

Click bars for
Quick Navigation ↓

Quick Changers

Laser-Cut Plate EOAT

3D Printing for EOAT

EOAT for Cobots

>ASS< Framing

Gimatic Framing

80/20 Framing

Suspensions

Vacuum Cups

Sprue Grippers

Gripper Fingers

Specialty Grippers

General Purpose
Grippers

Air Cylinders
& Slides

Rotaries

Nippers

Sensors

Valves & Regulators

Tubing & Fittings

Nuts & Bolts

Engineering
& Reference

End of Arm Tooling

Since 2001, EMI has been helping customers select everything from the right vacuum cups to designing fully-engineered complete project sets. Quality products, competitive pricing and all the support you need. We are easily accessible, friendly, and helpful.



Degating

Backed by a team of experienced EOAT Engineers, EMI's competency in degating applications along with an extensive offering of products, continue to push the limits of automation in your plastic injection molding facility. We are happy to work with you in testing, designing and supporting your next degate station.



EOAT for Cobots

Understanding the need for automation beyond the injection molding machine, EMI now offers a complete lineup of plug-and-play and custom Cobot solutions for the plastics industry. Our engineers are continuously working with customers to improve their operations and researching new products that are applicable to your processes.



Cobot Stands

EMI Cobot Stands are heavy duty, affordable, and readily available but can be designed to your specification. These pedestals can be moved around your plant and secured to the floor around your press or anywhere in your facility where Cobots are deployed in secondary operations.



Conveyor Automation Systems

Decades of constant improvement and custom conveying applications make EMI Conveyor systems the standard in the plastics industry. Manufactured in our Ohio facility, EMI conveyors are designed to your specifications, crafted by experienced assemblers and are made to last in industrial environments while offering advanced features to injection molders.



20 Years of EOAT from **EMI**



EMI Customer-focused innovation and growth.

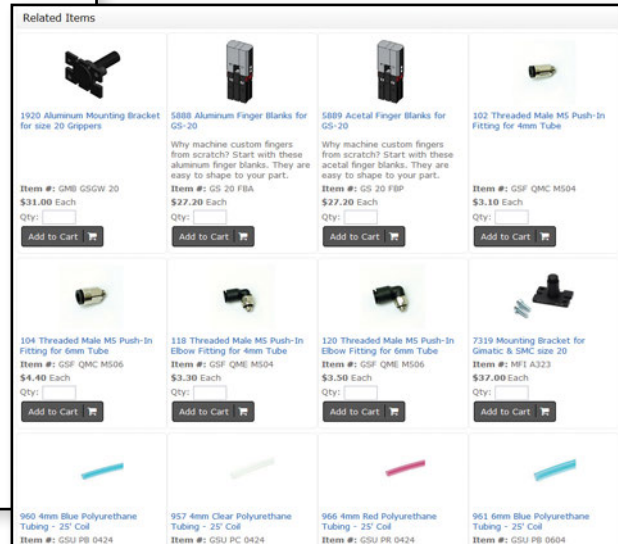
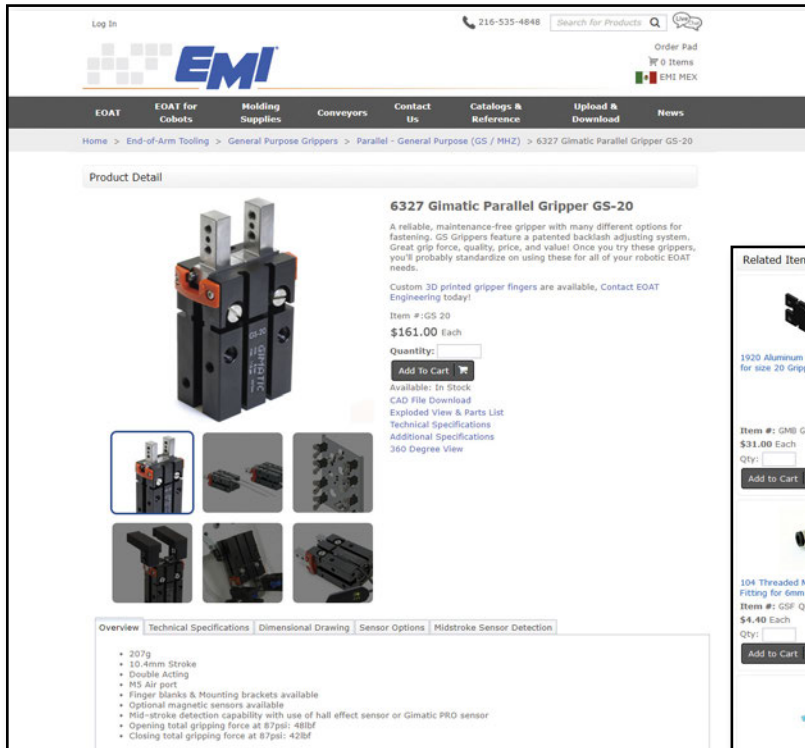
Online product pages have all the information you need!

Our online features are intended to make your experience with EMI even better

- Direct links to product pages from our online catalog.
- Search e-commerce items by Quick#, Part#, or Keyword.
- Drop-downs easily sort categories.
- Compare products, and check availability.

Easy online ordering!

- Track Orders
- Create Supply Lists
- Order from History
- Export Purchase Orders

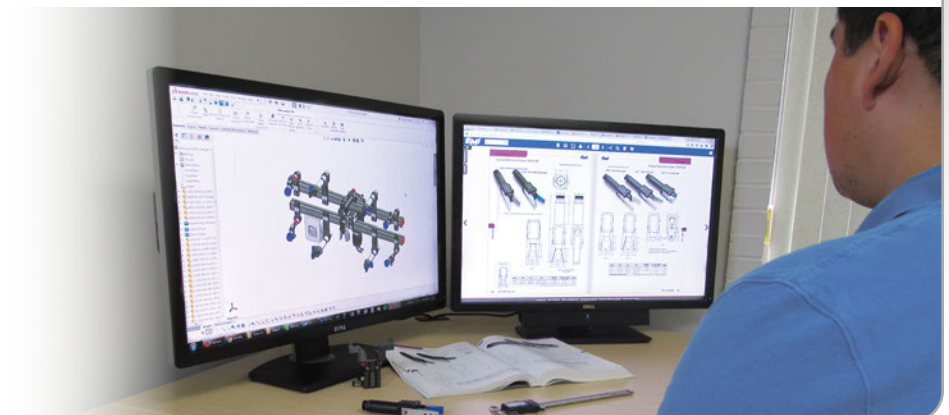
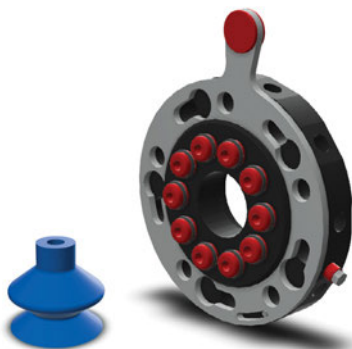


CAD File Downloads & 360° Views!

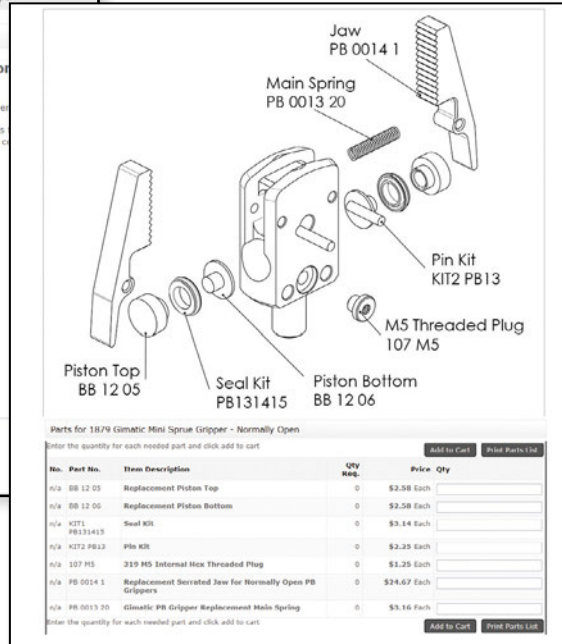
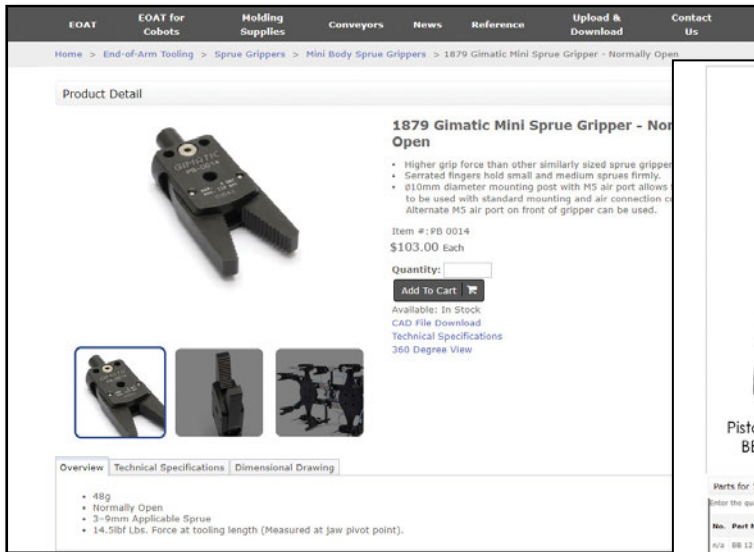
Building your own EOAT? Download the 3D CAD files you need to ensure an accurate design.

Our EOAT CAD Library has over 3,400 components and is updated daily. Download all or individual files, or preview them by Quick# with EMI's 360° View before downloading with no need to sign in.

Click here!



Find Replacement Parts Online!



Spare parts can be found on many product detail pages. In-stock and ready to ship same day!

Scan and Add to Cart!

Product packaging has QR codes for easy reorder or to check product info.



Hotlinks for Easy Navigation!

Click for Catalog Index

Click for Section Overview

Click for Online Ordering

1: QUICK CHANGERS

Standard Size (90mm) Quick Changer

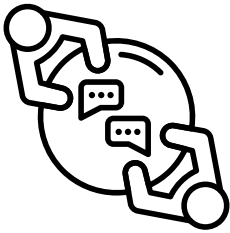
(Dimensioned drawing shown full scale)

Quick#	Part#	Description	Price
500	GSQ-R	Robot-Side - Standard size (90mm)	\$490.00
501	GSQ-G	EOAT-Side - Standard size (90mm)	\$275.00
502	WGS-QL EKRD	Robot-Side Electrical Connector & Cable	\$81.00

EMI's Engineers Evaluate and Design Specifically for Your Application

Suitable Applications:

- Plastic Handling
- General Assembly
- Packaging and Box Filling
- Plastic Secondary Operations (Degating, packaging, assembly)
- Machine Tending (CNC Mill, lathe, laser engraving)



Send your information

Send us a 3D model of the part, or a sample part, along with EMI's Standard EOAT or Machine Tending datasheet.

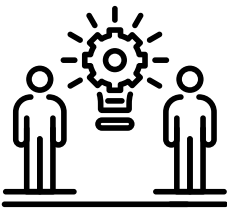
Interactive datasheets can be downloaded from our website. Send files to: Sales@EMICorp.com or upload them to our FTP site: www.emicorp.sharefile.com/share/filedrop



We will send you a quote

Including drawings and an itemized parts list with prices.

Designs typically take 2–4 weeks from the time we have all the required information. EMI can manufacture custom items, such as robot mounting plates and 3D printed parts fingers, to meet your complete EOAT requirements.

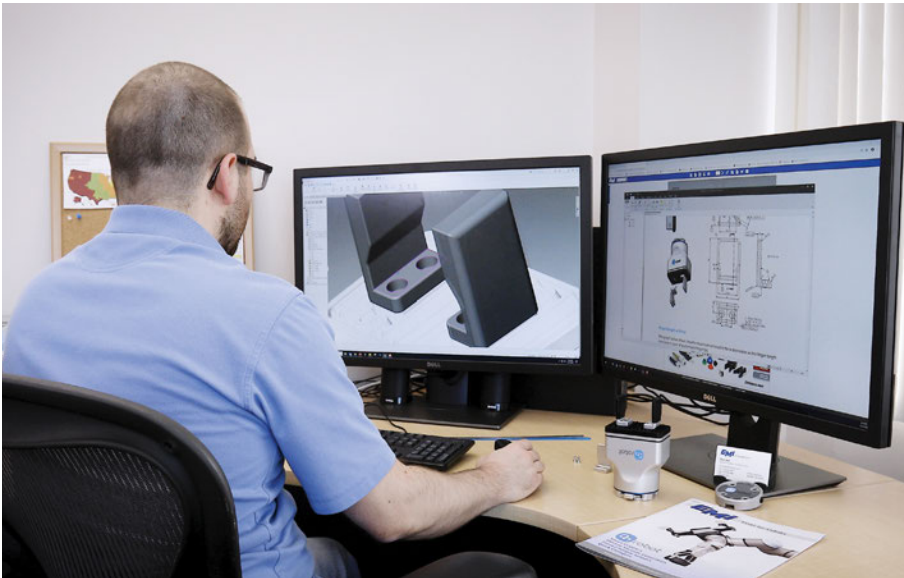


Support you can count on

Regional Sales Managers and Engineers on call.

EMI's Experienced Engineering Department is dedicated to help design and support all your EOAT and Cobot needs. We're easily accessible, friendly, and helpful. Give us a call and let us help you. Email: Sales@EMICorp.com or Call: 216-535-4848

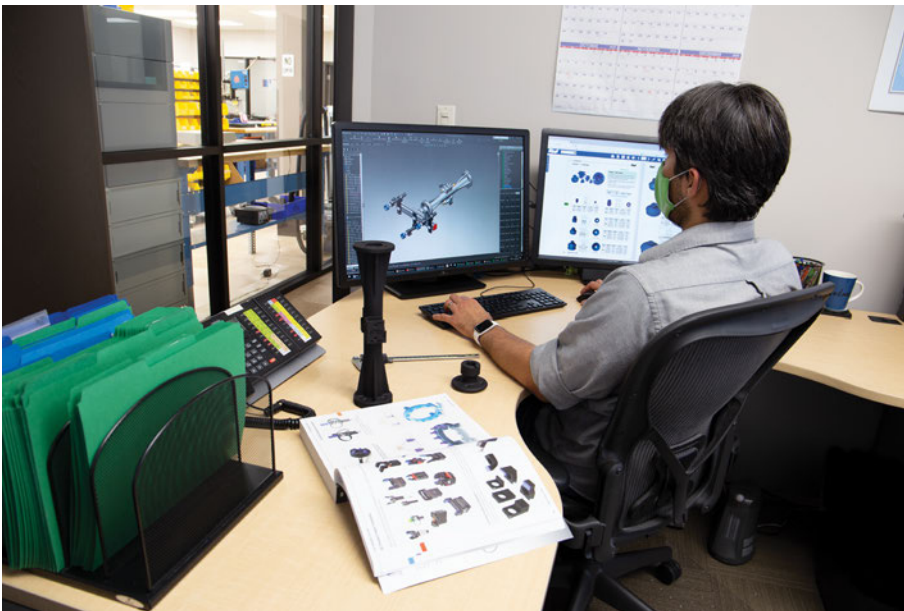
See page 1082 for more information about EMI's EOAT Design Assistance



Customer-Focused Engineering

Lets talk EOAT!

EOAT Engineers are available via phone, email, chat or video call. They will work with you on a degating test, vacuum cup recommendation, cobot kit demo, 3D printed fingers or your next multi-EOAT project set.



EOAT Experts

EMI does EOAT in a big way!

Design assistance is meant to suggest a possible design assembly, so there may be some tweaks or modifications to be made once you have built the tooling. EMI's in-house Engineering department of 20 EOAT engineers is dedicated to supporting all your needs. No question is too small and no project has been too large.



EOAT Build Service

Get expert assembly by EMI and save time!

Get the benefit of a reliable, professionally built EOAT when you have EMI's experienced technicians assemble your tool. Many customers find that EMI's complete design and build service is the most economical solution. Take the assembled EOAT out of the box and install it on your robot.



EMI's In-House Custom Approach

Find a Perfect Lightweight & Cost Effective Solution!

EMI's in-house laser cutting and 3D printing service allows us to provide considerable time and cost savings without sacrificing quality.

See page 86 for more information about our Laser-Cut Plate EOAT service.

Custom 3D Printed or Machined Fingers from EMI!

EMI's in-house 3D printing and CNC equipment allow us to provide custom fingers quickly and cost effectively.

See page 102 for more information about our 3D Printing service and how to pick the best option for your application!



Stay In Touch With Us!

January 2021 • [Contact Us](#)

Teachable PRO Sensors for EOAT

Complete Mounting of Gripper Jaw Position
Less Wires, Less Wiring
One Sensor, 3 positions

Teachable 3-Position Sensors for EOAT

Gimatic PRO-SS and PRO-SN sensors are digital magnetoresistive sensors with up to 3 programmable output signals, for example: gripper fully open, gripper fully closed, and part gripped. **Highly accurate, this sensor is ideal for part confirmation/mid-stroke detection for any size gripper.**

Gimatic PRO-SSR sensors have 3 output signals, 2 of which are programmable while the third is driven by a NOR logic gate. These are useful in instances when the sensing position may vary; simply teach the sensor the outer limits (open and closed positions) and the third output will activate when neither signal 1 or 2 are active. **Perfect for spigot applications where the spigot sizes can differ and part picking where the part size can change depending on position.**

[Shop Now](#)
In Stock - Ready to Ship

Features:

- Easy single button programming.
- Ideal for applications where space is limited and multiple output signals are needed.
- For Gimatic C shaped sensor slots and fixed in place with set screw.
- Each output can be independently configured to Normally Open or Normally Closed and is clearly identified by LEDs.
- Wide +/- 30mm sensing range (relative to the magnet and the sensor).

This custom End of Arm Tooling automates a bag filling operation, performing three part pick sequences and one loading sequence to fill a bag with six unique parts.

Subscribe to our **Monthly Newsletter!**

Our Engineers are constantly researching new products that are applicable to your processes. Subscribe to our Newsletter to stay informed!

Connect with us on LinkedIn

We've found that LinkedIn is a useful forum for us to share ideas, tips and more while also staying connected with friends and associates as they move and grow. Follow us today!



Visit and subscribe to EMI's YouTube channel to watch the latest videos on our EOAT products!

We are constantly adding new content to our YouTube page. From product overviews to in-depth how-to videos, we are sure you'll find our video's helpful.



Quick Changer Overview

The Senvex/WGS, Gimatic, and >ASS< Quick Changers are industry proven for use on robots tending to injection molding machines. From 50 – 3500 tons, EMI has the right sized QC to suit the size range of EOATs anticipated for use with your machines.

Quick Changer Advantages

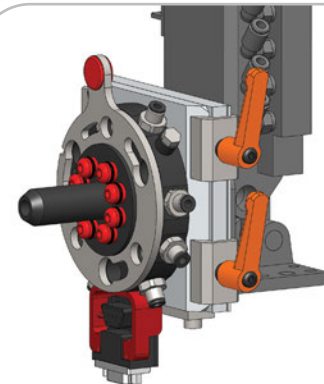
- Precision** Quick changers assure that the EOAT will be perfectly positioned each time it is mounted to the robot. In addition to helping to prevent damage to the mold or the EOAT, this can also greatly reduce the amount of fine-tuning needed upon set up.
- Efficiency** The SENVEX/WGS, Gimatic and >ASS< Quick Changers quickly and automatically make all pneumatic and electrical connections when both halves are locked into place. This can be especially time saving when an EOAT has multiple air, vacuum, or electrical connections and also ensures a repeatable installation.
- Safety** Using a quick changer that automatically connects air, vacuum and electrical (such as the SENVEX) assures that each time the EOAT is mounted, all of the connections will be correct (i.e. primary vacuum, secondary vacuum, primary air, secondary air etc.).
- Standardization** Uniform dedication of air and vacuum ports on all quick change applications throughout the plant allow EOAT to be mounted quickly wherever it is needed.



Manual Quick Changers for Cobots on page 114.



Automatic Quick Changer for Cobots on page 116.



Dovetail to Round QC Transition at your own pace on page 78.

Quick Changer Overview**SENVEX®/WGS Quick Changers**

p.12

**>ASS<® Quick Changers**

p.16

**Gimatic® Quick Changers**

p.22

**Electrical Connectors**

p.30

**Quick Changer with Air Shut Off**

p.38

**Star® Quick Changers**

p.84

**Quick Changer Interfaces**

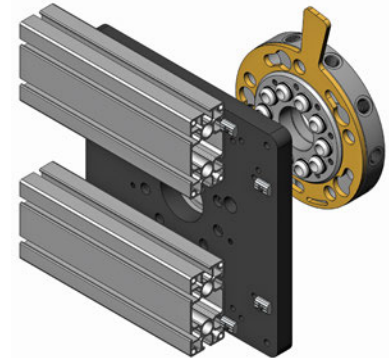
p.48

**6-Axis Robot Adaptor**

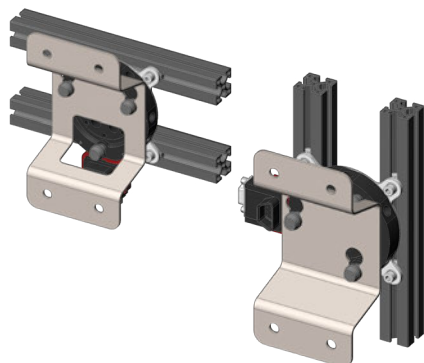
p.56

**Mounting Plates**

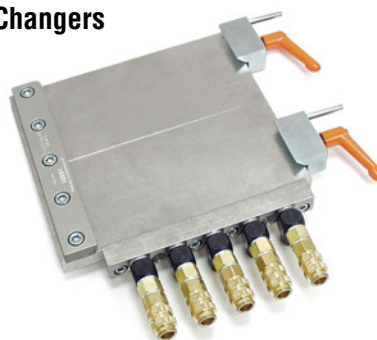
p.40

**Storage Hangers**

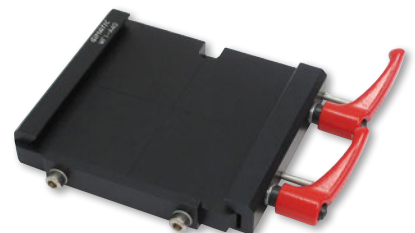
p.58

**>ASS< Dovetail Quick Changers**

p.62

**Gimatic Dovetail Quick Changers**

p.70

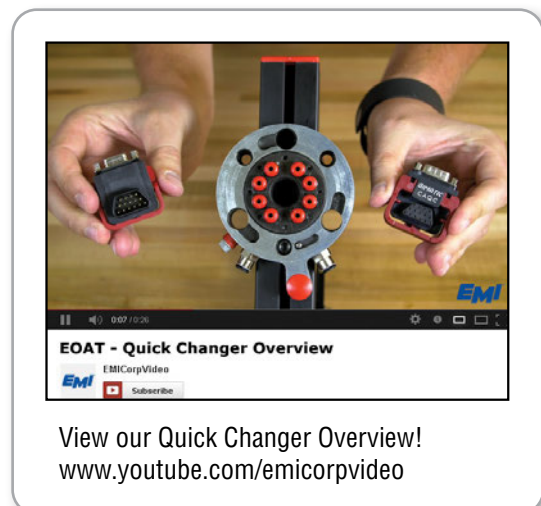
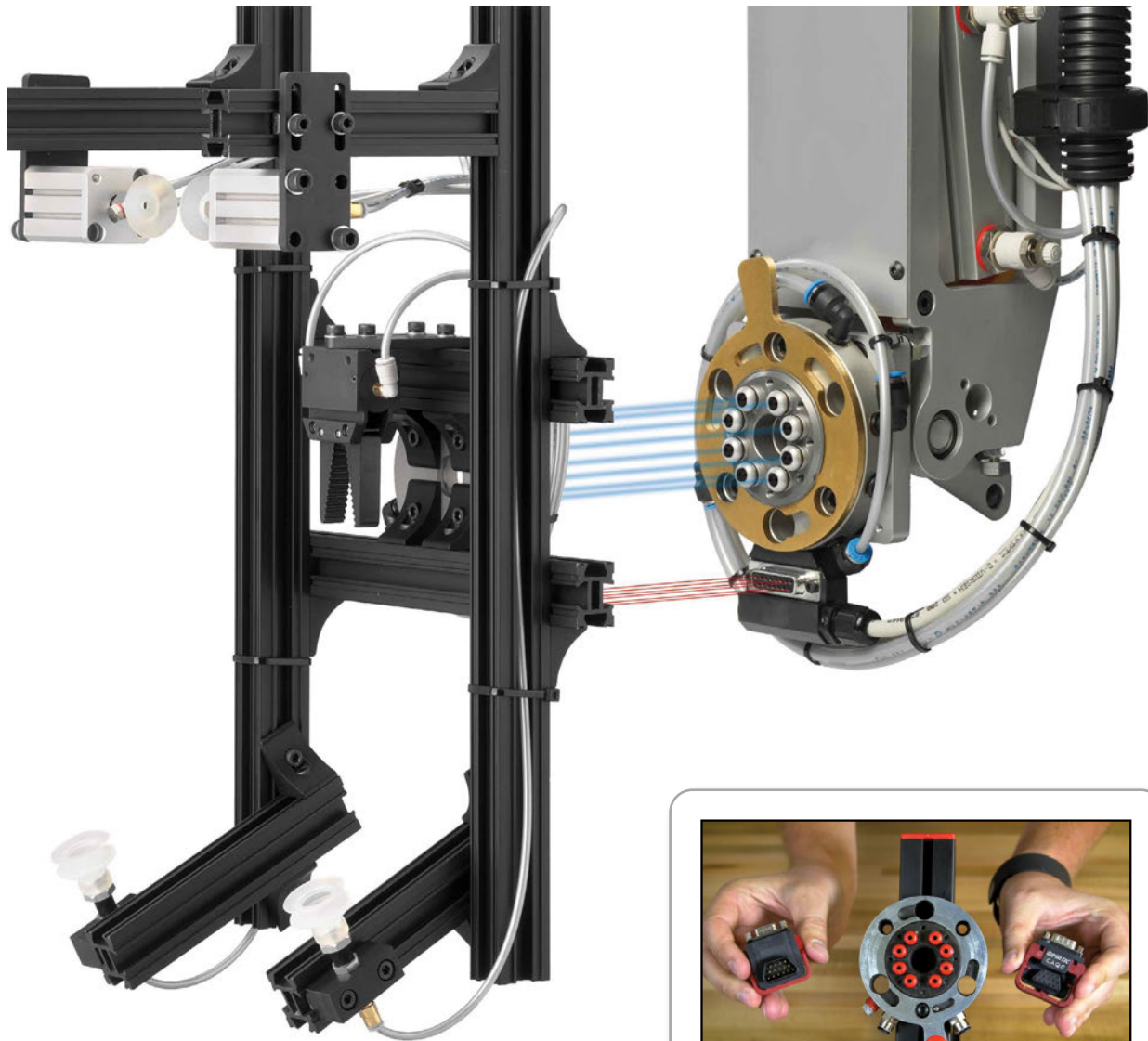


EOAT Quick Changer

Use this EOAT Quick Change system for Simpler, Faster, and Safer EOAT changes.

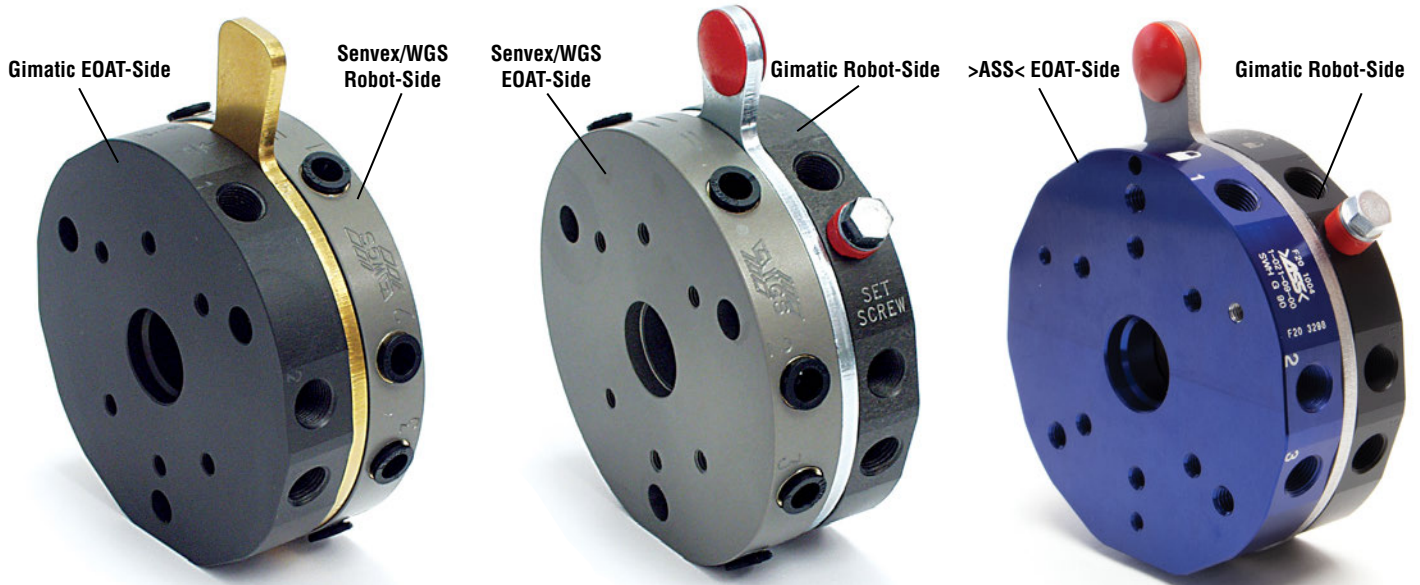
This Quick Change Adaptor handles end-of-arm tooling's for molding machines 50–3500 tons. The combined robot and EOAT-Sides weigh only 1.4 pounds, yet it can handle large-size EOATs. Its light weight allows for fast robot speeds. Its high strength allows it to be used on large machines with large EOATs. (See specifications) Up to 12 air ports and 30 electric signals are available depending on the size and configuration.

When the EOAT-Side is connected, the air lines and electrical signals are automatically coupled the same way every time. By standardizing port 1 to be the primary vacuum circuit, port 2 to be the secondary vacuum, port 3 to be primary gripper circuit, etc., your EOATs can easily be interchangeable on all your machines. Your connections will always be correct, with no chance of crossed vacuum lines or electrical signals.

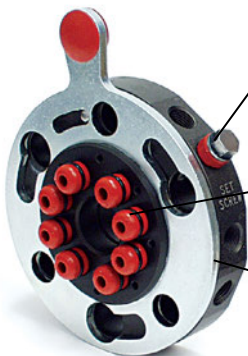


EOAT Quick Changer

Standard (90mm) and Large (150mm) Senvex®/WGS, Gimatic®, and >ASS< Quick Changers are Interchangeable. Matching Electrical Connector pairs are able to be used whether the QC sides are matching or non-matching.



Gimatic Robot-Side

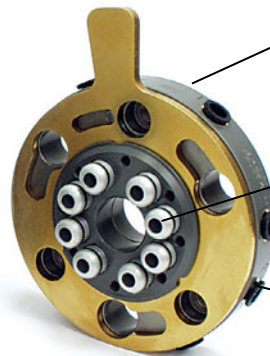


“Zero Tolerance” set screw can be used with both Gimatic and Senvex EOAT-Sides, but is not required for use with either Gimatic or Senvex.

Molded plastic fittings with O-rings.

No integrated push-in fittings. Threaded ports require fittings to be purchased separately. See dimensional drawings on the following pages to determine port size.

Senvex/WGS Robot-Side

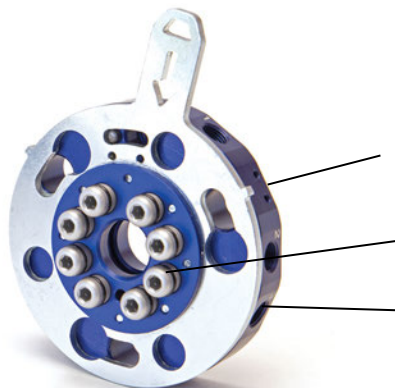


No secondary set screw keeps set-up a simple, one-step process; lock the lever and you’re done. Very close locking tolerances with locking lever alone.

Machined aluminum fittings with O-rings.

Integrated 6mm push-in fittings on standard 90mm quick changer. Threaded G1/4” ports on large 150mm Quick Changer requires fittings to be purchased separately.

>ASS< Robot-Side



An optional sensor bracket mounts on the EOAT-Side QC and a sensor signals when QC lock is engaged.

Machined aluminum fittings with O-rings.

No integrated push-in fittings. Threaded ports require fittings to be purchased separately. See dimensional drawings on the following pages to determine port size.

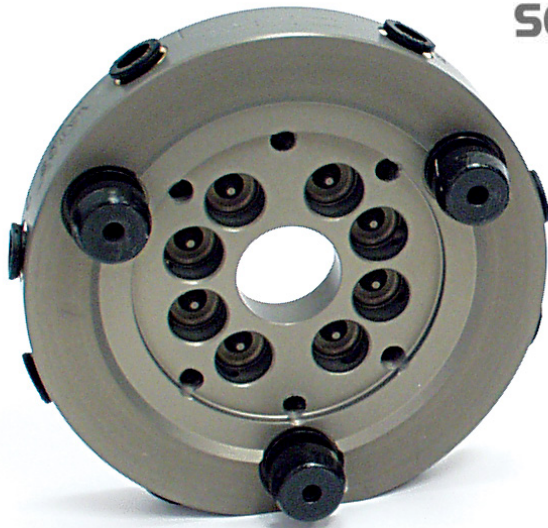


A close-up view of the tapered, hardened steel set screw shows how it friction locks against the EOAT-Side’s locating pins to eliminate any play between the two quick changer sides.

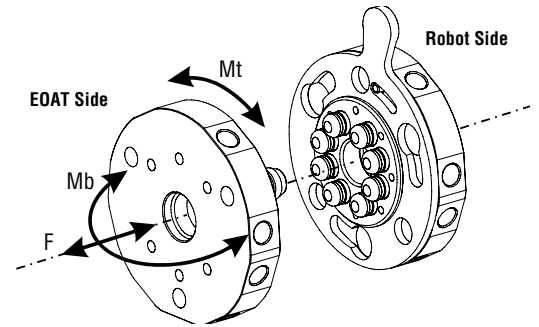
SUMMARY: Without using a set screw, the Senvex WGS quick changer will provide a closer, tighter lock than the Gimatic quick changer (without engaging set screw). However, if you DO engage the set screw with every tooling change, the Gimatic quick changer will provide a closer, tighter lock.

Standard Size (90mm) Quick Changer

(Dimensioned drawing shown full scale)

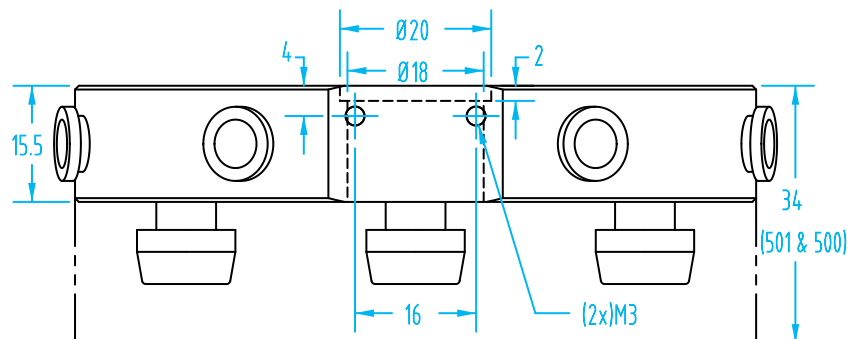
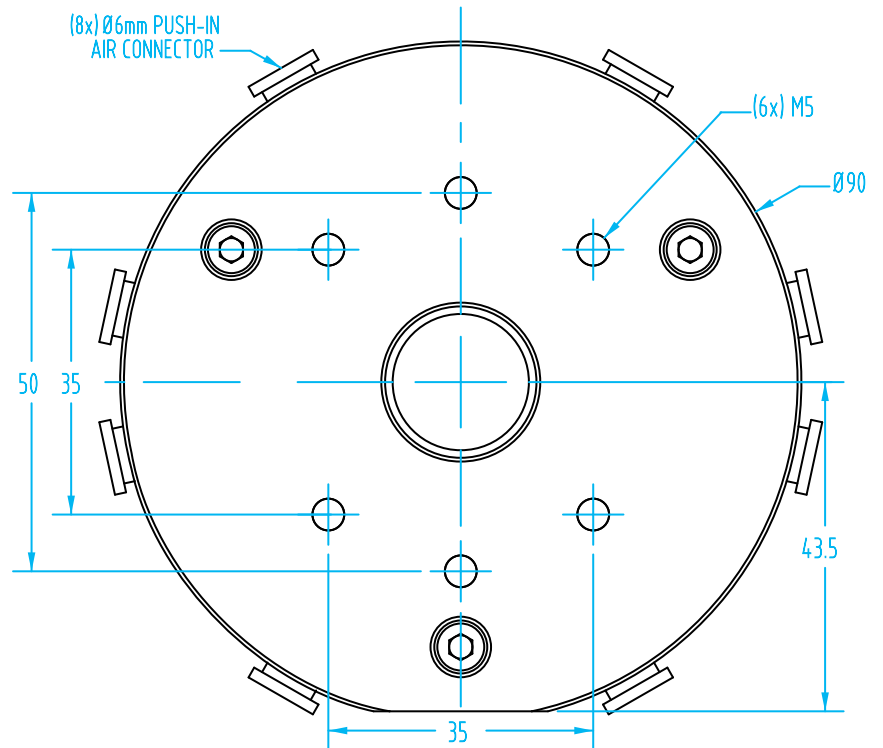
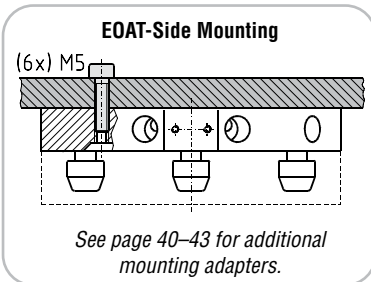


#501 - Standard EOAT-Side Quick Changer



Specifications		
Weight	Robot-Side	332g
	EOAT-Side	234g
Maximum Air Pressure	6 bar (87psi)	
Air Ports	(8X) Ø6mm O.D. tube	
Electrical Connector	Optional	
Safety Loads:		
F 90 lbs.	Mt 74 ft-lbs.	Mb 44 ft-lbs.

The standard version of the EOAT Quick Changer is designed to handle EOATs that are typically used on injection machines sized from 50–500 tons. This will generally handle EOATs weighing up to 25 lbs.



Standard Size (90mm) Quick Changer

(Dimensioned drawing shown full scale)

Standard EOAT Quick Changer

Quick#	Part#	Description	Price
500	GSQ-R	Robot-Side - Standard size (90mm)	\$490.00
501	GSQ-G	EOAT-Side - Standard size (90mm)	\$275.00
502	WGS-QLEKRD	Robot-Side Electrical Connector & Cable	\$81.00
503	WGS-QLEKGD	EOAT-Side Electrical Connector & Cable	\$81.00
6545	QC90-H	Horizontal EOAT Storage Hanger (pg. 59)	\$32.86
5997	QC90-V	Vertical EOAT Storage Hanger (pg. 59)	\$32.86
1791	GSQ-CP-QC90	Quick Changer Centering Pin (pg. 37)	\$26.00

Additional Electrical Connectors available on page 30.

Use Quick#s for easy online ordering.



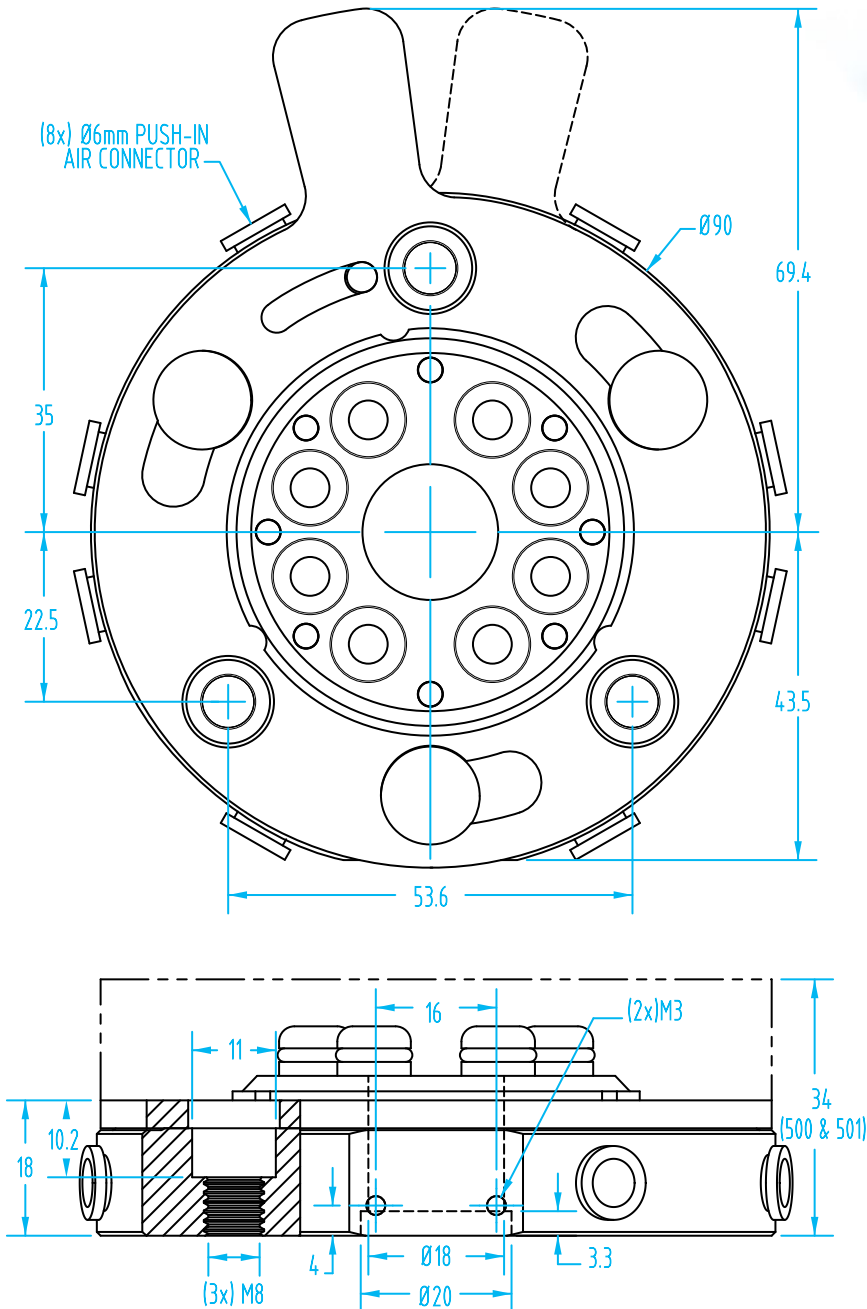
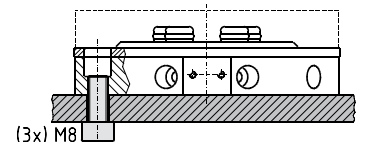
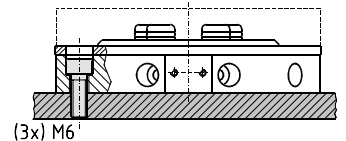
#500 - Standard Robot-Side Quick Changer



Electrical connectors mount to quick changer

Robot-Side Mounting Options

The robot-side quick changer can be mounted two ways: Use M6 when tapping into your robot plate from the front. Use M8 when making a thru hole in your robot plate to use the M8 threads in the quick changer.



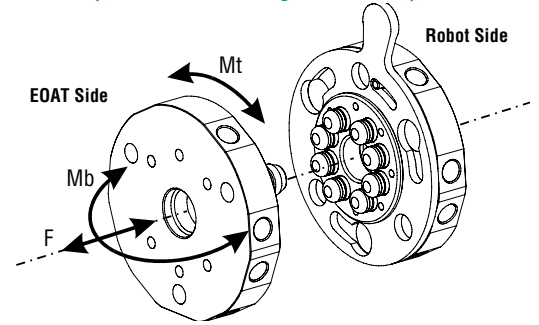
Large Size (150mm) Quick Changer

Standardize your EOAT mounting interface for all your machines!



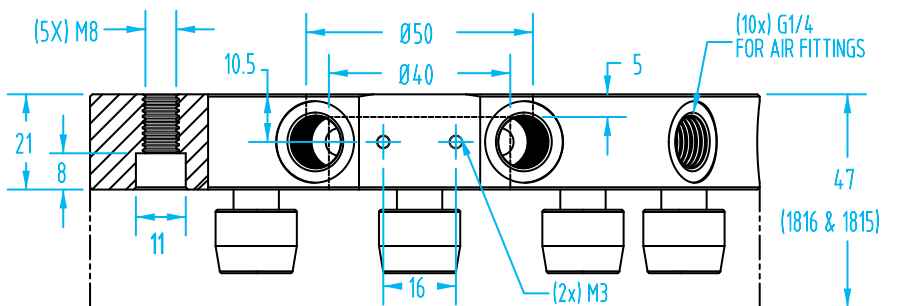
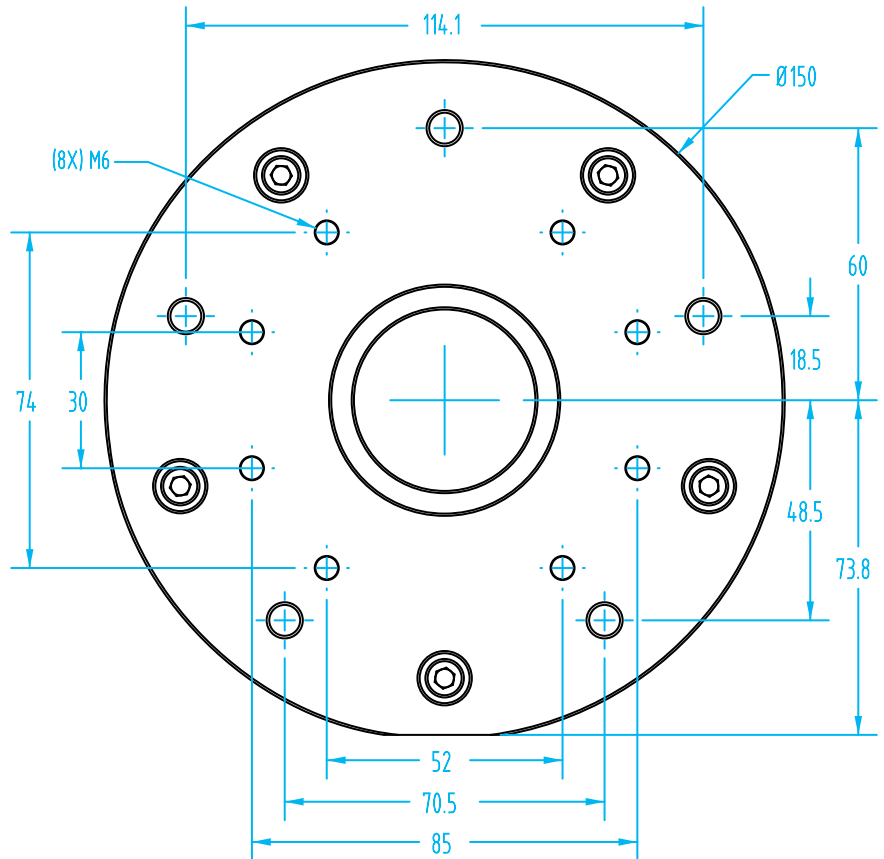
#1816 - Large EOAT-Side Quick Changer

(Dimensioned drawing reduced to fit)

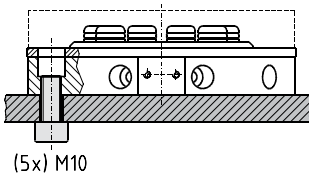
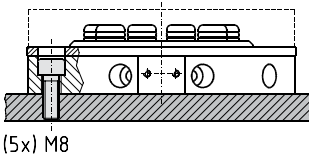


Specifications		
Weight	Robot-Side	1260g
	EOAT-Side	930g
Maximum Air Pressure	6 bar (87psi)	
Air Ports	(10X) G1/4"	
Electrical Connector	Optional	
Safety Loads:		
F	Mt	Mb
225 lbs.	184 ft-lbs.	74 ft-lbs.

The larger version of the EOAT Quick Changer is designed to handle EOATs that are typically used on injection machines sized from 500–2,000 tons. This will generally handle EOATs weighing up to 75 lbs.



EOAT-Side Mounting



See page 44–45 for additional mounting adapters.

Large Size (150mm) Quick Changer

(Dimensioned drawing reduced to fit)

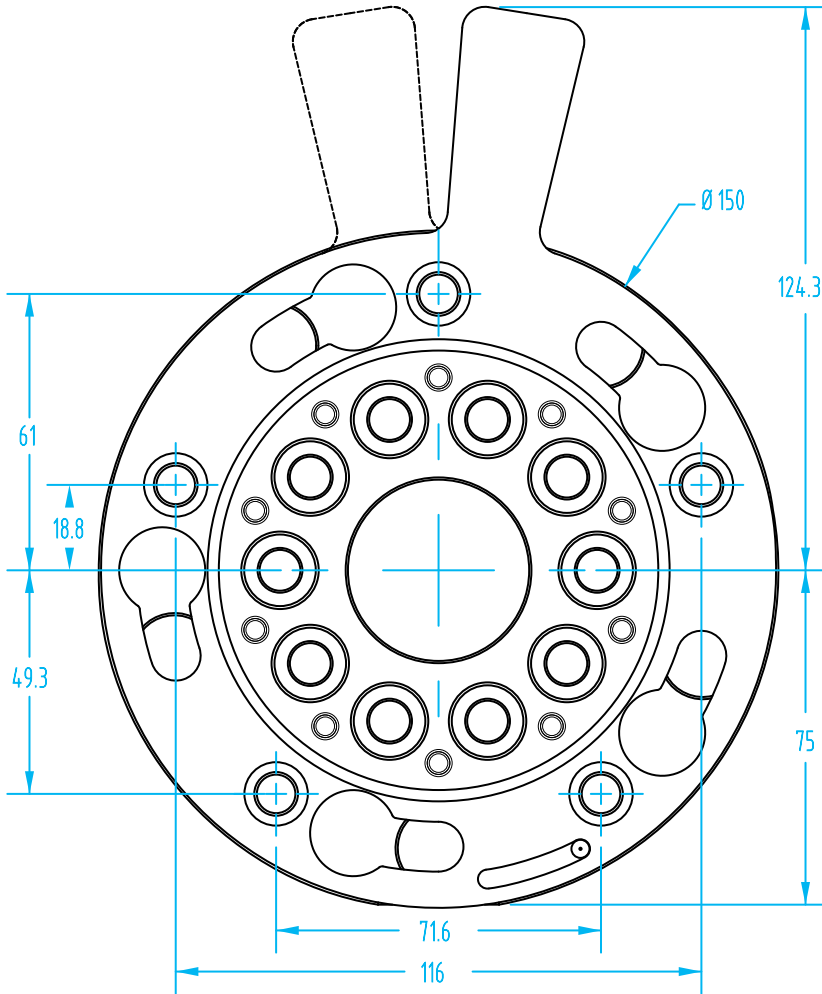
Large EOAT Quick Changer

Quick#	Part#	Description	Price
1815	GSQ-LR	Robot-Side - Large size (150mm)	\$795.00
1816	GSQ-LG	EOAT-Side - Large size (150mm)	\$430.00
502	WGS-QLEKRD	Robot-Side Electrical Connector & Cable	\$81.00
503	WGS-QLEKGD	EOAT-Side Electrical Connector & Cable	\$81.00
504	WGS-QLEKD	Spacer for Electrical Connectors	\$9.50
6546	QC150-H	Horizontal EOAT Storage Hanger (pg. 60)	\$38.27
5998	QC150-V	Vertical EOAT Storage Hanger (pg. 60)	\$38.27
1793	GSQ-CP-QC150	Quick Changer Centering Pin (pg. 37)	\$28.00

Additional Electrical Connectors available on page 30.

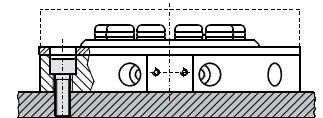


#1815 - Large Robot-Side Quick Changer



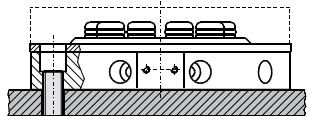
Robot-Side Mounting Options

You can use the holes in the quick changer as 8.5mm thru holes. Tap M8 threaded holes in your robot tooling plate.

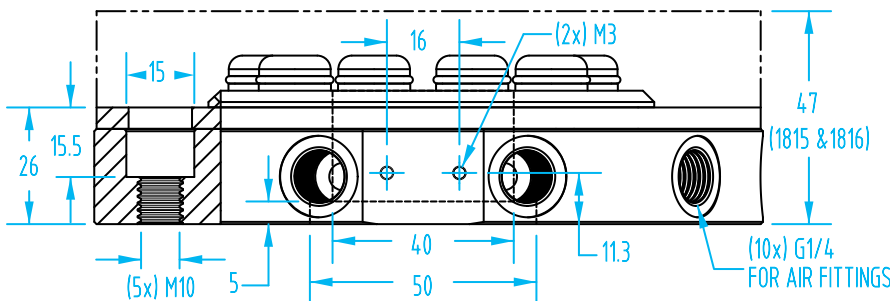


(5x) M8

To use the threaded M10 holes in the quick changer, use 10.5mm thru holes in your robot tooling plate.



(5x) M10



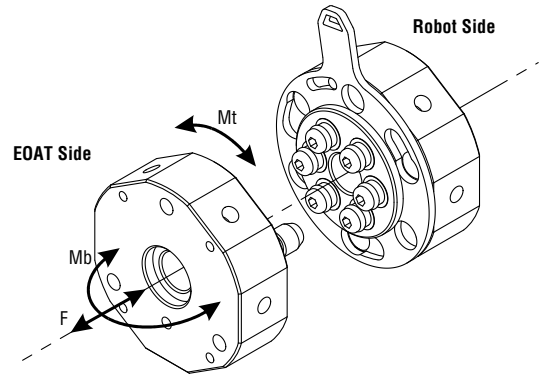
Small Size (50mm) >ASS< Quick Changers

(Dimensioned drawing shown full scale)



NEW

#3816 - Small EOAT-Side Quick Changer

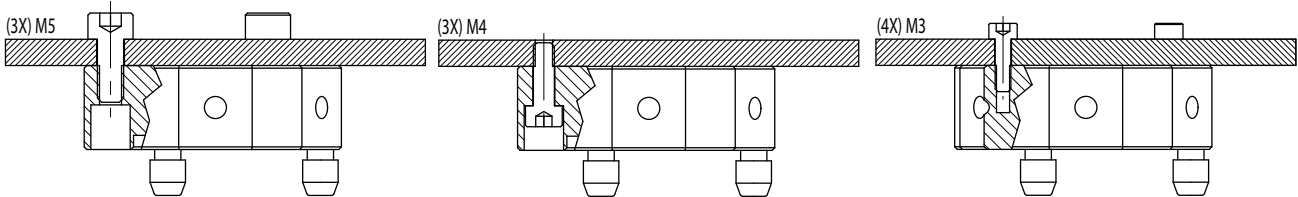


- For EOATs that are typically mounted on sprue pickers, tabletop SCARA robots, cobots, or used on IMMs sized up to 100 tons.
- This will generally handle EOATs weighing up to 11 lbs.
- Please consult with EOAT engineering for proper sizing to your application needs.
- Need to add more air circuits? Pneumatic Interface Expansion Modules available online, Quick #3933, #3934.

Specifications for Small Size Quick Changer		
Weight	Robot-Side	68g
	EOAT-Side	95g
Maximum Air Pressure	6 bar (87psi)	
Air Ports	(6X) M5	
Electrical Connector	Optional - Adapter needed	
Safety Loads:		
F 33 lbs.	Mt 14 ft-lbs.	Mb 7 ft-lbs.

F= Axial Load Limit Mt= Torque Moment Limit
Mb= Bending Moment Limit

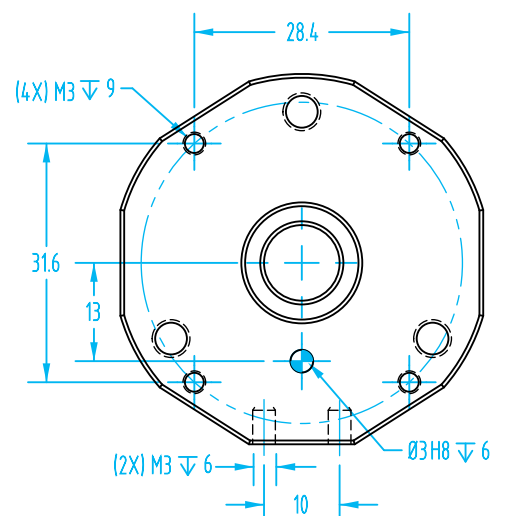
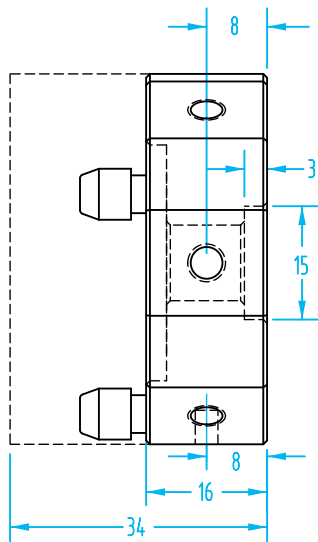
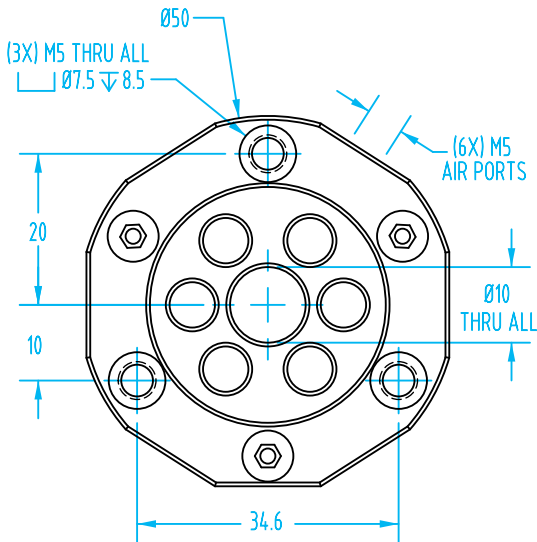
The EOAT-Side Quick Changer can be mounted three ways:



1. Use threaded M5 holes in the Quick Changer, and use 5.3mm thru holes in your EOAT tooling plate.

2. Use the threaded M5 holes as 4.2mm thru holes and use M4 threaded holes in your EOAT tooling plate.

3. Use threaded M3 holes in the Quick Changer, and use 3.4mm thru holes in your EOAT tooling plate.



Small Size (50mm) >ASS< Quick Changers

(Dimensioned drawing shown full scale)

Small Size Quick Changers

Quick#	Part#	>ASS< #	Description	Price
3815	SWH-RV-50	1-020-05-00	Robot-Side - Small size (50mm)	\$273.00
3816	SWH-G-50	1-021-05-00	EOAT-Side - Small size (50mm)	\$103.95
502	WGS-QLEKRD	Robot-Side Electrical Connector & Cable		\$81.00
503	WGS-QLEKGD	EOAT-Side Electrical Connector & Cable		\$81.00
3945	GHV-SWH-G-50	1-022-05-00	EOAT Storage Hanger (pg. 61)	\$19.43
3836	SWH-DS-50	1-025-05-00	Spacer for Electrical Connectors	\$22.58

Additional Electrical Connectors available on page 30.

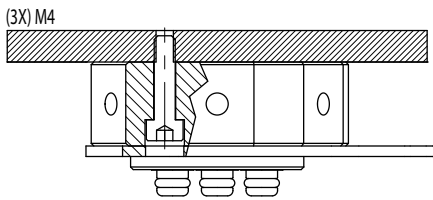
This quick changer features a safety locking mechanism against unintentional opening. The brass button needs to be pushed-in in order to unlock the quick changer. A sensor bracket is included, sensor sold separately.



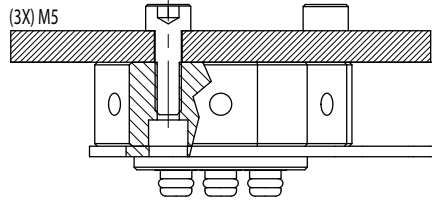
#3815 - Small Robot-Side Quick Changer

NEW

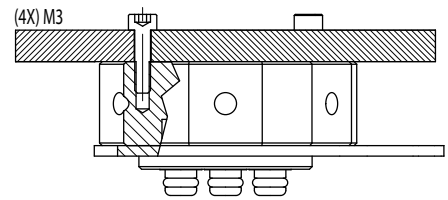
The Robot-Side Quick Changer can be mounted three ways:



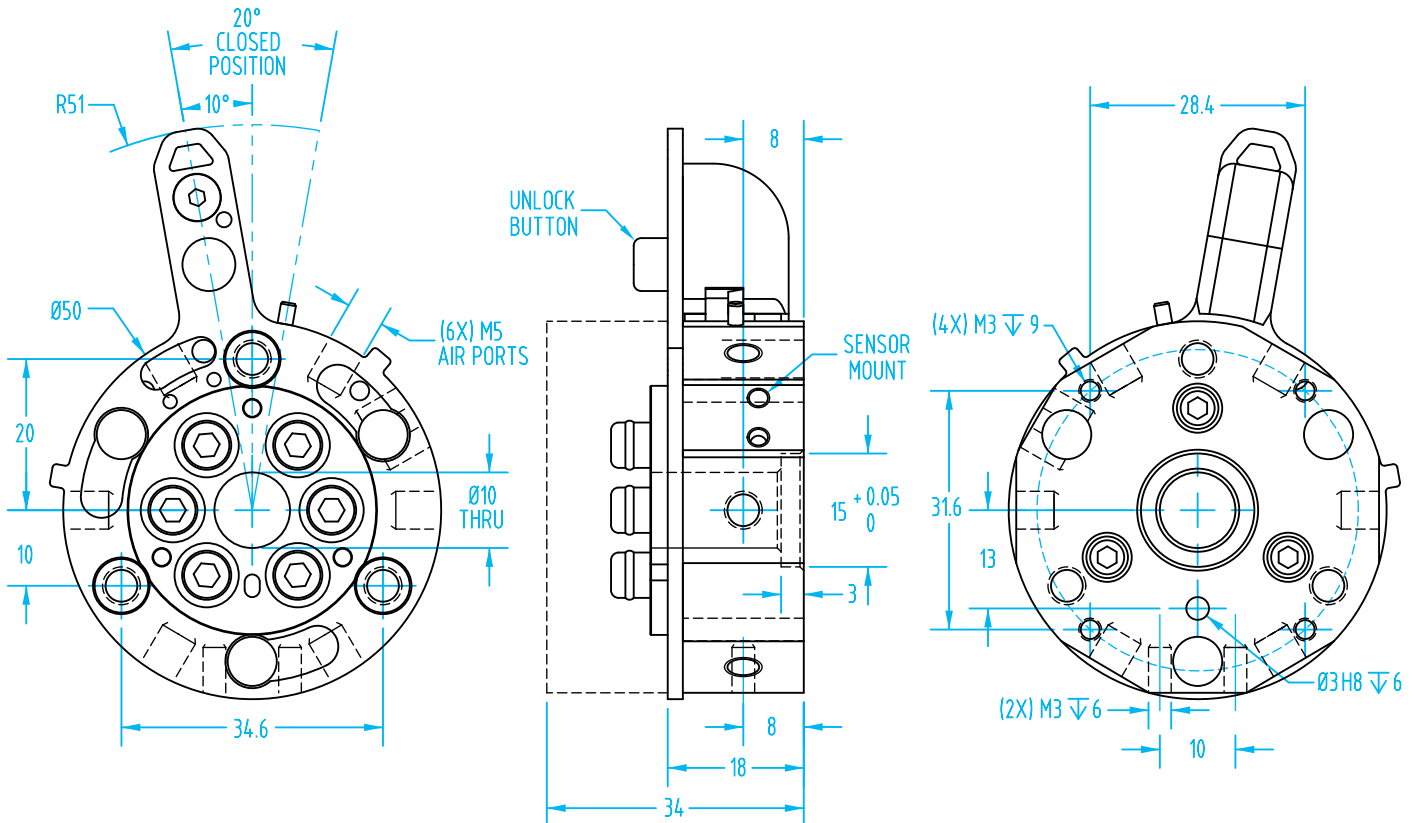
1. Use threaded M5 holes in the Quick Changer, and use 5.3mm thru holes in your robot tooling plate.



2. Use the threaded M5 holes as 4.2mm thru holes. Tap M4 threaded holes in your robot tooling plate.



3. Use threaded M3 holes in the Quick Changer, and use 3.4mm thru holes in your robot tooling plate.



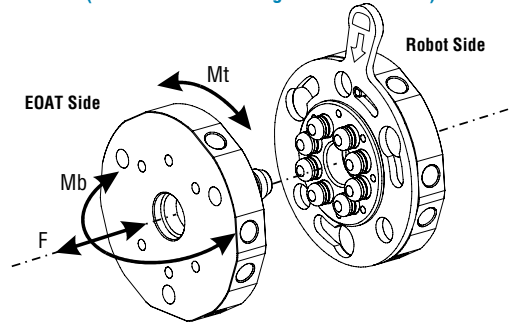
Standard Size (90mm) >ASS< Quick Changers

(Dimensioned drawing shown full scale)



#3818 - Standard EOAT-Side Quick Changer

NEW

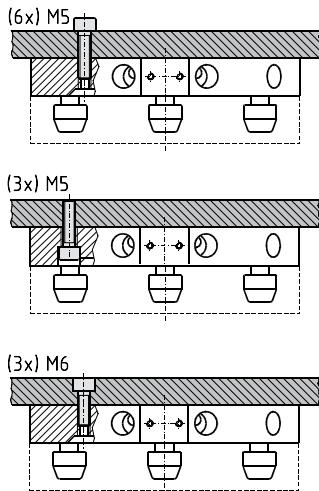


Specifications for Standard Size Q.C.		
Weight	Robot-Side	325g
	EOAT-Side	212g
Maximum Air Pressure	6 bar (87psi)	
Air Ports	(8X) G 1/8"	
Electrical Connector	Optional	
Safety Loads:		
F 90 lbs.	Mt 73 ft-lbs.	Mb 44 ft-lbs.

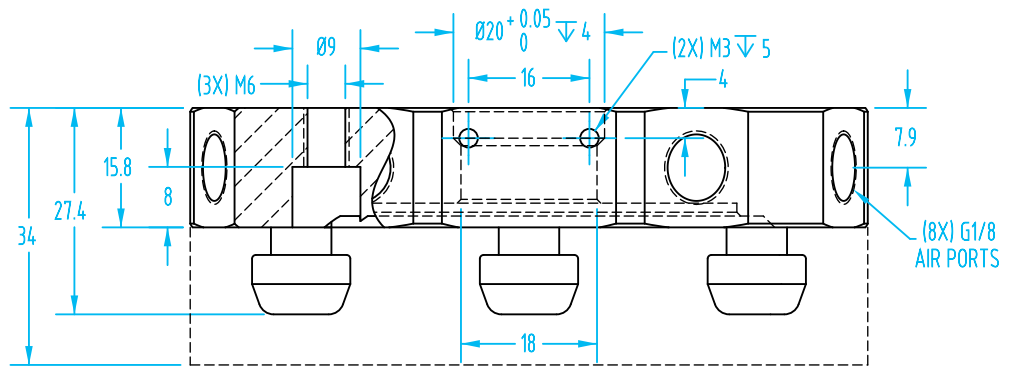
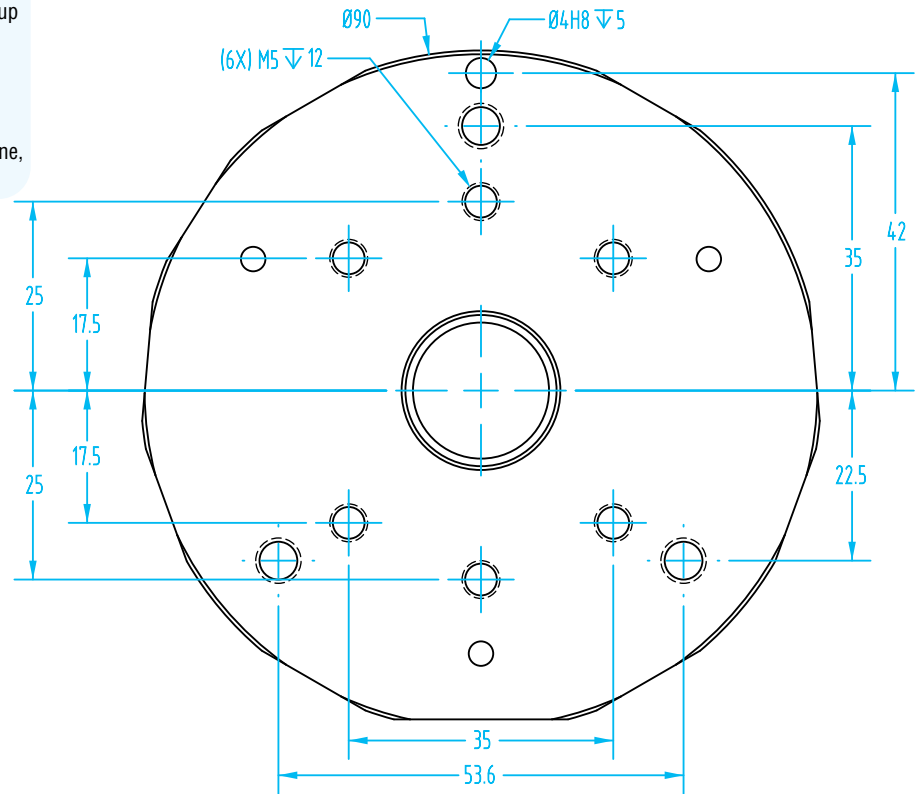
F= Axial Load Limit Mt= Torque Moment Limit
Mb= Bending Moment Limit

- For EOATs that are typically used on IMMs sized from 50 to 500 tons.
- This will generally handle EOATs weighing up to 44 lbs.
- Please consult with EOAT engineering for proper sizing to your application needs.
- Need to add more air circuits? Pneumatic Interface Expansion Modules available online, Quick #3933, #3934.

EOAT-Side Mounting



See page 40–43 for additional mounting adapters.



Standard Size (90mm) >ASS< Quick Changers

(Dimensioned drawing shown full scale)

Standard Size Quick Changers

Quick#	Part#	>ASS< #	Description	Price
3817	SWH-RV-90	1-020-07-00	Robot-Side - Standard size (90mm)	\$347.50
3818	SWH-G-90	1-021-09-00	EOAT-Side - Standard size (90mm)	\$194.25
502	WGS-QLEKRD	Robot-Side Electrical Connector & Cable		\$81.00
503	WGS-QLEKGD	EOAT-Side Electrical Connector & Cable		\$81.00
3946	GHV-SWH-G-90	1-022-09-00	EOAT Storage Hanger (pg. 61)	\$30.98
3886	RHZ-SWH-R-90	1-026-09-00	Quick Changer Centering Pin	\$22.05

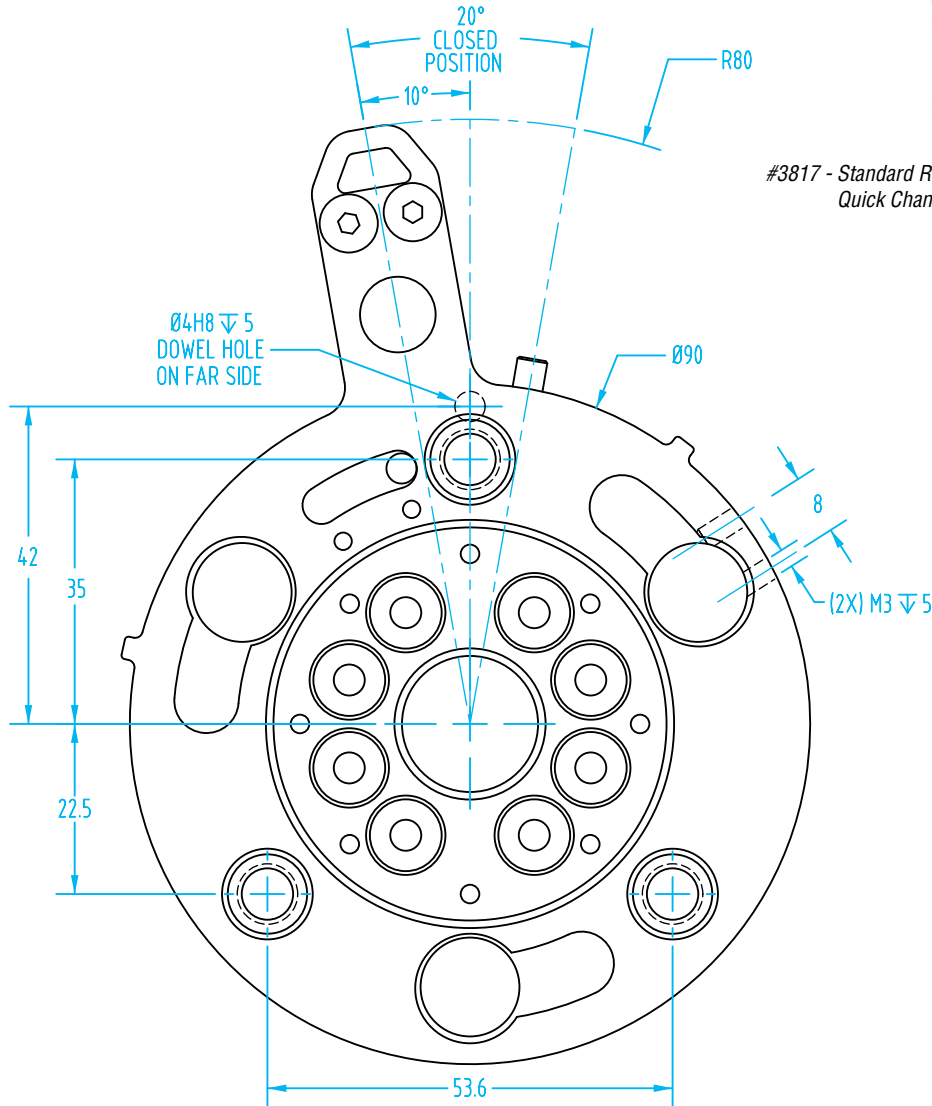
Additional Electrical Connectors available on page 30.



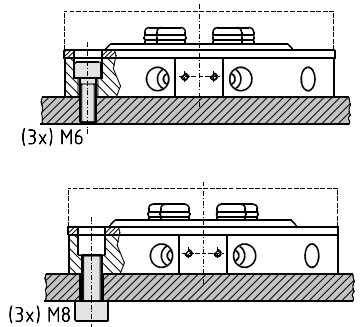
#3817 - Standard Robot-Side Quick Changer

NEW

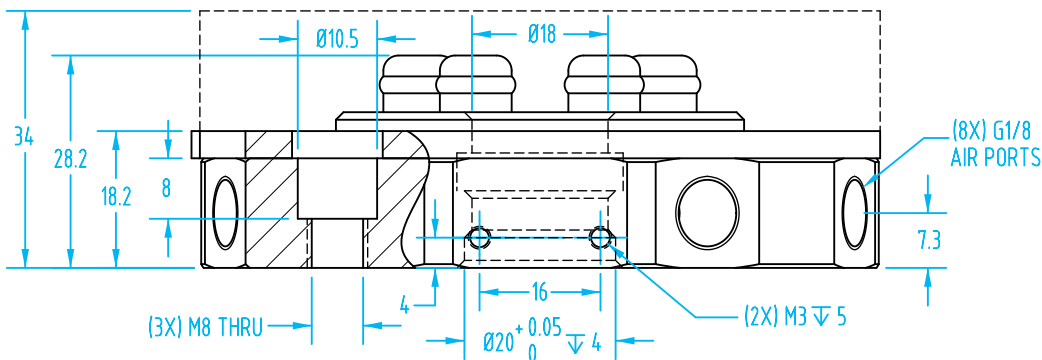
This quick changer features a safety locking mechanism against unintentional opening. The brass button needs to be pushed-in in order to unlock the quick changer. A sensor bracket is included, sensor sold separately.



Robot-Side Mounting



The robot-side quick changer can be mounted two ways: Use M6 when tapping into your robot plate from the front. Use M8 when making a thru hole in your robot plate to use the M8 threads in the quick changer.



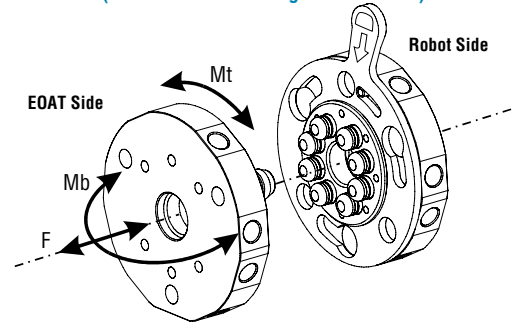
Large Size (150mm) >ASS< Quick Changers



#3832 - Large EOAT-Side Quick Changer

NEW

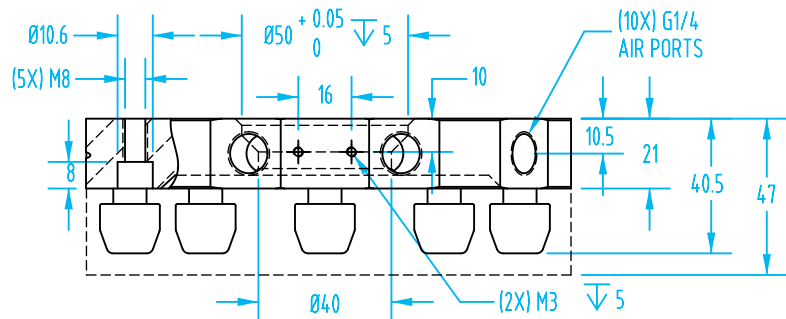
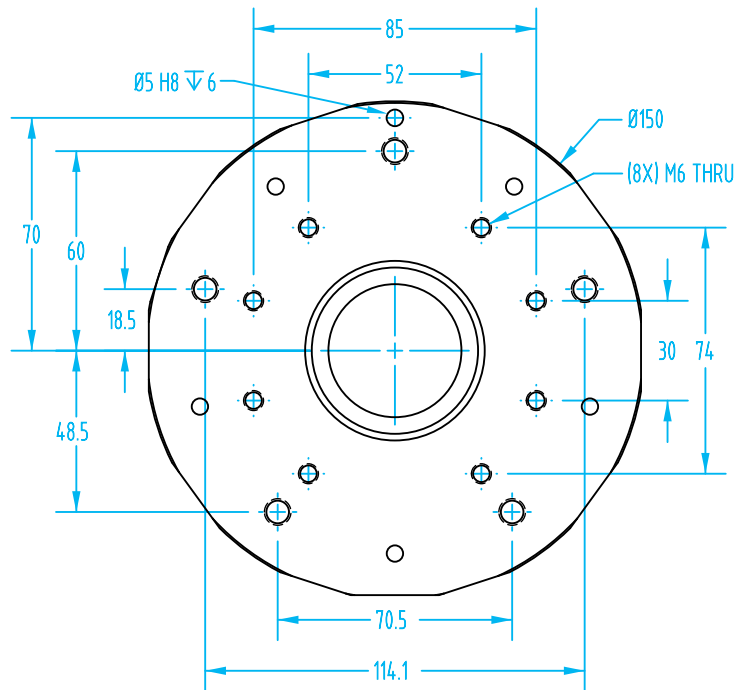
(Dimensioned drawing reduced to fit)



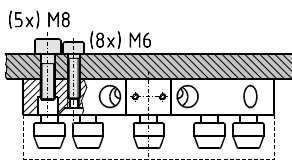
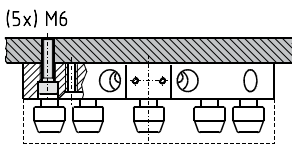
Specifications		
Weight	Robot-Side	1145g
	EOAT-Side	810g
Maximum Air Pressure	6 bar (87psi)	
Air Ports	(10X) G1/4"	
Electrical Connector	Optional	
Safety Loads:		
F 224 lbf.	Mt 184 ft-lbs.	Mb 73 ft-lbs.

F= Axial Load Limit Mt= Torque Moment Limit
Mb= Bending Moment Limit

- For EOATs that are typically used on IMMs sized from 500 to 2000 tons.
- This will generally handle EOATs weighing up to 88 lbs.
- Please consult with EOAT engineering for proper sizing to your application needs.
- Need to add more air circuits? Pneumatic Interface Expansion Modules available online, Quick #3933, #3934.



EOAT-Side Mounting



See page 44–45 for additional mounting adapters.

Large Size (150mm) >ASS< Quick Changers

(Dimensioned drawing reduced to fit)

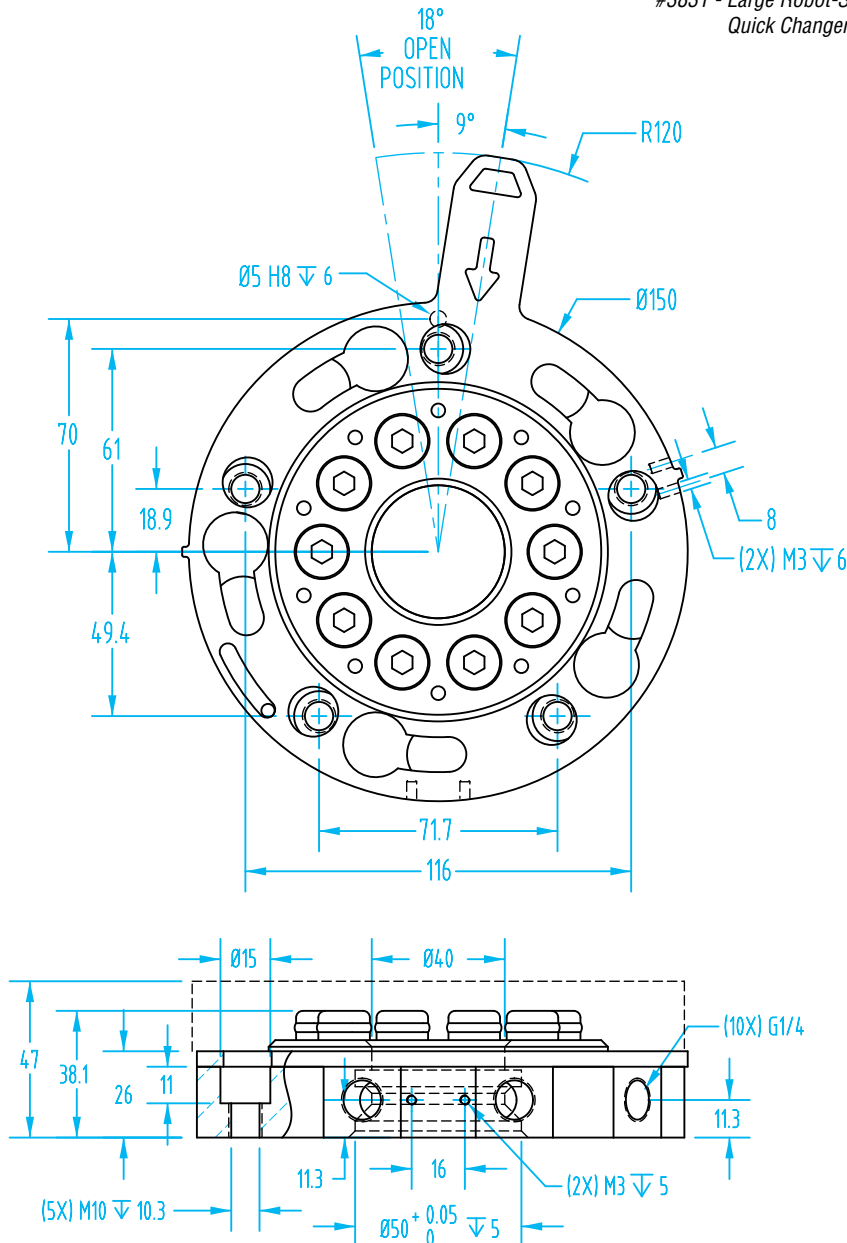
Large Size Quick Changers

Quick#	Part#	>ASS< #	Description	Price
3831	SWH-R-150	1-020-15-00	Robot-Side - Large size (150mm)	\$530.25
3832	SWH-G-150	1-021-15-00	EOAT-Side - Large size (150mm)	\$301.35
502	WGS-QLEKRD	Robot-Side Electrical Connector & Cable		\$81.00
503	WGS-QLEKGD	EOAT-Side Electrical Connector & Cable		\$81.00
3837	SWH-DS-150	1-025-15-00	Spacer for Electrical Connectors	\$22.58
6546	QC150-H		Horizontal EOAT Storage Hanger (pg. 60)	\$38.27
5998	QC150-V		Vertical EOAT Storage Hanger (pg. 60)	\$38.27
3887	RHZ-SWH-R-150	1-026-15-00	Quick Changer Centering Pin	\$25.20

The SWH-150.. needs an adapter (Quick# 3837) for electrical connectors.
Additional Electrical Connectors available on page 30.

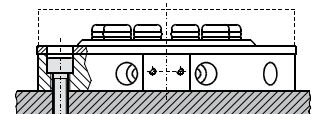


#3831 - Large Robot-Side Quick Changer



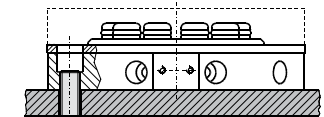
Robot-Side Mounting

You can use the holes in the quick changer as 8.5mm thru holes. Tap M8 threaded holes in your robot tooling plate.



(5x) M8

To use the threaded M10 holes in the quick changer, use 10.5mm thru holes in your robot tooling plate.



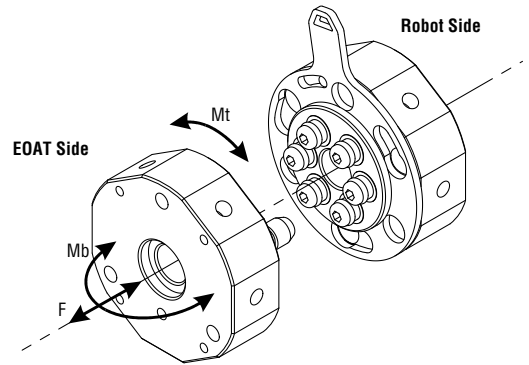
(5x) M10

Small Size (50mm) Gimatic Quick Changers



#6423 - Small EOAT-Side Quick Changer

(Dimensioned drawing shown full scale)

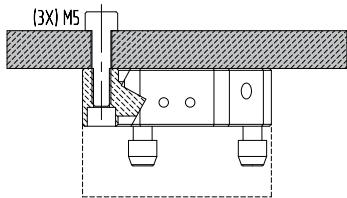


Specifications for Small Size Quick Changer		
Weight	Robot-Side	65g
	EOAT-Side	103g
Maximum Air Pressure	6 bar (87psi)	
Air Ports	(4X) M5	
Electrical Connector	Optional - Adapter needed	
Safety Loads:		
F	Mt	Mb
78 lbf.	22 ft-lbs.	11 ft-lbs.

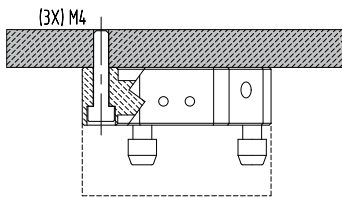
F= Axial Load Limit Mt= Torque Moment Limit
Mb= Bending Moment Limit

- For EOATs that are typically mounted on sprue pickers, tabletop SCARA robots, cobots, or used on IMMs sized up to 100 tons.
- This will generally handle EOATs weighing up to 11 lbs.
- Please consult with EOAT engineering for proper sizing to your application needs.

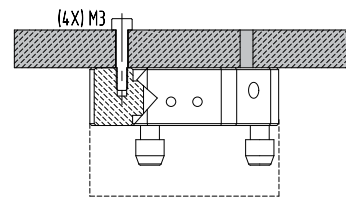
The EOAT-Side Quick Changer can be mounted three ways:



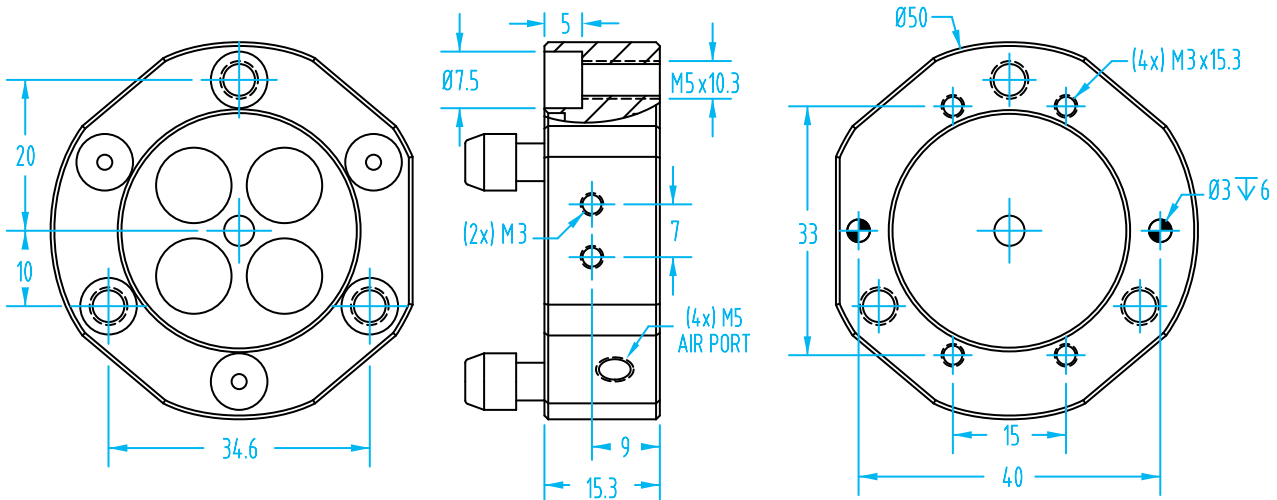
1. Use threaded M5 holes in the Quick Changer, and use 5.3mm thru holes in your EOAT tooling plate.



2. Use the threaded M5 holes as 4.2mm thru holes and use M4 threaded holes in your EOAT tooling plate.



3. Use threaded M3 holes in the Quick Changer, and use 3.4mm thru holes in your EOAT tooling plate.



Small Size (50mm) Gimatic Quick Changers

(Dimensioned drawing shown full scale)

Small Size Quick Changers

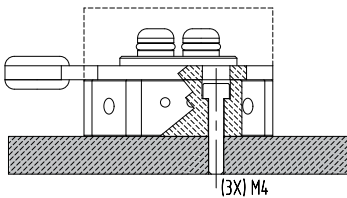
Quick#	Part#	Description	Price
6422	QC50-A	Robot-Side - Small size (50mm)	\$207.00
6423	QC50-B	EOAT-Side - Small size (50mm)	\$103.00
5039	CAQC	Robot-Side Electrical Connector	\$82.00
5040	CBQC	EOAT-Side Electrical Connector	\$46.00
6743	QC50-K	Electrical Connector Adapter for Small Size QC's	\$16.64
6070	CEQC-A	Robot-Side Cable for Electrical Connectors	\$21.84
6071	CEQC-B	EOAT-Side Cable for Electrical Connectors	\$21.84
6069	QC50-H	Horizontal EOAT Storage Hanger (pg. 58)	\$20.75
5996	QC50-V	Vertical EOAT Storage Hanger (pg. 58)	\$20.75

Note: The small size quick changer needs an adapter (Quick# 6743) for electrical connectors.
See page 30 for more information.

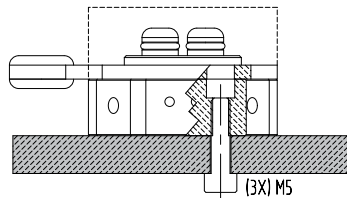


#6422 - Small Robot-Side Quick Changer

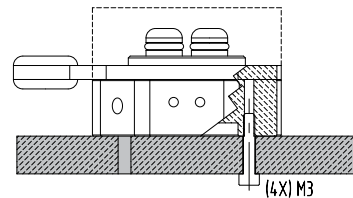
The Robot-Side Quick Changer can be mounted three ways:



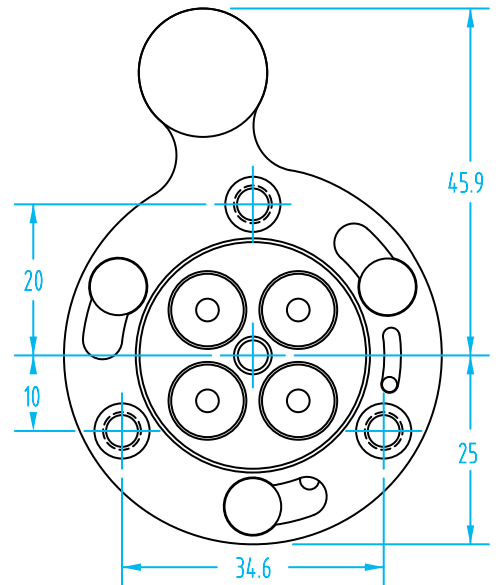
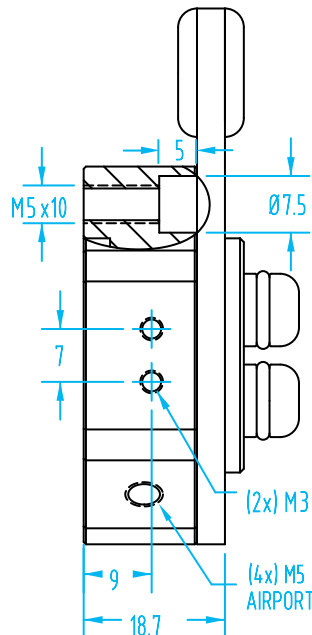
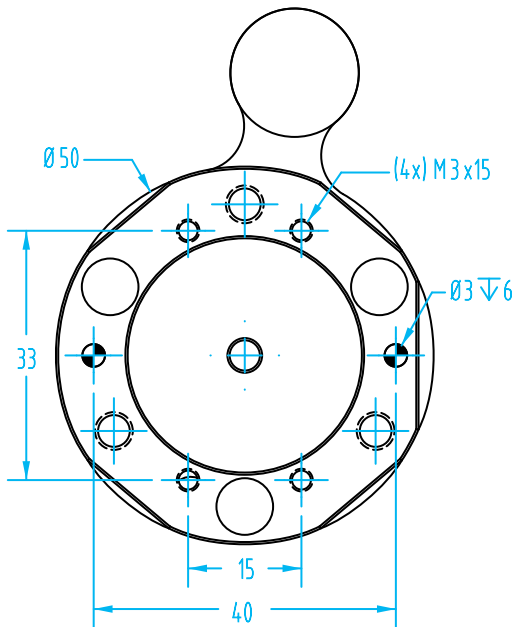
1. Use threaded M5 holes in the Quick Changer, and use 5.3mm thru holes in your robot tooling plate.



2. Use the threaded M5 holes as 4.2mm thru holes. Tap M4 threaded holes in your robot tooling plate.



3. Use threaded M3 holes in the Quick Changer, and use 3.4mm thru holes in your robot tooling plate.

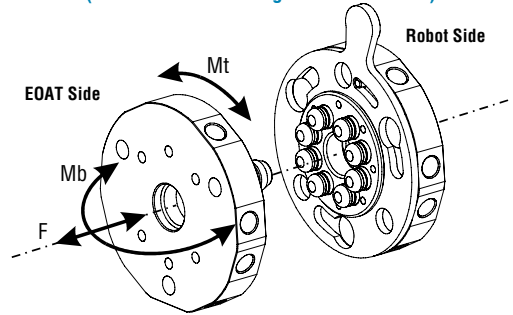


Standard Size (90mm) Gimatic Quick Changers

(Dimensioned drawing shown full scale)



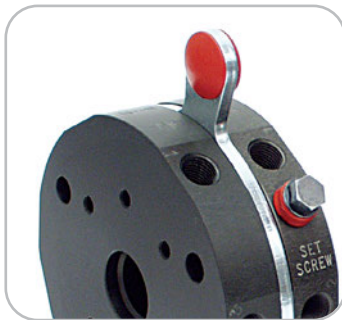
#5036 - Standard EOAT-Side Quick Changer



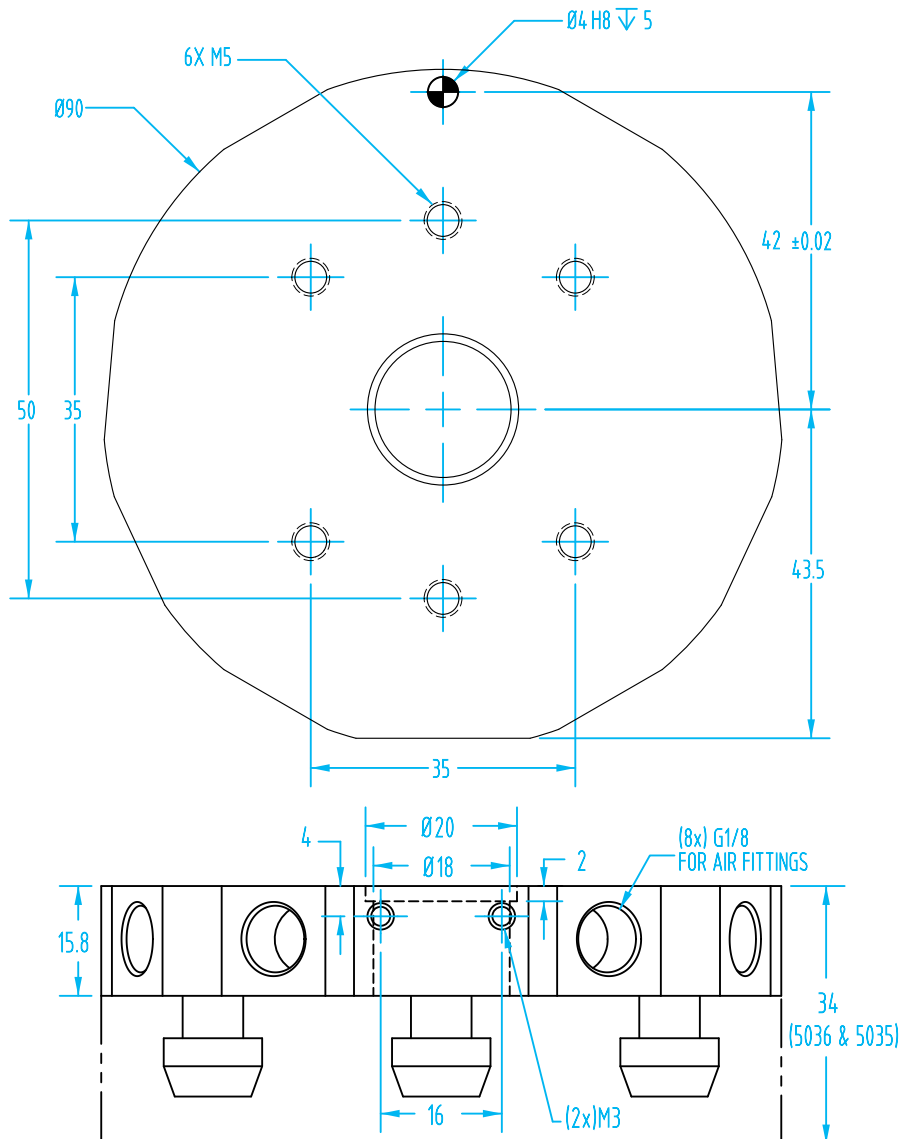
Specifications for Standard Size Quick Changer		
Weight	Robot-Side	318g
	EOAT-Side	227g
Maximum Air Pressure	6 bar (87psi)	
Air Ports	(8X) G 1/8"	
Electrical Connector	Optional	
Safety Loads:		
F 314 lbf.	Mt 132 ft-lbs.	Mb 73 ft-lbs.

F= Axial Load Limit Mt= Torque Moment Limit
Mb= Bending Moment Limit

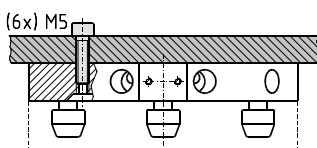
- For EOATs that are typically used on IMMs sized from 50 to 500 tons.
- This will generally handle EOATs weighing up to 44 lbs.
- Please consult with EOAT engineering for proper sizing to your application needs.
- Need to add more air circuits? Pneumatic Interface Expansion Modules available online, Quick#7561 & #7562.



The set screw friction locks against the EOAT-Side's locking pins to eliminate any play between the two Quick Changer sides for "zero tolerance" applications. However, for standard applications, it is not required. The Quick Changer functions very well using only the main locking lever.



EOAT-Side Mounting



See page 40-43 for additional mounting adapters.

Standard Size (90mm) Gimatic Quick Changers

(Dimensioned drawing shown full scale)

Standard Size Quick Changers

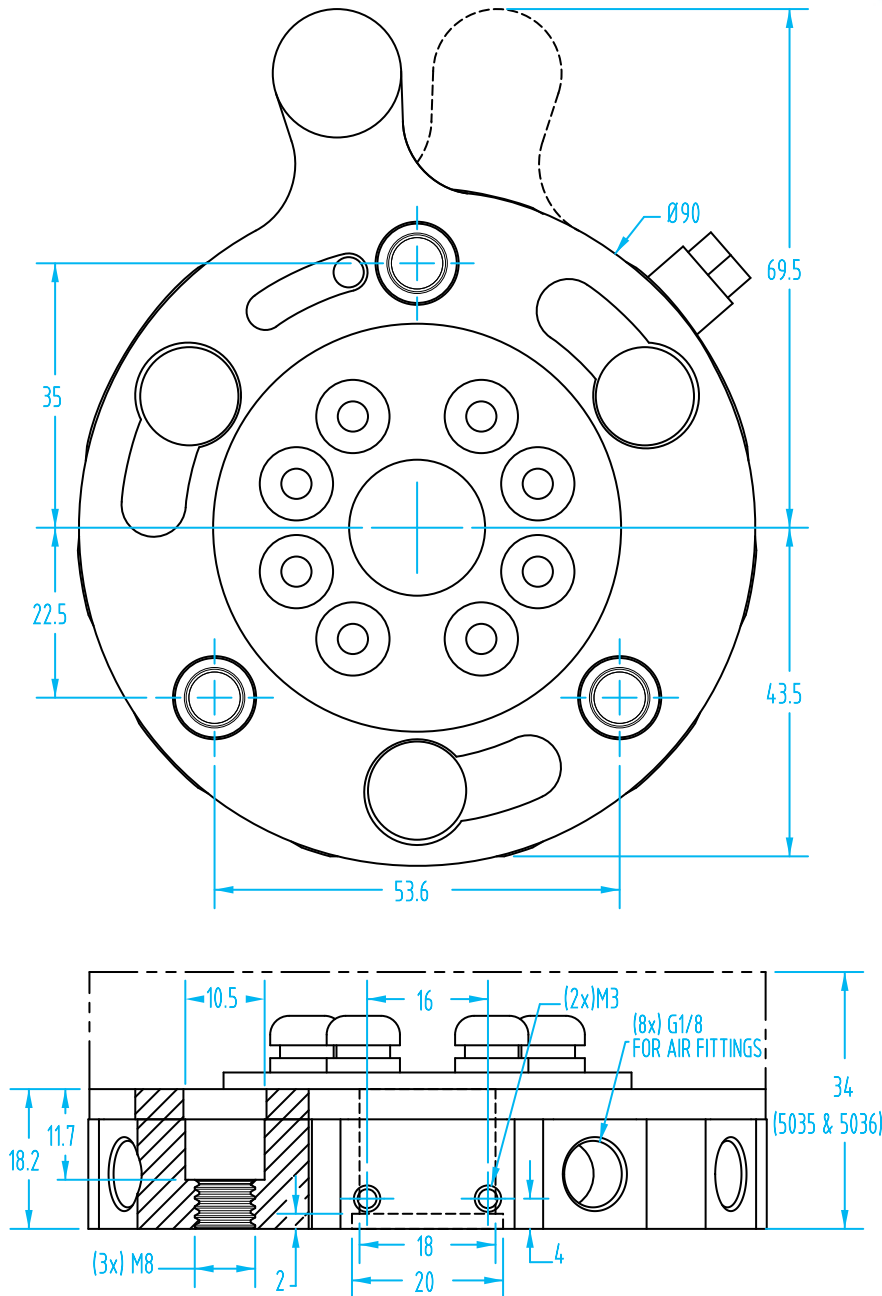
Quick#	Part#	Description	Price
5035	QC90-A	Robot-Side - Standard size (90mm)	\$302.00
5036	QC90-B	EOAT-Side - Standard size (90mm)	\$192.00
5039	CAQC	Robot-Side Electrical Connector	\$82.00
5040	CBQC	EOAT-Side Electrical Connector	\$46.00
6070	CEQC-A	Robot-Side Cable for Electrical Connectors	\$21.84
6071	CEQC-B	EOAT-Side Cable for Electrical Connectors	\$21.84
6545	QC90-H	Horizontal EOAT Storage Hanger (pg. 59)	\$32.86
5997	QC90-V	Vertical EOAT Storage Hanger (pg. 59)	\$32.86
7380	QC9065	Quick Changer Centering Pin	\$25.00

Additional Electrical Connectors available on page 30.

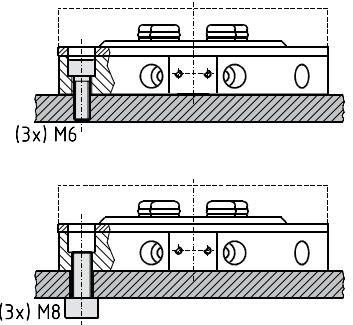
#5035 - Standard Robot-Side Quick Changer



Use Quick#s for easy online ordering.



Robot-Side Mounting



The Robot-Side Quick Changer can be mounted two ways: Use M6 when tapping into your robot plate from the front. Use M8 when making a thru hole in your robot plate to use the M8 threads in the Quick Changer.

Electrical connectors mount to Quick Changer



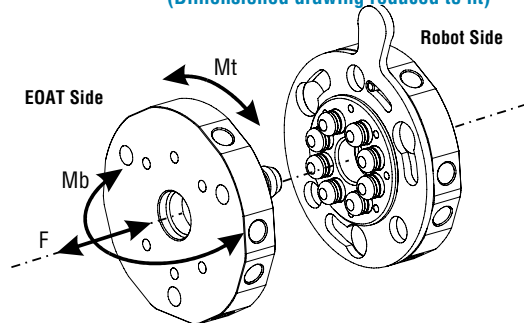
Quick Changer for Collaborative Robots QC75, see page 114.

Large Size (150mm) EOAT Quick Changer



#5038 - Large EOAT-Side Quick Changer

(Dimensioned drawing reduced to fit)

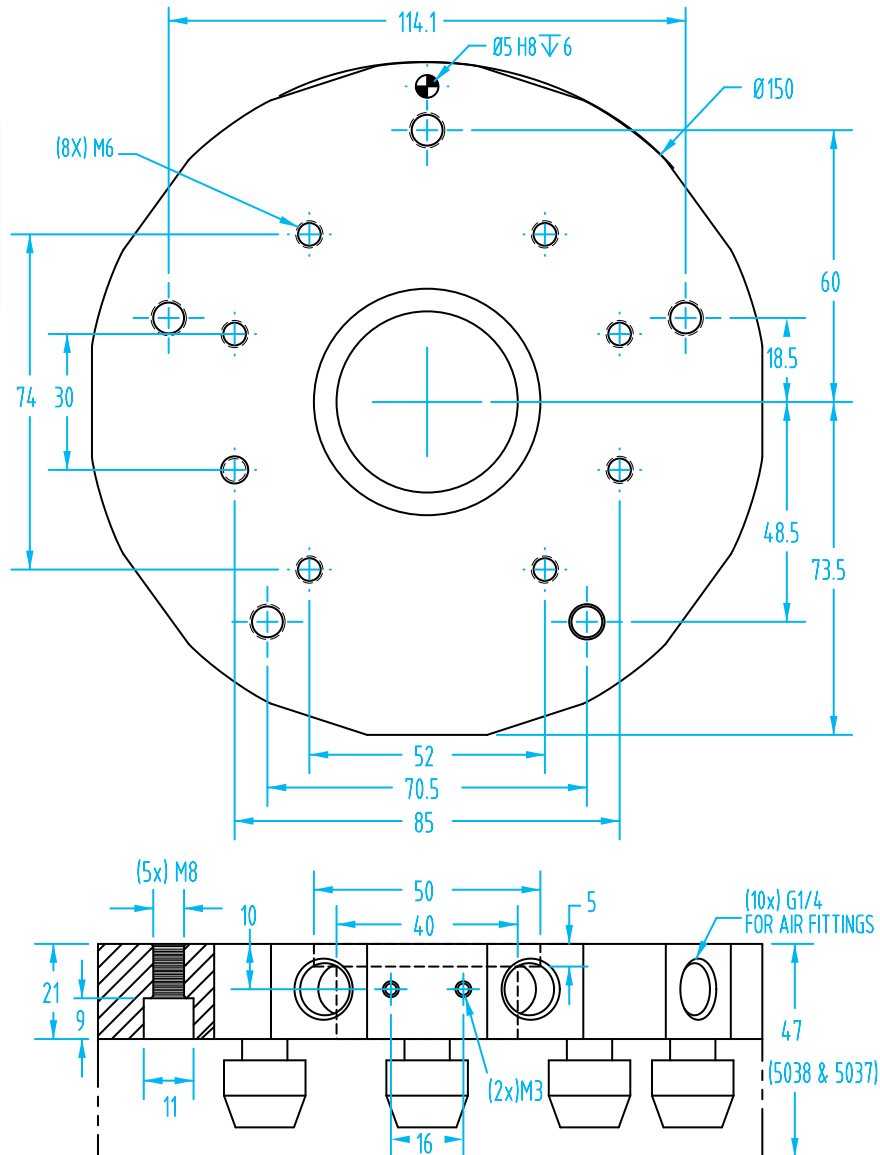


Specifications for Large Size Quick Changer

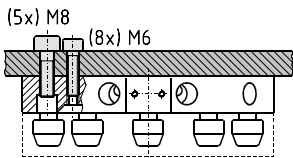
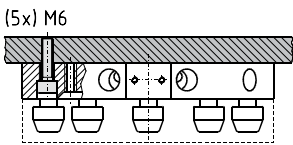
Weight	Robot-Side	1123g
	EOAT-Side	827g
Maximum Air Pressure	6 bar (87psi)	
Air Ports	(10X) G1/4"	
Electrical Connector	Optional	
Safety Loads:		
F 674 lbf.	Mt 442 ft-lbs.	Mb 258 ft-lbs.

F= Axial Load Limit Mt= Torque Moment Limit Mb= Bending Moment Limit

- For EOATs that are typically used on IMMs sized from 500 to 2000 tons.
- This will generally handle EOATs weighing up to 110 lbs.
- Please consult with EOAT engineering for proper sizing to your application needs.



EOAT-Side Mounting



See page 44–45 for additional mounting adapters.

Large Size (150mm) EOAT Quick Changer

(Dimensioned drawing reduced to fit)

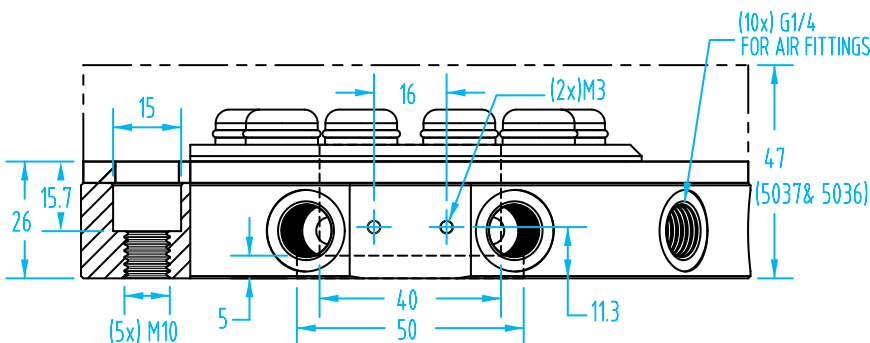
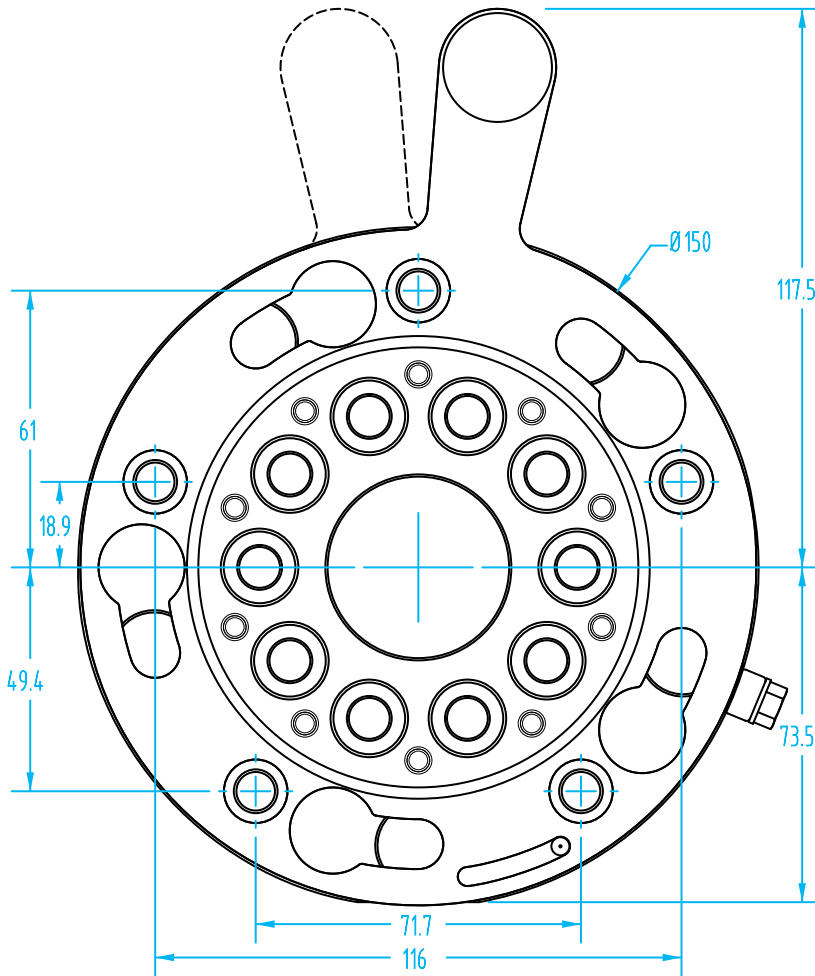
Large Quick Changers

Quick#	Part#	Description	Price
5037	QC150-A	Robot-Side - Large size (150mm)	\$515.00
5038	QC150-B	EOAT-Side - Large size (150mm)	\$296.00
5039	CAQC	Robot-Side Electrical Connector	\$82.00
5040	CBQC	EOAT-Side Electrical Connector	\$46.00
6070	CEQC-A	Robot-Side Cable for Electrical Connectors	\$21.84
6071	CEQC-B	EOAT-Side Cable for Electrical Connectors	\$21.84
6546	QC150-H	Horizontal EOAT Storage Hanger (pg. 60)	\$38.27
5998	QC150-V	Vertical EOAT Storage Hanger (pg. 60)	\$38.27
7381	QC150100	Quick Changer Centering Pin	\$60.00

QC-160 with 12-ports available, Call EMI or shop online.
Additional Electrical Connectors available on page 30.



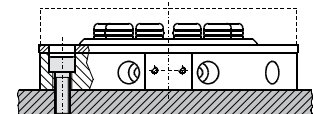
#5037 - Large Robot-Side Quick Changer



Detachment of the two parts is quick and easy.

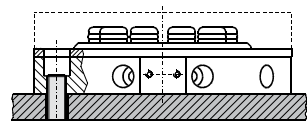
Robot-Side Mounting

You can use the holes in the Quick Changer as 8.5mm thru holes. Tap M8 threaded holes in your robot tooling plate.



(5x) M8

To use the threaded M10 holes in the quick changer, use 10.5mm thru holes in your robot tooling plate.

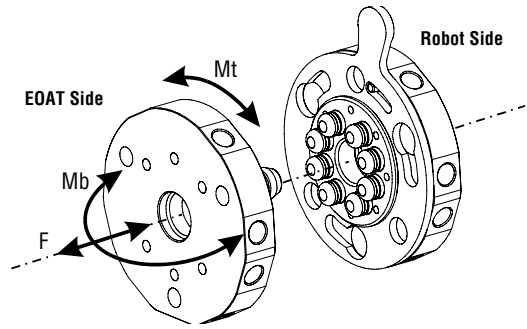


(5x) M10

Jumbo Size (200mm) EOAT Quick Changer



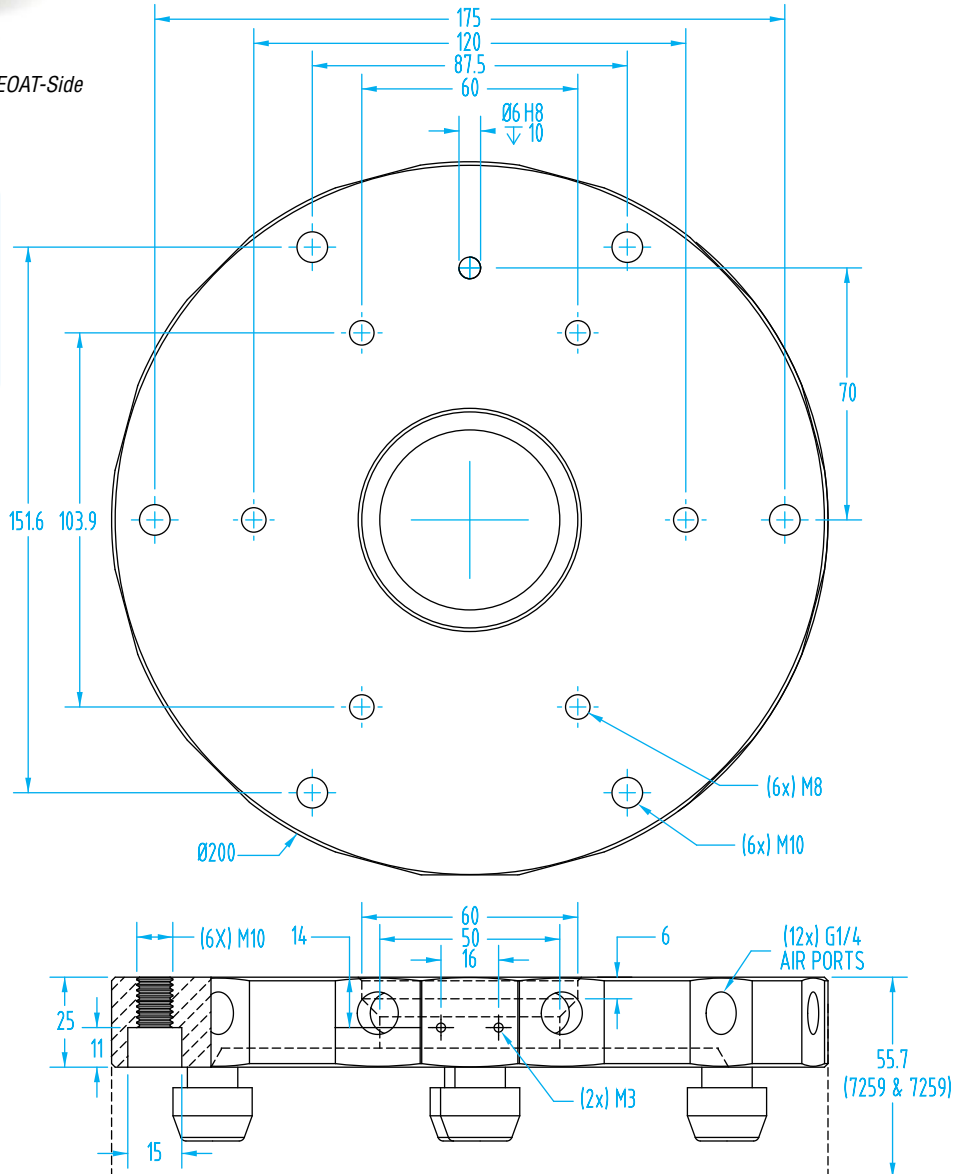
7259 - Jumbo EOAT-Side Quick Changer



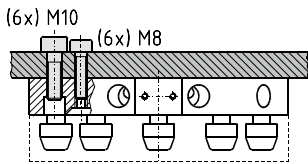
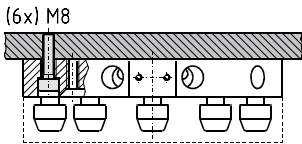
Specifications for Jumbo Size Quick Changer		
Weight	Robot-Side	2640g
	EOAT-Side	1890g
Maximum Air Pressure	6 bar (87psi)	
Air Ports	(12X) G1/4"	
Electrical Connector	Optional	
Safety Loads:		
F 2023 lbf.	Mt 1475 ft-lbs.	Mb 995 ft-lbs.

F= Axial Load Limit Mt= Torque Moment Limit
Mb= Bending Moment Limit

- For EOATs that are typically used on IMMs sized 1000 to 3000 tons.
- This will generally handle EOATs weighing up to 330 lbs.
- Please consult with EOAT engineering for proper sizing to your application needs.



EOAT-Side Mounting



See page 46 for additional mounting adapters.

Jumbo Size (200mm) EOAT Quick Changer

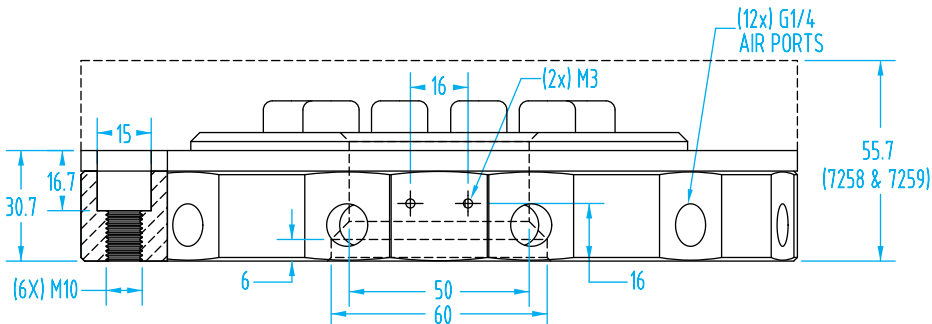
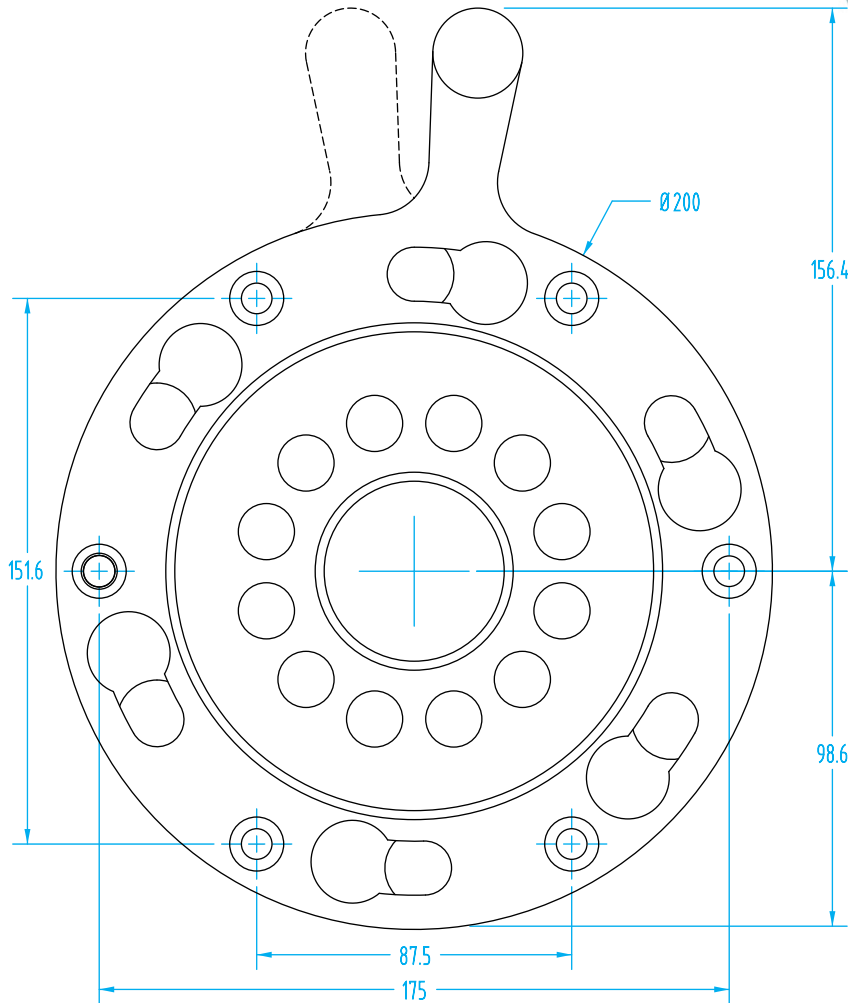
Jumbo Quick Changers

Quick#	Part#	Description	Price
7258	QC200-A	Robot-Side - Jumbo size (200mm)	\$608.00
7259	QC200-B	EOAT-Side - Jumbo size (200mm)	\$342.00
5039	CAQC	Robot-Side Electrical Connector	\$82.00
5040	CBQC	EOAT-Side Electrical Connector	\$46.00
6070	CEQC-A	Robot-Side Cable for Electrical Connectors	\$21.84
6071	CEQC-B	EOAT-Side Cable for Electrical Connectors	\$21.84
6076	QC200-H	Horizontal EOAT Storage Hanger (pg. 61)	\$49.24
5999	QC200-V	Vertical EOAT Storage Hanger (pg. 61)	\$49.24
7382	QC200120	Quick Changer Centering Pin	\$96.00

Additional Electrical Connectors available on page 30.



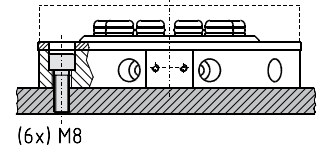
#7258 - Jumbo Robot-Side Quick Changer



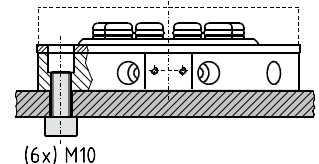
Detachment of the two parts is quick and easy.

Robot-Side Mounting

You can use the holes in the quick changer as 8.5mm thru holes. Tap M8 threaded holes in your robot tooling plate.



To use the threaded M10 holes in the Quick Changer, use 10.5mm thru holes in your robot tooling plate.

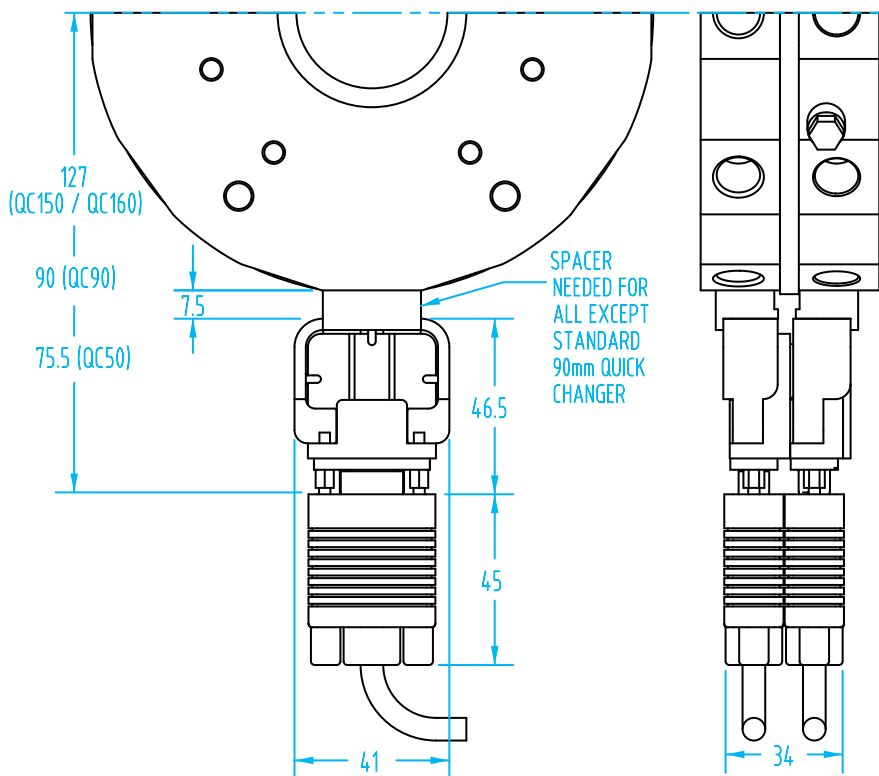


Electrical Connectors

(Dimensioned drawing reduced to fit)



Spacer for Senvex QC 150 and Gimatic QC's 150, 160, and 200 (included). Spacer for Size 50 sold separately.



- Uses standard 15-pin D-sub cables, sold separately on page 32.
- Suitable for use with >ASS<, Senvex / WGS, & Gimatic Quick Changers.
- Excellent electrical contact between male and female connectors.
- Spacer for Senvex and >ASS< QC 150 and Gimatic QC's 150, 160, and 200 is included. Spacers for Small Size 50 QC's sold separately on page 31.
- Dimensional drawings for #7607/#7608 & #7456/#7457 can be found online: www.EMICorp.com & search by Quick #.

Electrical Connectors

Part#	CAQC	CBQC	MAQC	MBQC	PAQC	PBQC	PMAQC	PMBQC
Quick#	5039	5040	5060	5059	7607	7608	7456	7457
Price	\$82.00	\$46.00	\$79.00	\$40.00	\$73.17	\$73.17	\$79.00	\$79.00
Weight	30g	30g	30g	30g	50g	50g	50g	50g
Contact	Gold plated		Gold plated spring contacts		Gold plated		Gold plated spring contacts	
Description	Robot-Side	EOAT-Side	Robot-Side	EOAT-Side	Robot-Side	EOAT-Side	Robot-Side	EOAT-Side
I/O connection type	15-pin D-sub, high density elbow type, VGA type							
Maximum contact resistance	30 mΩ @ 100 mA DC							
Minimum insulation resistance	500 MΩ @ 500 V DC							
Working current	3A							
Break down voltage	1000 V AC (1 minute)							
Operating temperature	0° – 200°F							

Electrical Connectors

Note: While you can use any of these electrical connectors as well as the connectors on page 33 with the round Quick Changers listed in this catalog, you must order the same style EOAT & Robot side connectors for a proper operation.

Standard Electrical Connector



#5039
(Robot-Side)

#5040
(EOAT-Side)

Electrical Connector with Spring Contacts

NEW



#5060
(Robot-Side)

#5059
(EOAT-Side)

Standard 90° Electrical Connector

NEW

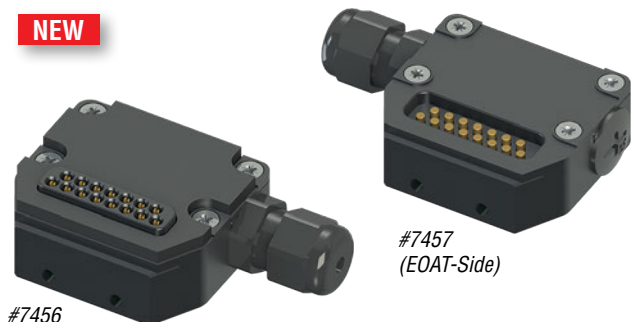


#7607
(Robot-Side)

#7608
(EOAT-Side)

90° Electrical Connector with Spring Contacts

NEW



#7456
(Robot-Side)

#7457
(EOAT-Side)

These 90° electrical connectors are not compatible with the WGS / Senvex electrical connectors on page 33.

MAQC / MBQC & PMAQC / PMBQC: Spring contact design helps avoid damage to contacts. The spring assists in maintaining connection through constant compression and pin geometry. This provides simpler and easier coupling through self-aligning geometry.

- Spacers include mounting hardware.



#6743

Gimatic Spacer for Electrical Connectors

Quick#	Part#	Required for:	Price
6743	QC50-K	Small Size (50mm)	\$16.64



#3836

>ASS< Spacer for Electrical Connectors

Quick#	Part#	>ASS< #	Required for:	Price
3836	SWH-DS-50	1-025-05-00	Small Size (50mm)	\$22.58

Electrical Connection Cables and Cable Connectors

(Dimensioned drawings shown full scale)

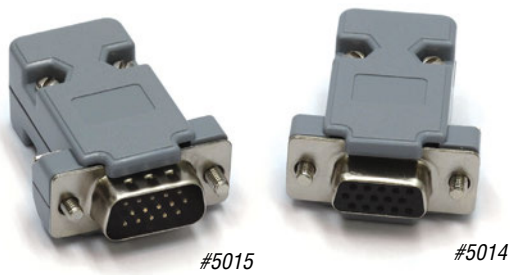


Extra Strength Double Housing (Aluminum)

Quick#	Part#	Description	Price
5345	CAQC-Double	Robot-Side (#5039 & #5060)	\$67.60
5346	CBQC-Double	EOAT-Side (#5040 & 5059)	\$67.60

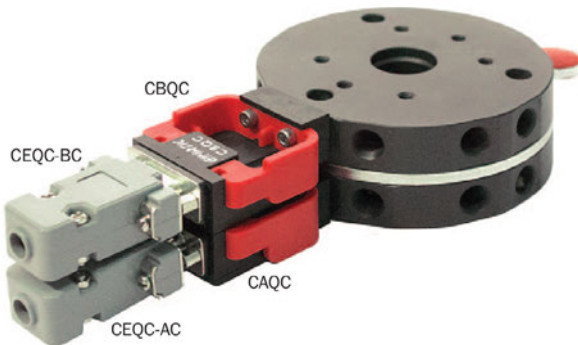
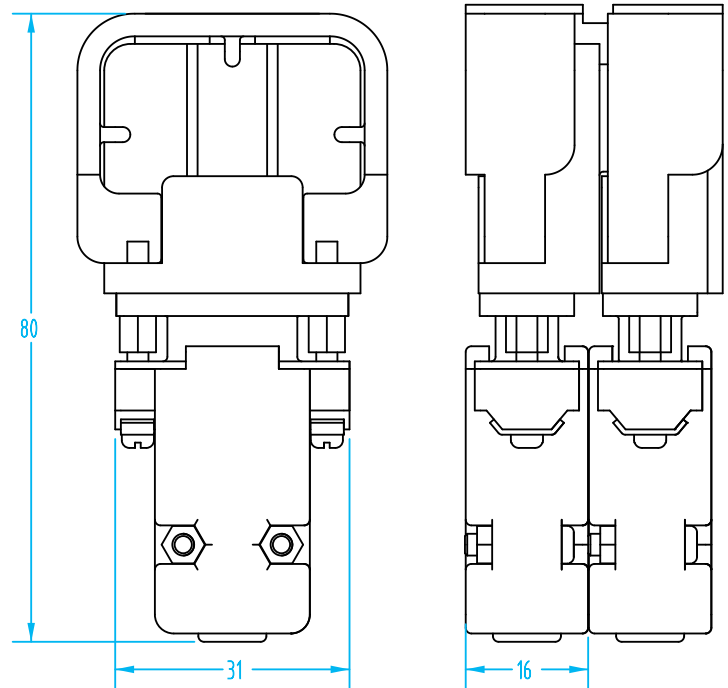
Extra Strength Single Housing (Aluminum)

Quick#	Part#	Description	Price
5343	CAQC-Strong	Robot-Side (#5039 & #5060)	\$35.36
5344	CBQC-Strong	EOAT-Side (#5040 & 5059)	\$35.36



Cabling Connectors (15-pin D-SUB - VGA Type)

Quick#	Part#	Description	Price
5014	CEQC-AC	Robot-Side	\$7.88
5015	CEQC-BC	EOAT-Side	\$7.88



These cabling connectors require you to solder the cable wires to the connector. (Cable not included.)



Electrical Connection Cables (1.5 meter each)

Quick#	Part#	Description	Price
6070	CEQC-A	Robot-Side	\$21.84
6071	CEQC-B	EOAT-Side	\$21.84

>ASS< & WGS / Senvex Electrical Connectors

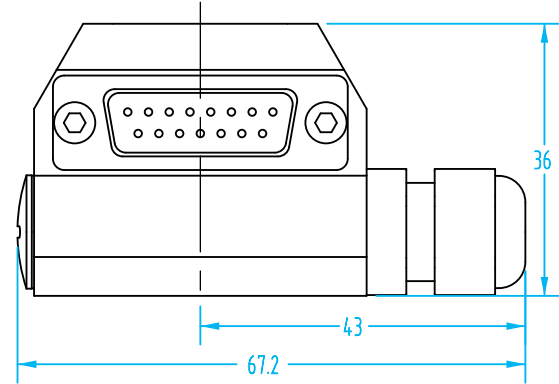
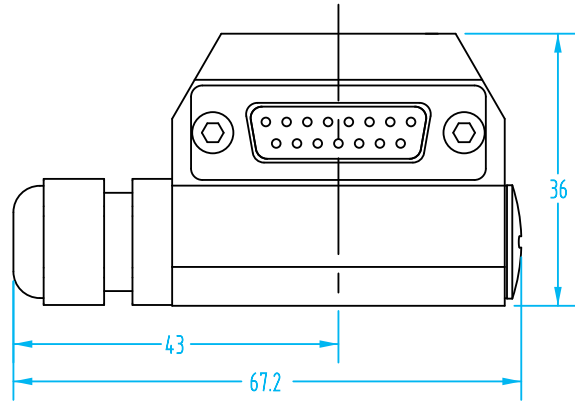
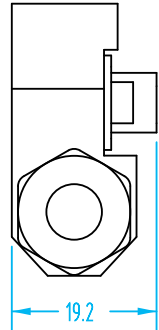
(Dimensioned drawings shown full scale)

- Suitable for use with >ASS<, Senvex / WGS, & Gimatic Quick Changers. (see note on page 31.)
- Certain Quick Changer sizes require spacers for the electrical connectors, listed below.
- Each supplied with 500mm long cable.

Low-Profile Electrical Connectors

Quick#	Part#	Description	Price
502	WGS-QLEKRD	Robot-Side	\$81.00
503	WGS-QLEKGD	EOAT-Side	\$81.00

These low-profile 90° electrical connectors are not compatible with the Gimatic electrical connectors on page 30–31.



- All spacers include mounting hardware.



Senvex Spacer for Electrical Connectors

Quick#	Part#	Required for:	Price
504	WGS-QLEKD	Large Size (150mm)	\$9.50



>ASS< Spacer for Electrical Connectors

Quick#	Part#	>ASS< #	Required for:	Price
3836	SWH-DS-50	1-025-05-00	Small Size (50mm)	\$22.58
3837	SWH-DS-150	1-025-15-00	Large Size (150mm)	\$22.58

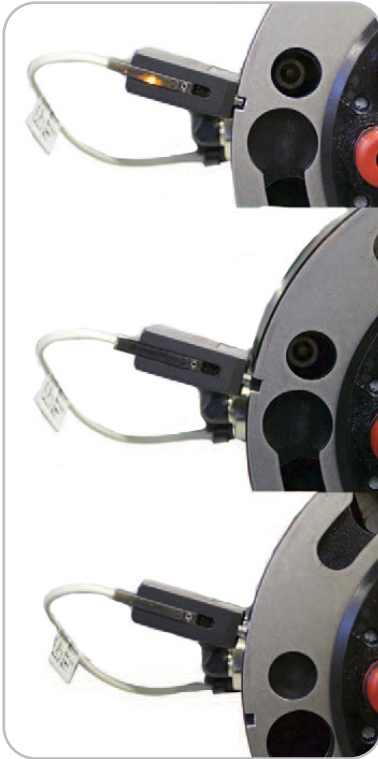


Gimatic Spacer for Electrical Connectors

Quick#	Part#	Required for:	Price
6743	QC50-K	Small Size (50mm)	\$16.64

Lock Unit for Gimatic Quick Changers

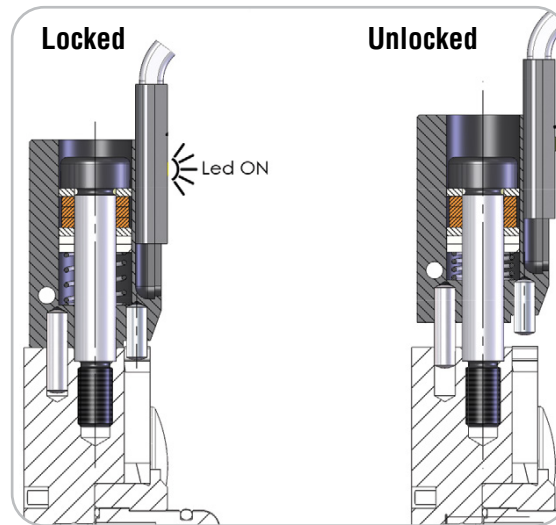
- Lock unit works with Gimatic: QC90-A, QC150-A, QC160-A, QC200-A, QCX90-A, QCX150-A, QCX160-A, QCX200-A.
- Prevents accidental unlocking or disengagement of the QC.
- Sensor Ready, see page 1002 for sensors.



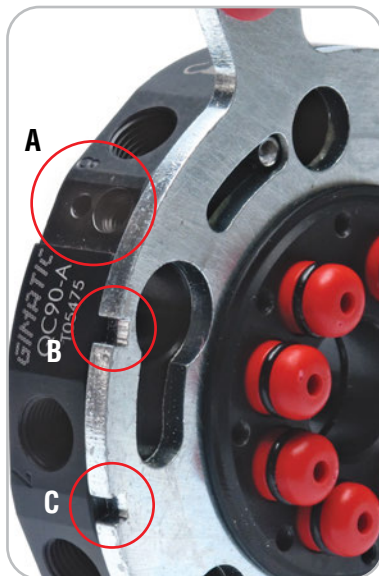
Mechanical safety: It locks the handle of the quick changer, only when correctly engaged.

Lock Unit for Gimatic Quick Changers

Quick#	Part#	Weight	Price
5013	LOQC	20g	\$51.31



Electrical safety: It emits an electric signal, only when locked. This signal will give the consent to the movement of the robot. In the case of incorrect engagement, or destructive impact on the LOQC, or electrical fault of the sensor, the signal drops out and the robot stops.



Lock unit ONLY works with newer model Gimatic Quick Changers that have a threaded hole (A), and grooves (B & C).



SS type (1) or inductive (SI type) (2) sensors are compatible but not supplied with lock unit.

Sensor Bracket for >ASS< Quick Changer

- Sensor bracket mounts on the Robot or EOAT-Side of Quick Changer.
- Sensor signals when QC lock is engaged.
- Does not provide mechanical locking.



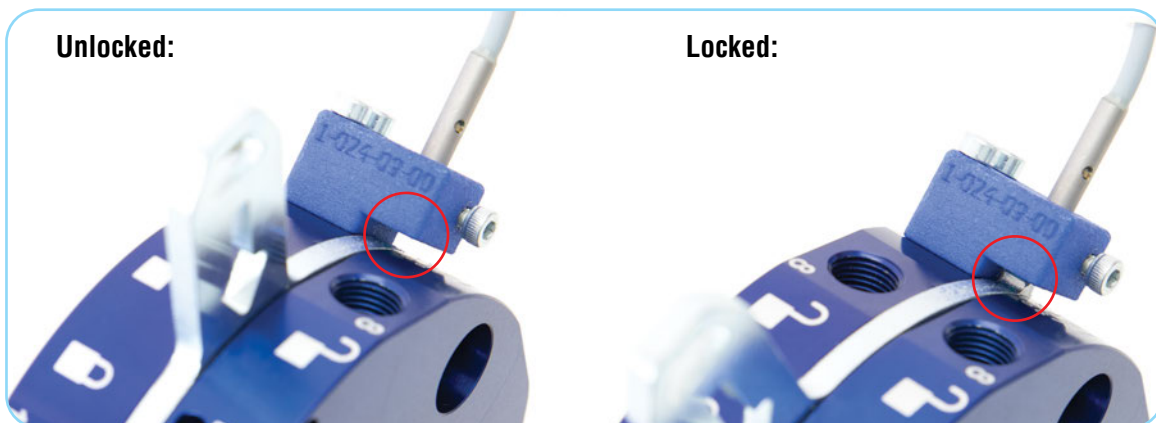
Sensor Bracket for >ASS< Quick Changers

NEW

Quick#	Part#	>ASS< #	Description	Price
3843	SWH-SH-G-50	1-024-05-00	for Small Size QC (50mm)	\$25.20
3844	SWH-SH-G-90150	1-024-09-00	for Standard & Large Size QC's (90mm & 150mm)	\$25.20

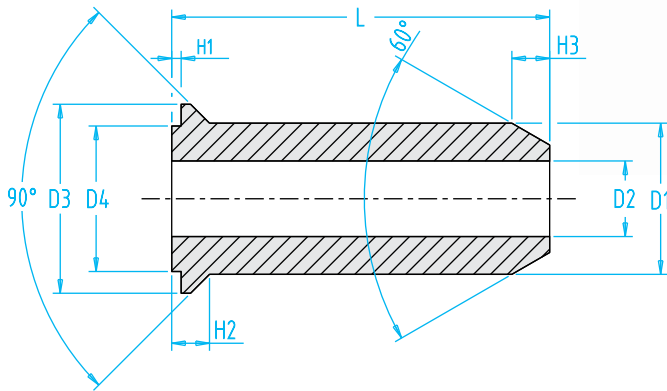
Inductive Sensors

Quick#	Part#	Description	Price
2429	GSG-IS-NPN	NPN Ø4mm N.O. Inductive Sensor, 2m long	\$62.00
2430	GSG-IS-PNP	PNP Ø4mm N.O. Inductive Sensor, 2m long	\$62.00



Gimatic Quick Changer Centering Pin

- Guides the manual centering of heavy EOATs.
- Made of aluminum
- To be positioned on the Robot-Side.
- Recommended Safety Loads can be found on online product pages, search by Quick#.
- Made for Gimatic Robot-Side Quick Changers.
- Gimatic, >ASS< and Senvex EOAT-Side Quick Changers will all fit properly over the pin during installation.

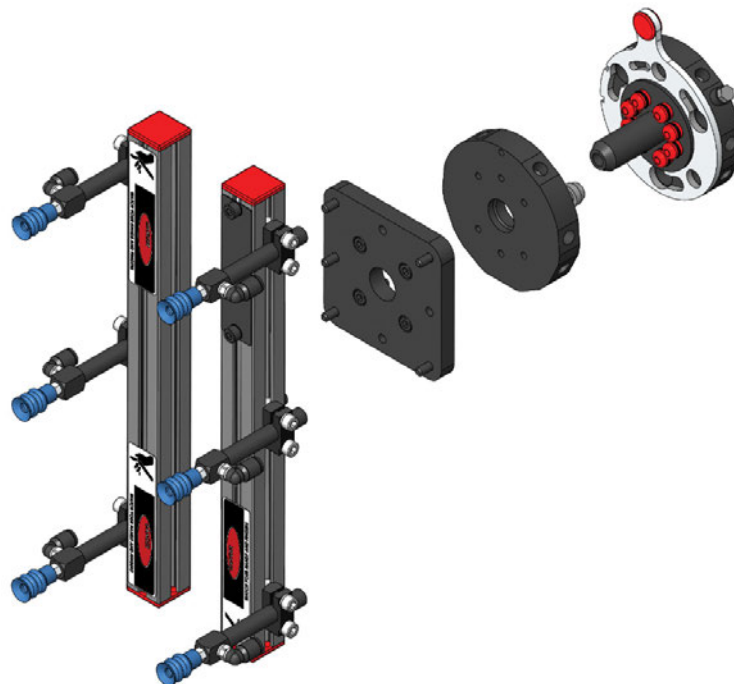


Gimatic Quick Changer Centering Pin

Quick#	Part#	Price	Quick Changer	L	H1	H2	H3	ØD1	ØD2	ØD3	ØD4	Wt.
7380	QC9065	\$25.00	Standard QC90-A (90mm)	65	2	5	5	18	8	20	14	190g
7381	QC150100	\$60.00	Large QC150/160-A (150mm)	100	2.5	10	10	40	20	50	38.5	435g
7382	QC200120	\$96.00	Jumbo QC200-A (200mm)	120	3	11	15	50	25	60	43.5	950g

Use Quick#s for easy online ordering.

Application Example



WGS / Senvex Quick Changer Centering Pin



- Guides the manual centering of heavy EOATs.
- Made of aluminum
- To be positioned on the Robot-Side.
- Recommended Safety Loads can be found on online product pages, search by Quick#.
- Dimensional drawings found online.
- Made for WGS/Senvex Robot-Side Quick Changers.
- Gimatic, >ASS< and Senvex EOAT-Side Quick Changers will all fit properly over the pin during installation.

WGS / Senvex Quick Changer Centering Pin

Quick#	Part#	Price	Quick Changer	Diameter Ø	Wt.
1791	GSQ-CP-QC90	\$26.00	Standard GSQ-R (90mm)	20mm	34g
1793	GSQ-CP-QC150	\$28.00	Large GSQ-LR (150mm)	50mm	253g

>ASS< Quick Changer Centering Pin



- Guides the manual centering of heavy EOATs.
- Made of aluminum
- To be positioned on the Robot-Side.
- Recommended Safety Loads can be found on online product pages, search by Quick#.
- Dimensional drawings found online.
- Made for >ASS< Robot-Side Quick Changers.
- Gimatic, >ASS< and Senvex EOAT-Side Quick Changers will all fit properly over the pin during installation.

>ASS< Quick Changer Centering Pin

Quick#	Part#	>ASS< #	Price	Quick Changer	Diameter Ø	Wt.
3886	RHZ-SWH-R-90	1-026-09-00	\$22.05	Standard SWH-R-90 (90mm)	20mm	37g
3887	RHZ-SWH-R-150	1-026-15-00	\$25.20	Large SWH-R-150 (150mm)	50mm	262g

NEW

Standard Size (90mm) Quick Changer with Air Shut Off

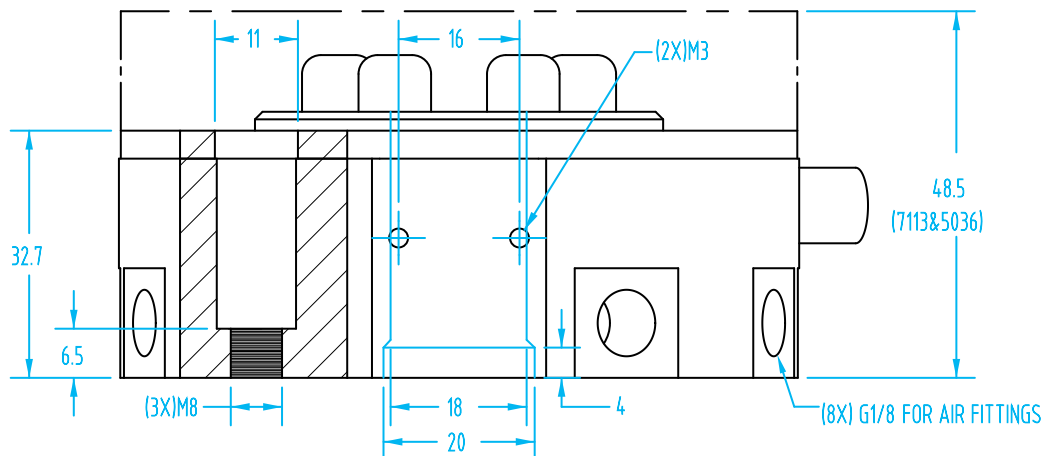
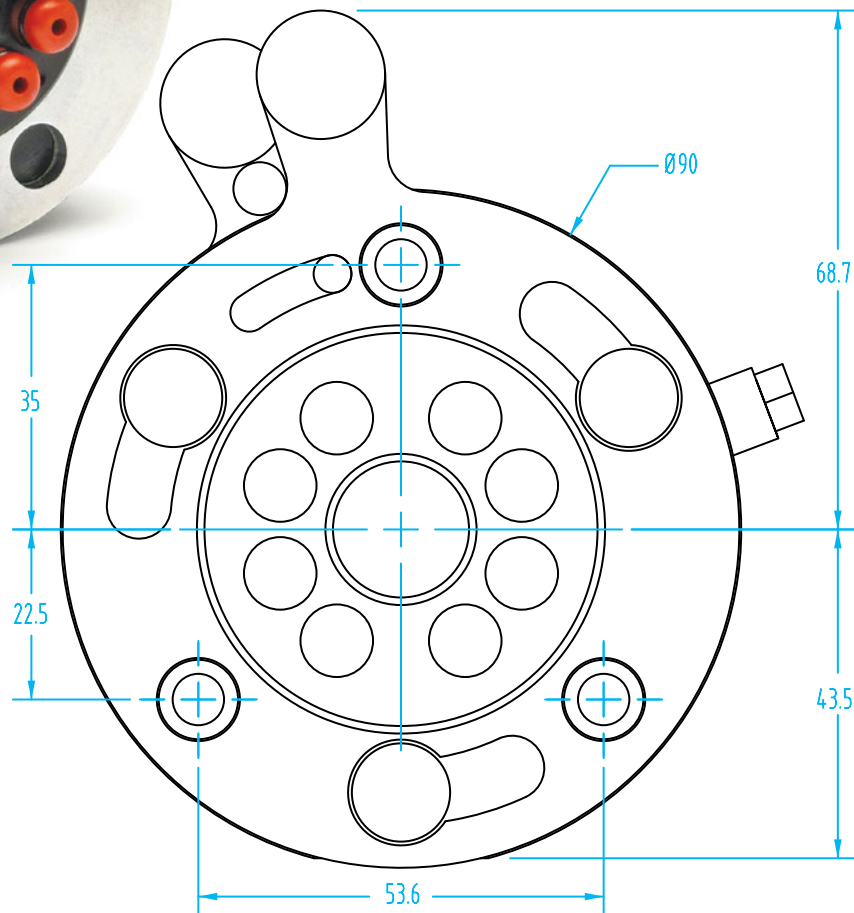
(Dimensioned drawings shown full scale)



Standard Size (90mm) Robot-Side Quick Changer

Quick#	Part#	Price	Weight
7113	QCX90-A	\$438.00	595g

Use Quick#s for easy online ordering.



Large Size (150mm) Quick Changer with Air Shut Off

(Dimensioned drawings reduced to fit)

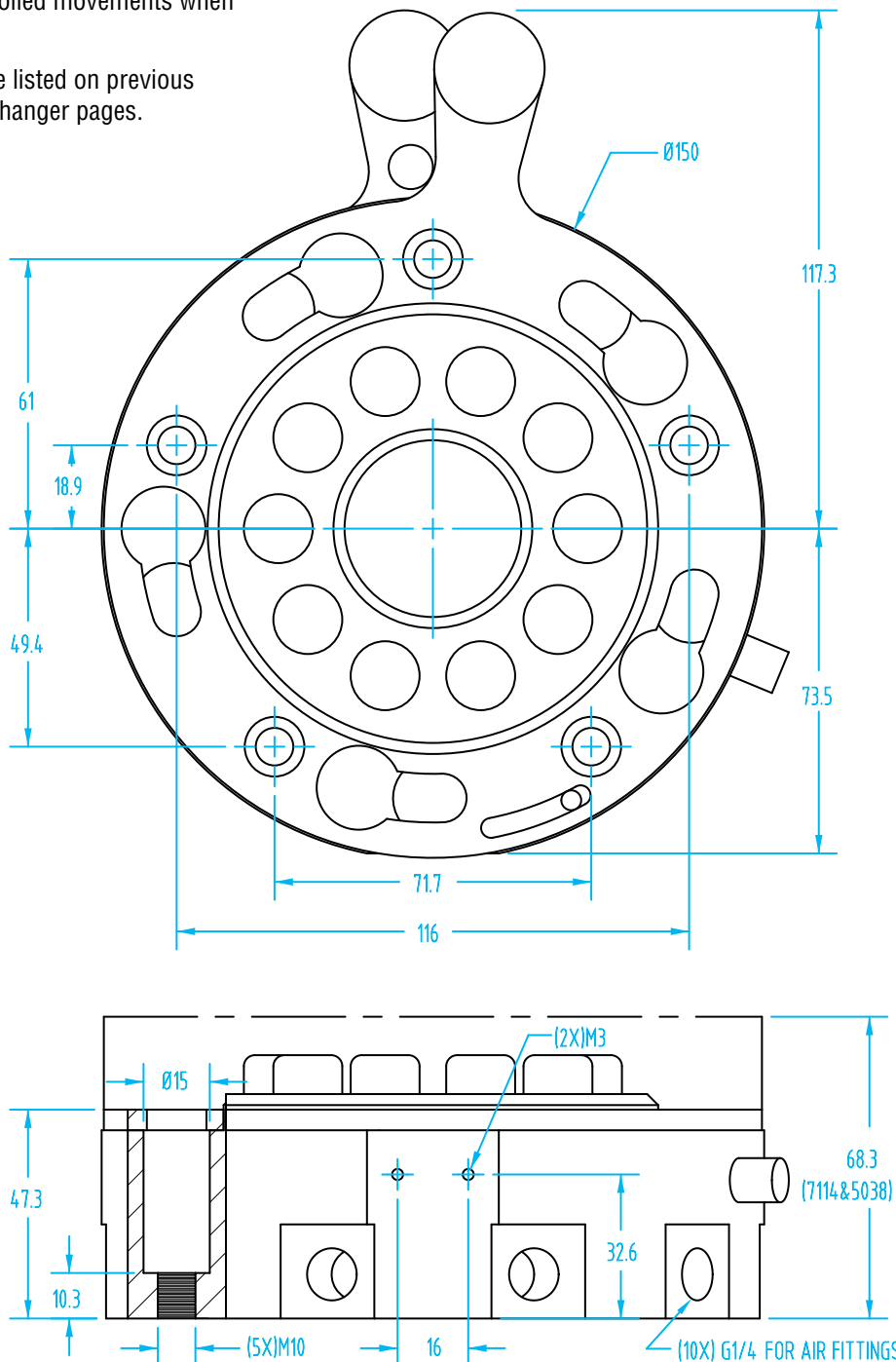
- The air valves automatically closes the air flow before the system is completely disengaged.
- It is not possible to open the air flow, if the flange is not engaged.
- The rotating tap valve solves all the problems of ball valve systems: the high pushing force necessary for engaging and the uncontrolled movements when disengaging.
- Safety Loads are listed on previous Gimatic Quick Changer pages.

Large Size (150mm) Robot-Side Quick Changer

Quick#	Part#	Price	Weight
7114	QCX150-A	\$756.00	2200g

See Also: EMIcorp.com

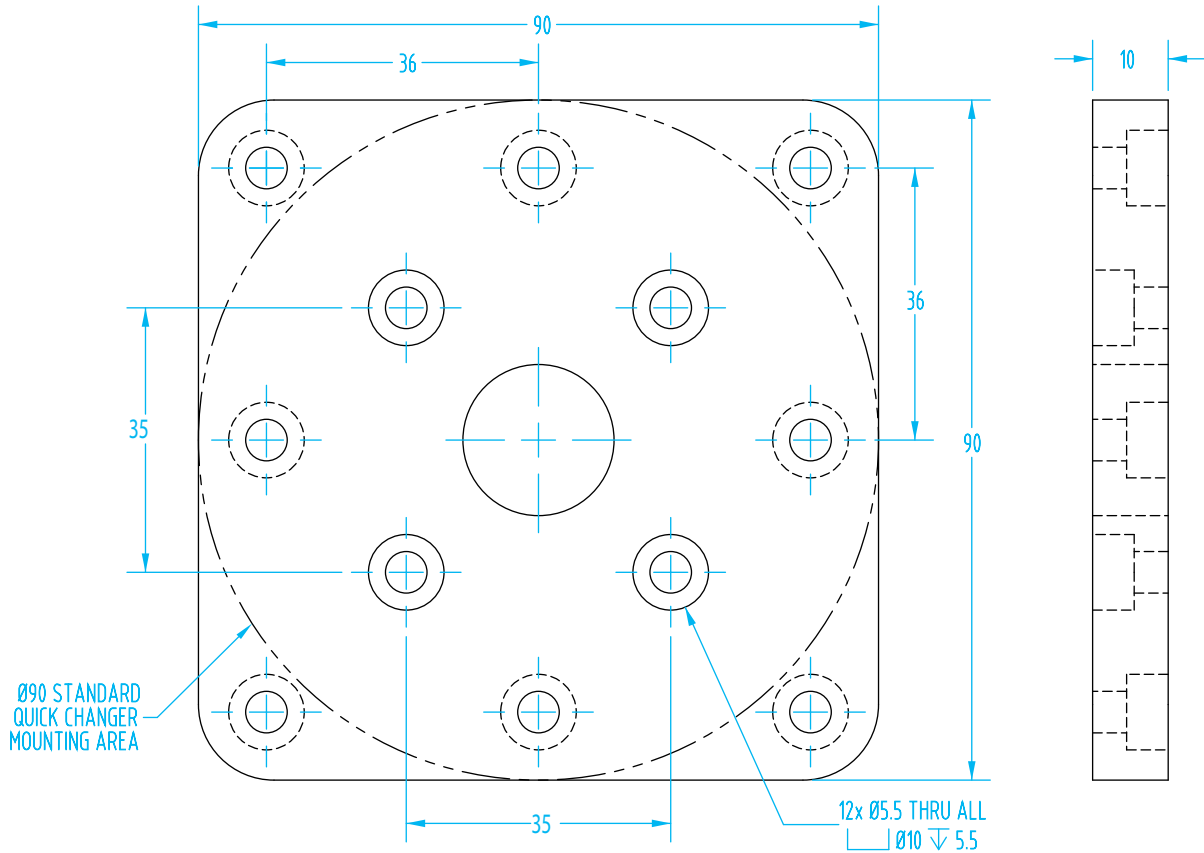
Quick#	Part#	Price	Weight
7311	QCX160-A	\$782.00	2200g
7312	QCX200-A	\$879.00	4900g



EOAT Mounting Plate for Standard Size (90mm) Quick Changers

(Dimensioned drawing shown full scale)

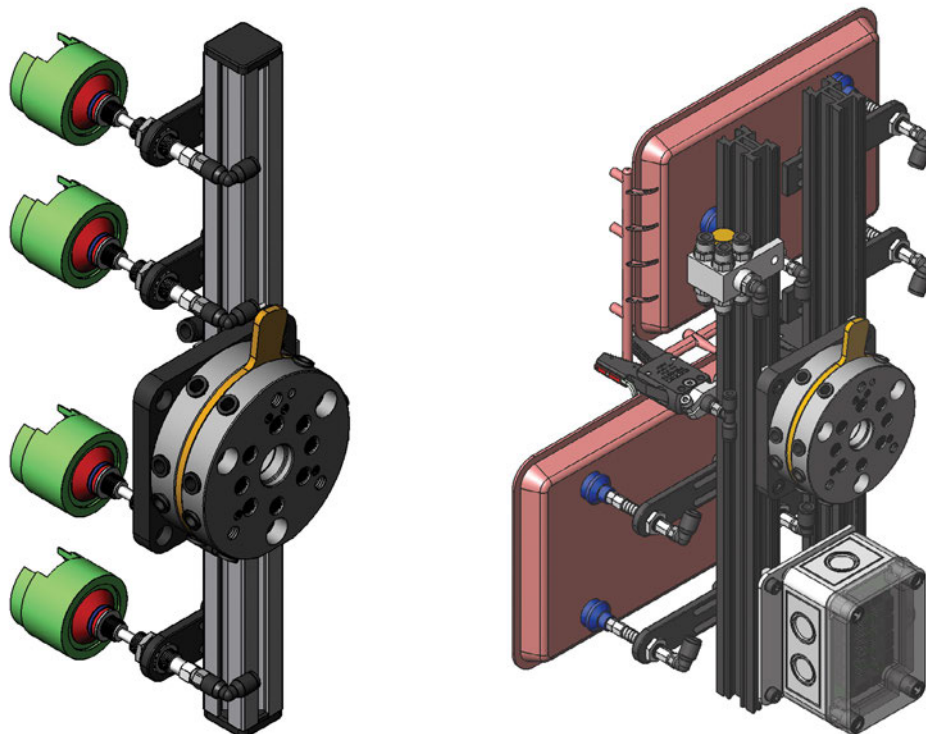
Use with 90mm Quick Changers to Mount to >ASS<, Gimatic, and 80/20 Profile



Standard Size (90mm) EOAT Mounting Plate

Quick#	Part#	Price	Weight
757	GSC-QCAP-1	\$32.00	191g

Application Examples



Blank EOAT Mounting Plate for Standard Size (90mm) Quick Changers

(Dimensioned drawing shown full scale)

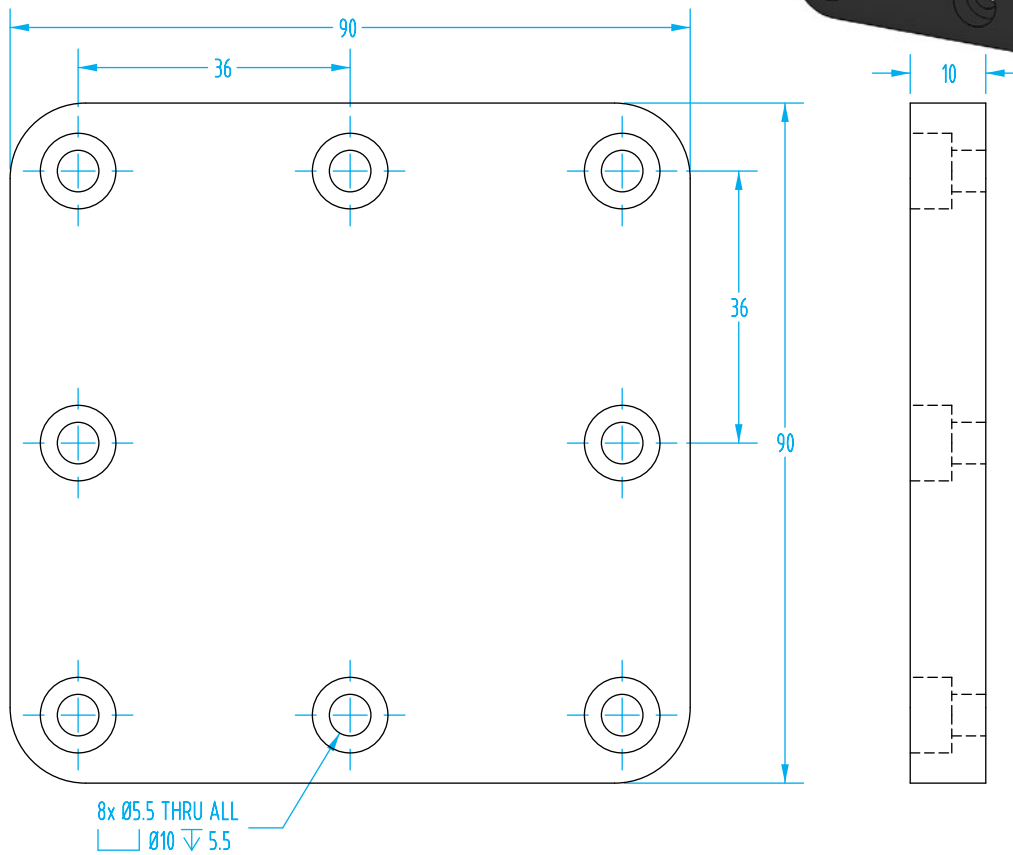
Basic Blank Mounting Plate for Custom Mount

This anodized aluminum plate can be used as a manual EOAT mounting plate to adapt profiles as shown on page 40. It is scored with a center line making it easy to locate holes for mounting to your robot tooling plate. There is plenty of space on this plate to drill or tap holes as necessary. Pre-drilled and counter-bored holes simplify mounting to profile.

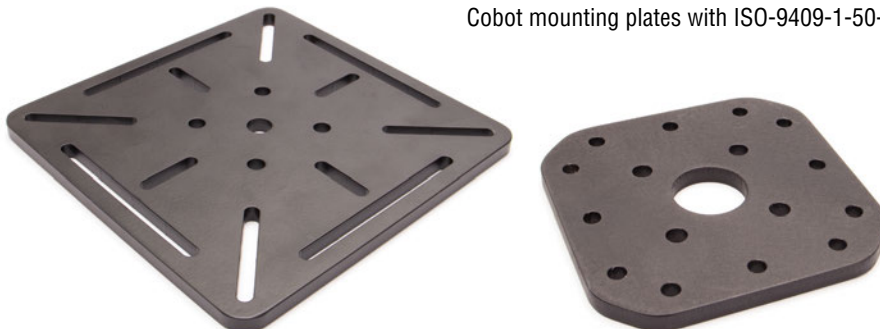


Standard Size (90mm) EOAT Mounting Plate

Quick#	Part#	Price	Weight
753	GSC-QCAP-1B	\$35.86	205g



Cobot mounting plates with ISO-9409-1-50-4-M6 mounting pattern on page 124.



EOAT Mounting Plate for Standard Size (90mm) Quick Changers

(Dimensioned drawing shown full scale)

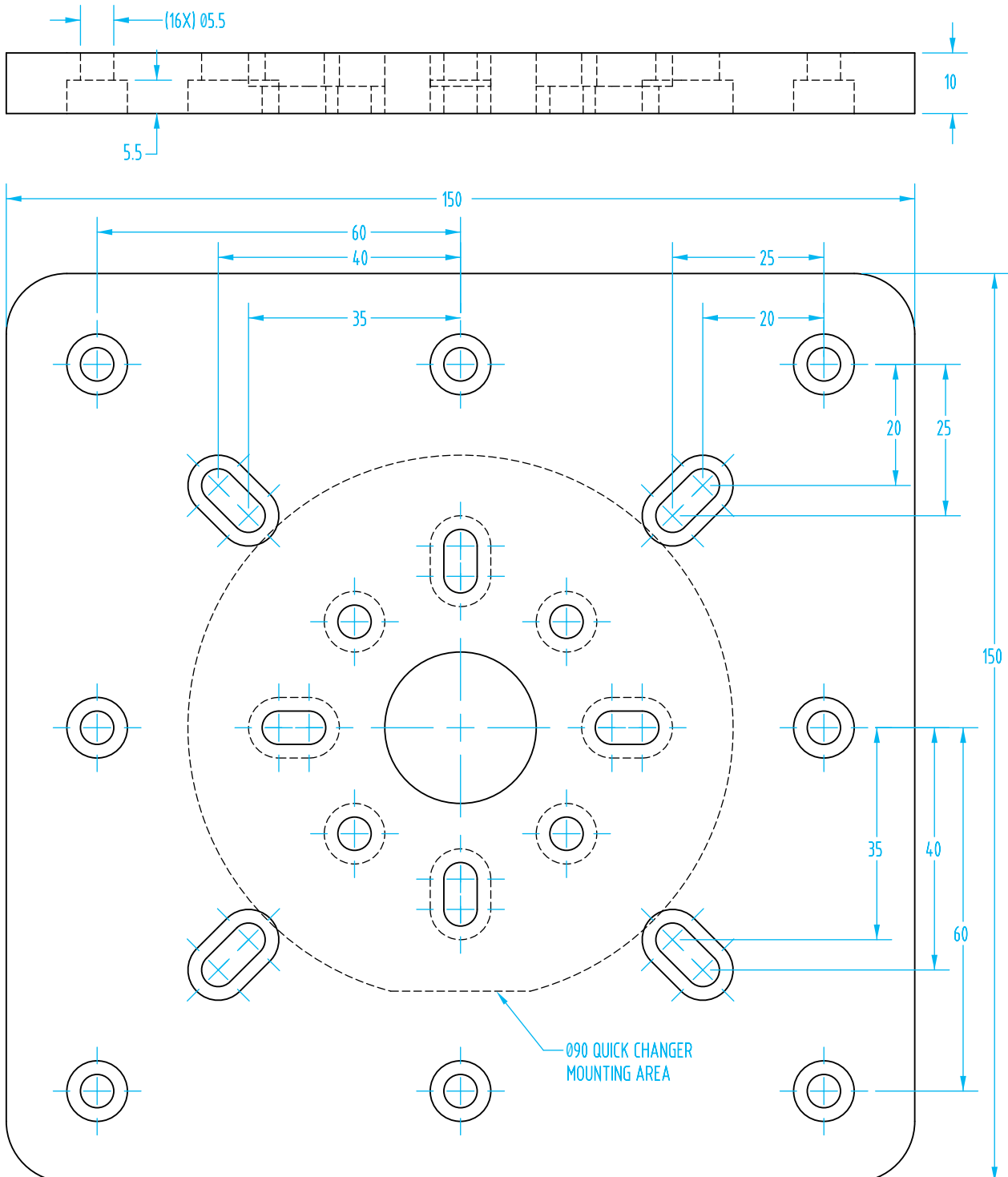
Use with 90mm Quick Changers to Mount to >ASS<, Gimatic, and 80/20 Profile

Standard Size (90mm) EOAT Mounting Plate

Quick#	Part#	Wt.	Price	Notes
1664	GSC-QCAP-2	553g	\$42.80	For >ASS<, Gimatic, and 80/20 profiles, use #972 M5x12 low head screws, #865 lock washers, and appropriate slotted nuts. Fasteners on page 1077.

Use M5x16mm SHCS to attach to quick changer

Use Quick#s for easy online ordering.



Blank EOAT Mounting Plate for Standard Size (90mm) Quick Changers

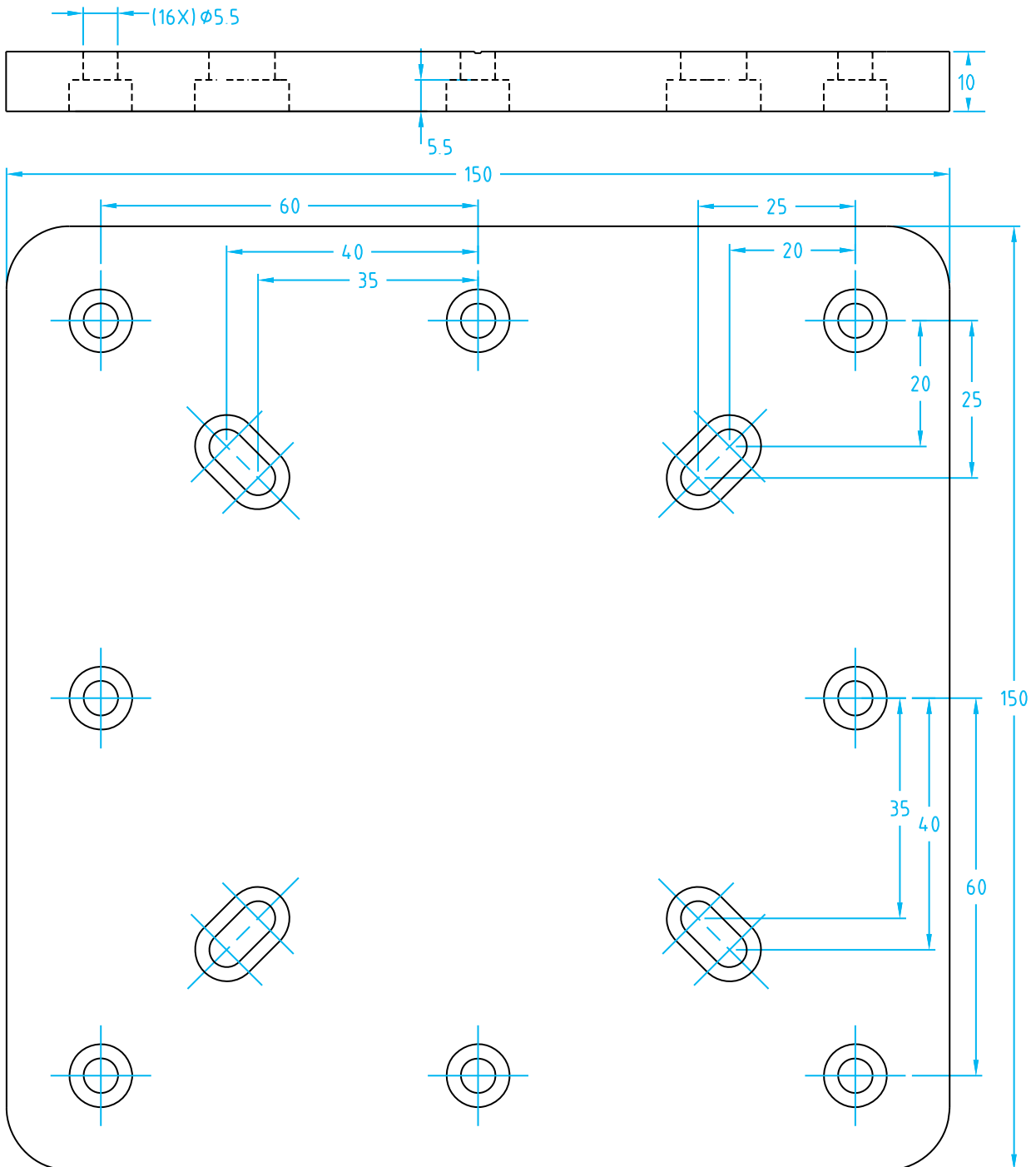
(Dimensioned drawing shown full scale)

Basic Blank Mounting Plate for Custom Mount

This anodized aluminum plate can be used as a manual EOAT mounting plate to adapt profiles as shown on page 42. It is scored with a center line making it easy to locate holes for mounting to your robot tooling plate. There is plenty of space on this plate to drill or tap holes as necessary. Pre-drilled and counter-bored holes simplify mounting to profile.

Standard Size (90mm) EOAT Mounting Plate

Quick#	Part#	Wt.	Price	Description
544	GSC-GMB-150	582g	\$42.80	For >ASS<, Gimatic and 80/20 profiles, use #972 M5x12 low-head screws, #865 lock washers, and appropriate slotted nuts. Fasteners on page 1077.

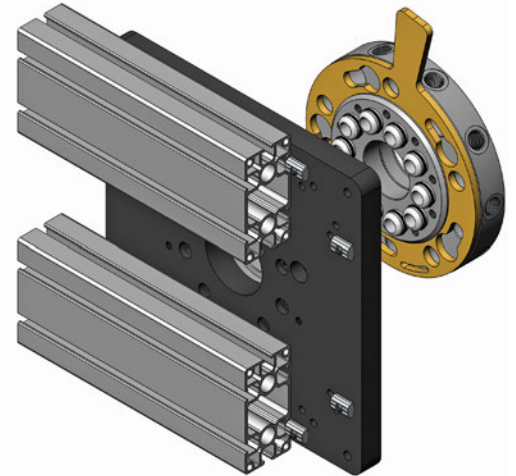


EOAT Mounting Plate for Large Size (150mm) Quick Changers

(Dimensioned drawing shown half scale)

Use with 150mm Quick Changers to Mount to >ASS<, Gimatic, and 80/20 Profile

Typically used when the injection molding machine is over 750 tons, this plate is designed to mount large/jumbo >ASS<, Gimatic, and 80/20 four- and six-groove profiles (80mmx40mm) as well as all standard profile. It is pre-drilled to mount to the large EOAT quick changer. The counter-bored holes provide flush mounting surfaces on both sides. And it can also be used as a manual mounting plate to the robot.



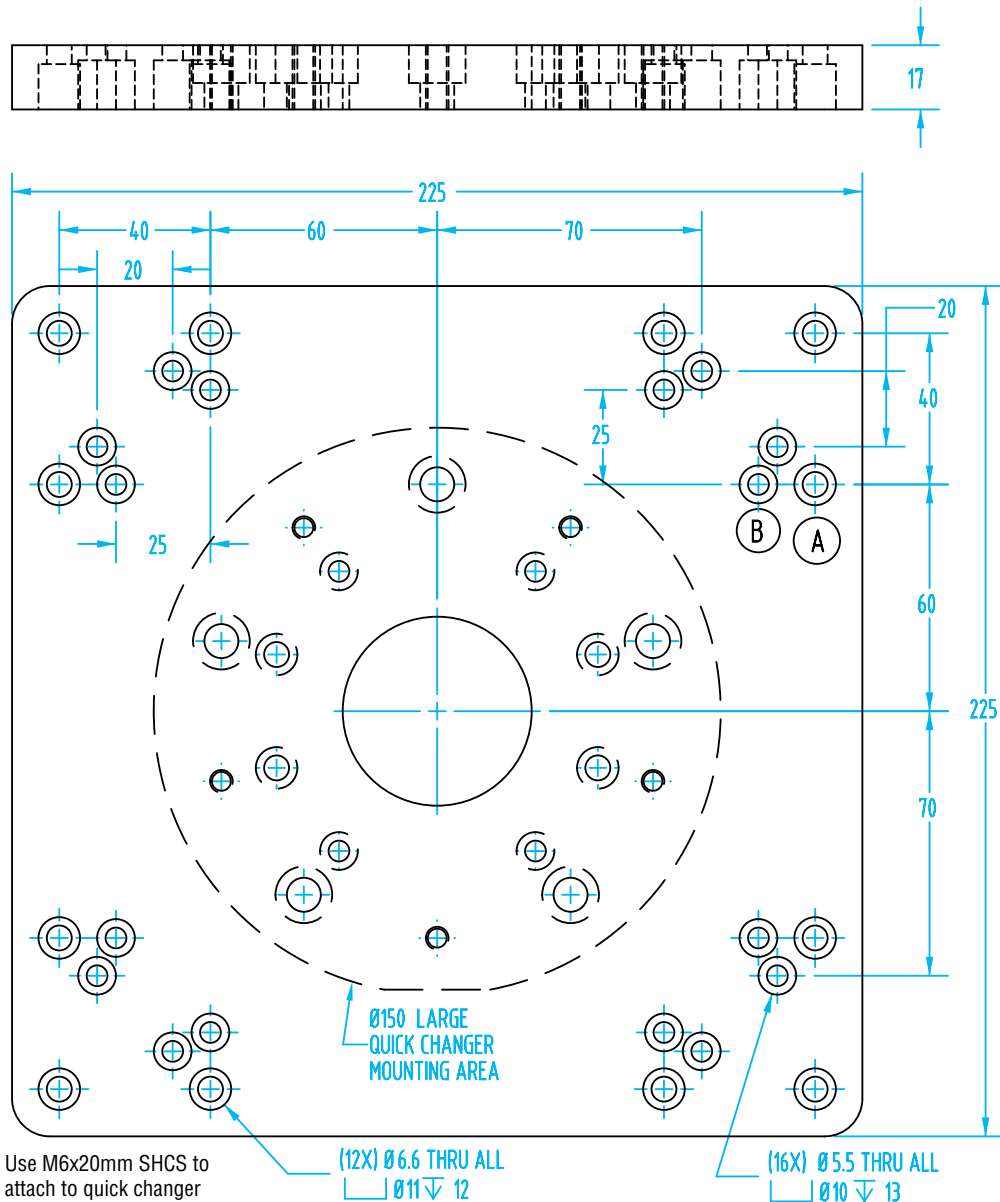
Large Size (150mm) EOAT Mounting Plate

Quick#	Part#	Wt.	Price	Description
1817	GSC-QCAP-L	2094g	\$99.00	Fasteners on page 1077

Note: Can also be used with Gimatic QC-160

- Ⓐ 40mm spacing for >ASS< 80mm X 40mm "J" profiles. Use: #874 M6 x 16mm SHCS, #880 lock washer, & #3031 M6 T nut.

- Ⓑ 25mm spacing for >ASS< 50mm X 25mm "X" profiles and 80/20 1020 profiles. Use #854 M5 x 12mm SHCS, #865 lock washer, & #3030 M5 T nut.



Blank EOAT Mounting Plate for Large Size (150mm) Quick Changers

(Dimensioned drawing shown half scale)

Basic Blank Mounting Plate for Custom Mount

This anodized aluminum plate can be used as a manual EOAT mounting plate to adapt profiles as shown on page 44. It is scored with a center line making it easy to locate holes for mounting to your robot tooling plate. There is plenty of space on this plate to drill or tap holes as necessary. Pre-drilled and counter-bored holes simplify mounting of two-, four-, and six-groove profiles.

Save on Custom Plates!

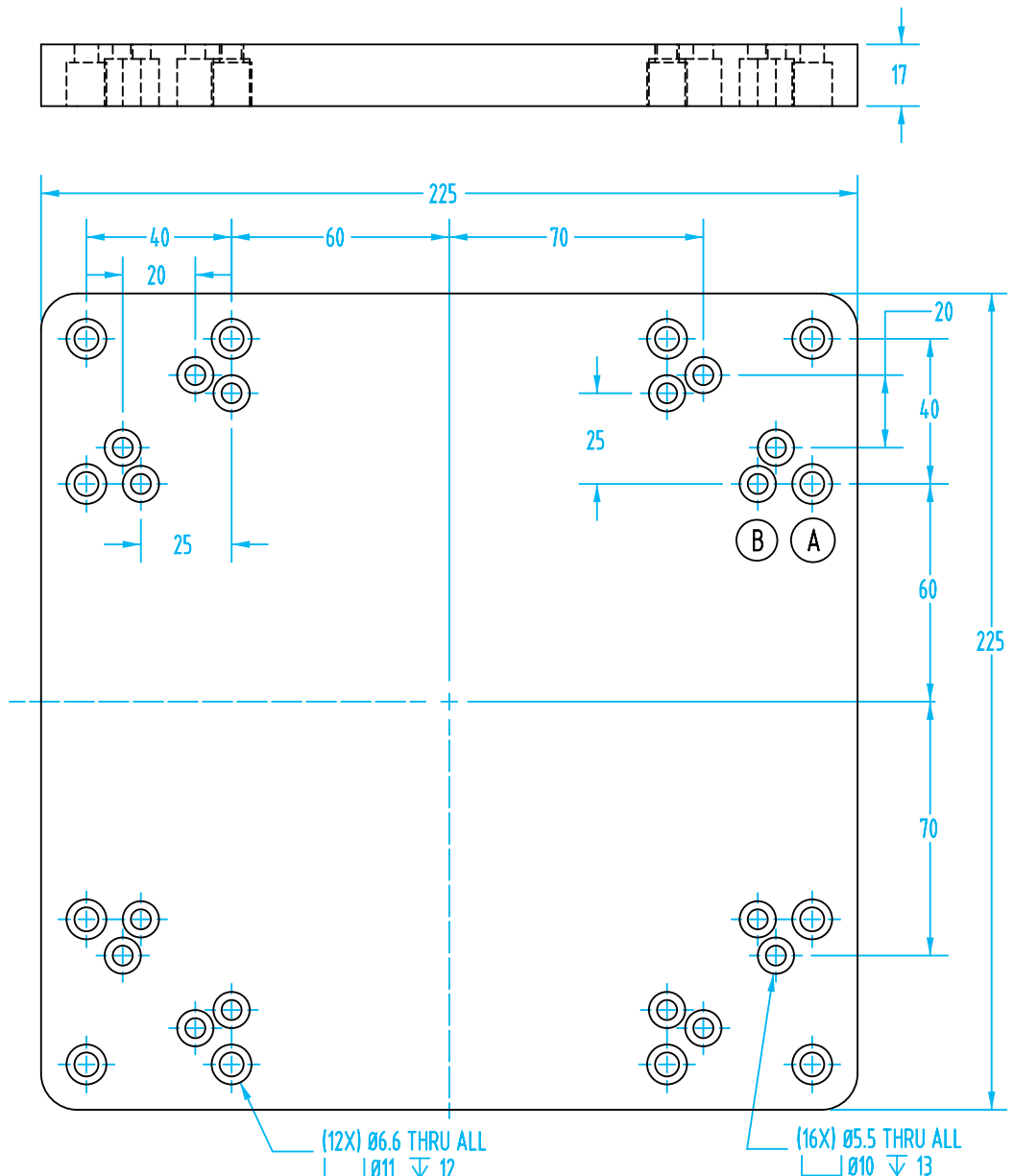
Custom mounting plates, interfaces, and brackets for building EOAT are available from EMI – Fast and at a low cost. EMI's in-house laser cutter precision cuts aluminum and stainless up to 0.250" thick.

Ⓐ 40mm spacing for >ASS< 80mm X 40mm "J" profiles. Use: #874 M6 x 16mm SHCS, #880 lock washer, & #3031 M6 T nut.

Ⓑ 25mm spacing for >ASS< 50mm X 25mm "X" profiles and 80/20 1020 profiles. Use #854 M5 x 12mm SHCS, #865 lock washer, & #3030 M5 T nut.

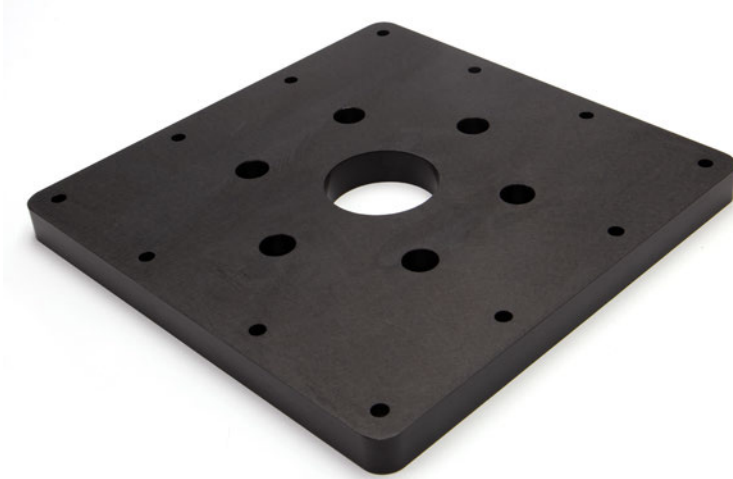
Large Size (150mm) EOAT Mounting Plate

Quick#	Part#	Wt.	Price	Note
760	GSC-QCAP-LB	2230g	\$98.40	Fasteners on page 1077



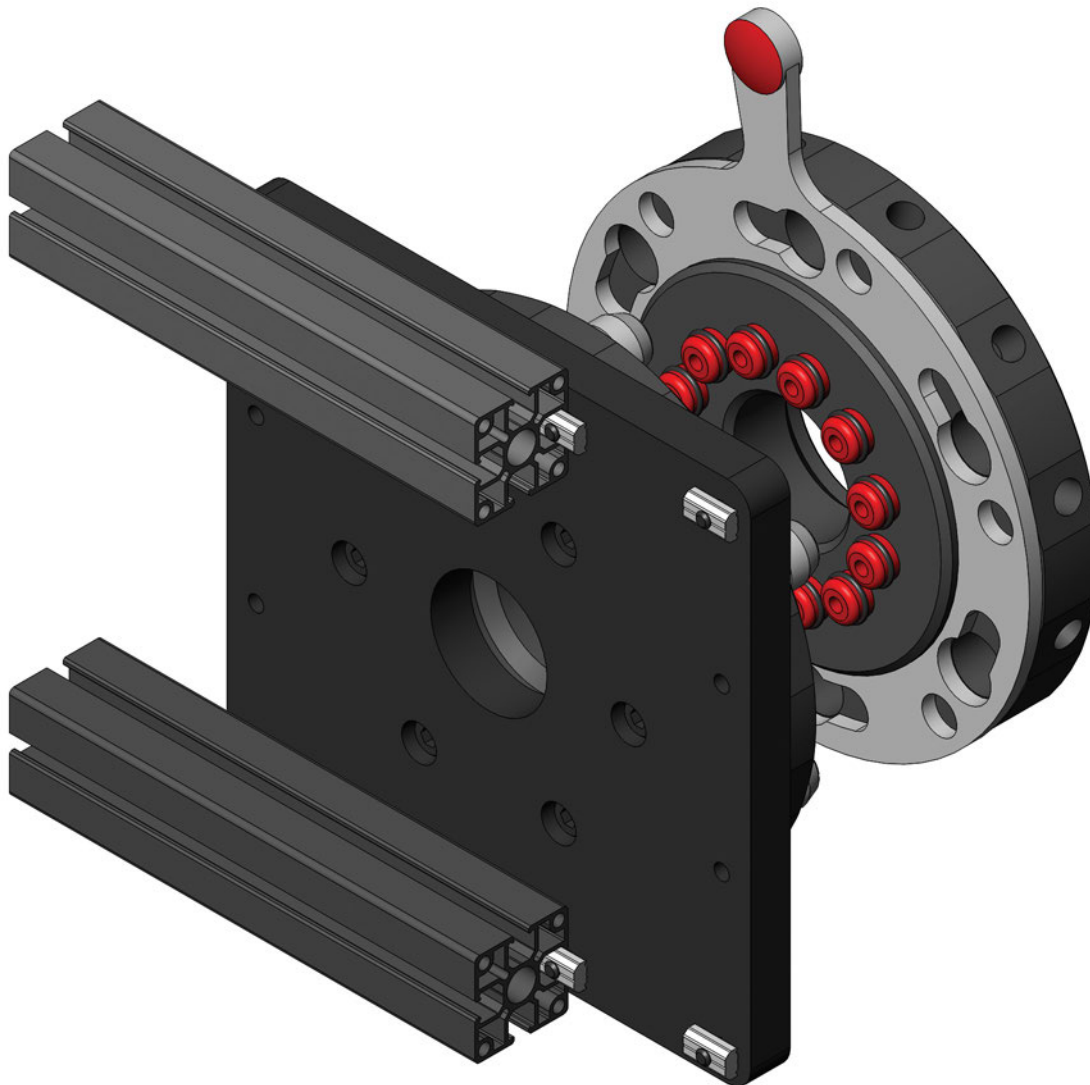
EOAT Mounting Plate for Jumbo Size (200mm) Quick Changers

Use with **200mm** Jumbo Quick Changers to Mount to >ASS<, Gimatic, and 80/20 Profile



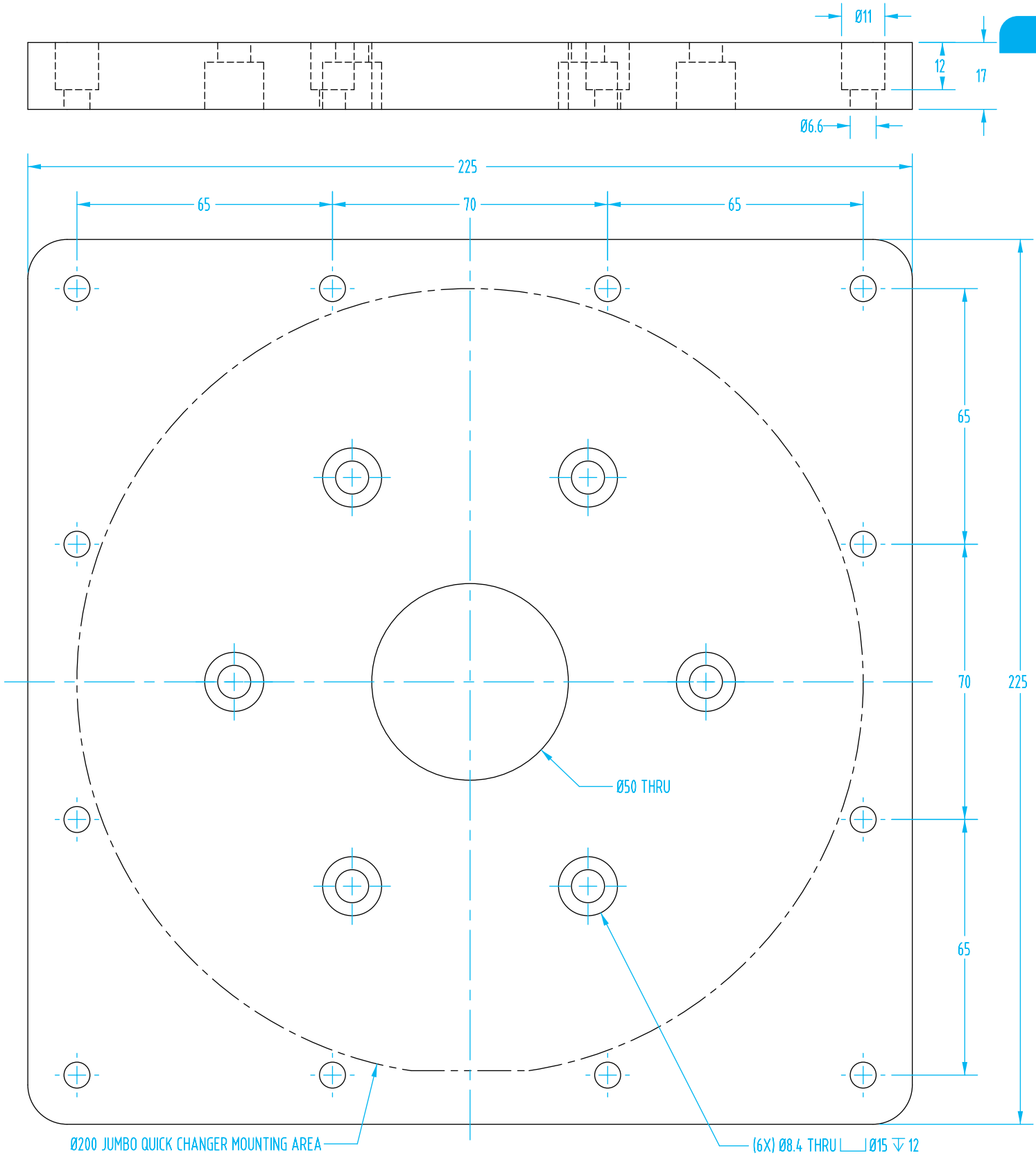
Jumbo EOAT Mounting Plate

Quick#	Part#	Wt.	Price	Description
1141	GSC-GMB-225	2160g	\$99.00	Fasteners on page 1077



EOAT Mounting Plate for Jumbo Size (200mm) Quick Changers

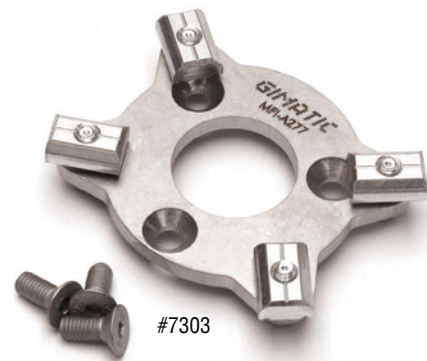
(Dimensioned drawing shown half scale)



Gimatic Quick Changer Interface



Thin plate-steel interface to mount EOAT-Side quick changer to Gimatic, >ASS<, and 80/20 profiles. Fasteners and mounting screws are included.

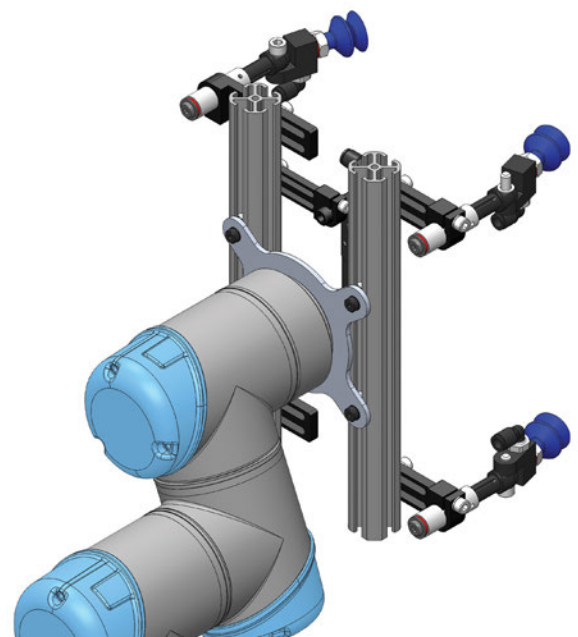
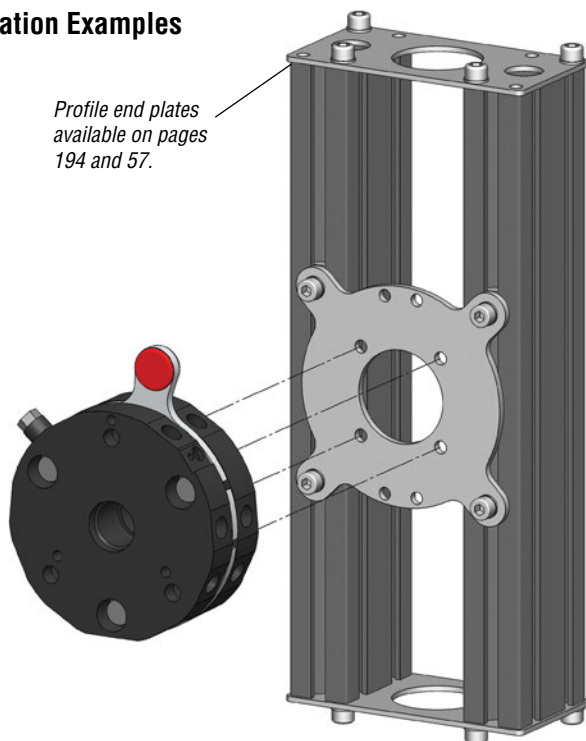


Quick Changer Interface

Quick#	Part#	Price	Quick Changer	Wt.
7303	MFI-A277	\$23.66	Mini 50mm (QC50)	90g
5836	MFI-A102	\$27.25	Standard 90mm (QC90)	190g
5837	MFI-A103	\$39.68	Large 150mm / 160mm (QC150 / QC160)	540g

Use Quick#s for easy online ordering.

Application Examples

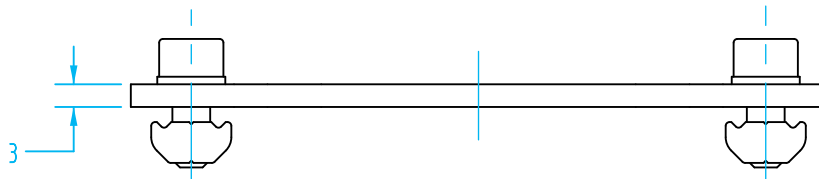
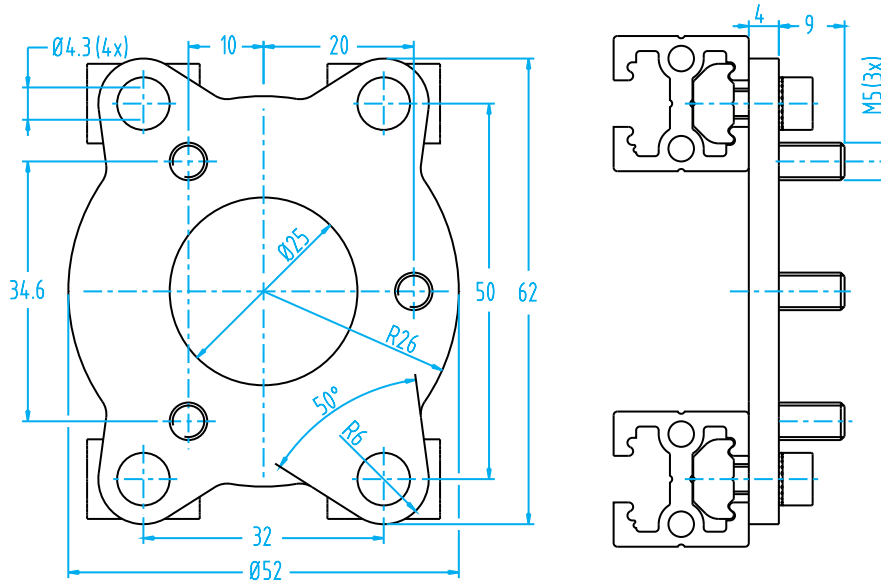


Interface plates for Cobots on page 126.

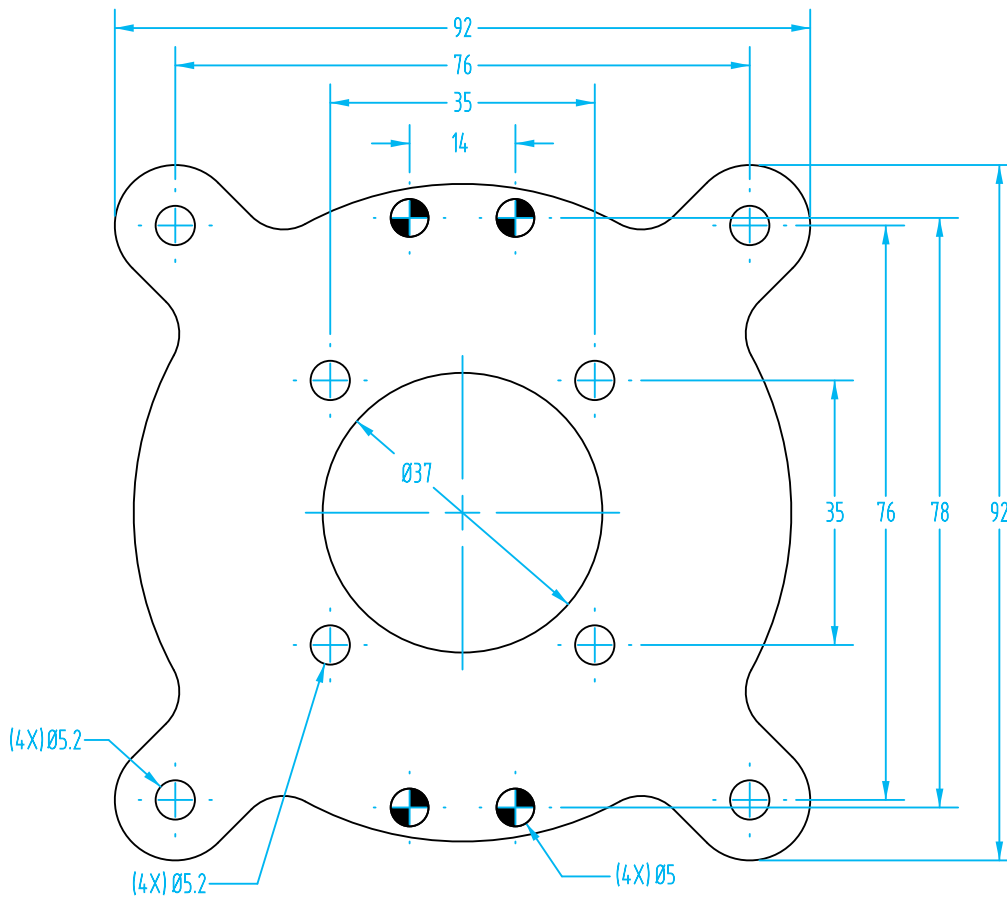
Gimatic Quick Changer Interface

(Dimensioned drawing shown full scale)

#7303



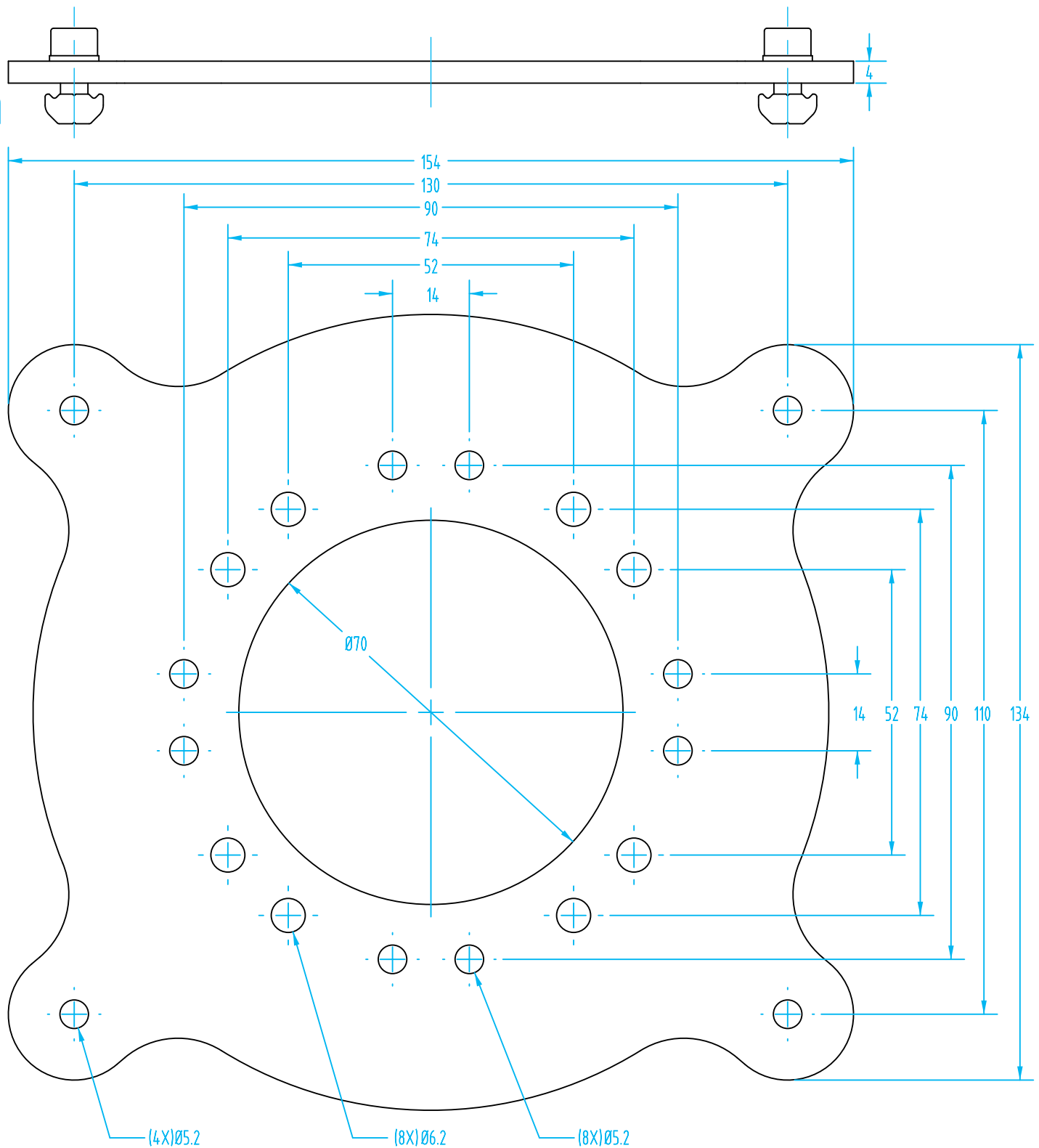
#5836



Gimatic Quick Changer Interface

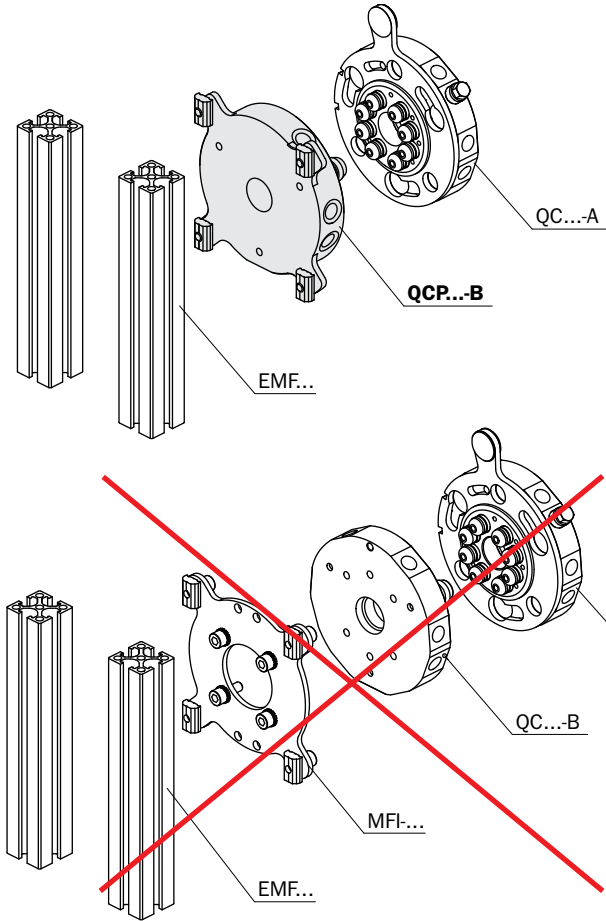
#5837

(Dimensioned drawing shown full scale)



Save on Custom Plates!
 Custom mounting plates, interfaces, and brackets are available from EMI – Fast and at a low cost. EMI's in-house laser cutter precision cuts aluminum and stainless up to 0.250" thick.

Quick Changer with Integrated Flange



#7564

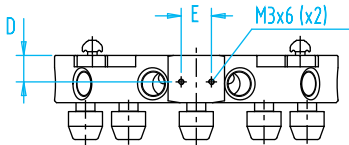
NEW

Quick Changer with Integrated Flange

Quick#	Part#	Price	Quick Changer	Wt.
7563	QCP50-B	\$132.00	Small 50mm (QC50)	110g
7564	QCP90-B	\$203.00	Standard 90mm (QC90)	315g
7565	QCP150-B	\$328.00	Large 150mm (QC150)	1090g
7566	QCP160-B	\$339.00	Large Plus 160mm (QC160)	1150g
7567	QCP200-B	\$402.00	Jumbo 200mm (QC200)	2400g

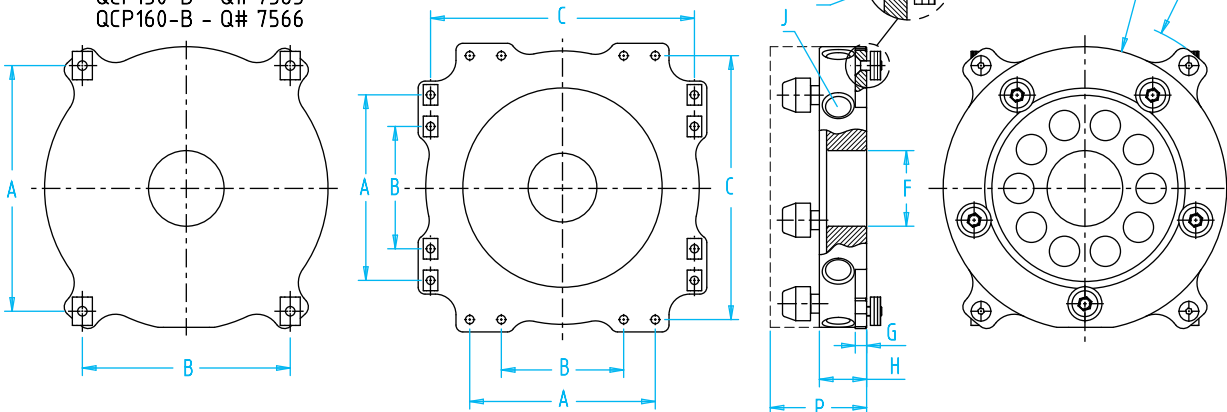
Includes mounting hardware

Quick#	A	B	C	D	E	F	G	H	J	K	L	M	N	P
7563	50	32	-	13	7	Ø4	4	19.3	M5 (x4)	M5 (x4)	7.4	Ø50	Ø71.5	38
7564	76	76	-	7	16	Ø18	4	18.8	G1/8" (x8)	M5 (x4)	7.4	Ø50	Ø99.5	37
7565	130	110	-	14	16	Ø40	6	25	G1/4" (x10)	M5 (x4)	7.4	Ø150	Ø183	51
7566	130	110	-	14	16	Ø40	6	25	G1/8" (x12)	M5 (x4)	7.4	Ø150	Ø183	51
7567	135	89	192	22	16	Ø40	8	33	G1/4" (x12)	M6 (x16)	7.4	Ø200	Ø257	64



- QCP50-B - Q# 7563
- QCP90-B - Q# 7564
- QCP150-B - Q# 7565
- QCP160-B - Q# 7566

QCP200-B - Q# 7567



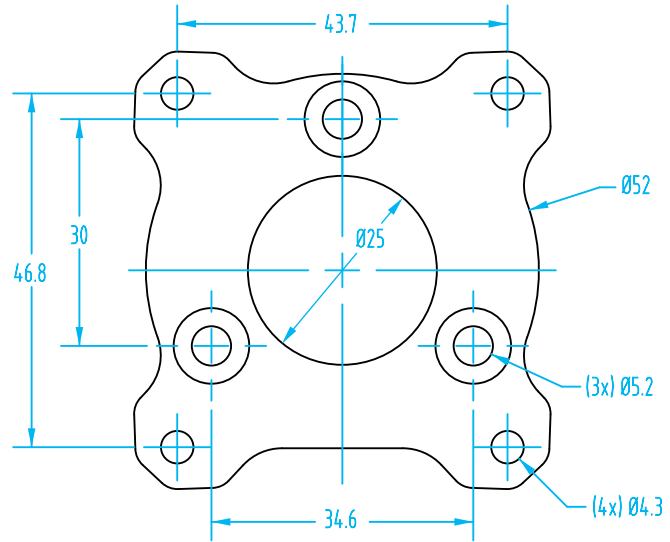
>ASS< Quick Changer Interfaces

NEW

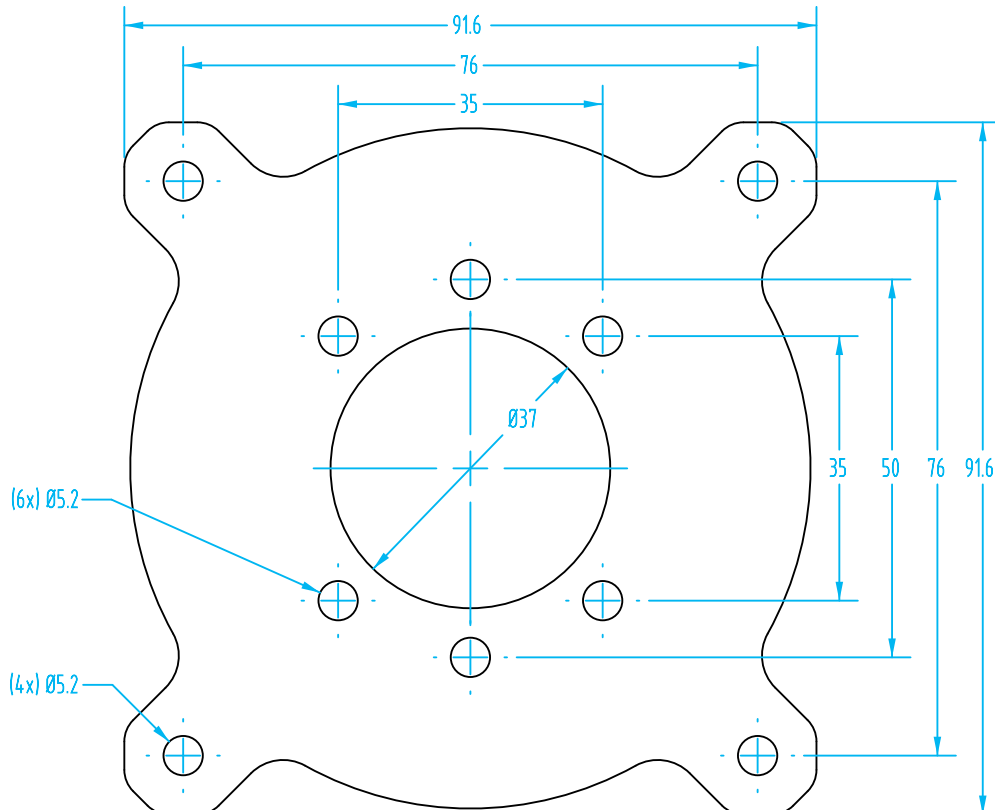
>ASS< Quick Changer Interface

Quick#	Part#	>ASS< #	Quick Changer	Price	Material	Thickness	Wt.
3833	GP-SWH-G-50	1-023-05-00	Mini (SWH-50)	\$22.05	Aluminum	4mm	54g
3834	GP-SWH-G-90	1-023-09-00	Standard (SWH-90)	\$25.73	Steel	3mm	180g
3835	GP-SWH-G-150	1-023-15-00	Large (SWH-150)	\$37.28	Steel	4mm	512g

Includes fasteners and mounting hardware.

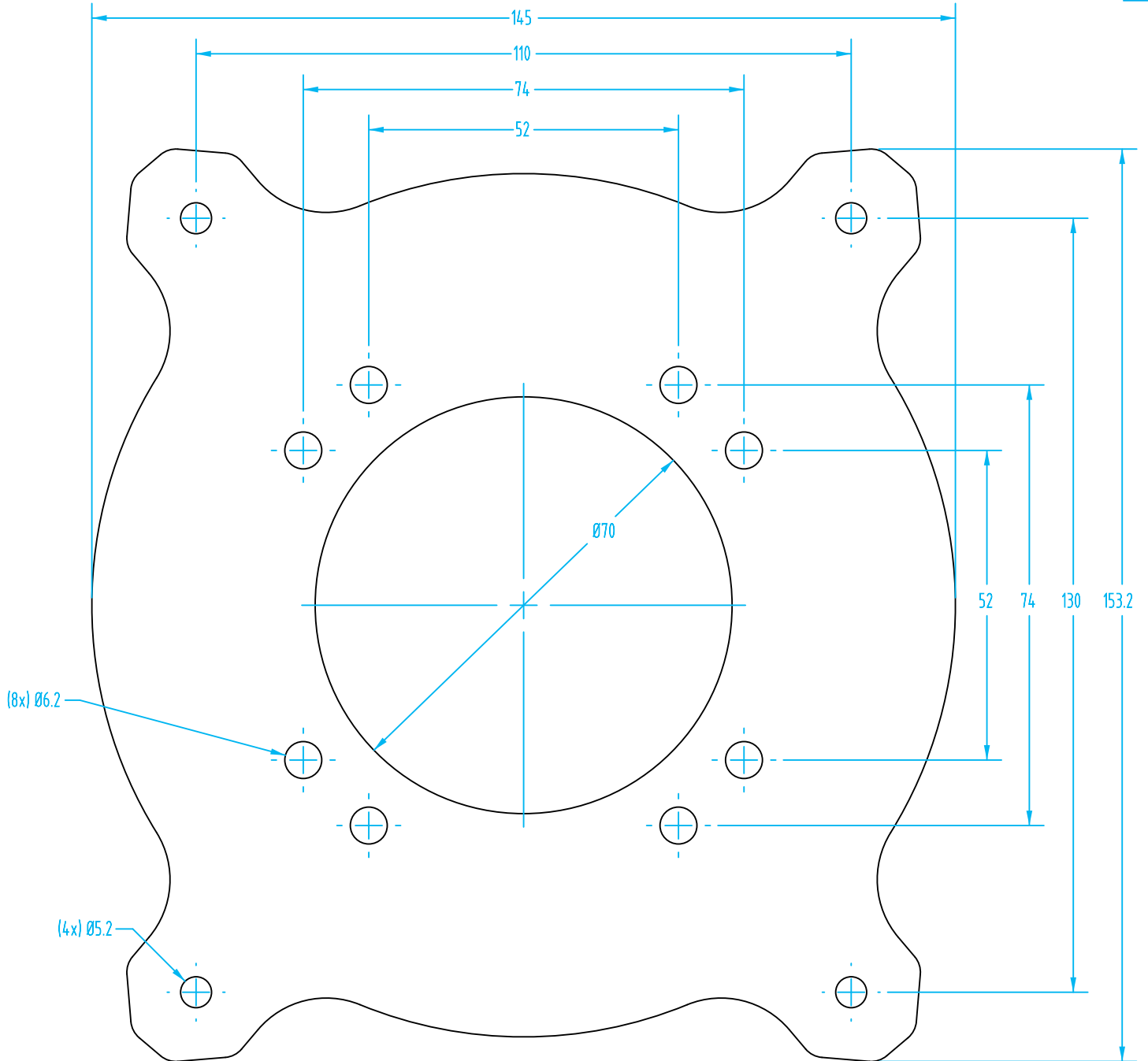
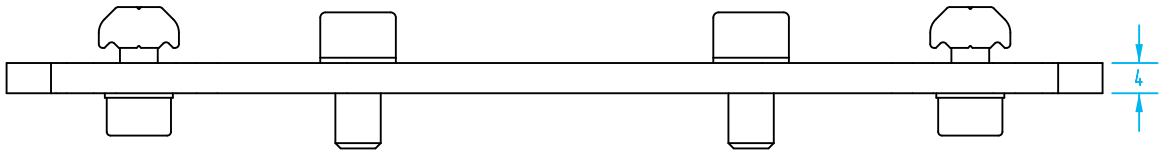


#3834



>ASS< Quick Changer Interfaces

#3835



Save on Custom Plates!

Custom mounting plates, interfaces, and brackets are available from EMI – Fast and at a low cost. EMI's in-house laser cutter precision cuts aluminum and stainless up to 0.250" thick.

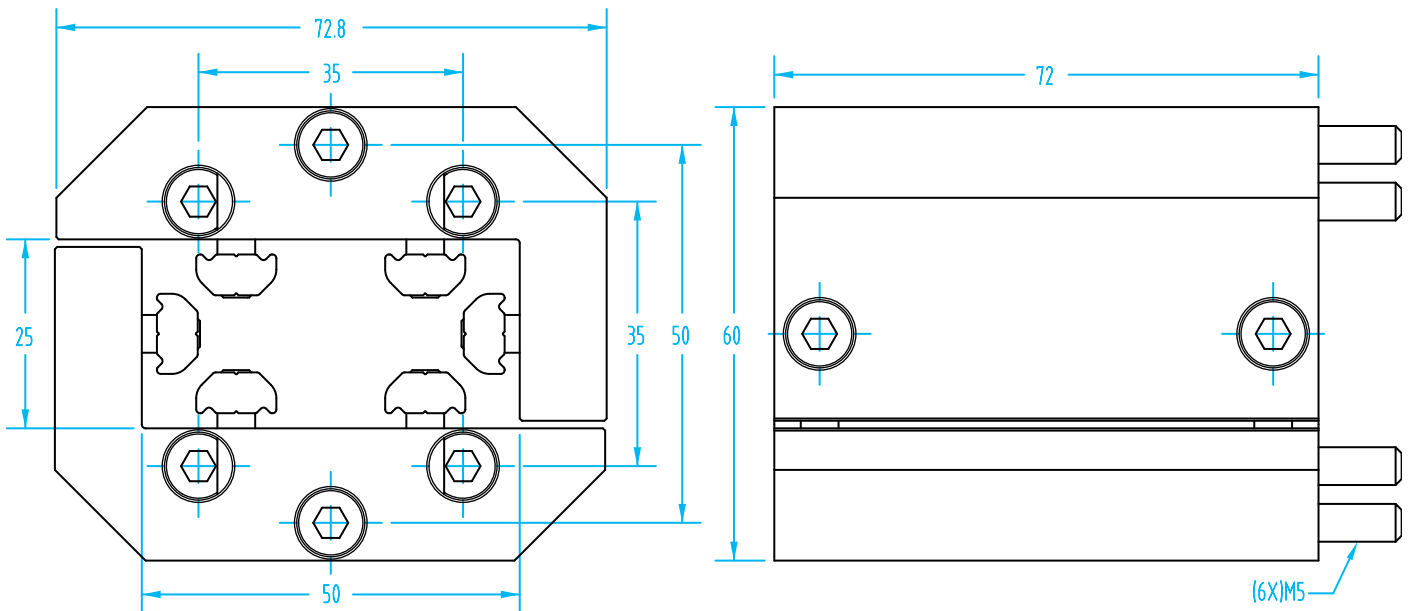
6-Axis Robot Quick Changer Adaptor

(Dimensioned drawings shown full scale)

- Mounts directly to standard size QC90 Quick Changer and 50x25 profile.
- Pre-drilled thru hole for installation of bolt to pass through the profile and adaptor to act as a mechanical safety.
- Mounting hardware is included for QC90 and 50x25 profile.



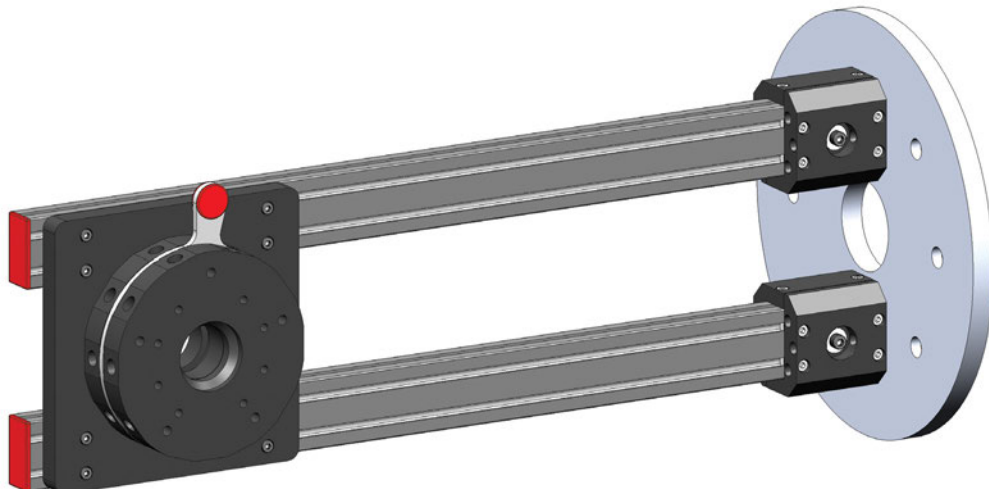
#6986



For Standard Size Quick Changer

Quick#	Part#	Price	Description	Weight
6986	MFI-A254	\$182.00	6-axis adaptor for QC90 and 50x25 profile	680g

Application Example

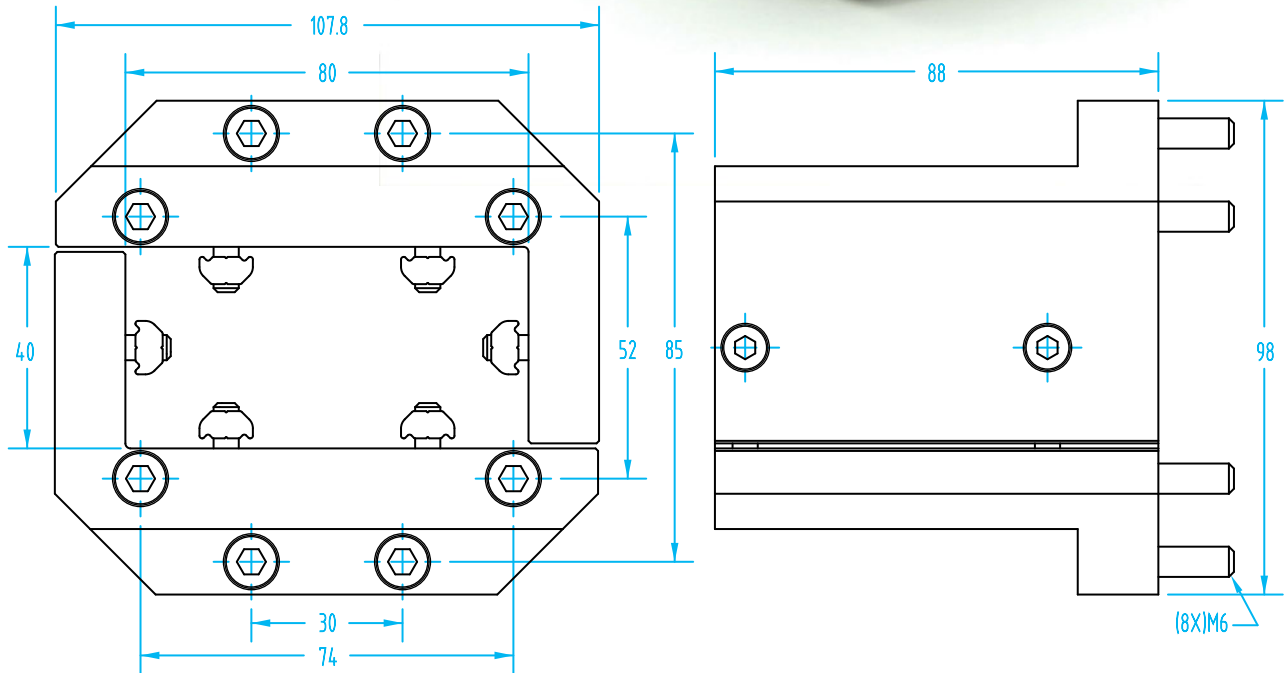
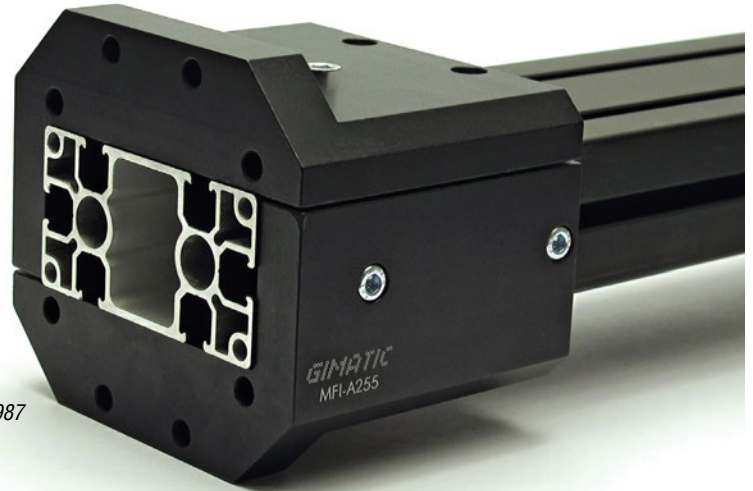


6-Axis Robot Quick Changer Adaptor

(Dimensioned drawings reduced to fit)

- Mounts directly to large size QC150 & QC160 Quick Changer and 80x40 profile.
- Pre-drilled thru hole for installation of bolt to pass through the profile and adaptor to act as a mechanical safety.
- Mounting hardware is included for QC150, QC160 and 80x40 profile.

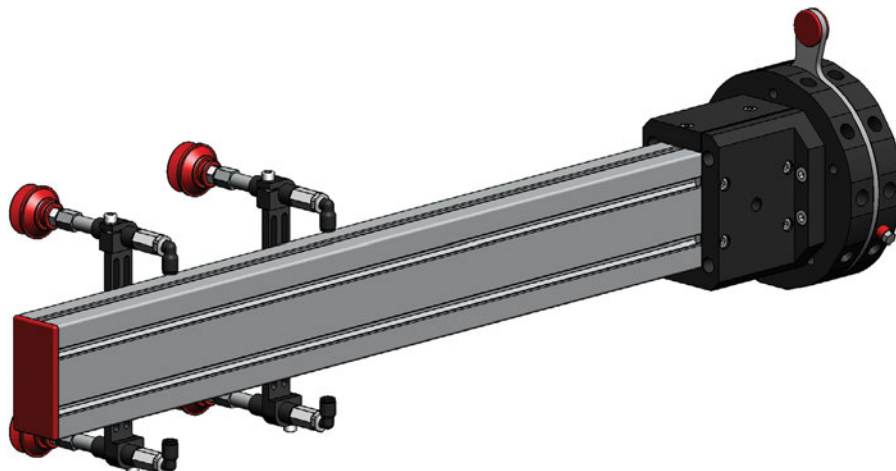
#6987



For Large Size Quick Changer

Quick#	Part#	Price	Description	Weight
6987	MFI-A255	\$307.00	6-axis adaptor for QC150 / QC160 and 80x40 profile	1300g

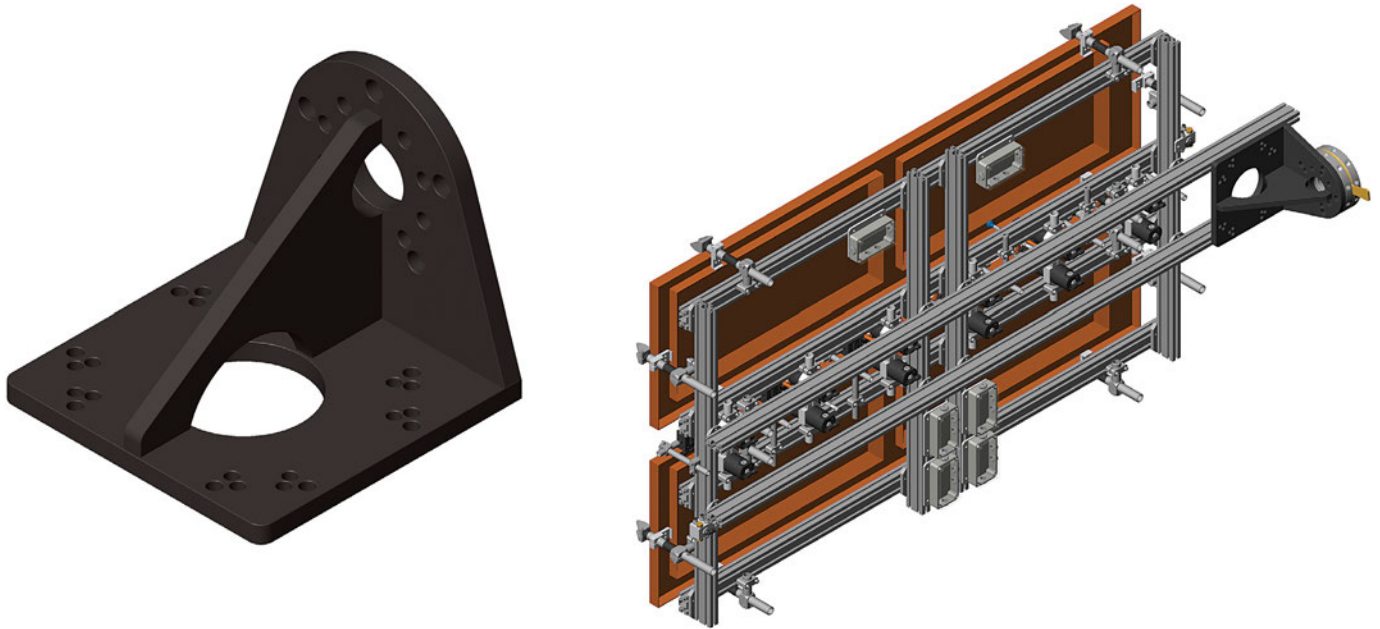
Application Example



6-Axis Robot Quick Changer Adaptor

(Dimensioned drawings shown half scale)

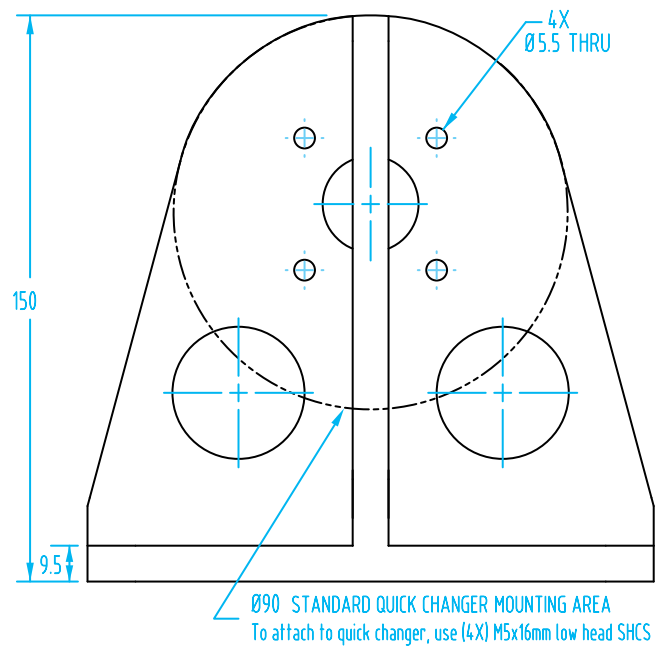
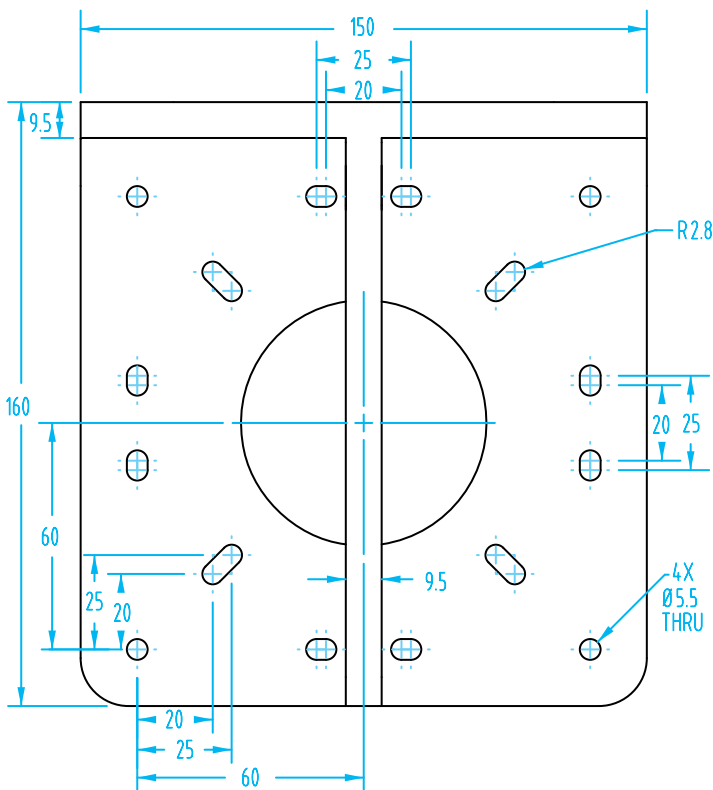
Fastens to Quick Changer for easy Mounting of Gimatic, >ASS<, and 80/20 Profiles



6-Axis Robot Adaptor Bracket

Quick#	Part#	Price	Quick Changer	Weight
1899	GSC-QCAP-L90SM	\$423.00	Standard (QC90)	1120g
1871	GSC-QCAP-L90	\$488.00	Large (QC150 / QC160)	3401g

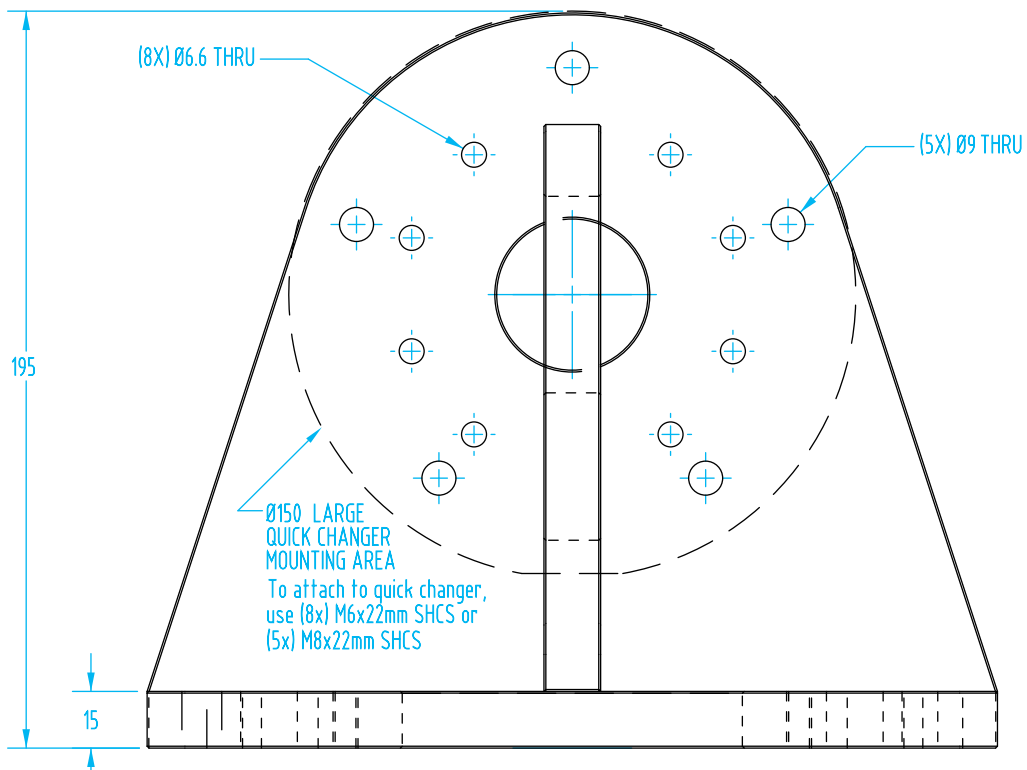
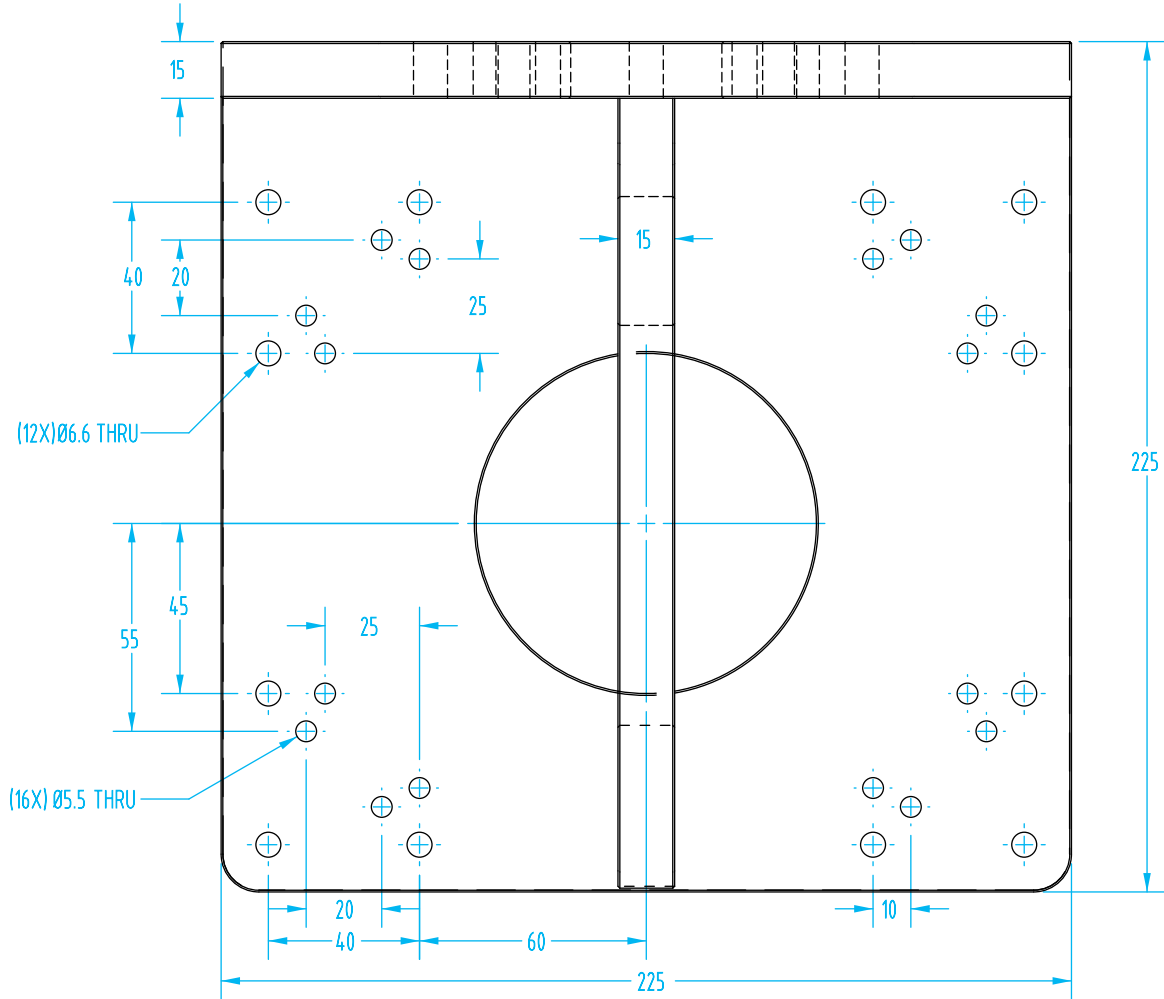
#1899



6-Axis Robot Quick Changer Adaptor

#1871

(Dimensioned drawings shown half scale)



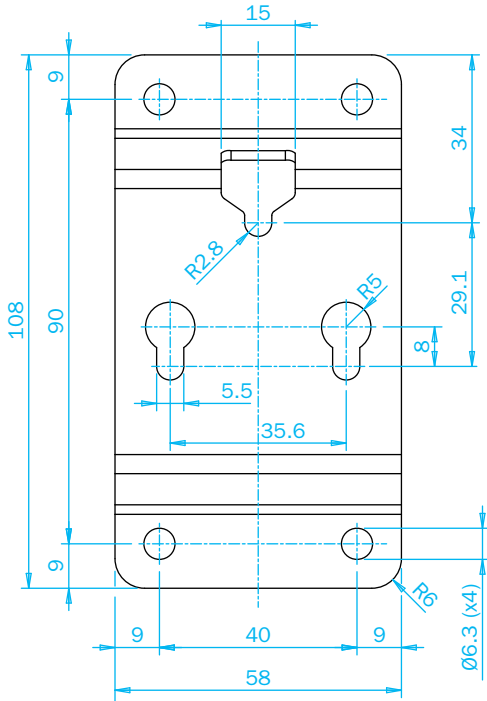
Storage Hangers for Small Size (50mm) Quick Changers

(Dimensioned drawings reduced to fit)

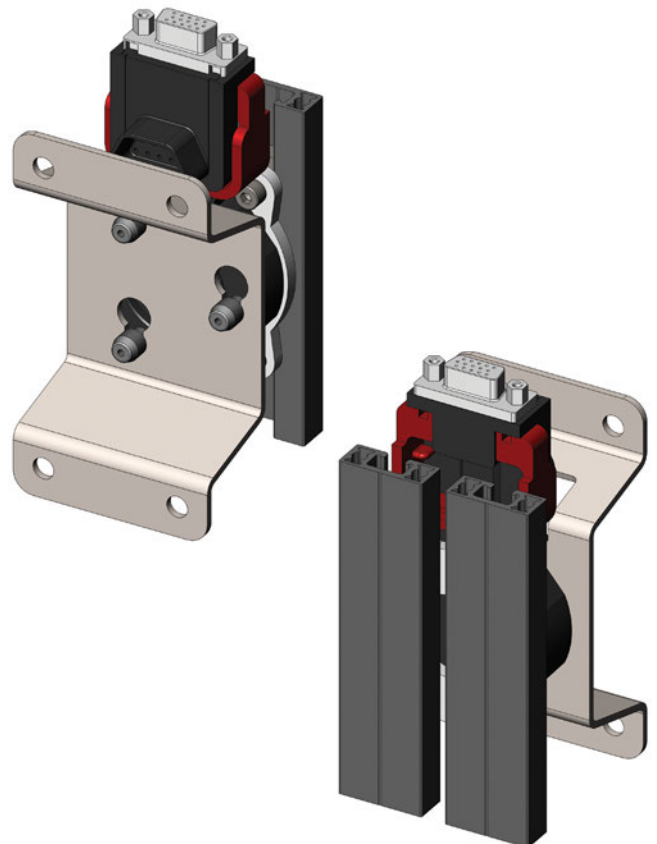
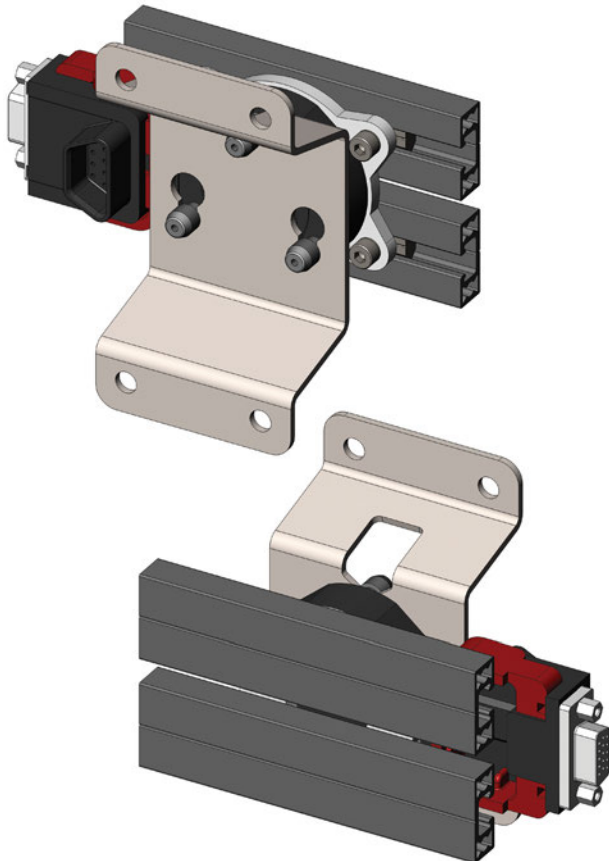
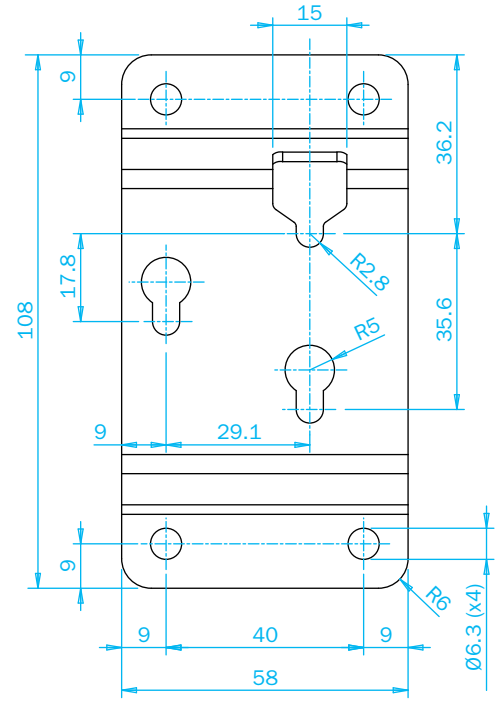
Small Size (50mm) EOAT Storage Hangers

Quick#	Part#	Price	Type	Wt.
6069	QC50-H	\$20.75	Horizontal	190g
5996	QC50-V	\$20.75	Vertical	190g

#6069



#5996



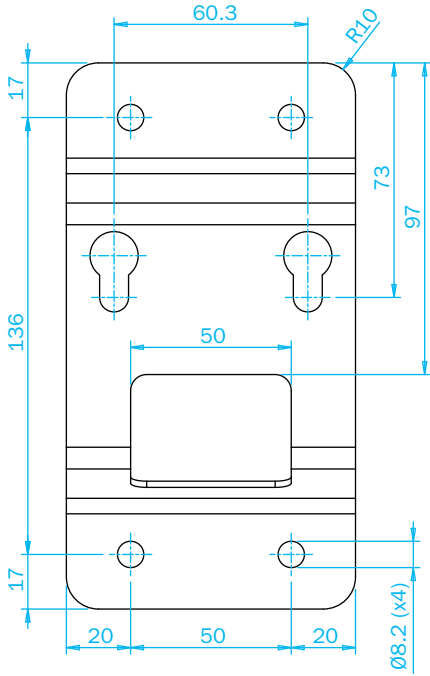
Storage Hangers for Standard Size (90mm) Quick Changers

(Dimensioned drawings reduced to fit)

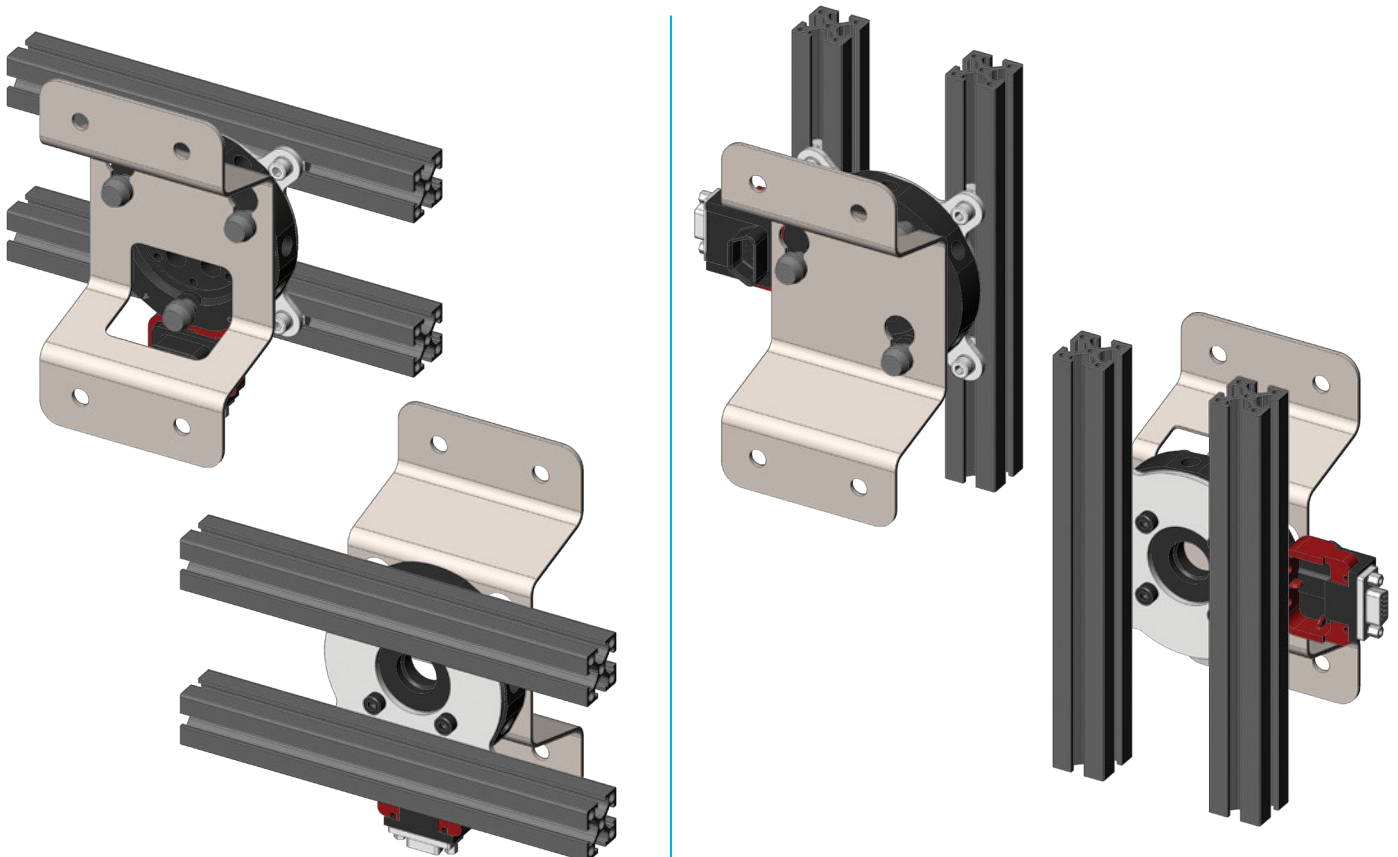
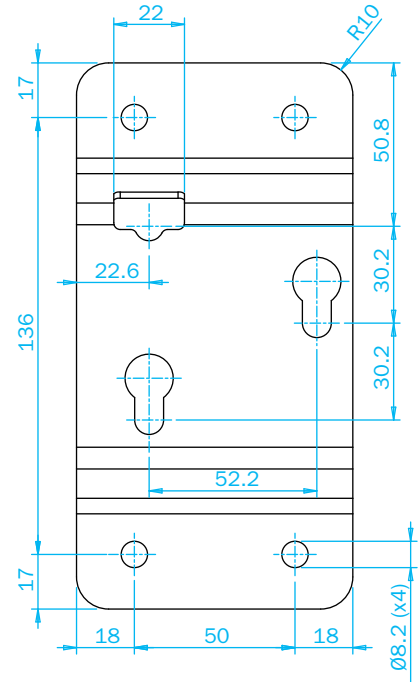
Standard Size (90mm) EOAT Storage Hangers

Quick#	Part#	Price	Type	Wt.
6545	QC90-H	\$32.86	Horizontal	435g
5997	QC90-V	\$32.86	Vertical	435g

#6545



#5997



Storage Hangers for Large & Jumbo (150/160 & 200mm) Quick Changers

(Dimensioned drawings reduced to fit)

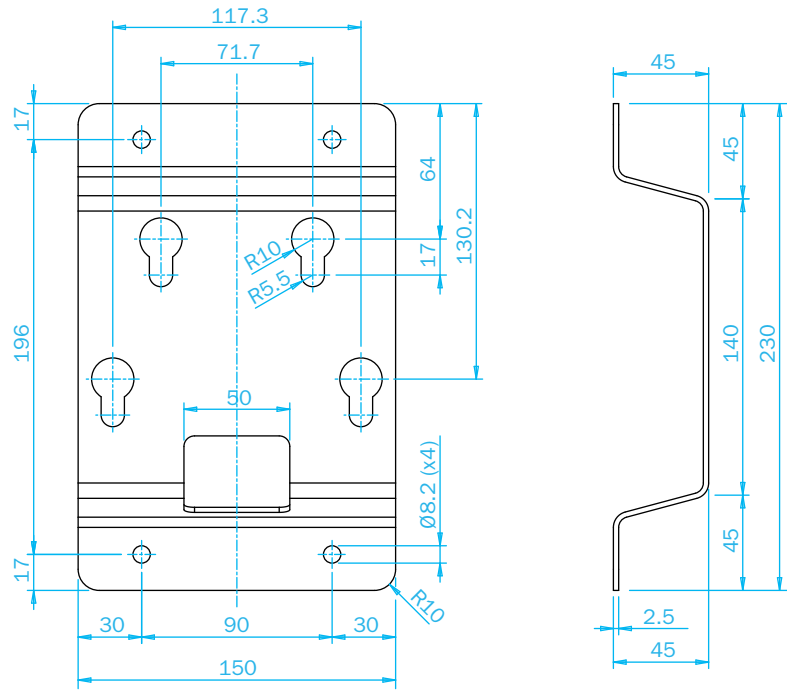
Large Size (150mm / 160mm) EOAT Storage Hangers

Quick#	Part#	Price	Type	Wt.
6546	QC150-H	\$38.27	Horizontal	950g
5998	QC150-V	\$38.27	Vertical	950g

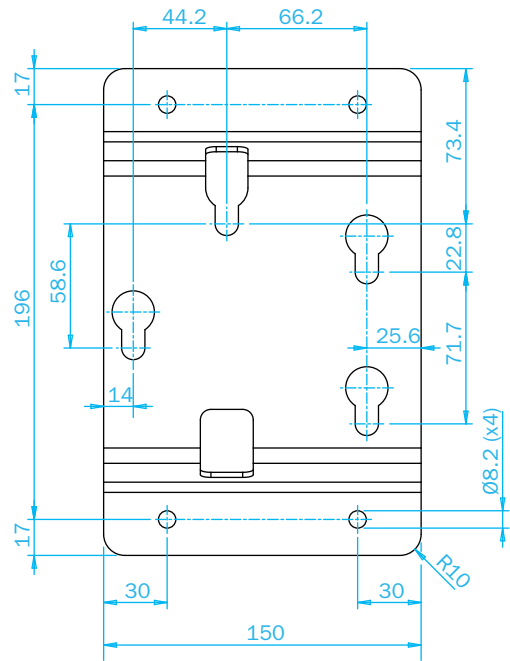
Jumbo Size (200mm) EOAT Storage Hangers

Quick#	Part#	Price	Type	Wt.
6076	QC200-H	\$49.24	Horizontal	1900g
5999	QC200-V	\$49.24	Vertical	1900g

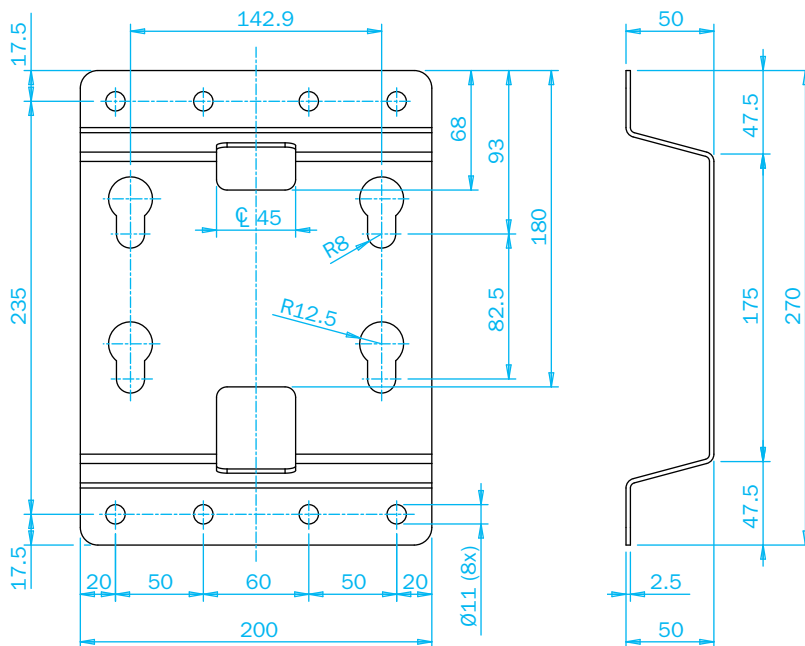
#6546



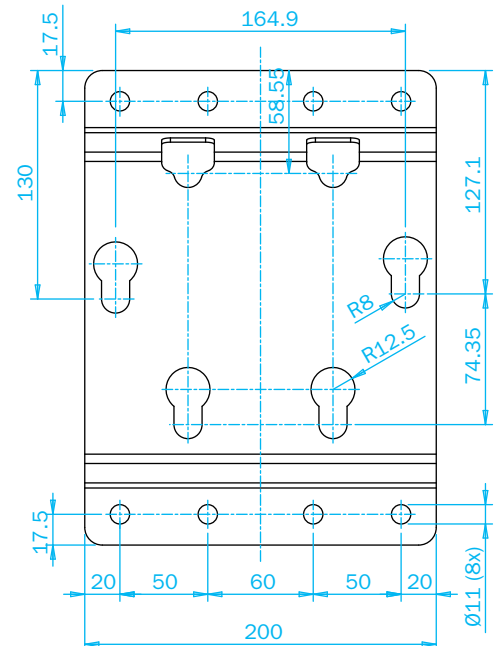
#5998



#6076



#5999



>ASS< Quick Changer Storage Hangers

(Dimensioned drawing shown full scale)

- Wall mount bracket for proper storage of End-of-Arm Tooling using SWH or other compatible quick changer.
- Dimensional drawings for #3946 & #3947 can be found online.

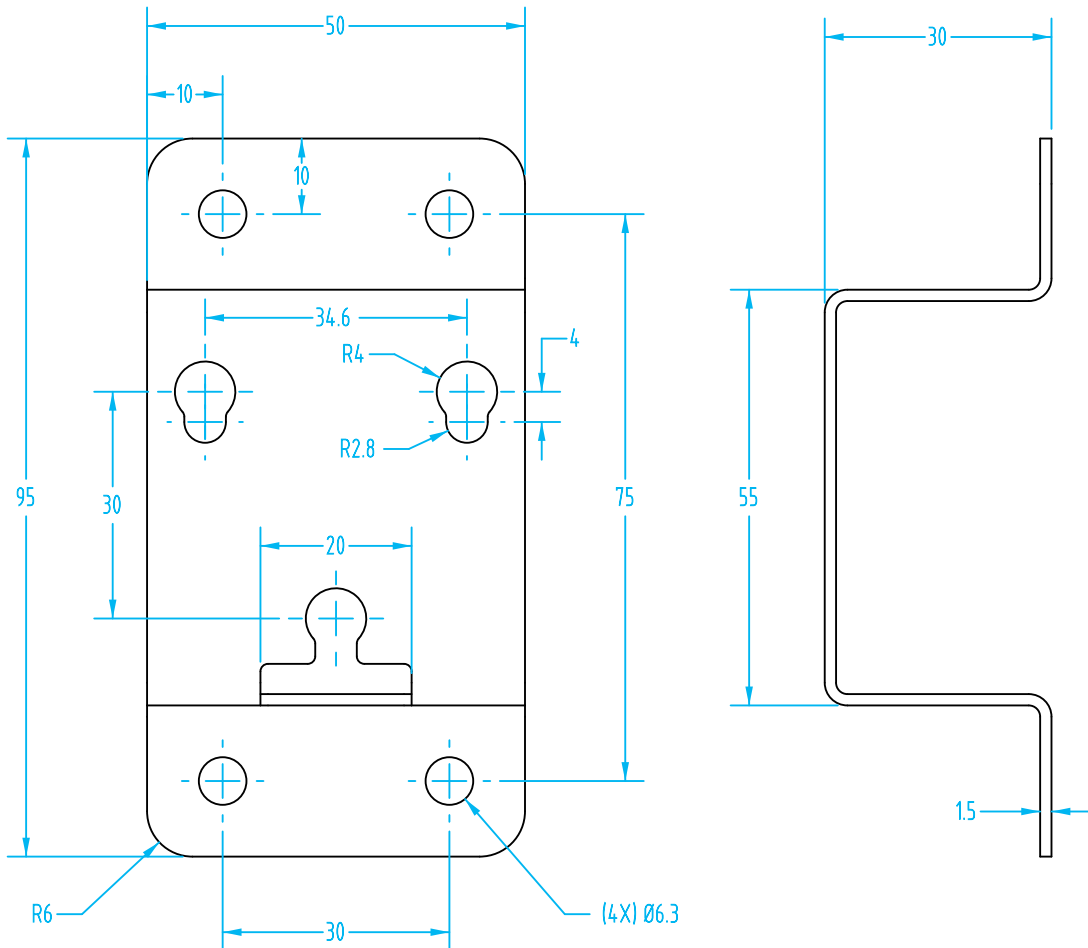


#3946

NEW

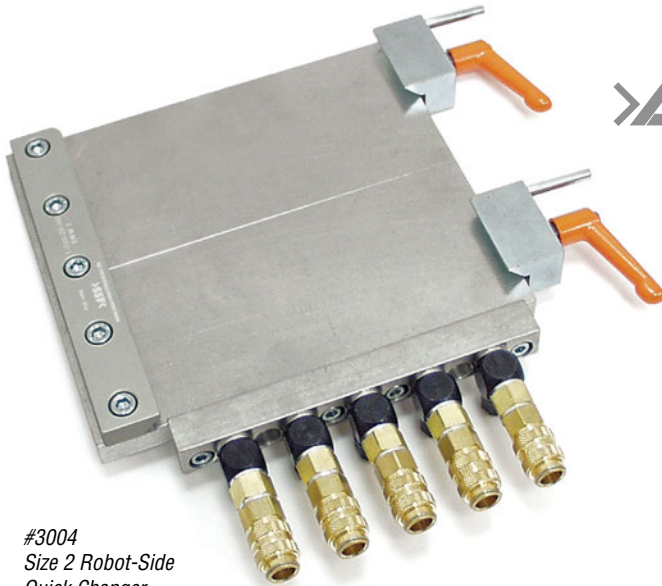
>ASS< Round QC Storage Hangers (Steel)

Quick#	Part#	>ASS< #	Price	For Quick Changer:	Wt.
3945	GHV-SWH-G-50	1-022-05-00	\$19.43	SWH_50 (50mm)	76g
3946	GHV-SWH-G-90	1-022-09-00	\$30.98	SWH_90 (90mm)	225g
3947	GHV-SWH-G-150	1-022-15-00	\$35.70	SWH_150 (150mm)	518g



Dovetail Quick Changer – Robot-Side – With Fittings

(Dimensioned drawings shown 1/3 scale)

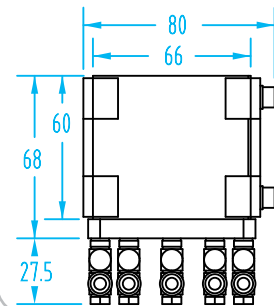
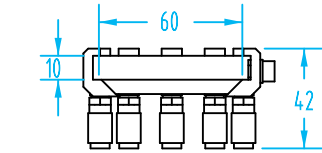
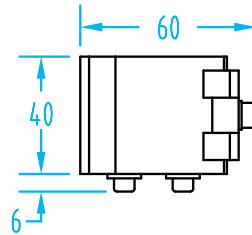
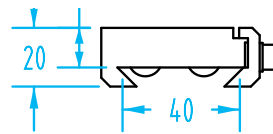


#3004
Size 2 Robot-Side
Quick Changer

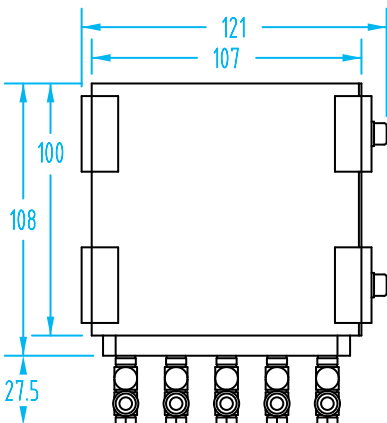
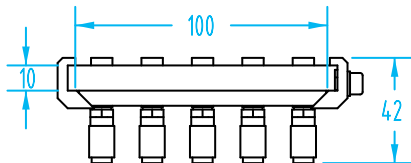
- Five sizes available that will work with all profile systems.
- Order EOAT-Side mounting plates separately, see page 68.
- Safety loads listed on page 68.
- See page 69 for additional quick disconnect nipples.
- See page 69 for storage hangers.

SWMGR-0
Quick#: 3002

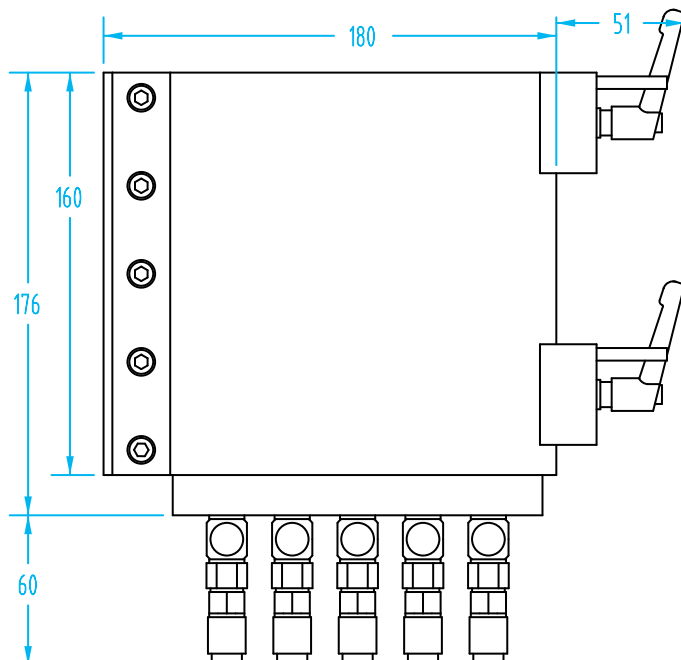
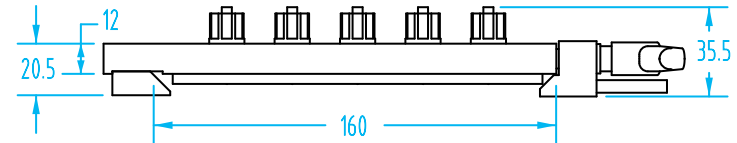
SWMGR-01
Quick#: 3001



SWMGR-1
Quick#: 3003



SWMGR-2
Quick#: 3004



Dovetail Quick Changer – Robot-Side – With Fittings

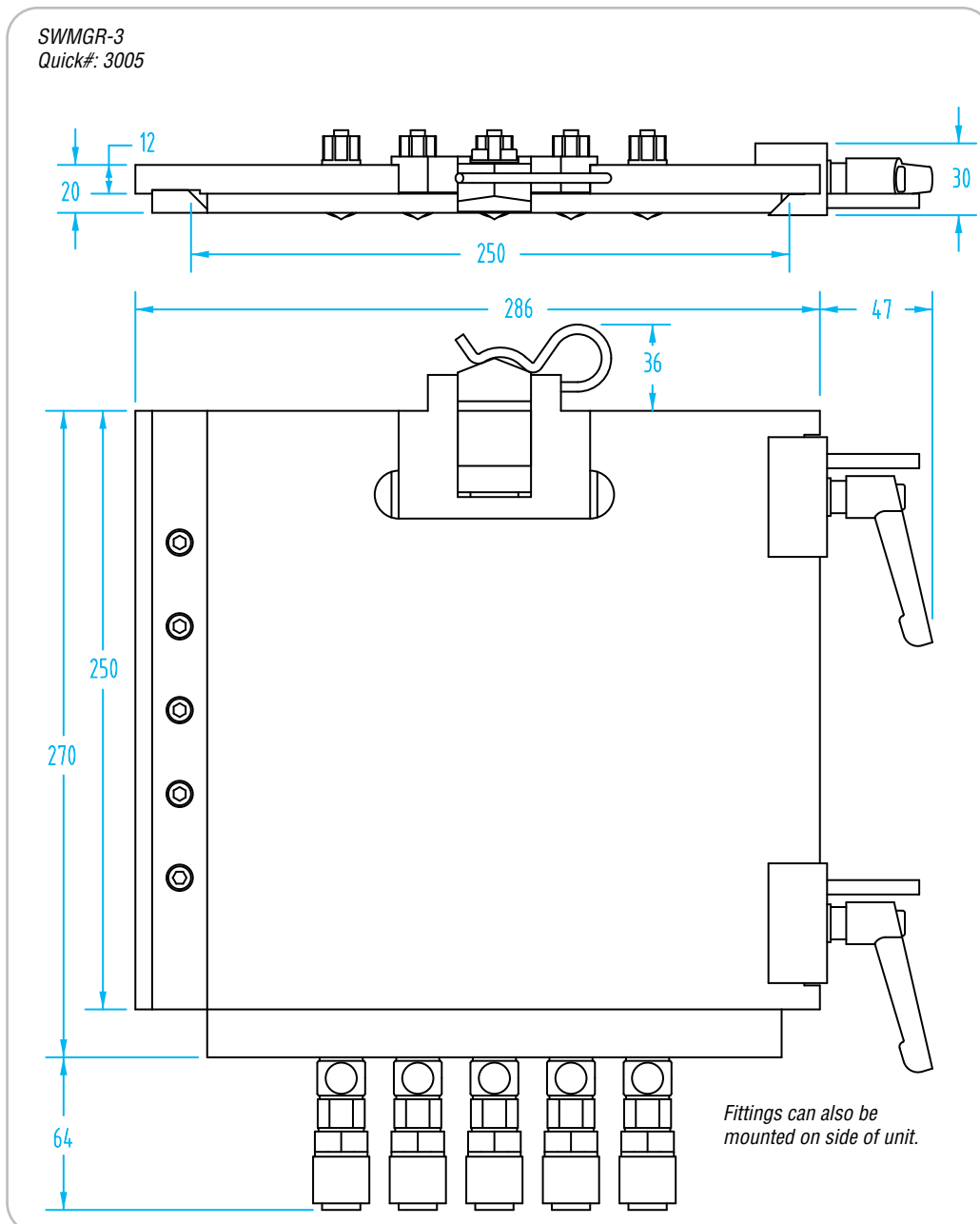
(Dimensioned drawings shown 1/3 scale)

Robot Plate (with fittings)

Quick#	Part#	>ASS< #	Price	Wt.	STN nipple size
3001	SWMGR-01	1-000-05-00	\$285.60	110g	–
3002	SWMGR-0	1-000-10-00	\$357.00	362g	M5
3003	SWMGR-1	1-000-15-00	\$467.25	570g	M5
3004	SWMGR-2	1-000-20-00	\$619.50	1772g	G1/8"
3005	SWMGR-3	1-000-25-00	\$829.50	4570g	G1/4"

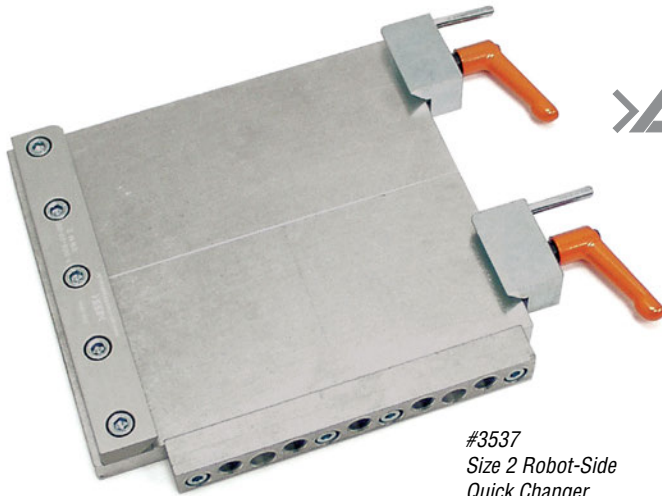
Note: Each SWM robot-side plate includes a set of 5 plug-in nipples (not pictured).

Use Quick#s for easy online ordering.



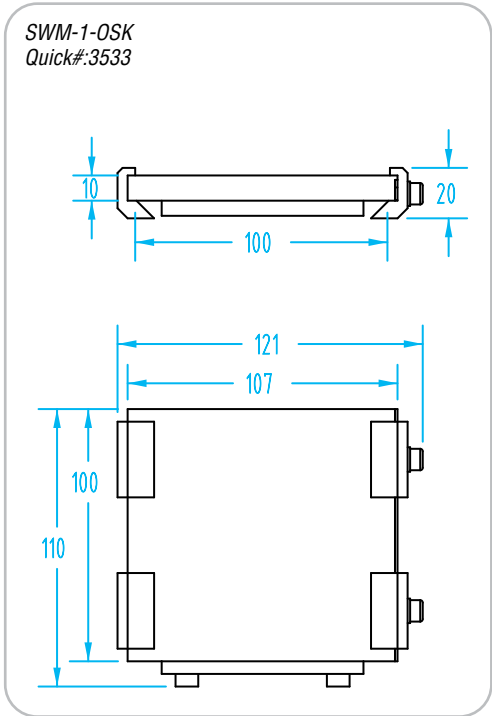
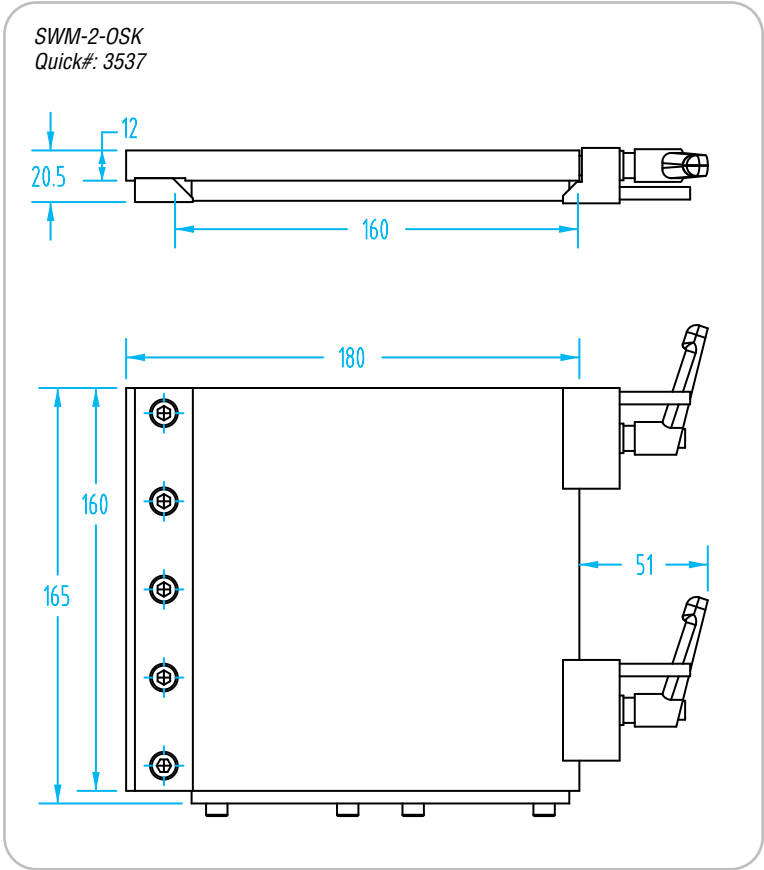
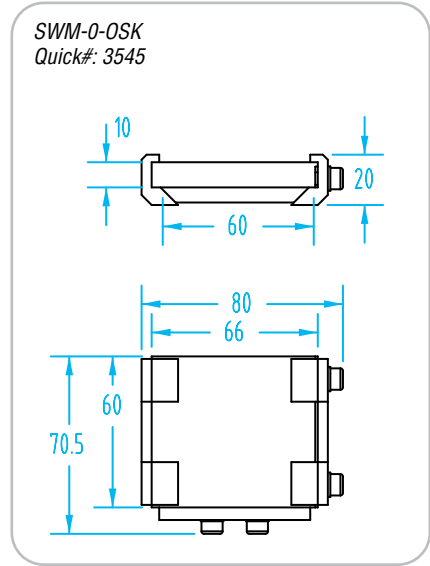
Dovetail Quick Changer – Robot-Side – No Fittings

(Dimensioned drawings shown 1/3 scale)



#3537
Size 2 Robot-Side
Quick Changer

- Four sizes available that will work with all profile systems.
- Safety loads listed on page 68.
- Order EOAT-Side mounting plates separately, see page 68.
- See page 69 for additional quick disconnect nipples.
- See page 69 for storage hangers.

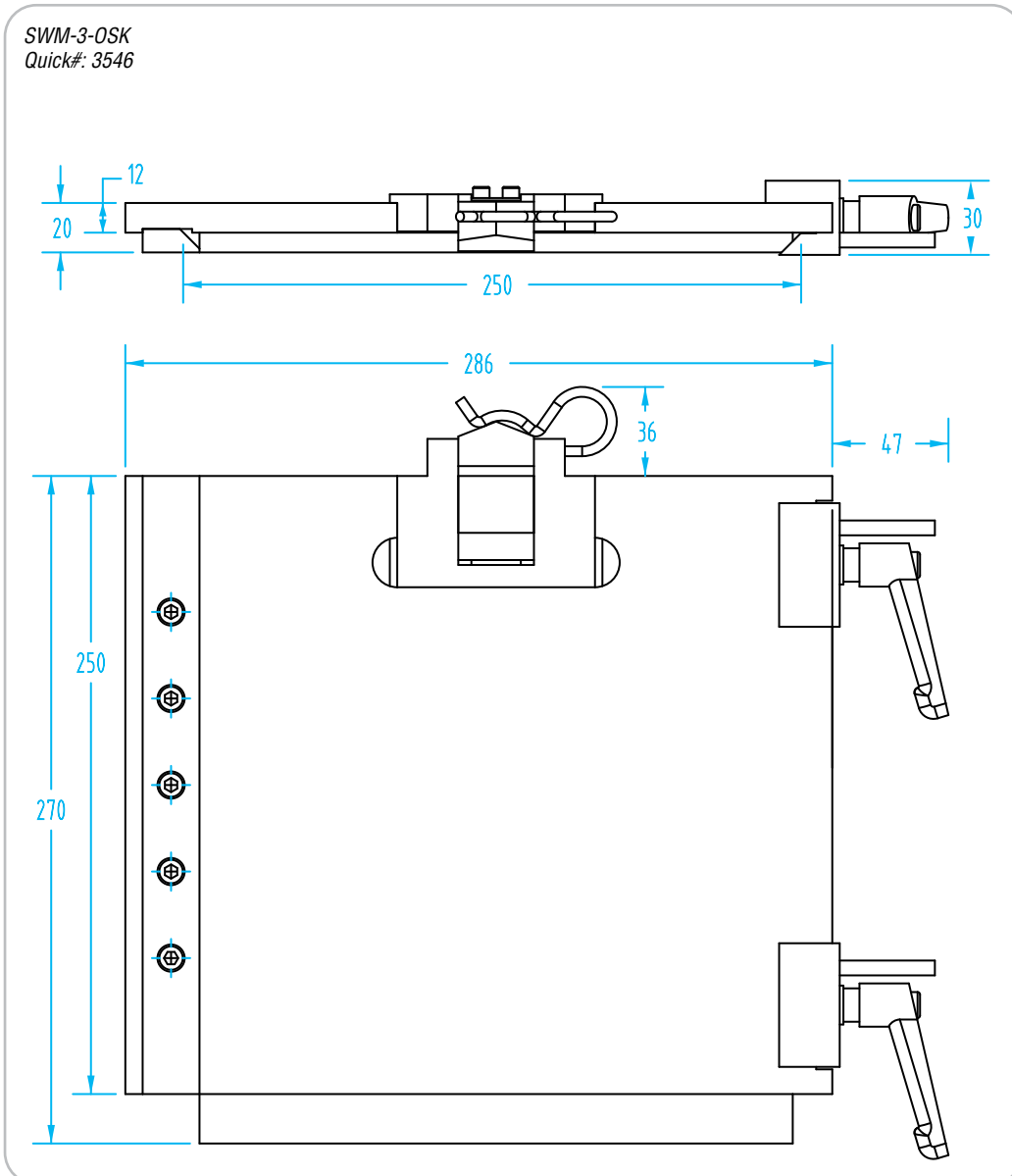


Dovetail Quick Changer – Robot-Side – No Fittings

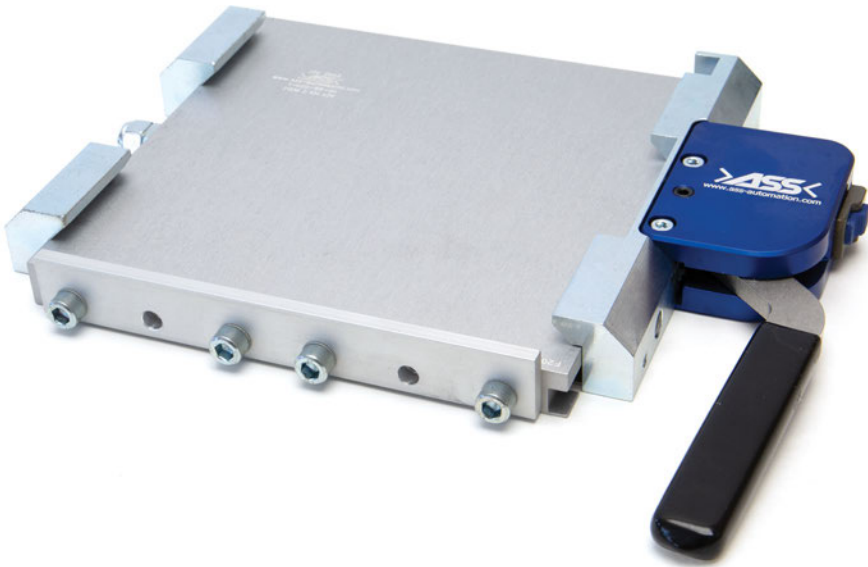
(Dimensioned drawings shown 1/3 scale)

Robot Plate (without fittings)

Quick#	Part#	>ASS< #	Price	Wt.
3545	SWM-0-OSK	1-000-40-00	\$301.35	362g
3533	SWM-1-OSK	1-000-43-00	\$397.95	570g
3537	SWM-2-OSK	1-000-46-00	\$472.50	1772g
3546	SWM-3-OSK	1-000-49-00	\$786.45	4010g



Dovetail One-Handle Quick Changer – Robot-Side – No Fittings

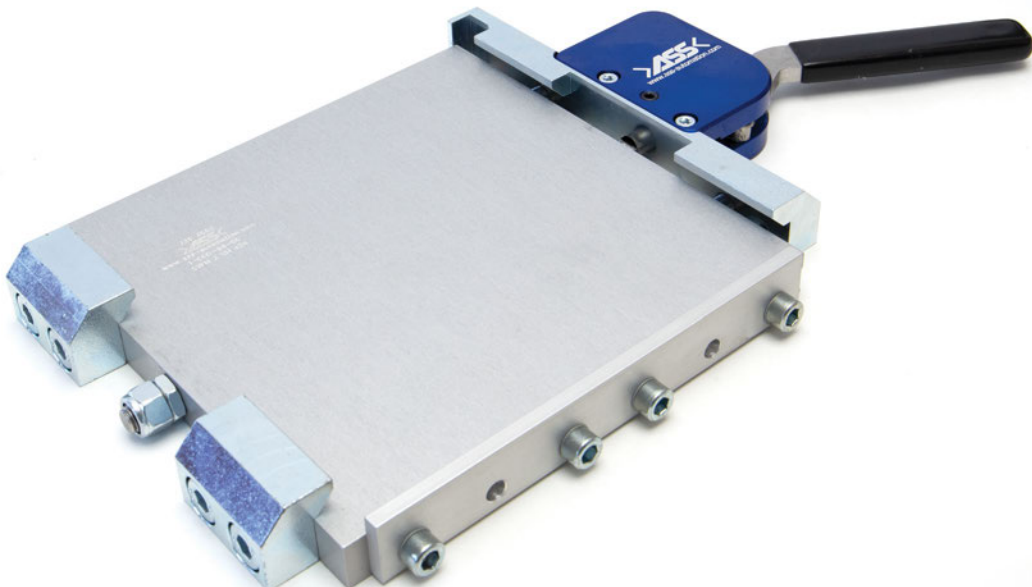


This dovetail style quick changer features a single hand locking mechanism. A safety latch prohibits accidental opening. An optional IES-8 sensor can be used to verify the locked position.

- Dovetail-type EOAT mounting plate.
- With integrated safety lock that prevents unwanted opening of the lever.
- Compatible with all profile systems.
- Safety loads listed on page 68.
- Order EOAT-Side mounting plates separately, see page 68.
- See page 69 for storage hangers.

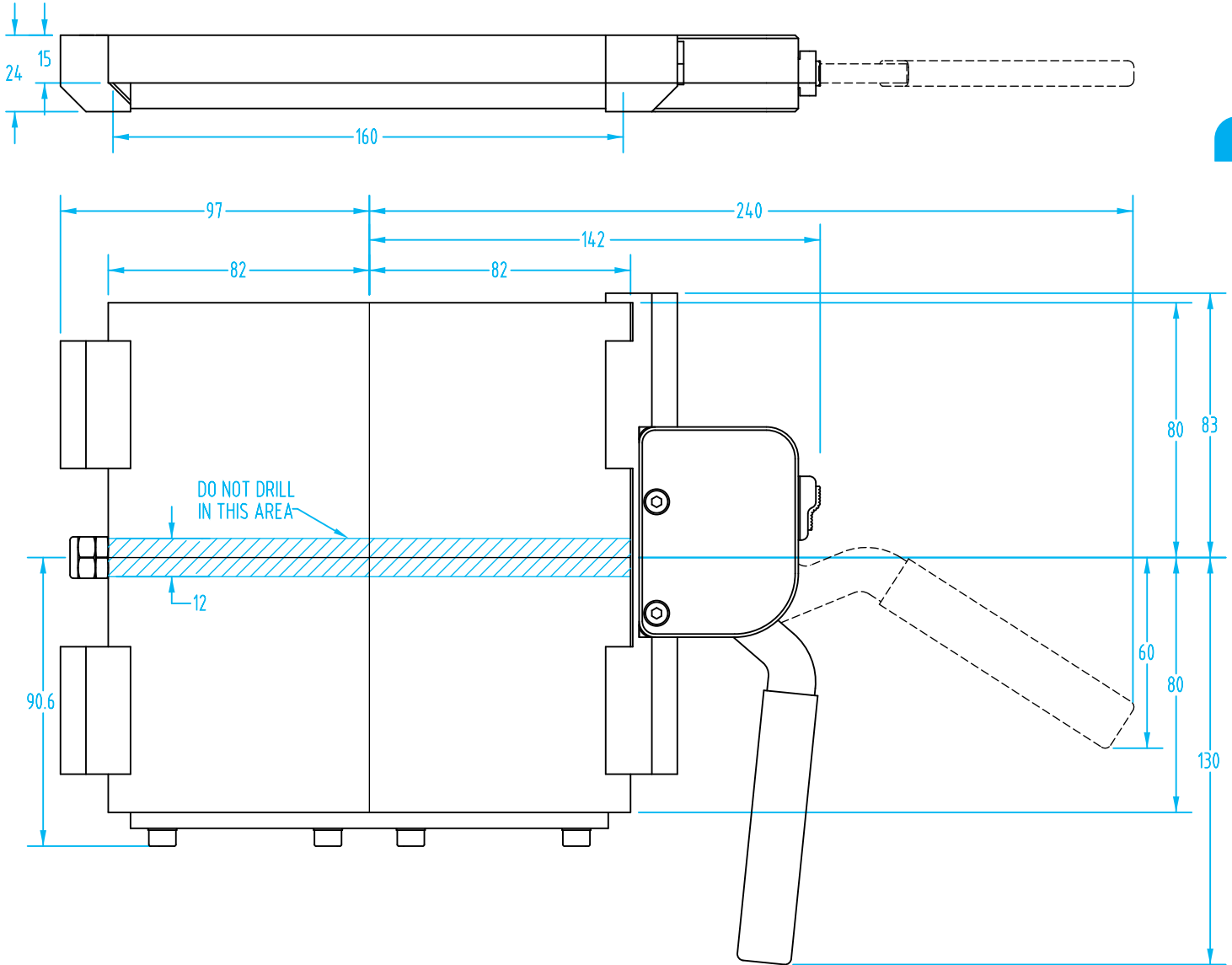
Robot Plate (without fittings)

Quick#	Part#	>ASS< #	Price	Wt.
3845	SWM-2-KH-OSK	1-000-66-00	\$495.60	1900g



Dovetail One-Handle Quick Changer – Robot-Side – No Fittings

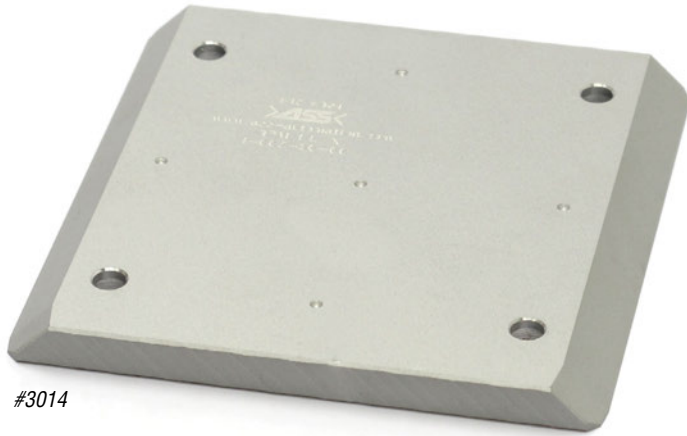
(Dimensioned drawings shown 1/2 scale)



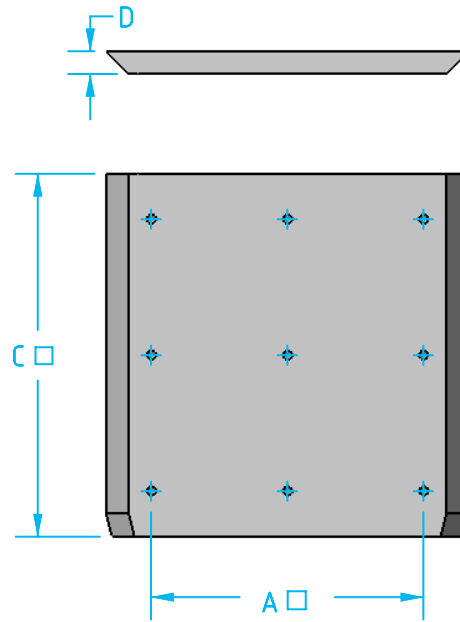
Sensor IES 8, 3 pin male plug in PNP or NPN. Extension cable KG 8-3 (6' length) is included.

Quick#	Part#	Price	Type	Signal	Connection	Power Supply	Max. Switching Frequency	Voltage Drop	Operating Temperature	IEC Rating	Cable
3805	IES-8-PNP	\$49.60	3-wire inductive rectangle	PNP	M8 & .16m lead	12-30V dc	2000 Hz	1.8V	-22-185°F	IP 67	PUR
3806	IES-8-NPN	\$65.40	3-wire inductive rectangle	NPN	M8 & .16m lead	12-30V dc	2000 Hz	1.8V	-22-185°F	IP 67	PUR

Dovetail EOAT-Side Mounting Plates



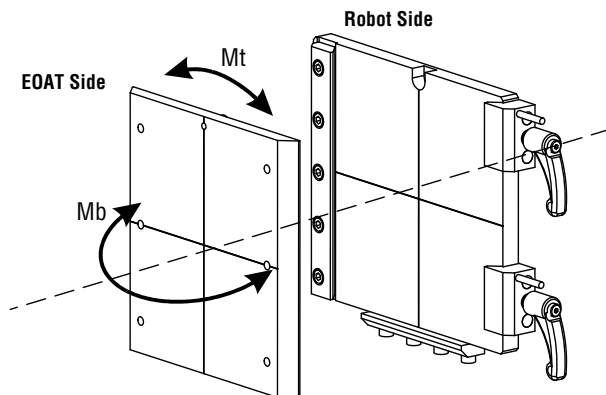
#3014



EOAT-Side Mounting Plate

Quick#	Part#	>ASS< #	Price	A	C	D	Wt.	Profile	Description
3009	GPMGR-01	1-005-05-00	\$11.55	-	40	8	29g	ANY	Solid
3010	GPMGR-0	1-005-10-00	\$14.18	35	60	8	68g	ANY	Pre-located center-punched holes
3011	GPMGR-0M	1-005-15-00	\$18.38	35	60	8	71g	L	M4 tapped threads
3012	GPMGR-1	1-005-25-00	\$17.85	70	100	8	196g	ANY	Pre-located center-punched holes
3014	GPMGR-1X	1-005-30-00	\$27.30	70	100	8	191g	X	Thru holes with counter bore. Includes M5 screws and slotted nuts
3015	GPMGR-2	1-005-40-00	\$26.78	120	160	10	639g	ANY	Pre-located center-punched holes
3016	GPMGR-2X	1-005-45-00	\$44.63	120	160	10	710g	X	Thru holes with counter bore. Includes M5 screws and slotted nuts
3017	GPMGR-2J	1-005-50-00	\$47.25	120	160	10	745g	J	Thru holes with counter bore. Includes M6 screws and slotted nuts
3018	GPMGR-3	1-005-60-00	\$42.00	200	250	10	1665g	ANY	Pre-located center-punched holes
3019	GPMGR-3X	1-005-65-00	\$59.85	200	250	10	1596g	X	Thru holes with counter bore. Includes M5 screws and slotted nuts
3020	GPMGR-3J	1-005-70-00	\$62.48	200	250	10	1592g	J	Thru holes with counter bore. Includes M6 screws and slotted nuts

Use Quick#s for easy online ordering.



>ASS< Dovetail QC Safety Loads

Dovetail Size	Mt	Mb	Suggested Payload
01	8.9	7.4	2.2 lbs
0	25.8	22.1	11.0 lbs
1	47.9	47.9	22.0 lbs
2	88.5	81.1	44.1 lbs
3	243.4	236.0	88.2 lbs

Mt= Torque Moment Limit Mb= Bending Moment Limit

Storage Hangers for >ASS< Dovetail Quick Changers

- Dovetail-type EOAT storage plate.
- This new version is stamped from stainless steel and has a lower price than the previous, CNC machined version.
- Each plate is designed to mount on any of our profiles.
- Channel nuts and screws are included.
- Dimensional drawings coming soon!



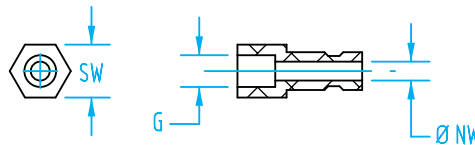
#3941

NEW

>ASS< Dovetail Storage Hangers (Stainless Steel)

Quick#	Part#	>ASS< #	Price	For Quick Changer:	Overall Dimensions (h x w)	Wt.
3940	GHV-01-ND	1-006-04-00	\$24.15	GPM 01	50 x 80 mm	110g
3941	GHV-0-ND	1-006-07-00	\$25.20	GPM 0	50 x 100 mm	315g
3942	GHV-1-ND	1-006-10-00	\$30.45	GPM 1	80 x 140 mm	1090g
3943	GHV-2-ND	1-006-13-00	\$42.00	GPM 2	115 x 210 mm	1150g
3944	GHV-3-ND	1-006-16-00	\$52.50	GPM 3	135 x 300 mm	2400g

Dovetail Plug-In Nipples



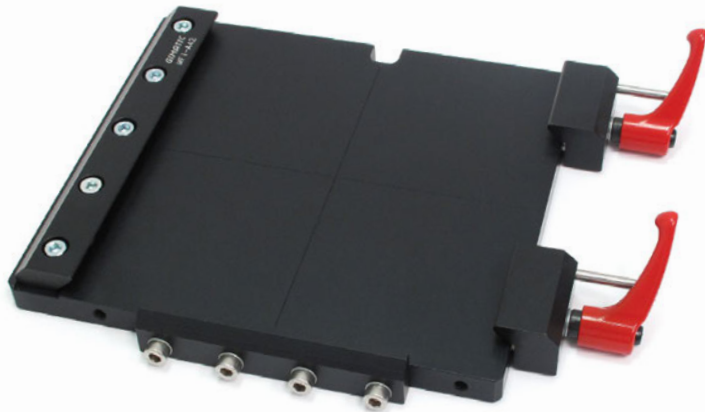
STN Plug-In Nipples (Brass)

Quick#	Part#	>ASS< #	Price	G	ØNW	SW	Wt.	for SWM:
3006	STNM5	1-862-10-00	\$2.63	M5	2.5	7	3g	GR0, GR1
3007	STN1/8	1-862-12-00	\$2.10	G1/8"	5	14	14g	GR2
3008	STN1/4	1-862-14-00	\$2.10	G1/4"	7	17	25g	GR3

See page 1043 for Tubing & Fittings.

Dovetail Quick Changer – Robot Side – Size 2

(Dimensioned drawing reduced to fit)



#5772
Size 2 Robot-Side
Quick Changer



#5774

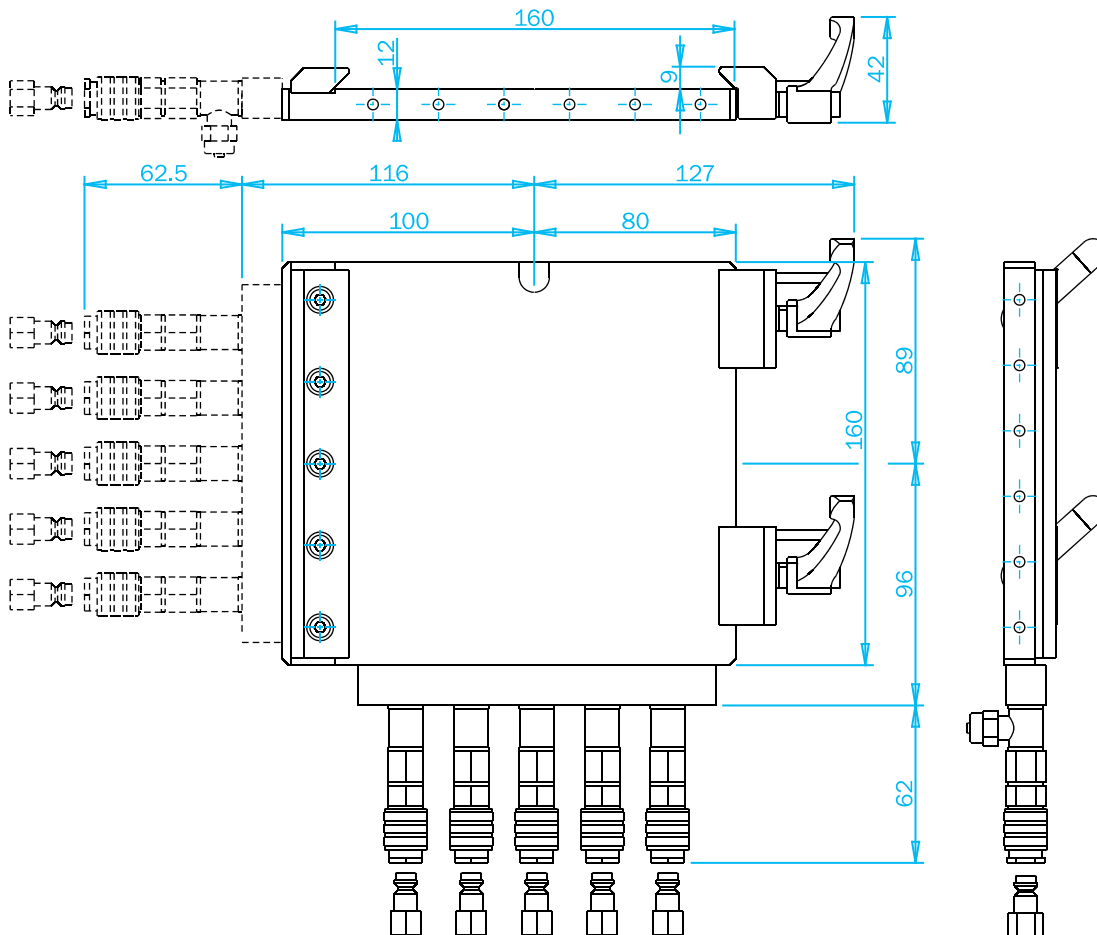


#5775

- Suggested payload: 44.0 lbs.

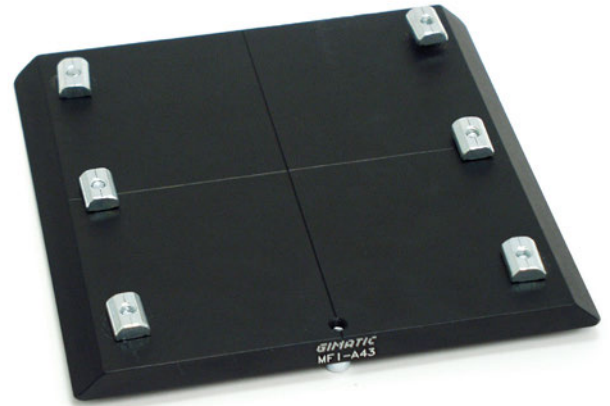
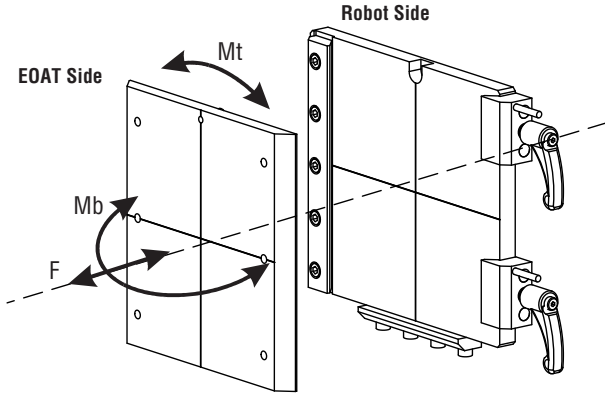
Robot-Side, Size 2

Quick#	Part#	Description	Price	Wt.
5772	MFI-A42	Robot Plate (only)	\$519.00	1270g
5773	MFI-A131	Robot Plate with Fittings	\$596.00	1650g
5774	MFI-A132	Fittings bar	\$132.00	450g
5775	MFI-A134	Nipples for EOAT	\$8.76 (Quantity: 5)	40g
6082	MFI-A43-H	Storage Hanger	\$43.55	-



Dovetail Mounting Plate – EOAT Side – Size 2

(Dimensioned drawing reduced to fit)

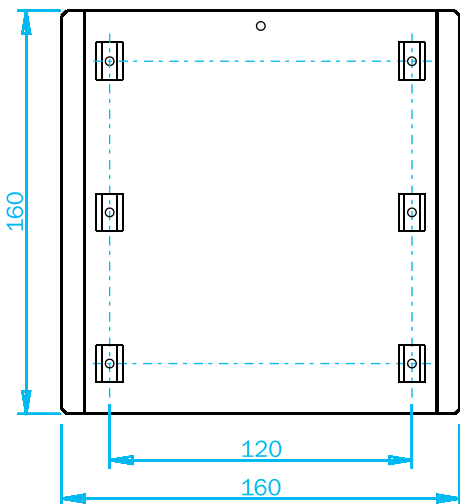
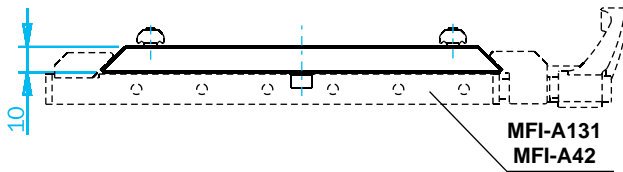


Specifications for Size 2 Dovetail Quick Changer	
Maximum Air Pressure	6 bar (87psi)
Safety Loads:	
F 89.9 lbf.	Mt 88.5 ft-lbs. Mb 59 ft-lbs.

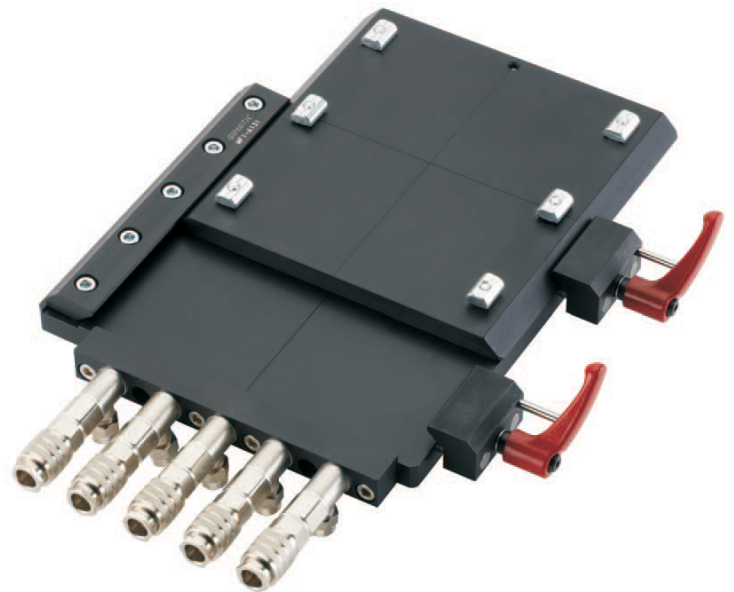
F= Axial Load Limit Mt= Torque Moment Limit
Mb= Bending Moment Limit

EOAT-Side, Size 2

Quick#	Part#	Price	Wt.
5776	MFI-A43	\$43.68	670g

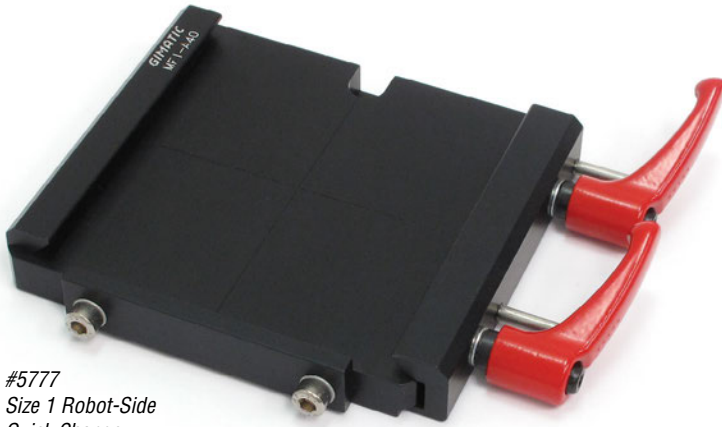


Application Example



Dovetail Quick Changer – Robot Side – Size 1

(Dimensioned drawing reduced to fit)



#5777
Size 1 Robot-Side
Quick Changer



#5779

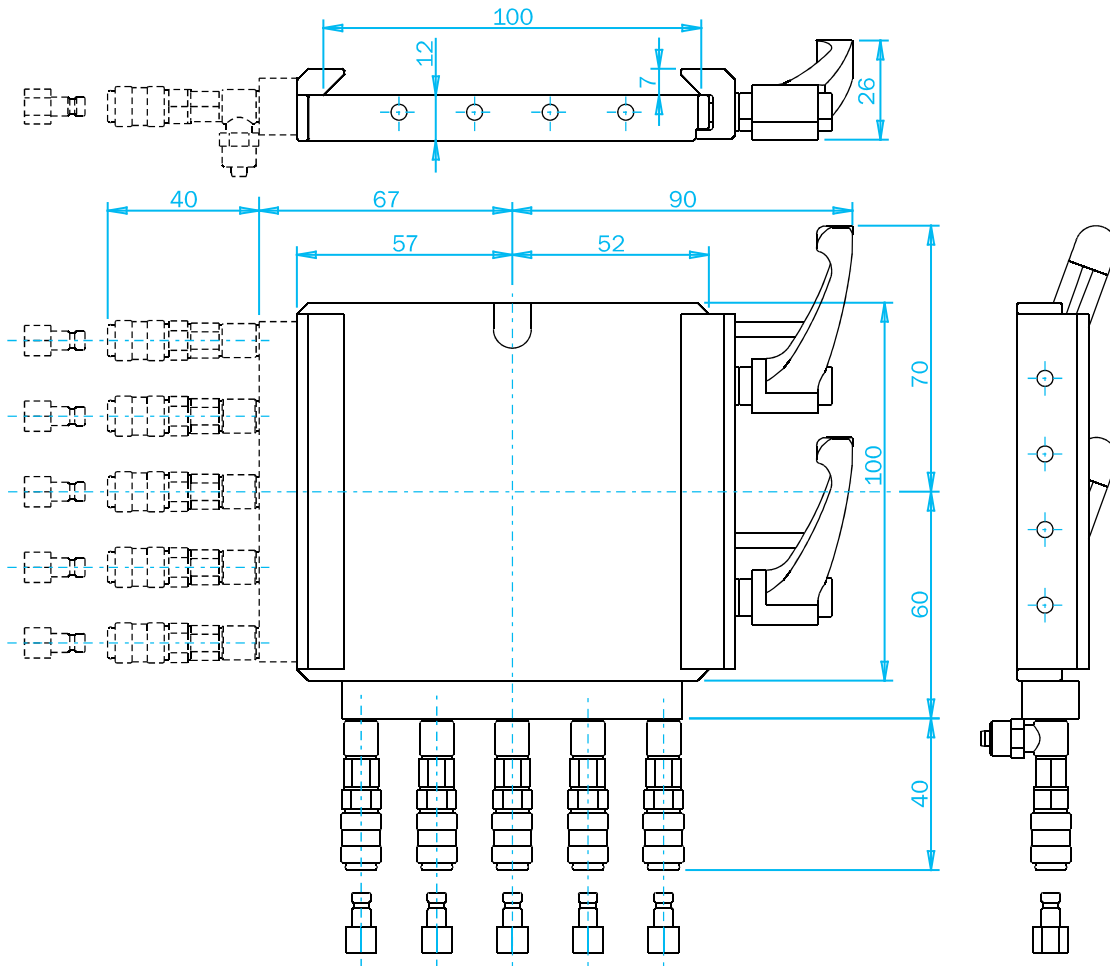


#5780

Robot-Side, Size 1

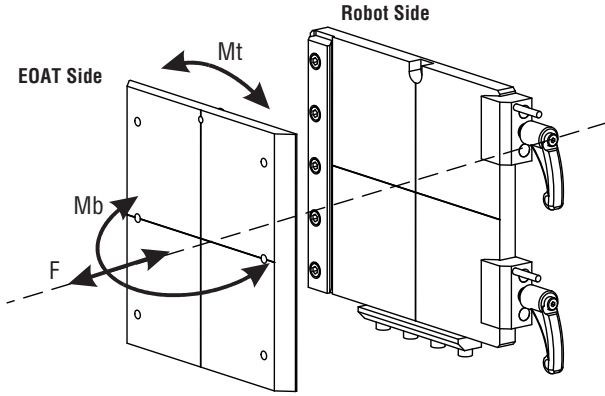
Quick#	Part#	Description	Price	Wt.
5777	MFI-A40	Robot Plate (only)	\$327.00	500g
5778	MFI-A130	Robot Plate with fittings	\$411.00	620g
5779	MFI-A133	Fittings bar	\$118.00	140g
5780	MFI-A135	Nipples for EOAT	\$10.34 (Quantity: 5)	17g
6081	MFI-A41-H	Storage Hanger	\$31.95	-

- Suggested payload: 22 lbs.



Dovetail Mounting Plate – EOAT Side – Size 1

(Dimensioned drawing reduced to fit)



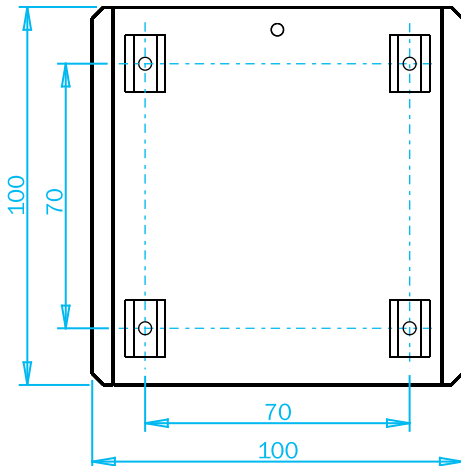
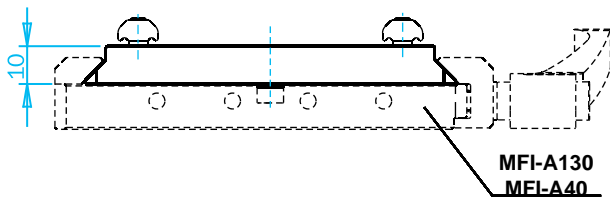
Specifications for Size 1 Dovetail Quick Changer	
Maximum Air Pressure	6 bar (87psi)
Safety Loads:	
F 45 lbf.	Mt 33.2 ft-lbs. Mb 22.1 ft-lbs.

F= Axial Load Limit Mt= Torque Moment Limit
Mb= Bending Moment Limit

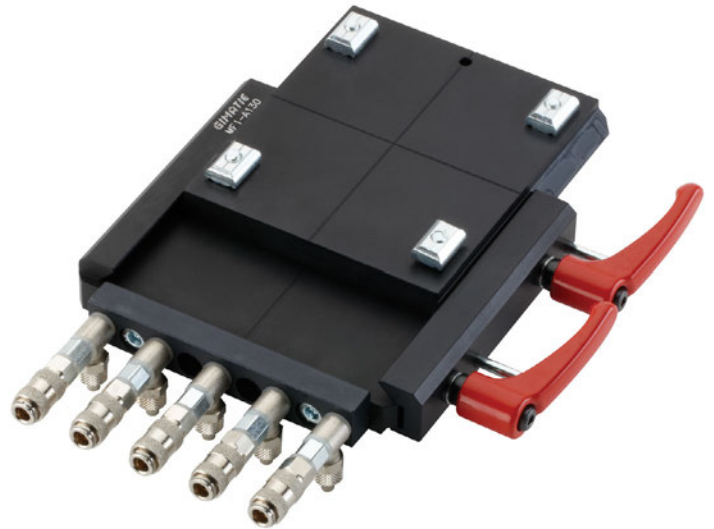


EOAT-Side, Size 1

Quick#	Part#	Price	Wt.
5781	MFI-A41	\$27.04	270g



Application Example



Dovetail Quick Changer – Robot Side – Size 0

(Dimensioned drawing shown full scale)

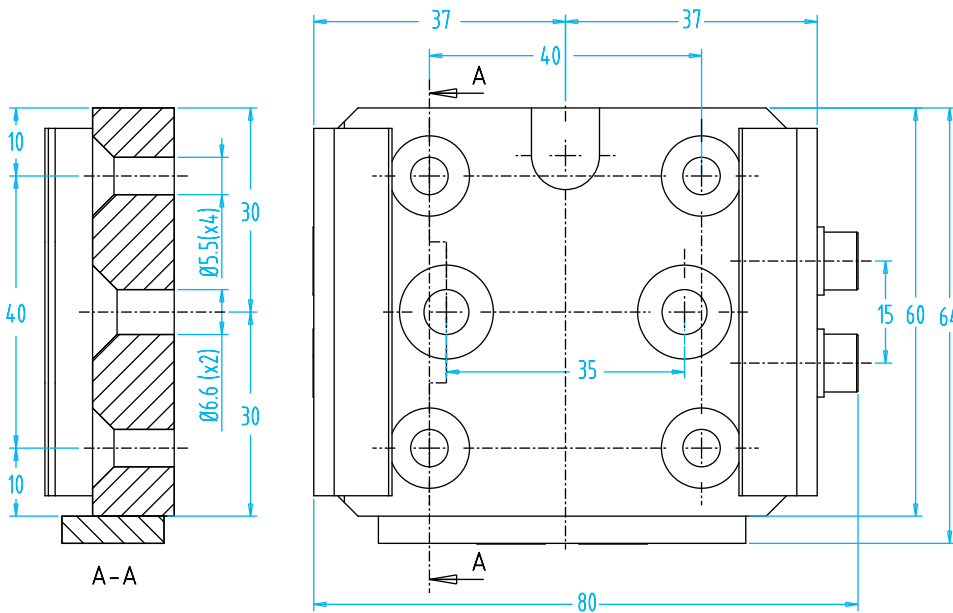
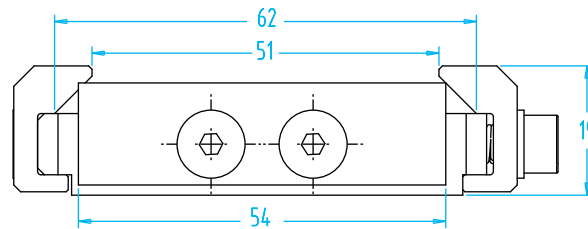


#6078
Size 0 Robot-Side
Quick Changer

Robot-Side, Size 0

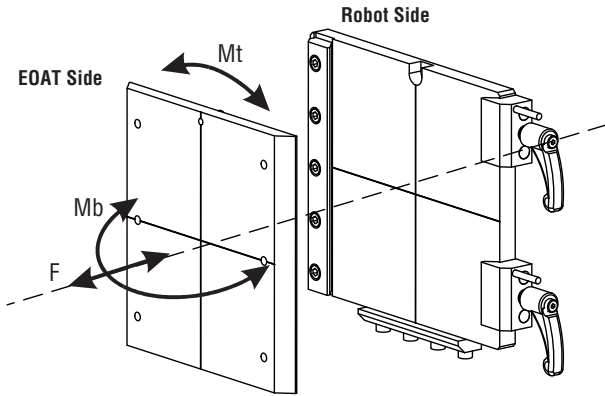
Quick#	Part#	Description	Price	Wt.
6078	MFI-A343E	Robot Plate (only)	\$181.00	165g
6080	MFI-A344-H	Storage Hanger	\$26.14	-

- Suggested payload: 6.6 lbs.



Dovetail Mounting Plate – EOAT Side – Size 0

(Dimensioned drawing shown full scale)

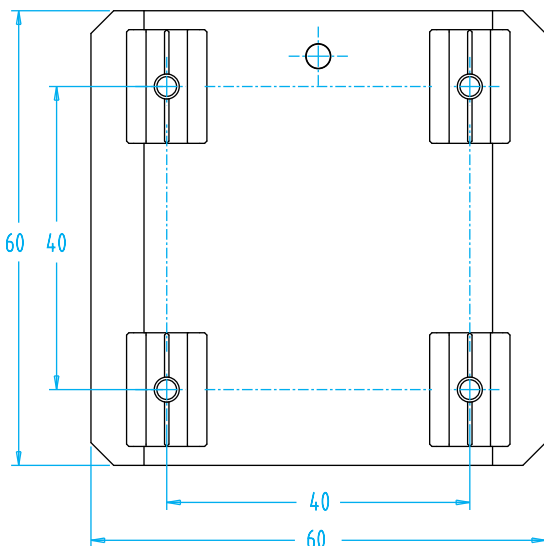
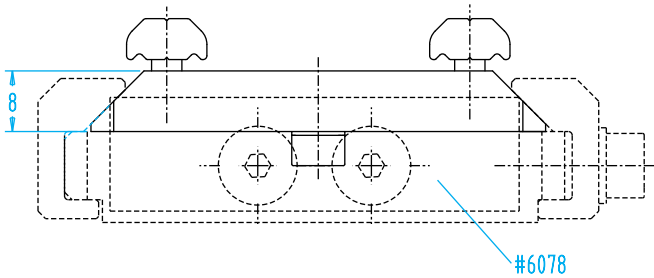


Specifications for Size 0 Dovetail Quick Changer	
Maximum Air Pressure	6 bar (87psi)
Safety Loads:	
F 13.5 lbf.	Mt 6.6 ft-lbs. Mb 4.4 ft-lbs.

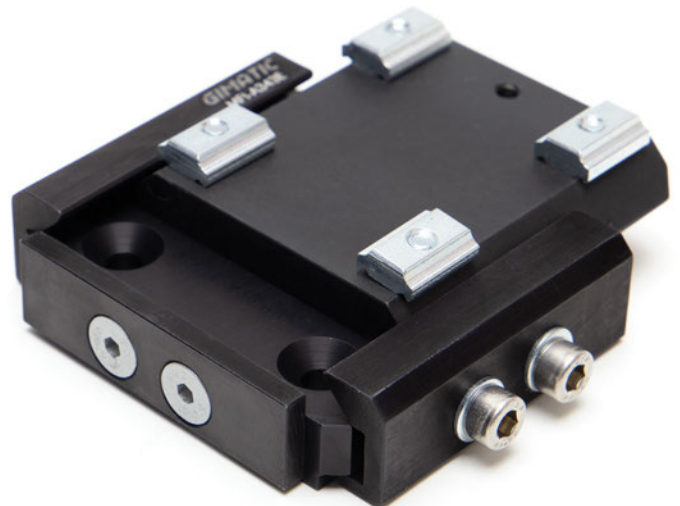
F= Axial Load Limit Mt= Torque Moment Limit
Mb= Bending Moment Limit

EOAT-Side, Size 0

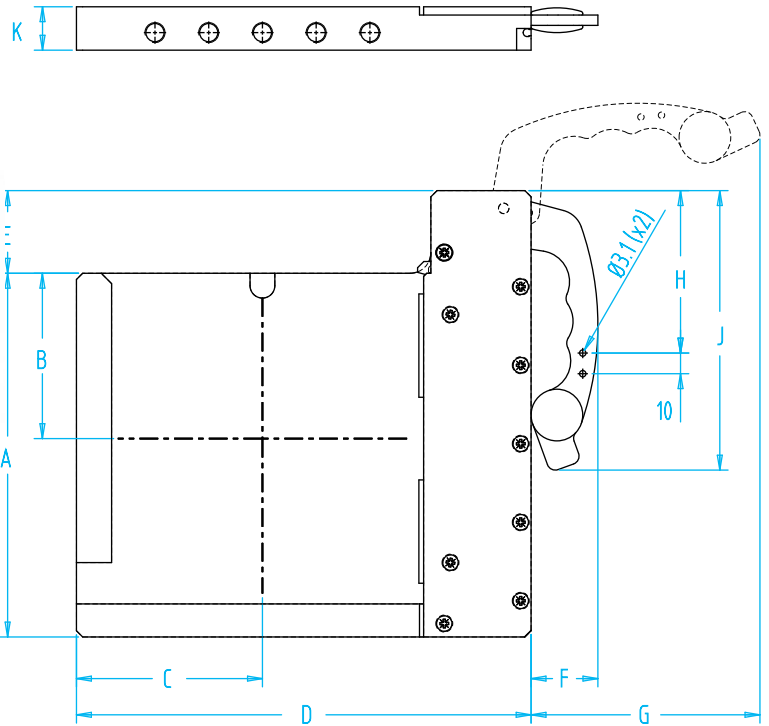
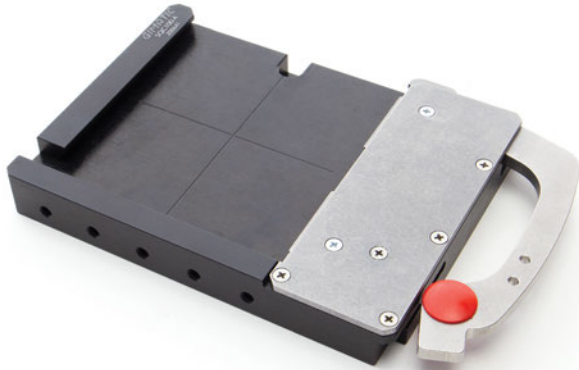
Quick#	Part#	Price	Wt.
6079	MFI-A344	\$19.76	65g



Application Example



Dovetail One-Handle Quick Changer – Robot Side



- Dovetail-type EOAT mounting plate with one handle for safer operation.
- Uses the same EOAT mounting plates, order separately.
- Optional Gimatic SS.. sensors detect closed position. See page 1002.
- See page 83 for storage hangers.

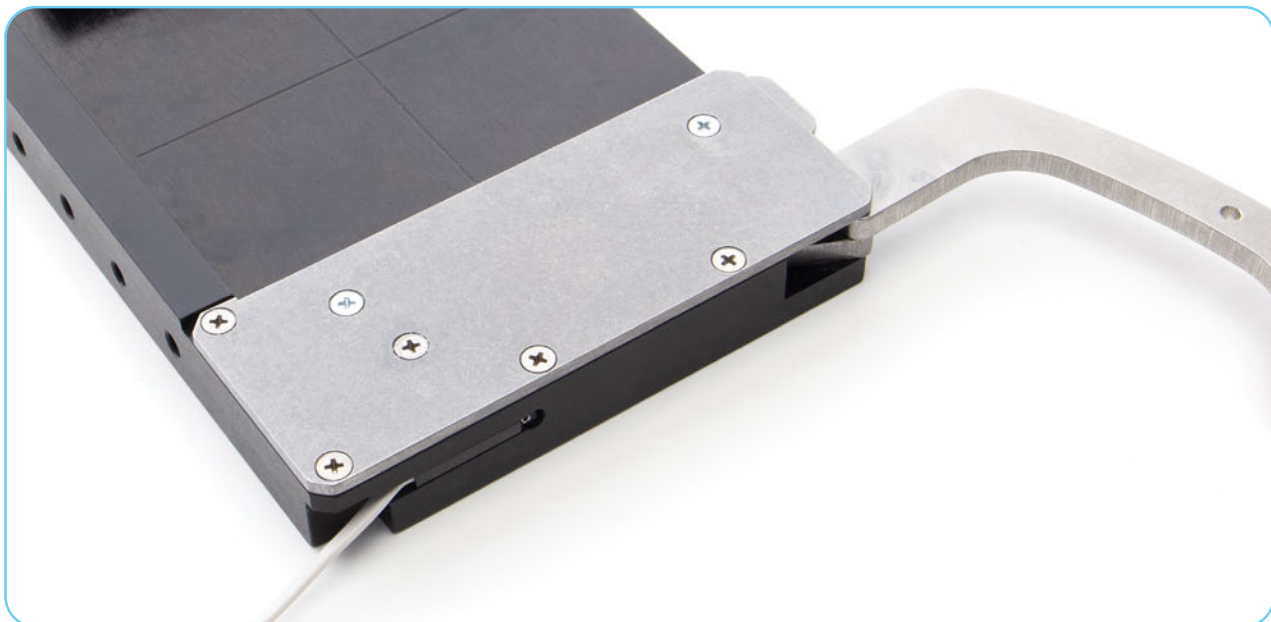
Dovetail Quick Changer with One Handle

NEW

Quick#	Part#	Mounting Plate (order separately)	Price	Wt.
7568	SQC100-A	Size 1 Q#5781 (MFI-A41)	\$484.00	770g
7569	SQC160-A	Size 2 Q#5776 (MFI-A43)	\$602.00	2050g
7570	SQC250-A	Size 3 Q#7529 (MFI-A363)	\$779.00	3720g

Quick#	A	B	C	D	E	F	G	H	J	K	F lbs	Mt ft-lbs	Mb ft-lbs	Payload lbs
7568	110	50	57	147	5.5	28	76.6	55.5	100	19	45	33.2	22.1	22
7569	176	80	90	220	40	32.3	110.8	78.6	135.3	21	89.9	88.5	59	44
7570	270	125	150	325	40	32.3	110.8	78.6	135.3	20	179.8	221.3	147.5	88

F= Axial Load Limit Mt= Torque Moment Limit Mb= Bending Moment Limit (See drawing on page 75.)



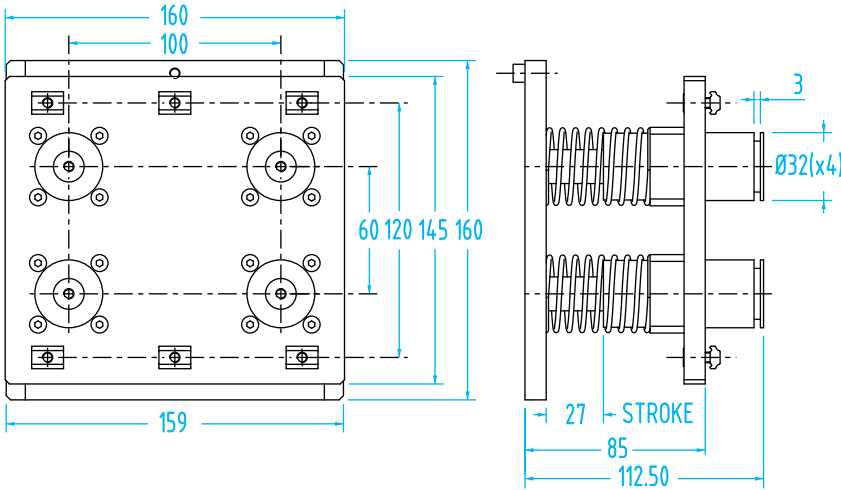
Dovetail EOAT Side Mounting Plates – with Springs

NEW

EOAT-Side with Hard Springs

Quick#	Part#	Price	Wt.
7648	SQM160-B	\$617.00	2634g

Note: Includes mounting hardware

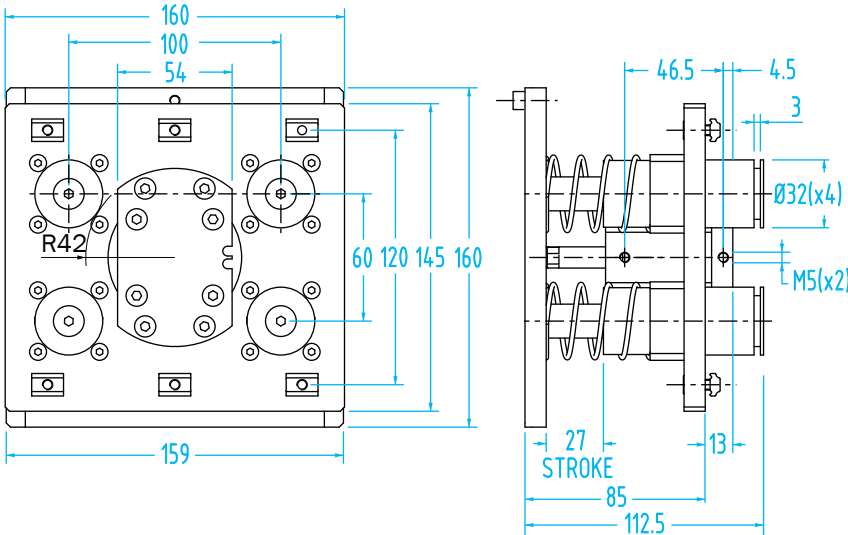


NEW

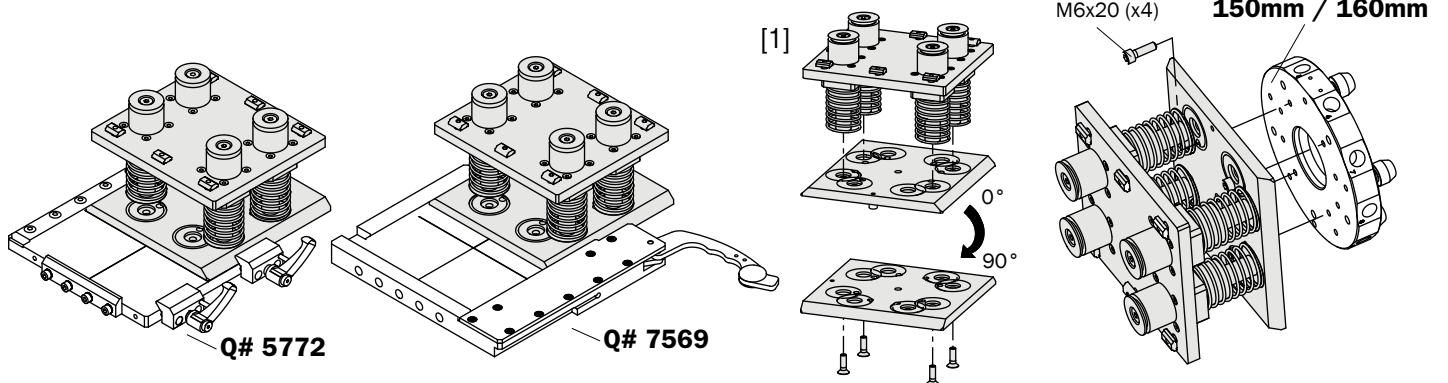
EOAT-Side with Soft Springs and Cylinder

Quick#	Part#	Price	Wt.
7649	SQP160-B	\$630.00	2898g

Note: Includes mounting hardware
See page 1002 for optional C-Slot sensors



- Easily add compliance to your EOAT with two different spring options.
- Gripper side SQM160-B with hard springs.
- Gripper side SQP160-B with soft springs and double-acting cylinder and is intended for locking in fully extended or compressed positions. Cylinder bore: 40mm with a force of 754N at 6bar.
- Plate can be rotated 90° [1].
- Compatible with Size 2 Dovetail QC's and, Large (150mm / 160mm) Round QC's.
- Payload: 44lbs (20kg); Mt: 120Nm; Mb: 80Nm.



How to Convert from Dovetail to Round Quick Changers

EMI's approach to converting and interchanging your robot from a Dovetail to Round Quick Changer.

Dovetail quick changers have a long legacy in the plastics industry and EMI continues to design, assemble and support End of Arm Toolings with this style of quick changers. As customers expand to more complex injection molding processes, more advanced features and functions may be required from tending robots and EOAT; That's where Round Style Quick Changers come into play.

This in-stock EMI solution can quickly retrofit your existing dovetail QC's to easily begin using round QC's without having to remove your existing Dovetail Robot Side Quick Changer! By doing so, this allows you to convert from Dovetail QC to Round QC's at your own pace!

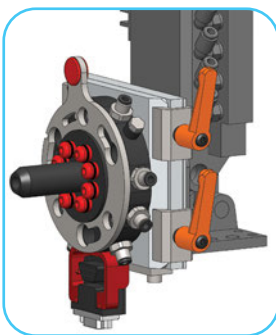
Here are some of the features that Round Style Quick Changers offer, and why EMI has developed this guide to seamlessly convert or interchange quick changers in your facility:

- **Safety:** Designated compressed air, vacuum, and electrical circuits ensure that actuators such as sprue grippers, nippers, cylinders and other circuits do not cross, increasing safety and protecting your equipment.
- **Standardization:** Consistent pneumatic and electrical connections across your plant. If your mold runs in the US, Canada or Mexico, Round Quick Changers enable EOAT consistency across your entire company.
- **Efficiency:** Downtime spent manually plumbing and wiring can be detrimental to your production. Round Quick Changers cut down installation time by offering up to 12 pneumatic and 30 electrical connections.

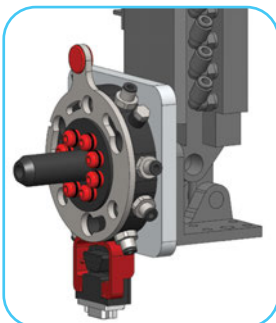


View our How-To Overview Video!
www.youtube.com/emiacorpvideo

EMI offers 2 options to implement Round Quick Changers in your plant:



- **Quick Changer Transition at your own pace**
 - Keep your Dovetail QC while adding a Round QC.
 - Existing Dovetail EOAT can still be used.
 - Newer EOAT with Round Quick Changers can also be used.
 - EMI offers all the components needed for a seamless transition.
 - Although this is mechanically sound, this should be considered as an intermediate step in an overall process towards a full quick changer conversion (below).

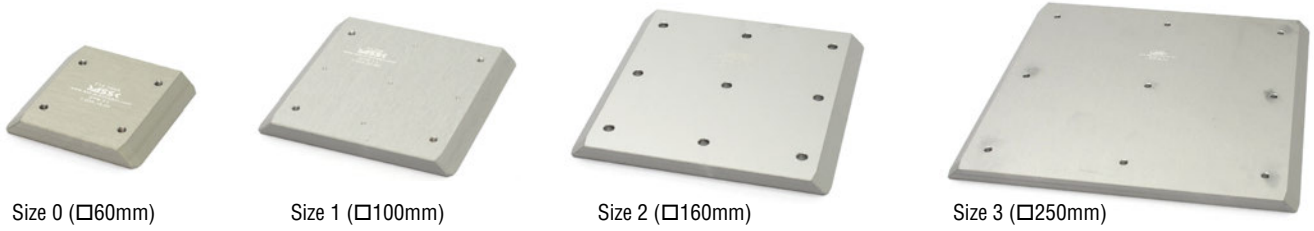


- **Full Quick Changer Conversion**
 - EMI will work with you to design the right adapter plate to fit your robot.
 - Remove existing Dovetail Quick Changer from EOAT and Robot.
 - Use in-stock adaptor plates to install your Round Quick Changer on both sides.
 - EMI recommends this permanent configuration when fully converting to round quick changers.

Whether your plant uses Dovetail or Round Quick Changers, EMI is here to support all your EOAT needs!

How to Convert from Dovetail to Round Quick Changers

STEP 1 WHAT SIZE IS YOUR CURRENT DOVETAIL QC?



STEP 2 CHOOSE THE COMPATIBLE ROUND QC

Choose the corresponding Senvex / WGS, Gimatic or >ASS< Round Quick Changers. Electrical connectors and other accessories are sold separately.

Advanced Tip: Always consider payload when sizing a Quick Changer. Contact EMI if you have any questions about QC specs.

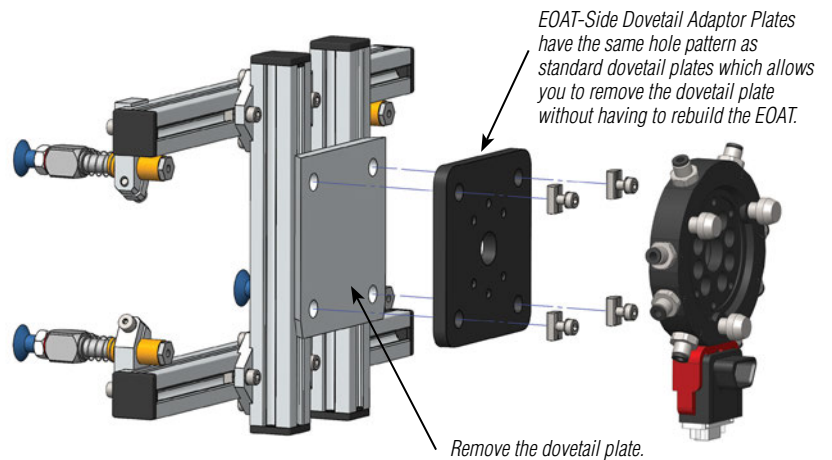


STEP 3 SELECT THE EOAT-SIDE ADAPTOR TO REPLACE THE DOVETAIL QC

This adaptor will be the same size as your existing dovetail quick changer.

Simply remove the existing Dovetail plate and replace it with the adaptor.

Swap your EOAT-side QC with the corresponding size adaptor and use the existing hardware.

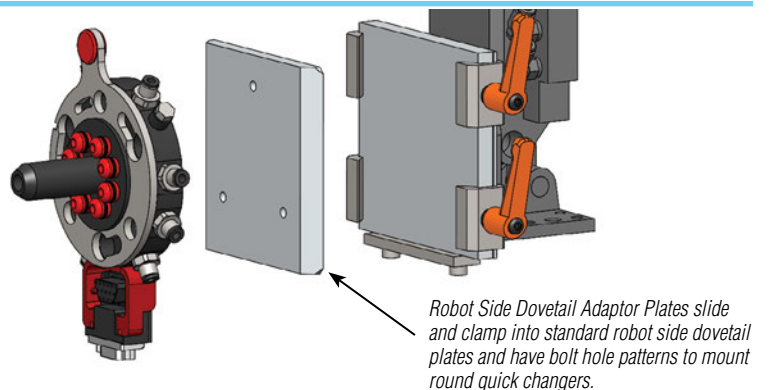


STEP 4 SELECT THE ROBOT-SIDE ADAPTOR

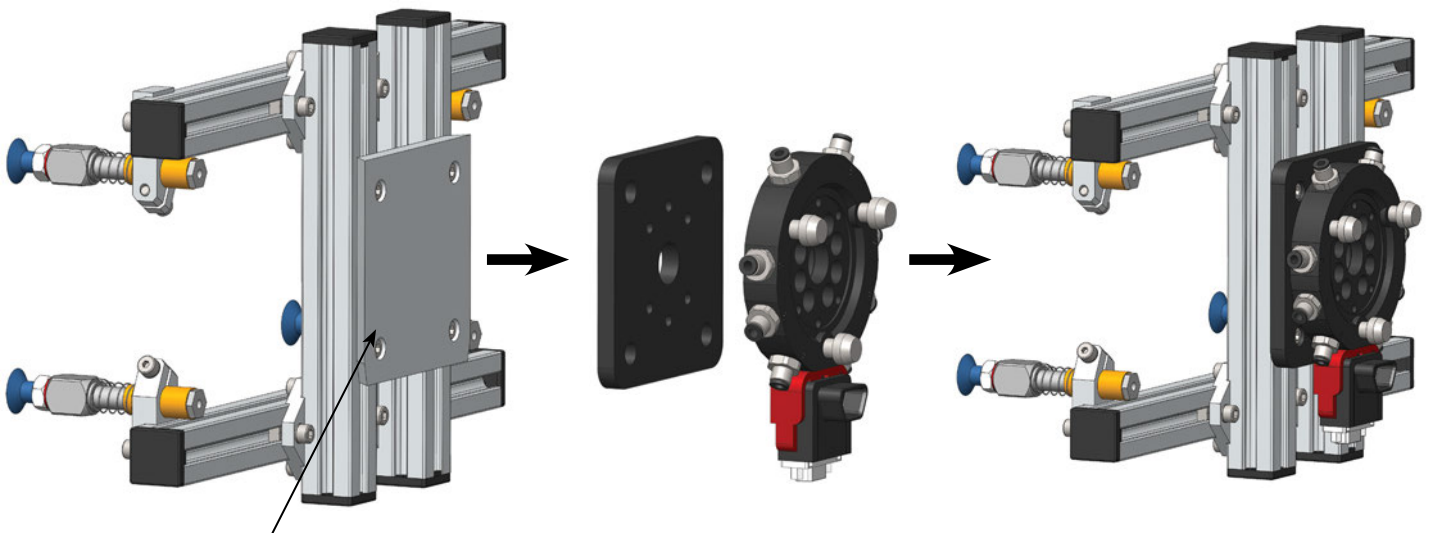
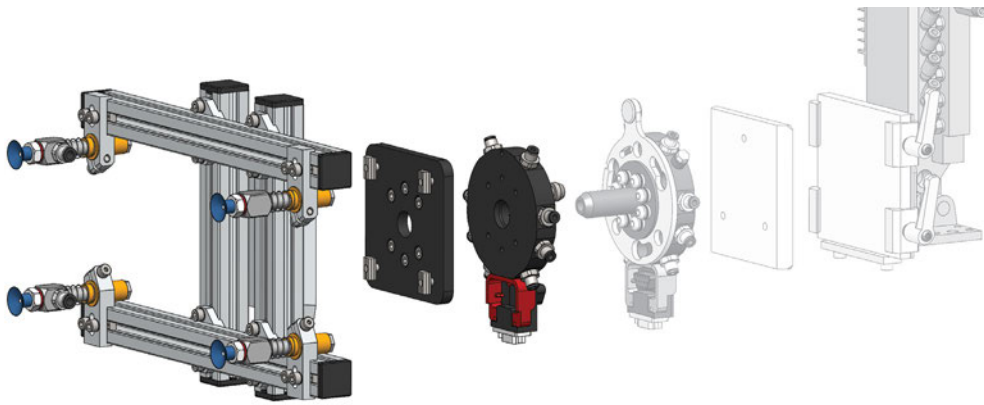
Lastly, select the matching size adapter plate for your robot-side QC and install the Round QC to it. This plate will look like your existing dovetail.

Your robot is now ready for Dovetail or Round QC EOAT!

Contact EMI if you want to attach the Round QC directly to your robot.



EOAT-Side Adaptor Plates



Remove the existing Dovetail plate and replace it with the new adaptor.

Advanced Tip: You may want to scribe the edges of your existing QC to make sure the new plate is properly aligned.

Install new EOAT-Side Adaptor Plate and Round Quick Changer.

EMI's Adaptor Plates have the same hole patterns as standard dovetail plates which allows you to remove the dovetail plate without having to rebuild the EOAT. Unbolt the standard dovetail plate and replace it with EMI's EOAT-Side Adaptor Plate and a round quick changer.

Your EOAT is ready for use!

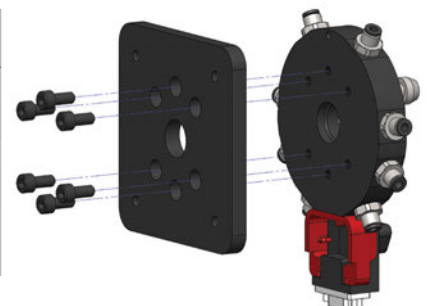
See Round QC pages for payload information.

NEW

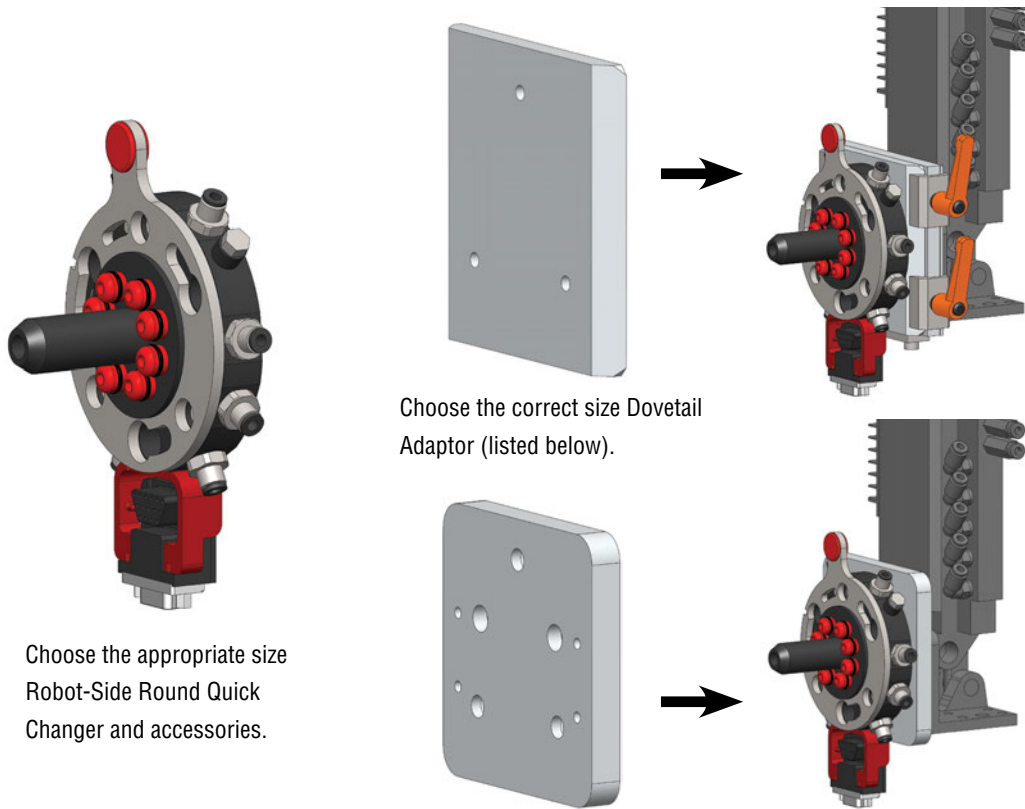
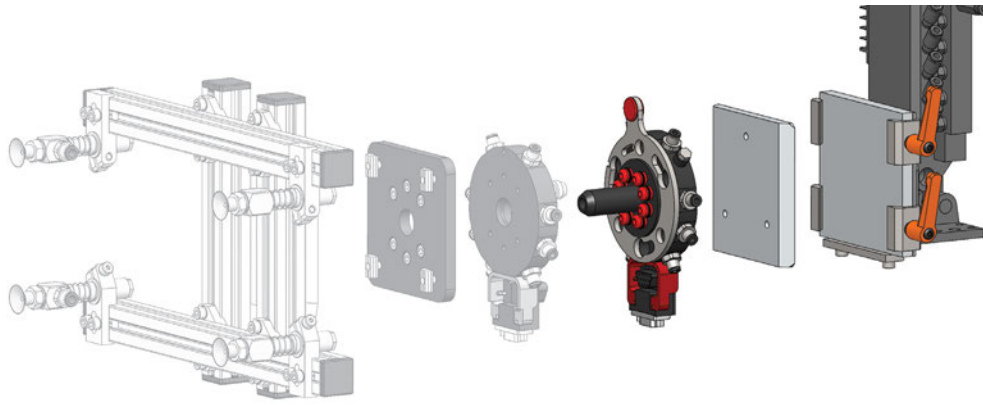
Dovetail Adaptor – EOAT-Side

Quick#	Part#	Price	Wt.	Dovetail Size	Round QC Options	Hardware
2451	GSC-DCP-0	\$22.50	48.5g	Size 0 (□60mm)	QC 50	4x Q# 827 and Q# 817
2452	GSC-DCP-1	\$23.50	194.4g	Size 1 (□100mm)	QC 90	6x Q# 865 and Q# 853
2453	GSC-DCP-2	\$43.50	512.3g	Size 2 (□160mm)	QC 90	6x Q# 865 and Q# 854
					QC 150	6x Q# 880 and Q# 876
2454	GSC-DCP-3	\$70.00	1548.8g	Size 3 (□250mm)	QC 150	6x Q# 880 and Q# 878
					QC 200	6x GSC-FSH-8x25

Note: Hardware can be found on page 1076.



Robot-Side Adaptor Plates



Choose the correct size Dovetail Adaptor (listed below).

Choose the appropriate size Robot-Side Round Quick Changer and accessories.

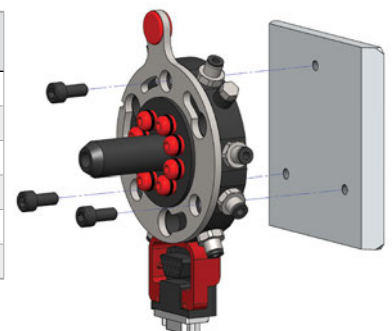
Or if you would like a custom designed plate contact us for assistance.

NEW

Dovetail Adaptor – Robot-Side

Quick#	Part#	Price	Wt.	Dovetail Size	Round QC Options	Hardware
2455	GSC-DQCAP-0	\$25.00	66.2g	Size 0 (□60mm)	QC 50	4x Q# 827 and Q# 817
2456	GSC-DQCAP-1	\$30.00	197.4g	Size 1 (□100mm)	QC 90	3x Q# 880 and Q# 873
2457	GSC-DQCAP-2	\$60.00	641.1g	Size 2 (□160mm)	QC 90	3x Q# 880 and Q# 873
					QC 150	5x Q# 894 and Q# 890
2458	GSC-DQCAP-3	\$100.00	1916.9g	Size 3 (□250mm)	QC 150	5x Q# 894 and Q# 890
					QC 200	6x Q# 894 and Q# 892

Note: Hardware can be found on page 1076.



EOAT Handle

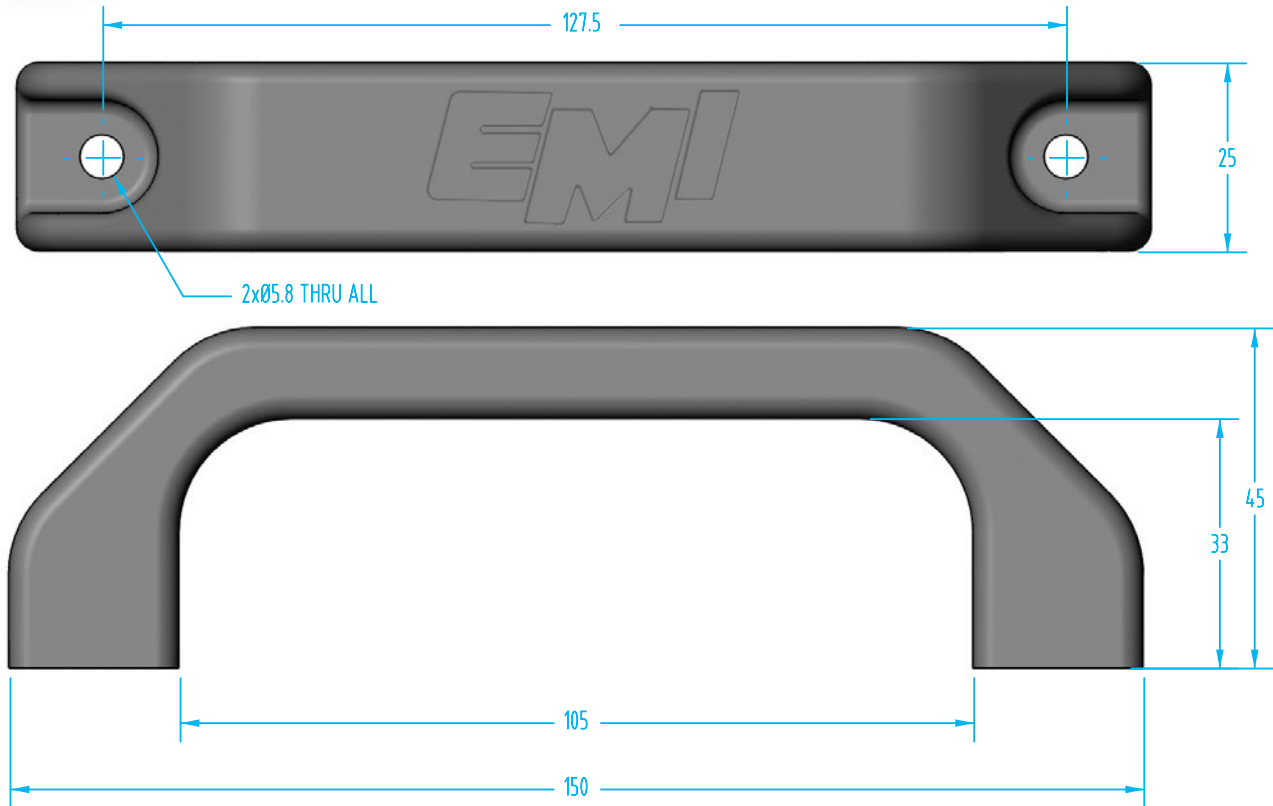
(Dimensioned drawing shown full scale)



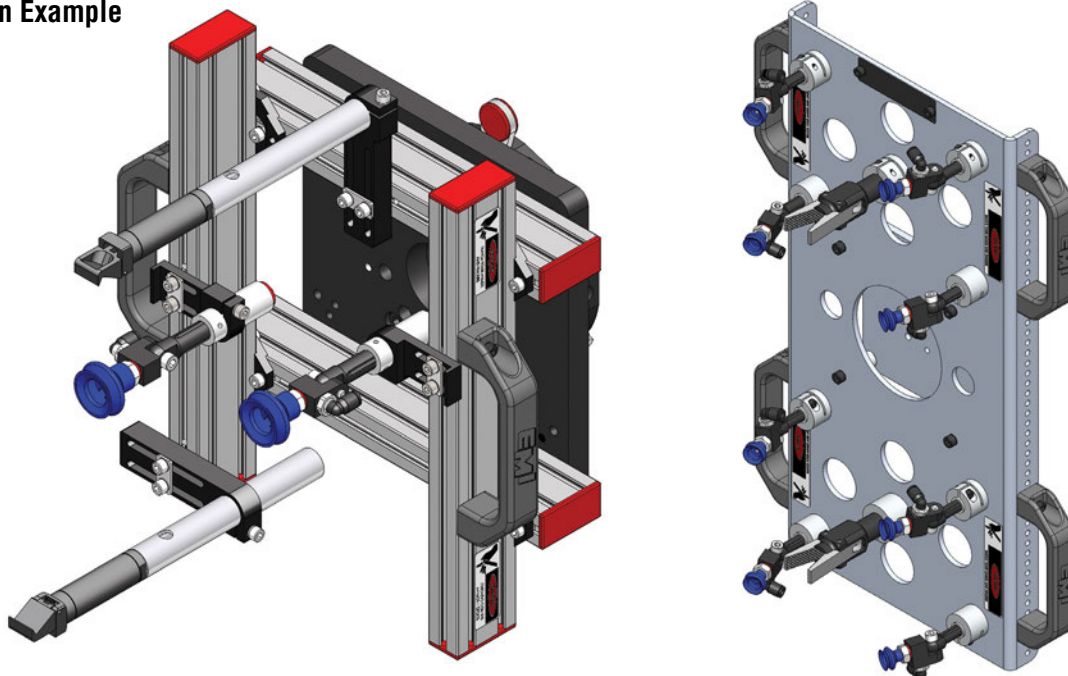
EOAT Handle

Quick#	Part#	Price	Wt.
700	EOAT-HANDLE	\$14.00	70g

Note: Includes hardware.



Application Example

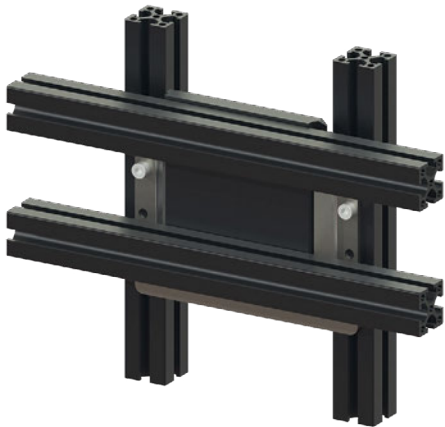
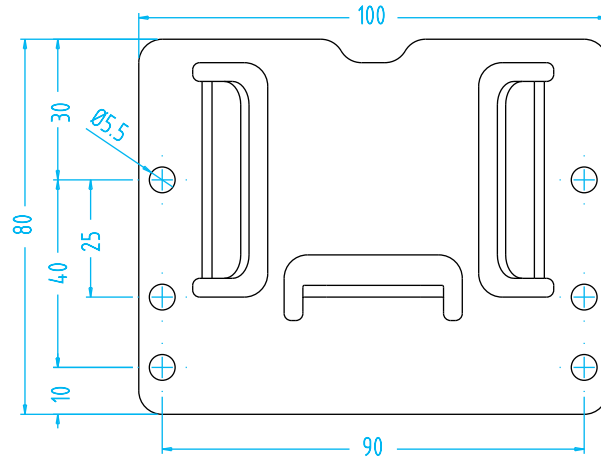


Storage Hangers for Gimatic Dovetail Quick Changers

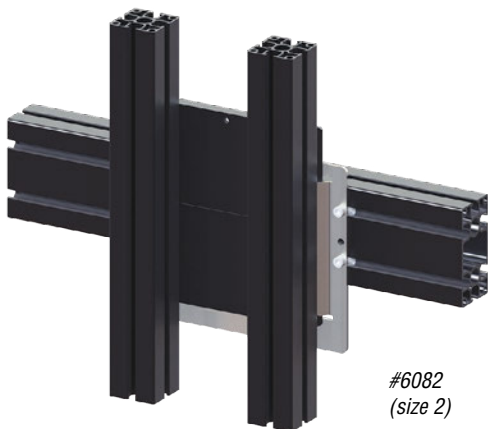
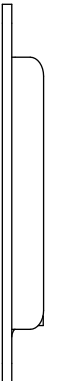
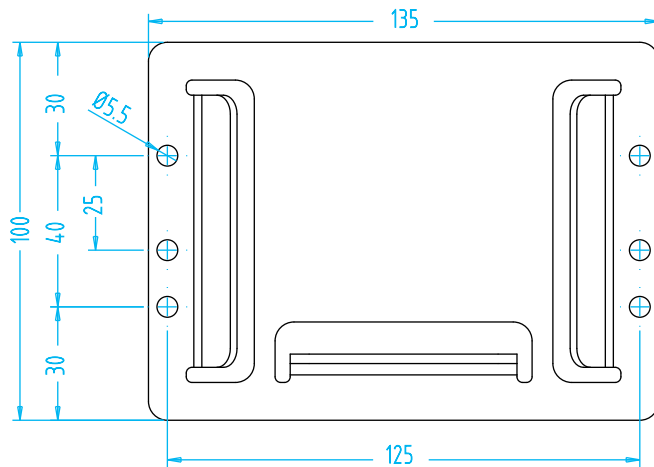
(Dimensioned drawings reduced to fit)



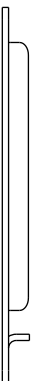
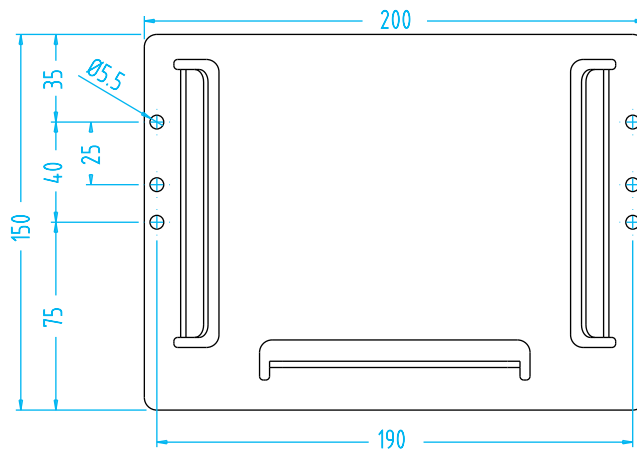
#6080
(size 0)



#6081
(size 1)



#6082
(size 2)



Dovetail Storage Hanger (For wall mounting and storage of EOATs)

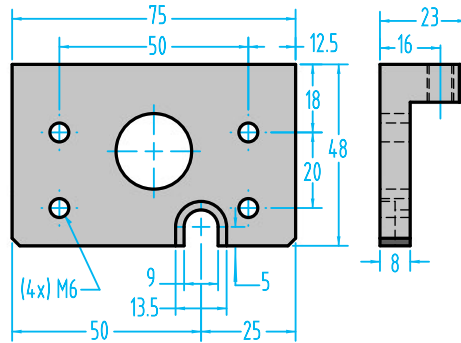
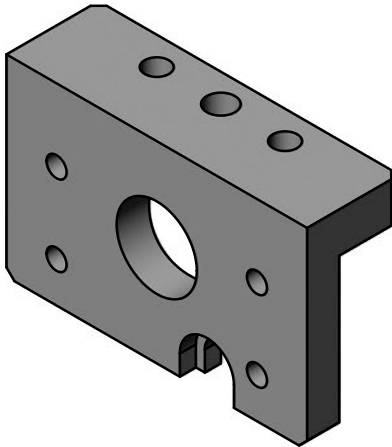
Quick#	Part#	Price	Use With
6080	MFI-A344-H	\$26.14	Size 0 Gimatic MFI-A344 (60 x 60mm)
6081	MFI-A41-H	\$31.95	Size 1 Gimatic MFI-A41 (98 x 100mm)
6082	MFI-A43-H	\$43.55	Size 2 Gimatic MFI-A43 & (158 x 160mm)

Use Quick#s for easy online ordering.

Star® EOAT-Side Quick Changers

(Dimensioned drawing shown half scale)

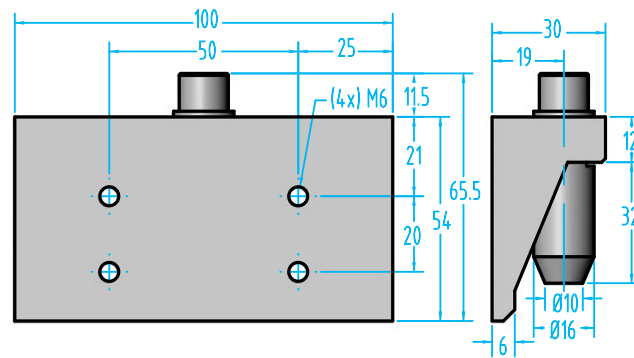
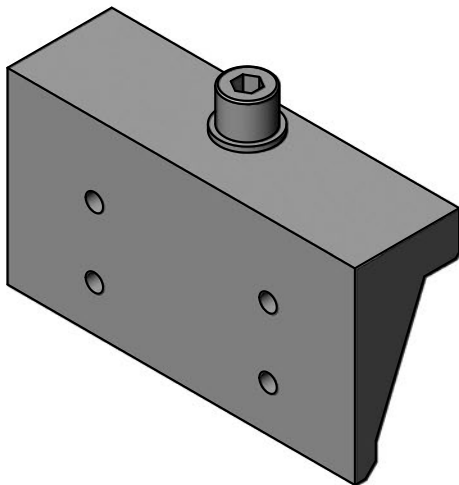
#2072, Small size



EOAT-Side Star Manual Quick Changer (Aluminum)

Quick#	Part#	Payload Capacity	Price	Wt.
2072	GSQ-OA-SSI	22lbs	\$67.70	97g

#5627, Medium size



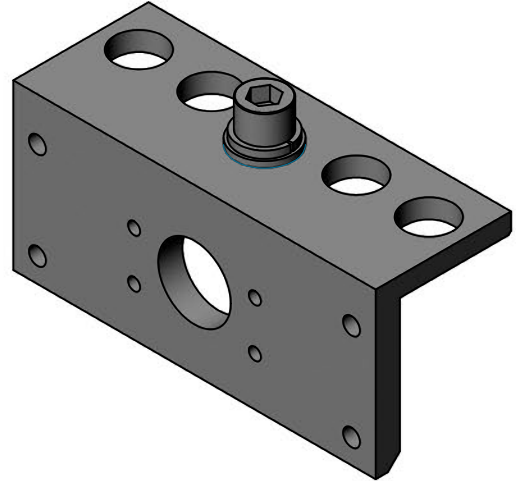
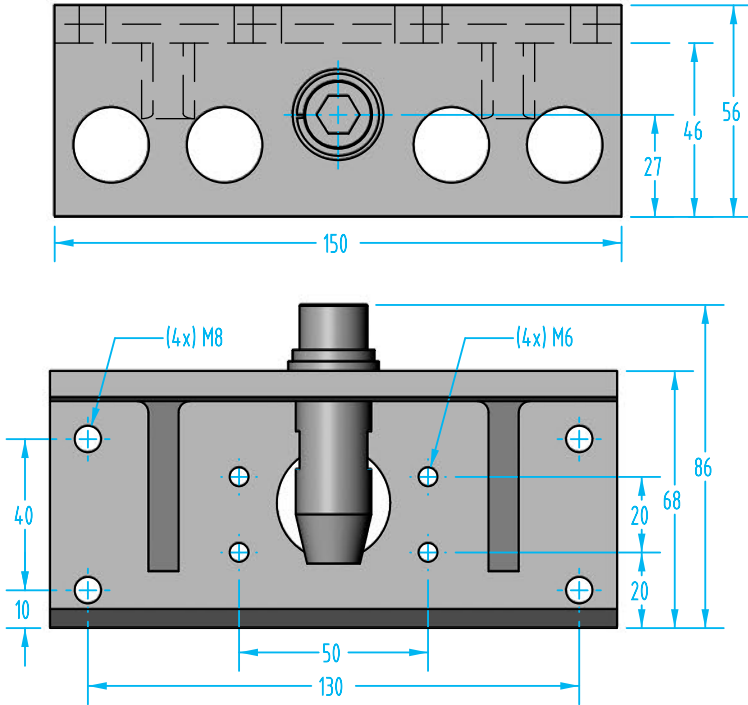
EOAT-Side Star Manual Quick Changer (Aluminum)

Quick#	Part#	Payload Capacity	Price	Wt.
5627	GSQ-OAI-SAI	33lbs	\$100.39	229g

Star EOAT-Side Quick Changers

#2073, Large size

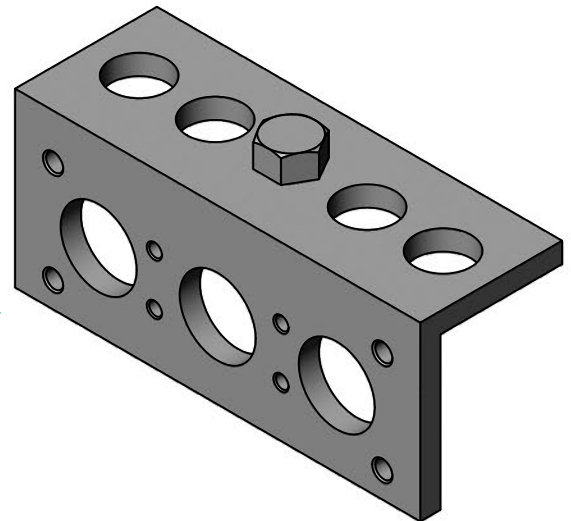
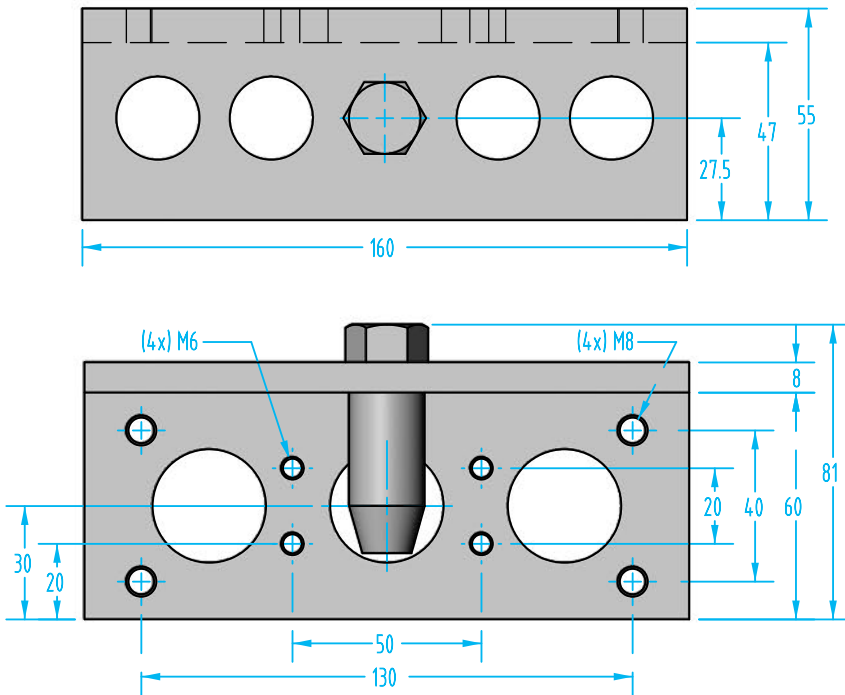
(Dimensioned drawing shown half scale)



EOAT-Side Star Manual Quick Changer (Aluminum)

Quick#	Part#	Payload Capacity	Price	Wt.
2073	GSQ-OA-LAI	77lbs	\$188.39	471g

#2074, Large size



EOAT-Side Star Manual Quick Changer (Steel)

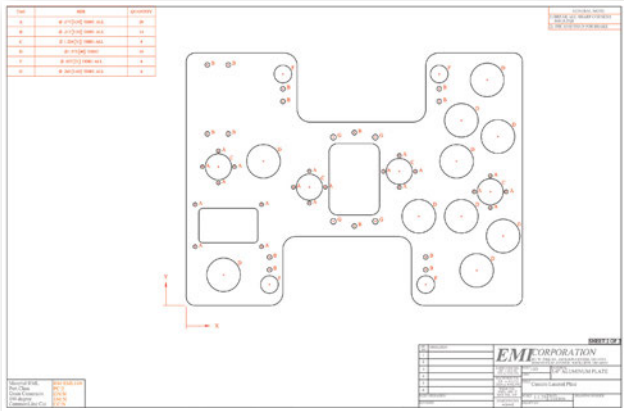
Quick#	Part#	Payload Capacity	Price	Wt.
2074	GSQ-OC-LAII	77lbs	\$187.89	1000g

Custom Made EOAT Plates

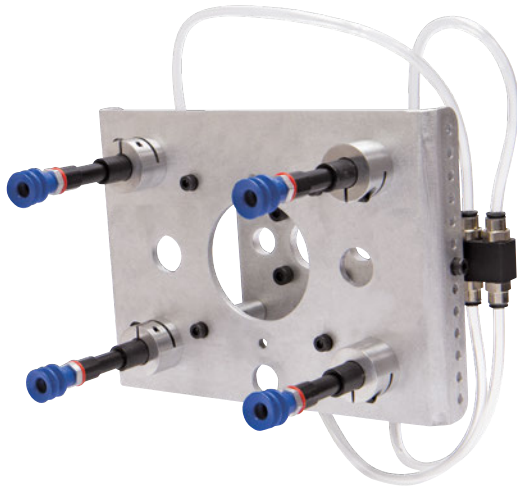
EMI has laser-cutting machinery in our own manufacturing plant that allows us to make plate-based EOAT fast, accurate, and at a low cost.

Typical plate-based EOAT is laser cut from 1/8", 3/16", or 1/4" aluminum or 12-gauge stainless steel—standard materials in our inventory. Shown on the following pages of examples, excess weight is removed by material cutouts. Thinner, lighter material can be strengthened by incorporating reinforcing bends.

Call our EOAT engineering department to discuss custom EOAT plates for your application.



Considering Plate-Based EOAT



Profile-based EOAT is great for some applications, but sometimes a lower cost, lighter weight, and easier to assemble option can be used. To suit these needs, EMI also offers plate-based EOAT.

	Plate-Based EOAT	Profile-Based EOAT
Cost	Lower Cost	Higher Cost
Weight	Lighter	Heavier
Adjustability	Limited	Easy
Opinion A	I don't want to be locked into a fixed design. I want the option to tweak and adjust the EOAT easily. I want a profile-based EOAT.	
Opinion B	The EOAT is designed well and it works. I don't want anyone making "adjustments" and potentially causing damage. I want a plate-based EOAT.	
Common Applications		
Flat parts	★★★★★	★★★
High number of cavities	★★★★★	★★
Deep-core parts	★★	★★★★★
Small parts	★★★★★	★★★
Large parts	★★	★★★★★
Insert loading EOAT	★★★	★★★
High-speed molding	★★★★	★★
EOAT for sprue pickers	★★★★★	★★
Degating	★	★★★★★

EMI's 3D Printing option allows for internal porting, built-in clamps and pressed inserts help keep it a lightweight, low-cost solution. See page 108 to compare 3D printing to Laser-cut plate.

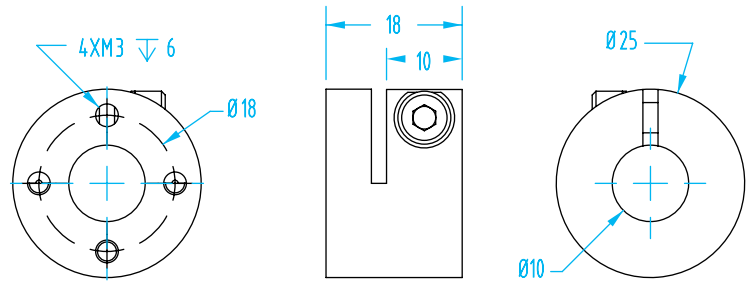
Clamps for Plate EOAT

(Dimensioned drawing shown full scale)

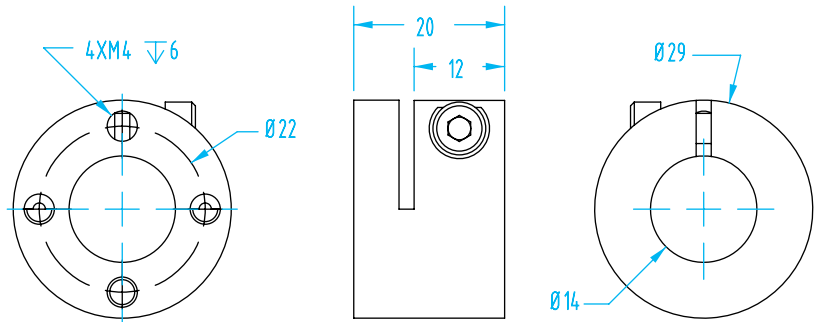


#5878

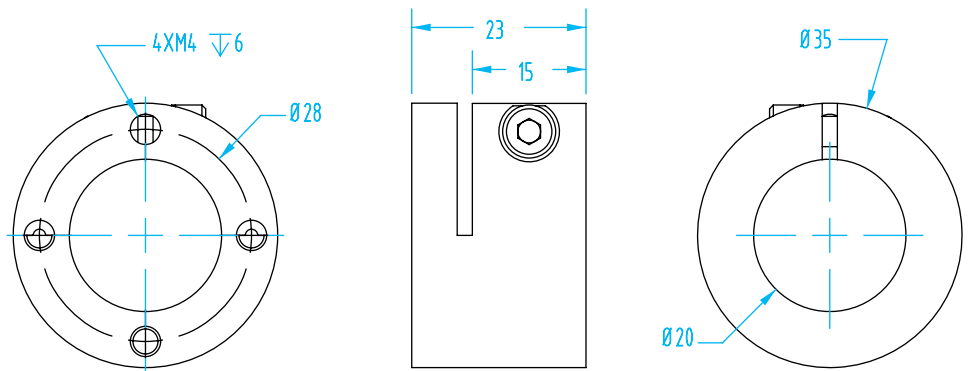
Ø10mm #5878



Ø14mm #5879



Ø20mm #5880



Ø30mm #5881

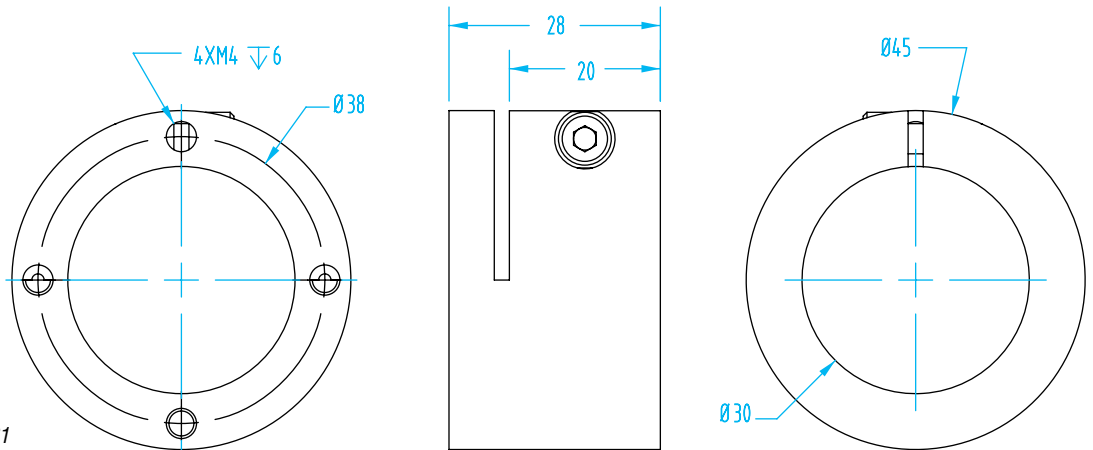


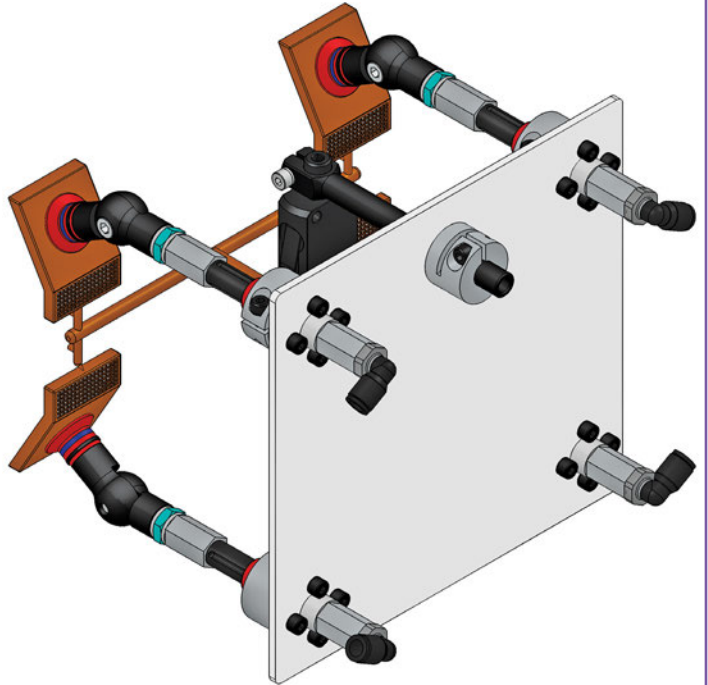
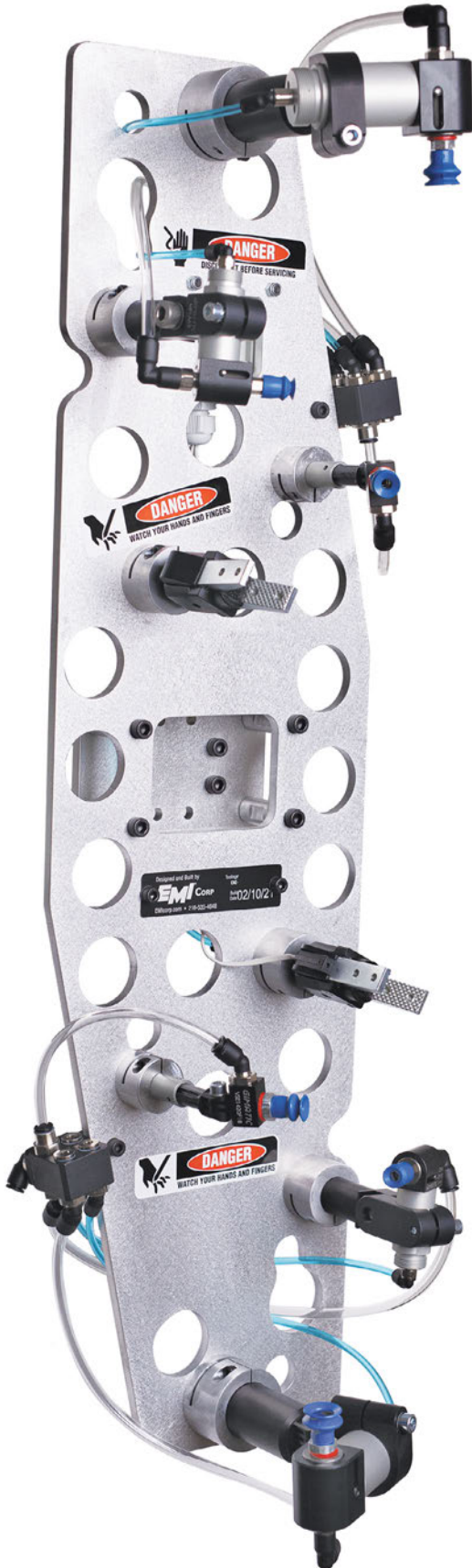
Plate Clamp Bracket

Quick#	Part#	Description	Price	Wt.
5878	PCB-10	Aluminum Plate Clamp Bracket 10mm	\$22.50	19g
5879	PCB-14	Aluminum Plate Clamp Bracket 14mm	\$24.00	26g
5880	PCB-20	Aluminum Plate Clamp Bracket 20mm	\$25.50	37g
5881	PCB-30	Aluminum Plate Clamp Bracket 30mm	\$29.00	63g

When ordering, use Quick#s to ensure order accuracy.

Clamps for Plate EOAT

Application Example



Clamps can be used on both front and back of plate.

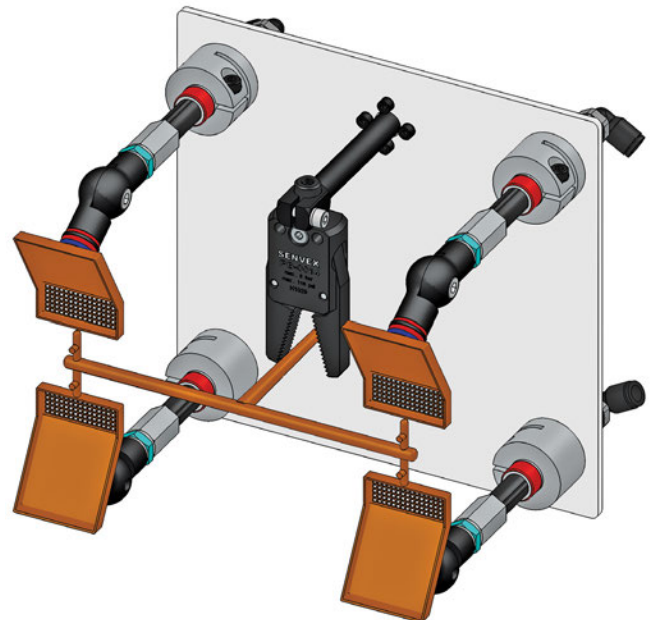
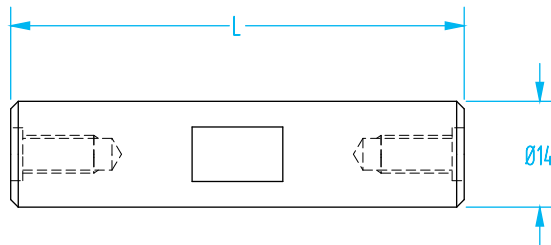
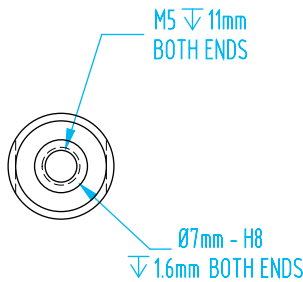
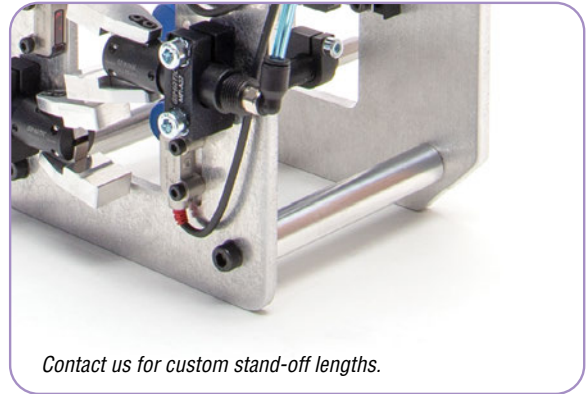
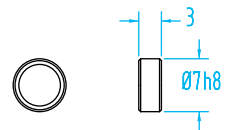


Plate Stand-Off

- Precision stand-offs mount with M5 bolts and optional centering sleeves.
- Centering sleeves should be used when a tighter tolerance is required. For instance, in insert loading applications and degate operations.
- Can be used without centering sleeves.



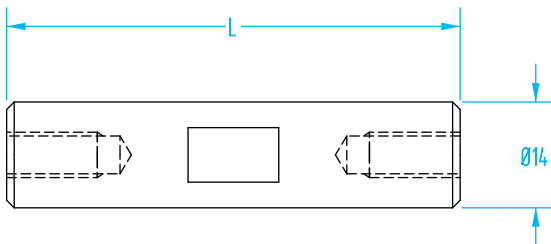
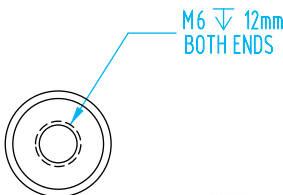
Centering Sleeve #6075



Precision Stand Off

Quick#	Part#	Description	Length	Price	Wt.
582	GSS-14P-30	With M5 Tap & Ø7mm H8 C'bore	30mm	\$12.42	10g
589	GSS-14P-45		45mm	\$14.12	17g
590	GSS-14P-60		60mm	\$15.72	23g
591	GSS-14P-75		75mm	\$17.30	29g
Centering Sleeve - Sold Individually					
6075	ZBH-7	Ø7mm-h8		\$1.56	1g

- Standard stand-offs require M6 bolts and do not accept centering sleeves.
- Ø14mm clampable OD.



Standard Stand Off

Quick#	Part#	Description	Length	Price	Wt.
5968	GSS-14-30	With M6 Tap	30mm	\$7.80	10g
5969	GSS-14-60		60mm	\$8.70	23g
5970	GSS-14-90		90mm	\$9.84	35g

Plate Stand-Off

Application Example

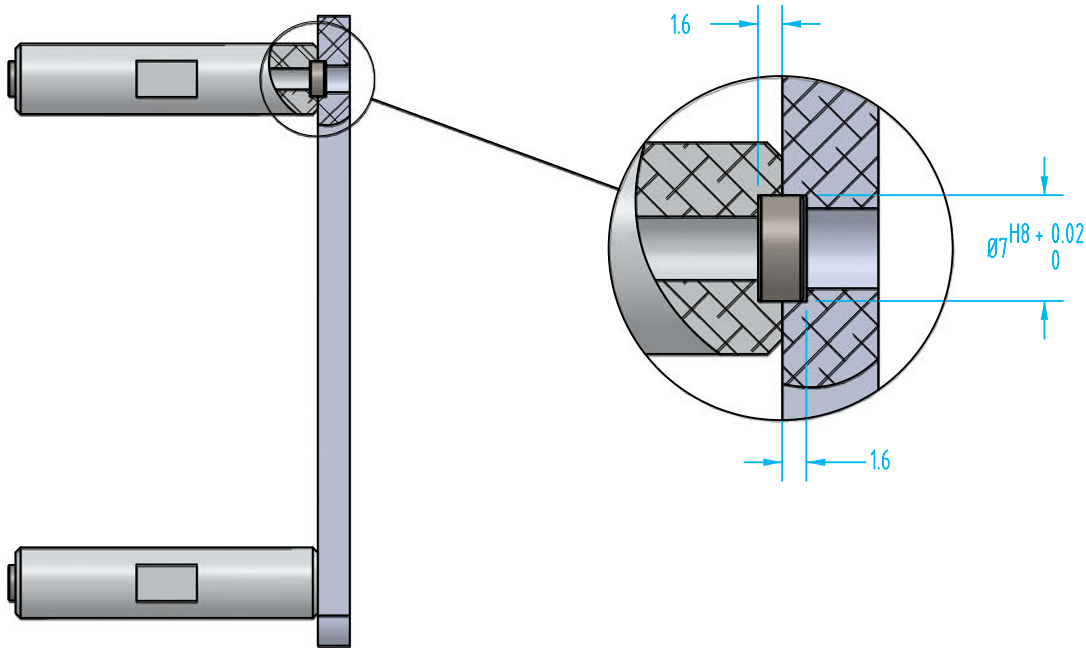
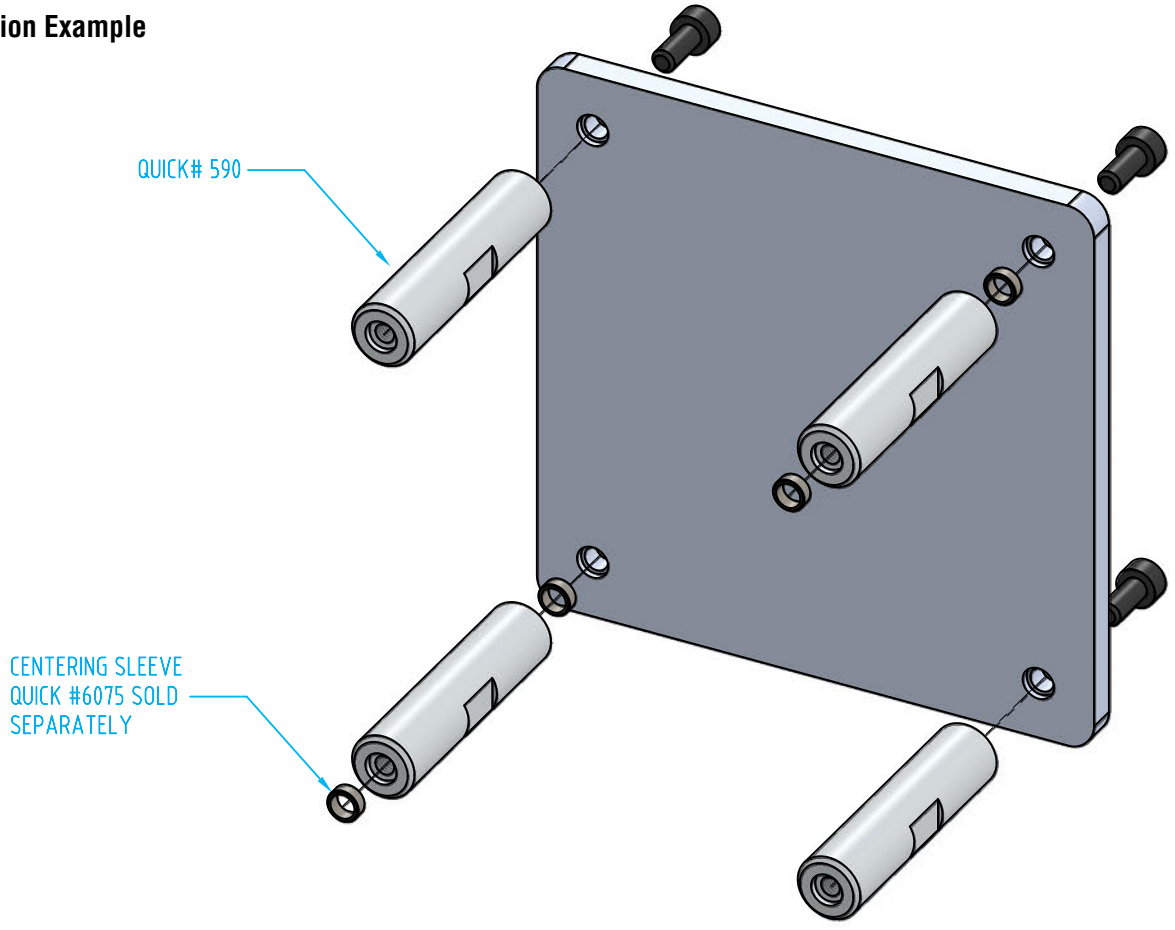


Plate-Based EOAT Examples

Custom Length Stand-Off's

We have a number of standard length plate stand-off's on page 90. Contact us if you require a custom length like those used on the EOAT shown here.

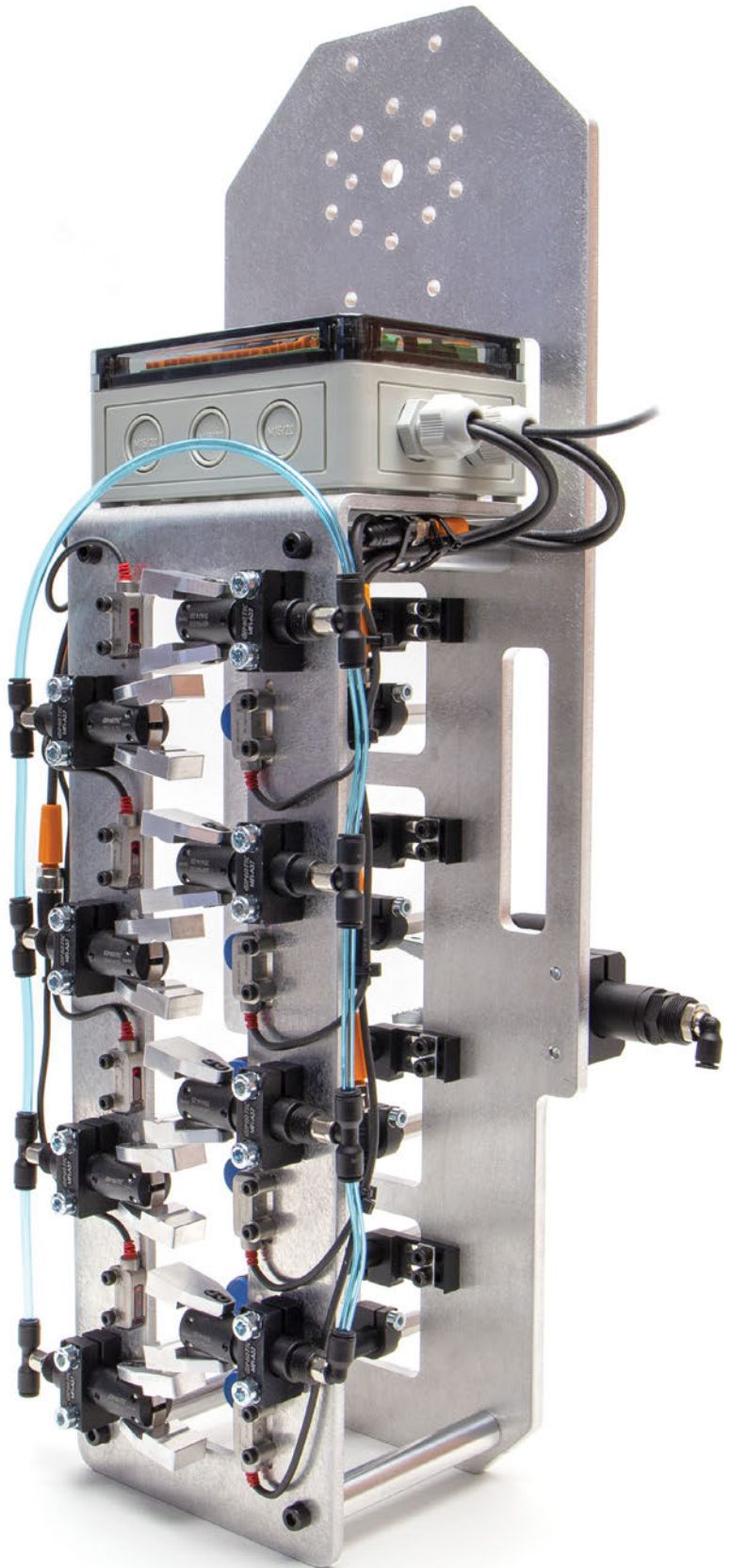
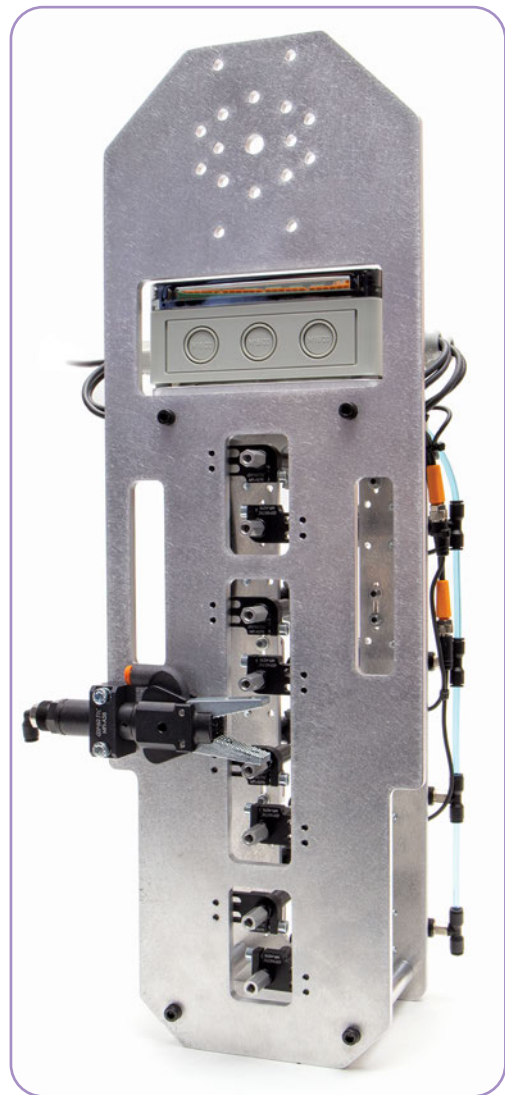


Plate-Based EOAT Examples

EOAT Frame with Suspensions

Smooth body suspensions can be mounted to plate EOAT with the clamps shown on page 88. Opposed to the fixed base on the previous page, these rotating suspensions can absorb full part ejection.

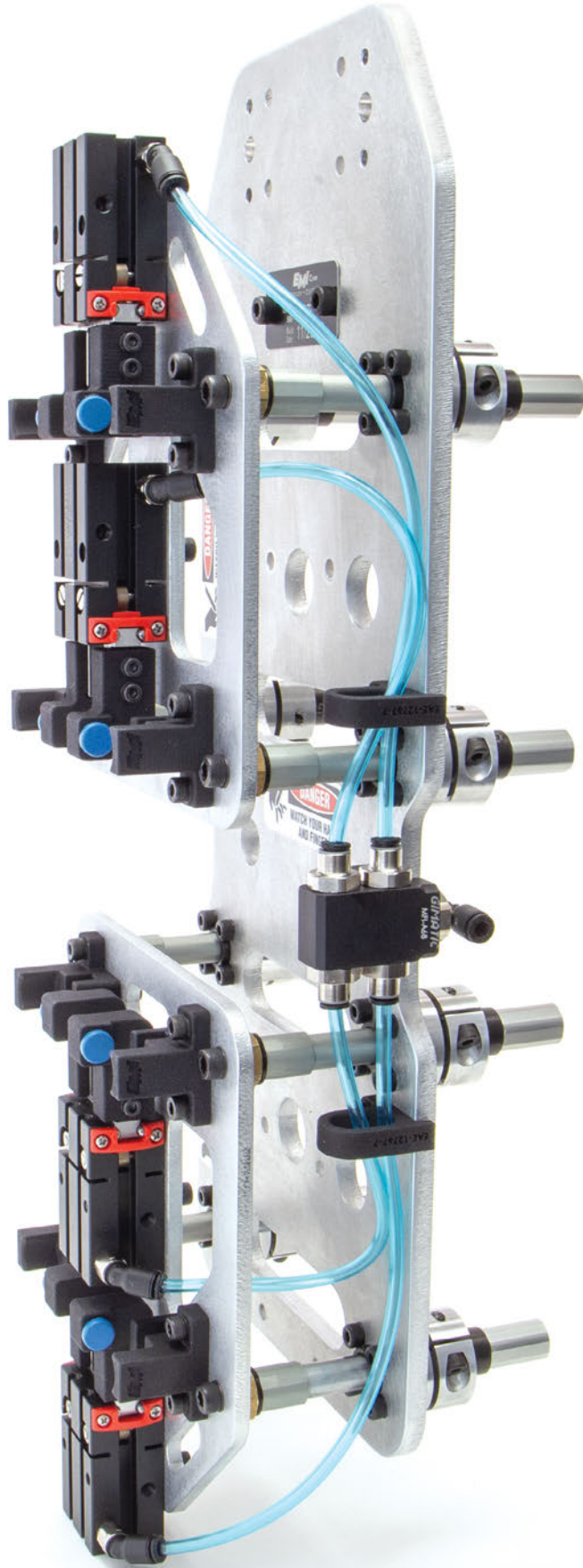


Plate-Based EOAT Examples



Find a Perfect Lightweight and Cost Effective Solution

EMI's in-house laser cutting and 3D printing service allows us to provide considerable time and cost savings without sacrificing quality.

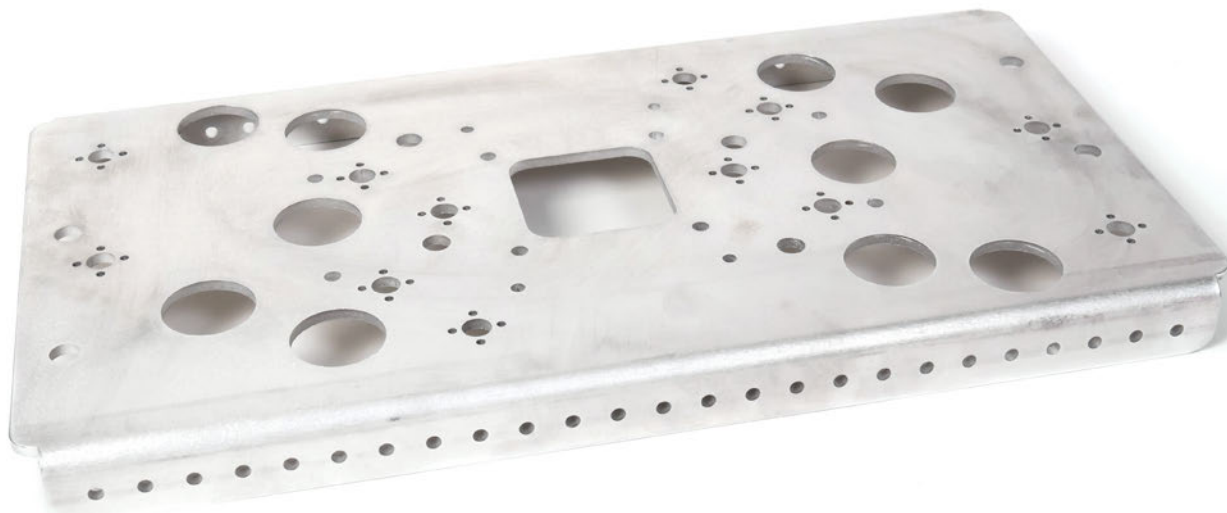
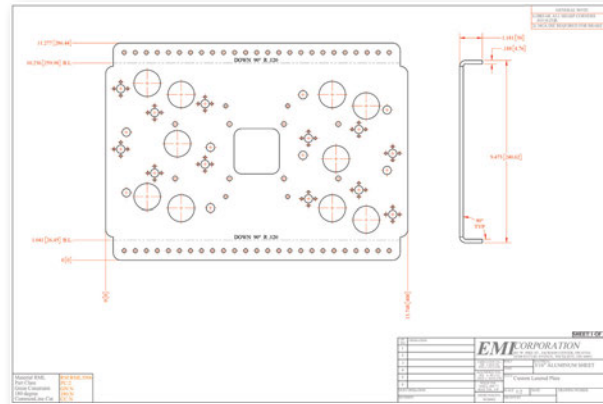


Plate-Based EOAT Examples

Single Panel EOAT keeps Tubing and Wires Separate from Gripping Area

Keeping tubing and wires from interfering with the gripping area significantly reduces the chance they could get snagged and become disconnected.

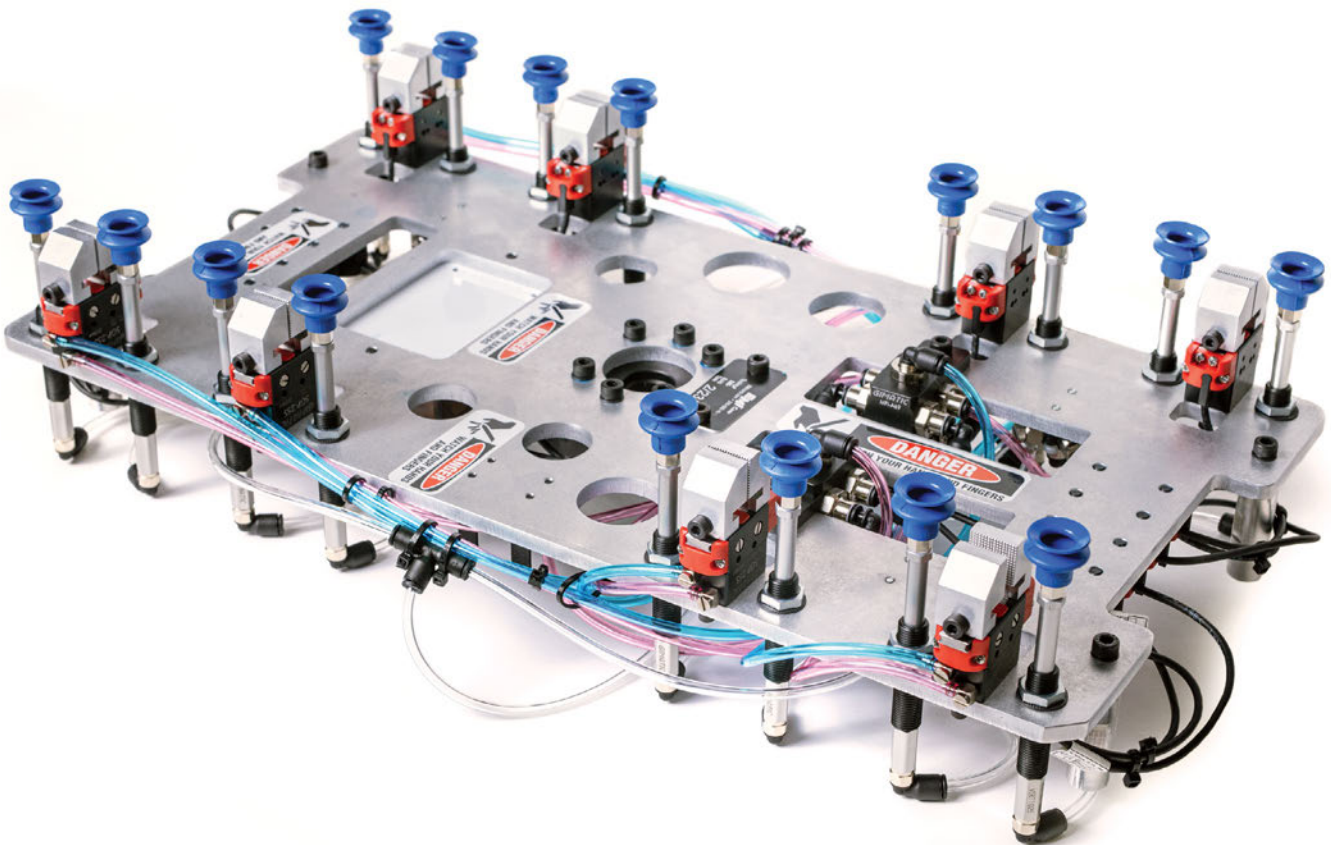
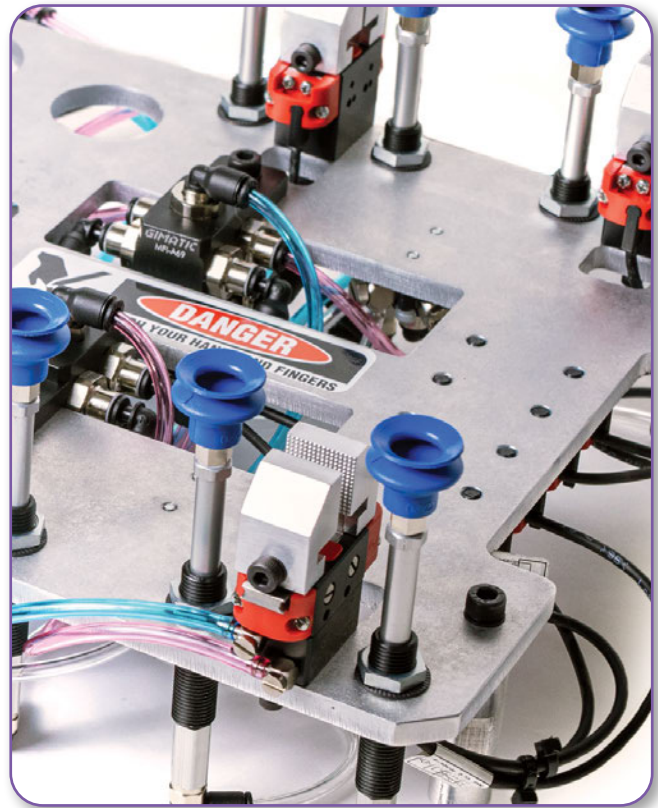


Plate-Based EOAT Examples

Degate Station Combines Profile and Laser-Cut Aluminum

Combine profile and flat-plate construction for an ideal EOAT solution. Here the plate is the base and the profile provides a compact mounting interface for degating.

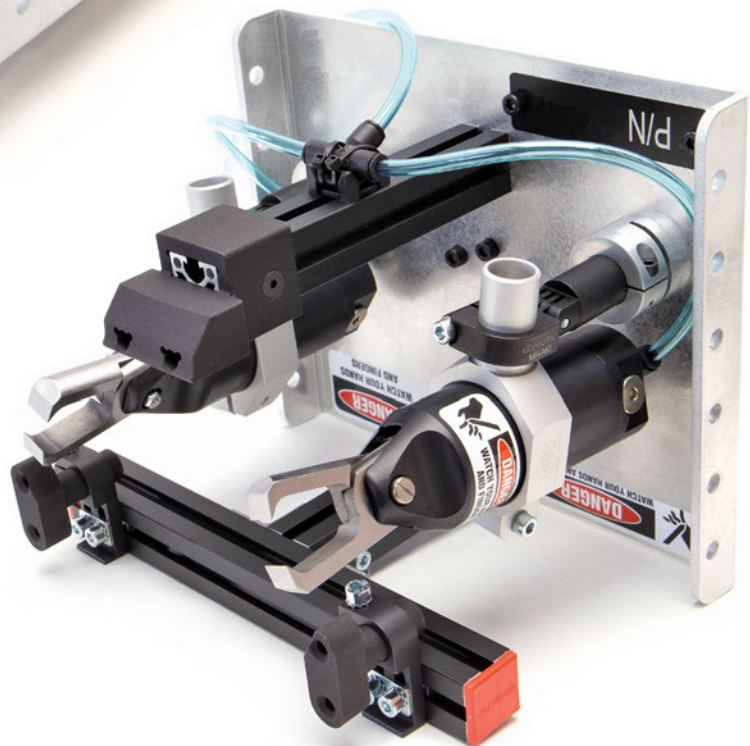
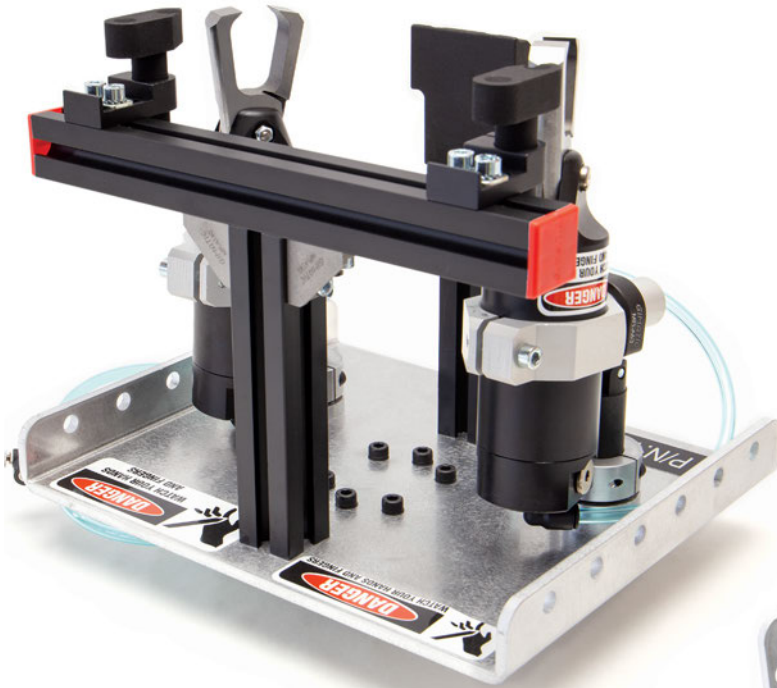


Plate-Based EOAT Examples

Adjustable Plate EOAT

Plate style EOAT can also incorporate extruded profile and angle clamps to offer adjustability during installation.

In this example, the aluminum plate incorporates slots that allow for some minor adjustments after assembly.

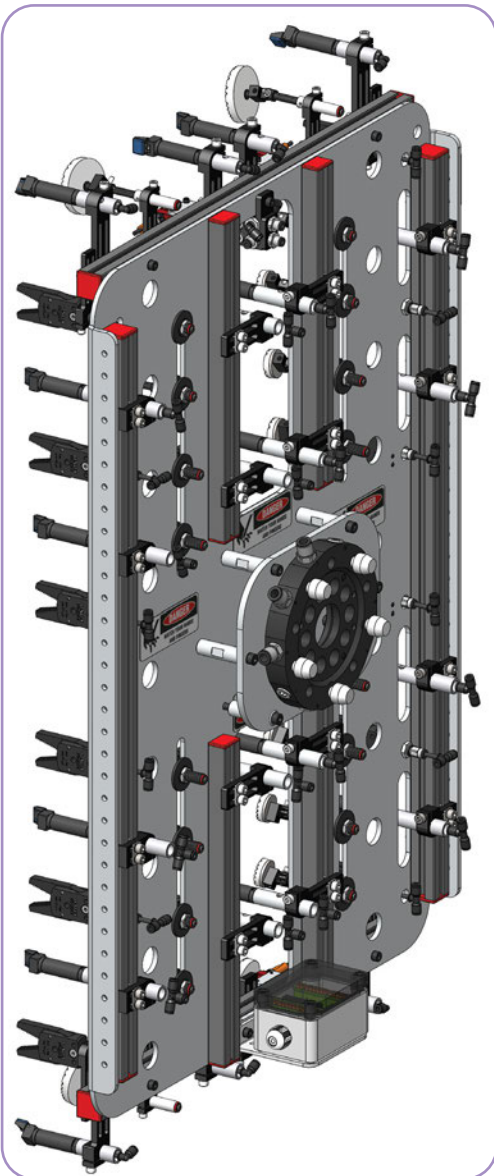


Plate-Based EOAT Examples

Lightweight Construction with Low-Profile Slides

Laser-Cut plate construction allows for a lightweight option for use with pneumatic mini-slides. ZE-P slides can be mounted on all four sides making it a great option.

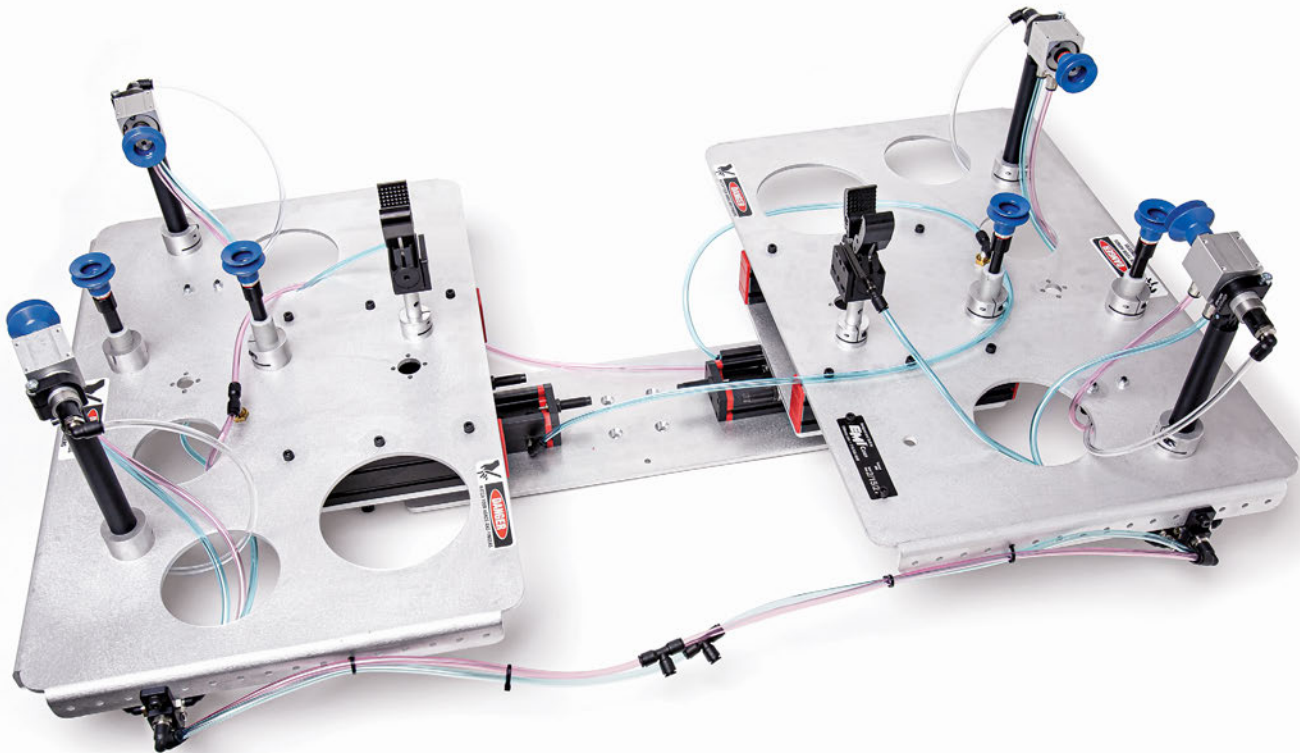
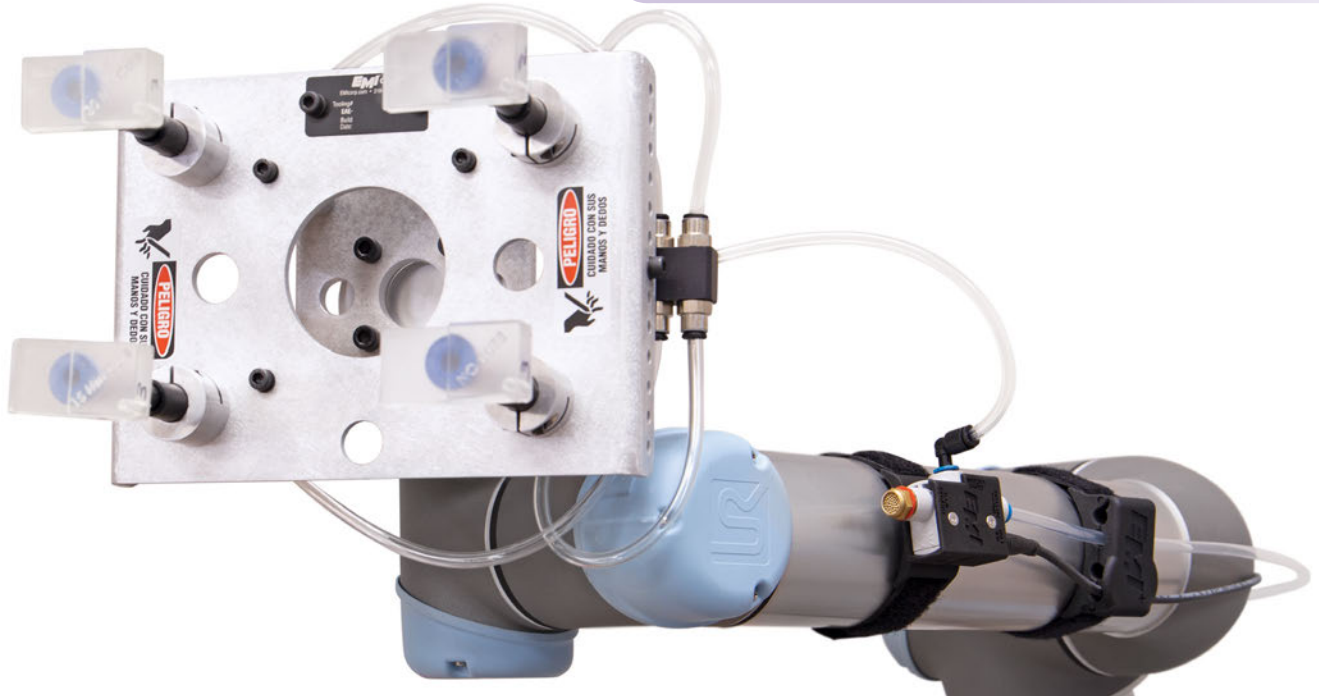


Plate-Based EOAT Examples

Use Laser-Cut Aluminum EOAT for Cobot Applications



From Simple..

..To Complex!

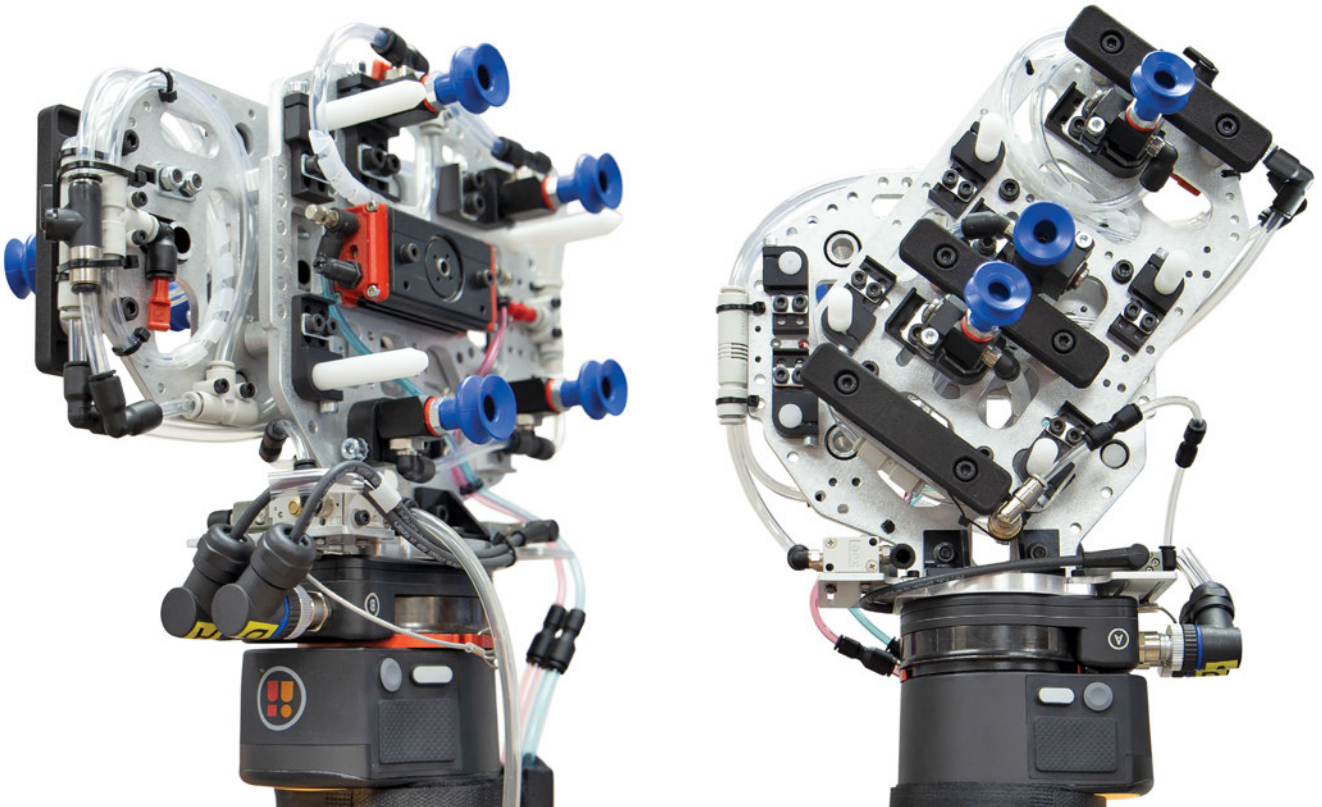
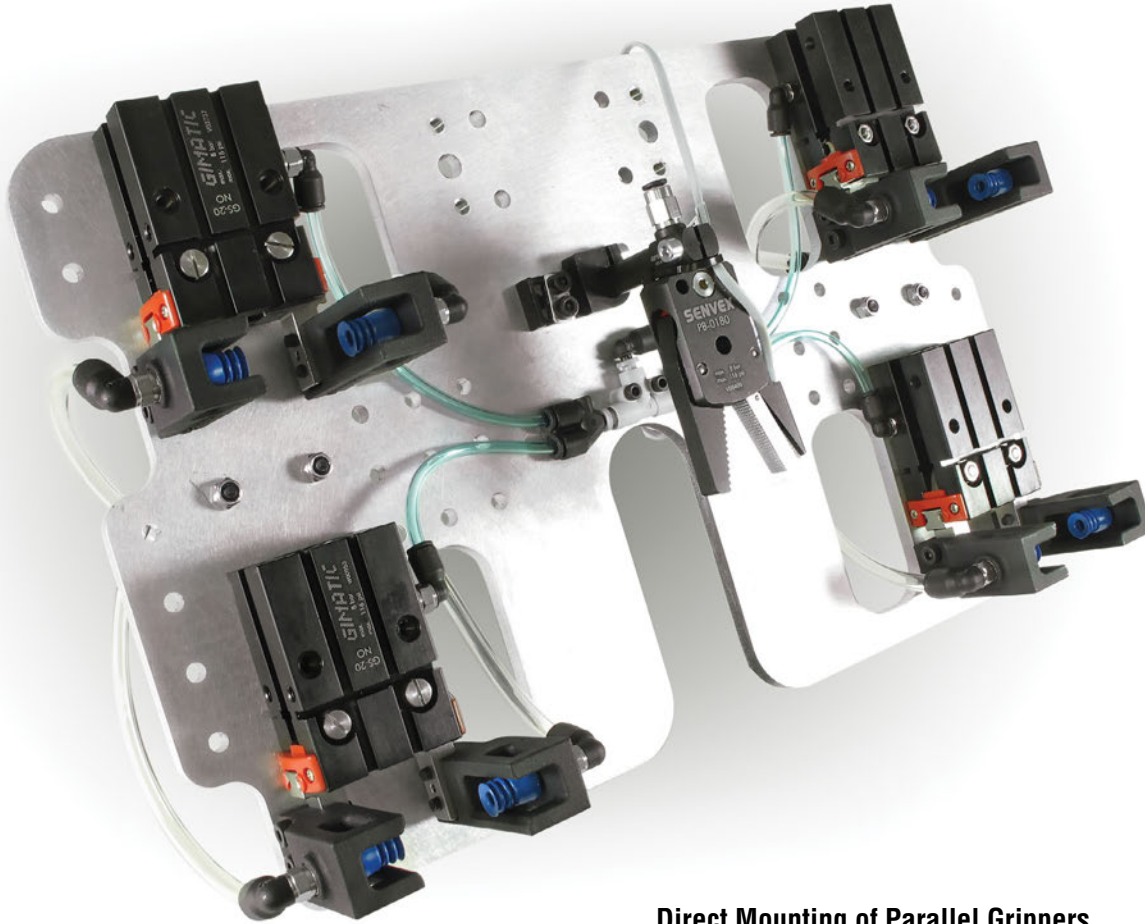


Plate-Based EOAT Examples



Direct Mounting of Parallel Grippers

Grippers are easy to mount on Flat-Plate EOAT's with as much or little adjustability as you need.

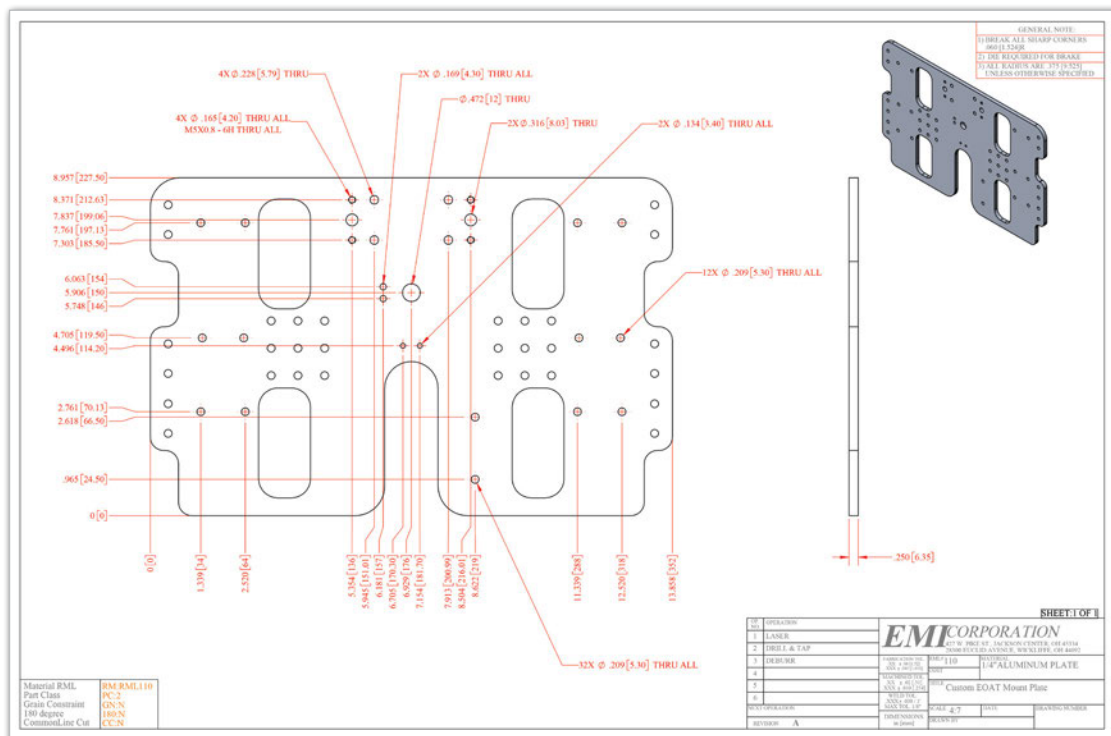
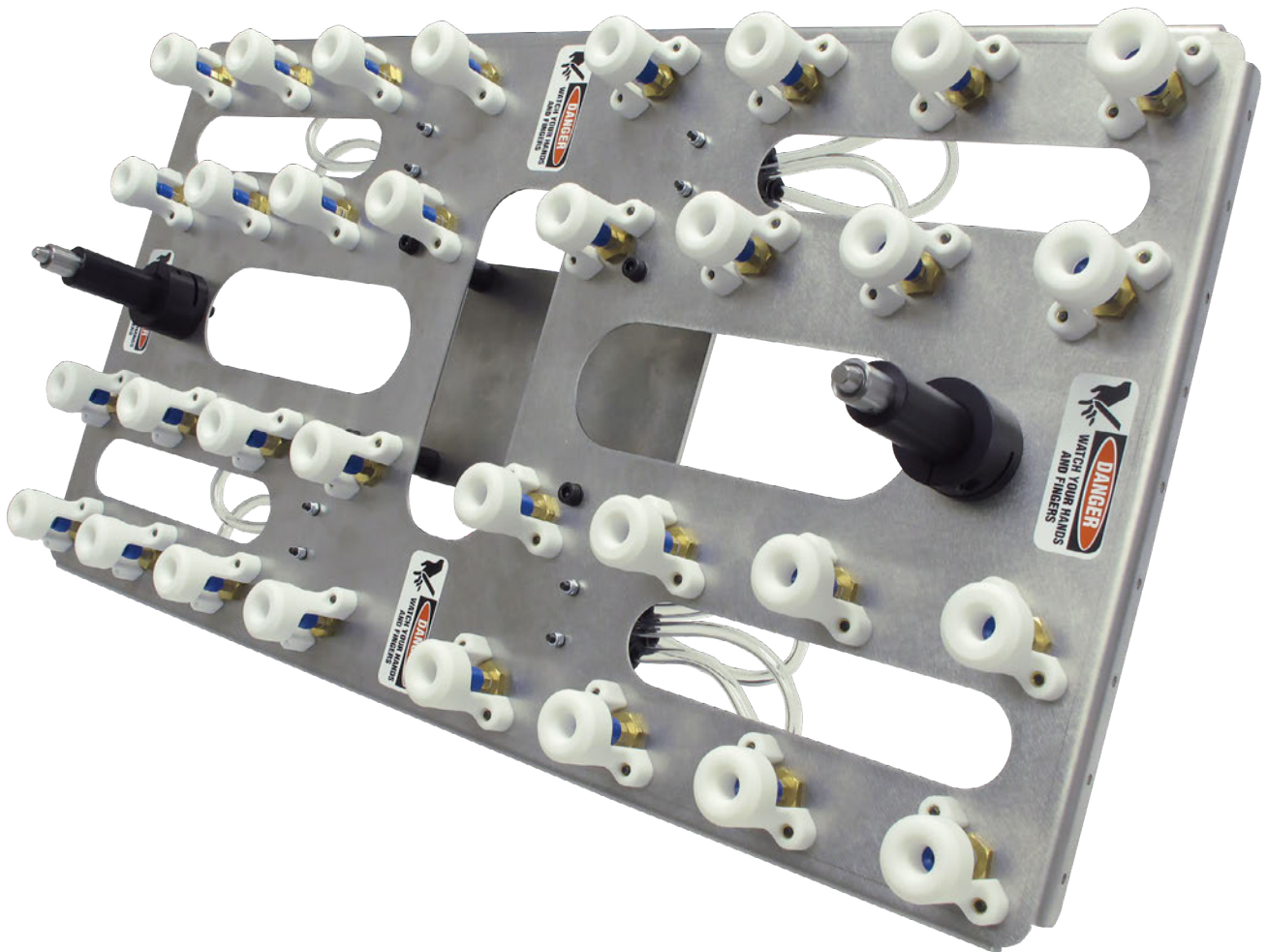


Plate-Based EOAT Examples

Ideal for Multi-Cavity Molds with 3D Printed Nests

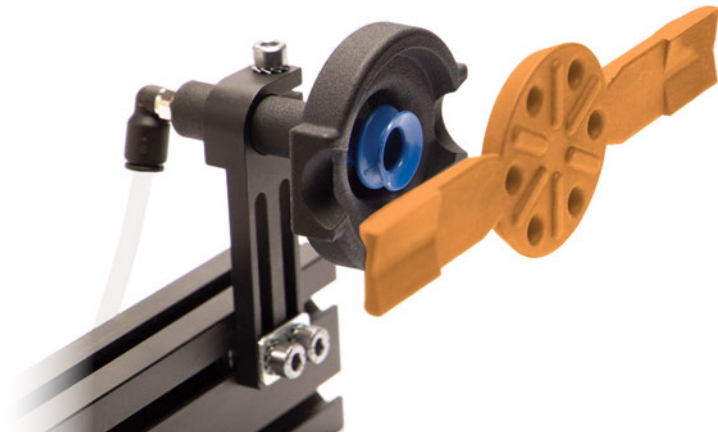
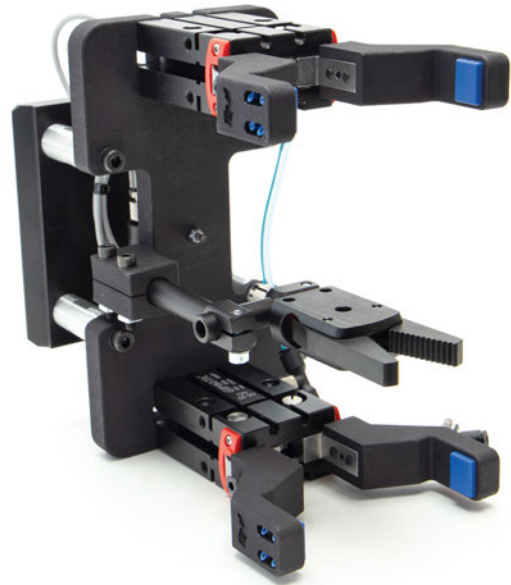
A key advantage of laser-cut flat-plate tooling for multi cavity molds is precision positioning. It would be very difficult to assure precision positioning using profile and clamps for this EOAT.



Additive Manufacturing by EMI

Since 2013, EMI's engineers have been utilizing **Additive Manufacturing (AM)** in robotic handling applications for the automotive, medical, consumer goods and plastic injection molding industry.

As an industry leader in robotic End of Arm Tooling (EOAT), we have found new, innovative ways to approach the traditional EOAT application. From custom nests to advanced hybrid gripper fingers, EMI is continually pushing the limits of 3D printing to support automation in the plastic injection molding industry.



Part Nests create a negative of your molded part to nest and support it has never been this feasible. Isotropic properties allow 3D printed components to act as support and high precision elements in light and heavy duty EOAT applications.

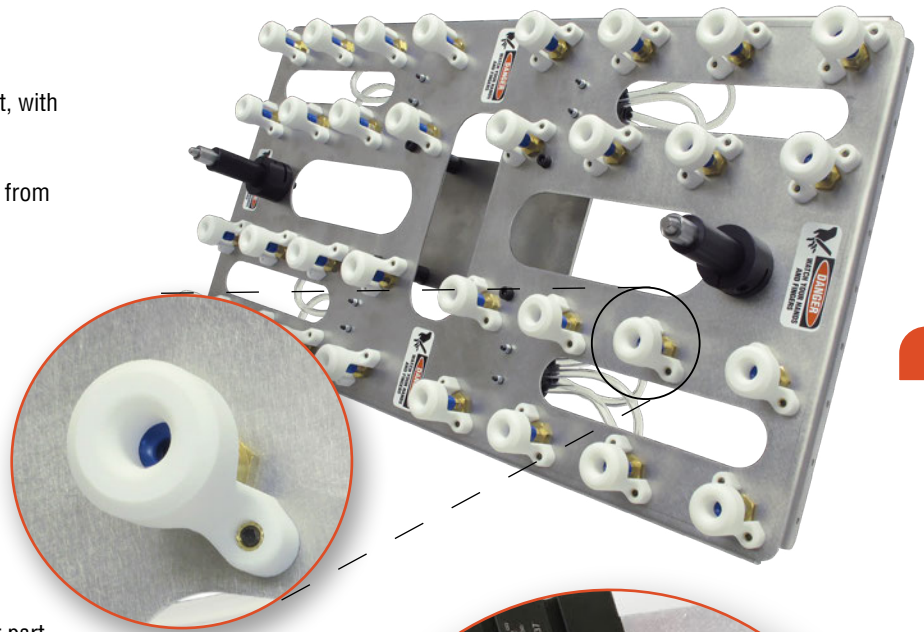
Our EOAT Engineers understand the additive manufacturing process from design to post processing and installation because it is done in-house with quality checks in every step of the way. We have found ways to take additive manufacturing to the next level with complex designs that are used in real world, industrial applications. Find out more about our 3DV for Cobots on page 132.



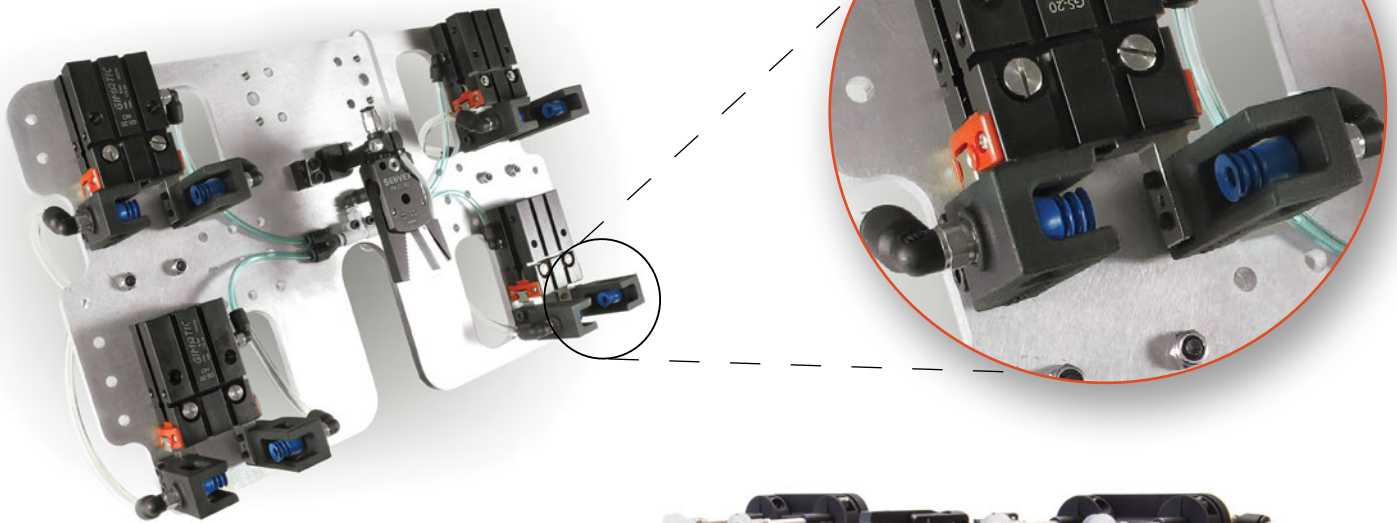
Typical EOAT Applications

Vacuum nests are an ideal application for 3D printing. Detect, secure and align your molded part, with simple or complex geometries.

Materials for clean room applications are available from EMI. Talk to our EOAT experts!



Vacuum fingers are a great way to handle your part and detect it without the use of sensors. Talk to our engineers to see if this is right for your application!



Hybrid EOAT is rapidly becoming a go-to option for customers who require lightweight and durable framing, but cannot afford to sacrifice precision and lead times. 3D printing for EOAT is an affordable, fast and a solid alternative. EMI EOAT Engineering is here to help with your application.

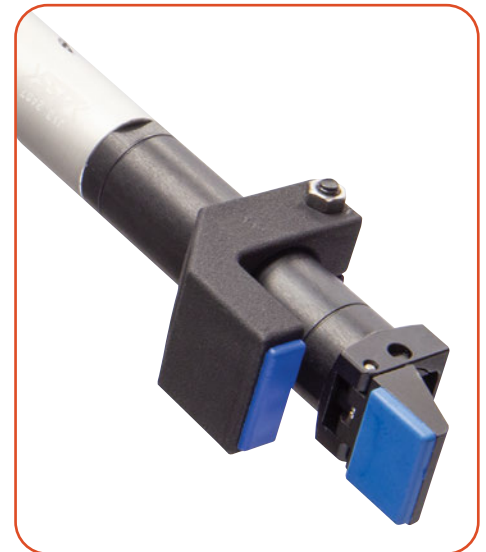
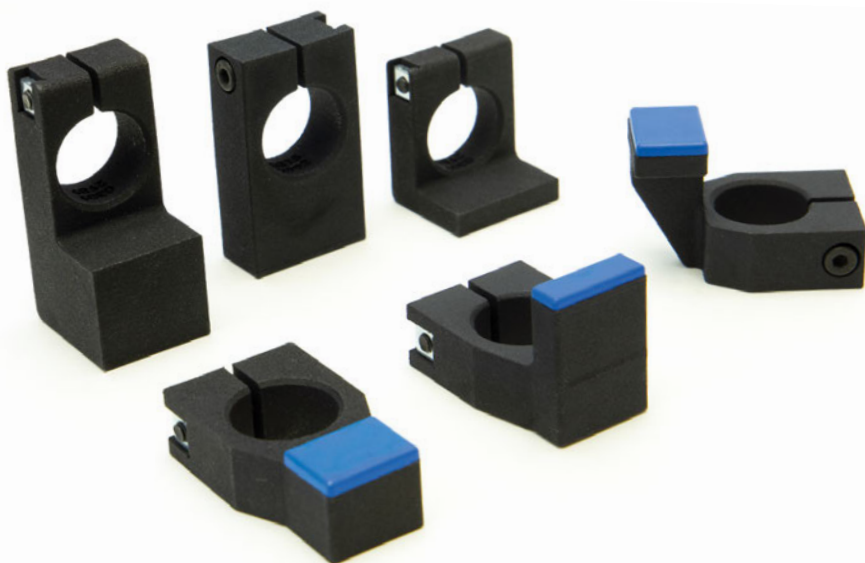


3D Printed Finger Examples

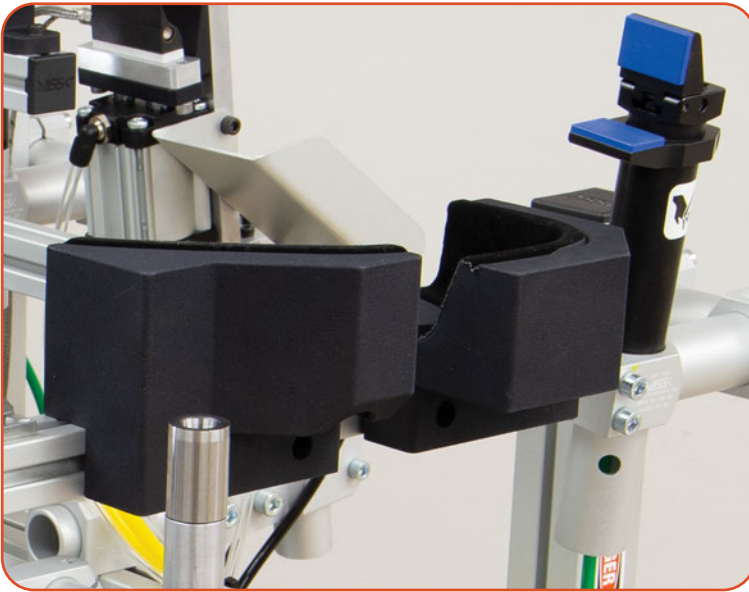
Gripper fingers that would normally be machined out of aluminum can be confidently designed and 3D printed for most applications. Thermal properties vary by material and soft-touch HNBR pads can be added. Take advantage of EMI's experience and talk with an EMI engineer about custom designed and printed gripper fingers for your application. We think you'll find EMI's 3D printing is affordable and fast.



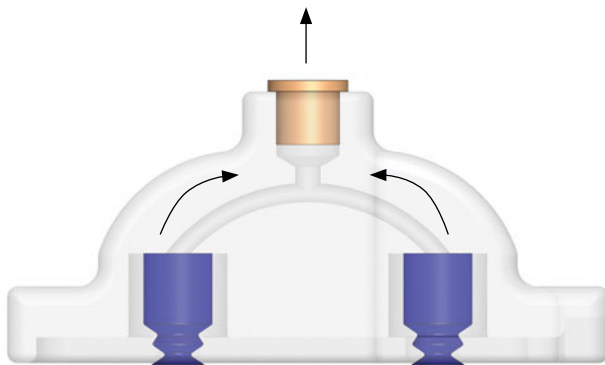
3D Printed Guides and Backstops are used to support the handling capabilities of Gripper Fingers. Accurately reaching behind a part is achievable with Gripper Fingers, and adding a 3D printed stop offers an even more secure grip. Gripper Fingers with 3D printed stops are a great alternative to handle parts that cannot be gripped with parallel grippers or vacuum cups. See "Gripper Finger Accessories" on page 526.



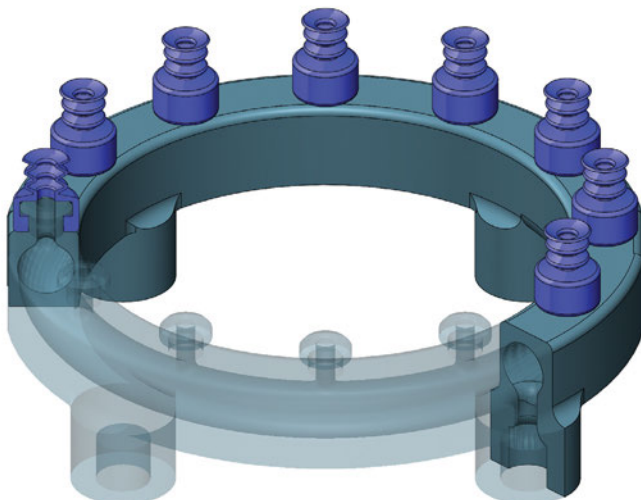
3D Printed Application Examples



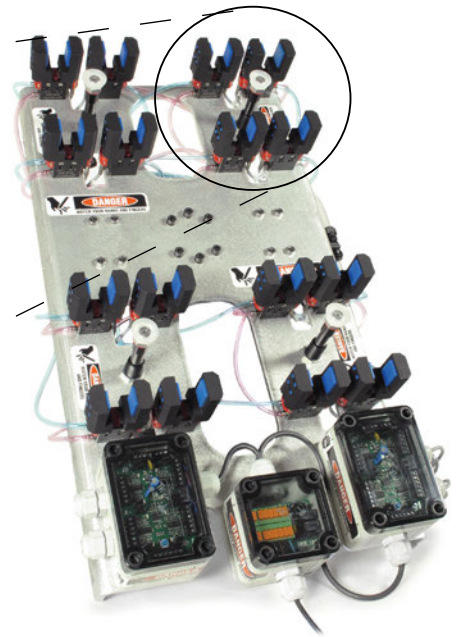
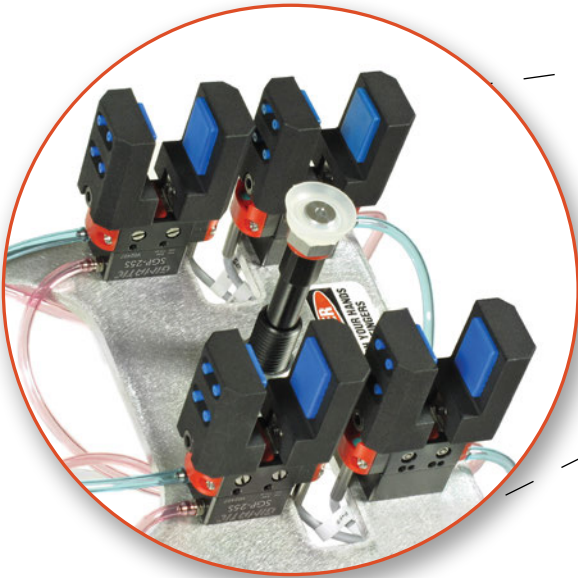
3D Printing for Degating In-house 3D Printing allows us to rapidly create custom and cost-effective nests for parts to ensure precise degating. Flocked part nests are used here for a soft-touch interface.



Create complex internal porting that would otherwise be very costly to machine!

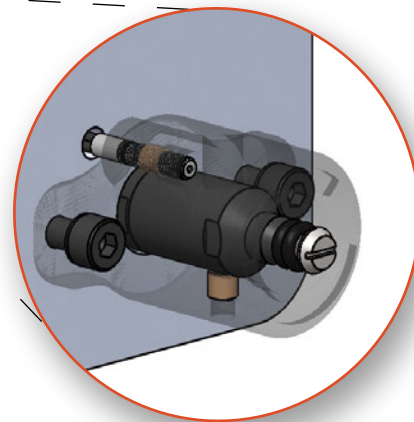
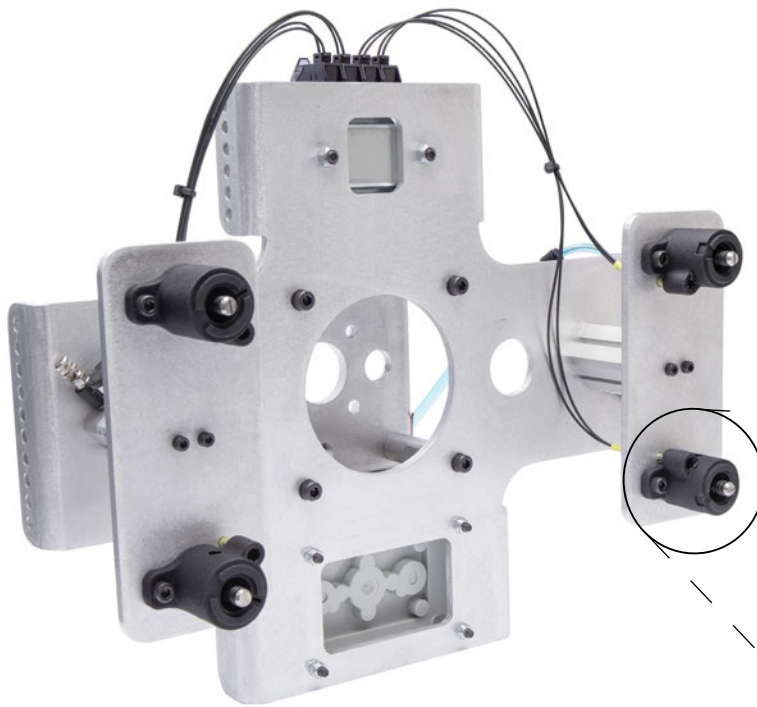
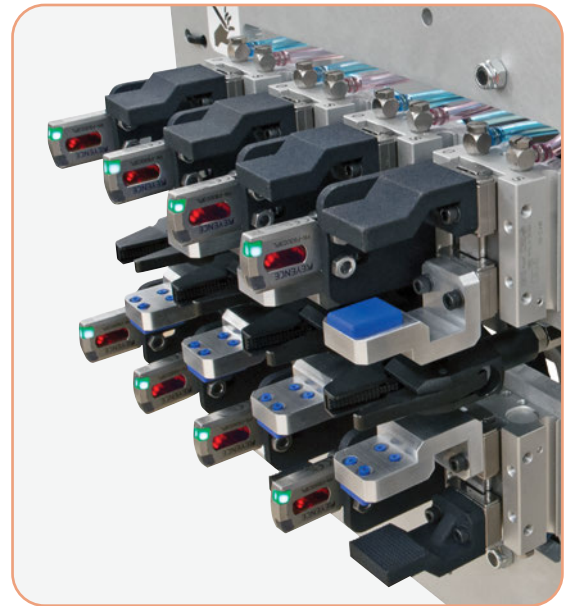


3D Printed Application Examples



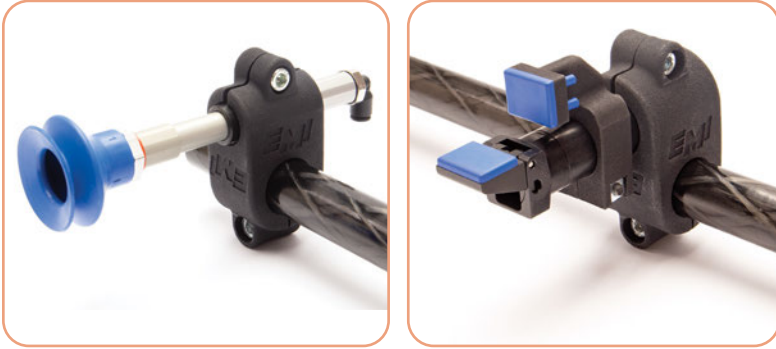
Simplify tools with creative custom components

Parallel grippers are one of the most common ways to grip molded plastic parts. Using custom padded fingers on a high precision SGP grippers from Gimatic is a great way to secure and detect your part without marring it and minimizing scrap. Find our popular SGP-S grippers on page 654, and low-profile MHF2 grippers on page 668.



This plate-style tooling incorporates fiber optic sensing with an expansion gripper for ID part handling inside of a 3D printed nest. All available from EMI with the help of our EOAT team. Find Fiber-Optic Sensors on page 966.

3D Printed Application Examples

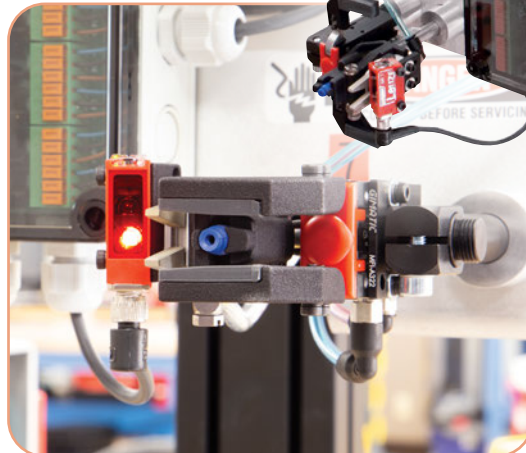
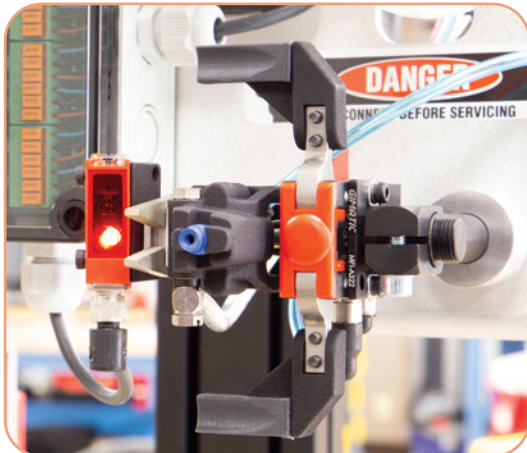


Lightweight carbon fiber profile with 3D printed clamp and gripper finger guides.

Different 3D printing methods can be combined to achieve a level of customization that only EMI can offer. Utilize the AM process and materials to save weight without sacrificing strength. SLA printing (shown below) forms a durable high-temp material used for finger pads in a variety of EOAT applications.



In the application below, 3D printed nests mounted on suspensions align the part with vacuum for part detection. Once detected, radial grippers secure the parts while the robot traverses to drop them on a conveyor.



Comparing EOAT Structures



	Profile-Based EOAT	3D-Printed EOAT	Plate-Style EOAT
Lead Time	Fastest	Fast	Varies by application
Weight	✓✓✓	✓	✓✓
Adjustability	✓✓✓	✓	✓
Common Applications			
High Number Of Cavities	✓✓✓	✓✓✓✓	✓✓✓✓✓
Small Parts	✓✓	✓✓✓✓✓	✓✓✓✓
Large Parts	✓✓✓✓✓	✓✓	✓✓✓
Insert Loading	✓✓	✓✓✓	✓✓✓✓✓
High-Speed Molding	✓✓✓	✓✓✓✓✓	✓✓✓✓
Degating	✓✓✓	✓	✓✓✓✓
EOATs with Nesting Features	✓✓✓	✓✓✓✓✓	✓✓✓✓

To help you decide which approach is best for your applications, this comparison explains the benefits of EMI's EOAT solutions as used by our Engineers on a daily basis.

EMI's 3DV Gripper Kit for Cobots is the perfect example of applications for 3D printed EOAT. Internal porting, built-in clamps and pressed inserts help keep it a lightweight, low-cost solution.

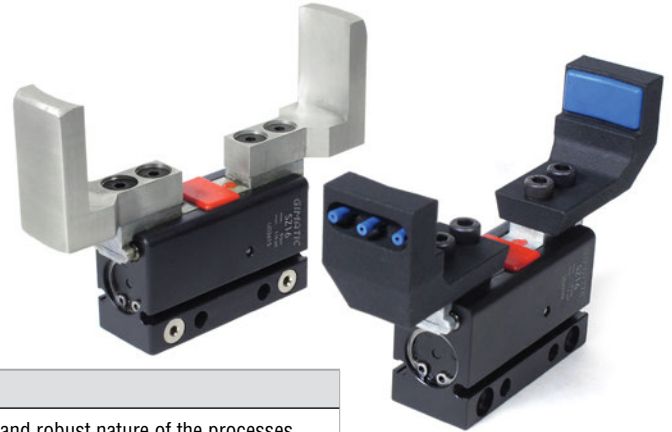
Profile Based EOAT are a proven solution for industrial applications. As you start to expand, weight adds up but the adjustability only increases. EMI has all the needed components in-stock to build adjustable EOAT that can also include 3D printed components for a more custom approach to your application.

Plate Style EOAT offer the highest precision, with reasonable weight requirements, where in some instances, adjustability can be offered for the less critical features of the application. 3D printed components are a perfect addition to plate tools. Custom laser cut or machined plates do require some manufacturing time, and EMI can help with that as well.

Additive Manufacturing by EMI

Machined vs. Additive Manufacturing

All manufacturing methods have their own benefits and drawbacks. Additive manufacturing methods have some benefits that traditional machining methods do not.



	3D Printing	Machining	
Lead Times	✓		Due to the fast and robust nature of the processes lead times are better for 3D printing
Precision	✓	✓+	While 3D Printing can be precise, machining can hold tighter tolerances
Complexity	✓		3D printing has less manufacturing constraints so it can produce more complex parts
Strength		✓	Machined metal is stiffer and stronger than plastic
Thermal Limit		✓	Metal can handle higher temperatures
Weight	✓		Complex internal lattice structure can be utilized in printing to lighten parts
Material Waste	✓		Very efficient process allows for very little scrap
Cost Effectiveness	✓		In general 3D printed parts cost less than machined parts

*Comparison can differ depending on materials and processes

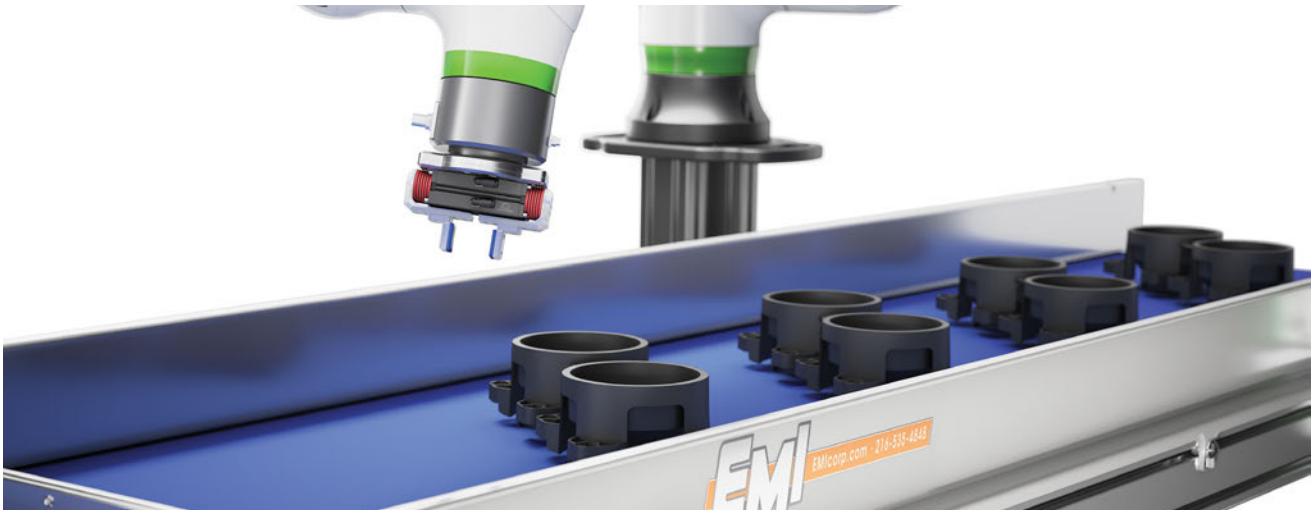
EMI offers four methods of 3D Printing for EOAT application components:

	MJF	SLA	FFF	SLS
Description	Powder-Based PA-12 (Nylon) is our main method due to its isotropic and mechanical properties.	Provides exceptional detail and a wide variety of materials that can be used in many EOAT applications.	Nylon based filament with optional fiber inlay reinforcement.	Contact our Engineering Department to discuss your Clean Room EOAT project.
Cost	\$	\$ \$	\$ \$	\$ \$ \$
Lead Time	⌚	⌚ ⌚	⌚ ⌚ ⌚	⌚ ⌚ ⌚ ⌚
Production Quantity	Large	Small-Medium	Small	Large
Layer Thickness	70–100 microns	25–100 microns	100–200 microns	120 microns
Tensile Strength	🔧 🔧 🔧	🔧 🔧 *	🔧 🔧 *	🔧 🔧 🔧
Heat Deflection Temp.	🌡️ 🌡️ 🌡️	🌡️ *	🌡️ 🌡️	🌡️ 🌡️
Temperature Resistance[^]	🔥 🔥	🔥 🔥 🔥	🔥	🔥 🔥
Flexibility	Minimal	Varies per Material	None	Minimal
Impact Resistance	🔨 🔨	🔨 *	🔨	🔨 🔨
Surface Finish	Fairly Smooth	Smooth	Rough	Fairly Smooth
Ability to Seal Vacuum	Yes	Yes	No	Yes

* Multiple materials available, performance may vary based on selection.

[^] Based on short-term 60 second temperature exposure.

EOAT for Cobots Overview



Industrial End Effectors for Cobots

EMI's years of experience in automation applications prove that we can provide the perfect solution for a wide variety of industrial end effector and custom cobot gripper kit needs. Our engineers have outfitted a number of our industry-proven pneumatic and electric grippers to easily adapt to, and maximize the high repeatability of Cobots from Universal Robots, Doosan, Sawyer, Kuka, Fanuc, and other Industrial Robots.

Understanding the need for automation beyond the injection molding machine, EMI now offers a complete lineup of plug-and-play and custom Cobot solutions for the plastics industry. Our engineers are continuously working with customers to improve their operations and researching new products that are applicable to your processes.

Many of the Gripper Kits require fingers or jaws that EMI engineers can help design based on years of expertise solving customer applications from simple to complex, machined, or 3D printed.

Need assistance with an industrial end effector or custom cobot gripper kit?

Email Cobots@EMICorp.com or call 216-535-4848 to get in touch with an experienced engineer.

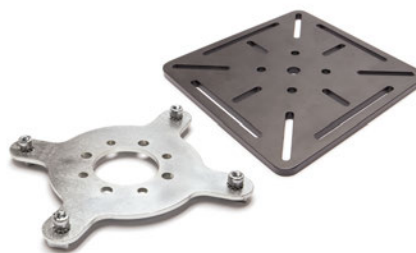
Quick Changers

p.114



Interface Plates

p.124



Flange Mono Clamps

p.180



Cobot Accessories

p.178



Cobot Ready Conveyor

p.186



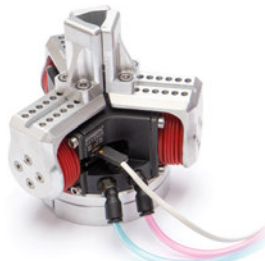
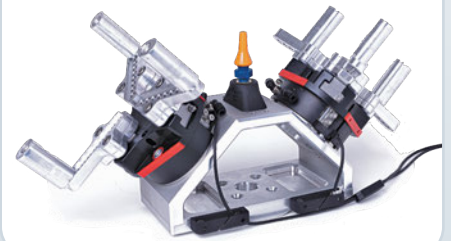
Cobot Stands

p.184



EOAT for Cobots Overview**Modular Vacuum Gripper Kit** p.128**3D Printed Vacuum Gripper Kit** p.132**Kit-UR-V Vacuum Gripper Kit** p.134**OnRobot Vacuum Grippers**

p.138

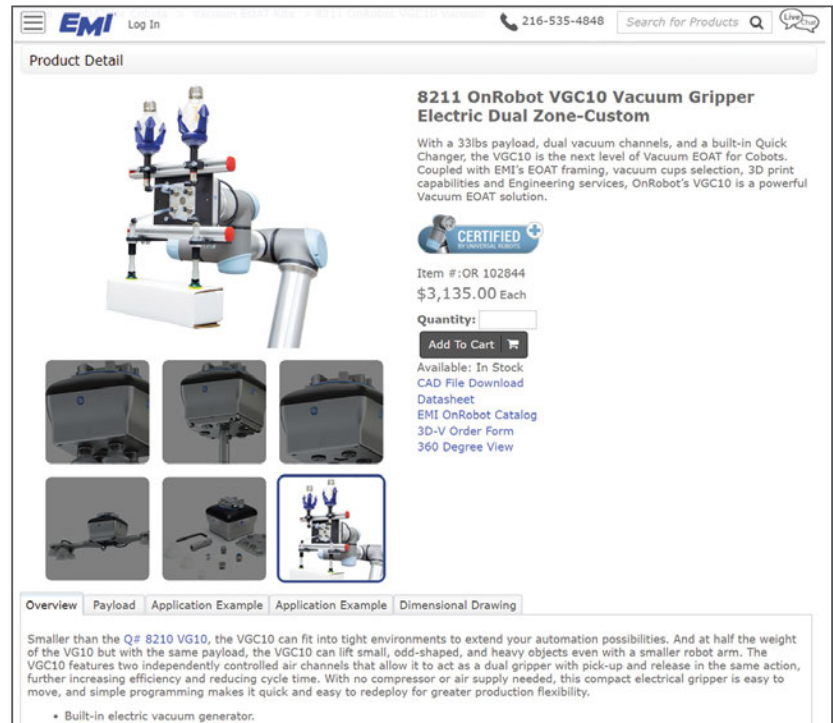
Schmalz® CobotPump Electric Vacuum Generator p.142**Two-Jaw Gripper Kits** p.146**Three-Jaw Gripper Kit** p.148**Gimatic Electric Gripper Kits** p.152**OnRobot 2-Jaw Grippers** p.154**OnRobot 3-Jaw Grippers** p.160**Machine Tending Kits** p.162**Soft Grippers** p.168**PIAB® piSoftGrip** p.172**Specialty Grippers** p.176

EOAT for Cobots

Easy Online Ordering!

All our Cobot kits can be ordered online. Product detail pages include all the information you need:

- Application examples
- CAD file downloads
- Additional specifications
- Dimensional drawings
- Related items
- Replacement parts



8211 OnRobot VGC10 Vacuum Gripper Electric Dual Zone-Custom

With a 33lbs payload, dual vacuum channels, and a built-in Quick Changer, the VGC10 is the next level of Vacuum EOAT for Cobots. Coupled with EMI's EOAT framing, vacuum cups selection, 3D print capabilities and Engineering services, OnRobot's VGC10 is a powerful Vacuum EOAT solution.

CERTIFIED

Item #: OR 102844
\$3,135.00 Each

Quantity:

Add To Cart

Available: In Stock
CAD File Download
Datasheet
EMI OnRobot Catalog
3D-V Order Form
360 Degree View

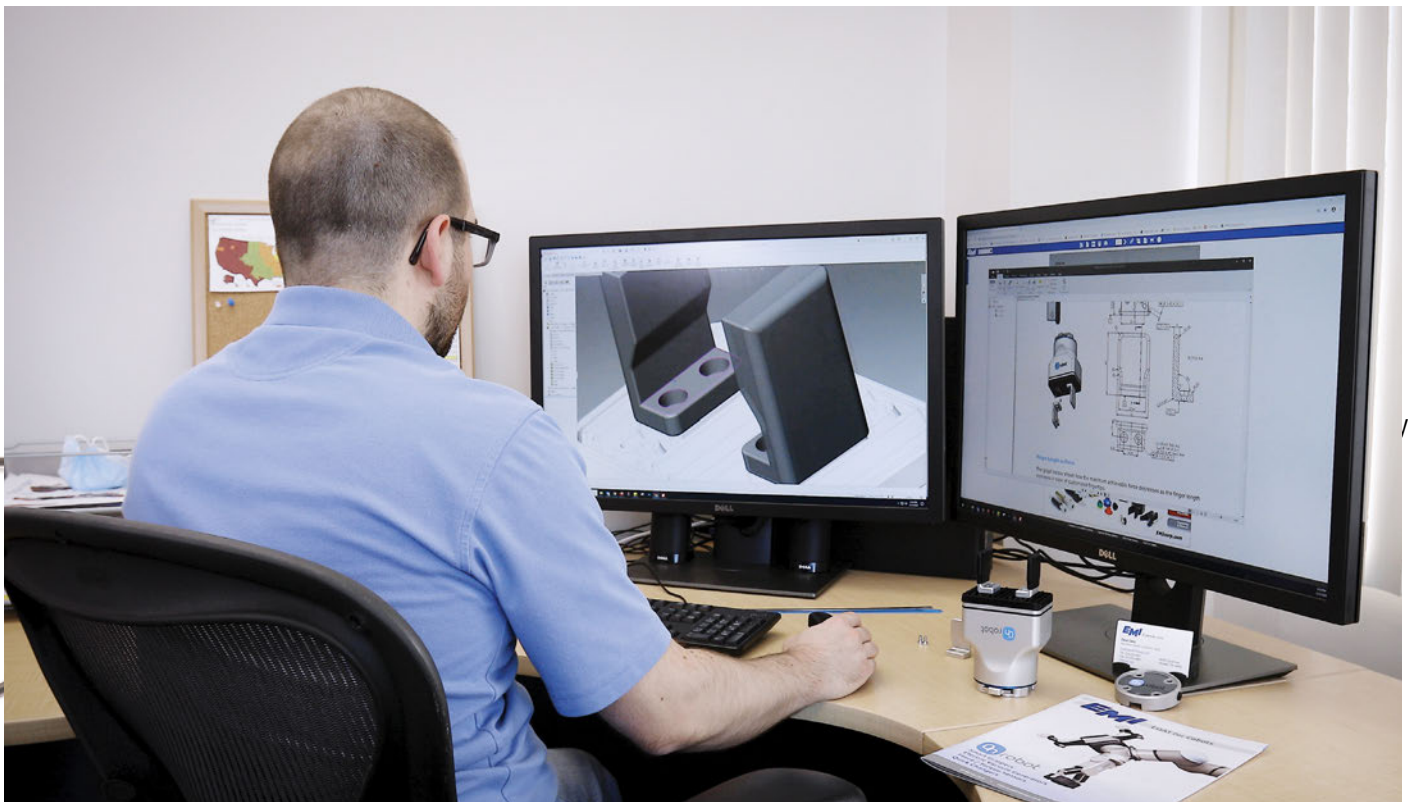
[Overview](#) [Payload](#) [Application Example](#) [Application Example](#) [Dimensional Drawing](#)

Smaller than the Q# 8210 VG10, the VGC10 can fit into tight environments to extend your automation possibilities. And at half the weight of the VG10 but with the same payload, the VGC10 can lift small, odd-shaped, and heavy objects even with a smaller robot arm. The VGC10 features two independently controlled air channels that allow it to act as a dual gripper with pick-up and release in the same action, further increasing efficiency and reducing cycle time. With no compressor or air supply needed, this compact electrical gripper is easy to move, and simple programming makes it quick and easy to redeploy for greater production flexibility.

- Built-in electric vacuum generator.

Support you can count on! Regional Sales Managers and Engineers on Call

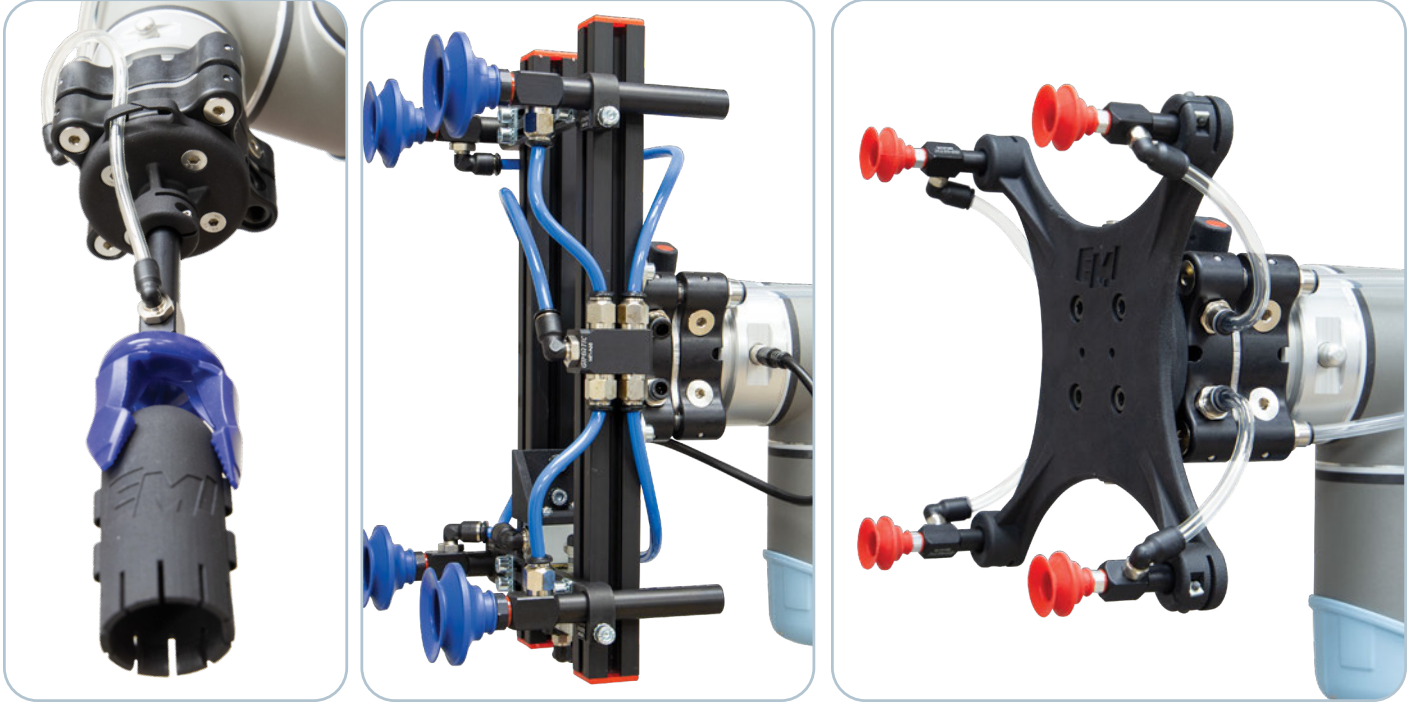
With over 12,000 custom EOAT projects completed, our 20 dedicated EOAT Engineers are on staff ready to answer YOUR EOAT questions about YOUR EOAT project. EMI's Experienced Engineering Department is dedicated to help design and support all your EOAT and Cobot needs. We're easily accessible, friendly, and helpful. Give us a call and let us help you.



Quick Changers for Collaborative Robots

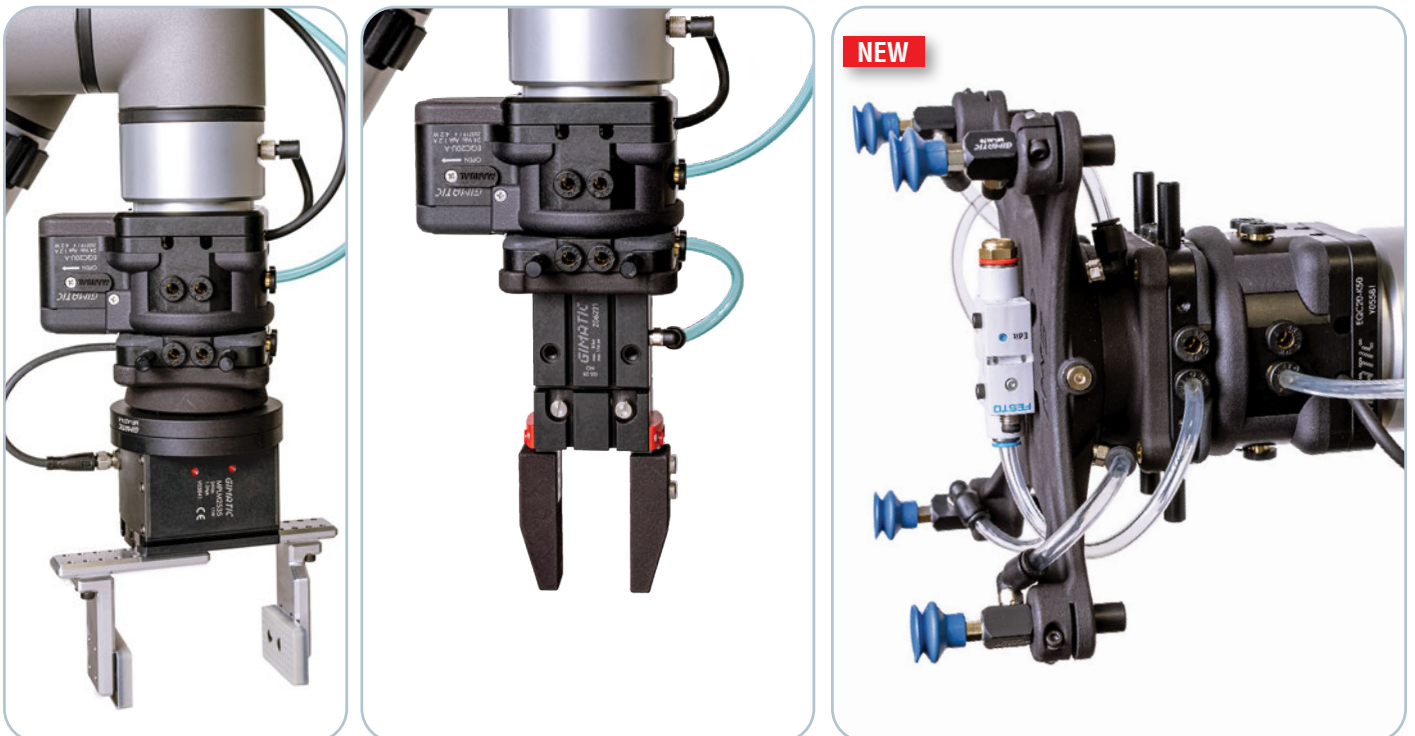
QC75 is a Manual Quick Changer, Ideal for Plug & Play or Custom EOAT

The QC75 was designed for collaborative robots, incorporating configurable electrical connections, innovative pneumatic pass-through ports and locked position confirmation. See page 114.

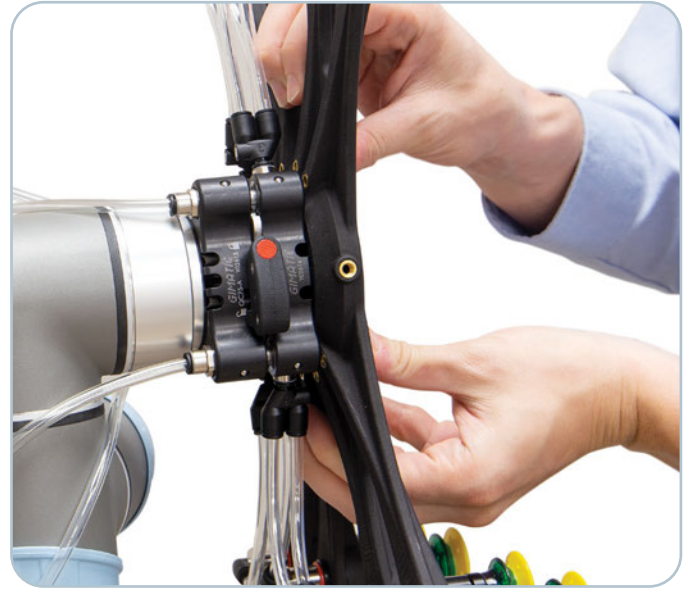


EQC is an Electrically-Powered Automatic Quick Changer, Compatible with a Wide Range of Grippers

The first of its kind to offer a quick disconnect solution that's electrically-actuated and lightweight, this is the best tool changer for quick, hands- and hassle-free changing of tools on your cobot. Built-in pneumatic pass-through ports and optional electrical connectors provide the flexibility required for your EOAT applications. See page 116.



Manual Quick Changer for Collaborative Robots – QC75

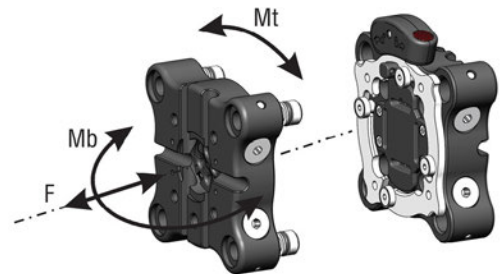
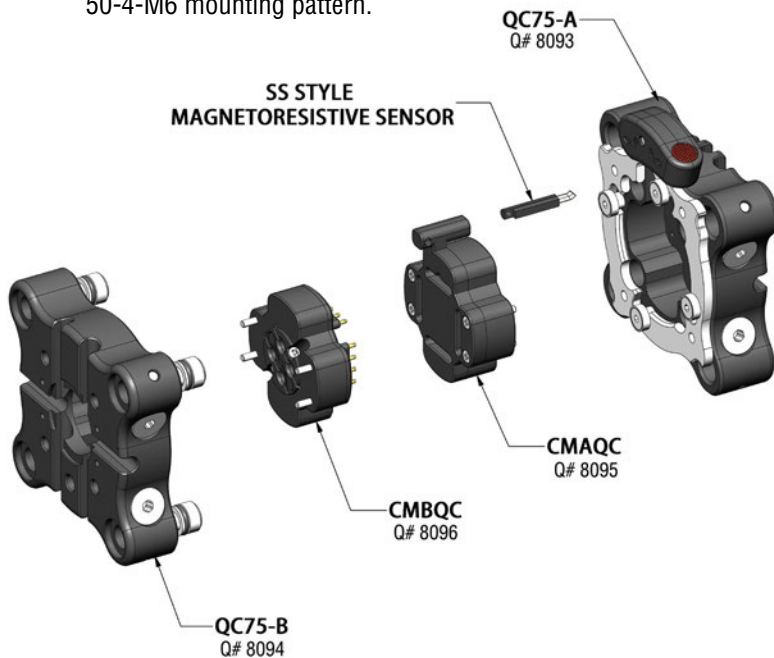


Designed for collaborative robots, the QC75 is a manual quick changer that allows for pneumatic and electrical connections to be easily coupled between jobs. Standardize up to 16 electrical contacts and 4 pneumatic lines to have your cobot up and running with minimal downtime.

With the same mounting pattern as the tool flange of your cobot (ISO-9409-1-50-4-M6), you can mount any “Plug & Play” end effector to the QC75-B for a quick and repeatable installation for every job. End effectors can be hard-wired to the QC75-B, or plugged to the wrist connector of your Cobot for even faster setup times.

- **Suggested payload: 44 lb (20 kg)**
- Four Integrated G1/8" pneumatic pass-through ports.
- Locked position sensing available.
- Optional electrical connector provides 16 screw terminals. See page 181 for equipment to assist in wiring.
- Cobot industry standard ISO-9409-1-50-4-M6 mounting pattern.

Quick#	Part#	Description	Weight	Price
8093	QC75-A	Robot-Side - For Cobots (75mm)	315g	\$402.00
8094	QC75-B	EOAT-Side - For Cobots (75mm)	270g	\$256.00
8095	CMAQC	Robot-Side Electrical Connector	18g	\$36.87
8096	CMBQC	EOAT-Side Electrical Connector	18.5g	\$86.89
8097	CSAQC	Robot-Side Locked Position Sensor Only	15g	\$30.77



Specifications for Quick Changer QC75		
Weight	Robot-Side	315g
	EOAT-Side	270g
Max. Suggested Payload	44 lb (20 kg)	
Maximum Air Pressure	6 bar (87psi)	
Air Ports	(4X) G1/8	
Electrical Connector	Optional	
Safety Loads:		
F	Mt	Mb
224.8 lbf.	110.6 lbf*ft.	36.8 lbf*ft.

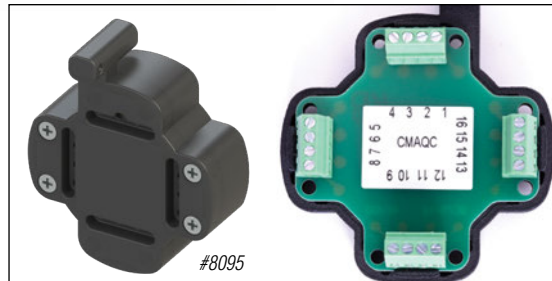
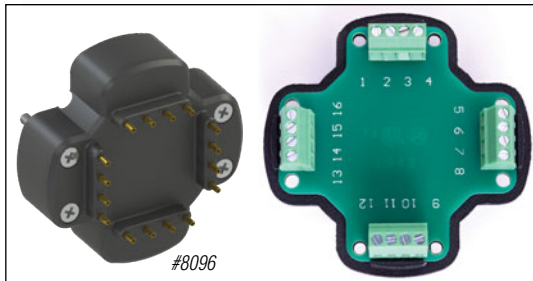
F= Axial Load Limit Mt= Torque Moment Limit
Mb= Bending Moment Limit

Manual Quick Changer for Collaborative Robots – QC75

(Dimensioned drawings shown half scale)

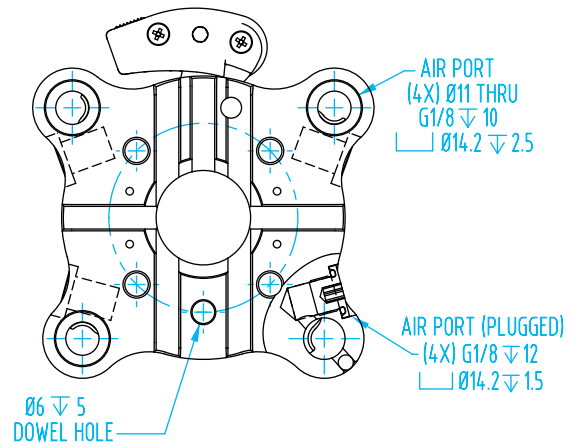
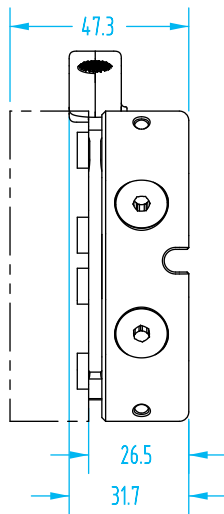
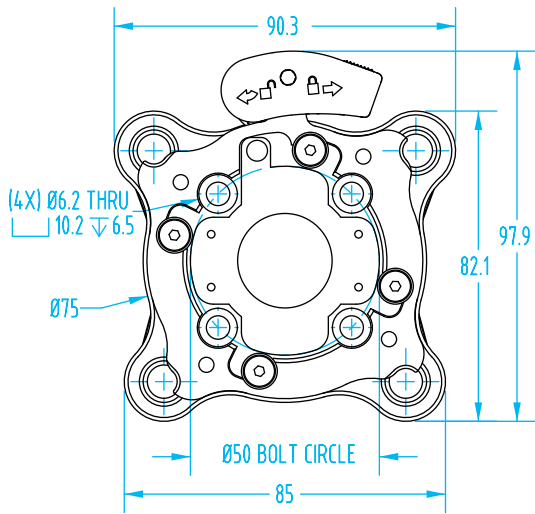


- The Quick Changer *standard* for collaborative robots.
- Handles both pneumatic and electrical end effectors.
- Air ports are integrated into the quick changer connection pins (patented) for streamlined pneumatic routing.
- Electrical connectors are integrated into the quick changer housing for streamlined wiring.

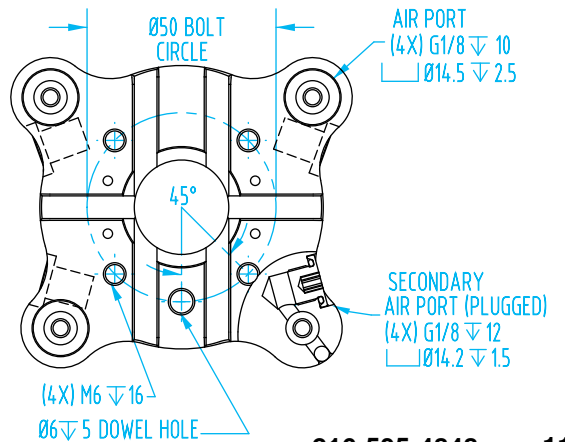
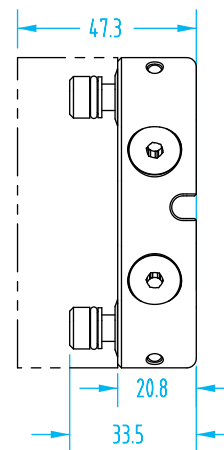
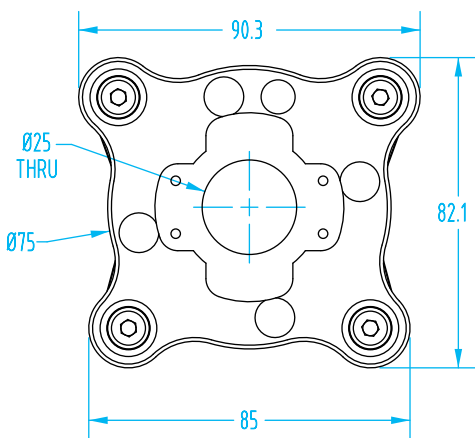


Robot-Side

Easy custom wiring of your EOAT.



EOAT-Side



Automatic Quick Changer for Cobots – EQC20

The EQC20 is designed to provide a hands- and hassle-free quick-change tool system, automated using resources readily available from your collaborative robot. Numerous model configurations allow for convenient control through the robot wrist I/O or controller, while various available interface plates make for simplified mechanical mounting to the robot flange. Pneumatic pass-through ports are built-in and optional electrical connectors can be positioned in the central thru-hole for a collaborative compliant execution.



#8098 – Robot-Side Electric Quick Changer with Female M8 8-pin Connector (configured for UR)

- **Suggested payload: 44 lbs (20kg)**
- Six Integrated Ø6mm pneumatic pass-through ports.
- Position confirmation sensing.
- Optional electrical connectors to be positioned in the central through hole. See page 181 for equipment to assist in wiring.
- Separate adapter plates available for ISO 9409-1-50-4-M6 and 9409-1-63-4-M6 interfaces, see page 118.
- Optional docking pins for storage, see page 118.

Try It Risk Free!

*Contact us for details



#8151 – EOAT-Side Electric Quick Changer

Gimatic EQC Automatic Quick Changer

NEW

Quick#	Part#	Type	Description	Weight	Price
8098	EQC20U-A	Robot-Side	With Female M8 Connector - For Universal Robots	810g	\$1,552.00
8150	EQC20-A		With Male M8 Connector, PNP	810g	\$1,481.00
8156	EQC20N-A		With Male M8 Connector, NPN	810g	\$1,661.00
8155	EQC20TM-A		With Male M8 Connector - For TM Robots	810g	\$1,661.00
8151	EQC20-B	EOAT-Side	Quick Changer	210g	\$215.00

Gimatic EQC Electrical Connectors

Quick#	Part#	Type	Description	Weight	Price
7600	RMAQC	Robot-Side	Electrical Connector, 32-Pin	70g	\$134.00
7601	RMBQC	EOAT-Side	Electrical Connector, 32-Pin	70g	\$220.00
7703	RMAQC-UR	Robot-Side	Electrical Connector with direct mount for UR, 8-Pin	46g	\$134.00
7711	RMBQC-UR	EOAT-Side	Electrical Connector with direct mount for UR, 8-Pin	51g	\$220.00
7602	RRAQCN	Robot-Side	Electrical Connector, + RFID, NPN, 16-Pin	75g	\$442.00
7603	RRAQC	Robot-Side	Electrical Connector + RFID, PNP, 16-Pin	75g	\$442.00
7604	RRBQC	EOAT-Side	Electrical Connector + RFID, 16-Pin	45g	\$159.00



Watch EMI's EQC and Electrical Connector Videos!



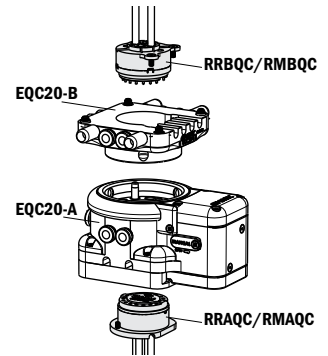
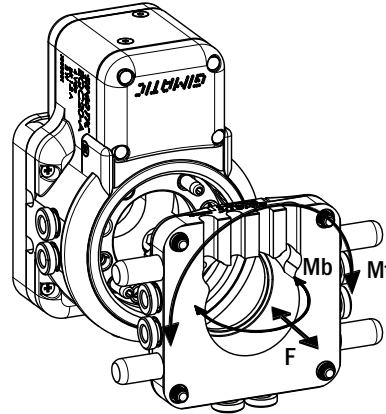
Automatic Quick Changer for Cobots – EQC20

Safety loads

Check the table for the maximum loads allowed. Excessive forces or torques can damage the system, cause operation problems and endanger the safety of the operator.

Specifications for Quick Changer EQC20		
Weight	Robot-Side	810g
	EOAT-Side	210g
Suggested Max. Payload		44 lbs (20 kg)
Maximum Air Pressure		6 bar (87psi)
Air Ports		(6x) Ø6mm
Electrical Connector		Optional
Safety Loads:		
F 449 lbs.	Mt 110 ft-lbs.	Mb 73 ft-lbs.

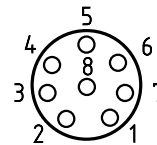
F= Axial Load Limit Mt= Torque Moment Limit
Mb= Bending Moment Limit



**Electrically Controlled,
Cobot Ready!**

Electrical Operation Cable

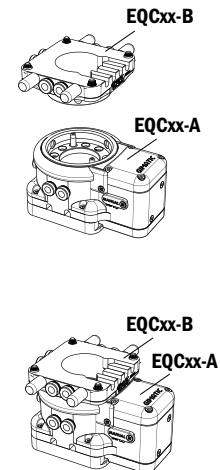
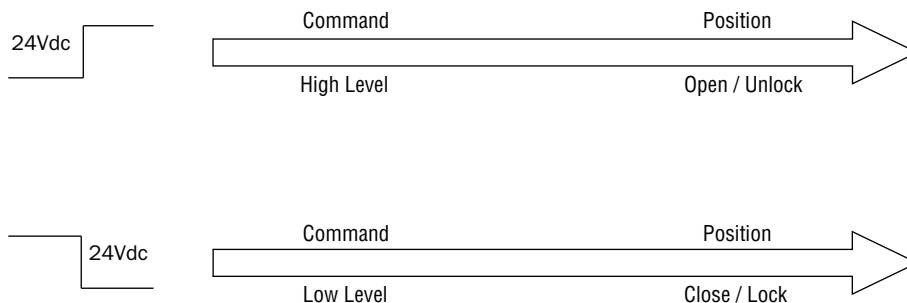
The electrical quick changer is equipped with an M8 8-pin connector for interfacing directly with your power supply and digital controller. This powers the mechanism, provides input control for locking/unlocking the mechanism, and feedback outputs for monitoring position of the mechanism. No additional external electronic control system is required. Various pin-out and plug configurations are available to fit your specific robot, please see our website for more details or contact EMI.



- 1 - White: N/C
- 2 - Brown: N/C
- 3 - Green: Out Closed (PNP)
- 4 - Yellow: Out Opened (PNP)
- 5 - Grey: 24V DC
- 6 - Pink: Open / Close (PNP)
- 7 - Blue: N/C
- 8 - Red: GND

**Note: Q#8150 Pinout shown. Varies by model.*

Technical Specifications



	EQC20
Electrical connection	M8, 8-pole
Power supply	24 Vdc ±10% 0.5 Arms, 1.2 Apk
PNP digital inputs	Low: coupling command High: uncoupling command
Output initialization delay	200 ms

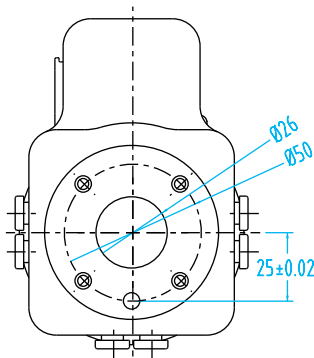
Automatic Quick Changer for Cobots – EQC20

(Dimensioned drawings reduced to fit)

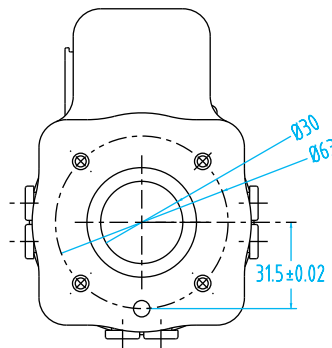
Interface Plates



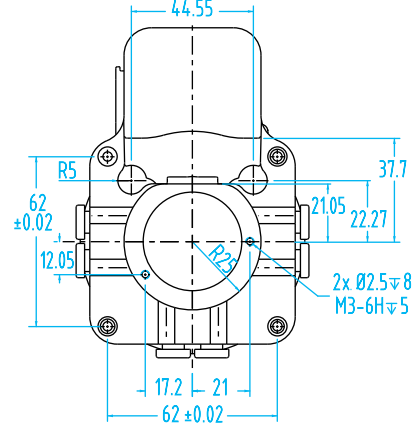
Q#8153 EQC20-K50
ISO 9409-1-50-4-M6



Q#8154 EQC20-K63
ISO 9409-1-63-4-M6



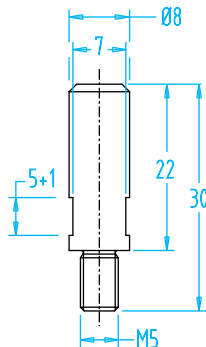
Robot Side EQC20
No Interface Plate Shown



Quick#	Part#	Description	Weight	Price
8153	EQC20-K50	Interface Plate with ISO 9409-1-50-4-M6 interface	120g	\$80.42
8154	EQC20-K63	Interface Plate with ISO 9409-1-63-4-M6 interface	120g	\$73.73
8152	EQC20-K1	Storage Docking Pins for EOAT-Side (x4)	13g	\$37.53

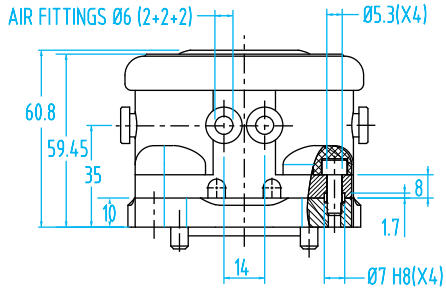
Storage Docking Pins

These pins recommended for storage of your EOAT, and are supplied separately. Contact EMI for a cradle for your EOAT.

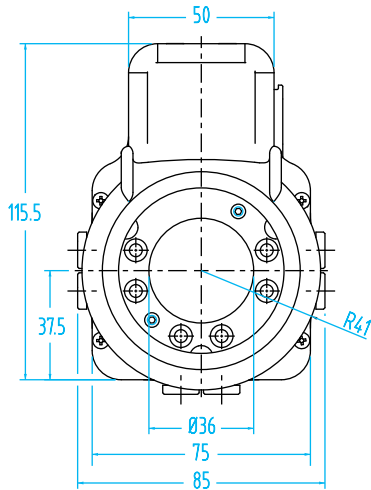


Automatic Quick Changer for Cobots – EQC20

(Dimensioned drawings reduced to fit)



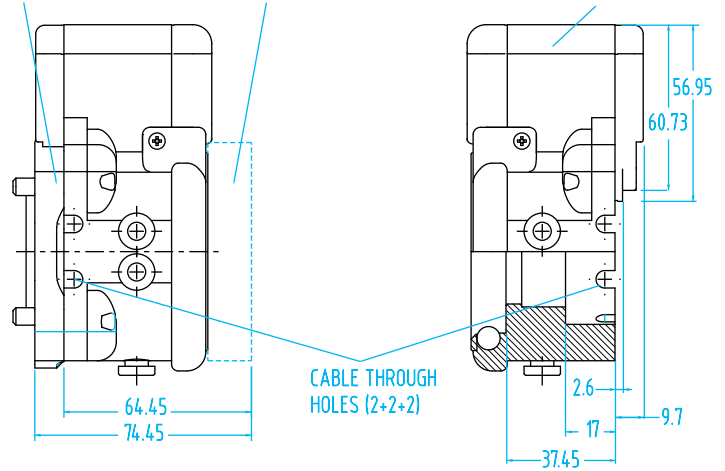
Robot-Sides, #8098, #8150, #8155, #8156



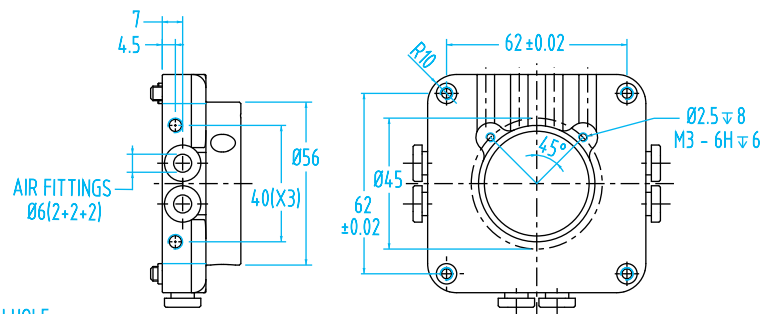
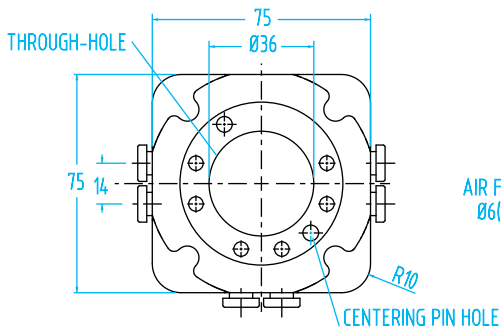
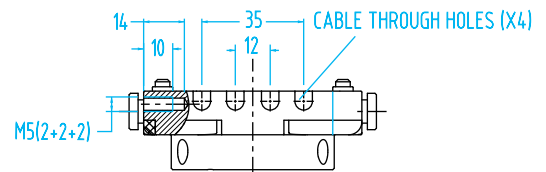
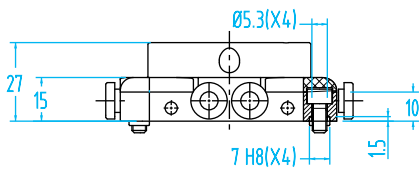
Q#8154, EQC20-K63

Q#8151, EQC20-B

Without interface plate



EOAT Side, #8151



OnRobot Quick Changer for Cobots



#8225
Robot-Side



#8221
EOAT-Side

The Robot-Side Quick Changer enables easy and fast tool changing. It is fully collaborative with no sharp edges, which makes it easy and safe for human interaction. The Quick Changer can handle up to a 44 lbs (20kg) payload and has a low built-in height and weight.

Compatible with eSeries UR, and any other cobot that uses the ISO-9409-1-50-4-M6 mounting pattern and can be easily adapted to even more robots.

Built into every OnRobot gripper, the EOAT-Side Quick Changer is now available for all EOAT which makes it easy to click into your cobot. With a 20kg max. payload, this quick changer is a simple way to swap your EOAT in between applications.

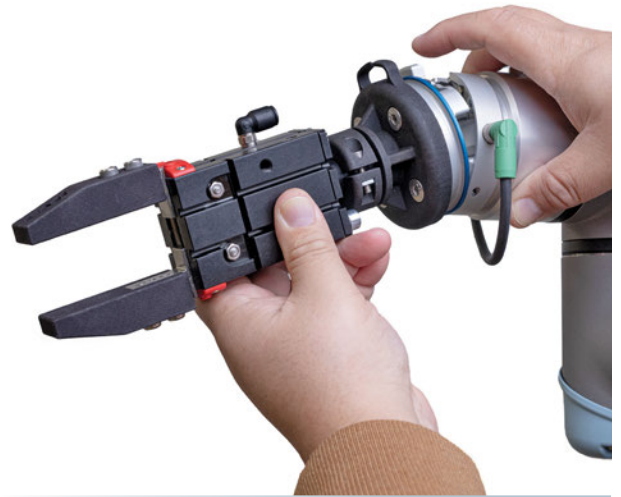
Use with pneumatic grippers, degating kits, or any third party product compatible with ISO-9409-1-50-4-M6 bolt pattern.

Quick#	Part#	Description	Weight	Price
8225	OR-QCA1*	Robot-Side	58.9g	\$588.00
8221	OR-102014	EOAT-Side	140g	\$588.00

*Not compatible with CB3 series UR, see #8224 below.
OnRobot pricing effective 3/1/2024 and subject to change.

8224	OR-102326	Robot-Side for CB Series	95.2g (0.21lb)	\$700.00
------	-----------	--------------------------	----------------	----------

Technical Specs	
Maximum permissible force	90 lbf
Maximum permissible torque	442 in-lb
Rated payload	44 lb (20 kg)
Repeatability	+/- 0.02mm



M8 8-Pin Tool Flange

Quick#	Part#	Description	Price
8230	OR-102113*	M8 8-Pin Female Tool Flange for UR	\$95.00
8237	OR-107456**	M8 8-Pin Female Tool Flange for Fanuc CRX	\$95.00

*Required to use Q#8220/8225 Quick Changer on eSeries UR and Q#8224 Quick Changer on previous (CB3) UR models to connect directly to the Tool I/O M8 connector.

**Required to use Q#8220/8225 on Fanuc CRX Tool I/O M8 connector.



Wingman Automatic Quick Changer for Cobots!

Click here for more information!

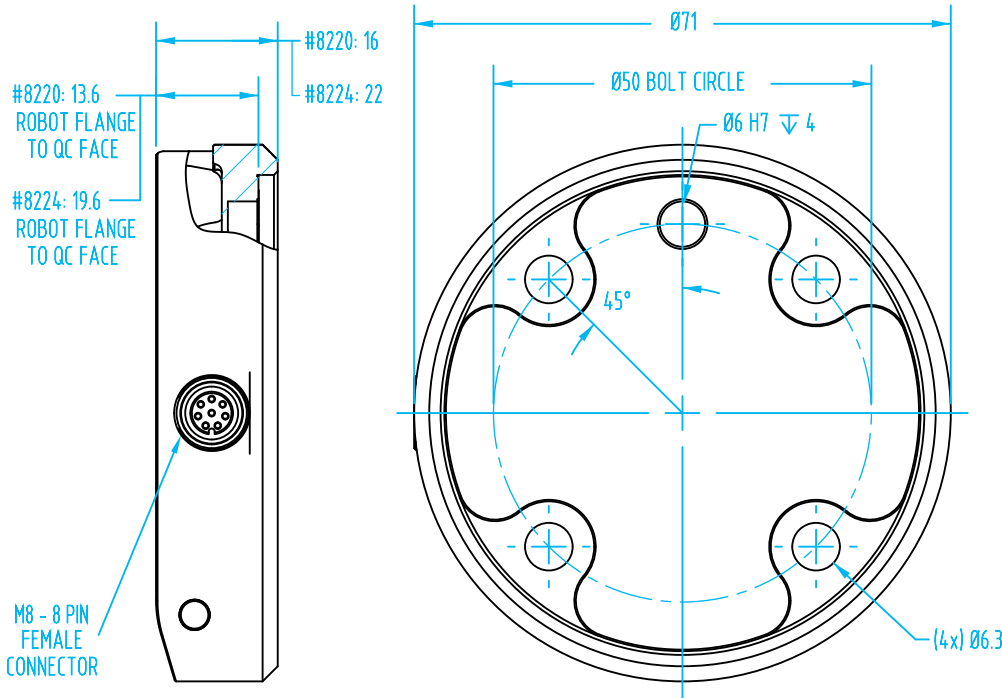


OnRobot Quick Changer for Cobots

(Dimensioned drawings shown full scale)

Robot-Side

- #8225 & #8224: M8 8-Pin Female Tool Flange Connection Q#8230 required for UR Robot.
M8 8-Pin Male Tool Flange Connection Q#8237 required for Fanuc CRX Robot.
- #8225 & #8224: Have the same dimensions except for the overall height as noted below.

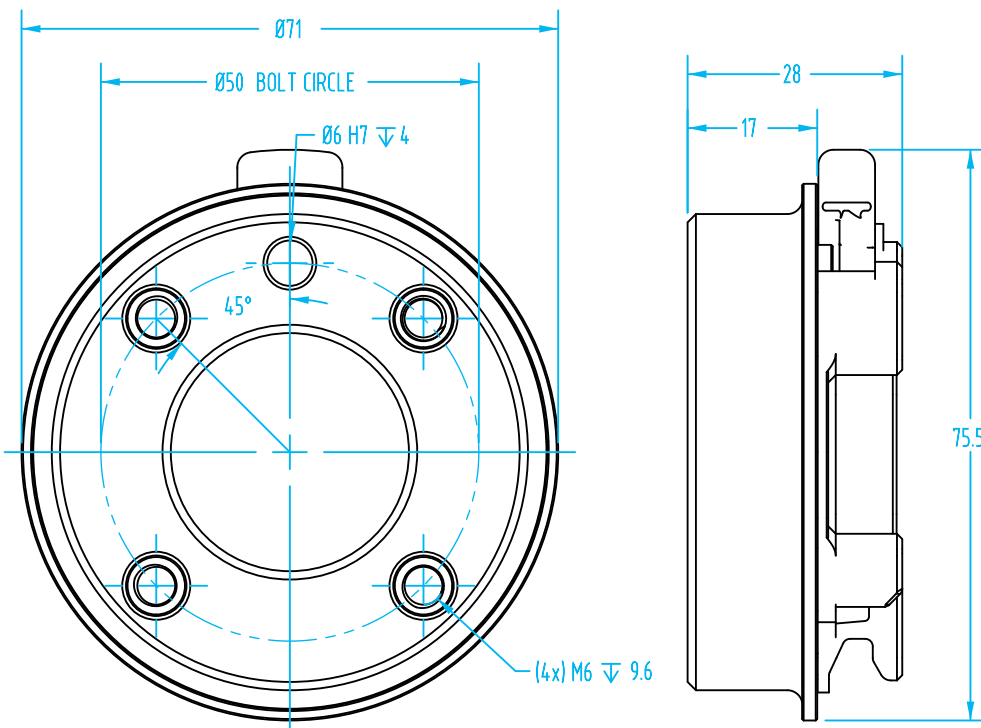


#8224
Robot-Side, for CB Series UR
Not compatible with eSeries UR



#8225
Robot-Side, 4.5a compatible

EOAT-Side



#8221
EOAT-Side

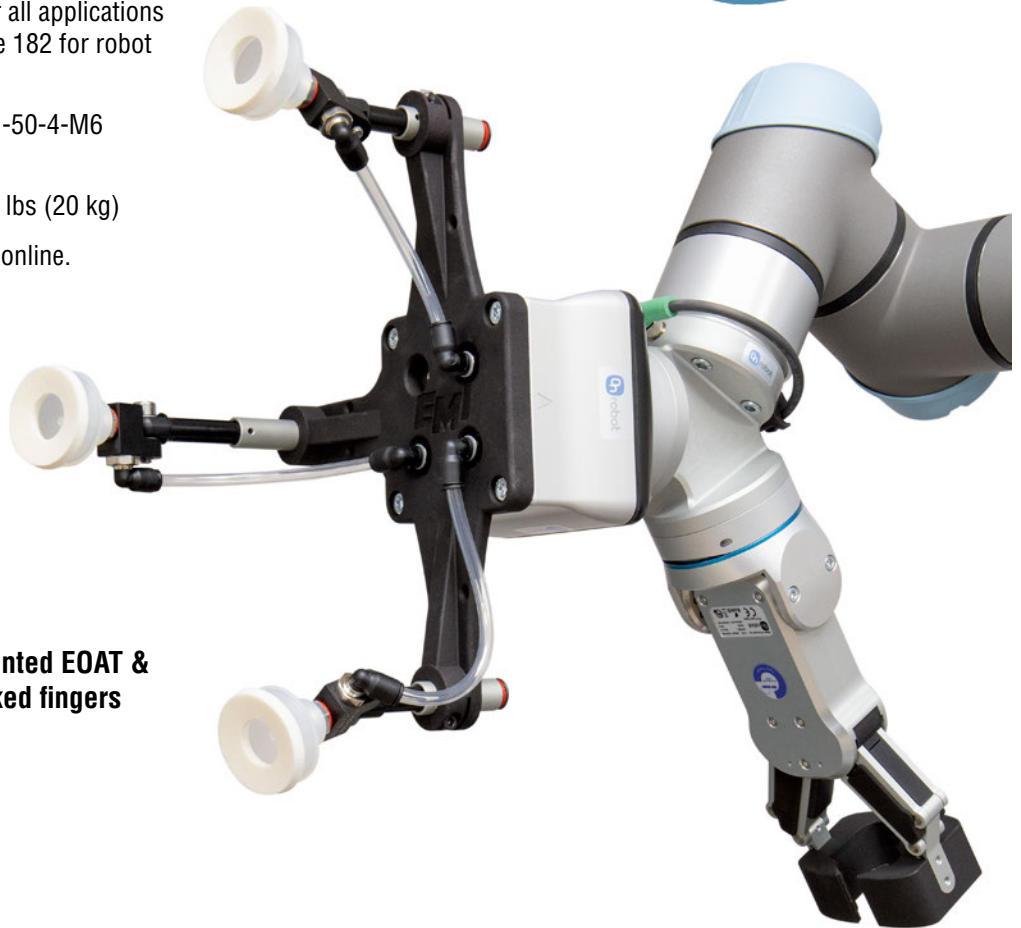
OnRobot Dual Quick Changer for Cobots

The Dual Quick Changer enables you to use two end-of-arm tools together in a single cycle. With this innovative solution you can use two grippers or vacuum units. Quickly and seamlessly switch between tools to maximize the utilization of your robots.

Quick#	Part#	Weight	Price
8222	OR-101788	410g	\$2,781.00

OnRobot pricing effective 3/1/2024 and subject to change.

- Easy and fast change of tools.
- High repeatability.
- Requires a Compute Box for all applications and robot models. See page 182 for robot specific Compute Boxes.
- Compatible with ISO 9409-1-50-4-M6 mounting interface.
- Max. suggested payload: 44 lbs (20 kg)
- Dimensional drawing found online.



Custom 3D printed EOAT & RG2 with flocked fingers

Cable Relief for Dual QC

Quick#	Part#	Price
8242	OR-102919	\$86.67



- Direct OEM replacement of the 3D printed cable relief found on Q#8222 dual quick changer for Cobots.
- Contact EMI if you need additional cable management solutions for your Cobot.

OnRobot Hex-E Quick Changer Force/Torque Sensor



Try It Risk Free!

*Contact us for details

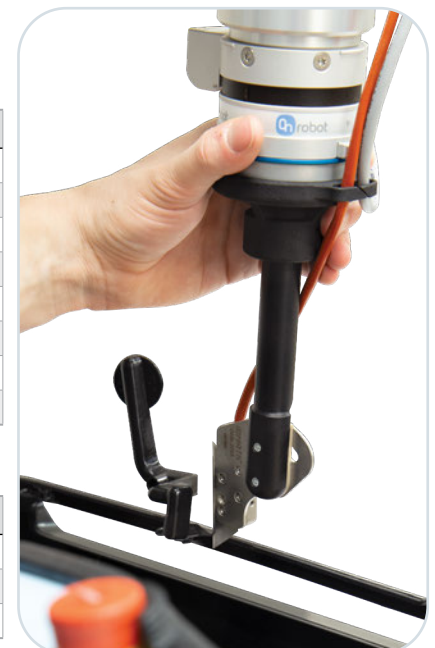


Quick#	Part#	Wt.	Price
8223	OR-102111	347g	\$4,342.00

- Plastic applications include degating, and insert loading using the advanced control and force feedback.
- Common applications are polishing, sanding, deburring, grinding and assembly, but it can also be used for teach-in and crash detection.
- Unique optical based technology allows for high precision and repeatability.
- Keeps constant force while moving.
- Easy to use interface, no programming skills are needed (UR only).
- Requires a Compute Box for all applications and robot models. See page 182 for robot specific Compute Boxes.

OnRobot's 6-axis force torque sensor provides an accurate force and torque measurement along all 6 axes. This gives you precise control when it comes to difficult jobs. Additionally, the HEX software includes path recording, force control (on UR and Kuka) and special features for insertion tasks (UR only). This means reduced integration time for your production line. The sensors are designed to fit most of the current industrial robot arms.

Utilizing the included URcap HEX commands, you can teach your robot the exact location, force and speed of operations such as **insert-loading** and **degating** of larger gates.



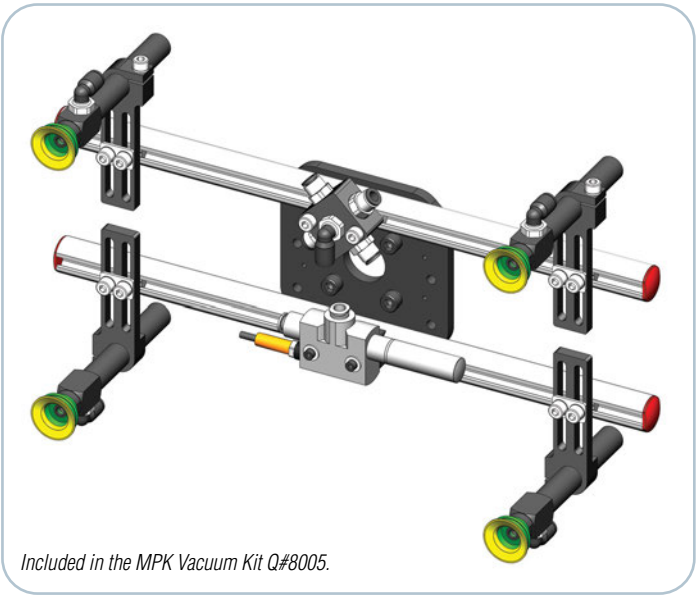
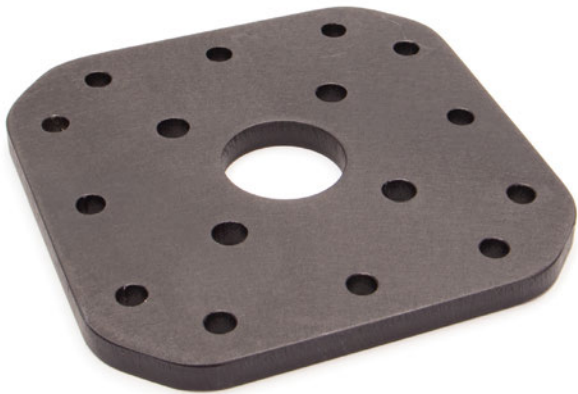
Technical Specs	Fx & Fy	Fz	Tx & Ty	Tz
Nominal capacity (N.C.)	200 N	200 N	10 Nm	6.5 Nm
Single axis deformation at N.C. (typical)	±1.7mm	±0.3mm	±2.5mm	±5mm
Single axis overload	500%	500%	500%	500%
Signal noise* (typical)	0.035 N	0.15 N	0.002 Nm	0.001 Nm
Noise-free resolution (typical)	0.2 N	0.8 N	0.01 Nm	0.002 Nm
Full scale nonlinearity	< 2%	< 2%	< 2%	< 2%
Hysteresis (measured on Fz axis, typical)	< 2%	< 2%	< 2%	< 2%
Crosstalk (typical)	< 5%	< 5%	< 5%	< 5%

* Signal noise is defined as the standard deviation (1sigma) of a typical one second no-load signal.

Operating Conditions	
Power supply	7V- 24V
Maximum current consumption	0.8W
Operating temperature	32° - 131°F

Interface Plate for DIY EOAT

(Dimensioned drawings shown full scale)

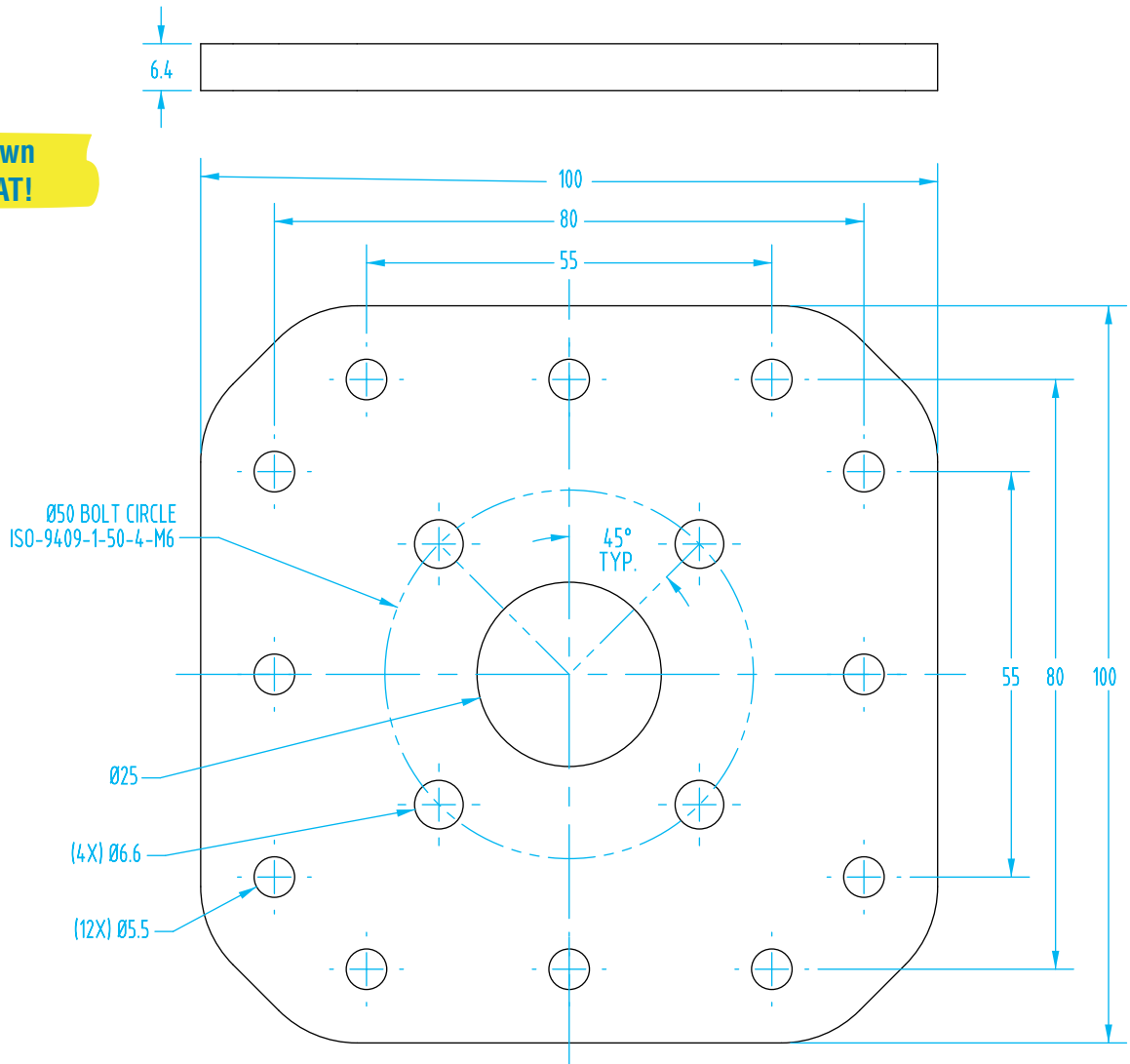


Included in the MPK Vacuum Kit Q#8005.

Quick#	Part#	Price	Wt.
8058	CRM-0138-2A	\$28.13	151g

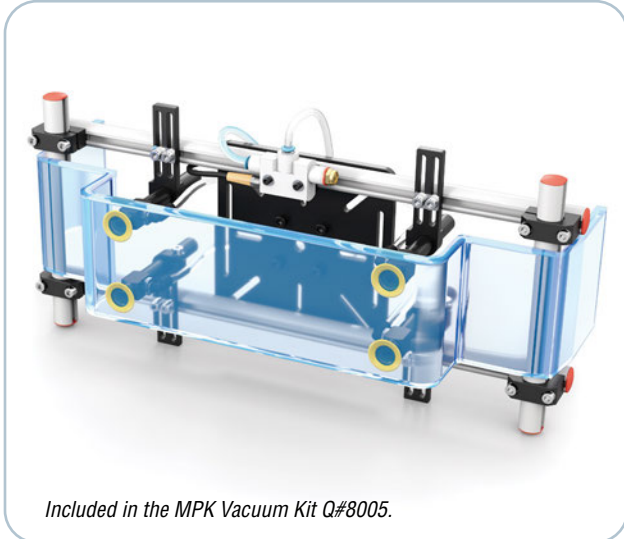
- Lightweight aluminum plate compatible with the ISO-9409-1-50-4-M6 mounting pattern.
- Can be manufactured to fit any Cobot.

Build your own Vacuum EOAT!



Interface Plate for DIY EOAT

(Dimensioned drawings shown half scale)

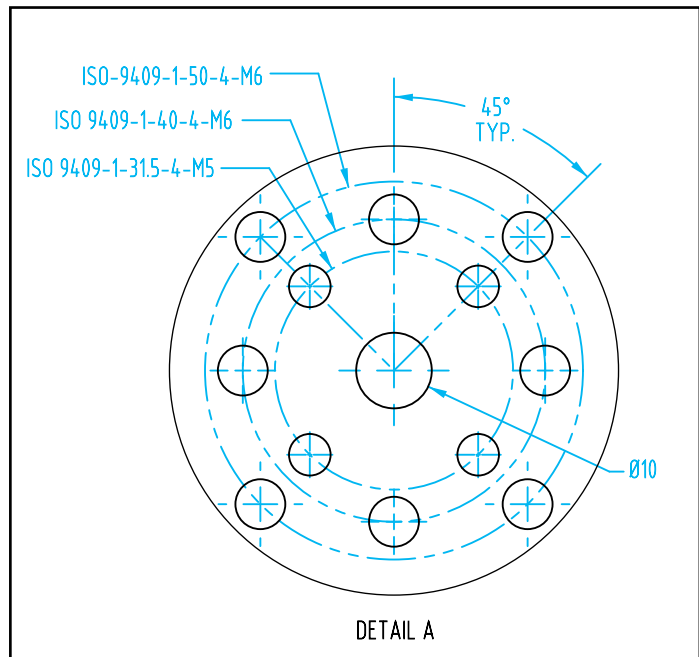


Included in the MPK Vacuum Kit Q#8005.



- Lightweight aluminum plate compatible with ISO 9409-1-31.5-4-M5, ISO 9409-1-40-4-M6, and ISO-9409-1-50-4-M6 mounting patterns.
- Slots allow for quick adjustments.
- See EMI website for full dimensional drawing.

Quick#	Part#	Price	Wt.
8057	CRM-0138-1A	\$31.85	324g



90° Angle Offset Bracket for Cobot Grippers

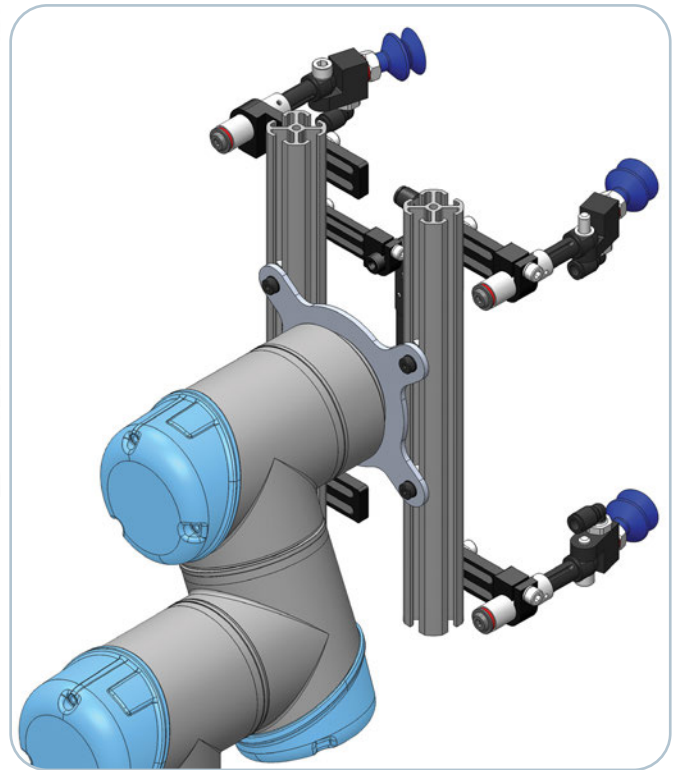
Quick#	Part#	Price
8279	OR-105870	\$233.33

- Can mount to any robot with ISO-9409-1-50-4-M6 mounting pattern.
- Compatible with any gripper that mount to the robot wrist.
- More information online!

Quick Changer Interface for DIY EOAT

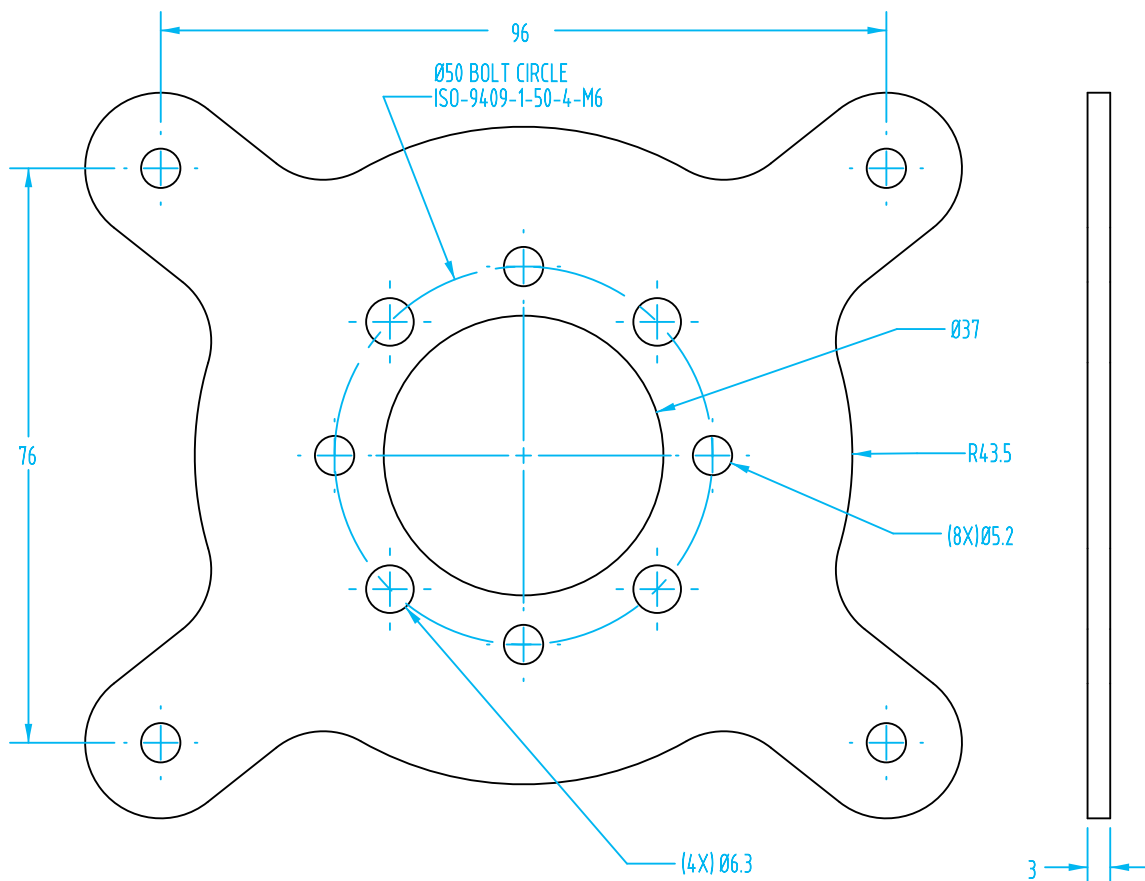


(Dimensioned drawings shown full scale)



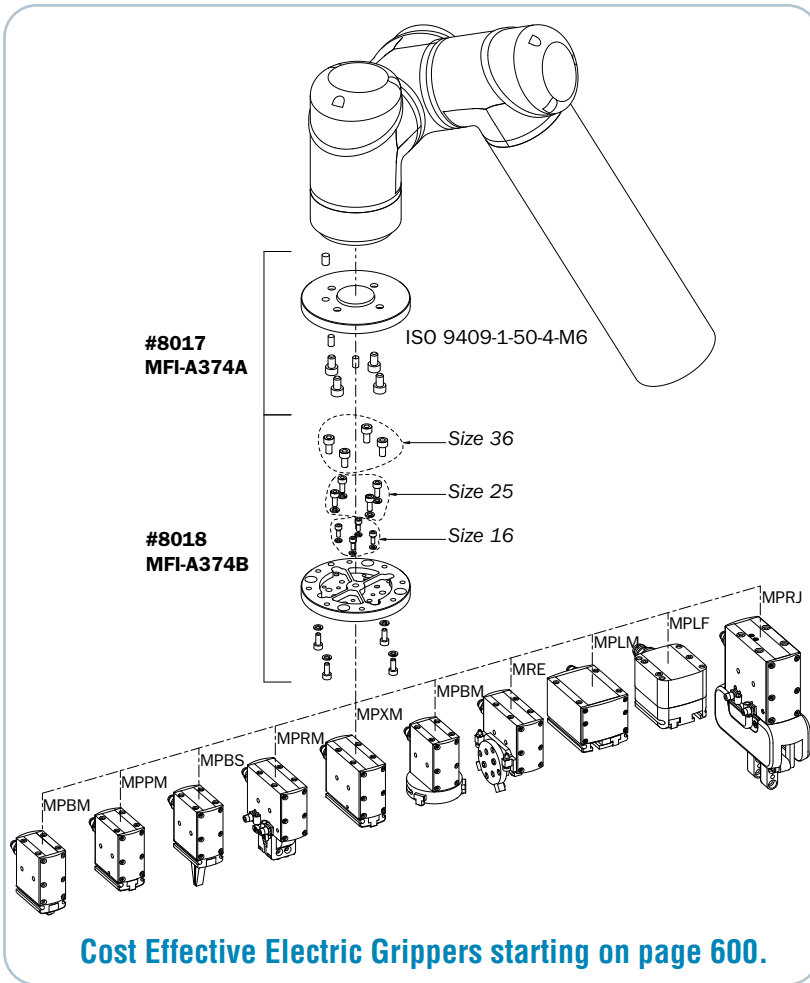
Quick#	Part#	Price	Wt.
7435	MFI-A372	\$29.29	218g

- Steel plate is compatible with the ISO-9409-1-50-4-M6 mounting pattern.
- Mounts directly to Quick Changers.
- Hardware included.



Interface Plates for Gimatic Electric Grippers

(Dimensioned drawings shown full scale)



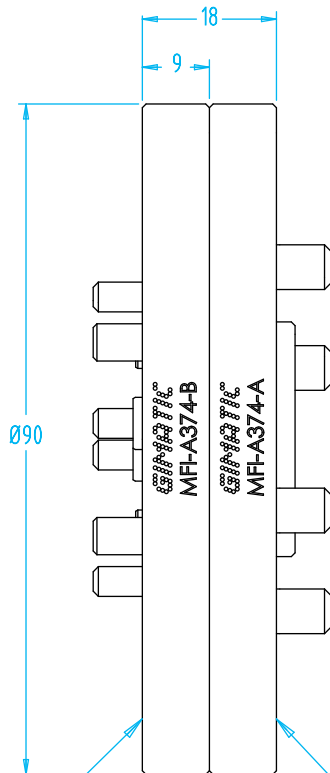
#8017



#8018

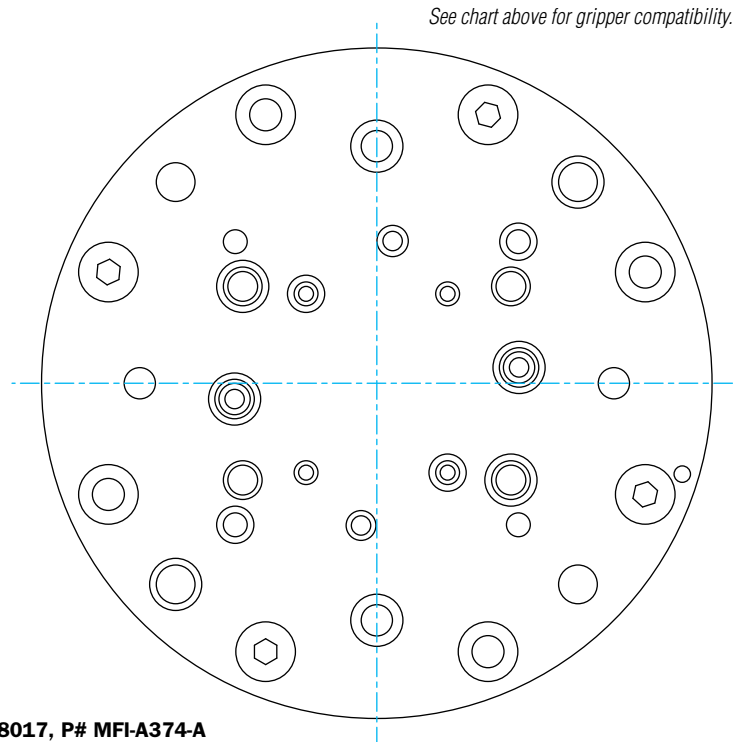
Quick#	Part#	Price	Wt.
8017	MFI-A374A	\$62.50	50g
8018	MFI-A374B	\$83.00	55g

- Compatible with the ISO-9409-1-50-4-M6 mounting pattern.
- Hardware included.



Q# 8018, P# MFI-A374-B
Gripper side

Q# 8017, P# MFI-A374-A
ISO 9409-1-50-4-M6 Robot side



See chart above for gripper compatibility.

EMI Modular Vacuum Kit – MPK

Everything You Need To Get Your Cobot Up
And Running For Vacuum Applications.

Best Seller!

Quick# 8005
CRK-MPK1-A
KIT PRICE: \$995.00



Modular MPK Vacuum Kit

- Modular, lightweight aluminum frame with two anodized aluminum mount plates.
- 3 Sets of vacuum cups included: High Temperature Silicone, Non-Marking Hithane and Dual Durometer.
- Includes an integrated Vacuum Generator with a monitoring switch for part confirmation.
- **Up to 450mm x 450mm footprint!**
- Compatible with our existing line-up of EOAT components.
- Includes EMI's URcap and sample CAD models for easy assembly and programming.
- Compatible with the ISO-9409-1-50-4-M6 mounting interface.
- Compatible with QC75 and QC90 quick changers.



Also available for Sawyer
and other Cobots!

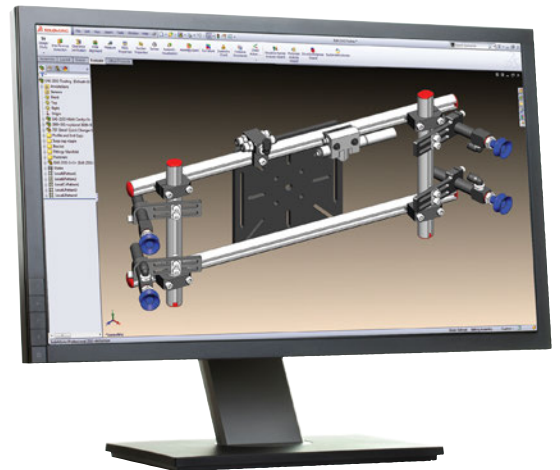
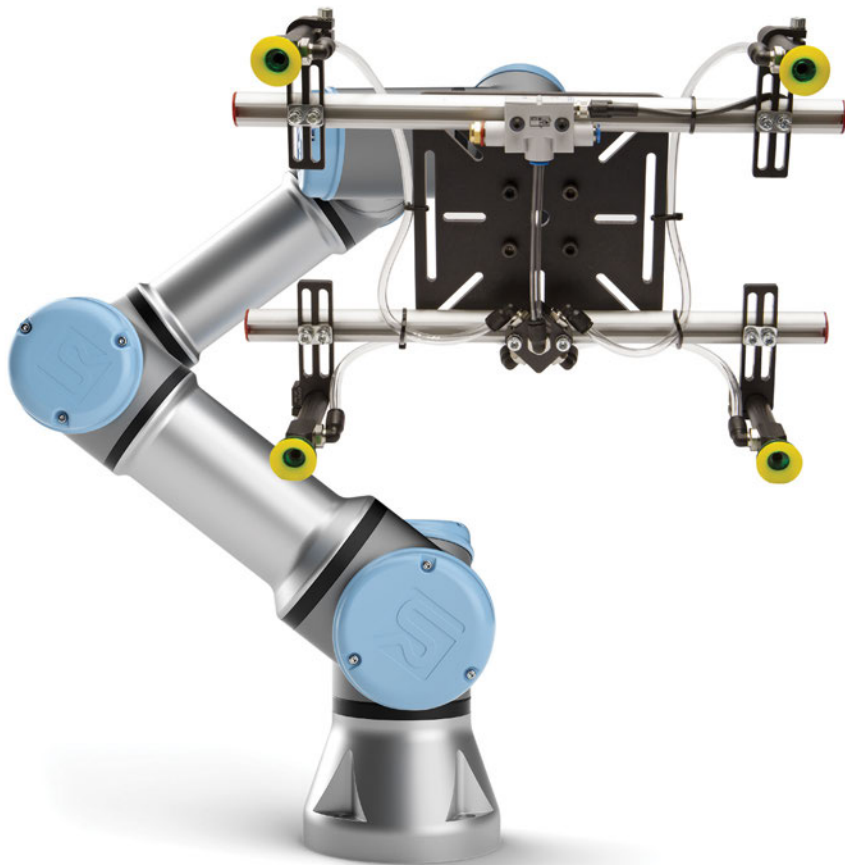
EMI Modular Vacuum Kit – MPK

Large Footprint or Compact Configuration!

Completely modular and lightweight, the MPK is a great starting point for most vacuum applications and can easily be expanded with EMI's complete line up of EOAT framing, suspensions, grippers, vacuum cups, and more. All in stock and ready to ship with a team of Engineers ready to assist you with your application.



Includes USB drive with literature and robot software plug-in.



Includes sample EOATs to get you started!



Quick# 8016

5/2 Solenoid valve with fittings, mufflers, and non-slip Velcro® strap.



Quick# 8015

Two cable management clamps with non-slip Velcro strap.



#8091 with silencer #8069

Vacuum generator with monitoring switch for part confirmation.



Easy to assemble and modify!
Contact us with any questions.

EMI Modular Vacuum Kit – MPK 2

Designed with the best vacuum components to meet the requirements of packaging applications, and the convenience to modify when needed.

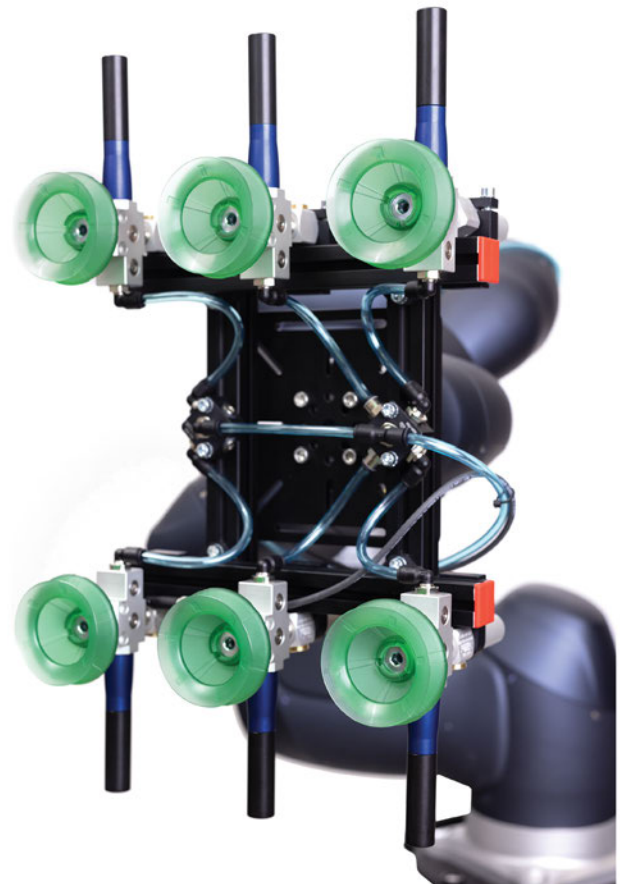
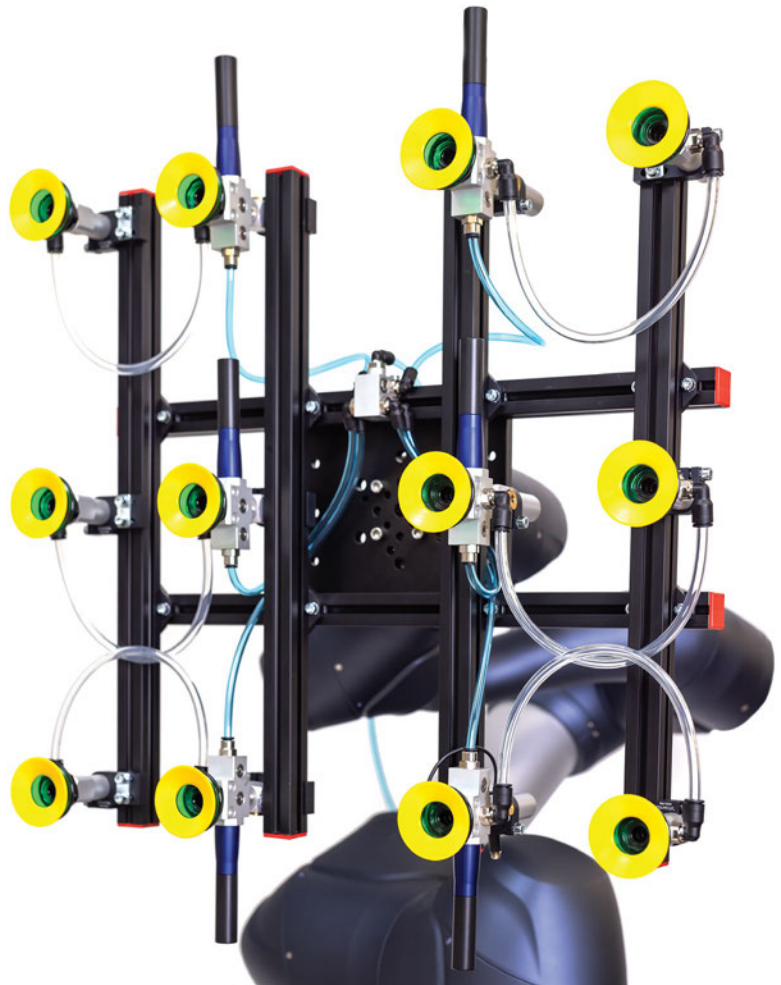
Expanding on EMI offering of vacuum automation products and solutions, our engineers have put together a kit to handle porous materials commonly used in packaging applications. With de-centralized vacuum generators, industry-leading vacuum cups, framing and two mounting plate options, this Kit is a great starting point for your Collaborative Robot to be deployed.

Quick# 8004
CRK-MPK2-A
KIT PRICE: \$2,998.00

Modular MPK 2 Vacuum Kit:

- Modular, lightweight aluminum frame with two anodized aluminum mount plates.
- Two sets of vacuum cups included: PIAB® Duraflex Dual Durometer and Schmalz® Elastodur Dual Durometer.
- Includes an integrated high-flow vacuum generator with a monitoring switch for part confirmation.
- Up to 500mm x 500mm footprint!
- Compatible with our existing line-up of EOAT components.
- Includes EMI's robot plugin and sample CAD models for easy assembly and programming.
- Compatible with multiple cobot mounting interfaces.
- Compatible with QC75 and QC90 quick changers.

Easily modify configurations when your application changes!



EMI Modular Vacuum Kit – MPK 2

Quick# 8004 has been tested for payloads up to 20kg, however, keep in mind that this is very dependent on the material being handled and testing is encouraged.

If you need support from our engineers, contact cobots@emicorp.com to get started with your vacuum packaging application.



3D Printed Vacuum EOAT for Cobots – 3D-V



The development of the 3D-V Vacuum Kit stems from years of successful implementation of 3D printed components to compliment custom End-of-Arm Tools.

The 3D-V Vacuum Kit is easy to install, operate, and is ready to expand the capabilities of your Collaborative Industrial Robot.

Quick#8000 – 3D-V (as shown)

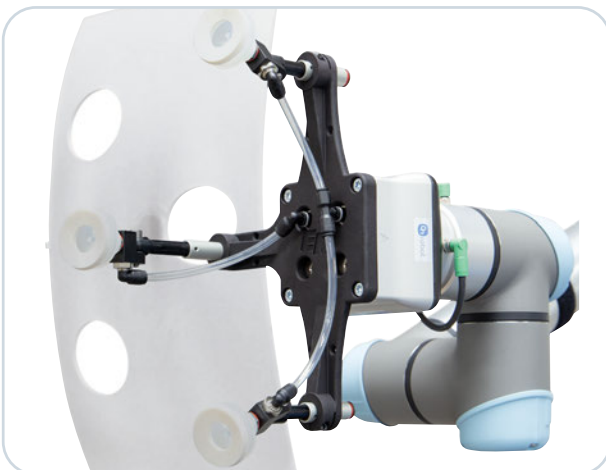
KIT PRICE: \$895.00*

*price subject to change per configuration



3D-V Vacuum Kit:

- Fully Customizable: (1–16) Vacuum cups with variable spacing.
- Available with any vacuum cup from our catalog. Shown with industry standard Hithane vacuum cups above.
- Available with an integrated vacuum generator with a monitoring switch for part confirmation.
- Lightweight 3D printed frame made out of durable nylon.
- Up to 375mm x 275mm.
- Each 3D-V Vacuum Kit is designed for your specific application.
- Supply with compressed air.



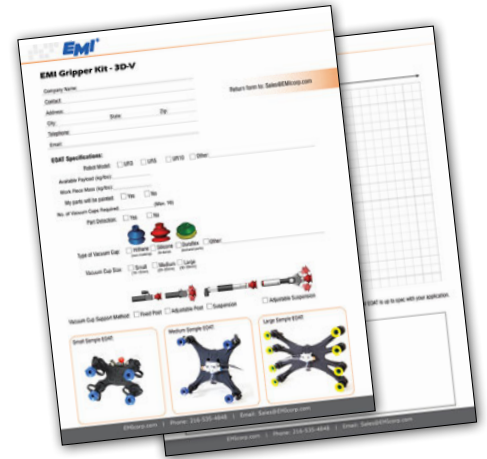
Large sample 3DV can hold up to 10kg. Payload can vary by configuration.

3D Printed Vacuum EOAT for Cobots – 3D-V

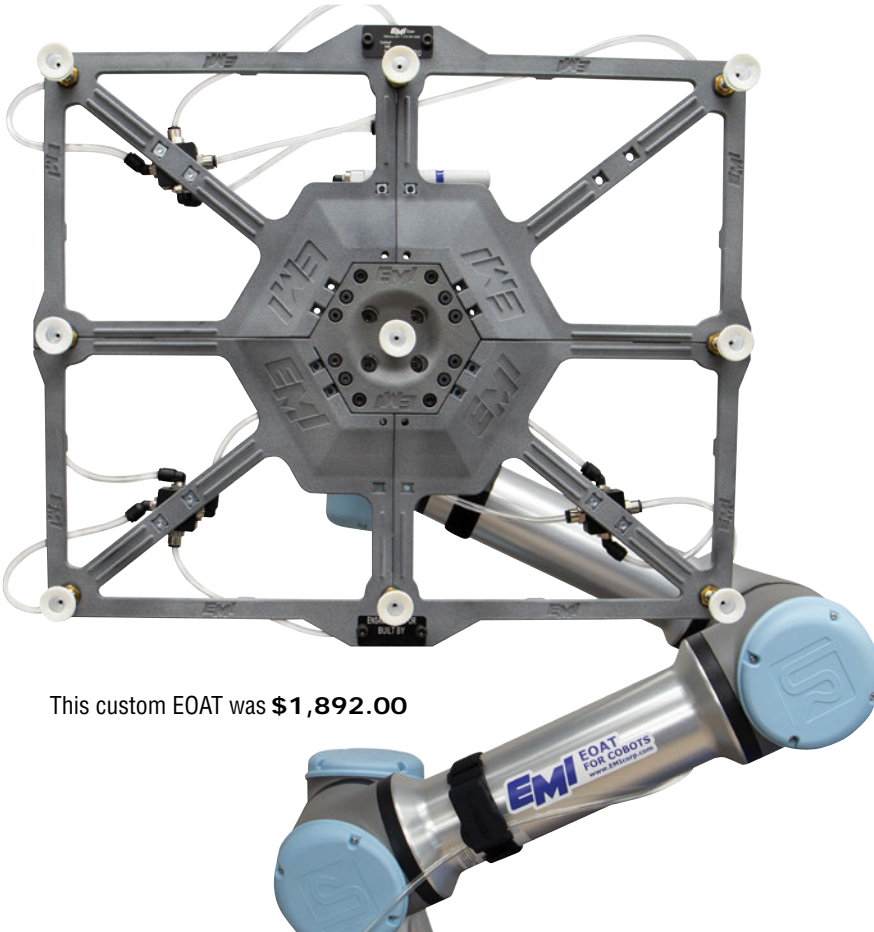
Can Mount to Any Robot!



Includes USB drive with literature and robot software plug-in.



EMI's 3D-V Datasheet for ordering, available at www.EMICorp.com.



This custom EOAT was **\$1,892.00**

3D-V Gripper Kit Includes:



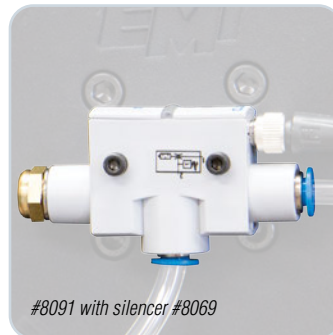
Quick# 8016

5/2 Solenoid valve with fittings, mufflers, and non-slip Velcro® strap.



Quick# 8015

Two cable management clamps with non-slip Velcro strap.



#8091 with silencer #8069

Vacuum generator with monitoring switch for part confirmation.



Hardware to mount your cobot or quick changer.

Gimatic Vacuum EOAT for Cobots – KIT-UR-V

Gimatic's KIT-V for Universal and Techman Robots is a modular and durable vacuum end effector. A lightweight, extruded aluminum frame offers versatility so it can be used for different tasks with minimal setup time.



Quick# 8011
KIT-UR-V

PRICE: \$726.⁰⁰



Gimatic by EMI KIT-UR-V & KIT-TM-V

End Of Arm Tool (EOAT) for vacuum based pick & place operations. The included pneumatic actuator allows for a direct connection to the robot wrist. KIT-UR-V includes a user manual and URCap.

The KIT-TM-V is designed for Techman Robot cobots (TM5, TM12 and TM14 series). This kit is completely compatible with Gimatic EQC20-TM (Quick#8155) and it can be used in combination with any collaborative robot that provides a limited power supply capability at the wrist.

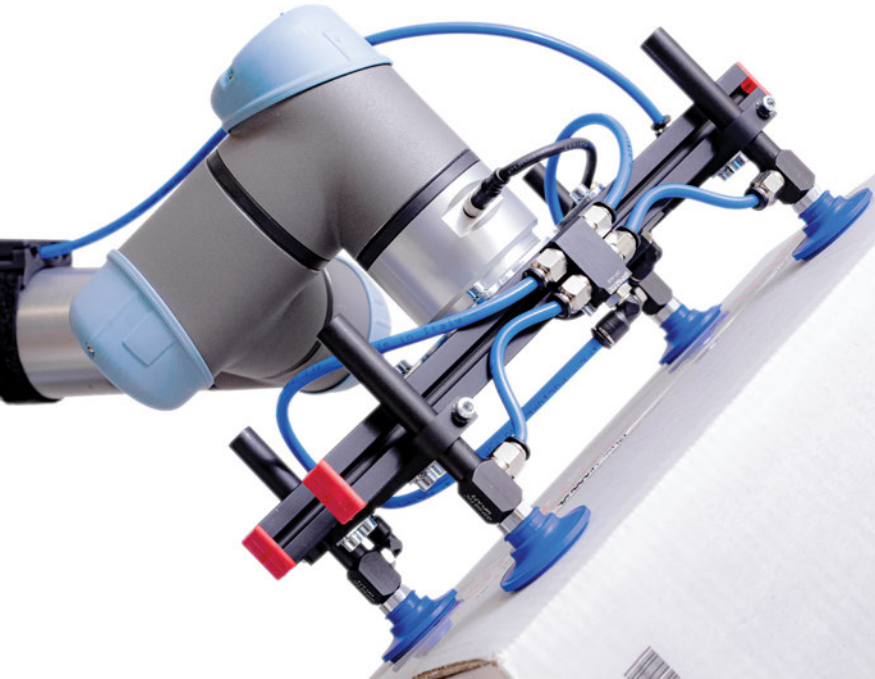
Find the right vacuum cup for your application!
See our Vacuum Cup Overview pages 322–323.

Quick# 8030
KIT-TM-V

PRICE: \$726.⁰⁰

TMPlug&Play
CERTIFIED

Gimatic Vacuum EOAT for Cobots – KIT-UR-V

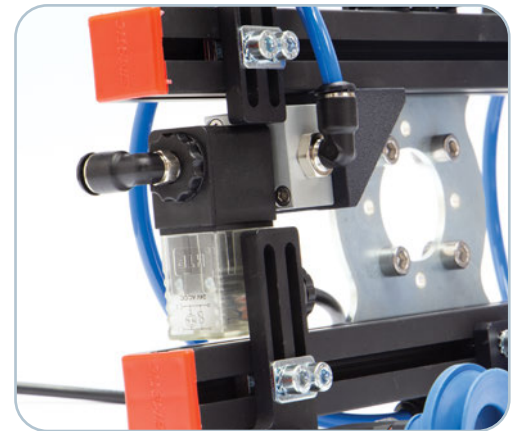


Look familiar? EMI EOAT components can be easily adapted to any robot.

**Pre-Assembled
and Reliable!**

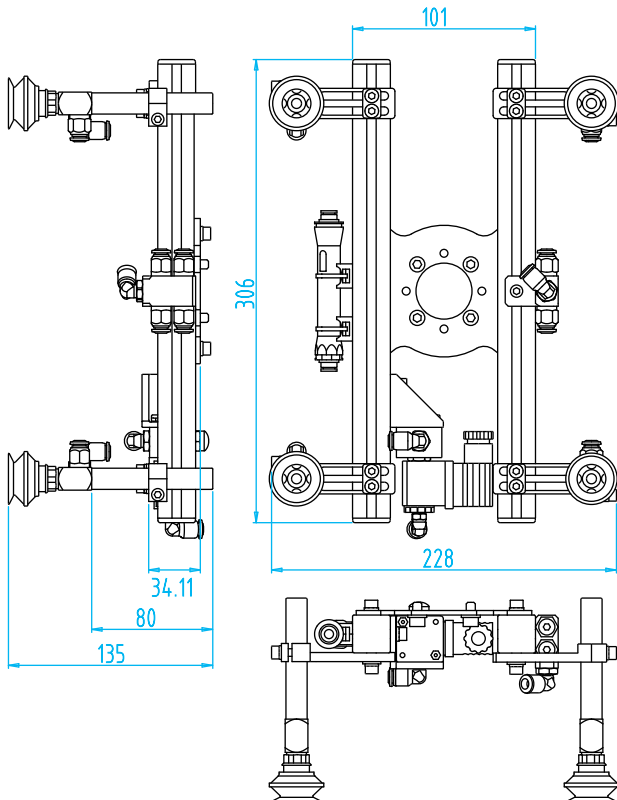
Features:

- Delivered fully assembled, and easy to adjust.
- Compatible with UR3(e), UR5(e), UR10(e).
- Directly connects to the wrist of the robot.
- Plug & play solution.
- Embedded vacuum generator and solenoid valve.
- Delivery with standard HNBR vacuum cups. Contact EMI for different vacuum cups.
- User manual and Gimatic URCap included.

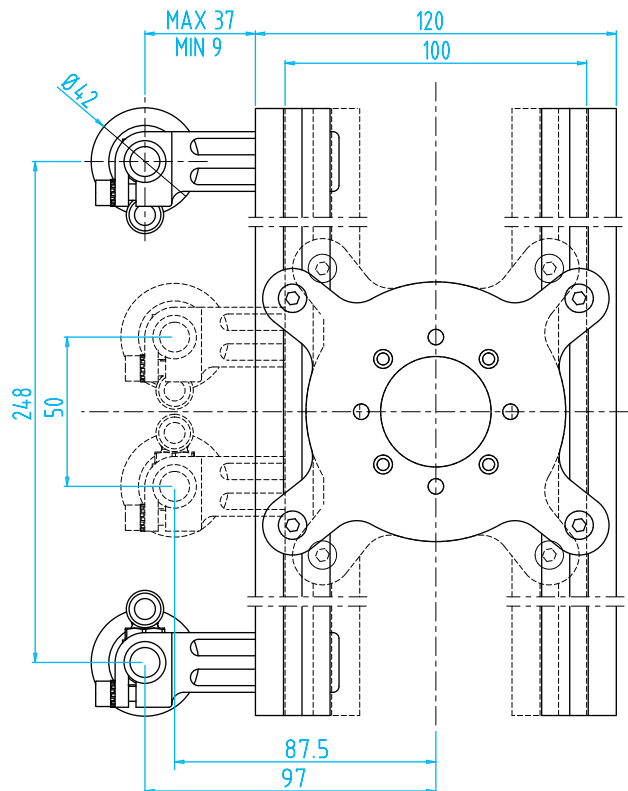


Embedded vacuum generator and solenoid valve.

Dimensions (mm):



Adjustments (mm):





Custom and Plug-and-Play Solutions for your Cobot

Vacuum Gripper Kits

Vacuum is the most effective way of handling molded parts and EMI offers everything you need for a plug and play solution. EMI stocks the largest selection of Vacuum EOAT kits and components.

EMI Gripper Kits

EMI offers a wide array of handling gripper kits to meet your application needs, budget and Cobot platform. Every kit is in-stock and can be customized, expanded or simplified according to your specifications.

Cobot Accessories

Our Cobot Accessories are compatible with a wide range of robot platforms. EMI Solenoid Valve, Vacuum Generator and Cable Management kits are a cost effective, practical way to enhance your Collaborative Robot.

Cobot Stand

EMI Cobot Stands extend the reach of your robot arm. In-stock and cost-effective, these heavy-duty pedestals come in various heights and are available with a mobile base. Perfect for industrial environments.

Cobot Ready Conveyors

Cobot Ready Conveyors from EMI easily interact with your robot to provide continuous part transfer. Ideal for pick and place, machine tending and packaging, these conveyors are designed and manufactured to order.





OnRobot VGC10 Customizable Electric Vacuum Gripper



Electric Vacuum Generator with 33 lbs payload, dual vacuum channels, and built-in quick changer is ideal for injection molded parts. Use your existing EOAT components to frame an EOAT that can run anywhere in your plant. **No Compressed Air Required!**

Quick# 8211
OR-102844
PRICE: \$3,709.00

OnRobot pricing effective 3/1/2024 and subject to change.

Try It Risk Free!

*Contact us for details



Features:

- Two independent LH/RH air channels for dual gripping are helpful for handling plastic molded parts.
- Flexible electric vacuum gripper with unlimited customization fits all your application needs.
- Compact, lightweight gripper is perfect for tight spaces but with plenty of power for objects up to 15kg.
- Built-in electric vacuum generator.
- No external air supply needed.
- Integrated software.
- Dimensional drawings and further technical information can be found on EMI's website.

Technical Specs	
Vacuum	5%– 80% Vacuum (1.5Hg – 24Hg)
Air flow	12 L /min (0.42 CFM)
Max. payload w/ default attachments*	13.2 lb (6 kg)
Max. payload w/ custom attachments*	33.1 lb (15 kg)
Gripping time	0.35 seconds
Releasing time	0.20 seconds
Weight	814g (1.79 lb)
Power supply	20.4V – 28.8V
Current consumption	50mA – 1500mA
Operating temperature	32° – 122°F

* When using three 40mm cups (more info in the table). Number of cups needed for non-porous materials varies depending on payload and vacuum.

Box Includes:

- VGC10
- Mounting plate
- 15mm Vacuum cup (x 8)
- 30mm Vacuum cup (x 6)
- 40mm Vacuum cup (x 4)
- Vacuum post (x2)
- G1/8" Vacuum cup nipple (x10)
- 6mm Push-in fitting (x4)
- G1/8" Plug (x4)
- M6 x 10mm screw (x4)
- 3mm Hex key
- Torx T30 key



#8271

Hithane Cups:
Industry Standard!
See page 326.

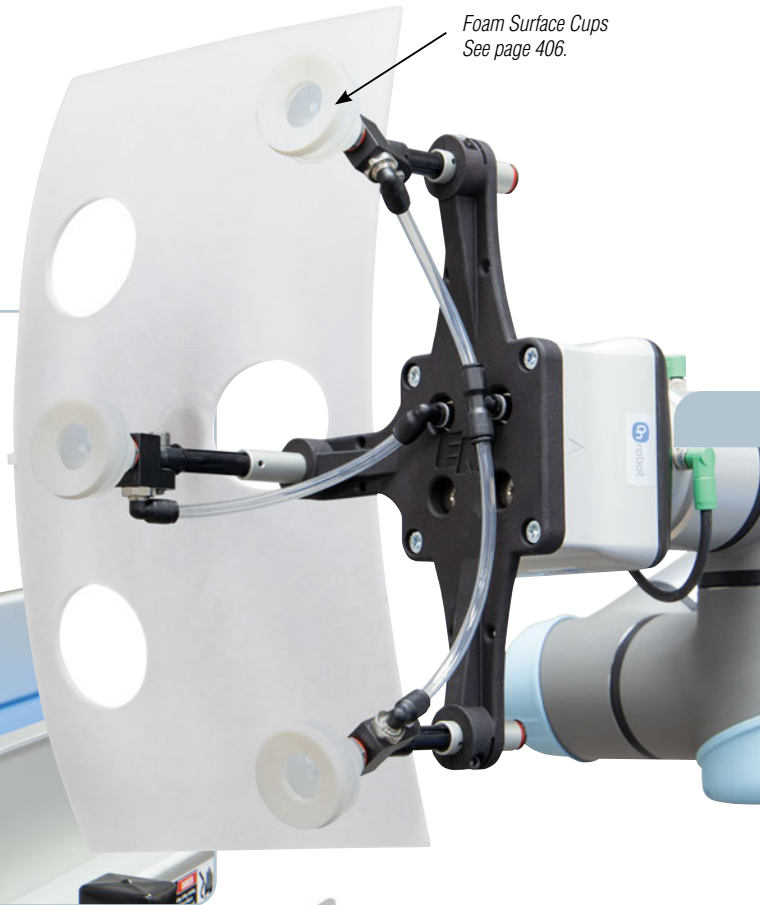
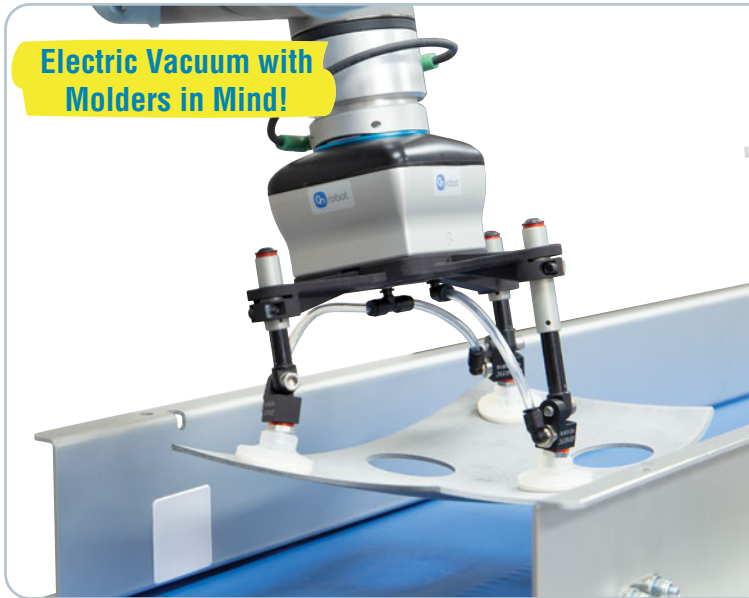


*Shown with custom framing.

OnRobot VGC10 Customizable Electric Vacuum Gripper

Custom 3D Printed EOAT and Cobot Ready Conveyor by EMI

EMI's Cobot Ready Conveyors are designed to be integrated with your Universal Robot to provide continuous part transfer and are ideal for pick and place, machine tending, and packaging applications.



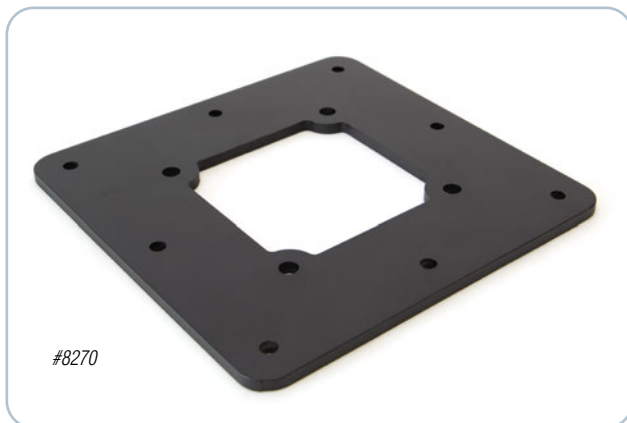
Custom mounting plates and EOAT by EMI

Have a specialty application that requires a custom vacuum gripper? Contact us to discuss! In-stock mounting plates are also available.

VGC10 Mounting Plates for EOAT

Quick#	Part#	Description	Wt.	Price
8271	CRM-0241-VGC10-4	Collaborative EOAT Plate	105g	\$41.84
8270	CRM-0241-VGC10-1	Laser Cut EOAT Plate	225g	\$23.45

Dimensional Drawings found online at: www.EMICorp.com
Search and Order by Quick#



OnRobot VG10 Electric Vacuum Gripper with Dual Zone



Built on the VGC10 platform, this unit has the same features plus built-in swiveling arms that can house up to 16 vacuum cups on a 400mm footprint.

The next generation Vacuum EOAT for the Plastics Industry!

Quick# 8210
OR-101661
PRICE: \$6,022.00

OnRobot pricing effective 3/1/2024 and subject to change.

Try It Risk Free!

*Contact us for details



Features:

- Two independent LH/RH air channels for dual gripping is helpful for handling plastic molded parts.
- No external air supply required.
- Seamless integration with the robot of your choice.
- Integrated software.
- Configurable vacuum cups on four swivelling arms, up to 16 cups can be used with 8 per vacuum channel.
- Built-in electric vacuum generator.
- Dimensions (folded): 105mm x 146mm x 146mm tall. Dimensions (unfolded): 105mm x 390mm x 390mm tall. Full dimensions and specifications can be found on EMI's website.

Technical Specs	
Vacuum	5%– 80% Vacuum (1.5Hg – 24Hg)
Air flow	12 L /min (0.42 CFM)
Arms adjustment	0° – 270°
Arm holding torque	6 Nm (4.4 ft-lbf)
Maximum rated payload	33 lb (15 kg)
Gripping time	0.35 seconds
Releasing time	0.20 seconds
Weight	1620g (3.57 lb)
Power supply	20.4V – 28.8V
Current consumption	50mA – 1500mA
Operating temperature	32° – 131°F

OnRobot VG10 Filter Kit (see website for details)

Quick#	Part#	Price
8243	OR-100064	\$286.67



OnRobot VGP20 Electric Vacuum Gripper with Quad Zone



Quick# 8213
OR-107242
PRICE: \$6,625.00

OnRobot pricing effective 3/1/2024 and subject to change.

Try It Risk Free!

*Contact us for details

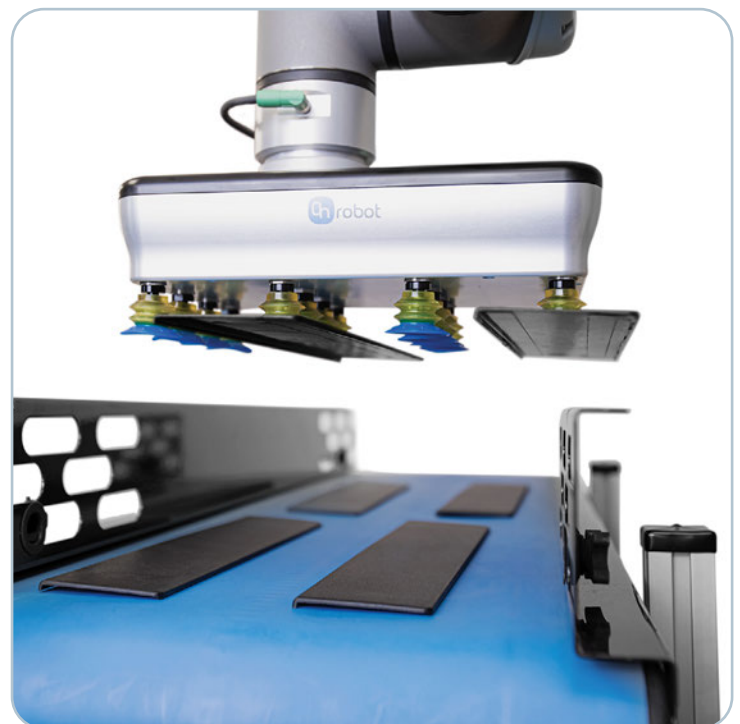
Features:

- Industry's most powerful electric vacuum gripper.
- Highly versatile gripper with unlimited customization possibilities fits many applications.
- Built-in intelligence and multichannel functionality ensure fail-safe, flexible operation.
- Complete out-of-the-box vacuum gripper offers fast, easy deployment with any leading robot.
- Powerful, flexible gripper is ideal for porous and non-porous surfaces.
- Dimensions (with cups): 250mm x 170mm, 92mm tall.
- Sixteen Ø40mm vacuum cups are included with a total 450mm footprint. Many other cup options are available, see pages 322–323.

Technical Specs	
Vacuum	5%–60% Vacuum (1.5Hg – 17.95Hg)
Air flow total	48 L /min (1.7 CFM)
Air flow on each channel	12 L /min (0.42 CFM)
Maximum rated payload*	44 lb (20 kg)
Gripping time**	0.25 seconds
Releasing time	0.40 seconds
Weight	2550g (5.62 lb)
Power supply	20.4V – 28.8V
Current consumption	50mA – 4500mA
Operating temperature	32° – 122°F

* Cardboard is recommended up to 10 kg. 20 kg payload can be achieved with low accelerations (0.2G added to 1G; 1G = gravity = 9.82 m/s²). Other conditions may apply.

** The gripping time can be shortened with smaller or less suction cups. The release time depends on the payload. With high payload, you can achieve fast release time.



Schmalz® CobotPump Electric Vacuum Generator



Try It Risk Free!

*Contact us for details

The CobotPump ECBPM is designed especially for the automated handling of small parts with a single vacuum cup. This lightweight and compact solution is typically used on collaborative robots with a lifting capacity of up to three kilograms (6.6 lbs).

Quick# 8090

ECBPM-UR

PRICE: \$1,598.47



Electric Vacuum Generator for Universal Robots

- Fully electric, no need for compressed air.
- Energy saving control mode ensures efficient operation.
- Mechanical connection via flange adapter plate.
- Central electrical interface and simple control.
- Electrical connection via external cable routing or internal pin connection.
- Compatible with other robots. Contact EMI for more info.
- Has a female G1/4" thread. Reducer bushings on page 1069.
- Many replacement vacuum cups available, see pages 322–323.
- For more information including dimensional drawing, see online product page.

ECBPM Vacuum Gripper Kit Includes:

- Cobot Pump with mounting interface.
- Vacuum cups with fittings: Ø20mm Flat & Ø30mm 1.5 Bellow.
- Hardware
- USB Drive with URCap.

Note: Overtightening screws can cause stress cracks, which causes a complete loss of vacuum seal. Refer to our instructions online.

ECBPM Technical Specifications:

- Max payload: 6.6 lb (3 kg)
- Suction rate (max): 1.6 l/min
- Rated power: 7.2 W
- Voltage: 24Vdc
- Rated current: 0.3 A
- Electrical connection: Spring contact
- Noise level (max): 57 dB
- Ambient temperature: 32–104°F (0–40 °C)



Quick# 8070 & Quick# 8090 Schmalz CobotPump Electric vacuum generator

Wide selection of vacuum cups for Cobot EOAT

The **widest selection** of vacuum cups available! See pages 322–323.

Dual-Durometer



Dual Durometer cups are considered to be the best polyurethane cups for use with EOAT. Mark-free, long-lasting Polyurethane. Flexible surface. 1.5 Bellow, & 2.5 Bellow Ø11–75mm.

Gimatic®



Available in two styles: flat or with 1.5 bellows. Four materials: Silicone, EPDM, HNBR, and Natural Rubber cups. Diameter from Ø11mm to 53mm.

Hithane®



A hybrid, high-temp, non-silicone, non-marking cup for use with hot plastic parts. Maximum temperature 320°F. Good flexibility. Flat, Oval, 1.5 Bellow, & 2.5 Bellow.

Framing



Inline vacuum cup mounts and adjustable angle arms shown to the left are common in vacuum applications.

EMI offers a wide choice of round and hybrid framing profiles, connectors, insert clamps, reducing inserts, slotted brackets, and more for robotic end effectors and EOAT.

See page 186.

Mini



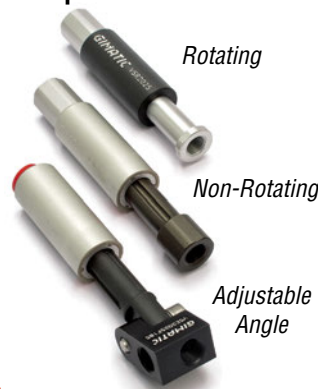
For those tiny parts, vacuum cups as small as Ø1mm. Flat, 1.5 bellows, and 2.5 bellows.

Foam



Very soft, closed-cell silicone foam vacuum cups for textured surfaces. Flat Ø8–40mm. 1.5 bellows, Ø20–40mm.

Suspensions



Suspensions are used to keep vacuum cups in position as the robot approaches. They are typically mounted using the MFI brackets found in our framing section.

EMI has a wide variety of rotating non-rotating, clampable and threaded body suspensions in-stock.

See page 279.

Packaging & Paper



DURAFLEX® mark-free material features the elasticity of rubber in combination with the wear resistance of polyurethane. High-flow fitting allows for high initial vacuum flow needed for bag handling. Ø30–40mm.

Paper & Foil



Ridges keep paper, foil, and other thin material from being sucked into the cup. Natural rubber vacuum cups Ø15–40mm.

Anti-Static



Anti-Static vacuum cups are typically used in electronic, packaging, and small parts applications. These are from the SMC family of vacuum cups. Available in Flat, and 1.5 bellows up to Ø16mm.

For Carbon Fiber



PTFE vacuum cups do not stick to hot carbon fiber parts (up to 480°F) Used in applications where needle grippers would puncture and damage the structure of composites. Supporting ribs avoid suction and deformation of soft materials.

Hi-Speed



Optimized for high speed attachment and release. Great for high speed thin wall molding applications. Silicone and very flexible polyurethane materials.

Tubing & Fittings



EMI has a wide selection of tubing, fittings, adaptors, reducers, manifolds, and accessories—specifically sizes and styles that are used for robots and EOAT applications. See page 1043.

Valves & Regulators

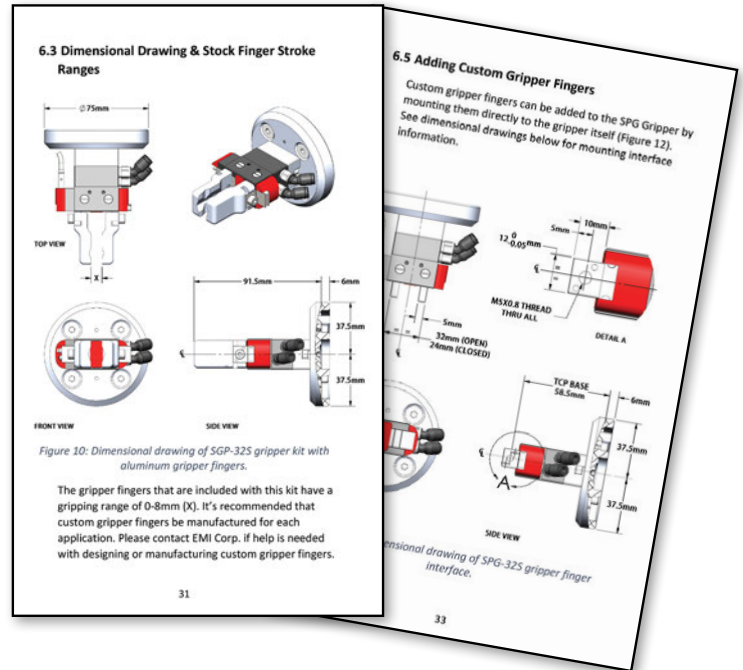


EMI's expert selection of valves and regulators have been engineered to be compact and light in order to be utilized on EOAT. See page 1013

EMI Gripper Kits

All EMI kits include a User Manual and the EMI URcap.

Information including diagrams, dimensions, installation instructions, a BOM, and other technical specifications are found in the User Manuals supplied with each kit.



Our Gripper and Vacuum kits include everything you need!

A USB Flash Drive includes our robot plugin, EMI Catalogs, and manuals. Our gripper kits were designed for ISO-9409-1-50-4-M6 mount pattern but EMI can supply a kit complete with interface plates, and quick changers for your Sawyer, Kuka, Fanuc, or other robots.



Easy installation and programming!



Packaging of EMI Gripper Kits (Q#8001 shown above)

Online product pages have all the information you need!

8204 OnRobot 2FG7 Parallel Gripper for Cobots

Item #: OR 106376
\$3,765.00 Each

Quantity:
 Add To Cart

Available: In Stock
 CAD File Download
 Datasheet
 360 Degree View
 Application Video

Technical data	Min	Typical	Max
Payload force fit	-	-	7kg / 15.5lbs
Payload form fit	-	-	11kg / 24.3lbs
Total stroke (adjustable)	-	38mm / 1.49in	-
OD Grip Range with stock fingers	1mm	-	73mm
ID Grip Range with stock fingers	11mm	-	83mm
Repetition accuracy	-	0.1mm / 0.004in	-
Gripping force*	20N	-	140N
Gripping force tolerance	-	-	+/-5% N
Gripping speed**	16mm/second	-	450mm/second
Gripping time (including brake activation)***	-	200ms	-
Storage temperature	0°C / 32°F	-	60°C / 140°F

Operating Conditions	Min	Typical	Max
Power supply	20V	24V	25V
Current consumption	-	-	2000mA*
Operating temperature	5°C / 41°F	-	50°C / 122°F

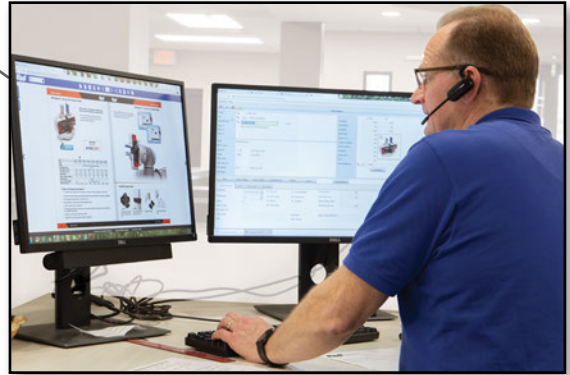
Calculated MTBF (operating life)
 30,000 hours

* Automatically adapts to the current requirements when UR CB3 tool connector is used (600mA).

Related Items

- 8297 OnRobot 2-Finger Parallel Gripper 2FG7 S-Bellow Kit Set of 2 Bellow
- 8295 OnRobot 2-Finger Parallel Gripper 2FG7 Spare Finger Kit Includes Hardware**
- 8296 OnRobot 2-Finger Parallel Gripper Spare Finger Kit Set of 4 Fingers
- 8222 OnRobot Dual Quick Changer for Cobots

Questions? Try Our Live Chat!



Application Examples



Related Items / Replacement Parts

8295 OnRobot 2-Finger Parallel Gripper 2FG7 Spare Finger Kit Includes Hardware

Item #: OR 106553
\$172.00 Each

Quantity:
 Add To Cart

Available: In Stock

Related Items

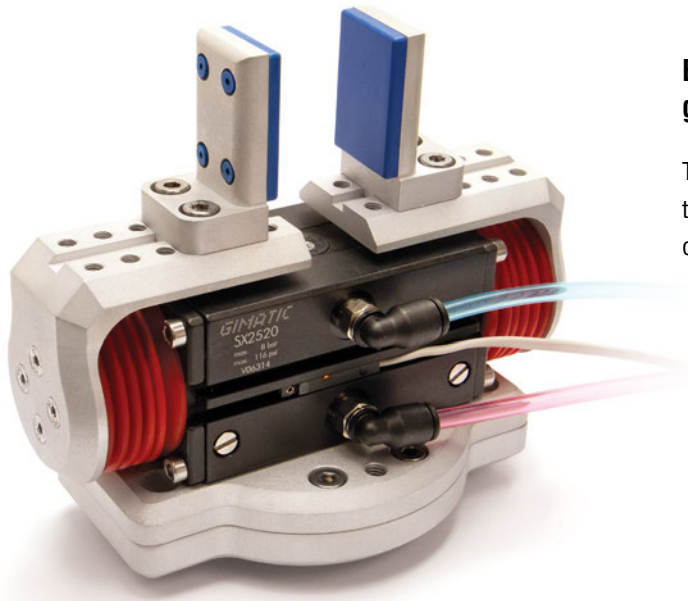
- 8204 OnRobot 2FG7 Parallel Gripper for Cobots
- 8296 OnRobot 2-Finger Parallel Gripper 2FG7 Spare Finger Kit Set of 4 Fingers

Easy online ordering!

- Track Orders
- Create Supply Lists
- Order from History
- Export Purchase Orders



EMI Gripper Kit – Two-Jaw SX for Industrial Cobots



EMI has adapted a cost-effective and industry-proven gripper to expand the capabilities of Industrial cobots.

The Pneumatic SX Gripper Kit for Industrial Cobots by EMI offers the ideal solution for part handling, machine tending and secondary operations in Collaborative Industrial Robot applications.

Quick# 8002
CRK-SX2520-A
KIT PRICE: \$995.00



**Industry Proven
Gripper!**



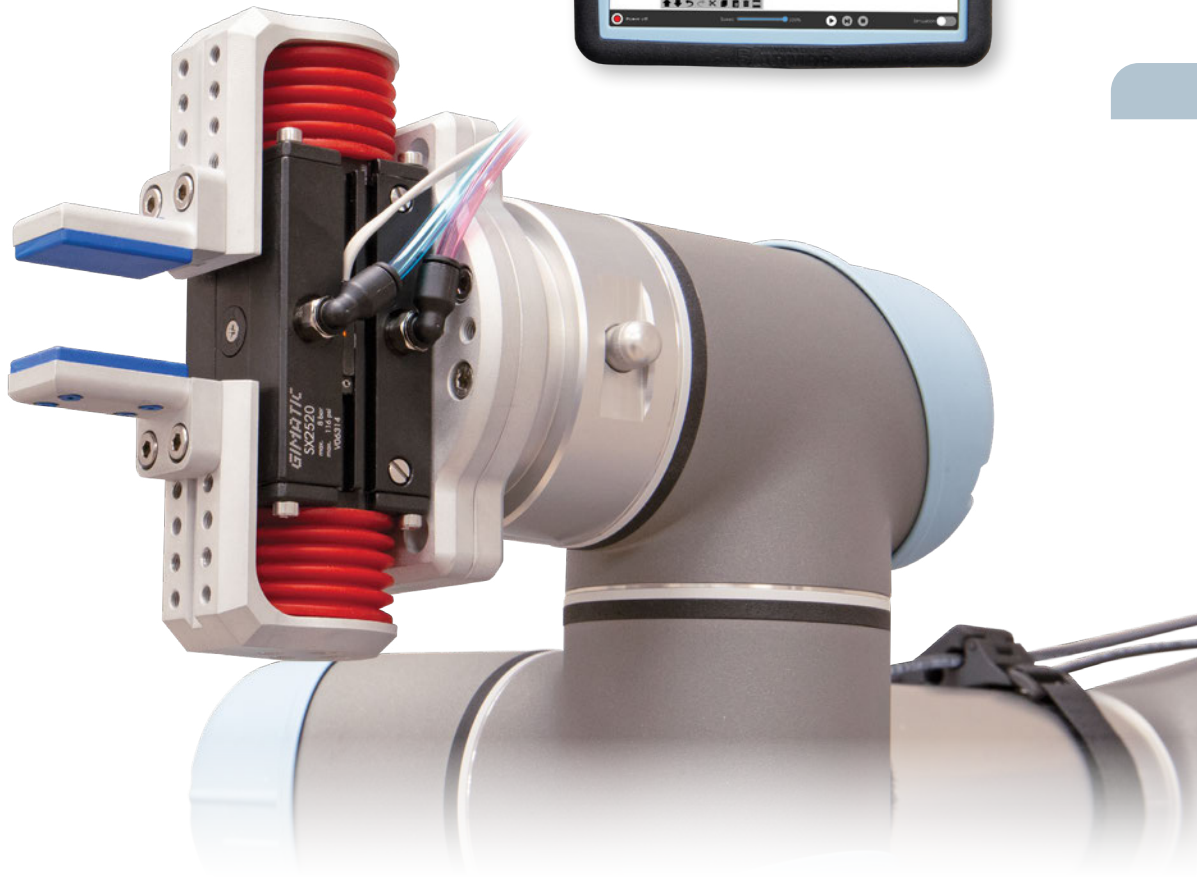
Part#	SX2510	SX2520	SX4020	SX4040	SX5030	SX5060	SX6340	SX6380
Quick#	7164	7165	7166	7167	7168	7169	7170	7171
Medium	Filtered, lubricated / non-lubricated compressed air							
Operating pressure range	30–116 psi							
Total Opening force at 87 psi	112lbf	112lbf	292lbf	292lbf	472lbf	472lbf	764lbf	764lbf
Total Closing force at 87 psi	87lbf	87lbf	225lbf	225lbf	360lbf	360lbf	562lbf	562lbf
Stroke (±0.5mm)	10mm	20mm	20mm	40mm	30mm	60mm	40mm	80mm
Opening / closing time without load	0.03s	0.05s	0.03s	0.08s	0.06s	0.10s	0.20s	0.30s
Repetition accuracy	0.05mm							
Mid-stroke detection capability	No	Yes, with Magneto-resistive sensor						
Weight of Gripper (Only)	260g	310g	750g	900g	1300g	1700g	2800g	3500g

SX Parallel, Self-Centering Two-Jaw Gripper Kit:

- This versatile kit can be adapted to other SX Gripper sizes with various strokes and gripping forces upon request.
- The precision machined components make this industrial gripper rugged, while offering a high degree of repeatability.
- The SX gripper is completely sealed – IP67 protection class.
- Double acting with 5/2 solenoid valve and cable management clamps.
- Includes 1 magnet sensor for part detection. Contact EMI to upgrade to teachable PRO-SS sensors.
- The included interface plate mounts directly to any robot with an ISO-9409-1-50-4-M6 tool flange. Contact EMI if you need a different interface plate.
- Includes 3 sets of finger pads: Silicone, Rubber, HNBR.
- CRK-SX2520-A Mass: 735g (subject to change per configuration).
- Dimensional drawings found online. For more information, see SX gripper page 720.

EMI Gripper Kit – Two-Jaw SX for Industrial Cobots

Easy installation and programming!

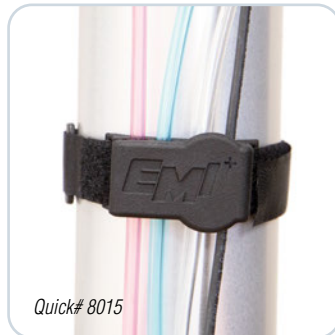


CRK-SX2520-A Gripper Kit Includes:



Quick# 8016

5/2 Solenoid valve with fittings, muffers, and non-slip Velcro® strap.



Quick# 8015

Two cable management clamps with non-slip Velcro® strap.

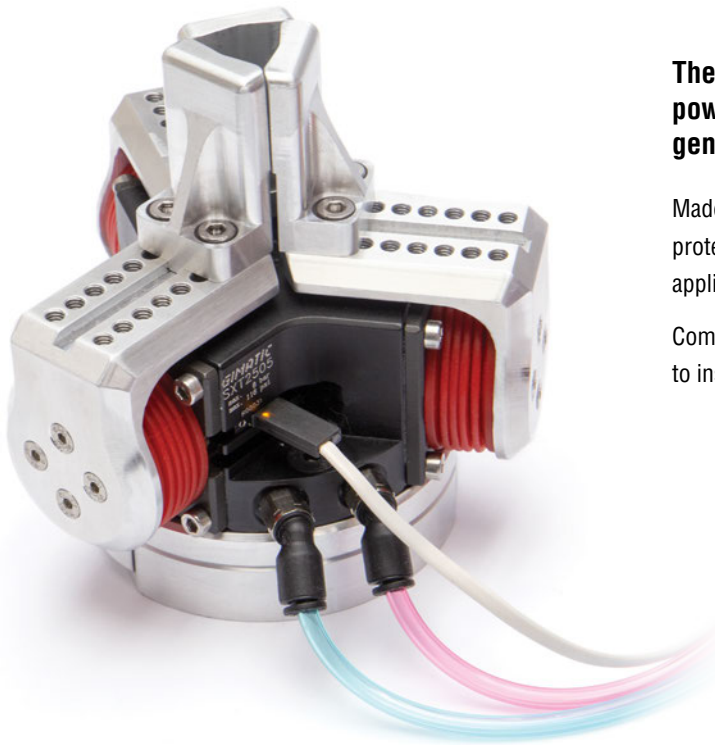


Alternate pads for fingers.



USB drive with URCap, and user manual.

EMI Gripper Kit – Three-Jaw SXT for Industrial Cobots



The SXT gripper kit by EMI uses a concentric, powerful 3-jaw gripper ideal for machine tending and general handling of cylindrical workpieces.

Made out of high-quality machined components with an IP67 protection class, the SXT Gripper is ideal for a variety of industrial applications.

Compatible with any robot and with all the features to make it easy to install and kick off on your next Cobot Application.

Quick# 8006
CRK-SXT2505-A
KIT PRICE: \$1,495.00



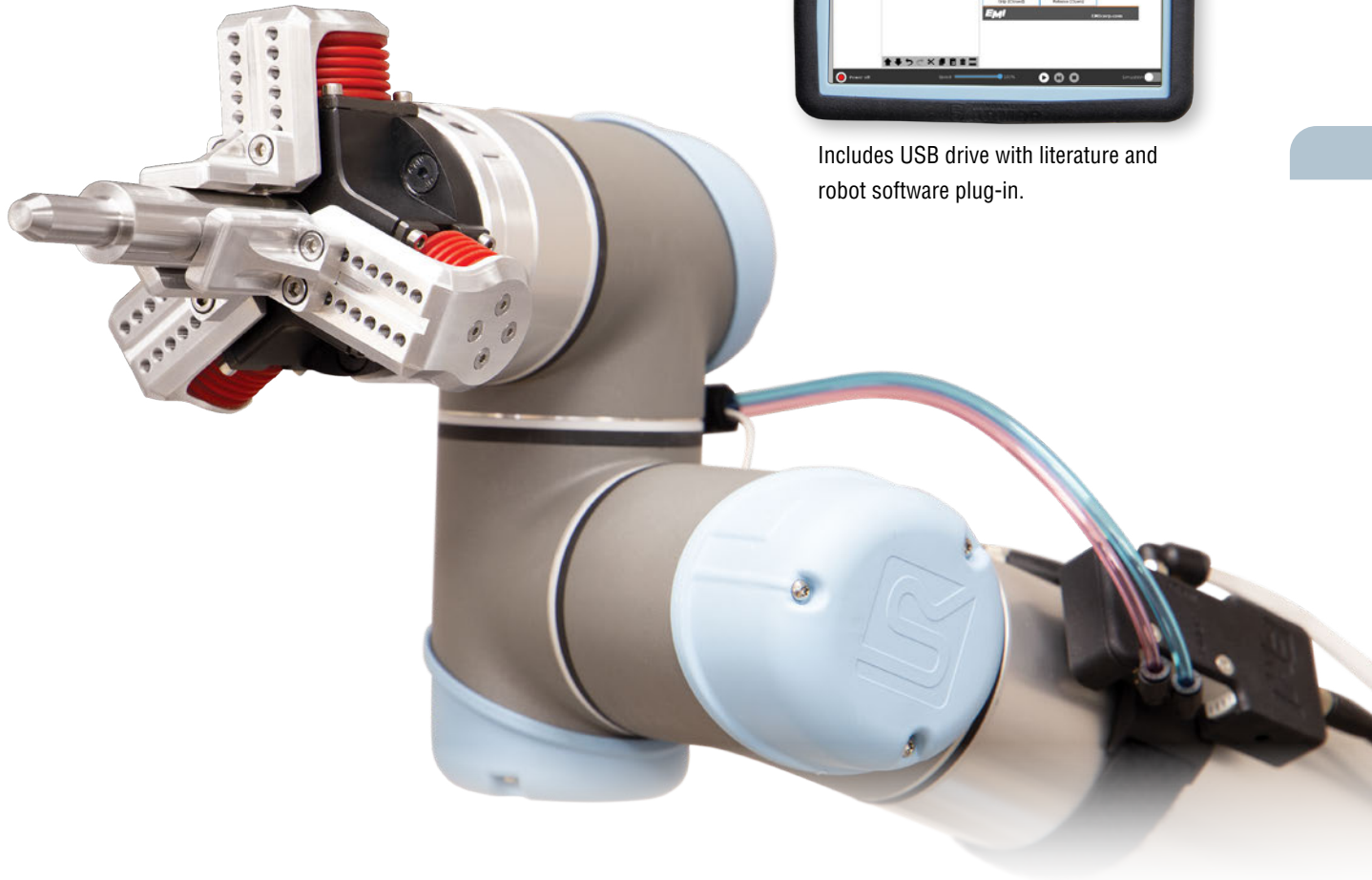
Part#	SXT2505	SXT4008	SXT5012	SXT6315
Quick#	7172	7173	7174	7175
Medium	Filtered, lubricated / non-lubricated compressed air			
Operating pressure range	36–116 psi			
Total Opening force at 87 psi	168lbf	438lbf	708lbf	1112lbf
Total Closing force at 87 psi	131lbf	337lbf	539lbf	809lbf
Stroke (±0.5mm)	3x5mm	3x8mm	3x12mm	3x15mm
Opening / closing time without load	0.02s	0.02s	0.05s	0.15s
Repetition accuracy	0.05mm			
Mid-stroke detection capability	No	Yes, with Magnetoresistive sensor		
Weight of Gripper (only)	420g	1100g	2000g	3800g

SXT Concentric, Self-Centering Three-Jaw Gripper Kit:

- This versatile kit can be adapted to other SXT Gripper sizes with various strokes and gripping forces upon request
- Gripping Range: Ø12mm - Ø76mm
- Completely sealed with IP67 protection class.
- Double acting with 5/2 solenoid valve and cable management clamps.
- Includes 1 magnetic sensor for open/close position detection. Contact EMI to upgrade to teachable PRO-SN sensors.
- The included interface plate mounts directly to any robot with an ISO-9409-1-50-4-M6 tool flange. Contact EMI if you need a different interface plate.
- Includes an alternative set of V-Groove fingers to extend the gripping range.
- CRK-SXT2505-A Mass: 825g (subject to change per configuration).
- Dimensional drawings found online. For more information, see SXT gripper page 722.

EMI Gripper Kit – Three-Jaw SXT for Industrial Cobots

Powerful Grip!



Includes USB drive with literature and robot software plug-in.

CRK-SXT2505-A Gripper Kit Includes:



Quick# 8016

5/2 Solenoid valve with fittings, muffers, and non-slip Velcro® strap.



Quick# 8015

Two cable management clamps with non-slip Velcro strap.

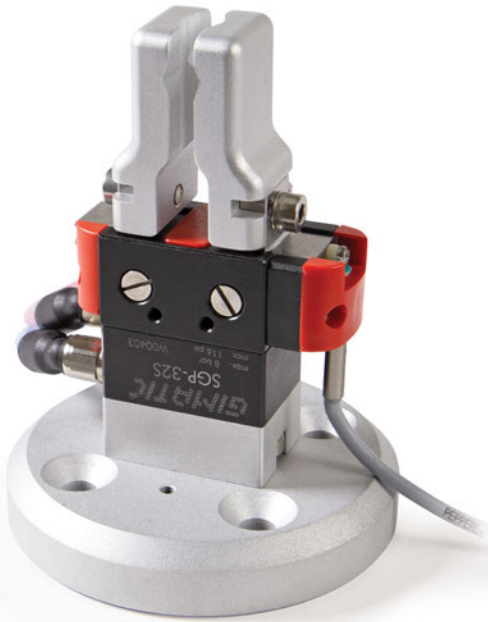


Alternate V-Groove fingers to extend the gripping range. Contact EMI for custom fingers.



USB drive with URCap, and user manual.

EMI Gripper Kit – Two-Jaw SGP for Industrial Cobots



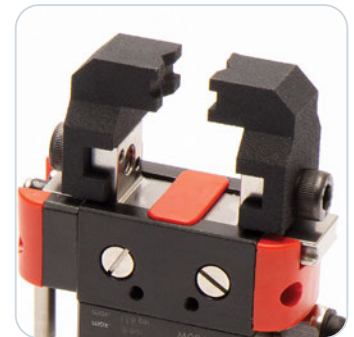
EMI's experience in high precision applications prove that the SGP family of grippers are the perfect solution for a wide variety of industrial gripper needs.

The SGP High Precision Gripper Kit for Industrial Cobots by EMI is a double-acting parallel gripper ideal for high precision applications such as insert loading or high accuracy pick-and-place. With blank finger-mounting jaws, the possibilities are virtually endless with the ability to use custom fingers that fit your exact application.

Quick# 8001
CRK-SGP32S-A
KIT PRICE: \$695.00



Part#	SGP-20S	SGP-25S	SGP-32S	SGP-40S
Quick#	6780	6781	6782	6783
Medium	Filtered, lubricated / non-lubricated compressed air			
Pressure range	30–116 psi			
Opening total gripping force at 87 psi	10lbf	23lbf	30lbf	36lbf
Closing total gripping force at 87 psi	9lbf	21lbf	27lbf	33lbf
Total stroke (± 0.3mm)	4mm	6mm	8mm	12mm
Maximum repeatability tolerance	±0.02mm			
Mid-stroke detection capability	Yes, with use of Inductive sensor			
Weight of gripper (only)	33g	43g	86g	170g



EMI can help develop 3D printed or machined fingers.

SGP Parallel, High-Precision Gripper Kit :

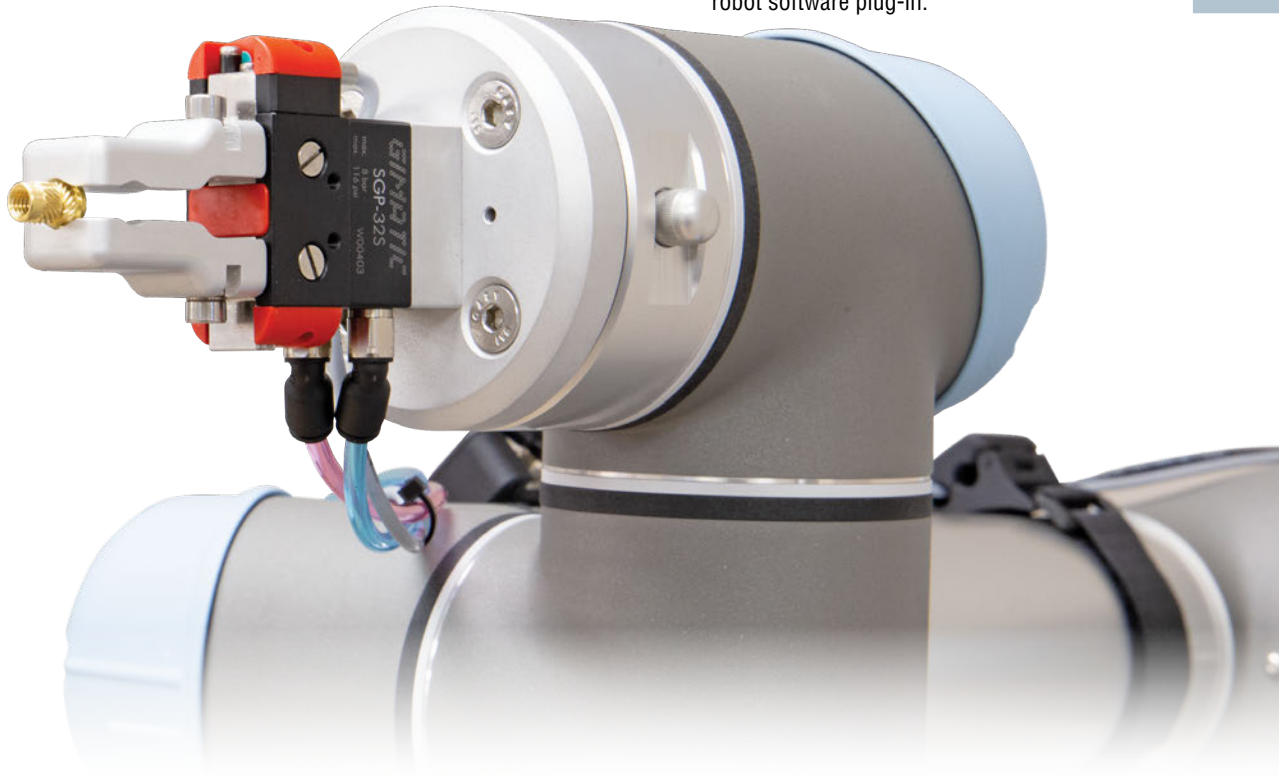
- This versatile kit can be adapted to other SGP Gripper sizes with various strokes and gripping forces upon request.
- Double acting with patented backlash adjusting system.
- The rugged construction lends itself to heavy-duty applications for a trouble-free long life without maintenance.
- Includes 5/2 solenoid valve and cable management clamps.
- Includes 1 inductive sensor for mid-stroke workpiece detection. Contact EMI for 3-Position Teachable PRO sensors.
- The included interface plate mounts directly to any robot with an ISO-9409-1-50-4-M6 tool flange. Contact EMI if you need a different interface plate.
- 0–8mm V-Groove fingers included.
- CRK-SGP32S-A Mass: 285g (subject to change per configuration).
- Dimensional drawings found online. For more information, see SGP gripper page 654.

EMI Gripper Kit – Two-Jaw SGP for Industrial Cobots

**Cost Effective,
High Precision!**



Includes USB drive with literature and robot software plug-in.



CRK-SGP32S-A Gripper Kit Includes:



5/2 Solenoid valve with fittings, muffers, and non-slip Velcro® strap.



Two cable management clamps with non-slip Velcro strap.



Interface plates, magnetic sensor for part detection, USB drive with URCap, and user manual.



High-precision Inductive sensor for part detection.

Gimatic Electric Gripper Kit for Cobots – KIT-UR-G

The Gimatic KIT-UR-G is an industrial electric gripper that plugs straight to your Universal Robot's wrist connector. Equipped with machined fingers that can be replaced by custom fingers for your application.

Try It Risk Free!

*Contact us for details

Quick# 8010
KIT-UR-G

PRICE: \$2,028.00



Plug & Play
Solution!

Features:

- Compatible with UR3(e), UR5(e), UR10(e).
- Connects directly to the robot's wrist.
- 2x3mm Stroke with 15 lbf total gripping force.
- Base Diameter: 100mm
- Total Height (fingers included): 83mm
- Contact EMI for custom fingers.
- Sensor ready for gripping or end of the stroke detection.
- The included interface plate mounts directly to any robot with an ISO-9409-1-50-4-M6 tool flange. Contact EMI if you need a different interface plate.
- Gimatic URCap available.
- See page 600 for gripper specifications.



Available in Various Strokes & Grip Force!
Cost Effective Electric Grippers starting on page 600.

Gimatic Electric Gripper Kit for Cobots – KIT-UR-J

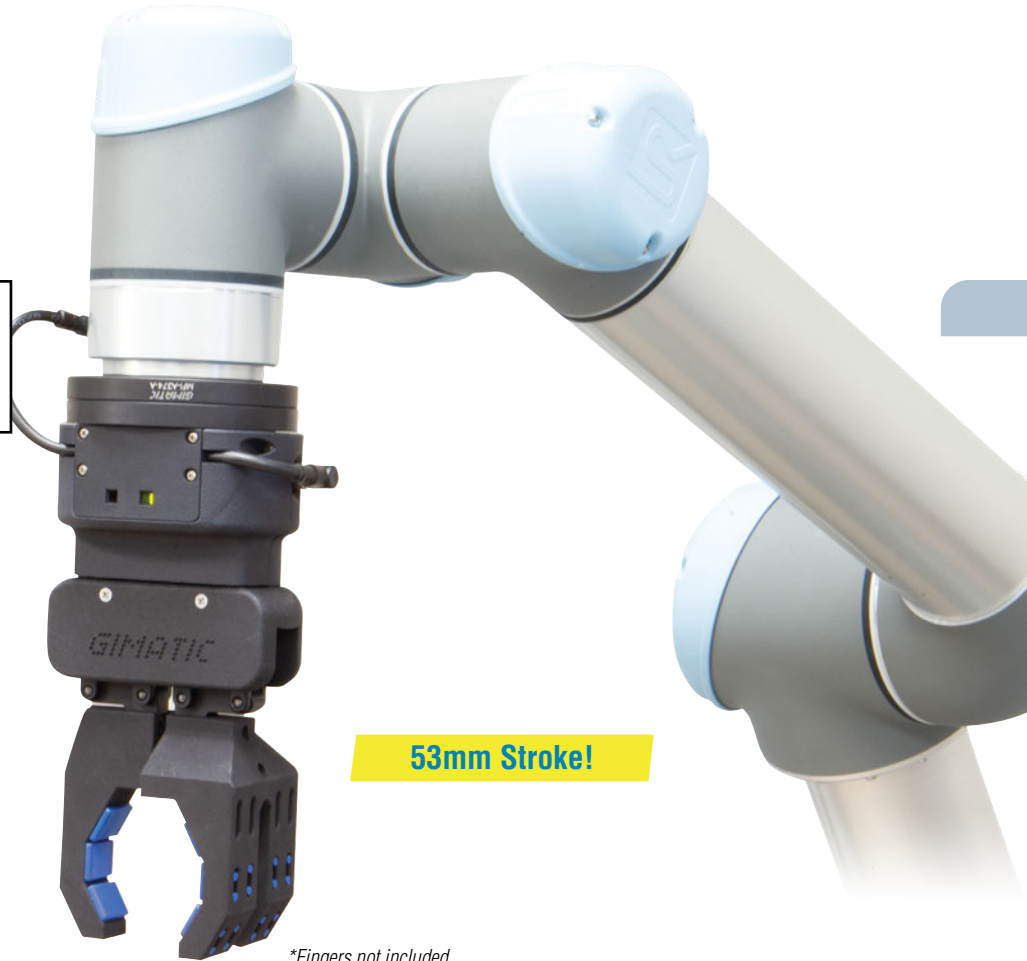
The Gimatic KIT-UR-J is an industrial electric gripper with a long stroke that plugs straight to your Universal Robot’s wrist connector. Equipped with finger blanks that can be fitted with custom fingers (shown below) specific to your application.

Try It Risk Free!

*Contact us for details

Quick# 8012
KIT-UR-J

PRICE: \$2,904.00



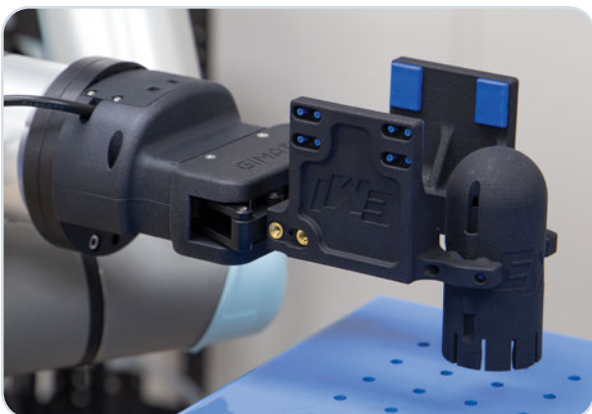
*Fingers not included.



*Shown here without fingers..

Features:

- Compatible with UR3(e), UR5(e), UR10(e); Gimatic URCap available.
- **Also available for Techman Robots, see Quick# 8031.**
- Plug & play solution.
- Connects directly to the robot’s wrist.
- Sensor ready for gripping or end of the stroke detection.
- 53mm Stroke
- Base Diameter: 100mm
- The included interface plate mounts directly to any robot with an ISO-9409-1-50-4-M6 tool flange. Contact EMI if you need a different interface plate.
- See page 610 for gripper specifications.



Custom fingers available, contact us today!

OnRobot 2FG7 Parallel Gripper for Cobots



NEW

OnRobot's 2FG7 is a complete, off-the-shelf electric parallel gripper that can be deployed within minutes and requires no custom engineering for installation, programming, or maintenance.

This strong parallel gripper can be used in tight spaces and handles demanding payload requirements.

Quick# 8204
OR-106376

PRICE: \$4,633.00

OnRobot pricing effective 3/1/2024 and subject to change.

Try It Risk Free!

*Contact us for details



Features:

- Grip detection / lost grip detection.
- Custom fingers available from EMI.
- Integrated software.
- Ready for use almost anywhere, with IP67 rating for harsh environments and ISO Class 5 certification for cleanroom use.
- Dimensional drawing and further technical information can be found on EMI's website.

Technical Specs	
Total OD stroke (w/ stock fingers)	1–73mm
Total ID stroke (w/ stock fingers)	11–83mm
Payload with stock fingers (force fit)	15.43 lb (7kg)
Payload with custom fingers (form fit)	24.25 lb (11kg)
Repetition accuracy	± 0.1mm
Gripping force (adjustable)*	4.5 lbf – 31.5 lbf
Gripping force deviation	+/- 5%
Gripping speed**	16mm – 450mm /second
Gripping time***	200ms
Storage temperature	32° – 140°F
Weight	1100g (2.4 lb)
Power supply	20V – 25V
Max. Current consumption****	2000mA
Operating temperature	41° – 122°F

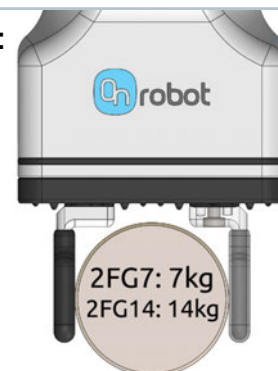
* The required current is 2000 mA, less current will result in less gripping force.

** Relatively from the gripping object (both arms).

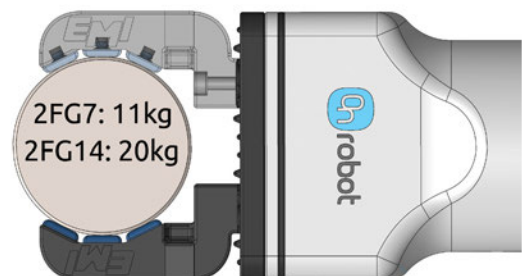
*** At 4 mm stroke and 80 N. The typical value is 300 ms at 40 mm and 80 N.

****Automatically adapts to the current requirements when UR CB3 tool connector is used (600mA).

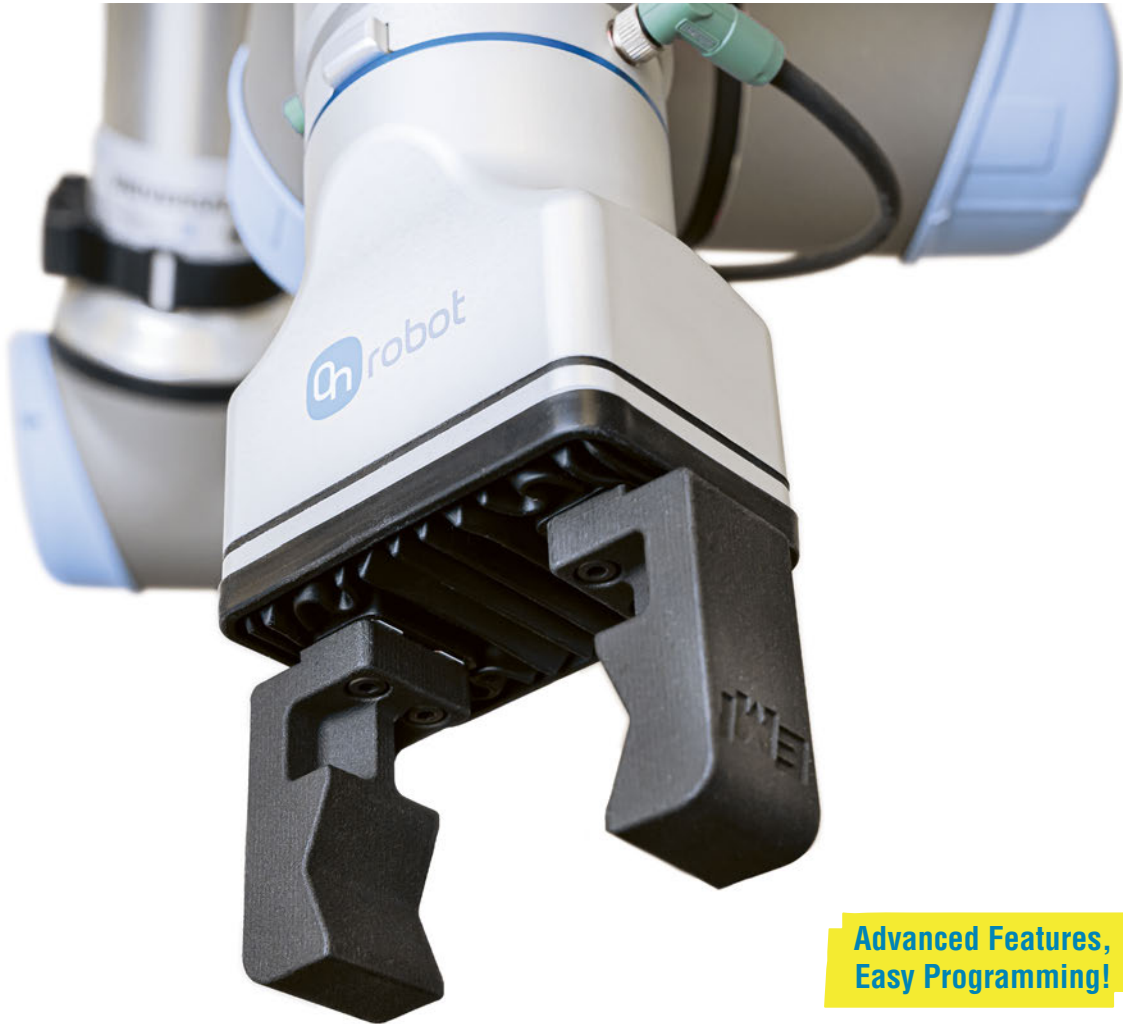
Force Fit:



Form Fit:



OnRobot 2FG7 Parallel Gripper for Cobots



**Advanced Features,
Easy Programming!**

Shown with custom 3D printed fingers. Available from EMI.

2FG7 Replacement Fingers and Bellow



**In-Stock
Replacement Parts!**

Replacement 2FG7 Parts

Quick#	Part#	Description	Price
8295	OR-106553	2-Finger Kit (2pc plus hardware)	\$223.33
8296	OR-106559	Finger Sleeves (4pc)	\$86.67
8297	OR-113012	Bellow Kit (2pc)	\$53.33

OnRobot pricing effective 3/1/2024 and subject to change.

OnRobot RG2 Adaptive Gripper for Cobots



Adaptive Grippers make it easy to program secondary operations using Cobots around the Injection Molding Machine or anywhere in your plant.

Contact our EOAT experts to learn more about OnRobot! Cobots@EMICorp.com

Quick# 8201
OR-102012
PRICE: \$5,472.00

OnRobot pricing effective 3/1/2024 and subject to change.

Try It Risk Free!

*Contact us for details



Features:

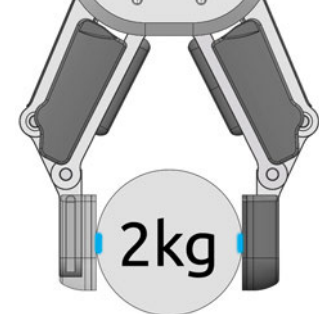
- Grip indications (part confirmation).
- Custom fingers available from EMI.
- Automatic tool center point (TCP) calculation, depth compensation, and payload calculation for UR.
- Integrated software.
- +/-90° Angular adjustments built into device in 30° Increments.
- Dimensional drawing and further technical information can be found on EMI's website.

Technical Specs	
Adjustable stroke (w/ stock fingers)	0–110mm
Payload with stock fingers (force fit)	4.4 lb (2 kg)
Payload with custom fingers (form fit)	11.02 lb (5 kg)
Finger position resolution	± 0.1mm
Repetition accuracy	± 0.1mm– 0.2mm
Reversing backlash	± 0.1mm – 0.3mm
Gripping force (adjustable)	3 – 40 N (0.7 – 9 lbf)
Gripping force deviation	+/-25%
Gripping speed	38mm – 127mm /second
Gripping time*	0.06s – 0.21s
Adjustable bracket tilting accuracy	less than 1°
Storage temperature	32° – 122°F
Weight	780g (1.72 lb)
Power supply	20V – 25V
Current consumption**	10mA –600mA
Operating temperature	41° – 122°F

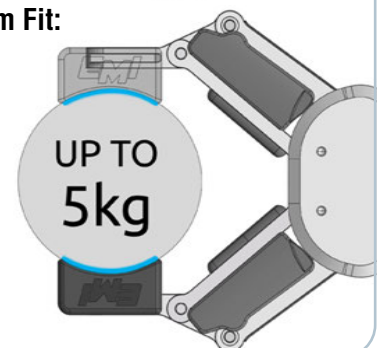
* Based on 8mm total movement between fingers. The speed is linearly proportional to the force.

**Current spikes up to 3A (max 6mS) may occur during the release action.

Force Fit:

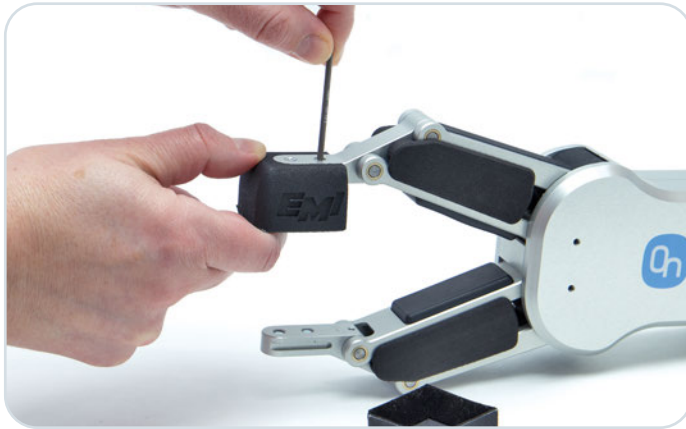


Form Fit:

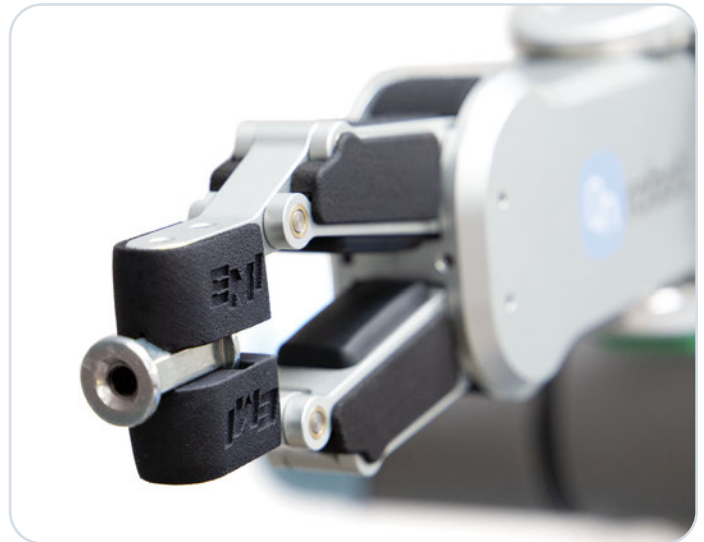


OnRobot RG2 Adaptive Gripper for Cobots

Easy finger tip replacement



Perfect for insert-loading applications



OnRobot's RG2 gripper has a dovetail style finger tip design which enables you to use custom fingers made for your application(s).

RG2 Replacement Items



Quick#	Part#	Description	Price
8240	OR-100669	Standard Finger Tip	\$86.67
8272	OR-105871	X-Shape Finger Tip	\$131.67
8274	OR-106959	50mm Finger Extension	\$233.33
8275	OR-106960	100mm Finger Extension	\$233.33

Note: See EMI website for dimensional drawings.
 OnRobot pricing effective 3/1/2024 and subject to change.

Contact EMI for Custom Fingers: Cobots@EMInc.com

OnRobot RG6 Adaptive Gripper for Cobots



OnRobot's RG6 adaptive gripper is a powerful adaptive gripper with features that make it the ideal gripper for Collaborative and Industrial Applications. It includes a built-in Quick Changer, adjustable stroke and grip force, finger tips, and software that makes it easy to use.

Quick# 8202
OR-102021
PRICE: \$6,554.00

OnRobot pricing effective 3/1/2024 and subject to change.

Try It Risk Free!

*Contact us for details



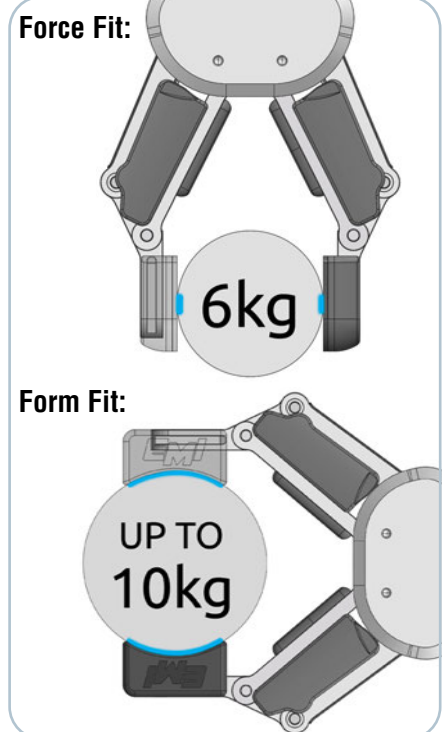
Features:

- Grip indications (part confirmation).
- Custom fingers available from EMI.
- Automatic tool center point (TCP) calculation, depth compensation, and payload calculation for UR.
- Integrated software.
- +/-90° Angular adjustments built into device in 30° Increments.
- Dimensional drawing and further technical information can be found on EMI's website.

Technical Specs	
Adjustable stroke (w/ stock fingers)	0–160mm
Payload with stock fingers (force fit)	13.22 lb (6 kg)
Payload with custom fingers (form fit)	22.04 lb (10 kg)
Finger position resolution	± 0.1mm
Repetition accuracy	± 0.1mm – 0.2mm
Reversing backlash	± 0.1mm – 0.3mm
Gripping force (adjustable)	25 – 120 N (5.6 – 27 lbf)
Gripping force deviation	+/-25%
Gripping speed	51mm – 160mm /second
Gripping time*	0.05s – 0.15s
Adjustable bracket tilting accuracy	less than 1°
Storage temperature	32° – 122°F
Weight	1250g (1.76 lb)
Power supply	20V – 25V
Current consumption**	70mA – 600mA
Operating temperature	41° – 122°F

* Based on 8mm total movement between fingers. The speed is linearly proportional to the force.

**Current spikes up to 3A (max 6mS) may occur during the release action.

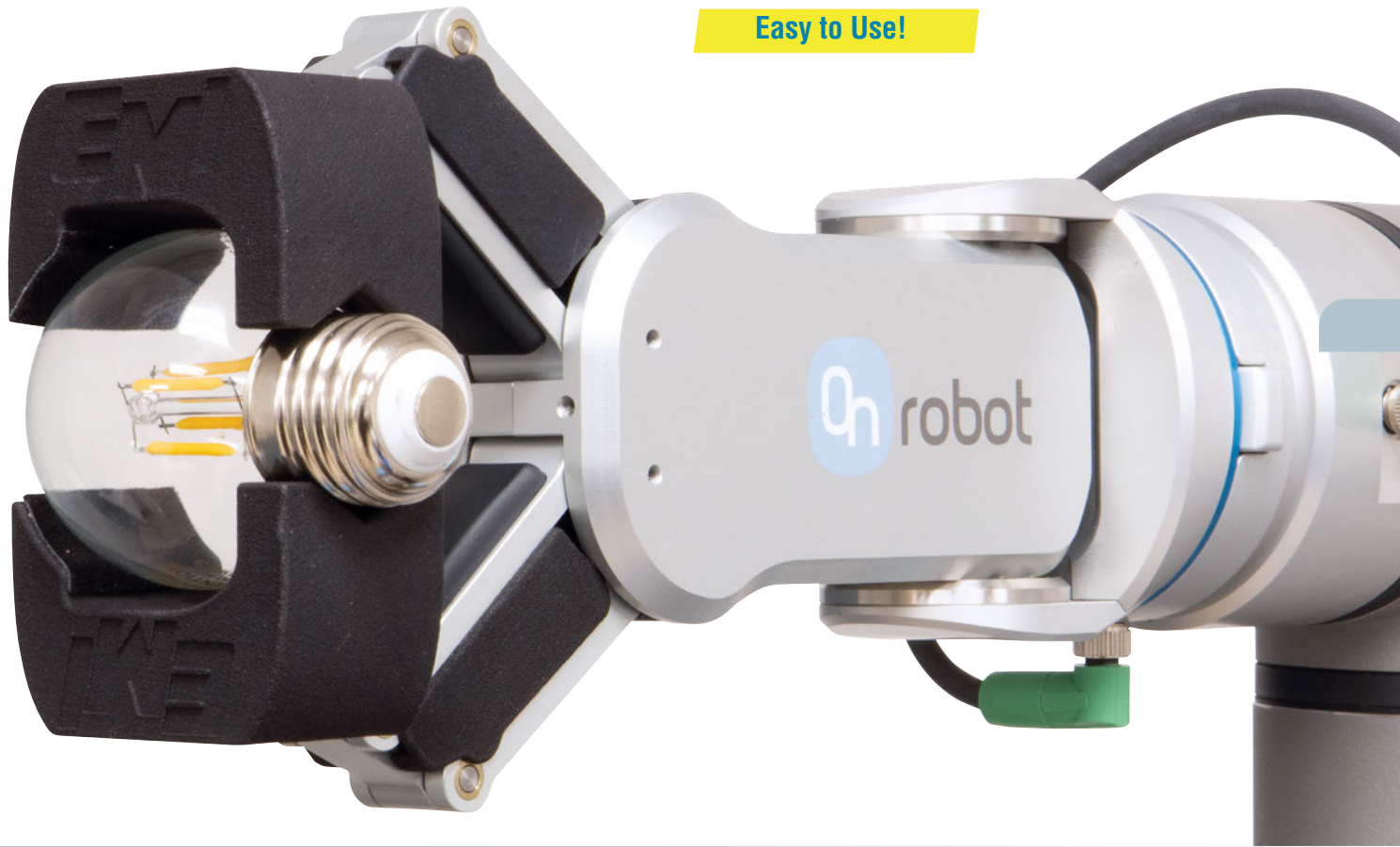


OnRobot RG6 Adaptive Gripper for Cobots

Custom fingers with soft-touch flocking available.

Contact EMI about 3D printed fingers.

Easy to Use!



Replacement and Optional RG6 Items



#8241



#8273



#8276

Quick#	Part#	Description	Price
8241	OR-100670	Standard Finger Tip	\$86.67
8273	OR-106957	X-Shape Finger Tip	\$131.67
8276	OR-106966	50mm Finger Extension	\$233.33
8277	OR-106967	100mm Finger Extension	\$233.33

Note: See EMI website for dimensional drawings.

OnRobot pricing effective 3/1/2024 and subject to change.

OnRobot 3FG15 Three-Jaw Gripper for Cobots



NEW

The 3FG15 is ideal for gripping a wide range of cylindrical objects in machine-tending applications such as CNC lathe machines. The gripper's design automatically centers workpieces, resulting in fast deployment with a strong, stable grip and precise placement.

Quick# 8203
OR-103666

PRICE: \$5,768.00

OnRobot pricing effective 3/1/2024 and subject to change.

Try It Risk Free!

*Contact us for details



Features:

- Grip indications (part confirmation).
- Custom fingers available from EMI.
- Automatic tool center point (TCP) calculation, depth compensation, and payload calculation for UR.
- Integrated software.
- Ready for use almost anywhere, with IP67 rating for harsh environments and ISO Class 5 certification for cleanroom use.
- Dimensional drawing and further technical information can be found on EMI's website.

Technical Specs	
Total OD stroke (w/ stock fingers)	4–152mm
Total ID stroke (w/ stock fingers)	35–176mm
Payload with stock fingers (force fit)	22.04 lb (10 kg)
Payload with custom fingers (form fit)	33.06 lb (15 kg)
Finger position resolution	±0.1mm
Repetition accuracy	± 0.1mm–0.2mm
Gripping force (adjustable)*	10 – 240 N (2.25 lbf – 54 lbf)
Gripping force deviation	+/- 5%
Gripping speed**	125mm
Gripping time***	500ms
Storage temperature	32° – 140°F
Weight	1500g (2.5 lb)
Power supply	20V – 25V
Max. Current consumption****	1500mA
Operating temperature	41° – 122°F

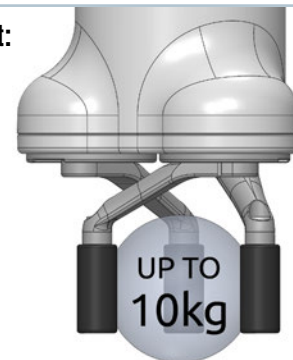
* The required current is 2000 mA, less current will result in less gripping force.

** Relatively from the gripping object (both arms).

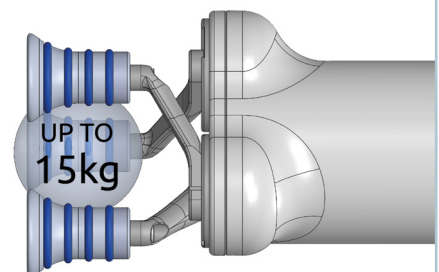
*** At 4 mm stroke and 80 N. The typical value is 300 ms at 40 mm and 80 N.

****Automatically adapts to the current requirements when UR CB3 tool connector is used (600mA).

Force Fit:

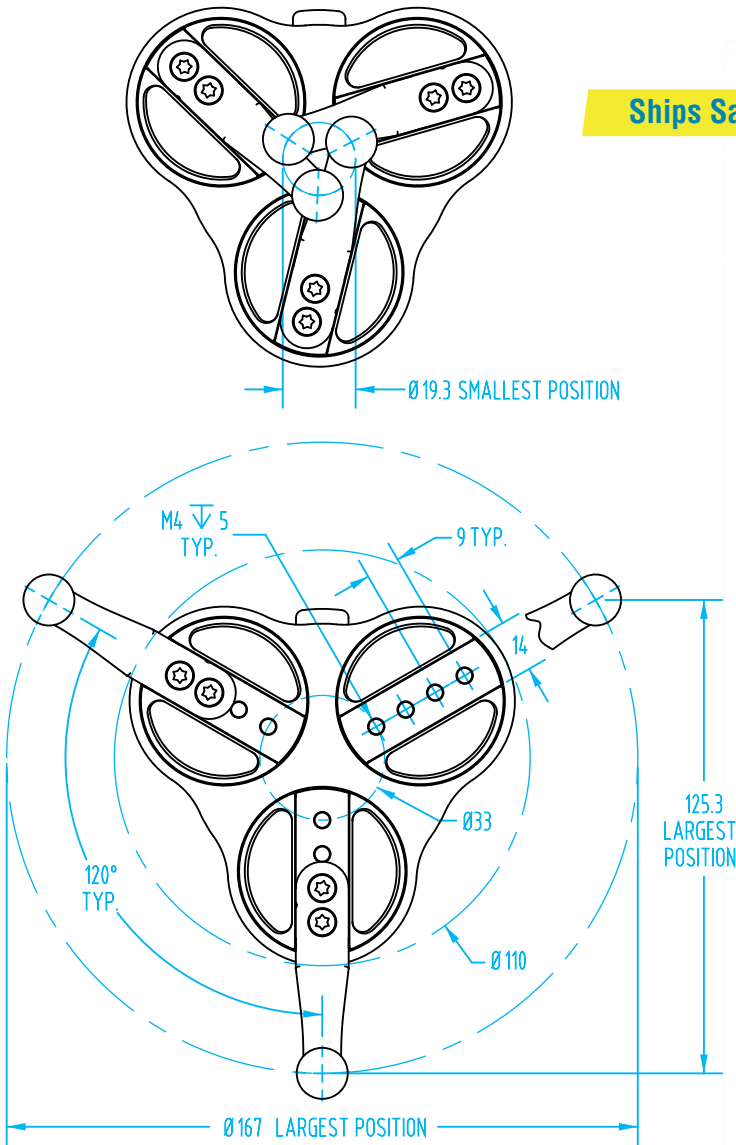


Form Fit:



OnRobot 3FG15 Three-Jaw Gripper for Cobots

Ships Same Day!



3FG15 Replacement Fingers and Bumpers

In-Stock Replacement Parts!



Replacement 3FG15 Parts

Quick#	Part#	Description	Price
8290	OR-104160	Ø10mm Steel fingers (3pc)	\$86.67
8291	OR-104162	Rubber bumpers for Ø10mm fingers (3pc)	\$86.67
8292	OR-104241	Ø13mm Steel fingers (3pc)	\$86.67
8293	OR-104240	Rubber bumpers for Ø13mm fingers (3pc)	\$86.67
8278	OR-105877	X-Shape Steel fingers (3pc)	\$233.33
8294	OR-104161	Steel finger base for fingers (3pc)	\$160.00

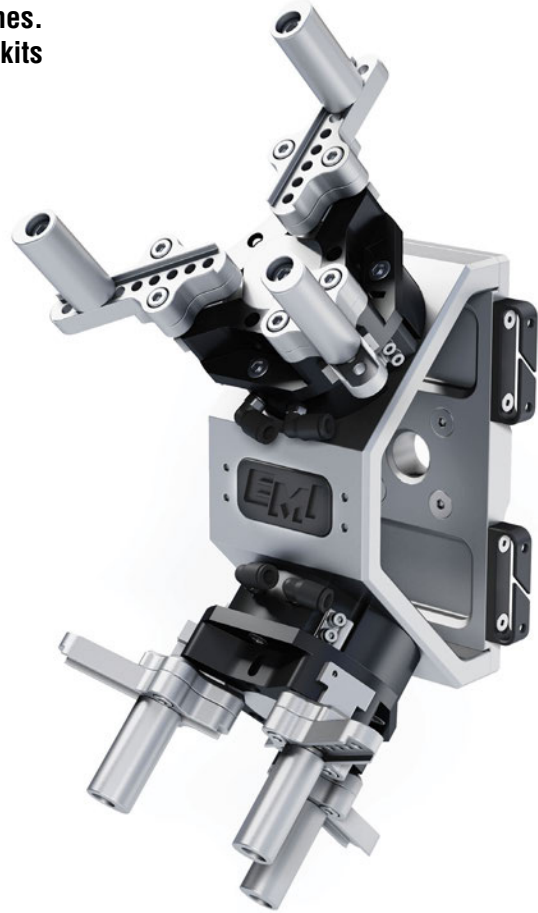
OnRobot pricing effective 3/1/2024 and subject to change.

Machine Tending Kits from EMI

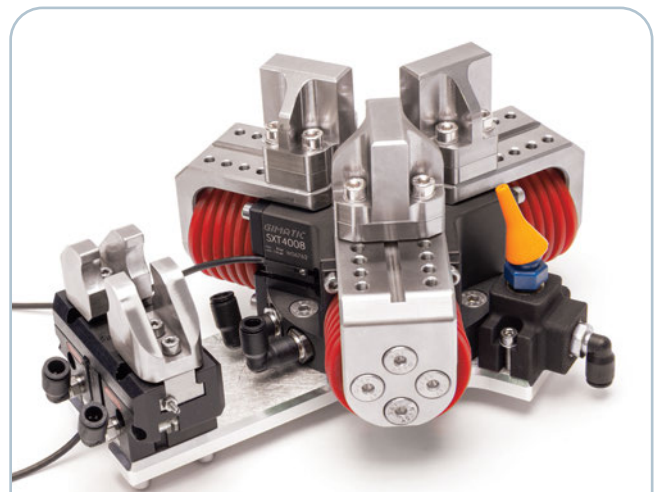
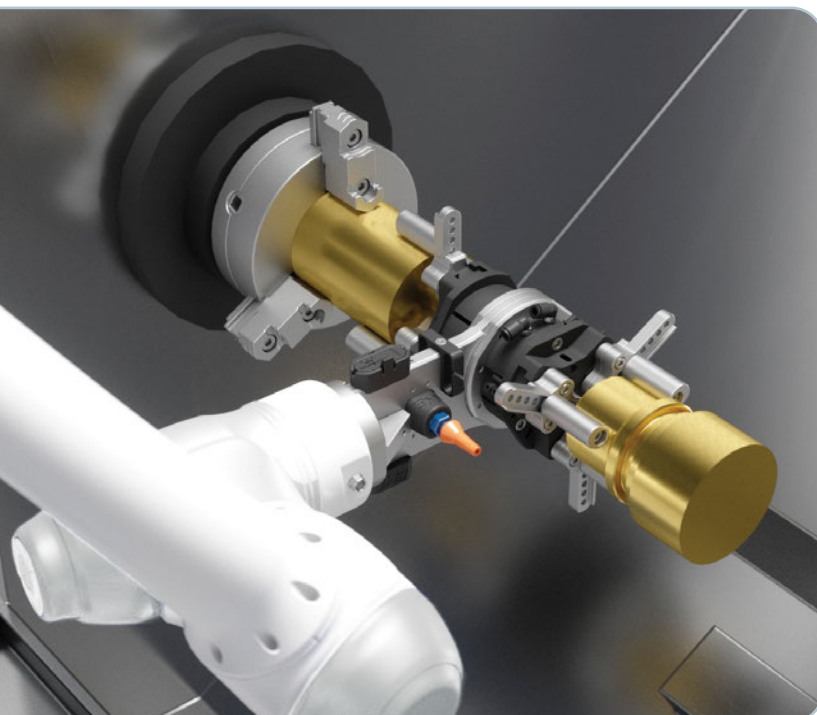
Machine Tending Kits from EMI are a perfect starting point for tending machine centers, such as CNC mills and lathes. With multiple mounting configurations available, these kits can be used in a wide variety of applications.

Features:

- Mounts directly to ISO 9409-1-50-4-M6 robot flange.
- Mounting options include dual gripper set up in a 90° or 180° configuration and single gripper 180°.
- 2-Jaw & 3-Jaw gripper options available in each mounting option.
- Grippers can be mounted in multiple orientations.
- All kits include stock, adjustable gripping jaws.
- Includes EMI's Essentials Tool Kit (Q# 8110).
- Each gripper includes a multi-output, programmable sensor (PNP).
- Includes blow-off manifold, nozzle kit and blocking plate.
- Operates via filtered, lubricated/unlubricated compressed air (nominal pressure, 87 psi).



Automate Your Machine Tending Process!



**Need a custom solution?
EMI can provide that too!**

Our Machine Tending Datasheet is online at: www.EMICorp.com
or contact: Cobots@EMICorp.com today.

Machine Tending Kits from EMI

How to select the best kit:

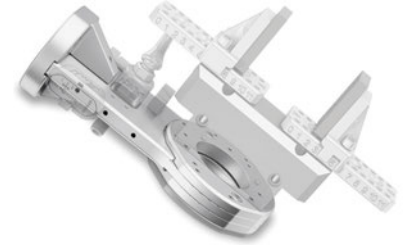
Step 1: Select a Mounting Configuration



D90: Dual Gripper 90°



D180: Dual Gripper 180°



S180: Single Gripper 180°

Step 2: Select a Two or Three Jaw Gripper



2-Jaw Gripper DH-44__

- DH4410: Shorter Stroke, Higher Grip Force
- DH4420: Longer Stroke, Lower Grip Force



3-Jaw Gripper TH-54__

- TH5404: Shorter Stroke, Higher Grip Force
- TH5408: Longer Stroke, Lower Grip Force

Step 3: Select Pneumatics Control Package (optional)

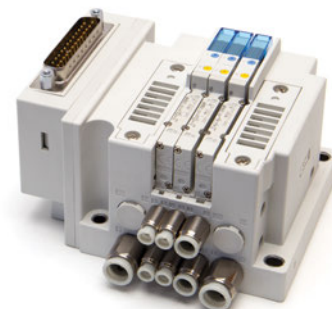
Control your EMI Machine Tending Kit with our pre-configured and pre-assembled, 3-station pneumatic solenoid valve kit and filter/regulator assembly. Perfect for controlling two grippers and blow-off nozzle.



Filter / Regulator Assembly

Quick#	Part#	Description	Price
2800	CRA-FR-R14-1	Filter / Regulator with Shut-off and R1/4" Ports	\$99.50

Note: See website for more information. Visit www.EMICorp.com and search by Quick#.



3-Station Valve Assembly, PNP

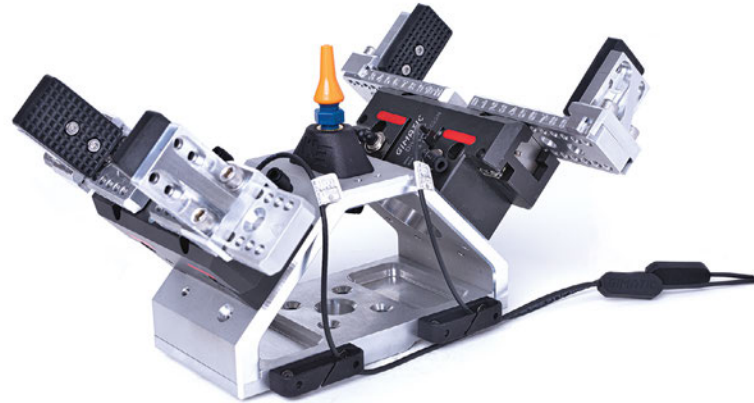
Quick#	Part#	Description	Price
2801	CRA-JSY1-P3Z-1	2x 5/2 Single Solenoid + 1x 5/4 Double Solenoid	\$635.00
2802	CRA-JSY1-P3Z-2	2x 5/2 Double Solenoid + 1x 5/4 Double Solenoid	\$695.00

Other configurations available upon request, contact EMI.

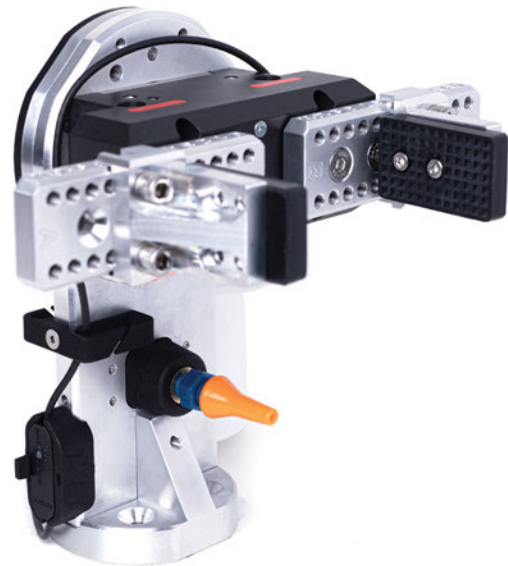
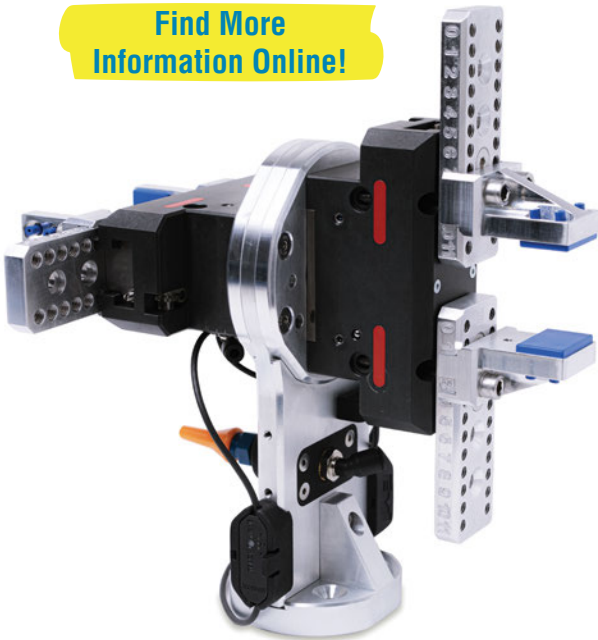
Machine Tending – 2-Jaw Parallel Gripper Kits

2-Jaw Kit Features:

- 2-Jaw kits include Aluminum jaws, and HNBR & Rubber pad options.
- Reversible finger base for increased gripping range.
- Kits can be used to pick either external (closed grip) or interior surfaces (open grip).
- 2-Jaw grippers can be mounted in multiple orientations (rotated 90° increments).
- See page 724 for more information on DH grippers.



Find More Information Online!



Quick#	8111	8112	8113	8114	8115	8116
Part#	CRK-DH4410-D90-A	CRK-DH4420-D90-A	CRK-DH4410-D180-A	CRK-DH4420-D180-A	CRK-DH4410-S180-A	CRK-DH4420-S180-A
Price	\$4,195.00	\$4,195.00	\$3,695.00	\$3,695.00	\$1,945.00	\$1,945.00
Mount configuration						
Operating pressure range	36–116 psi					
Gripper stroke	2x5mm	2x10mm	2x5mm	2x10mm	2x5mm	2x10mm
Gripper type	2x DH4410	2x DH4420	2x DH4410	2x DH4420	1x DH4410	1x DH4420
Closing force w/stock jaws	247.3 lbf	123.6 lbf	247.3 lbf	123.6 lbf	247.3 lbf	123.6 lbf
Kit Operating Grip Range* [^]	0–160mm	0–170mm	0–160mm	0–170mm	0–160mm	0–170mm
Maximum work piece mass** [^]	6.2 kg	3.0 kg	6.2 kg	3.0 kg	6.2 kg	3.0 kg
Weight	3.31 kg	3.27 kg	3.15 kg	3.11 kg	1.89 kg	1.87 kg

*Minimum to maximum external grip range with the included stock finger kit.

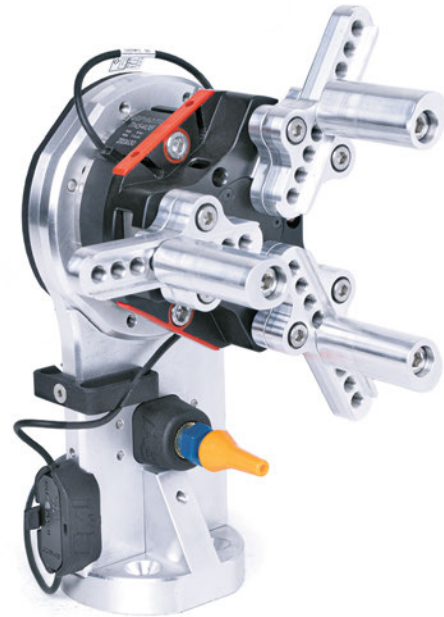
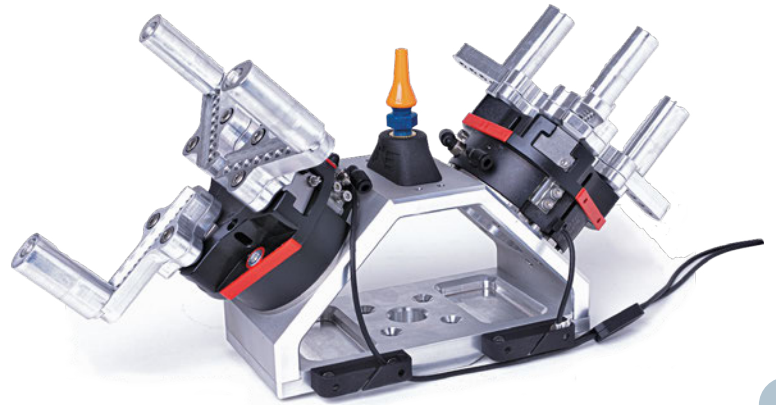
**Indicates usage at 87psi with stock finger kit with dry & clear surface conditions. Varies based on grip style, orientation, materials and input pressure.

[^] Values may vary slightly based on certain application conditions. See online product page for more detailed information.

Machine Tending – 3-Jaw Concentric Gripper Kits

3-Jaw Kit Features:

- 3-Jaw kits include dual-sided gripper fingers to accommodate a larger variety of grip ranges.
- D180 gripper mounting configuration includes S180 gripper cap, to be used as a single gripper configuration.
- Kits can be used to pick either the OD (closed grip) or ID (open grip).
- 3-Jaw grippers can be mounted in multiple orientations (D90: 60° increments, D180/S180: 90° increments).
- See page 726 for more information on TH grippers.



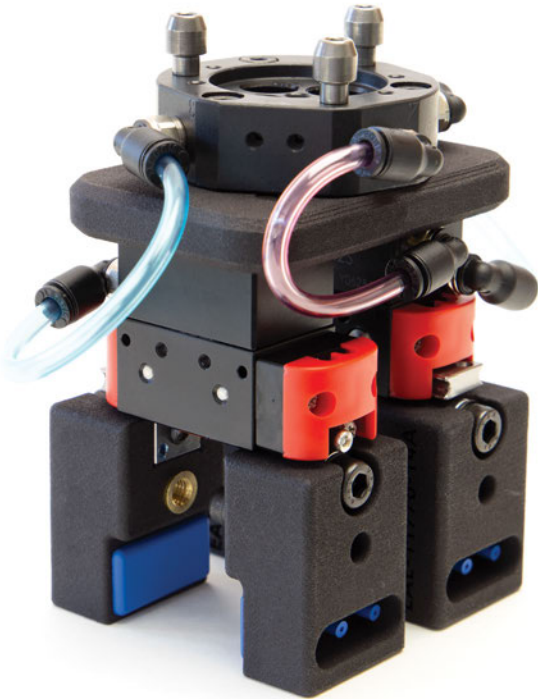
Quick#	8117	8118	8119	8120	8121	8122
Part#	CRK-TH5404-D90-A	CRK-TH5408-D90-A	CRK-TH5404-D180-A	CRK-TH5408-D180-A	CRK-TH5404-S180-A	CRK-TH5408-S180-A
Price	\$4,295.00	\$4,295.00	\$3,795.00	\$3,795.00	\$1,995.00	\$1,995.00
Mount configuration						
Operating pressure range	36–116 psi					
Gripper stroke	3x4mm	3x8mm	3x4mm	3x8mm	3x4mm	3x8mm
Gripper type	2x TH5404	2x TH5408	2x TH5404	2x TH5408	1x TH5404	1x TH5408
Closing force w/stock jaws	370.9 lbf	185.5 lbf	370.9 lbf	185.5 lbf	370.9 lbf	185.5 lbf
Kit Operating Grip Range**^	0–150mm	0–158mm	0–150mm	0–158mm	0–150mm	0–158mm
Maximum work piece mass***^	8.9 kg	4.4 kg	8.9 kg	4.4 kg	8.9 kg	4.4 kg
Weight	3.29 kg	3.27 kg	3.12 kg	3.10 kg	1.87 kg	1.87 kg

*Minimum to maximum external grip range with the included stock finger kit.

**Indicates usage at 87psi with stock finger kit with dry & clear surface conditions. Varies based on grip style, orientation, materials and input pressure.

^ Values may vary slightly based on certain application conditions. See online product page for more detailed information.

Custom EOAT for Cobot Applications



Features:

- **Designed for SCARA robots.**
- Quick Changer for quick set-up and tooling change over.
- Automatically engages pneumatic and electrical circuits.
- Padded fingers for an increased friction hold and softer touch to prevent damage.
- SGP-S Precision grippers are used for small work pieces and accurate handling.

This custom EOAT was **\$1,346.00**



Features:

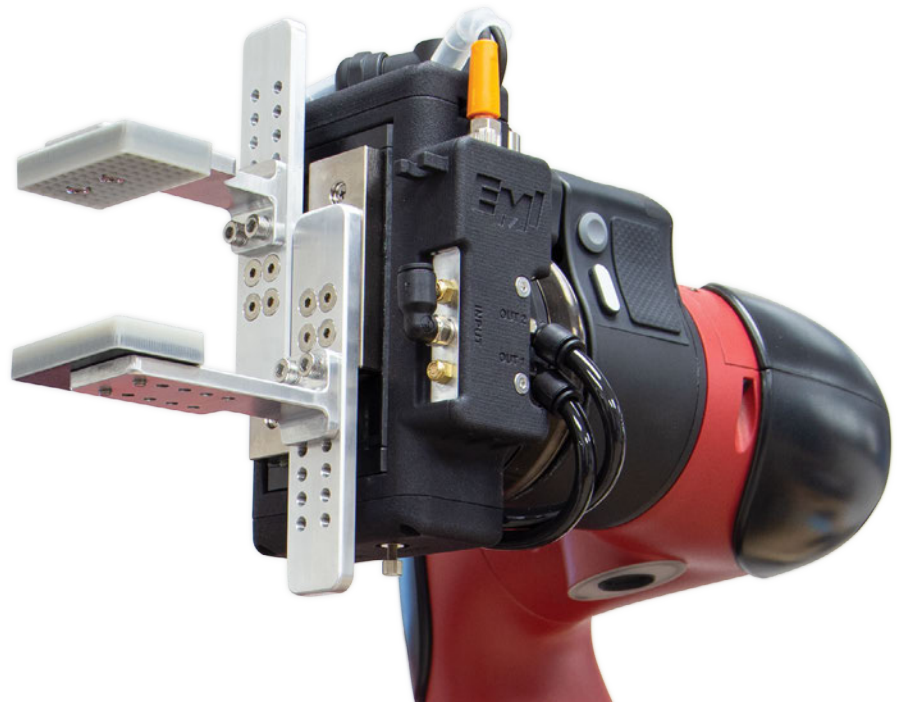
- Dual DH Parallel grippers with custom fingers.
- Part blow-off. (many options available)
- Direct mount with pass-through for tubing and cables.
- This solution caters to heavy duty machine tending applications at an affordable price

This custom EOAT was **\$4,633.00**

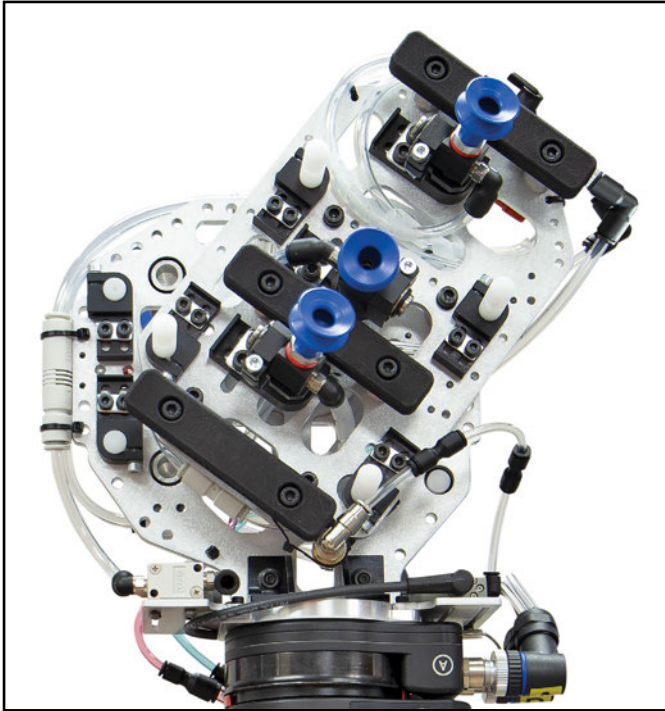
Features:

- Pneumatic PE-1640 gripper
- 40mm Gripper Stroke - Adjustable grip range: 45mm – 128mm
- Built-in 5/2 solenoid valve
- 3-Position teachable sensor
- Close/Open port flow controls
- 3D Printed shroud
- Silicone pads
- *ClickSmart® Ready

This custom EOAT was **\$1,995.00**



Custom EOAT for Cobot Applications



Using independent vacuum circuits, this EOAT grips 2 different parts out of an Injection Molding Machine, for placement into a secondary assembly process. Before placement, self-contained 180° rotary action is required for proper reorientation of a part. Once the secondary assembly is complete, the EOAT removes the final assembly.

On-board pneumatic valves control air flow to cartridge vacuum generators, and part confirmation is achieved through vacuum monitor switches. All I/O operates through ClickSmart connectors at Sawyer's wrist.

This custom EOAT was **\$3,048.00**

[Click here for more EOAT examples!](#)



OnRobot Soft Gripper Actuator for Cobots



Try It Risk Free!

*Contact us for details

The OnRobot Soft Gripper is able to pick a wide array of irregular shapes and delicate items, making it **ideal for pick-and-place applications**, as well as manufacturing or packaging. The gripper is available with three interchangeable silicon-molded cups.

The Soft Gripper operates without an external air supply, for no additional costs or complexity.

Quick# 8280
OR-103456

PRICE: \$4,378.00

* Actuator price only. Modules sold separately.

OnRobot pricing effective 3/1/2024 and subject to change.



Features:

- Actuator base weight: 0.77kg / 1.69lbs
- Actuator base dimensions: 84mm x 98mm.
- Smart lock tool mechanism and quick changer base included.
- Maximum payload of 2.2 kg depends on shape, softness, and friction of items to be handled, and grip dimensions range from 11mm to 118mm, depending on cup used.
- IP 67 Classification.
- Silicone is FDA 21 CFR 177.2600* & EC 1935/2004 approved
- Integrated software.
- Automatic tool center point (TCP) calculation, depth compensation, and payload calculation for UR.
- Dimensional drawing and technical information can be found on EMI's website.



NEW

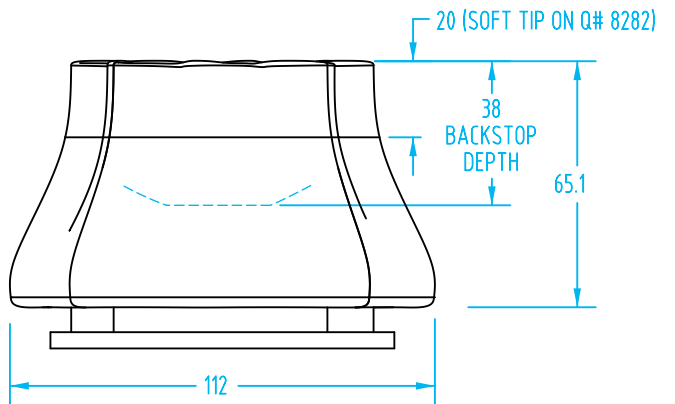
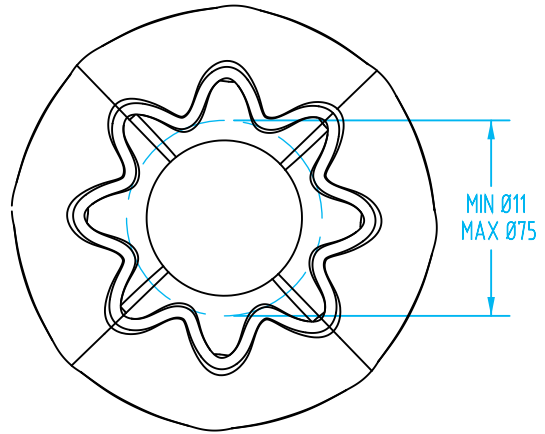
Gripper Modules for Soft Gripper Actuator

Quick#	Part#	Description	Max Payload*	Gripping Range	Price
8281	OR-103689	Soft	4.85 / 3.3 lb (2.2 / 1.5 kg)	11–75mm	\$1,042.00
8282	OR-103860	Extra Soft	4.85 / 3.3 lb (2.2 / 1.5 kg)	11–75mm	\$1,042.00
8283	OR-103691	Claw	2.42 lb (1.1 kg)	24–118mm	\$1,042.00

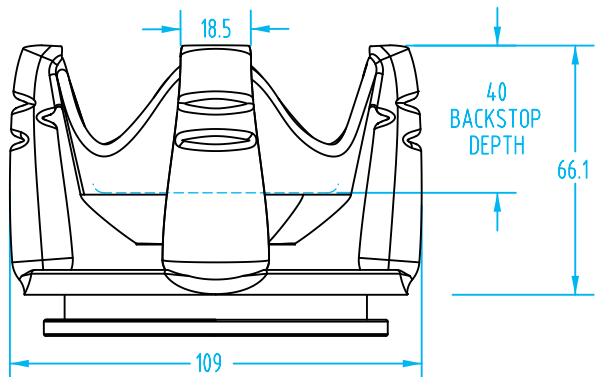
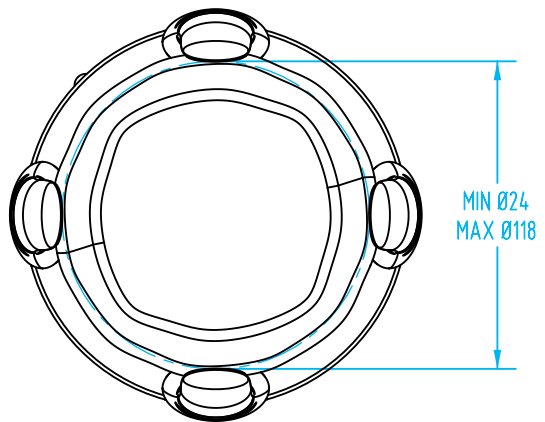
* Test object: 3D-printed ABS cylinder Ø65mm. Payload depends on shape, softness, and friction of the product.

OnRobot Soft Gripper Actuator for Cobots

(Dimensioned drawings shown at 50% scale)



**Need to handle delicate plastic parts?
Try a Soft Gripper from EMI!**



Ubiros® Gentle Duo Mini Gripper for Cobots



Gentle Duo Mini grippers provide an optimal balance of versatility and grip stability in handling delicate objects or products that vary in size, shape, and weight during primary packaging.

Gentle Duo Mini Touch (Q# 8302) adds extra control for handling more complex applications.

Quick# 8301
PRICE: **\$2,400**

With Force Feedback
Quick# 8302
PRICE: **\$3,800**



Features:

- Digital output force feedback for part confirmation on Touch model.
- Integrated software accessible through wifi for configuring grip positions and calibrating fingers.
- Common interface plate mounts on all ISO flanges from 31.5mm to 63mm.
- Mount hardware and interface cable included.
- URCap available for simplified use.
- Overall height: 172.5mm, Base OD: Ø104mm
- Dimensional drawing and further technical information can be found on EMI's website.

Quick#	8301	8302
Part#	GNT-DUO-2F-0	GNT-DUO-2F-T
Price	\$2,400.00	\$3,800.00
Part confirmation	No sensing	Adjustable force feedback
Gripper control	1 input, 2 positions	2 inputs, 4 positions Force control
Payload (at 2A)*	3.3 lb (1.5 kg)	
Gripping time	100ms/ 50mm	
Input voltage	15V - 25V	
Max. current	0.03A (idle) / 2A (load) / 3A (instantaneous)	
Finger material	Silicone (FDA approved)	
Weight	800g (1.8 lb)	

*Actual payload dependent on workpiece properties: geometry, material, surface qualities, etc.



Ubiros Gentle Duo Mini Gripper for Cobots

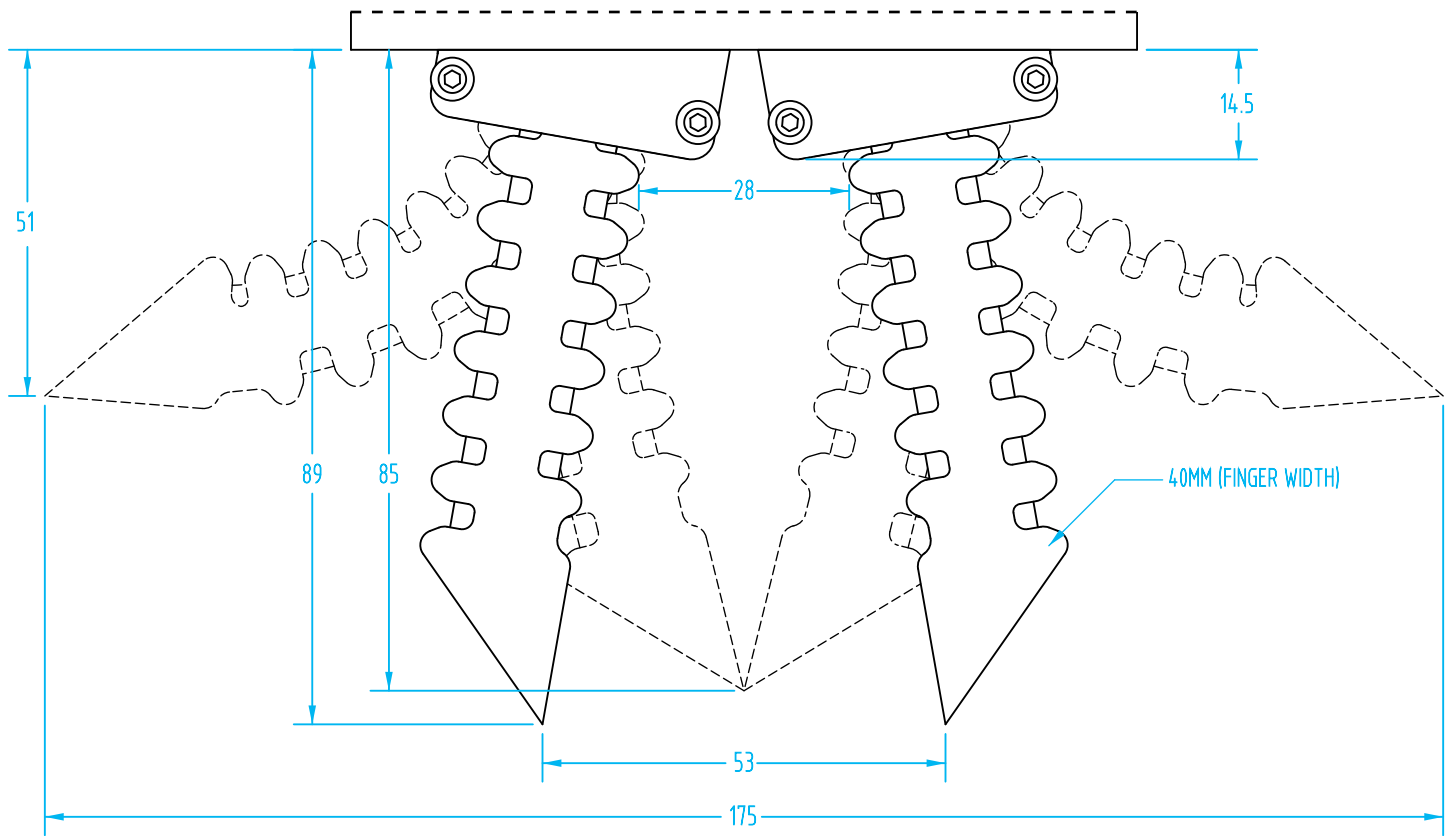
(Dimensioned drawings shown full scale)



Wi-fi Enabled Web App for Configuring Gripper

Try It Risk Free!

*Contact us for details



FINGER OPENING MAY VARY DUE TO CALIBRATION

piSOFTGRIP® Three Finger Grippers

(Dimensioned drawings shown full scale)

Cost effective, simple and robust. This silicone gripper is ideal for sensitive and lightweight object handling. Made in detectable silicone approved for direct contact with food, in accordance with FDA 21 CFR and EU 1935/2004 regulations. Gripper is actuated using a vacuum circuit.

It comes with a male G1/8" fitting which makes it compatible with our wide range of vacuum posts, suspensions and 3D printed supports. An optional stainless-steel fitting offers wash-down provision to assist cleaning is available upon request.

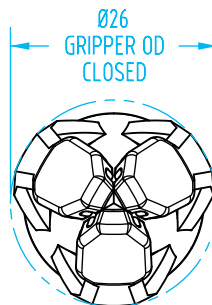
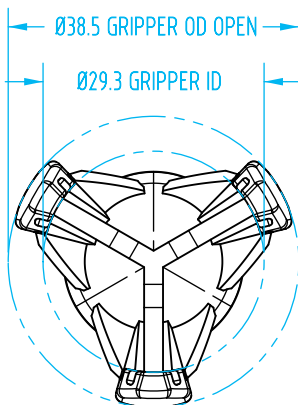
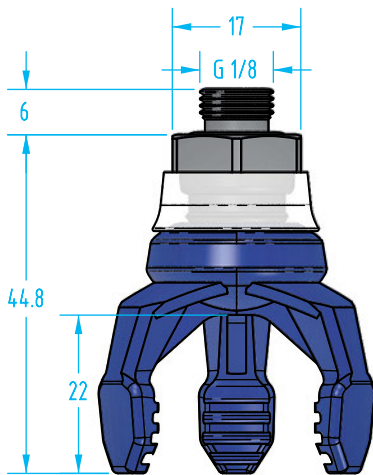
Piab SoftGrip	Size 30	Size 50
Quick#	8070	8080
Part#	CRG-PSG30-3S-G18M	CRG-PSG-3S-G18M
Price	\$88.45	\$140.13
Weight	11.6g	55g
Temperature range	-4--212°F	
Recommended vacuum level	0.4–0.9 Bar	0.2–0.6 Bar
Maximum object size	29mm	62mm
Maximum payload	50g	250g
Connection	Male G1/8"	
Finger / Claw material	Detectable Silicone 70° Shore A	



Quick# 8080
PRICE: \$140.13

Quick# 8070
PRICE: \$88.45

Size 30, #8070:



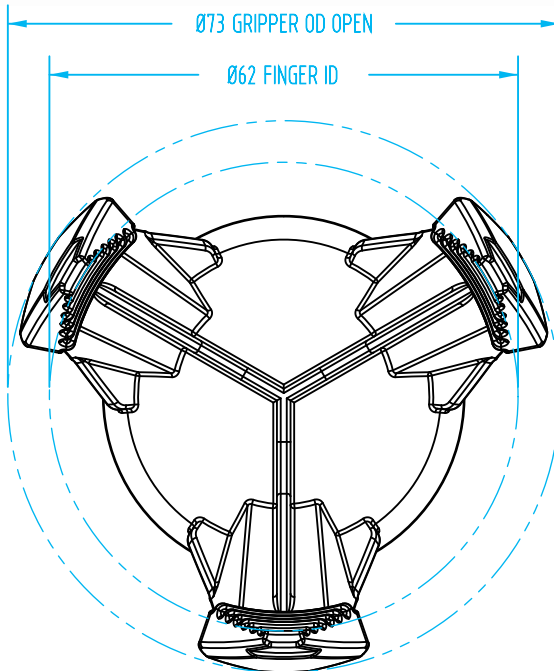
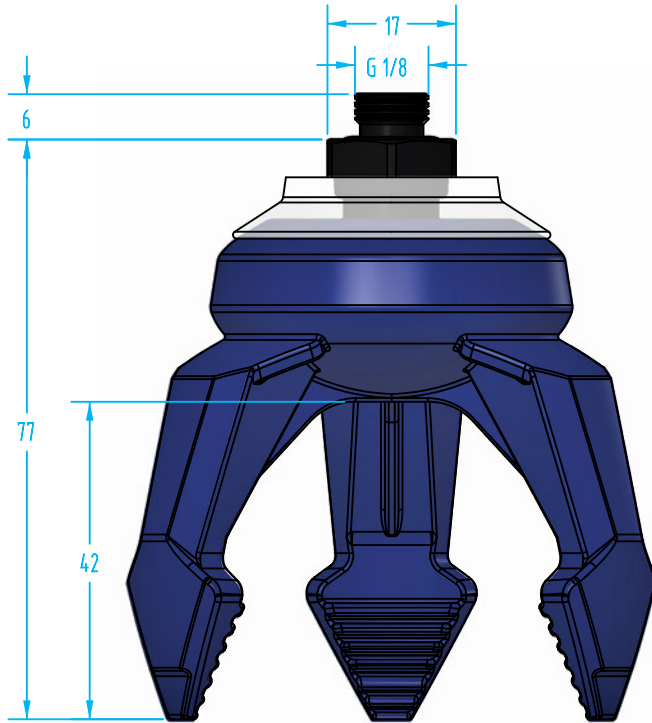
Quick# 8070 & Quick# 8090 Schmalz CobotPump Electric vacuum generator

piSOFTGRIP Three Finger Grippers

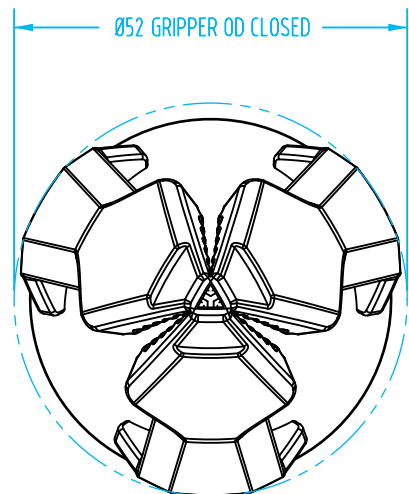
(Dimensioned drawings shown full scale)

**Cost Effective
Soft Grippers!**

Size 50, #8080:



Quick# 8080, Ø10mm Mono
Clamp Quick# 8101, & Vacuum
Post Quick# 5732.



piSOFTGRIP® Two Finger Gripper

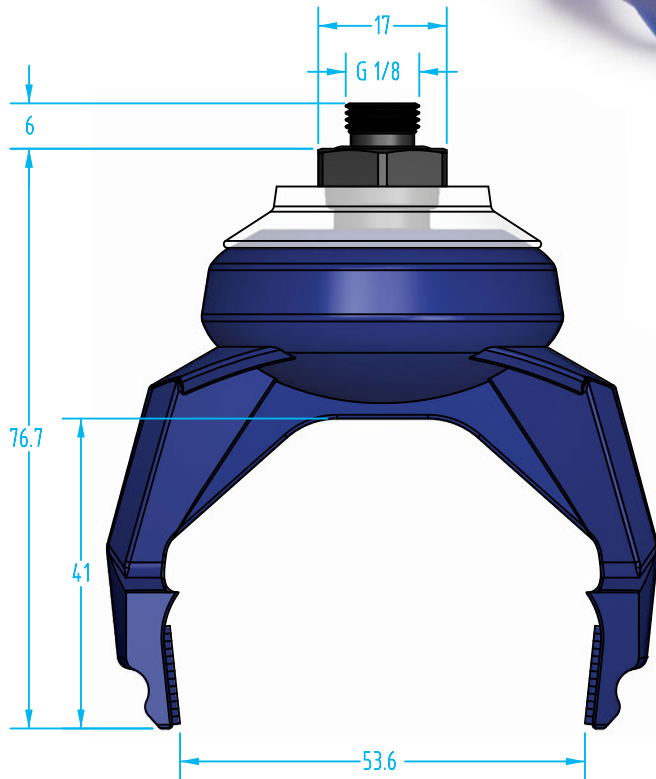
This two-finger vacuum-based soft gripper can grip sensitive and lightweight objects with odd geometries and/or objects with an unusual surface. Made in detectable silicone approved for direct contact with food, in accordance with FDA 21 CFR and EU 1935/2004 regulations.

It comes with a male G1/8" fitting which makes it compatible with our wide range of vacuum posts, suspensions and 3D printed supports. Available with wash-down fitting, see Quick# 8073 on our website.

Easy Vacuum Actuation!

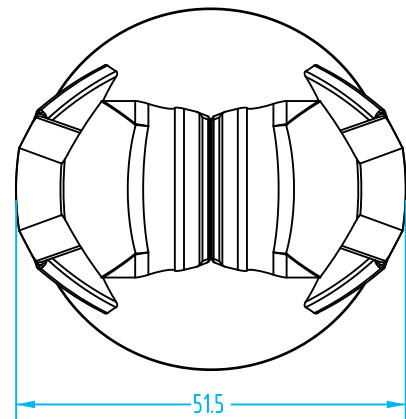
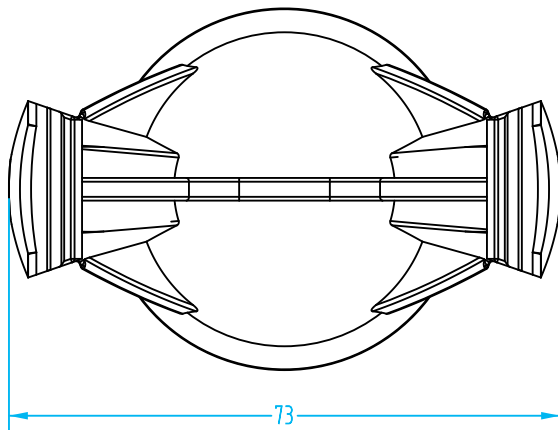


Quick# 8071
PRICE: \$119.31



NEW

Piab SoftGrip	Size 50
Quick#	8071
Part#	CRG-PSG50-2S-G18M
Price	\$119.31
Weight	43g
Temperature range	-4-212°F
Recommended vacuum level	0.4-0.9 Bar
Maximum object size	53.59mm
Maximum payload	150g
Connection	Male G1/8"
Finger / Claw material	Detectable Silicone 70° Shore A



piSOFTGRIP Two Finger Gripper



View our Soft Gripper Overview Video showing the OnRobot, Ubiros, and piSOFTGRIP!

Connects to your Existing EOAT Components



OnRobot Magnet Gripper MG10 for Cobots



OnRobot's MG10 is a versatile, easy to use magnetic gripper for material handling, assembly and machine tending applications in manufacturing, automotive and aerospace environments. Fully compatible with all major robot brands through OnRobot's One System Solution, the MG10 offers unique adjustable force and grip detection features that provide users with unprecedented levels of control.

Quick# 8212
OR-105202
PRICE: \$3,066.00

OnRobot pricing effective 3/1/2024 and subject to change.



Technical Specs	
Payload	0.002–22.046 lb (0.001–10 kg)
Workpiece size	Ø65.4mm (Ø2.574 in)
Magnetism resolution	100 steps
Gripping time	300 ms
Storage temperature	32–131°F (0–55°C)
IP Classification	IP67
Weight	800g (1.763 lb)

Features:

- Reliable gripping with variable force.
- Built-in proximity sensor to automatically detect the workpiece.
- Includes exchangeable fingertips for handling cylindrical objects.
- Includes protective pads (shown above).
- Safe, consistent grip even after power loss.
- Integrated software.
- No compressed air needed.

OnRobot Gecko Gripper for Cobots

The Gecko Gripper uses millions of micro-scaled fibrillar stalks that adhere to a surface using powerful van der Waals forces — the same way that geckos climb. It's possible to attach and lift any type of flat and smooth surfaces without compressed air or any external power, using easy gripping technology for Pick & Place applications.

Gecko Grippers

Quick#	Part#	Ø Pad	Max Suggested Payload	Price
8251	OR-104086	35mm	2.20 lb (1 kg)	\$853.00
8252	OR-104087	60mm	6.61 lb (3 kg)	\$853.00
8253	OR-108088	75mm	11.02 lb (5 kg)	\$853.00

Note: Robot-side quick changer is required. See page 120 for OnRobot Quick Changers. OnRobot pricing effective 3/1/2024 and subject to change.



EMI Gripper Kit – Magnet Gripper for Industrial Cobots

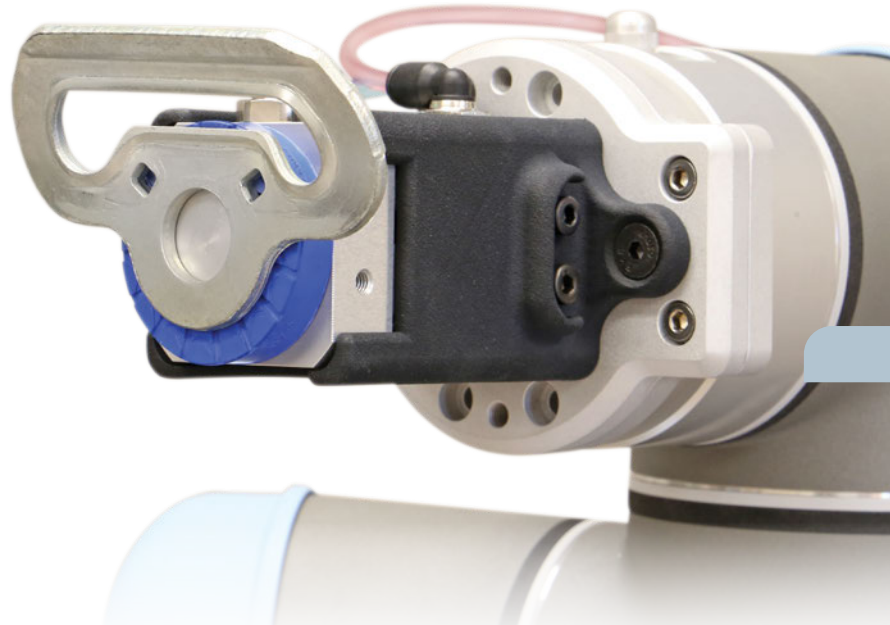
The MAG Gripper Kit is ideal for insert loading!

The MAG Gripper Kit offers customization with the ability to mount custom-made nests and sensors to make sure the part is picked, held and placed accurately.

Quick# 8003
CRK-MAG40-A
KIT PRICE: \$695.00

Try It Risk Free!

*Contact us for details



Quick#	Part#	Holding Force*	Remaining Force	Operating Pressure	Operating Temp.	Wt. of Gripper
1993	SGM-30-G18-IG	7.8 lbf	0.06 lbf	50.7–87 psi	41°–158°F	130g
1994	SGM-40-G14-IG	22.4 lbf				240g
1995	SGM-50-G14-IG	40.4 lbf				440g

*Note: The value given is a static value with no safety factor; based on a plate with a thickness of 2mm, with friction ring installed. For system configurations with magnetic grippers, a safety factor of $S = 3$ must be applied.

Features:

- This versatile kit can be adapted to other SGM Gripper sizes with various gripping forces upon request.
- Double acting with 5/2 solenoid valve and cable management clamps.
- The included interface plate mounts directly to any robot with an ISO-9409-1-50-4-M6 tool flange. Contact EMI if you need a different interface plate.
- Replaceable polyurethane ring for delicate handling and added friction.
- CRK-MAG40-A Mass: 555g (subject to change per configuration).
- For more information, see MAG gripper page 592.



CRK-MAG40-A Gripper Kit Includes:



Quick# 8016

5/2 Solenoid valve with fittings, mufflers, and non-slip Velcro® strap.



Quick# 8015

Two cable management clamps with non-slip Velcro strap.



Package with 3D printed insert for storage.



Interface plates, USB drive with URCap, and user manual.

Accessories for Collaborative Robots

One-Time Purchase! Compatible with ALL EMI Grippers!

- Simple, on-arm design with protective shroud and non-slip Velcro® strap to mount to the robot arm.
- 5/2 Solenoid Valve - Single - Solenoid, monostable
- See page 1017 for more information.
- Includes User Manual.

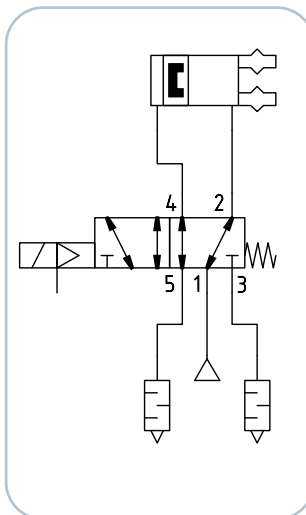


EMI's **Solenoid Valve Kit** is an essential add-on for pneumatic applications and cornerstone of all pneumatic end effectors.

Cobot Solenoid Valve Kit

Quick#	Part#	Price
8016	CRA-SVK-1	\$149.00

One Stop Shop for Cobot Accessories! Contact EMI for Custom Solutions!

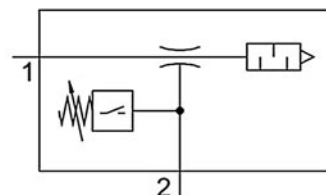
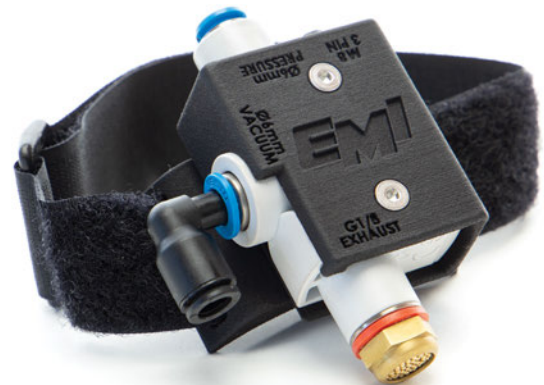


- Housing made of lightweight impact-resistant plastic.
- Connection of compressed air and vacuum with push-in 6mm.
- Operating temp: 32–122° F.
- Operating pressure: 1–8 bar.
- Kit includes User Manual, Silencer, Velcro strap, 3-Pin Cable, and Clear PU tubing.
- See Vacuum Generator on page 1017 for more information.

EMI's **Vacuum Generator Kit** operates off of a 24Vdc, mono-stable signal and is the ideal solution for vacuum EOAT. With an incorporated teachable vacuum switch, 3D printed housing and anti-slip straps, the VGK is a true plug and play solution for your cobot.

Vacuum Generator Kit with Teachable Vacuum Switch

Quick#	Part#	Tubing	Price
8021	CRA-VGK-1	Ø6mm	\$265.00



Accessories for Collaborative Robots

Easy to use!

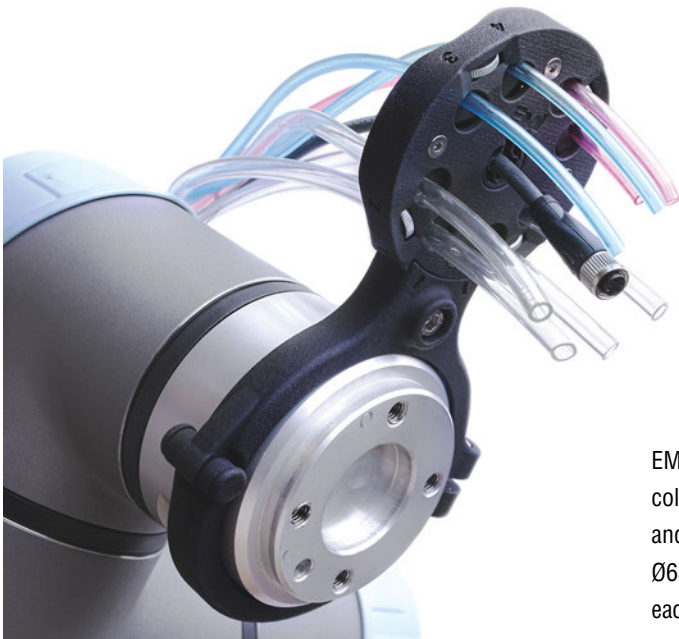
Organize and secure pneumatic and electric lines running down your robot arm. Clamps have (4x) channels for tubing and cables up to 8mm diameter. The kit includes 2 clamps, one 12in. strap, and one 18in. strap that fit most Collaborative Robots.

Cable Management Kit

Quick#	Part#	Tubing / Cable	Price
8015	CRA-CMK-1	Ø8mm max.	\$35.00



Watch EMI's Wrist Wangler Video!



NEW

EMI's **Wrist Wrangler** is a cable and tubing management solution designed for collaborative robots. It clamps at the wrist of your robot and it helps organize cables and pneumatic lines for more complex EOAT or for multiple gripper tools. Available with Ø63mm, Ø75mm and Ø90mm robot wrist clamps, it can secure 8x conduits up to Ø10mm each with an additional grommet at the center for additional tubing and cables.

Wrist Wrangler

Quick#	Part#	Description	Price
8024	CRA-WW1-A3	Ø63mm Wrist Mount (for use with UR3)	\$184.00
8025	CRA-WW1-A5	Ø75mm Wrist Mount (for use with UR5)	\$189.00
8027	CRA-WW1-A10	Ø90mm Wrist Mount (for use with UR10 & UR16)	\$194.00

Spiral Polyurethane Tubing

Quick#	Part#	Description	Price
987	GSU-PCR-0424	Ø4mm Transparent Red, 2.6m long	\$21.35
988	GSU-PCB-0424	Ø4mm Transparent Blue, 2.6m long	\$21.35
996	GSU-PCC-0604	Ø6mm Transparent Clear, 2.6m long	\$23.33
997	GSU-PCR-0604	Ø6mm Transparent Red, 2.6m long	\$23.33
998	GSU-PCB-0604	Ø6mm Transparent Blue, 2.6m long	\$23.33

- Ø4mm spiral tubing has a maximum suggested working length of 2.6m, with a retracted coil length of 135mm.
- Ø6mm spiral tubing has a maximum suggested working length of 2.6m, with a retracted coil length of 150mm.
- Polyurethane straight tubing is available on page 1045.

Ideal to avoid tension between robot joints



Cobot Flange Mono Clamp

Compatible with your existing EOAT components!

- Available with Ø10, 14, 20, 30mm clamps.
- Can be printed to fit any Cobot.
- Compatible with our wide range of quick changers, vacuum posts, grippers or custom to fit your EOAT.

EMI's printed Cobot mono clamps are lightweight, cost effective and easy to use. Simply mount the clamp directly to your Cobot's ISO-9409-1-50-4-M6 tool flange or to our Cobot Quick Changer with the included hardware and spacer.



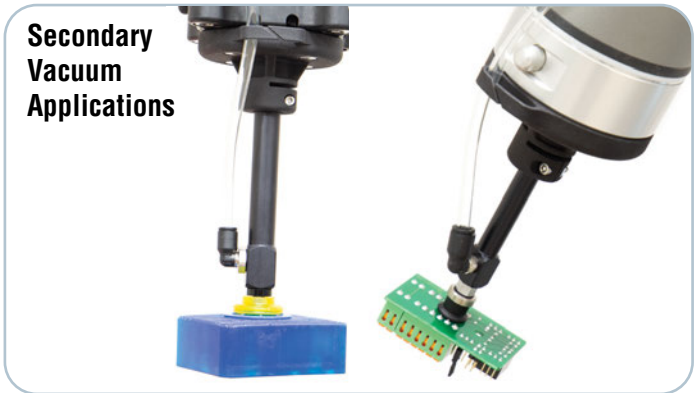
Cobot Flange Mono Clamp

Quick#	Part#	Clamp	Price	Wt.*
8101	CRM-MC10-A	Ø10	\$38.29	47g
8102	CRM-MC14-A	Ø14	\$42.61	49g
8103	CRM-MC20-A	Ø20	\$46.33	61g
8104	CRM-MC30-A	Ø30	\$49.82	71g

*Standard weight. The weight is slightly higher when using hardware to attach to the QC-75.

Mono-Clamp Spacer for Sawyer ClickSmart

Quick#	Part#	Price	Wt.
8105	CRA-MCRT-B	\$15.48	51g



Cables and Connectors

NEW

Power your Cobot End Effectors!

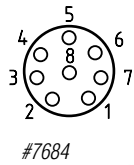
- Additional cables and connectors on page 984.
- Sensor diagrams and other specifications can be found on our online product pages at: www.EMICorp.com
- Contact us with any questions: Cobots@EMICorp.com



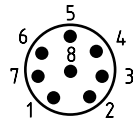
Extension Cables

Quick#	Part#	Description	Price
8082	GSE-RFC-M8-4P	4-Pin M8 Female Connector with leads, 5m long	\$16.00
2581	GSE-RCS-8FS-5000	8-Pin M8 Female Connector with leads, 5m long	\$26.75
7683	CFGM1200850P	8-Pin M12 Female Connector with leads, 5m long	\$40.56

- Use these flexible cables as an extension from electrical components using M8 and M12 4-Pin and 8-Pin connectors for wiring directly to the controller.



#7686

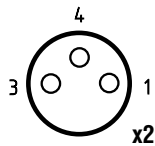
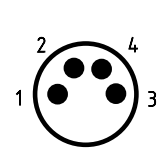


#7685 & #7686

Field Wireable M12 Connectors with Screw Terminals

Quick#	Part#	Description	Price
7684	CFGM1200800	8-Pin Female M12 Straight Connector	\$19.76
7685	CMGM1200800	8-Pin Male M12 Straight Connector	\$19.76
7686	CMGM1290800	8-Pin Male M12 90° Connector	\$32.00

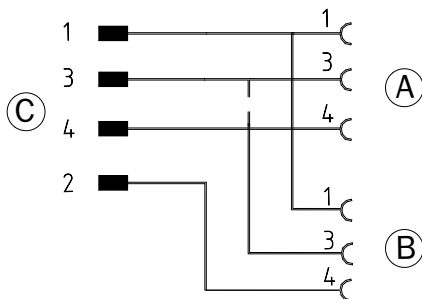
- Use these field wireable M12, 8-Pin connectors to extend cables from a quick changer and build custom wire harnesses.



Y-Splitter with M8 Connector

Quick#	Part#	Description	Price
8081	GSE-E12269	2x M8 3-pin female, 1x M8 4-pin Male	\$32.58

- Combine two sensor cables to simplify I/O requirements.



#8079

Short Connector Cables

Quick#	Part#	Description	Price
8088	CFGM8908CF8903010	3-Pin 90° M8 Female to 8-pin 90° M8 Female, 0.1m long	\$33.51
8089	CFGM8908CF8904010	4-Pin 90° M8 Female to 8-pin 90° M8 Female, 0.1m long	\$35.75
8079	CMGM800803P	8-Pin M8 Male Straight with leads, 0.3m long	\$27.92
8087	CFGM890802P	8-Pin M8 Female 90° with leads, 0.2m long	\$33.88

- Use #8088 & #8089 to connect electric grippers direct to the Tool I/O at the wrist of a cobot. Use #8079 & #8087 for wiring into a quick changer.



#8084

Continuous Flex Interface Cables

Quick#	Part#	Description	Price
8084	CRC-650-3P	3-pin M8 Male / Female, 650mm long	\$32.00
8085	CRC-750-3P	3-pin M8 Male / Female, 750mm long	\$32.00
8086	CRC-1000-3P	3-pin M8 Male / Female, 1000mm long	\$32.00

- Used extensively in EMI's cobot gripper kits, adapt for your needs!

OnRobot Compute Box

Powerful, Simple, Versatile

OnRobot Grippers are compatible with a wide variety of Robots using the Compute Box to communicate via Ethernet or Digital I/O interface. The Compute Box is also required for OnRobot's more advanced products: Dual QC, HEX Force/Torque Sensor.

OnRobot's WebLogic App can also be accessed through a computer to program your gripper remotely through Ethernet or while on the robot if you are using Digital I/O.



Ethernet



Digital I/O



OnRobot's Compute Box is needed with:

- All OnRobot Grippers to be used on robots other than UR®:
 - Doosan® Kuka® Kawasaki®
 - Hanwha® Fanuc® Nachi®
 - Techman Robot® Yaskawa® Other
- Dual Quick Changer on any robot, including UR.
- Hex Force/Torque Sensor on any robot, including UR.
- A computer to access WebLogic App.

Box Includes:

- Compute box
- 5m Cable (M12 to M8)
- UTP Cable (RJ45 to RJ45)
- Power supply
- USB stick
- 4x Cable strap
- 3x Terminal blocks
- 8x I/O Wires

OnRobot Compute Box

Quick#	Part#	Description	Price
8231	OR-113761	Works with Various Robot Models. Interface plates sold separately.	\$986.00

OnRobot pricing effective 3/1/2024 and subject to change.



OnRobot Adapter Plate K for Techman / Omron

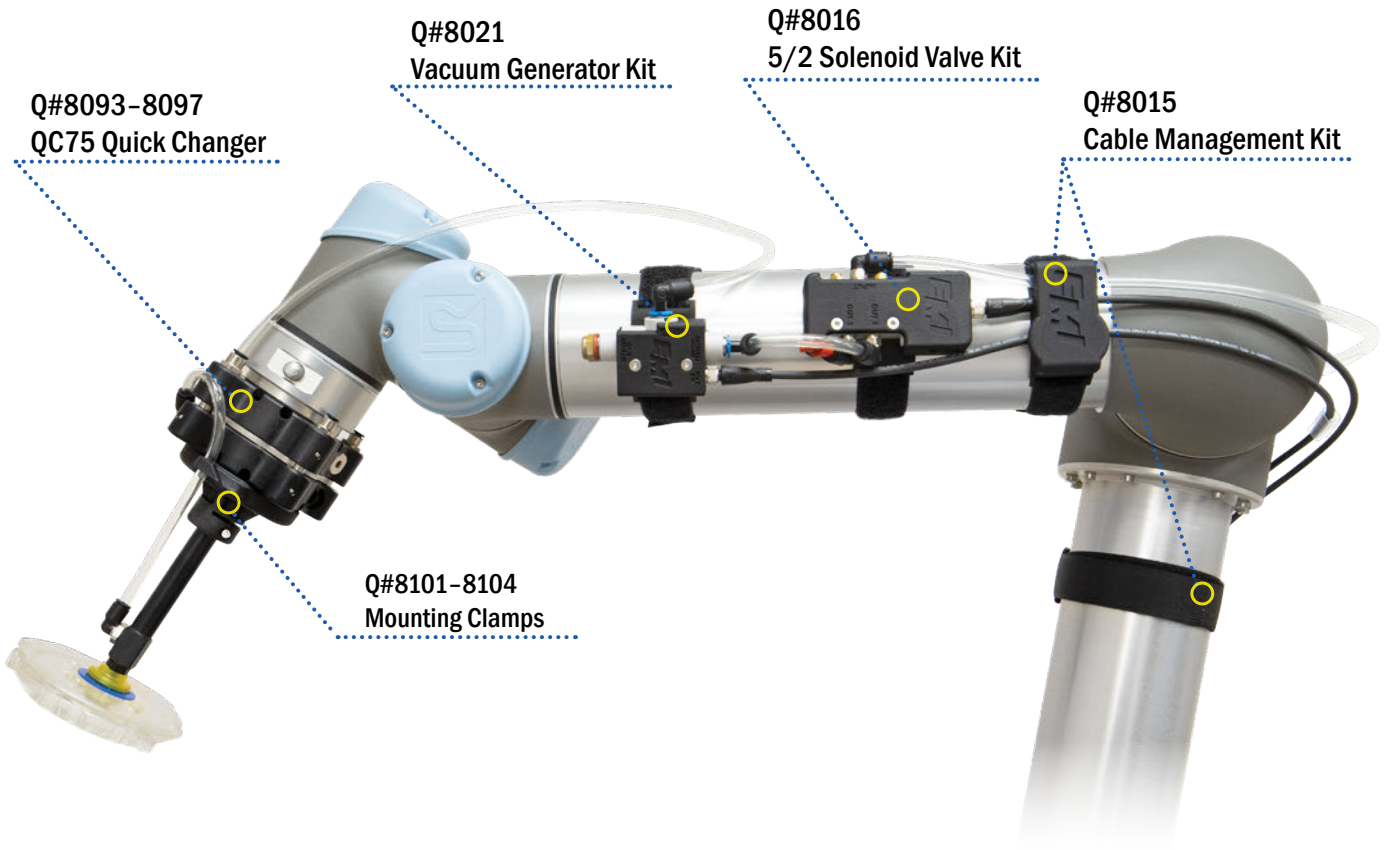
Quick#	Part#	Description	Weight	Price
8269	OR-101850	Plate K for Techman / Omron ISO 9409 Mount Pattern	151g	\$128.00



OnRobot ABB Interface Cable

Quick#	Part#	Description	Price
8239	OR-113690	For ABB Gofa - Connects to the Robot Wrist I/O	\$409.00

Accessories for Collaborative Robots



Subscribe to our YouTube Channel

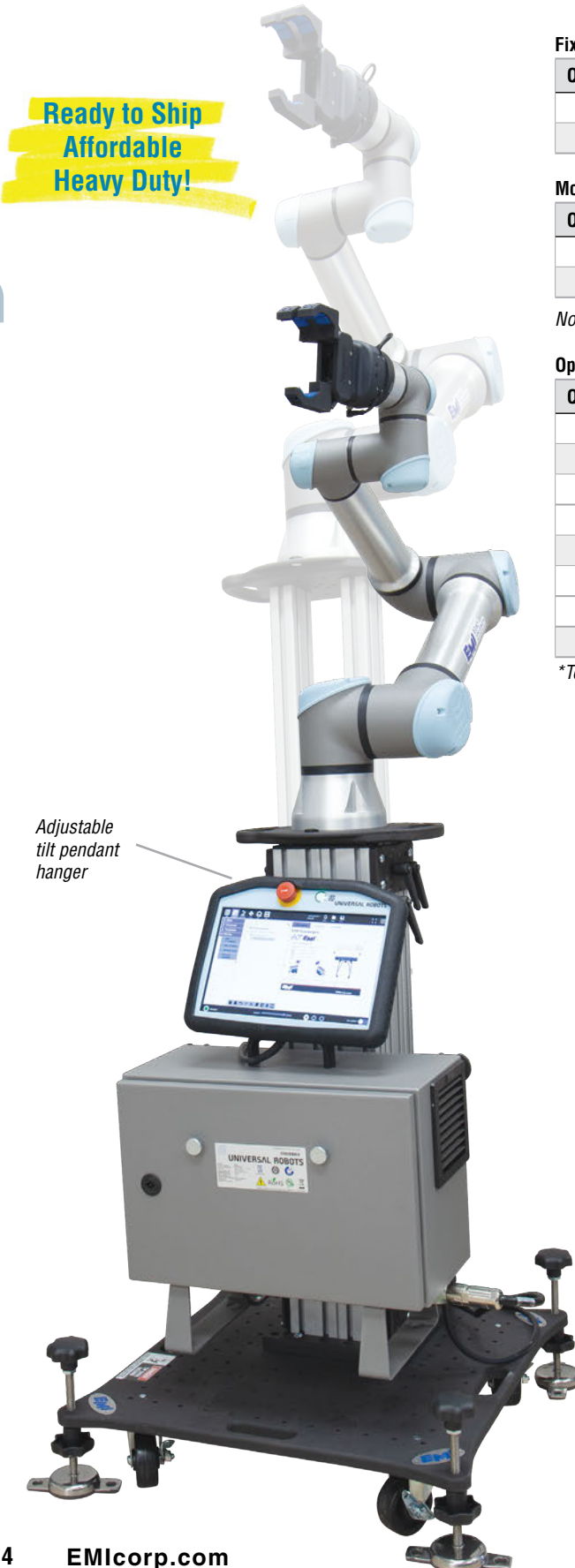
Visit and subscribe to EMI's YouTube channel to watch the latest videos on our EOAT products!

We are constantly adding new content to our YouTube channel. From product overviews to in-depth how-to videos, we are sure you'll find our videos helpful. Click the play button below to watch our EOAT for Cobots video!



Adjustable Height Industrial Cobot Stands

EMI's Cobot Stands extend the reach of a cobot arm. These heavy-duty stands are perfect to an industrial environment where redeployment and adjustability may be required.



Ready to Ship
Affordable
Heavy Duty!

Fixed Base (Aluminum Profile Riser) with Adjustable Height

Quick #	Part #	Description	Wt.	Price
8920	CRS-FA-2339	23.7"-39.9" OAH	59 lbs	\$1,610.00
8921	CRA-FA-3054	30.8"-54" OAH	65 lbs	\$1,662.00

Mobile Base (Aluminum Profile Riser) with Adjustable Height

Quick #	Part #	Description	Wt.	Price
8901	CRA-MA-2844	28.5"-44.5" OAH	167 lbs	\$2,920.00
8902	CRS-MA-3558	35.5"-58.8" OAH	173 lbs	\$2,972.00

Note: The mobile base unit adds roughly 4.7" to the overall height.

Optional Accessories

Quick #	Part #	Description	Price
8940	CRS-CBM-UR	UR Control Box Mount for Cobot Stand	\$35.00
8943	CRS-CBM-DO	Doosan / Fanuc CRX Control Box Mount	\$204.00
8945	CRS-CBM-TM	Techman Control Box Mount w/ Swivel	\$204.00
8941	CRS-TPH-UR	UR Pendant Hanger w/ Adj. Tilt Angle*	\$99.00
8944	CRS-TPH-DO	Doosan Pendant Hanger w/ Adj. Tilt Angle	\$109.00
8946	CRS-TPH-CRX	Fanuc CRX Pendant Hanger w/ Adj. Tilt Angle	\$136.00
8942	CRS-CM-1	Cobot Stand Cable Management (x2)	\$39.00
2809	CRA-DRM-1	Din Rail Mount Bracket Kit (includes hardware)	\$37.89

**Teach pendant hanger includes bracket for older model (CB-Series) UR Teach Pendant*



Mounting pattern compatible with:

UR
UNIVERSAL ROBOTS
UR3/e, UR5/e, UR10/e, UR16/e

FANUC
CRx-10iA, CRx-10iA/L



A0509, A0509S, A0915, A0912S, M0609, M0617, M1013, M1509, H2017, H2515



TM5, TM12, TM14

UR Universal Robots, Doosan, TM Techman Robot, and Fanuc are trademarks of their respective owners.

Fixed Height Industrial Cobot Stands

Watch EMI's Cobot Stand Video!

Fixed Base (Steel Riser) with Fixed Height

Quick #	Part #	Description	Wt.	Price
8930	CRS-FF-30	30.6" OAH	68 lbs	\$1,271.00
8931	CRS-FF-36	36.9" OAH	71 lbs	\$1,346.00
8932	CRS-FF-42	42.5" OAH	79 lbs	\$1,421.00
8933	CRS-FF-48	48.7" OAH	87 lbs	\$1,496.00

Mobile Base (Steel Riser) with Fixed Height

Quick #	Part #	Description	Wt.	Price
8910	CRS-MF-35	35.3" OAH	176 lbs	\$2,581.00
8911	CRS-MF-41	41.6" OAH	179 lbs	\$2,656.00
8912	CRS-MF-47	47.2" OAH	187 lbs	\$2,731.00
8913	CRS-MF-53	53.5" OAH	195 lbs	\$2,806.00

Note: The mobile base unit adds roughly 4.7" to the overall height.

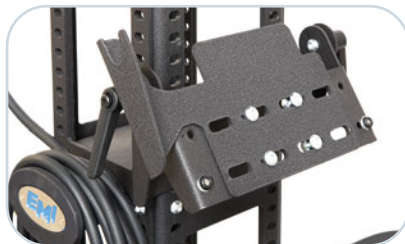
Find our new Electronically-driven riser Cobot Stand models and new Heavy-duty fixed height Cobot Stand Online, [Click here!](#)

Custom height options and configurations are available upon request!

Optional Accessories, see page 184.



Optional UR Control Box Hanger



Optional Doosan Adjustable Tilt Pendant Hanger



Cable Management (2x included with Stand)

Mounting plates for all cobots available

Cable management with pass-through for tubing

Stand can be placed anywhere on base

Castors and leveling pads included



Cobot Ready Conveyors

EMI has developed a conveyor package to easily integrate with your Collaborative Robot.

Our conveyors are Certified by Universal Robots. With EMI's URcap development, any Universal Robot can easily control the conveyor's speed and direction.

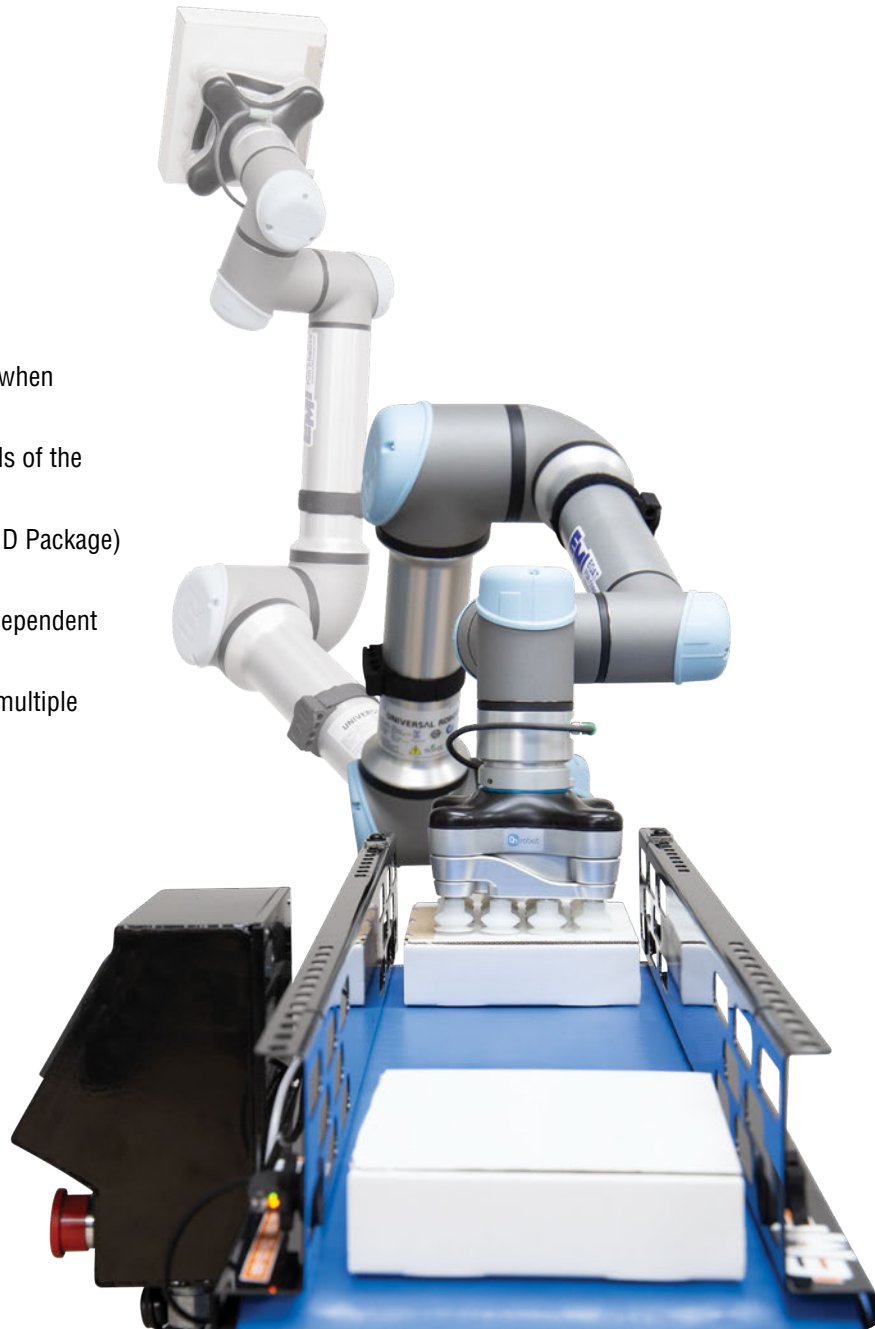
With every Cobot Conveyor:

- EMI URcap allows for easy programming and use when integrated with your UR Robot.
- Two photo-eyes (1 at infeed and 1 at discharge ends of the conveyor).
- Variable Speed, Internal Motor Drive Package (EA-ID Package) or External Drive. (See below)
- Compact touch screen speed control allows for independent control, if necessary.
- 4" x 90° 12ga. Steel powder coated side rails with multiple photo eye mounting positions.
- Adjustable leg sets with 4" swivel, locking castors.



[Click here to view our Cobot Ready Conveyor Brochure](#)

[Click here to download the Cobot Ready Conveyor Order Form](#)



Choose Either Internal or External Drive:

Internal Drive Package: (Extruded Aluminum Model Conveyors Only)

- MODBUS communication via Ethernet (EA-PLC-UR Electrical Package).
- Single V-guide polyurethane belting.
- Power: 110V/ 5amp.
- Maximum load: 50lbs.
- Maximum belt speed: 70ft per minute*.
- Belt widths: 4"-60" at 2" increments.
- Belt lengths: starting at 4ft.

*Belt speed may vary based on overall length and width

External Drive Package:

- Steel or aluminum frame.
- MODBUS communication via Ethernet (T-99 Electrical Package).
- Power: 110V/ 5 amp.
- Maximum load: varies by conveyor model.
- Belt widths: varies by conveyor model.
- Belt lengths: starting at 4ft.
- Speed: 20, 40, or 80 feet per minute.
- Variable frequency drive as compared to EA-ID.

Cobot Ready Conveyors

URCap Features:

- MODBUS communication via Ethernet Cable
- Simple UR pendant interface
- Variable speed control
- Directional control
- Detect workpiece presence
- User Manual

Suitable Applications:

- Machine tending
- Injection molding
- Material handling
- Pick and place
- Box filling



	Extruded Aluminum	Extruded Aluminum	Trim Line	Merit Line	Clean Room	Signature Line
Electrical Package	Internal Drive with EA-PLC-UR Package		External Drive with T-99 Cobot Controller Package			
Price for standard Cobot Ready Flat Belt Conveyor (18" wide by 10' long) <i>Other sizes available</i>	EAF-18-10-40 \$4,910	EAF-18-10-40 \$5,007	STL / ATL-18-10-40 \$4,809	ADF-18-10-40 \$5,345 DDF-18-10-40 \$5,555	ACRF-18-10-40 \$5,631	RM-18-10-40 \$5,835

Pricing effective 08/01/2022

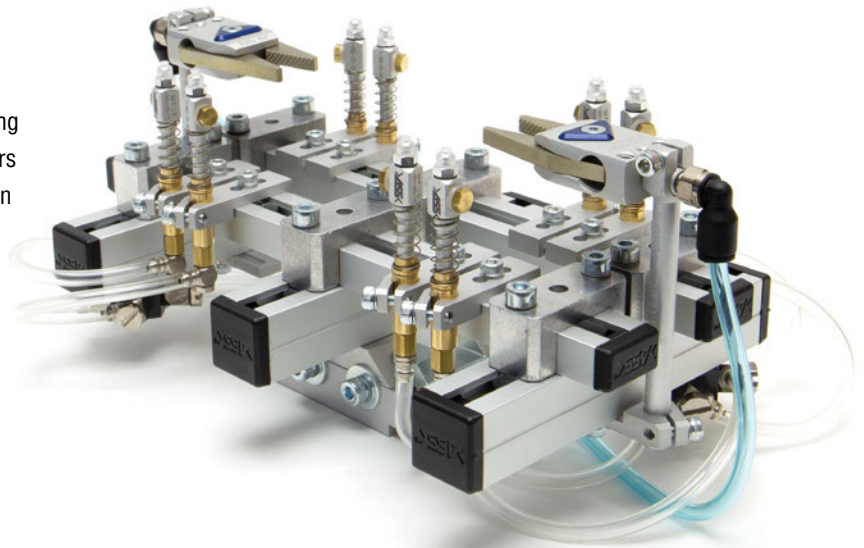
To request more information, call 216-535-4848 or email us at Sales@EMICorp.com

The Original EOAT Gripper System



Designed and manufactured in Germany, >ASS< has been building end-of-arm tooling components since 1984. Relied upon for years by many of the world's largest robot users, these parts are known for their exceptionally high quality and innovative engineering.

These are the authentic components made by the original manufacturer. We have them in stock in the United States and Mexico available for immediate shipment.



New! Micro Series Components: With a clamping diameter of 6mm, the >ASS< Micro EOAT System is significantly smaller and lighter than any other framing components available. With this new system it is now possible to handle even the smallest components simply and cleanly in the tightest of spaces. See pages 222–223.

New! Blue Components: The blue scale system was developed for providing verifiable positions for tooling, fixture and sensor applications. The elbow and mounting arms are pre-drilled for set screws locking their position. See pages 224–227.

>ASS< Framing Overview

These >ASS< components can be found in their respective product sections

EOAT Quick Changers p.16



Vacuum Cups p.360



Sprue Grippers p.429



Finger Grippers p.522



Lightweight ID Grippers p.580

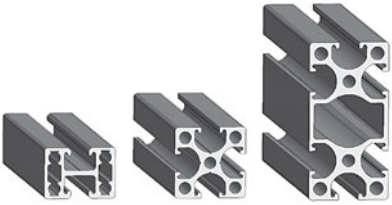


Nipper Brackets p.832




>ASS< Framing Overview


Profile p.190



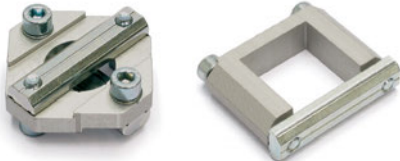
Angle Connector p.195




End Joint Connector p.196



Cross Joint Connector p.198




Flat Connector p.200



Cross Clamp p.205



Angle Clamp p.208



Swivel Head Clamp p.210



Angle Arm p.212



Heavy-Duty Elbow Arm p.214



Round to Round Clamp p.215




Extensions & Centering Pins p.217




Vacuum Cup Arm p.219



Vacuum Cup Connector p.220



Long Angle Connector p.220



Profile

(Dimensioned drawings shown full scale)

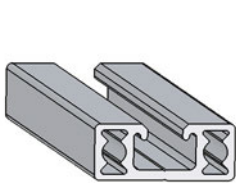
Quick#	Part#	>ASS< #	Price	Slots	Profile Type	T-Slot	Size	Length	Weight
3915	X-25/10-1M	1-052-66-00	\$12.00	1	X	X (M4)	25x10mm	1 meter	294g
3916	X-25/18-1M	1-052-86-00	\$13.88	2			25x18mm	1 meter	454g
3903	X-25/25-1M	1-052-21-00	\$14.75	4	X	X (M5)	25x25mm	1 meter	620g
3904	X-25/25-2M	1-052-22-00	\$29.50					2 meter	1240g
3905	X-50/25-1M	1-052-41-00	\$21.25	6	X	X (M5)	50x25mm	1 meter	1026g
3906	X-50/25-2M	1-052-42-00	\$42.50					2 meter	2052g
3907	J-40/40-2M	1-055-23-00	\$44.00	4	JU	X (M6)	40x40mm	2 meter	2678g
3908	J-80/40-2M	1-055-42-00	\$75.00	6			80x40mm	2 meter	4634g

Save on Shipping Costs !

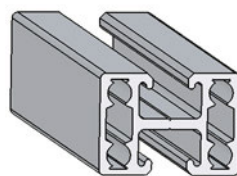
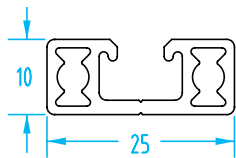
Order 1-meter profiles to save on shipping costs. (2-meter profiles ship UPS oversized and will cost approximately 2½ times as much to ship compared to 1-meter profiles.)

Use Quick#s for easy online ordering.

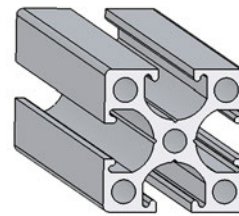
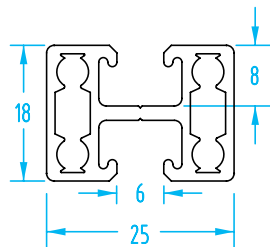
X Profile



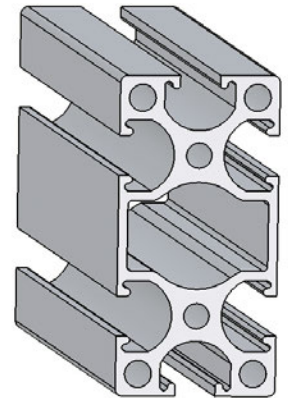
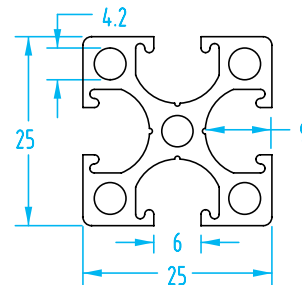
#3915



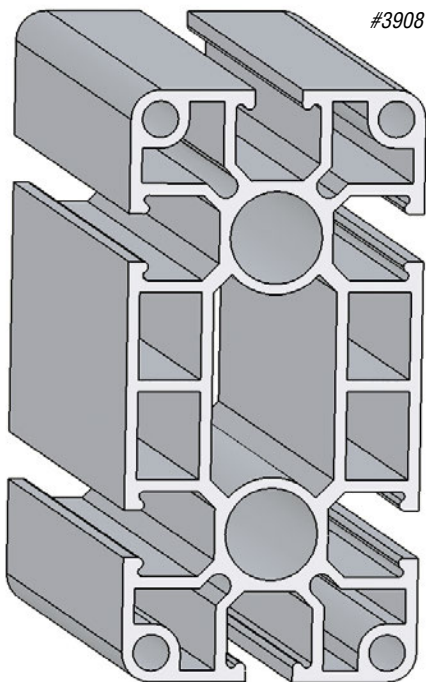
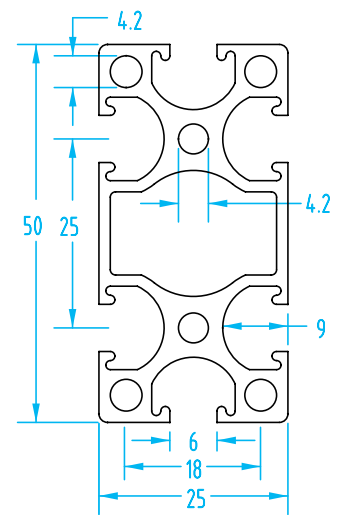
#3916



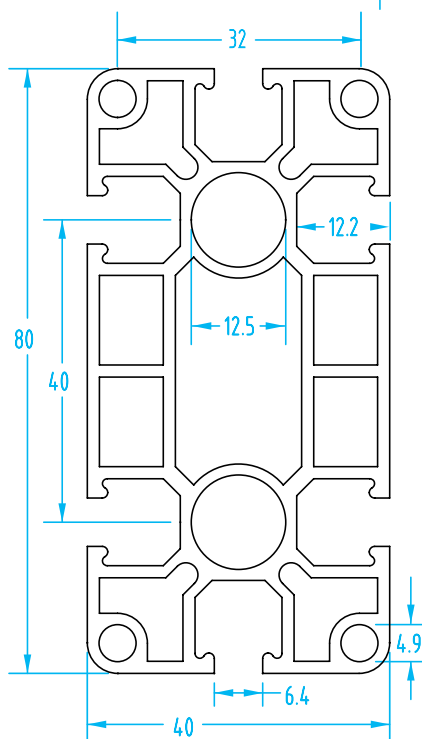
#3903 & 3904



#3905 & 3906

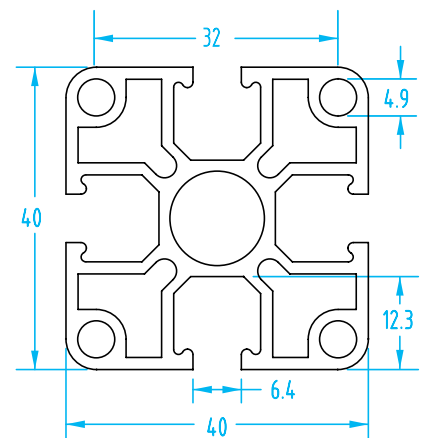


#3908

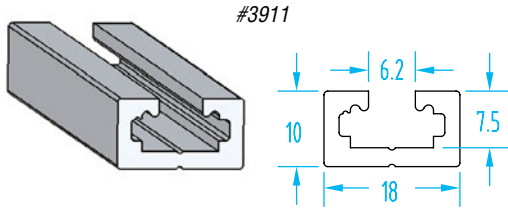


J Profile

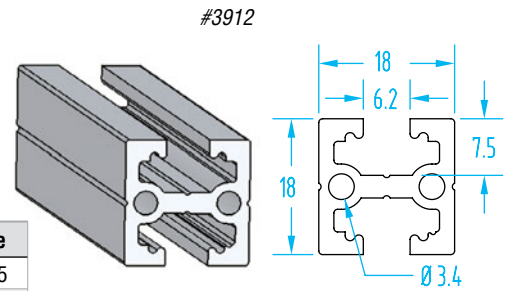
#3907



Profile Accessories

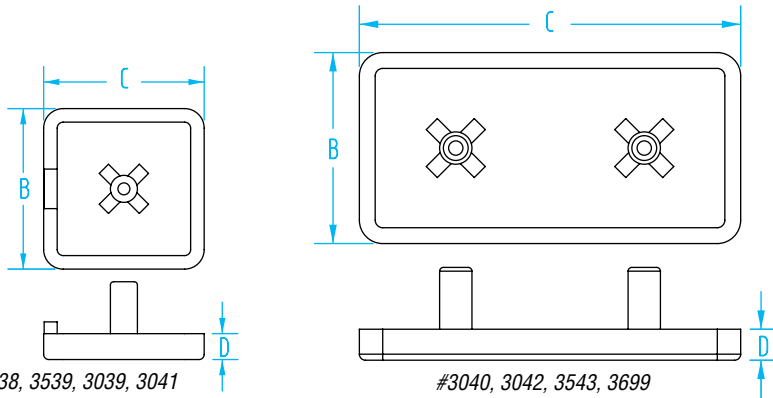


L Profile



L (Light) Aluminum Profile

Quick#	Part#	>ASS< #	Slots	Profile Type	Size	Length	Wt.	Price
3911	L-18/10-1M	1-051-21-00	1	L	18x10mm	1 meter	247g	\$7.75
3912	L-18/18-1M	1-051-46-00	2		18x18mm	1 meter	382g	\$12.00



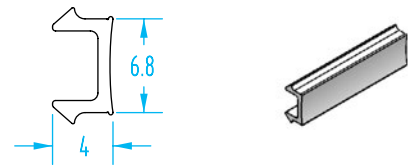
Profile End Cap

Quick#	Part#	>ASS< #	Price	B	C	D	Wt.	Use with:
3543	ADK-L-18-10	1-190-20-00	\$1.05	18	10	4	1g	L 18/10
3699	ADK-L-18-18	1-190-22-00	\$1.05	18	18	4	1g	L 18/18
3538	ADK-X-25-10	1-190-23-00	\$1.05	25	10	4	1g	X 25/10
3539	ADK-X-25-18	1-190-24-00	\$1.05	25	18	4	1g	X 25/18
3039	ADK25/25X	1-190-25-00	\$1.05	25	25	4	2g	X 25/25
3040	ADK50/25X	1-190-30-00	\$1.58	25	50	4	3g	X 50/25
3041	ADK40/40J	1-190-37-00	\$2.10	40	40	4	4g	J 40/40
3042	ADK80/40J	1-190-42-00	\$2.63	40	80	4	8g	J 80/40

Plastic Profile Channel Cover

Quick#	Part#	>ASS< #	Price	Length	Use with:
3698	ADP-1000	1-090-11-00	\$6.30	1 meter	L, X, JU

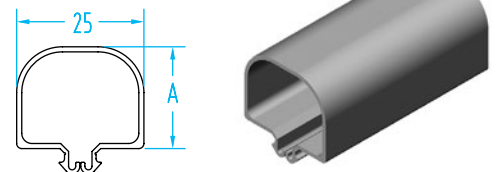
ADP channel covers snap into the profile channel and close the profile channel.



Plastic Tube & Wire Channel

Quick#	Part#	>ASS< #	Price	A	Length	Use with:
3652	KKP-25-20	1-090-13-00	\$5.78	20	1 meter	L, X, JU
3653	KKP-25-35	1-090-16-00	\$7.88	35	1 meter	L, X, JU

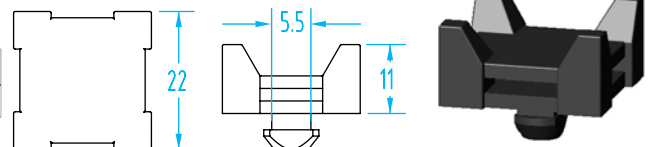
KKP channel covers snap into the profile channel to route tubing and wires.



PA Twist-On Channel Saddle

Quick#	Part#	>ASS< #	Price	Wt.	Use with:
3583	KKB-X-JU	1-790-41-00	\$1.58	4g	X, JU

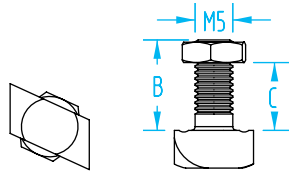
KKB twist on zip-tie saddle used to achieve clean and professional looking end-of-arm tools.



Slotted Nuts



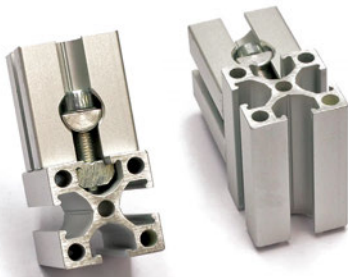
#3066 in profile



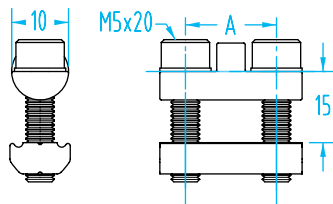
Removable Slotted Bolts

Quick#	Part#	>ASS< #	Price	B	C	Wt.
3066	HKS5-15X	1-121-05-00	\$1.58	15	to 10mm	5g
3067	HKS5-62X	1-121-10-00	\$1.58	62	10-57mm	11g

Note: For use with L, X, and JU profiles



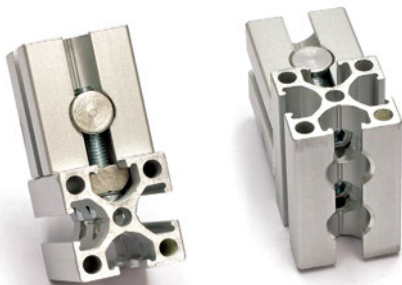
Note: Requires one hole to be drilled using stepped drill STBM5X.



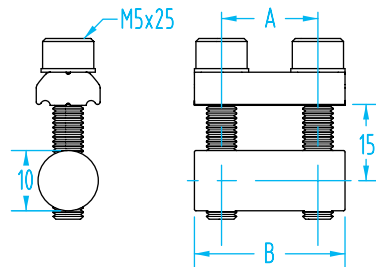
#3068

X-Profile Adjustable Universal Joint Connector

Quick#	Part#	>ASS< #	Price	A	Wt.
3068	UVV25X	1-121-15-00	\$5.78	16	19g
3069	UVV50X	1-121-20-00	\$6.30	41	35g



Note: Requires three holes to be drilled using stepped drill STBM5X.



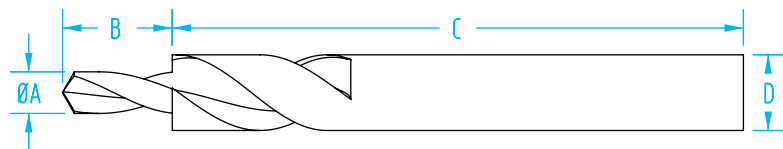
#3070

X-Profile Fixed Universal Joint Connector

Quick#	Part#	>ASS< #	Price	A	B	Wt.
3070	UVF25X	1-121-25-00	\$5.78	16	25	17g
3071	UVF50X	1-121-30-00	\$6.30	41	50	29g



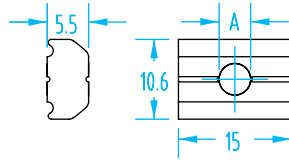
#3078



Stepped Drill

Quick#	Part#	>ASS< #	Price	ØA	B	C	D
3077	STBM4L	1-190-80-00	\$31.50	4.5	12	65	8
3078	STBM5X	1-190-82-00	\$33.60	5.5	15	75	10

Slotted Nuts

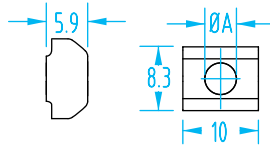


Slotted Nuts (Steel / zinc coated)

NEW

Quick#	Part#	>ASS< #	Price	ØA	Wt.	Use with:
3846	GWP-3-U	1-058-31-15	\$2.10	M3	5g	L, X, J profile
3029	GWP4L/X	1-058-41-15	\$2.10	M4	5.3g	L, X, J profile
3030	GWP5X	1-058-51-15	\$2.10	M5	5g	L, X, J profile
3031	GWP6U	1-058-61-18	\$2.10	M6	4.7g	L, X, J profile

Note: Double slotted nuts are available on page 1078.

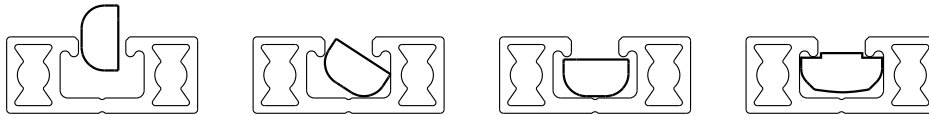


Drop-In Channel Nuts (Steel chromated)

NEW

Quick#	Part#	>ASS< #	Price	ØA	Wt.	Use with:
3853	GWP-EX3-U	1-056-32-01	\$2.10	M3	2g	L, X, J profile
3854	GWP-EX4-U	1-056-42-01	\$2.10	M4	2g	L, X, J profile
3032	GWP-EX5-U	1-056-52-01	\$3.68	M5	2g	L, X, J profile

Drop-in & rotate 90° when you need to add to an already assembled EOAT.



Extensive EOAT Inventory!

Easy Online Ordering!

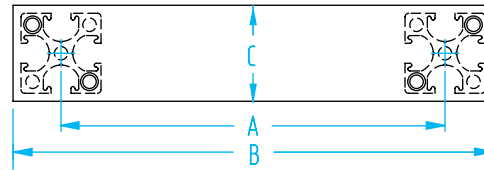
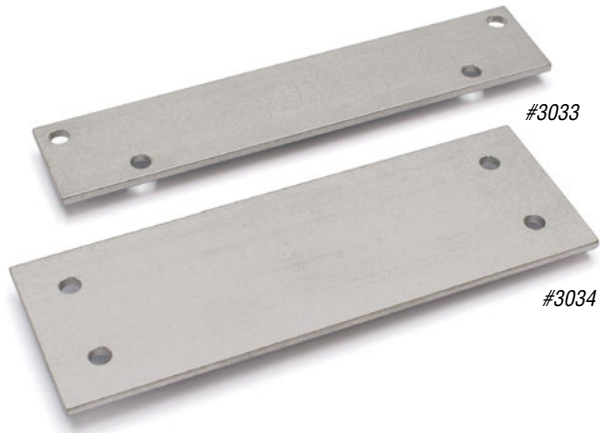
- Create Supply Lists
- Order from History
- Export Purchase Orders
- Track Orders

Product Pages Include:

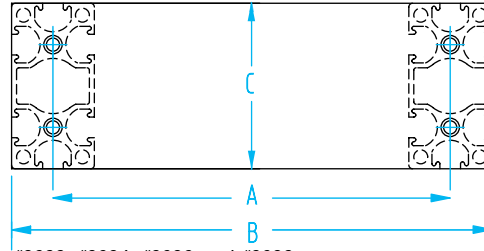
- CAD file downloads
- 360° 3D Views
- Dimensional drawings
- Related items



Profile End Plate



#3687, #3033, #3035, and #3037



#3688, #3034, #3036, and #3038.

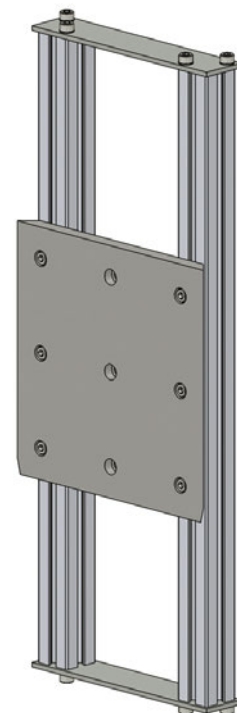
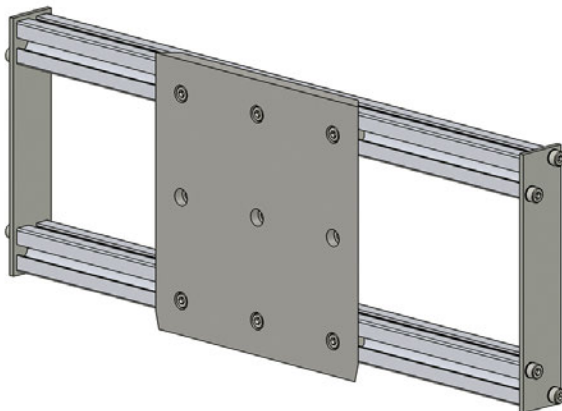
#3033, #3034, #3035, and #3036 are 3mm thick.
 #3037 & #3038 are 5mm thick.

Profile End Plate

Quick#	Part#	>ASS< #	Price	A	B	C	Wt.	Use with:	Fits base plate size
3687	EPL1-25X	1-122-81-00	\$6.30	70	100	30	34g	X 25/25	1X
3688	EPL1-50-25X	1-122-83-00	\$6.30	70	95	50	57g	X 50/25	1X
3033	EPL2-25X	1-122-85-00	\$9.45	120	150	30	34g	X 25/25	2X
3034	EPL2-50X	1-122-87-00	\$9.45	120	145	50	57g	X 50/25	2X
3035	EPL3-25X	1-122-89-00	\$7.35	200	230	30	57g	X 25/25	3X
3036	EPL3-50X	1-122-91-00	\$9.45	200	225	50	88g	X 50/25	3X
3037	EPL3-40J	1-122-94-00	\$9.98	200	245	45	126g	J 40/40	3J
3038	EPL3-80J	1-122-96-00	\$12.60	200	240	80	251g	J 80/40	3J

Use with profile size

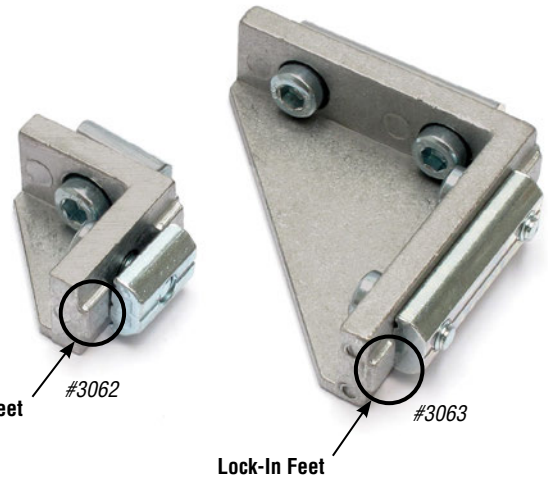
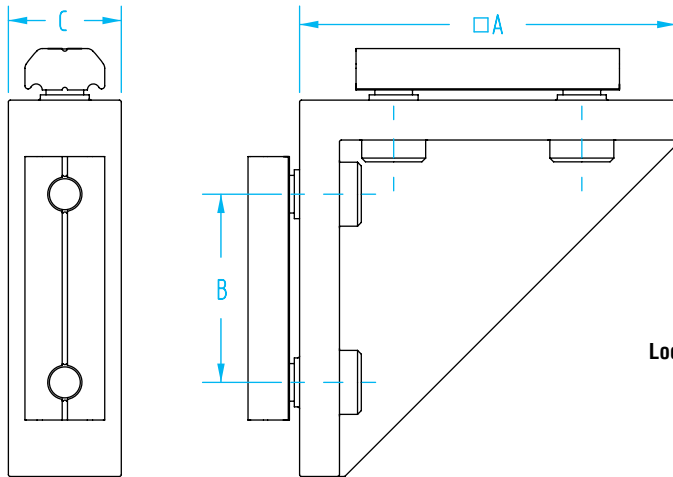
Application Examples



Save on Custom Plates !

Custom mounting plates, interfaces, and brackets for building EOAT are available from EMI. Fast and low cost. EMI's in-house laser cutter precision cuts aluminum and stainless up to 0.250" thick.

Angle Joint Connectors



Angle Joint Connector

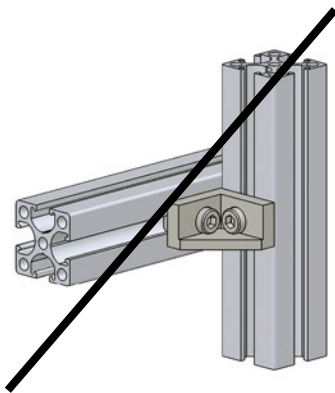
Quick#	Part#	>ASS< #	Price	A	B	C	Wt.
3062	WIV25X	1-121-66-00	\$5.78	25	-	15	26g
3063	WIV50X	1-121-71-00	\$7.88	50	25	15	60g
3064	WIV40J	1-121-77-00	\$11.03	40	-	40	131g
3065	WIV80J	1-121-82-00	\$22.05	80	40	40	377g

Use with profile size ↑

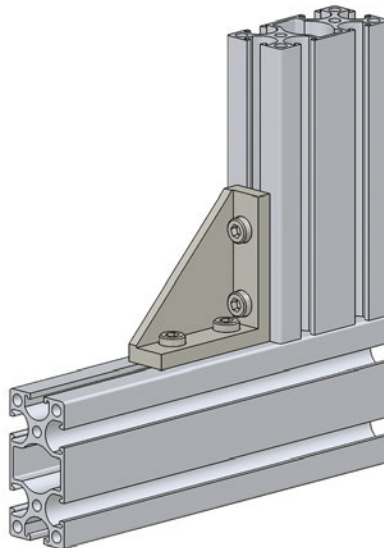
Q# 3064 & 3065 do not have lock-in feet.

Application Examples

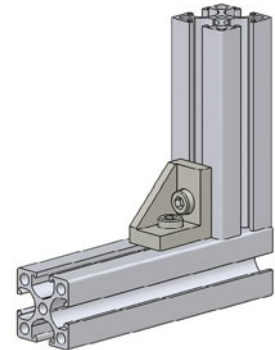
Perpendicular Use:



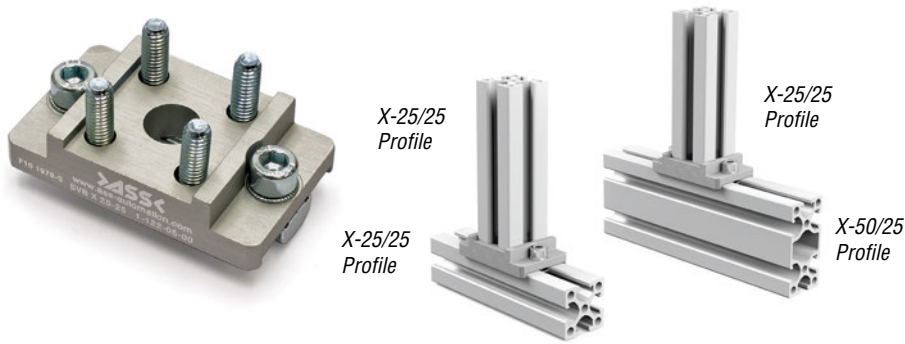
Connector NOT recommended for this type of use.



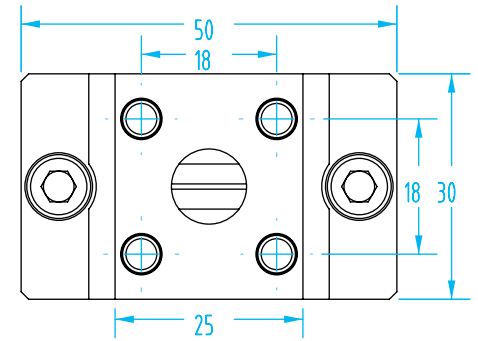
InLine Use:



Profile End Joint Connector

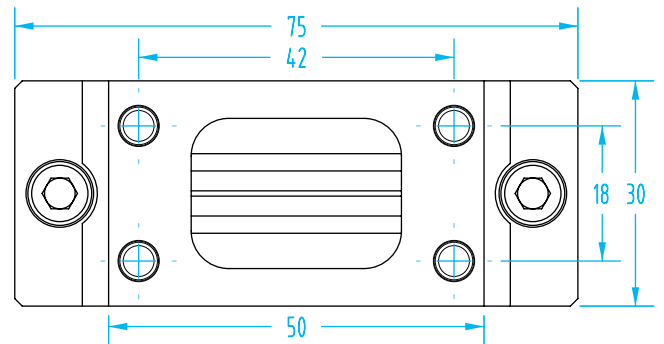
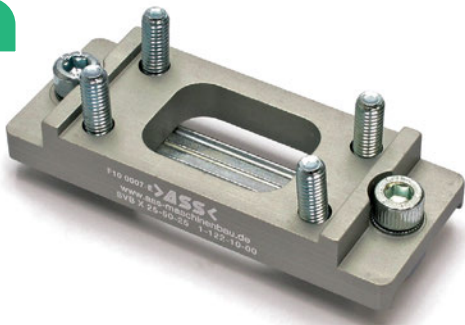


(Dimensioned drawings shown full scale)



90° Profile End Joint Connector

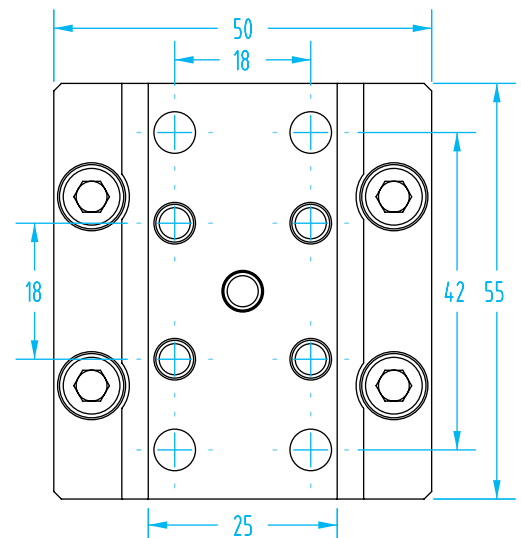
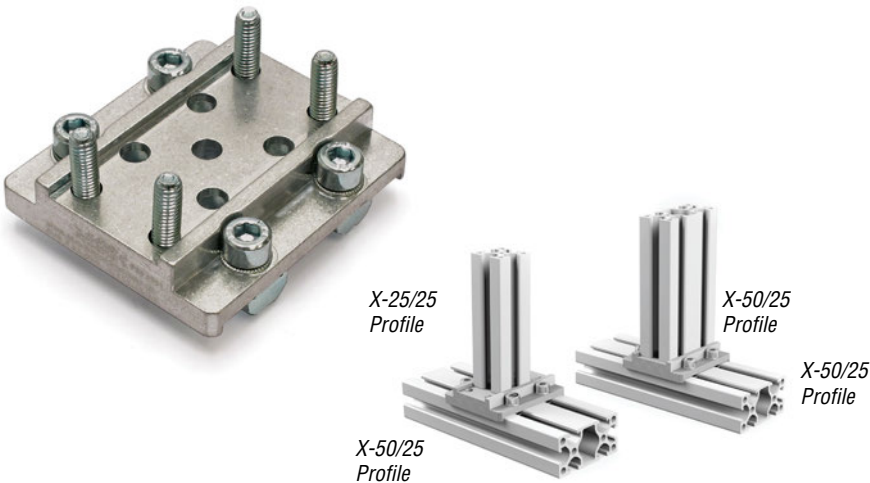
Quick#	Part#	>ASS< #	Price	Wt.	Use with:
3486	SVB25-25X	1-122-05-00	\$27.83	60.5g	X



90° Profile End Joint Connector

Quick#	Part#	>ASS< #	Price	Wt.	Use with:
3487	SVB25-50/25X	1-122-10-00	\$29.40	78g	X

Use Quick#s for easy online ordering.

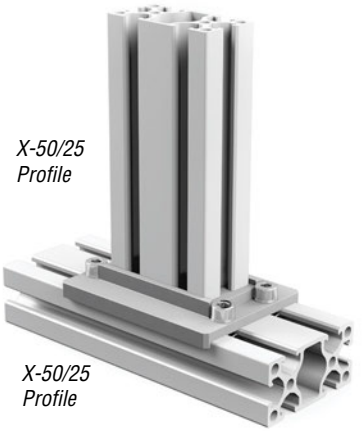
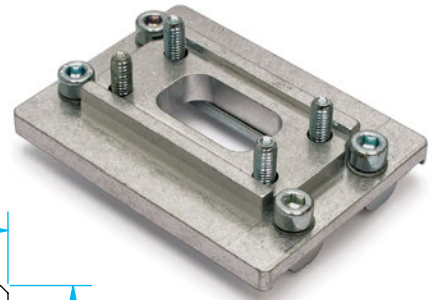
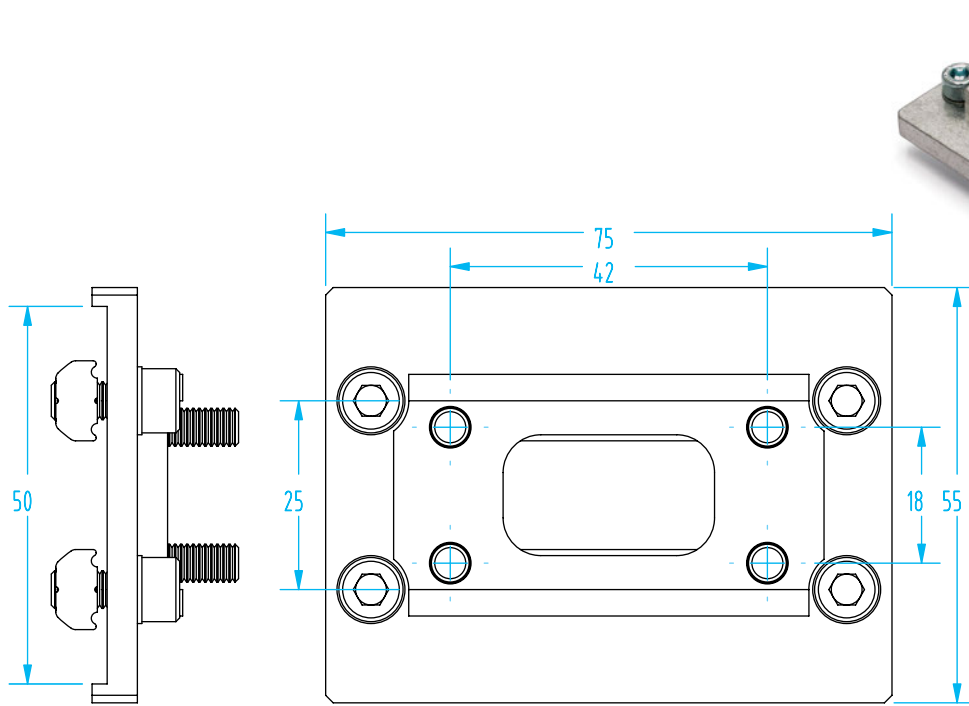


90° Profile End Joint Connector

Quick#	Part#	>ASS< #	Price	Wt.	Use with:
3488	SVB50/25X	1-122-15-00	\$30.45	100g	X 25/

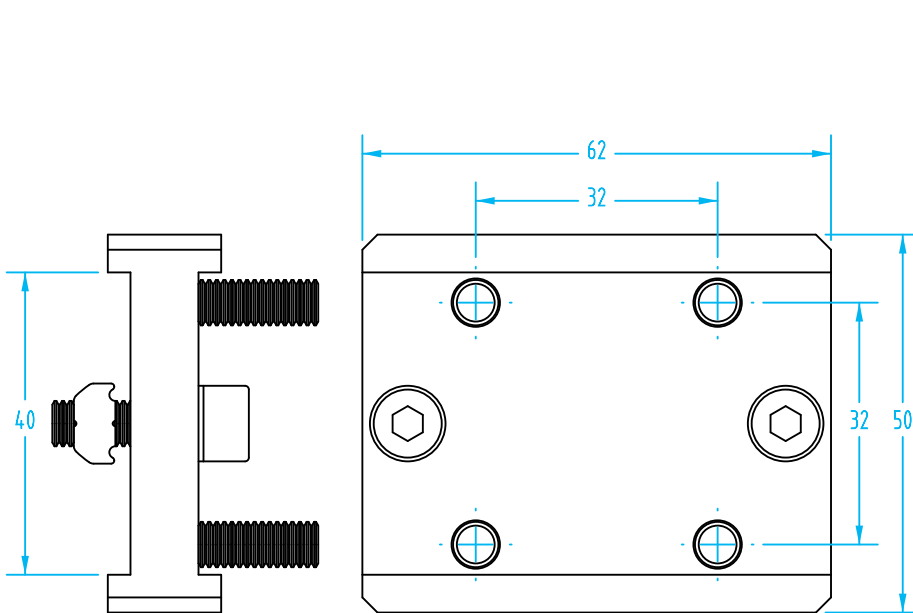
Profile End Joint Connector

(Dimensioned drawings shown full scale)



90° Profile End Joint Connector

Quick#	Part#	>ASS< #	Price	Wt.	Use with:
3489	SVB50/25-50/25X	1-122-20-00	\$32.03	134g	50X

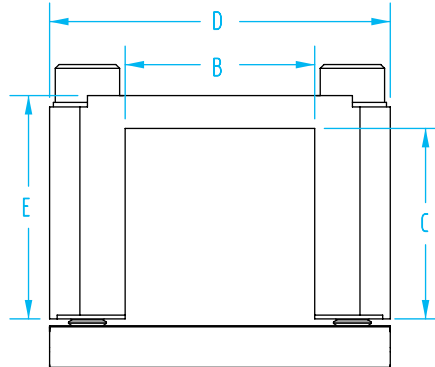
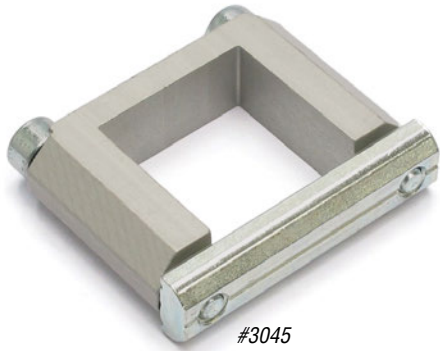


90° Profile End Joint Connector

NEW

Quick#	Part#	>ASS< #	Price	Wt.	Use with:
3354	SVB-JU-40-40	1-122-21-00	\$48.30	135g	J

Square Joint Connectors

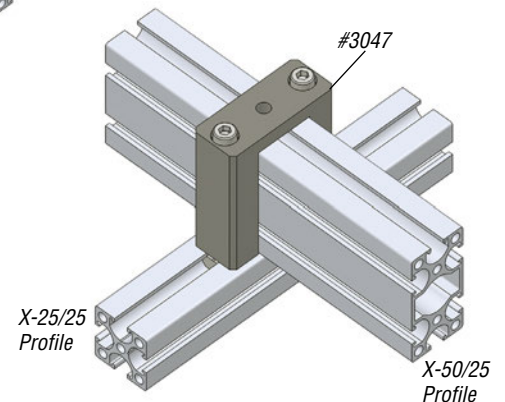
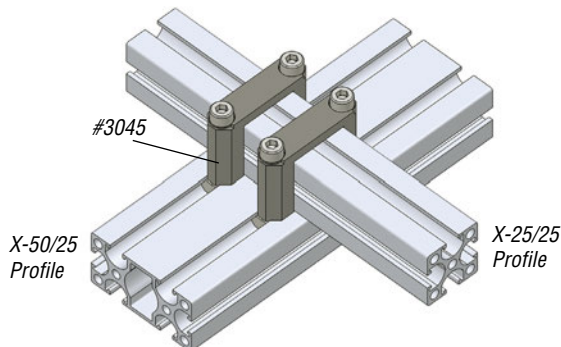
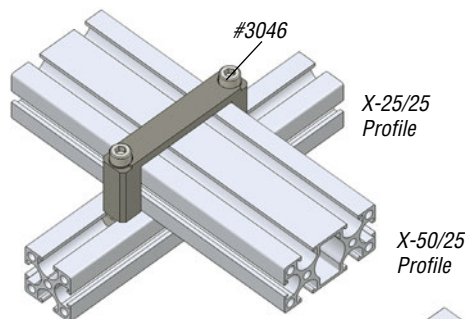
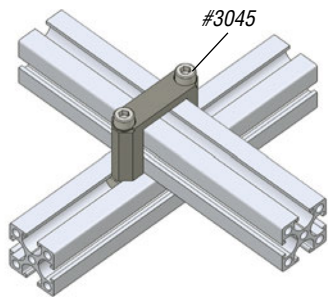


Square Joint Connector

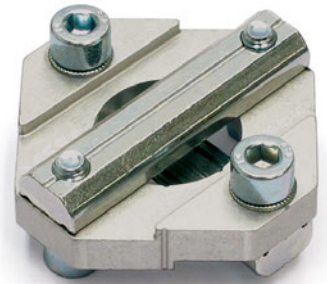
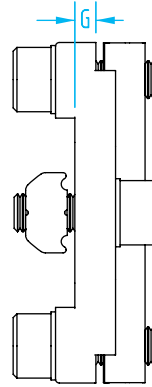
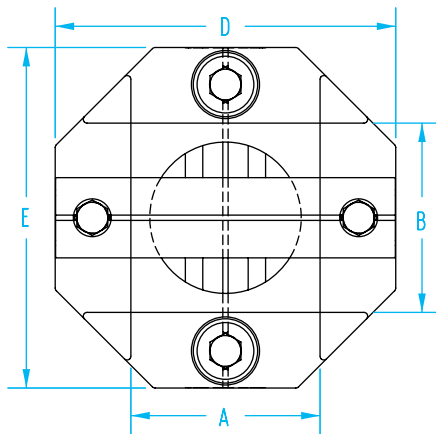
Quick#	Part#	>ASS< #	Price	B	C	D	E	Wt.
3043	KBV10/18L	1-120-05-00	\$16.28	18	10	33	15	23g
3044	KBV18/18L	1-120-10-00	\$17.33	18	18	33	23	28g
3685	KBV-X-10-25	1-120-13-00	\$20.48	25	10	45	15	37g
3686	KBV-X-18-25	1-120-14-00	\$21.00	25	18	45	23	32g
3045	KBV25-25X	1-120-15-00	\$17.85	25	25	45	30	45g
3046	KBV25-50X	1-120-25-00	\$18.90	50	25	70	30	80g
3047	KBV50-25X	1-120-20-00	\$19.95	25	50	50	55	64g
3048	KBV40-40J	1-120-32-00	\$21.53	40	40	65	50	85g
3049	KBV40-80J	1-120-37-00	\$32.55	80	40	105	50	110g
3050	KBV80-40J	1-120-42-00	\$32.55	40	80	60	90	129g

Use with profile size ↑

Application Examples



Cross Joint Connectors



#3053



NEW

Adjustable Cross Joint Connector

Quick#	Part#	For	Price
3897	KPL-D-JU-40	X / JU Profile	\$38.28

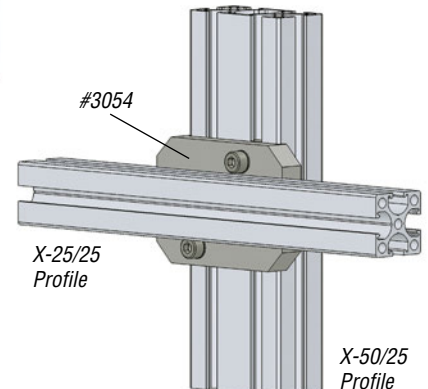
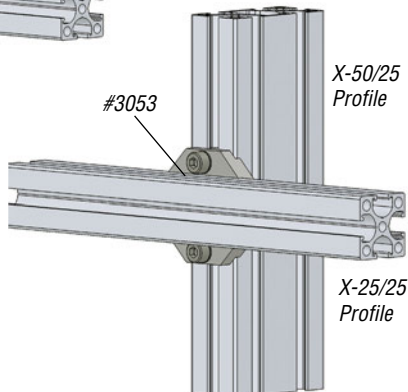
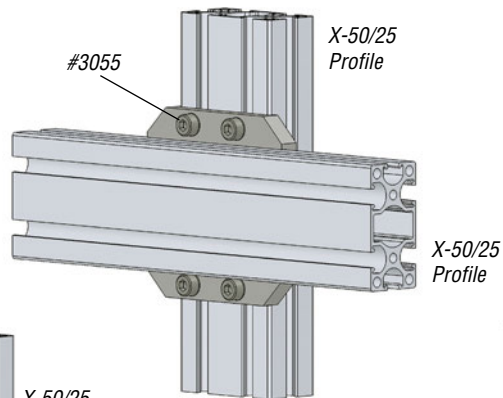
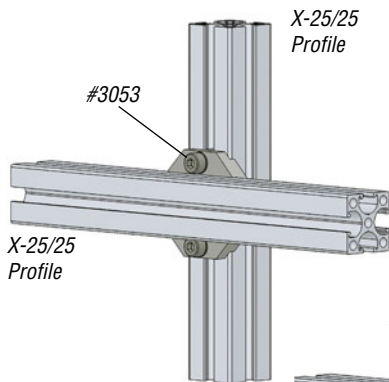
Visit www.EMlcorp.com for dimensional drawing.

Cross Joint Connector

Quick#	Part#	>ASS< #	Price	A	B	D	E	G	Wt.
3052	KPL18-18L	1-120-55-00	\$21.00	18	18	38	38	3	37g
3692	KPL25X-L18	1-120-57-00	\$27.30	25	18	45	38	4	61g
3053	KPL25-25X	1-120-65-00	\$24.68	25	25	45	45	4	61g
3054	KPL25-50X	1-120-70-00	\$27.30	25	50	45	70	4	110g
3693	KPL40J-X25	1-120-76-00	\$33.08	25	40	45	60	4	112g
3694	KPL80J-X25	1-120-83-00	\$49.35	25	80	45	100	4	164g
3055	KPL50-50X	1-120-75-00	\$30.45	50	50	70	70	4	180g
3696	KPL50-40J	1-120-98-00	\$48.30	50	40	70	60	4	152g
3695	KPL80J-50X	1-120-95-00	\$53.03	50	80	70	100	4	227g
3056	KPL40-40J	1-120-82-00	\$27.30	40	40	60	60	4	113g
3057	KPL80-40J	1-120-87-00	\$31.50	80	40	100	60	4	187g
3058	KPL80-80J	1-120-93-00	\$41.48	80	80	100	100	4	298g

Use with profile size

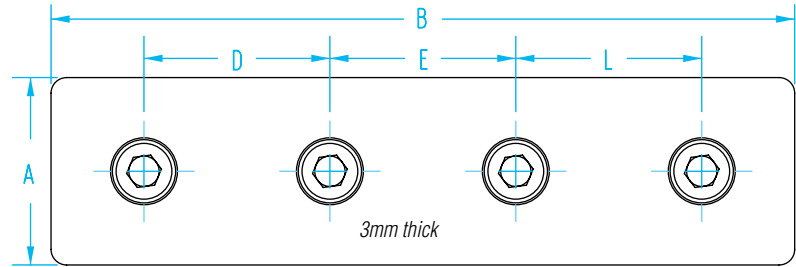
Application Examples



Flat Connectors



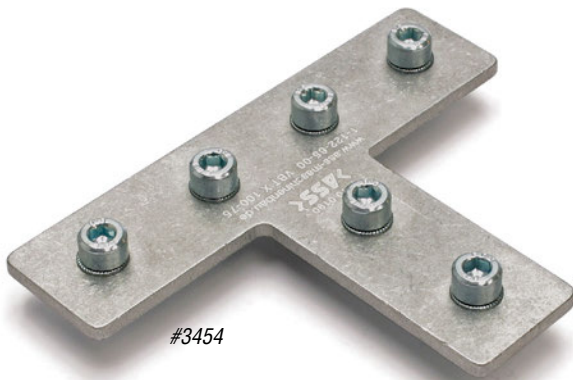
#3448



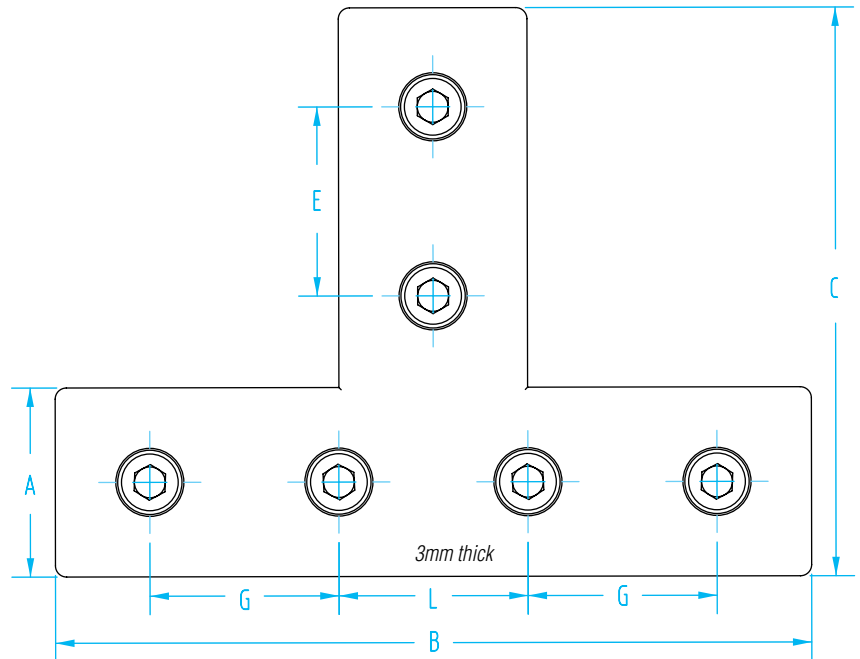
Straight Connector

Quick#	Part#	>ASS< #	Material	Price	A	B	D	E	L	Wt.
3446	VBG25-50X	1-122-25-00	Aluminum	\$8.40	25	50	25	-	-	27g
3447	VBG25-75X	1-122-30-00	Aluminum	\$9.98	25	75	25	25	-	49g
3448	VBG25-100X	1-122-35-00	Aluminum	\$12.08	25	100	25	25	25	55g
3449	VBG40-160J	1-122-42-00	Steel	\$16.80	40	160	40	40	40	209g

Use with profile size



#3454



T Connector

Quick#	Part#	>ASS< #	Material	Price	A	B	C	E	G	L	Wt.
3453	VBT50-75X	1-122-60-00	Aluminum	\$13.65	25	50	75	25	-	25	56g
3454	VBT100-75X	1-122-65-00	Aluminum	\$20.48	25	100	75	25	25	25	84g
3455	VBT120-120J	1-122-72-00	Steel	\$17.85	40	100	120	40	40	-	252g

Use with profile size



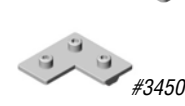
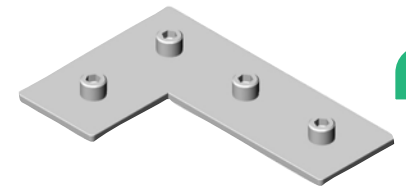
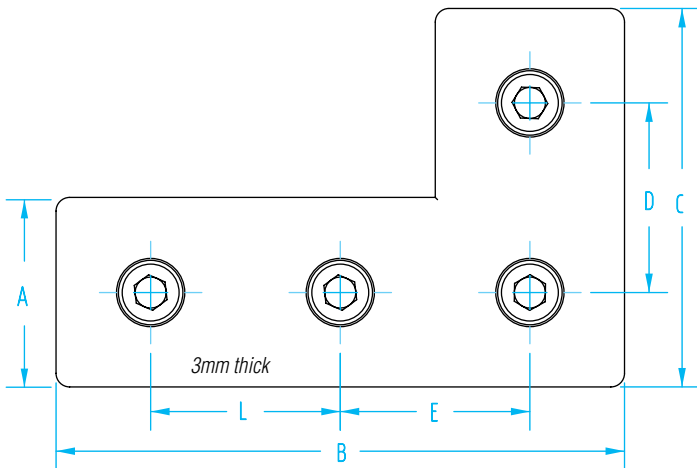
120° Profile Connector

Quick#	Part#	>ASS< #	For	Material	Price	Wt.
3898	VBW-X-120	1-122-77-00	X Profile	Aluminum	\$16.80	57g
3899	VBW-JU-120	1-122-78-00	JU Profile	Steel	\$15.75	320g

NEW

Visit www.EMlcorp.com for dimensional drawings.

Flat Connectors

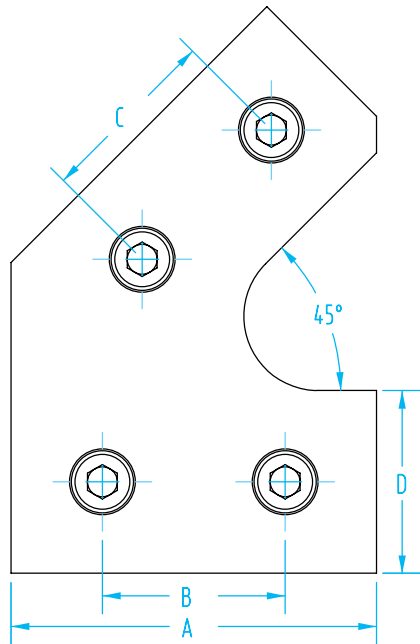
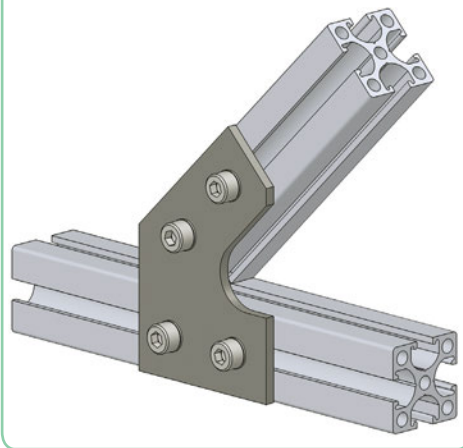


L Connector

Quick#	Part#	>ASS< #	Material	Price	A	B	C	D	E	G	L	Wt.
3450	VBL50-50X	1-122-45-00	Aluminum	\$11.55	25	50	50	25	25	25	-	41g
3451	VBL50-75X	1-122-50-00	Aluminum	\$13.65	25	75	50	25	25	25	25	56g
3452	VBL80-120J	1-122-57-00	Steel	\$16.28	40	120	80	40	40	40	40	197g

Use with profile size ↑

Application Example



45° Profile Connector

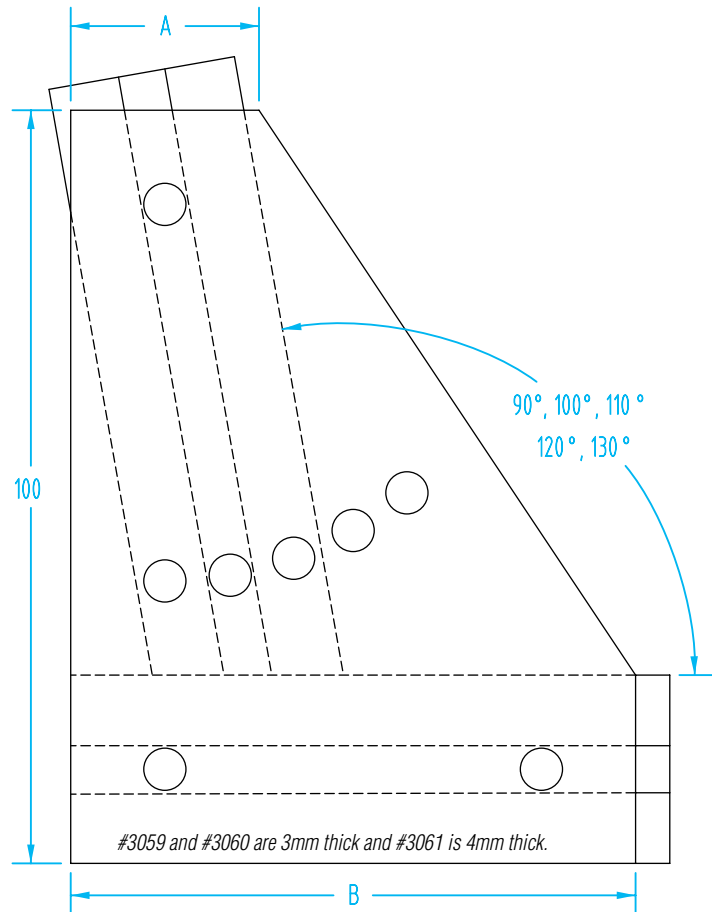
Quick#	Part#	>ASS< #	A	B	C	D	Material	Price	Wt.
3456	VBW45X	1-122-75-00	50	25	25	25	Aluminum	\$15.23	57g
3472	VBW45JU	1-122-76-00	130	40	40	40	Steel	\$23.63	365g

Use with profile size ↑

Corner Joint Plate



#3059

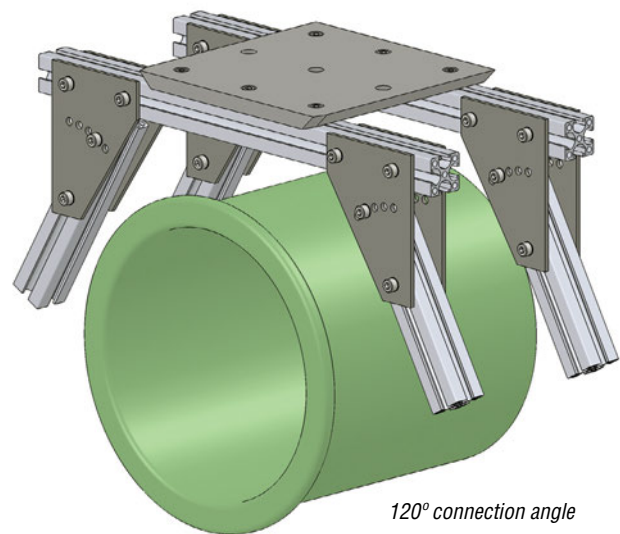
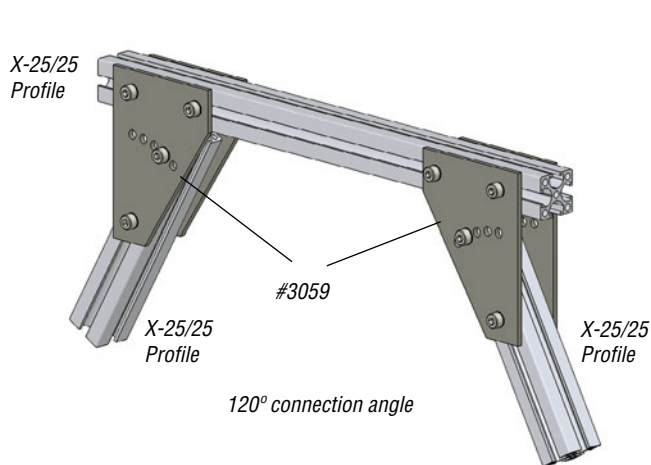


Corner Joint Plate (Aluminum)

Quick#	Part#	>ASS< #	Price	A	B	Wt.
3059	EVB-X-75	1-121-85-00	\$16.80	25	75	99.5g
3060	EVB-X-100	1-121-90-00	\$18.90	50	100	112g
3061	EVB-JU-100	1-121-97-00	\$19.95	40	80	126.7g

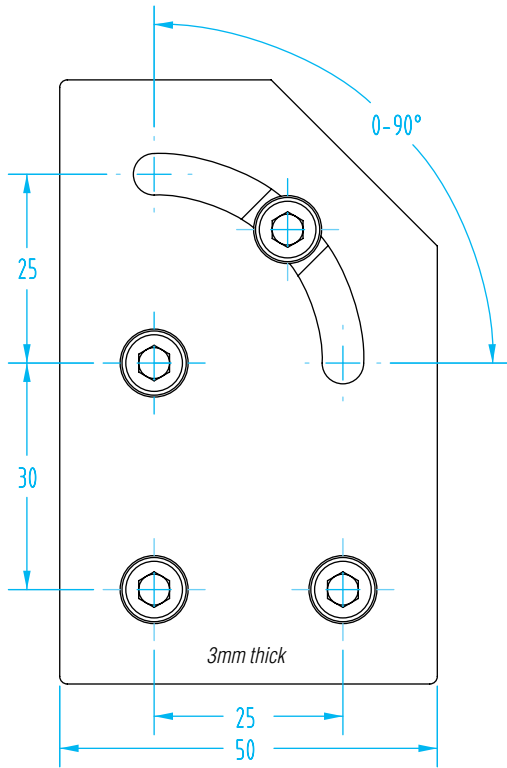
Use with profile size ↑

Application Examples



Adjustable Profile Connector

(Dimensioned drawings shown full scale)

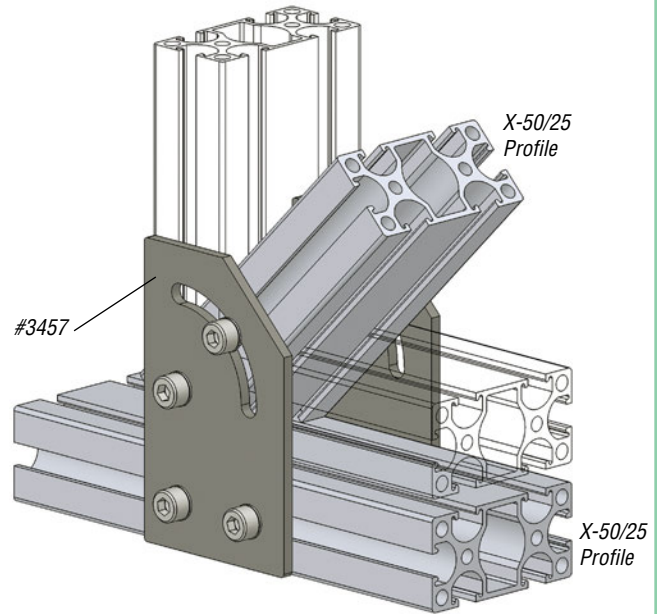
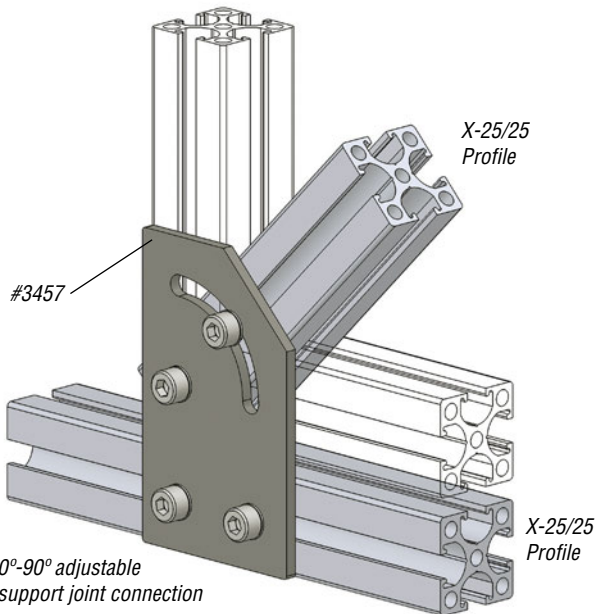


Adjustable Connector (Aluminum)

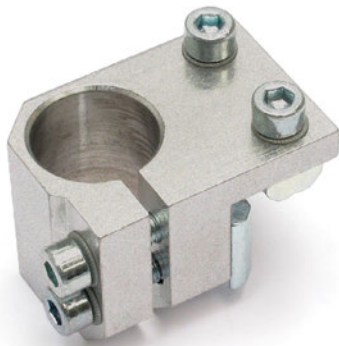
Quick#	Part#	>ASS< #	Price	Wt.
3457	VBW0-90X	1-122-80-00	\$15.23	65g

Use with profile size ↑

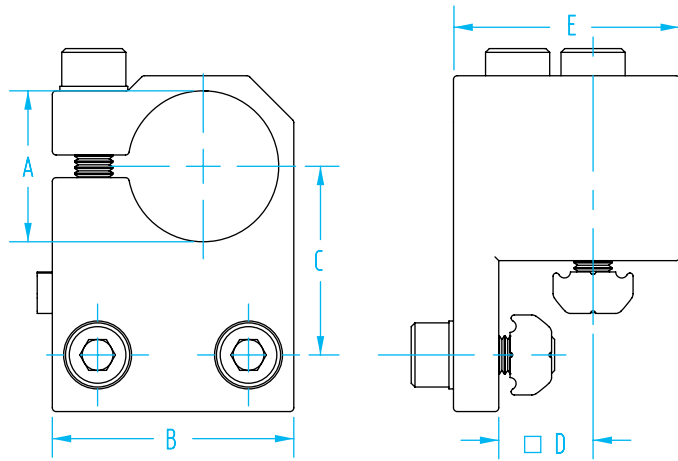
Application Examples



Heavy-Duty Cross Clamp



#3514



Cross Clamp (Heavy-duty, clamps on two profile sides)

Quick#	Part#	>ASS< #	Price	A	B	C	D	E	Wt.	Use with:
3512	WSWX10	1-102-02-00	\$33.08	10	25	19.5	12.5	25	32g	L
3513	WSWX14	1-102-03-00	\$34.13	14	25	21.5	12.5	25	47g	X
3514	WSWX20	1-102-06-00	\$34.65	20	32	24	12.5	30	70g	X
3515	WSWJU20	1-102-09-00	\$40.95	20	35	33	20	40	115g	J
3516	WSWJU30	1-102-12-00	\$44.10	30	45	39	20	45	185g	J

Cross Clamp, Mirrored Version (Heavy-duty, clamps on two profile sides)

NEW

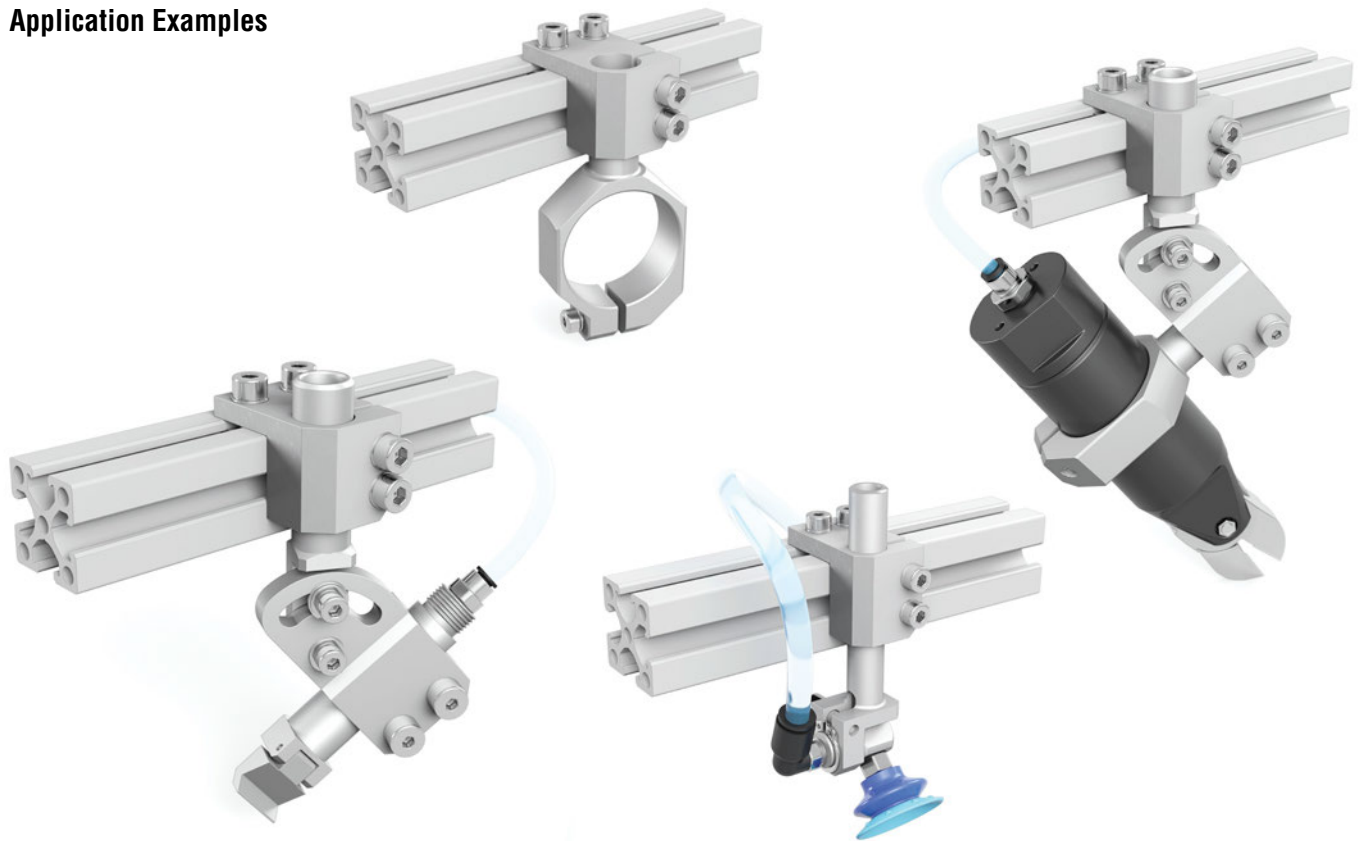
Quick#	Part#	>ASS< #	Price	Wt.	Use with:
3351	WSW-M-X-20	1-102-07-00	\$34.65	74g	X
3352	WSW-M-JU-20	1-102-08-00	\$40.95	115g	J

Check EMI website for dimensional drawing.

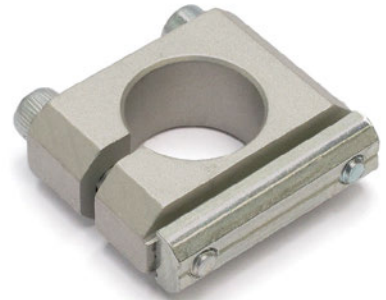
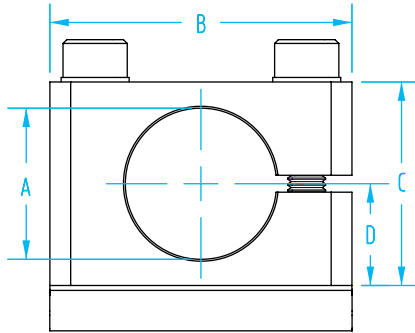


#3351, mirrored version

Application Examples



Cross Connector Clamp



#3094

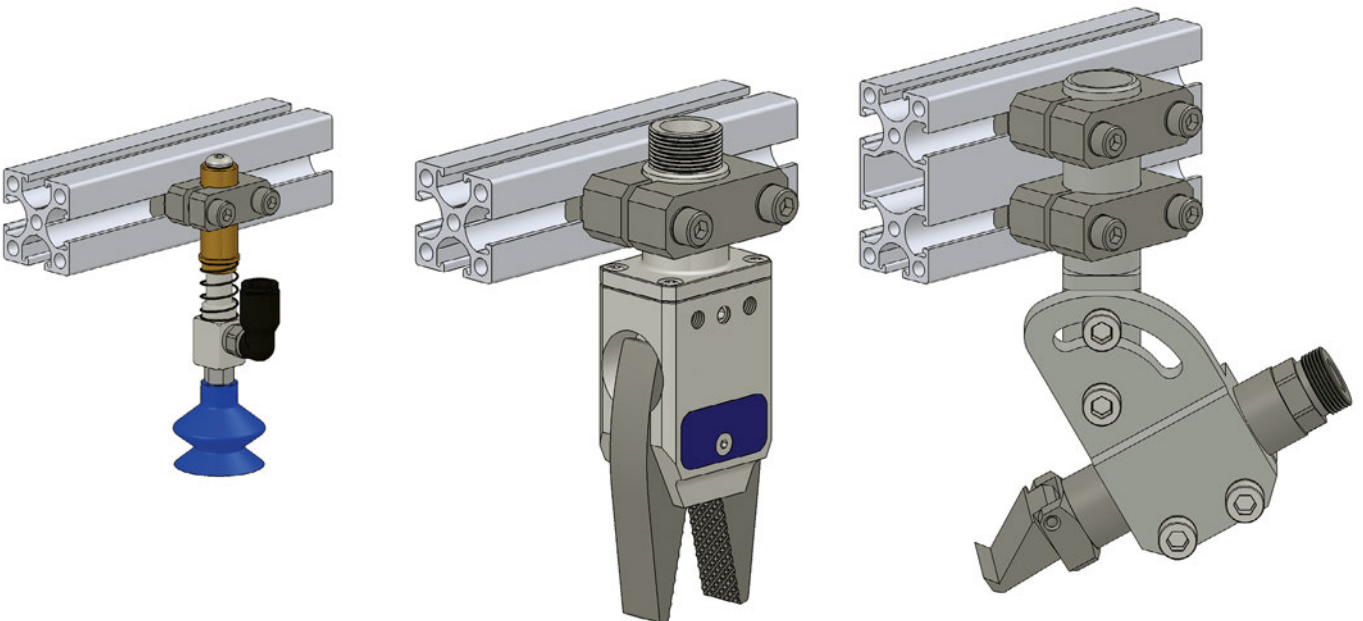
Cross Connector Clamp

Quick#	Part#	>ASS< #	Price	A	B	C	D	T	Wt.
3092	KVB10L/X	1-115-05-00	\$10.50	10	25	14	7	10	20g
3093	KVB14X	1-115-15-00	\$15.23	14	32	19	9	12	32g
3094	KVB20X	1-115-20-00	\$15.23	20	38	26	12	15	52g
3096	KVB20J	1-115-27-00	\$19.95	20	40	29	13	20	71g
3097	KVB30J	1-115-37-00	\$21.00	30	50	34	17	20	87g

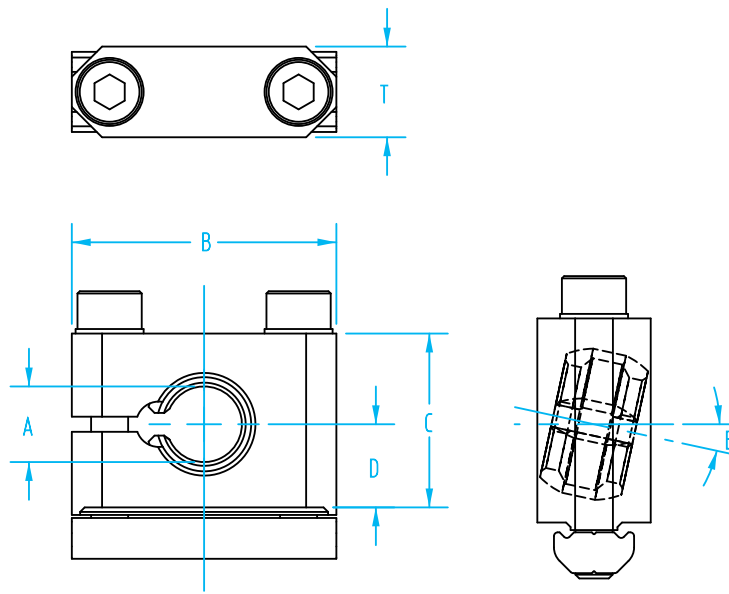
Use with profile size

T=Thickness

Application Examples



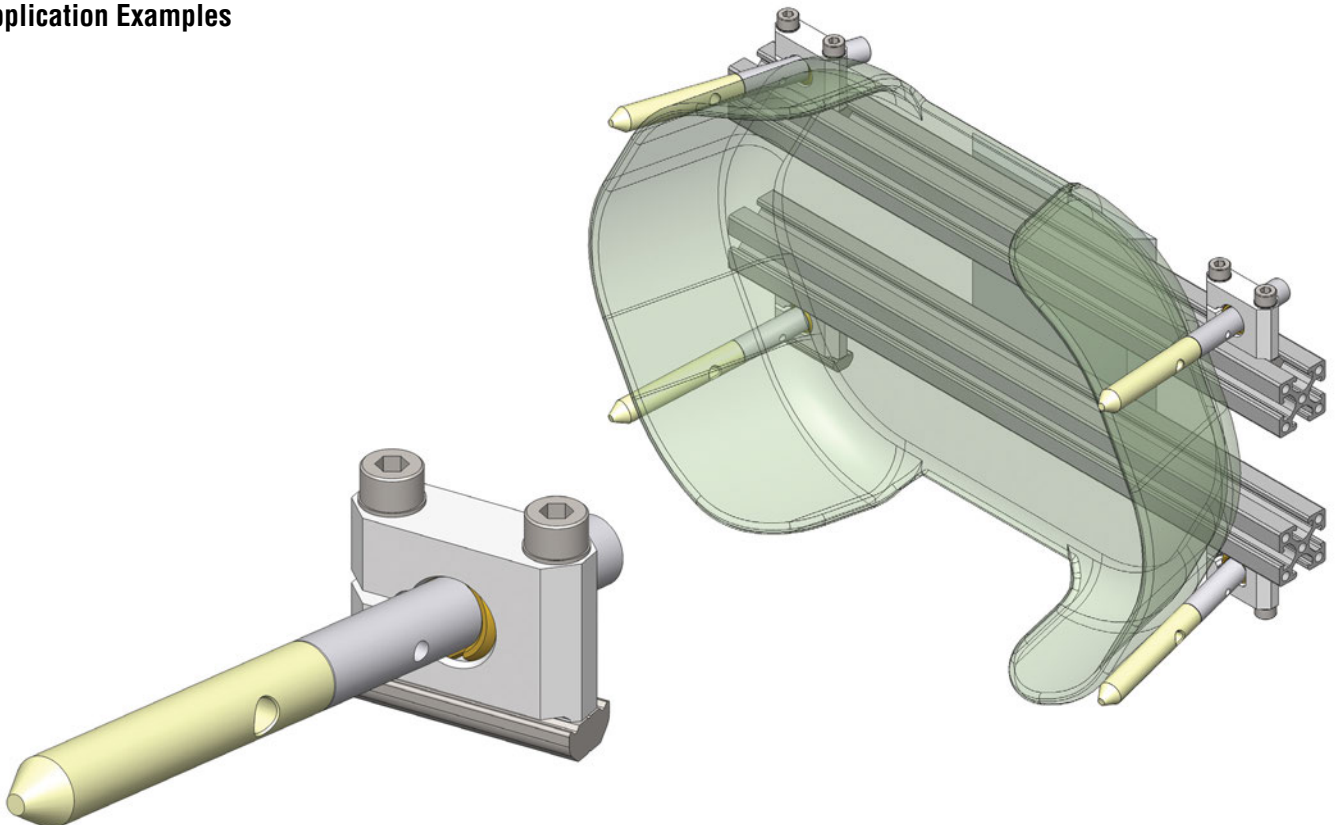
Cross Clamp with Ball Joint



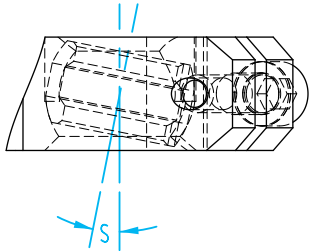
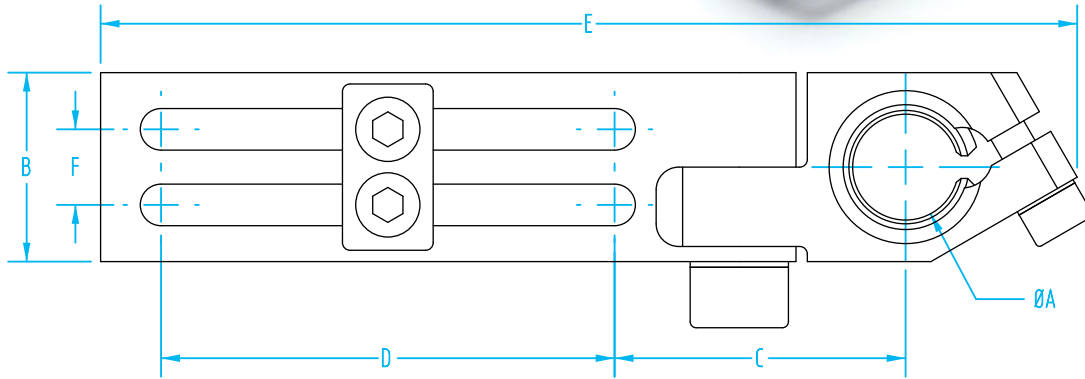
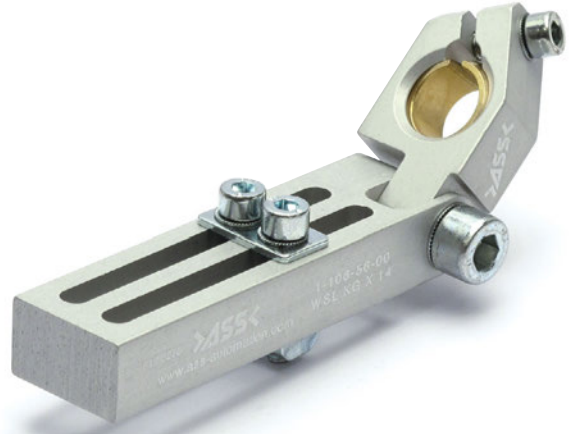
Cross Connector Clamp with Swivel Ball Joint Clamp

Quick#	Part#	>ASS< #	Price	A	B	C	D	E	T	Wt.
3334	KVB-G-10	1-116-46-00	\$35.70	10	35	23	11	12	12	47g
3335	KVB-G-14	1-116-56-00	\$37.28	14	40	27	13	12	15	50g
3336	KVB-G-14-JU	1-116-58-00	\$37.28	14	45	26.5	12.5	12	15	78g
3337	KVB-G-20	1-116-66-00	\$38.85	20	50	37	18	19	20	137g
3338	KVB-G-20-JU	1-116-68-00	\$38.85	20	55	36.5	17.5	19	20	149g

Application Examples



Long Angle Clamp with Swivel Head and Ball Joint



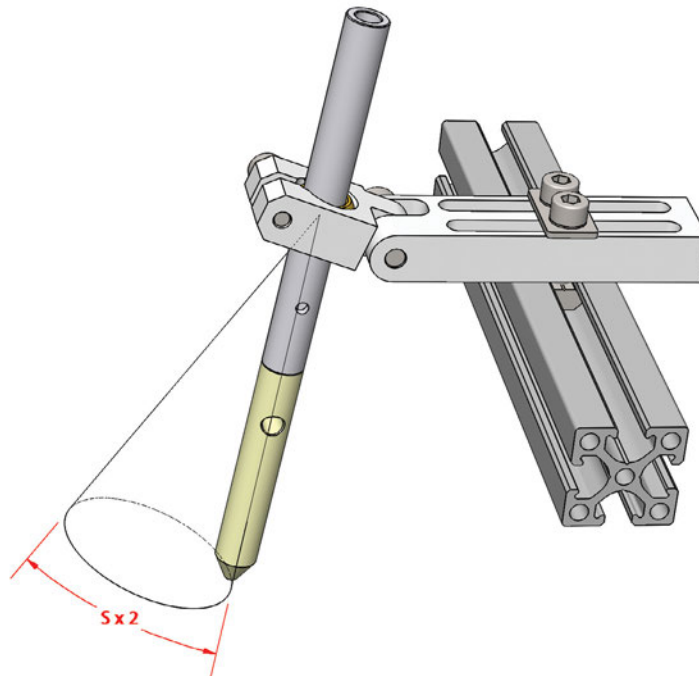
Long Angle Clamp with Swivel Head & Ball Joint Clamp

Quick#	Part#	>ASS< #	A	B	C	D	E	F	S	T	Price	Wt.
3645	WSL-KG-X10	1-106-53-00	10	20	32.5	50	106.5	10	13°	12	\$61.95	60
3646	WSL-KG-X14	1-106-56-00	14	25	38.5	60	129.2	10	17°	15	\$67.20	125
3647	WSL-KG-JU20	1-106-59-00	20	35	50	82	175	20	19°	20	\$76.65	305

Use with profile size ↑

T=Thickness

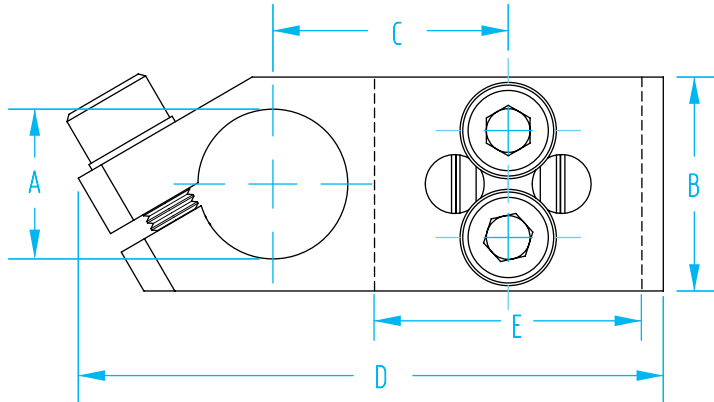
Application Examples



Angle Clamp



#3103



Angle Clamp

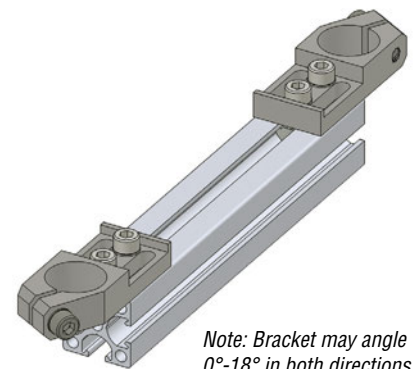
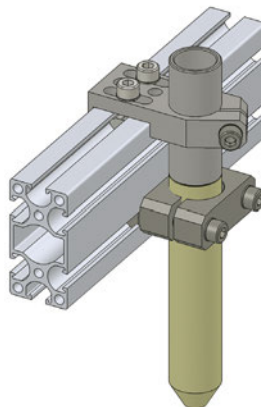
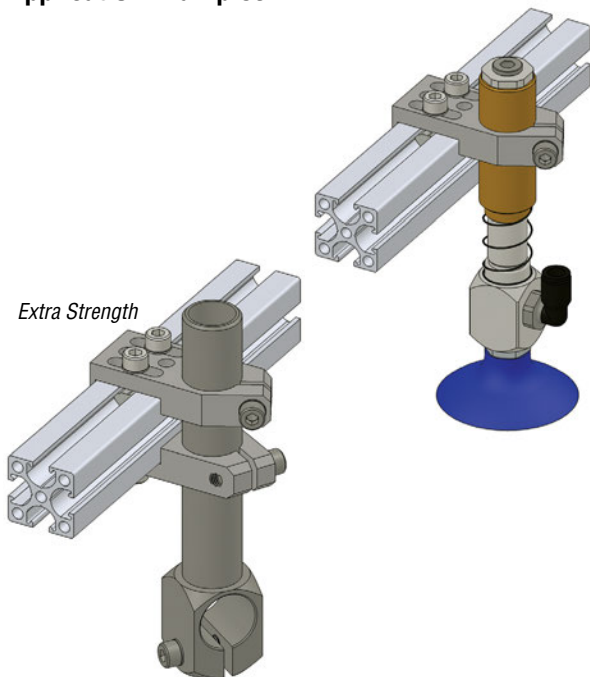
Quick#	Part#	>ASS< #	Price	A	B	C	D	E	T	Wt.
3100	WST10L	1-103-00-00	\$12.60	10	16	16	41	18	4	17g
3511	WST14L	1-103-03-00	\$13.13	14	20	18	55	18	6	26g
3101	WST10X	1-103-06-00	\$14.70	10	16	19.5	48	25	4	19g
3102	WST14X	1-103-09-00	\$15.75	14	20	21.5	55	25	6	33g
3103	WST20X	1-103-12-00	\$16.28	20	25	17.5-32.5	63	25	6	40g
3104	WST30X	1-103-15-00	\$19.43	30	35	22.5-37.5	74	25	10	80g
3105	WST20J	1-103-18-00	\$19.43	20	25	32	77	40	7.5	58g
3106	WST30J	1-103-21-00	\$21.53	30	40	27-47	91	40	10	117g

Use with profile size

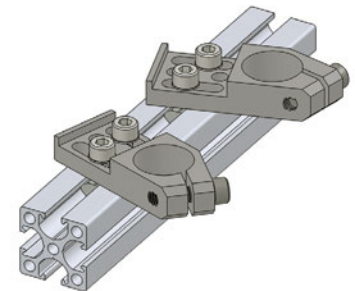
T= thickness

Application Examples

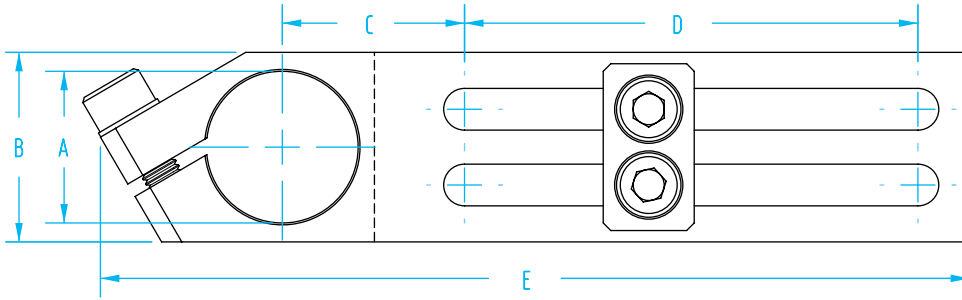
Extra Strength



Note: Bracket may angle 0°-18° in both directions.



Long Angle Clamp



Long Angle Clamp

Quick#	Part#	>ASS< #	Price	A	B	C	D	E	T	Wt.
3108	WSL10L/X	1-105-07-00	\$17.33	10	16	16	40	76	4	22g
3109	WSL14X	1-105-17-00	\$20.48	14	20	21	50	97	6	41g
3110	WSL20X	1-105-22-00	\$21.53	20	25	25	60	114	6	53g
3111	WSL30X	1-105-37-00	\$31.50	30	35	29	60	126	10	115g
3112	WSL20J	1-105-32-00	\$23.63	20	30	31	70	140	7.5	116g
3113	WSL30J	1-105-42-00	\$25.73	30	35	28	70	143	10	135g

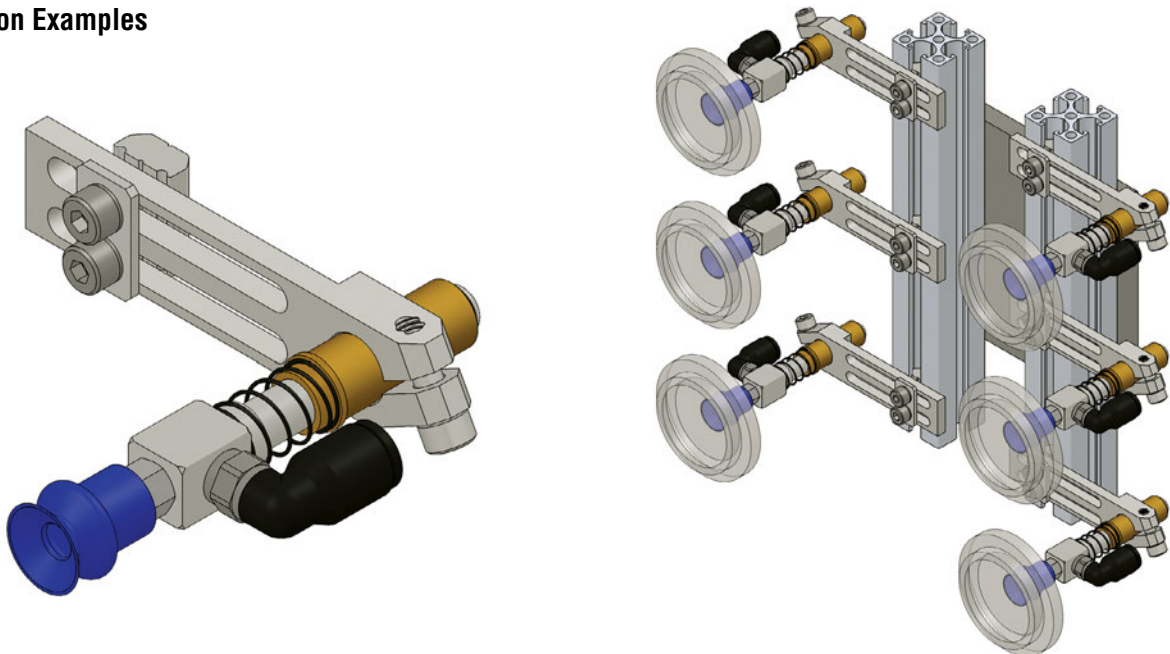
Extra-Strong Version

3564	WSL10VX	1-105-09-00	\$22.05	10	16	16	40	80	8	24g
3616	WSL14VX	1-105-19-00	\$22.58	14	20	21	50	100	12	41g
3107	WSL20VX	1-105-27-00	\$23.63	20	25	24	60	115	15	91g
3569	WSL30VX	1-105-39-00	\$26.25	30	35	30	60	128	20	180g
3570	WSL20VJ	1-105-35-00	\$25.73	20	30	31	73.5	140	15	125g
3571	WSL30VJ	1-105-45-00	\$27.30	30	35	30	70	148	20	198g

Use with profile size

T= thickness

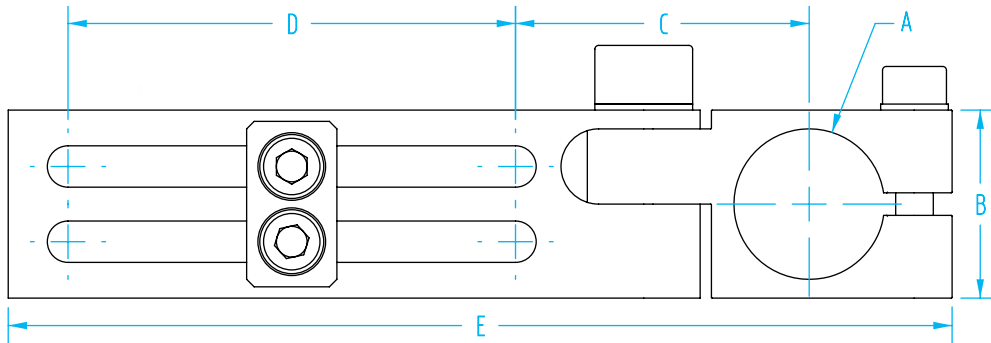
Application Examples



Long Angle Clamp with Swivel Head



#3581



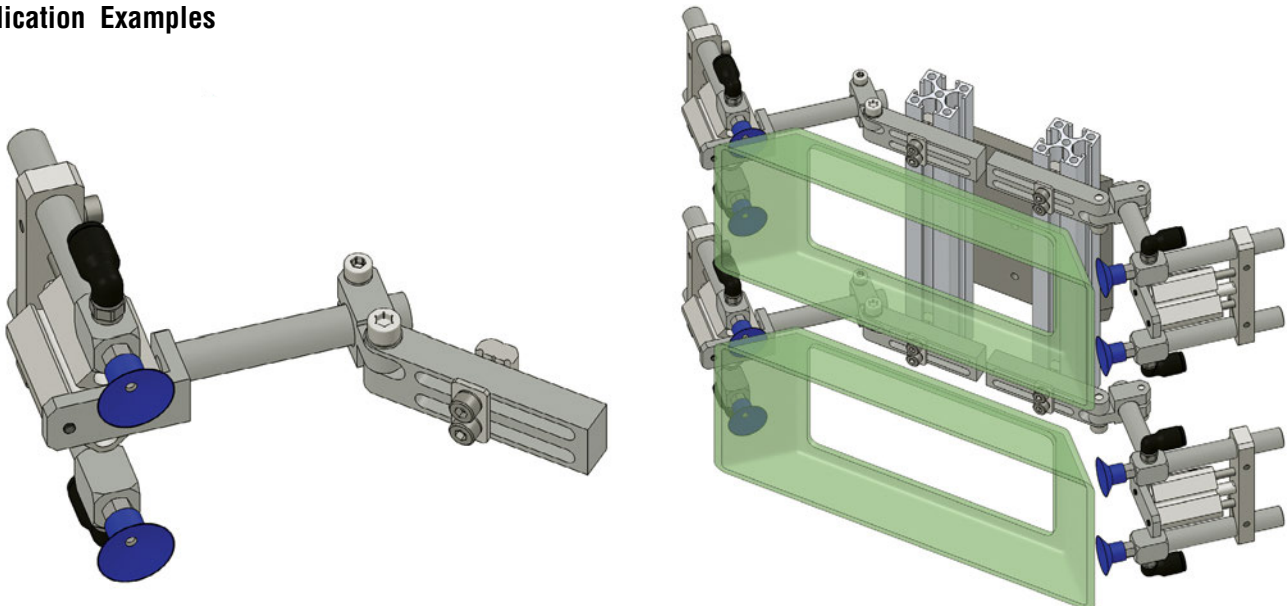
Long Angle Clamp with Swivel Head

Quick#	Part#	>ASS< #	Price	A	B	C	D	E	T	Wt.
3579	WSL-GA-X10	1-106-33-00	\$36.75	10	16	27	40	85	10	31g
3580	WSL-GA-X14	1-106-36-00	\$39.90	14	20	32.5	50	107	12	54g
3581	WSL-GA-X20	1-106-39-00	\$42.53	20	25	38.5	60	125	15	97g
3582	WSL-GA-JU30	1-106-42-00	\$78.75	30	35	52	82	170	20	246g

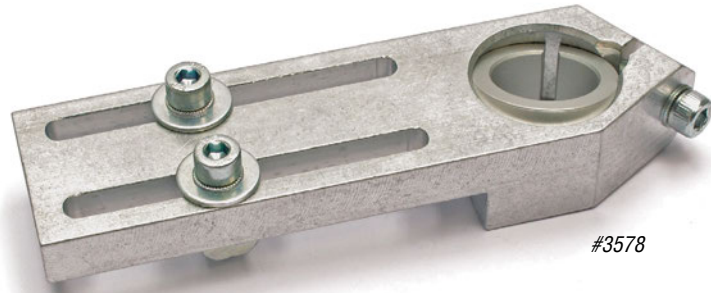
Use with profile size ↑

T= thickness

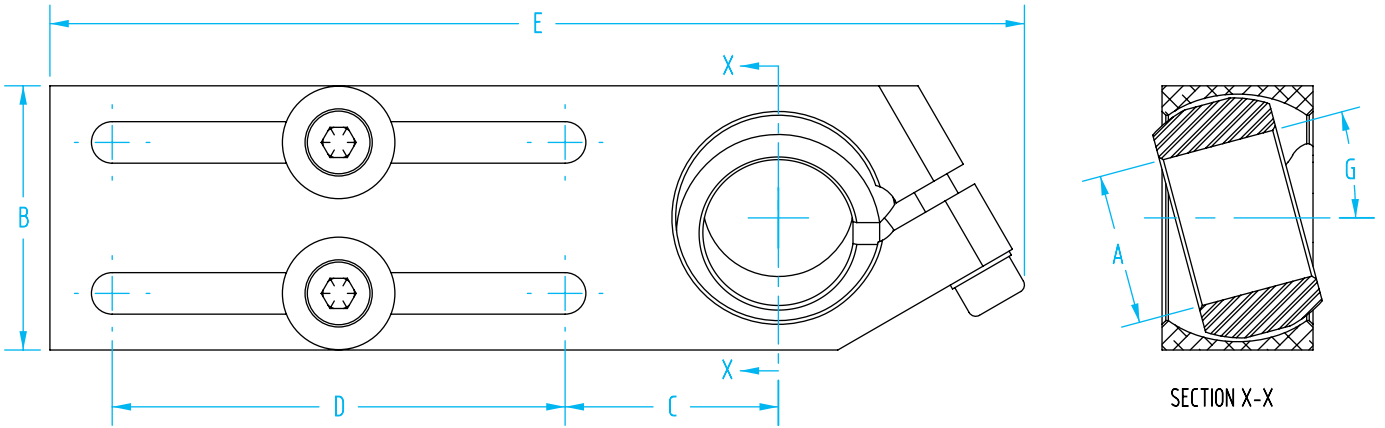
Application Examples



Long Angle Clamp with Ball-Joint Clamp



#3578



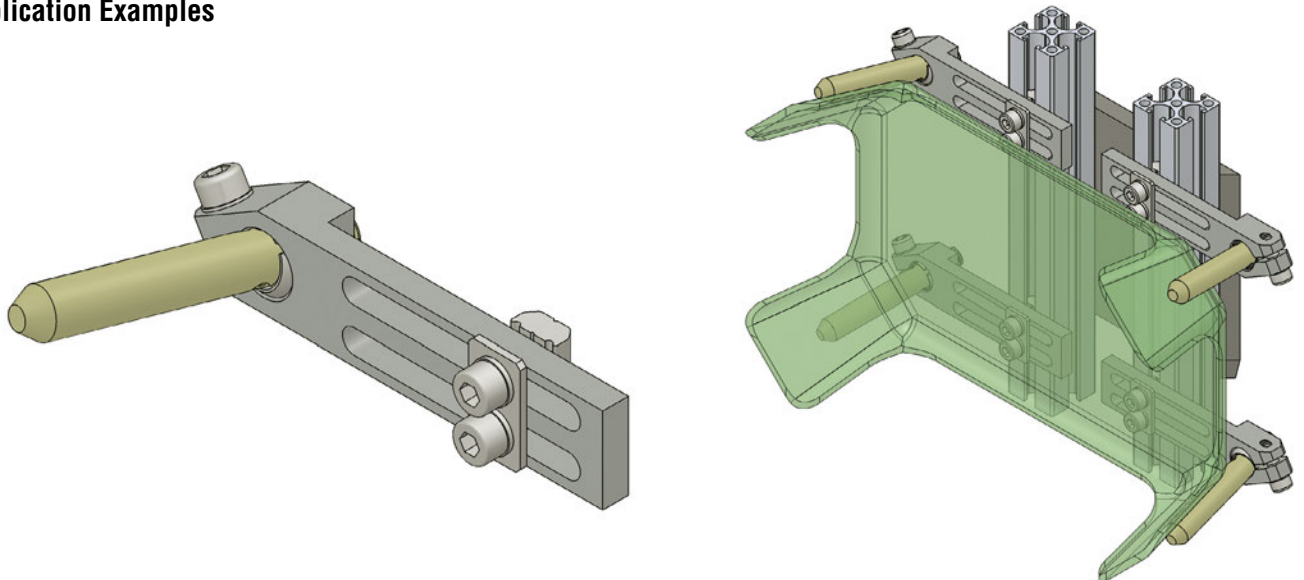
Long Angle Clamp with Ball-Joint Clamp

Quick#	Part#	>ASS< #	Price	A	B	C	D	E	G	T	Wt.
3576	WSL-G-X-10-40-U	1-106-03-00	\$42.00	10	20	20	40	100	max. 13°	6	41g
3577	WSL-G-X-14-60-U	1-106-06-00	\$46.20	14	25	24	60	117	max. 17°	6	55g
3578	WSL-G-X-20-60-U	1-106-09-00	\$48.30	20	35	29	60	128	max. 19°	10	115g

Use with profile size

T= thickness

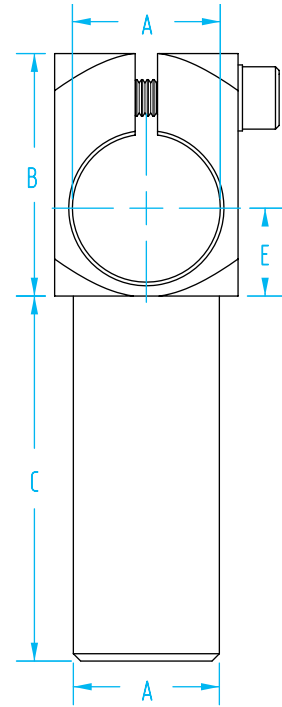
Application Examples



Angle Arm



#3117

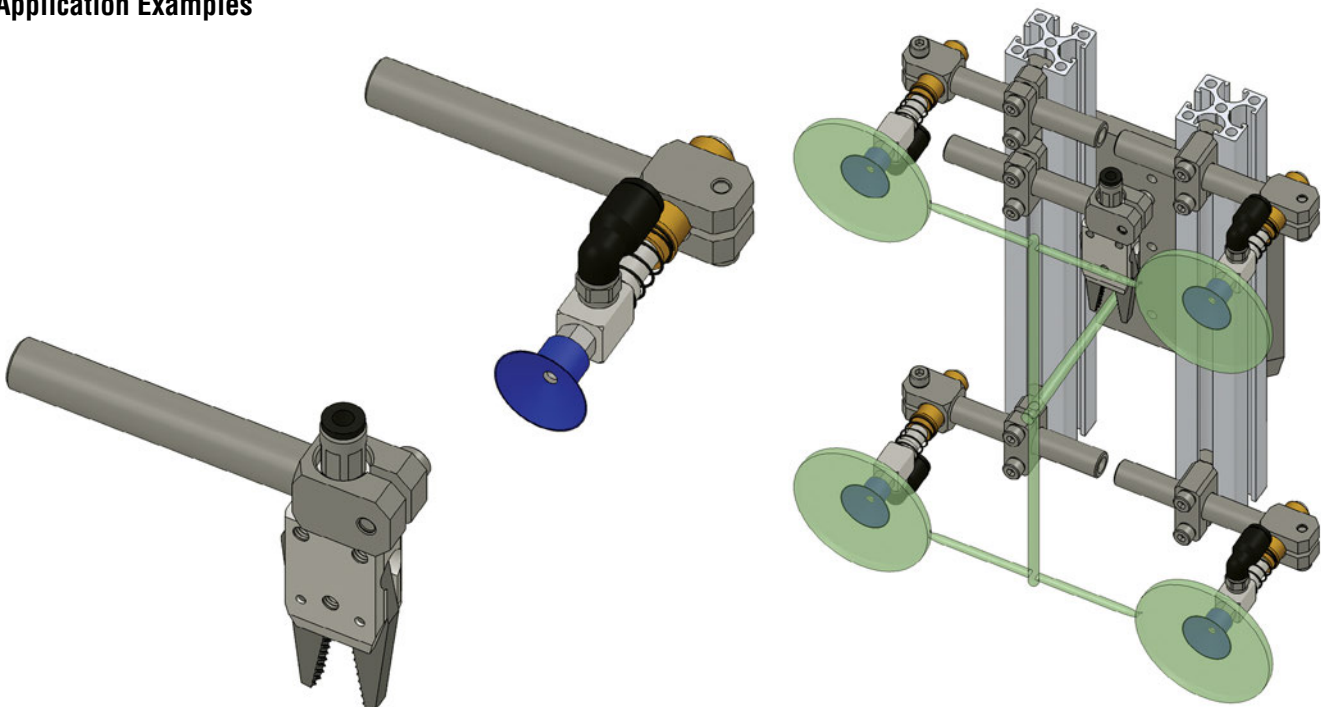


Angle Arm

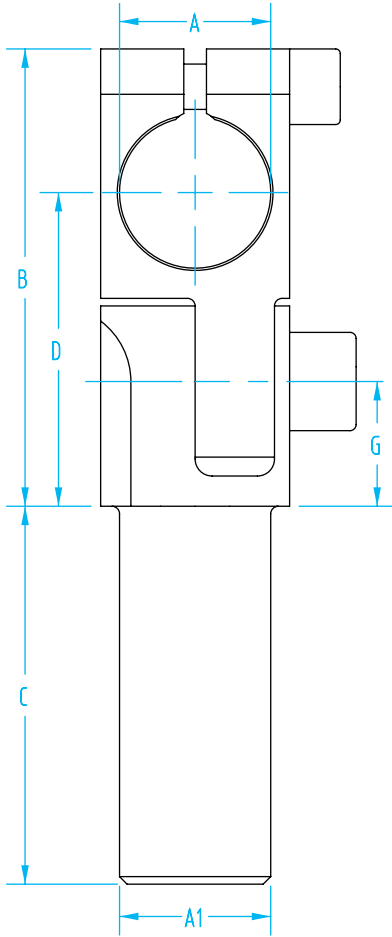
Quick#	Part#	>ASS< #	Price	ØA	B	C	E	Wt.
3114	WKA10-30	1-320-03-00	\$17.33	10	19	30	7	10g
3115	WKA10-60	1-320-06-00	\$17.85	10	19	60	7	13g
3116	WKA10-90	1-320-09-00	\$18.38	10	19	90	7	21g
3481	WKA14-40	1-320-12-00	\$34.65	14	26	40	10	25g
3482	WKA14-80	1-320-15-00	\$35.70	14	26	80	10	32g
3483	WKA14-120	1-320-18-00	\$36.75	14	26	120	10	41g
3117	WKA20-50	1-320-21-00	\$27.30	20	32	50	13	48g
3118	WKA20-100	1-320-24-00	\$28.88	20	32	100	13	64g
3119	WKA20-150	1-320-27-00	\$30.45	20	32	150	13	79g
3120	WKA30-80	1-320-30-00	\$36.75	30	44	80	19	223g
3121	WKA30-140	1-320-33-00	\$37.80	30	44	140	19	279g
3122	WKA30-200	1-320-36-00	\$39.90	30	44	200	19	391g

Use Quick#s for easy online ordering.

Application Examples



Elbow Arm

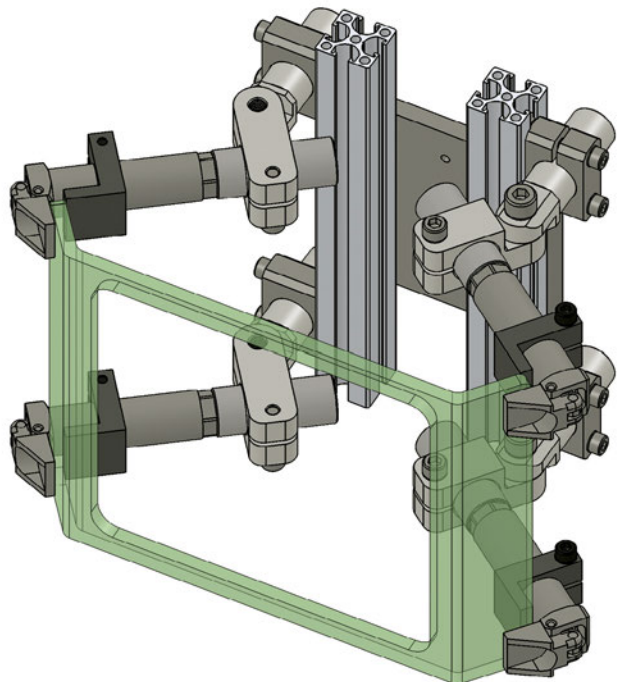
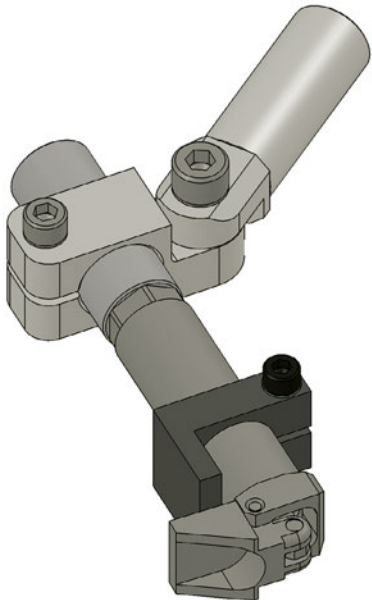


#3126

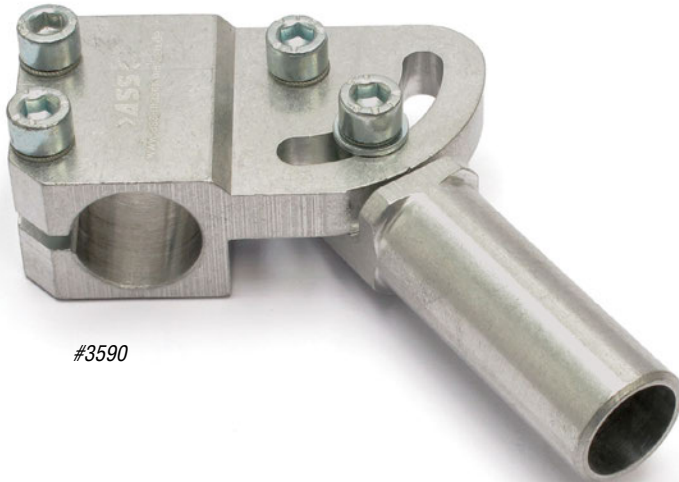
Elbow Arm

Quick#	Part#	>ASS< #	Price	A	A1	B	C	D	G	Wt.
3123	GLA10-30	1-325-03-00	\$20.48	10	10	34	30	22	10	17g
3124	GLA10-60	1-325-06-00	\$21.00	10	10	38	60	25	10	19g
3125	GLA10-90	1-325-09-00	\$21.53	10	10	38	90	25	10	23g
3478	GLA14-40	1-325-12-00-1	\$32.55	14	14	46	40	30	13	43g
3479	GLA14-80	1-325-15-00-1	\$33.60	14	14	46	80	30	13	51g
3480	GLA14-120	1-325-18-00-1	\$34.65	14	14	46	120	30	13	60g
3126	GLA20-50	1-325-21-00-1	\$39.38	20	20	60.5	50	41.5	16.5	95g
3127	GLA20-100	1-325-24-00-1	\$40.95	20	20	60.5	100	41.5	16.5	107g
3128	GLA20-150	1-325-27-00-1	\$42.00	20	20	60.5	150	41.5	16.5	127g
3129	GLA20/30-50	1-325-30-00-1	\$45.68	30	20	75.5	50	48.5	16.5	152g
3130	GLA20/30-100	1-325-33-00-1	\$46.73	30	20	75.5	100	48.5	16.5	163g
3131	GLA20/30-150	1-325-36-00-1	\$47.78	30	20	75.5	150	48.5	16.5	181g
3700	GLA30/30-80	1-325-39-00-1	\$45.68	30	30	84.5	80	59.5	21.5	245g
3701	GLA30/30-140	1-325-42-00-1	\$46.73	30	30	84.5	140	59.5	21.5	290g
3702	GLA30/30-200	1-325-45-00-1	\$47.78	30	30	84.5	200	59.5	21.5	355g

Application Examples



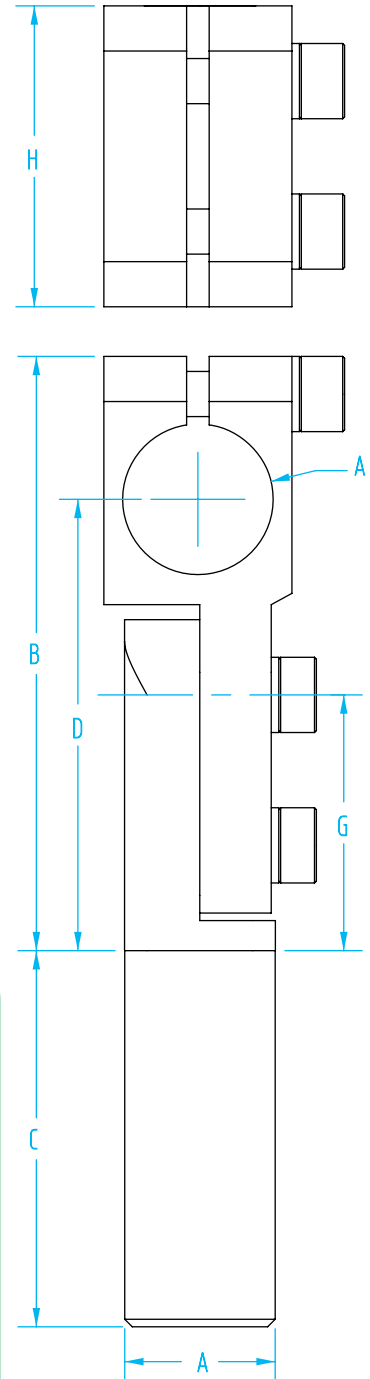
Heavy-Duty Elbow Arm



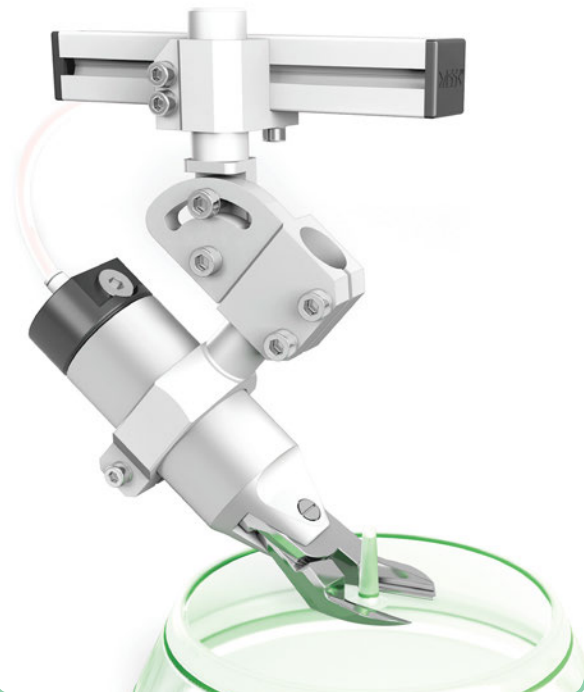
#3590

Heavy-Duty Elbow Arm

Quick#	Part#	>ASS< #	Price	ØA	B	C	D	G	H	Wt.
3584	GLA-V-10-10-30	1-325-53-00	\$48.30	10	44	30	32	19	20	25g
3585	GLA-V-10-10-60	1-325-56-00	\$50.40	10	44	60	32	19	20	28g
3586	GLA-V-10-10-90	1-325-59-00	\$51.45	10	44	90	32	19	20	32g
3587	GLA-V-14-14-40	1-325-62-00	\$52.50	14	59	40	43	25	28	67g
3588	GLA-V-14-14-80	1-325-65-00	\$53.55	14	59	80	43	25	28	76g
3589	GLA-V-14-14-120	1-325-68-00	\$54.60	14	59	120	43	25	28	84g
3590	GLA-V-20-20-50	1-325-71-00	\$56.70	20	79	50	60	35	40	128g
3591	GLA-V-20-20-100	1-325-74-00	\$57.75	20	79	100	60	35	40	144g
3592	GLA-V-20-20-150	1-325-77-00	\$58.80	20	79	150	60	35	40	160g
3593	GLA-V-30-30-80	1-325-89-00	\$85.05	30	110	80	85	50	60	419g
3594	GLA-V-30-30-140	1-325-92-00	\$86.10	30	110	140	85	50	60	462g
3595	GLA-V-30-30-200	1-325-95-00	\$87.15	30	110	200	85	50	60	505g



Application Example

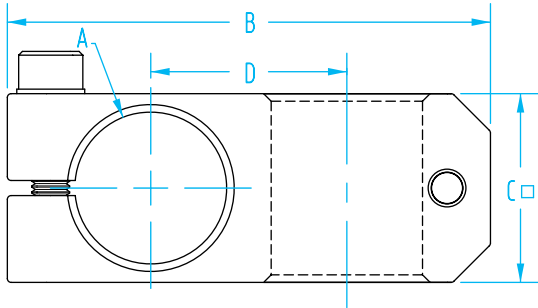


NEW Mirrored Version

Available now in the same sizes that are listed above on EMI's website, [click here for more information.](#)



Round to Round Clamps



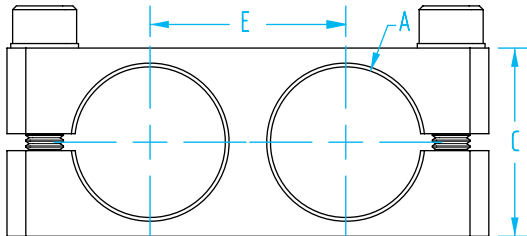
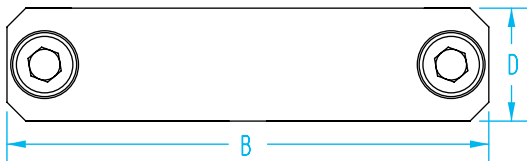
Cross Clamp

Quick#	Part#	>ASS< #	Price	A	B	C	D	Wt.
3458	KKS10L	1-115-40-00	\$15.75	10	38	14	14	24g
3459	KKS14X	1-115-45-00	\$16.28	14	50	20	18	43g
3460	KKS20X	1-115-50-00	\$17.85	20	64	25	26	66g

Cross Clamp, Mirrored Version

NEW

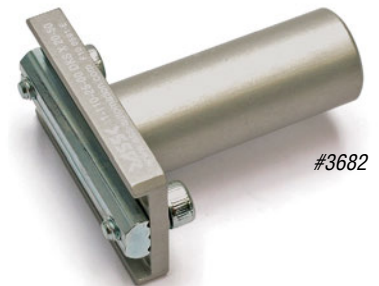
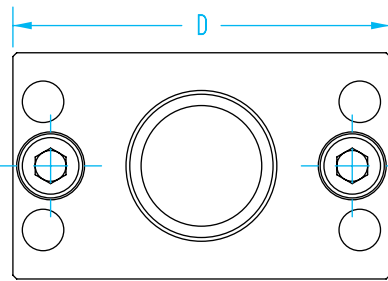
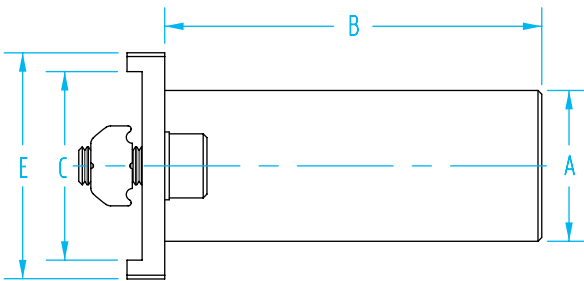
Quick#	Part#	>ASS< #	Price	Ø Clamp	Wt.
3353	KKS-M-20-20-26	1-115-51-00	\$17.85	20	66g



Parallel Clamp

Quick#	Part#	>ASS< #	Price	A	B	C	D	E	Wt.
3461	PKS10	1-115-60-00	\$14.18	10	38	15	8	15	15g
3462	PKS14	1-115-65-00	\$15.23	14	52	20	12	20	29g
3463	PKS20	1-115-70-00	\$16.28	20	64	25	15	26	43g
3684	PKS-30-30-38	1-115-75-00	\$28.35	30	88	35	20	38	83g

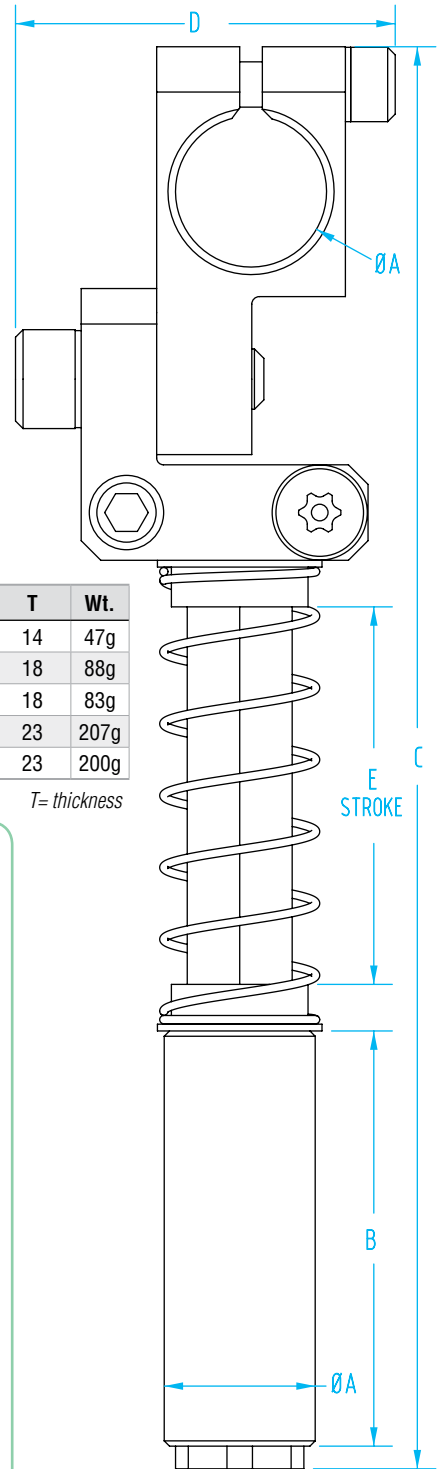
Profile Mounting Post



Profile Mounting Post

Quick#	Part#	>ASS< #	Price	A	B	C	D	E	Wt.	Use with:
3464	DKS10L	1-110-10-00	\$19.95	10	60	18	30	20	27g	L
3465	DKS14X	1-110-20-00	\$24.15	14	80	25	40	30	51g	X
3682	DKS-X-20-50	1-110-25-00	\$21.00	20	50	25	50	30	62g	X
3466	DKS20X	1-110-30-00	\$26.25	20	100	25	50	30	77g	X

Spring-Loaded Elbow Arm

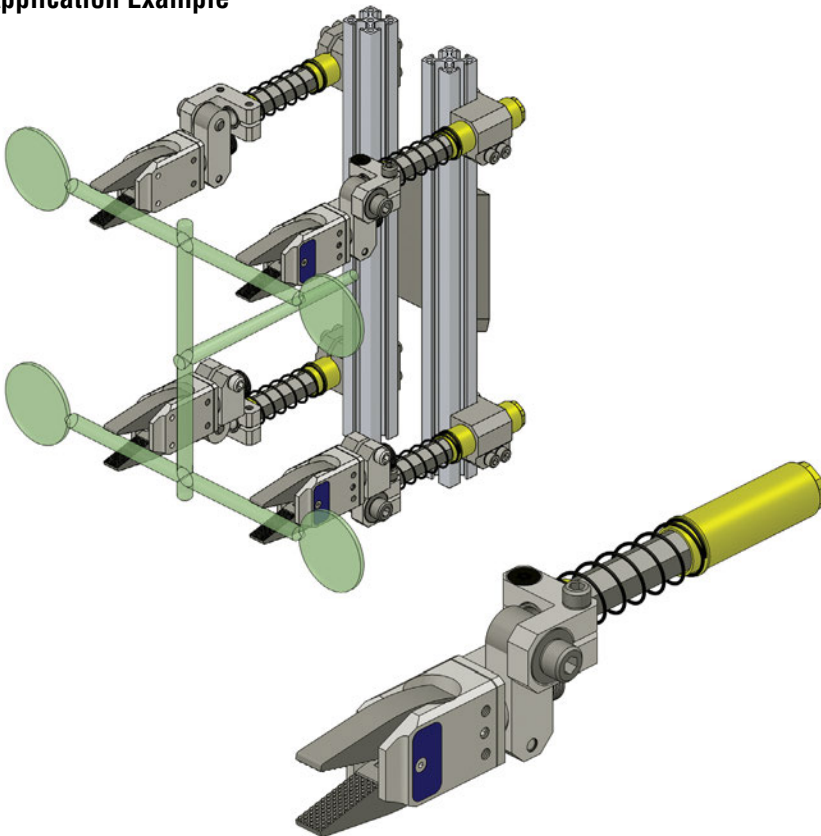


Non-Rotating Spring-Loaded Elbow Arm

Quick#	Part#	>ASS< #	Price	A	B	C	D	E	T	Wt.
3735	GGs-W-10-10-10	1-362-03-00	\$41.48	10	25	87	24	10	14	47g
3736	GGs-W-14-14-15	1-362-09-00	\$60.90	14	32	114	33	14	18	88g
3738	GGs-W-14-14-40	1-362-15-00	\$68.25	14	32	139	33	40	18	83g
3737	GGs-W-20-20-20	1-362-21-00	\$72.45	20	55	160	41	20	23	207g
3697	GGs-W-20-20-50	1-362-27-00	\$76.65	20	55	190	41	50	23	200g

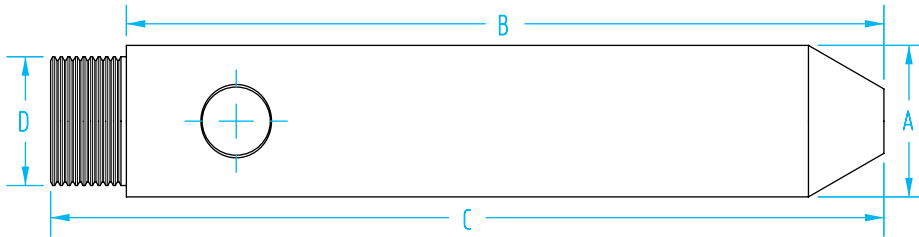
T= thickness

Application Example



Centering Pin and Extension

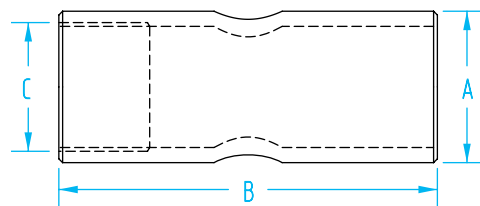
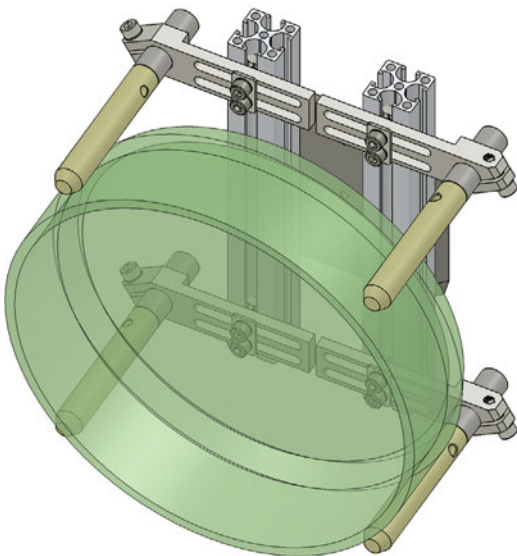
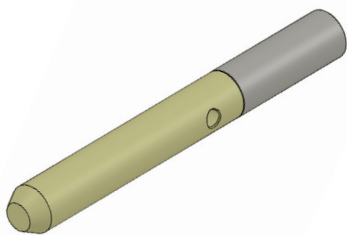
- Finger stops found on pages 526–528 can be used with centering pins to help position a part.



Centering Pin

Quick#	Part#	>ASS< #	Price	A	B	C	D	Wt.
3532	ZTB10	1-790-20-00	\$22.05	10	60	68	M8x1	7g
3561	ZTB14	1-790-23-00	\$22.05	14	80	88	M12x1	18g
3382	ZTB20	1-790-29-00	\$22.05	20	100	110	M17x1	36g
3383	ZTB30	1-790-35-00	\$26.25	30	100	110	M27x1	82g

Application Example



Extension Tube

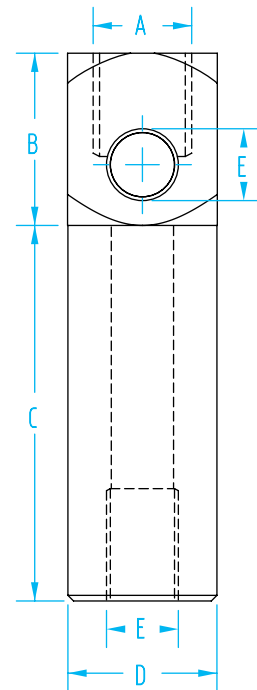
Quick#	Part#	>ASS< #	Price	A	B	C	Wt.
3562	VLR10-30	1-735-03-00	\$8.40	10	30	M8x1	3g
3563	VLR10-60	1-735-06-00	\$8.40	10	60	M8x1	7g
3531	VLR10-90	1-735-09-00	\$8.40	10	90	M8x1	11g
3384	VLR14-40	1-735-12-00	\$8.40	14	40	M12x1	6g
3385	VLR14-80	1-735-15-00	\$10.50	14	80	M12x1	14g
3386	VLR14-120	1-735-18-00	\$10.50	14	120	M12x1	23g
3387	VLR20-50	1-735-21-00	\$10.50	20	50	M17x1	15g
3388	VLR20-100	1-735-24-00	\$10.50	20	100	M17x1	29g
3389	VLR20-150	1-735-27-00	\$11.55	20	150	M17x1	44g
3390	VLR30-80	1-735-30-00	\$13.13	30	80	M27x1	51g
3391	VLR30-140	1-735-33-00	\$13.65	30	140	M27x1	88g
3392	VLR30-200	1-735-36-00	\$14.70	30	200	M27x1	128g

Use Quick#s for easy online ordering.

Gripper Arm for Vacuum Cup



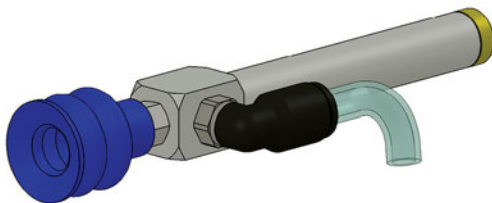
#3626



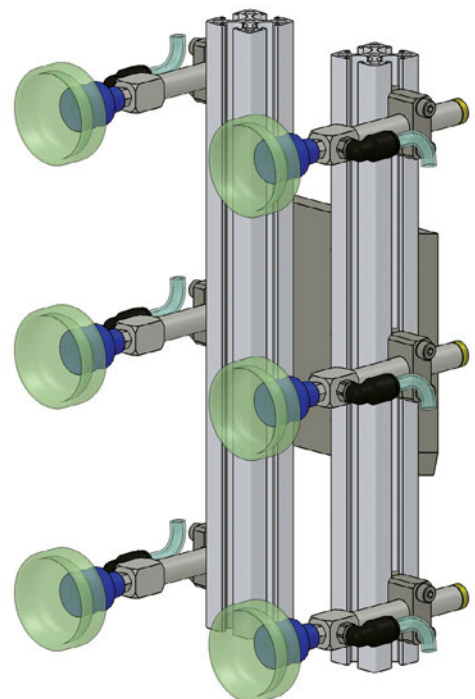
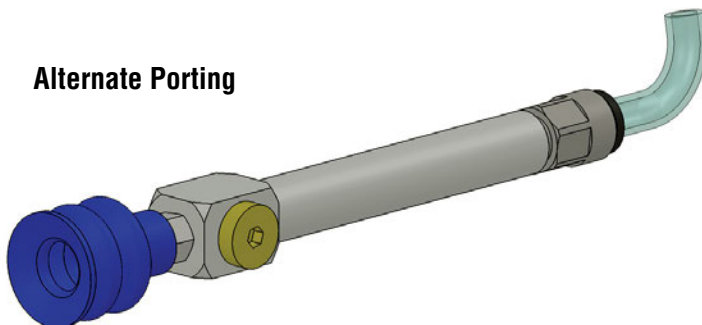
Gripper Arm for Vacuum Cup

Quick#	Part#	>ASS< #	Price	A	B	C	ØD	E	Wt.
3619	GSE-U-10-M5-M5-30	1-311-00-00	\$15.75	M5	16	30	10	M5	7g
3620	GSE-U-10-M5-M5-60	1-311-01-00	\$16.28	M5	16	60	10	M5	11g
3605	GSE-U-10-M5-M5-90	1-311-02-00	\$16.80	M5	16	90	10	M5	14g
3621	GSE-U-10-1/8-M5-30	1-311-03-00	\$17.33	G1/8"	16	30	10	M5	8g
3622	GSE-U-10-1/8-M5-60	1-311-04-00	\$17.85	G1/8"	16	60	10	M5	12g
3623	GSE-U-10-1/8-M5-90	1-311-05-00	\$18.90	G1/8"	16	90	10	M5	15g
3624	GSE-U-14-1/8-1/8-40	1-311-06-00	\$25.73	G1/8"	22	40	14	G1/8"	20g
3625	GSE-U-14-1/8-1/8-80	1-311-07-00	\$26.78	G1/8"	22	80	14	G1/8"	28g
3598	GSE-U-14-1/8-1/8-120	1-311-08-00	\$27.83	G1/8"	22	120	14	G1/8"	37g
3626	GSE-U-20-1/4-1/8-50	1-311-09-00	\$27.30	G1/4"	23	50	20	G1/8"	37g
3627	GSE-U-20-1/4-1/8-100	1-311-10-00	\$29.40	G1/4"	23	100	20	G1/8"	52g
3628	GSE-U-20-1/4-1/8-150	1-311-11-00	\$30.98	G1/4"	23	150	20	G1/8"	68g

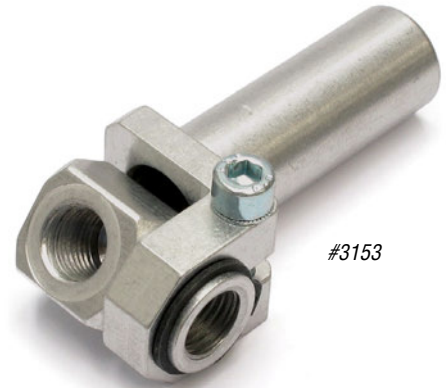
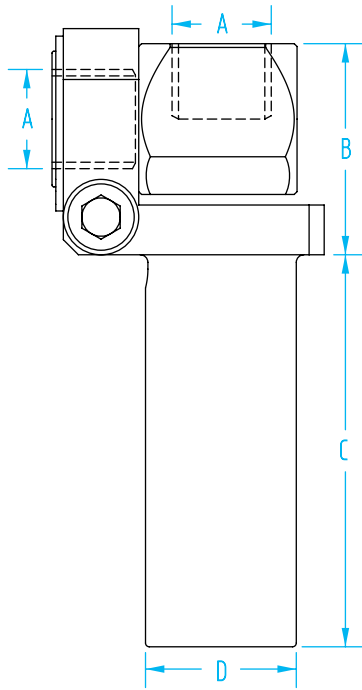
Application Examples



Alternate Porting

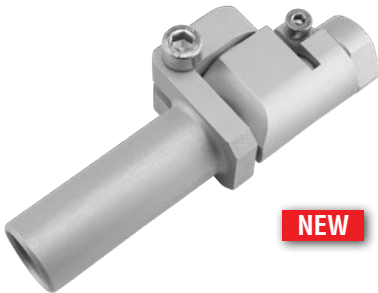


Elbow Arm for Vacuum Cup



Elbow Gripper Arm for Vacuum Cup

Quick#	Part#	>ASS< #	Price	A	B	C	ØD	Wt.
3147	GGE10-30	1-315-03-00	\$23.10	M5	15	30	10	15g
3148	GGE10-60	1-315-06-00	\$24.15	M5	15	60	10	18g
3149	GGE10-90	1-315-09-00	\$25.20	M5	15	90	10	21g
3150	GGE14-40	1-315-21-00	\$32.55	G1/8"	20	40	14	33g
3151	GGE14-80	1-315-24-00	\$33.60	G1/8"	20	80	14	40g
3152	GGE14-120	1-315-27-00	\$34.65	G1/8"	20	120	14	49g
3153	GGE20-50	1-315-39-00	\$34.13	G1/4"	25	50	20	59g
3154	GGE20-100	1-315-42-00	\$35.18	G1/4"	25	100	20	74g
3155	GGE20-150	1-315-45-00	\$36.75	G1/4"	25	150	20	89g

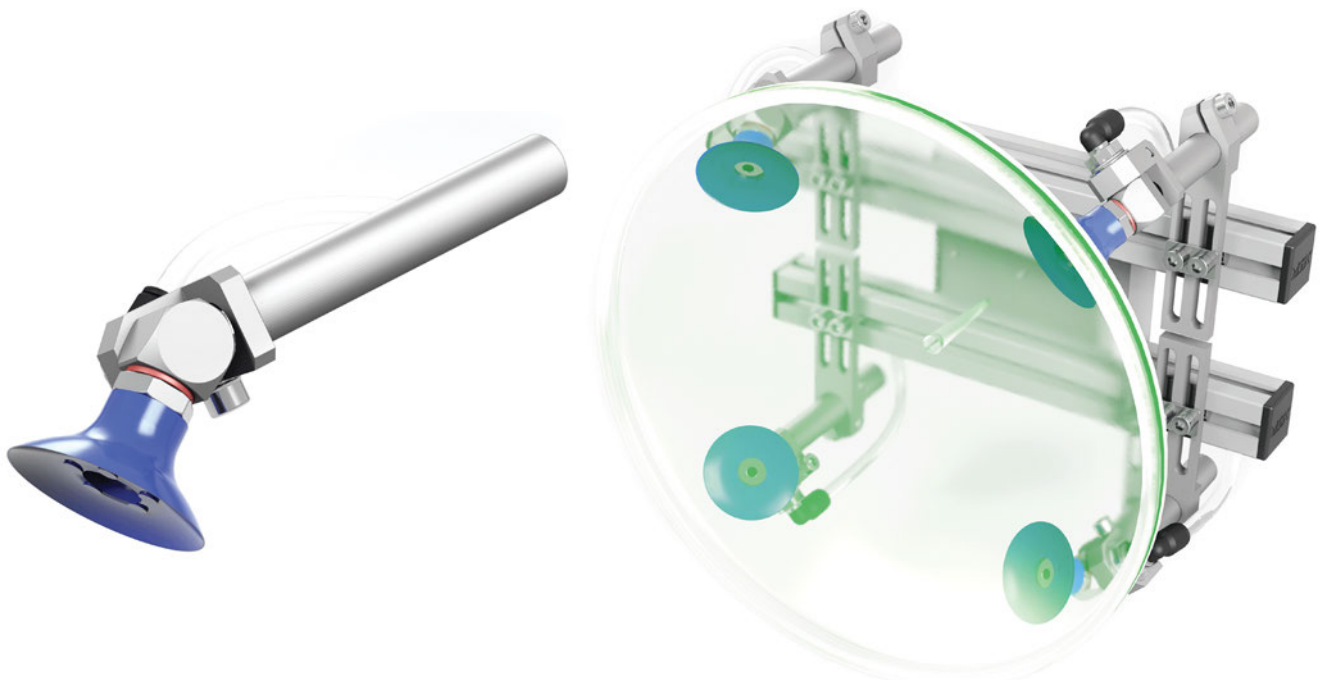


NEW

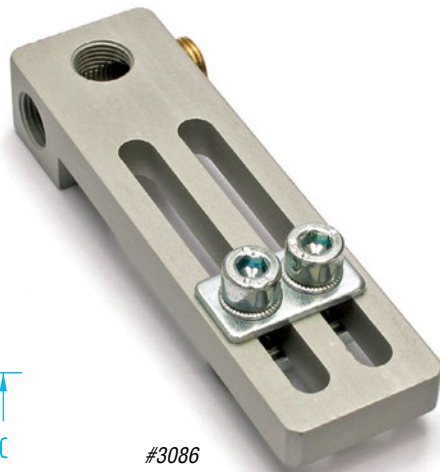
Elbow Gripper Arm with Fine Adjustment for Vacuum Cup

Quick#	Part#	>ASS< #	Price	Vacuum Port	Air Port	Length	Ø Shaft	Wt.
3949	GG020 50	1-314-39-00	\$43.05	G1/4"	G1/8"	50	20	80g
3369	GG0-20-1/4-1/8-100	1-314-42-00	\$36.40	G1/4"	G1/8"	100	20	95g
3370	GG0-20-1/4-1/8-150	1-314-45-00	\$37.59	G1/4"	G1/8"	150	20	111g

Application Examples



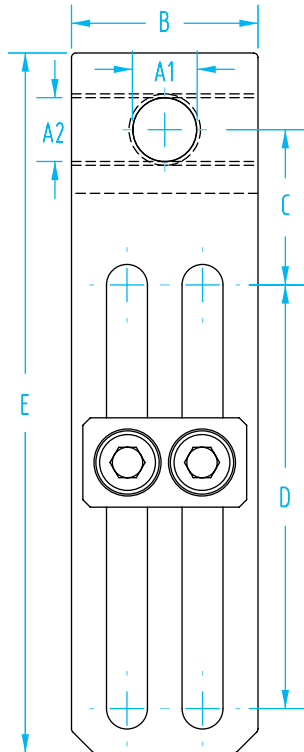
Vacuum Cup Connectors



Long Angle Connector with Swivel Head

Quick#	Part#	Price	Wt.
3160	WLS-GA-X-1/4-1/8-50	\$45.15	80g

See www.EMlcorp.com for more information.



#3086

Threaded Long Angle Connector

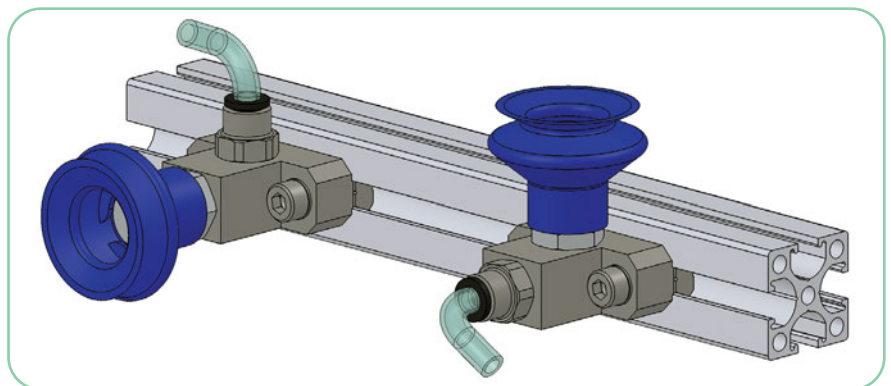
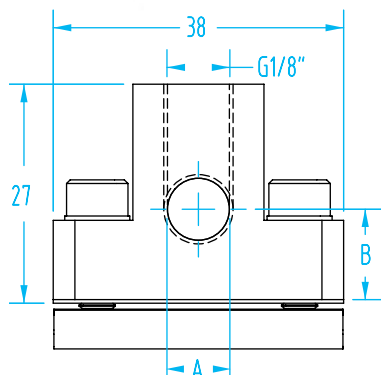
Quick#	Part#	>ASS< #	Price	A1	A2	B	C	D	E	Wt.
3085	WLSM5L/X	1-200-30-00	\$13.65	M5	M5	16	14	40	65	21g
3086	WLS1/8X	1-200-35-00	\$19.43	G1/8"	G1/8"	25	22	50	88	56g
3087	WLS1/4X	1-200-40-00	\$19.43	G1/4"	G1/8"	25	22	57	94	57g
3088	WLS1/4J	1-200-47-00	\$20.48	G1/4"	G1/8"	30	30	60	110	82g

Use Quick#s for easy online ordering.

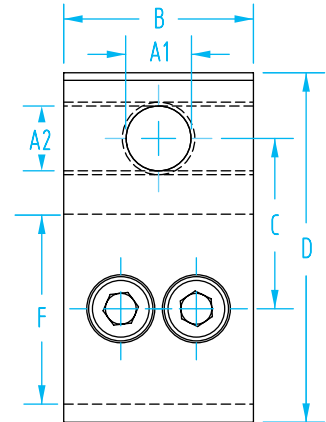
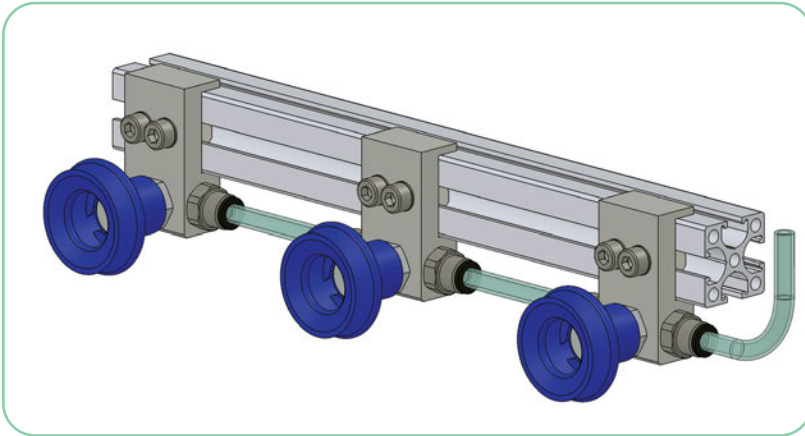


Vacuum Cup Connector

Quick#	Part#	>ASS< #	Price	A	B	Wt.
3079	SAS1/8X	1-200-70-00	\$11.55	G1/8"	12	41g
3080	SAS1/4X	1-200-75-00	\$11.55	G1/4"	10	43g



Vacuum Cup Connectors



Threaded Angle Connector

Quick#	Part#	>ASS< #	Price	A1	A2	B	C	D	F	Wt.
3081	WSSM5L	1-200-05-00	\$12.60	M5	M5	16	13.5	30	18	17g
3082	WSS1/8X	1-200-10-00	\$15.75	G1/8"	G1/8"	25	22	45	25	42g
3083	WSS1/4X	1-200-15-00	\$16.80	G1/4"	G1/8"	25	22	45	25	40g
3084	WSS1/4J	1-200-22-00	\$20.48	G1/4"	G1/8"	30	30	63	40	83g

Use with profile size \uparrow

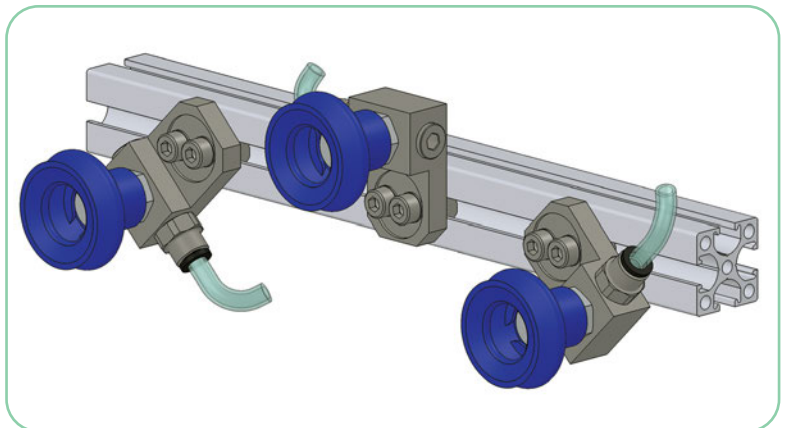
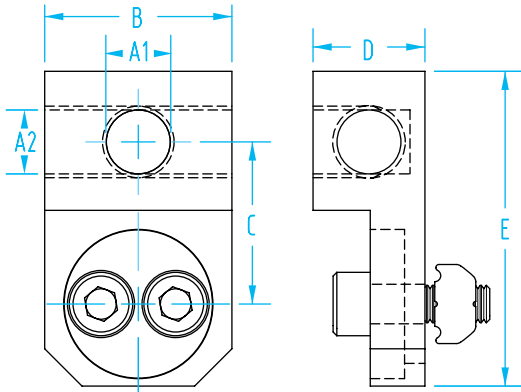
#3082



Adjustable Angle Connector 360°

Quick#	Part#	>ASS< #	Price	A1	A2	B	C	D	E	Wt.
3089	WSDM5L/X	1-200-55-00	\$15.23	M5	M5	16	13	16	26	18g
3090	WSD1/8X	1-200-60-00	\$19.95	G1/8"	G1/8"	25	22	25	41	38g
3091	WSD1/4X	1-200-65-00	\$19.95	G1/4"	G1/8"	25	22	25	41	39g

#3090



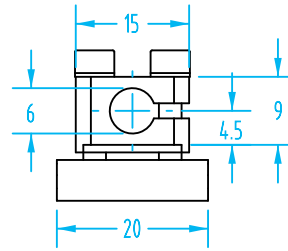
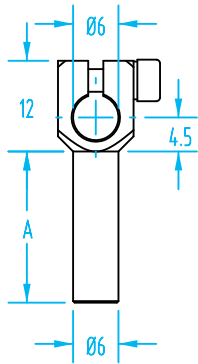
Micro Series Framing – Ø6mm

NEW

(Dimensioned drawings shown full scale)



#3787

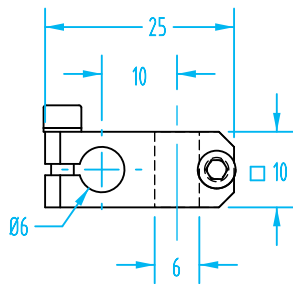


Micro Series Angle Arm

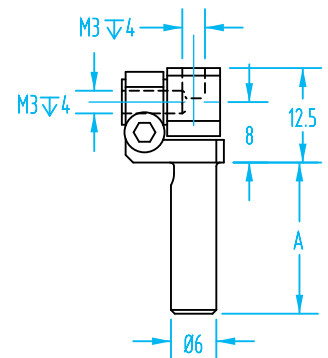
Quick#	Part#	>ASS< #	Price	A	Wt.
3787	WKA6-20	1-320-63-00	\$13.13	20	3g
3788	WKA6-40	1-320-66-00	\$13.65	40	4g
3789	WKA6-60	1-320-69-00	\$14.70	60	6g

Micro Series Cross Connector

Quick#	Part#	>ASS< #	Price	Wt.
3780	KVB6L	1-115-01-00	\$8.93	11g



#3795



Micro Series Round Cross Connector

Quick#	Part#	>ASS< #	Price	Wt.
3779	KKS6L	1-115-39-00	\$12.08	6g

Micro Series Swivel Gripper Arm

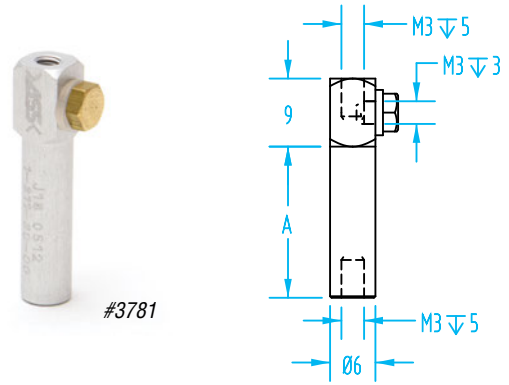
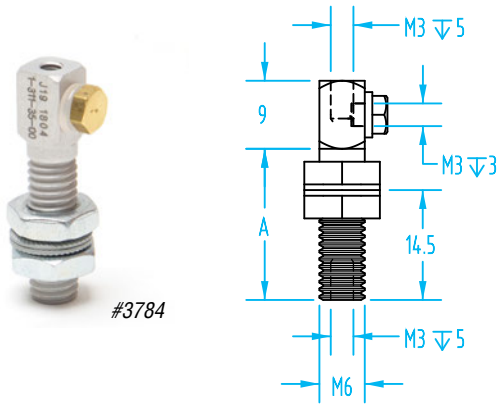
Quick#	Part#	>ASS< #	Price	A	Wt.
3795	GGE6-20	1-315-00-00	\$18.90	20	4g
3796	GGE6-40	1-315-01-00	\$19.95	40	6g
3797	GGE6-60	1-315-02-00	\$21.00	60	8g

- See page 281 for M6 and Ø6mm Suspensions.
- See pages 412–416 for Mini Vacuum Cups and M3 Fittings.
- See page 490 for New Micro Series (Nano) Sprue Grippers.

Micro Series Framing – Ø6mm

NEW

(Dimensioned drawings shown full scale)

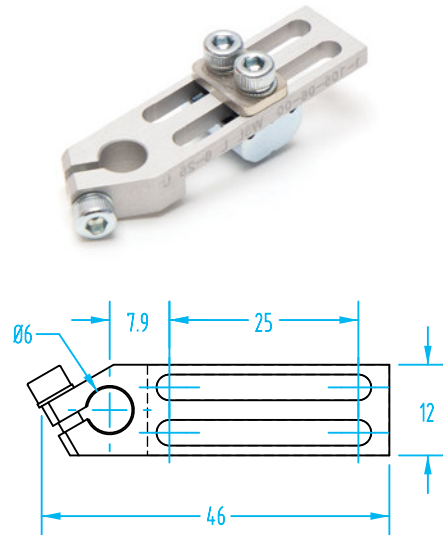
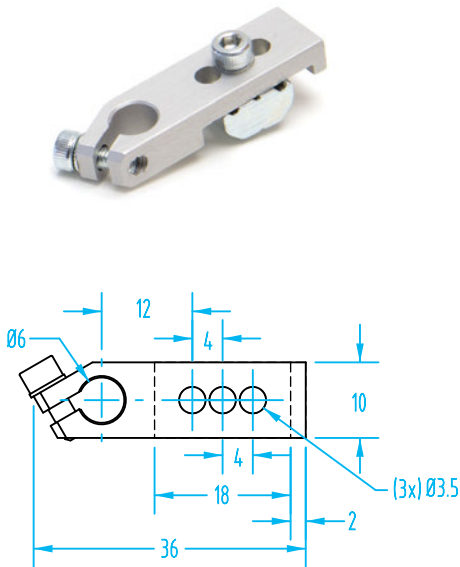


Threaded Micro Series Gripper Arm

Quick#	Part#	>ASS< #	Price	A	Wt.
3784	GSE-U-6-M6-M3-20	1-311-35-00	\$12.60	20	5g
3785	GSE-U-6-M6-M3-40	1-311-36-00	\$13.13	40	6g
3786	GSE-U-6-M6-M3-60	1-311-37-00	\$13.65	60	7g

Clampable Micro Series Gripper Arm

Quick#	Part#	>ASS< #	Price	A	Wt.
3781	GSE-U-6-M3-M3-20	1-311-30-00	\$12.60	20	3g
3782	GSE-U-6-M3-M3-40	1-311-31-00	\$13.13	40	4g
3783	GSE-U-6-M3-M3-60	1-311-32-00	\$13.65	60	6g



Micro Series Angle Clamp

Quick#	Part#	>ASS< #	Price	Wt.
3778	WST6L	1-103-01-00	\$9.98	7g

Micro Series Long Angle Clamp

Quick#	Part#	>ASS< #	Price	Wt.
3798	WSL6L	1-105-06-00	\$13.65	11g

Blue Scale Series – Angle Clamp

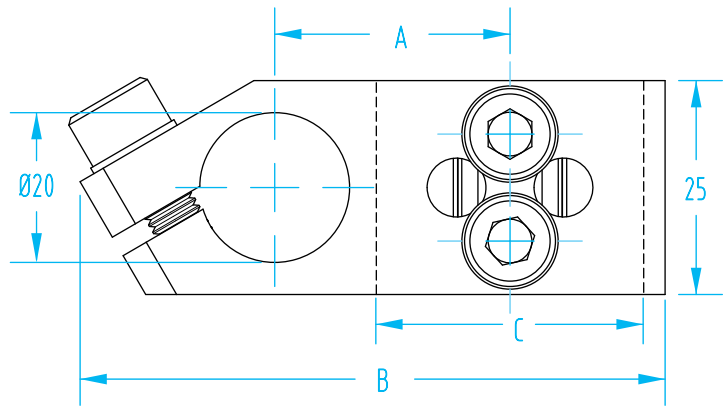
NEW



#3883



#3884



The blue scale system was developed for providing verifiable positions for tooling, fixture and sensor applications. The elbow and mounting arms are pre-drilled for set screws locking their position.

Angle Clamp – Blue Scale

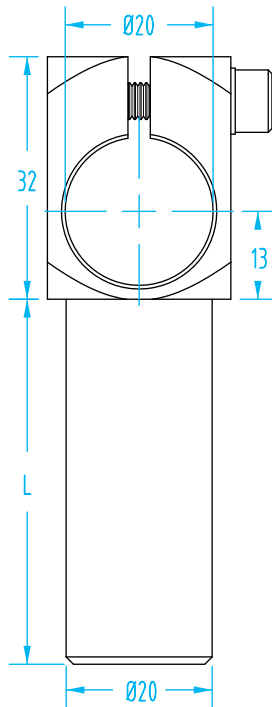
Quick#	Part#	>ASS< #	Price	Use with Profile	A	B	C	T	Wt.
3883	WST20X-BS	1-103-13-00	\$23.10	X	22.5-37.5	63	25	6	46g
3884	WST20J-BS	1-103-19-00	\$27.30	J	27-47	77	40	7.5	62g

T= thickness



Blue Scale Series – Angle Arm

NEW



Angle Arm – Blue Scale

Quick#	Part#	>ASS< #	Price	L (Post Length)	Wt.
3880	WKA20-50-BS	1-320-22-00	\$42.00	50mm	46g
3881	WKA20-100-BS	1-320-25-00	\$43.58	100mm	63g
3882	WKA20-150-BS	1-320-28-00	\$44.63	150mm	79g

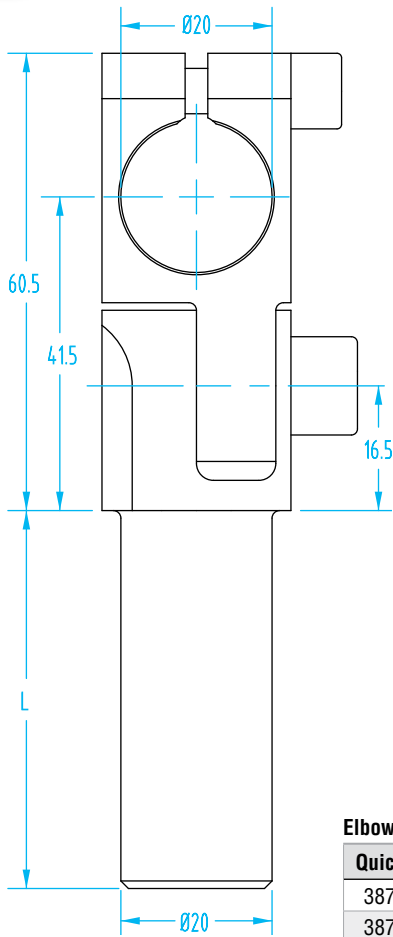
Use Quick#s for easy online ordering.

The blue scale system was developed for providing verifiable positions for tooling, fixture and sensor applications. The elbow and mounting arms are pre-drilled for set screws locking their position.



Blue Scale Series – Elbow Arm

NEW



The blue scale system was developed for providing verifiable positions for tooling, fixture and sensor applications. The elbow and mounting arms are pre-drilled for set screws locking their position.

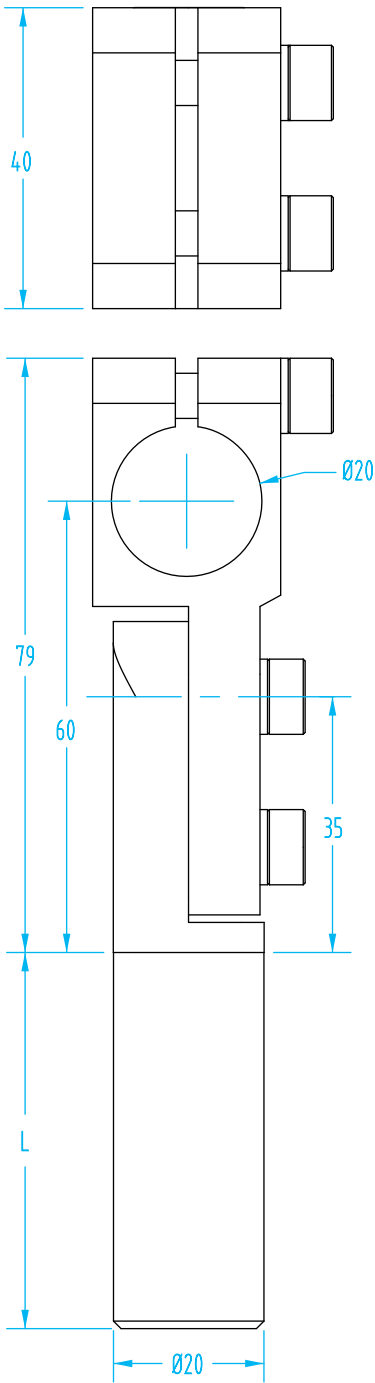
Elbow Arm – Blue Scale

Quick#	Part#	>ASS< #	Price	L (Post Length)	Wt.
3874	GLA20-50-BS	1-325-22-00	\$52.50	50mm	93g
3875	GLA20-100-BS	1-325-25-00	\$54.08	100mm	108g
3876	GLA20-150-BS	1-325-28-00	\$55.13	150mm	129g



Blue Scale Series – Heavy-Duty Elbow Arm

NEW



The blue scale system was developed for providing verifiable positions for tooling, fixture and sensor applications. The elbow and mounting arms are pre-drilled for set screws locking their position.

Heavy-Duty Elbow Arm – Blue Scale

Quick#	Part#	>ASS< #	Price	L (Post length)	Wt.
3877	GLA-V-20-50-BS	1-325-72-00	\$64.05	50mm	153g
3878	GLA-V-20-100-BS	1-325-75-00	\$65.10	100mm	169g
3879	GLA-V-20-150-BS	1-325-78-00	\$65.63	150mm	191g

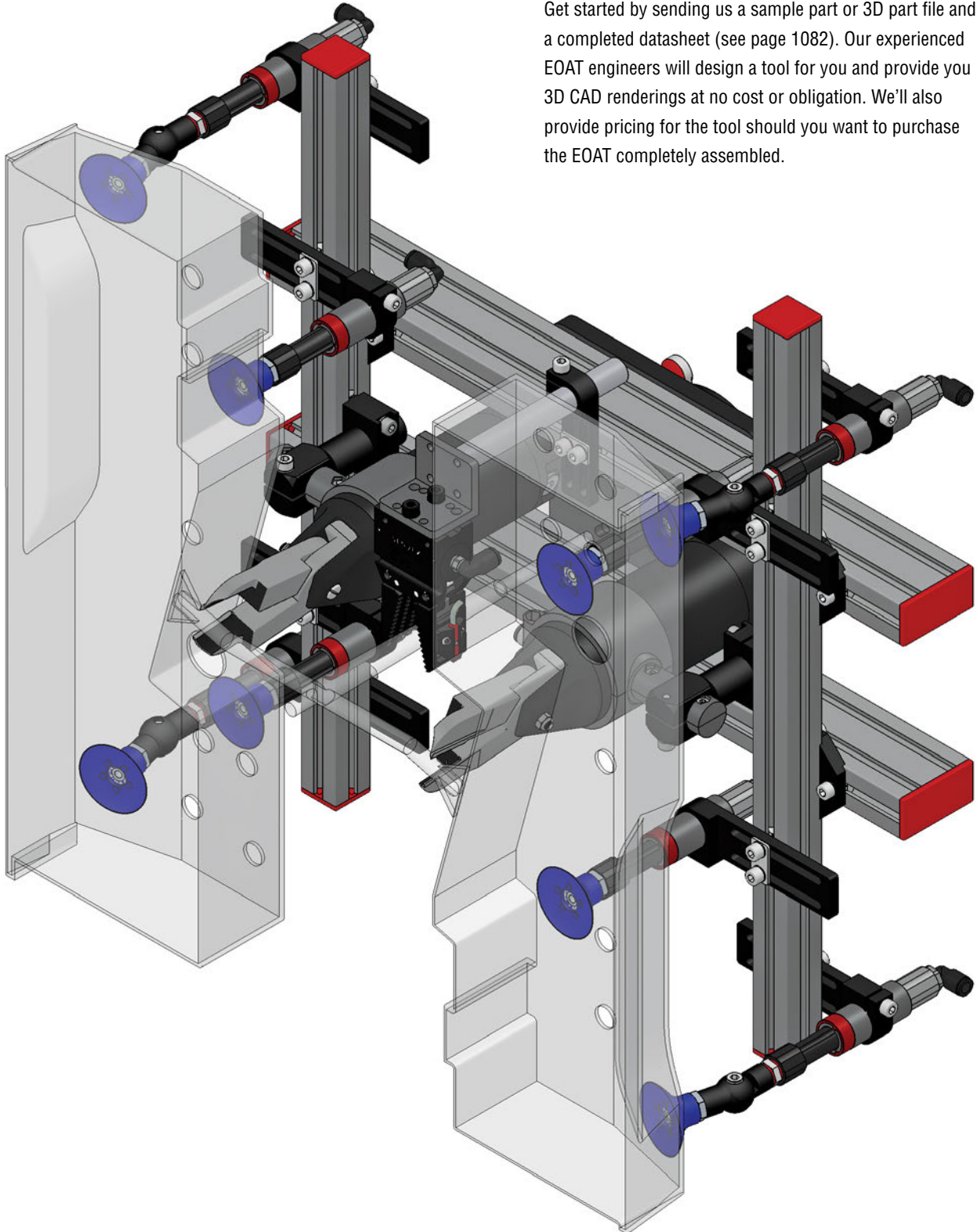
Use Quick#s for easy online ordering.



EOAT Design and Build Service

From the simplest to the most complex EOAT, EMI specializes in designing and building customized End-of-Arm-Tooling— **Priced Competitively.**

Get started by sending us a sample part or 3D part file and a completed datasheet (see page 1082). Our experienced EOAT engineers will design a tool for you and provide you 3D CAD renderings at no cost or obligation. We'll also provide pricing for the tool should you want to purchase the EOAT completely assembled.



Gimatic Framing Overview**Profile**

p.230

**Angle Connector**

p.235

**End Joint Connector**

p.236

**Square Joint Connector**

p.238

**Cross Joint Connector**

p.239

**Threaded Mounting Bracket**

p.244

**Cross Clamp**

p.247

**Angle Clamp**

p.248

**Angle & Elbow Arms**

p.252

**Angle Clamp with Swivel**

p.255

**Angle Clamp with Ball Joint**

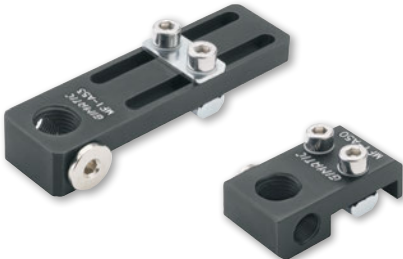
p.251

**Extensions & Centering Pins**

p.262

**Vacuum Cup Brackets**

p.260

**Arms for Vacuum Cups**

p.256

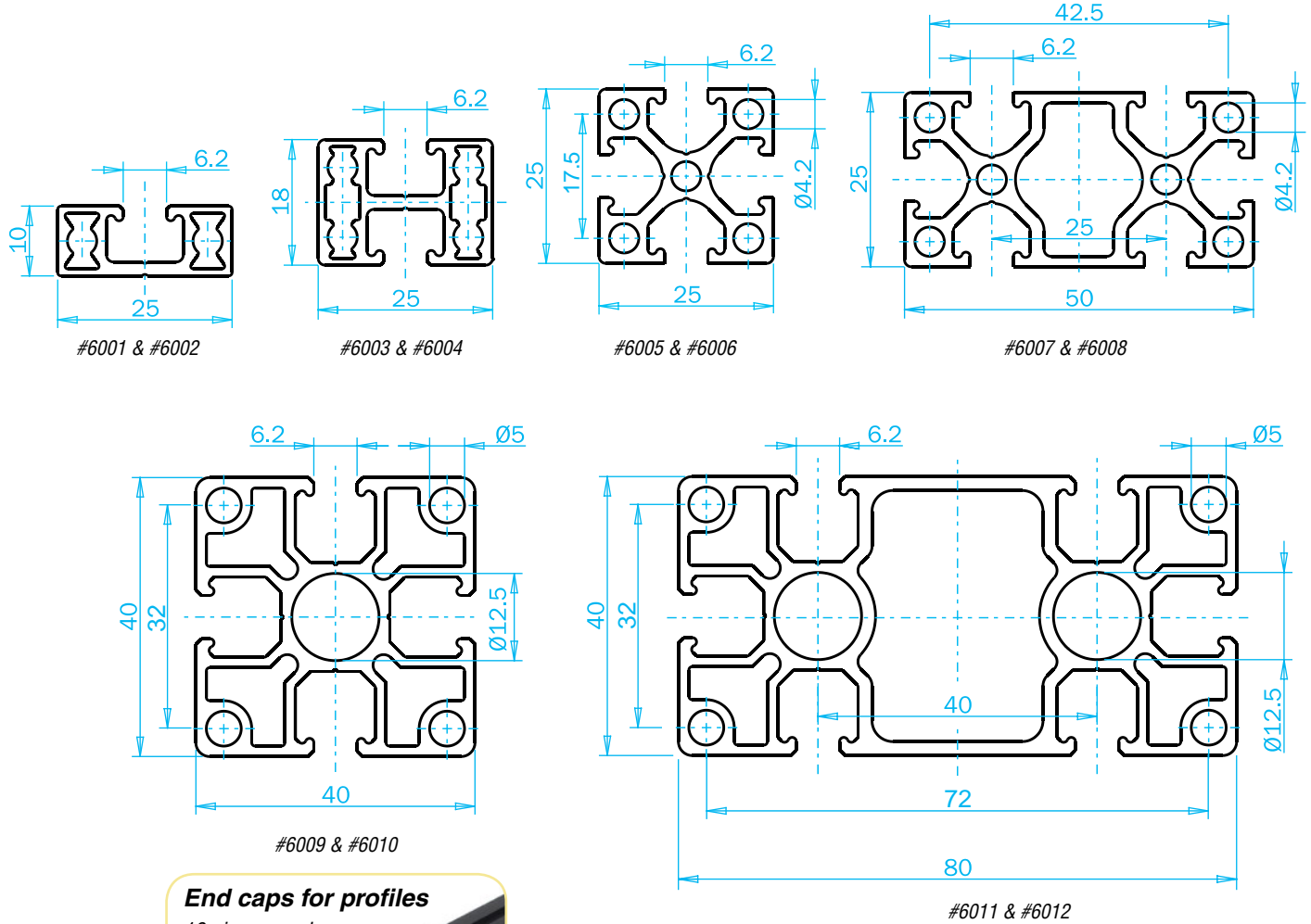
**Vacuum Accessories**

p.258



Framing Profile

(Dimensioned drawings shown at full scale)



Save on Shipping Costs!
Order 1-meter profiles to save on shipping costs. (2-meter profiles ship oversized and will cost approximately 2½ times as much to ship compared to 1-meter profiles.)

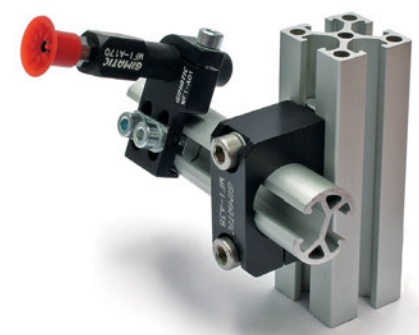
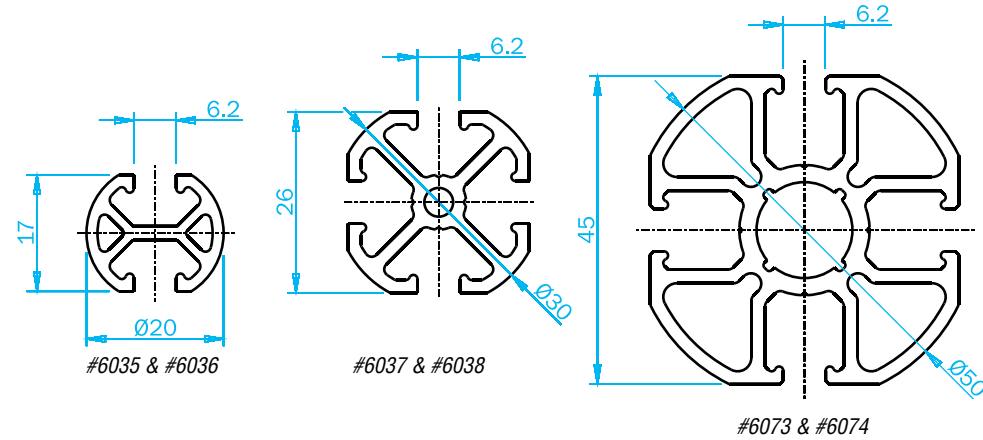
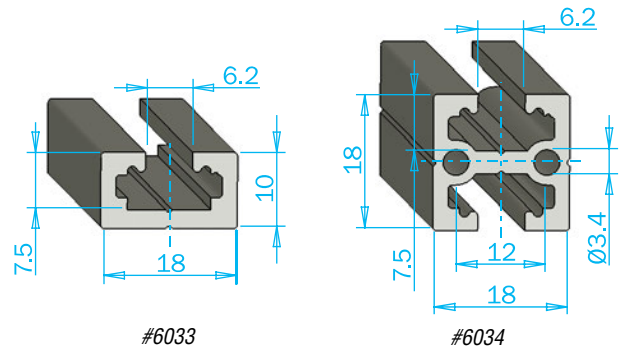
Profile (Black Anodized)				Profile (Clear Anodized) NEW				End Caps (10 pieces per bag)			
Quick#	Part#	Price	Length	Quick#	Part#	Price	Length	Wt.	Quick#	Part#	Price
6001	EMF-2510-1000	\$6.19	1m	-	Contact EMI			280g	6013	MFI-A27	\$5.09
6002	EMF-2510-2000	\$10.26	2m	-				560g	6013	MFI-A27	\$5.09
6003	EMF-2518-1000	\$7.10	1m	-				400g	6014	MFI-A28	\$5.09
6004	EMF-2518-2000	\$12.21	2m	-				800g	6014	MFI-A28	\$5.09
6005	EMF-2525-1000	\$8.59	1m	6045	EMB-2525-1000	\$8.59	1m	610g	6015	MFI-A21	\$5.09
6006	EMF-2525-2000	\$16.52	2m	6046	EMB-2525-2000	\$16.52	2m	1220g	6015	MFI-A21	\$5.09
6007	EMF-5025-1000	\$15.26	1m	6047	EMB-5025-1000	\$15.26	1m	1040g	6016	MFI-A22	\$7.33
6008	EMF-5025-2000	\$29.64	2m	6048	EMB-5025-2000	\$29.64	2m	2080g	6016	MFI-A22	\$7.33
6009	EMF-4040-1000	\$16.37	1m	6049	EMB-4040-1000	\$16.74	1m	1300g	6017	MFI-A25	\$10.70
6010	EMF-4040-2000	\$32.67	2m	6050	EMB-4040-2000	\$32.67	2m	2600g	6017	MFI-A25	\$10.70
6011	EMF-8040-1000	\$25.69	1m	6052	EMB-8040-1000	\$26.73	1m	2180g	6018	MFI-A26	\$14.29
6012	EMF-8040-2000	\$51.81	2m	6053	EMB-8040-2000	\$51.81	2m	4360g	6018	MFI-A26	\$14.29

Framing Profile

(Dimensioned drawings shown at full scale)

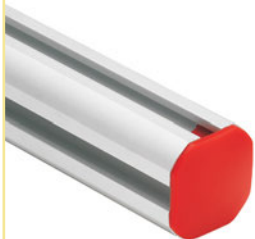
Light Profile (Black Anodized)

Quick#	Part#	Price	Length	Wt.
6033	EMF-1018-1000	\$7.07	1m	250g
6034	EMF-1818-1000	\$10.87	1m	380g
End Caps (10 per bag)		For Profile		
6039	MFI-A24	\$4.60	EMF-1018	2g
6040	MFI-A23	\$6.43	EMF-1818	4g



End caps for profiles

10 pieces per bag

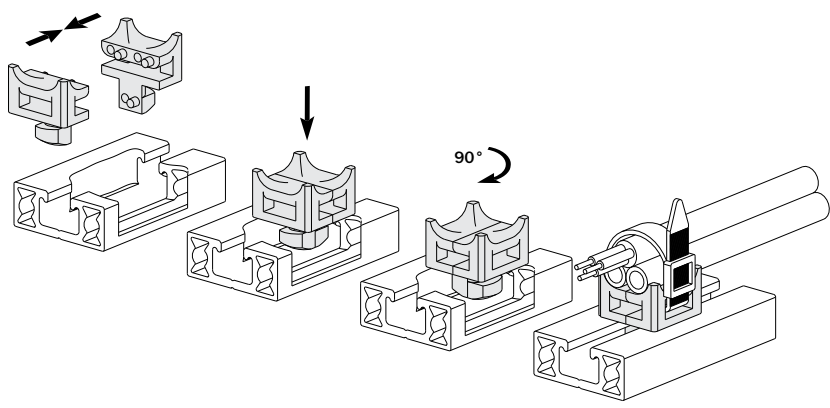
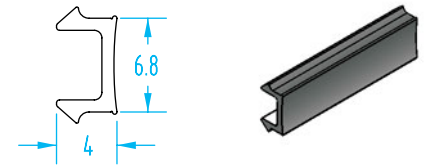


Slotted Round Profile (Silver Anodized)

Quick#	Part#	Price	Length	Profile Ø	Wt.
6035	EMB-2017-1000	\$9.83	1m	20mm	340g
6036	EMB-2017-2000	\$18.10	2m		680g
6037	EMB-3026-1000	\$19.40	1m	30mm	700g
6038	EMB-3026-2000	\$32.51	2m		1400g
6073	EMB-5045-1000	\$32.76	1m	50mm	1665g
6074	EMB-5045-2000	\$56.89	2m		3330g
End Caps (10 per bag)		For Profile Ø			
6054	MFP-K29	\$9.26	EMB-2017 - Ø20mm		2g
6055	MFP-K28	\$9.46	EMB-3026 - Ø30mm		4g
6072	MFP-K50	\$10.19	EMB-5045 - Ø50mm		6g

Profile Channel Cover (Black PVC)

Quick#	Part#	Price	Dimensions
6084	PCC-1000	\$5.04	1m long, 6mm wide, Use with L, X, J



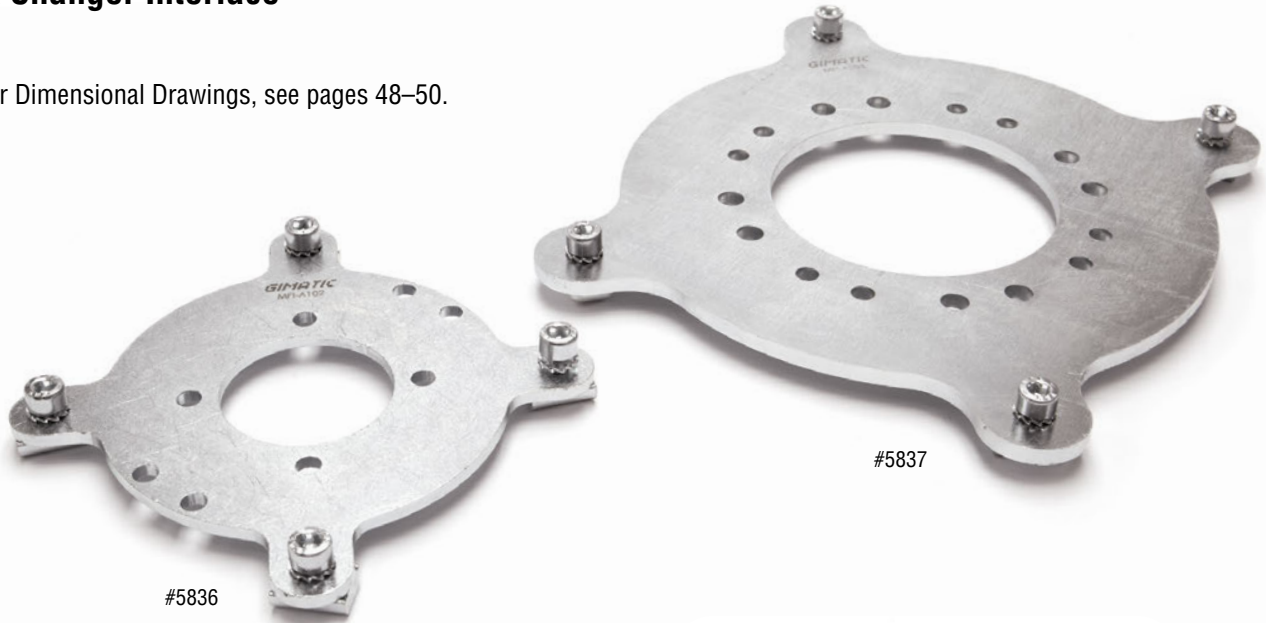
Twist-on Cable Tie Sold in packs of 10

Quick#	Part#	Price
7618	MFI-A239	\$10.27

NEW

Quick Changer Interface

- For Dimensional Drawings, see pages 48–50.



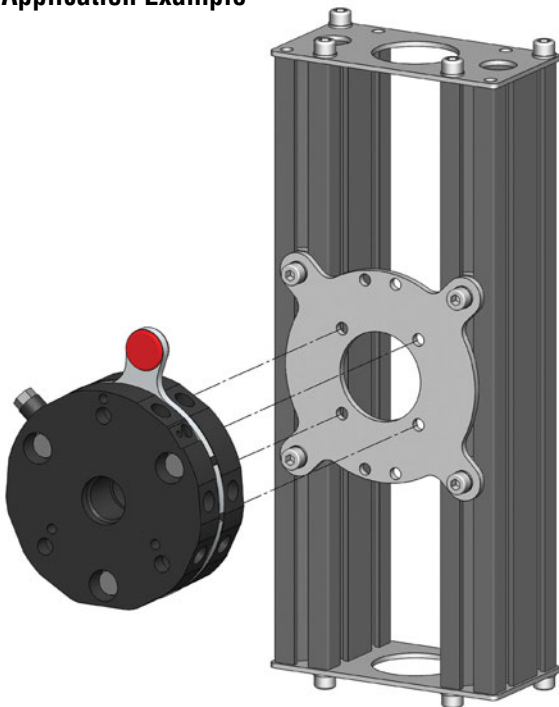
Quick Changer Interface (steel)

Quick#	Part#	Price	Quick Changer Size	Wt.
7303	MFI-A277	\$23.66	Mini QC50 (50mm)	90g
5836	MFI-A102	\$27.25	Standard QC90 (90mm)	190g
5837	MFI-A103	\$39.68	Large QC150 (150mm)	540g

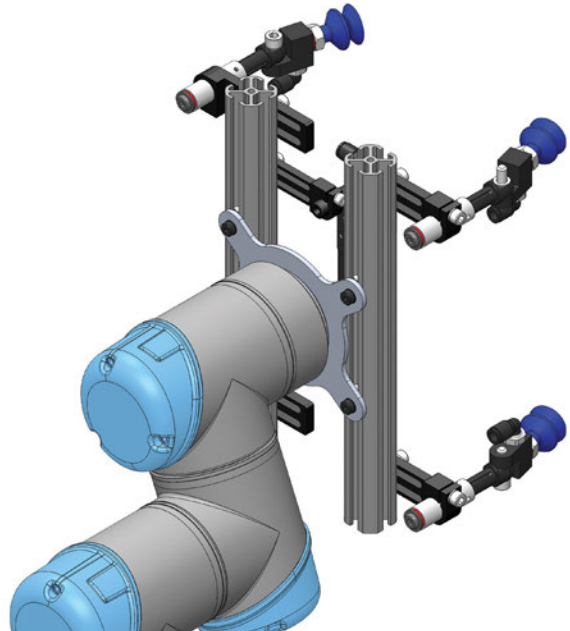
Note: Mounting hardware included



Application Example



Interface plates for Cobots on page 126.

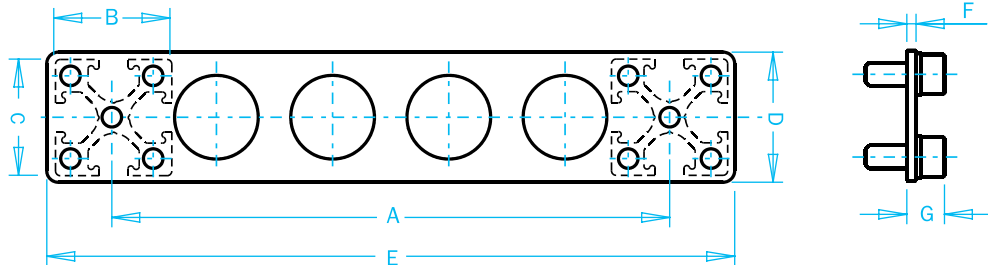


Profile End Plate

Save on Custom Plates!

Custom mounting plates, interfaces, and brackets for building EOAT are available from EMI. Fast and low cost.

EMI's in-house laser cutter precision cuts aluminum and stainless up to 0.250" thick.

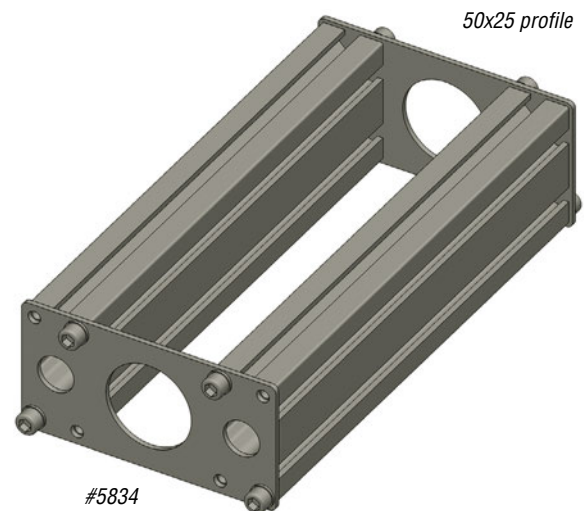
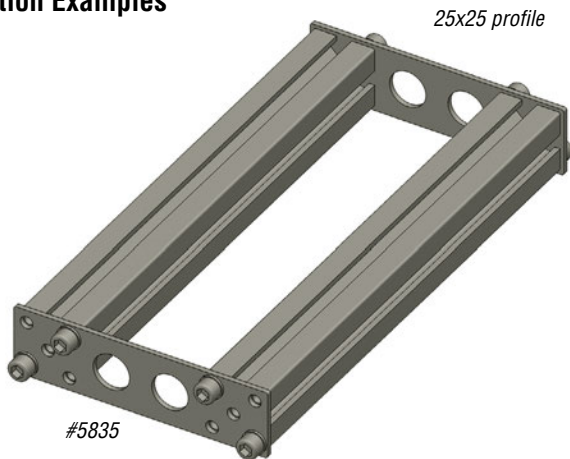


Profile End Plate

Quick#	Part#	Price	Profile	A	B	C	D	E	F	G	Wt.
5834	MFI-A100	\$7.90	5025	76	25	50	53	104	2	8	75g
5835	MFI-A101	\$8.59	2525	76	25	25	28	104	2	8	50g
5832	MFI-A19	\$5.75	2525	120	25	25	28	148	2	8	60g
5833	MFI-A20	\$7.12	5025	120	25	50	53	148	2	8	100g
6066	MFI-A201	\$8.89	2525	130	25	25	28	158	2	8	65g
6067	MFI-A202	\$9.05	5025	130	25	50	53	158	2	8	110g

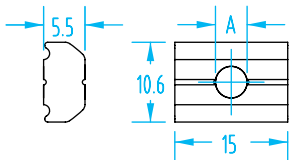
Note: Mounting hardware included

Application Examples



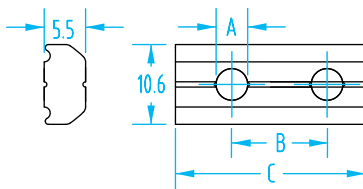
Channel Nuts

#6058, #6019, #6059



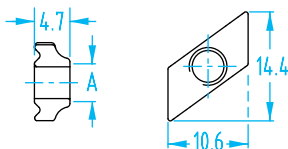
Quick#	Part#	Price	A	Wt.
6058	MFI-177	\$1.00	M4	5g
6019	MFI-025	\$1.00	M5	5g
6059	MFI-178	\$1.00	M6	5g

#6020–#6032



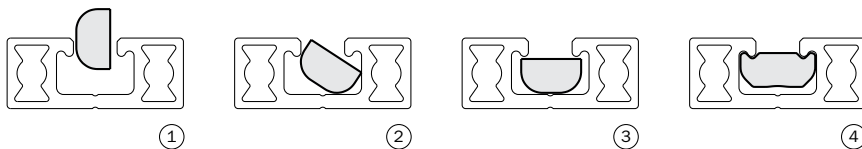
Quick#	Part#	Price	A	B	C	Wt.
6020	MFI-003	\$1.50	M4	8	16	5g
6021	MFI-006	\$1.50	M5	10	20	7g
6022	MFI-009	\$1.50	M5	15	25	9g
6023	MFI-148	\$1.50	M5	17	25	9g
6024	MFI-016	\$1.50	M5	22	32	11g
6025	MFI-027	\$1.50	M5	25	35	13g
6026	MFI-055	\$1.50	M5	28	38	14g
6027	MFI-050	\$1.72	M5	30	40	15g
6028	MFI-029	\$1.72	M5	35	45	16g
6029	MFI-020	\$1.72	M5	40	50	18g
6030	MFI-043	\$1.72	M5	50	60	22g
6031	MFI-022	\$1.72	M5	60	70	26g
6032	MFI-045	\$1.72	M5	90	100	38g

#6088, #6089, #6090



Quick#	Part#	Price	A	Wt.
6090	MFI-490	\$2.25	M3	2g
6089	MFI-489	\$2.25	M4	2g
6088	MFI-477	\$2.25	M5	2g

Drop-in #6088–#6090 & rotate 90° when you need to add to an already assembled EOAT.



- See page 1078 replacement washers for Gimatic hardware.

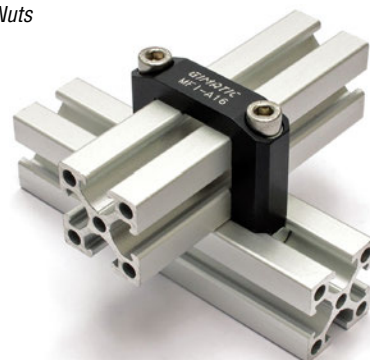
Gimatic & >ASS< Profile Compatibility



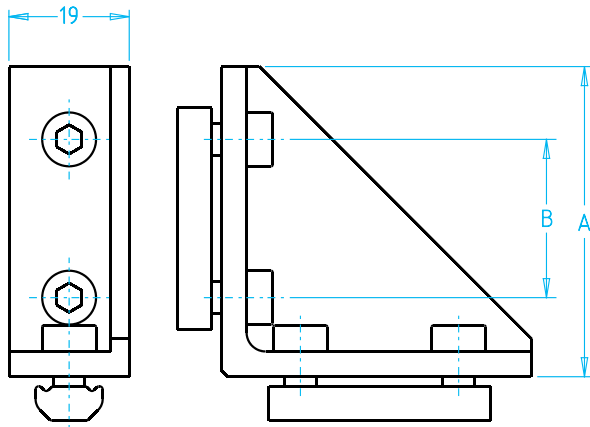
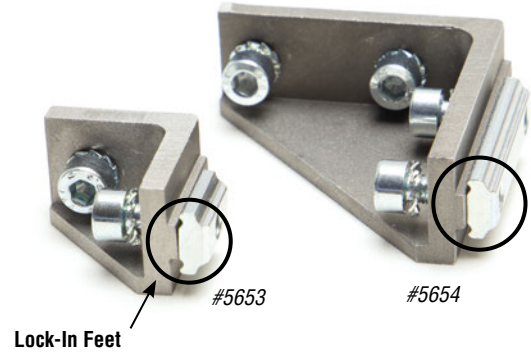
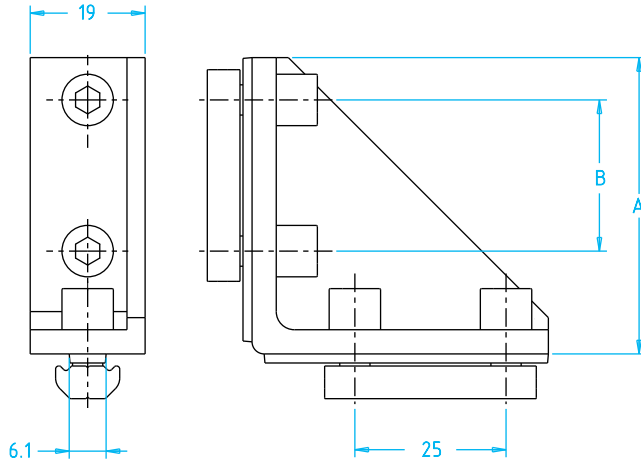
Gimatic Brackets and Channel Nuts work with >ASS< Profile.



>ASS< Brackets and Channel Nuts work with Gimatic Profile.



Angle Joint Connector



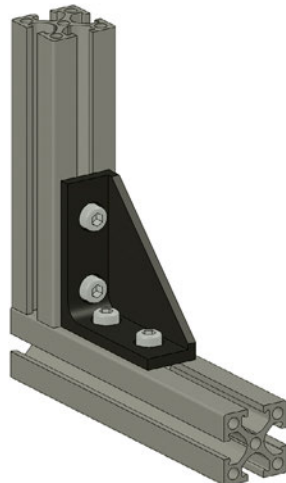
Angle Joint Connector for Profile

Quick#	Part#	Price	A (size)	Material	Style	Use	B	Wt.
5653	MFI-A140	\$5.05	Single (25mm)	Steel	With Lock-in Feet	Inline only	-	33g
5654	MFI-A141	\$7.23	Double (50mm)				25	82g
5651	MFI-A14	\$5.29	Single (25mm)	Aluminum	No Lock-in Feet	Inline & Perpendicular	-	25g
5652	MFI-A15	\$7.59	Double (50mm)				25	60g

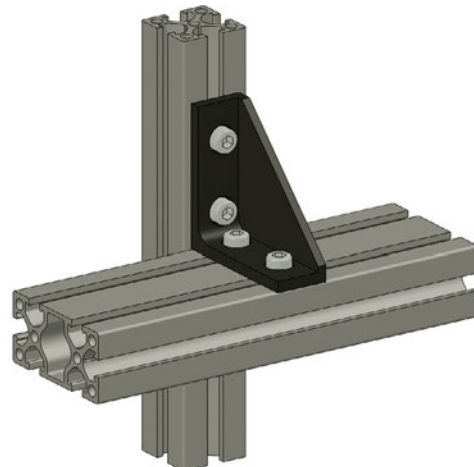
Use Quick#s for easy online ordering.

Application Examples

Inline Use:

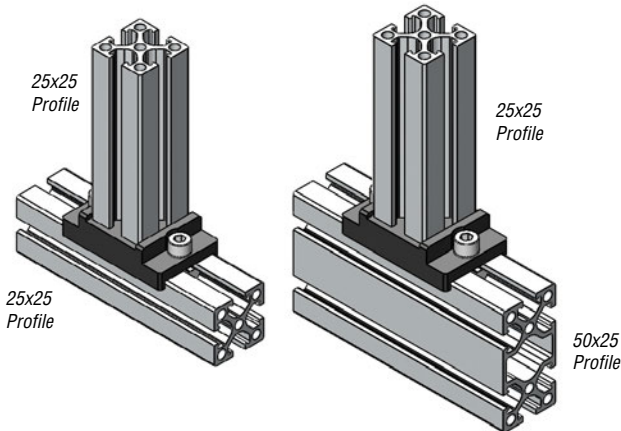
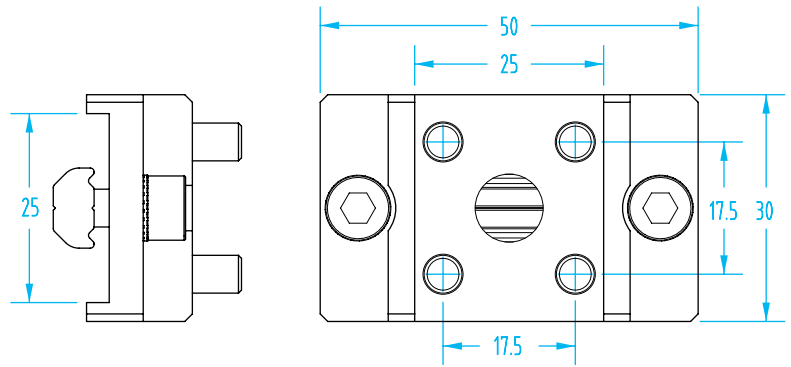


Perpendicular Use:



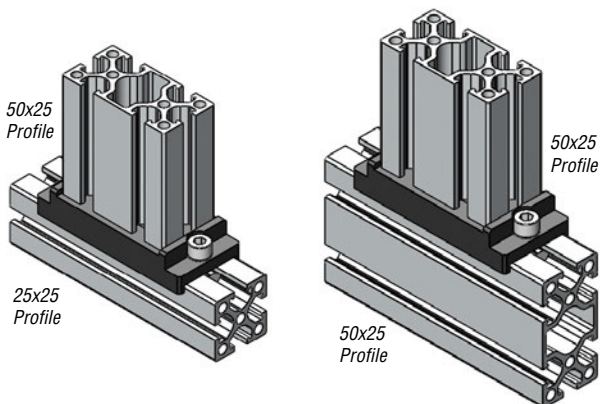
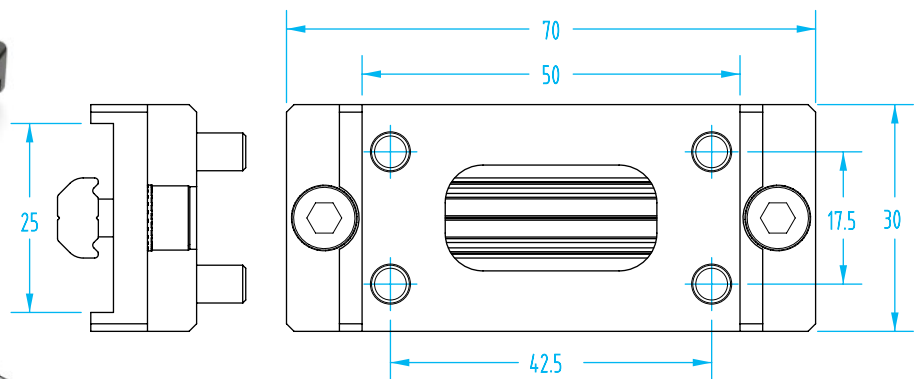
Profile End Joint Connector

(Dimensioned drawings shown full scale)



90° Profile End Joint Connector

Quick#	Part#	Price	Weight
7105	MFI-A217	\$27.00	65g

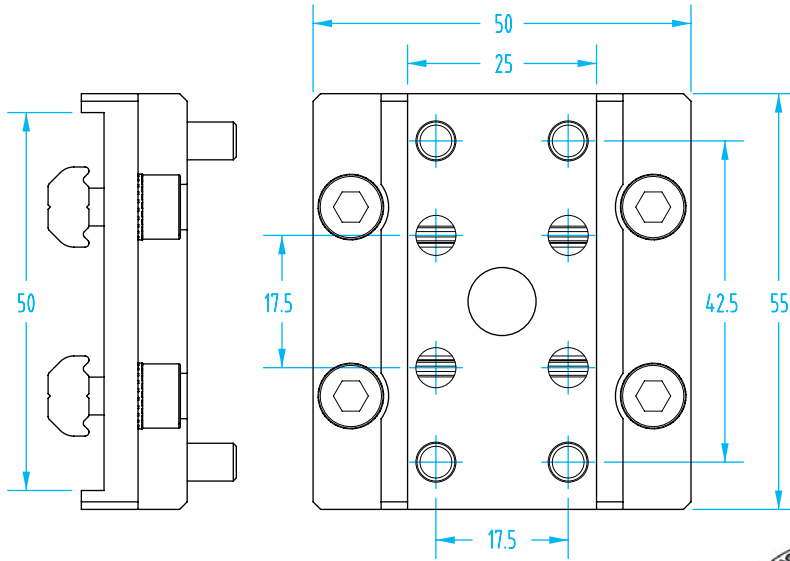


90° Profile End Joint Connector

Quick#	Part#	Price	Weight
7106	MFI-A218	\$28.00	85g

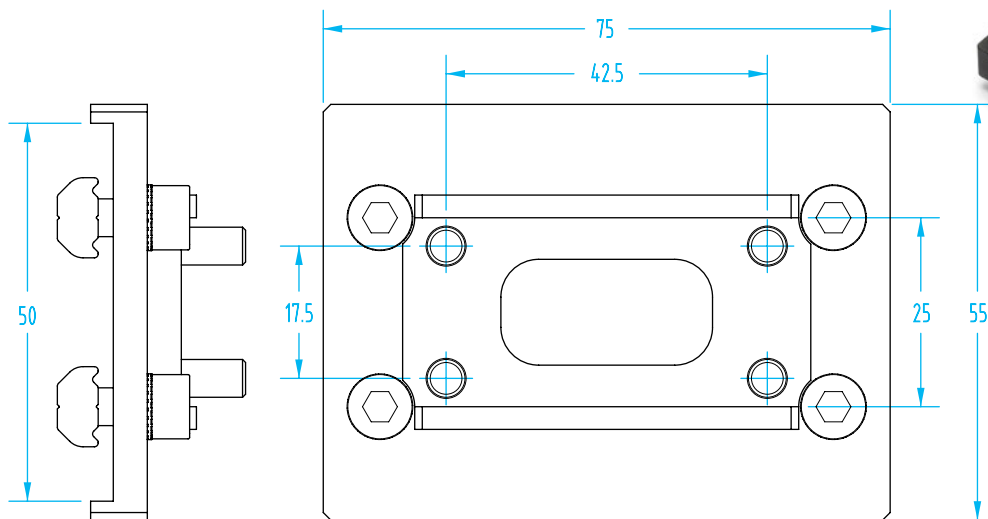
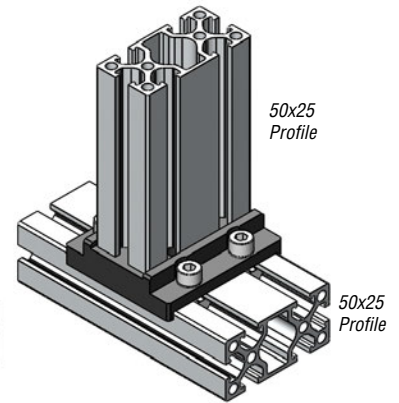
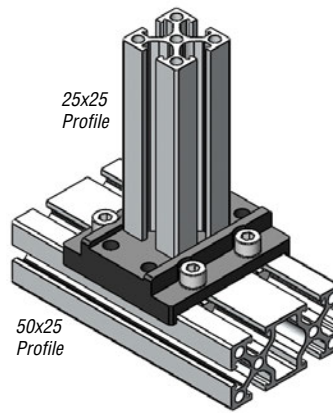
Profile End Joint Connector

(Dimensioned drawings shown full scale)



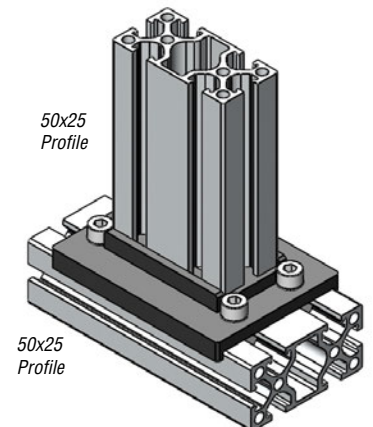
90° Profile End Joint Connector

Quick#	Part#	Price	Weight
7107	MFI-A219	\$29.00	110g

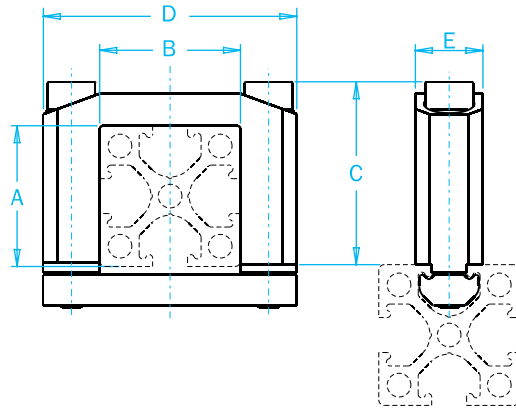


90° Profile End Joint Connector

Quick#	Part#	Price	Weight
7108	MFI-A220	\$30.50	140g



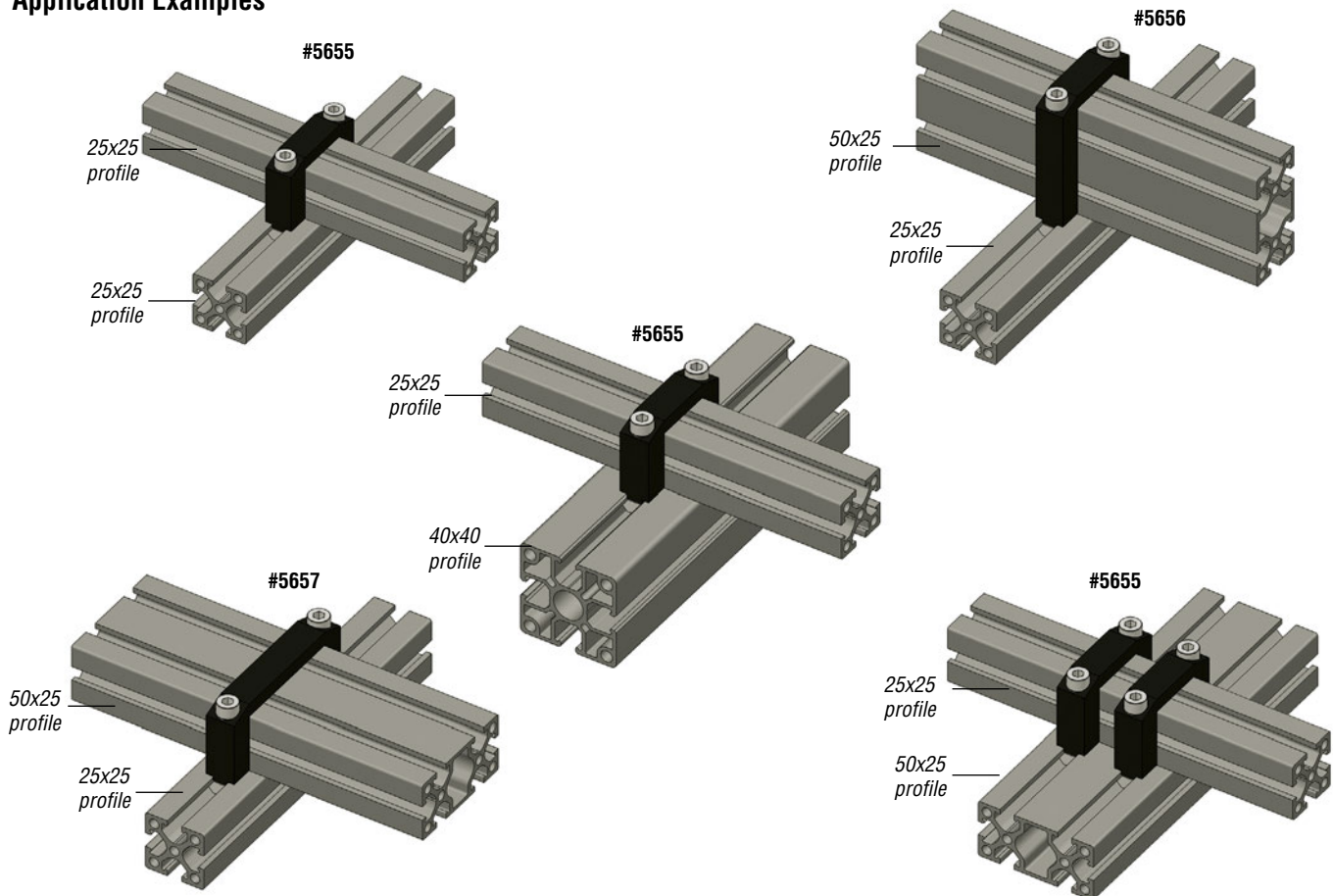
Square Joint Connector



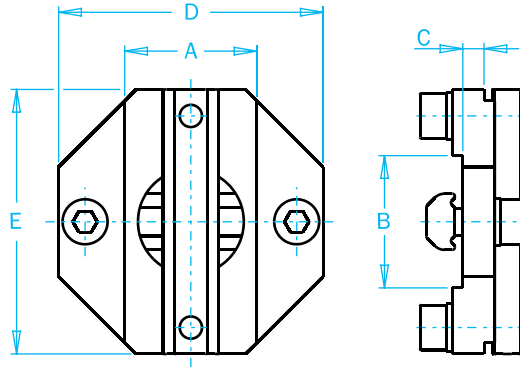
Square Joint Connector for Profile

Quick#	Part#	Price	A	B	C	D	E	Wt.
6747	MFI-A244	\$14.89	18	18	29	38	12	41g
5655	MFI-A16	\$15.04	25	25	32	45	12	45g
5656	MFI-A17	\$16.14	50	57	45	12	65g	
5657	MFI-A18	\$16.33	25	50	32	70	12	50g

Application Examples



Cross Joint Connector



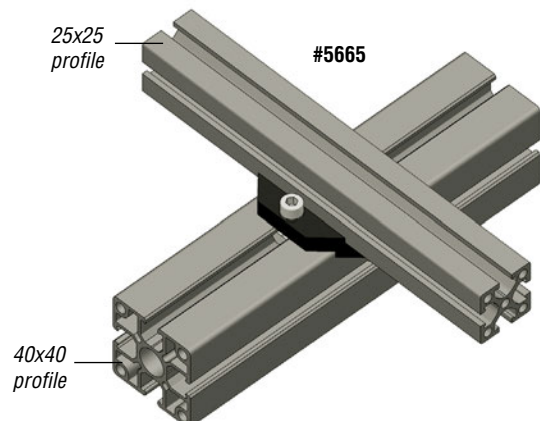
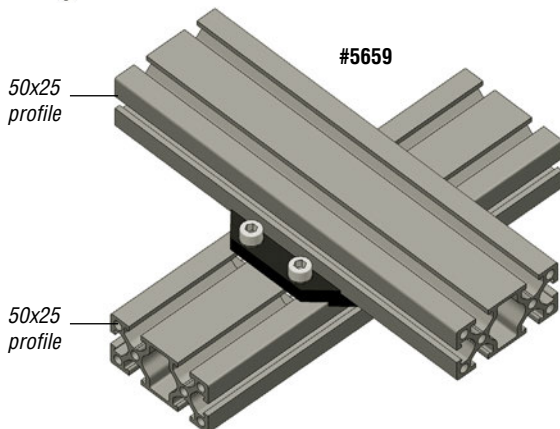
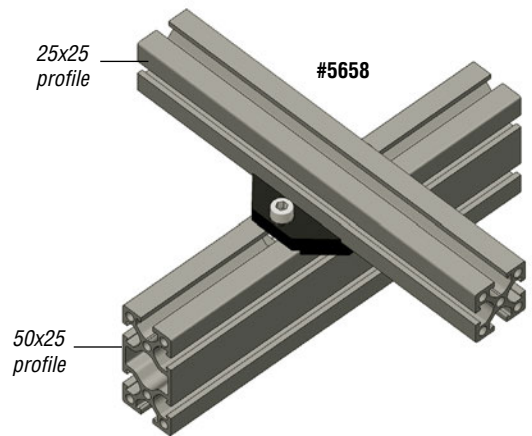
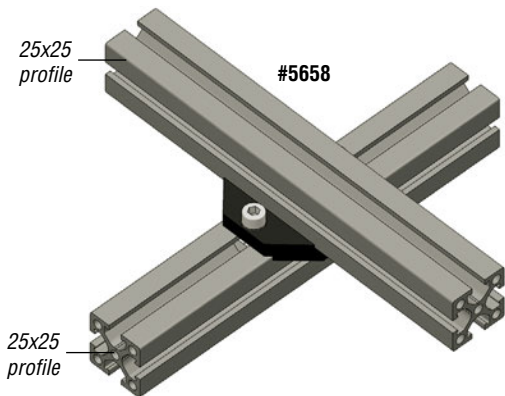
#5658

Cross Joint Connector for Profile

Quick#	Part#	Price	A	B	C	D	E	Wt.
5851	MFI-A175	\$19.03	18	18	2	38	38	40g
6746	MFI-A265	\$23.59	18	25	4	38	45	60g
5658	MFI-A11	\$20.25	25	25	4	45	45	75g
5659	MFI-A12	\$25.75	50	50	4	70	70	170g
5660	MFI-A13	\$22.83	25	50	4	45	70	114g
5661	MFI-A29	\$24.18	40	40	4	60	60	85g
7611	MFI-A29-H*	\$29.07	40	40	4	60	60	85g
5662	MFI-A30	\$30.48	80	80	4	100	100	255g
5663	MFI-A31	\$25.25	40	80	4	60	100	175g
5664	MFI-A32	\$25.22	25	80	4	45	100	140g
5665	MFI-A33	\$22.19	25	40	4	45	60	75g

*Heavy-duty version uses M6 hardware.

Application Examples



Flat Connectors



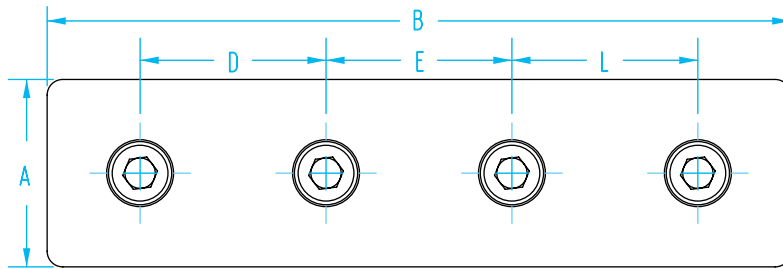
#5855



#5856



#7671



Straight Connector - Black Anodized Aluminum

Quick#	Part#	Price	A	B	D	E	L	Wt.
5855	MFM-A504	\$7.80	25	50	-	25	-	33g
5856	MFM-A505	\$11.23	25	100	25	25	25	67g
5857	MFM-A506	\$13.85	40	160	40	40	40	128g

Use with profile size ↑

4.8mm thick

Straight Connector - Steel

Quick#	Part#	Price	A	B	D	E	L	Wt.
7669	MFI-A226	\$6.54	25	50	-	25	-	45g
7670	MFI-A227	\$9.54	25	100	25	25	25	95g
7671	MFI-A228	\$12.35	40	160	40	40	40	195g

NEW

Use with profile size ↑

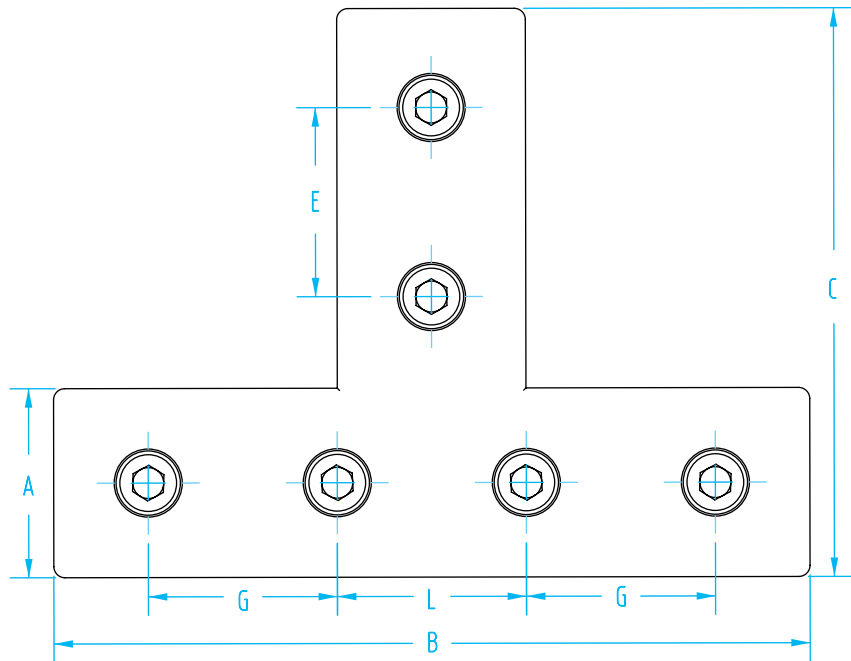
3mm thick



#5861



#7673



T Connector - Black Anodized Aluminum

Quick#	Part#	Price	A	B	C	E	G	L	Wt.
5861	MFM-A510	\$12.40	25	50	75	25	-	25	67g
5862	MFM-A511	\$16.90	25	100	75	25	25	25	101g
5863	MFM-A512	\$19.35	40	120	120	40	-	90	163g

Use with profile size ↑

4.8mm thick

T Connector - Steel

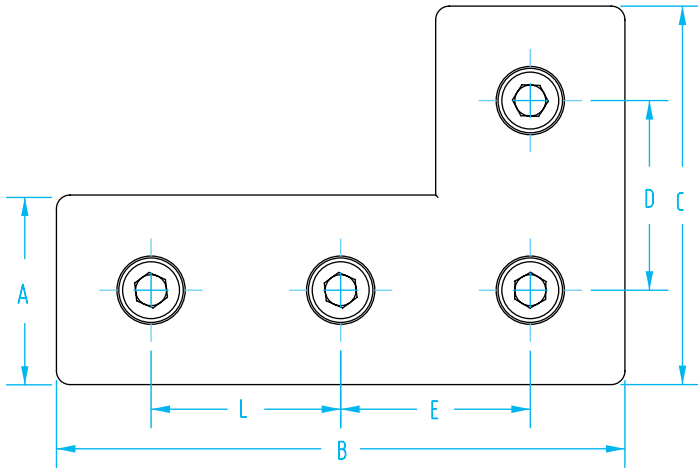
Quick#	Part#	Price	A	B	C	E	G	L	Wt.
7672	MFI-A229	\$10.56	25	50	75	25	-	25	95g
7673	MFI-A230	\$15.50	25	100	75	25	25	25	145g
7674	MFI-A231	\$16.52	40	120	110	40	-	90	250g

NEW

Use with profile size ↑

3mm thick

Flat Connectors



L Connector - Black Anodized Aluminum

Quick#	Part#	Price	A	B	C	D	E	L	Wt.
5858	MFM-A507	\$10.69	25	50	50	25	25	-	49g
5859	MFM-A508	\$12.40	25	75	50	25	25	25	67g
5860	MFM-A509	\$15.56	40	120	80	40	40	40	128g

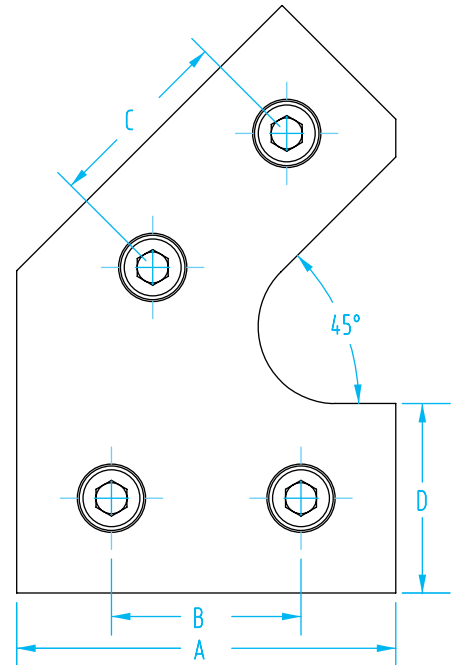
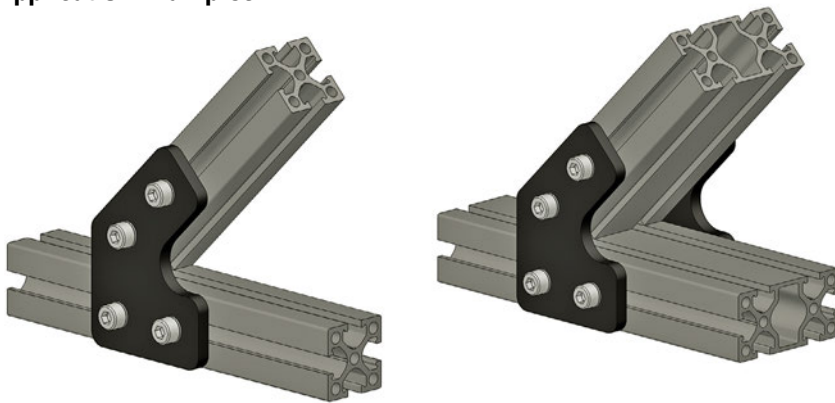
Use with profile size 4.8mm thick

L Connector - Steel

Quick#	Part#	Price	A	B	C	D	E	L	Wt.
7675	MFI-A232	\$8.94	25	50	50	25	25	-	70g
7676	MFI-A233	\$10.56	25	75	50	25	25	25	95g
7677	MFI-A234	\$12.46	40	120	80	40	40	40	200g

NEW Use with profile size 3mm thick

Application Examples



45° Profile Connector - Black Anodized Aluminum

Quick#	Part#	Price	A	B	C	D	Wt.
5864	MFM-A513	\$13.84	50	25	25	25	70g
6083	MFM-A515	\$19.85	130	40	40	40	210g

Use with profile size 4.8mm thick

45° Profile Connector - Steel

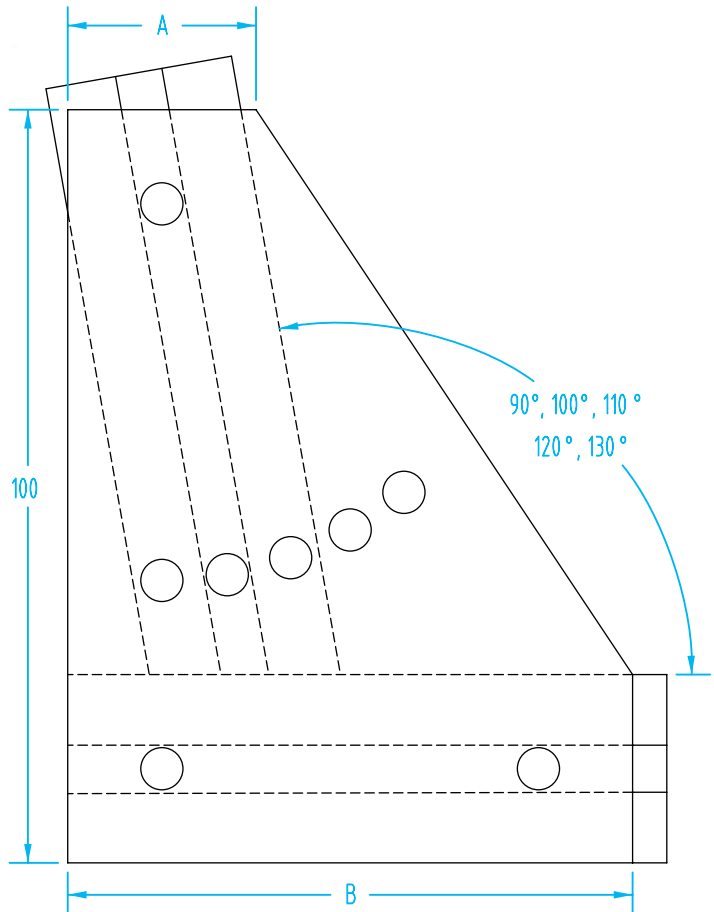
Quick#	Part#	Price	A	B	C	D	Wt.
7664	MFI-A221	\$11.95	50	25	25	25	100g

NEW Use with profile size 3mm thick

Corner Joint Plate



#5852



Corner Joint Plate - Black Anodized Aluminum

Quick#	Part#	Price	A	B	Wt.
5852	MFM-A501	\$15.12	25	75	125g
5853	MFM-A502	\$17.13	50	110	222g
5854	MFM-A503	\$18.68	40	80	137g

Use with profile size 4.8mm thick

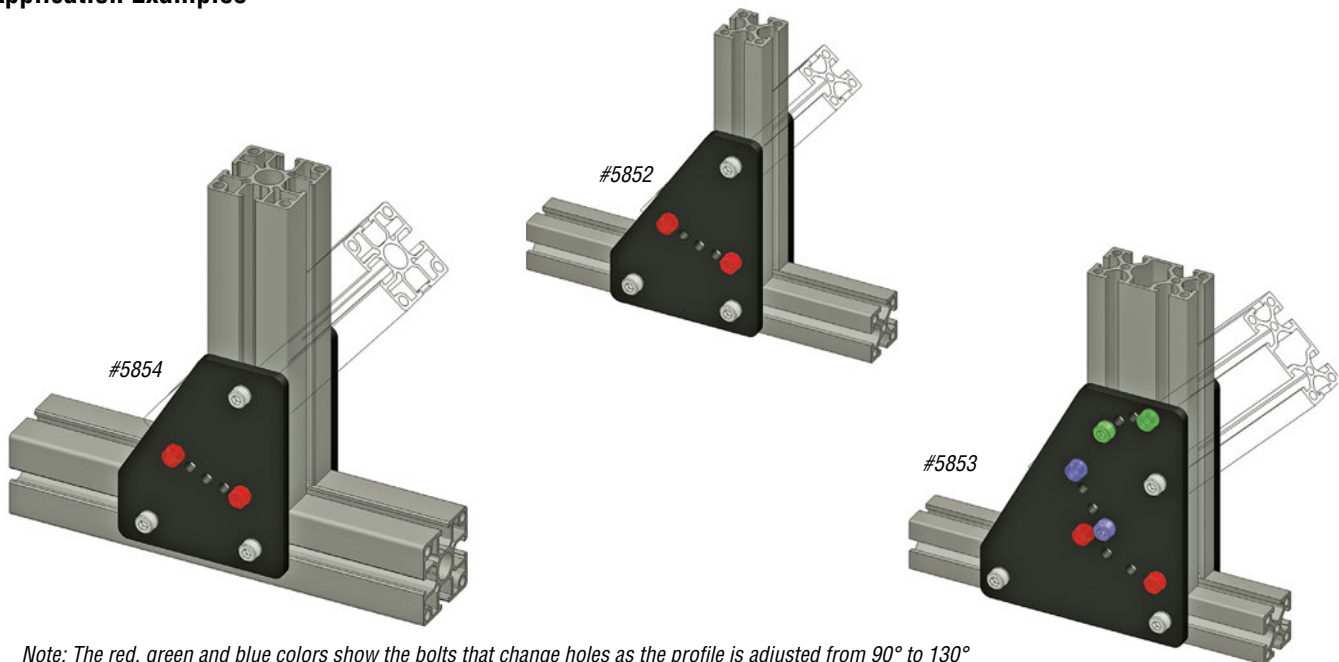
Corner Joint Plate - Steel

Quick#	Part#	Price	A	B	Wt.
7665	MFI-A222	\$13.26	25	60	130g
7666	MFI-A223	\$15.16	50	90	215g
7667	MFI-A224	\$15.40	40	70	175g

Use with profile size 3mm thick

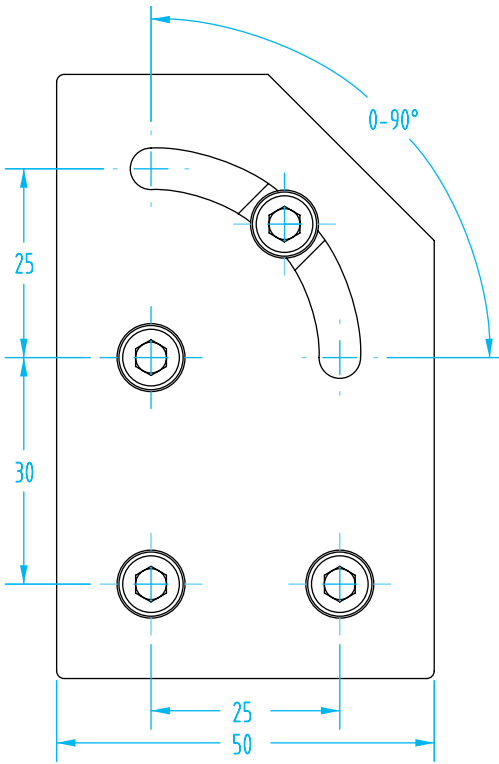
NEW

Application Examples



Note: The red, green and blue colors show the bolts that change holes as the profile is adjusted from 90° to 130°

Adjustable Profile Connector



Adjustable Connector - Black Anodized Aluminum

Quick#	Part#	Price	Wt.
5865	MFM-A514	\$15.10	79g

4.8mm thick

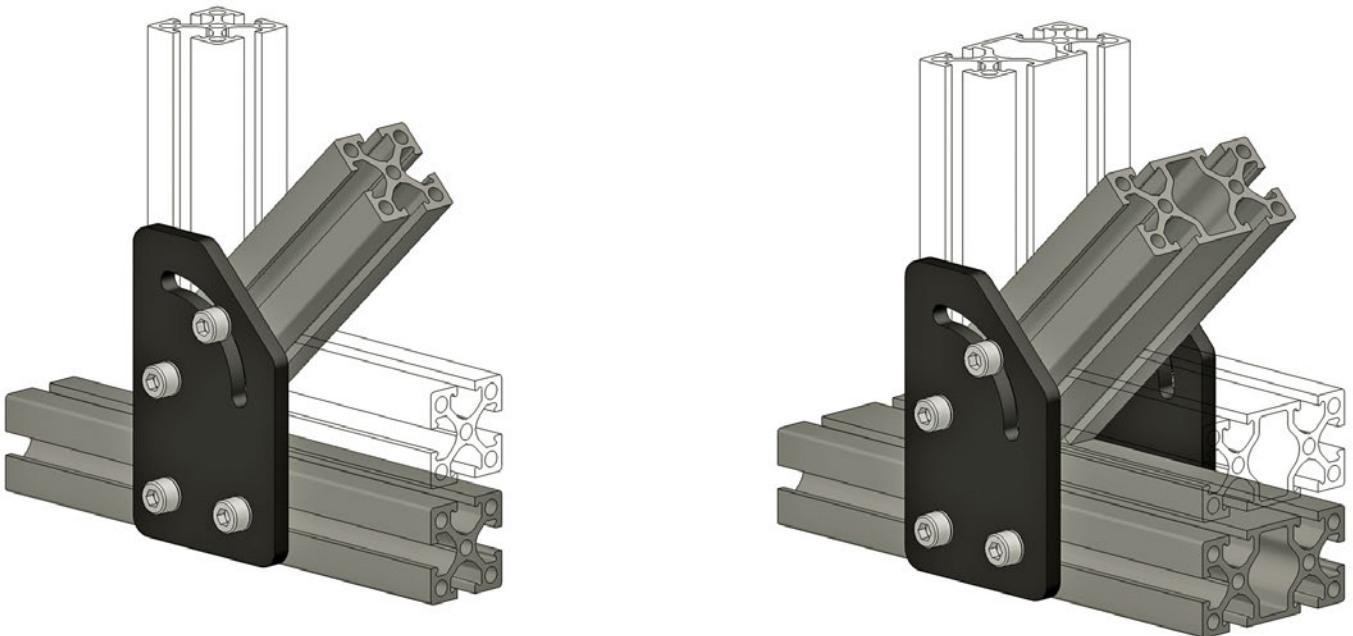
Adjustable Connector - Steel

Quick#	Part#	Price	Wt.
7668	MFI-A225	\$11.95	115g

3mm thick

NEW

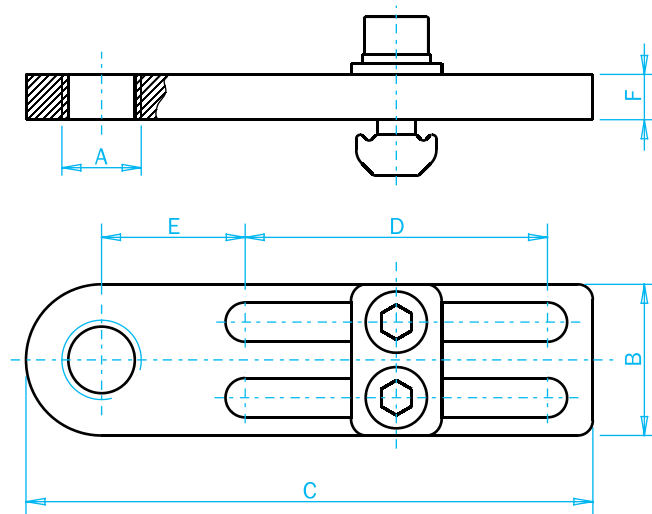
Application Examples



Threaded Mounting Bracket



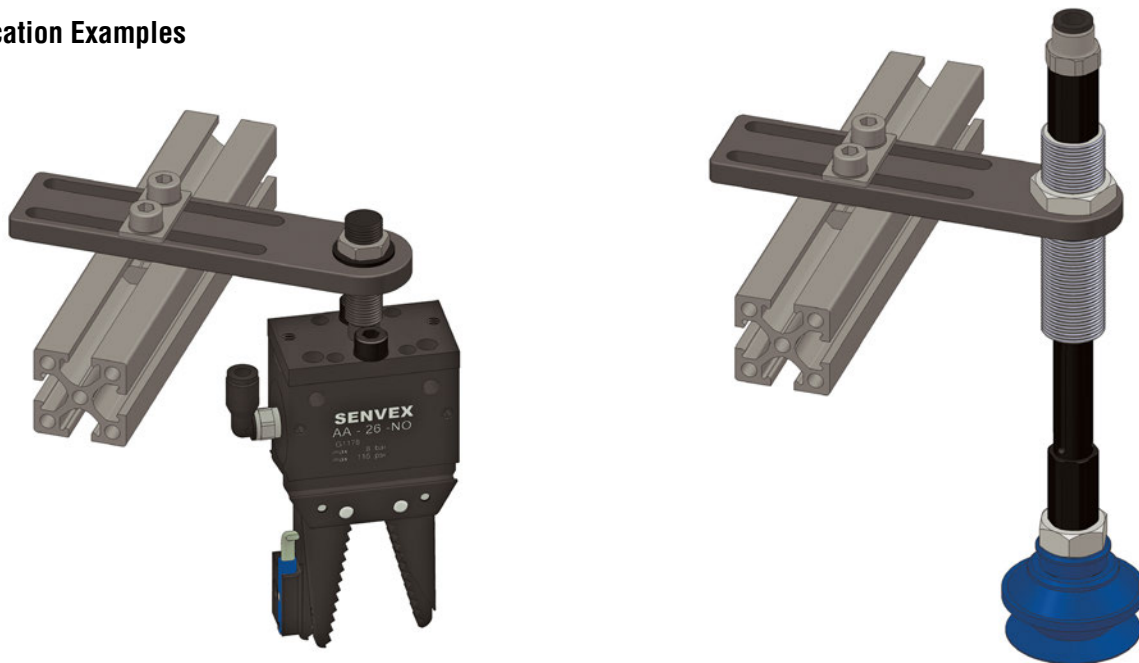
#5670



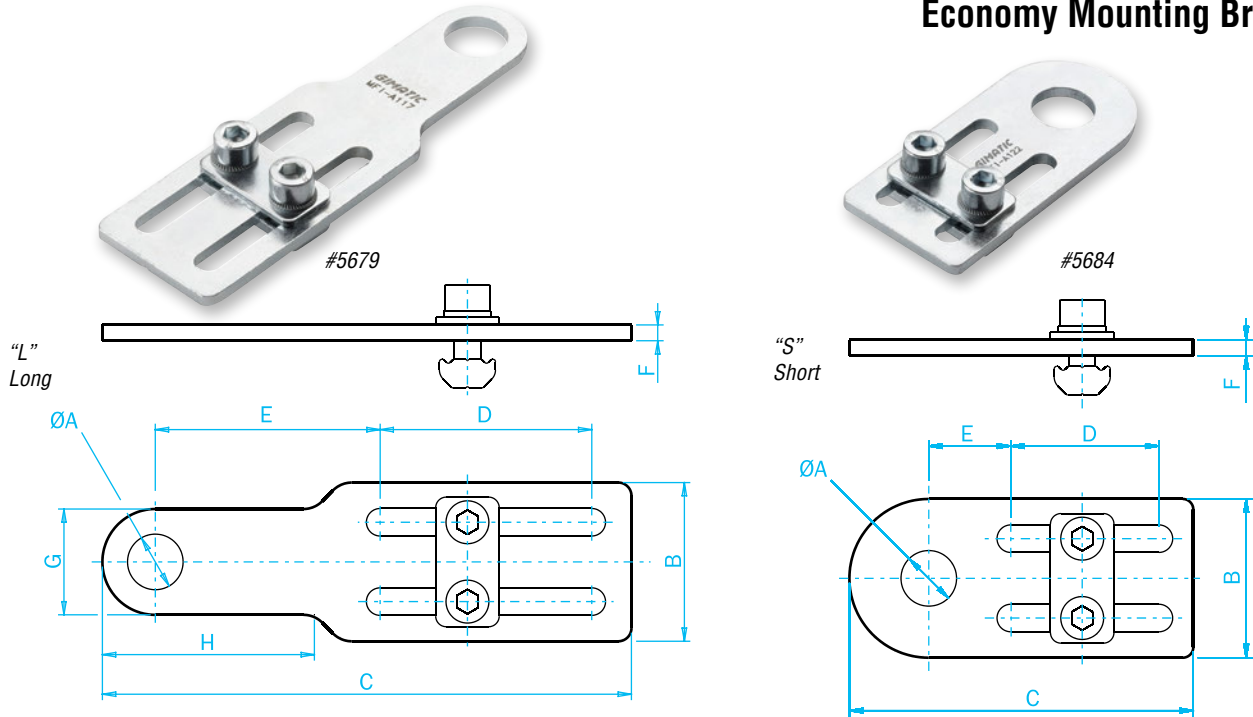
Threaded Mounting Bracket (Anodized Aluminum)

Quick#	Part#	Price	A	Type	B	C	D	E	F	Wt.
5666	MFI-A104	\$10.58	G1/8"	Short	20	75	40	19	6	25g
5667	MFI-A105	\$10.58	G1/8"	Long	25	105	60	26.5	6	42g
5668	MFI-A106	\$9.23	M10x1	Short	20	75	40	19	6	30g
5669	MFI-A107	\$10.13	M10x1	Long	25	105	60	26.5	6	40g
7615	MFI-A266	\$10.19	M12x1	Short	20	75	40	19	6	30g
7616	MFI-A267	\$11.03	M12x1	Long	25	105	60	26.5	6	47g
5670	MFI-A108	\$9.22	M14x1	Short	20	75	40	19	6	20g
5671	MFI-A109	\$10.13	M14x1	Long	25	105	60	26.5	6	40g
5239	MFI-A210	\$15.52	M14x1.5	Short	20	75	40	19	6	20g
5240	MFI-A211	\$17.09	M14x1.5	Long	25	105	60	26.5	6	40g
5672	MFI-A110	\$9.23	M16x1	Short	20	75	40	16.5	6	20g
5673	MFI-A111	\$10.58	M16x1	Long	25	105	60	26.5	6	40g
5674	MFI-A112	\$15.52	M20x1.5	Short	25	75	40	16.5	6	30g
5675	MFI-A113	\$17.09	M20x1.5	Long	25	105	60	26.5	6	35g
7315	MFI-A268	\$19.73	M25x1.5	Short	30	85	40	24	8	52g
7316	MFI-A269	\$20.33	M25x1.5	Long	30	115	60	34	8	67g
5676	MFI-A114	\$9.26	Solid	Short	20	75	40	19	6	25g
5677	MFI-A115	\$10.58	Solid	Long	25	105	60	26.5	6	40g

Application Examples



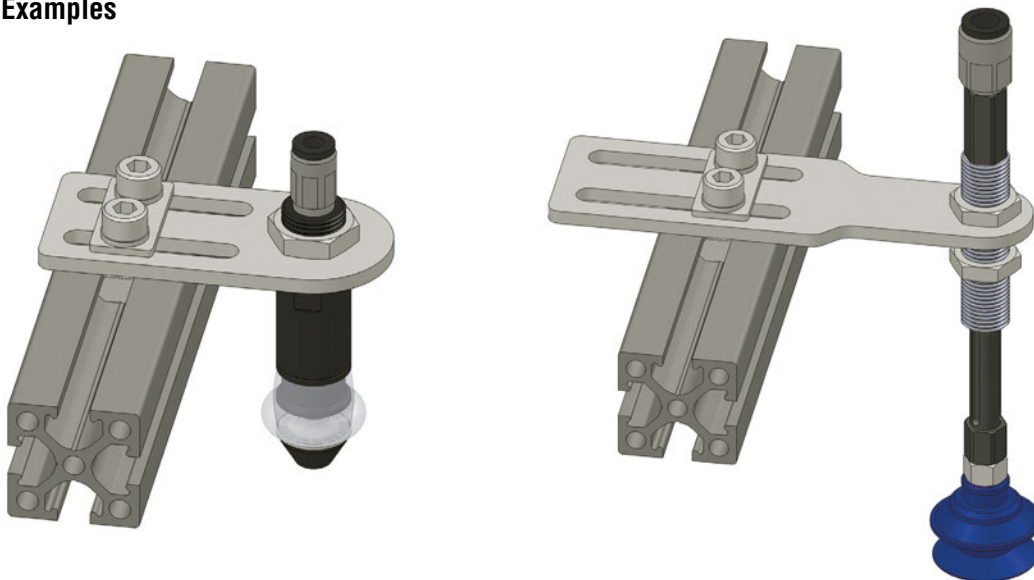
Economy Mounting Bracket



Slotted Mounting Bracket (Economy version - Steel)

Quick#	Part#	Price	Type	ØA	B	C	D	E	F	G	H	Wt.
5678	MFI-A116	\$8.26	L	10.5	30	100	40	42.5	3	20	38	60g
5679	MFI-A117	\$8.26	L	12.5	30	100	40	42.5	3	20	38	60g
5680	MFI-A118	\$8.26	L	14.5	30	100	40	42.5	3	24	38	60g
5681	MFI-A119	\$8.26	L	16.5	30	100	40	42.5	3	30	-	65g
5682	MFI-A120	\$8.26	L	20.5	30	100	40	42.5	3	30	-	60g
6957	MFI-A181	\$15.40	L	22.5	30	100	40	42.5	5	35	26	105g
6958	MFI-A182	\$15.40	L	25.5	30	100	40	42.5	5	35	26	100g
5683	MFI-A121	\$7.68	S	10.5	30	65	28	15.5	3	-	-	45g
5684	MFI-A122	\$7.68	S	12.5	30	65	28	15.5	3	-	-	45g
5685	MFI-A123	\$7.68	S	14.5	30	65	28	15.5	3	-	-	45g
5686	MFI-A124	\$7.68	S	16.5	30	65	28	15.5	3	-	-	45g
5687	MFI-A125	\$7.68	S	20.5	30	65	28	15.5	3	-	-	40g
6959	MFI-A183	\$15.26	S	22.5	30	70	28	17	5	35	26	75g
6960	MFI-A184	\$15.26	S	25.5	30	70	28	17	5	35	26	70g

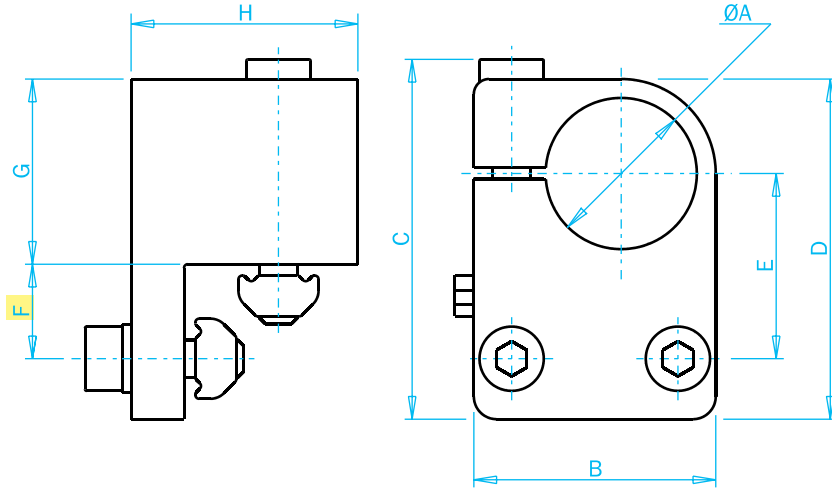
Application Examples



Heavy-Duty Cross Clamp



#5689

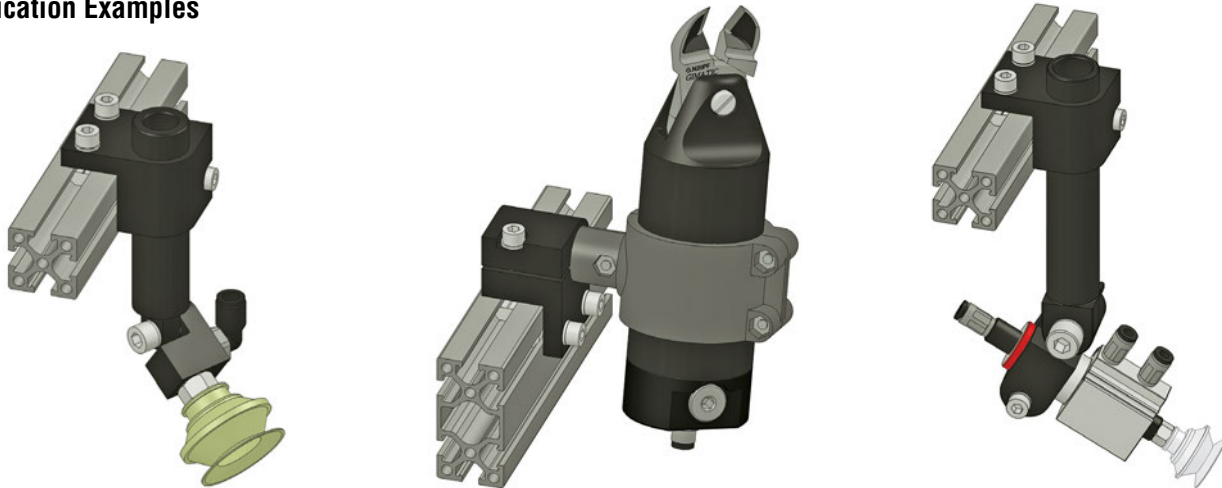


Heavy-Duty Cross Clamp

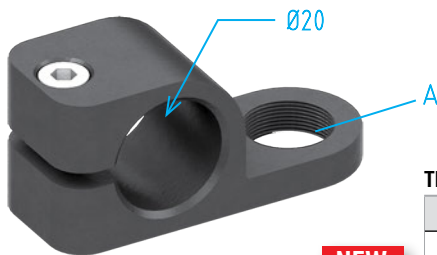
Quick#	Part#	Price	ØA	B	C	D	E	F	G	H	Profile	Wt.
5688	MFI-A09	\$29.62	14	25	42.6	40	22	12.5	19.5	25	2525 / 5025	50g
5689	MFI-A10	\$31.10	20	32	47.6	45	24.5	12.5	24.5	30	2525 / 5025	70g
5690	MFI-A36	\$36.82	20	35	54.1	54.5	33	20	26.5	35	4040 / 8040	95g
7613	MFI-A36-H*	\$42.48	20	47	64.7	65.5	35	20	37.5	40	4040 / 8040	209g
5691	MFI-A34	\$33.94	30	40	53.1	55	29.5	12.5	34.5	30	2525 / 5025	90g
5692	MFI-A35	\$37.55	30	45	64.1	65.5	39	20	37.5	40	4040 / 8040	150g
7614	MFI-A35-H*	\$43.16	30	47	64.7	65.5	39	20	37.5	40	4040 / 8040	168g

*Heavy-duty versions use M6 hardware.

Application Examples



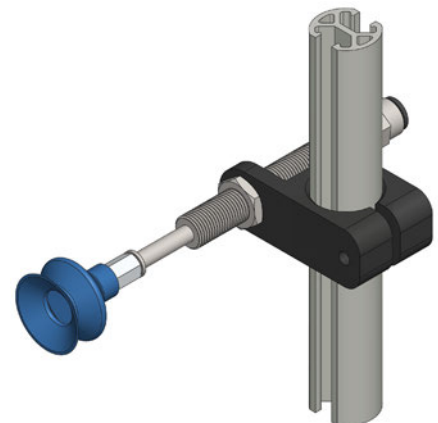
Threaded Mounting Bracket Clamp



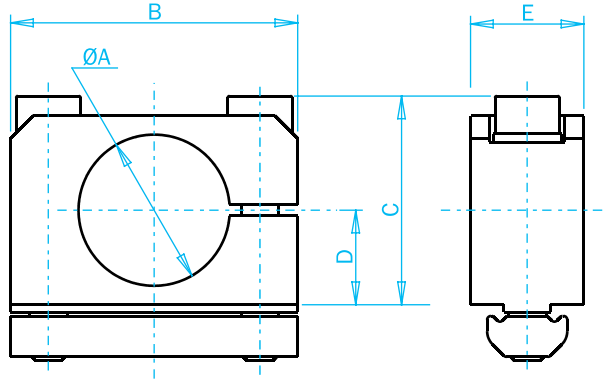
NEW

Threaded Mounting Bracket Clamp

Quick#	Part#	Price	A	Wt.
7681	MFI-A212	\$18.98	G1/8"	30g
7682	MFI-A213	\$20.54	M16x1	40g



Cross Connector Clamps

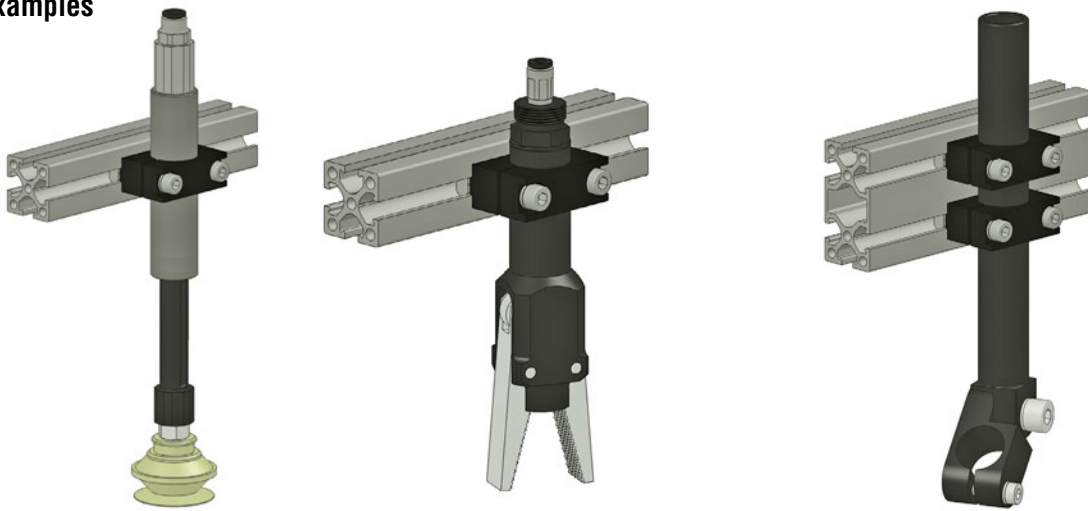


Cross (round) Connector Clamp

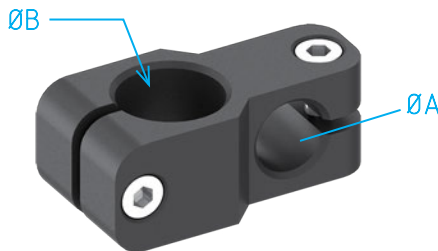
Quick#	Part#	Price	ØA	B	C	D	E	Wt.
5693	MFI-A156	\$10.00	10	25	18.5	7	10	15g
5694	MFI-A37	\$14.22	14	32	23	9	12	32g
5695	MFI-A38	\$14.22	20	38	28	12.5	15	45g
5696	MFI-A39	\$20.00	30	50	34	17	20	75g
5850	MFI-A178	\$33.41	50	70	56	28	25	150g

Use Quick#s for easy online ordering.

Application Examples



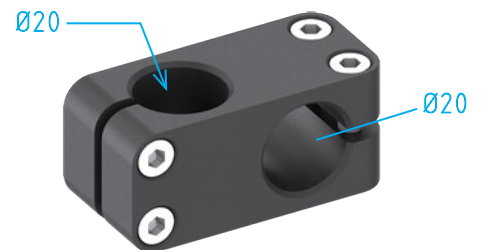
Round to Round Clamps



Cross Connection Clamp

Quick#	Part#	Price	ØA	ØB	Wt.
7678	MFI-A214	\$23.45	10	20	40g
7679	MFI-A215	\$25.24	14	20	45g

NEW



Cross Connection Clamp

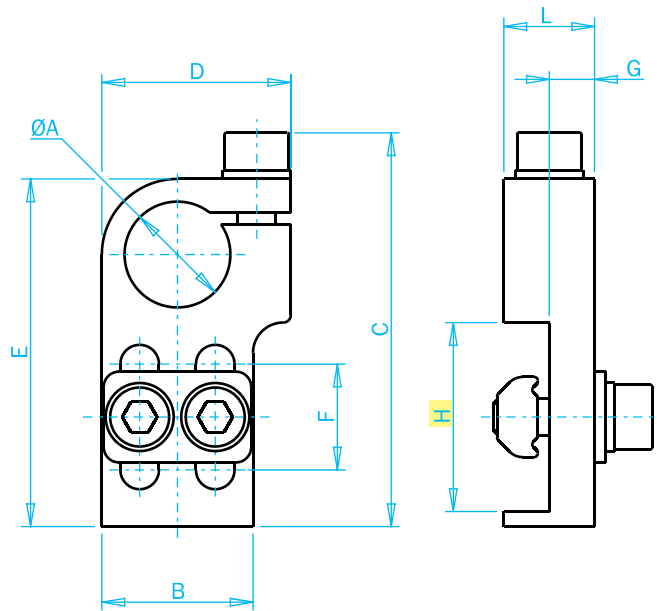
Quick#	Part#	Price	Wt.
7680	MFI-A216	\$18.30	70g

NEW

Angle Clamp



#5699

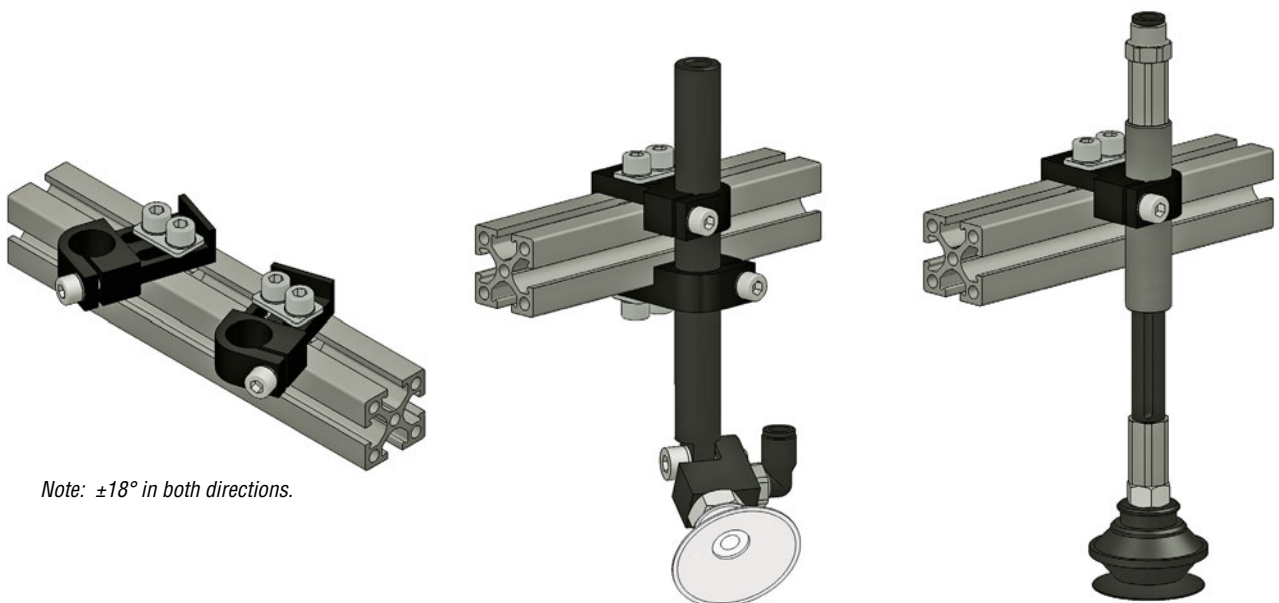


Angle Clamp

Quick#	Part#	Price	ØA	B	C	D	E	F	G	H	L	Wt.
5697	MFI-A01	\$14.00	10	16	43	20	38	10	4.5	18	8	20g
7220	MFI-A270	\$14.11	10	16	49	20	44	14	4.5	25	8	21g
5698	MFI-A02	\$14.72	14	20	52	25	46	14	6	25	12	34g
5873	MFI-A204	\$14.82	20	25	58	30	52	14	6	25	12	41g
5699	MFI-A03	\$15.10	20	25	74	30	68	22	6	40	12	48g

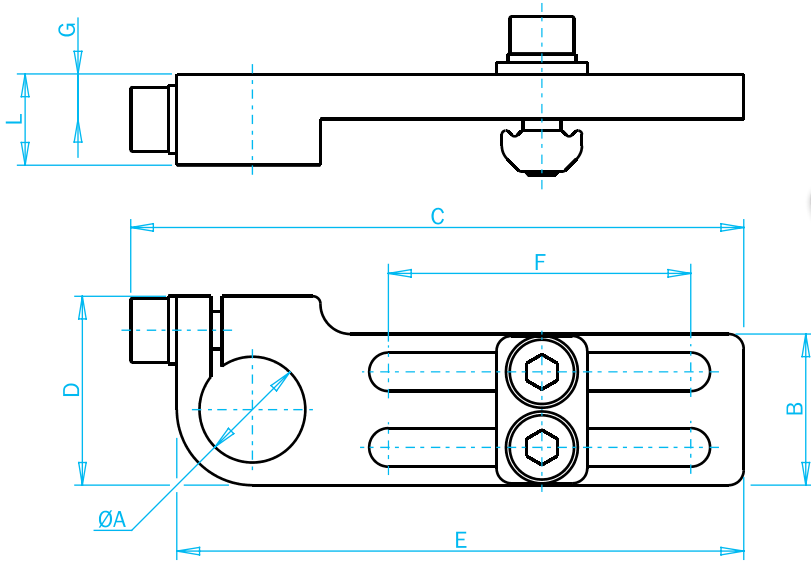
*Note: #5697 must be used upside down with 25mm profile

Application Examples



Note: ±18° in both directions.

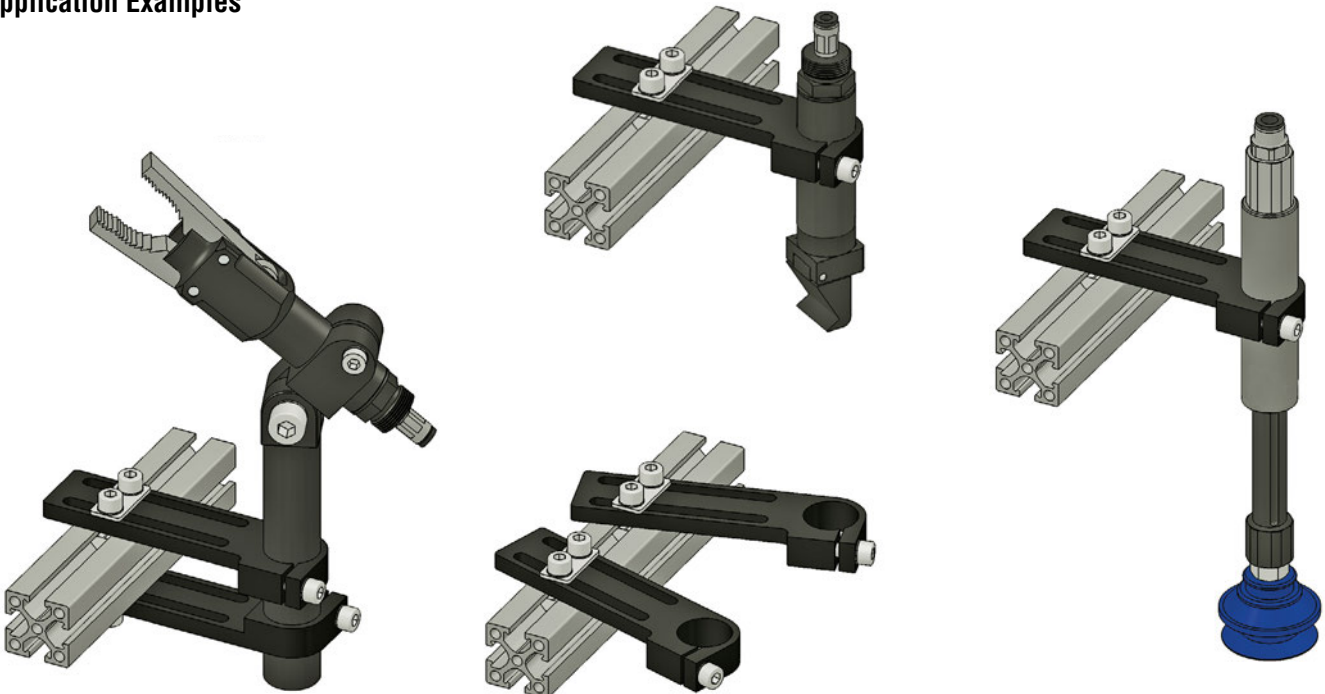
Long Angle Clamp



Long Angle Clamp

Quick#	Part#	Price	ØA	B	C	D	E	F	G	L	Wt.
5700	MFI-A04	\$16.04	10	16	75	20	70	40	4.5	8	23g
5701	MFI-A05	\$16.96	14	20	81.1	25	75	40	6	12	38g
5702	MFI-A06	\$17.50	14	20	91.1	25	85	50	6	12	40g
5703	MFI-A07	\$18.31	20	25	111.1	30	105	60	6	12	55g
5704	MFI-A08	\$19.30	30	35	121.1	40	115	60	8	12	95g

Application Examples



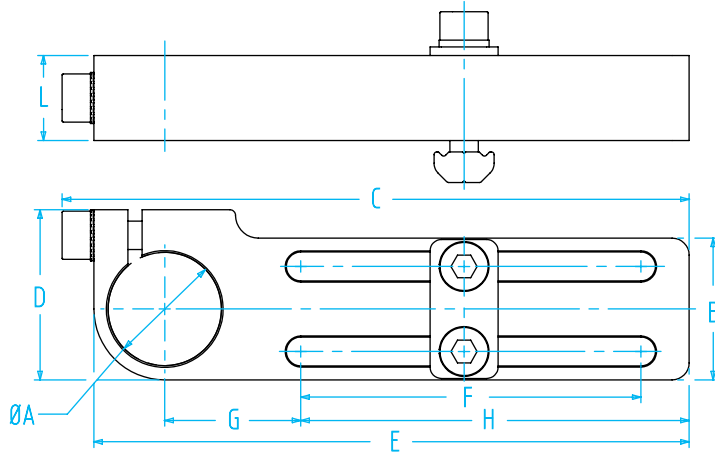
Note: ±16° in both directions.

Heavy-Duty Long Angle Clamp



#5876

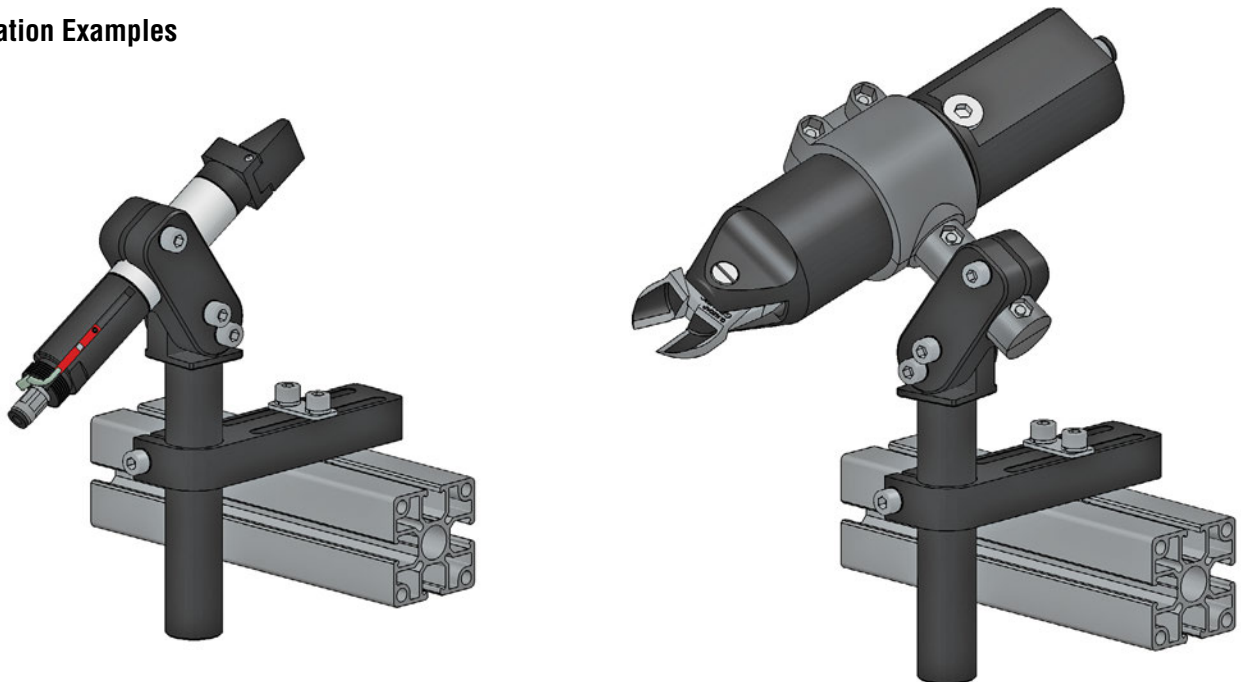
Extra thickness for heavy-duty applications



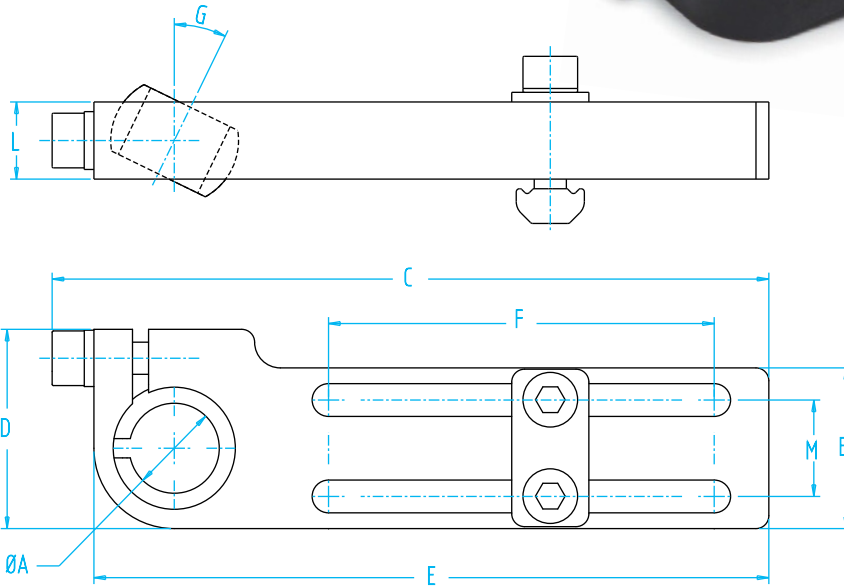
Heavy-Duty Long Angle Clamp

Quick#	Part#	Price	ØA	B	C	D	E	F	G	H	L	Wt.
5874	MFI-A207	\$20.51	10	16	75	20	70	40	16	46	8.3	30g
5875	MFI-A209	\$20.59	14	20	90.6	25	85	50	18	57	12	60g
5876	MFI-A205	\$21.96	20	25	110.6	30	105	60	24	68.5	15	85g
5877	MFI-A206	\$24.51	30	35	122.2	42	115	60	30	67.5	20	175g

Application Examples



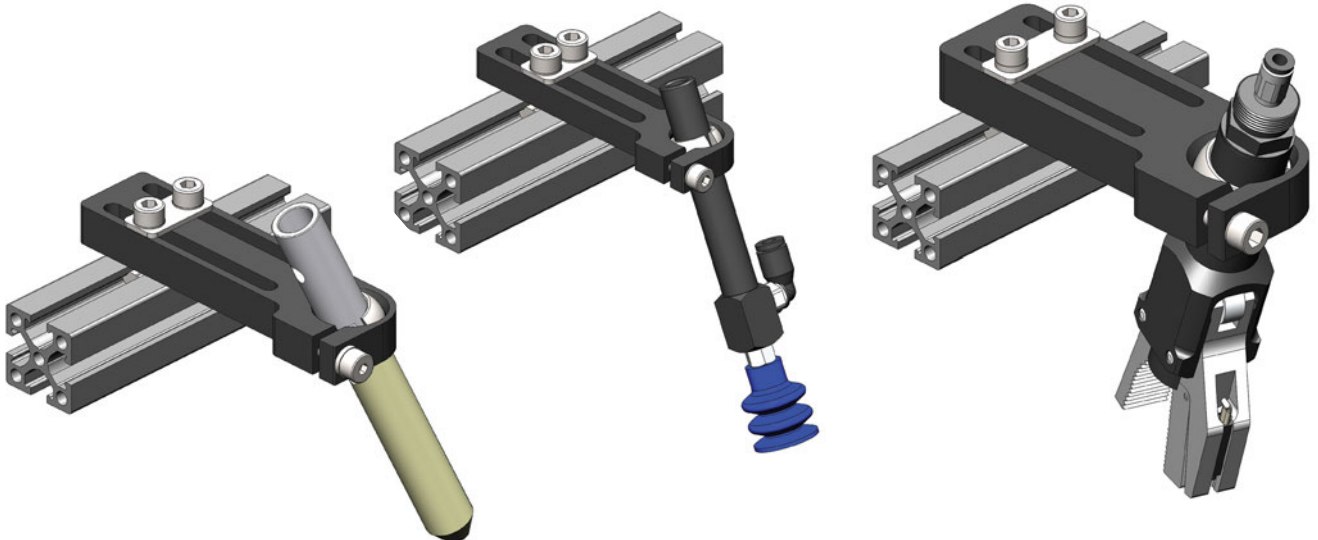
Long Angle Clamp with Ball Joint



Long Angle Clamp with Ball Joint

Quick#	Part#	Price	ØA	B	C	D	E	F	G	L	M	Weight
7367	MFI-A348	\$40.46	10	20	89.5	25	85	50	0-26°	8.3	10	45g
7368	MFI-A349	\$42.90	14	25	111.5	31	105	60	0-26°	12	15	86g
7369	MFI-A350	\$44.56	20	35	121.8	42	115	60	0-26°	15	22	160g

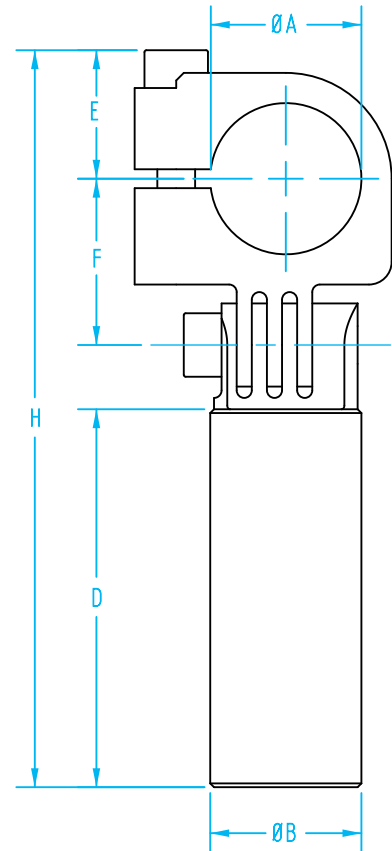
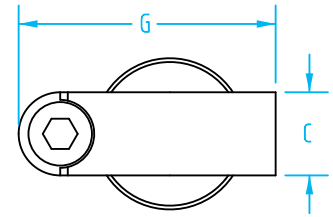
Application Examples



Elbow Arm



New, improved hinge design!

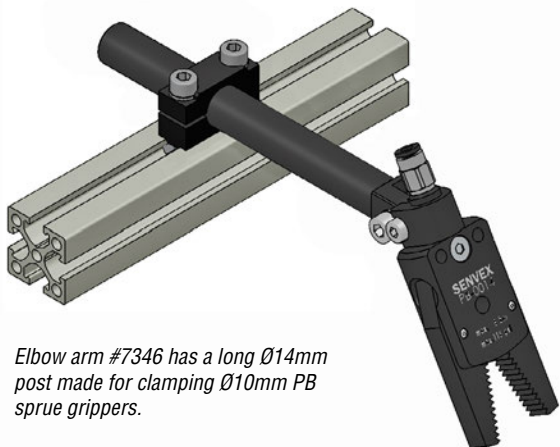


Elbow Arm

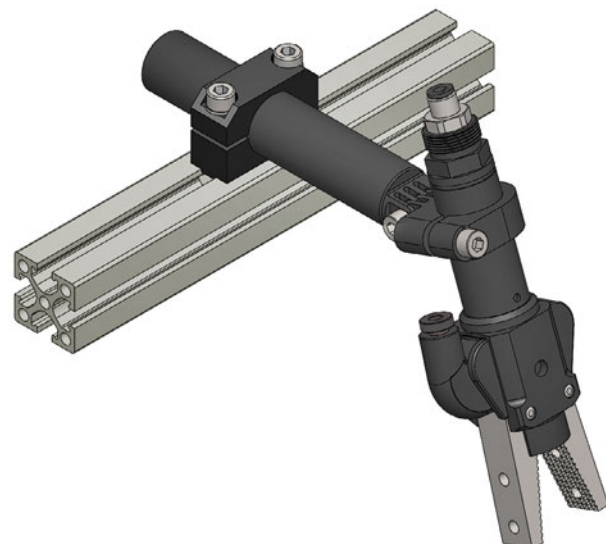
Quick#	Part#	Price	ØA	ØB	C	D	E	F	G	H	Wt.
5721	MFI-A59	\$19.00	10	10	11	60	11.6	18.5	21.4	98.6	20g
7346	MFI-A332	\$29.89	10	14	12	120	8	18.5	22.3	155.8	48g
5722	MFI-A60	\$26.88	14	14	11	40	14.1	19	27	83.1	32g
5723	MFI-A61	\$28.97	14	14	11	80	14.1	19	27	123.1	42g
5724	MFI-A62	\$30.40	14	14	11	120	14.1	19	27	163.1	50g
5725	MFI-A63	\$31.67	20	20	11	50	17.6	22	34	98.1	70g
5726	MFI-A64	\$33.00	20	20	11	100	17.6	22	34	148.1	90g
5727	MFI-A65	\$37.28	20	20	11	150	17.6	22	34	198.1	120g
5728	MFI-A167	\$43.06	30	30	16	80	24.6	29.5	48	145.6	235g
5729	MFI-A168	\$44.15	30	30	16	140	24.6	29.5	48	204.6	300g
5730	MFI-A169	\$44.93	30	30	16	200	24.6	29.5	48	264.6	360g

Use Quick#s for easy online ordering.

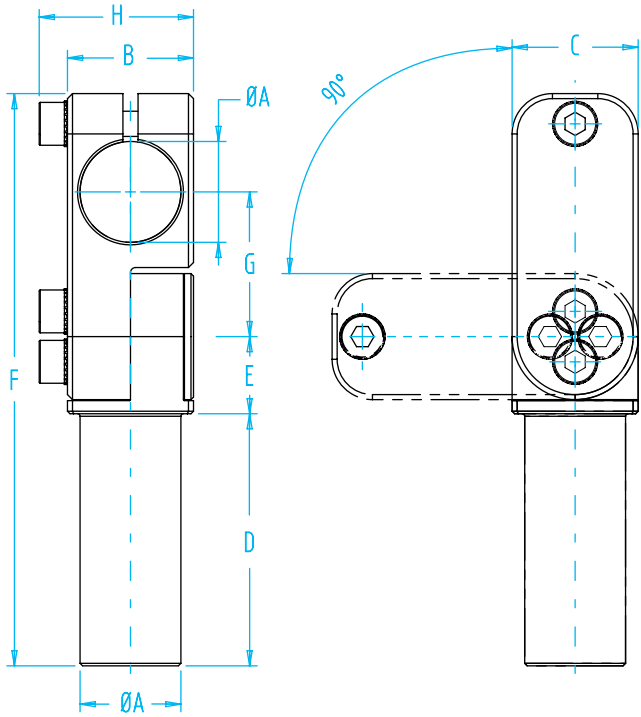
Application Examples



Elbow arm #7346 has a long Ø14mm post made for clamping Ø10mm PB sprue grippers.



Heavy-Duty Elbow Arm



**Double screws
securely lock
swivel to
prevent slipping**

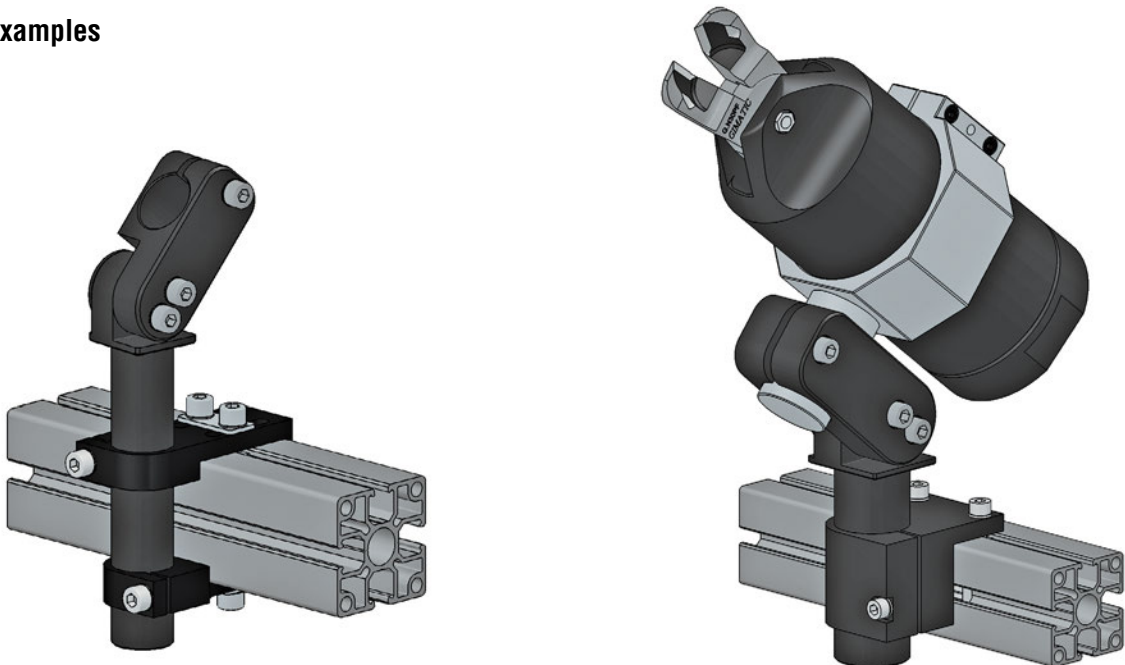


#5867

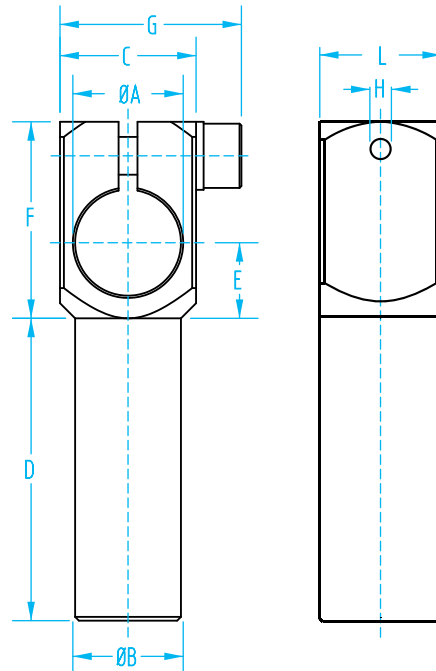
Heavy-Duty Elbow Arm

Quick#	Part#	Price	ØA	B	C	D	E	F	G	H	Wt.
5866	MFI-A195	\$50.71	20	25	25	50	15	113	29	31	95g
5867	MFI-A199	\$51.79	20	25	25	100	15	163	29	31	115g
5868	MFI-A200	\$53.00	20	25	25	150	15	213	29	31	130g
5869	MFI-A196	\$67.84	30	38	35	80	21	169	41	42	330g
5870	MFI-A197	\$69.04	30	38	35	140	21	229	41	42	380g
5871	MFI-A198	\$70.00	30	38	35	200	21	289	41	42	435g

Application Examples



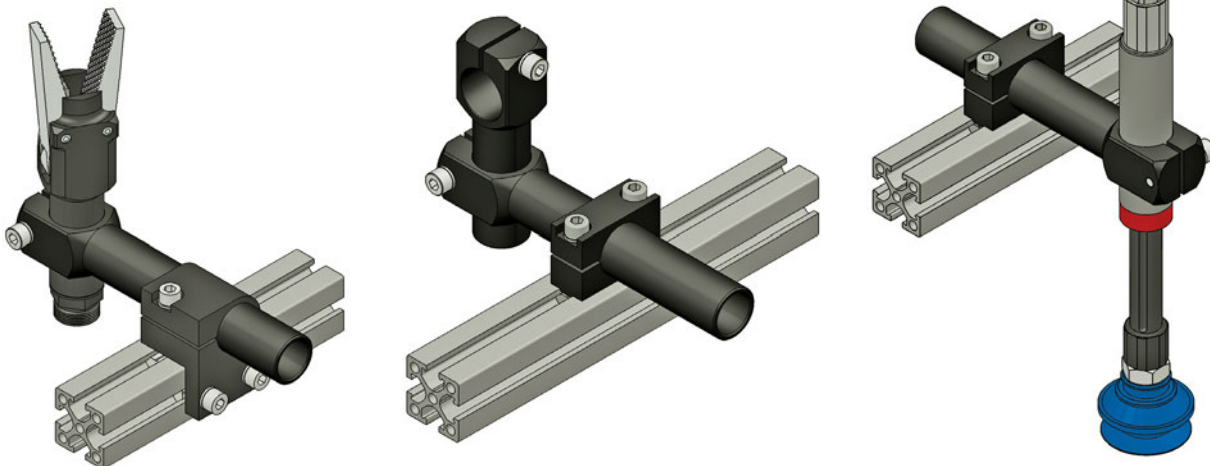
Angle Arm



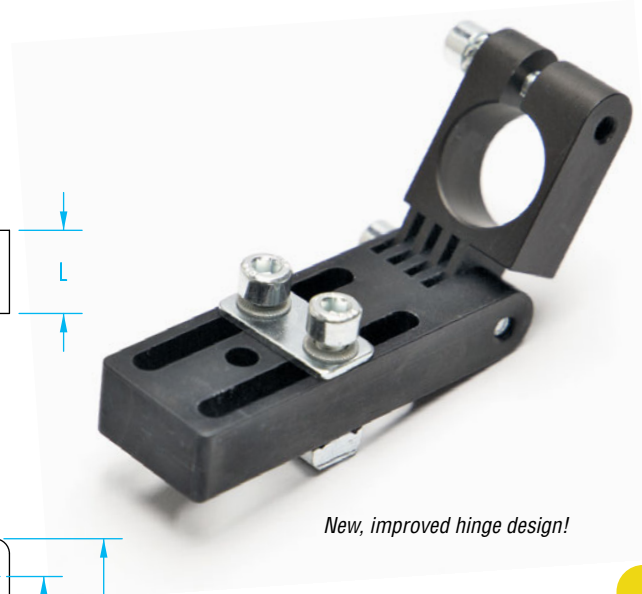
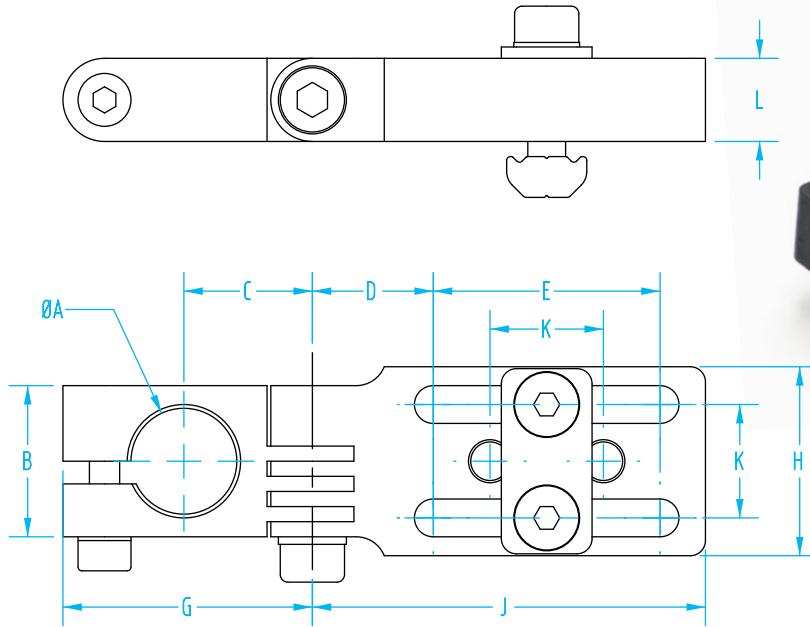
Angle Arm

Quick#	Part#	Price	ØA	ØB	C	D	E	F	G	H	L	Wt.
5705	MFI-A93	\$15.09	10	10	14	15	7	19	19	M4	10	8g
5706	MFI-A158	\$15.55	10	10	14	30	7	19	19	M4	10	10g
5707	MFI-A159	\$16.12	10	10	14	60	7	19	19	M4	10	15g
5708	MFI-A160	\$16.59	10	10	14	90	7	19	19	M4	10	20g
5709	MFI-A157	\$18.26	14	14	18	20	10	25	24	M5	14	15g
5710	MFI-A161	\$18.67	14	14	18	40	10	25	24	M5	14	20g
5711	MFI-A162	\$20.23	14	14	18	80	10	25	24	M5	14	30g
5712	MFI-A163	\$22.05	14	14	18	120	10	25	24	M5	14	40g
5713	MFI-A94	\$22.82	20	20	25	25	13	32	30	M6	20	35g
5714	MFI-A77	\$24.23	20	20	25	50	13	32	31	M6	20	45g
5715	MFI-A78	\$25.74	20	20	25	100	13	32	31	M6	20	70g
5716	MFI-A79	\$27.04	20	20	25	150	13	32	31	M6	20	105g
5717	MFI A95	\$27.54	30	20	40	25	19	25	45	M6	30	60g
5872	MFI-A203	\$28.73	30	30	40	40	19	44	47	M6	30	130g
5718	MFI-A164	\$29.59	30	30	40	80	19	44	46	M6	30	170g
5719	MFI-A165	\$30.33	30	30	40	140	19	44	46	M6	30	230g
7617	MFI-A165-H	\$64.74	30	30	40	140	19	44	46	2x M6	40	280g
5720	MFI-A166	\$31.00	30	30	40	200	19	44	46	M6	30	300g
7593	MFI-A166-H	\$62.24	30	30	40	210	19	44	46	2x M6	40	356g

Application Examples



Long Angle Clamp with Swivel Head



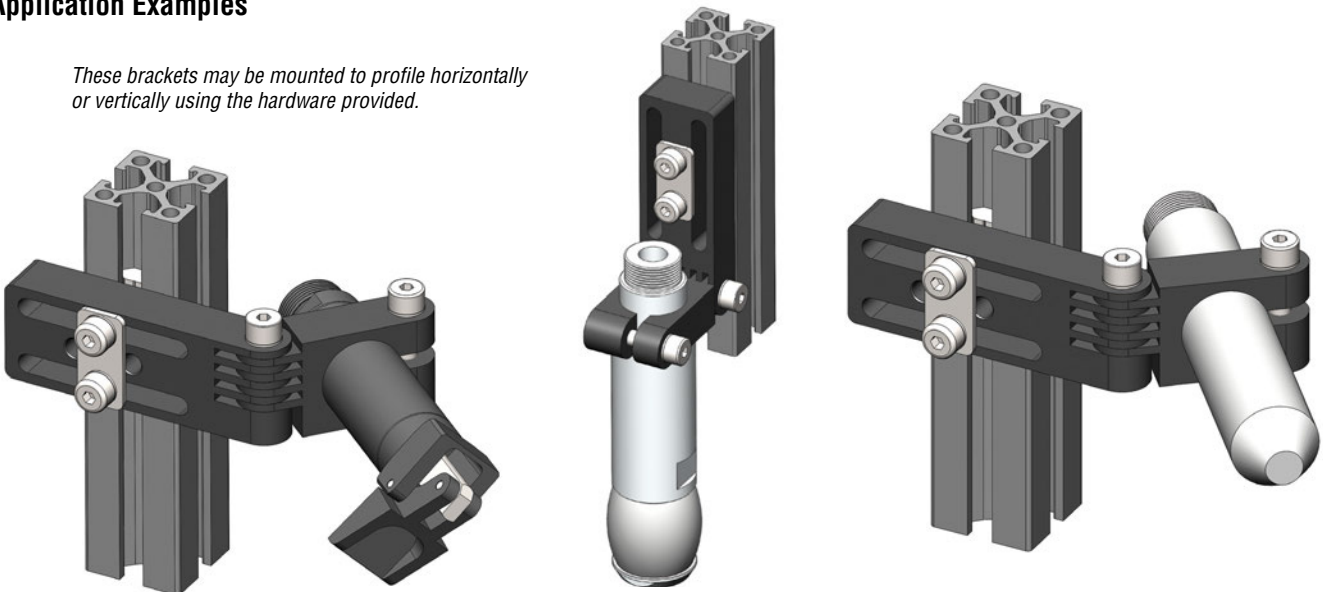
New, improved hinge design!

Long Angle Clamp with Swivel Head

Quick#	Part#	Price	ØA	B	C	D	E	G	H	J	K	L	Weight
7109	MFI-A250	\$32.00	10	16	14	13	20	26.5	16	38	8	9	30g
7110	MFI-A251	\$37.19	14	20	17	16	30	33	25	52	15	11	50g
7111	MFI-A252	\$39.40	20	25	22	19	40	42	25	65	15	13	90g
7112	MFI-A253	\$45.70	30	36	28	24	50	54.5	36	81	22	16	185g

Application Examples

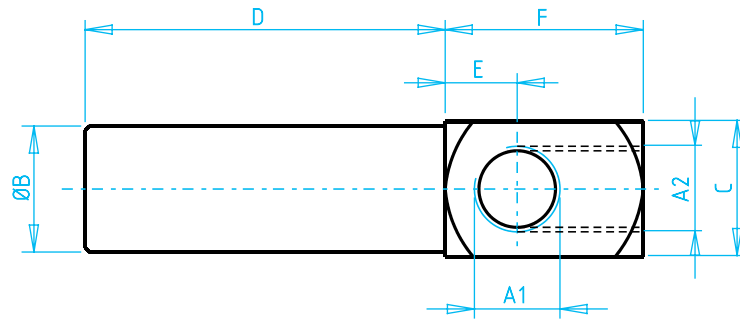
These brackets may be mounted to profile horizontally or vertically using the hardware provided.



Gripper Arm for Vacuum Cup



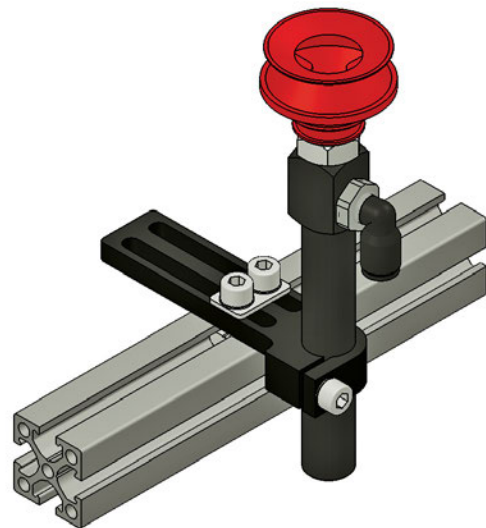
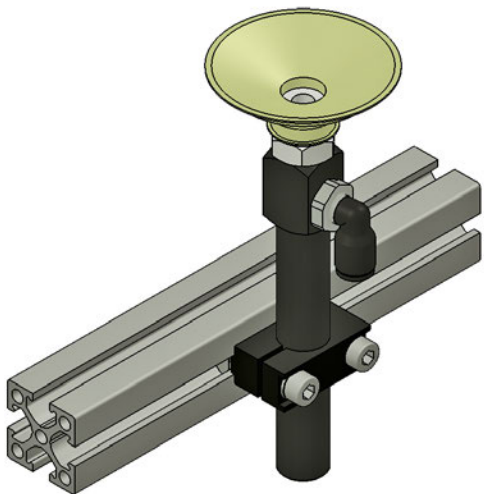
#5737



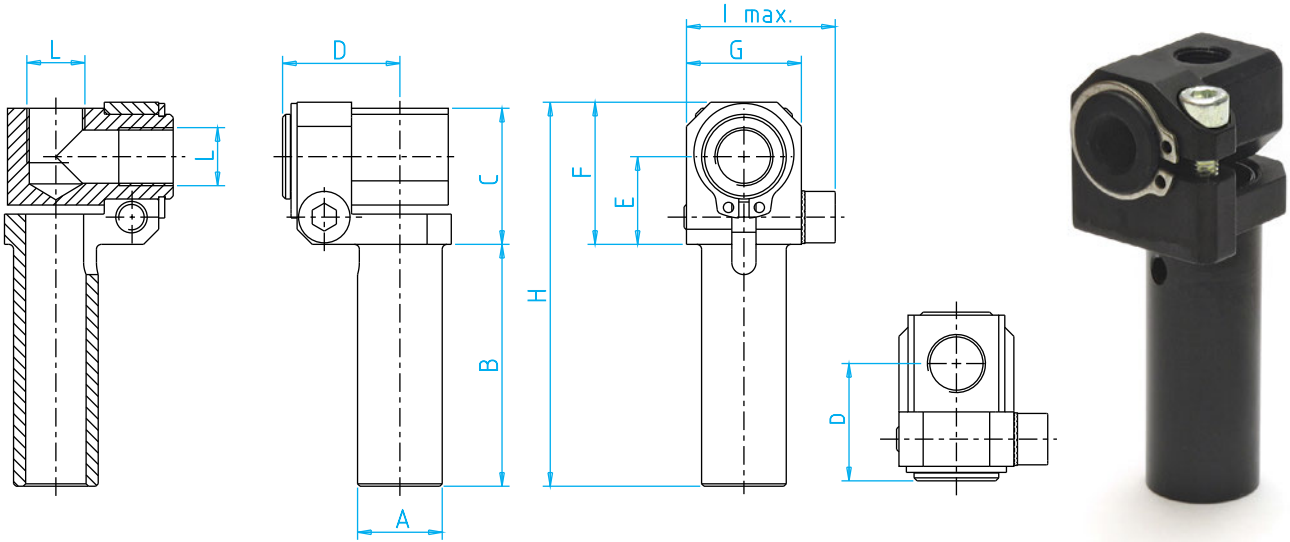
Gripper Arm for Vacuum Cup

Quick#	Part#	Price	A1	A2	ØB	C	D	E	F	Wt.
5731	MFI-A170	\$12.38	M5	M5	10	11	30	6	16	10g
5732	MFI-A171	\$13.05	M5	M5	10	11	60	6	16	13g
5733	MFI-A172	\$13.44	M5	M5	10	11	90	6	16	17g
5734	MFI-A71	\$17.94	G1/8"	G1/8"	14	15	40	8	22	17g
5735	MFI-A72	\$18.06	G1/8"	G1/8"	14	15	80	8	22	25g
5736	MFI-A73	\$19.06	G1/8"	G1/8"	14	15	120	8	22	32g
5737	MFI-A74	\$19.15	G1/8"	G1/4"	20	20	50	8	23	40g
5738	MFI-A75	\$19.26	G1/8"	G1/4"	20	20	100	8	23	60g
5739	MFI-A76	\$20.47	G1/8"	G1/4"	20	20	150	8	23	75g

Application Examples



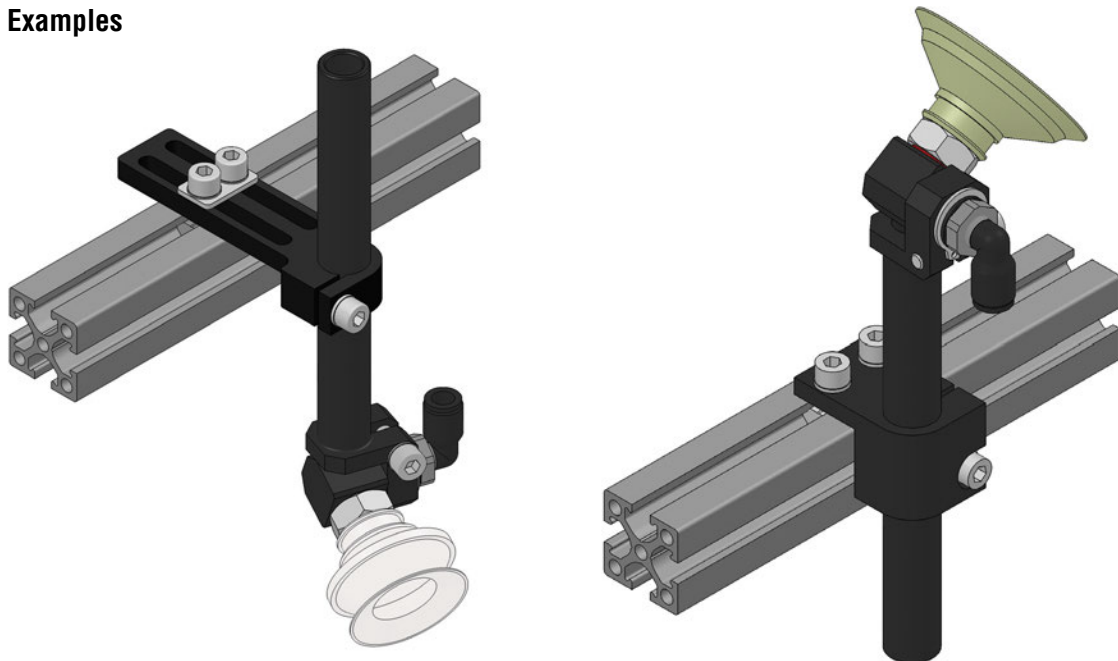
Elbow Arm for Vacuum Cup



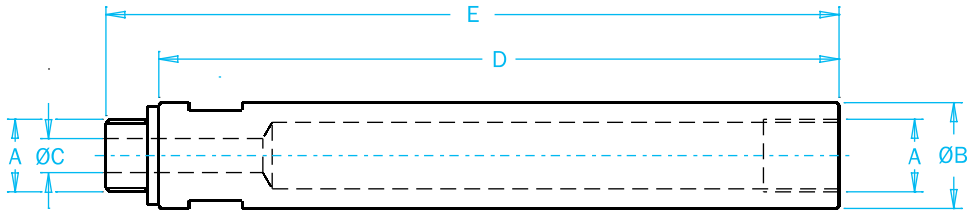
Elbow Arm for Vacuum Cup

Quick#	Part#	Price	ØA	B	C	D	E	F	G	H	I	L	Wt.
7288	MFI-A256	\$20.27	10	30	17	14.5	11	18	14	48	18.5	M5	14g
7289	MFI-A257	\$21.49	10	60	17	14.5	11	18	14	78	18.5	M5	17g
7290	MFI-A258	\$22.71	10	90	17	14.5	11	18	14	108	18.5	M5	20g
7291	MFI-A259	\$27.58	14	40	22.5	19.4	14.5	23.5	19	63.5	24.5	G1/8"	32g
7292	MFI-A260	\$29.91	14	80	22.5	19.4	14.5	23.5	19	103.5	24.5	G1/8"	40g
7293	MFI-A261	\$30.52	14	120	22.5	19.4	14.5	23.5	19	143.5	24.5	G1/8"	48g
7294	MFI-A290	\$31.52	20	50	28	23.3	18	30	24	80	31	G1/8"	63g
7295	MFI-A291	\$31.62	20	100	28	23.3	18	30	24	130	31	G1/8"	78g
7296	MFI-A292	\$32.95	20	150	28	23.3	18	30	24	180	31	G1/8"	93g
7297	MFI-A262	\$31.52	20	50	28	23.3	18	30	24	80	31	G1/4"	58g
7298	MFI-A263	\$31.62	20	100	28	23.3	18	30	24	130	31	G1/4"	73g
7299	MFI-A264	\$32.95	20	150	28	23.3	18	30	24	180	31	G1/4"	88g

Application Examples



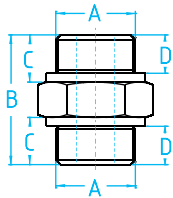
Vacuum Extension Tube



Vacuum Extension Tube

Quick#	Part#	Price	A	ØB	ØC	D	E	Wt.
5748	MFI-A154	\$9.48	M5	10	2	45	50	10g
5749	MFI-A155	\$9.98	M5	10	2	90	95	15g
5750	MFI-A150	\$10.93	G1/8"	14	4.5	45	52	15g
5751	MFI-A151	\$12.20	G1/8"	14	4.5	90	97	25g
5752	MFI-A152	\$12.44	G1/4"	20	6.5	45	53	30g
5753	MFI-A153	\$13.33	G1/4"	20	6.5	90	98	55g
7803	MFI-A506	\$34.32	G3/8"	30	10	150	159	210g

Use Quick#s for easy online ordering.



Male to Male Adaptor Fitting

Quick#	Part#	Price	A	B	C	D	Wt.
5782	AF05M05M	\$3.23	M5	11.5	4	3	3g
5783	AF18M18M	\$2.33	G1/8"	17	7	5.5	3g
5784	AF14M14M	\$4.27	G1/4"	22	8	6.5	7g



Application Examples

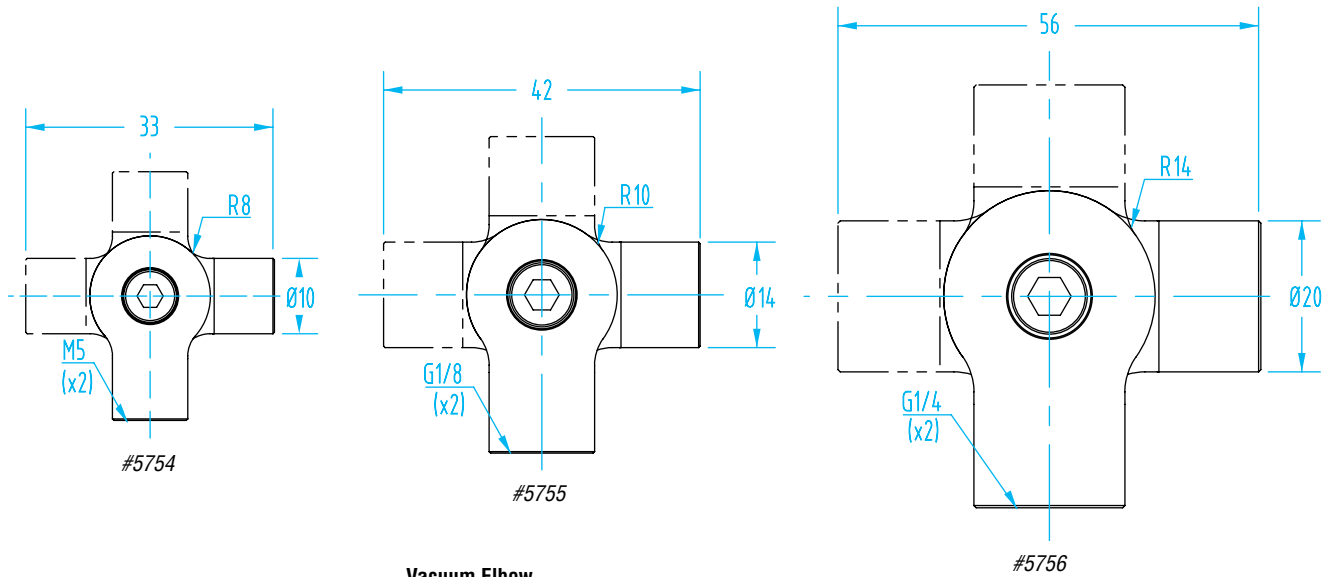


Vacuum Elbow

- Mount between the vacuum cup and suspension or extension tube.
- Sets the angle of a vacuum cup between 0° and ± 90°.
- By tightening one screw the angle is fixed.
- Integrated vacuum channel.
- Adaptor fittings available on page 258.
- For vacuum circuits only.



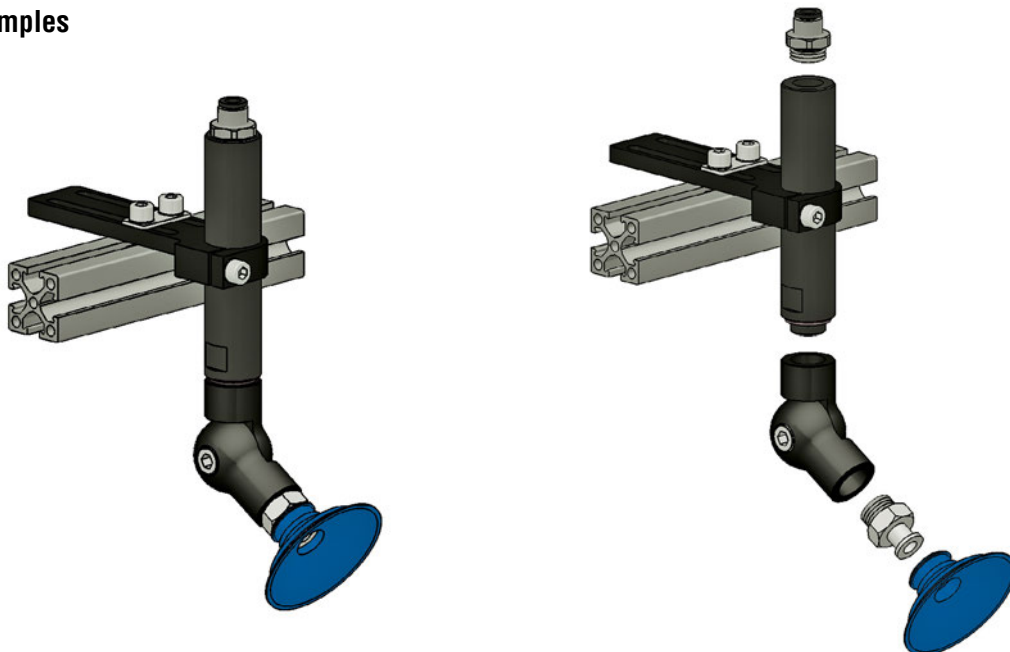
#5755



Vacuum Elbow

Quick#	Part#	Price	Ports	Wt.
5754	VAC05F05F	\$13.35	M5	10g
5755	VAC18F18F	\$14.38	G1/8"	15g
5756	VAC14F14F	\$20.09	G1/4"	40g

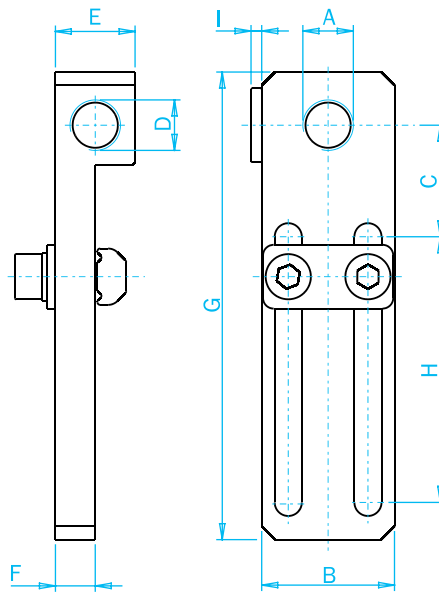
Application Examples



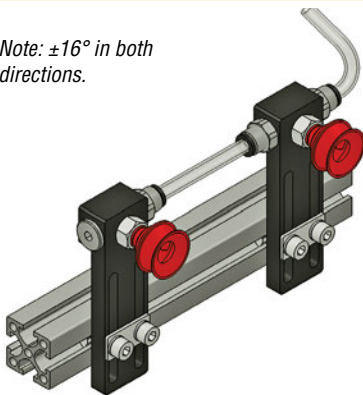
Vacuum Cup Connectors



#5759



Note: ±16° in both directions.

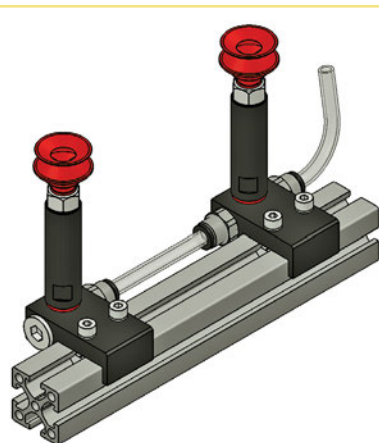
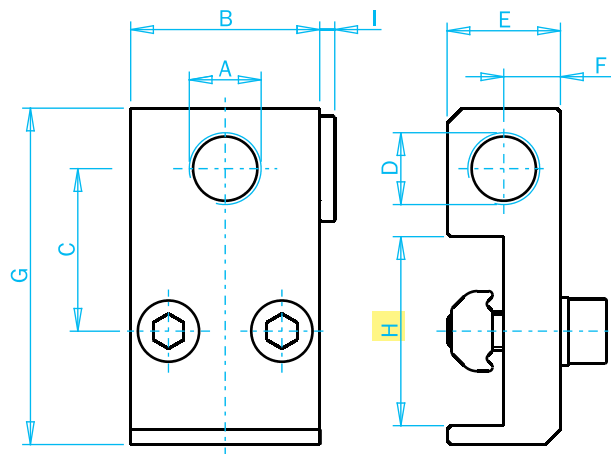


Long Mounting Bracket for Vacuum Cups

Quick#	Part#	Price	A	B	C	D	E	F	G	H	I	Wt.
5757	MFI-A51	\$12.75	M5	16	14	M5	8	4	65	40	2	20g
5758	MFI-A52	\$17.80	G1/8"	25	21	G1/8"	15	7.5	88	50	2	60g
5759	MFI-A53	\$17.94	G1/4"	25	21	G1/8"	15	7.5	88	50	2	60g



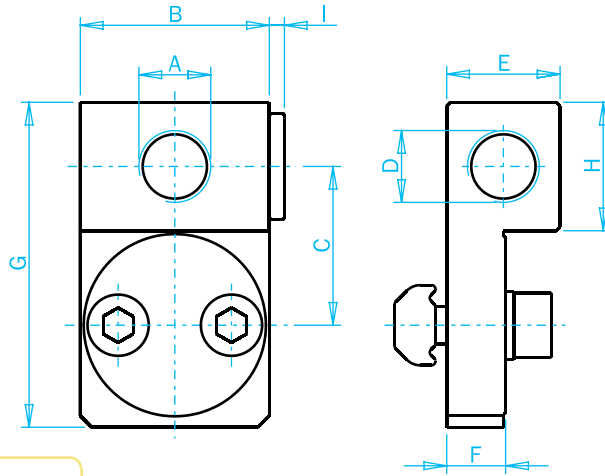
#5767



Mounting Bracket for Vacuum Cups

Quick#	Part#	Price	A	B	C	D	E	F	G	H	I	Wt.
5765	MFI-A48	\$10.75	M5	16	13.5	M5	8	4	29	18	2	15g
5766	MFI-A49	\$13.73	G1/8"	25	21.5	G1/8"	15	7.5	45	25	2	45g
5767	MFI-A50	\$14.70	G1/4"	25	21.5	G1/8"	15	7.5	47	25	2	45g

Vacuum Cup Connectors

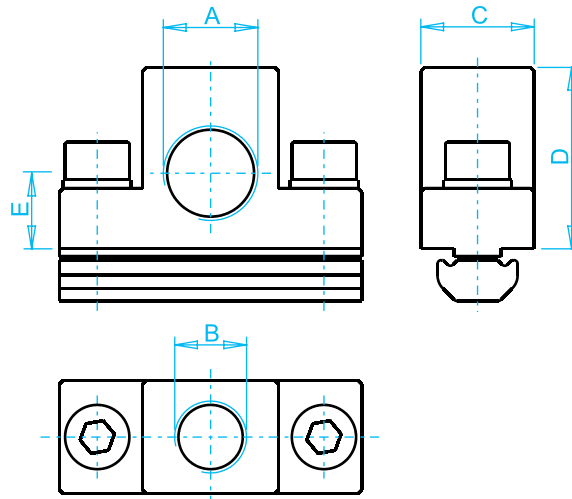


#5764



Adjustable Angle Connector for Vacuum Cups

Quick#	Part#	Price	A	B	C	D	E	F	G	H	I	Wt.
5762	MFI-A54	\$13.62	M5	16	13	M5	10	5.3	28	10	2	15g
5763	MFI-A55	\$17.32	G1/8"	25	21	G1/8"	15	7.8	43	17	2	45g
5764	MFI-A56	\$19.06	G1/4"	25	21	G1/8"	15	7.8	43	17	2	42g



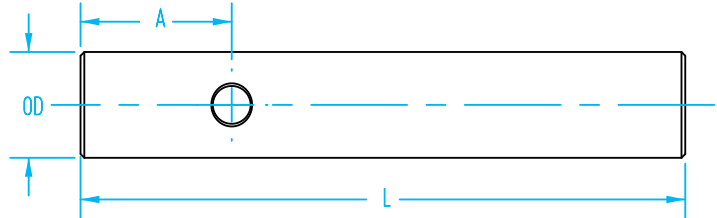
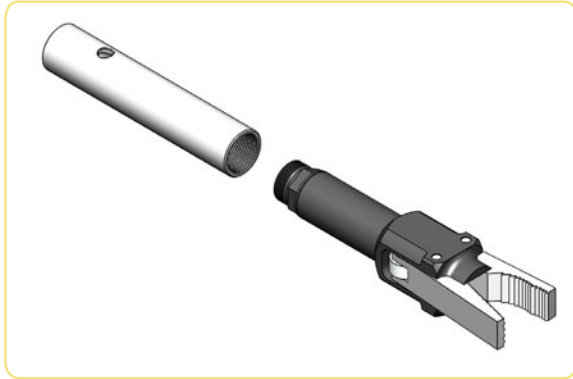
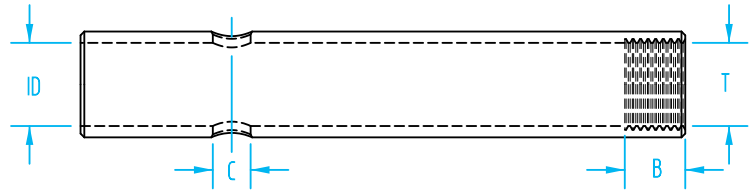
#5760



Direct Connector for Vacuum Cups

Quick#	Part#	Price	A	B	C	D	E	Wt.
5760	MFI-A46	\$10.09	G1/8"	G1/8"	15	24	12	42g
5761	MFI-A47	\$10.11	G1/4"	G1/8"	15	24	10	40g
7805	MFI-A508	\$25.81	G3/8"	G3/8"	35	34	12	100g

Extension Tube (not for Vacuum)



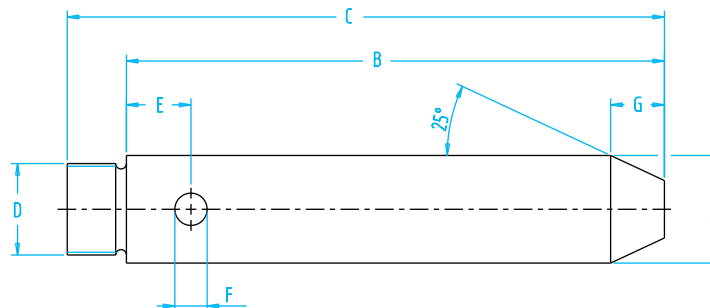
Extension Tube (Not for Vacuum)

Quick#	Part#	Price	OD	ID	A	B	ØC	L	T	Wt.
5993	OF10L60	\$7.64	10	7	15	8	3.5	60	M8x1	7g
5842	OF14L80	\$7.50	14	11	20	8	5	80	M12x1	10g
5843	OF20L100	\$9.72	20	16	25	12	6	100	M17x1	30g
5994	OF20L250	\$15.44	20	16	125	12	6	250	M17x1	75g
5844	OF30L120	\$12.59	30	25	30	14	8	120	M27x1	65g
5995	OF30L250	\$19.60	30	25	125	14	8	250	M27x1	145g

Use Quick#s for easy online ordering.

Centering Pin

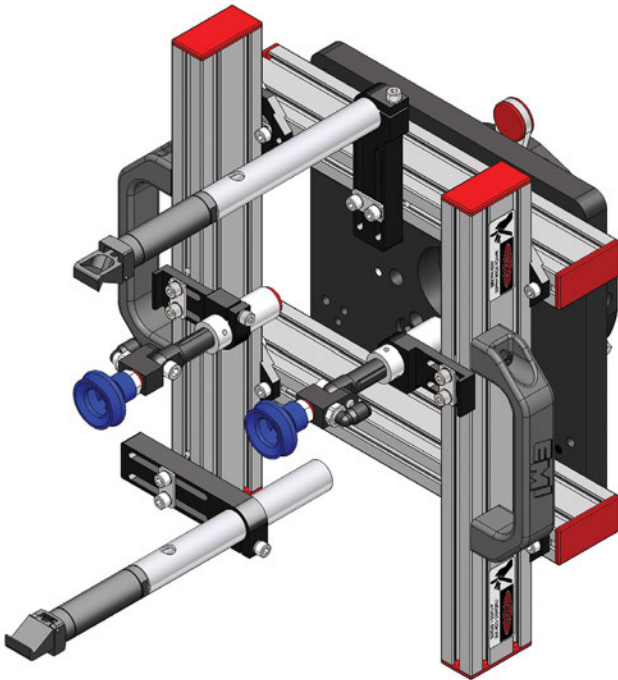
- Finger stops found on pages 526–528 can be used with centering pins to help position a part.



Centering Pin

Quick#	Part#	Price	ØA	B	C	D	E	ØF	G	Wt
7447	MFI-A235	\$17.58	10	60	68	M8x1	6	3.5	5	7g
7448	MFI-A236	\$18.62	14	80	88	M12x1	8	5	7	20g
7449	MFI-A237	\$19.66	20	100	111	M17x1	12	6	10	45g
7450	MFI-A238	\$20.70	30	100	113	M27x1	15	8	14	104g

EOAT Handle



- Use this handle to securely pick up EOAT's. You can use more than one for heavy EOATs.
- See page 82 for dimensional drawing.

EOAT Handle

Quick#	Part#	Price	Wt.
700	EOAT-HANDLE	\$14.00	70g

Note: Includes hardware.

Ideal for those who assemble their own EOAT in-house and want to apply safety labels to the EOAT

- 21 stickers combining English and Spanish.
- Designed to adhere to 25mm and 40mm profile.
- Contextual warnings specifically for EOAT.

EOAT Safety Labels

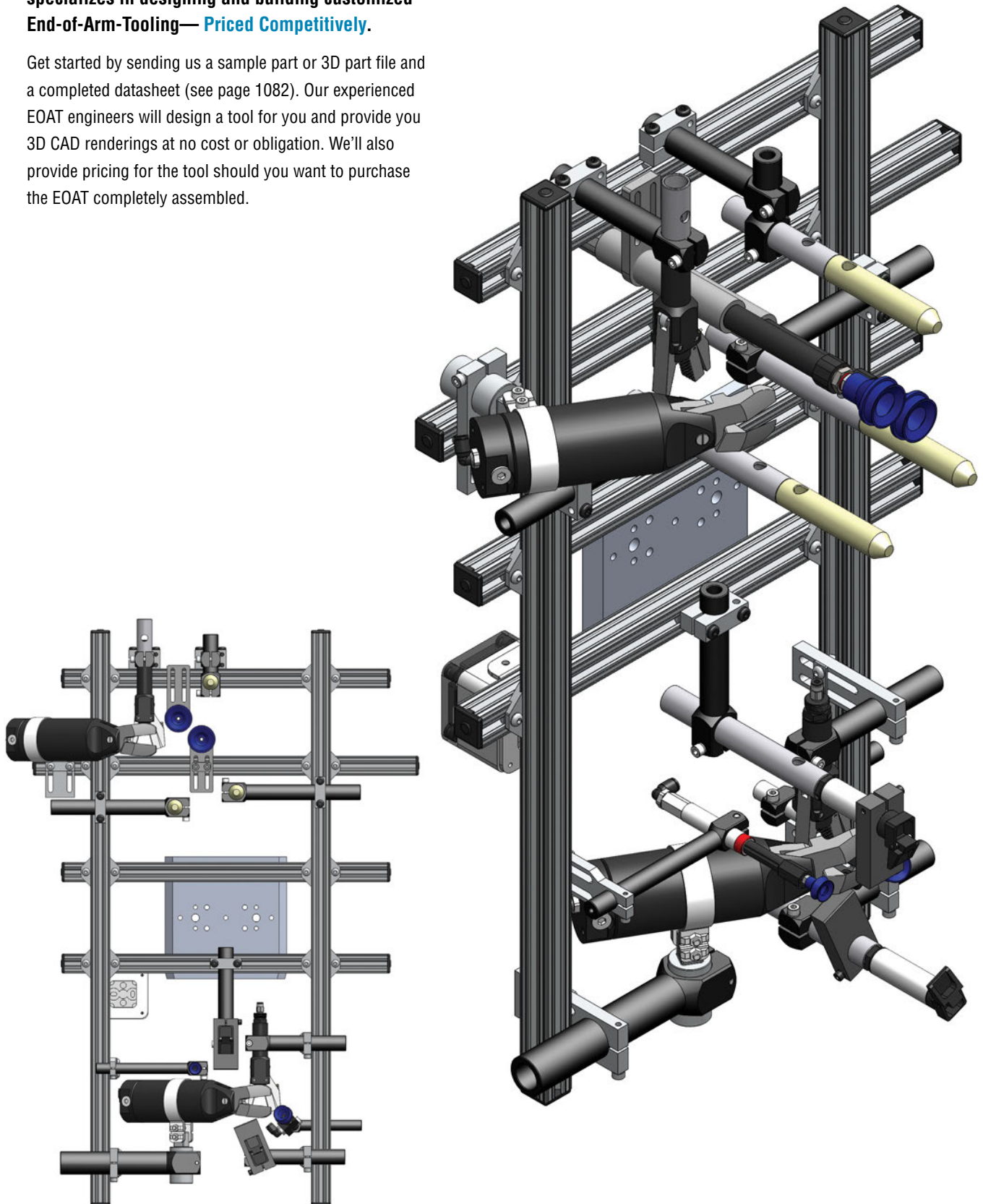
Quick#	Part#	Price
9054	SAFETY 1	\$0.99



EOAT Design and Build Service

From the simplest to the most complex EOAT, EMI specializes in designing and building customized End-of-Arm-Tooling— **Priced Competitively.**

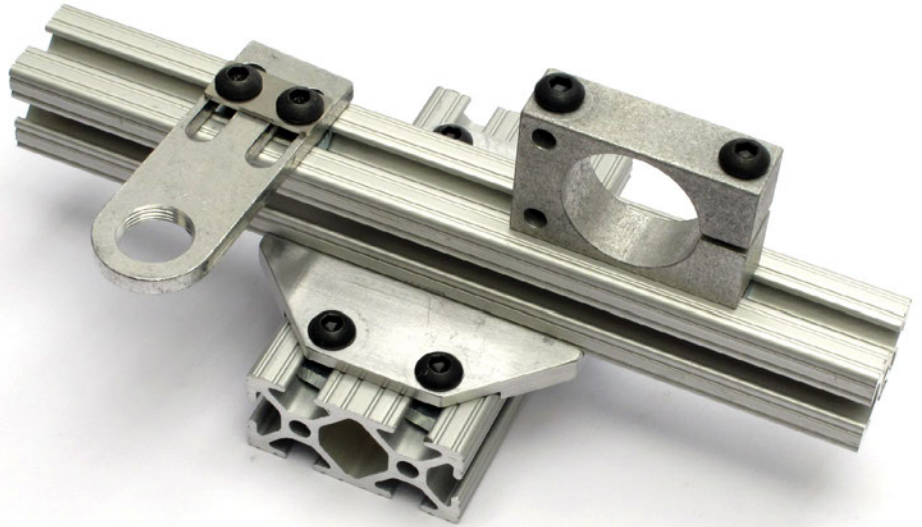
Get started by sending us a sample part or 3D part file and a completed datasheet (see page 1082). Our experienced EOAT engineers will design a tool for you and provide you 3D CAD renderings at no cost or obligation. We'll also provide pricing for the tool should you want to purchase the EOAT completely assembled.



80/20

Best of Both Worlds

For those who prefer using 80/20 Inch/Fractional profiles, but also want to mount the wide variety of metric-based Gimatic and >ASS< sprue grippers, gripper fingers, vacuum cup suspensions, etc., EMI provides cross-over brackets, clamps, and connectors. These fasten to 80/20 Inch/Fractional profiles but have metric-sized clamps.



Profile p.266

Fasteners p.267

Angle Brackets p.268

Flat Brackets p.270

Threaded Brackets p.272

Thru Hole Brackets p.273

Slotted Long Clamps p.274

Cross Clamps p.275

Profile Connectors p.276

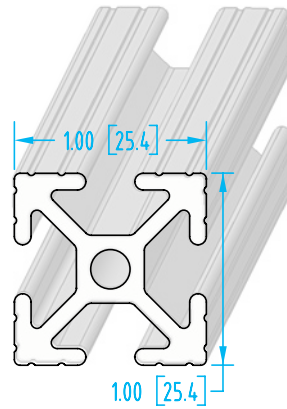
80/20 Profile

(Dimensioned drawings shown full scale)
Dimensioned drawings shown in Inches & (mm).

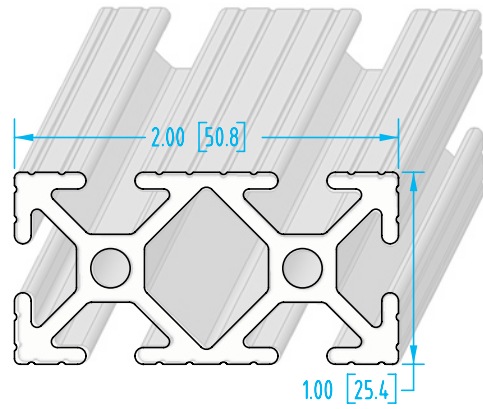
Save on Shipping Costs!

Order 39.5" profiles to save on shipping costs. (79" profiles ship UPS oversized and will cost approximately 2½ times as much to ship compared to 39.5" profiles.)

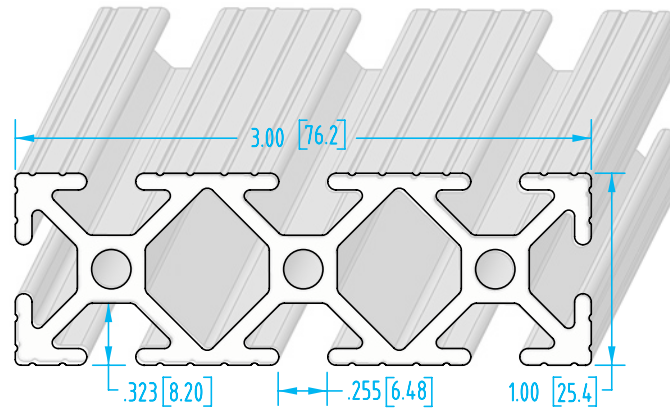
#4990 & #4991



#4992 & #4993



#4994



Slotted Aluminum Profile

Quick#	Part#	Size	Wt.	Price
4990	GCP-8020-1010-1M	1" x 1" x 39.5"	739g	\$17.41
4991	GCP-8020-1010-2M	1" x 1" x 79.0"	1478g	\$32.02
4992	GCP-8020-1020-1M	1" x 2" x 39.5"	1399g	\$27.28
4993	GCP-8020-1020-2M	1" x 2" x 79.0"	2798g	\$51.77
4994	GSP-8020-1030-2M	1" x 3" x 79.0"	3813g	\$69.15

Use Quick#s for easy online ordering.

Profile End Caps

Quick#	Part#	Size	Price (each)
4925	GSC-8020-2015	1010 End Cap	\$1.60
4926	GSC-8020-2025	1020 End Cap	\$2.23
4927	GSC-8020-2026	1030 End Cap	\$2.20



Double (M6) T-Nut Options for Eoat Brackets

Quick#	Part#	Description	Hole Spacing	Quantity	Price
4929	GSC-8020-4929	M6 Double T-Nut (25mm long)	15mm	Individually (E)	CALL OR CLICK Q# FOR PRICE
4930	GSC-8020-4930	M6 Double T-Nut (30mm long)	20mm	Individually (E)	
4931	GSC-8020-4931	M6 Double T-Nut (35mm long)	25mm	Individually (E)	
4932	GSC-8020-4932	M6 Double T-Nut (40mm long)	30mm	Individually (E)	
4933	GSC-8020-4933	M6 Double T-Nut (50mm long)	40mm	Individually (E)	



80/20 Single M5 T-Nut Options

Quick#	4951	
Part#	GSE-8020-4951	
Description	M5 T-Nut	
Price	\$36.00	
Quantity	25 pack (S)	
Quick#	4919	
Part#	GSC-8020-3875	
Description	M5 Roll In T-Nut	
Price	\$2.51	
Quantity	Individually (E)	

80/20 Screws









Quick#	Part#	Description	Price (25 Packs)
4949	GSC-8020-4949	1/4"-20 x 1/2 BHSCS	\$8.50
4939	GSC-8020-4939	M5 x 10mm BHSCS	\$12.50
4940	GSC-8020-4940	M5 x 12mm BHSCS	\$13.00
4941	GSC-8020-4941	M6 x 10mm BHSCS	\$10.00
4942	GSC-8020-4942	M6 x 12mm BHSCS	\$13.50
4943	GSC-8020-4943	M6 x 14mm BHSCS	\$14.75
4944	GSC-8020-4944	M6 x 16mm BHSCS	\$14.00
4945	GSC-8020-4945	M6 x 18mm BHSCS	\$15.00
4946	GSC-8020-4946	M6 x 20mm BHSCS	\$14.75













Note: (E) = Economy (S)= Standard

80/20 Fasteners

SINGLE FASTENER OPTIONS FOR 80/20 FLAT AND ANGLE BRACKETS

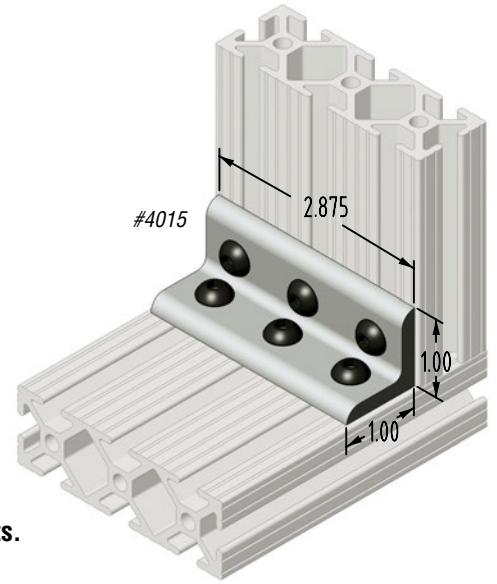
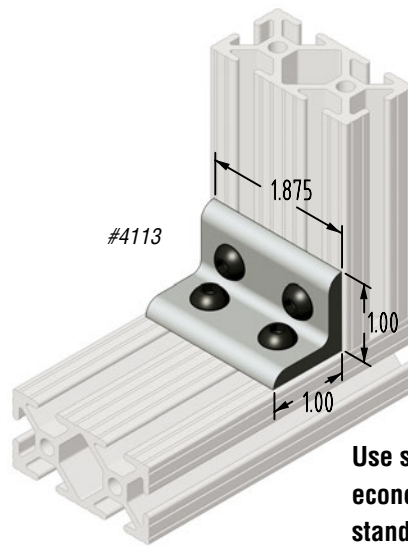
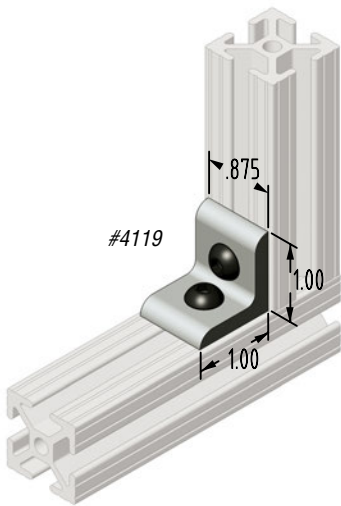
M6 Metric Fastener Options					1/4" -20 Inch Fastener Options				
A = Screw		B = Nut		A + B	A = Screw		B = Nut		A + B
Quick#	4942		4948	4936	4949		4947		4934
Part#	GSE-8020-4942		GSE-8020-4948	GSE-8020-4936	GSE-8020-4949		GSE-8020-4947		GSE-8020-4934
Description	M6 x 12		M6 T-Nut	Combo	1/4"-20 x 1/2"		1/4"-20 T-Nut		Combo
Price	\$13.50		\$10.50	\$21.75	\$8.50		\$8.00		\$16.50
Quantity	25 pack		25 pack (E)	25 pack	25 pack		25 pack (E)		25 pack
Quick#	4942		4928	4937					
Part#	GSE-8020-4942		GSE-8020-4928	GSE-8020-4937					
Description	M6 x 12		M6 T-Nut	Combo					
Price	\$13.50		\$12.00	\$24.25					
Quantity	25 pack		25 pack (E)	25 pack					
Quick#	4942		4952	4938					
Part#	GSE-8020-4942		GSE-8020-4952	GSE-8020-4938					
Description	M6 x 12		M6 T-Nut	Combo					
Price	\$13.50		\$36.00	\$49.50					
Quantity	25 pack		25 pack (S)	25 pack					
Quick#	4942		4920	n/a					
Part#	GSE-8020-4942		GSE-8020-4920						
Description	M6 x 12		M6 Roll in T-Nut						
Price	\$13.50		\$2.51						
Quantity	25 pack		Individually						
Quick#	4949		4950	4935					
Part#	GSE-8020-4949		GSE-8020-4950	GSE-8020-4935					
Description	1/4"-20 x 1/2"		1/4"-20 T-Nut	Combo					
Price	\$8.50		\$29.00	\$37.50					
Quantity	25 pack		25 pack (S)	25 pack					
Quick#	4949		4918	n/a					
Part#	GSE-8020-4949		GSE-8020-4918						
Description	1/4"-20 x 1/2"		1/4"-20 Roll In T-Nut						
Price	\$8.50		\$2.44						
Quantity	25 pack		Individually						

DOUBLE & TRIPLE FASTENER OPTIONS FOR 80/20 FLAT AND ANGLE BRACKETS

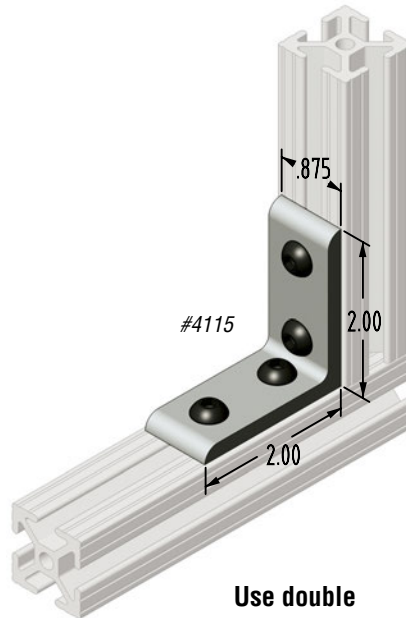
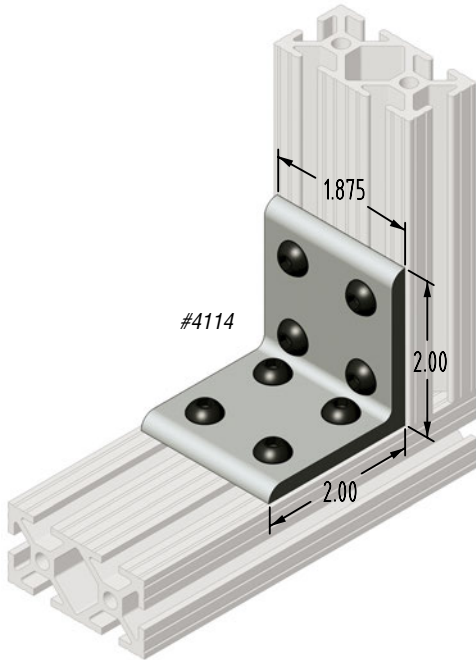
M6 Metric Fastener Options					1/4" -20 Inch Fastener Options				
Screw		Nut			Screw		Nut		
Quick#	4942		4912		4949		4911		
Part#	GSE-8020-4942		GSE-8020-4912		GSE-8020-4949		GSE-8020-4911		
Description	M6 x 12		M6 Double T-Nut		1/4"-20 x 1/2"		1/4"-20 Double T-Nut		
Price	\$13.50		\$0.78		\$8.50		\$1.00		
Quantity	25 pack		Individually (E)	25 pack		Individually (E)			
Quick#	4942		4914		4949		4913		
Part#	GSE-8020-4942		GSE-8020-4914		GSE-8020-4949		GSE-8020-4913		
Description	M6 x 12		M6 Triple T-Nut		1/4"-20 x 1/2"		1/4"-20 Triple T-Nut		
Price	\$13.50		\$1.21		\$8.50		\$1.16		
Quantity	25 pack		Individually (E)	25 pack		Individually (E)			
Quick#	4942		4931						
Part#	GSE-8020-4942		GSE-8020-4931						
Description	M6 x 12		M6 Double T-Nut						
Price	\$13.50		CALL						
Quantity	25 pack		Individually (E)						

Note: (E) = Economy (S) = Standard

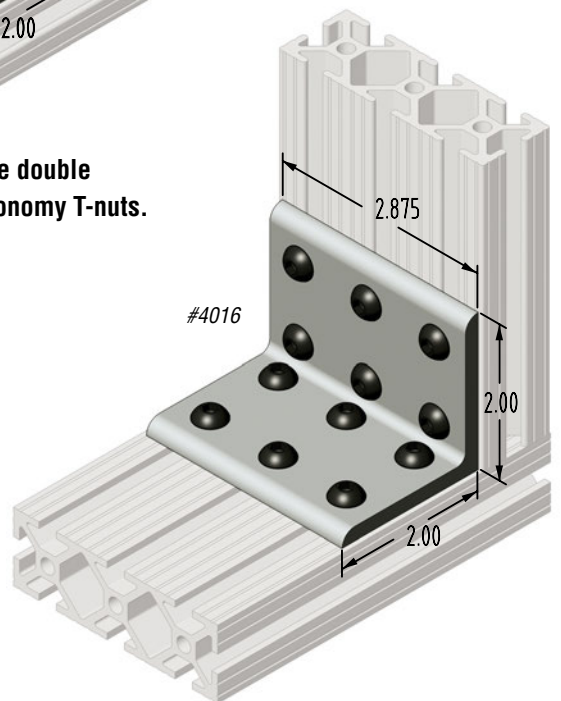
80/20 Angle Brackets



Use single economy or standard T-nuts.



Use double economy T-nuts.

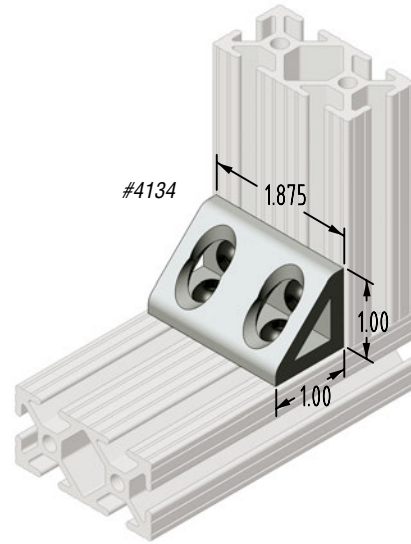


Order fasteners separately.

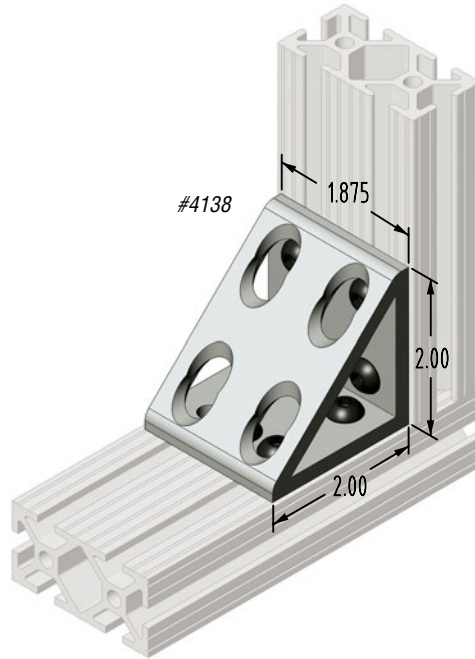
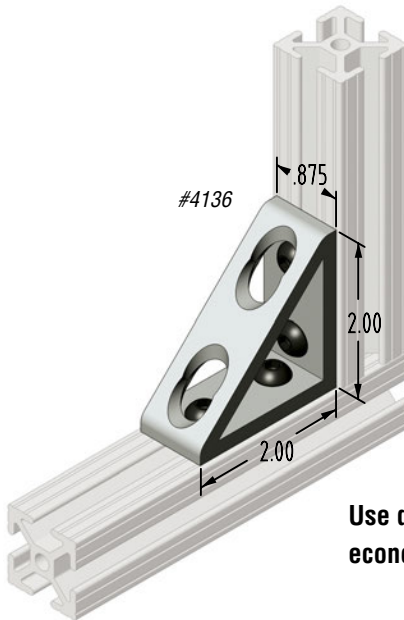
Quick#	Part#	Inch fasteners	Metric fasteners	Wt.	Price
4015	GSC-8020-4015	1/4-20 x 1/2"	M6 x 12mm	39g	\$7.78
4016	GSC-8020-4016	1/4-20 x 1/2"	M6 x 12mm	79g	\$9.86
4113	GSC-8020-4113	1/4-20 x 1/2"	M6 x 12mm	25g	\$6.06
4114	GSC-8020-4114	1/4-20 x 1/2"	M6 x 12mm	54g	\$7.98
4115	GSC-8020-4115	1/4-20 x 1/2"	M6 x 12mm	25g	\$6.06
4119	GSC-8020-4119	1/4-20 x 1/2"	M6 x 12mm	11g	\$4.36

All brackets on this page are 3/16" thick. Additional Bracket Styles Available, Call EMI

80/20 Angle Brackets



Use single economy or standard T-nuts.



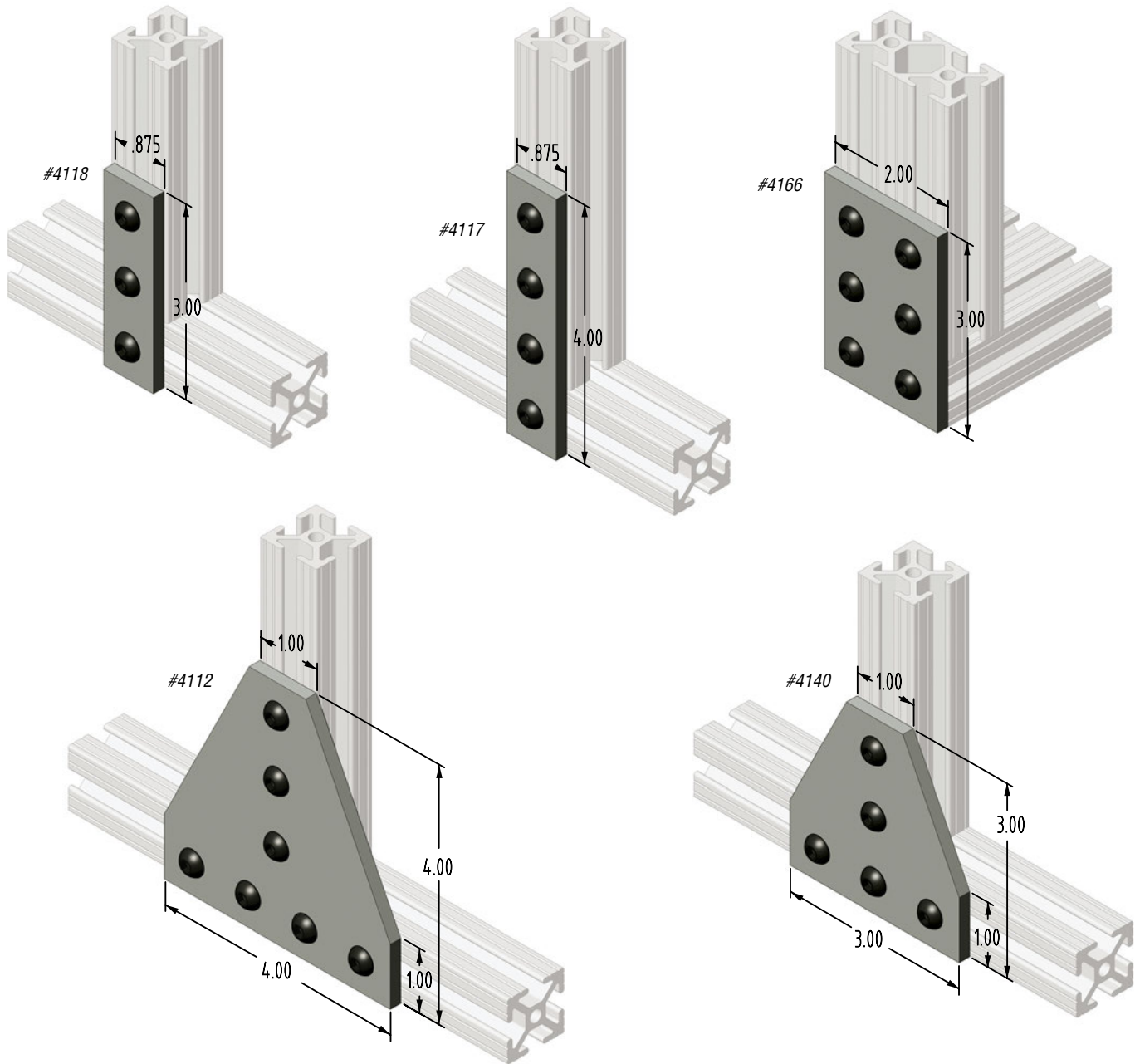
Use double economy T-nuts.

Order fasteners separately.

Quick#	Part#	Inch fasteners	Metric fasteners	Wt.	Price
4132	GSC-8020-4132	1/4"-20 x 1/2"	M6 x 12mm	19g	\$5.90
4134	GSC-8020-4134	1/4"-20 x 1/2"	M6 x 12mm	37g	\$8.46
4136	GSC-8020-4136	1/4"-20 x 1/2"	M6 x 12mm	42g	\$8.46
4138	GSC-8020-4138	1/4"-20 x 1/2"	M6 x 12mm	83g	\$11.12

All brackets on this page are 3/16" thick. Additional Bracket Styles Available, Call EMI

80/20 Flat Brackets

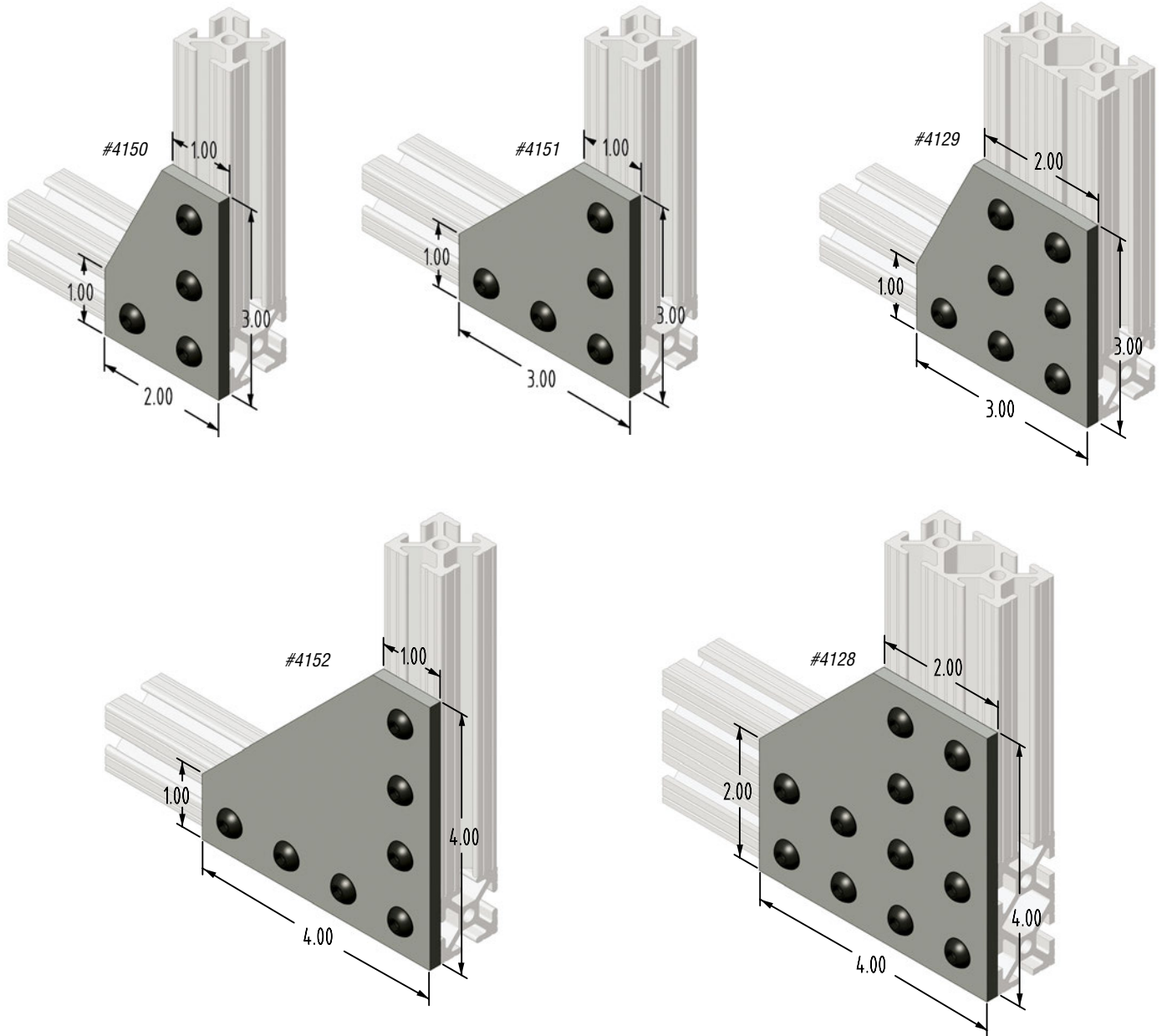


Order fasteners separately.

Quick#	Part#	Inch fasteners	Metric fasteners	Wt.	Price
4112	GSC-8020-4112	1/4"-20 x 1/2"	M6 x 12mm	91g	\$12.18
4117	GSC-8020-4117	1/4"-20 x 1/2"	M6 x 12mm	27g	\$7.17
4118	GSC-8020-4118	1/4"-20 x 1/2"	M6 x 12mm	20g	\$6.43
4140	GSC-8020-4140	1/4"-20 x 1/2"	M6 x 12mm	54g	\$10.15
4166	GSC-8020-4166	1/4"-20 x 1/2"	M6 x 12mm	48g	\$8.07
4167	GSC-8020-4167	1/4"-20 x 1/2"	M6 x 12mm	50g	\$7.17

All brackets on this page are 3/16" thick. Additional Bracket Styles Available, Call EMI
Quick# 4167 is a square bracket (2"x2") with 4 holes.

80/20 Flat Brackets



Order fasteners separately.

Quick#	Part#	Inch fasteners	Metric fasteners	Wt.	Price
4128	GSC-8020-4128	1/4"-20 x 1/2"	M6 x 12mm	109g	\$16.12
4129	GSC-8020-4129	1/4"-20 x 1/2"	M6 x 12mm	61g	\$10.75
4150	GSC-8020-4150	1/4"-20 x 1/2"	M6 x 12mm	41g	\$7.62
4151	GSC-8020-4151	1/4"-20 x 1/2"	M6 x 12mm	57g	\$9.42
4152	GSC-8020-4152	1/4"-20 x 1/2"	M6 x 12mm	91g	\$11.43

All brackets on this page are 3/16" thick. Additional Bracket Styles Available, Call EMI

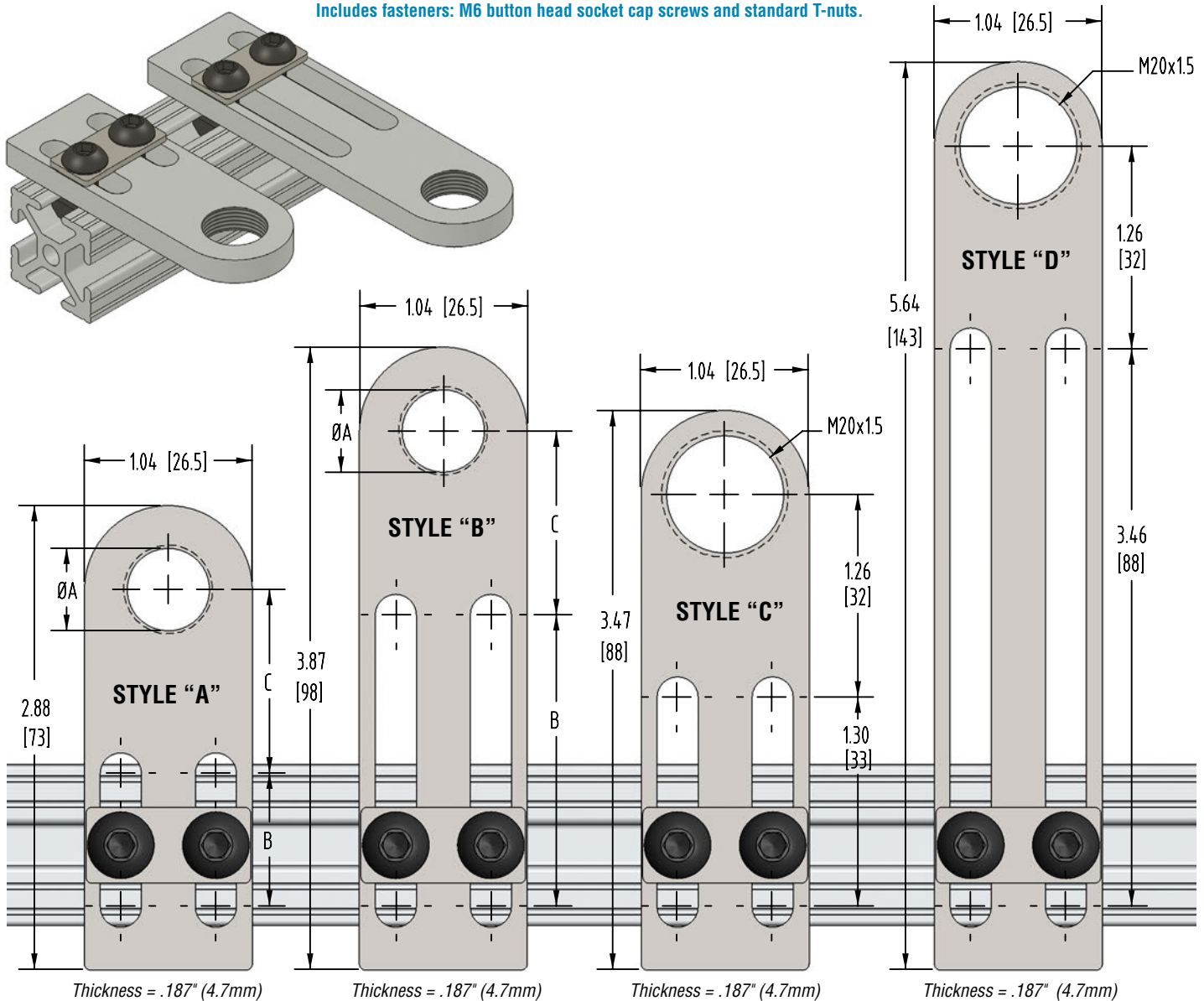
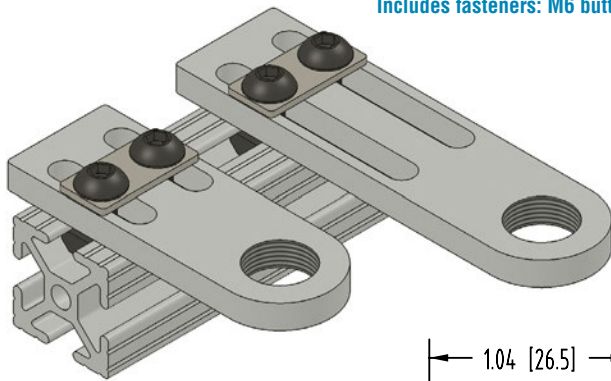
Threaded Brackets for 80/20

(Dimensioned drawings shown full scale)
Dimensioned drawings shown in Inches & (mm).

Threaded Mounting Brackets

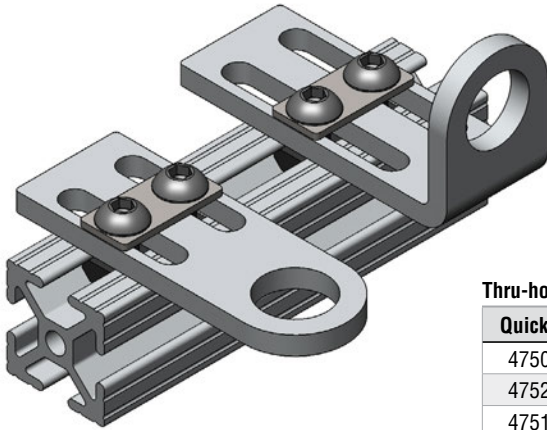
Quick#	Part#	Thread "A"	B	C	Length	Style	Weight	Price
4730	GSC-8020-4730	Solid	20mm	-	Short	A	45g	\$11.21
4731	GSC-8020-4731	Solid	40mm	-	Long	B	52g	\$12.29
4732	GSC-8020-4732	M5	28mm	22mm	Short	A	43g	\$11.21
4733	GSC-8020-4733	M5	53mm	22mm	Long	B	49g	\$12.29
4734	GSC-8020-4734	M8	25mm	25mm	Short	A	44g	\$11.21
4735	GSC-8020-4735	M8	49mm	26mm	Long	B	50g	\$12.29
4736	GSC-8020-4736	G1/8"	24mm	26mm	Short	A	44g	\$11.21
4737	GSC-8020-4737	G1/8"	49mm	26mm	Long	B	50g	\$12.29
4738	GSC-8020-4738	M10 x 1	25mm	25mm	Short	A	44g	\$11.21
4739	GSC-8020-4739	M10 x 1	50mm	25mm	Long	B	49g	\$12.29
4740	GSC-8020-4740	M14 x 1	21mm	29mm	Short	A	43g	\$11.21
4741	GSC-8020-4741	M14 x 1	46mm	29mm	Long	B	49g	\$12.29
4742	GSC-8020-4742	M16 x 1	20mm	30mm	Short	A	42g	\$11.21
4743	GSC-8020-4743	M16 x 1	45mm	30mm	Long	B	48g	\$12.29
4744	GSC-8020-4744	M20 x 1.5	33mm	32mm	Short	C	45g	\$19.27
4745	GSC-8020-4745	M20 x 1.5	88mm	32mm	Long	D	58g	\$20.49

Includes fasteners: M6 button head socket cap screws and standard T-nuts.



Thru Hole Brackets for 80/20

(Dimensioned drawings shown full scale)
Dimensioned drawings shown in Inches & (mm).

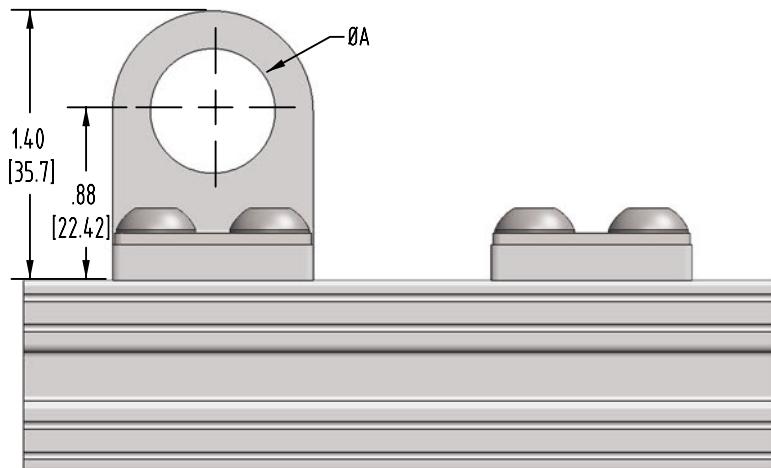
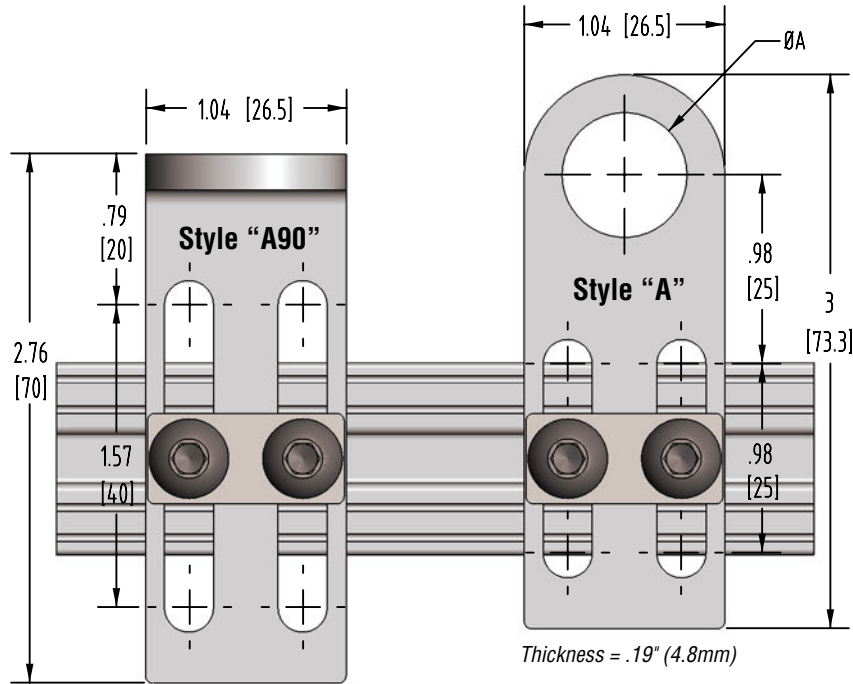


Thru-hole— requires the component being mounted to have two locking nuts.

Thru-hole Stainless Brackets

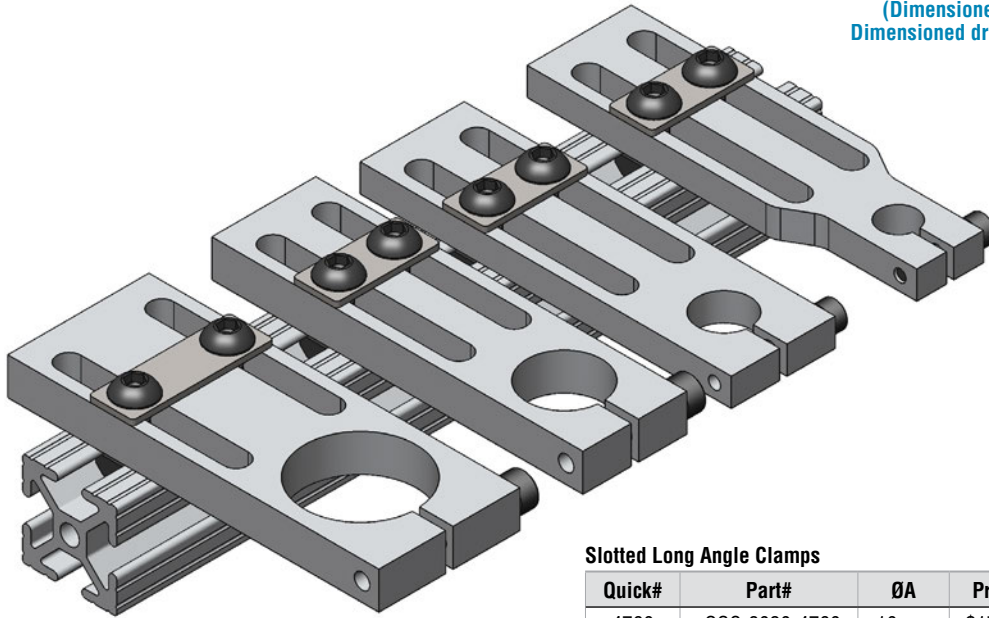
Quick#	Part#	Style	Use with	ØA	Wt.	Price
4750	GSC-8020-4750	A	G1/8", M10	10.5mm	49g	\$7.48
4752	GSC-8020-4752	A	M16	16.5mm	59g	\$8.95
4751	GSC-8020-4751	A90	G1/8", M10	10.5mm	46g	\$7.48
4753	GSC-8020-4753	A90	M16	16.5mm	56g	\$8.95

Includes fasteners: M6 button head socket cap screws and standard T-nuts.



Slotted Long Clamps for 80/20

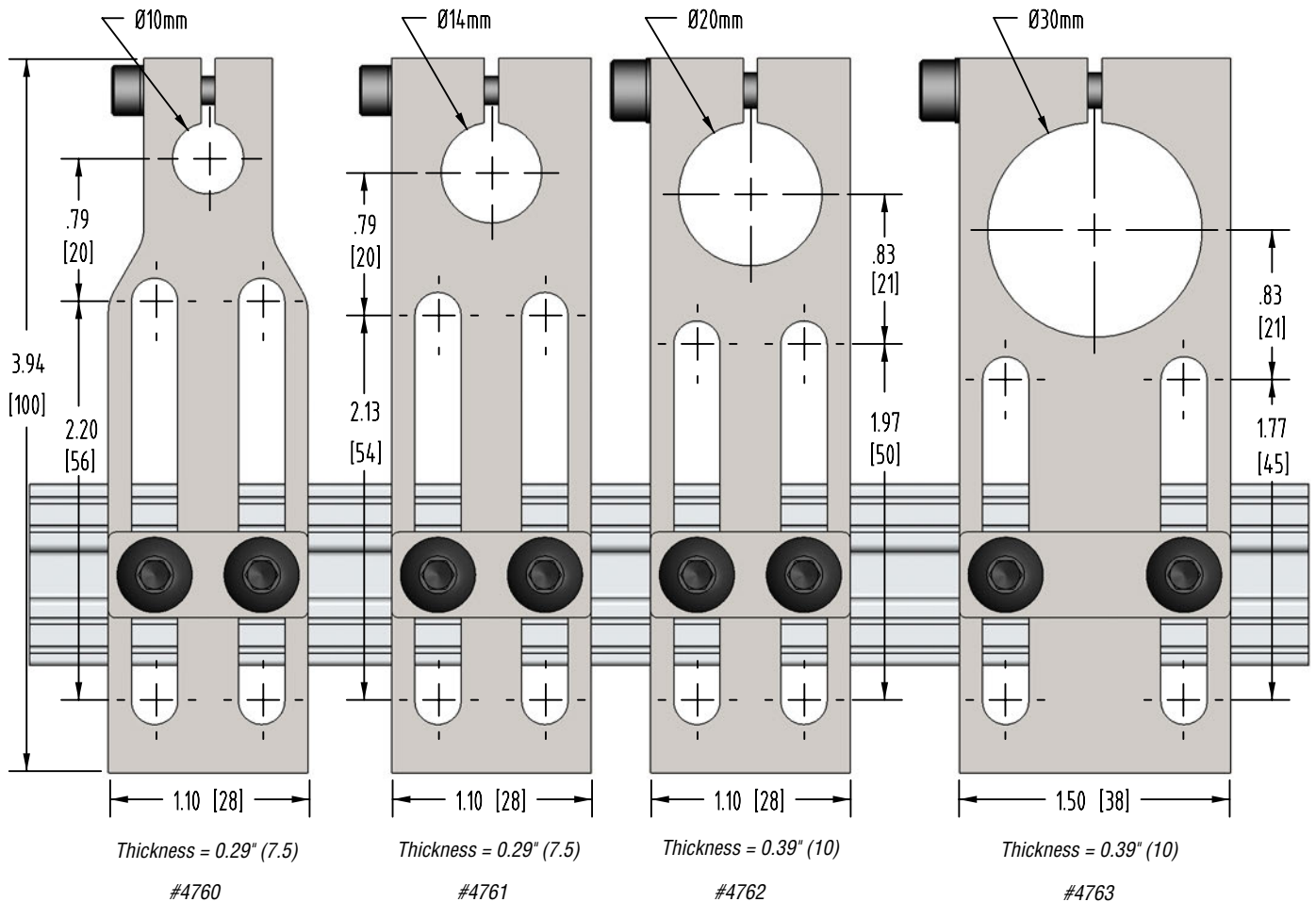
(Dimensioned drawings shown full scale)
Dimensioned drawings shown in Inches & (mm).



Slotted Long Angle Clamps

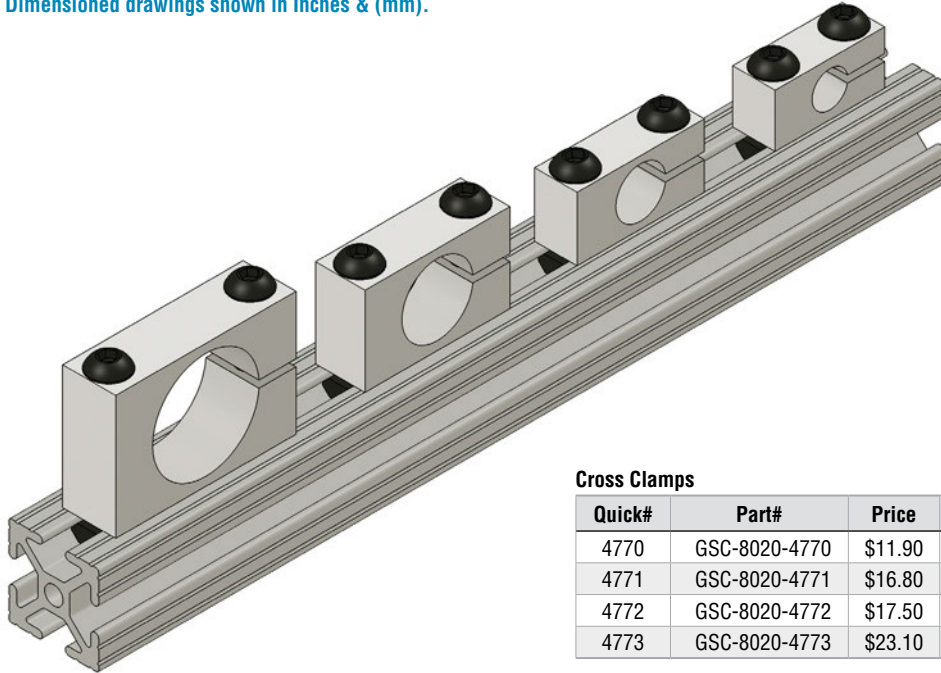
Quick#	Part#	ØA	Price	Wt.
4760	GSC-8020-4760	10mm	\$17.50	55g
4761	GSC-8020-4761	14mm	\$21.90	60g
4762	GSC-8020-4762	20mm	\$23.10	71g
4763	GSC-8020-4763	30mm	\$25.90	92g

Includes fasteners: M6 button head socket cap screws and standard T-nuts.



Cross Clamps for 80/20

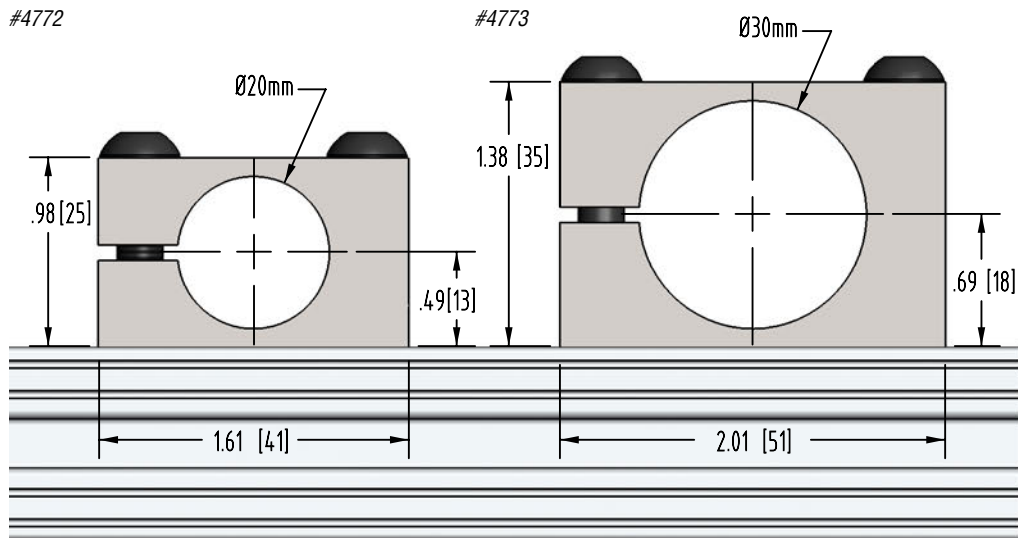
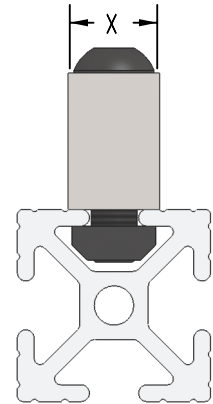
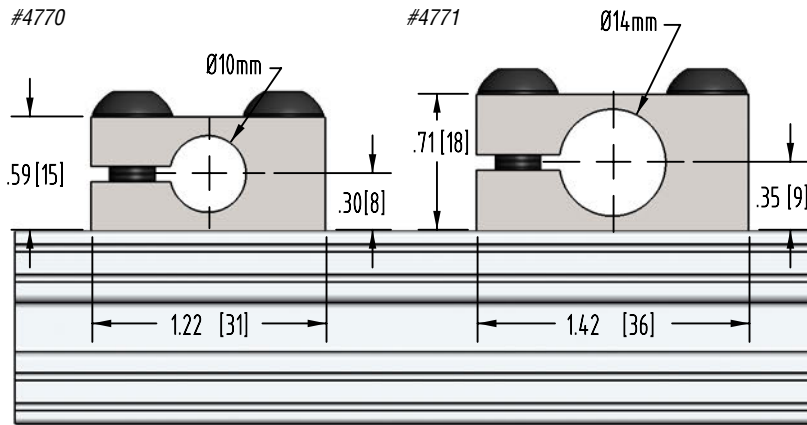
(Dimensioned drawings shown full scale)
Dimensioned drawings shown in Inches & (mm).



Cross Clamps

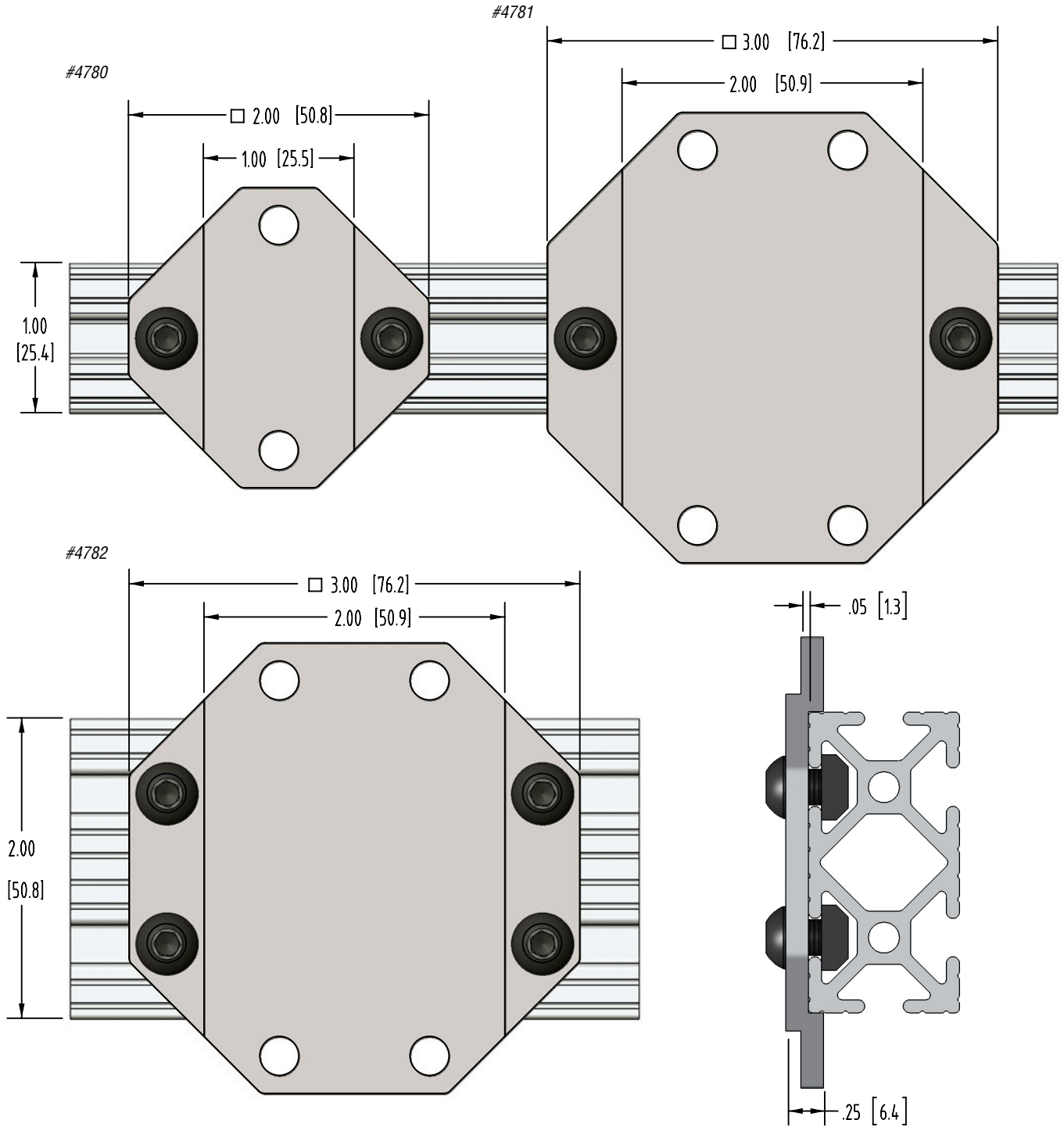
Quick#	Part#	Price	ØA	X (width)	Wt.
4770	GSC-8020-4770	\$11.90	10mm	12mm	29g
4771	GSC-8020-4771	\$16.80	14mm	12mm	33g
4772	GSC-8020-4772	\$17.50	20mm	14mm	46g
4773	GSC-8020-4773	\$23.10	30mm	15mm	65g

Includes fasteners: M6 button head socket cap screws and standard T-nuts.



Profile Connectors for 80/20

(Dimensioned drawings shown full scale)
Dimensioned drawings shown in Inches & (mm).

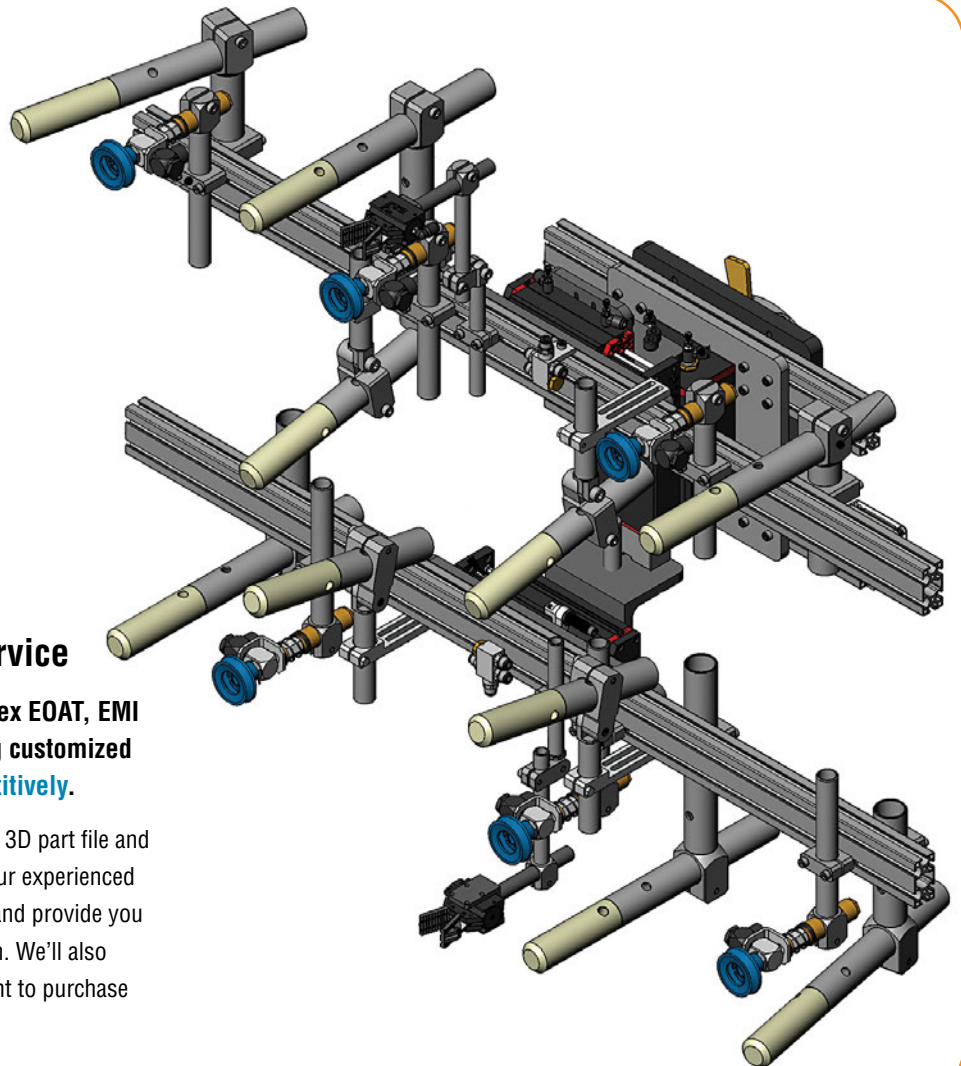
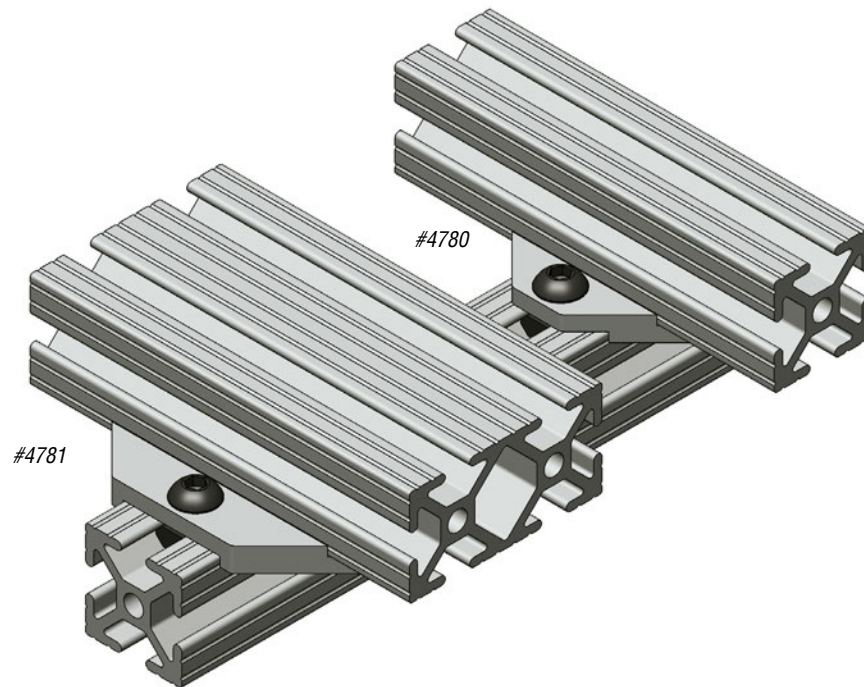


Profile Connector Clamps

Quick#	Part#	Price	Use with	Use with	Wt.
4780	GSC-8020-4780	\$23.85	1010	1010	43g
4781	GSC-8020-4781	\$27.72	1010	1020	85g
4782	GSC-8020-4782	\$27.72	1020	1020	87g

Includes fasteners: M6 button head socket cap screws and standard T-nuts.

Profile Connectors for 80/20



EOAT Design and Build Service

From the simplest to the most complex EOAT, EMI specializes in designing and building customized End-of-Arm-Tooling— **Priced Competitively.**

Get started by sending us a sample part or 3D part file and a completed datasheet (see page 1082). Our experienced EOAT engineers will design a tool for you and provide you 3D CAD renderings at no cost or obligation. We'll also provide pricing for the tool should you want to purchase the EOAT completely assembled.

Suspensions Overview

Vacuum Suspensions p.316

These suspensions have a self adjusting stroke and are available in both rotating and non-rotating.



New! Vacuum Generators p.1020

New clampable vacuum generators are available for a convenient in-line solution



Suspensions with Brake p.300



New! Micro Series Ø6mm / M6 p.281



EMI offers a wide range of suspensions

Smooth Body for Mounting in Clamps



Threaded Body for Thru-hole Mounting



Rotating

Non-Rotating

Adjustable Angle



External Spring



Internal Spring

Suspensions Overview

Vacuum Accessories

p.280



Suspension for Actuators

p.312



G1/8"

p.282



M10 / Ø10mm

p.283



M14 / Ø14mm

p.304



M16

p.306



M20 / Ø20mm

p.308



VSR / VSRT

p.286



VSNG / VSNTG

p.290



VVX - High Load Stainless Steel

p.294



VSE / VSET

p.296



Suspensions with Clamp

p.314



Vacuum Elbow

- Mount between the vacuum cup and suspension or extension tube.
- Sets the angle of a vacuum cup between 0° and ± 90°.
- Tighten one screw to set the angle in a fixed position.
- Integrated vacuum channel.
- For vacuum circuits only.
- See page 259 for dimensional drawings and more application examples.

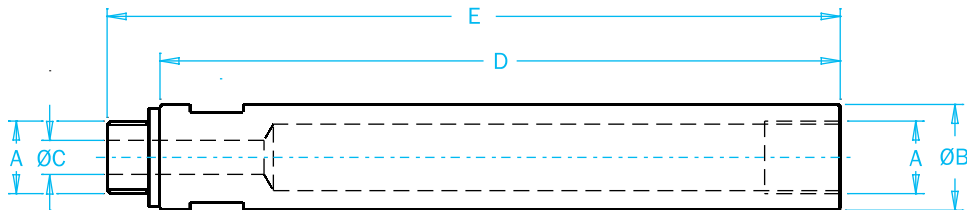


Elbow Arm for Suspensions

Quick#	Part#	Ports	Price	Wt.
5754	VAC05F05F	M5	\$13.35	10g
5755	VAC18F18F	G1/8"	\$14.38	15g
5756	VAC14F14F	G1/4"	\$20.09	40g



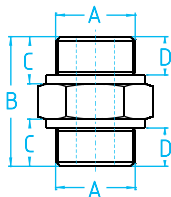
Vacuum Extension Tube



Vacuum Extension Tube

Quick#	Part#	Price	A	ØB	ØC	D	E	Wt.
5748	MFI-A154	\$9.48	M5	10	2	45	50	10g
5749	MFI-A155	\$9.98	M5	10	2	90	95	15g
5750	MFI-A150	\$10.93	G1/8"	14	4.5	45	52	15g
5751	MFI-A151	\$12.20	G1/8"	14	4.5	90	97	25g
5752	MFI-A152	\$12.44	G1/4"	20	6.5	45	53	30g
5753	MFI-A153	\$13.33	G1/4"	20	6.5	90	98	55g
7803	MFI-A506	\$34.32	G3/8"	30	10	150	159	210g

Fittings Available
on page 1043



Adaptor Fittings

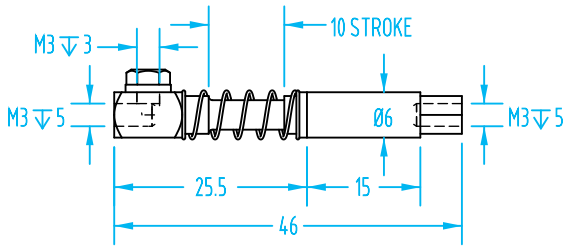
Quick#	Part#	Price	A	B	C	D	Wt.
5782	AF05M05M	\$3.23	M5	11.5	4	3	3g
5783	AF18M18M	\$2.33	G1/8"	17	7	5.5	3g
5784	AF14M14M	\$4.27	G1/4"	22	8	6.5	7g



Use Quick#s for easy online ordering.

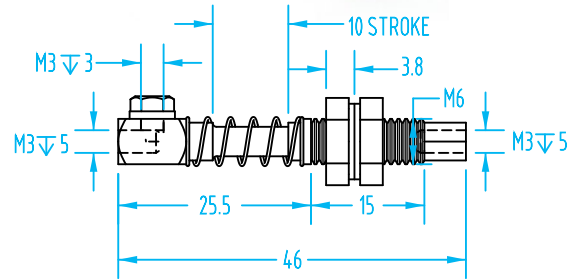
Ø6mm / M6 Suspensions

- See pages 222–223 for Micro Series framing components.
- See pages 412–416 for Mini Vacuum Cups and M3 Fittings.
- See page 486 for Micro Series Sprue Grippers.
- For rotationally symmetrical vacuum cups. (Do not use with Oval cups)
- Two options for fitting placement. It can either be fed through the side port (plugged initially) or it can pass through the vacuum channel which extends through the suspension body.
- It is recommended to use soft tubing and barb fittings on micro sized suspensions to prevent suspension binding.



Micro Series Clampable Suspension

Quick#	Part#	>ASS< #	Type	Price	Wt.
3790	GAF6-U-10	1-355-01-00	Rotate	\$23.63	6g



Micro Series Threaded Suspension

Quick#	Part#	>ASS< #	Type	Price	Wt.
3791	GAF6-M-10	1-355-02-00	Rotate	\$24.68	9g

Self-Retracting Suspension

- The VHE pulls the vacuum cup in as soon as the vacuum cup seals and vacuum is engaged.
- The internal spring extends the arm as soon as vacuum is disengaged.
- G1/8" air ports.
- Extendable reach with M17x1 thread and VLR Extension tubes.
- Anodized aluminum Ø20mm clampable body.
- Dimensional drawing can be found online.



NEW

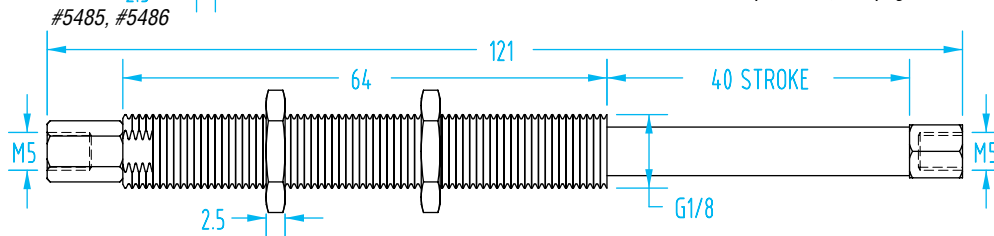
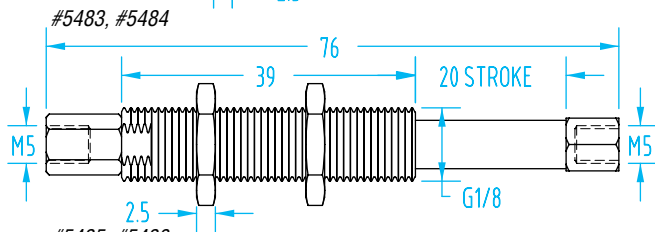
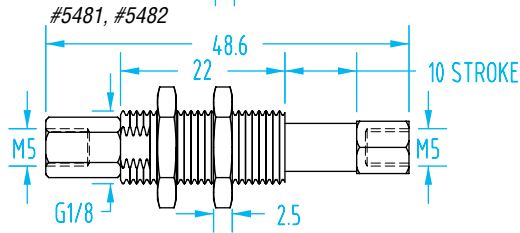
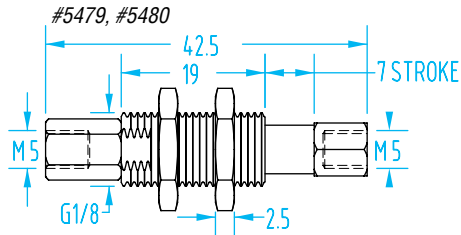
Ø20mm Clampable Self-Retracting Suspension

Quick#	Part#	>ASS< #	Stroke	Style	Price	Wt.
3948	VHE-20	1-775-00-00	20mm	Rotate	\$174.30	48g
3953	VHE-20-VG	1-775-00-00-1	20mm	Non-Rotate	\$174.30	48g

G1/8" Suspensions

(Dimensioned drawings shown full scale)

Internal Spring Versions

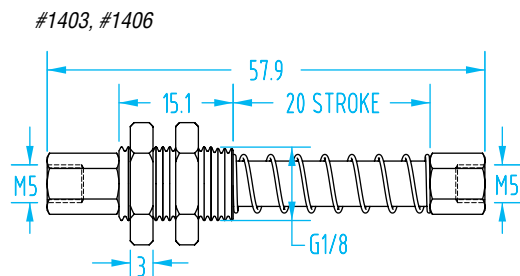
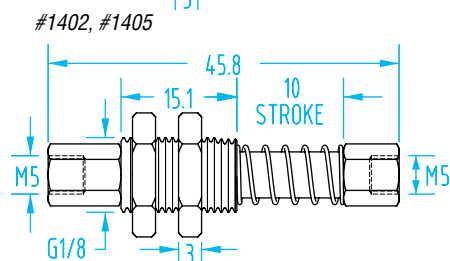
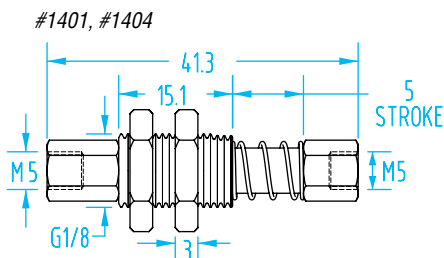


Quick#	Part#	Type	Stroke	Weight	Price
5479	GSS-C7-G8M5	Rotate	7mm	14g	\$20.76
5481	GSS-C10-G8M5	Rotate	10mm	19g	\$22.62
5483	GSS-C20-G8M5	Rotate	20mm	26g	\$28.27
5485	GSS-C40-G8M5	Rotate	40mm	37g	\$31.50

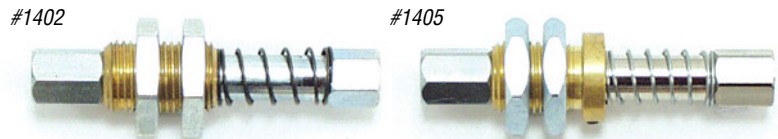
Quick#	Part#	Type	Stroke	Weight	Price
5480	GSS-C7R-G8M5	Non-Rotate	7mm	15g	\$30.19
5482	GSS-C10R-G8M5	Non-Rotate	10mm	21g	\$31.24
5484	GSS-C20R-G8M5	Non-Rotate	20mm	27g	\$39.38
5486	GSS-C40R-G8M5	Non-Rotate	40mm	39g	\$45.68

We recommend using an appropriately sized lock washer with threaded body suspensions, see page 1076.

External Spring Versions



Quick#	Part#	Type	Stroke	Weight	Price
1401	GSS-40-G8M5	Rotate	5mm	14g	\$36.05
1404	GSS-40R-G8M5	Non-rotate	5mm	14g	\$93.95



Quick#	Part#	Type	Stroke	Weight	Price
1402	GSS-47-G8M5	Rotate	10mm	16g	\$70.11
1405	GSS-47R-G8M5	Non-rotate	10mm	16g	\$51.66

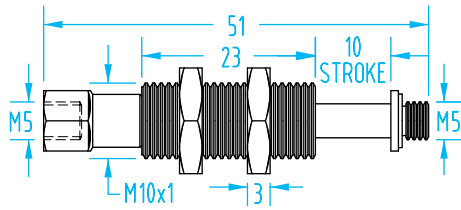


Quick#	Part#	Type	Stroke	Weight	Price
1403	GSS-59-G8M5	Rotate	20mm	18g	\$72.17
1406	GSS-59R-G8M5	Non-rotate	20mm	18g	\$95.84

M10 Suspensions

(Dimensioned drawings shown full scale)

Quick#	Part#	Type	Stroke	Weight	Price
336	GSS-53-M10M5	Rotate	10mm	19g	\$19.75
337	GSS-53R-M10M5	Non-rotate	10mm	21g	\$22.34
2569	GSS-80-M10M5	Rotate	20mm	26g	\$23.64
2571	GSS-80R-M10M5	Non-rotate	20mm	26g	\$33.92
443	GSS-99-M10M5	Rotate	30mm	32g	\$24.68
1870	GSS-99R-M10M5	Non-rotate	30mm	32g	\$34.96
2576	GSS-119-M10M5	Rotate	50mm	43g	\$37.85
5444	GSS-119R-M10M5	Non-Rotate	50mm	46g	\$34.75



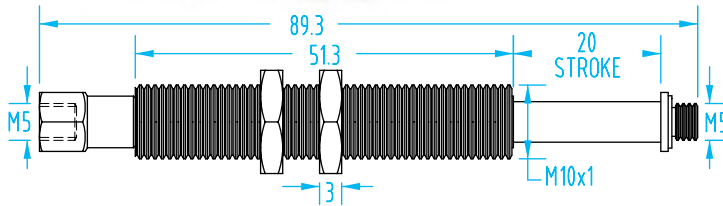
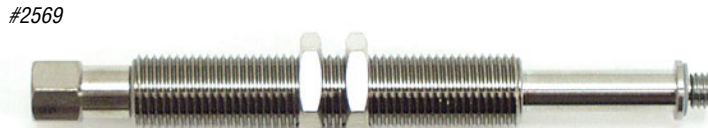
Fittings Available on page 1043



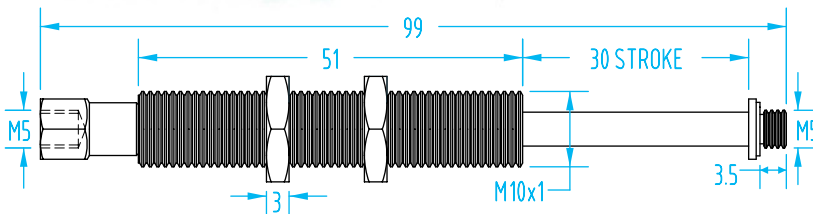
Mounting Brackets Available on page 244



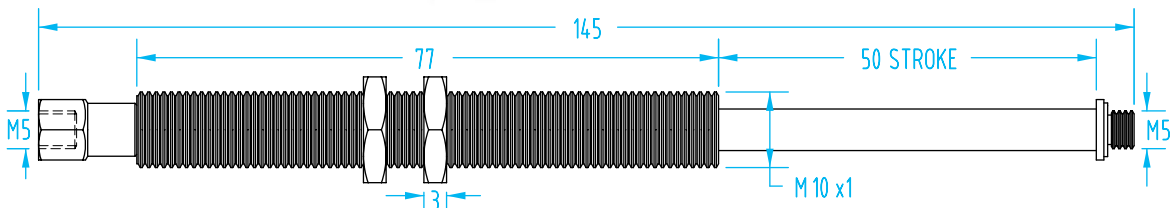
We recommend using an appropriately sized lock washer with threaded body suspensions, see page 1076.



#2571



#1870



Suspensions

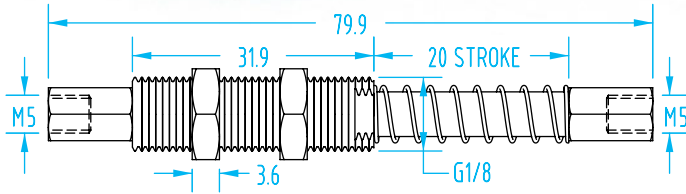
(Dimensioned drawings shown full scale)

G1/8"

#333



#454



Quick#	Part#	Type	Stroke	Weight	Price
333	GSS-60-G8M5	Rotate	20mm	19g	\$36.00
454	GSS-60R-G8M5	Non-rotate	20mm	18g	\$45.00

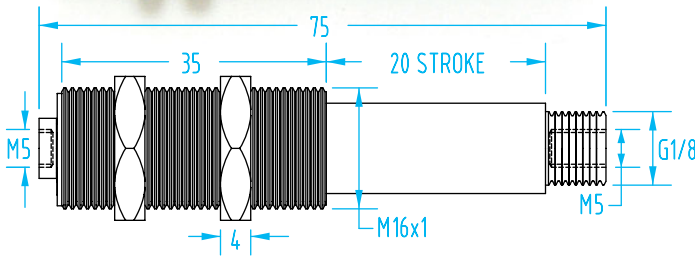
We recommend using an appropriately sized lock washer with threaded body suspensions, see page 1076.

Mounting Brackets Available on page 244



Lightweight Suspensions

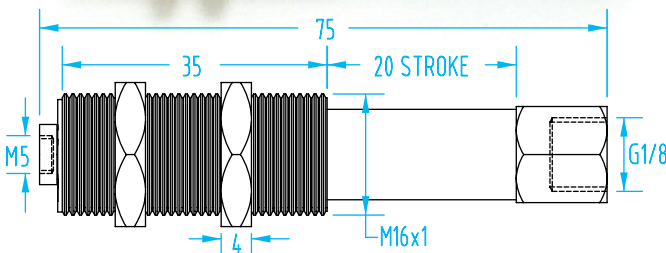
#1822



Fittings Available on page 1043



#1824



Quick#	Part#	Type	Stroke	Weight	Price
1822	GSS-75L-M16M5	Rotate	20mm	20g	\$21.30
1823	GSS-75L-M16N	Rotate	20mm	20g	\$25.30
1824	GSS-75L-M16G8	Rotate	20mm	18g	\$21.30

#1823



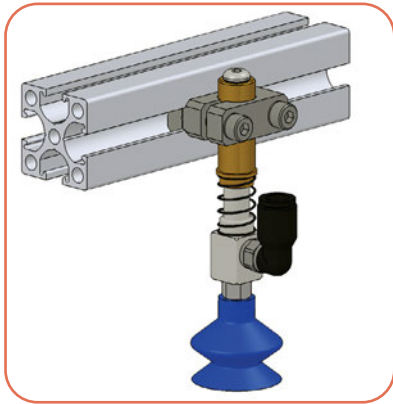
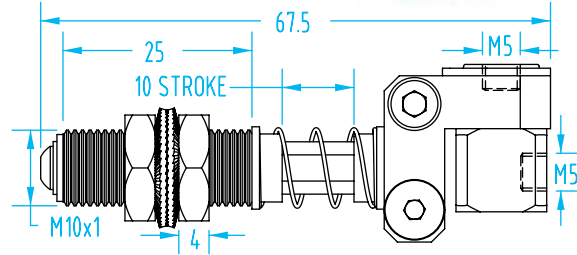
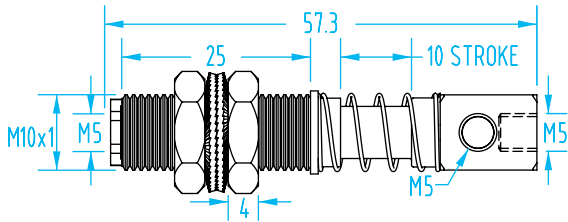
M10 Suspensions

(Dimensioned drawings shown full scale)

#3607



#3166



Quick#	Part#	>ASS< #	Type	Stroke	Weight	Price
3607	GAF10-M-10	1-356-09-00	Rotate	10mm	41g	\$33.08
3166	GGG10-M-10	1-360-06-00	Non-rotate	10mm	41g	\$36.75

Use Quick#s for easy online ordering.

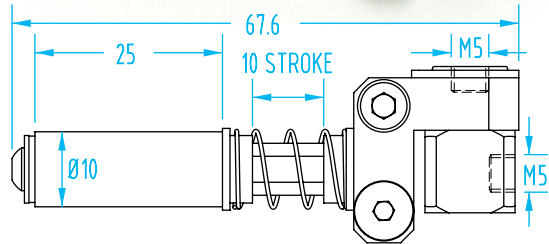
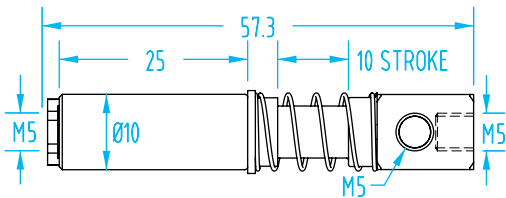
- Two options for fitting placement. It can either be fed through the side port (plugged initially) or it can pass through the vacuum channel which extends through the suspension body.

Ø10mm Suspensions

#3603



#3165



Quick#	Part#	>ASS< #	Type	Stroke	Weight	Price
3603	GAF10-U-10	1-356-00-00	Rotate	10mm	33g	\$28.88
3165	GGG10-C-10	1-360-03-00	Non-rotate	10mm	35g	\$36.75

- Two options for fitting placement. It can either be fed through the side port (plugged initially) or it can pass through the vacuum channel which extends through the suspension body.

Rotating Suspensions – VSR

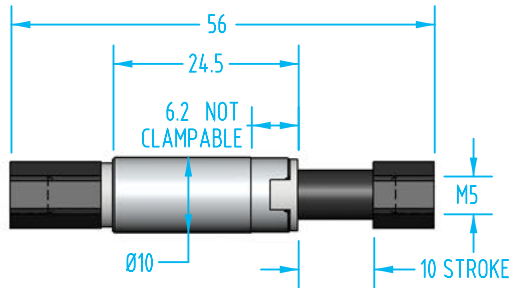
(Dimensioned drawings shown full scale)

- Body and rod are made of anodized aluminum.
- High-load capability
- Clampable smooth body
- FDA-H1 food-grade lubricant

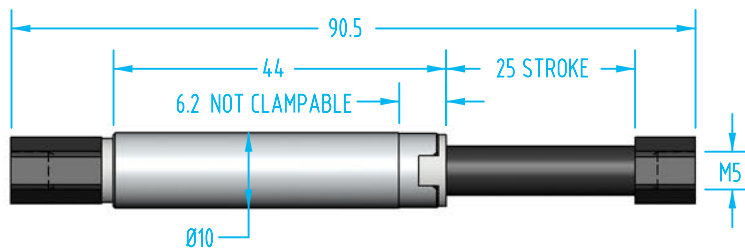
New Bushing and shaft design provides more reliable compensation and a more robust vacuum connection. Check online product pages for current dimensional drawings and photos. www.EMlcorp.com and search by Q#.



#6602



#6603



Fittings Available on page 1043

Mounting Brackets Available on page 248

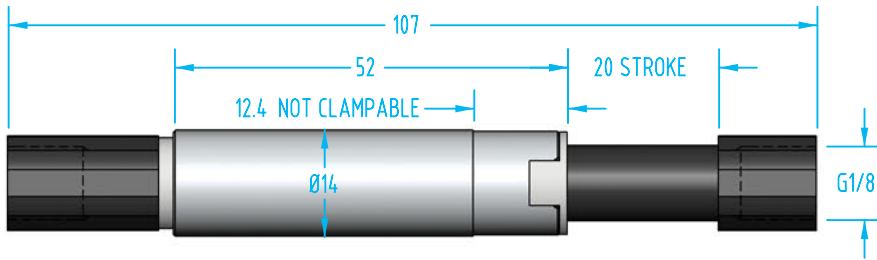
Quick#	Part#	Price	Air Port	ØD	Stroke	Wt.
6602	VSR-1010	\$19.95	M5	10	10mm	7g
6603	VSR-1025	\$26.20	M5	10	25mm	11g
6604	VSR-1420	\$31.45	G1/8"	14	20mm	28g
6605	VSR-1435	\$36.70	G1/8"	14	35mm	37g
6606	VSR-2025F18	\$40.90	G1/8"	20	25mm	64g
6607	VSR-2050F18	\$46.15	G1/8"	20	50mm	93g
7782	VSR-2025F14	\$40.90	G1/4"	20	25mm	60g
7783	VSR-2050F14	\$46.15	G1/4"	20	50mm	90g

Suspension Reactive Spring Force data for all suspensions is available online, [click here!](#)

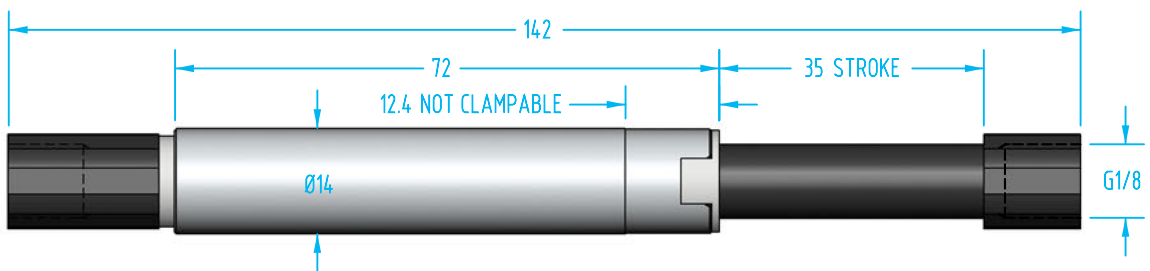
Rotating Suspensions – VSR

(Dimensioned drawings shown full scale)

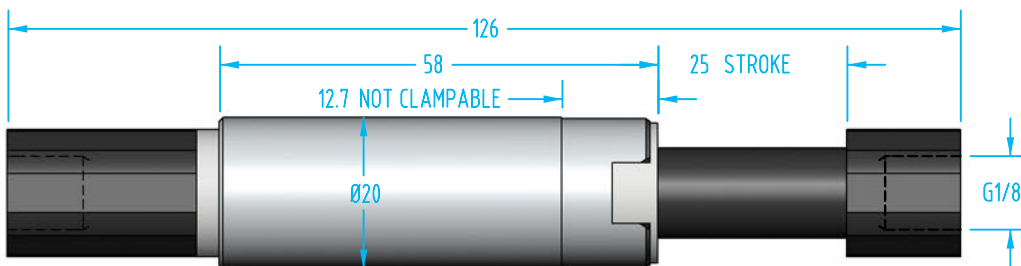
#6604



#6605

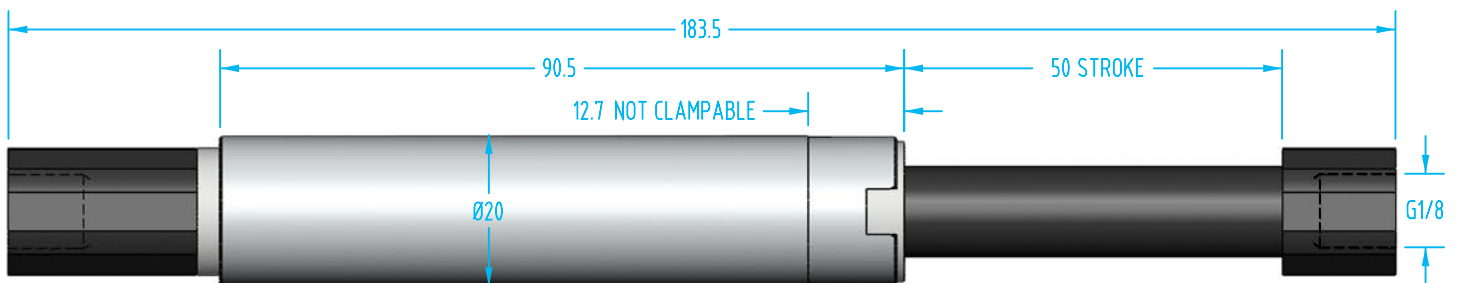


#6606



Note: Quick #7782 has the same dimensions except with G1/4" air ports

#6607

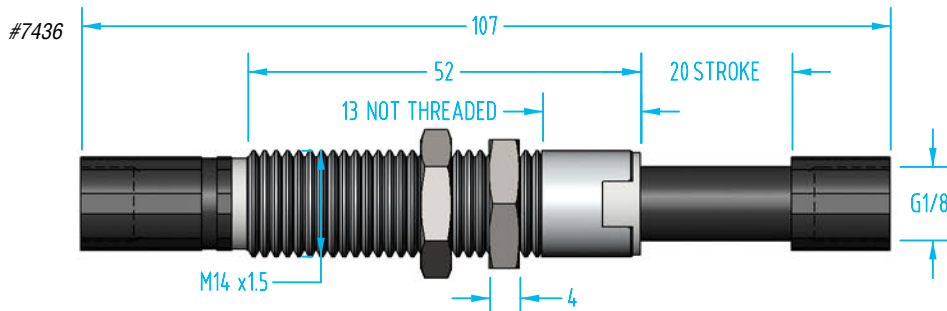
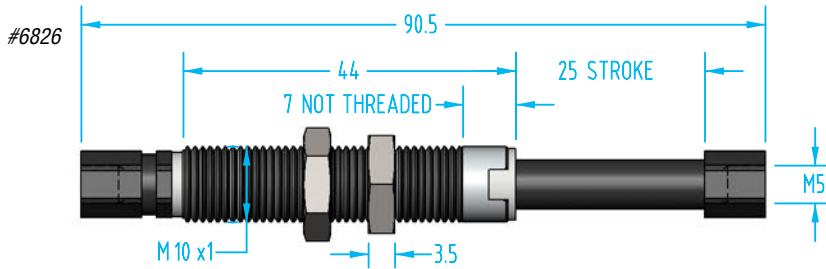
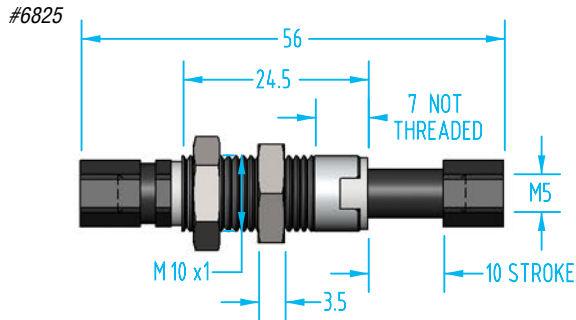


Note: Quick #7783 has the same dimensions except with G1/4" air ports

Rotating Suspensions – VSRT

(Dimensioned drawings shown full scale)

- Body and rod are made of anodized aluminum.
- High-load capability
- Threaded body
- We recommend using an appropriately sized lock washer with threaded body suspensions.
- New Bushing and shaft design provides more reliable compensation and a more robust vacuum connection.



Quick#	Part#	Price	Air Port	Mount	Stroke	Wt.
6825	VSRT1010	\$22.60	M5	M10x1	10mm	12g
6826	VSRT1025	\$26.30	M5	M10x1	25mm	16.5g
7436	VSRT1420	\$32.60	G1/8"	M14x1.5	20mm	37g
7437	VSRT1435	\$36.30	G1/8"	M14x1.5	35mm	47g
6827	VSRT1620	\$33.80	G1/8"	M16x1	20mm	46.5g
6828	VSRT1635	\$37.60	G1/8"	M16x1	35mm	58g
6829	VSRT2025F18	\$40.10	G1/8"	M20x1.5	25mm	85g
6830	VSRT2050F18	\$45.10	G1/8"	M20x1.5	50mm	110g
7784	VSRT2025F14	\$40.10	G1/4"	M20x1.5	25mm	82g
7785	VSRT2050F14	\$45.10	G1/4"	M20x1.5	50mm	111g
7788	VSRT2540*	\$64.40	G3/8"	M25x1.5	40mm	200g
7789	VSRT2580*	\$89.85	G3/8"	M25x1.5	80mm	271g

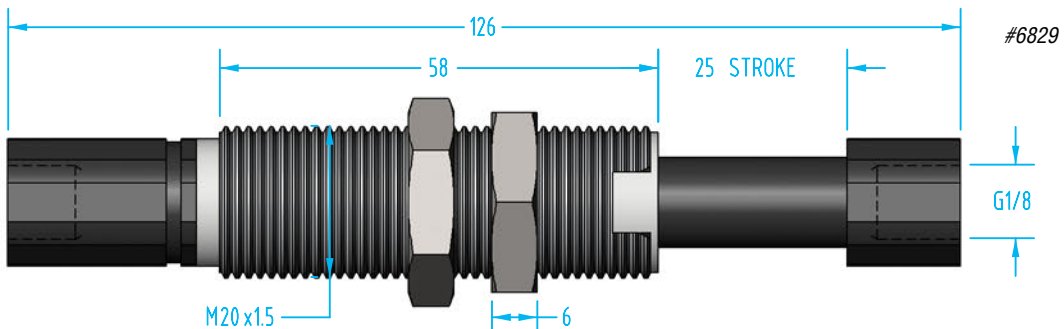
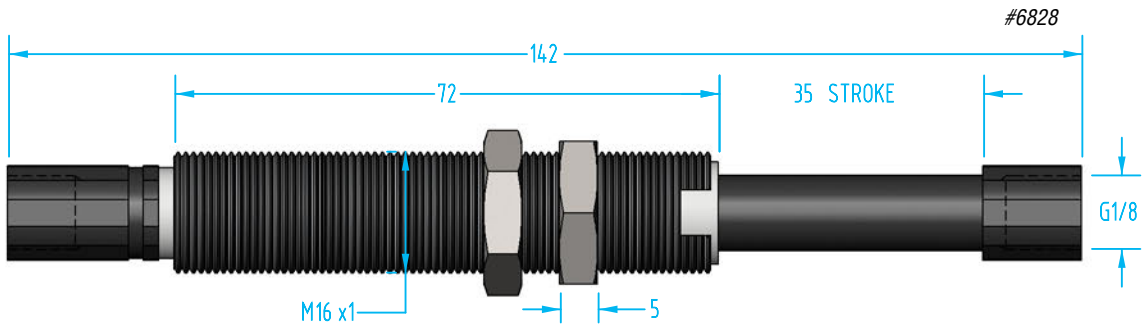
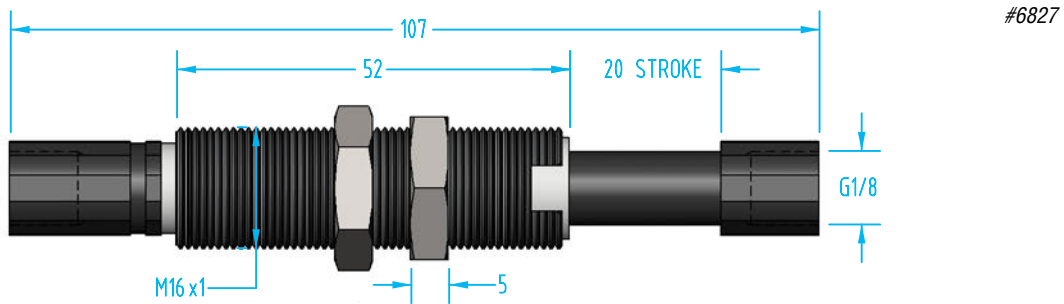
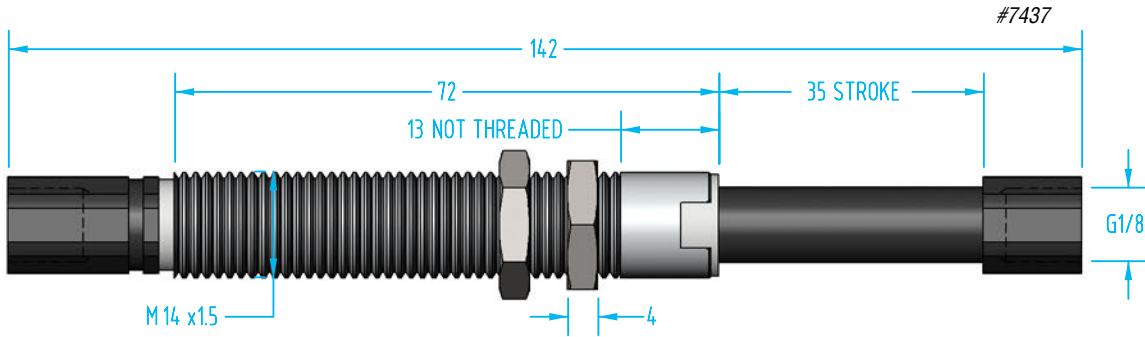
*Dimensional information available online.

Lock Washers

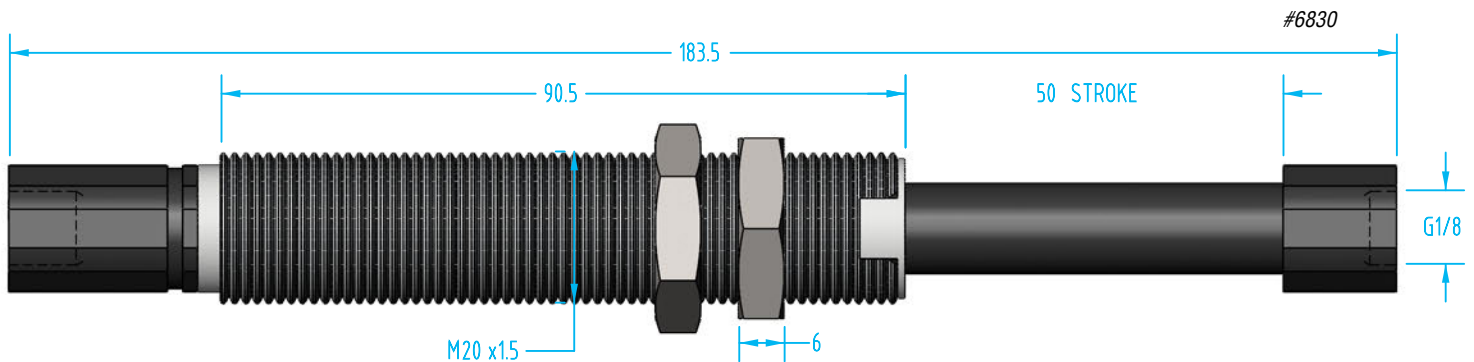
Quick #	Part #	Description	Price
948	GSC-M10-LW	M10 Thin lock washer	\$0.25
2347	GSC-M14-LW	M14 Thin lock washer	\$0.40
939	GSC-M16-LW	M16 Thin lock washer	\$0.60
928	GSC-M20-LW	M20 Thin lock washer	\$1.25
985	GSC-M25-LW	M25 Thin lock washer	\$2.25

Rotating Suspensions – VSRT

(Dimensioned drawings shown full scale)



Note: Quick #7884 has the same dimensions except with G1/4" air ports



Note: Quick #7785 has the same dimensions except with G1/4" air ports

Non-Rotating Suspensions – VSNG

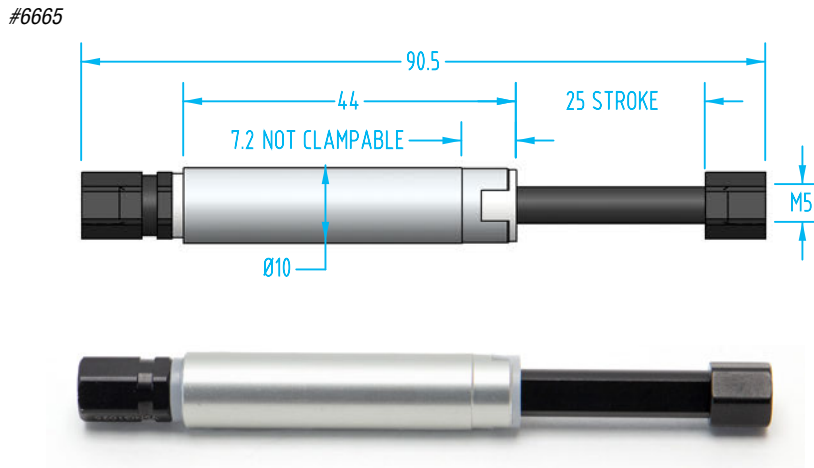
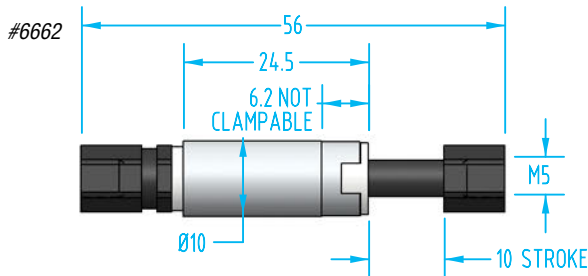
(Dimensioned drawings shown full scale)

- Body and rod made of anodized aluminum.
- Non-rotating rod with high-load capability.
- Clampable smooth body.
- FDA-H1 food-grade lubricant.



New Design Changes!

New Bushing and shaft design provides more reliable compensation and a more robust vacuum connection.



Quick#	Part#	Price	Air Port	ØD	Stroke	Wt.
6662	VSNG-1010	\$24.25	M5	10	10mm	7g
6665	VSNG-1025	\$26.90	M5	10	25mm	11g
6668	VSNG-1420	\$31.50	G1/8"	14	20mm	27g
6671	VSNG-1435	\$35.70	G1/8"	14	35mm	36g
6674	VSNG-2025-F18	\$39.90	G1/8"	20	25mm	63g
6677	VSNG-2050-F18	\$46.20	G1/8"	20	50mm	91g
7252	VSNG-2025-F14	\$39.90	G1/4"	20	25mm	60g
7253	VSNG-2050-F14	\$46.20	G1/4"	20	50mm	88g

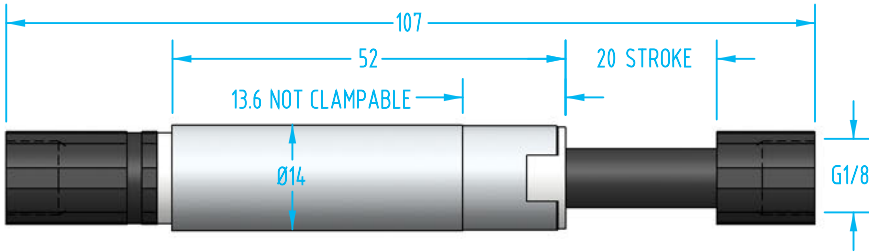
Use Quick#s for easy online ordering.



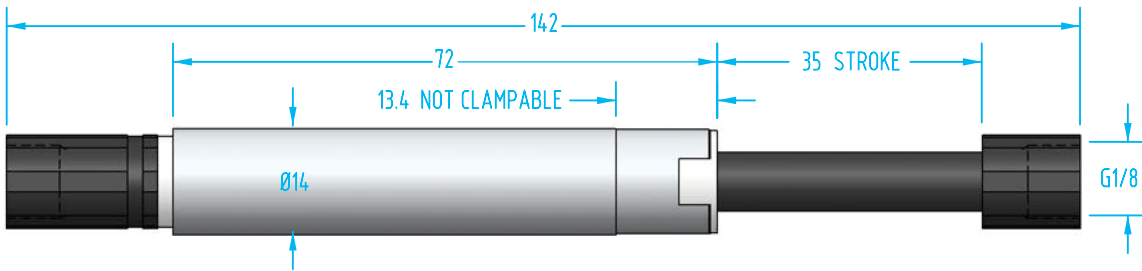
Non-Rotating Suspensions – VSNG

(Dimensioned drawings shown full scale)

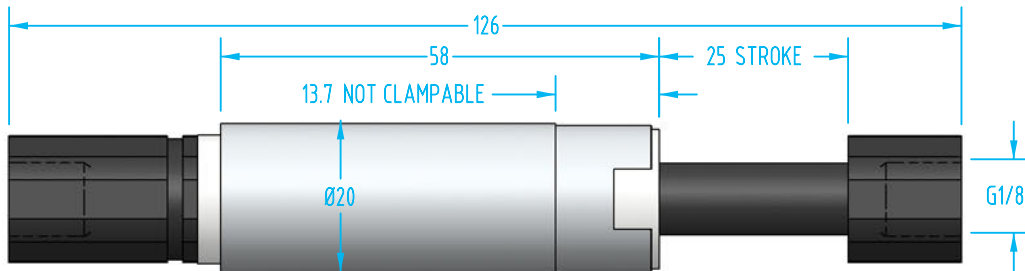
#6668



#6671

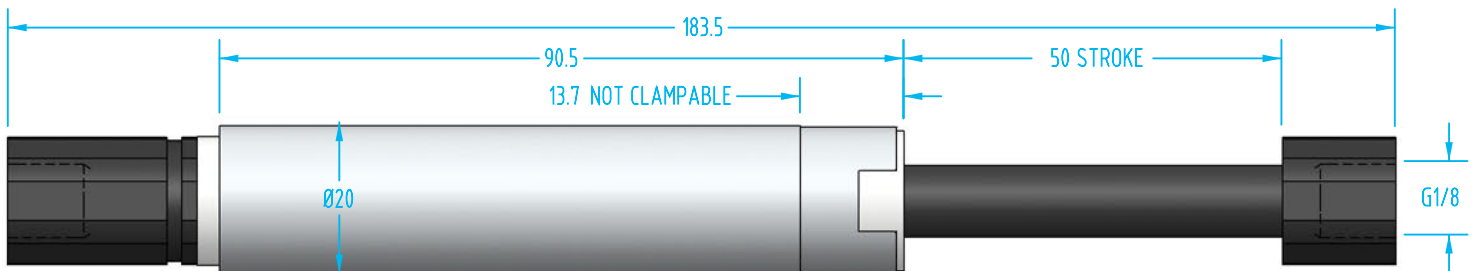


#6674



Note: Quick #7252 has the same dimensions except with G1/4" air ports

#6677



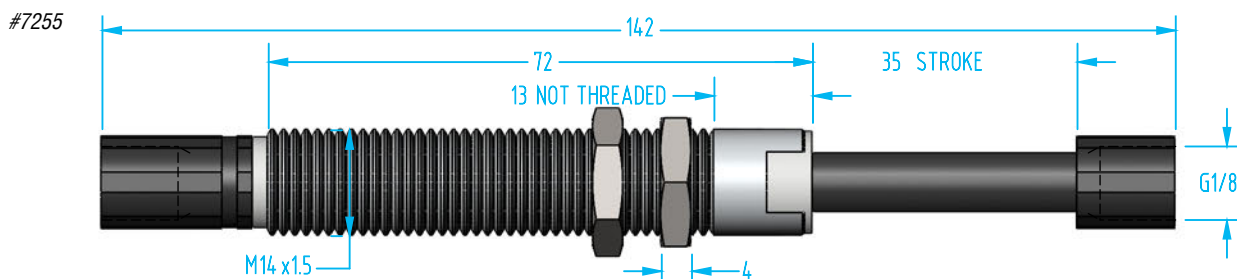
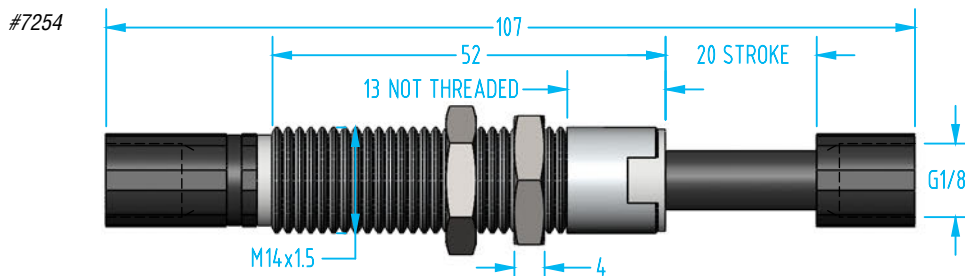
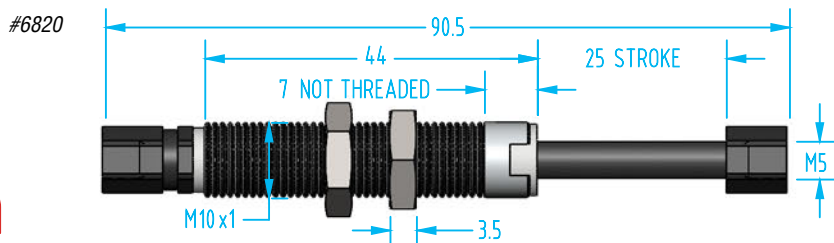
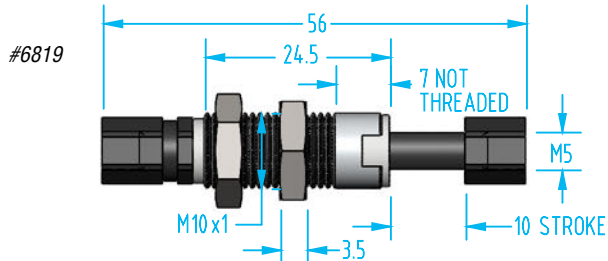
Note: Quick #7253 has the same dimensions except with G1/4" air ports

Non-Rotating Suspensions – VSNTG

(Dimensioned drawings shown full scale)

- Body and rod are made of anodized aluminum.
- High-load capability
- Threaded body
- FDA-H1 food-grade lubricant.
- We recommend using an appropriately sized lock washer with threaded suspensions, see page 288.

New Design Changes!
Phased in though 2021-2022



New Bushing and shaft design provides more reliable compensation and a more robust vacuum connection. Check online product pages for current dimensional drawings and photos. www.EMlcorp.com and search by Q#.

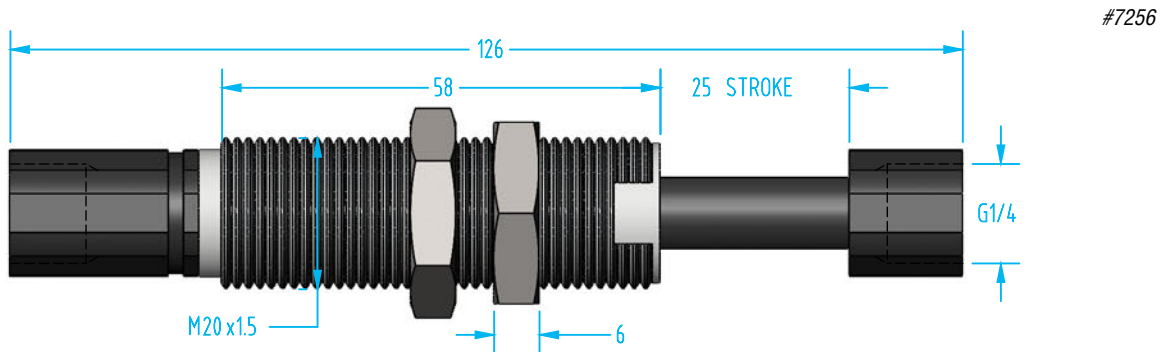
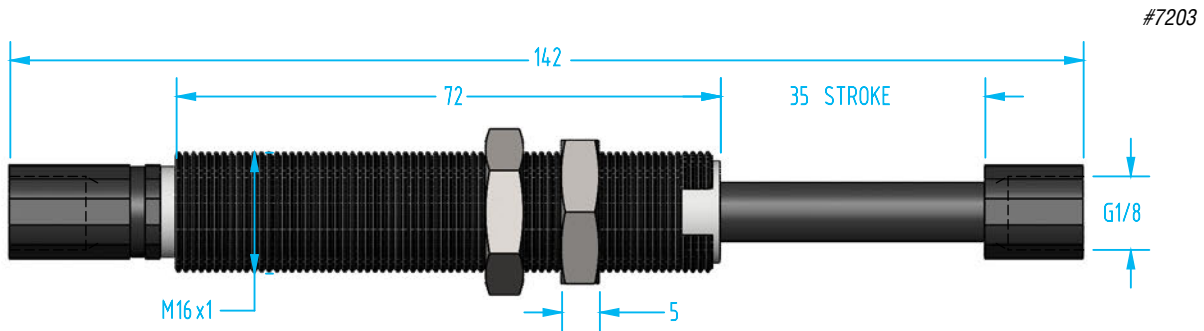
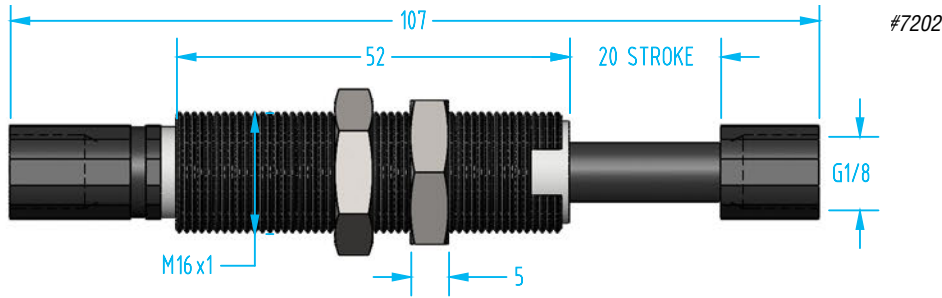
Quick#	Part#	Price	Air Port	ØD	Stroke	Wt.
6819	VSNTG-1010	\$27.60	M5	M10x1	10mm	7g
6820	VSNTG-1025	\$30.10	M5	M10x1	25mm	11g
7254	VSNTG-1420	\$38.00	G1/8"	M14x1.5	20mm	22g
7255	VSNTG-1435	\$44.00	G1/8"	M14x1.5	35mm	33g
7202	VSNTG-1620	\$38.80	G1/8"	M16x1	20mm	35g
7203	VSNTG-1635	\$44.00	G1/8"	M16x1	35mm	45g
7256	VSNTG-2025-F18	\$46.40	G1/8"	M20x1.5	25mm	54g
7257	VSNTG-2050-F18	\$49.00	G1/8"	M20x1.5	50mm	80g
7204	VSNTG-2025-F14	\$46.40	G1/4"	M20x1.5	25mm	65g
7205	VSNTG-2050-F14	\$49.00	G1/4"	M20x1.5	50mm	90g
7206	VSNTG-2540*	\$70.00	G3/8"	M25x1.5	40mm	170g
7207	VSNTG-2580*	\$89.00	G3/8"	M25x1.5	80mm	235g

*Dimensional information available online.

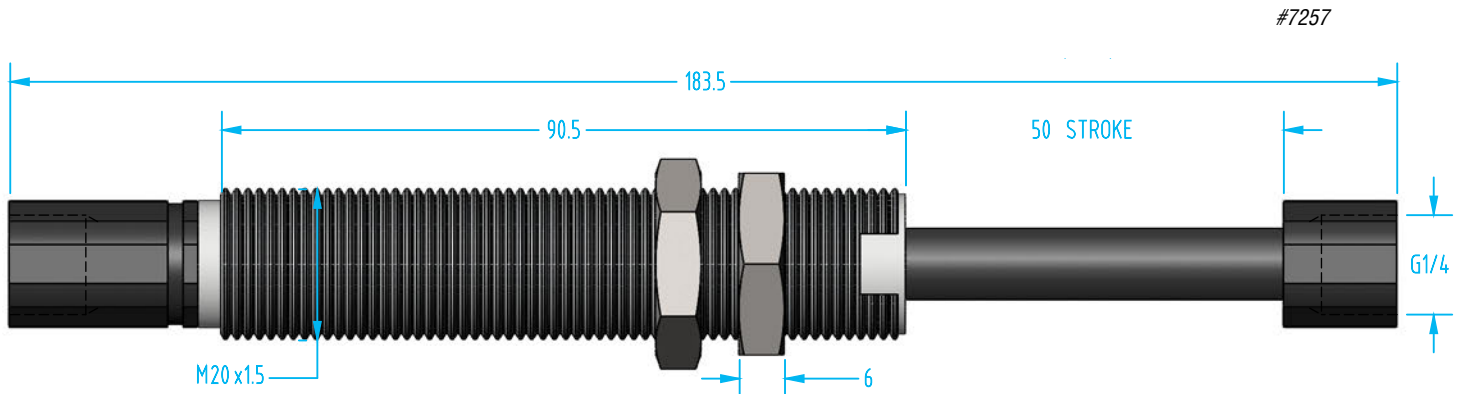


Non-Rotating Suspensions – VSNTG

(Dimensioned drawings shown full scale)



Note: Quick #7204 has the same dimensions except with G1/4" air ports



Note: Quick #7205 has the same dimensions except with G1/4" air ports

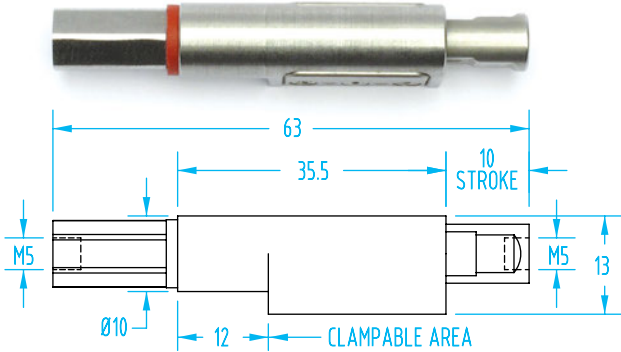
Non-Rotating Ball Bearing Suspensions – VVX

(Dimensioned drawings shown full scale)

- Body, rod and spring in stainless steel.
- Ball bearings for a smooth operation and exceptionally high load capability.
- Zero backlash
- FDA-H1 food-grade lubricant.

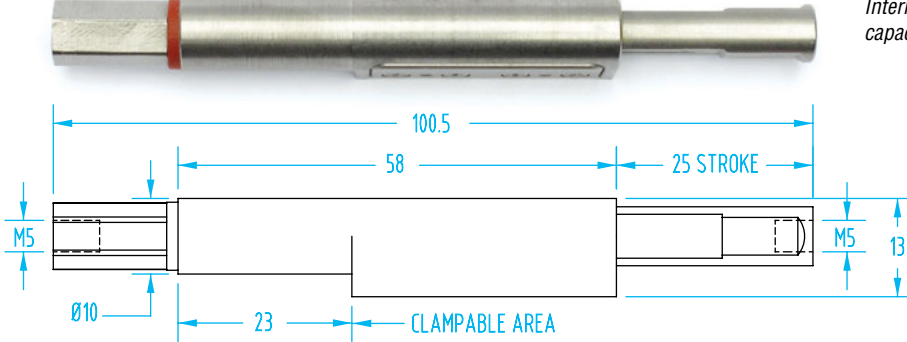


#6951

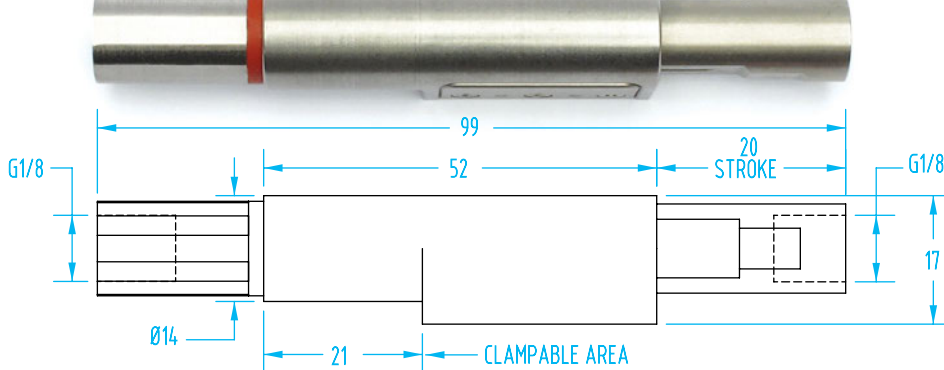


Internal spring and ball bearings for high load capacity and very smooth operation.

#6952



#6953



Fittings Available on page 1043

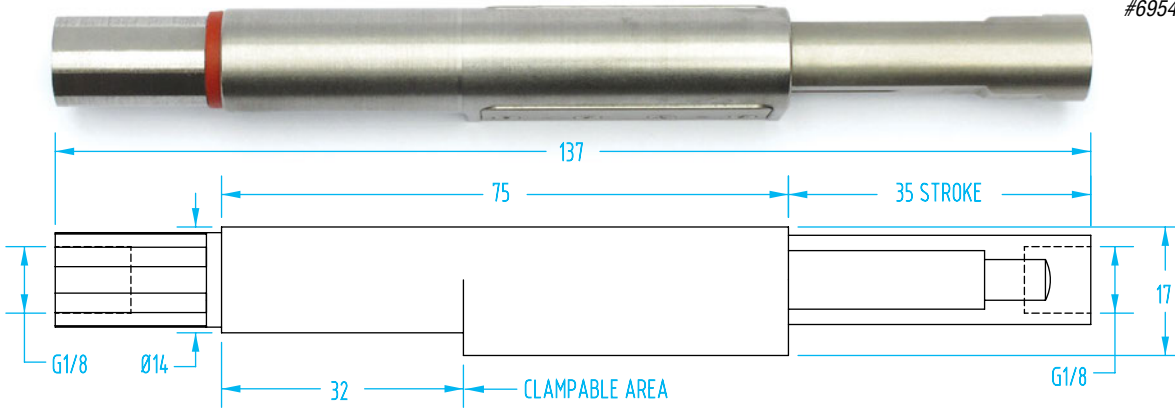
Mounting Brackets Available on page 248

Quick#	Part#	Price	ØD	Air Port	Stroke	Wt.
6951	VVX1010F	\$188.00	10	M5	10mm	30g
6952	VVX1025F	\$192.00	10	M5	25mm	45g
6953	VVX1420F	\$214.00	14	G1/8"	20mm	80g
6954	VVX1435F	\$219.00	14	G1/8"	35mm	110g
6955	VVX2025F	\$227.00	20	G1/8"	25mm	150g
6956	VVX2050F	\$232.00	20	G1/8"	50mm	235g

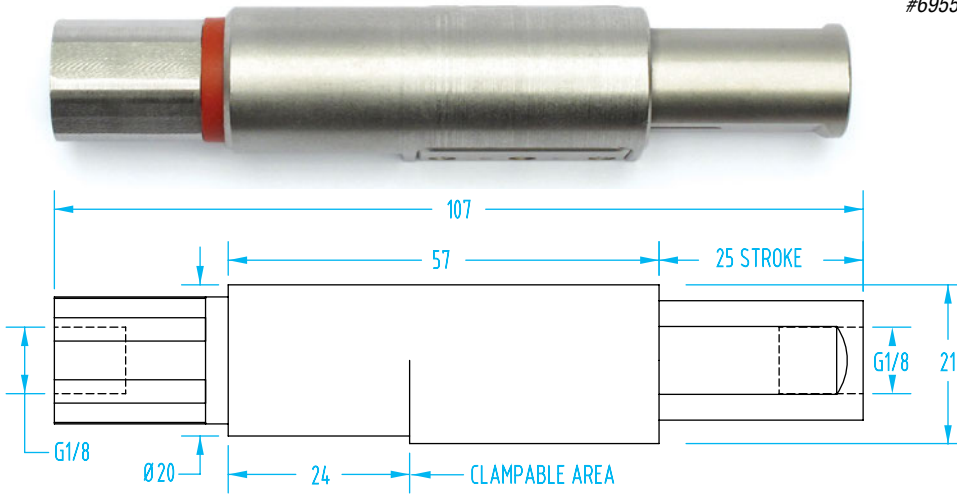
Non-Rotating Ball Bearing Suspensions – VVX

(Dimensioned drawings shown full scale)

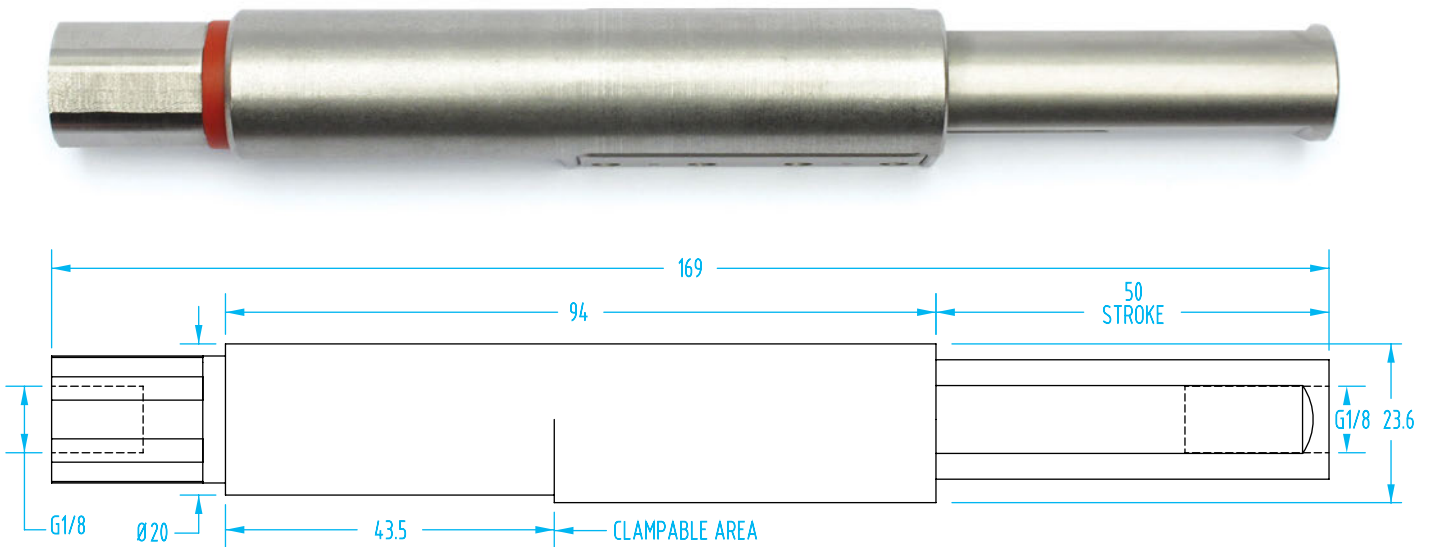
#6954



#6955



#6956

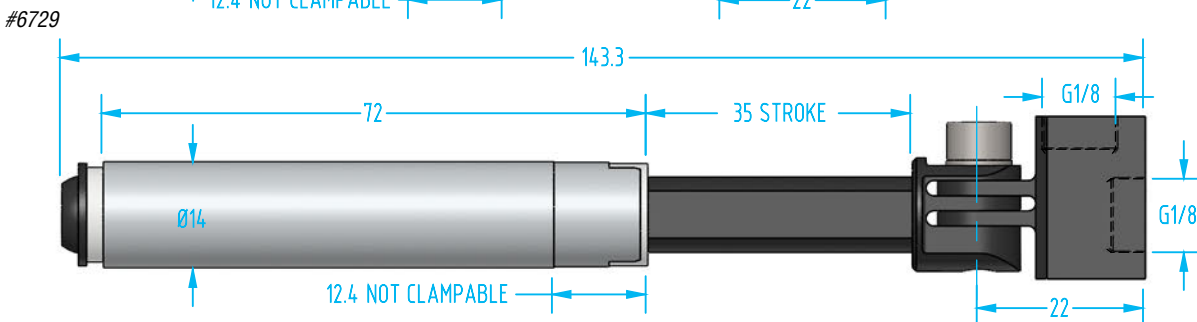
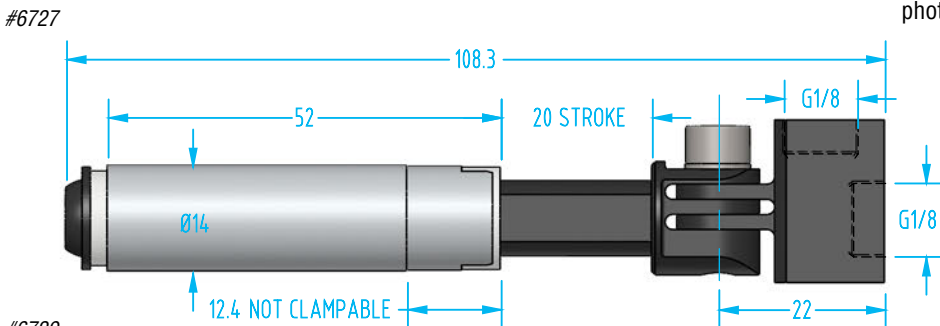
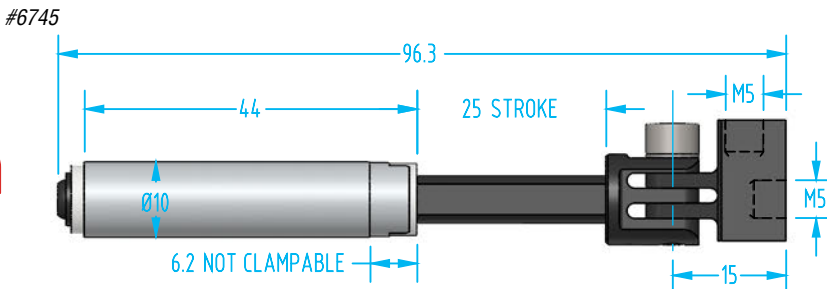
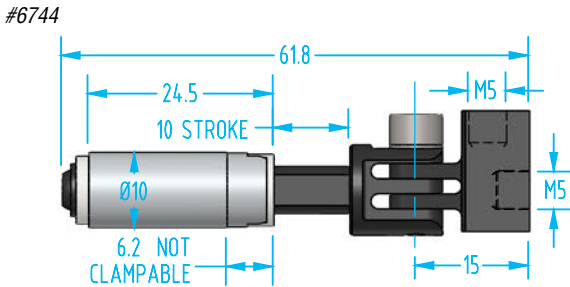


Suspensions with Integrated Elbow Arms – VSE

(Dimensioned drawings shown full scale)

- Adjustable angle from 0° and +/- 90°.
- Body and rod are made of anodized aluminum.
- Non-rotating
- Clampable, smooth body

New Design Changes!
Phased in though 2021-2022



New Bushing and shaft design provides more reliable compensation. Check online product pages for current dimensional drawings and photos. www.EMlcorp.com and search by Q#.

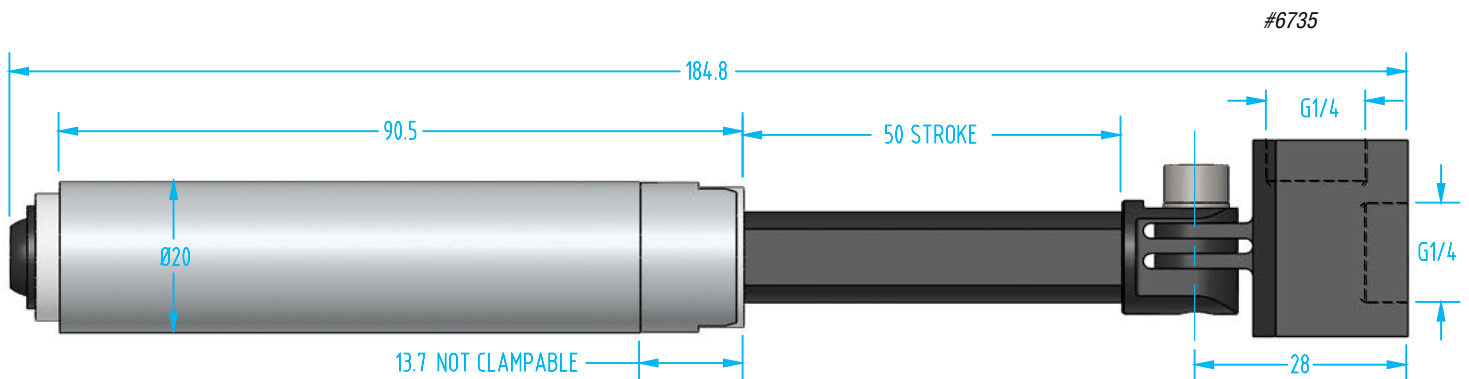
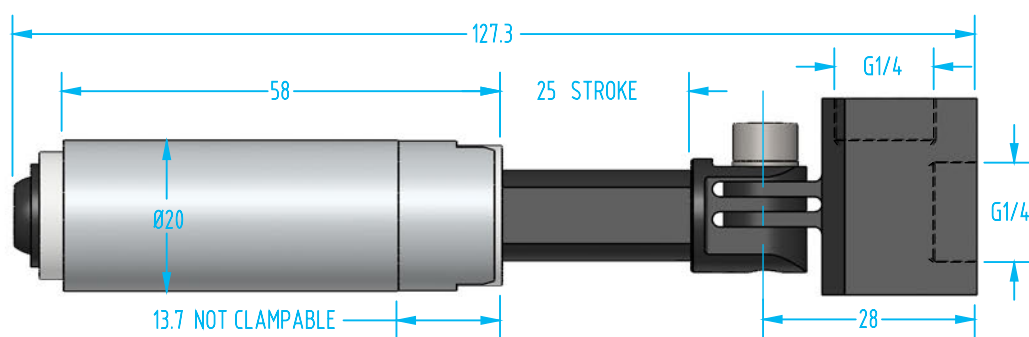
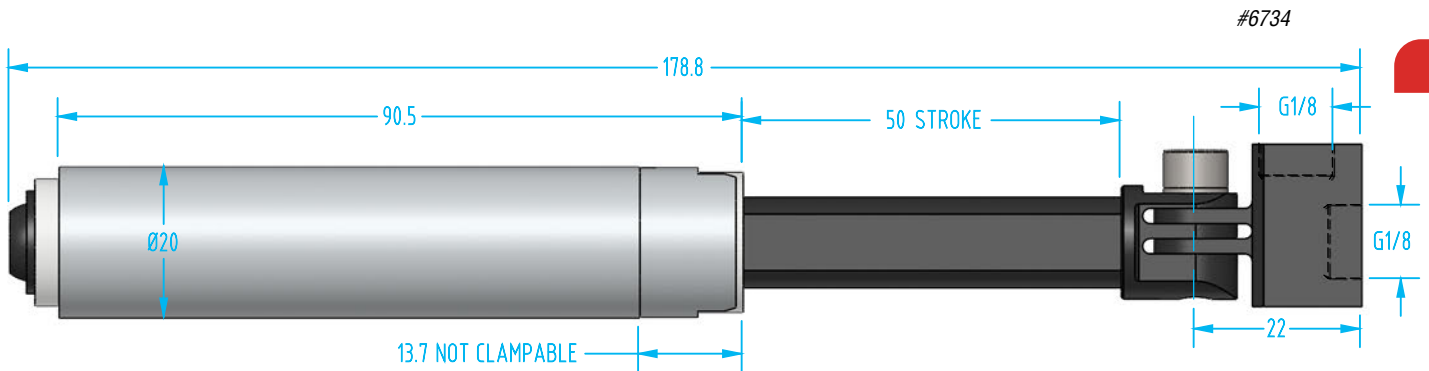
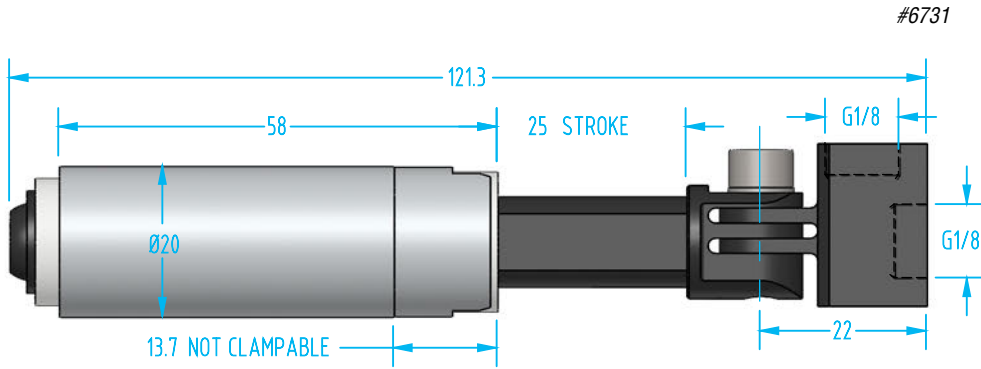
Quick#	Part#	Price	Air Port	ØD	Stroke	Wt.
6744	VSE1010F05	\$34.40	M5	10	10mm	15g
6745	VSE1025F05	\$38.10	M5	10	25mm	20g
6727	VSE1420F18	\$47.25	G1/8"	14	20mm	45g
6729	VSE1435F18	\$51.10	G1/8"	14	35mm	55g
6731	VSE2025F18	\$52.35	G1/8"	20	25mm	70g
6734	VSE2050F18	\$55.55	G1/8"	20	50mm	105g
6732	VSE2025F14	\$52.35	G1/4"	20	25mm	90g
6735	VSE2050F14	\$55.55	G1/4"	20	50mm	120g

Fittings Available
on page 1043



Suspensions with Integrated Elbow Arms – VSE

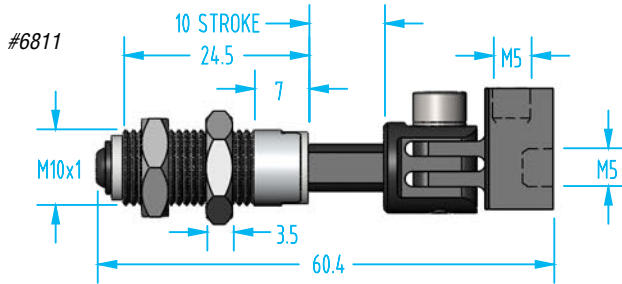
(Dimensioned drawings shown full scale)



Suspensions with Integrated Elbow Arms – VSET

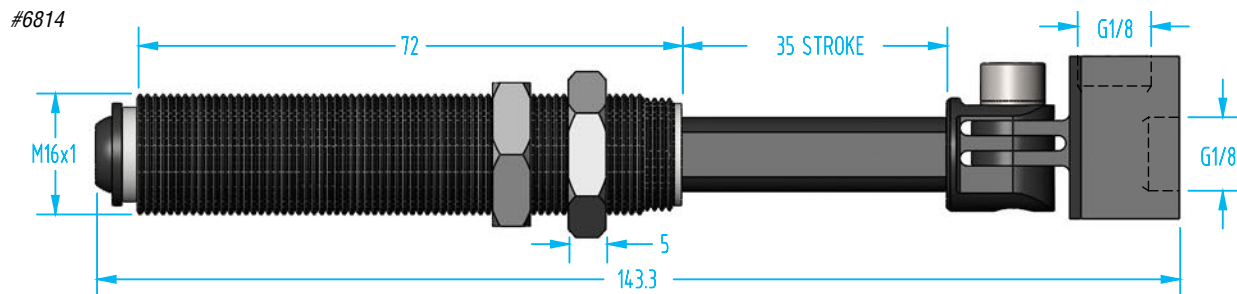
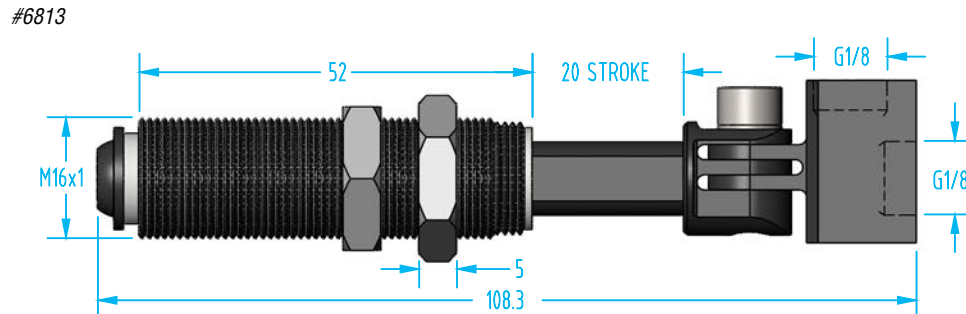
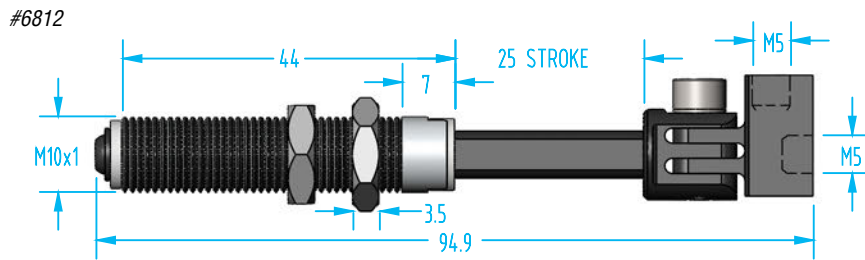
(Dimensioned drawings shown full scale)

- Adjustable angle from 0° and +/- 90°.
- Body and rod are made of anodized aluminum.
- Non-rotating, threaded body.
- We recommend using an appropriately sized lock washer with threaded body suspensions.



New Design Changes!

New bushing and shaft design provides more reliable compensation.



Quick#	Part#	Price	Air Port	Mount	Stroke	Wt.
6811	VSET1010F05	\$42.10	M5	M10x1	10mm	18g
6812	VSET1025F05	\$45.40	M5	M10x1	25mm	23g
6813	VSET1620F18	\$52.10	G1/8"	M16x1	20mm	57g
6814	VSET1635F18	\$55.60	G1/8"	M16x1	35mm	70g
6816	VSET2025F18	\$59.40	G1/8"	M20x1.5	25mm	88g
6815	VSET2025F14	\$59.40	G1/4"	M20x1.5	25mm	109g
6818	VSET2050F18	\$62.70	G1/8"	M20x1.5	50mm	125g
6817	VSET2050F14	\$62.70	G1/4"	M20x1.5	50mm	142g

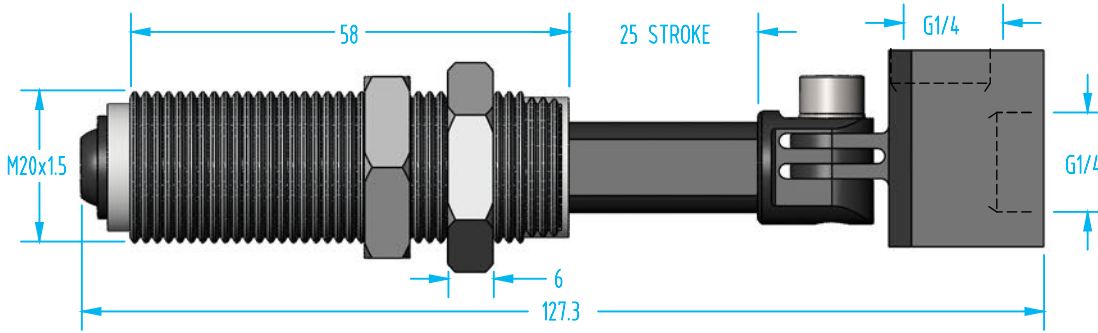
Lock Washers

Quick #	Part #	Description	Price
948	GSC-M10-LW	M10 Thin lock washer	\$0.20
939	GSC-M16-LW	M16 Thin lock washer	\$0.30
928	GSC-M20-LW	M20 Thin lock washer	\$1.00

Suspensions with Integrated Elbow Arms – VSET

(Dimensioned drawings shown full scale)

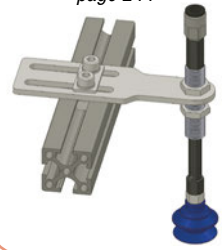
#6816



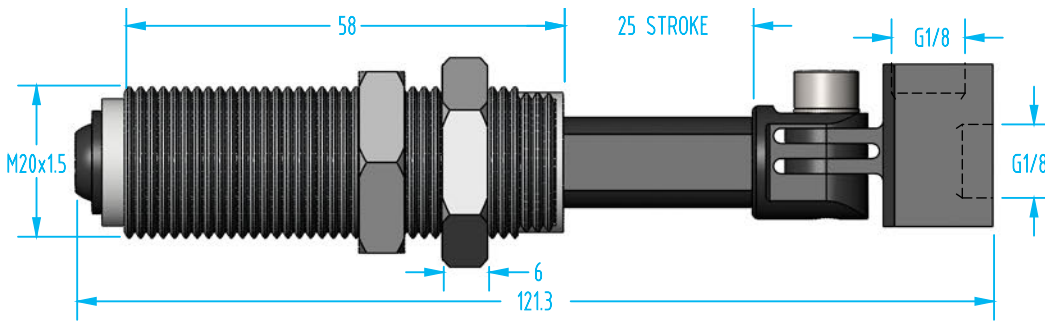
Fittings Available on page 1043



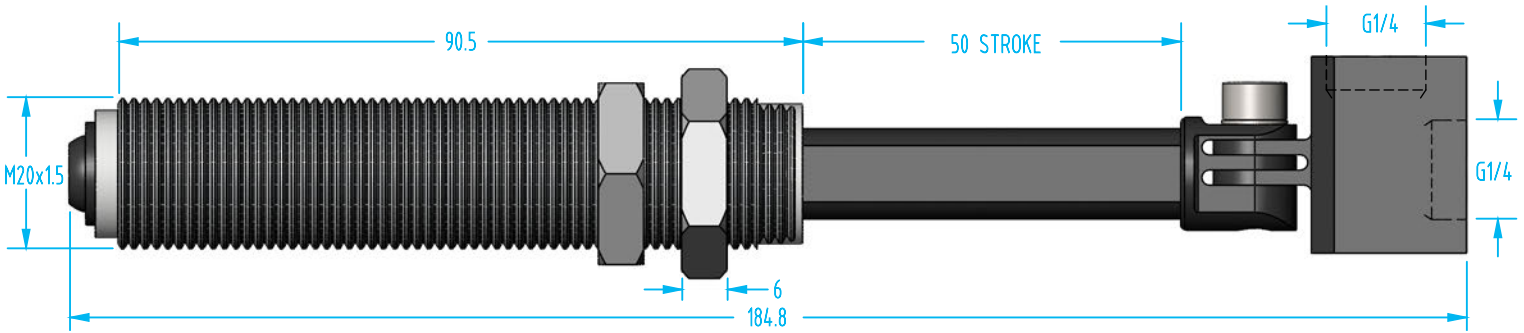
Mounting Brackets Available on page 244



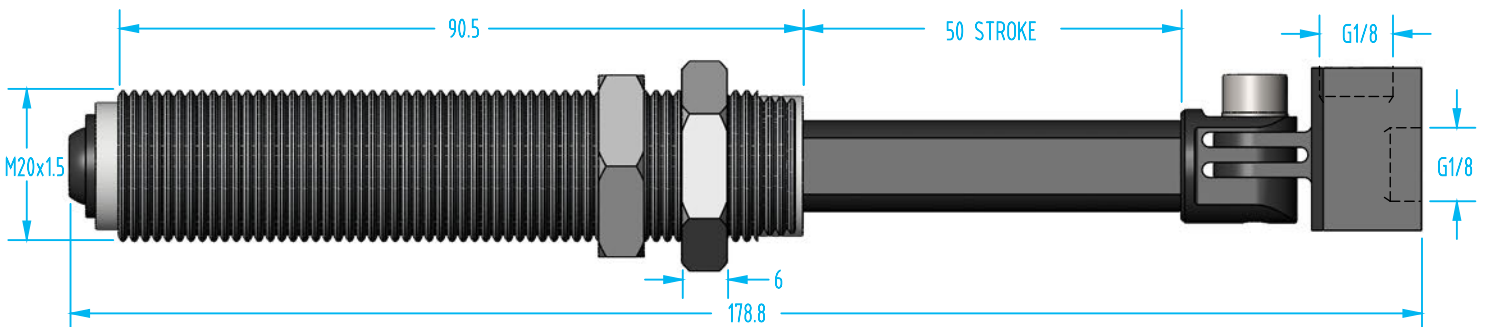
#6815



#6818



#6817



Suspensions with Brake – Clampable Body

- Aluminum body and steel rod.
- Pneumatic brake available in two options:
Normally Open (NO) = Supply pressure to engage brake, and Normally closed (NC) = Supply pressure to unlock brake.
- Available in both rotating (VSRF) and non-rotating (VSNF) shafts.
- SS Sensors (for all models), SI Inductive Sensors (for NC models only) detects when the brake is engaged, not shaft position. See page 1007.

Pneumatic brake suspensions combine the compliance of a traditional suspension with the rigidity of a fixed location mount. They can be used in applications where height compensation is needed but then the suspension position must be maintained until the part is released. When locked, this prevents the suspension from exerting force which could affect part position or part integrity.

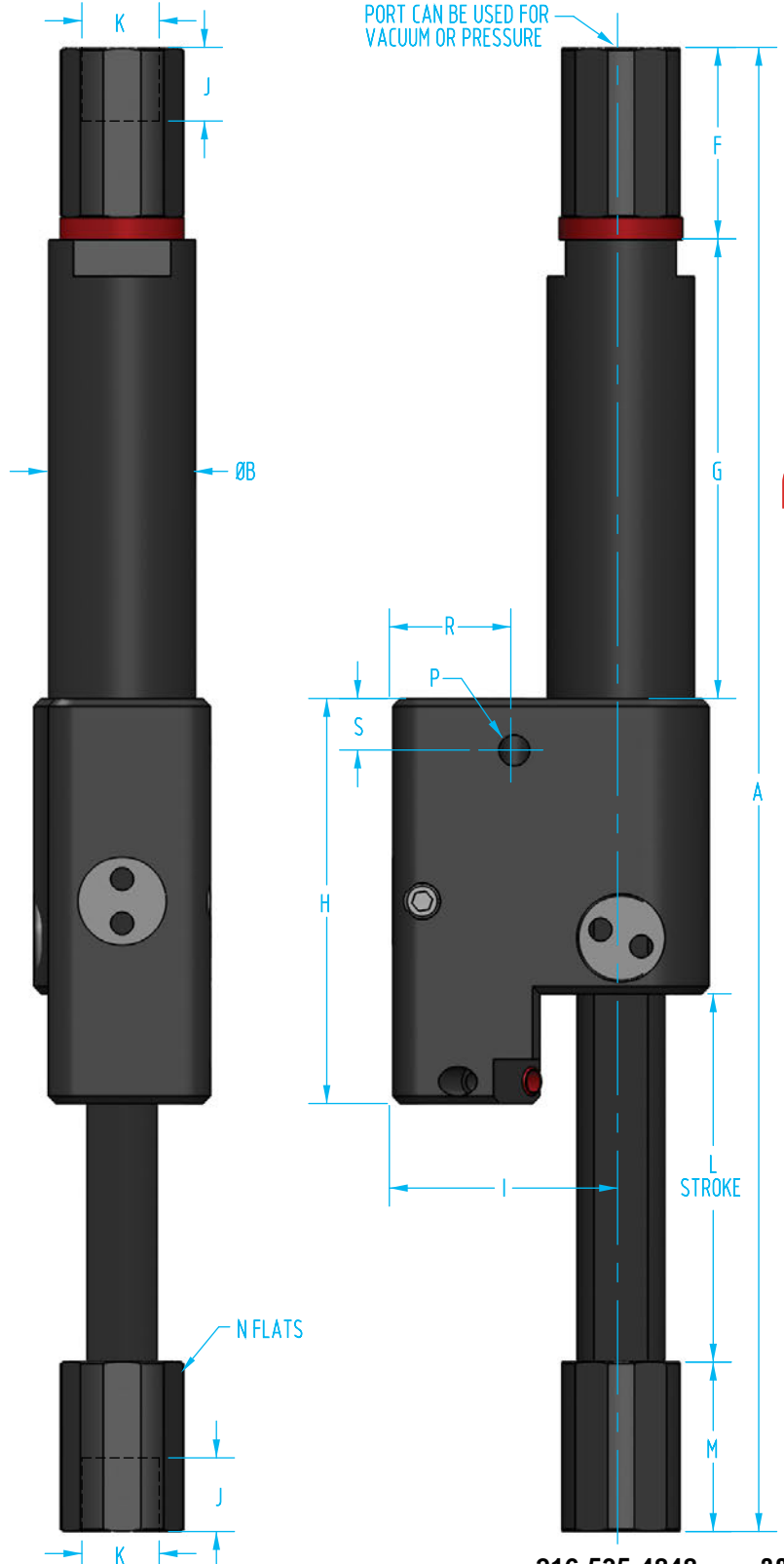
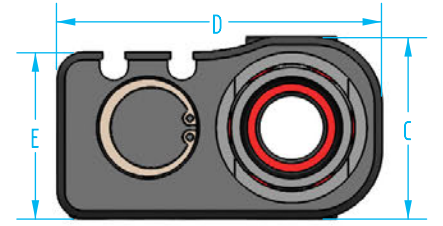
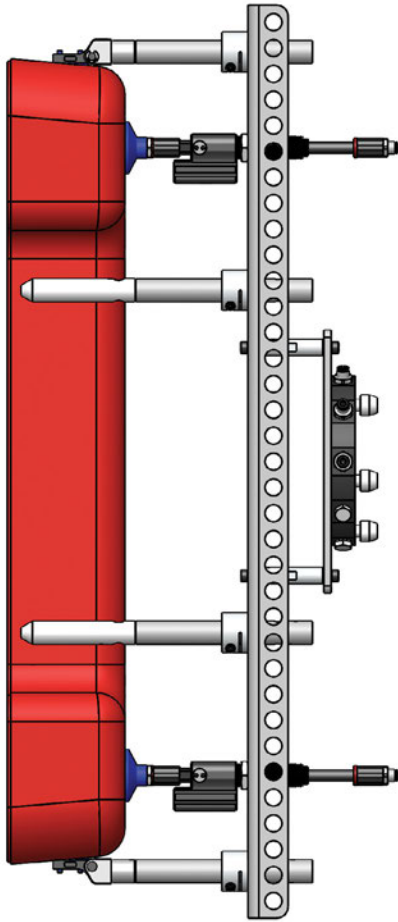
Also, by locking the suspension in place, this can reduce the occurrence of overcoming the spring force sometimes experienced in fast moving applications where part inertia is a factor.



Quick#	Part#	Price	Style	Pass Through Air Port (K)	Break Air Port (P)	ØD	Stroke	Operating Pressure for Locking (P1)	Operating Pressure for Unlocking (P2)	Braking Force	Wt.
7417	VSNF2050-NC	\$444.00	Non Rotating Shaft	G1/4"	M5	20	50mm	-	58-116psi	45lbf	254g
7418	VSNF2050-NO	\$444.00						58-101psi	-	1.24lbf x P1 – 34lbf	254g
7419	VSNF30100-NC	\$499.00		G3/8"	M5	30	100mm	-	58-116psi	112lbf	820g
7420	VSNF30100-NO	\$499.00						43-116 psi	-	3.1lbf x P1 – 90lbf	820g
7425	VSRF2050-NC	\$395.00	Rotating Shaft	G1/4"	M5	20	50mm	-	58-116psi	45lbf	254g
7426	VSRF2050-NO	\$395.00						58-101psi	-	1.24lbf x P1 – 34lbf	254g
7427	VSRF30100-NC	\$458.00		G3/8"	M5	30	100mm	-	58-116psi	112lbf	820g
7428	VSRF30100-NO	\$458.00						43-116 psi	-	3.1lbf x P1 – 90lbf	820g

Suspensions with Brake – Clampable Body

(Dimensioned drawings show full scale Size 20)



Pneumatic brake suspensions can absorb an ejection stroke and then be locked in place for degating as shown in the above application.

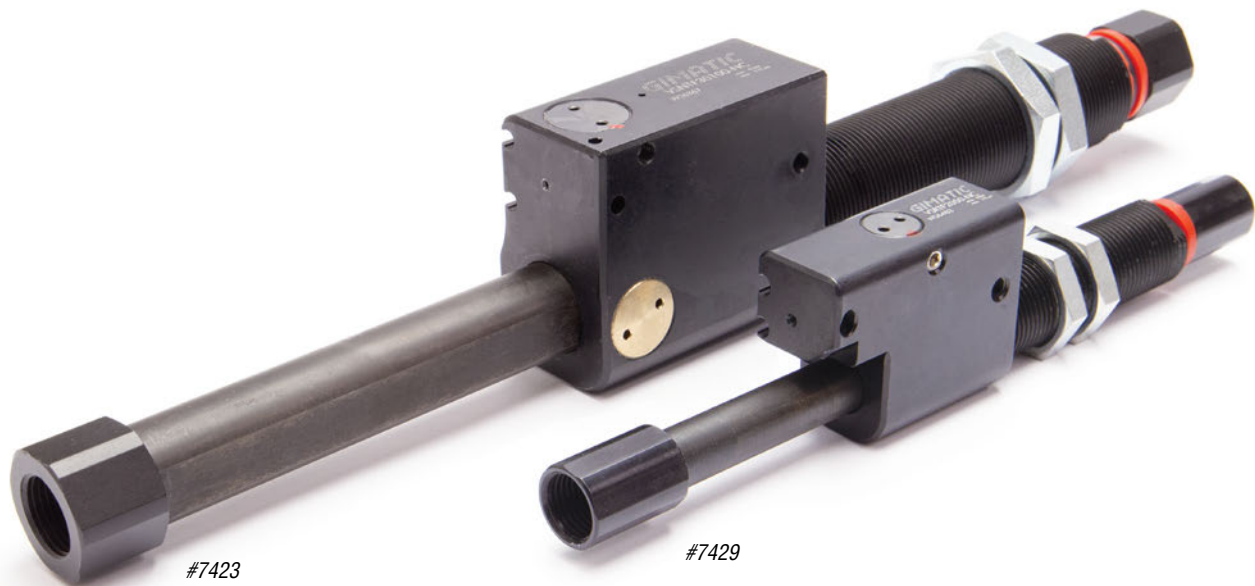
	Size 20 #7417 / 7418 #7425 / 7426	Size 30 #7419 / 7420 #7427 / 7428
A	201.5	324.5
B	20	30
C	24	35
D	43	57
E	22	32.2
F	26	28
G	62.4	113
H	55	65.5
I	31	40
J	10	13
K	G1/4"	G3/8"
L	50	100
M	23	18
N	16	24
P	M5	M5
R	16.5	18
S	7	8

Suspensions with Brake – Threaded Body

- Aluminum body and steel rod.
- Pneumatic brake available in two options:
Normally Open (NO) = Supply pressure to engage brake, and Normally closed (NC) = Supply pressure to unlock brake.
- Available in both rotating (VSRTF) and non-rotating (VSNTF) shafts.
- SS Sensors (for all models), SI Inductive Sensors (for NC models only) detects when the brake is engaged, not shaft position. See page 1007.

Pneumatic brake suspensions combine the compliance of a traditional suspension with the rigidity of a fixed location mount. They can be used in applications where height compensation is needed but then the suspension position must be maintained until the part is released. When locked, this prevents the suspension from exerting force which could affect part position or part integrity.

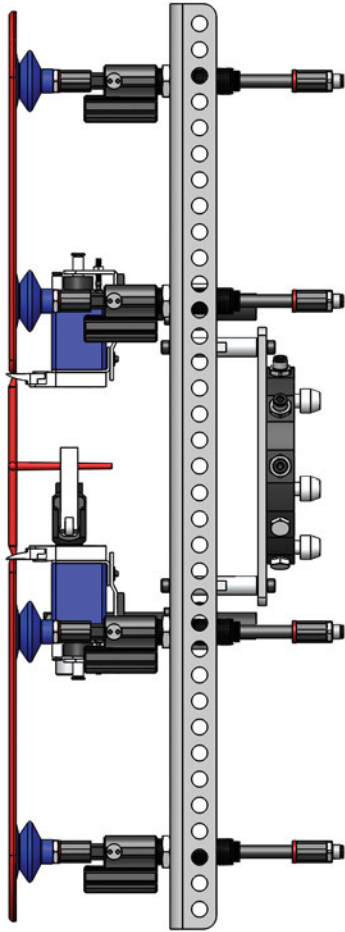
Also, by locking the suspension in place, this can reduce the occurrence of overcoming the spring force sometimes experienced in fast moving applications where part inertia is a factor.



Quick#	Part#	Price	Style	Pass Through Air Port (K)	Break Air Port (P)	Mount	Stroke	Operating Pressure for Locking (P1)	Operating Pressure for Unlocking (P2)	Braking Force	Wt.
7421	VSNTF2050-NC	\$444.00	Non Rotating Shaft	G1/4"	M5	M20x1.5	50mm	-	58-116psi	45lbf	270g
7422	VSNTF2050-NO	\$444.00		58-101psi	-	1.24lbf x P1 – 34lbf	270g				
7423	VSNTF30100-NC	\$522.00		G3/8"	M5	M30x1.5	100mm	-	58-116psi	112lbf	890g
7424	VSNTF30100-NO	\$522.00		43-116 psi	-	3.1lbf x P1 – 90lbf	890g				
7429	VSRTF2050-NC	\$395.00	Rotating Shaft	G1/4"	M5	M20x1.5	50mm	-	58-116psi	45lbf	270g
7430	VSRTF2050-NO	\$395.00		58-101psi	-	1.24lbf x P1 – 34lbf	270g				
7431	VSRTF30100-NC	\$489.00		G3/8"	M5	M30x1.5	100mm	-	58-116psi	112lbf	890g
7432	VSRTF30100-NO	\$489.00		43-116 psi	-	3.1lbf x P1 – 90lbf	890g				

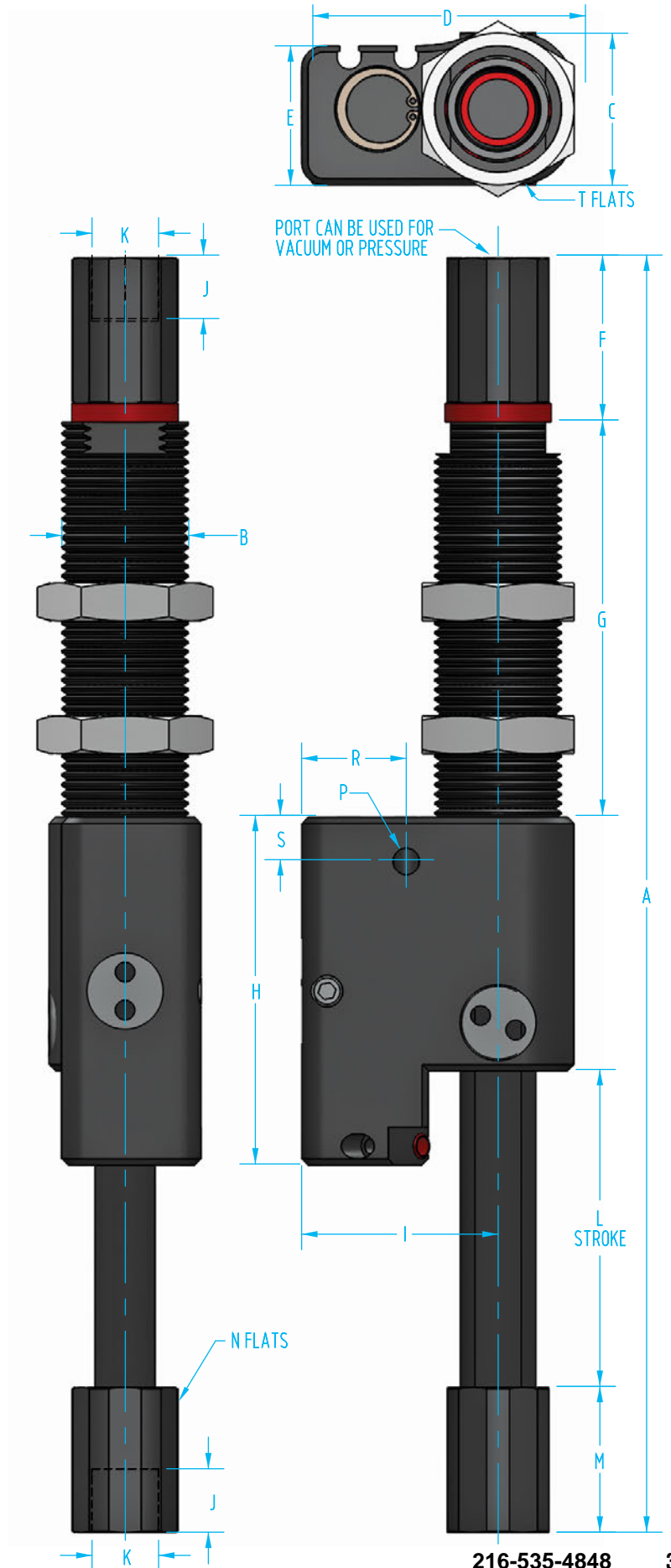
Suspensions with Brake – Threaded Body

(Dimensioned drawings show full scale Size 20)



Pneumatic brake suspensions can absorb an ejection stroke and then be locked in place for degating as shown in the above application.

	Size 20 #7421 / 7422 #7429 / 7430	Size 30 #7423 / 7424 #7431 / 7432
A	201.5	324.5
B	M20x1.5	M30x1.5
C	24	35
D	43	57
E	22	32.2
F	26	28
G	62.4	113
H	55	65.5
I	31	40
J	10	13
K	G1/4"	G3/8"
L	50	100
M	23	18
N	16	24
P	M5	M5
R	16.5	18
S	7	8
T	24	36

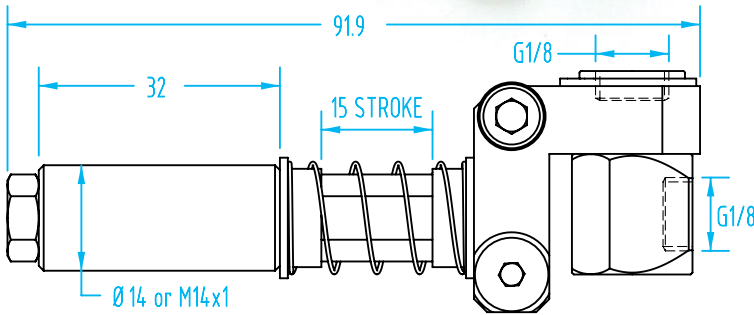
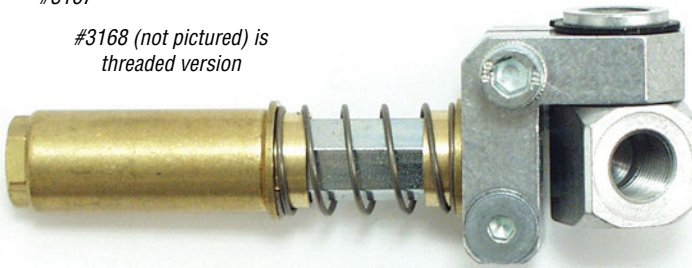


M14 / Ø14mm Suspensions

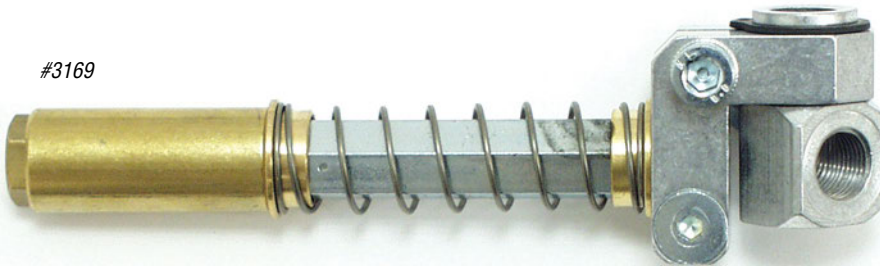
(Dimensioned drawings shown full scale)

#3167

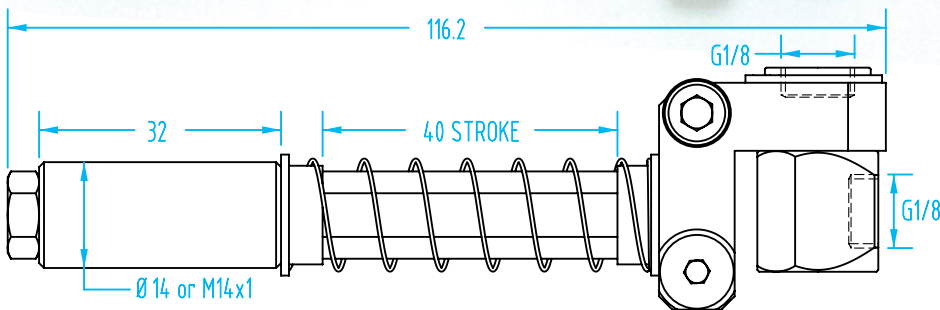
#3168 (not pictured) is threaded version



#3169



#3170



Quick#	Part#	>ASS< #	Style	Stroke	Weight	Price
3167	GGs14-C-15	1-360-09-00	Clampable, Non-rotate	15mm	81g	\$47.78
3168	GGs14-M-15	1-360-12-00	Threaded, Non-rotate	15mm	91g	\$49.35
3169	GGs14-C-40	1-360-15-00	Clampable, Non-rotate	40mm	90g	\$51.98
3170	GGs14-M-40	1-360-18-00	Threaded, Non-rotate	40mm	101g	\$53.03

We recommend using an appropriately sized lock washer with threaded body suspensions, see page 1076.

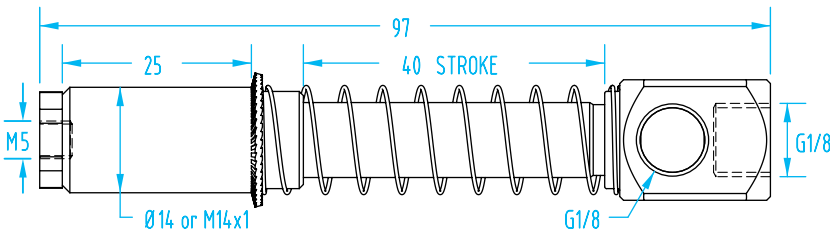
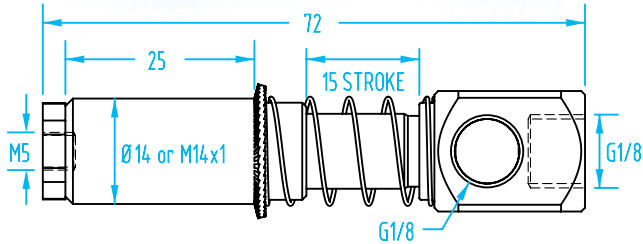
M14 / Ø14mm Suspensions

(Dimensioned drawings shown full scale)

#3601



#3606



- Two options for fitting placement. It can either be fed through the side port (plugged initially) or it can pass through the vacuum channel which extends through the suspension body.



Fittings Available on page 1043



Mounting Brackets Available on page 244

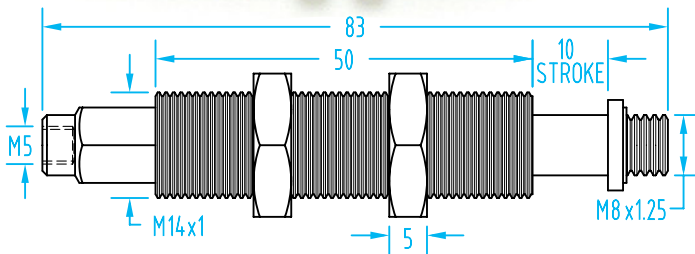


Quick#	Part#	>ASS< #	Style	Stroke	Weight	Price
3601	GAF14-U-15	1-356-02-00	Clampable, Rotate	15mm	51g	\$39.90
3606	GAF14-M-15	1-356-11-00	Threaded, Rotate	15mm	69g	\$45.15
3602	GAF14-U-40	1-356-03-00	Clampable, Rotate	40mm	55g	\$43.58
3608	GAF14-M-40	1-356-12-00	Threaded, Rotate	40mm	73g	\$54.08

#339



#340

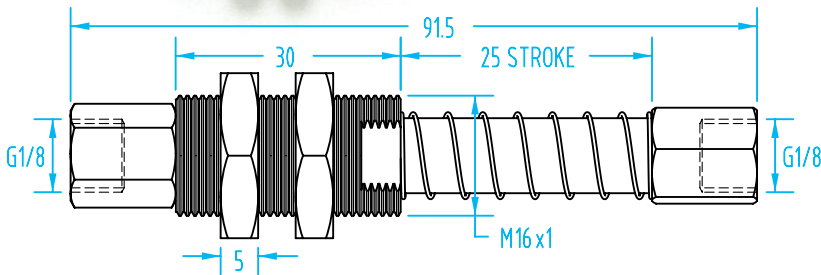


Quick#	Part#	Style	Stroke	Weight	Price
339	GSS-88-M14M5	Rotate	10mm	69g	\$18.39
340	GSS-88R-M14M5	Non-Rotate	10mm	67g	\$28.69

M16 Suspensions

(Dimensioned drawings shown full scale)

#457



Quick#	Part#	Style	Stroke	Weight	Price
457	GSS-85-M16G8F	Rotate	25mm	97g	\$36.90
458	GSS-85R-M16G8F	Non-Rotate	25mm	95g	\$46.80

#458 and #460 Non-rotating style are similar to #1409, on page 308.

Use Quick#s for easy online ordering.

Mounting Brackets Available on page 244

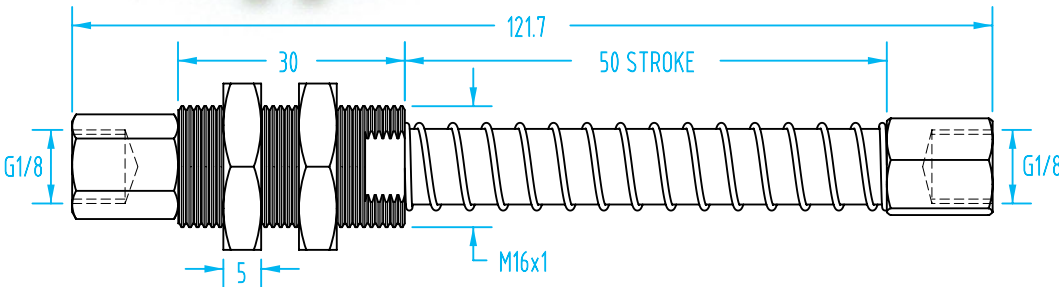
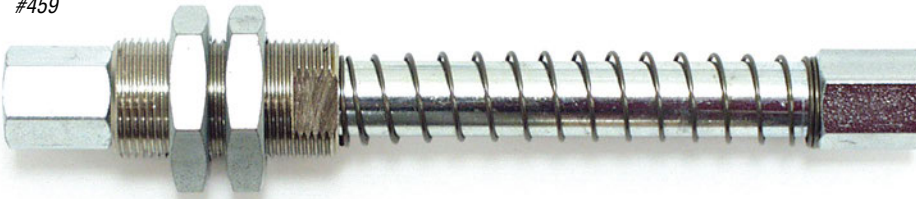


Fittings Available on page 1043



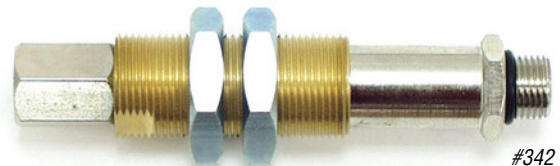
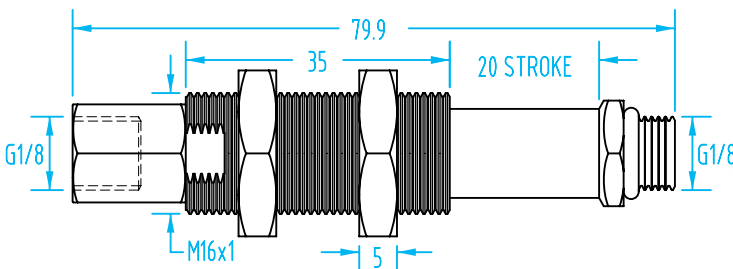
We recommend using an appropriately sized lock washer with threaded body suspensions, see page 1076.

#459



Quick#	Part#	Style	Stroke	Weight	Price
459	GSS-115-M16G8F	Rotate	50mm	114g	\$41.60
460	GSS-115R-M16G8F	Non-Rotate	50mm	110g	\$52.80

#458 and #460 Non-rotating style are similar to #1409, on page 308.

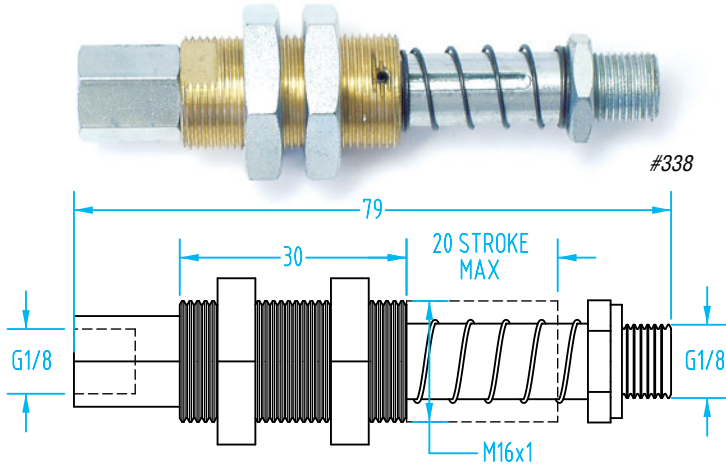


#342

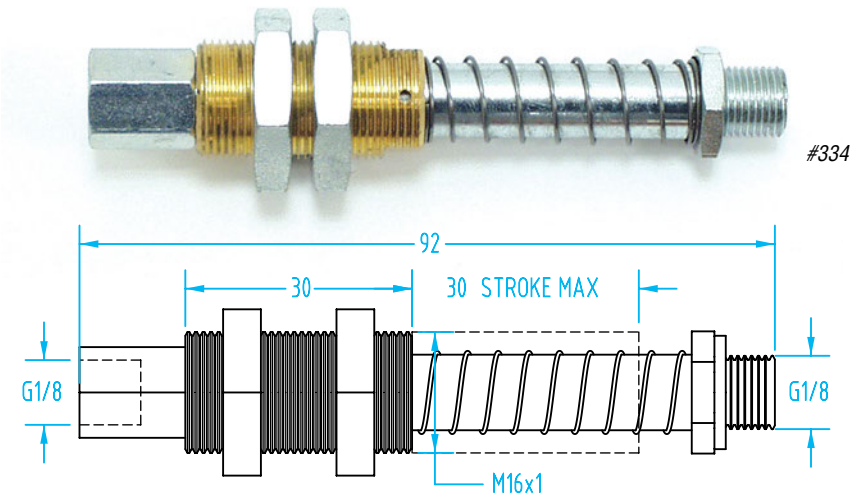
Quick#	Part#	Style	Stroke	Weight	Price
342	GSS-80-M16G8	Rotate	20mm	72g	\$50.99

M16 Suspensions

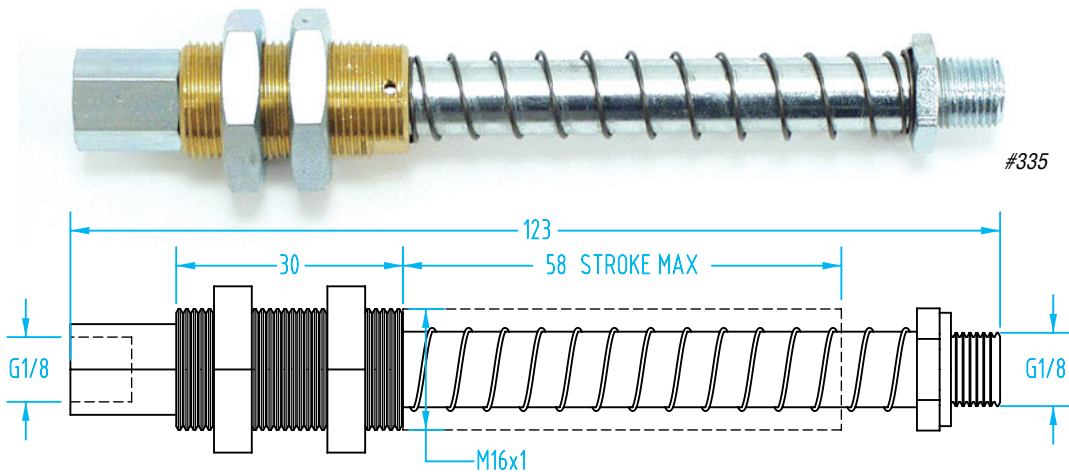
(Dimensioned drawings shown full scale)



Quick#	Part#	Style	Stroke	Weight	Price
338	GSS-80R-M16G8	Non-Rotate	20mm	90g	\$101.07



Quick#	Part#	Style	Stroke	Weight	Price
334	GSS-85-M16G8	Rotate	30mm	92g	\$82.70



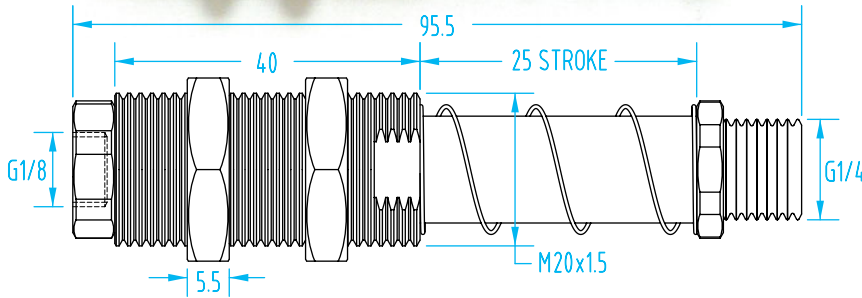
Quick#	Part#	Style	Stroke	Weight	Price
335	GSS-115-M16G8	Rotate	50mm	109g	\$85.67
455	GSS-115R-M16G8	Non-Rotate	50mm	105g	\$100.83

#455 Non-rotating style is similar to #1409, on page 308.

M20 Suspensions

(Dimensioned drawings shown full scale)

#1407



Quick#	Part#	Style	Stroke	Weight	Price
1407	GSS-85-M20G4	Rotate	25mm	136g	\$60.53
1409	GSS-85R-M20G4	Non-rotate	25mm	134g	\$121.84

Fittings Available on page 1043



Mounting Brackets Available on page 244

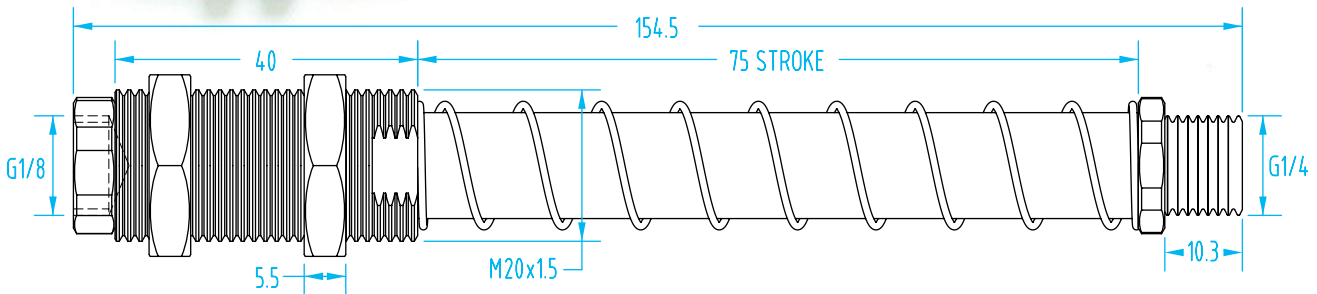


We recommend using a lock washer with threaded body suspensions, see page 1076.

#1410



Non-rotating



Quick#	Part#	Style	Stroke	Weight	Price
1408	GSS-145-M20G4	Rotate	75mm	192g	\$103.11
1410	GSS-145R-M20G4	Non-rotate	75mm	186g	\$162.58

- Bottom-side G1/8" air port, eliminating any interference.
- G1/4" air port for vacuum attachments.
- Anodized aluminum Ø20mm clampable body.
- Extendable reach with M17x1 thread and VLR Extension tubes.
- Dimensional drawing can be found online.



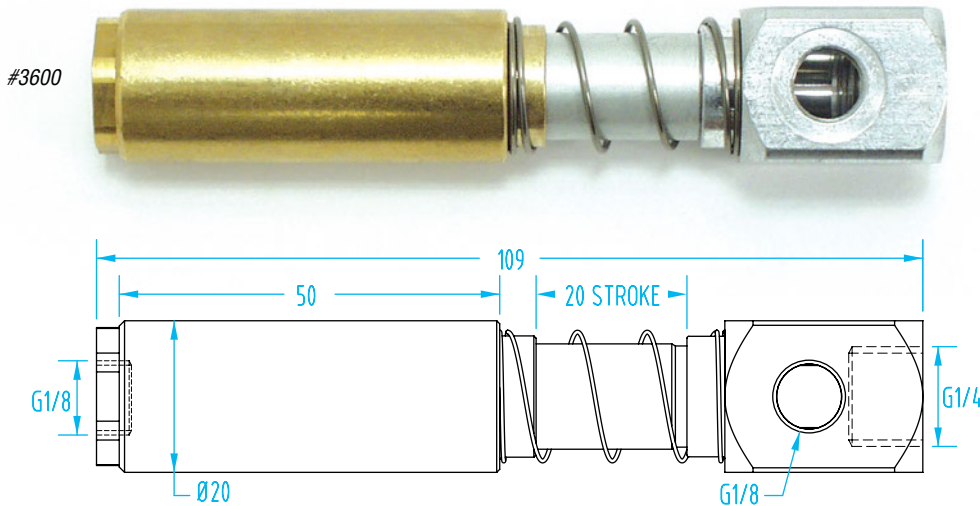
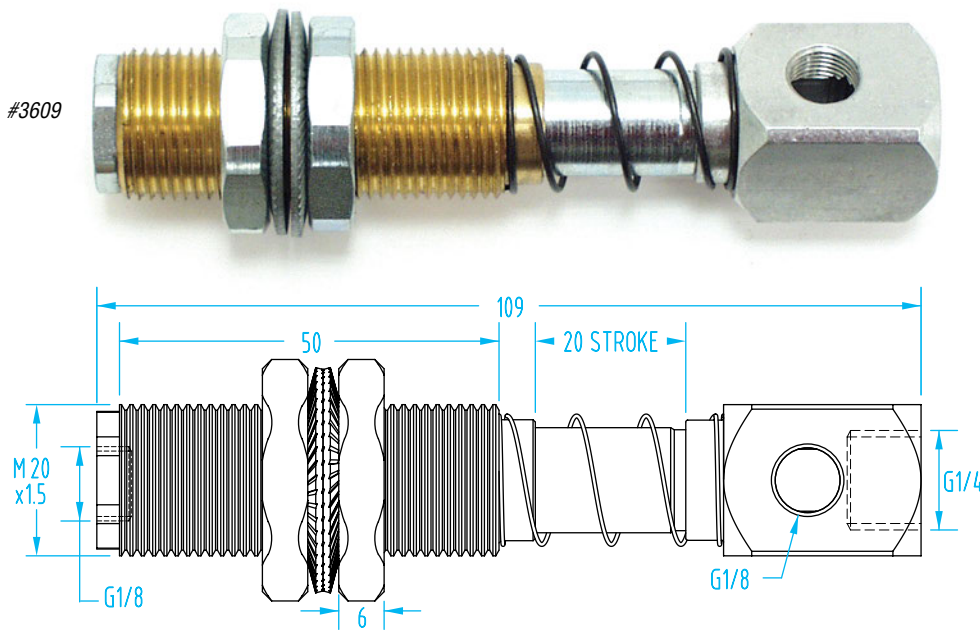
NEW

Non-Rotating Ø20mm Suspension with Internal Spring

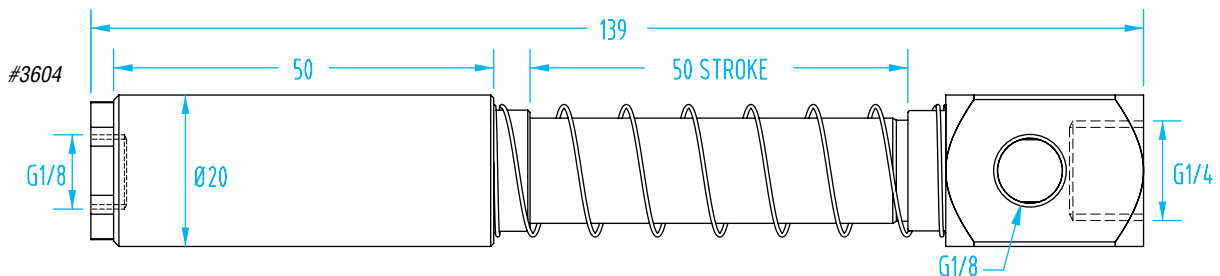
Quick#	Part#	>ASS< #	Style	Stroke	Wt.	Price
3950	GIF-UT-20-1/4-1/8-20	1-359-15-00	Non-rotate	20mm	55g	\$56.70

M20 / Ø20mm Suspensions

(Dimensioned drawings shown full scale)



- Two options for fitting placement. It can either be fed through the side port (plugged initially) or it can pass through the vacuum channel which extends through the suspension body.



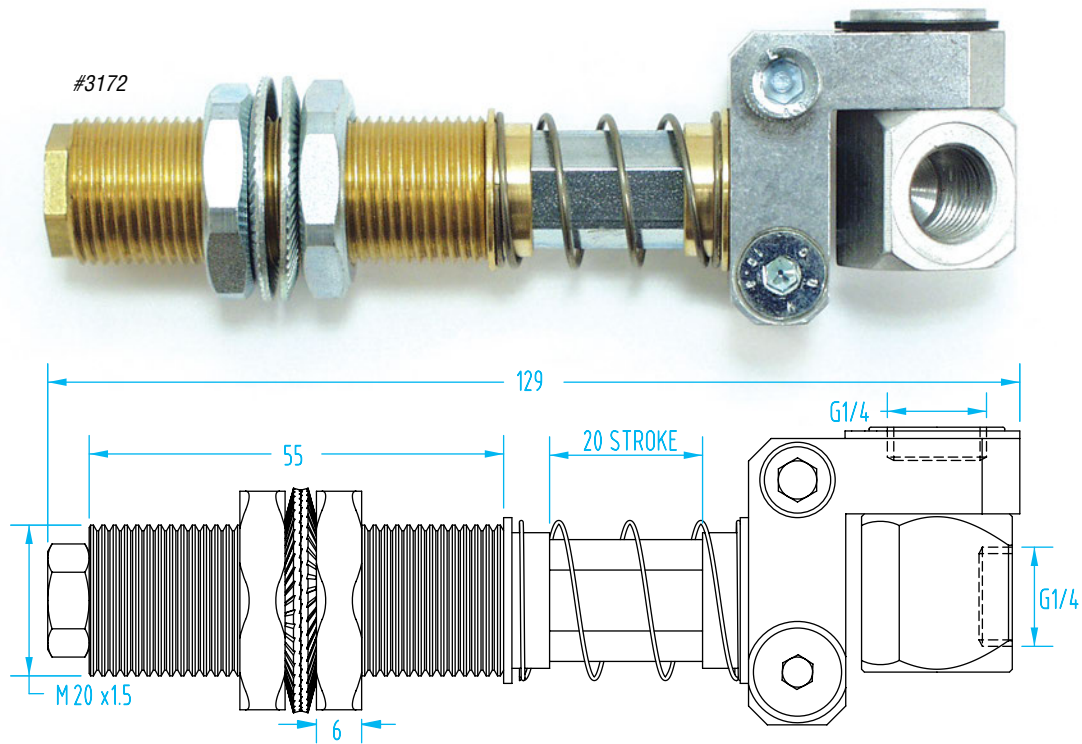
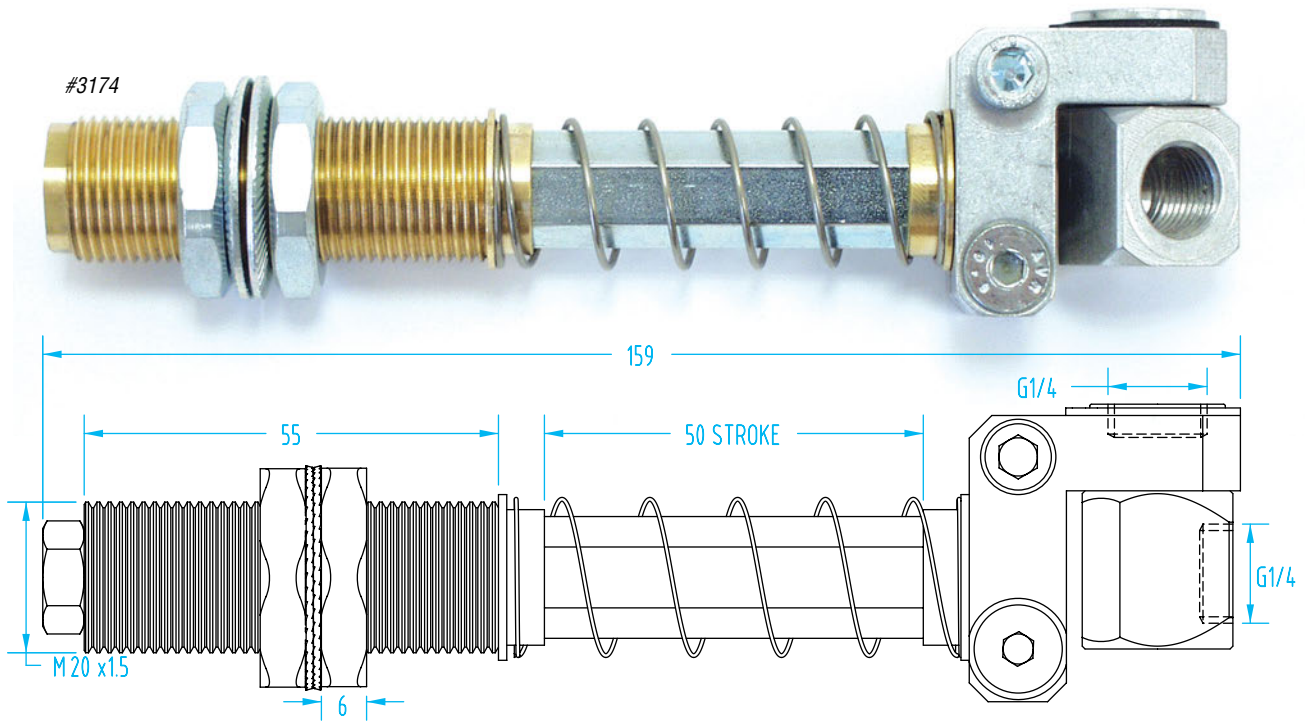
#3610 (not pictured) is threaded version

Quick#	Part#	>ASS< #	Style	Stroke	Weight	Price
3609	GAF20-M-20	1-356-13-00	Threaded, Rotate	20mm	167g	\$48.83
3600	GAF20-U-20	1-356-04-00	Clampable, Rotate	20mm	126g	\$43.05
3610	GAF20-M-50	1-356-14-00	Threaded, Rotate	50mm	175g	\$51.45
3604	GAF20-U-50	1-356-05-00	Clampable, Rotate	50mm	134g	\$45.68

Use Quick#s for easy online ordering.

M20 Suspensions

(Dimensioned drawings shown full scale)

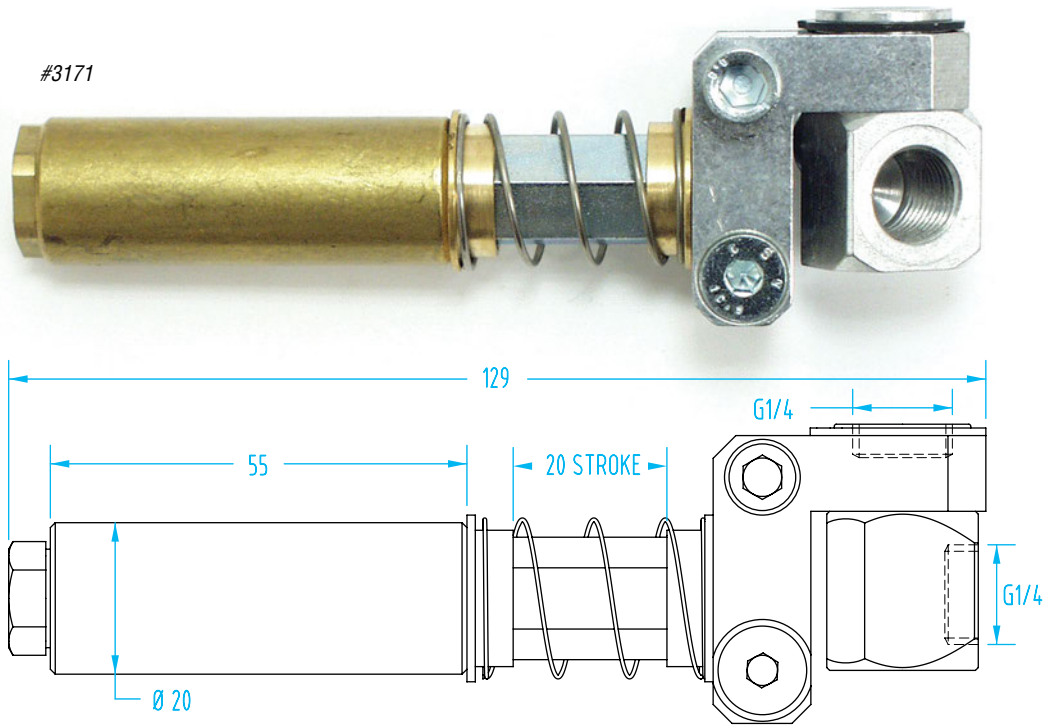
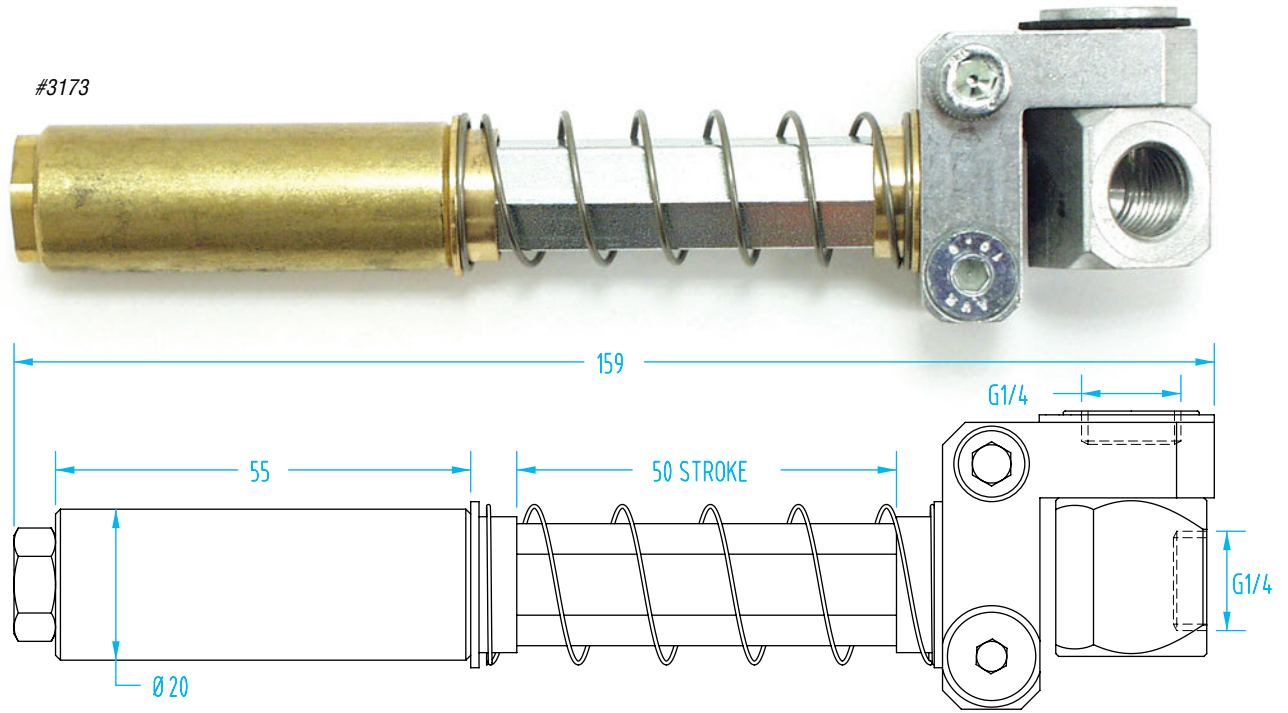


Quick#	Part#	>ASS< #	Style	Stroke	Weight	Price
3174	GG20-M-50	1-360-30-00	Non-rotate	50mm	231g	\$58.28
3172	GG20-M-20	1-360-24-00	Non-rotate	20mm	212g	\$55.65

Fittings Available
on page 1043

Ø20mm Suspensions

(Dimensioned drawings shown full scale)



Mounting Brackets
Available on
page 244

Quick#	Part#	>ASS< #	Style	Stroke	Weight	Price
3173	GGS20-C-50	1-360-27-00	Non-rotate	50mm	209g	\$56.70
3171	GGS20-C-20	1-360-21-00	Non-rotate	20mm	191g	\$53.55

Suspension Reactive Spring Force data is available on each online product page: www.EMlcorp.com

Non-Rotating Suspension for Actuators – VMK

- Heavy-duty, non-rotative
- For all actuators and brackets with Ø14mm, Ø20mm and Ø30mm.
- The compressed position of the suspension can be detected by a sensor (inductive sensors for VMK-20 & VMK-30 only).
- With through hole for air hoses.
- Clampable



VMK Suspension

Optional Spring

Quick#	Part#	Stroke	Spring force (lbs)	Clamp	Actuator	Price	Wt.	Quick#	Increased force with optional spring (lbs)
7135	VMK14	10mm	1.12–1.34	Ø20	Ø14	\$165.00	55g		not available
7136	VMK20	13mm	1.57–2.24	Ø30	Ø20	\$188.00	160g	5347	6.29–8.99
7137	VMK30	16mm	1.57–2.24	Ø30	Ø30	\$218.00	250g	5347	6.29–8.99

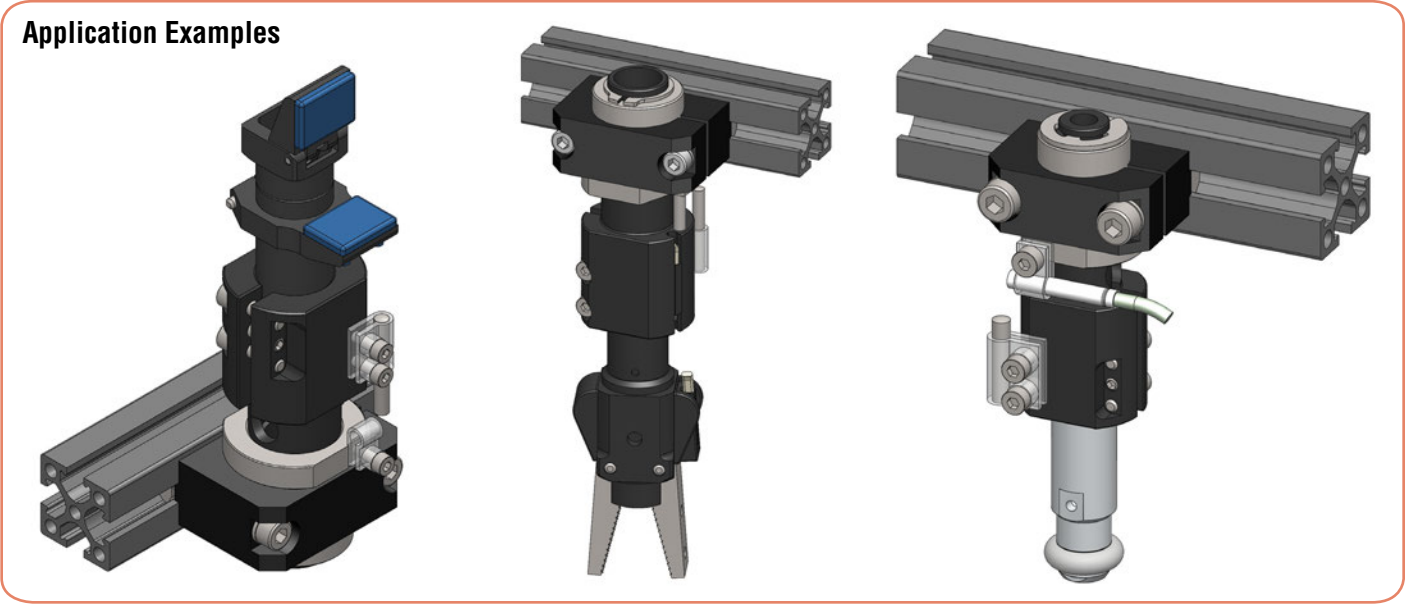
C-Slot, 3-wire Sensors

Quick#	Part#	Signal	Description	Price
1882	SS4N225G	PNP	2.5m Cable	\$27.20
1883	SS4M225G	NPN	2.5m Cable	\$27.20
6282	SS3N203G	PNP	0.3m Cable & M8 male connector	\$31.16
1884	SS3M203G	NPN	0.3m Cable & M8 male connector	\$31.16

Inductive Sensors Only for VMK-20 & VMK-30

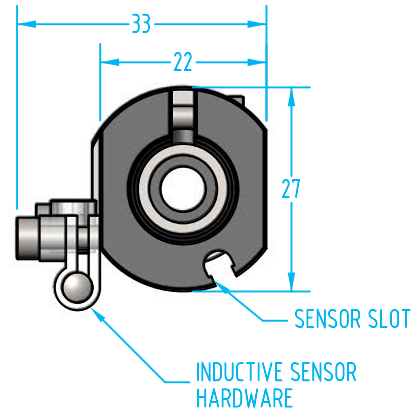
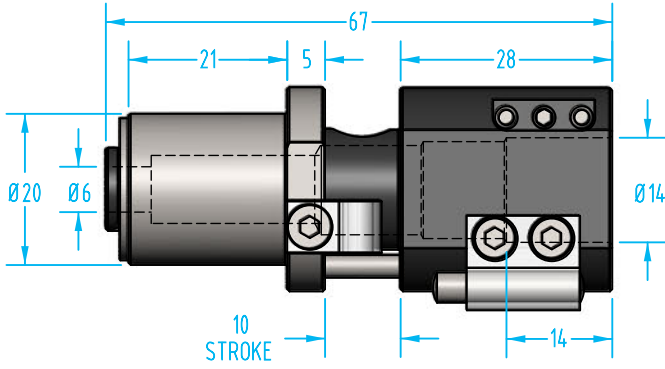
2429	GSG-IS-NPN	NPN	4mm Normally open, 3-wire	\$62.00
2430	GSG-IS-PNP	PNP	4mm Normally open, 3-wire	\$62.00

Application Examples

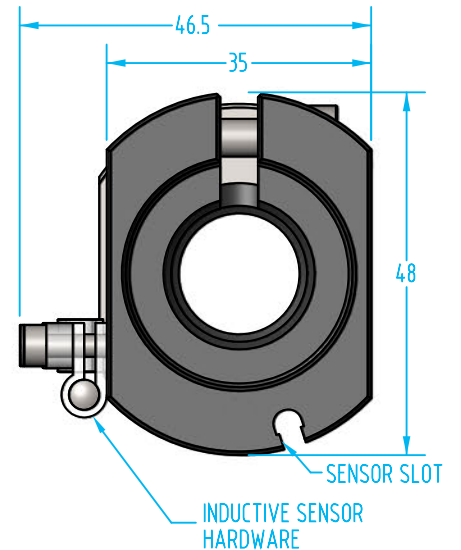
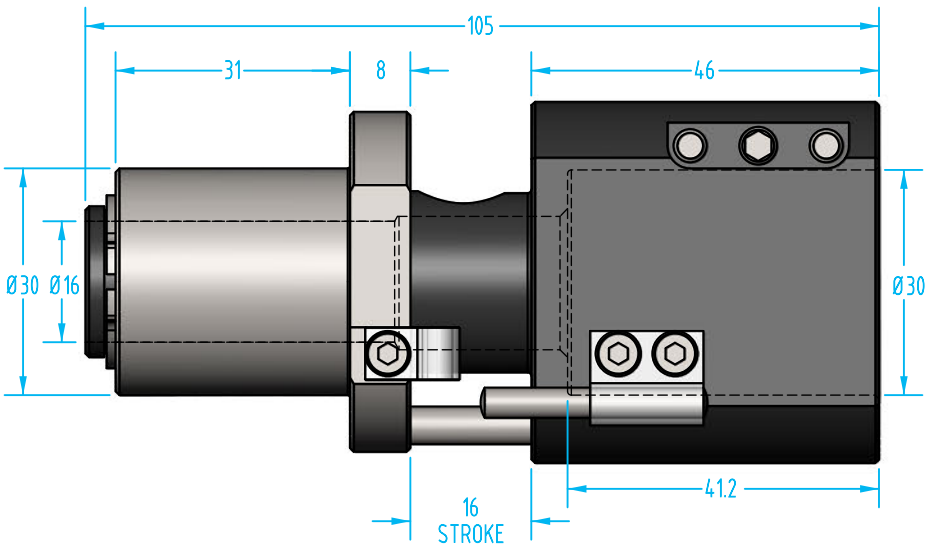
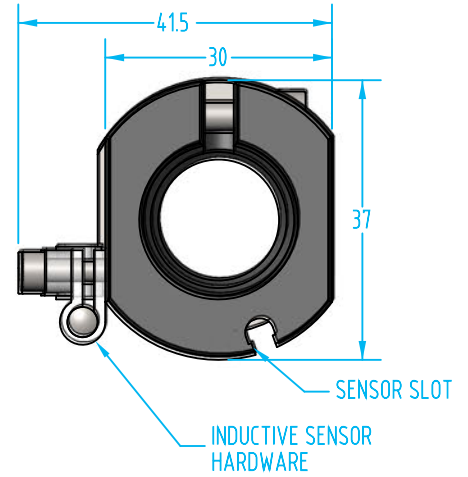
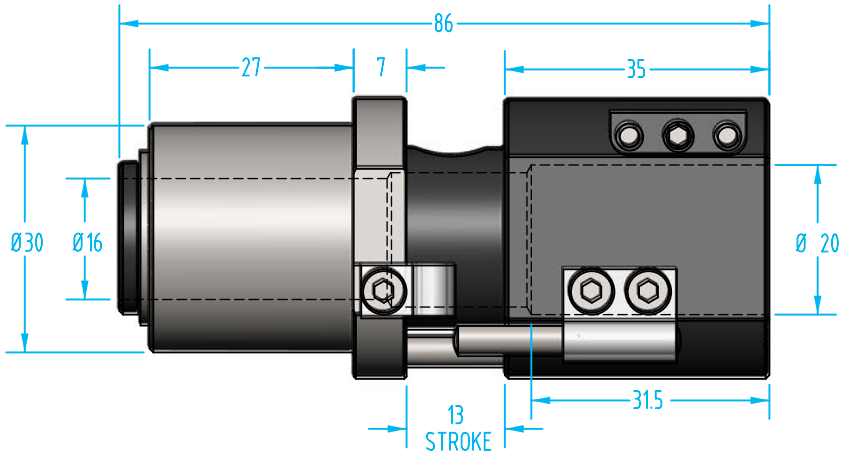


Non-Rotating Suspension for Actuators – VMK

(Dimensioned drawings shown full scale)



#7135

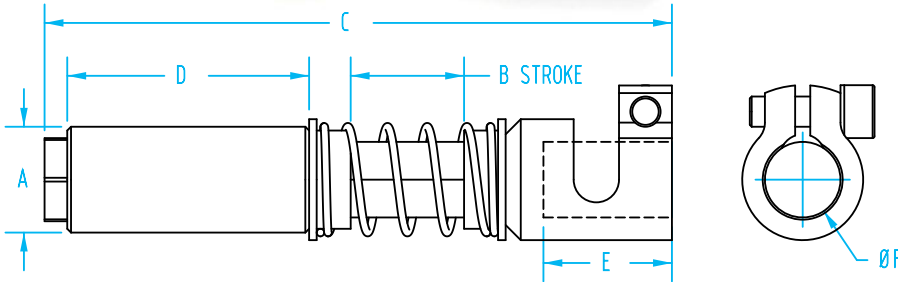


#7107

Non-Rotating Suspension with Gripper Arm



#3650 (shown at 100% scale)

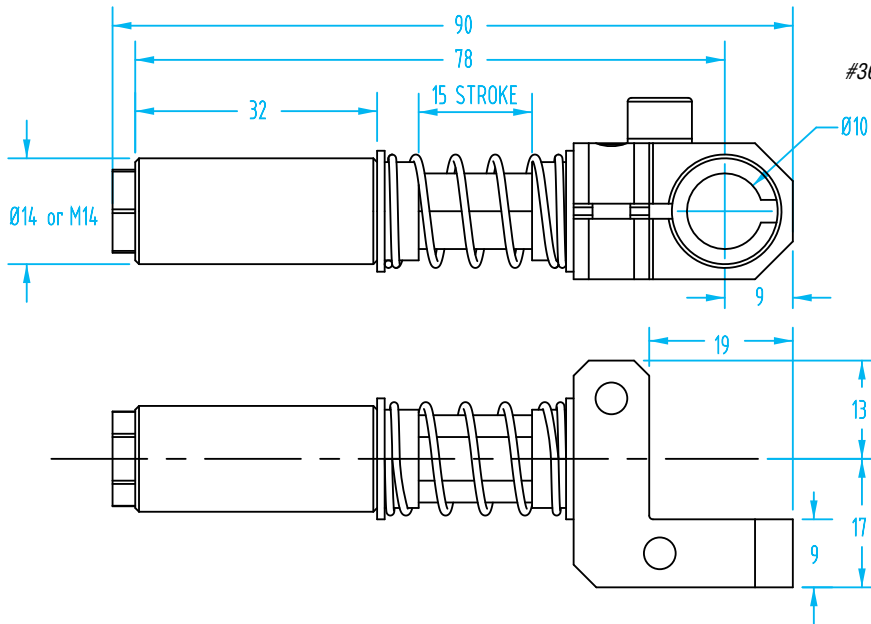


Spring Loaded Elbow Arm
on page 216

Quick#	Part#	>ASS< #	Style	ØA	B (Stroke)	C	D	E	ØF	Price	Wt.
3650	GGG-14-10-15	1-363-09-00	Clampable	14	15mm	83	32	17	10	\$116.55	44g
3651	GGG-20-20-20	1-363-21-00		20	20mm	130	55	37	20	\$119.18	138g
3367	GGG-20-20-50	1-363-27-00		20	50mm	160	55	32	20	\$121.15	138g
3690	GGG-M14-10-15	1-363-12-00	Threaded	M14x1	15mm	83	32	17	10	\$116.55	62g
3691	GGG-M20-20-20	1-363-24-00		M20x1.5	20mm	130	55	37	20	\$119.18	179g
3368	GGG-M20-20-50	1-363-30-00		M20x1.5	50mm	160	55	32	20	\$121.15	179g

NEW

NEW

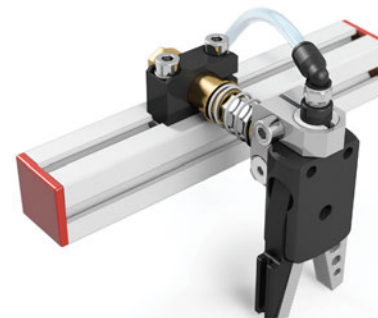
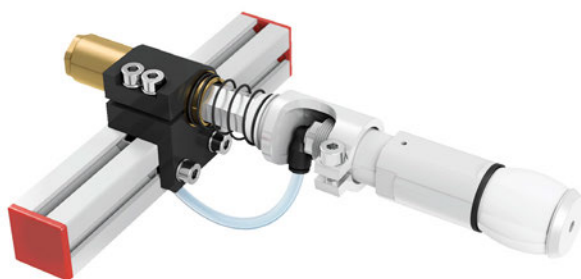


#3648 (shown at 100% scale)



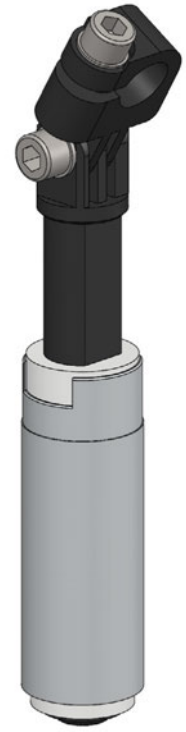
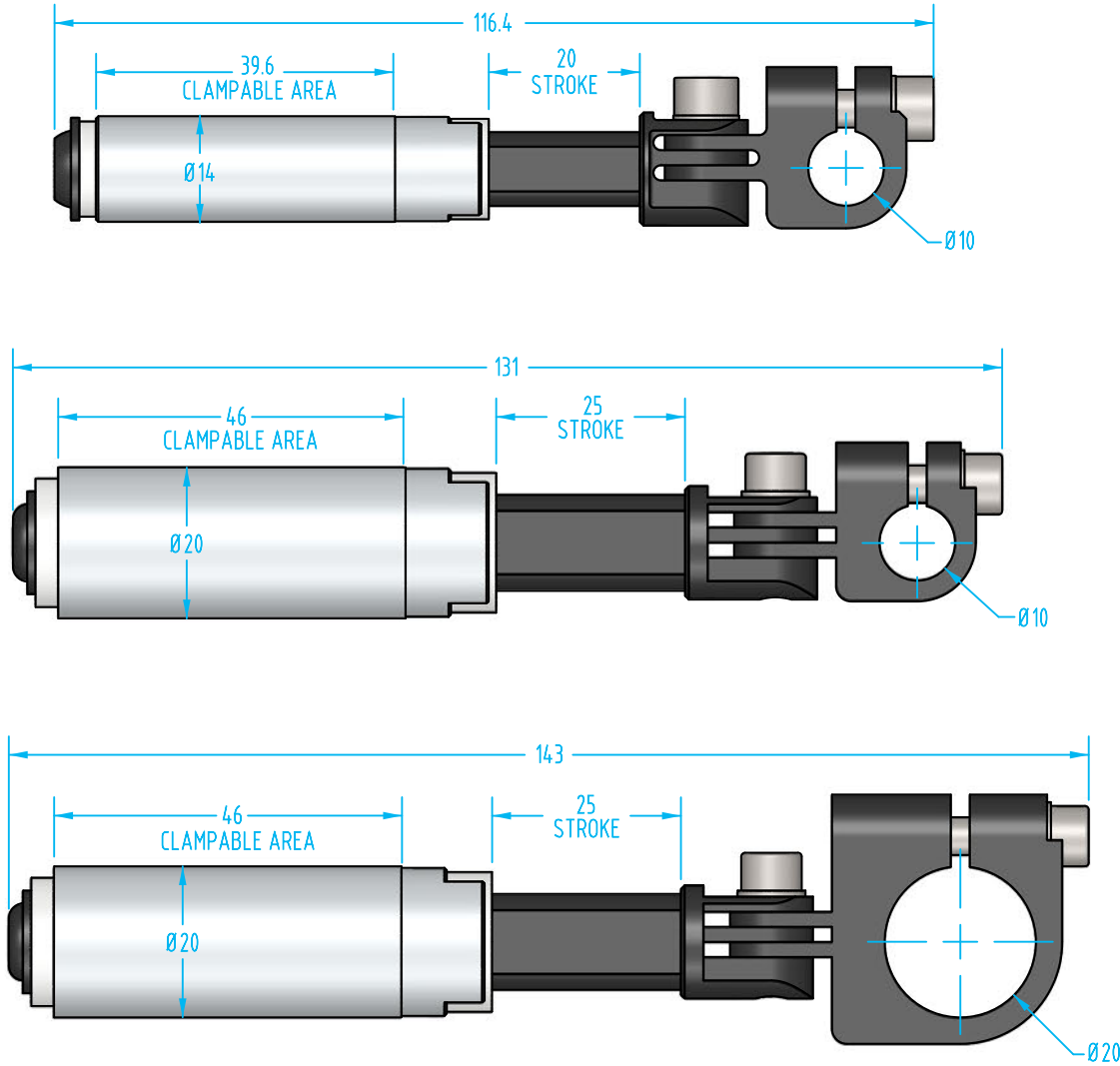
Quick#	Part#	>ASS< #	Style	Stroke	Ø	Price	Wt.
3648	GGG-90-14-10-15	1-364-09-00	Clampable	15mm	14	\$57.75	57g
3649	GGG-90-M14-10-15	1-364-12-00	Theaded	15mm	M14x1	\$59.85	75g

Application Example



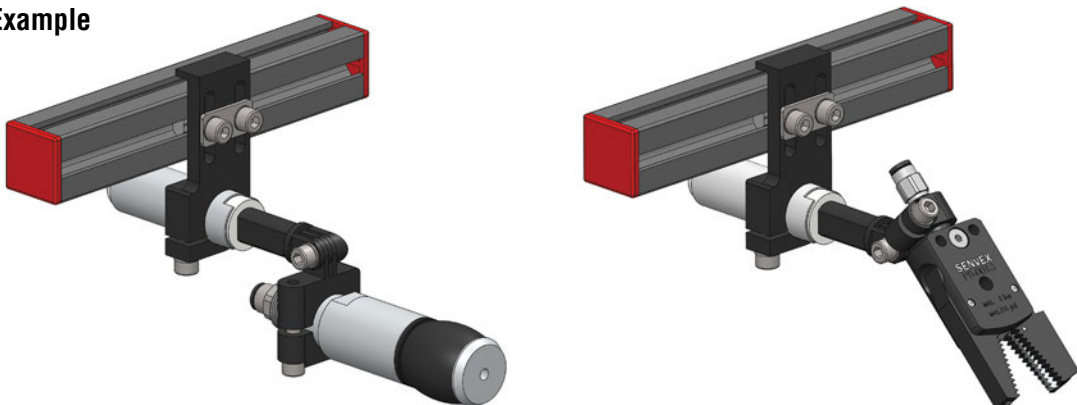
Non-Rotating Suspension with Adjustable Clamp

(Dimensioned drawings shown full scale)



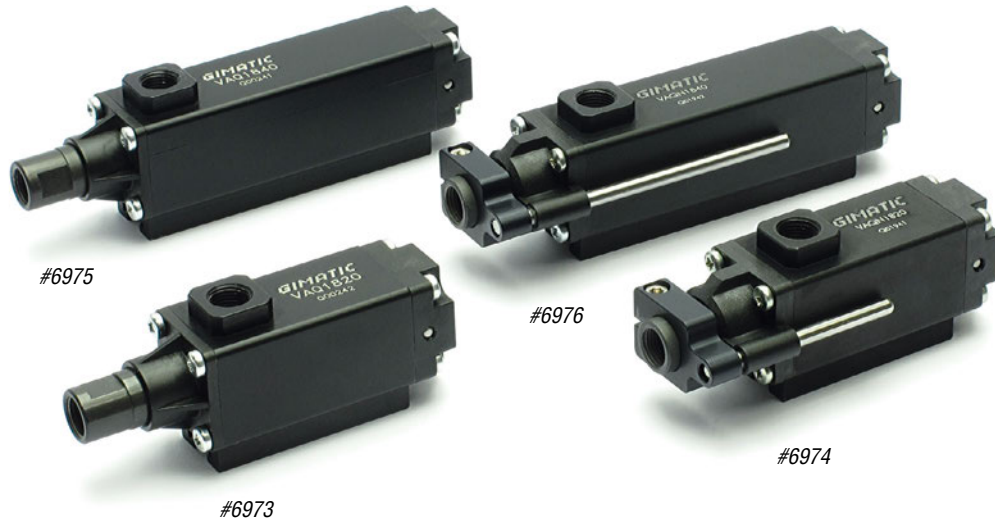
Quick#	Part#	Stroke	Price	Wt.
7453	VSD1420D10	20mm	\$60.40	43g
7454	VSD2025D10	25mm	\$62.50	69g
7455	VSD2025D20	25mm	\$65.60	85g

Application Example



Vacuum Suspensions – VAQ

- Operated by vacuum only.
- The extension and the retraction movements are automatically actuated.
- The stroke is self-adjusting.
- Temperature range from 50° to 104°F.



Quick#	Part#	Price	Style	Total Stroke	Stroke with Full Force	Max. Vertical Load	Min. Vacuum Flow	Min. Vacuum Level	Weight
6973	VAQ1820	\$99.00	Rotating	25mm	20mm	500g	1.06 SCFM	30%	90g
6975	VAQ1840	\$107.00		55mm	40mm				125g
6974	VAQN1820	\$129.00	Non-Rotating	25mm	20mm	500g	1.06 SCFM	30%	105g
6976	VAQN1840	\$140.00		55mm	40mm				145g

Use Quick#s for easy online ordering.



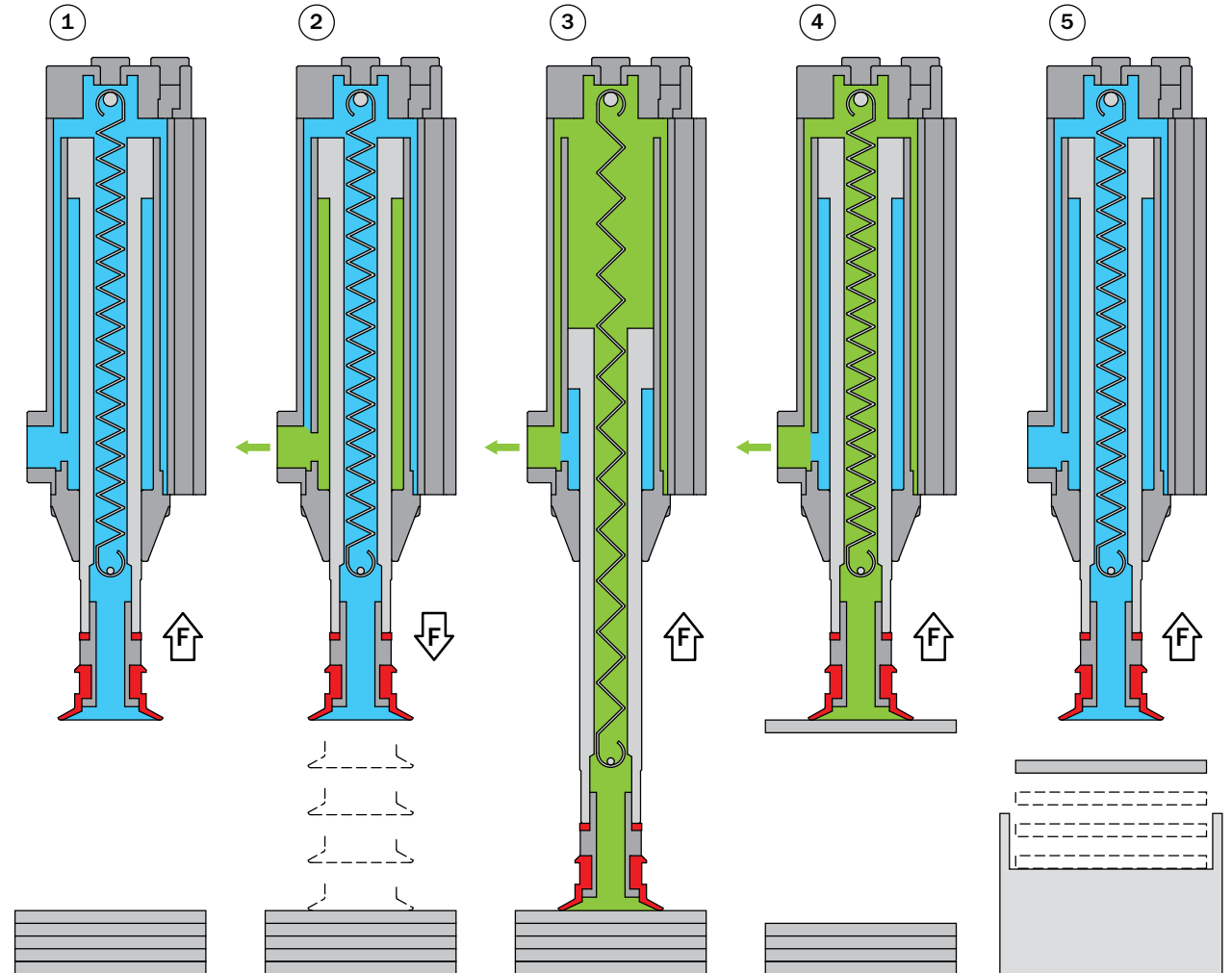
View EMI's video for more information on how the VAQ works!

www.youtube.com/emiacorpvideo

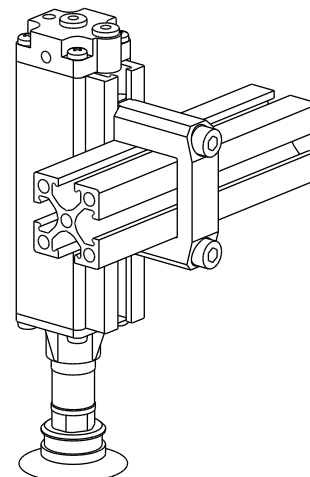
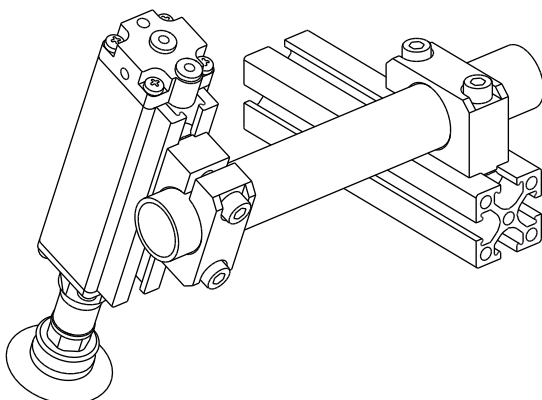
Vacuum Suspensions – VAQ

Working Principle:

1. Without vacuum, the rod is retracted by the spring force.
2. When vacuum is applied, the pressure under the piston is lower than the pressure over the piston and the rod travels forward.
3. The pressures invert as soon as the vacuum cup makes contact with an object.
4. Thus the rod retracts immediately, lifting the object.
5. When the vacuum is removed, the object is released, but the spring holds the rod retracted. (Accurately, instead of removing vacuum, a pressure impulse can be provided by the air port over the piston.)



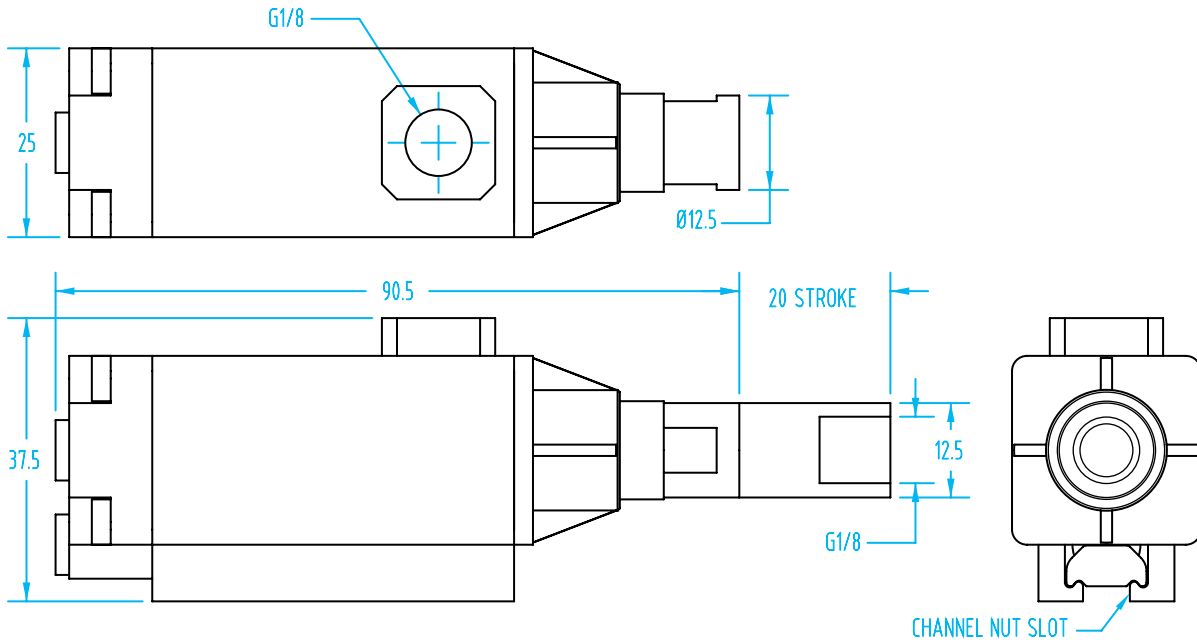
Mounting Examples



Vacuum Suspensions – VAQ

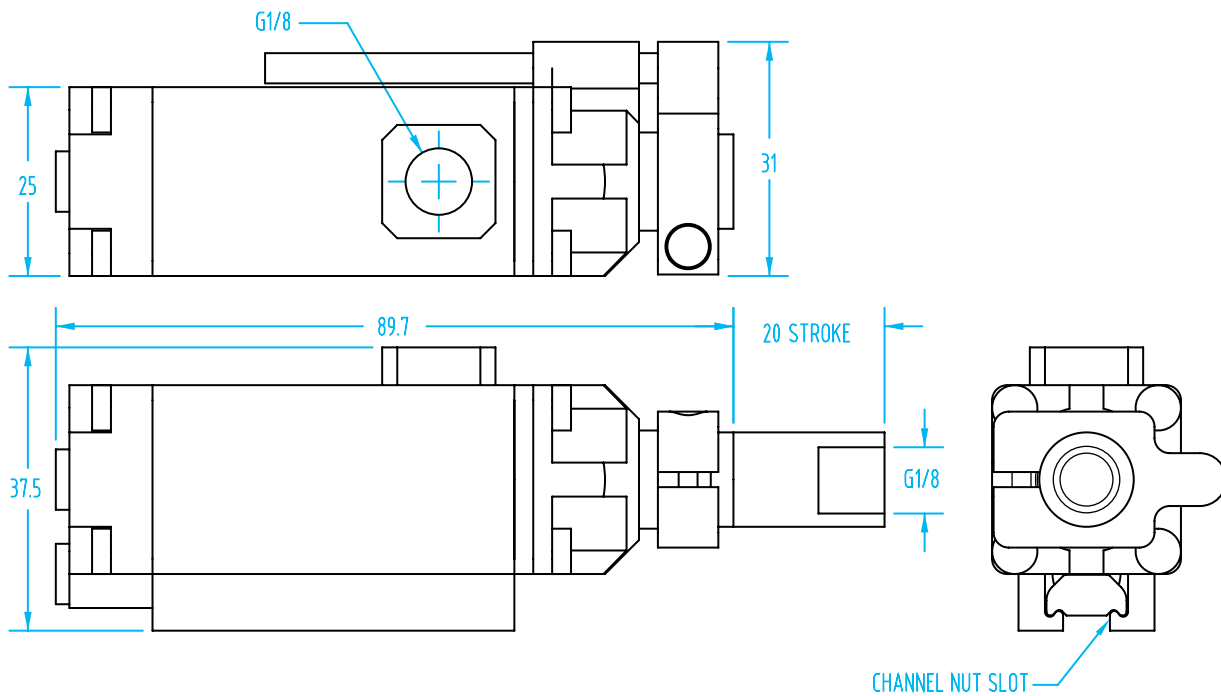
(Dimensioned drawings shown full scale)

#6973



Non-Rotating Version

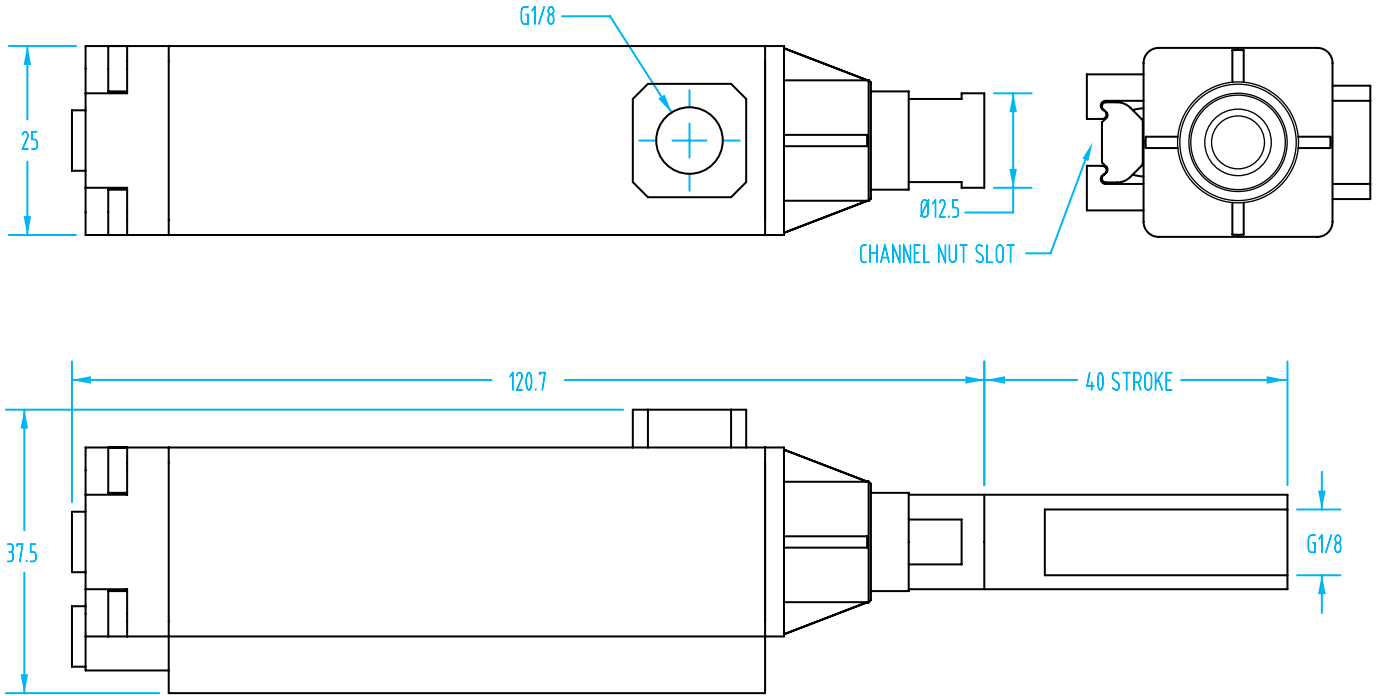
#6974



Vacuum Suspensions – VAQ

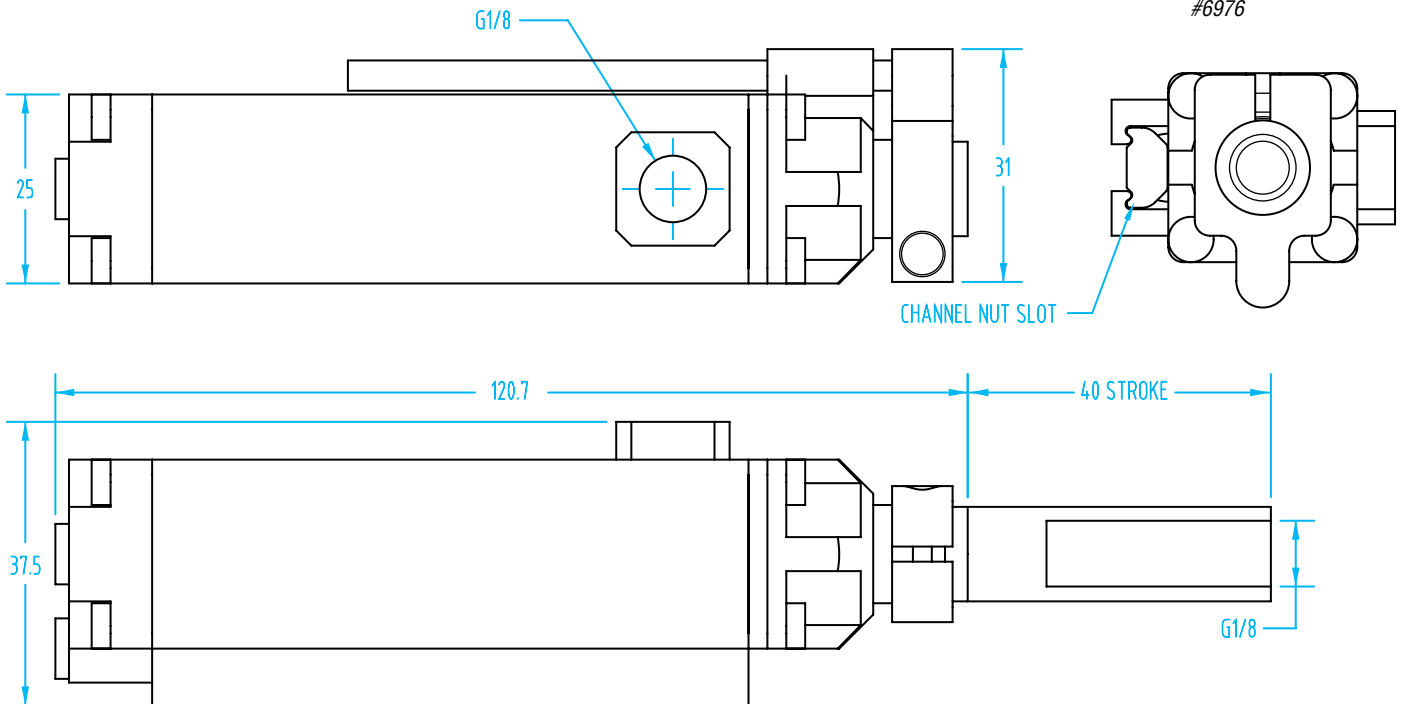
(Dimensioned drawings shown full scale)

#6975

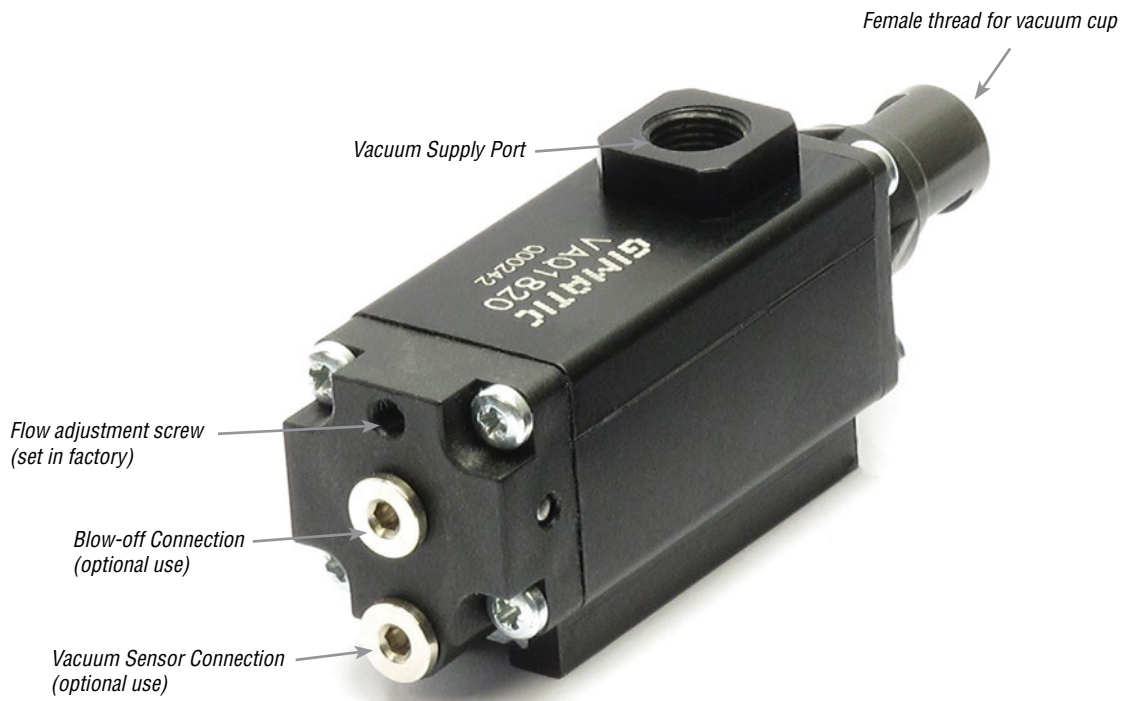


Non-Rotating Version

#6976

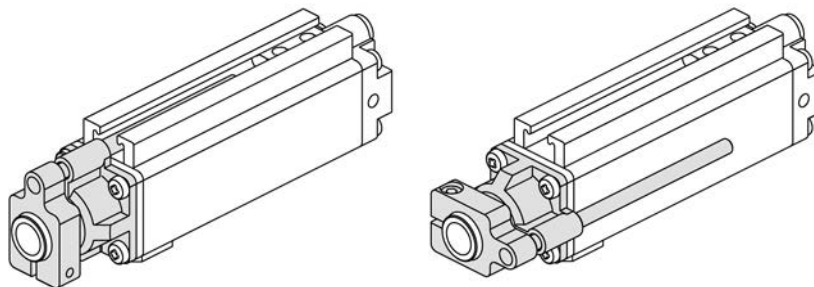


Vacuum Suspensions – VAQ



Mounting Examples

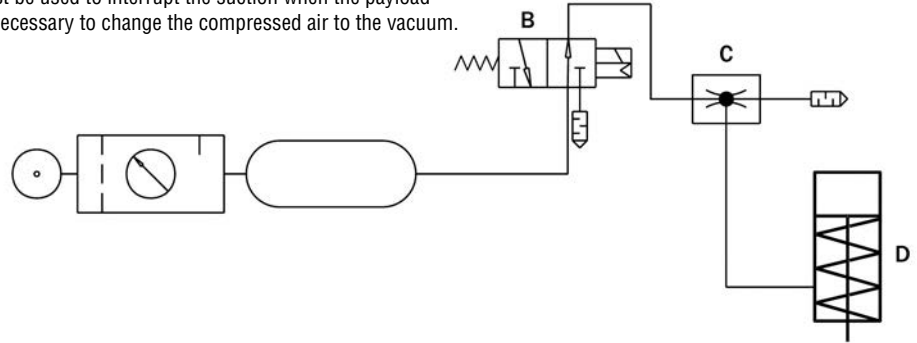
The non-rotation assembly can be positioned on 3 sides.



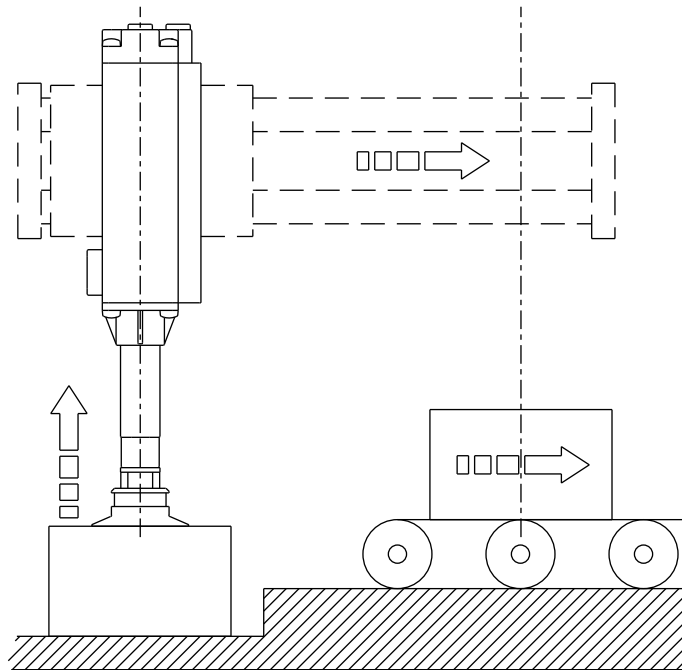
Vacuum Suspensions – VAQ

Pneumatic circuit:

To command the actuator (D), a 3/2 valve (B) must be used to interrupt the suction when the payload must be released and a vacuum generator (C) is necessary to change the compressed air to the vacuum.

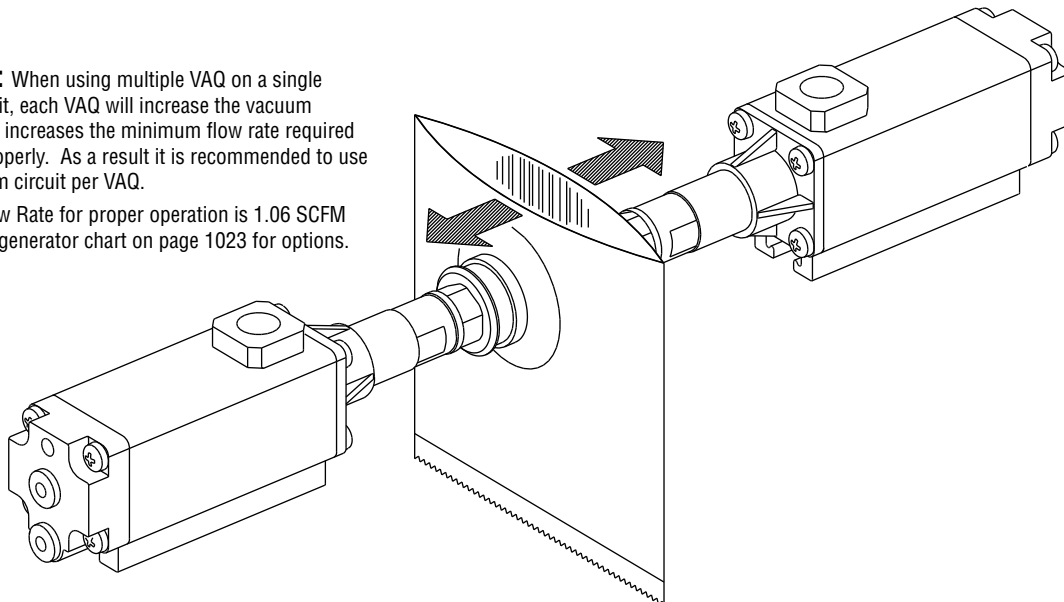


Application Example: Pick & Placing at different levels.



Warning! When using multiple VAQ on a single vacuum circuit, each VAQ will increase the vacuum losses, which increases the minimum flow rate required to operate properly. As a result it is recommended to use only 1 vacuum circuit per VAQ.

Minimum Flow Rate for proper operation is 1.06 SCFM (see vacuum generator chart on page 1023 for options).



Vacuum Cups Overview

Hithane® p.324



A hybrid, high-temperature, non-silicone, non-marking cup good for use with hot plastic parts.
Maximum temperature 320°F.
Good flexibility.

Material	Flat w/Ribs	Flat	Oval	1.5 Bellows	2.5 Bellows
Hithane		8-50mm	4-75mm	5-53mm	7-62mm

OEM Replacement p.334



The translucent clear silicone cups are very nice quality.
Ideal for customers wanting non-colored silicone cups.
Popular design fits PIAB nipples.
Non-branded for OEM applications.

Material	Flat w/Ribs	Flat	Deep	1.5 Bellows	2.5 Bellows
Silicone	16-50mm	7-16mm		5-50mm	
Hithane®	16-50mm	7-16mm		5-50mm	
Polyurethane					
Nitrile	16-50mm	7-16mm		5-50mm	

Piab® p.338



Excellent performing silicone.
Low-cost chloroprene for lower temperature, non-critical applications.

Material	Flat w/Ribs	Flat	Deep	1.5 Bellows	2.5 Bellows
Silicone	15-75mm	2-50mm	15-50mm	5-75mm	
Polyurethane	15-50mm			15-50mm	
Chloroprene	15-30mm	4-20mm	15-50mm	5-40mm	
Nitrile	40-75mm	30-50mm	15-50mm	50-75mm	

>S< Style p.360



Good quality, high performing vacuum cups in a broad size and material range.
Silicone maximum temperature 482°F.
New Hithane cups! Max. temperature 320°F.
Hard-to-find foam cups on page 368.

Material	Foam	Foam, 1.5 Bellows	Flat	1.5 Bellows	2.5 Bellows
Silicone	15-50mm	4-50mm	1-95mm	4-75mm	5-90mm
Hithane			2-95mm	4-75mm	5-7mm
Nitrile	15-50mm	20-50mm	1-95mm	4-75mm	5-90mm

SMC® p.374



We make ordering SMC vacuum cups easy. See step by step ordering guide on page 375.
Good variety of alternate vacuum entries with push-in fittings and barbed fittings.

Material	Flat w/Ribs	Flat	Deep	1.5 Bellows	2.5 Bellows
Silicone	10-50mm	2-50mm	10-40mm	6-50mm	
Polyurethane	10-50mm	2-50mm	10-40mm	6-50mm	
Anti-Static		2-16mm		6-16mm	
Nitrile	10-50mm	2-50mm	10-40mm	6-50mm	

Senvex® p.392



One-nipple-size-fits-all Senvex cups make it easy to standardize with fewer nipples, suspensions, and mounting brackets.
Nipple-integrated suspensions are also available.

Material	Flat w/Ribs	Flat	Deep	1.5 Bellows	2.5 Bellows
Silicone	10-40mm			10-40mm	
Polyurethane	10-40mm			10-40mm	
Special PU					
Nitrile					

Star® p.400



Very nice quality vacuum cups.
Two nipple sizes fit the entire range.
Nipple integrated suspensions are available.

Material	Flat w/Ribs	Flat	Foam	1.5 Bellows	2.5 Bellows
Silicone	15-20mm	6-45mm	8-60mm		6-40mm
Polyurethane					
Fluorine		6-40mm			12-20mm
Nitrile					

Apex® p.396




Long lasting, slightly thicker silicone.
One-nipple-size-fits-all.
Good quality, basic vacuum cups.

Material	Flat w/Ribs	Flat	Deep	1.5 Bellows	2.5 Bellows
Silicone	10-50mm			5-40mm	
Polyurethane					
Special PU					
Nitrile					

Vacuum Cups Overview


Gimatic® p.386



Available in two styles: flat or with 1.5 bellows.
 Four materials: Silicone, EPDM, and HNBR. *Call EMI for Natural Rubber cups.
 Diameter from 11mm to 53mm.

Material	Flat w/Ribs	Flat	Oval	1.5 Bellows	2.5 Bellows
Silicone		11–53mm		11–53mm	
EPDM		11–53mm		11–53mm	
HNBR		11–53mm		11–53mm	
Natural Rubber		11–53mm		11–53mm	

For Carbon Fiber p.420




PTFE vacuum cups do not stick to hot carbon fiber parts (up to 480°F)
 Used in applications where needle grippers would puncture and damage the structure of composites.
 Supporting ribs avoid suction and deformation of soft materials.

Aclathane® Online Only!




A special, long-life, non-marking polyurethane.
 Maximum temperature 212°F.
 Relatively stiff.

Duraflex® p.346




One of the best polyurethane cups for use with EOAT.
 Green PU is stiffer to provide excellent part support when carrying the part vertically. Yellow PU is very flexible to provide excellent sealing.
 1.5 & 2.5 bellows 11–75mm.

Foam p.406



Very soft, closed-cell silicone foam vacuum cups for textured surfaces.
 Flat 8–60mm.
 1.5 bellows 15–40mm.
 Additional foam cups on page 368.

ShorTec® with Larger Lip p.350



These dual durometer cups offer excellent quality and feature a larger and more flexible lip. Available at a lower price compared to other similar polyurethane cups.
 Made of mark-free polyurethane.
 2.5 bellows 25–55mm.

ShorTec® p.352




These dual durometer cups offer excellent quality and features like the popular brand name dual durometer cups, but at a lower price. Made of mark-free polyurethane.
 1.5 & 2.5 bellows 10–70mm.

Packaging & Paper p.423



DURAFLEX® mark-free material features the elasticity of rubber in combination with the wear resistance of polyurethane.
 High-flow fitting allows for high initial vacuum flow needed for bag handling.
 30–40mm.

Paper & Foil p.424



Special ridges keep paper, foil, and other thin material from being sucked into the cup.
 Natural rubber vacuum cups 15–40mm.

Oval p.408



From 2x4mm to 25x75mm.
 Translucent silicone.
 Hard to find 2.5 bellows silicone.
 Additional Hithane Oval cups on page 330.

Hi-Speed p.422




Optimized for high speed attachment and release.
 Great for high speed thin wall molding applications.
 Silicone and very flexible polyurethane materials.

Mini p.412




For those tiny parts, vacuum cups as small as Ø1mm.
 Flat, 1.5 bellows, and 2.5 bellows.

Long Neck p.391




Translucent silicone.
 6–25mm.
 Softer durometer.
 Good for small parts.

Anti-Static p.376



Anti-Static vacuum cups are typically used in electronic, packaging, and small parts applications.
 These are from the SMC family of vacuum cups.
 Available in Flat, and 1.5 bellows up to 16mm.

4.5 Bellows p.426



Great for use with angled and contoured surfaces.
 Translucent silicone.
 20–50mm.

Hithane® – Flat

(Shown Actual Size)



Hithane - Time Proven!

This hybrid non-marking cup combines the high-temperature and flexibility properties of silicone with the wear resistance and non-marking properties of polyurethane.

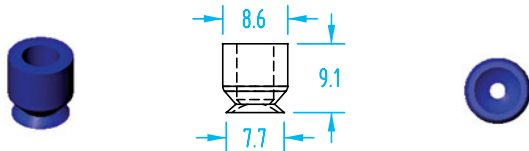
It contains no silicone so it is suitable to be used with parts that will be painted.

Hithane is designed not to leave residue, mold release marks, or ghost marks on hot, injection molded plastic parts.

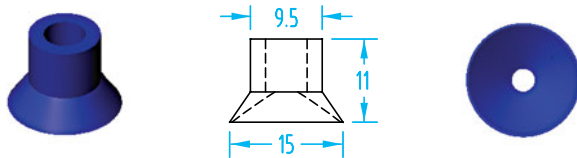
Hithane Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
Hithane	Blue	320°F	60°

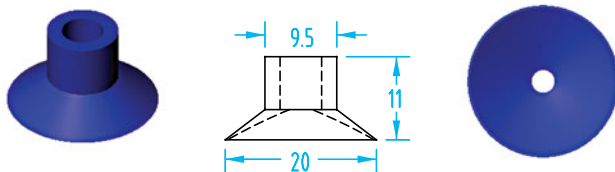
See page 332–333 for nipple dimensions.



Cup Ø	Material	Quick#	Part#	Price
8mm	Hithane	1645	GSV-FHT-8	\$5.26
Nipple	Female M5	5431	GSF-HTN1-M5F	\$3.59
	Male M5	408	GSF-N16-M5M	\$3.52



Cup Ø	Material	Quick#	Part#	Price
15mm	Hithane	1646	GSV-FHT-15	\$6.63
Nipple	Female M5	5431	GSF-HTN1-M5F	\$3.59
	Male M5	408	GSF-N16-M5M	\$3.52
	Male G1/8"	1604	GSF-PFN-G8M	\$3.99
	Female G1/8"	1603	GSF-PFN-G8F	\$3.99

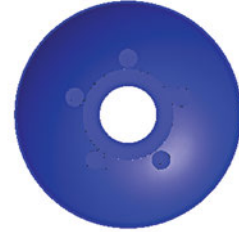
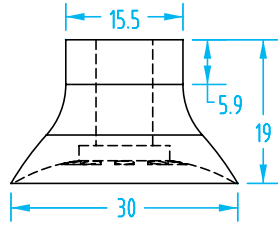


Cup Ø	Material	Quick#	Part#	Price
20mm	Hithane	1647	GSV-FHT-20	\$5.26
Nipple	Female M5	5431	GSF-HTN1-M5F	\$3.59
	Male M5	408	GSF-N16-M5M	\$3.52
	Male G1/8"	1604	GSF-PFN-G8M	\$3.99
	Female G1/8"	1603	GSF-PFN-G8F	\$3.99

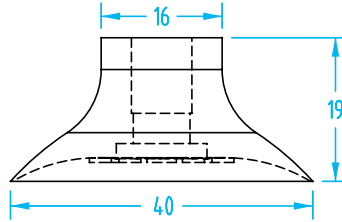
Hithane® – Flat

(Shown Actual Size)

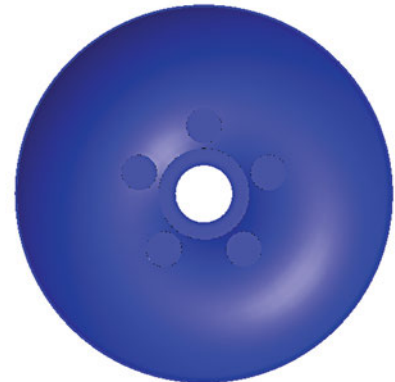
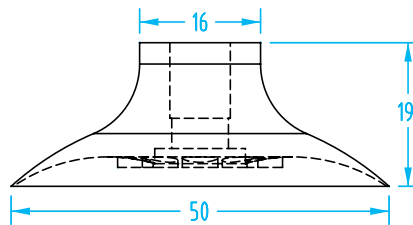
Use Quick#s for easy online ordering.



Cup Ø	Material	Quick#	Part#	Price
30mm	Hithane	1648	GSV-FHT-30	\$7.88
Nipple	Female G1/8"	5432	GSF-HTN1-G8F	\$3.67
	Male G1/8"	5433	GSF-HTN1-G8M	\$3.67
	Female G1/4"	1744	GSF-HTN4-G4F	\$6.61
	Male G1/4"	1743	GSF-HTN4-G4M	\$6.77



Cup Ø	Material	Quick#	Part#	Price
40mm	Hithane	1649	GSV-FHT-40	\$14.12
Nipple	Female G1/8"	5432	GSF-HTN1-G8F	\$3.67
	Male G1/8"	5433	GSF-HTN1-G8M	\$3.67
	Female G1/4"	1744	GSF-HTN4-G4F	\$6.61
	Male G1/4"	1743	GSF-HTN4-G4M	\$6.77



Cup Ø	Material	Quick#	Part#	Price
50mm	Hithane	1650	GSV-FHT-50	\$10.56
Nipple	Female G1/8"	5432	GSF-HTN1-G8F	\$3.67
	Male G1/8"	5433	GSF-HTN1-G8M	\$3.67
	Female G1/4"	1744	GSF-HTN4-G4F	\$6.61
	Male G1/4"	1743	GSF-HTN4-G4M	\$6.77

Fittings Available
on page 1043



Hithane® – 1.5 Bellows

(Shown Actual Size)



Hithane - Time Proven!

This hybrid non-marking cup combines the high-temperature and flexibility properties of silicone with the wear resistance and non-marking properties of polyurethane.

It contains no silicone so it is suitable to be used with parts that will be painted.

Hithane is designed not to leave residue, mold release marks, or ghost marks on hot, injection molded plastic parts.

Hithane Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
Hithane	Blue	320°F	60°

See page 332–333 for nipple dimensions.

Cup Ø	Material	Quick#	Part#	Price
5mm	Hithane	5988	GSV-BHT-5	\$11.48
Nipple	Male M5	258	GSF-BS-M506	\$0.77
	Female M5	1070	ZPT1B5	\$3.25

Cup Ø	Material	Quick#	Part#	Price
11mm	Hithane	5989	GSV-BHT-11	\$7.17
Nipple	Male M5	408	GSF-N16-M5M	\$3.52
	Female M5	5431	GSF-HTN1-M5F	\$3.59

Cup Ø	Material	Quick#	Part#	Price
14mm	Hithane	1651	GSV-BHT-14	\$6.34
Nipple	Male M5	408	GSF-N16-M5M	\$3.52
	Female M5	5431	GSF-HTN1-M5F	\$3.59
	Male G1/8"	1604	GSF-PFN-G8M	\$3.99
	Female G1/8"	1603	GSF-PFN-G8F	\$3.99

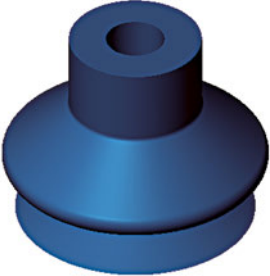
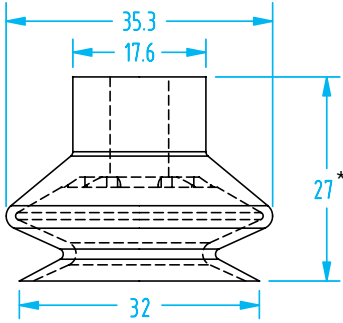
Cup Ø	Material	Quick#	Part#	Price
20mm	Hithane	1652	GSV-BHT-20	\$7.69
Nipple	Male M5	408	GSF-N16-M5M	\$3.52
	Female M5	5431	GSF-HTN1-M5F	\$3.59
	Male G1/8"	1604	GSF-PFN-G8M	\$3.99
	Female G1/8"	1603	GSF-PFN-G8F	\$3.99

Cup Ø	Material	Quick#	Part#	Price
25mm	Hithane	1653	GSV-BHT-25	\$7.81
Nipple	Male M5	408	GSF-N16-M5M	\$3.52
	Female M5	5431	GSF-HTN1-M5F	\$3.59
	Male G1/8"	1604	GSF-PFN-G8M	\$3.99
	Female G1/8"	1603	GSF-PFN-G8F	\$3.99

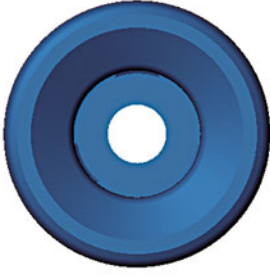
Cup Ø	Material	Quick#	Part#	Price
25mm	Hithane	1653	GSV-BHT-25	\$7.81
Nipple	Male M5	408	GSF-N16-M5M	\$3.52
	Female M5	5431	GSF-HTN1-M5F	\$3.59
	Male G1/8"	1604	GSF-PFN-G8M	\$3.99
	Female G1/8"	1603	GSF-PFN-G8F	\$3.99

Hithane® – 1.5 Bellows

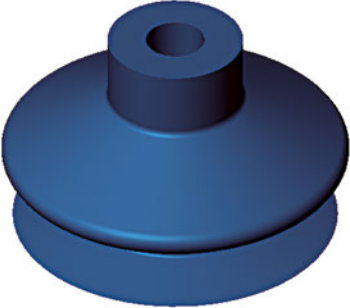
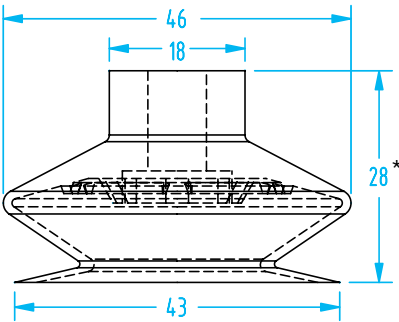
(Shown Actual Size)

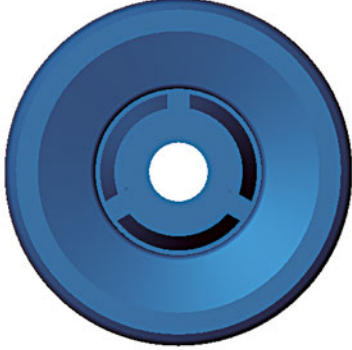
* 19mm Compressed



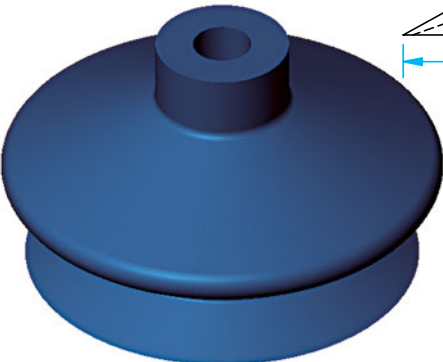
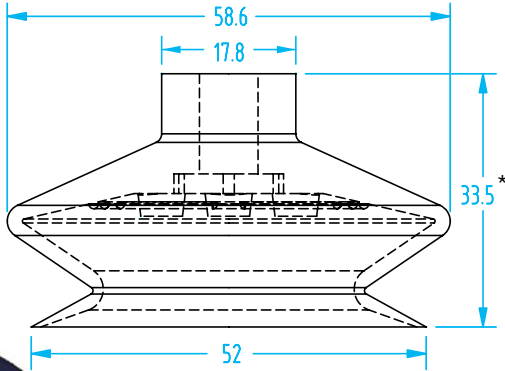
Cup Ø	Material	Quick#	Part#	Price
33mm	Hithane	1654	GSV-BHT-33	\$10.66
Nipple	Female G1/8"	5432	GSF-HTN1-G8F	\$3.67
	Male G1/8"	5433	GSF-HTN1-G8M	\$3.67
	Female G1/4"	1744	GSF-HTN4-G4F	\$6.61
	Male G1/4"	1743	GSF-HTN4-G4M	\$6.77


* 19mm Compressed



Cup Ø	Material	Quick#	Part#	Price
43mm	Hithane	1655	GSV-BHT-43	\$11.77
Nipple	Female G1/8"	5432	GSF-HTN1-G8F	\$3.67
	Male G1/8"	5433	GSF-HTN1-G8M	\$3.67
	Female G1/4"	1744	GSF-HTN4-G4F	\$6.61
	Male G1/4"	1743	GSF-HTN4-G4M	\$6.77

* 21mm Compressed



Cup Ø	Material	Quick#	Part#	Price
53mm	Hithane	1656	GSV-BHT-53	\$12.79
Nipple	Female G1/8"	5432	GSF-HTN1-G8F	\$3.67
	Male G1/8"	5433	GSF-HTN1-G8M	\$3.67
	Female G1/4"	1744	GSF-HTN4-G4F	\$6.61
	Male G1/4"	1743	GSF-HTN4-G4M	\$6.77

Hithane® – 2.5 Bellows

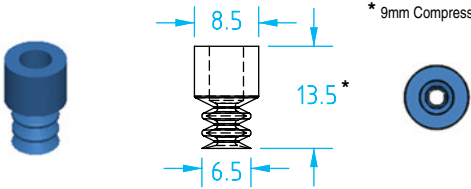
(Shown Actual Size)



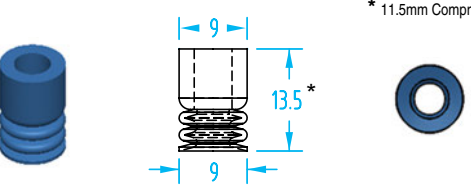
Hithane Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
Hithane	Blue	320°F	60°

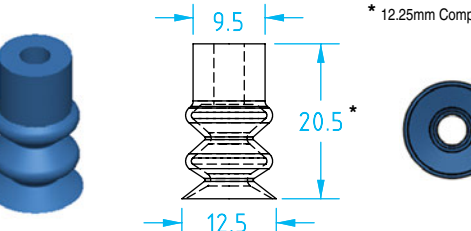
See page 332–333 for nipple dimensions.



Cup Ø	Material	Quick#	Part#	Price
7mm	Hithane	5442	GSV-2BHT-7	\$9.03
Nipple	Male M5	408	GSF-N16-M5M	\$3.52
	Female M5	5431	GSF-HTN1-M5F	\$3.59



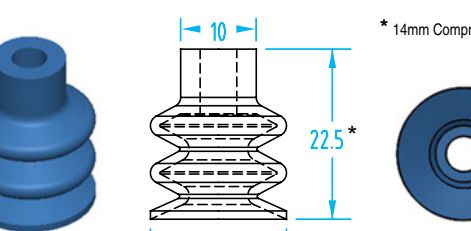
Cup Ø	Material	Quick#	Part#	Price
9mm	Hithane	1657	GSV-2BHT-9	\$7.17
Nipple	Male M5	408	GSF-N16-M5M	\$3.52
	Female M5	5431	GSF-HTN1-M5F	\$3.59
	Male G1/8"	1604	GSF-PFN-G8M	\$3.99
	Female G1/8"	1603	GSF-PFN-G8F	\$3.99



Cup Ø	Material	Quick#	Part#	Price
12mm	Hithane	5443	GSV-2BHT-12	\$7.77
Nipple	Male M5	408	GSF-N16-M5M	\$3.52
	Female M5	5431	GSF-HTN1-M5F	\$3.59
	Male G1/8"	1604	GSF-PFN-G8M	\$3.99
	Female G1/8"	1603	GSF-PFN-G8F	\$3.99



Cup Ø	Material	Quick#	Part#	Price
14mm	Hithane	1658	GSV-2BHT-14	\$7.42
Nipple	Male M5	408	GSF-N16-M5M	\$3.52
	Female M5	5431	GSF-HTN1-M5F	\$3.59
	Male G1/8"	1604	GSF-PFN-G8M	\$3.99
	Female G1/8"	1603	GSF-PFN-G8F	\$3.99

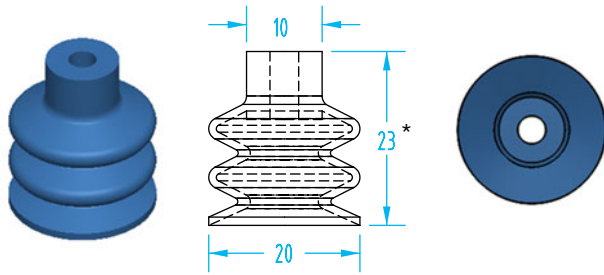


Cup Ø	Material	Quick#	Part#	Price
18mm	Hithane	1659	GSV-2BHT-18	\$7.42
Nipple	Male M5	408	GSF-N16-M5M	\$3.52
	Female M5	5431	GSF-HTN1-M5F	\$3.59
	Male G1/8"	1604	GSF-PFN-G8M	\$3.99
	Female G1/8"	1603	GSF-PFN-G8F	\$3.99

Hithane® – 2.5 Bellows

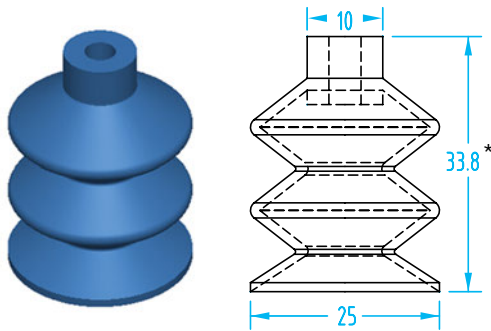
(Shown Actual Size)

* 13mm Compressed



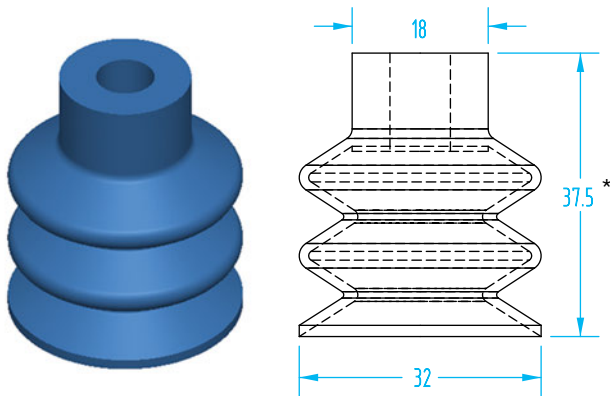
Cup Ø	Material	Quick#	Part#	Price
20mm	Hithane	1184	GSV-2BHT-20	\$9.45
Nipple	Male M5	408	GSF-N16-M5M	\$3.52
	Female M5	5431	GSF-HTN1-M5F	\$3.59
	Male G1/8"	1604	GSF-PFN-G8M	\$3.99
	Female G1/8"	1603	GSF-PFN-G8F	\$3.99

* 16mm Compressed



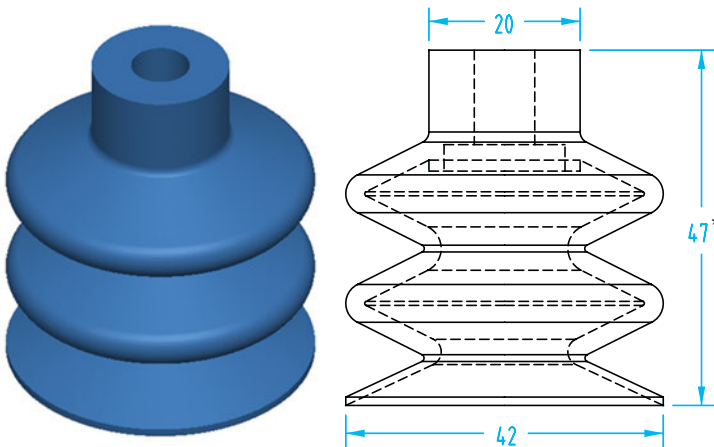
Cup Ø	Material	Quick#	Part#	Price
25mm	Hithane	1660	GSV-2BHT-25	\$11.75
Nipple	Male M5	408	GSF-N16-M5M	\$3.52
	Female M5	5431	GSF-HTN1-M5F	\$3.59
	Male G1/8"	1604	GSF-PFN-G8M	\$3.99
	Female G1/8"	1603	GSF-PFN-G8F	\$3.99

* 22mm Compressed



Cup Ø	Material	Quick#	Part#	Price
32mm	Hithane	1185	GSV-2BHT-32	\$13.29
Nipple	Female G1/8"	5432	GSF-HTN1-G8F	\$3.67
	Male G1/8"	5433	GSF-HTN1-G8M	\$3.67
	Female G1/4"	1744	GSF-HTN4-G4F	\$6.61
	Male G1/4"	1743	GSF-HTN4-G4M	\$6.77

* 26mm Compressed



Cup Ø	Material	Quick#	Part#	Price
42mm	Hithane	1661	GSV-2BHT-42	\$12.97
Nipple	Female G1/8"	5432	GSF-HTN1-G8F	\$3.67
	Male G1/8"	5433	GSF-HTN1-G8M	\$3.67
	Female G1/4"	1744	GSF-HTN4-G4F	\$6.61
	Male G1/4"	1743	GSF-HTN4-G4M	\$6.77

Cup Ø	Material	Quick#	Part#	Price
62mm	Hithane	1186	GSV-2BHT-62	\$31.14

visit EMIcorp.com for dimensions and fittings.

* This cup uses the same nipples as Quick#1661: Q#'s 5432, 5433, 1744, 1743.

Hithane® – Oval

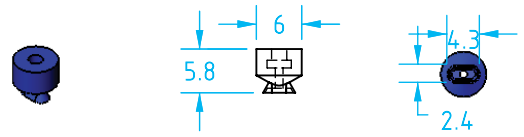
(Shown Actual Size)



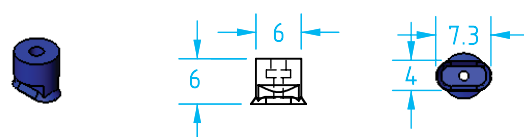
Hithane Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
Hithane	Blue	320°F	60°

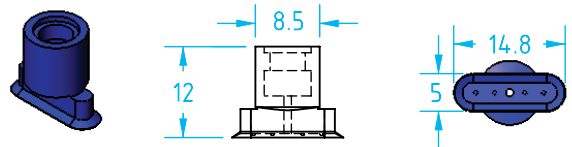
See page 332–333 for nipple dimensions.



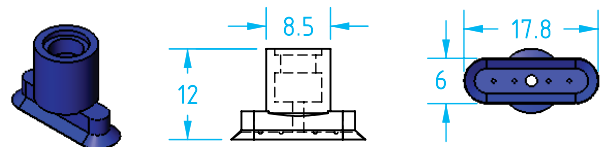
Cup Size	Material	Quick#	Part#	Price
2x4mm	Hithane	5416	GSV-OHT-24	\$9.98
Nipple	Male M3	3285	VSA5	\$6.09
	Female M5	5434	GSF-HTN2-M5FXS	\$3.59
	Male M5	5435	GSF-HTN2-M5MXS	\$3.59



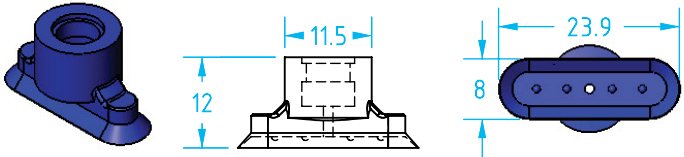
Cup Size	Material	Quick#	Part#	Price
3.5x7mm	Hithane	5417	GSV-OHT-357	\$10.12
Nipple	Male M3	3285	VSA5	\$6.09
	Female M5	5434	GSF-HTN2-M5FXS	\$3.59
	Male M5	5435	GSF-HTN2-M5MXS	\$3.59



Cup Size	Material	Quick#	Part#	Price
5x15mm	Hithane	5418	GSV-OHT-515	\$19.57
Nipple	Male M5	378	GSF-N21-M5M	\$7.26
	Female M5	379	GSF-N21-M5F	\$7.26



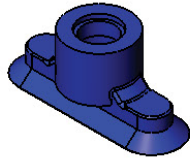
Cup Size	Material	Quick#	Part#	Price
6x18mm	Hithane	5419	GSV-OHT-618	\$20.56
Nipple	Male M5	378	GSF-N21-M5M	\$7.26
	Female M5	379	GSF-N21-M5F	\$7.26



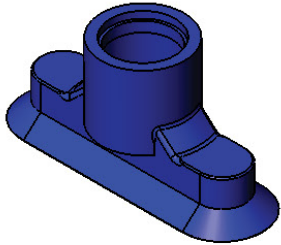
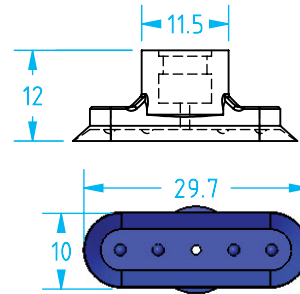
Cup Size	Material	Quick#	Part#	Price
8x24mm	Hithane	5420	GSV-OHT-824	\$23.25
Nipple	Female M5	5438	GSF-HTN2-M5FM	\$3.62
	Male M5	5439	GSF-HTN2-M5MM	\$3.62

Hithane® – Oval

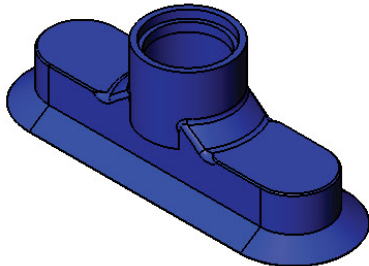
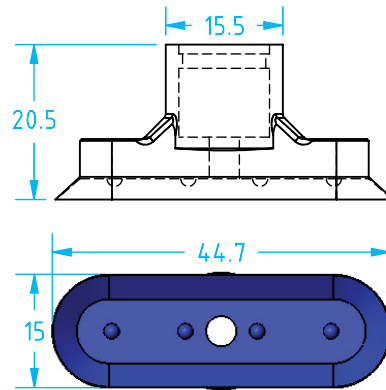
(Shown Actual Size)



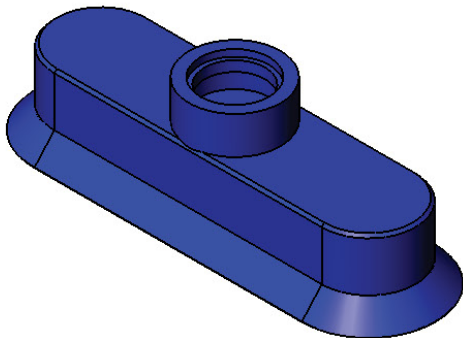
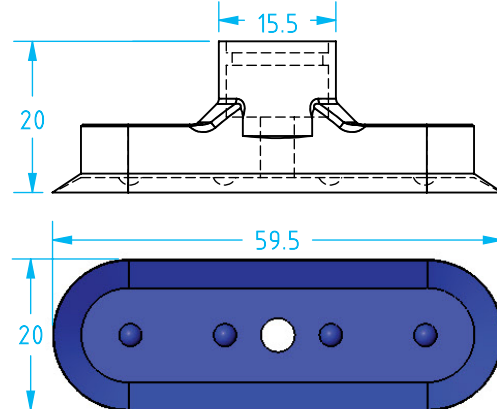
Cup Size	Material	Quick#	Part#	Price
10x30mm	Hithane	5421	GSV-OHT-1030	\$26.23
Nipple	Female M5	5438	GSF-HTN2-M5FM	\$3.62
	Male M5	5439	GSF-HTN2-M5MM	\$3.62



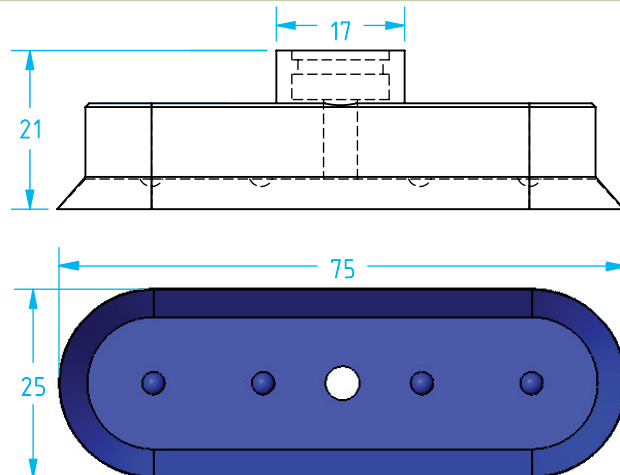
Cup Size	Material	Quick#	Part#	Price
15x45mm	Hithane	5422	GSV-OHT-1545	\$26.94
Nipple	Female G1/8"	5440	GSF-HTN2-G8FL	\$3.67
	Male G1/8"	5441	GSF-HTN2-G8ML	\$3.67



Cup Size	Material	Quick#	Part#	Price
20x60mm	Hithane	5423	GSV-OHT-2060	\$32.80
Nipple	Female G1/8"	5440	GSF-HTN2-G8FL	\$3.67
	Male G1/8"	5441	GSF-HTN2-G8ML	\$3.67

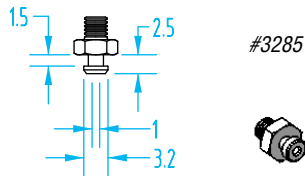


Cup Size	Material	Quick#	Part#	Price
25x75mm	Hithane	5424	GSV-OHT-2575	\$41.83
Nipple	Female G1/8"	5440	GSF-HTN2-G8FL	\$3.67
	Male G1/8"	5441	GSF-HTN2-G8ML	\$3.67

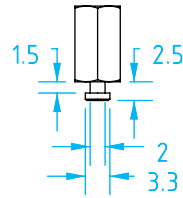


Hithane® – Vacuum Cup Nipples

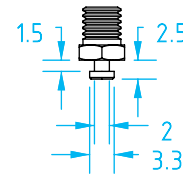
(Shown Actual Size)



#3285



#5434

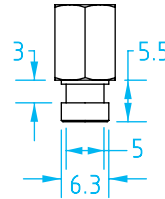


#5435

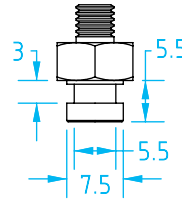
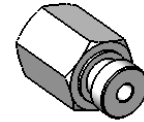


Thread	Quick#	Part#	Price
Male M3	3285	VSA5	\$6.09
Female M5	5434	GSF-HTN2-M5FX5	\$3.59
Male M5	5435	GSF-HTN2-M5MX5	\$3.59

For: Oval Cups: 2x4mm and 3.5x7mm



#5438

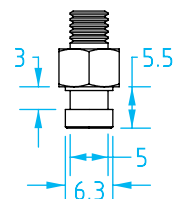


#5439

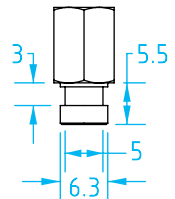


Thread	Quick#	Part#	Price
Female M5	5438	GSF-HTN2-M5FM	\$3.62
Male M5	5439	GSF-HTN2-M5MM	\$3.62

For: Oval Cups: 8x24mm and 10x30 mm



#378

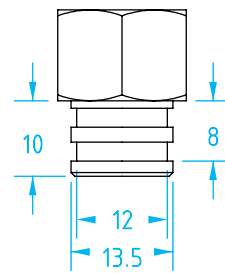


#379

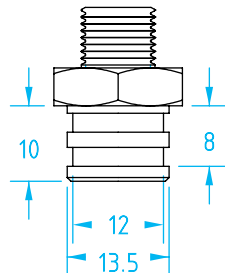
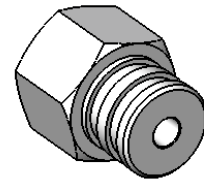


Thread	Quick#	Part#	Price
Male M5	378	GSF-N21-M5M	\$7.26
Female M5	379	GSF-N21-M5F	\$7.26

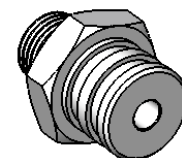
For: Oval Cups: 5x15mm and 6x18mm



#5440



#5441



Thread	Quick#	Part#	Price
Female G1/8"	5440	GSF-HTN2-G8FL	\$3.92
Male G1/8"	5441	GSF-HTN2-G8ML	\$3.92

For: Oval Cups: 15x45mm, 20x60mm, and 25x75mm

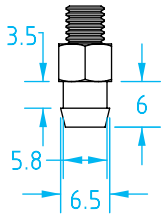


3D Printed Clamp Rings clamp onto the stem of oval Hithane vacuum cups to prevent them from rotating. Please note, they can only be installed once.

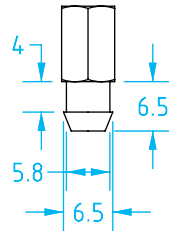
Quick#	Part#	For:	Price
770	GSF-515618-CR	5 x 15mm & 6 x 18mm cups: Q #5418, #5419	\$0.73
771	GSF-8241030-CR	8 x 24mm & 10 x 30mm cups: Q #5420, #5421	\$0.84
772	GSF-15452060-CR	15 x 45mm & 20 x 60mm cups: Q #5422, #5423	\$0.88
773	GSF-2575-CR	25x75mm cups: Q #5424	\$0.91

Hithane® – Vacuum Cup Nipples

(Shown Actual Size)



#408, nickle-plated, FDA approved

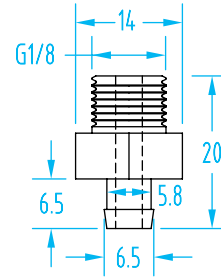


#5431

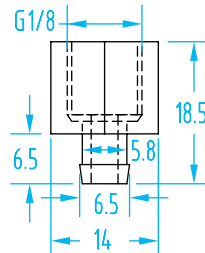


Thread	Quick#	Part#	Price
Female M5	5431	GSF-HTN1-M5F	\$3.59
Male M5	408	GSF-N16-M5M	\$3.52

For: Flat Cups: 5mm, 8mm, 11mm, 15mm, and 20mm
 1.5 Bellows Cups: 11mm, 14mm, 20mm, and 25mm
 2.5 Bellows Cups: 7mm, 9mm, 12mm, 14mm, 18mm, 20mm and 25mm



#1604

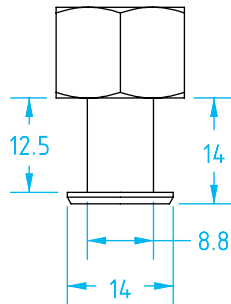


#1603

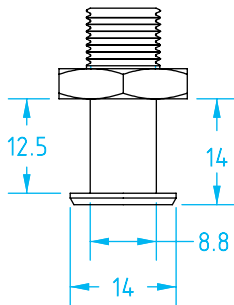
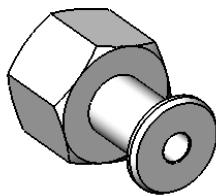


Thread	Quick#	Part#	Price
Male G1/8"	1604	GSF-PFN-G8M	\$3.99
Female G1/8"	1603	GSF-PFN-G8F	\$3.99

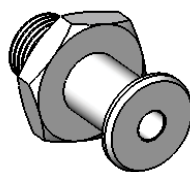
For: Flat Cups: 5mm, 8mm, 11mm, 15mm, and 20mm
 1.5 Bellows Cups: 14mm, 20mm, and 25mm
 2.5 Bellows Cups: 7mm, 9mm, 12mm, 14mm, 18mm, and 25mm



#5432

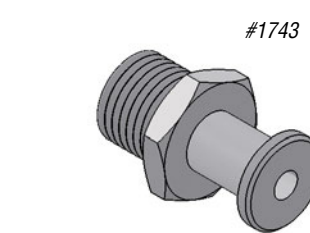


#5433

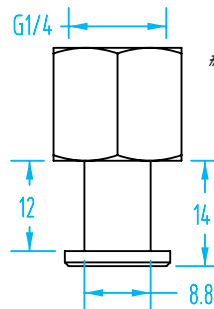
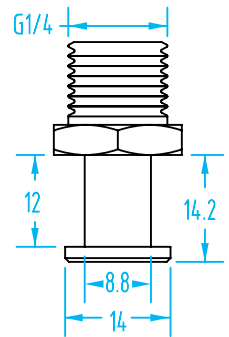


Thread	Quick#	Part#	Price
Female G1/8"	5432	GSF-HTN1-G8F	\$3.67
Male G1/8"	5433	GSF-HTN1-G8M	\$3.67

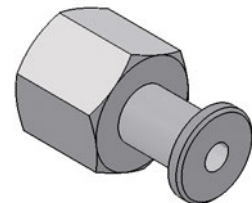
For: Flat Cups: 30mm, 40mm, and 50mm
 1.5 Bellows Cups: 33mm, 43mm, and 53mm
 2.5 Bellows Cups: 32mm, and 42mm



#1743



#1744



Thread	Quick#	Part#	Price
Male G1/4"	1743	GSF-HTN4-G4M	\$6.77
Female G1/4"	1744	GSF-HTN4-G4F	\$6.61

For: Flat Cups: 30mm, 40mm, and 50mm
 1.5 Bellows Cups: 33mm, 43mm, and 53mm
 2.5 Bellows Cups: 32mm, and 42mm

OEM Replacement – Flat, Flat Ribbed



(Shown Actual Size)

Compatible with PIAB nipples!

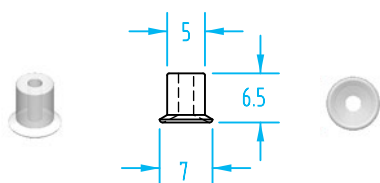
OEM replacement vacuum cups are available in Hithane. This EMI exclusive material combines the high-temperature and flexibility properties of silicone with the wear resistance and non-marking properties of polyurethane.

OEM Replacement Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
Silicone	Semi-translucent White	392°F	50°
Hithane	Blue	320°F	60°
Nitrile	Black	240°F	60°

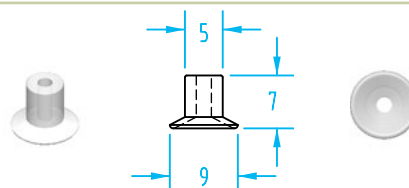
Order nipples separately. See page 356–357 for nipple dimensions.

Flat



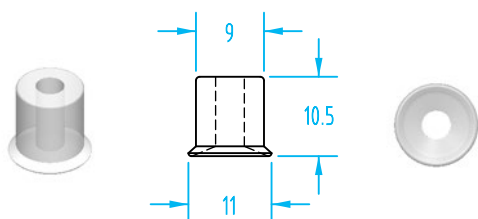
Cup Ø	Material	Quick#	Part#	Price
7mm	Silicone	673	GSV-FOS-5	\$2.21
	Hithane	1113	GSV-FOH-5	\$5.69
	Nitrile	1153	GSV-FON-5	\$1.94
Nipple	M5 Male	688	GSF-NF11-M5	\$2.31

Flat



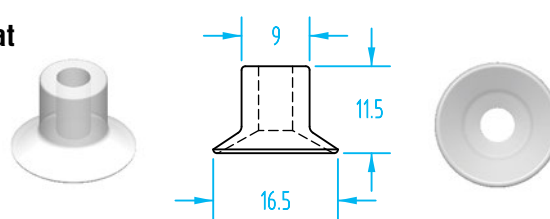
Cup Ø	Material	Quick#	Part#	Price
9mm	Silicone	674	GSV-FOS-7	\$2.39
	Hithane	1114	GSV-FOH-7	\$5.69
	Nitrile	1154	GSV-FON-7	\$1.94
Nipple	M5 Male	688	GSF-NF11-M5	\$2.31

Flat



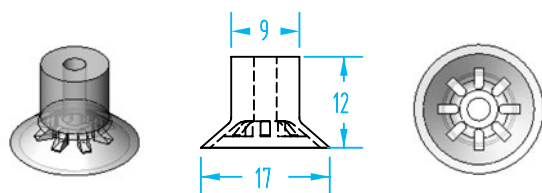
Cup Ø	Material	Quick#	Part#	Price
11mm	Silicone	675	GSV-FOS-11	\$3.19
	Hithane	1115	GSV-FOH-11	\$6.06
	Nitrile	1155	GSV-FON-11	\$2.12
Nipple	M5 Male	411	GSF-NF1-M5	\$1.75

Flat



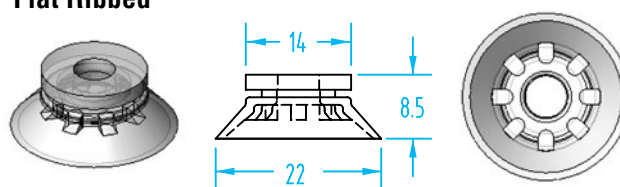
Cup Ø	Material	Quick#	Part#	Price
16mm	Silicone	676	GSV-FOS-16	\$3.51
	Hithane	1116	GSV-FOH-16	\$5.80
	Nitrile	1156	GSV-FON-16	\$2.24
Nipple	M5 Male	411	GSF-NF1-M5	\$1.75

Flat Ribbed



Cup Ø	Material	Quick#	Part#	Price
16mm	Silicone	682	GSV-FOS-16R	\$3.62
	Hithane	1122	GSV-FOH-16R	\$6.50
	Nitrile	1121	GSV-FON-16R	\$2.36
Nipple	M5 Male	411	GSF-NF1-M5	\$1.75

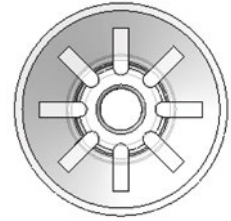
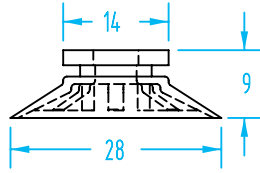
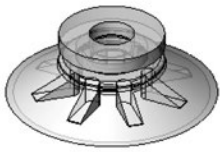
Flat Ribbed



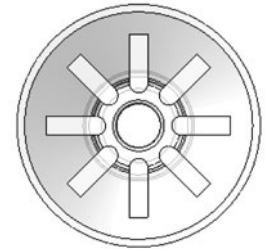
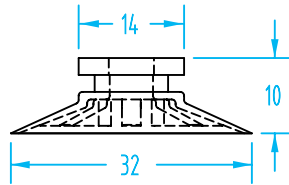
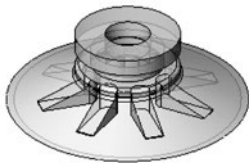
Cup Ø	Material	Quick#	Part#	Price
20mm	Silicone	683	GSV-FOS-20R	\$4.08
	Hithane	1124	GSV-FOH-20R	\$5.86
	Nitrile	1123	GSV-FON-20R	\$3.07
Nipple	Male G1/8" Female M5	412	GSF-NF2-G8M5	\$5.25

OEM Replacement – Flat Ribbed

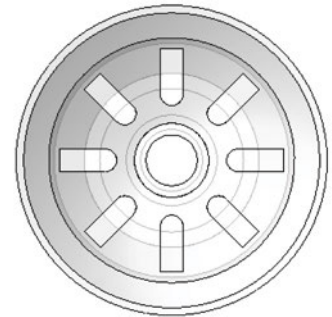
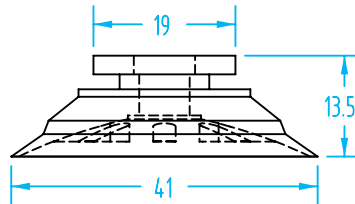
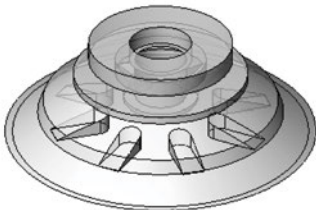
(Shown Actual Size)



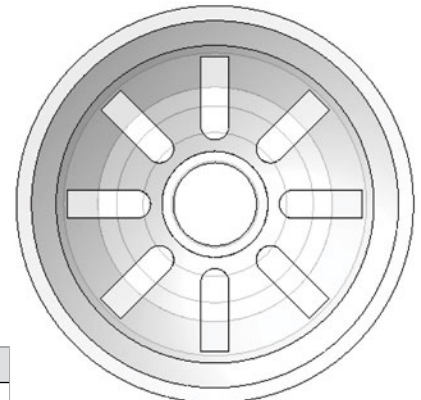
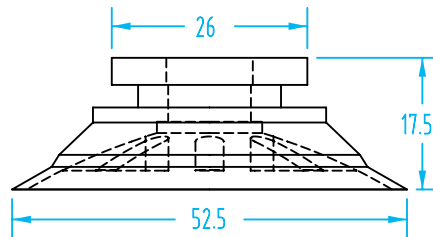
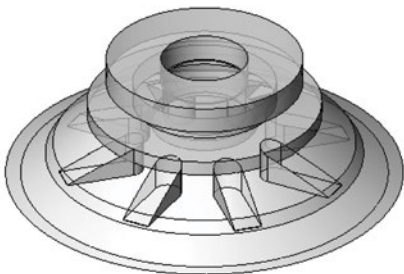
Cup Ø	Material	Quick#	Part#	Price
25mm	Silicone	684	GSV-FOS-25R	\$4.18
	Hithane	1126	GSV-FOH-25R	\$7.68
	Nitrile	1125	GSV-FON-25R	\$3.76
Nipple	Male G1/8"/Female M5	412	GSF-NF2-G8M5	\$5.25



Cup Ø	Material	Quick#	Part#	Price
30mm	Silicone	685	GSV-FOS-30R	\$4.57
	Hithane	1128	GSV-FOH-30R	\$8.48
	Nitrile	1127	GSV-FON-30R	\$3.92
Nipple	Male G1/8"/Female M5	412	GSF-NF2-G8M5	\$5.25



Cup Ø	Material	Quick#	Part#	Price
40mm	Silicone	686	GSV-FOS-40R	\$7.05
	Hithane	1130	GSV-FOH-40R	\$12.93
	Nitrile	1129	GSV-FON-40R	\$5.94
Nipple	G1/8" Female	413	GSF-NF3-G8	\$6.56



Cup Ø	Material	Quick#	Part#	Price
50mm	Silicone	687	GSV-FOS-50R	\$7.10
	Hithane	1132	GSV-FOH-50R	\$12.85
	Nitrile	1131	GSV-FON-50R	\$5.48
Nipple	G1/8" Female	646	GSF-NF5-G8F	\$5.78

OEM Replacement – 1.5 Bellows

(Shown Actual Size)

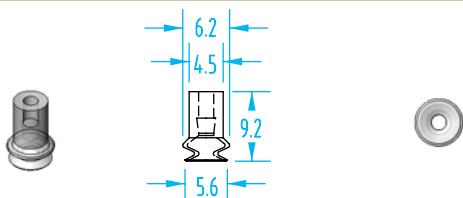


Compatible with PIAB nipples!

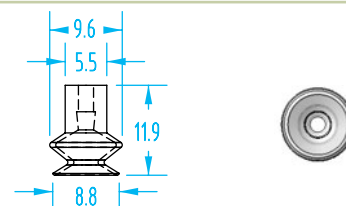
OEM replacement vacuum cups are available in Hithane. This EMI exclusive material combines the high-temperature and flexibility properties of silicone with the wear resistance and non-marking properties of polyurethane.

OEM Replacement Vacuum Cup Properties

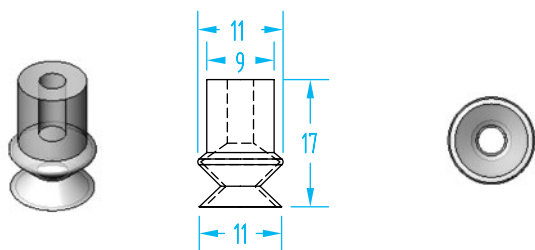
Material	Color	Max Temp.	Durometer
Silicone	Semi-translucent White	392°F	50°
Hithane	Blue	320°F	60°
Nitrile	Black	240°F	60°



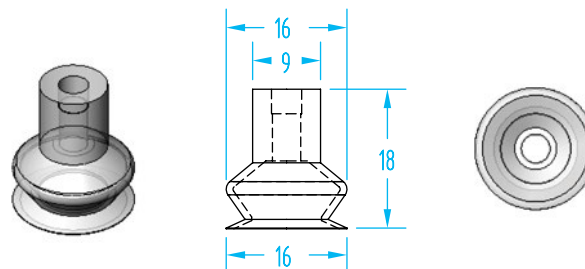
Cup Ø	Material	Quick#	Part#	Price
5mm	Silicone	1142	GSV-BOS-5	\$3.84
	Hithane	1133	GSV-BOH-5	\$7.02
	Nitrile	1144	GSV-BON-5	\$2.13
Nipple	M5 Male	688	GSF-NF11-M5	\$2.31



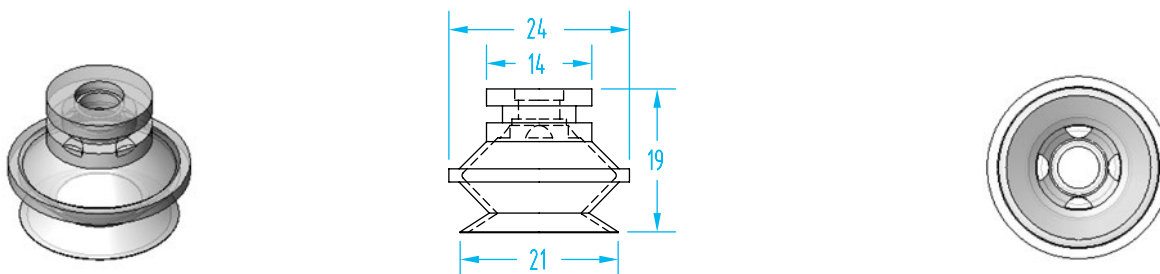
Cup Ø	Material	Quick#	Part#	Price
8mm	Silicone	1143	GSV-BOS-8	\$4.12
	Hithane	1134	GSV-BOH-8	\$6.35
	Nitrile	1145	GSV-BON-8	\$2.21
Nipple	M5 Male	688	GSF-NF11-M5	\$2.31



Cup Ø	Material	Quick#	Part#	Price
11mm	Silicone	640	GSV-BOS-11	\$2.33
	Hithane	1135	GSV-BOH-11	\$7.14
	Nitrile	1146	GSV-BON-11	\$2.59
Nipple	M5 Male	411	GSF-NF1-M5	\$1.75



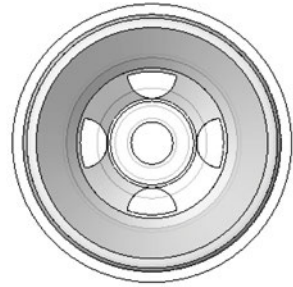
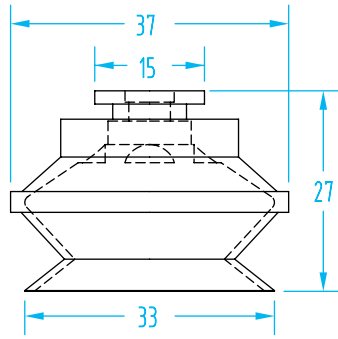
Cup Ø	Material	Quick#	Part#	Price
16mm	Silicone	641	GSV-BOS-16	\$3.02
	Hithane	1136	GSV-BOH-16	\$7.50
	Nitrile	1147	GSV-BON-16	\$2.75
Nipple	M5 Male	411	GSF-NF1-M5	\$1.75



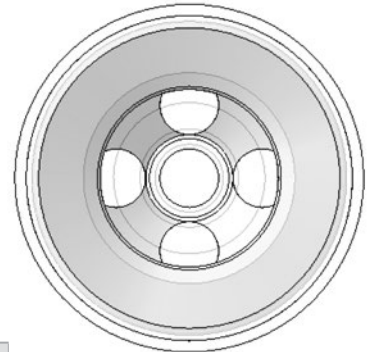
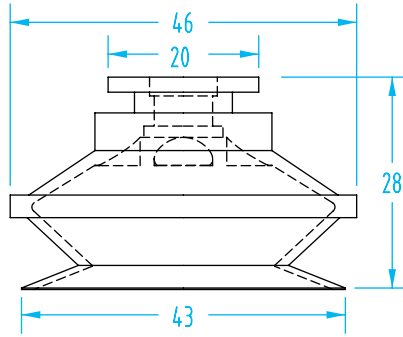
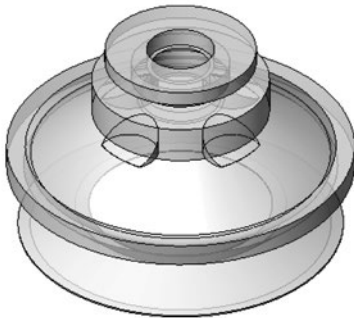
Cup Ø	Material	Quick#	Part#	Price
20mm	Silicone	642	GSV-BOS-20	\$6.62
	Hithane	1137	GSV-BOH-20	\$9.36
	Nitrile	1148	GSV-BON-20	\$4.37
Nipple	Male G1/8"/Female M5	412	GSF-NF2-G8M5	\$5.25

OEM Replacement – 1.5 Bellows

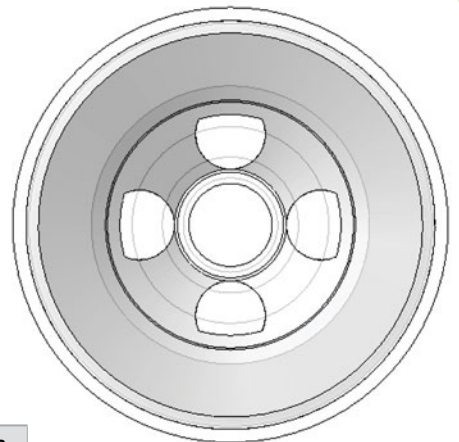
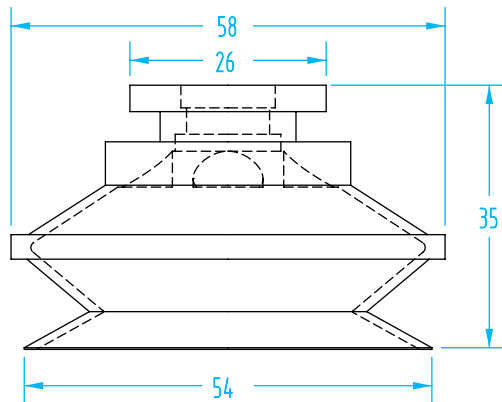
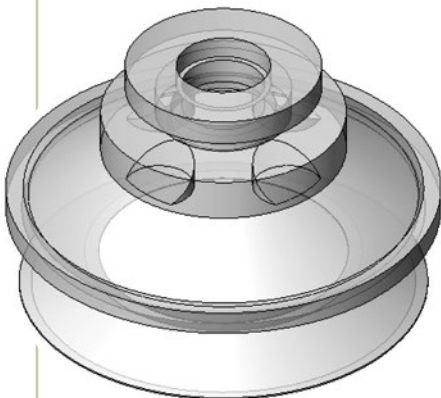
(Shown Actual Size)



Cup Ø	Material	Quick#	Part#	Price
30mm	Silicone	643	GSV-BOS-30	\$9.52
	Hithane	1138	GSV-BOH-30	\$13.22
	Nitrile	1149	GSV-BON-30	\$5.53
Nipple	Male G1/8"/Female M5	412	GSF-NF2-G8M5	\$5.25



Cup Ø	Material	Quick#	Part#	Price
40mm	Silicone	644	GSV-BOS-40	\$11.09
	Hithane	1139	GSV-BOH-40	\$15.15
	Nitrile	1151	GSV-BON-40	\$7.07
Nipple	G1/8" Female	413	GSF-NF3-G8	\$6.56



Cup Ø	Material	Quick#	Part#	Price
50mm	Silicone	645	GSV-BOS-50	\$12.83
	Hithane	1140	GSV-BOH-50	\$17.27
	Nitrile	1152	GSV-BON-50	\$8.42
Nipple	G1/8" Female	646	GSF-NF5-G8F	\$5.78

PIAB® – Flat Smooth



NEW

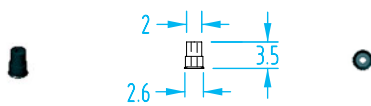
(Shown Actual Size)

PIAB silicone vacuum cups are among the best and longest lasting silicone cups available. PIAB's specially compounded silicone keeps its flexibility longer than others. If your silicone cups are 'cracking' at the edges and leaking vacuum, try these for longer life. The new FDA Silicone material is approved by FDA (FDA 21 CFR 177.2600.) and meets EU's regulation EU 1935/2004.

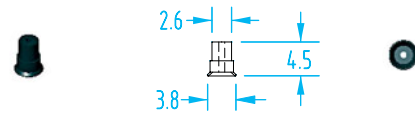
PIAB Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
Silicone	Red w/ Blue Ring	392°F	50°
FDA Silicone	Clear w/ Blue Ring	392°F	50°
Polyurethane TPU	Clear w/ Yellow Ring	176°F	81°
Chloroprene	Black w/ Yellow Ring	230°F	50°
Nitrile	Black w/ White Dot	225°F	50°

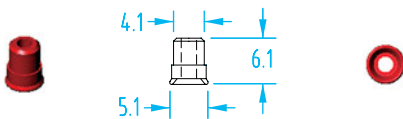
Order nipples separately. See page 356–357 for nipple dimensions.
Use Quick#s for easy online ordering.



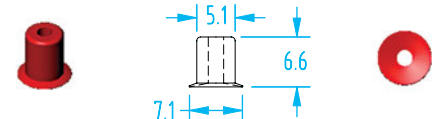
Cup Ø	Material	Quick#	Part#	Price
2mm	AS Silicone	5091	GSV-U2-25	\$10.47
Nipple	M3 Male	5464	GSF-MN15-M3	\$5.59



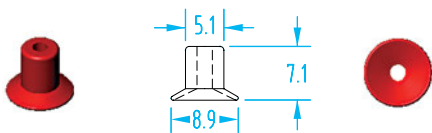
Cup Ø	Material	Quick#	Part#	Price
3mm	AS Silicone	5092	GSV-U3-25	\$9.91
Nipple	M3 Male	5464	GSF-MN15-M3	\$5.59



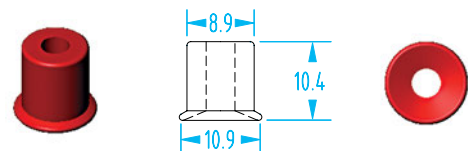
Cup Ø	Material	Quick#	Part#	Price
4mm	Silicone	5093	GSV-U4-20	\$7.70
	FDA Silicone	2910	GSV-U4-21	\$7.70
	Chloroprene	5102	GSV-U4-10	\$3.42
Nipple	M5 Male	1438	GSV-01AB	\$1.85



Cup Ø	Material	Quick#	Part#	Price
6mm	Silicone	5094	GSV-U6-20	\$5.89
	FDA Silicone	2911	GSV-U6-21	\$5.89
	Chloroprene	5103	GSV-U6-10	\$2.99
Nipple	M5 Male	1438	GSV-01AB	\$1.85



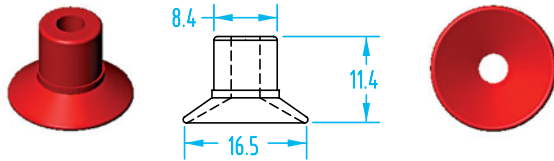
Cup Ø	Material	Quick#	Part#	Price
8mm	Silicone	5095	GSV-U8-20	\$6.36
	FDA Silicone	2912	GSV-U8-21	\$6.36
	Chloroprene	5104	GSV-U8-10	\$2.99
Nipple	M5 Male	1438	GSV-01AB	\$1.85



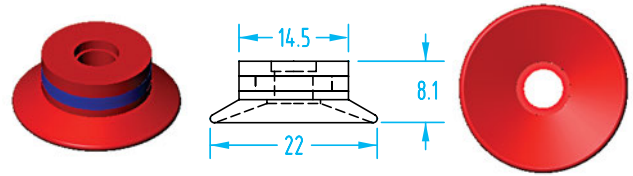
Cup Ø	Material	Quick#	Part#	Price
10mm	Silicone	5096	GSV-U10-20	\$6.24
	FDA Silicone	2913	GSV-U10-21	\$6.24
	Chloroprene	5105	GSV-U10-10	\$3.35
Nipple	M5 Male	1439	GSV-01AC	\$1.85

PIAB® – Flat Smooth

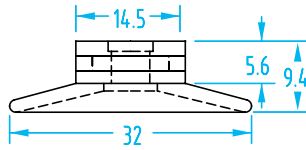
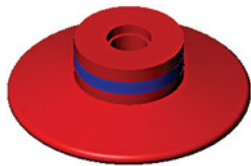
(Shown Actual Size)



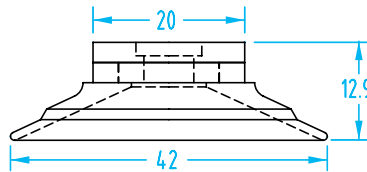
Cup Ø	Material	Quick#	Part#	Price
15mm	Silicone	5097	GSV-U15-20	\$6.24
	FDA Silicone	2914	GSV-U15-21	\$5.86
	Chloroprene	5106	GSV-U15-10	\$3.79
Nipple	M5 Male	1439	GSV-01AC	\$1.85



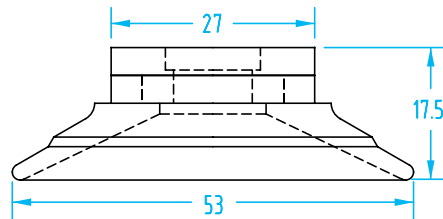
Cup Ø	Material	Quick#	Part#	Price
20mm	Silicone	5098	GSV-U20-20	\$8.39
	FDA Silicone	2915	GSV-U20-21	\$8.39
	Chloroprene	5107	GSV-U20-10	\$6.33
Nipple	G1/8" & M5	1440	GSV-02AF	\$5.14
	G1/8" Male	5157	GSV-02AB	\$5.44



Cup Ø	Material	Quick#	Part#	Price
30mm	Silicone	5099	GSV-U30-20	\$9.21
	FDA Silicone	2916	GSV-U30-21	\$9.21
	Nitrile	5108	GSV-U30-30	\$7.07
Nipple	G1/8" & M5	1440	GSV-02AF	\$5.14
	G1/8" Male	5157	GSV-02AB	\$5.44



Cup Ø	Material	Quick#	Part#	Price
40mm	Silicone	5100	GSV-U40-2-20	\$15.66
	FDA Silicone	2917	GSV-U40-2-21	\$15.66
	Nitrile	5109	GSV-U40-2-30	\$11.61
Nipple	G1/8" Female	1441	GSV-04AG	\$6.61
	G1/4" Male	5315	GSV-04AB	\$7.11



Cup Ø	Material	Quick#	Part#	Price
50mm	Silicone	5101	GSV-U50-2-20	\$19.89
	FDA Silicone	2918	GSV-U50-2-21	\$19.89
	Nitrile	5110	GSV-U50-2-30	\$13.05
Nipple	G1/8" Female	1442	GSV-05AG	\$8.14
	G1/4" Male	5316	GSV-05AB	\$8.77



PIAB® – Flat Ribbed

(Shown Actual Size)



PIAB Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
Silicone	Red w/ Blue Ring	392°F	50°
FDA Silicone	Clear w/ Blue Ring	392°F	50°
Polyurethane TPU	Clear w/ Yellow Ring	176°F	81°
Chloroprene	Black w/ Yellow Ring	230°F	50°
Nitrile	Black w/ White Dot	225°F	50°

Order nipples separately. See page 356–357 for nipple dimensions.

Cup Ø	Material	Quick#	Part#	Price
15mm	Silicone	1426	GSV-F15-20	\$5.86
	FDA Silicone	2919	GSV-F15-21	\$5.86
	Polyurethane	1432	GSV-F15MF-40	\$3.66
	Chloroprene	5124	GSV-F15-10	\$3.62
Nipple	M5 Male	1439	GSV-01AC	\$1.85

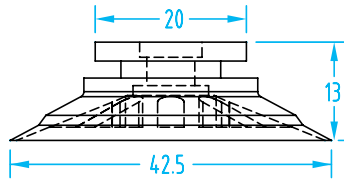
Cup Ø	Material	Quick#	Part#	Price
20mm	Silicone	1427	GSV-F20-20	\$8.71
	FDA Silicone	2920	GSV-F20-21	\$8.71
	Polyurethane	1433	GSV-F20MF-40	\$6.51
	Chloroprene	5125	GSV-F20-10	\$6.76
Nipple	G1/8" & M5	1440	GSV-02AF	\$5.14
	G1/8" Male	5157	GSV-02AB	\$5.44

Cup Ø	Material	Quick#	Part#	Price
25mm	Silicone	1428	GSV-F25-20	\$9.26
	FDA Silicone	2921	GSV-F25-21	\$9.26
	Polyurethane	1434	GSV-F25MF-40	\$6.72
	Chloroprene	5126	GSV-F25-10	\$7.09
Nipple	G1/8" & M5	1440	GSV-02AF	\$5.14
	G1/8" Male	5157	GSV-02AB	\$5.44

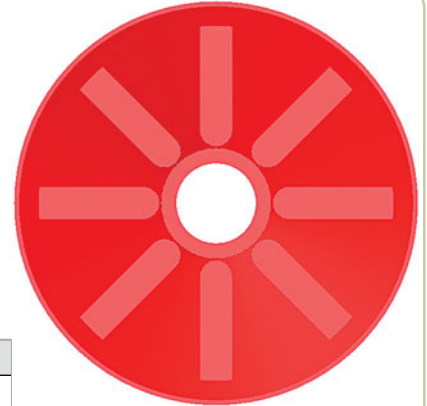
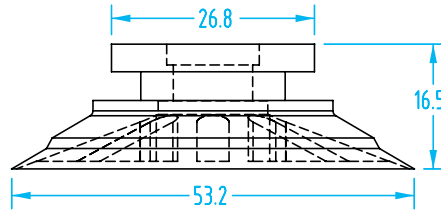
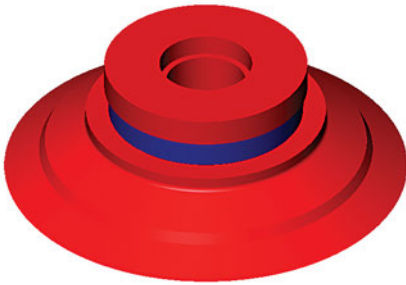
Cup Ø	Material	Quick#	Part#	Price
30mm	Silicone	1429	GSV-F30-20	\$9.75
	FDA Silicone	2922	GSV-F30-2-21	\$9.75
	Polyurethane	1435	GSV-F30MF-40	\$7.38
	Chloroprene	5127	GSV-F30-10	\$7.68
Nipple	G1/8" & M5	1440	GSV-02AF	\$5.14
	G1/8" Male	5157	GSV-02AB	\$5.44

PIAB® – Flat Ribbed

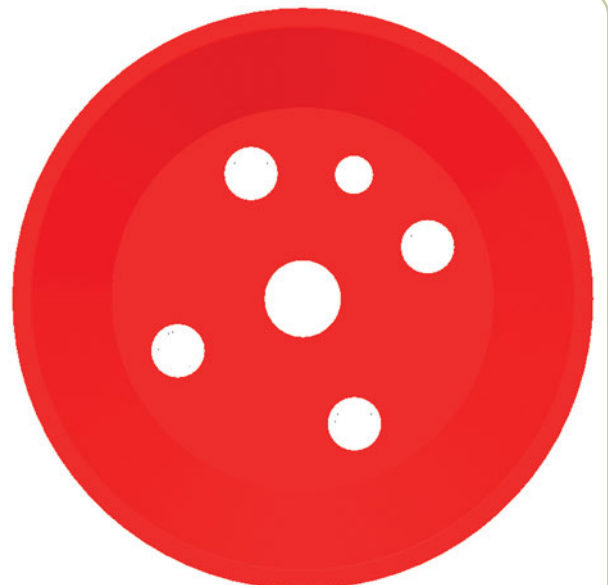
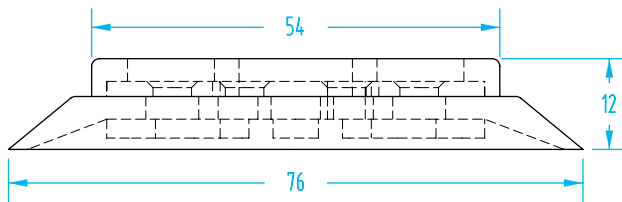
(Shown Actual Size)



Cup Ø	Material	Quick#	Part#	Price
40mm	Silicone	1430	GSV-F40-20	\$13.40
	FDA Silicone	2937	GSV-F40-2-21	\$12.64
	Polyurethane	1436	GSV-F40MF-40	\$9.03
	Nitrile	5128	GSV-F40-30	\$9.21
Nipple	G1/8" Female	1441	GSV-04AG	\$6.61
	G1/4" Male	5315	GSV-04AB	\$7.11



Cup Ø	Material	Quick#	Part#	Price
50mm	Silicone	1431	GSV-F50-20	\$21.08
	FDA Silicone	2923	GSV-F50-2-21	\$21.08
	Polyurethane	1437	GSV-F50MF-40	\$10.39
	Nitrile	5129	GSV-F50-30	\$10.60
Nipple	G1/8" Female	1442	GSV-05AG	\$8.14
	G1/4" Male	5316	GSV-05AB	\$8.77



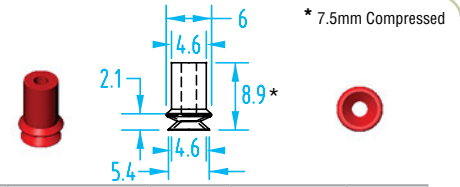
Cup Ø	Material	Quick#	Part#	Price
75mm	Silicone	5131	GSV-F75-20	\$32.11
	FDA Silicone	2924	GSV-F75-21	\$32.11
	Nitrile	5130	GSV-F75-30	\$20.01
Nipple	G1/8" Female	2172	GSV-07UA	\$31.24

PIAB® – 1.5 Bellows



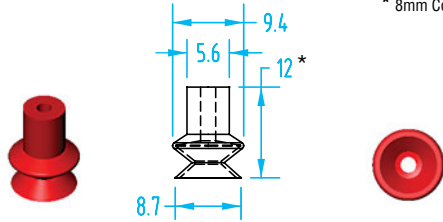
Order nipples separately. See page 356–357 for nipple dimensions.

(Shown Actual Size)



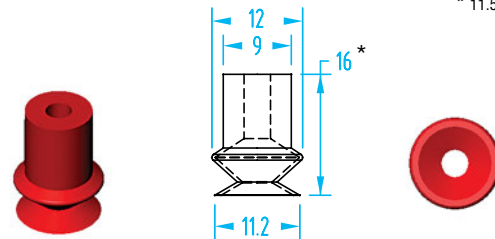
Cup Ø	Material	Quick#	Part#	Price
5mm	Silicone	1413	GSV-B5-20	\$8.72
	FDA Silicone	2925	GSV-B5-21	\$7.31
	Chloroprene	5115	GSV-B5-10	\$3.23
Nipple	M5 Male	1438	GSV-01AB	\$1.85

* 8mm Compressed



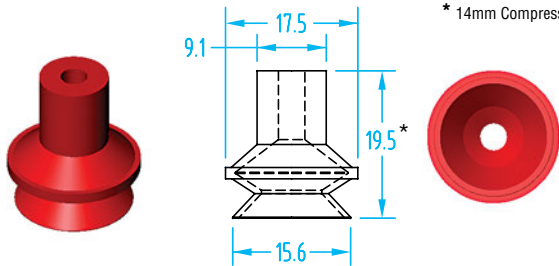
Cup Ø	Material	Quick#	Part#	Price
8mm	Silicone	1414	GSV-B8-20	\$10.19
	FDA Silicone	2926	GSV-B8-21	\$8.55
	Chloroprene	5116	GSV-B8-10	\$3.77
Nipple	M5 Male	1438	GSV-01AB	\$1.85

* 11.5mm Compressed



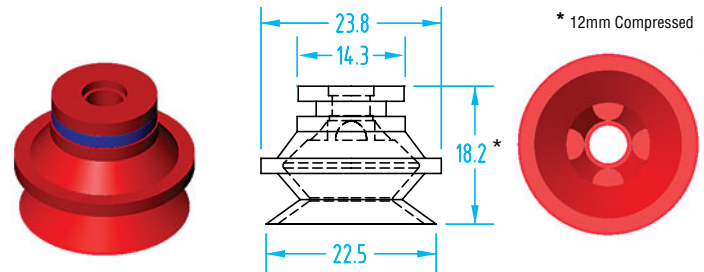
Cup Ø	Material	Quick#	Part#	Price
10mm	Silicone	1415	GSV-B10-2-20	\$9.14
	FDA Silicone	2927	GSV-B10-2-21	\$9.14
	Chloroprene	5117	GSV-B10-2-10	\$5.06
Nipple	M5 Male	1439	GSV-01AC	\$1.85

* 14mm Compressed



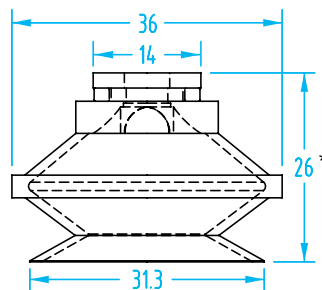
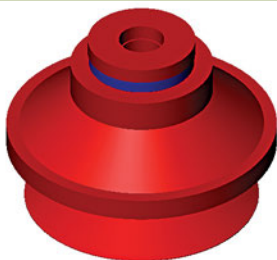
Cup Ø	Material	Quick#	Part#	Price
15mm	Silicone	1416	GSV-B15-2-20	\$11.10
	FDA Silicone	2928	GSV-B15-2-21	\$11.10
	Polyurethane	1421	GSV-B15MF-40	\$5.11
	Chloroprene	5118	GSV-B15-2-10	\$5.06
Nipple	M5 Male	1439	GSV-01AC	\$1.85

* 12mm Compressed



Cup Ø	Material	Quick#	Part#	Price
20mm	Silicone	1417	GSV-B20-20	\$15.16
	FDA Silicone	2929	GSV-B20-21	\$15.16
	Polyurethane	1422	GSV-B20MF-40	\$8.18
	Chloroprene	5119	GSV-B20-10	\$8.52
Nipple	G1/8" & M5	1440	GSV-02AF	\$5.14

* 16mm Compressed

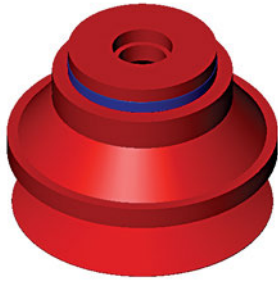


Cup Ø	Material	Quick#	Part#	Price
30mm	Silicone	1418	GSV-B30-20	\$21.99
	Chloroprene	5120	GSV-B30-10	\$11.94
Nipple	G1/8" & M5	1440	GSV-02AF	\$5.14
	G1/8" Male	5157	GSV-02AB	\$5.44

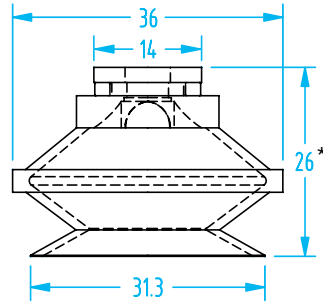
(1st generation 30mm cup—smaller fitting)

PIAB® – 1.5 Bellows

(Shown Actual Size)



(2nd generation 30mm cup—larger fitting)

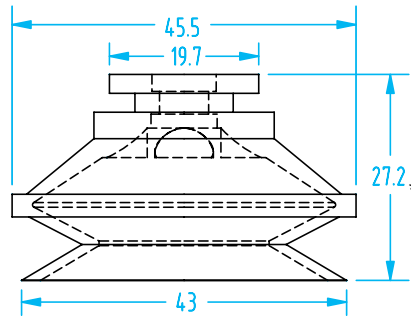
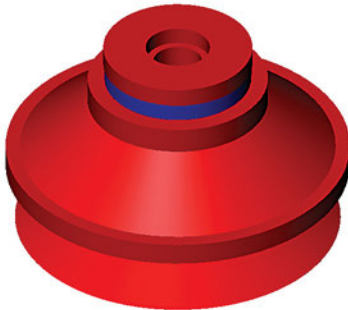


* 15mm Compressed



Cup Ø	Material	Quick#	Part#	Price
30mm	Silicone	2228	GSV-B30-2-20	\$21.99
	FDA Silicone	2930	GSV-B30-2-21	\$21.99
	Polyurethane	1423	GSV-B30MF-40	\$11.15
	Chloroprene	5121	GSV-B30-2-10	\$11.94
Nipple	G1/8" Female	1441	GSV-04AG	\$6.61

See page 356–357 for all nipple options.



* 20mm Compressed



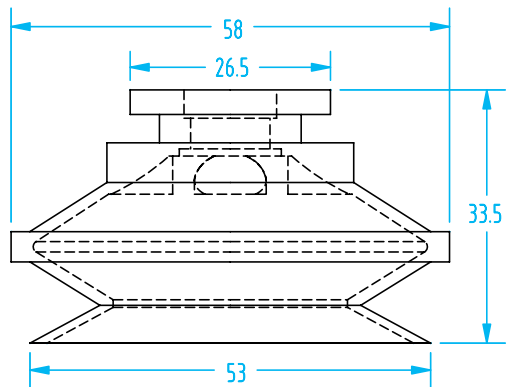
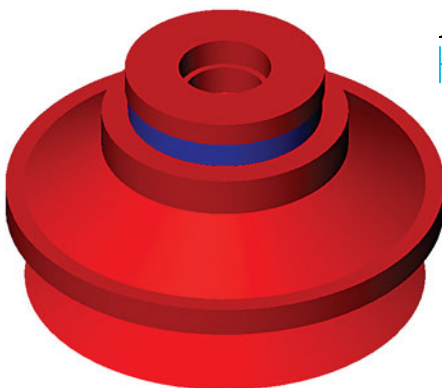
Cup Ø	Material	Quick#	Part#	Price
40mm	Silicone	1419	GSV-B40-20	\$25.83
	FDA Silicone	2931	GSV-B40-21	\$25.83
	Polyurethane	1424	GSV-B40MF-40	\$13.96
	Chloroprene	5122	GSV-B40-10	\$14.95
Nipple	G1/8" Female	1441	GSV-04AG	\$6.61

See page 356–357 for all nipple options.

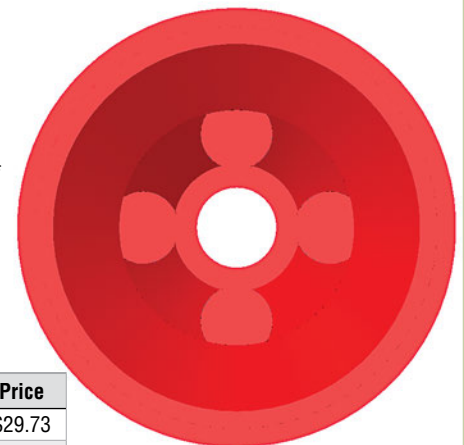
Also Available: 50mm Cup 1-1/2 B
Q#2382 Silicone cup with filter disk

Also Available: 75mm Cup
Q#2153 PIAB 1-1/2 Bellows
Nitrile Vacuum Cup
Q#1999 PIAB 1-1/2 Bellows
Silicone Vacuum Cup

110mm Cup Q#2672 PIAB 1-1/2
Bellows Silicone Vacuum Cup



* 22mm Compressed



Cup Ø	Material	Quick#	Part#	Price
50mm	Silicone	1420	GSV-B50-20	\$29.73
	FDA Silicone	2932	GSV-B50-21	\$29.73
	Polyurethane	1425	GSV-B50MF-40	\$16.06
	Nitrile	5123	GSV-B50-30	\$15.90
Nipple	G1/8" Female	1442	GSV-05AG	\$8.14
	G1/8" Male	1444	GSV-05AI	\$6.94
	G1/4" Male	5316	GSV-05AB	\$8.77

PIAB® – Deep

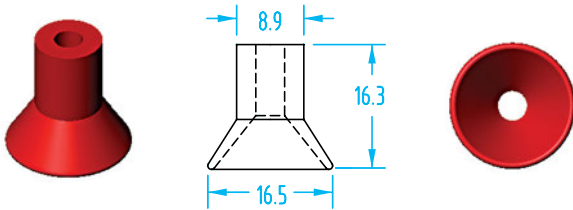
(Shown Actual Size)



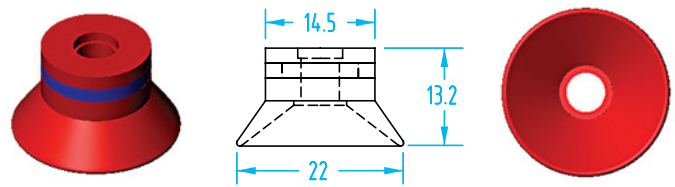
PIAB Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
Silicone	Red w/ Blue Ring	392°F	50°
FDA Silicone	Clear w/ Blue Ring	392°F	50°
Polyurethane TPU	Clear w/ Yellow Ring	176°F	81°
Chloroprene	Black w/ Yellow Ring	230°F	50°
Nitrile	Black w/White Dot	225°F	50°

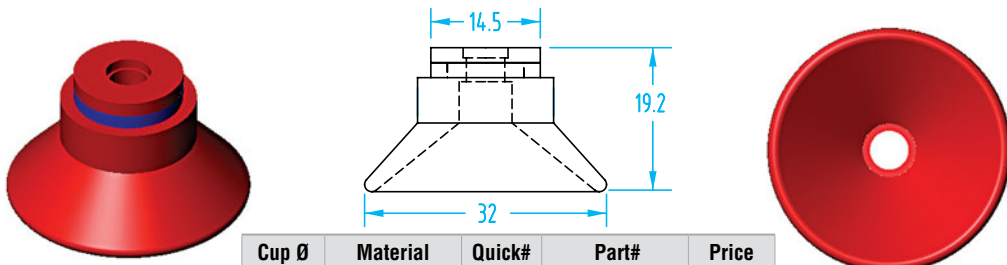
Use Quick#s for easy online ordering.



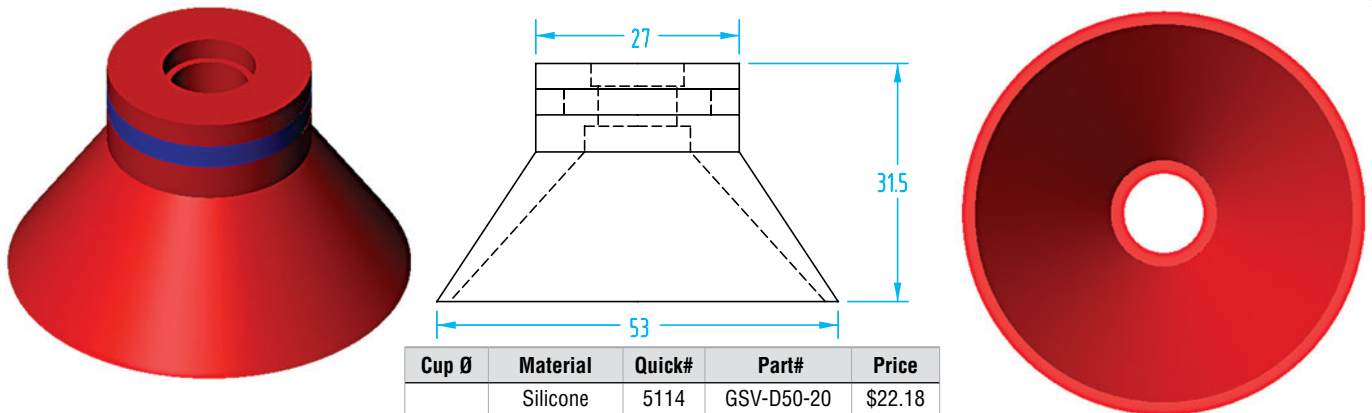
Cup Ø	Material	Quick#	Part#	Price
15mm	Silicone	5111	GSV-D15-2-20	\$6.99
	FDA Silicone	2933	GSV-D15-2-21	\$6.99
	Chloroprene	5138	GSV-D15-2-10	\$4.27
Nipple	M5 Male	1439	GSV-01AC	\$1.85



Cup Ø	Material	Quick#	Part#	Price
20mm	Silicone	5112	GSV-D20-2-20	\$9.32
	FDA Silicone	2934	GSV-D20-2-21	\$9.32
	Chloroprene	5139	GSV-D20-2-10	\$6.19
Nipple	G1/8" & M5	1440	GSV-02AF	\$5.14
	G1/8" Male	5157	GSV-02AB	\$5.44



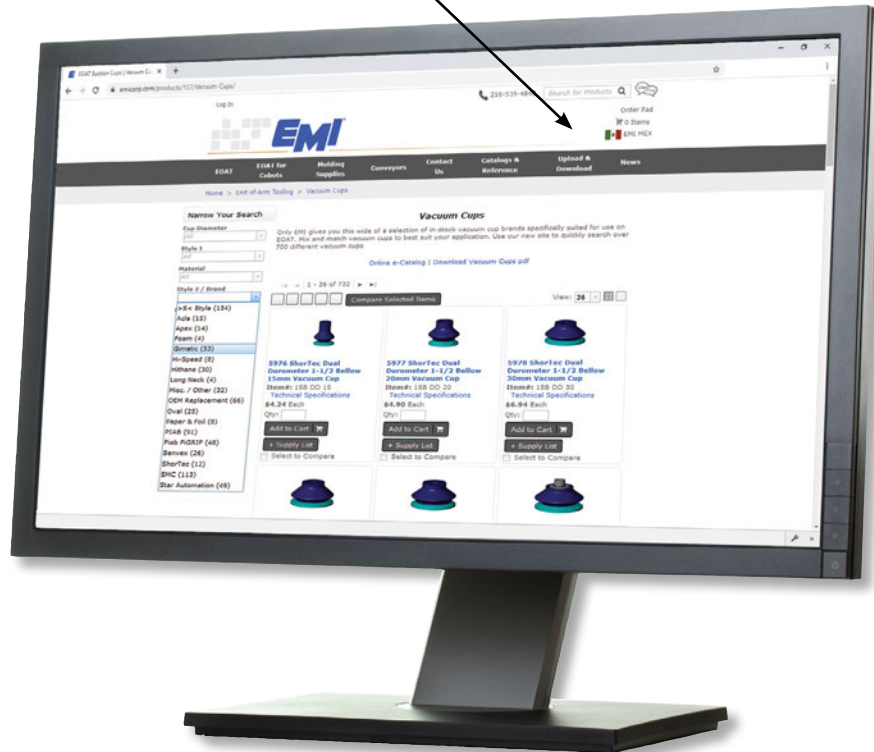
Cup Ø	Material	Quick#	Part#	Price
30mm	Silicone	5113	GSV-D30-2-20	\$11.41
	FDA Silicone	2935	GSV-D30-2-21	\$11.41
	Chloroprene	5140	GSV-D30-2-10	\$8.35
Nipple	G1/8" & M5	1440	GSV-02AF	\$5.14
	G1/8" Male	5157	GSV-02AB	\$5.44



Cup Ø	Material	Quick#	Part#	Price
50mm	Silicone	5114	GSV-D50-20	\$22.18
	FDA Silicone	2936	GSV-D50-21	\$22.18
	Chloroprene	5141	GSV-D50-10	\$13.23
Nipple	G1/8" Female	1442	GSV-05AG	\$8.14

Upload orders with an excel sheet

- Find the 'Order Pad' link above the shopping cart icon.
- Click the 'Quick Order Upload' tab and download our order template.
- Add Part or Quick#'s to one column and quantity in the next.
- Attach and upload!



Quickly search over 740 Vacuum Cups!

- Narrow your search by: cup diameter, style, material, and brand.
- Find dimensional drawings, technical specifications, and CAD file downloads.
- Corresponding nipples are listed on the page with vacuum cups.

Shop PIAB PiGrip Configurable Vacuum Cups and Replacement Lips!



PIAB – Duraflex® Polyurethane with 2.5 Bellows

(Shown Actual Size)



Dual Durometer Polyurethane

These polyurethane vacuum cups are constructed in two different durometers (hardness). The cups have a sturdy and “forgiving” bellows (60° shore, green) and a large flexible sealing surface (30° shore, yellow) that performs extremely well on uneven surfaces. 30° shore makes these the most flexible sealing surface cups available. As shown installed in the cup on the left, white filter discs are included with 25mm and larger PIAB Dual Durometer cups.

The polyurethane makes them mark free and long lasting. The dual durometer makes these vacuum cups both strong and flexible.

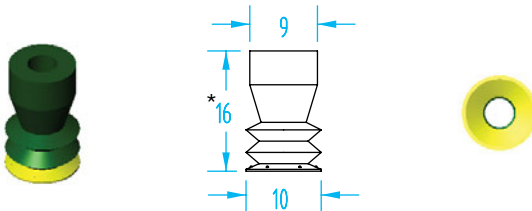
Many consider these the best performing polyurethane cup available.

Dual Durometer Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
Dual Durometer Polyurethane	Semi-translucent Green / Yellow	122°F	60° / 30° Shore

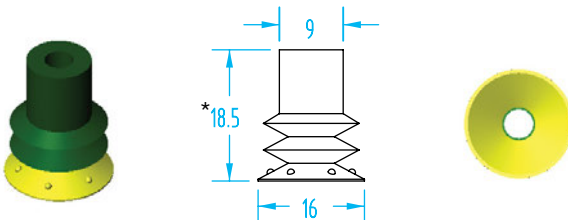
Order nipples separately. See page 356–357 for nipple dimensions.

* 12.5mm Compressed



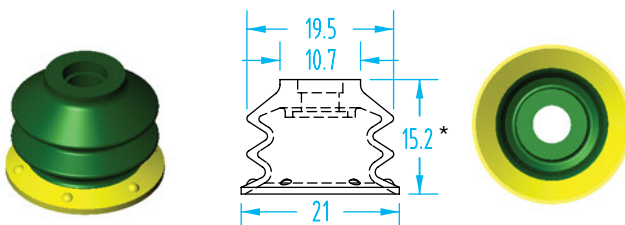
Cup Ø	Material	Quick#	Part#	Price
10mm	Polyurethane	5639	GSV-BDD-10	\$9.00
Nipple	M5 Male	1439	GSV-01AC	\$1.85

* 13.5mm Compressed



Cup Ø	Material	Quick#	Part#	Price
16mm	Polyurethane	5640	GSV-BDD-15	\$11.03
Nipple	M5 Male	1439	GSV-01AC	\$1.85

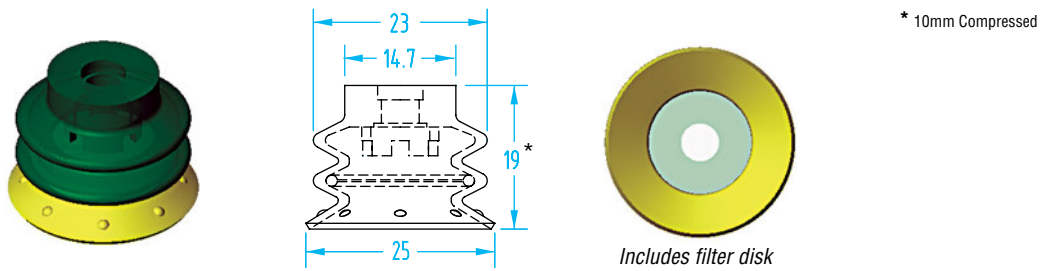
* 9mm Compressed



Cup Ø	Material	Quick#	Part#	Price
20mm	Polyurethane	5641	GSV-BDD-20	\$15.84
Nipple	G1/8" & M5	1440	GSV-02AF	\$5.14
	G1/8" Male	5157	GSV-02AB	\$5.44

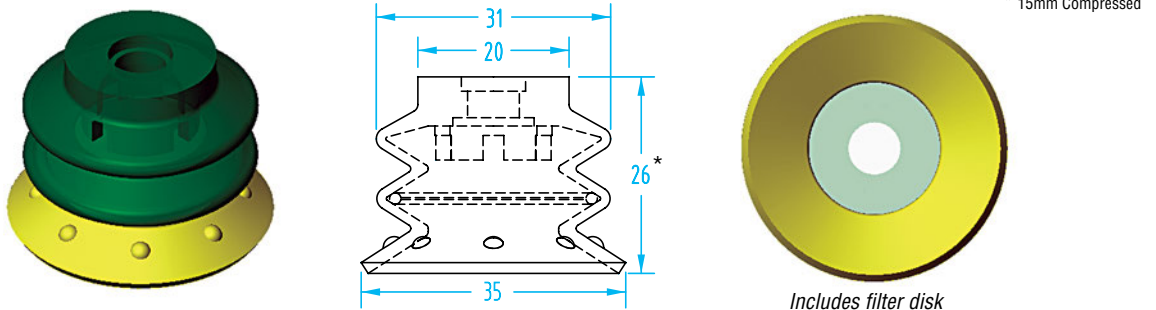
PIAB – Duraflex® Polyurethane with 2.5 Bellows

(Shown Actual Size)



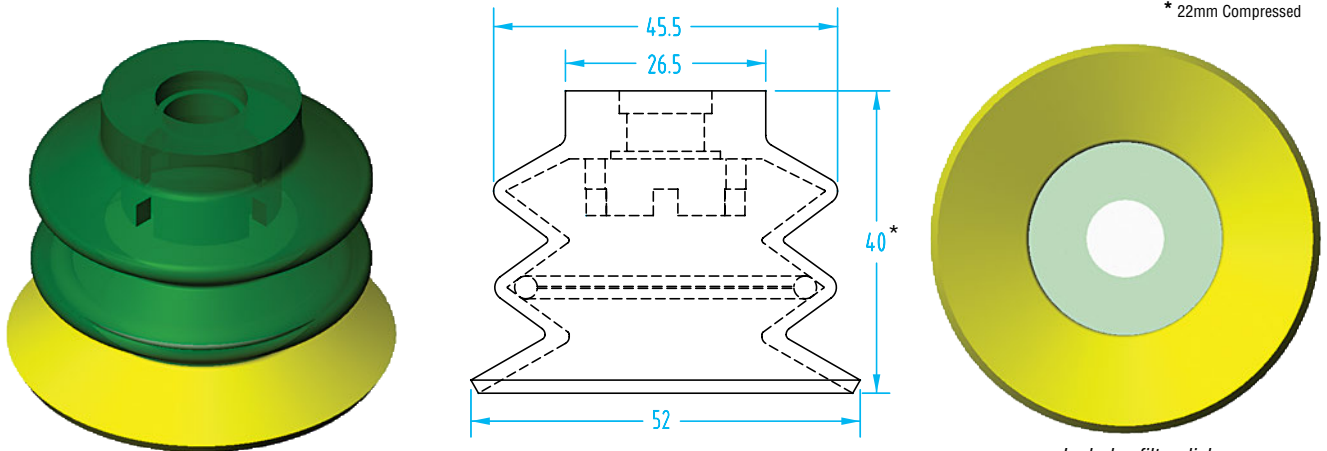
Cup Ø	Material	Quick#	Part#	Price
25mm	Polyurethane	5173	GSV-BDD-25	\$21.43
Nipple	G1/8" & M5	1440	GSV-02AF	\$5.14
	G1/8" Male	5157	GSV-02AB	\$5.44

Includes filter disk



Cup Ø	Material	Quick#	Part#	Price
35mm	Polyurethane	1826	GSV-BDD-35	\$29.32
Nipple	G1/8" Female	1441	GSV-04AG	\$6.61
	G1/4" Male	5315	GSV-04AB	\$7.11

Includes filter disk



Cup Ø	Material	Quick#	Part#	Price
52mm	Polyurethane	1827	GSV-BDD-52	\$33.85
Nipple	G1/8" Female	1442	GSV-05AG	\$8.14
	G1/4" Male	5316	GSV-05AB	\$8.77

Includes filter disk

Cup Ø	Material	Quick#	Part#	Price
75mm	Polyurethane	5135	GSV-BX75P-4K-07UFF	\$62.08
Nipple	G3/8" Male / G1/8" Female			Included

Includes filter disk

PIAB – Duraflex® Polyurethane with 1.5 Bellows

(Shown Actual Size)



Dual Durometer Polyurethane

These polyurethane vacuum cups are constructed in two different durometers (hardness). The cups have a sturdy and “forgiving” bellows (60° shore, green) and a large flexible sealing surface (30° shore, yellow) that performs extremely well on uneven surfaces. 30° shore makes these the most flexible sealing surface cups available. White filter discs are included with 25mm and larger PIAB Dual Durometer cups.

The polyurethane makes them mark free and long lasting. The dual durometer makes these vacuum cups both strong and flexible.

Many consider these the best performing polyurethane cup available.

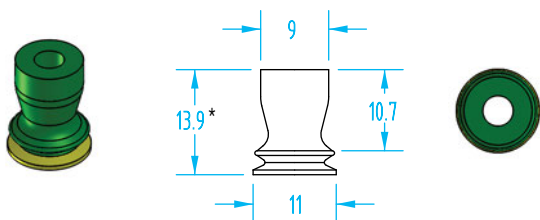
Dual Durometer Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
Dual Durometer Polyurethane	Semi-translucent Green / Yellow	122°F	60° / 30° Shore

Order nipples separately. See page 356–357 for nipple dimensions.

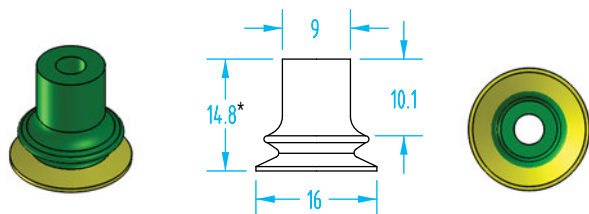
Use Quick#s for easy online ordering.

* 10.8mm Compressed



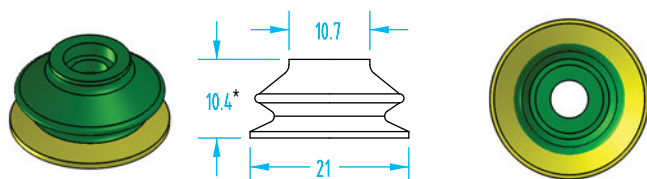
Cup Ø	Material	Quick#	Part#	Price
10mm	Polyurethane	5642	GSV-1BDD-10	\$8.46
Nipple	M5 Male	1439	GSV-01AC	\$1.85

* 11.5mm Compressed



Cup Ø	Material	Quick#	Part#	Price
15mm	Polyurethane	5643	GSV-1BDD-15	\$10.38
Nipple	M5 Male	1439	GSV-01AC	\$1.85

* 5.8mm Compressed

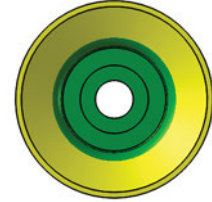
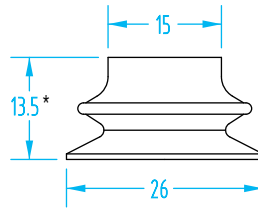
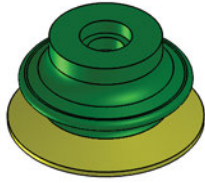


Cup Ø	Material	Quick#	Part#	Price
20mm	Polyurethane	5644	GSV-1BDD-20	\$14.68
Nipple	G1/8" & M5	1440	GSV-02AF	\$5.14
	G1/8" Male	5157	GSV-02AB	\$5.44

PIAB – Duraflex® Polyurethane with 1.5 Bellows

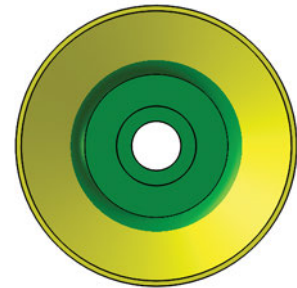
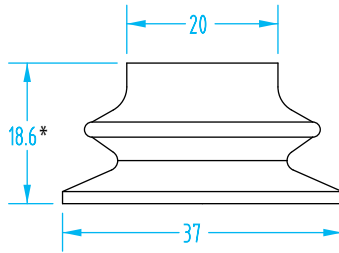
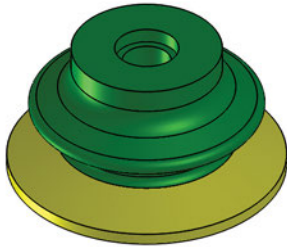
(Shown Actual Size)

* 7.9mm Compressed



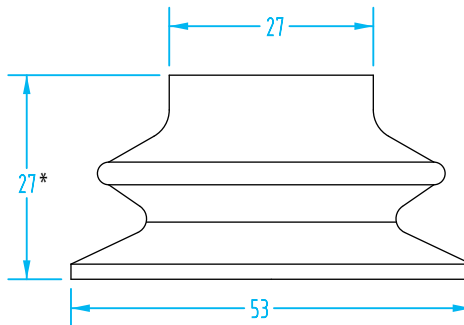
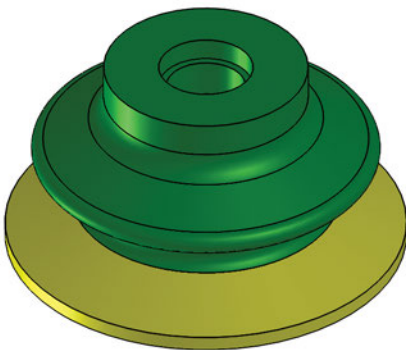
Cup Ø	Material	Quick#	Part#	Price
25mm	Polyurethane	5645	GSV-1BDD-25	\$16.35
Nipple	G1/8" & M5	1440	GSV-02AF	\$5.14
	G1/8" Male	5157	GSV-02AB	\$5.44

* 9.2mm Compressed



Cup Ø	Material	Quick#	Part#	Price
35mm	Polyurethane	5646	GSV-1BDD-35	\$23.67
Nipple	G1/8" Female	1441	GSV-04AG	\$6.61
	G1/4" Male	5315	GSV-04AB	\$7.11

* 15.8mm Compressed



Cup Ø	Material	Quick#	Part#	Price
52mm	Polyurethane	5647	GSV-1BDD-52	\$27.79
Nipple	G1/8" Female	1442	GSV-05AG	\$8.14
	G1/4" Male	5316	GSV-05AB	\$8.77

* 18mm Compressed

Cup Ø	Material	Quick#	Part#	Price
75mm	Polyurethane	5648	GSV-1BDD-75	\$59.24
Nipple	G3/8" Male / G1/8" Female			Included

Also Available: 75mm Cup
Q#2384 PIAB 1-1/2 Bellows
Vacuum Cup

ShorTec® Dual Durometer with Large Lip – 2.5 Bellows

(Shown Actual Size)



Dual Durometer Vacuum Cups, now with a larger and more flexible lip!

Dual durometer-style vacuum cups are considered to be the best performing polyurethane cup.

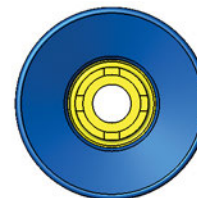
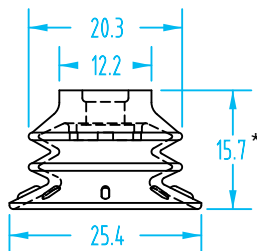
These yellow dual durometer cups are comparable to our current cups on page 352–353 but with larger and more flexible lips. They use mark-free and long-lasting polyurethane, and fit the same size nipples. The yellow bellows have a 55° shore and a large, flexible sealing surface with a lighter blue 30° shore.

Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
Polyurethane	Yellow / Blue	122°F	55° / 30° Shore

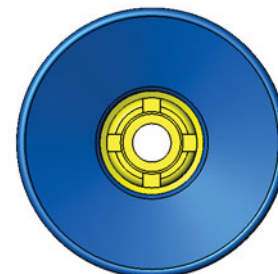
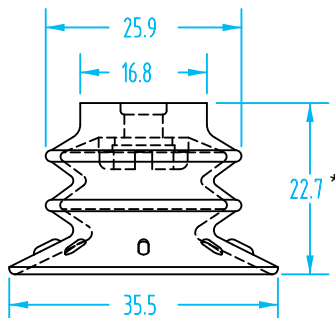
Order nipples separately. See page 356–357 for nipple dimensions.

* 7.7mm Compressed



Cup Ø	Material	Quick#	Part#	Price
25mm	Polyurethane	2066	25B-DDBL-25	\$9.66
Nipple	G1/8" Male	5982	F02-G8M	\$3.25
	G1/8" Female	5983	F02-G8F	\$3.25

* 11.5mm Compressed



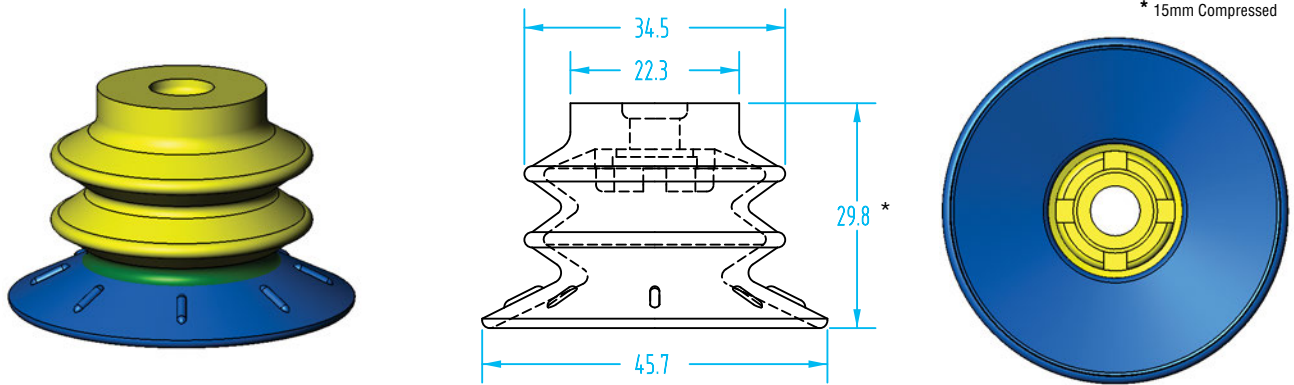
Cup Ø	Material	Quick#	Part#	Price
35mm	Polyurethane	2067	25B-DDBL-35	\$12.50
Nipple	G1/8" Male	5982	F02-G8M	\$3.25
	G1/8" Female	5983	F02-G8F	\$3.25

ShorTec® Dual Durometer with Large Lip – 2.5 Bellows

(Shown Actual Size)

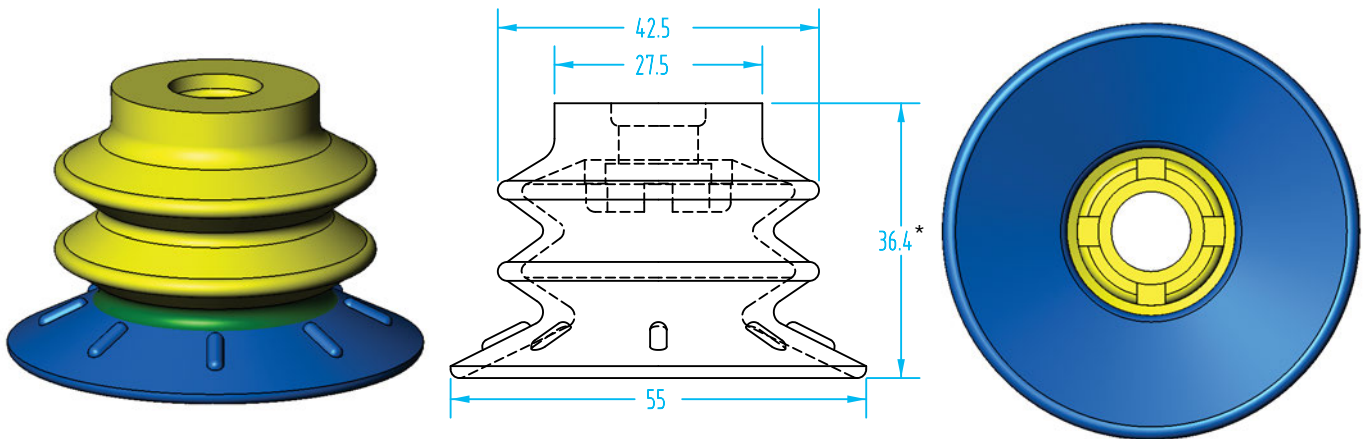


ShorTec cups are shown here with the OnRobot electric vacuum gripper VGP20. Great for packaging! See page 141 for more info.



Cup Ø	Material	Quick#	Part#	Price
45mm	Polyurethane	2068	25B-DDBL-45	\$14.92
Nipple	G1/4" Male	5984	F03-G4M	\$4.00
	G1/4" Female	5985	F03-G4F	\$4.00

* 18mm Compressed



Cup Ø	Material	Quick#	Part#	Price
55mm	Polyurethane	2069	25B-DDBL-55	\$17.12
Nipple	G3/8" Male	5986	F04-G3M	\$4.40
	G3/8" Female	5987	F04-G3F	\$4.40

G3/8" to G1/4" reducer fittings are available on catalog page 1069.

ShorTec® Dual Durometer – 2.5 Bellows

(Shown Actual Size)



Dual Durometer Vacuum Cups!

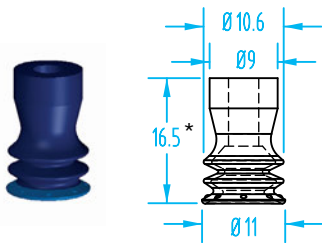
Dual durometer-style vacuum cups are considered to be the best performing polyurethane cup and are now available at a lower price.

These blue dual durometer cups are comparable to the brand-name OEM green and yellow cups in that they use mark-free and long-lasting polyurethane, have the same dual-shore rating, and fit the same size nipples. They have a sturdy dark blue bellows with a 60° shore and a large, flexible sealing surface with a lighter blue 30° shore.

Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
Polyurethane	Blue / Blue	122°F	60° / 30° Shore

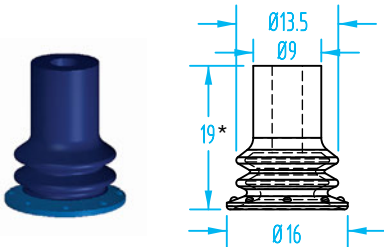
Order nipples separately. See page 356–357 for nipple dimensions.



* 13mm Compressed

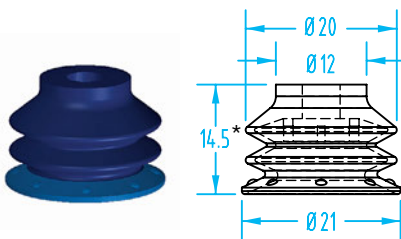
NEW

Cup Ø	Material	Quick#	Part#	Price
10mm	Polyurethane	5966	25B-DD-10	\$5.05
Nipple	M5 Male	411	GSF-NF1-M5	\$1.75



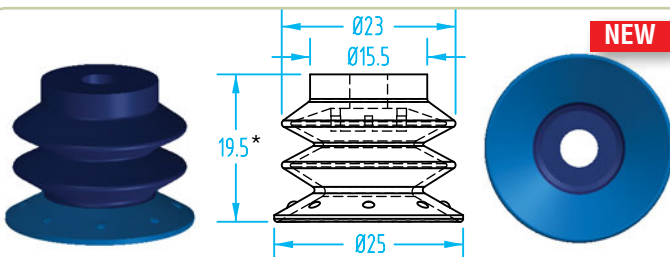
* 14mm Compressed

Cup Ø	Material	Quick#	Part#	Price
15mm	Polyurethane	5967	25B-DD-15	\$5.64
Nipple	M5 Male	411	GSF-NF1-M5	\$1.75



* 9mm Compressed

Cup Ø	Material	Quick#	Part#	Price
20mm	Polyurethane	5971	25B-DD-20	\$7.32
Nipple	G1/8" Male	5982	F02-G8M	\$3.25
	G1/8" Female	5983	F02-G8F	\$3.25

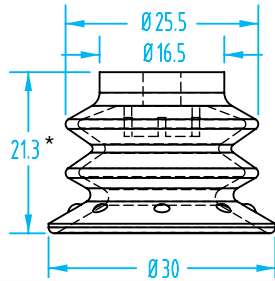


NEW

Cup Ø	Material	Quick#	Part#	Price
25mm	Polyurethane	2082	25B-DD-25	\$9.14
Nipple	G1/8" Male	5982	F02-G8M	\$3.25
	G1/8" Female	5983	F02-G8F	\$3.25

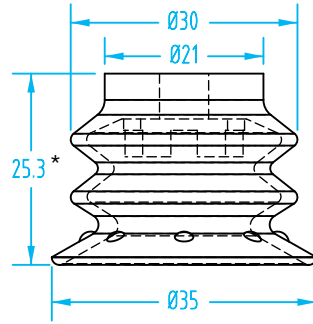
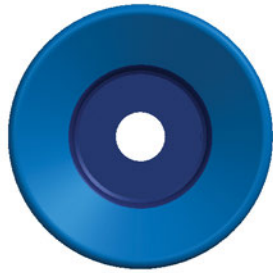
ShorTec® Dual Durometer – 2.5 Bellows

(Shown Actual Size)



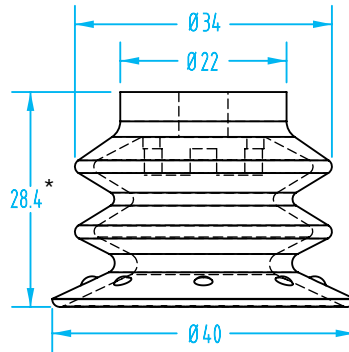
* 12mm Compressed

Cup Ø	Material	Quick#	Part#	Price
30mm	Polyurethane	5972	25B-DD-30	\$9.50
Nipple	G1/4" Male	5984	F03-G4M	\$4.00
	G1/4" Female	5985	F03-G4F	\$4.00



* 14mm Compressed

Cup Ø	Material	Quick#	Part#	Price
35mm	Polyurethane	2081	25B-DD-35	\$12.08
Nipple	G1/4" Male	5984	F03-G4M	\$4.00
	G1/4" Female	5985	F03-G4F	\$4.00



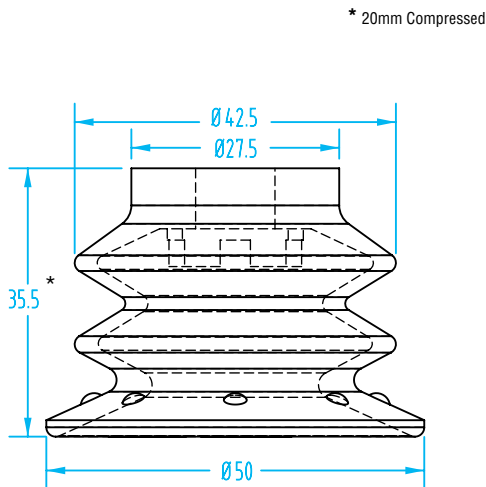
* 16mm Compressed

Cup Ø	Material	Quick#	Part#	Price
40mm	Polyurethane	5973	25B-DD-40	\$12.67
Nipple	G1/4" Male	5984	F03-G4M	\$4.00
	G1/4" Female	5985	F03-G4F	\$4.00

G3/8" to G1/4" reducer fittings are available on catalog page 1069.

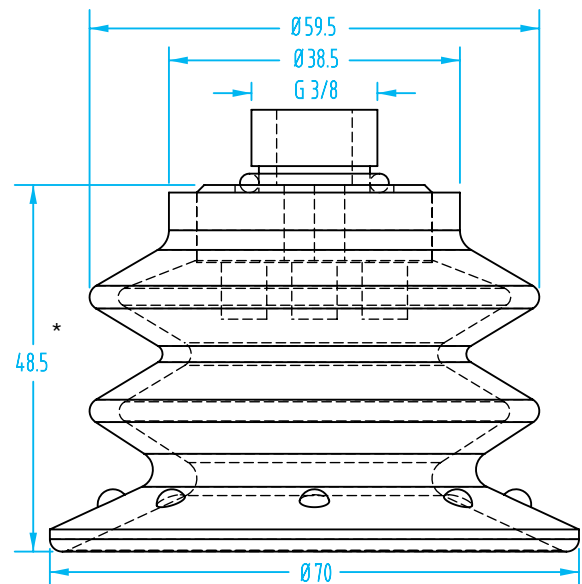
Q# 5975 shown, see website for #2083

* 23mm Compressed



* 20mm Compressed

Cup Ø	Material	Quick#	Part#	Price
50mm	Polyurethane	5974	25B-DD-50	\$15.94
Nipple	G3/8" Male	5986	F04-G3M	\$4.40
	G3/8" Female	5987	F04-G3F	\$4.40



Cup Ø	Nipple	Material	Quick#	Part#	Price
70mm	G3/8" Male	PU	5975	25B-DD-70	\$25.84
	G3/8" Female	PU	2083	25B-DD-70-G38F	\$25.84

ShorTec® Dual Durometer – 1.5 Bellows

(Shown Actual Size)



Dual Durometer Vacuum Cups!

Dual durometer-style vacuum cups are considered to be the best performing polyurethane cup and are now available at a lower price.

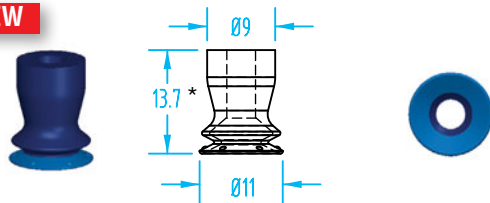
These blue dual durometer cups are comparable to the brand-name OEM green and yellow cups in that they use mark-free and long-lasting polyurethane, have the same dual-shore rating, and fit the same size nipples. They have a sturdy dark blue bellows with a 60° shore and a large, flexible sealing surface with a lighter blue 30° shore.

Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
Polyurethane	Blue / Blue	122°F	60° / 30° Shore

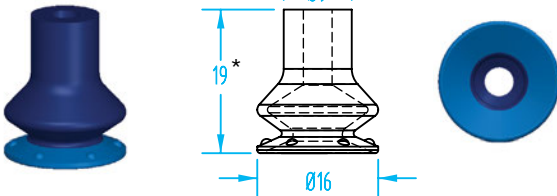
Order nipples separately. See page 356–357 for nipple dimensions.

NEW



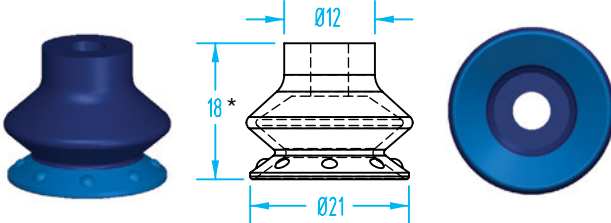
* 11mm Compressed

Cup Ø	Material	Quick#	Part#	Price
10mm	Polyurethane	5948	15B-DD-10	\$3.78
Nipple	M5 Male	411	GSF-NF1-M5	\$1.75



* 15mm Compressed

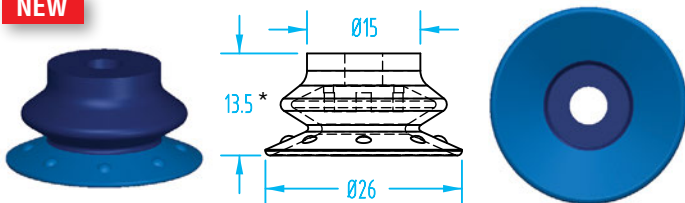
Cup Ø	Material	Quick#	Part#	Price
15mm	Polyurethane	5976	15B-DD-15	\$4.46
Nipple	M5 Male	411	GSF-NF1-M5	\$1.75



* 12mm Compressed

Cup Ø	Material	Quick#	Part#	Price
20mm	Polyurethane	5977	15B-DD-20	\$5.04
Nipple	G1/8" Male	5982	F02-G8M	\$3.25
	G1/8" Female	5983	F02-G8F	\$3.25

NEW



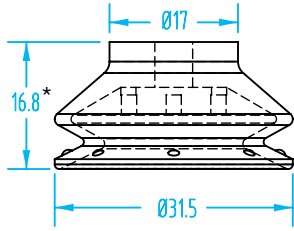
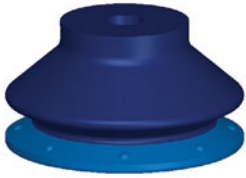
* 8mm Compressed

Cup Ø	Material	Quick#	Part#	Price
25mm	Polyurethane	5949	15B-DD-25	\$5.88
Nipple	G1/8" Male	5982	F02-G8M	\$3.25
	G1/8" Female	5983	F02-G8F	\$3.25

ShorTec® Dual Durometer – 1.5 Bellows

(Shown Actual Size)

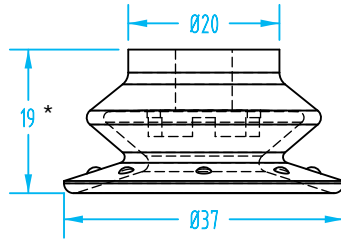
* 11.5mm Compressed



Cup Ø	Material	Quick#	Part#	Price
30mm	Polyurethane	5978	15B-DD-30	\$7.18
Nipple	G1/4" Male	5984	F03-G4M	\$4.00
	G1/4" Female	5985	F03-G4F	\$4.00

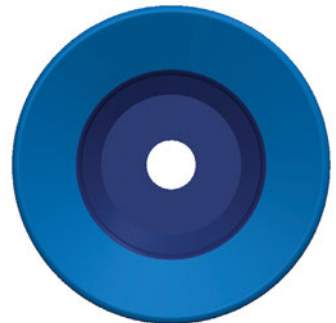
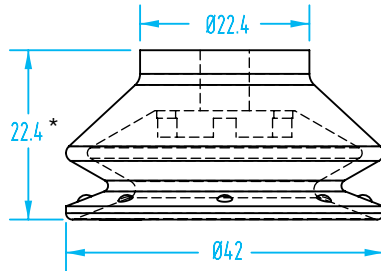
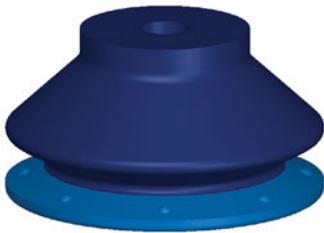
NEW

* 11.5mm Compressed



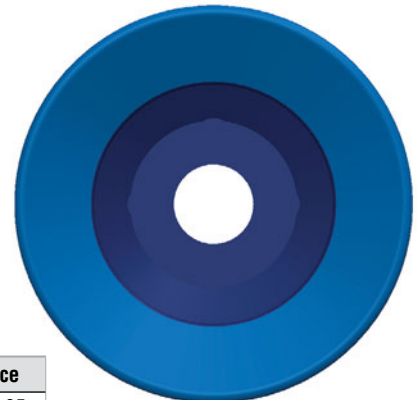
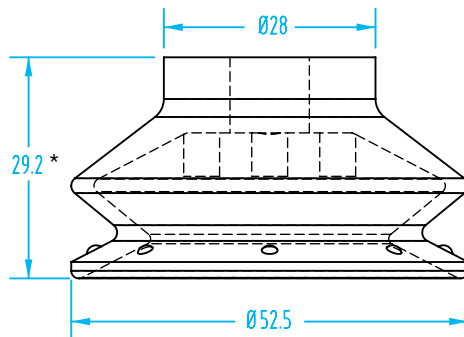
Cup Ø	Material	Quick#	Part#	Price
35mm	Polyurethane	2080	15B-DD-35	\$8.30
Nipple	G1/4" Male	5984	F03-G4M	\$4.00
	G1/4" Female	5985	F03-G4F	\$4.00

* 16mm Compressed



Cup Ø	Material	Quick#	Part#	Price
40mm	Polyurethane	5979	15B-DD-40	\$9.29
Nipple	G1/4" Male	5984	F03-G4M	\$4.00
	G1/4" Female	5985	F03-G4F	\$4.00

* 21mm Compressed



G3/8" to G1/4" reducer fittings are available on catalog page 1069.

Cup Ø	Material	Quick#	Part#	Price
50mm	Polyurethane	5980	15B-DD-50	\$10.95
Nipple	G3/8" Male	5986	F04-G3M	\$4.40
	G3/8" Female	5987	F04-G3F	\$4.40

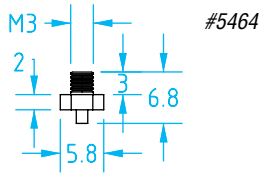
Cup Ø	Material	Quick#	Part#	Price
70mm	Polyurethane	5981	15B-DD-70	\$22.69

Note: G3/8" Male Nipple Included

OEM, ShorTec & PIAB – Nipples

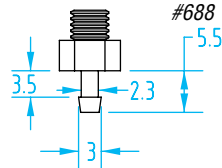
(Shown Actual Size)

M3

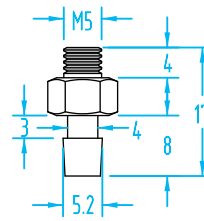


#5464

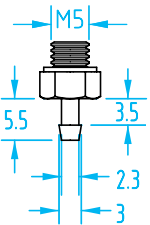
M5



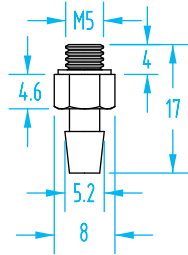
#688



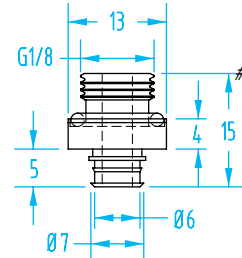
#411



#1438

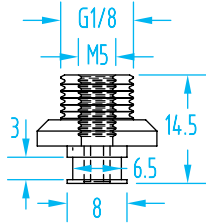


#1439

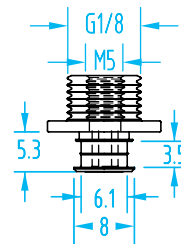


#5982

M5 Female / G1/8" Male

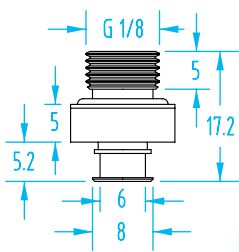


#412

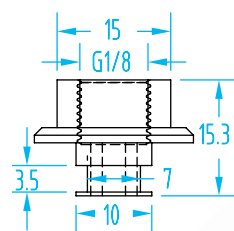


#1440

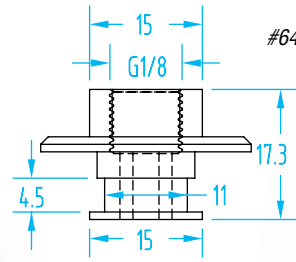
G1/8"



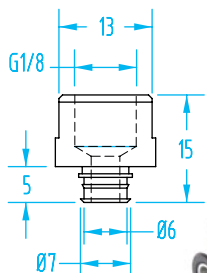
#5157



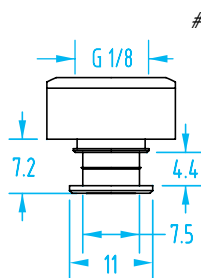
#413



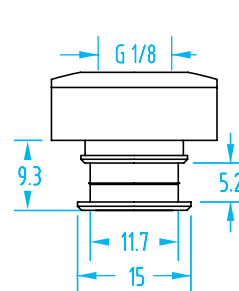
#646



#5983



#1441

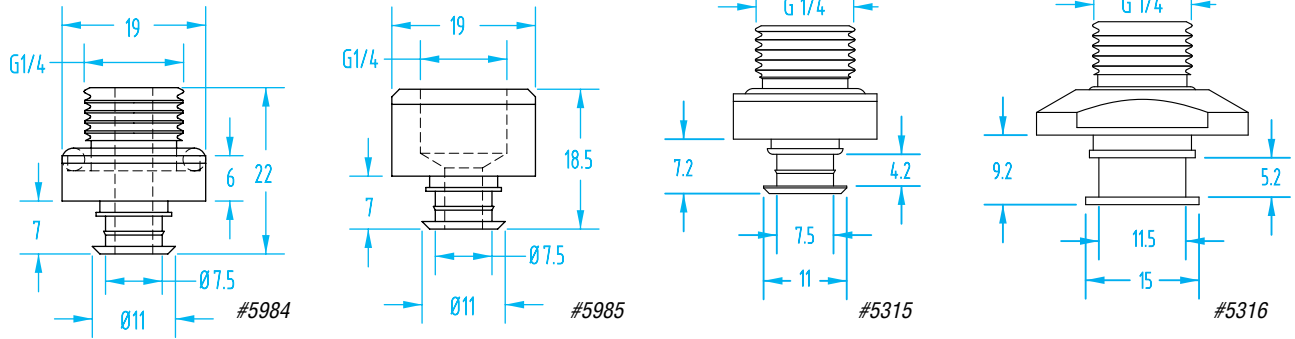


#1442

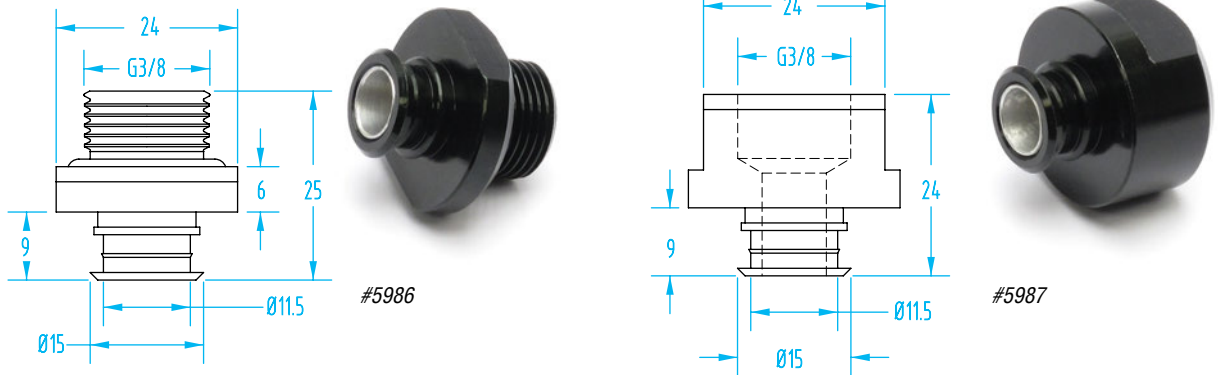
OEM, ShorTec & PIAB – Nipples

(Shown Actual Size)

G1/4"

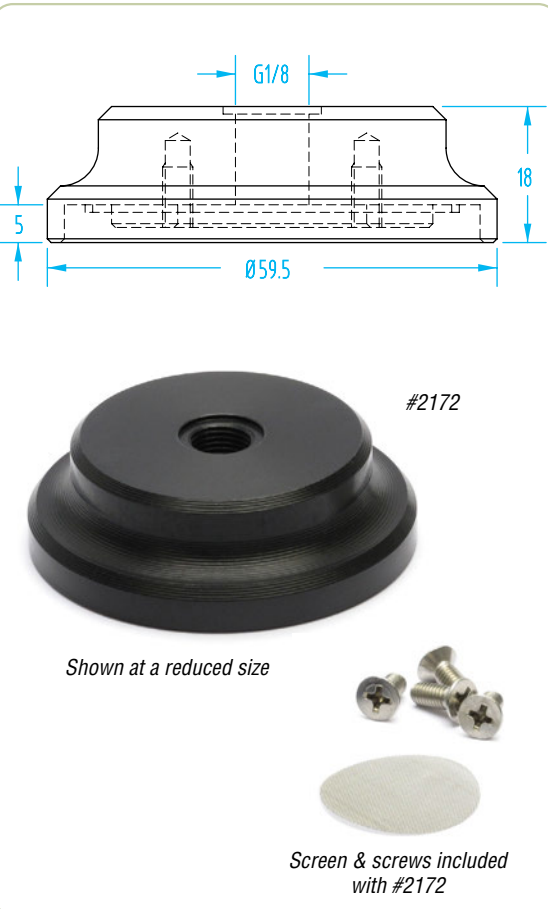


G3/8"



Nipples

Quick#	Part#	Nipple	Thread	Vacuum Cup Ø	Price
5174	GSV-01AA	Male	M2.5	2–3mm	\$2.71
5464	GSF-MN15-M3	Male	M3	2–3mm	\$5.59
688	GSF-NF11-M5	Male	M5	5–7mm	\$2.31
411	GSF-NF1-M5	Male	M5	15mm	\$1.75
1438	GSV-01AB	Male	M5	4–8mm	\$1.85
1439	GSV-01AC	Male	M5	10–15mm	\$1.85
412	GSF-NF2-G8M5	Male/Female	G1/8" /M5	20–30mm	\$5.25
1440	GSV-02AF	Male/Female	G1/8" /M5	20–30mm	\$5.14
5982	F02-G8M	Male	G1/8"	20–30mm	\$3.25
5157	GSV-02AB	Male	G1/8"	20–30mm	\$5.44
5983	F02-G8F	Female	G1/8"	20–30mm	\$3.25
1441	GSV-04AG	Female	G1/8"	30–40mm	\$6.61
1443	GSV-04AI	Male	G1/8"	30–40mm	\$6.94
413	GSF-NF3-G8	Female	G1/8"	40mm	\$6.56
1442	GSV-05AG	Female	G1/8"	50mm	\$8.14
1444	GSV-05AI	Male	G1/8"	50mm	\$6.94
646	GSF-NF5-G8F	Female	G1/8"	50mm	\$5.78
2172	GSV-07UA	Female	G1/8"	75mm	\$31.24
5984	F03-G4M	Male	G1/4"	30–40mm	\$4.00
5985	F03-G4F	Female	G1/4"	30–40mm	\$4.00
5315	GSV-04AB	Male	G1/4"	30–40mm	\$7.11
5316	GSV-05AB	Male	G1/4"	50mm	\$8.77
5986	F04-G3M	Male	G3/8"	50mm	\$4.40
5987	F04-G3F	Female	G3/8"	50mm	\$4.40



Reference our Compatibility Chart on pages 358–359 to determine which nipple to use for OEM, ShorTec & PIAB Vacuum Cups!

OEM, ShorTec & PIAB – Nipple Compatibility

		Quick#	5464	688	1438	411	1439	412	1440	5157	5982	5983
		Brand	Piab	OEM	Piab	OEM	Piab	OEM	Piab	Piab	ShorTec	ShorTec
		Thread	M3-M	M5-M	M5-M	M5-M	M5-M	G1/8-M / M5-F	G1/8-M / M5-F	G1/8-M	G1/8-M	G1/8-F
2mm	Piab (flat-smooth)		✓									
3mm	Piab (flat-smooth)		✓									
4mm	Piab (flat-smooth)			✓	✓							
5mm	Piab (1.5 B)			✓	✓							
6mm	Piab (flat-smooth)			✓	✓							
8mm	Piab (flat-smooth, 1.5 B)			✓	✓							
10mm	Piab (flat, 1.5 B, Duraflex)					✓	✓					
	ShorTec (1.5 B)					✓	✓					
	ShorTec (2.5 B)					✓	✓					
11mm	OEM (1.5 B)				✓	✓						
15mm	Piab (flat, 1.5 B, deep, 1.5 B Duraflex)					✓	✓					
	ShorTec (1.5 B)					✓	✓					
16mm	OEM (1.5 B)				✓	✓						
20mm	Piab (flat, 1.5 B, deep, Duraflex)							✓	✓	✓	✓	✓
	OEM (1.5 B)							✓	✓	✓	✓	✓
	ShorTec (1.5 B, 2.5 B)							✓	✓	✓	✓	✓
25mm	Piab (flat-ribbed, Duraflex)							✓	✓	✓	✓	✓
	OEM (flat-ribbed)							✓	✓	✓	✓	✓
	ShorTec (1.5 B)							✓	✓	✓	✓	✓
	ShorTec (2.5 B with large lip)							✓	✓	✓	✓	✓
30mm	Piab (flat, 1.5 B, deep)							✓	✓	✓	✓	✓
	OEM (flat-ribbed)							✓	✓	✓	✓	✓
35mm	ShorTec (2.5 B with large lip)							✓	✓	✓	✓	✓
30mm	ShorTec (1.5 B, 2.5 B)											
30mm*	Piab (1.5 B - 2nd generation)											
35mm	Piab (Duraflex)											
	ShorTec (1.5 B)											
40mm	Piab (flat, 1.5 B)											
	OEM (1.5 B)											
	ShorTec (1.5 B, 2.5 B)											
45mm	ShorTec (2.5 B with large lip)											
50mm	Piab (flat, 1.5 B, deep)											
	OEM (1.5 B)											
	ShorTec (1.5 B, 2.5 B)											
52mm	Piab (Duraflex)											
55mm	ShorTec (2.5 B with large lip)											

* Piab 2nd generation cup takes a larger fitting. B= Bellow. Duraflex refers to the 1.5 Bellow and 2.5 Bellow Dual Durometer cups unless noted.

OEM, ShorTec & PIAB – Nipple Compatibility

		Quick#	413	1441	5984	5985	5315	5316	646	1442	5986	5987
		Brand	OEM	Piab	ShorTec	ShorTec	PIAB	PIAB	OEM	Piab	ShorTec	ShorTec
		Thread	G1/8-F	G1/8-F	G1/4-M	G1/4-F	G1/4-M	G1/4-M	G1/8-F	G1/8-F	G3/8-M	G3/8-F
2mm	Piab (flat-smooth)											
3mm	Piab (flat-smooth)											
4mm	Piab (flat-smooth)											
5mm	Piab (1.5 B)											
6mm	Piab (flat-smooth)											
8mm	Piab (flat-smooth, 1.5 B)											
10mm	Piab (flat, 1.5 B, Duraflex)											
	ShorTec (1.5 B)											
	ShorTec (2.5 B)											
11mm	OEM (1.5 B)											
15mm	Piab (flat, 1.5 B, deep, 1.5 B Duraflex)											
	ShorTec (1.5 B)											
16mm	OEM (1.5 B)											
20mm	Piab (flat, 1.5 B, deep, Duraflex)											
	OEM (1.5 B)											
	ShorTec (1.5 B, 2.5 B)											
25mm	Piab (flat-ribbed, Duraflex)											
	OEM (flat-ribbed)											
	ShorTec (1.5 B)											
	ShorTec (2.5 B with large lip)											
30mm	Piab (flat, 1.5 B, deep)											
	OEM (flat-ribbed)											
35mm	ShorTec (2.5 B with large lip)											
30mm	ShorTec (1.5 B, 2.5 B)	✓	✓	✓	✓	✓						
30mm*	Piab (1.5 B - 2nd generation)	✓	✓	✓	✓	✓						
35mm	Piab (Duraflex)	✓	✓	✓	✓	✓						
	ShorTec (1.5 B)	✓	✓	✓	✓	✓						
40mm	Piab (flat, 1.5 B)	✓	✓	✓	✓	✓						
	OEM (1.5 B)	✓	✓	✓	✓	✓						
	ShorTec (1.5 B, 2.5 B)	✓	✓	✓	✓	✓						
45mm	ShorTec (2.5 B with large lip)	✓	✓	✓	✓	✓						
50mm	Piab (flat, 1.5 B, deep)						✓	✓	✓	✓	✓	✓
	OEM (1.5 B)						✓	✓	✓	✓	✓	✓
	ShorTec (1.5 B, 2.5 B)						✓	✓	✓	✓	✓	✓
52mm	Piab (Duraflex)						✓	✓	✓	✓	✓	✓
55mm	ShorTec (2.5 B with large lip)						✓	✓	✓	✓	✓	✓

* Piab 2nd generation cup takes a larger fitting. B= Bellow. Duraflex refers to the 1.5 Bellow and 2.5 Bellow Dual Durometer cups unless noted.

>S< Style – Flat

(Shown Actual Size)

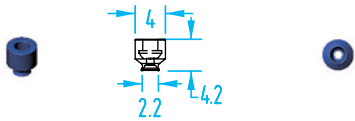


>S< Style Vacuum Cup Properties

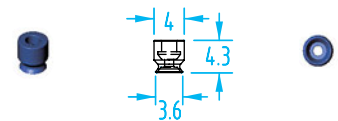
Material	Color	Max Temp.	Durometer
Silicone	Semi-translucent white	482°F	50°
Hithane	Blue	320°F	60°
Nitrile	Black	248°F	60°

Available with Foam Cup, see page 368.

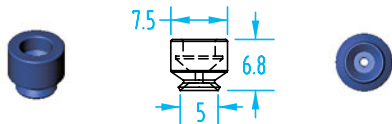
Additional Mini Vacuum Cup sizes on page 412.



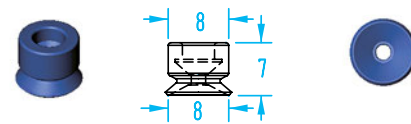
Cup Ø	Material	Quick#	Part#	(Reference)	Price
2mm	SIL	3187	VN1-2-S	PFG-2A-SI	\$3.59
	HIT	1161	VN1-2-H	PFG-2A-U	\$8.51
	NIT	3186	VN1-2-N	PFG-2A-NBR	\$2.63
Nipple		3286	VSA10	M5 Male	\$2.94



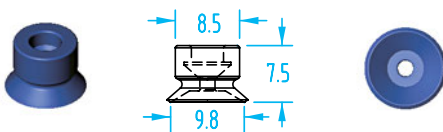
Cup Ø	Material	Quick#	Part#	(Reference)	Price
3.5mm	SIL	3190	VN1-3.5-S	PFG-3.5A-SI	\$3.50
	HIT	1162	VN1-3.5-H	PFG-3.5A-U	\$8.10
	NIT	3189	VN1-3.5-N	PFG-3.5A-NBR	\$3.08
Nipple		3286	VSA10	M5 Male	\$2.94



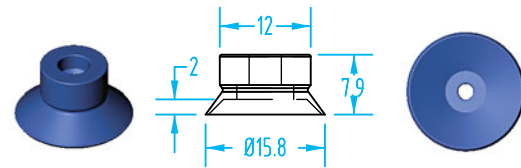
Cup Ø	Material	Quick#	Part#	(Reference)	Price
5mm	SIL	3193	VN1-5-S	PFG-5A-SI	\$2.86
	HIT	1163	VN1-5-H	PFG-5A-U	\$4.05
	NIT	3192	VN1-5-N	PFG-5A-NBR	\$2.10
Nipple		3289	VSA30	M5 Male	\$2.94
		5178	VSA30F	M5 Female	\$2.94



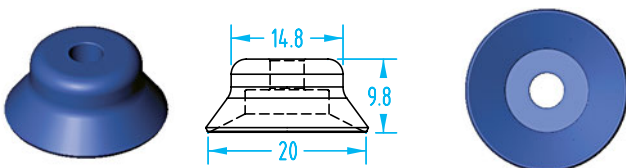
Cup Ø	Material	Quick#	Part#	(Reference)	Price
8mm	SIL	3196	VN1-8-S	PFG-8A-SI	\$2.97
	HIT	1164	VN1-8-H	PFG-8A-U	\$4.05
	NIT	3195	VN1-8-N	PFG-8A-NBR	\$2.30
Nipple		3289	VSA30	M5 Male	\$2.94
		5178	VSA30F	M5 Female	\$2.94



Cup Ø	Material	Quick#	Part#	(Reference)	Price
10mm	SIL	3200	VN1-10-S	PFG-10A-SI	\$3.07
	HIT	1165	VN1-10-H	PFG-10A-U	\$4.44
	NIT	3199	VN1-10-N	PFG-10A-NBR	\$2.63
Nipple		3289	VSA30	M5 Male	\$2.94
		5178	VSA30F	M5 Female	\$2.94



Cup Ø	Material	Quick#	Part#	(Reference)	Price
15mm	SIL	3204	VN1-15-S	PFG-15A-SI	\$3.15
	HIT	1166	VN1-15-H	PFG-015A-U	\$4.44
	NIT	3203	VN1-15-N	PFG-15A-NBR	\$2.39
Nipple		3289	VSA30	M5 Male	\$2.94
		5178	VSA30F	M5 Female	\$2.94

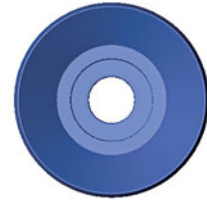
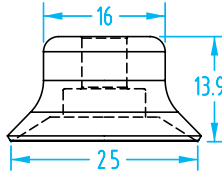


Cup Ø	Material	Quick#	Part#	(Reference)	Price
20mm	SIL	3207	VN1-20-S	PFG-20-SI	\$3.15
	HIT	1167	VN1 20 H	PFG-20-U	\$4.73
	NIT	3206	VN1-20-N	PFG-20A-NBR	\$2.36
Nipple		3291	VSA50	G1/8" Male	\$3.33
		5179	VSA50F	G1/8" Female	\$5.36

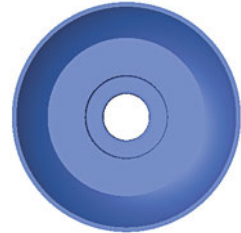
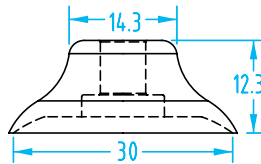
>S< Style – Flat

(Shown Actual Size)

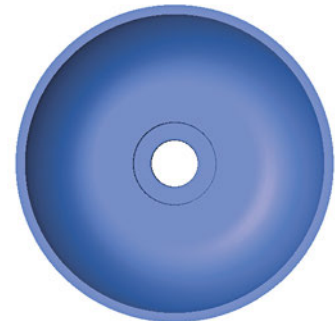
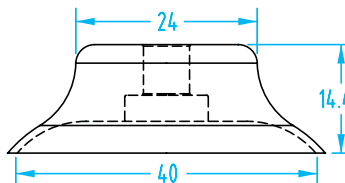
See page 372 for nipple dimensions.
Use Quick#s for easy online ordering.



Cup Ø	Material	Quick#	Part#	(Reference)	Price
25mm	SIL	3211	VN1-25-S	PFG-25-SI	\$3.15
	HIT	1168	VN1-25-H	PFG-25-U	\$5.03
	NIT	3210	VN1-25-N	PFG-25A-NBR	\$2.63
Nipple		3292	VSA60	G1/8" Male	\$3.33
		5180	VSA60F	G1/8" Female	\$3.50



Cup Ø	Material	Quick#	Part#	(Reference)	Price
30mm	SIL	3215	VN1-30-S	PFG-30-SI	\$3.15
	HIT	1169	VN1-30-H	PFG-30-U	\$5.78
	NIT	3214	VN1-30-N	PFG-30A-NBR	\$2.61
Nipple		3292	VSA60	G1/8" Male	\$3.33
		5180	VSA60F	G1/8" Female	\$3.50



Cup Ø	Material	Quick#	Part#	(Reference)	Price
40mm	SIL	3219	VN1-40-S	PFG-40-SI	\$3.43
	HIT	1170	VN1-40-H	PFG-40-U	\$6.08
	NIT	3218	VN1-40-N	PFG-40A-NBR	\$3.07
Nipple		3292	VSA60	G1/8" Male	\$3.33
		5180	VSA60F	G1/8" Female	\$3.50

Fittings Available
on page 1043



>S< Style – Flat

(Shown Actual Size)

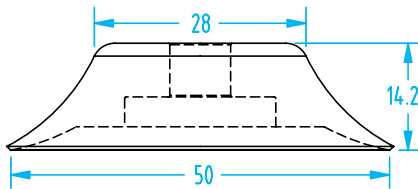
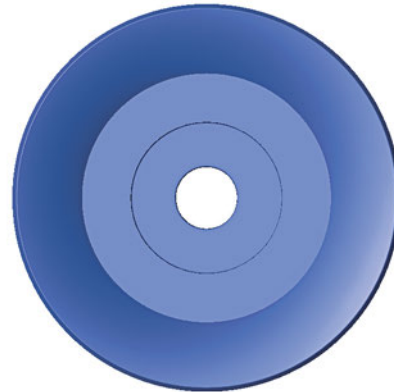


>S< Style Vacuum Cup Properties

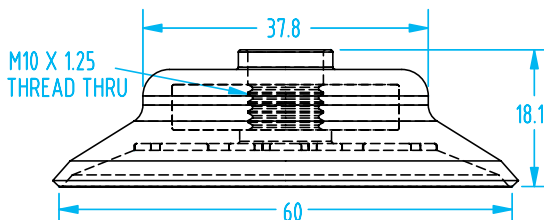
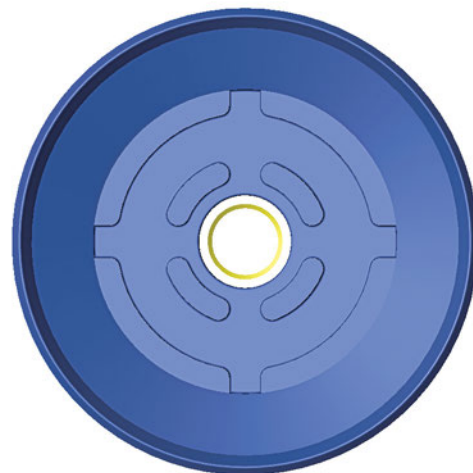
Material	Color	Max Temp.	Durometer
Silicone	Semi-translucent white	482°F	50°
Hithane	Blue	320°F	60°
Nitrile	Black	248°F	60°

Available with Foam Cup, see page 368.

See page 372 for nipple dimensions.



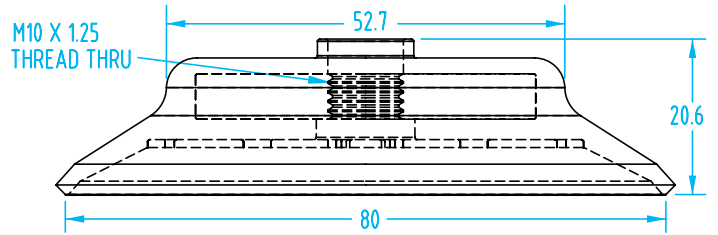
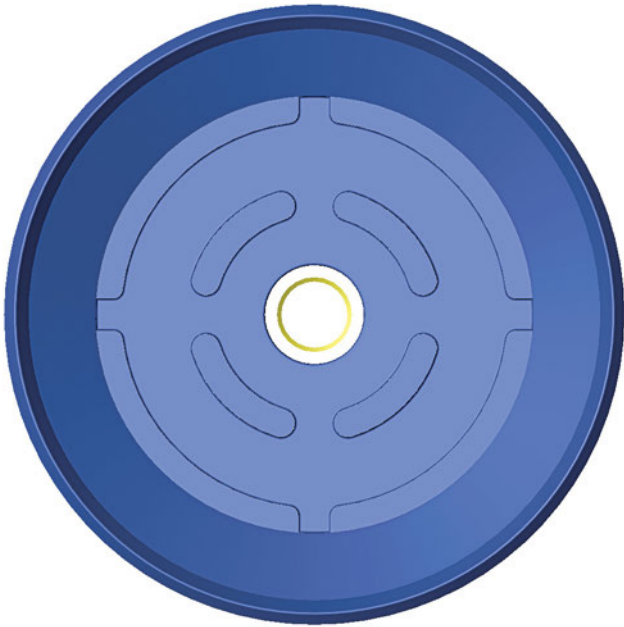
Cup Ø	Material	Quick#	Part#	(Reference)	Price
50mm	SIL	3223	VN1-50-S	PFG-50-SI	\$3.72
	HIT	1171	VN1-50-H	PFG-50-U	\$7.95
	NIT	3222	VN1-50-N	PFG-50A-NBR	\$3.23
Nipple		3294	VSA80	G1/8" Male	\$3.68
		5182	VSA80F	G1/8" Female	\$3.68



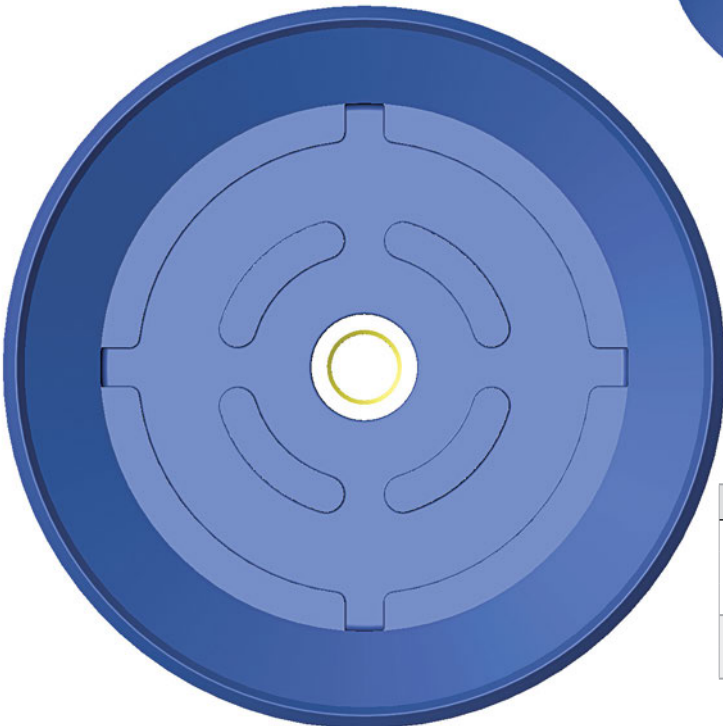
Cup Ø	Material	Quick#	Part#	(Reference)	Price
60mm	SIL	3227	VN1-60-S	PFG-60-SI	\$9.90
	HIT	1172	VN1-60-H	PFG-60-U	\$14.70
	NIT	3226	VN1-60-N	PFG-60A-NBR	\$8.93
Nipple		3297	VSA110	G1/4" Male	\$5.59
		5183	VSA110F	G1/4" Female	\$5.59

>S< Style – Flat

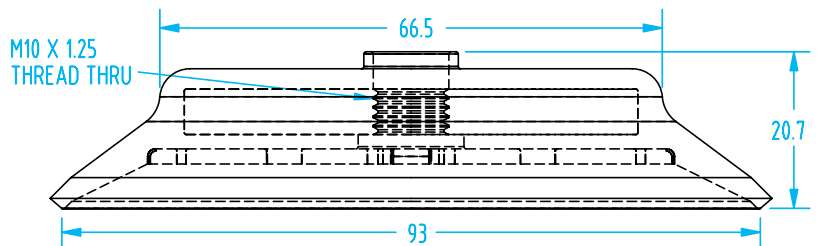
(Shown Actual Size)



Cup Ø	Material	Quick#	Part#	(Reference)	Price
80mm	SIL	3230	VN1-80-S	PFG-80-SI	\$14.70
	HIT	1173	VN1-80-H	PFG-80-U	\$16.28
	NIT	3229	VN1-80-N	PFG-80A-NBR	\$11.03
Nipple		3297	VSA110	G1/4" Male	\$5.59
		5183	VSA110F	G1/4" Female	\$5.59



Cup Ø	Material	Quick#	Part#	(Reference)	Price
95mm	SIL	3233	VN1-95-S	PFG-95-SI	\$20.21
	HIT	1174	VN1-95-H	PFG-95-U	\$31.28
	NIT	3232	VN1-95-N	PFG-95A-NBR	\$15.40
Nipple		3297	VSA110	G1/4" Male	\$5.59
		5183	VSA110F	G1/4" Female	\$5.59



>S< Style – 1.5 Bellows

(Shown Actual Size)



>S< Style Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
Silicone	Semi-translucent white	482°F	50°
Hithane	Blue	320°F	60°
Nitrile	Black	248°F	60°

Available with Foam Cup, see page 368.

Additional Mini Vacuum Cup sizes on page 416.

See page 372 for nipple dimensions.

* 9.5mm Compressed

Cup Ø	Material	Quick#	Part#	(Reference)	Price
10mm	NIT	3235	VN2-10-N	PBG-10A-NBR	\$3.51
	SIL	3236	VN2-10-S	PBG-10A-SI	\$5.46
	HIT	1175	VN2-10-H	PBG-10A-U	\$7.56
Nipple		3289	VSA30	M5 Male	\$2.94
		5178	VSA30F	M5 Female	\$2.94

* 9mm Compressed

Cup Ø	Material	Quick#	Part#	(Reference)	Price
15mm	NIT	3238	VN2-15-N	PBG-15A-NBR	\$4.20
	SIL	3239	VN2-15-S	PBG-15A-SI	\$7.35
	HIT	1176	VN2-15-H	PBG-15A-U	\$8.40
Nipple		3289	VSA30	M5 Male	\$2.94
		5178	VSA30F	M5 Female	\$2.94

* 16mm Compressed

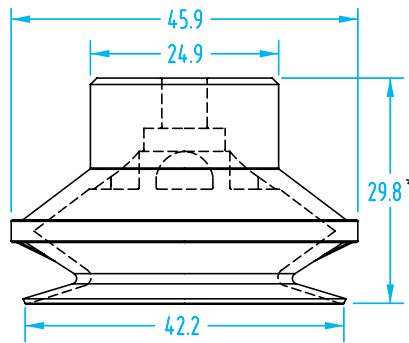
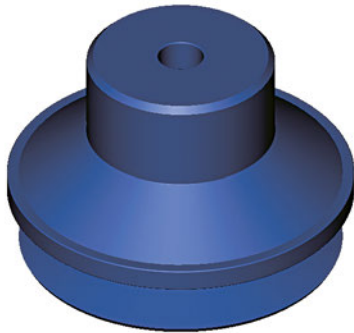
Cup Ø	Material	Quick#	Part#	(Reference)	Price
20mm	NIT	3241	VN2-20-N	PBG-20-NBR	\$4.50
	SIL	3242	VN2-20-S	PBG-20-SI	\$7.27
	HIT	1177	VN2-20-H	PBG-20A-U	\$9.19
Nipple		3292	VSA60	G1/8" Male	\$3.33
		5180	VSA60F	G1/8" Female	\$3.50

* 20mm Compressed

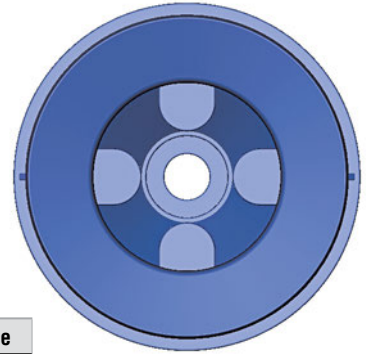
Cup Ø	Material	Quick#	Part#	(Reference)	Price
30mm	NIT	3244	VN2-30-N	PBG-30-NBR	\$5.33
	SIL	3245	VN2-30-S	PBG-30-SI	\$8.11
	HIT	1178	VN2-30-H	PBG-30A-U	\$12.24
Nipple		3292	VSA60	G1/8" Male	\$3.33
		5180	VSA60F	G1/8" Female	\$3.50

>S< Style – 1.5 Bellows

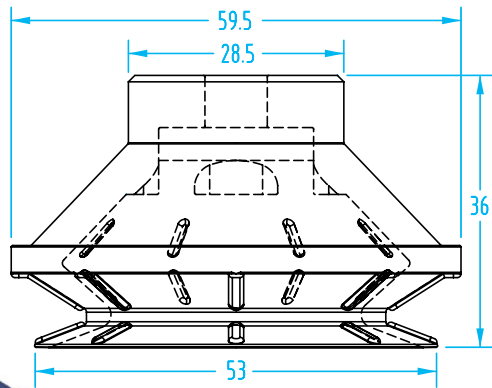
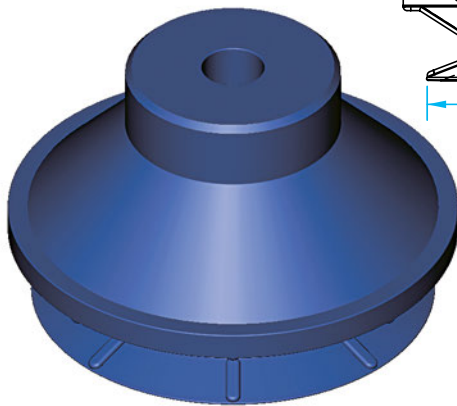
(Shown Actual Size)



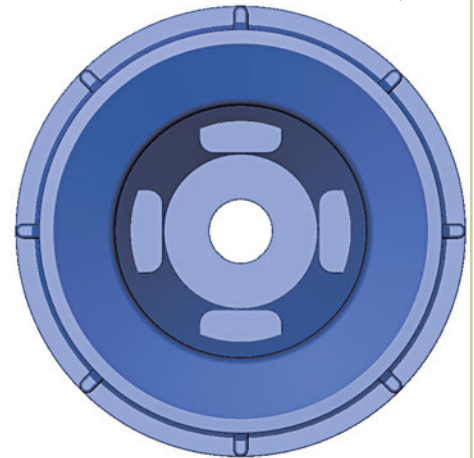
* 20mm Compressed



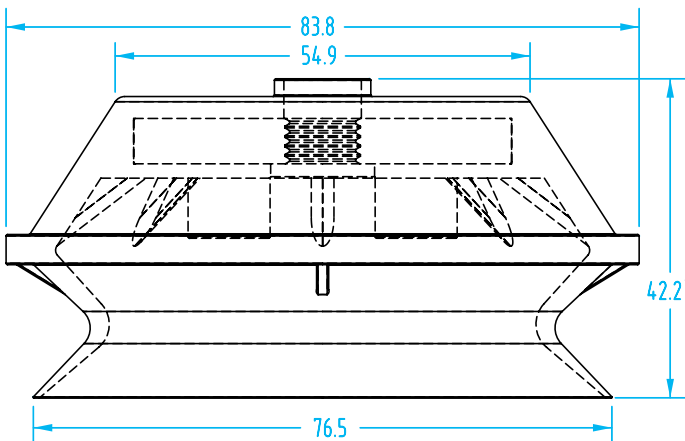
Cup Ø	Material	Quick#	Part#	(Reference)	Price
40mm	NIT	3247	VN2-40-N	PBG-40-NBR	\$6.91
	SIL	3248	VN2-40-S	PBG-40-SI	\$12.08
	HIT	1179	VN2-40-H	PBG-40A-U	\$14.99
Nipple		3292	VSA60	G1/8" Male	\$3.33
		5180	VSA60F	G1/8" Female	\$3.50



* 24mm Compressed



Cup Ø	Material	Quick#	Part#	(Reference)	Price
50mm	NIT	3250	VN2-50-N	PBG-50-NBR	\$7.70
	SIL	3251	VN2-50-S	PBG-50-SI	\$13.25
	HIT	1180	VN2-50-H	PBG-50A-U	\$23.84
Nipple		3294	VSA80	G1/8" Male	\$3.68
		5182	VSA80F	G1/8" Female	\$3.68



* 20mm Compressed

Cup Ø	Material	Quick#	Part#	(Reference)	Price
75mm	NIT	3253	VN2-75-N	PBG-75-NBR	\$22.92
	SIL	3254	VN2-75-S	PBG-75-SI	\$30.53
	HIT	1181	VN2-75-H	PBG-75A-U	\$57.75
Nipple		3297	VSA110	G1/4" Male	\$5.59
		5183	VSA110F	G1/4" Female	\$5.59

>S< Style – 2.5 Bellows



(Shown Actual Size)

>S< Style Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
Silicone	Semi-translucent white	482°F	50°
Hithane	Blue	320°F	60°
Nitrile	Black	248°F	60°

See page 372 for nipple dimensions.

* 8mm Compressed

Cup Ø	Material	Quick#	Part#	(Reference)	Price
5mm	NIT	3256	VN3-5-N	PCG-5-NBR	\$4.64
	SIL	3257	VN3-5-S	PCG-5-SI	\$5.23
	HIT	1182	VN3-5-H	PCG-5-U	\$8.93
Nipple		3289	VSA30	M5 Male	\$2.94
		5178	VSA30F	M5 Female	\$2.94

* 8mm Compressed

Cup Ø	Material	Quick#	Part#	(Reference)	Price
8mm	NIT	3259	VN3-8-N	PCG-7-NBR	\$4.64
	SIL	3260	VN3-8-S	PCG-7-SI	\$5.23
	HIT	1183	VN3-7-H	PCG-7-U	\$8.93
Nipple		3289	VSA30	M5 Male	\$2.94
		5178	VSA30F	M5 Female	\$2.94

* 12.5mm Compressed

Cup Ø	Material	Quick#	Part#	(Reference)	Price
10mm	NIT	3262	VN3-10-N	PCG-10-NBR	\$3.17
	SIL	3263	VN3-10-S	PCG-10-SI	\$3.95
Nipple		3290	VSA40	M5 Male	\$1.86
		1603	GSF-PFN-G8F	G1/8" Female	\$3.99

* 15mm Compressed

Cup Ø	Material	Quick#	Part#	(Reference)	Price
15mm	NIT	3265	VN3-15-N	PCG-15-NBR	\$3.17
	SIL	3266	VN3-15-S	PCG-15-SI	\$3.85
Nipple		3290	VSA40	M5 Male	\$1.86
		1603	GSF-PFN-G8F	G1/8" Female	\$3.99

* 15mm Compressed

Cup Ø	Material	Quick#	Part#	(Reference)	Price
18mm	NIT	3268	VN3-18-N	PCG-18-NBR	\$4.73
	SIL	3269	VN3-18-S	PCG-18-SI	\$4.45
Nipple		1604	GSF-PFN-G8M	G1/8" Male	\$3.99
		1603	GSF-PFN-G8F	G1/8" Female	\$3.99

* 15mm Compressed

Cup Ø	Material	Quick#	Part#	(Reference)	Price
18mm	NIT	3268	VN3-18-N	PCG-18-NBR	\$4.73
	SIL	3269	VN3-18-S	PCG-18-SI	\$4.45
Nipple		1604	GSF-PFN-G8M	G1/8" Male	\$3.99
		1603	GSF-PFN-G8F	G1/8" Female	\$3.99

* 14mm Compressed

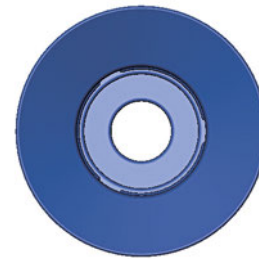
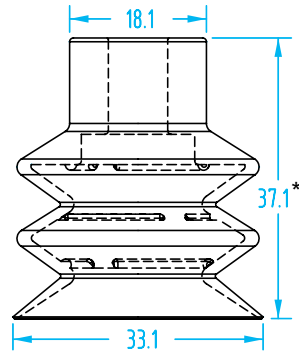
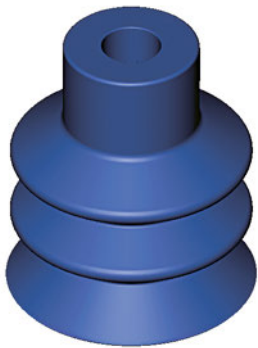
Cup Ø	Material	Quick#	Part#	(Reference)	Price
20mm	NIT	3271	VN3-20-N	PCG-20-NBR	\$3.85
	SIL	3272	VN3-20-S	PCG-20-SI	\$4.64
Nipple		1604	GSF-PFN-G8M	G1/8" Male	\$3.99
		1603	GSF-PFN-G8F	G1/8" Female	\$3.99

* 14mm Compressed

Cup Ø	Material	Quick#	Part#	(Reference)	Price
20mm	NIT	3271	VN3-20-N	PCG-20-NBR	\$3.85
	SIL	3272	VN3-20-S	PCG-20-SI	\$4.64
Nipple		1604	GSF-PFN-G8M	G1/8" Male	\$3.99
		1603	GSF-PFN-G8F	G1/8" Female	\$3.99

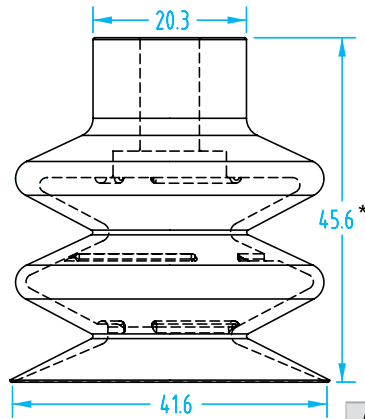
>S< Style – 2.5 Bellows

(Shown Actual Size)



* 24mm Compressed

Cup Ø	Material	Quick#	Part#	(Reference)	Price
30mm	NIT	3274	VN3-30-N	PCG-30-NBR	\$5.12
	SIL	3275	VN3-30-S	PCG-30-SI	\$7.12
Nipple		5433	GSF-HTN1-G8M	G1/8" Male	\$3.67
		5432	GSF-HTN1-G8F	G1/8" Female	\$3.67

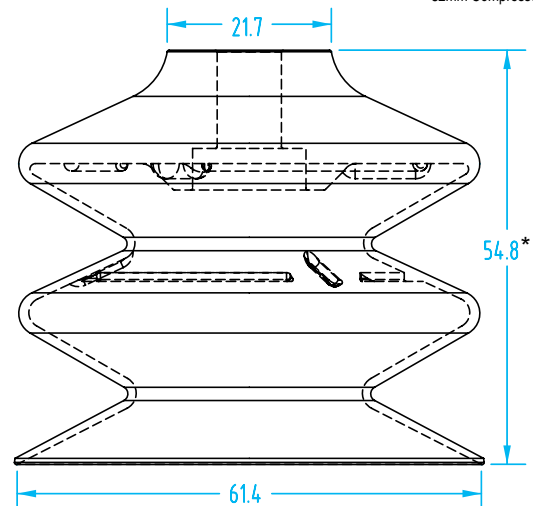


* 28mm Compressed

Cup Ø	Material	Quick#	Part#	(Reference)	Price
40mm	NIT	3277	VN3-40-N	PCG-40-NBR	\$7.25
	SIL	3278	VN3-40-S	PCG-40-SI	\$9.05
Nipple		5433	GSF-HTN1-G8M	G1/8" Male	\$3.67
		5432	GSF-HTN1-G8F	G1/8" Female	\$3.67

Cup Ø	Material	Quick#	Part#	(Reference)	Price
60mm	NIT	3280	VN3-60-N	PCG-60-NBR	\$11.70
	SIL	3281	VN3-60-S	PCG-60-SI	\$14.78
Nipple		5433	GSF-HTN1-G8M	G1/8" Male	\$3.67
		5432	GSF-HTN1-G8F	G1/8" Female	\$3.67

Cup Ø	Material	Quick#	Part#	(Reference)	Price
90mm	NIT	3283	VN3-90-N	PCG-90-NBR	\$23.29
	SIL	3284	VN3-90-S	PCG-90-SI	\$32.26
Nipple		3296	VSA100	G1/4" Male	\$5.31
		1607	GSF-PFN4-G4F	G1/4" Female	\$6.74



* 32mm Compressed

>S< Style – Foam Surface – Flat

(Shown Actual Size)

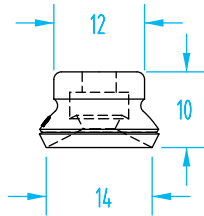


Foam cups are designed for gripping products with an uneven or ridged surface such as metal sheets or flat surfaces with bumps or hollows. Heat-resistant silicone cups have a temperature range up to 428°F, and don't leave marks on products handled. Silicone foam cups are not recommended for gripping products before painting or coating.

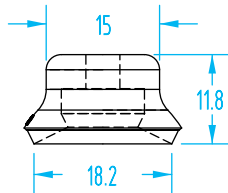
Foam Vacuum Cup Properties

Material	Color	Max Temp.	Cup Durometer
Nitrile	Black	176°	60°
Silicone	Clear	428°	50°

See page 372 for nipple dimensions.



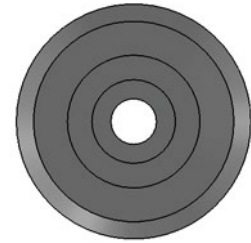
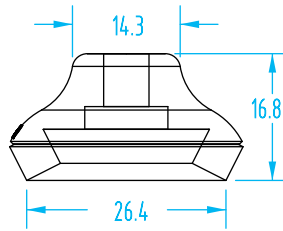
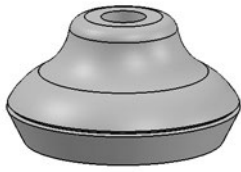
Cup Ø	Material	Quick#	Part#	Price
15mm	Nitrile	1049	VPG-15-NBR-BM	\$12.16
	Silicone	1050	VPG-15-SI-BM	\$12.52
Nipple	M5 Male	3290	VSA40	\$1.86
	G1/8" Female	1603	GSF-PFN-G8F	\$3.99



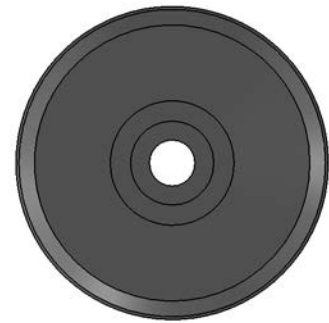
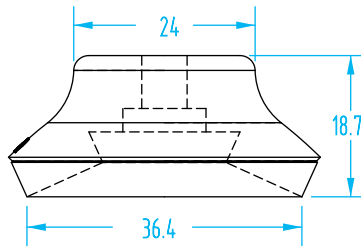
Cup Ø	Material	Quick#	Part#	Price
20mm	Nitrile	1051	VPG-20-NBR-BM	\$12.68
	Silicone	1052	VPG-20-SI-BM	\$13.13
Nipple	G1/8" Male	1604	GSF-PFN-G8M	\$3.99
	G1/8" Female	1603	GSF-PFN-G8F	\$3.99

>S< Style – Foam Surface – Flat

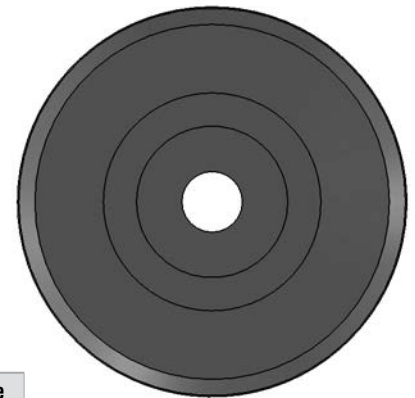
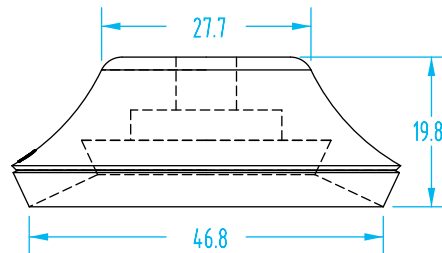
(Shown Actual Size)



Cup Ø	Material	Quick#	Part#	Price
30mm	Nitrile	1053	VPG-30-NBR-BM	\$13.73
	Silicone	1054	VPG-30-SI-BM	\$15.67
Nipple	G1/8" Male	3292	VSA60	\$3.33
	G1/8" Female	5180	VSA60F	\$3.50



Cup Ø	Material	Quick#	Part#	Price
40mm	Nitrile	1055	VPG-40-NBR-BM	\$13.91
	Silicone	1056	VPG-40-SI-BM	\$16.72
Nipple	G1/8" Male	3292	VSA60	\$3.33
	G1/8" Female	5180	VSA60F	\$3.50



Cup Ø	Material	Quick#	Part#	Price
50mm	Nitrile	1057	VPG-50-NBR-BM	\$15.67
	Silicone	1058	VPG-50-SI-BM	\$18.29
Nipple	G1/8" Male	3294	VSA80	\$3.68
	G1/8" Female	5182	VSA80F	\$3.68

>S< Style – Foam Surface – 1.5 Bellow

(Shown Actual Size)

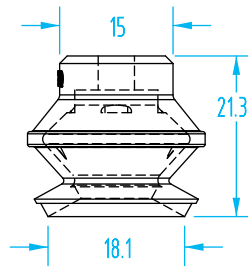
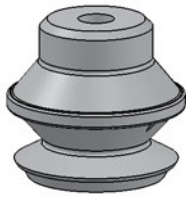


Foam cups are designed for gripping products with an uneven or ridged surface such as metal sheets or flat surfaces with bumps or hollows. Heat-resistant silicone cups have a temperature range up to 428°F, and don't leave marks on products handled. Silicone foam cups are not recommended for gripping products before painting or coating.

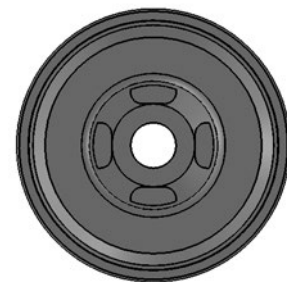
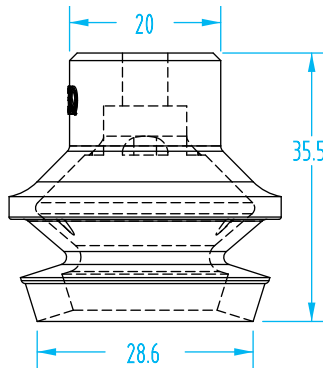
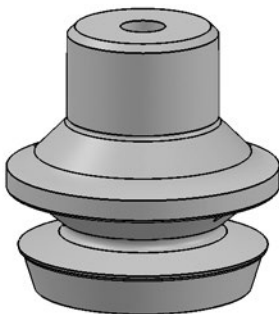
Foam Vacuum Cup Properties

Material	Color	Max Temp.	Cup Durometer
Nitrile	Black	176°	60°
Silicone	Clear	428°	50°

See page 372 for nipple dimensions.



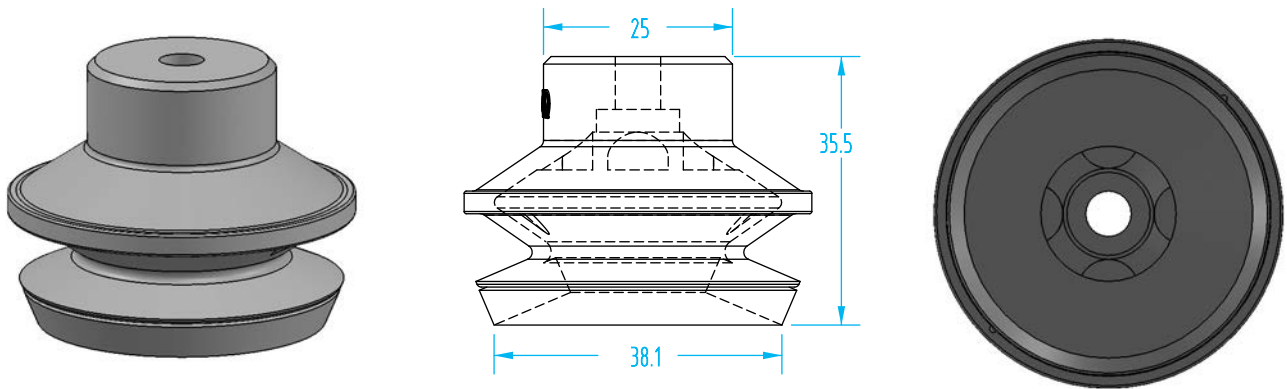
Cup Ø	Material	Quick#	Part#	Price
20mm	Nitrile	1059	VSAG-20-BNBR-BM	\$16.28
	Silicone	1060	VSAG-20-BSI-BM	\$19.01
Nipple	G1/8" Male	1604	GSF-PFN-G8M	\$3.99
	G1/8" Female	1603	GSF-PFN-G8F	\$3.99



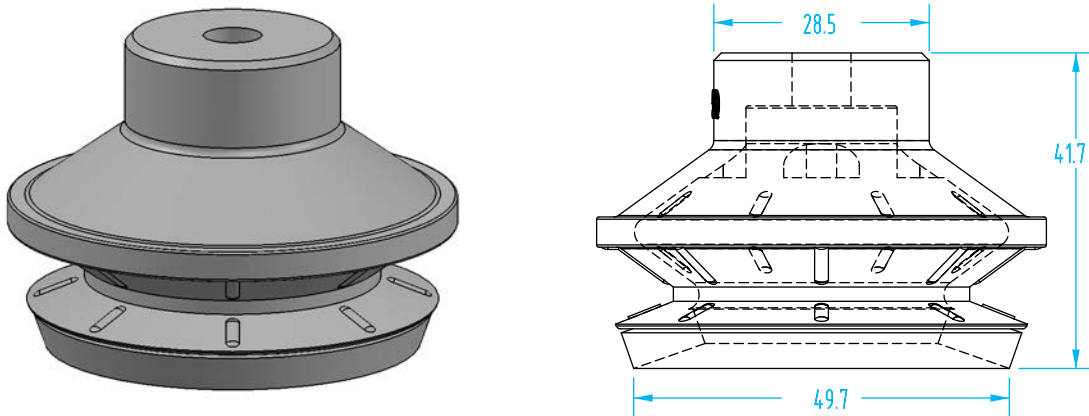
Cup Ø	Material	Quick#	Part#	Price
30mm	Nitrile	1061	VSAG-30-NBR-BM	\$16.80
	Silicone	1062	VSAG-30-SI-BM	\$19.95
Nipple	G1/8" Male	3292	VSA60	\$3.33
	G1/8" Female	5180	VSA60F	\$3.50

>S< Style – Foam Surface – 1.5 Bellow

(Shown Actual Size)



Cup Ø	Material	Quick#	Part#	Price
40mm	Nitrile	1063	VSAG-40-NBR-BM	\$20.16
	Silicone	1064	VSAG-40-SI-BM	\$23.10
Nipple	G1/8" Male	3292	VSA60	\$3.33
	G1/8" Female	5180	VSA60F	\$3.50



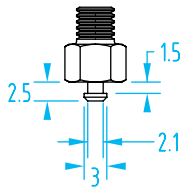
Cup Ø	Material	Quick#	Part#	Price
50mm	Nitrile	1065	VSAG-50-NBR-BM	\$21.42
	Silicone	1066	VSAG-50-SI-BM	\$27.30
Nipple	G1/8" Male	3294	VSA80	\$3.68
	G1/8" Female	5182	VSA80F	\$3.68

>S< Style – Nipples

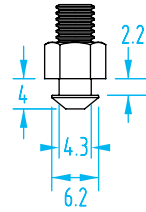
(Shown Actual Size)

M5

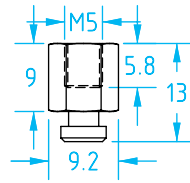
#3286



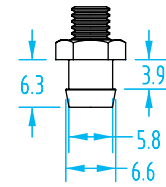
#3289



#5178

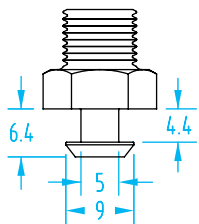


#3290

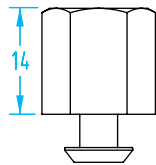


G1/8"

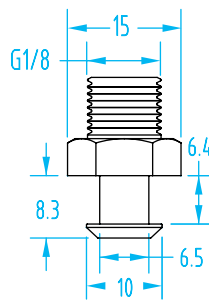
#3291



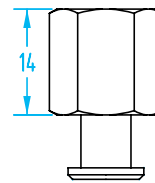
#5179



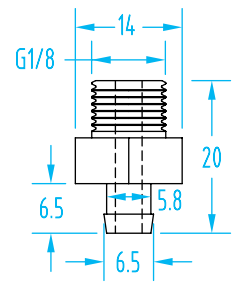
#3292



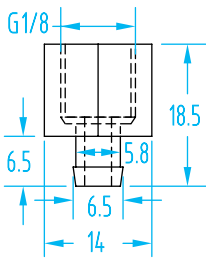
#5180



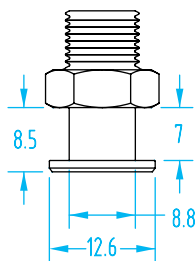
#1604



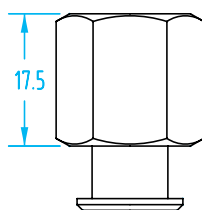
#1603



#3294

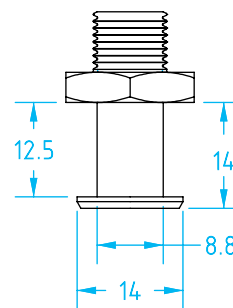


#5182

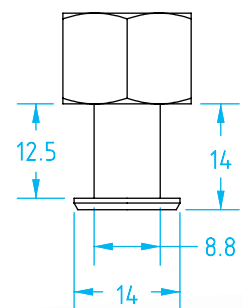


#5433

*Includes the #244 seal ring



#5432

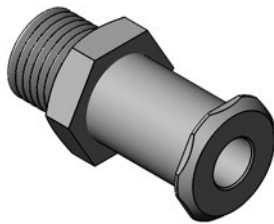
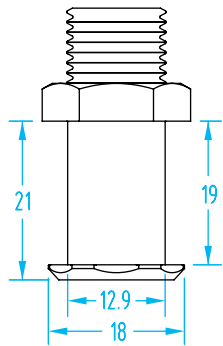


>S< Style – Nipples

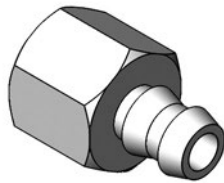
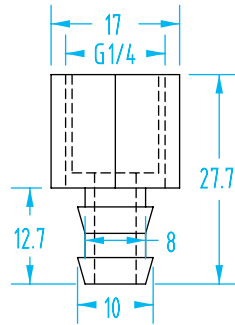
(Shown Actual Size)

G1/4"

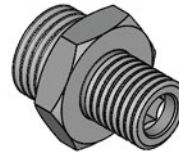
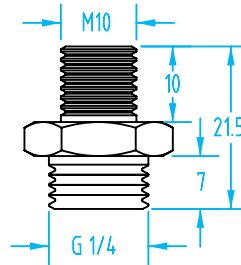
#3296



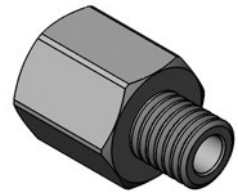
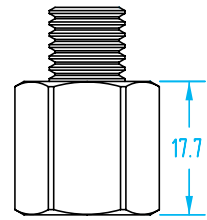
#1607



#3297



#5183



Quick#	Part#	Thread	Price
3286	VSA10	M5 Male	\$2.94
3289	VSA30	M5 Male	\$2.94
5178	VSA30F	M5 Female	\$2.94
3290	VSA40	M5 Male	\$1.86
3291	VSA50	G1/8" Male	\$3.33
5179	VSA50F	G1/8" Female	\$5.36
3292	VSA60	G1/8" Male	\$3.33
5180	VSA60F	G1/8" Female	\$3.50
1604	GSF-PFN-G8M	G1/8" Male	\$3.99
1603	GSF-PFN-G8F	G1/8" Female	\$3.99
3294	VSA80	G1/8" Male	\$3.68
5182	VSA80F	G1/8" Female	\$3.68
5433	GSF-HTN1-G8M	G1/8" Male	\$3.67
5432	GSF-HTN1-G8F	G1/8" Female	\$3.67
3296	VSA100	G1/4" Male	\$5.31
1607	GSF-PFN4-G4F	G1/4" Female	\$6.74
3297	VSA110	G1/4" Male	\$5.59
5183	VSA110F	G1/4" Female	\$5.59

Use Quick#s for easy online ordering.

Fittings Available
on page 1043



SMC® Vacuum Cups – Introduction



SMC Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
Silicone	Semi-translucent white	392°F	40°
Polyurethane	Semi-translucent gold	140°F	60°
Nitrile	Black	180°F	50°
Anti-static	Black	356°F	50°



Anti-static vacuum cups available.

SMC Vacuum Cups

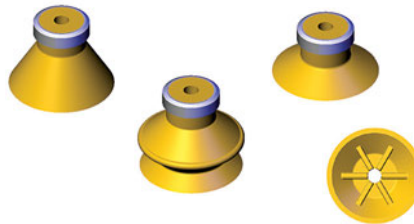
SMC makes very nice quality and good performing vacuum cups. They are well suited for most robotic EOAT applications. The silicone cups are more flexible because they have a softer durometer (40°) than most silicone cups (50°–55°). Therefore, they often provide a better seal on contoured parts or slightly textured parts.

And we make ordering them easy. Our simple step-by-step ordering guide makes it easy for you to build the vacuum cup and mounting assembly that is suited to your application. Full-size drawings assist you in getting the right size. And of course, our EOAT engineers are always available to provide engineering assistance.

How to Order SMC® Vacuum Cups

STEP 1 SELECT VACUUM CUP TYPE AND SIZE

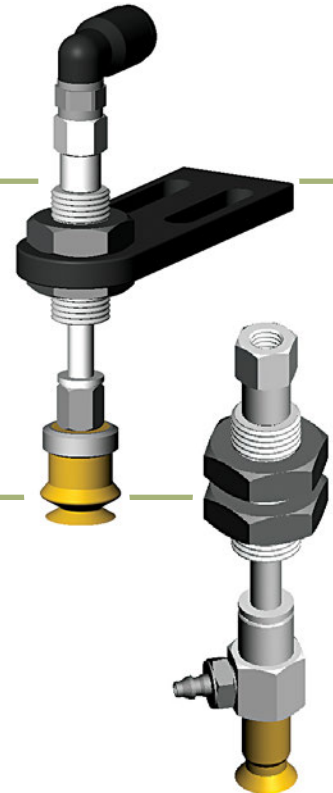
Silicone, Polyurethane, Nitrile or Anti-static:
 Deep Cups on page 382.
 Bellows Cups on page 380.
 Flat Cups on page 376.
 Flat Cups with Ridges on page 378.
 Nitrile Material available for all cups.
 Anti-Static Cups on page 376 & 380.



Vacuum cups 10mm and larger include clamp ring as standard.

STEP 2 DETERMINE REQUIRED NIPPLE

Vacuum cup nipples are ordered separately. See corresponding sizing chart on Page 383.



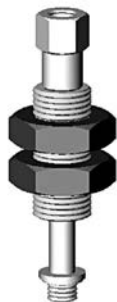
STEP 3 (OPTIONAL) ALTERNATE VACUUM ENTRY

Alternate vacuum entry adaptors are available with push-in tubing connectors. Page 383.



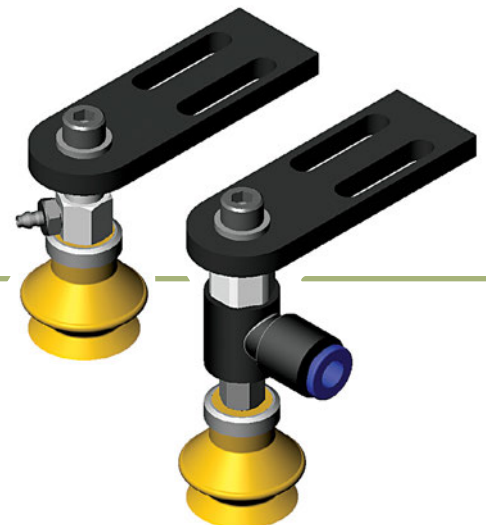
STEP 4 (OPTIONAL) MOUNTING SUSPENSIONS

Also known as “buffers” and “level compensators”, these devices have internal springs. Page 384.



STEP 5 (OPTIONAL) MOUNTING BRACKETS

Custom aluminum brackets are available that allow for easy mounting and adjustment to popular types of aluminum framing profiles. Page 385.



SMC® – Flat Smooth

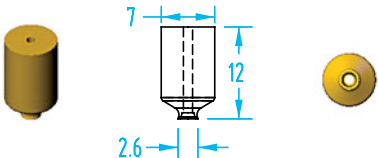
(Shown Actual Size)



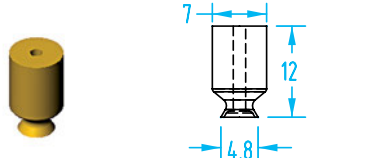
SMC Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
Silicone	Semi-translucent white	392°F	40°
Polyurethane	Semi-translucent gold	140°F	60°
Nitrile	Black	180°F	50°
Anti-static	Black	356°F	50°

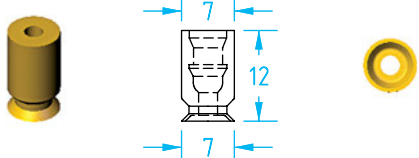
Order nipples separately, see page 383.



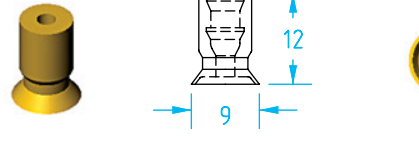
Cup Ø	Material	Quick#	Part#	Price
2mm	Silicone	2501	ZP02US	\$2.45
	Polyurethane	2535	ZP02UU	\$2.95
	Nitrile	2604	ZP02UN	\$2.25
	Anti-static	2683	ZP02UGS	\$2.40



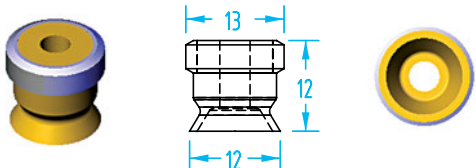
Cup Ø	Material	Quick#	Part#	Price
4mm	Silicone	2502	ZP04US	\$2.45
	Polyurethane	2536	ZP04UU	\$2.95
	Nitrile	2605	ZP04UN	\$2.25
	Anti-static	2684	ZP04UGS	\$2.40



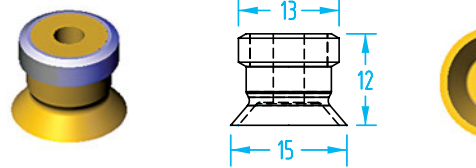
Cup Ø	Material	Quick#	Part#	Price
6mm	Silicone	2503	ZP06US	\$2.45
	Polyurethane	2537	ZP06UU	\$2.95
	Nitrile	2606	ZP06UN	\$2.25



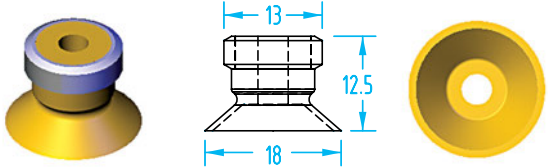
Cup Ø	Material	Quick#	Part#	Price
8mm	Silicone	2504	ZP08US	\$2.45
	Polyurethane	2538	ZP08UU	\$2.95
	Nitrile	2607	ZP08UN	\$2.25
	Anti-static	2685	ZP08UGS	\$2.40



Cup Ø	Material	Quick#	Part#	Price
10mm	Silicone	2505	ZP10US	\$2.95
	Polyurethane	2539	ZP10UU	\$3.65
	Nitrile	2608	ZP10UN	\$2.70
	Anti-static	2686	ZP10UGS	\$4.30



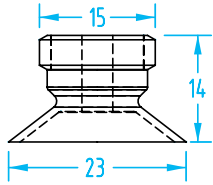
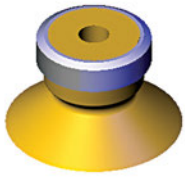
Cup Ø	Material	Quick#	Part#	Price
13mm	Silicone	2506	ZP13US	\$2.95
	Polyurethane	2540	ZP13UU	\$3.65
	Nitrile	2609	ZP13UN	\$2.70
	Anti-static	2687	ZP13UGS	\$4.30



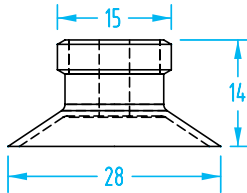
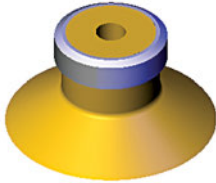
Cup Ø	Material	Quick#	Part#	Price
16mm	Silicone	2507	ZP16US	\$3.40
	Polyurethane	2541	ZP16UU	\$4.10
	Nitrile	2610	ZP16UN	\$3.15
	Anti-static	2688	ZP16UGS	\$4.75

SMC® – Flat Smooth

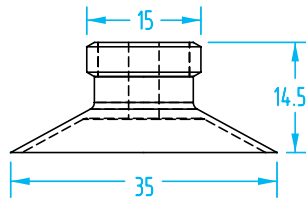
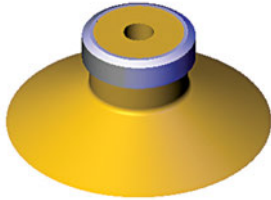
(Shown Actual Size)



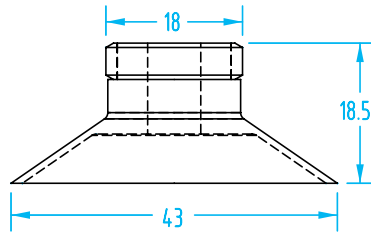
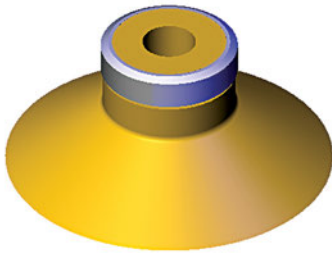
Cup Ø	Material	Quick#	Part#	Price
20mm	Silicone	2508	ZP20US	\$3.40
	Polyurethane	2542	ZP20UU	\$4.10
	Nitrile	2611	ZP20UN	\$3.15



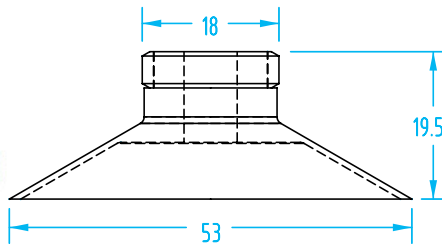
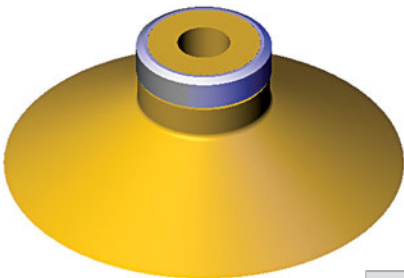
Cup Ø	Material	Quick#	Part#	Price
25mm	Silicone	2509	ZP25US	\$3.40
	Polyurethane	2543	ZP25UU	\$4.10
	Nitrile	2612	ZP25UN	\$3.15



Cup Ø	Material	Quick#	Part#	Price
32mm	Silicone	2510	ZP32US	\$3.75
	Polyurethane	2544	ZP32UU	\$4.45
	Nitrile	2613	ZP32UN	\$3.40



Cup Ø	Material	Quick#	Part#	Price
40mm	Silicone	2511	ZP40US	\$4.90
	Polyurethane	2545	ZP40UU	\$5.85
	Nitrile	2614	ZP40UN	\$4.45



Cup Ø	Material	Quick#	Part#	Price
50mm	Silicone	2512	ZP50US	\$4.90
	Polyurethane	2546	ZP50UU	\$5.85
	Nitrile	2615	ZP50UN	\$4.45

SMC® – Flat Ribbed

(Shown Actual Size)



SMC Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
Silicone	Semi-translucent white	392°F	40°
Polyurethane	Semi-translucent gold	140°F	60°
Nitrile	Black	180°F	50°

Order nipples separately, see page 383.

Cup Ø	Material	Quick#	Part#	Price
10mm	Silicone	2513	ZP10CS	\$2.95
	Polyurethane	2547	ZP10CU	\$3.65
	Nitrile	2616	ZP10CN	\$2.70

Cup Ø	Material	Quick#	Part#	Price
13mm	Silicone	2514	ZP13CS	\$2.95
	Polyurethane	2548	ZP13CU	\$3.65
	Nitrile	2617	ZP13CN	\$2.70

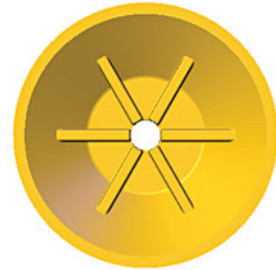
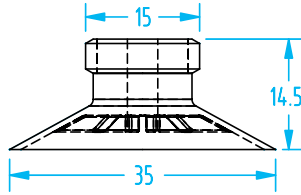
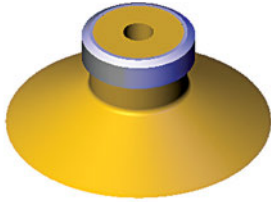
Cup Ø	Material	Quick#	Part#	Price
16mm	Silicone	2515	ZP16CS	\$3.40
	Polyurethane	2549	ZP16CU	\$4.10
	Nitrile	2618	ZP16CN	\$3.15

Cup Ø	Material	Quick#	Part#	Price
20mm	Silicone	2516	ZP20CS	\$3.40
	Polyurethane	2550	ZP20CU	\$4.10
	Nitrile	2619	ZP20CN	\$3.15

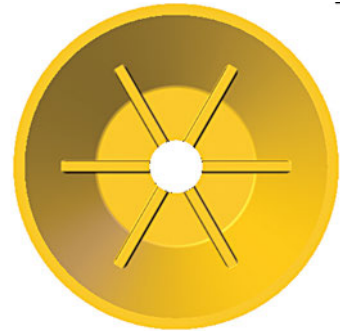
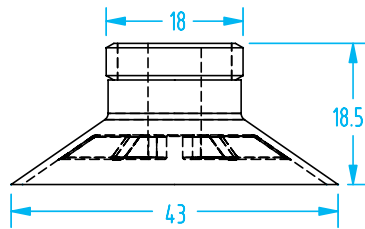
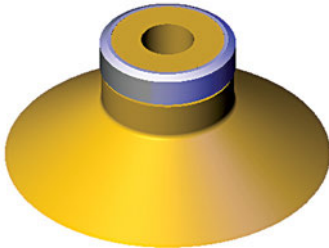
Cup Ø	Material	Quick#	Part#	Price
25mm	Silicone	2517	ZP25CS	\$3.40
	Polyurethane	2551	ZP25CU	\$4.10
	Nitrile	2620	ZP25CN	\$3.15

SMC® – Flat Ribbed

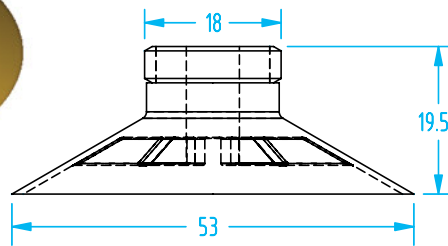
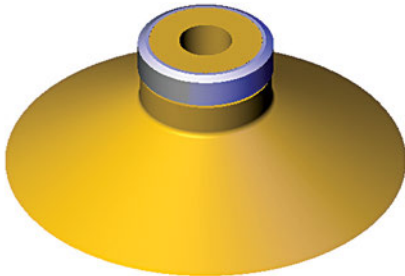
(Shown Actual Size)



Cup Ø	Material	Quick#	Part#	Price
32mm	Silicone	2518	ZP32CS	\$3.75
	Polyurethane	2552	ZP32CU	\$4.45
	Nitrile	2621	ZP32CN	\$3.40



Cup Ø	Material	Quick#	Part#	Price
40mm	Silicone	2519	ZP40CS	\$4.90
	Polyurethane	2553	ZP40CU	\$5.85
	Nitrile	2637	ZP40CN	\$4.45



Cup Ø	Material	Quick#	Part#	Price
50mm	Silicone	2520	ZP50CS	\$4.90
	Polyurethane	2554	ZP50CU	\$5.85
	Nitrile	2622	ZP50CN	\$4.45

Use Quick#s for easy online ordering.

SMC® – 1.5 Bellows

(Shown Actual Size)

* 11mm Compressed

Cup Ø	Material	Quick#	Part#	Price
6mm	Silicone	2525	ZP06BS	\$4.25
	Polyurethane	2559	ZP06BU	\$4.60
	Nitrile	2625	ZP06BN	\$4.05
	Anti-static	2678	ZP06BGS	\$4.20

* 11mm Compressed

Cup Ø	Material	Quick#	Part#	Price
8mm	Silicone	2526	ZP08BS	\$4.25
	Polyurethane	2560	ZP08BU	\$4.60
	Nitrile	2624	ZP08BN	\$4.05
	Anti-static	2679	ZP08BGS	\$4.20

* 12mm Compressed

Cup Ø	Material	Quick#	Part#	Price
10mm	Silicone	2527	ZP10BS	\$5.35
	Polyurethane	2561	ZP10BU	\$5.95
	Nitrile	2654	ZP10BN	\$5.15
	Anti-static	2680	ZP10BGS	\$6.45

* 13mm Compressed

Cup Ø	Material	Quick#	Part#	Price
13mm	Silicone	2528	ZP13BS	\$5.35
	Polyurethane	2562	ZP13BU	\$5.95
	Nitrile	2623	ZP13BN	\$5.15
	Anti-static	2681	ZP13BGS	\$6.45

* 13mm Compressed

Cup Ø	Material	Quick#	Part#	Price
16mm	Silicone	2529	ZP16BS	\$5.75
	Polyurethane	2563	ZP16BU	\$6.30
	Nitrile	2626	ZP16BN	\$5.50
	Anti-static	2682	ZP16BGS	\$6.85

* 15mm Compressed

Cup Ø	Material	Quick#	Part#	Price
20mm	Silicone	2530	ZP20BS	\$5.75
	Polyurethane	2564	ZP20BU	\$6.30
	Nitrile	2627	ZP20BN	\$5.50

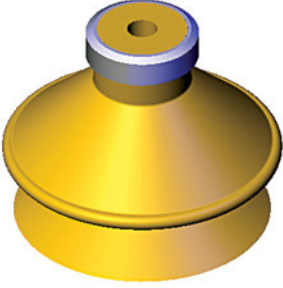
* 15mm Compressed

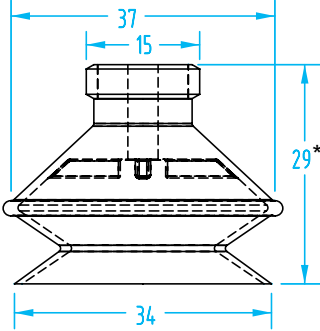
Cup Ø	Material	Quick#	Part#	Price
25mm	Silicone	2531	ZP25BS	\$5.75
	Polyurethane	2565	ZP25BU	\$6.30
	Nitrile	2628	ZP25BN	\$5.50

SMC® – 1.5 Bellows


(Shown Actual Size)

Order nipples separately, see page 383.

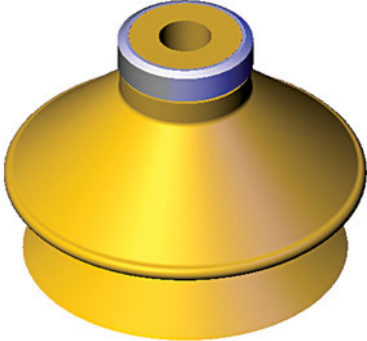


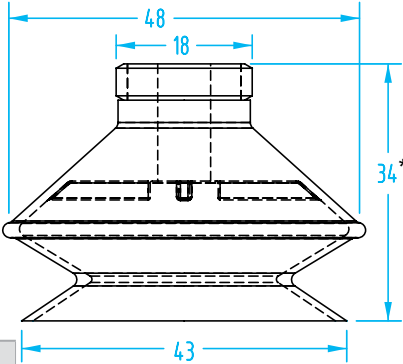


* 18mm Compressed




Cup Ø	Material	Quick#	Part#	Price
32mm	Silicone	2532	ZP32BS	\$7.10
	Polyurethane	2566	ZP32BU	\$7.70
	Nitrile	2629	ZP32BN	\$6.80

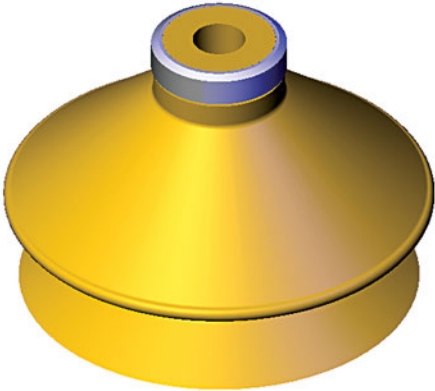


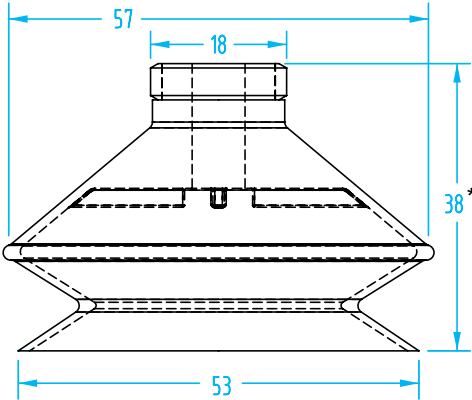


* 22mm Compressed

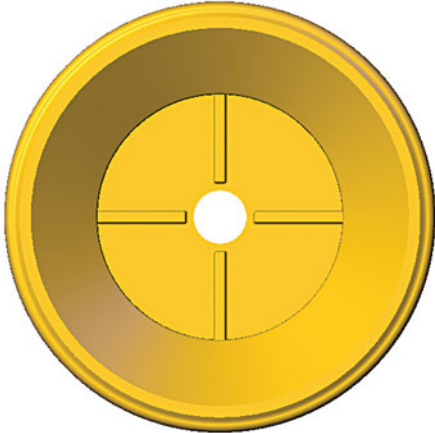


Cup Ø	Material	Quick#	Part#	Price
40mm	Silicone	2533	ZP40BS	\$9.15
	Polyurethane	2567	ZP40BU	\$9.95
	Nitrile	2630	ZP40BN	\$8.80





* 22mm Compressed



Cup Ø	Material	Quick#	Part#	Price
50mm	Silicone	2534	ZP50BS	\$9.15
	Polyurethane	2568	ZP50BU	\$9.95
	Nitrile	2631	ZP50BN	\$8.80

SMC® – Deep Cups

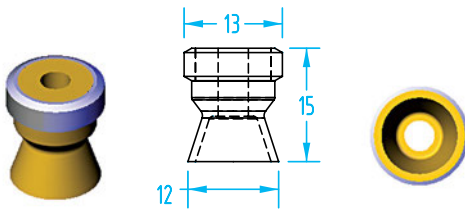
(Shown Actual Size)



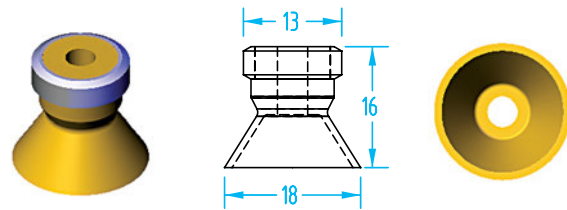
SMC Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
Silicone	Semi-translucent white	392°F	40°
Polyurethane	Semi-translucent gold	140°F	60°
Nitrile	Black	180°F	50°

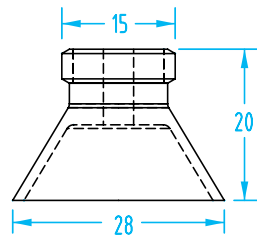
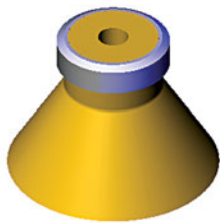
Use Quick#s for easy online ordering.



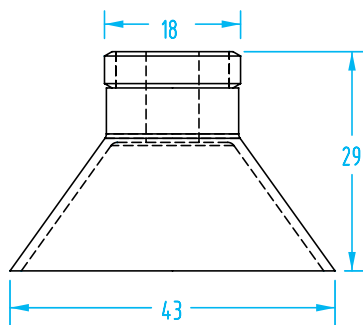
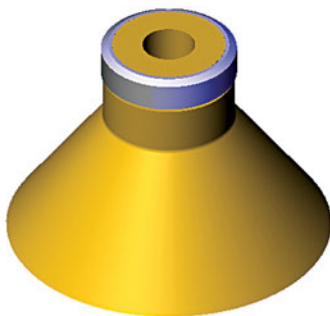
Cup Ø	Material	Quick#	Part#	Price
10mm	Silicone	2521	ZP10DS	\$6.30
	Polyurethane	2555	ZP10DU	\$7.00
	Nitrile	2632	ZP10DN	\$6.05



Cup Ø	Material	Quick#	Part#	Price
16mm	Silicone	2522	ZP16DS	\$6.65
	Polyurethane	2556	ZP16DU	\$7.35
	Nitrile	2633	ZP16DN	\$6.40



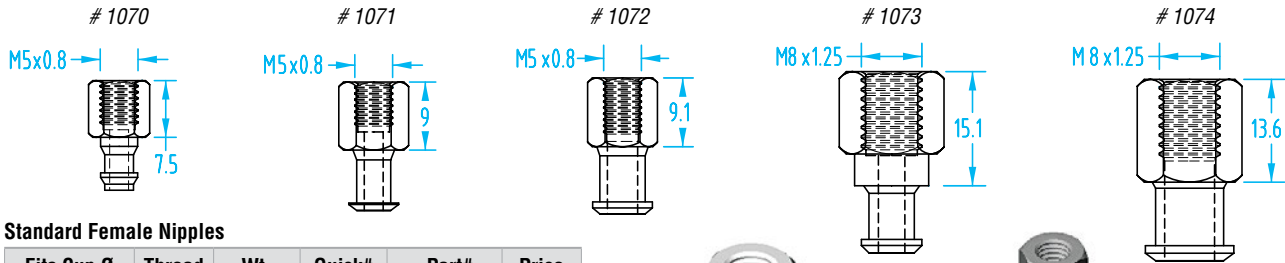
Cup Ø	Material	Quick#	Part#	Price
25mm	Silicone	2523	ZP25DS	\$6.65
	Polyurethane	2557	ZP25DU	\$7.35
	Nitrile	2634	ZP25DN	\$6.40



Cup Ø	Material	Quick#	Part#	Price
40mm	Silicone	2524	ZP40DS	\$3.85
	Polyurethane	2558	ZP40DU	\$4.80
	Nitrile	2635	ZP40DN	\$3.40

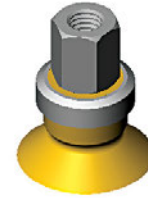
SMC® – Nipples and Adaptors

(Shown Actual Size)

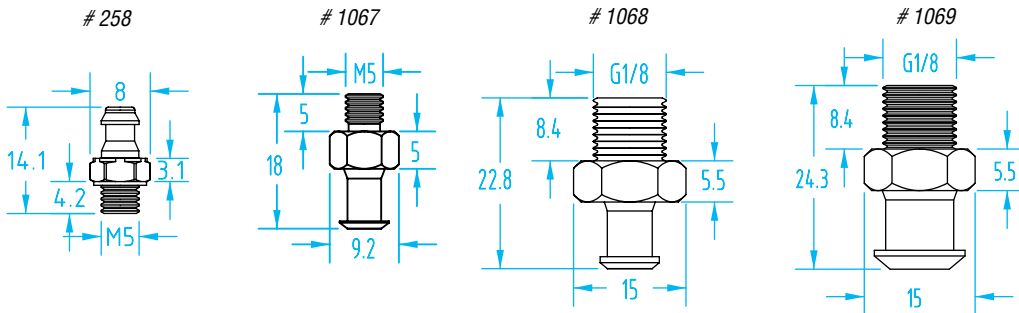


Standard Female Nipples

Fits Cup Ø	Thread	Wt.	Quick#	Part#	Price
2–8mm	M5	3g	1070	ZPT1B5	\$3.25
10–16mm	M5	4g	1071	ZPT2B5	\$6.15
20–32mm	M5	4g	1072	ZPT3B5	\$6.15
20–32mm	M8	12g	1073	ZPT3B8	\$6.15
40–50mm	M8	12g	1074	ZPT4B8	\$6.15

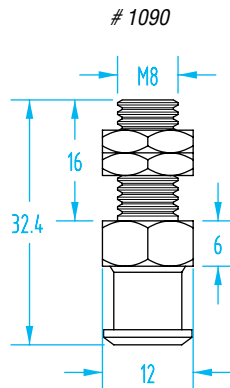


Shown with vacuum cup attached (typical)

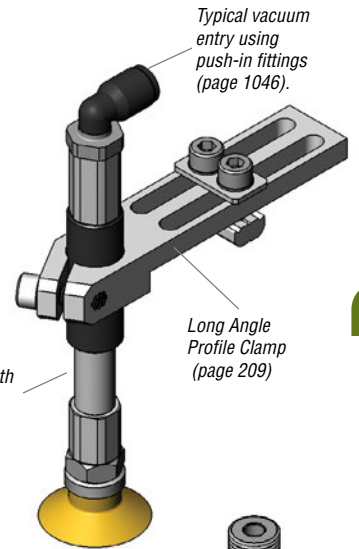


Standard Male Nipples

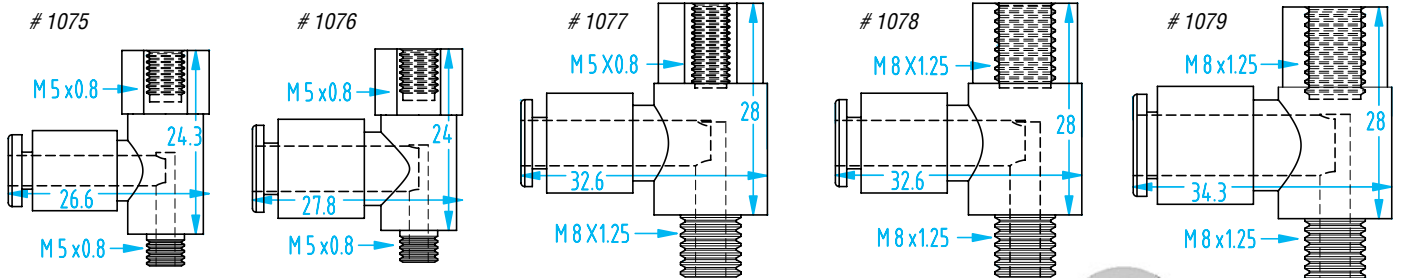
Fits Cup Ø	Thread	Wt.	Quick#	Part#	Price
2–8mm	M5	4g	258	GSF-BS-M506	\$0.78
10–16mm	M5	5g	1067	GSF-ZPT2-M5S	\$6.15
10–16mm	M5	10g	1088	ZPT2A5	\$6.40
20–32mm	M8	13g	1089	ZPT3A8	\$6.40
20–32mm	G1/8"	13g	1068	GSF-ZPT3-G8	\$6.15
40–50mm	M8	13g	1090	ZPT4A8	\$6.40
40–50mm	G1/8"	13g	1069	GSF-ZPT4-G8	\$6.15



Gimatic Smooth Suspension (page 286)



Shown with vacuum cup attached (typical)



One-Touch Adaptor for Standard Nipples (use with standard polyurethane tubing)

Fits Cup Ø	Tubing Dia.	Thread	Wt.	Quick#	Part#	Price
2–16mm	Ø 4mm	M5	12g	1075	ZPRS04B5	\$12.80
2–16mm	Ø 6mm	M5	14g	1076	ZPRS06B5	\$12.80
20–32mm	Ø 6mm	M5	24g	1077	ZPRL06B5	\$13.80
20–50mm	Ø 6mm	M8	24g	1078	ZPRL06B8	\$13.80
20–50mm	Ø 8mm	M8	24g	1079	ZPRL08B8	\$13.80

See page 384 for typical assembly styles.



Screws into standard nipples (above)

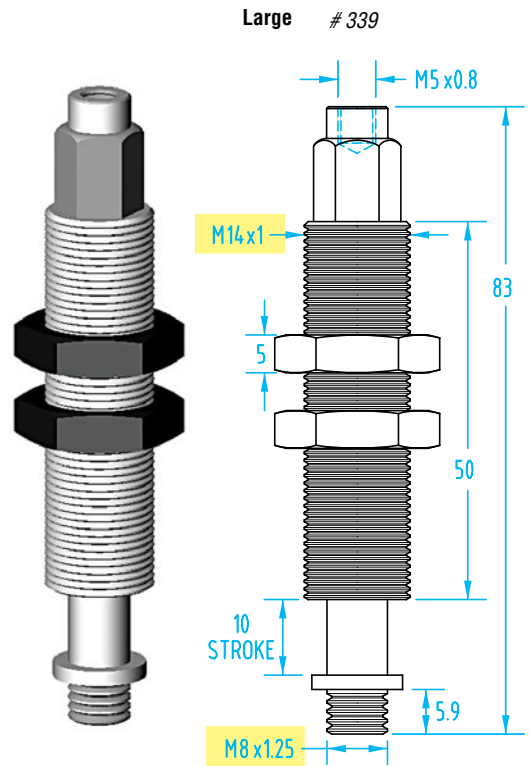
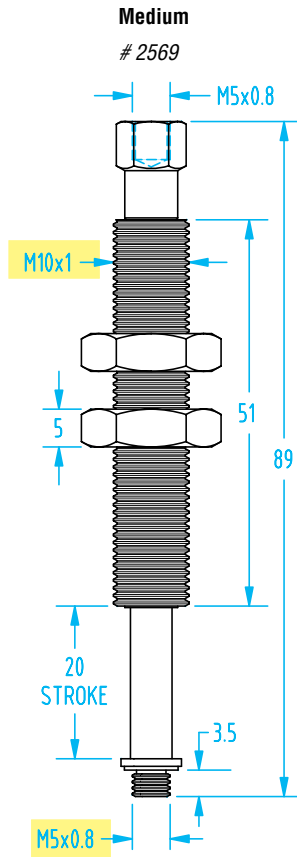
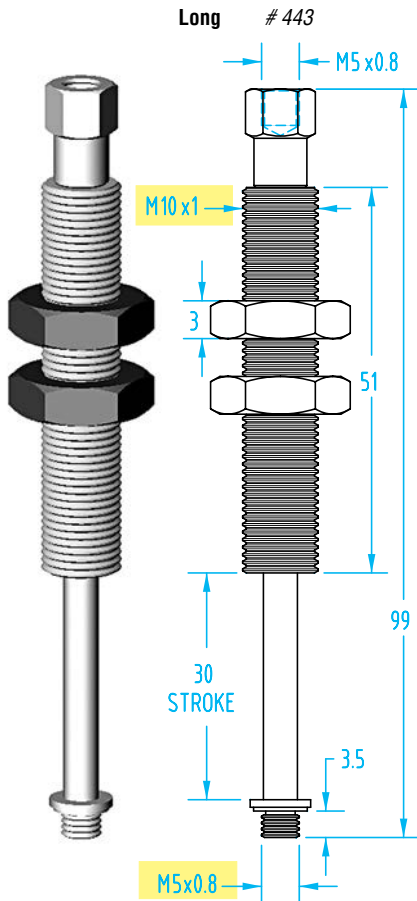
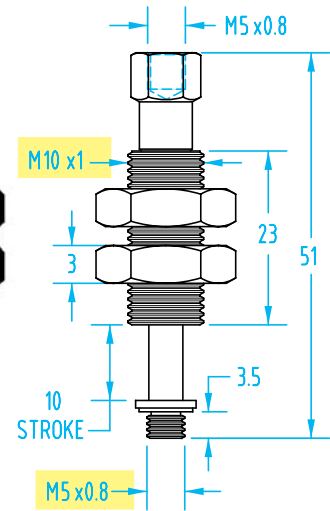
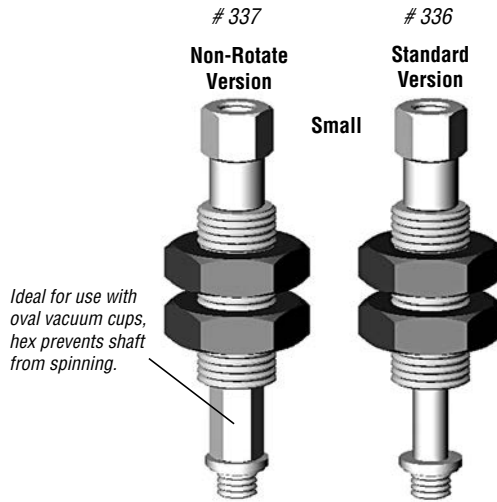
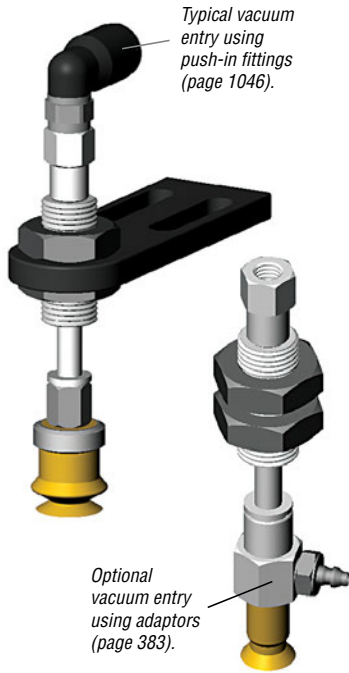
SMC® – Spring Loaded Suspensions

(Shown Actual Size)

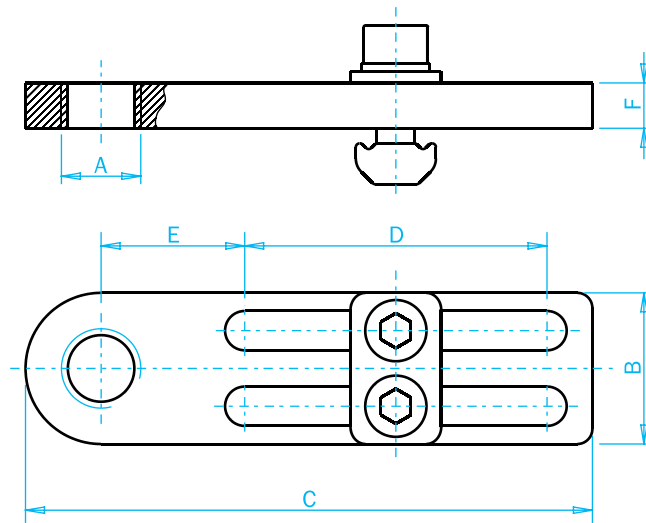
Suspensions (with Internal Springs)

Style	Size	Weight	Quick#	Part#	Price
Standard	Small	20g	336	GSS-53-M10M5	\$19.75
Non-rotate		20g	337	GSS-53R-M10M5	\$22.34
Standard	Large	68g	339	GSS-88-M14M5	\$18.39
Non-rotate		68g	340	GSS-88R-M14M5	\$28.69
Standard	Medium	26g	2569	GSS-80-M10M5	\$23.64
Non-rotate		26g	2571	GSS-80R-M10M5	\$33.92
Standard	Long	32g	443	GSS-99-M10M5	\$24.68
Non-rotate		32g	1870	GSS-99R-M10M5	\$34.96

More SMC Suspensions on page 282.

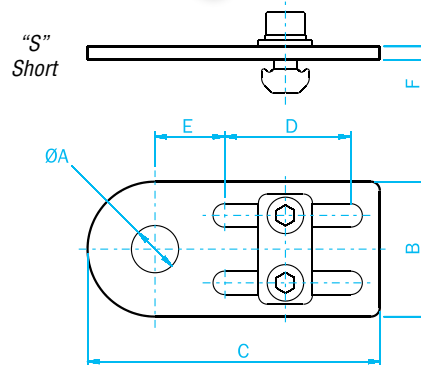
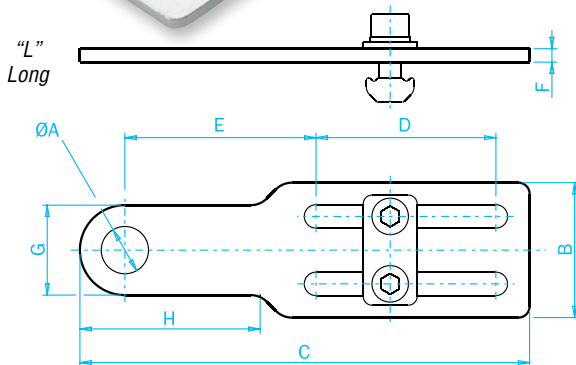
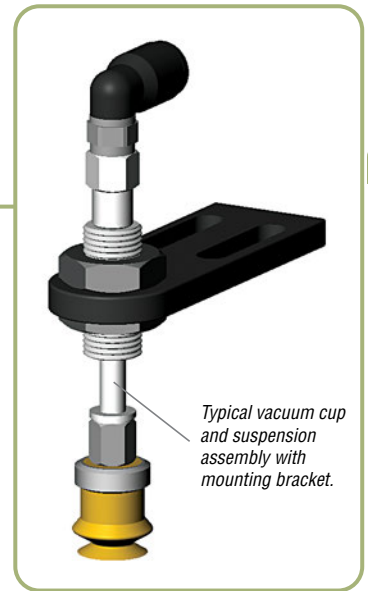


Mounting Brackets for SMC



Slotted Mounting Bracket (anodized aluminum)

Quick#	Part#	Price	A	Type	B	C	D	E	F	Wt.
5668	MFI-A106	\$9.23	M10x1	Short	20	75	40	19	6	30g
5669	MFI-A107	\$10.13	M10x1	Long	25	105	60	26.5	6	40g
5670	MFI-A108	\$9.22	M14x1	Short	20	75	40	19	6	20g
5671	MFI-A109	\$10.13	M14x1	Long	25	105	60	26.5	6	40g



Slotted Mounting Bracket (economy version - steel)

Quick#	Part#	Price	Type	ØA	B	C	D	E	F	G	H	Wt.
5678	MFI-A116	\$8.26	L	10.5	30	100	40	42.5	3	20	38	60g
5680	MFI-A118	\$8.26	L	14.5	30	100	40	42.5	3	24	38	60g
5683	MFI-A121	\$7.68	S	10.5	30	65	28	15.5	3	-	-	45g
5685	MFI-A123	\$7.68	S	14.5	30	65	28	15.5	3	-	-	45g

More Sizes Available on page 245



Fittings Available on page 1043



Gimatic® – Flat

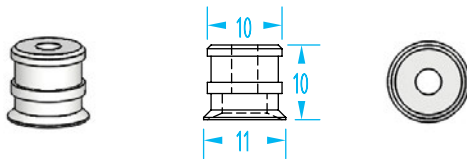
(Shown Actual Size)



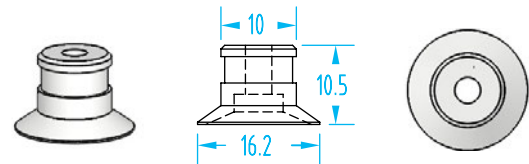
Gimatic Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
FDA-Compliant Silicone	Clear	392°F	50°
Silicone	Red	392°F	50°
EPDM	Black	212° F	50°
HNBR	Blue	302° F	60°
Natural Rubber	Green	176°F	53°

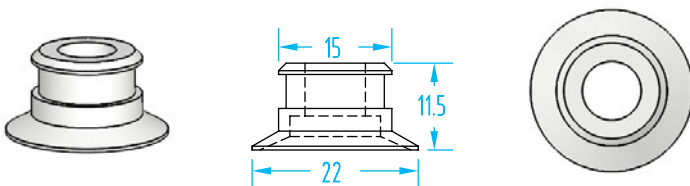
- Two styles: flat or with 1.5 bellows.
- Four materials: FDA-Compliant Silicone, EPDM, HNBR, & Natural Rubber.
- Non-marking HNBR material has a higher temperature range.
- Call EMI or visit our website for natural rubber cups.
- Diameters from 11mm to 53mm.
- See page 390 for nipple dimensions.



Cup Ø	Quick#	Part#	Reference	Price
11mm	5785	V0111S01	FDA-SIL	\$3.56
	5786	V0111E02	EPDM	\$2.59
	2019	V0111H04	HNBR	\$3.56
Nipple	V1157	GOC-2321408	Female M5	\$1.75
	V1159	GOC-2321410	Male M5	\$1.75
	V1161	GOC-2321412	Female G1/8"	\$3.79
	V1163	GOC-2321414	Male G1/8"	\$3.79



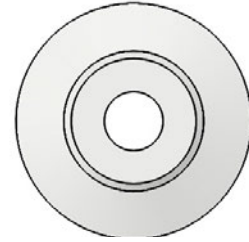
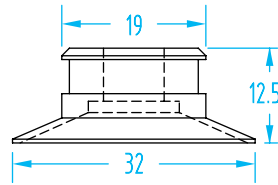
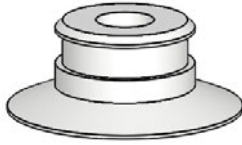
Cup Ø	Quick#	Part#	Reference	Price
16mm	5788	V0116S01	FDA-SIL	\$4.54
	5789	V0116E02	EPDM	\$2.59
	2020	V0116H04	HNBR	\$4.54
	Nipple	V1157	GOC-2321408	Female M5
V1159		GOC-2321410	Male M5	\$1.75
V1161		GOC-2321412	Female G1/8"	\$3.79
V1163		GOC-2321414	Male G1/8"	\$3.79



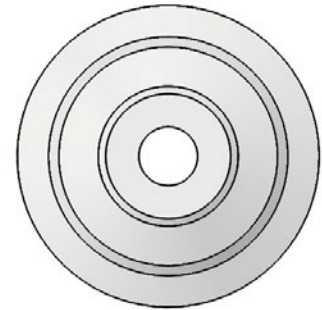
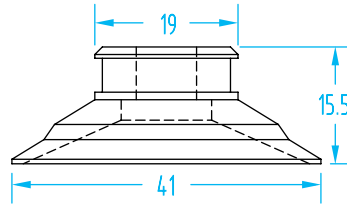
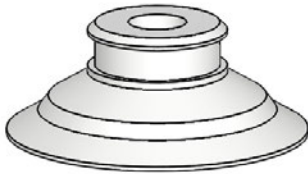
Cup Ø	Quick#	Part#	Reference	Price
22mm	5791	V0122S01	FDA-SIL	\$5.18
	5792	V0122E02	EPDM	\$3.56
	2021	V0122H04	HNBR	\$5.18
Nipple	V1171	GOC-2321422	Female G1/8"	\$5.84
	V1173	GOC-2321424	Male G1/8"	\$5.84
	V1175	GOC-2321426	Female G1/8"	\$5.84
	V1177	GOC-2321428	Male G1/8"	\$5.84

Gimatic® – Flat

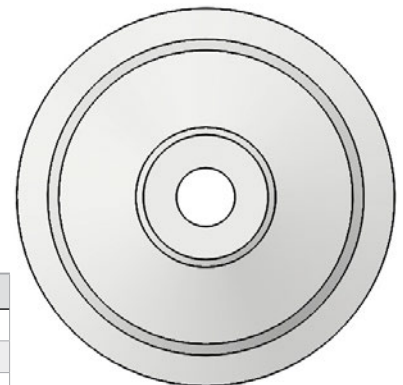
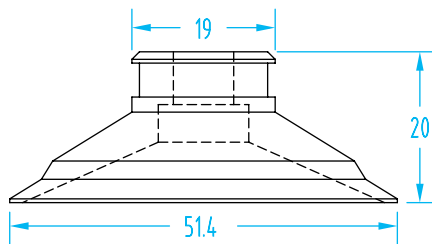
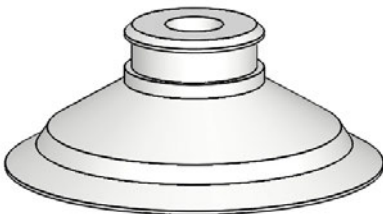
(Shown Actual Size)



Cup Ø	Quick#	Part#	Reference	Price
33mm	5794	V0133S01	FDA-SIL	\$5.83
	5795	V0133E02	EPDM	\$4.86
	2022	V0133H04	HNBR	\$5.83
Nipple	V1171	GOC-2321422	Female G1/8"	\$5.84
	V1173	GOC-2321424	Male G1/8"	\$5.84
	V1175	GOC-2321426	Female G1/8"	\$5.84
	V1177	GOC-2321428	Male G1/8"	\$5.84
	V1179	GOC-2321430	Female G1/4"	\$6.43
	5830	AV0114M16	Male G1/4"	\$7.14



Cup Ø	Quick#	Part#	Reference	Price
42mm	5797	V0142S01	FDA-SIL	\$7.14
	5798	V0142E02	EPDM	\$4.86
	2023	V0142H04	HNBR	\$7.14
Nipple	V1171	GOC-2321422	Female G1/8"	\$5.84
	V1173	GOC-2321424	Male G1/8"	\$5.84
	V1175	GOC-2321426	Female G1/8"	\$5.84
	V1177	GOC-2321428	Male G1/8"	\$5.84
	V1179	GOC-2321430	Female G1/4"	\$6.43
	5830	AV0114M16	Male G1/4"	\$7.14



Cup Ø	Quick#	Part#	Reference	Price
53mm	5800	V0153S01	FDA-SIL	\$8.11
	5801	V0153E02	EPDM	\$6.49
	2024	V0153H04	HNBR	\$8.11
Nipple	V1171	GOC-2321422	Female G1/8"	\$5.84
	V1173	GOC-2321424	Male G1/8"	\$5.84
	V1175	GOC-2321426	Female G1/8"	\$5.84
	V1177	GOC-2321428	Male G1/8"	\$5.84
	V1179	GOC-2321430	Female G1/4"	\$6.43
	5830	AV0114M16	Male G1/4"	\$7.14

Gimatic® – 1.5 Bellows

(Shown Actual Size)



Gimatic Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
FDA-Compliant Silicone	Clear	392°F	50°
Silicone	Red	392°F	50°
EPDM	Black	212° F	50°
HNBR	Blue	302° F	60°
Natural Rubber	Green	176° F	53°

See page 390 for nipple dimensions.

* 11.2mm Compressed

Cup Ø	Quick#	Part#	Reference	Price
11mm	5803	V0211S01	FDA-SIL	\$4.54
	5804	V0211E02	EPDM	\$2.92
	2025	V0211H04	HNBR	\$4.54
Nipple	V1157	GOC-2321408	Female M5	\$1.75
	V1159	GOC-2321410	Male M5	\$1.75
	V1161	GOC-2321412	Female G1/8"	\$3.79
	V1163	GOC-2321414	Male G1/8"	\$3.79

* 14mm Compressed

Cup Ø	Quick#	Part#	Reference	Price
16mm	5806	V0216S01	FDA-SIL	\$5.83
	5807	V0216E02	EPDM	\$3.56
	2026	V0216H04	HNBR	\$5.83
	Nipple	V1157	GOC-2321408	Female M5
V1159		GOC-2321410	Male M5	\$1.75
V1161		GOC-2321412	Female G1/8"	\$3.79
V1163		GOC-2321414	Male G1/8"	\$3.79

* 12mm Compressed

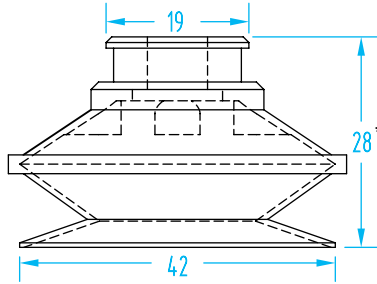
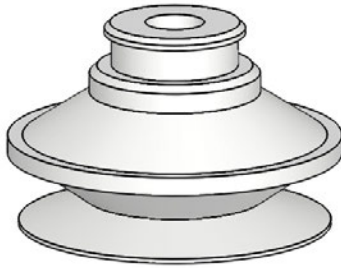
Cup Ø	Quick#	Part#	Reference	Price
22mm	5809	V0222S01	FDA-SIL	\$7.14
	5810	V0222E02	EPDM	\$3.89
	2027	V0222H04	HNBR	\$7.14
Nipple	V1157	GOC-2321408	Female M5	\$1.75
	V1159	GOC-2321410	Male M5	\$1.75
	V1161	GOC-2321412	Female G1/8"	\$3.79
	V1163	GOC-2321414	Male G1/8"	\$3.79

* 15mm Compressed

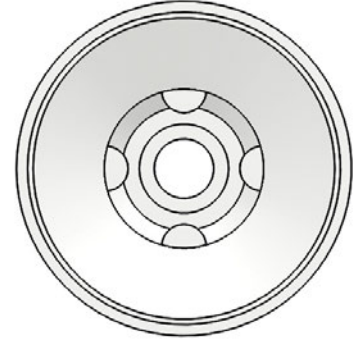
Cup Ø	Quick#	Part#	Reference	Price
33mm	5812	V0233S01	FDA-SIL	\$7.79
	5813	V0233E02	EPDM	\$5.51
	2028	V0233H04	HNBR	\$7.79
Nipple	V1171	GOC-2321422	Female G1/8"	\$5.84
	V1173	GOC-2321424	Male G1/8"	\$5.84
	V1175	GOC-2321426	Female G1/8"	\$5.84
	V1177	GOC-2321428	Male G1/8"	\$5.84
	V1179	GOC-2321430	Female G1/4"	\$6.43
	5830	AV0114M16	Male G1/4"	\$7.14

Gimatic® – 1.5 Bellows

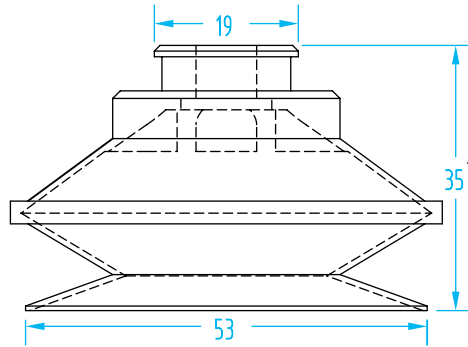
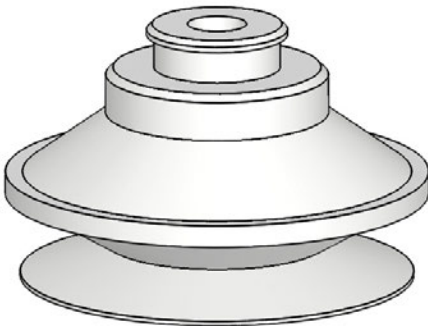
(Shown Actual Size)



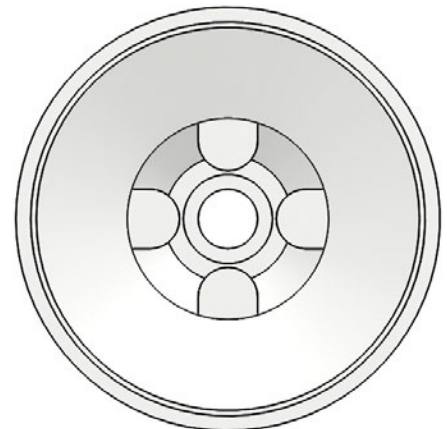
* 14.5mm Compressed



Cup Ø	Quick#	Part#	Reference	Price
42mm	5815	V0242S01	FDA-SIL	\$8.44
	5816	V0242E02	EPDM	\$7.14
	2029	V0242H04	HNBR	\$8.44
Nipple	V1171	GOC-2321422	Female G1/8"	\$5.84
	V1173	GOC-2321424	Male G1/8"	\$5.84
	V1175	GOC-2321426	Female G1/8"	\$5.84
	V1177	GOC-2321428	Male G1/8"	\$5.84
	V1179	GOC-2321430	Female G1/4"	\$6.43
	5830	AV0114M16	Male G1/4"	\$7.14



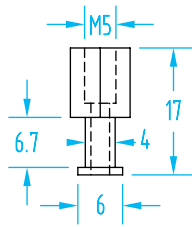
* 17.8mm Compressed



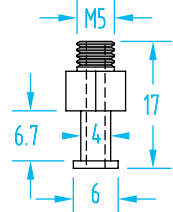
Cup Ø	Quick#	Part#	Reference	Price
53mm	5818	V0253S01	FDA-SIL	\$10.06
	5819	V0253E02	EPDM	\$8.11
	2030	V0253H04	HNBR	\$10.06
Nipple	V1171	GOC-2321422	Female G1/8"	\$5.84
	V1173	GOC-2321424	Male G1/8"	\$5.84
	V1175	GOC-2321426	Female G1/8"	\$5.84
	V1177	GOC-2321428	Male G1/8"	\$5.84
	V1179	GOC-2321430	Female G1/4"	\$6.43
	5830	AV0114M16	Male G1/4"	\$7.14

Gimatic® – Nipples

(Shown Actual Size)



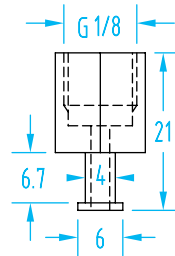
#V1157



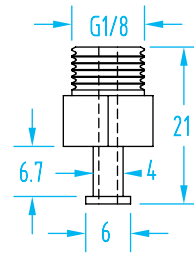
#V1159

Thread	Quick#	Part#	Price
Female M5	V1157	GOC-2321408	\$1.75
Male M5	V1159	GOC-2321410	\$1.75

For: Vacuum Cup Ø11mm–22mm from pages 386–388



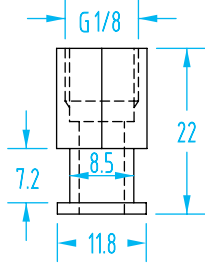
#V1161



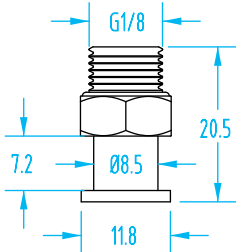
#V1163

Thread	Quick#	Part#	Price
Female G1/8"	V1161	GOC-2321412	\$3.79
Male G1/8"	V1163	GOC-2321414	\$3.79

For: Vacuum Cup Ø11mm–22mm from pages 386–388



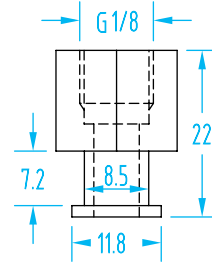
#V1171



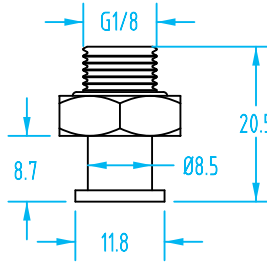
#V1173

Thread	Quick#	Part#	Price
Female G1/8"	V1171	GOC-2321422	\$5.84
Male G1/8"	V1173	GOC-2321424	\$5.84

For: Vacuum Cup Ø22–53mm from pages 386–389



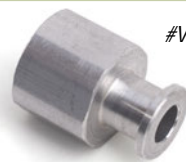
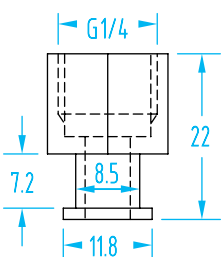
#V1175



#V1177

Thread	Quick#	Part#	Price
Female G1/8"	V1175	GOC-2321426	\$5.84
Male G1/8"	V1177	GOC-2321428	\$5.84

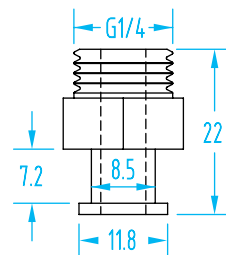
For: Vacuum Cup Ø22–53mm from pages 386–389



#V1179



#5830



Material	Quick#	Part#	Price
Female G1/4"	V1179	GOC-2321430	\$6.43
Male G1/4"	5830	AV0114M16	\$7.14

For: Vacuum Cup Ø33mm–53mm from pages 386–389

Long Neck Silicone

(Shown Actual Size)



These elastic long-neck vacuum cups have a dedicated following of users. The long neck extends the reach of the cup beyond the congestion of the fitting, suspension, and tubing. The neck is slightly more flexible than standard flat cups.

Long Neck Extra Elastic Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
Silicone	Semi-translucent white	392°F	40°

Quick#	Part#	Pad øD	OAL	Price
444	GSV-LES-6	6mm	12	\$11.55
Nipple				
445	GSF-N24-M5M	Male M5		\$8.23

Quick#	Part#	Pad øD	OAL	Price
446	GSV-LES-10	10mm	13	\$6.35
Nipple				
447	GSF-N25-M5M	Male M5		\$8.23

Quick#	Part#	Pad øD	OAL	Price
448	GSV-LES-16	16mm	20	\$12.56
Nipple				
449	GSF-N26-M5M	Male M5		\$8.23

Quick#	Part#	Pad øD	OAL	Price
450	GSV-LES-25	25mm	30	\$13.68
Nipple				
451	GSF-N27-G8M	Male G1/8"		\$8.23

One-Nipple-Size-Fits-All

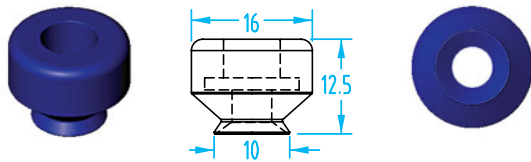
(Shown Actual Size)



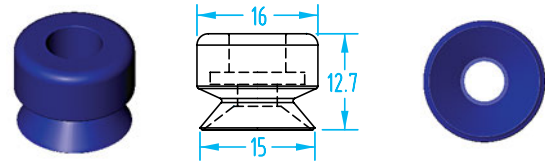
**One nipple size, five thread options.
All vacuum cups on these two pages use the same nipple size!**

One-Nipple-Size-Fits-All Vacuum Cup Properties

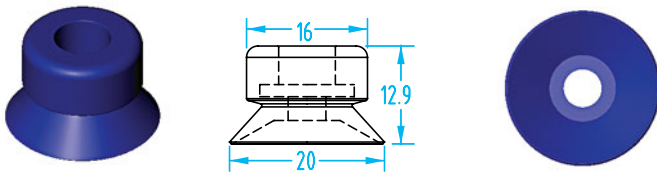
Material	Color	Max Temp.	Durometer
Silicone	Semi-translucent white	392°F	50°
HNBR	Blue	320°F	60°



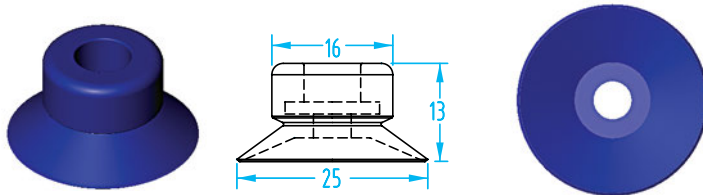
Cup Ø	Material	Quick#	Part#	Price
10mm	Silicone	345	GSV-FS-10	\$4.00
	HNBR	1550	GSV-FP-10	\$7.40



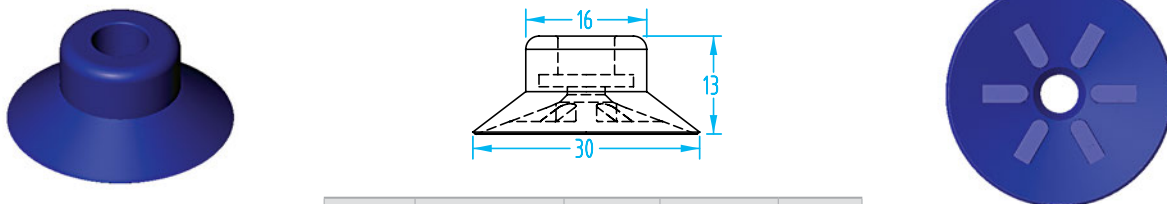
Cup Ø	Material	Quick#	Part#	Price
15mm	Silicone	346	GSV-FS-15	\$4.20
	HNBR	1551	GSV-FP-15	\$7.90



Cup Ø	Material	Quick#	Part#	Price
20mm	Silicone	347	GSV-FS-20	\$4.50
	HNBR	1552	GSV-FP-20	\$8.20



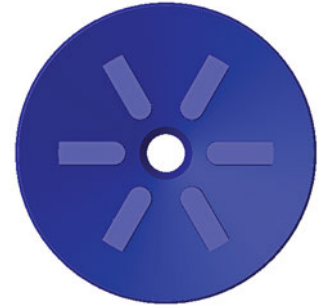
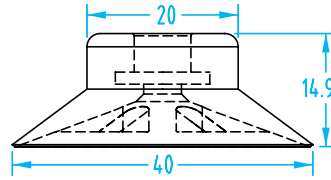
Cup Ø	Material	Quick#	Part#	Price
25mm	Silicone	348	GSV-FS-25	\$4.70
	HNBR	1553	GSV-FP-25	\$8.40



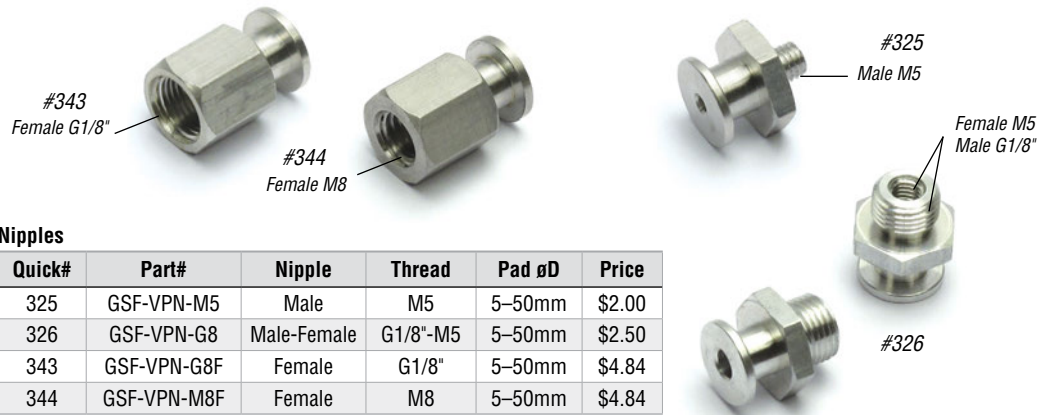
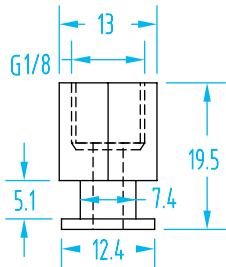
Cup Ø	Material	Quick#	Part#	Price
30mm	Silicone	349	GSV-FS-30	\$5.00
	HNBR	1554	GSV-FP-30	\$8.90

One-Nipple-Size-Fits-All

(Shown Actual Size)



Cup Ø	Material	Quick#	Part#	Price
40mm	Silicone	350	GSV-FS-40	\$5.90
	HNBR	1555	GSV-FP-40	\$11.10



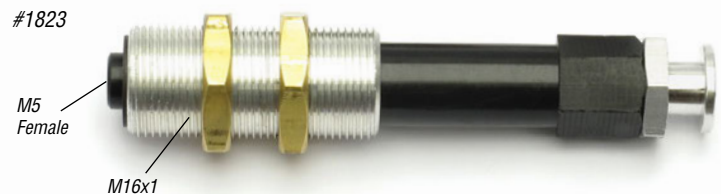
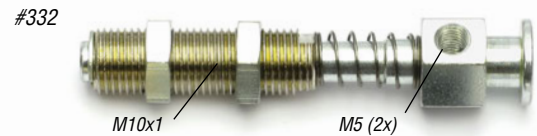
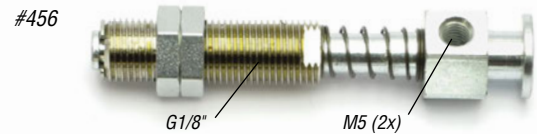
Nipples

Quick#	Part#	Nipple	Thread	Pad øD	Price
325	GSF-VPN-M5	Male	M5	5-50mm	\$2.00
326	GSF-VPN-G8	Male-Female	G1/8"-M5	5-50mm	\$2.50
343	GSF-VPN-G8F	Female	G1/8"	5-50mm	\$4.84
344	GSF-VPN-M8F	Female	M8	5-50mm	\$4.84

All vacuum cups on these two pages fit these integrated nipple suspensions.

Suspensions

Quick#	Part#	Stroke	Weight	Price
332	GSS-65N-M10M5	10mm	41g	\$21.00
456	GSS-65N-G8M5	10mm	39g	\$21.00
1823	GSS-75L-M16N	20mm	\$25.30	



One-Nipple-Size-Fits-All

(Shown Actual Size)

**One nipple size, five thread options.
All vacuum cups on these two pages use the same nipple size!**



One-Nipple-Size-Fits-All Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
Silicone	Semi-translucent white	392°F	50°
HNBR	Blue	320°F	60°

These cups are also available with a foam sealing surface for textured parts, see page 407.

* 10mm Compressed

Cup Ø	Material	Quick#	Part#	Price
10mm	Silicone	353	GSV-BS-10	\$6.40
	HNBR	1558	GSV-BP-10	\$9.70

* 10mm Compressed

Cup Ø	Material	Quick#	Part#	Price
15mm	Silicone	354	GSV-BS-15	\$7.40
	HNBR	1559	GSV-BP-15	\$10.40

* 10mm Compressed

Cup Ø	Material	Quick#	Part#	Price
20mm	Silicone	355	GSV-BS-20	\$8.70
	HNBR	1560	GSV-BP-20	\$10.70

* 10mm Compressed

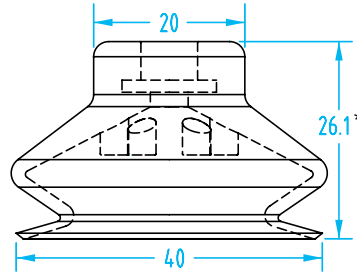
Cup Ø	Material	Quick#	Part#	Price
25mm	Silicone	356	GSV-BS-25	\$9.20
	HNBR	1561	GSV-BP-25	\$14.10

* 16mm Compressed

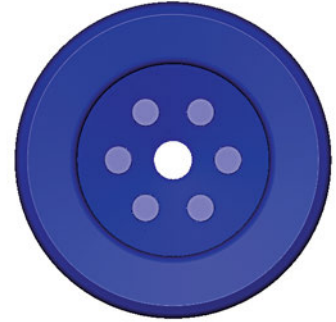
Cup Ø	Material	Quick#	Part#	Price
30mm	Silicone	357	GSV-BS-30	\$9.90
	HNBR	1562	GSV-BP-30	\$19.30

One-Nipple-Size-Fits-All

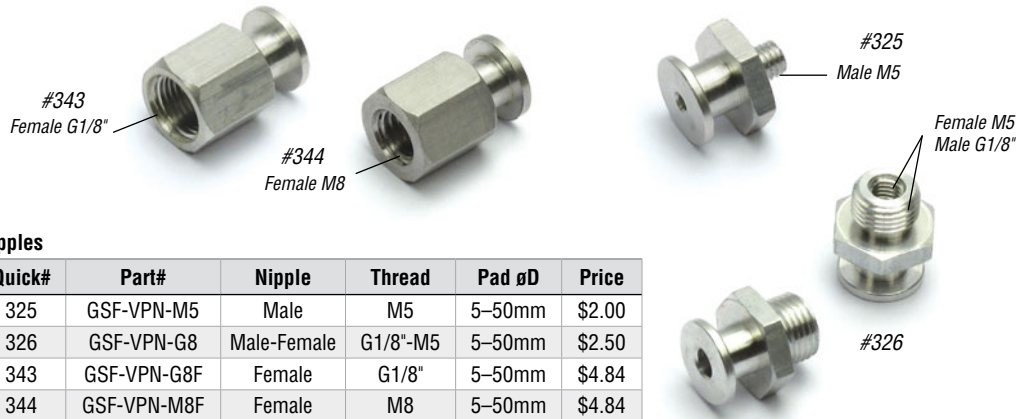
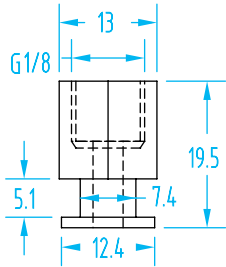
(Shown Actual Size)



* 19mm Compressed



Cup Ø	Material	Quick#	Part#	Price
40mm	Silicone	358	GSV-BS-40	\$10.70
	HNBR	1563	GSV-BP-40	\$23.00



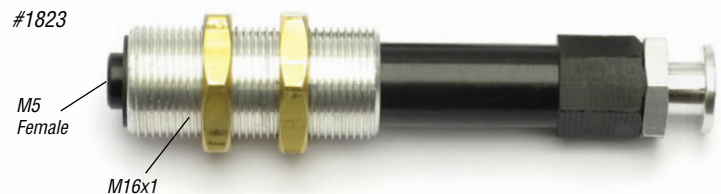
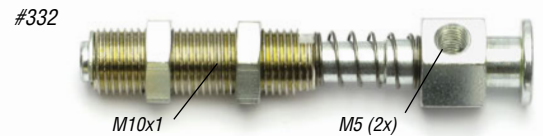
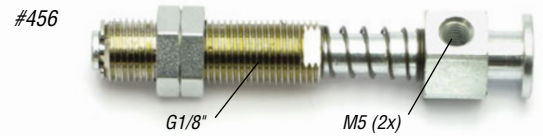
Nipples

Quick#	Part#	Nipple	Thread	Pad øD	Price
325	GSF-VPN-M5	Male	M5	5-50mm	\$2.00
326	GSF-VPN-G8	Male-Female	G1/8"-M5	5-50mm	\$2.50
343	GSF-VPN-G8F	Female	G1/8"	5-50mm	\$4.84
344	GSF-VPN-M8F	Female	M8	5-50mm	\$4.84

All vacuum cups on these two pages fit these integrated nipple suspensions.

Suspensions

Quick#	Part#	Stroke	Weight	Price
332	GSS-65N-M10M5	10mm	41g	\$21.00
456	GSS-65N-G8M5	10mm	39g	\$21.00
1823	GSS-75L-M16N	20mm	20g	\$25.30



Apex® – One-Nipple-Size-Fits-All

(Shown Actual Size)



Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
Silicone	Semi-translucent white	392°F	50°

Quick#	Part#	Pad øD	Price
1885	GSV-FSAX-10	10mm	\$3.13

Quick#	Part#	Pad øD	Price
1886	GSV-FSAX-15	15mm	\$3.13

Quick#	Part#	Pad øD	Price
1887	GSV-FSAX-20	20mm	\$3.13

Quick#	Part#	Pad øD	Price
1888	GSV-FSAX-25	25mm	\$3.13

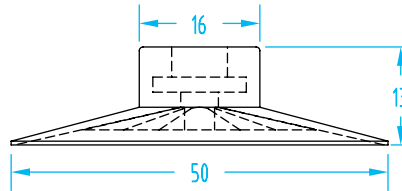
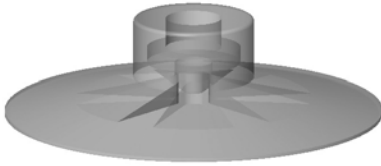
Quick#	Part#	Pad øD	Price
1889	GSV-FSAX-30	30mm	\$3.67

Quick#	Part#	Pad øD	Price
1890	GSV-FSAX-40	40mm	\$3.67

Apex – One-Nipple-Size-Fits-All

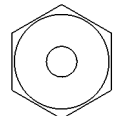
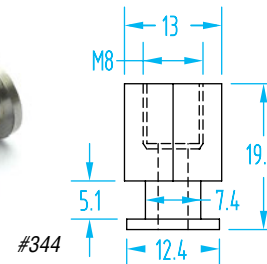
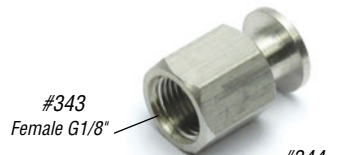
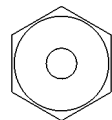
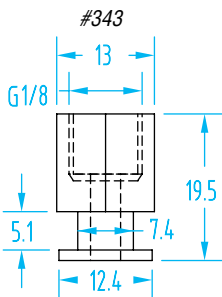
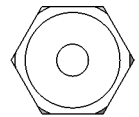
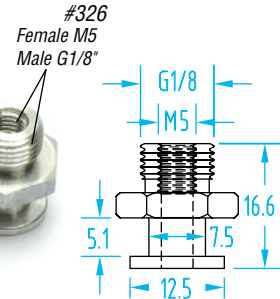
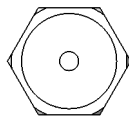
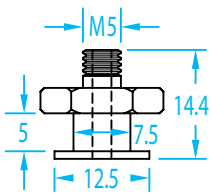
(Shown Actual Size)

Use Quick#s for easy online ordering.



Quick#	Part#	Pad øD	Price
1891	GSV-FSAX-50	50mm	\$4.20

**One nipple size, five thread options.
All vacuum cups on these two pages use the same nipple size!**



Nipples

Quick#	Part#	Nipple	Thread	Pad øD	Price
325	GSF-VPN-M5	Male	M5	5-50mm	\$2.00
326	GSF-VPN-G8	Male-Female	G1/8"-M5	5-50mm	\$2.50
343	GSF-VPN-G8F	Female	G1/8"	5-50mm	\$4.84
344	GSF-VPN-M8F	Female	M8	5-50mm	\$4.84

Fittings Available
on page 1043



All vacuum cups on these two pages fit the integrated nipple suspensions on page 399.

Apex® – One-Nipple-Size-Fits-All

(Shown Actual Size)



Apex Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
Silicone	Semi-translucent white	392°F	50°

Nipples available on page 397.

Pad \varnothing D	Part#	Quick#	Price
5mm	GSV-BSAX-05	1892	\$4.20

Pad \varnothing D	Part#	Quick#	Price
10mm	GSV-BSAX-10	1893	\$4.20

Pad \varnothing D	Part#	Quick#	Price
15mm	GSV-BSAX-15	1894	\$4.20

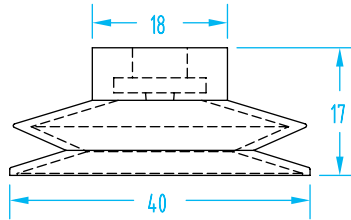
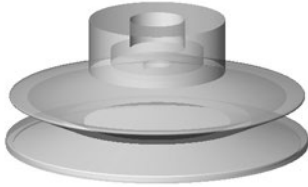
Pad \varnothing D	Part#	Quick#	Price
20mm	GSV-BSAX-20	1895	\$5.27

Pad \varnothing D	Part#	Quick#	Price
25mm	GSV-BSAX-25	1896	\$5.27

Pad \varnothing D	Part#	Quick#	Price
30mm	GSV-BSAX-30	1897	\$6.33

Apex – One-Nipple-Size-Fits-All

(Shown Actual Size)



Pad øD	Part#	Quick#	Price
40mm	GSV-BSAX-40	1898	\$6.33

One nipple size, five thread options.
All vacuum cups on these two pages use the same nipple size, see page 397

All vacuum cups on these two pages fit these integrated nipple suspensions.

Fittings Available
 on page 1043



Suspensions

Quick#	Part#	Stroke	Weight	Price
332	GSS-65N-M10M5	10mm	41g	\$21.00
456	GSS-65N-G8M5	10mm	39g	\$21.00
1823	GSS-75L-M16N	20mm	20g	\$25.30
333	GSS-60-G8M5	20mm	19g	\$36.00

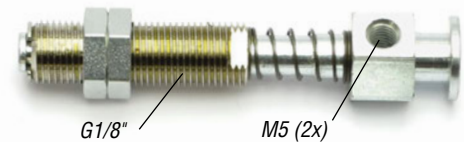
Elbow fitting
 #120 (p.1048)

Integrated nipple
 suspension #332

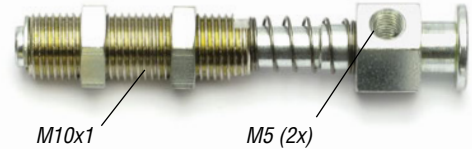
Vacuum
 pad #355

Plug #238
 (page 1068)

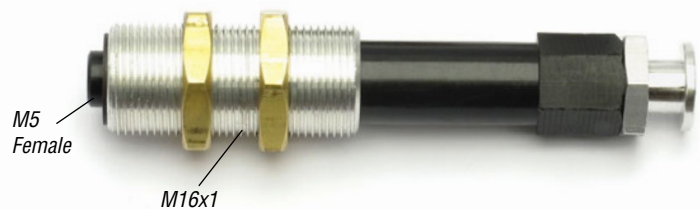
#456



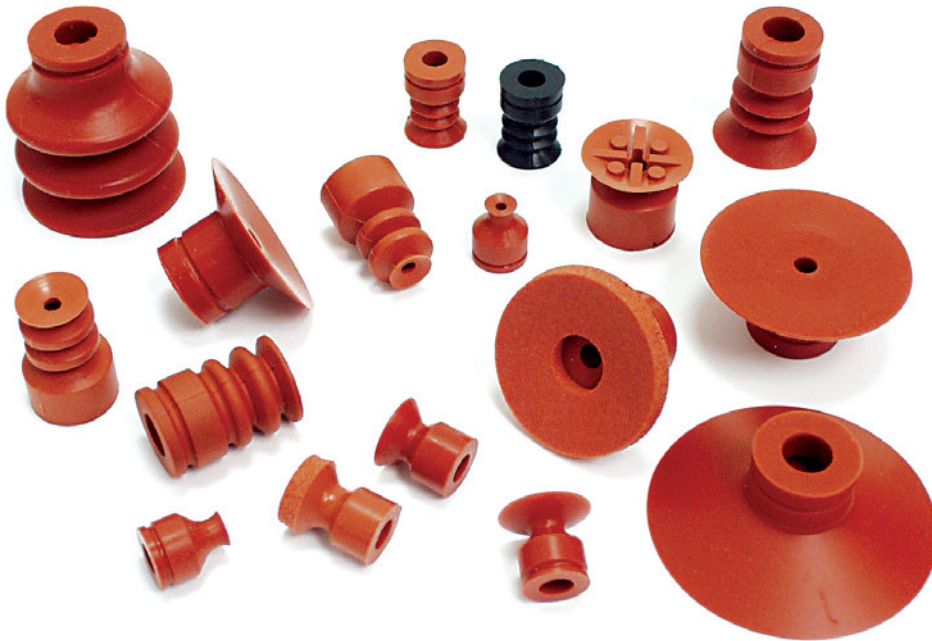
#332



#1823



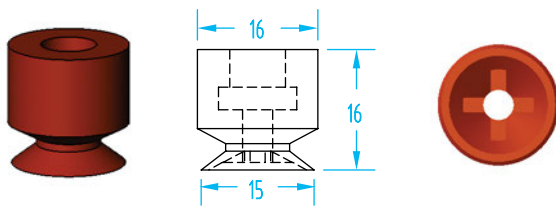
Star® Vacuum Cups



This family of vacuum cups offer the compatibility of integrated nipple suspensions and threaded stem nipples that fit lightweight air cylinders on page 752. Also, the molded quality is outstanding. The flat cup design allows for fast vacuum build-up and release time, resulting in faster cycles.

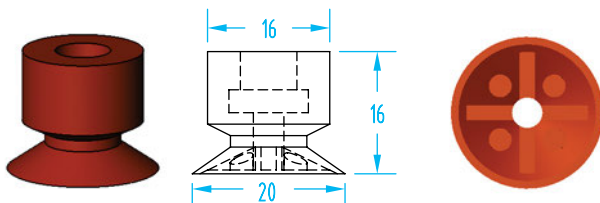
Star Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
Silicone	Brown	482°F	50°
Fluorine	Black	446°F	65°



Cross Recessed (Suitable for plastic film, foil & paper)

Cup Ø	Material	Quick#	Part#	Nipple Size	Price
15mm	Silicone	1691	GSV-VAPH-15C1	Small	\$8.05

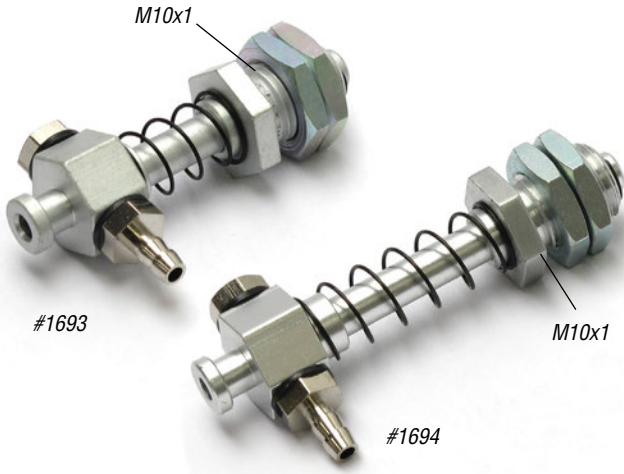


Cup Ø	Material	Quick#	Part#	Nipple Size	Price
20mm	Silicone	1692	GSV-VAPH-20C1	Small	\$8.95

Star® – Nipples and Suspensions

(Shown Actual Size)

“Mini” Suspensions



See EMIcorp.com for dimensional drawings

“Small” Suspensions

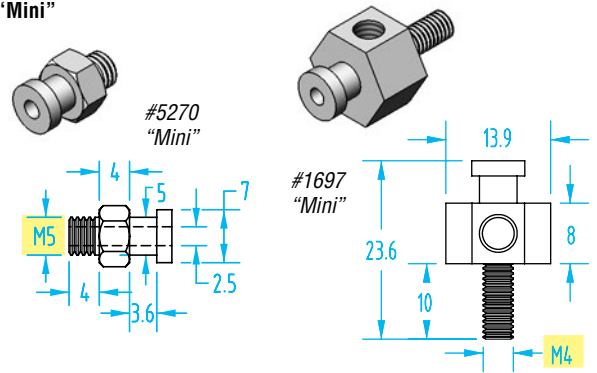


Lightweight Aluminum Suspensions

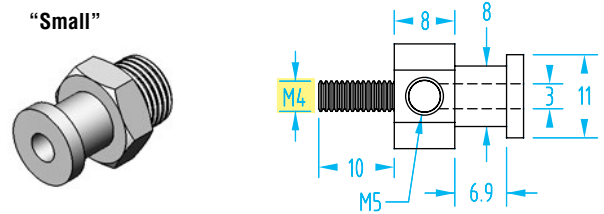
Quick#	Part#	Size	Stroke	Weight	Price
5399	GSV-VFIL-SS-5	Mini	5mm	14g	\$14.60
1693	GSV-VFIL-SS10	Mini	10mm	14g	\$14.64
1694	GSV-VFIL-SS20	Mini	20mm	16g	\$15.65
5275	GSV-VFIL-SS30	Mini	30mm	20g	\$14.75
5500	GSV-VFIL-S	Small	5mm	20g	\$12.23
1695	GSV-VFIL-S10	Small	10mm	20g	\$16.04
1696	GSV-VFIL-S20	Small	20mm	24g	\$13.97
5276	GSV-VFIL-S30	Small	30mm	30g	\$15.65

See EMIcorp.com for dimensional drawings

“Mini”

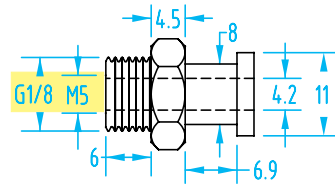


“Small”



#5271
“Small”

#1698
“Small”



Threaded Stem Nipples

Quick#	Part#	Size	Price	Thread	Wt.
1697	GSV-CP-063	Mini	\$8.39	M4 Male	8g
5270	GSV-CP-063-M5	Mini	\$4.51	M5 Male	3g
1698	GSV-CP-064	Small	\$8.39	M4 Male	10g
5271	GSV-CP-064-G8	Small	\$5.80	G1/8"-M5	4g



#1700



#1704

Extension Mounts for Suspensions

Quick#	Part#	Size	Threaded Extension	Thread	Price
1701	GSV-CP-023AL	Mini	20mm	M10x1	\$7.55
1702	GSV-CP-024AL	Mini	40mm	M10x1	\$6.29
1699	GSV-CP-021AL	Small	20mm	M12x1	\$7.55
1700	GSV-CP-022AL	Small	40mm	M12x1	\$9.29

Lock nuts for extension mounts (order separately 2@)

1704	GSV-M10nut	Mini		M10x1	\$0.37
1703	GSV-M12nut	Small		M12x1	\$0.37

Star® – Flat

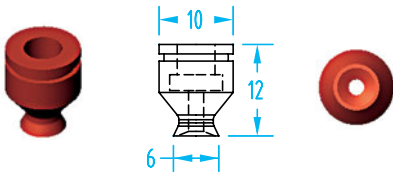
(Shown Actual Size)



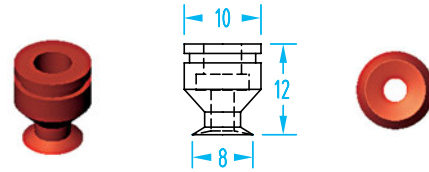
Star Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
Silicone	Brown	482°F	50°
Fluorine	Black	446°F	65°

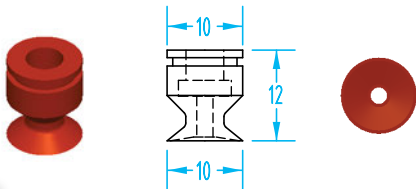
Order nipples separately, see page 401.



Cup Ø	Material	Quick#	Part#	Nipple Size	Price
6mm	Silicone	1674	GSV-VAPH-6C	Mini	\$3.21
	Fluorine	5228	GSV-VAPF-6C	Mini	\$15.74

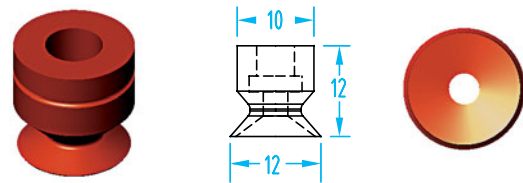


Cup Ø	Material	Quick#	Part#	Nipple Size	Price
8mm	Silicone	1675	GSV-VAPH-8C	Mini	\$3.42
	Fluorine	5229	GSV-VAPF-8C	Mini	\$15.74

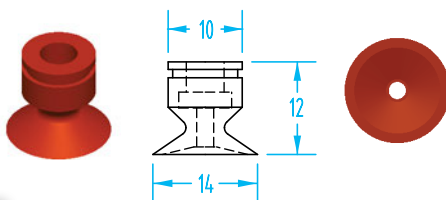


NEW

Cup Ø	Material	Quick#	Part#	Nipple Size	Price
10mm	Silicone	1676	GSV-VAPH-10C	Mini	\$3.95

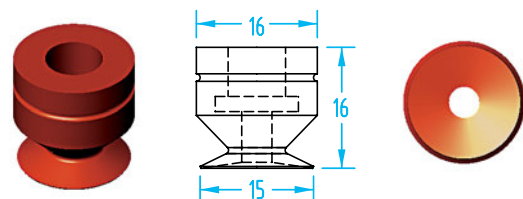


Cup Ø	Material	Quick#	Part#	Nipple Size	Price
12mm	Silicone	1677	GSV-VAPH-12C	Mini	\$4.74
	Fluorine	5230	GSV-VAPF-12C	Mini	\$17.71



NEW

Cup Ø	Material	Quick#	Part#	Nipple Size	Price
14mm	Silicone	1678	GSV-VAPH-14C	Mini	\$4.89



Cup Ø	Material	Quick#	Part#	Nipple Size	Price
15mm	Silicone	1984	GSV-VAPH-15C	Small	\$5.05
	Fluorine	5231	GSV-VAPF-15C	Small	\$19.68

Star® – Flat

(Shown Actual Size)

Cup Ø	Material	Quick#	Part#	Nipple Size	Price
20mm	Silicone	1679	GSV-VAPH-20C	Small	\$5.21
	Fluorine	5232	GSV-VAPF-20C	Small	\$19.68

Cup Ø	Material	Quick#	Part#	Nipple Size	Price
25mm	Silicone	1680	GSV-VAPH-25C	Small	\$6.58

Cup Ø	Material	Quick#	Part#	Nipple Size	Price
30mm	Silicone	1681	GSV-VAPH-30C	Small	\$5.97
	Fluorine	5233	GSV-VAPF-30C	Small	\$19.68

Cup Ø	Material	Quick#	Part#	Nipple Size	Price
35mm	Silicone	1682	GSV-VAPH-35C	Small	\$8.21

Cup Ø	Material	Quick#	Part#	Nipple Size	Price
40mm	Silicone	1683	GSV-VAPH-40C	Small	\$9.24
	Fluorine	5234	GSV-VAPF-40C	Small	\$26.84

Cup Ø	Material	Quick#	Part#	Nipple Size	Price
45mm	Silicone	1684	GSV-VAPH-45C	Small	\$9.84

Star® – 2.5 Bellows

(Shown Actual Size)



Order nipples separately, see page 401.



* 13mm Compressed

Cup Ø	Material	Quick#	Part#	Nipple Size	Price
12mm	Silicone	1685	GSV-VAPH-12C2	Mini	\$8.05
	Fluorine	1687	GSV-VAPF-12C2	Mini	\$19.68

* 18mm Compressed

Cup Ø	Material	Quick#	Part#	Nipple Size	Price
20mm	Silicone	1686	GSV-VAPH-20C2	Small	\$8.89
	Fluorine	1688	GSV-VAPF-20C2	Small	\$26.84

* 13mm Compressed

Cup Ø	Material	Quick#	Part#	Nipple Size	Price
6mm	Silicone	5169	TR-1062-1	Small	\$13.61

* 13mm Compressed

Cup Ø	Material	Quick#	Part#	Nipple Size	Price
8mm	Silicone	5170	TR-1062-2	Small	\$13.61

* 13mm Compressed

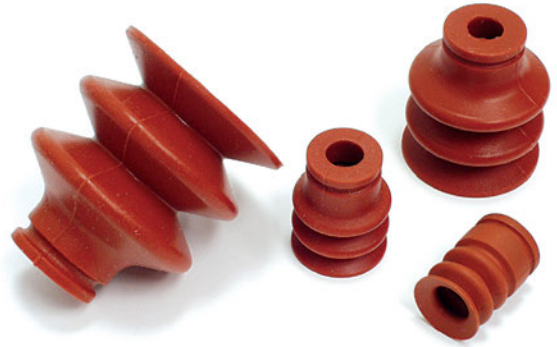
Cup Ø	Material	Quick#	Part#	Nipple Size	Price
10mm	Silicone	5171	TR-1062-3	Small	\$13.61

* 13mm Compressed

Cup Ø	Material	Quick#	Part#	Nipple Size	Price
12mm	Silicone	5172	TR-1062-4	Small	\$13.61

Star® – 2.5 Bellows

(Shown Actual Size)



Star Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
Silicone	Brown	482°F	50°
Fluorine	Black	446°F	65°

* 14mm Compressed

Cup Ø	Material	Quick#	Part#	Nipple Size	Price
15mm	Silicone	5158	VAPH-15C-3	Small	\$5.40

* 15mm Compressed

Cup Ø	Material	Quick#	Part#	Nipple Size	Price
20mm	Silicone	5159	VAPH-20C-3	Small	\$9.32

* 20mm Compressed

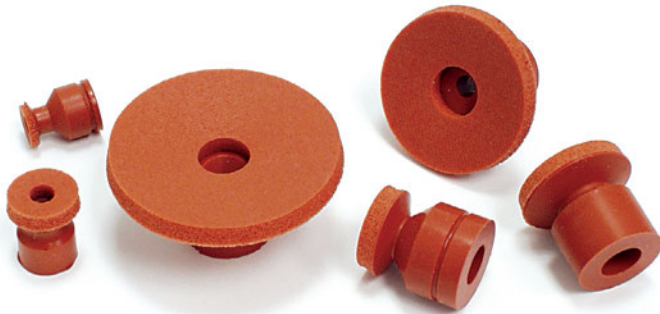
Cup Ø	Material	Quick#	Part#	Nipple Size	Price
30mm	Silicone	5160	VAPH-30C-3	Small	\$13.26

* 27mm Compressed

Cup Ø	Material	Quick#	Part#	Nipple Size	Price
40mm	Silicone	5161	VAPH-40C-3	Small	\$19.68

Foam Surface – Flat

(Shown Actual Size)

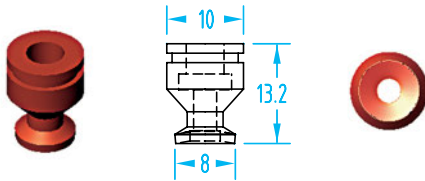


Star Foam Vacuum Cup Properties

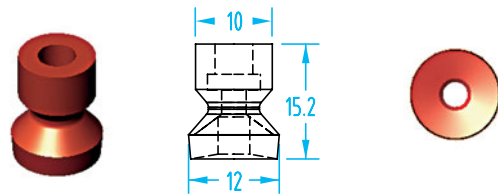
Material	Color	Max Temp.	Durometer
Silicone	Brown	482°F	40°

Order nipples separately, see page 401.

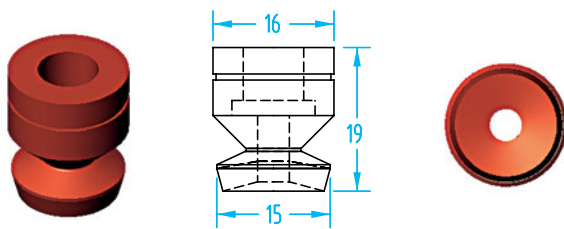
More foam cups can be found on page 368.



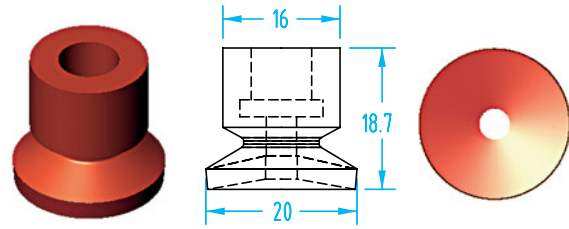
Cup Ø	Material	Quick#	Part#	Nipple Size	Price
8mm	Silicone	5162	VAPH-8C-SP	Mini	\$11.63



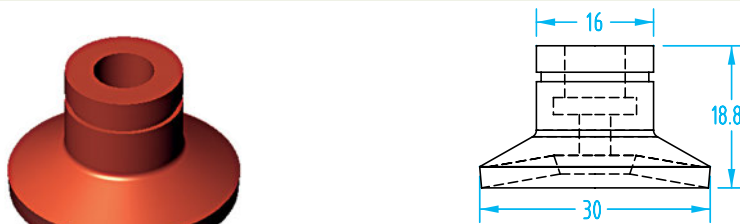
Cup Ø	Material	Quick#	Part#	Nipple Size	Price
12mm	Silicone	5163	VAPH-12C-SP	Mini	\$13.42



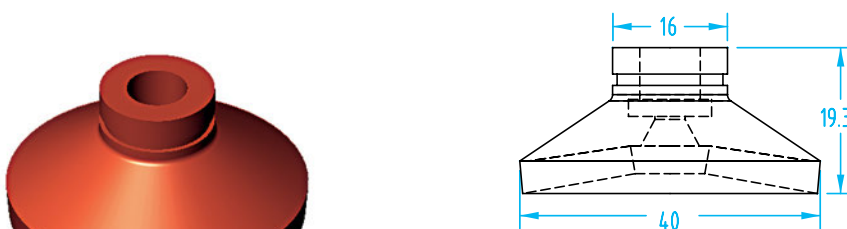
Cup Ø	Material	Quick#	Part#	Nipple Size	Price
15mm	Silicone	5164	VAPH-15C-SP	Small	\$11.63



Cup Ø	Material	Quick#	Part#	Nipple Size	Price
20mm	Silicone	5165	VAPH-20C-SP	Small	\$12.34



Cup Ø	Material	Quick#	Part#	Nipple Size	Price
30mm	Silicone	5166	VAPH-30C-SP	Small	\$17.00



Cup Ø	Material	Quick#	Part#	Nipple Size	Price
40mm	Silicone	5167	VAPH-40C-SP	Small	\$21.47
60mm*	Silicone	5168	VAPH-60C-SP	#5883	\$26.84

*#5168 & #5883 not shown, call EMI or visit website for details.

Foam Surface – 1.5 Bellows

(Shown Actual Size)

All vacuum cups on this page use the same nipple size!
See page 397 for nipples and suspensions.

Foam Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
Silicone	Translucent	320°F	30°

* 11mm Compressed

NEW

Cup Ø	Material	Quick#	Part#	Price
15mm	Silicone	5181	GSV-BSF-15	\$18.97

* 13mm Compressed

Cup Ø	Material	Quick#	Part#	Price
20mm	Silicone	5203	GSV-BSF-20	\$19.27

* 14mm Compressed

Cup Ø	Material	Quick#	Part#	Price
25mm	Silicone	5204	GSV-BSF-25	\$19.94

* 15mm Compressed

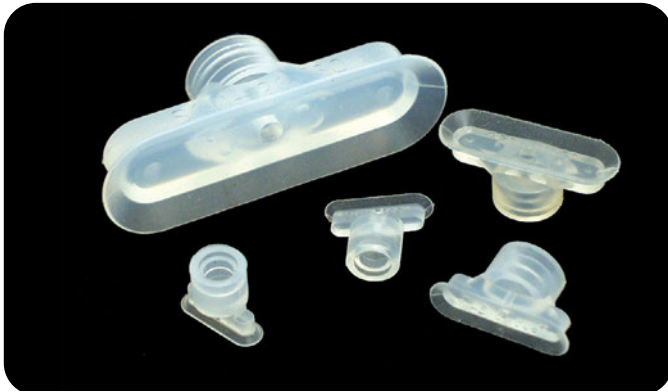
Cup Ø	Material	Quick#	Part#	Price
30mm	Silicone	5205	GSV-BSF-30	\$20.60

* 17mm Compressed

Cup Ø	Material	Quick#	Part#	Price
40mm	Silicone	5206	GSV-BSF-40	\$21.49

Silicone – Oval

(Shown Actual Size)



Oval Vacuum Cup Properties

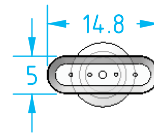
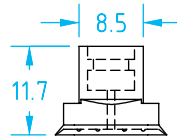
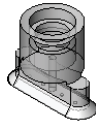
Material	Color	Max Temp.	Durometer
Silicone	semi-translucent clear	392°F	50°

See page 330 for Hithane™ Oval Vacuum Cups.

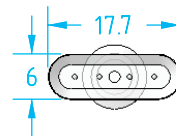
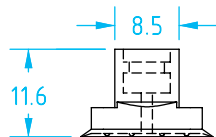
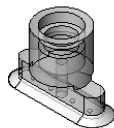
Note: All of these cups can be used in contact with isopropyl alcohol.

Quick#	Part#	Pad øD	Price
5425	GSV-OS-24	2x4mm	\$7.79
Nipple			
5434	GSF-HTN2-M5FXS	Male M5	\$3.59
5435	GSF-HTN2-M5MXS	Male M5	\$3.59

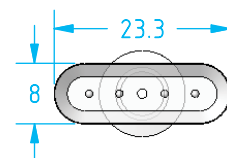
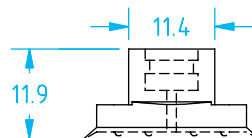
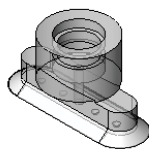
Quick#	Part#	Pad øD	Price
5426	GSV-OS-357	3-1/2x7mm	\$7.25
Nipple			
5434	GSF-HTN2-M5FXS	Male M5	\$3.59
5435	GSF-HTN2-M5MXS	Male M5	\$3.59



Quick#	Part#	Pad øD	Price
376	GSV-OS-5x15	5x15mm	\$18.06
Nipple			
378	GSF-N21-M5M	Male M5	\$7.26
379	GSF-N21-M5F	Female M5	\$7.26



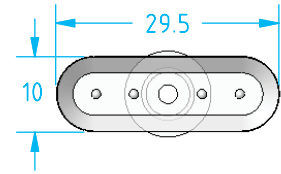
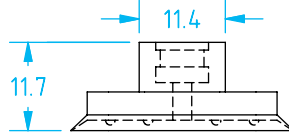
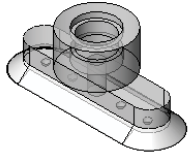
Quick#	Part#	Pad øD	Price
377	GSV-OS-6x18	6x18mm	\$20.00
Nipple			
378	GSF-N21-M5M	Male M5	\$7.26
379	GSF-N21-M5F	Female M5	\$7.26



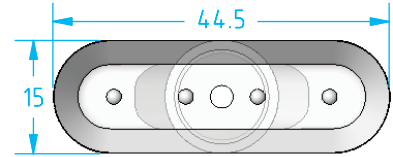
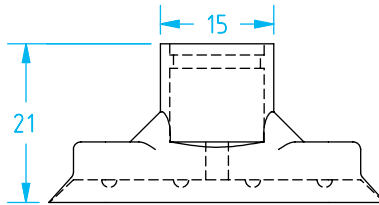
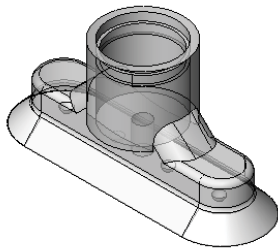
Quick#	Part#	Pad øD	Price
380	GSV-OS-8x24	8x24mm	\$21.42
Nipple			
651	GSF-NF9-G8M	Male G1/8"	\$4.99
383	GSF-N22-G8F	Female G1/8"	\$7.26

Silicone – Oval

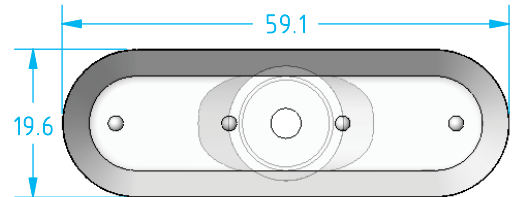
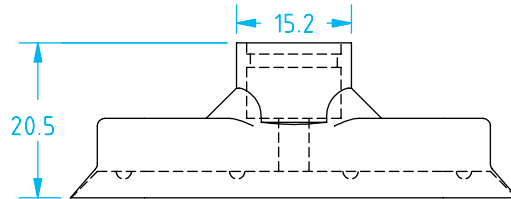
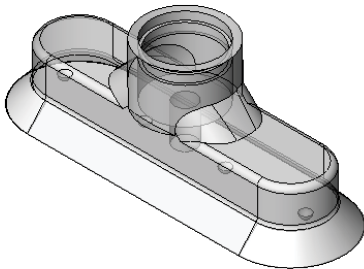
(Shown Actual Size)



Quick#	Part#	Pad øD	Price
381	GSV-OS-10x30	10x30mm	\$24.15
Nipple			
651	GSF-NF9-G8M	Male G1/8"	\$4.99
383	GSF-N22-G8F	Female G1/8"	\$7.26



Quick#	Part#	Pad øD	Price
384	GSV-OS-15x45	15x45mm	\$23.65
Nipple			
655	GSF-NF0-G4F	Female G1/4"	\$4.78
3298	VSA130	Male G1/4"	\$6.20



Quick#	Part#	Pad øD	Price
385	GSV-OS-20x60	20x60mm	\$28.85
Nipple			
655	GSF-NF0-G4F	Female G1/4"	\$4.78
3298	VSA130	Male G1/4"	\$6.20

Also Available: 25x75mm Cup
Quick #5427 Price: \$28.88

Silicone – Oval 2.5 Bellows

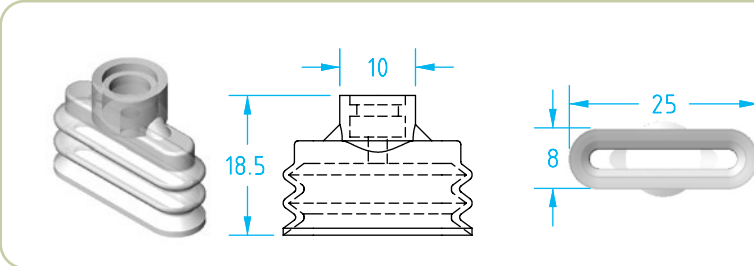


Oval bellows cups can be used on medium contour surfaces without using special angle adjusting mounting brackets.

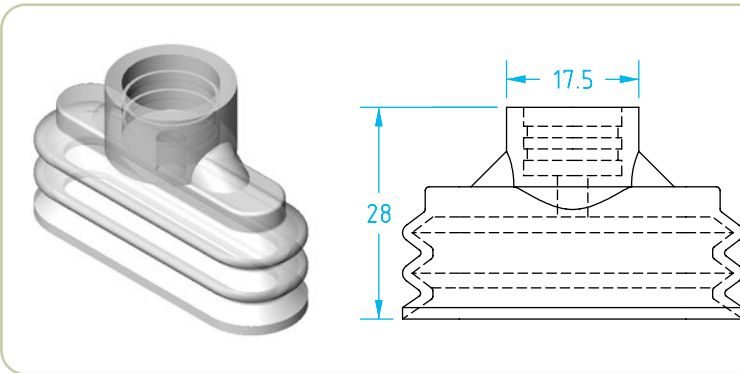
The 2.5 bellows provide extra compression that can sometimes be used in place of expensive non-rotating suspensions.

Oval Bellows Vacuum Cup Properties

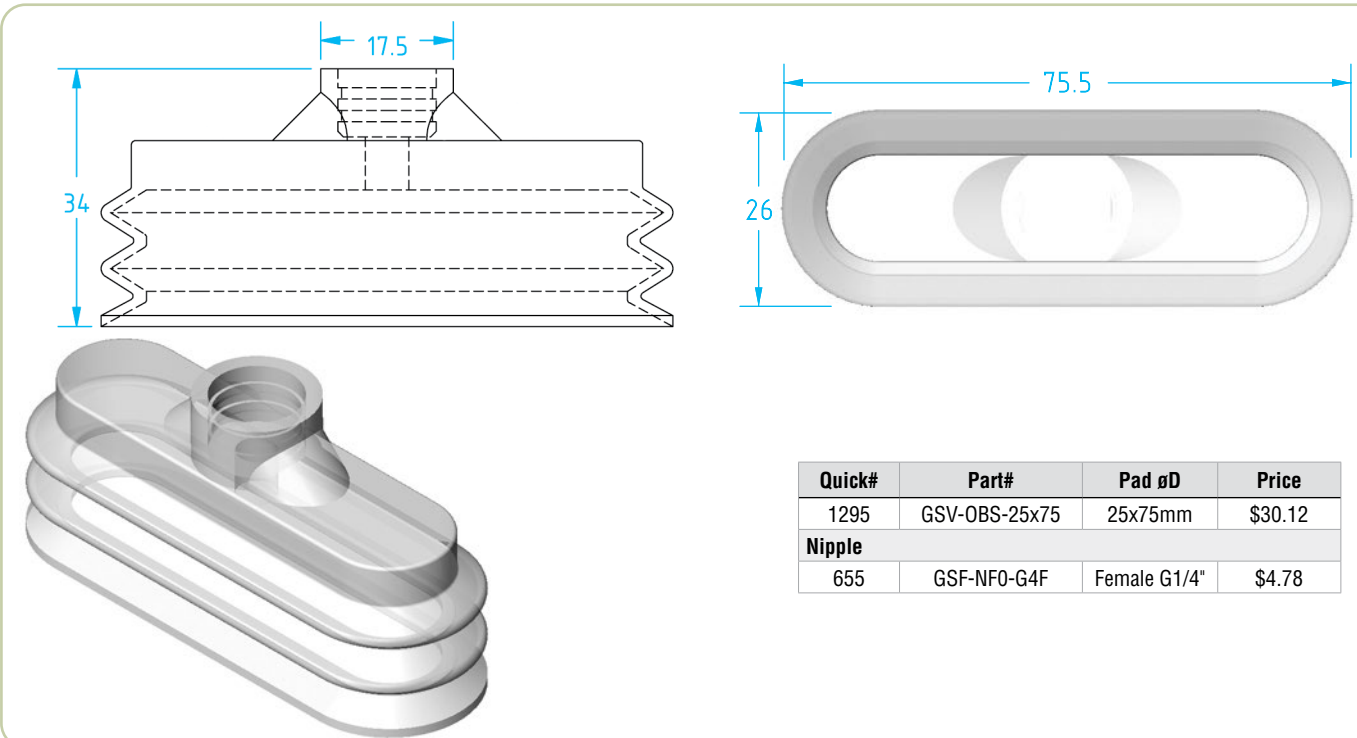
Material	Color	Max Temp.	Durometer
Silicone	Semi-translucent clear	392°F	55°



Quick#	Part#	Pad øD	Price
1293	GSV-OBS-8x25	8x25mm	\$16.95
Nipple			
649	GSF-NF8-M5M	Male M5	\$4.28
651	GSF-NF9-G8M	Male G1/8"	\$4.99
652	GSF-NF9-G8F	Female G1/8"	\$5.17



Quick#	Part#	Pad øD	Price
1294	GSV-OBS-15x45	15x45mm	\$20.85
Nipple			
655	GSF-NF0-G4F	Female G1/4"	\$4.78



Quick#	Part#	Pad øD	Price
1295	GSV-OBS-25x75	25x75mm	\$30.12
Nipple			
655	GSF-NF0-G4F	Female G1/4"	\$4.78

Super -Sucker Vacuum Cups

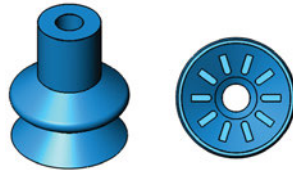
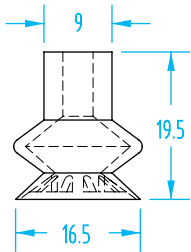
(Shown Actual Size)

Try this super flexible vacuum cup on parts that are difficult to maintain good vacuum on, such as textured, or easily distorted parts like foils.

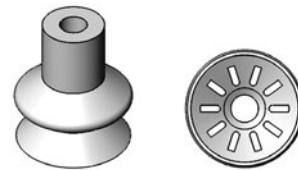


Super-Sucker Vacuum Cup Properties

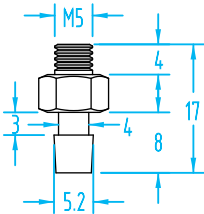
Material	Color	Max Temp.	Durometer
Silicone	Semi-translucent white	392°F	30°
Natural Rubber	Blue	176°F	30°



#1662



#1663



#411

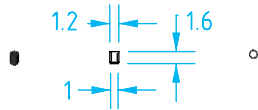
Super-Sucker Cups

Material	Quick#	Part#	Price
Silicone	1663	GSV-SVC-18SI	\$5.74
Natural Rubber	1662	GSV-SVC-18NR	\$6.96
Nipples - Order Separately			
Male M5	411	GSF-NF1-M5	\$1.75

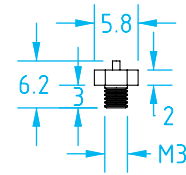
Mini Flat Vacuum Cup – Ø1mm – Ø6mm

(Shown Actual Size)

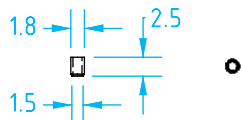
1mm



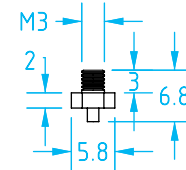
Quick#	Part#	Material	Price
5452	VN1-1-N	Nitrile	\$8.19
5453	VN1-1-S	Silicone	\$10.05
Nipples - Order Separately			
5463	GSF-MN1-M3	Male M3	\$5.59



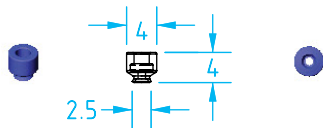
1.5mm



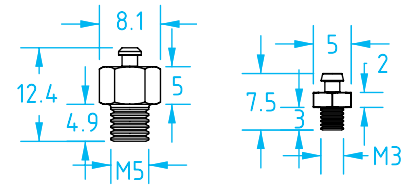
Quick#	Part#	Material	Price
5454	VN1-1.5-N	Nitrile	\$8.19
5455	VN1-1.5-S	Silicone	\$10.26
Nipples - Order Separately			
5464	GSF-MN15-M3	Male M3	\$5.59



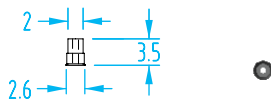
2mm



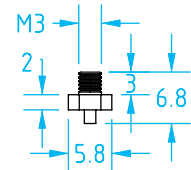
Quick#	Part#	Material	Price
3187	VN1-2-S	Silicone	\$3.59
3186	VN1-2-N	Nitrile	\$2.63
1161	VN1-2-H	Hithane	\$8.51
1241	GSV-MFA-2	Anti-Static Silicone	\$6.30
Nipples - Order Separately			
3286	VSA10	Male M5	\$2.94
1267	GSF-N17-M3M	Male M3	\$3.85



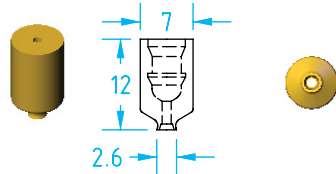
2mm



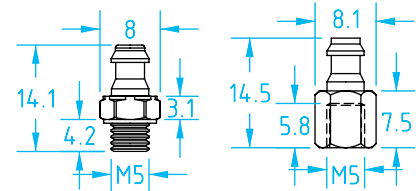
Quick#	Part#	Material	Price
5091	GSV-U2-25	Anti-Static Silicone	\$10.47
Nipples - Order Separately			
5464	GSF-MN15-M3	Male M3	\$5.59



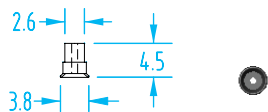
2mm



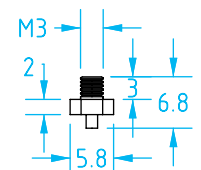
Quick#	Part#	Material	Price
2501	ZP02US	Silicone	\$2.45
2535	ZP02UU	Polyurethane	\$2.95
2604	ZP02UN	Nitrile	\$2.25
2683	ZP02UGS	Anti-static	\$2.40
Nipples - Order Separately			
258	GSF-BS-M506	Male M5	\$0.77
1070	ZPT1B5	Female M5	\$3.25



3mm



Quick#	Part#	Material	Price
5092	GSV-U3-25	Anti-Static Silicone	\$11.21
Nipples - Order Separately			
5464	GSF-MN15-M3	Male M3	\$5.59

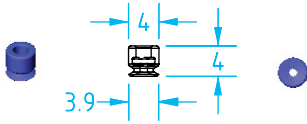


Use Quick#s for easy online ordering.

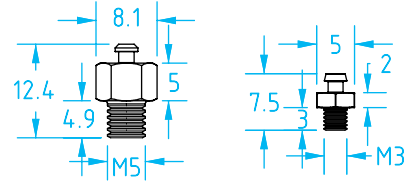
Mini Flat Vacuum Cup – Ø1mm – Ø5mm

(Shown Actual Size)

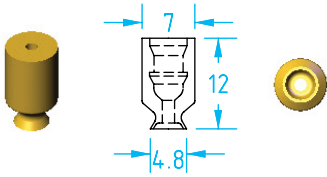
3.5mm



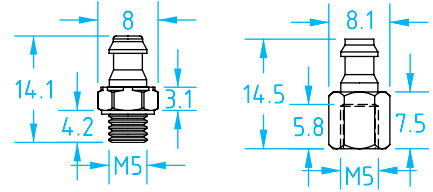
Quick#	Part#	Material	Price
3189	VN1-3.5-N	Nitrile	\$3.23
3190	VN1-3.5-S	Silicone	\$3.68
1162	VN1-3.5-H	Hithane	\$8.51
5457	VN1-3.5-V	Viton	\$30.87
1244	GSV-MFA-35	Anti-Static Silicone	\$6.09
Nipples - Order Separately			
3286	VSA10	Male M5	\$2.94
1267	GSF-N17-M3M	Male M3	\$3.85



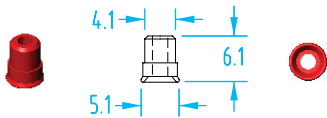
4mm



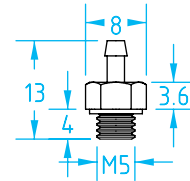
Quick#	Part#	Material	Price
2502	ZP04US	Silicone	\$2.45
2536	ZP04UU	Polyurethane	\$2.95
2605	ZP04UN	Nitrile	\$2.25
2684	ZP04UGS	Anti-static	\$2.40
Nipples - Order Separately			
258	GSF-BS-M506	Male M5	\$0.77
1070	ZPT1B5	Female M5	\$3.25



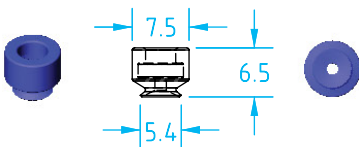
5mm



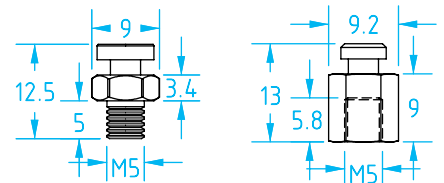
Quick#	Part#	Material	Price
5093	GSV-U4-20	Silicone	\$7.70
5102	GSV-U4-10	Chloroprene	\$3.42
Nipples - Order Separately			
1438	GSV-01AB	Male M5	\$1.85



5mm



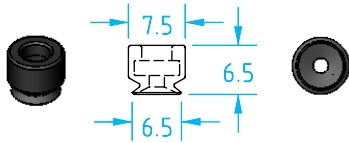
Quick#	Part#	Material	Price
3192	VN1-5-N	NIT	\$2.10
3193	VN1-5-S	Silicone	\$2.86
1163	VN1-5-H	Hithane	\$4.05
1247	GSV-MFA-5	Anti-static Silicone	\$7.80
Nipples - Order Separately			
3289	VSA30	Male M5	\$2.94
5178	VSA30F	Female M5	\$2.94



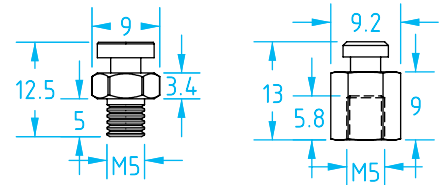
Mini Flat Vacuum Cup – Ø6mm – Ø9mm

(Shown Actual Size)

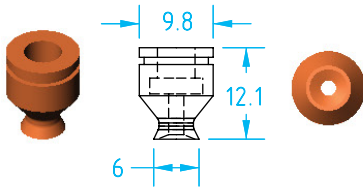
6mm



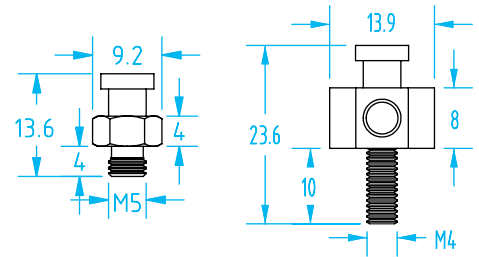
Quick#	Part#	Material	Price
1249	GSV-MFS-6	Silicone	\$3.78
1250	GSV-MFA-6	Anti-static Silicone	\$8.12
5459	VN1-6-N	Nitrile	\$2.94
Nipples - Order Separately			
3289	VSA30	Male M5	\$2.94
5178	VSA30F	Female M5	\$2.94



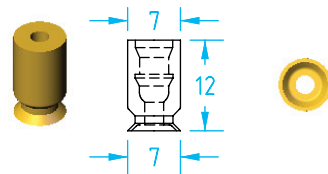
6mm



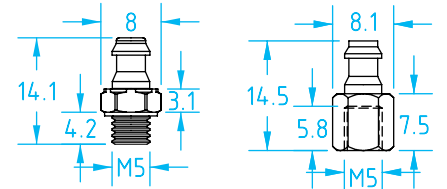
Quick#	Part#	Material	Price
1674	GSV-VAPH-6C	Silicone	\$3.21
5221	GSV-VAPU-6C	Polyurethane	\$9.13
5228	GSV-VAPF-6C	Fluorine	\$15.74
Nipples - Order Separately			
5270	GSV-CP-063-M5	Male M5	\$4.51
1697	GSV-CP-063	Male M4	\$8.39



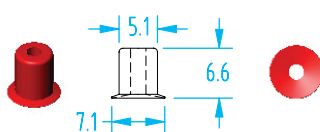
6mm



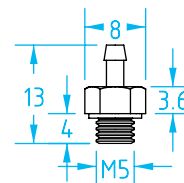
Quick#	Part#	Material	Price
2503	ZP06US	Silicone	\$2.45
2537	ZP06UU	Polyurethane	\$2.95
2606	ZP06UN	Nitrile	\$2.25
Nipples - Order Separately			
258	GSF-BS-M506	Male M5	\$0.77
1070	ZPT1B5	Female M5	\$3.25



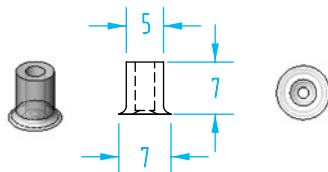
7mm



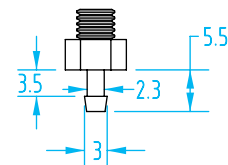
Quick#	Part#	Material	Price
5094	GSV-U6-20	Silicone	\$5.89
5103	GSV-U6-10	Chloroprene	\$2.99
Nipples - Order Separately			
1438	GSV-01AB	Male M5	\$1.85



7mm



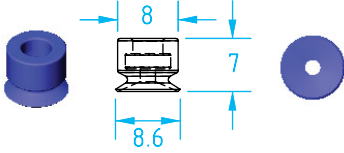
Quick#	Part#	Material	Price
674	GSV-FOS-7	Silicone	\$2.39
1114	GSV-FOH-7	Hithane	\$5.69
1154	GSV-FON-7	Nitrile	\$1.94
Nipples - Order Separately			
688	GSF-NF11-M5	M5 Male	\$2.31



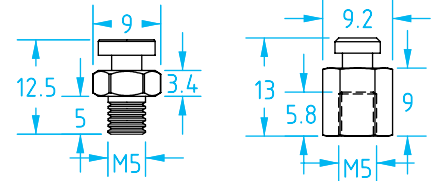
Mini Flat Vacuum Cup – Ø6mm – Ø9mm

(Shown Actual Size)

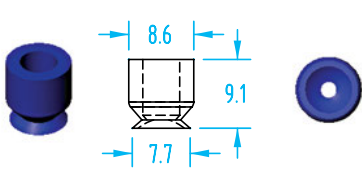
8mm



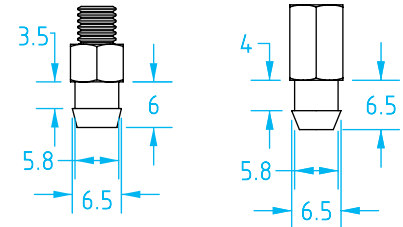
Quick#	Part#	Material	Price
3195	VN1-8-N	Nitrile	\$2.30
3196	VN1-8-S	Silicone	\$2.97
1164	VN1-8-H	Hithane	\$4.05
1253	GSV-MFA-8	Anti-static Silicone	\$4.83
Nipples - Order Separately			
3289	VSA30	Male M5	\$2.94
5178	VSA30F	Female M5	\$2.94



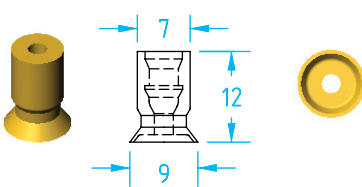
8mm



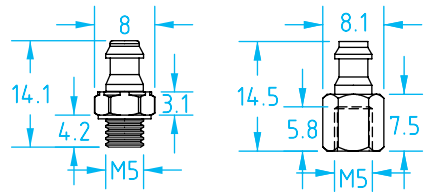
Quick#	Part#	Material	Price
1645	GSV-FHT-8	Hithane	\$5.26
Nipples - Order Separately			
408	GSF-N16-M5M	Male M5	\$3.52
5431	GSF-HTN1-M5F	Female M5	\$3.59



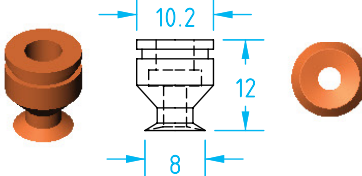
8mm



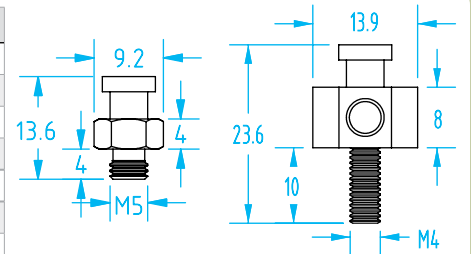
Quick#	Part#	Material	Price
2504	ZP08US	Silicone	\$2.45
2538	ZP08UU	Polyurethane	\$2.95
2607	ZP08UN	Nitrile	\$2.25
2685	ZP08UGS	Anti-static	\$2.40
Nipples - Order Separately			
258	GSF-BS-M506	Male M5	\$0.77
1070	ZPT1B5	Female M5	\$3.25



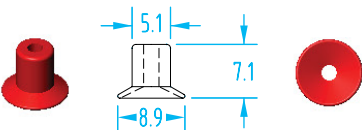
8mm



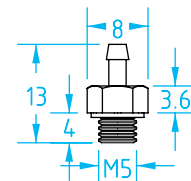
Quick#	Part#	Material	Price
1675	GSV-VAPH-8C	Silicone	\$3.42
5222	GSV-VAPU-8C	Polyurethane	\$9.13
5229	GSV-VAPF-8C	Fluorine	\$15.74
5162	VAPH-8C-SP	Silicone-Foam	\$11.63
Nipples - Order Separately			
5270	GSV-CP-063-M5	Male M5	\$4.51
1697	GSV-CP-063	Male M4	\$8.39



9mm



Quick#	Part#	Material	Price
5095	GSV-U8-20	Silicone	\$6.36
5104	GSV-U8-10	Chloroprene	\$2.99
Nipples - Order Separately			
1438	GSV-01AB	Male M5	\$1.85

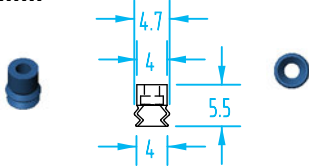


More anti-static vacuum cups available on page 374

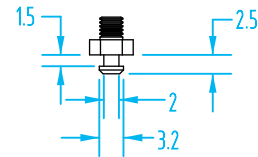
1.5 Bellows Mini Vacuum Cup – Ø4mm – Ø10.5mm

(Shown Actual Size)

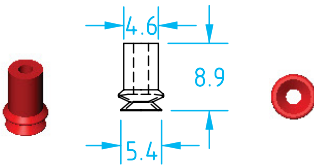
4mm



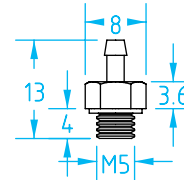
Quick#	Part#	Material	Price
3855	VN2-4-N	Nitrile	\$6.53
3856	VN2-4-S	Silicone	\$6.53
3857	VN2-4-H	Hithane	\$8.15
Nipples - Order Separately			
3871	GSF-VSA-5	Male M3	\$5.73



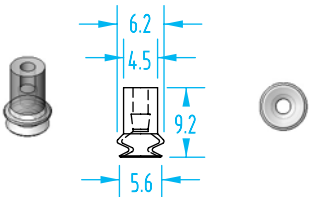
4.5mm



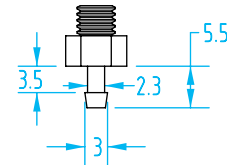
Quick#	Part#	Material	Price
1413	GSV-B5-20	Silicone	\$8.72
5115	GSV-B5-10	Chloroprene	\$3.23
Nipples - Order Separately			
1438	GSV-01AB	Male M5	\$1.85



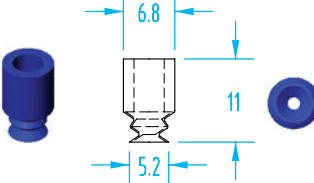
5mm



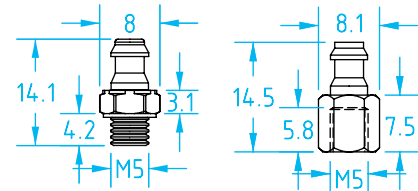
Quick#	Part#	Material	Price
1142	GSV-BOS-5	Silicone	\$3.84
1133	GSV-BOH-5	Hithane	\$7.02
1144	GSV-BON-5	Nitrile	\$2.13
Nipples - Order Separately			
688	GSF-NF11-M5	M5 Male	\$2.31



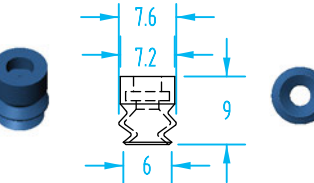
5mm



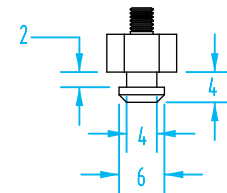
Quick#	Part#	Material	Price
5988	GSV-BHT-5	Hithane	\$11.48
Nipples - Order Separately			
258	GSF-BS-M506	Male M5	\$0.77
1070	ZPT1B5	Female M5	\$3.25



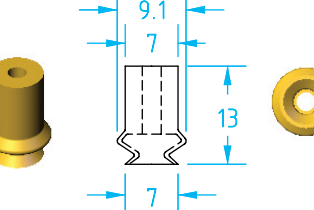
6mm



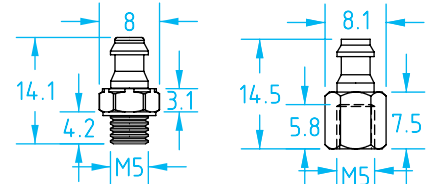
Quick#	Part#	Material	Price
3858	VN2-6-N	Nitrile	\$5.00
3859	VN2-6-S	Silicone	\$7.81
3860	VN2-6-H	Hithane	\$8.00
Nipples - Order Separately			
3870	GSF-VSA-4	Male M3	\$5.25



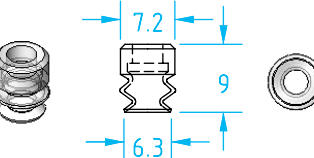
6mm



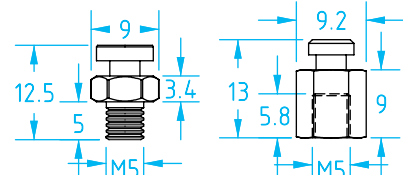
Quick#	Part#	Material	Price
2525	ZP06BS	Silicone	\$4.25
2559	ZP06BU	Polyurethane	\$4.60
2625	ZP06BN	Nitrile	\$4.05
2678	ZP06BGS	Anti-static	\$4.20
Nipples - Order Separately			
258	GSF-BS-M506	Male M5	\$0.77
1070	ZPT1B5	Female M5	\$3.25



6.5mm



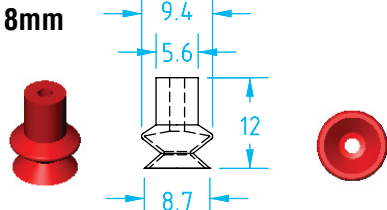
Quick#	Part#	Material	Price
5488	GSV-MBS-65S	Silicone	7.81
Nipples - Order Separately			
3289	VSA30	Male M5	\$2.94
5178	VSA30F	Female M5	\$2.94



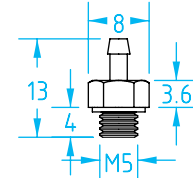
1.5 Bellows Mini Vacuum Cup – Ø4mm – Ø10.5mm

(Shown Actual Size)

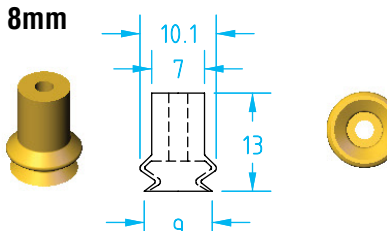
8mm



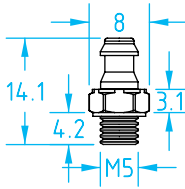
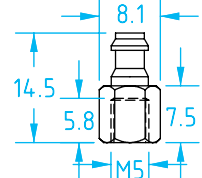
Quick#	Part#	Material	Price
1414	GSV-B8-20	Silicone	\$10.19
5116	GSV-B8-10	Chloroprene	\$3.77
Nipples - Order Separately			
1438	GSV-01AB	Male M5	\$1.85



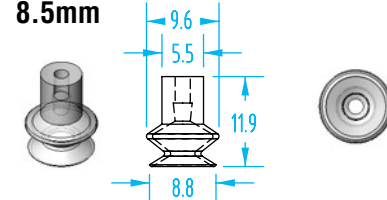
8mm



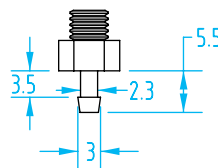
Quick#	Part#	Material	Price
2526	ZP08BS	Silicone	\$4.25
2560	ZP08BU	Polyurethane	\$4.60
2624	ZP08BN	Nitrile	\$4.05
2679	ZP08BGS	Anti-static	\$4.20
Nipples - Order Separately			
258	GSF-BS-M506	Male M5	\$0.77
1070	ZPT1B5	Female M5	\$3.25

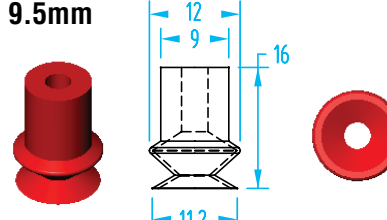
8.5mm



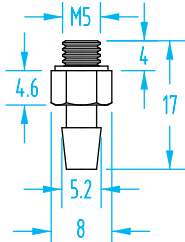
Quick#	Part#	Material	Price
1143	GSV-B0S-8	Silicone	\$4.33
1134	GSV-B0H-8	Hithane	\$6.67
1145	GSV-B0N-8	Nitrile	\$2.32
Nipples - Order Separately			
688	GSF-NF11-M5	M5 Male	\$2.31



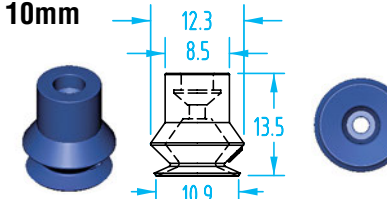
9.5mm



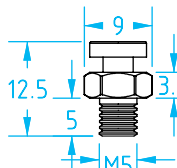
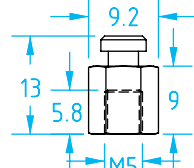
Quick#	Part#	Material	Price
1415	GSV-B10-2-20	Silicone	\$9.14
5117	GSV-B10-2-10	Chloroprene	\$5.06
Nipples - Order Separately			
1439	GSV-01AC	Male M5	\$1.85



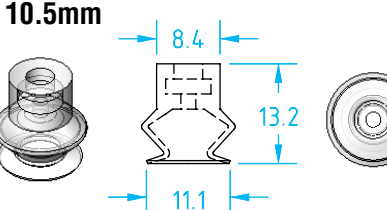
10mm



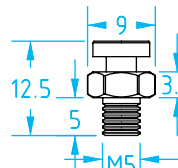
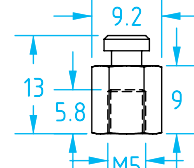
Quick#	Part#	Material	Price
3235	VN2-10-N	Nitrile	\$3.51
3236	VN2-10-S	Silicone	\$5.46
1175	VN2-10-H	Hithane	\$7.56
3289	VSA30	Male M5	\$2.94
5178	VSA30F	Female M5	\$2.94

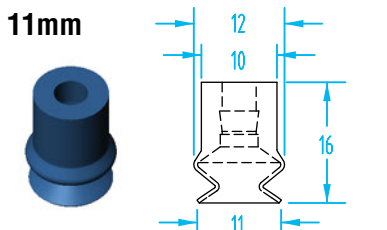
10.5mm



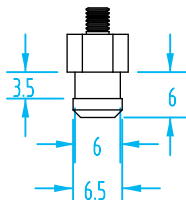
Quick#	Part#	Material	Price
5490	GSV-MBS-10S	Silicone	\$6.45
Nipples - Order Separately			
3289	VSA30	Male M5	\$2.94
5178	VSA30F	Female M5	\$2.94

11mm



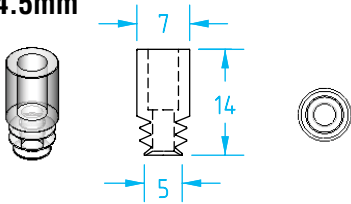
Quick#	Part#	Material	Price
3861	VN2-11-N	Nitrile	\$5.75
3862	VN2-11-S	Silicone	\$7.14
3863	VN2-11-H	Hithane	\$8.35
Nipples - Order Separately			
3872	GSF-VSA-16	Male M3	\$5.25



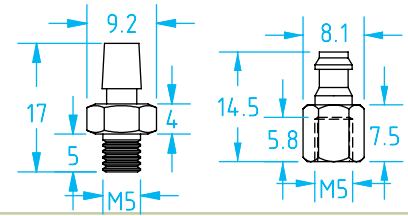
2.5 Bellows Mini Vacuum Cup – Ø4.5mm – Ø9mm

(Shown Actual Size)

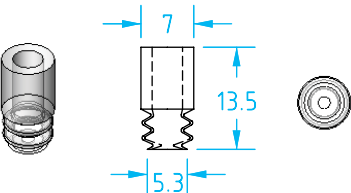
4.5mm



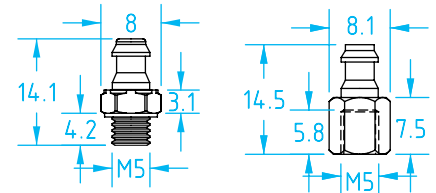
Quick#	Part#	Material	Price
1258	GSV-M2BS-4	Silicone	\$3.42
Nipples - Order Separately			
1439	GSV-01AC	Male M5	\$1.85
1070	ZPT1B5	Female M5	\$3.25



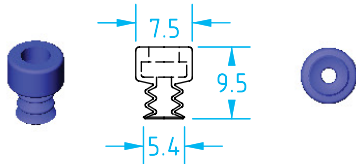
4.5mm



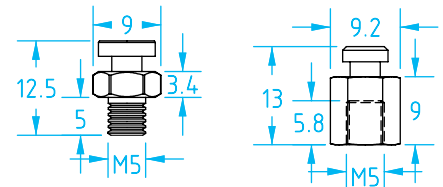
Quick#	Part#	Material	Price
5491	GSV-M2BS-5S	Silicone	\$3.44
Nipples - Order Separately			
258	GSF-BS-M506	Male M5	\$0.77
1070	ZPT1B5	Female M5	\$3.25



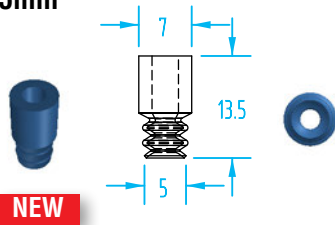
5mm



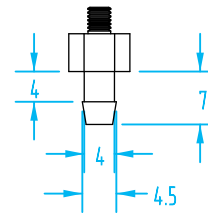
Quick#	Part#	Material	Price
3256	VN3-5-N	Nitrile	\$4.64
3257	VN3-5-S	Silicone	\$5.23
1182	VN3-5-H	Hithane	\$8.93
Nipples - Order Separately			
3289	VSA30	Male M5	\$2.94
5178	VSA30F	Female M5	\$2.94



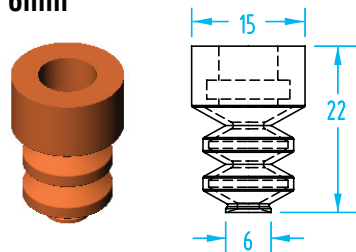
5mm



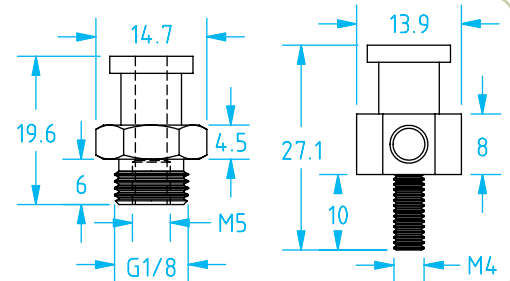
Quick#	Part#	Material	Price
3864	GSV-M2BN-5	Nitrile	\$7.34
3865	GSV-M2BS-5	Silicone	\$7.98
3866	GSV-M2BH-5	Hithane	\$9.24
Nipples - Order Separately			
3873	GSF-VSA-17	Male M3	\$4.73



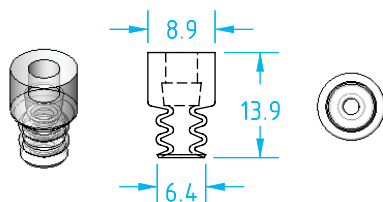
6mm



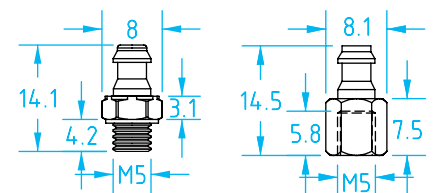
Quick#	Part#	Material	Price
5169	TR-1062-1	Silicone	\$13.61
Nipples - Order Separately			
1698	GSV-CP-064	Male M4	\$8.39
5271	GSV-CP-064-G8	G1/8"-M5	\$5.80



6mm



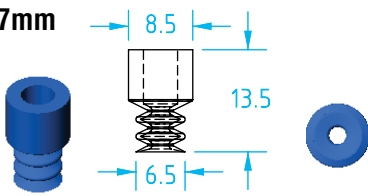
Quick#	Part#	Material	Price
5492	GSV-M2BS-65S	Silicone	\$8.04
Nipples - Order Separately			
258	GSF-BS-M506	Male M5	\$0.77
1070	ZPT1B5	Female M5	\$3.25



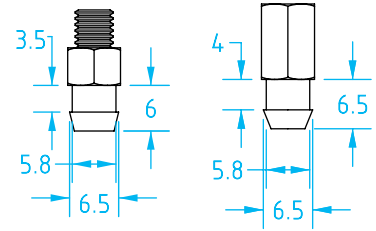
2.5 Bellows Mini Vacuum Cup – Ø4.5mm – Ø9mm

(Shown Actual Size)

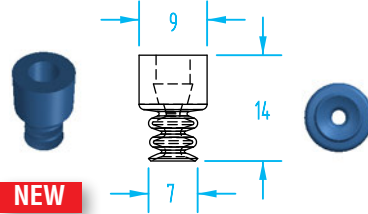
7mm



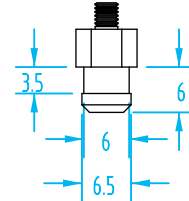
Quick#	Part#	Material	Price
5442	GSV-2BHT-7	Hithane	\$9.03
Nipples - Order Separately			
408	GSF-N16-M5M	Male M5	\$3.52
5431	GSF-HTN1-M5F	Female M5	\$3.59



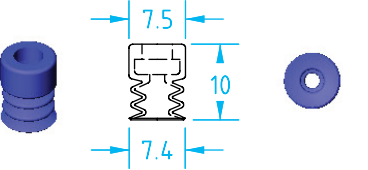
7mm



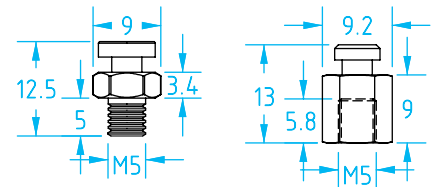
Quick#	Part#	Material	Price
3867	GSV-M2BN-7	Nitrile	\$7.38
3868	GSV-M2BS-7	Silicone	\$8.04
3869	GSV-M2BH-7	Hithane	\$5.25
Nipples - Order Separately			
3872	GSF-VSA-16	Male M3	\$5.25



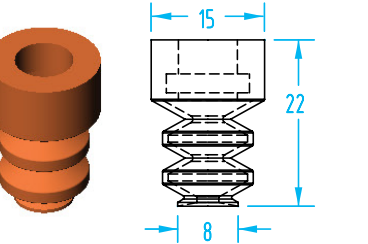
8mm



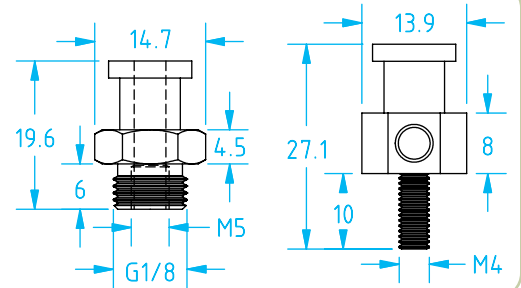
Quick#	Part#	Material	Price
3259	VN3-8-N	Nitrile	\$4.64
3260	VN3-8-S	Silicone	\$5.23
1183	VN3-8-H	Hithane	\$8.93
Nipples - Order Separately			
3289	VSA30	Male M5	\$2.94
5178	VSA30F	Female M5	\$2.94



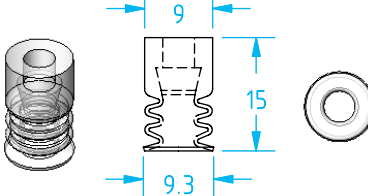
8mm



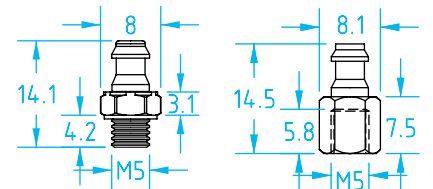
Quick#	Part#	Material	Price
5170	TR-1062-2	Silicone	\$13.61
Nipples - Order Separately			
1698	GSV-CP-064	Male M4	\$8.39
5271	GSV-CP-064-G8	G1/8"-M5	\$5.80



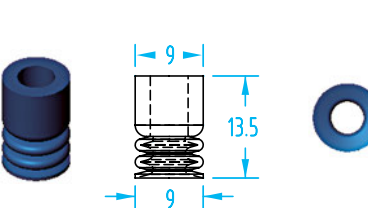
9mm



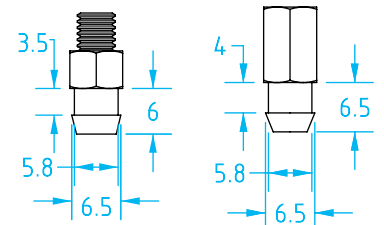
Quick#	Part#	Material	Price
5493	GSV-M2BS-9S	Silicone	\$8.15
Nipples - Order Separately			
258	GSF-BS-M506	Male M5	\$0.77
1070	ZPT1B5	Female M5	\$3.25



9mm



Quick#	Part#	Material	Price
1657	GSV-2BHT-9	Hithane	\$7.17
Nipples - Order Separately			
408	GSF-N16-M5M	Male M5	\$3.52
5431	GSF-HTN1-M5F	Female M5	\$3.59



Cups for Carbon Fiber Parts and Sheet

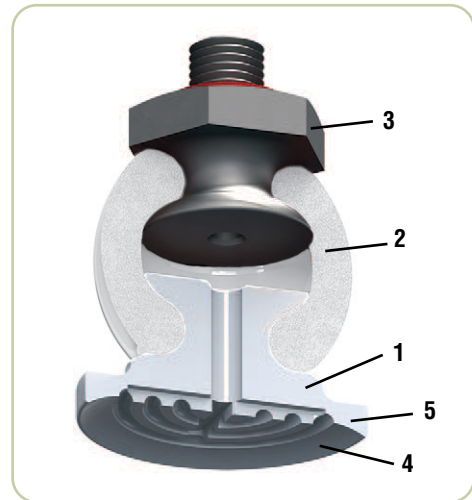
(Shown Actual Size)



No needle damage!

Handle hot molded carbon fiber parts and cold carbon fiber sheet without damage caused when using needle grippers.

1. PTFE vacuum cup does not stick to hot carbon fiber parts up to 480°F.
2. Flexible white silicone bellow allows axial and angular movements for part compliance.
3. Stainless steel nipple included.
4. The supporting ribs avoid suction and deformation of soft materials.
5. The flexible lip allows good vacuum even at the low temperatures for effective sealing over cold composites.
6. Patented

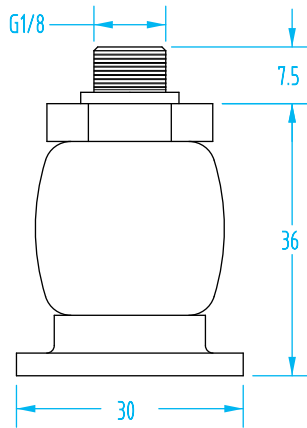
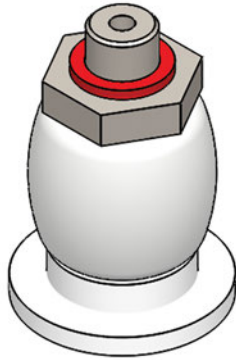


Quick#	Part#	Cup Ø	Weight	Price
7339	PAAT16R	16mm	9g	\$69.50

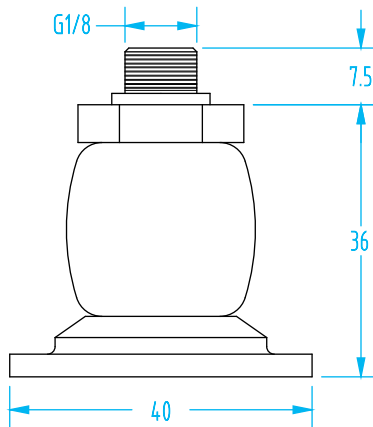
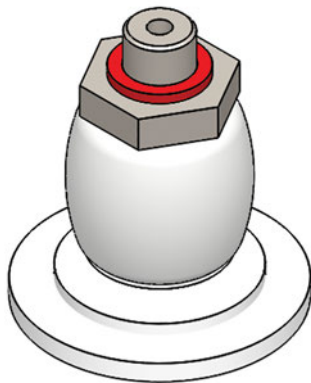
Quick#	Part#	Cup Ø	Weight	Price
7340	PAAT20R	20mm	9g	\$69.50

Cups for Carbon Fiber Parts and Sheet

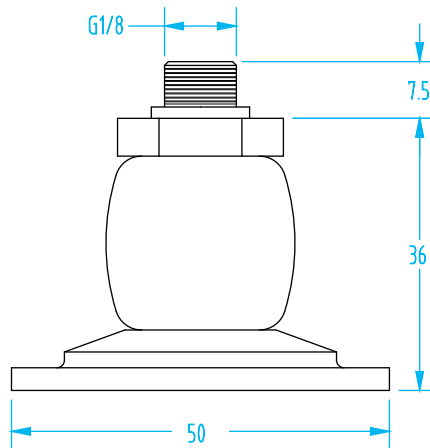
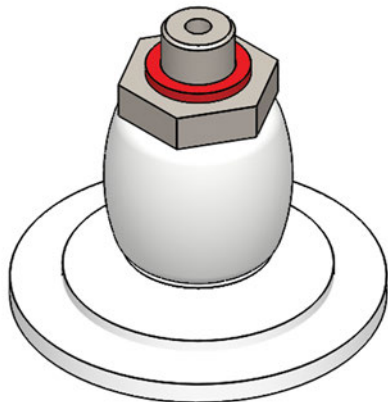
(Shown Actual Size)



Quick#	Part#	Cup Ø	Weight	Price
7341	PAAT30R	30mm	35g	\$79.00



Quick#	Part#	Cup Ø	Weight	Price
7342	PAAT40R	40mm	37g	\$87.25



Quick#	Part#	Cup Ø	Weight	Price
7343	PAAT50R	50mm	41g	\$101.00

High Speed Specialty – Flat

(Shown Actual Size)



These cups are optimized in their design for use in high-speed applications such as thin-wall molding of parts having flat surfaces. Their design allows faster attach/release time than other flat cups.

High Speed Vacuum Cup Properties

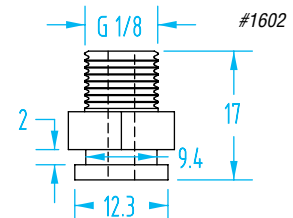
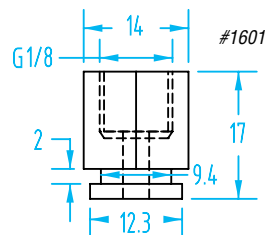
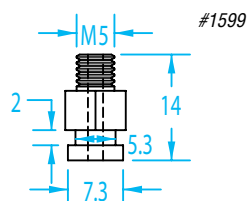
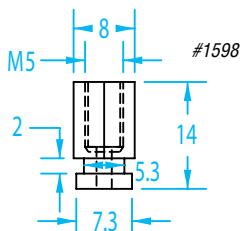
Material	Color	Max Temp.	Durometer
Silicone	Semi-translucent white	392°F	55°
Polyurethane	Blue	176°F	55°-60°

Pad øD	Part#	Material	Quick#	Price
7mm	GSV-HSP-07S	SIL	1590	\$12.04
	GSV-HSP-07P	PU	1594	\$15.02
Nipples - Order Separately				
M5	GSF-HSN-M5F	Female	1598	\$8.14
	GSF-HSN-M5M	Male	1599	\$7.07

Pad øD	Part#	Material	Quick#	Price
9mm	GSV-HSP-09S	SIL	1591	\$12.47
	GSV-HSP-09P	PU	1595	\$15.81
Nipples - Order Separately				
M5	GSF-HSN-M5F	Female	1598	\$8.14
	GSF-HSN-M5M	Male	1599	\$7.07

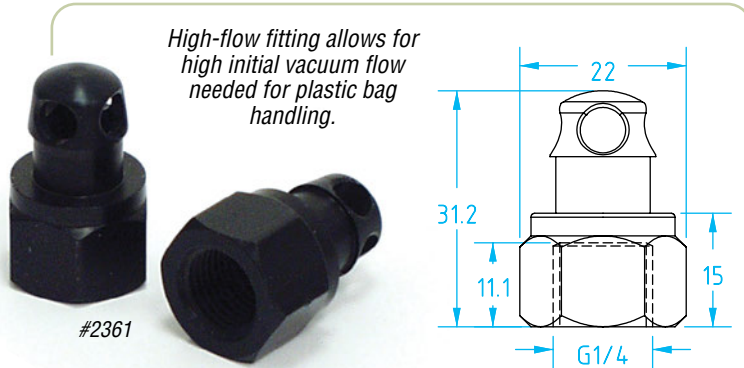
Pad øD	Part#	Material	Quick#	Price
13mm	GSV-HSP-13S	SIL	1592	\$13.50
	GSV-HSP-13P	PU	1596	\$17.63
Nipples - Order Separately				
G1/8"	GSF-HSN-G8F	Female	1601	\$8.14
	GSF-HSN-G8M	Male	1602	\$7.07

Pad øD	Part#	Material	Quick#	Price
16mm	GSV-HSP-16S	SIL	1593	\$14.52
	GSV-HSP-16P	PU	1597	\$18.68
Nipples - Order Separately				
G1/8"	GSF-HSN-G8F	Female	1601	\$8.14
	GSF-HSN-G8M	Male	1602	\$7.07



Packaging & Paper

(Shown Actual Size)



High-flow fitting allows for high initial vacuum flow needed for plastic bag handling.

#2361

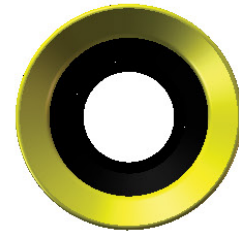
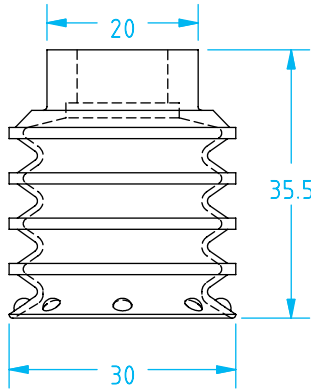
Nipples

Quick#	Part#	Thread	Weight	Price
2359	GSF-04AJ	G3/8" Male	11g	\$6.43
2360	GSF-04AL	3/8" NPT Male	11g	\$6.43
2361	GSF-NF8-G4F	G1/4" Female	10g	\$4.50

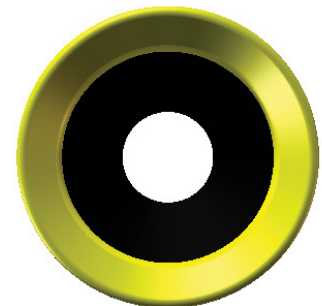
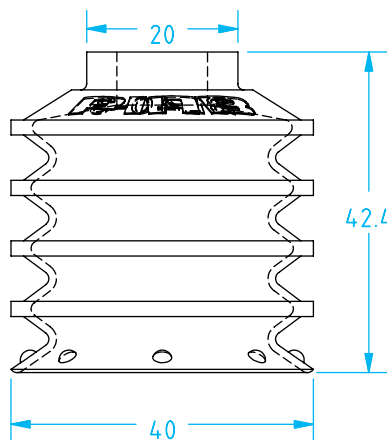


Dual Durometer Properties - Packaging & Paper

Material	Color	Max Temp.	Durometer
Dual Durometer Polyurethane	Black / Yellow	122°F	70° / 30° Shore



Pad øD	Part#	Material	Quick#	Weight	Price
30mm	GSV-BL30-3P-4L	Polyurethane	5448	5.9g	\$21.85



Pad øD	Part#	Material	Quick#	Weight	Price
40mm	GSV-BL40-3	Polyurethane	2358	12g	\$29.09

Paper and Foil Specialty

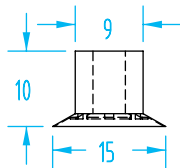
(Shown Actual Size)



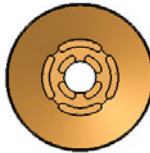
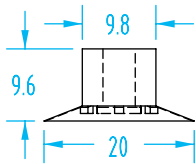
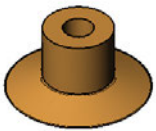
These cups are specially designed for handling paper and foil. The soft, tapered sealing lips and the inner support on the bottom of the pad prevent the foil from being drawn in. The softer material ensures that the paper and foil is not creased or damaged.

Paper & Foil Vacuum Cup Properties

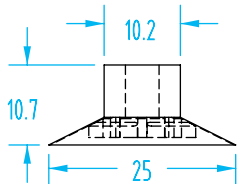
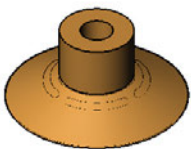
Material	Color	Max Temp.	Durometer
Natural Rubber	Beige	176°F	40°



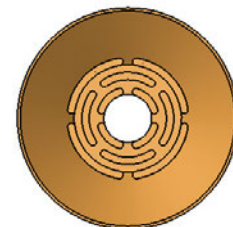
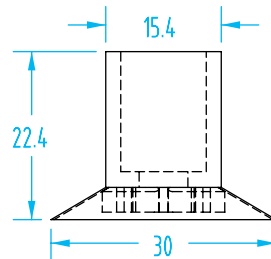
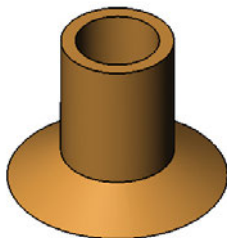
Pad \varnothing D	Part#	Quick#	Price
15mm	GSV-PFP-15NR	250	\$6.35
Nipples - Order Separately			
G1/8" Female	GSF-PFN-G8F	1603	\$3.99
G1/8" Male	GSF-PFN-G8M	1604	\$3.99



Pad \varnothing D	Part#	Quick#	Price
20mm	GSV-PFP-20NR	251	\$7.60
Nipples - Order Separately			
G1/8" Female	GSF-PFN-G8F	1603	\$3.99
G1/8" Male	GSF-PFN-G8M	1604	\$3.99



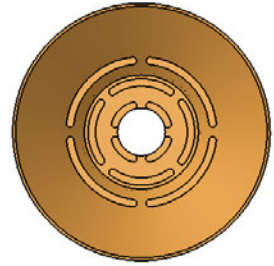
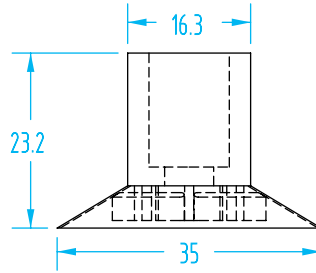
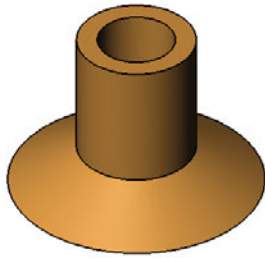
Pad \varnothing D	Part#	Quick#	Price
25mm	GSV-PFP-25NR	252	\$9.56
Nipples - Order Separately			
G1/8" Female	GSF-PFN-G8F	1603	\$3.99
G1/8" Male	GSF-PFN-G8M	1604	\$3.99



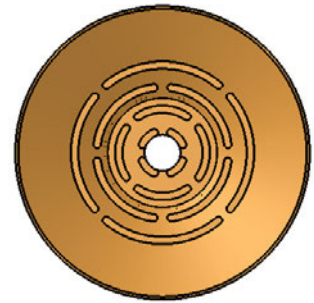
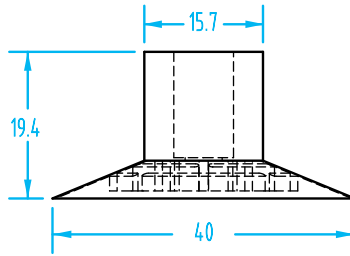
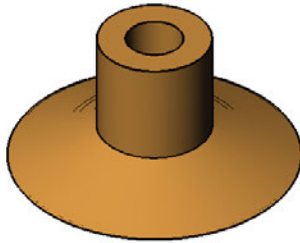
Pad \varnothing D	Part#	Quick#	Price
30mm	GSV-PFP-30NR	253	\$10.55
Nipples - Order Separately			
G1/4" Female	GSF-PFN2-G4F	1605	\$9.03

Paper and Foil Specialty

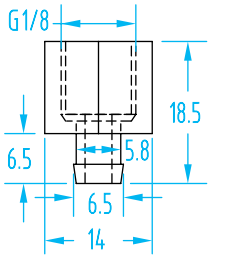
(Shown Actual Size)



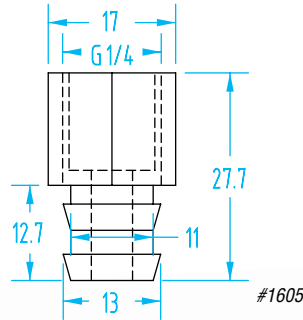
Pad ϕ D	Part#	Quick#	Price
35mm	GSV-PFP-35NR	254	\$10.55
Nipples - Order Separately			
G1/4" Female	GSF-PFN3-G4F	1606	\$9.03



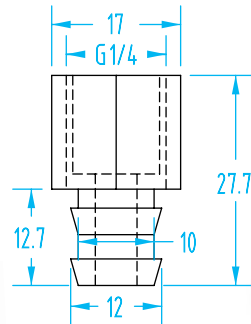
Pad ϕ D	Part#	Quick#	Price
40mm	GSV-PFP-40NR	255	\$11.24
Nipples - Order Separately			
G1/4" Female	GSF-PFN4-G4F	1607	\$6.74



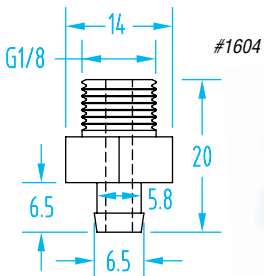
#1603



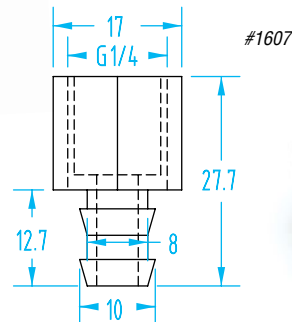
#1605



#1606



#1604



#1607



4.5 Bellows – Silicone

(Shown Actual Size)

4.5 Bellows Vacuum Cup Properties

Material	Color	Max Temp.	Durometer
Silicone	Semi-translucent white	392°F	50°

Use 4.5 bellows cups for significantly curved or angled parts. Remember, 4.5 bellows cups have a significant volume of air to evacuate before vacuum can be generated to grip the part, so attach and release times are greater.

These vacuum cups now include retention rings.

* 12mm Compressed

Quick#	Part#	Pad øD	Price
1390	GSV-4BS-20	20mm	\$8.40
Nipples - Order Separately			
412	GSF-NF2-G8M5	Male G1/8" / Female M5	\$5.25

* 14mm Compressed

Quick#	Part#	Pad øD	Price
1391	GSV-4BS-30	30mm	\$10.25
Nipples - Order Separately			
413	GSF-NF3-G8	G1/8" Female	\$6.56

* 22mm Compressed

Quick#	Part#	Pad øD	Price
1392	GSV-4BS-40	40mm	\$12.25
Nipples - Order Separately			
413	GSF-NF3-G8	G1/8" Female	\$6.56

4.5 Bellows – Silicone

(Shown Actual Size)

Quick#	Part#	Pad øD	Price
1393	GSV-4BS-50	50mm	\$17.45
Nipples - Order Separately			
646	GSF-NF5-G8F	G1/8" Female	\$5.78

Nipples for 4.5 Bellow Cups

Quick#	Part#	Nipple	Thread	Price
412	GSF-NF2-G8M5	Male / Female	G1/8" / M5	\$5.25
413	GSF-NF3-G8	Female	G1/8"	\$6.56
646	GSF-NF5-G8F	Female	G1/8"	\$5.78

Sprue Grippers Overview

EMI offers the largest 'in stock' selection of sprue grippers with models from Senvex®, >ASS<®, Harmo®, Gimatic® and more.

We also offer a complete selection of mounting brackets, sensors, fingers, rebuild kits etc. Not sure which is the best gripper for your application? Weight, durability, size, sensor capability and other features are all factors. Contact our EOAT engineering department to help you select the best gripper for your application.



Mini Grippers

p.430



Price	Grip Force	Sprue Ø
\$103 & up	14.5 lbf	3–9mm

Micro Gripper

p.442



Price	Grip Force	Sprue Ø
\$104 / \$119	6 lbf	1–6mm

Nano Gripper

p.443



Price	Grip Force	Sprue Ø
\$106.00	0.88 lbf	1–5.5 mm

Die Cast Grippers

p.441



Price	Grip Force	Sprue Ø
\$89/ \$99	11 lbf	3–9mm

Compact Grippers

p.444



Price	Grip Force	Sprue Ø
\$159 & up	45 lbf	1–16mm

Compact Grippers with Vacuum Detection

p.446



Price	Grip Force	Sprue Ø
\$179.00	45 lbf	3–12mm

The Senvex Original

p.454



Price	Grip Force	Sprue Ø
\$237.00	22.5 / 27 lbf	4–14mm

Value Gripper

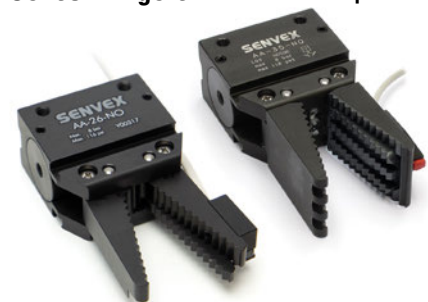
p.456



Price	Grip Force	Sprue Ø
\$145.00	19 / 22.5 lbf	4–12mm

Sensor Fingers

p.457



Price	Grip Force	Sprue Ø
\$186 & up	19 / 22.5 lbf	4–12mm

Sprue Grippers Overview

Large Diameter & Deep Reach Grippers p.455



Price	Grip Force	Sprue Ø
\$259 & up	16 / 19.5 lbf	10–25mm

AA- Gripper Mounting Brackets p.458



Replacement Parts



Replacement Parts for Gimatic and Senvex components are available on EMIcorp.com

Mini (GRZ 10-12) p.476



Price	Grip Force	Sprue Ø
\$138 & up	11 lbf	1–9mm

Micro (GRZ 10-08) p.486



Price	Grip Force	Sprue Ø
\$124 & up	6.5 lbf	1–6mm

Nano (GRZ 10-06 / 06-06) p.490



Price	Grip Force	Sprue Ø
\$91 & up	1.34 lbf	1–6mm

Full Body (GRZ 20-20) p.462



Price	Grip Force	Sprue Ø
\$182 & up	32 lbf	2–12mm

Compact (GRZ 20-16) p.492



Price	Grip Force	Sprue Ø
\$182 & up	14.61 lbf	2–12mm

Medium Body (GRZ 14) p.470



Price	Grip Force	Sprue Ø
\$183 & up	18.5 lbf	2–12mm

Harmo Sprue Gripper p.502



Price	Grip Force	Sprue Ø
\$190–\$280	13–18 lbf	4–12mm

Harmo Angular p.503



Price	Grip Force	Sprue Ø
\$160–\$280	13 / 28 lbf	-

High Power p.460



Price	Grip Force	Sprue Ø
\$108 & up	448 / 790 lbf	5–15mm

Original Style Mini Sprue Gripper with Sensor Jaw – PB-0013

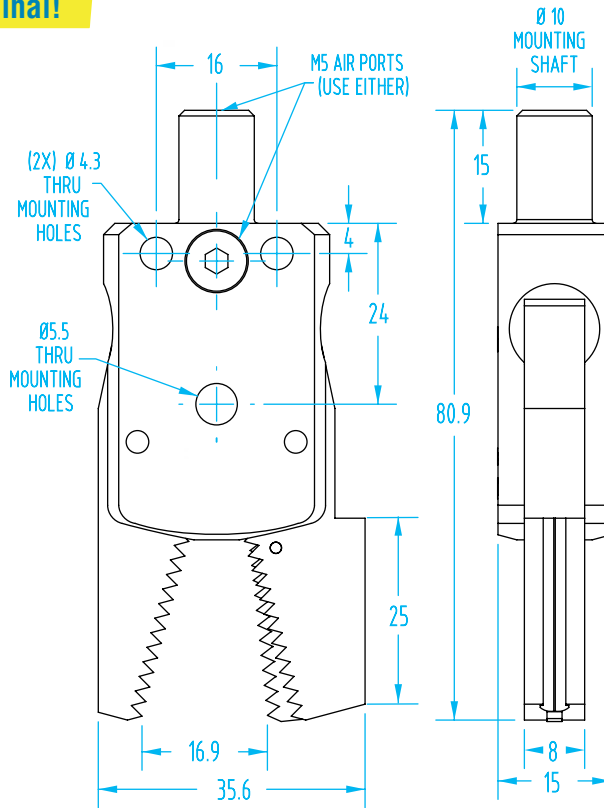
(Dimensioned drawings shown full scale)

The Original!

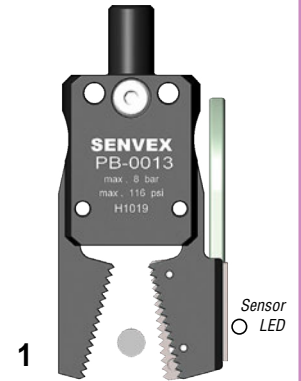


#1878
\$113.00

- **Simple, easy sensing.** A single sensor mounted on the finger confirms 'sprue gripped' and eliminates the 'hide and seek' process of sensor set-up.
- Steel trigger is longer lasting and has a higher temperature range than the previous red plastic finger.
- Higher grip force than other similarly sized sprue grippers.
- Serrated fingers hold small and medium sprues firmly.
- Ø10mm diameter mounting post with M5 air port allows this gripper to be used with standard mounting and air connection components. Alternate M5 air port on front of gripper can be used.



SPRUE SENSING



1
Sprue gripper is OPEN; and ready to grip sprue. The red spring loaded lever arm is open. The sensor circuit is 'open.'



2
Sprue gripper is CLOSED; and gripping the sprue. Pressure from the sprue deflects the metal spring loaded lever arm into the gripper finger. The close proximity of the lever arm to the sensor closes the circuit, illuminates the LED, and indicates that the sprue is gripped.



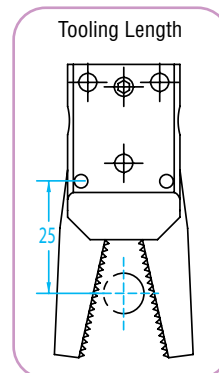
3
Sprue gripper is CLOSED; and missing the sprue. The metal spring loaded lever arm remains in its open position although the gripper is closed.

Quick#	Part#	Price	Style	Applicable Sprue Ø	Closing Force at 25mm Tooling Length*	Weight
1878	GSG-PB-0013S	\$113.00	w/ Sensor Trigger	3–9mm	14.5 lbf	48g
Order sensors separately See Sensor Reference Guide on page 1008 for a complete list of sensors for PB Grippers.						
1882	SS4N225G	\$27.20	PNP sensor	with lead, 2.5m long		6–24vdc
6282	SS3N203G	\$31.16	PNP sensor	M8 male connector, 0.3m long**		6–24vdc
1883	SS4M225G	\$27.20	NPN sensor	with lead, 2.5m long		6–24vdc
1884	SS3M203G	\$31.16	NPN sensor	M8 male connector, 0.3m long**		6–24vdc

Note: 2-wire reed sensors are not recommended for grippers.

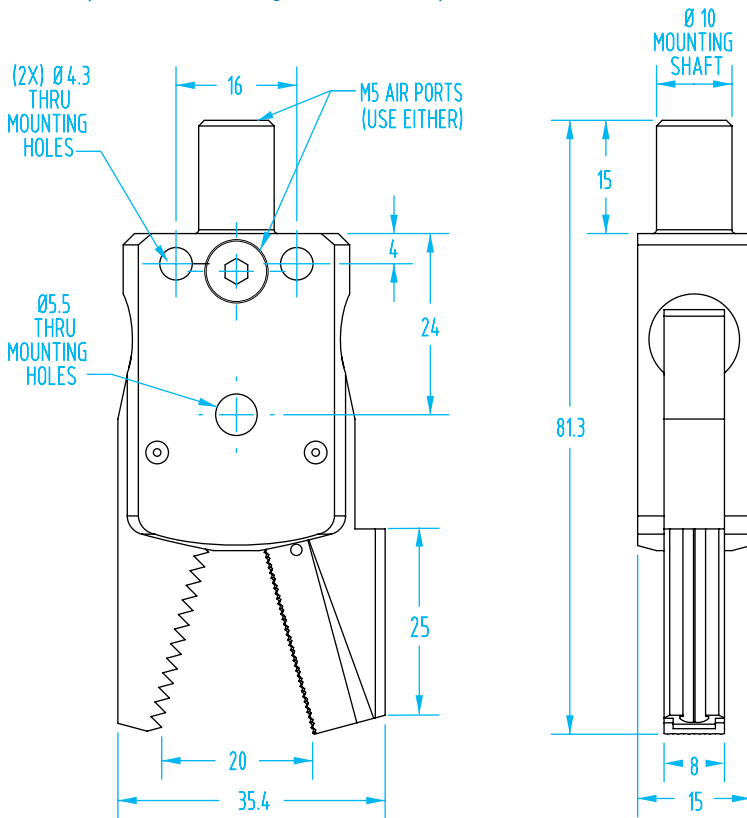
* The Closing Force listed is both jaws combined when supplied at 87psi. Tooling length is measured from jaw pivot point.

(**) M8 Extension cables Quick#'s 2582 & 2583 available on page 987.



Original Style Sprue Gripper with Steel Sensor Finger – PB

(Dimensioned drawings shown full scale)



The Original!



#6988
\$148.00



#6999
\$158.00

Quick#	Part#	Price	Jaw Style	Applicable Sprue Ø	Closing Force at 25mm Tooling Length*	Weight
6988	PB-0180-S	\$148.00	Aluminum Jaw w/ Sprue Detect	3–9mm	14.5 lbf	60g
6999	PB-0181-S	\$158.00	Steel Jaw w/ Sprue Detect	3–9mm	14.5 lbf	75g
7287	PB-0182-S	\$155.00	Steel Saw Jaw w/ Sprue Detect	3–9mm	11.0 lbf	75g
Order sensors separately See Sensor Reference Guide on page 1008 for a complete list of sensors for PB Grippers.						
1882	SS4N225G	\$27.20	PNP sensor	with lead, 2.5m long		6–24vdc
6282	SS3N203G	\$31.16	PNP sensor	M8 male connector, 0.3m long**		6–24vdc
1883	SS4M225G	\$27.20	NPN sensor	with lead, 2.5m long		6–24vdc
1884	SS3M203G	\$31.16	NPN sensor	M8 male connector, 0.3m long**		6–24vdc

- Piston bore: 12mm
- Single-acting with protected opening spring
- Sensor on the jaw (purchase separately)
- Steel sensor finger
- Dimensional drawing for the Saw Jaw, Quick# 7287 can be found online.

Note: 2-wire reed sensors are not recommended for grippers.

* The Closing Force listed is both jaws combined when supplied at 87psi. Tooling length is measured from jaw pivot point.

** M8 Extension cables Quick#s 2582 & 2583 available on page 985.



Replacement Parts for Gimatic and Senvex components are available on EMICorp.com
Fingers, Pistons, O-rings, and more!



#7287
\$155.00

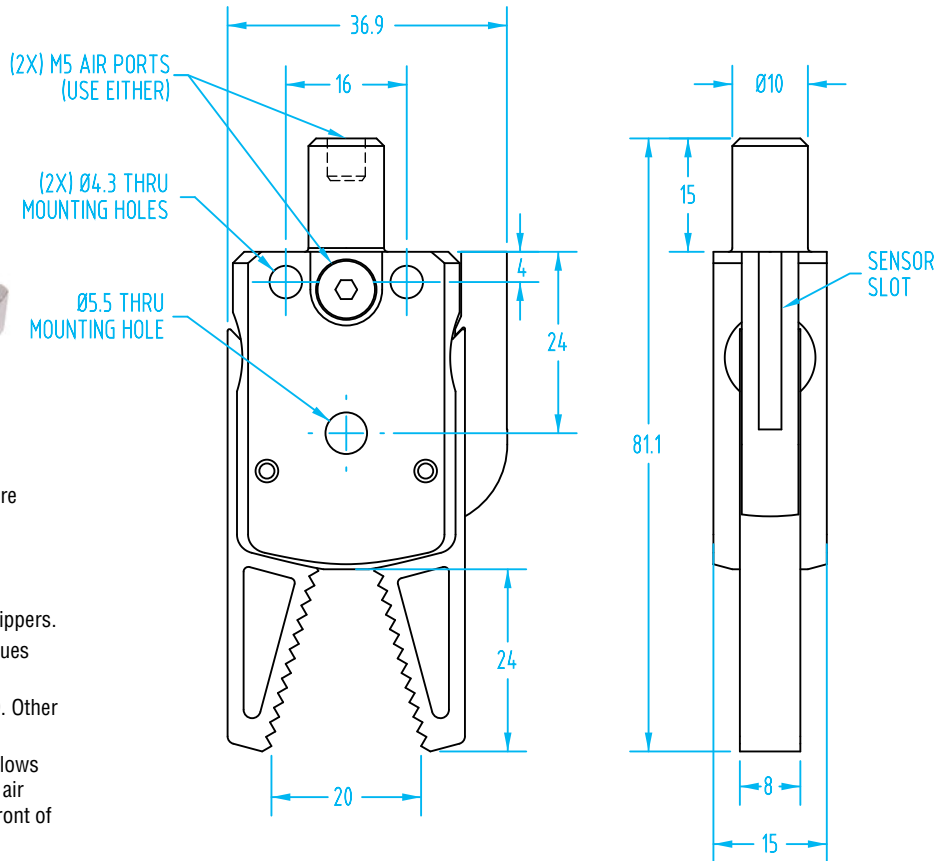
New Style Mini Sprue Gripper with Sensor Slot – PB-0180-S2 & PB-0187-S2



#7701
\$109.00

NEW

- New Sensor Slot position provides sensing with more space around the jaws due to relocated sensor slot.
- Angular, non-self-centering.
- Single-acting with protected opening spring.
- Higher grip force than other similarly sized sprue grippers.
- #7701: Serrated fingers hold small and medium sprues firmly.
- #7702: Replacement HNBR pads listed on page 439. Other replacement parts are available online.
- Ø10mm diameter mounting post with M5 air port allows this gripper to be used with standard mounting and air connection components. Alternate M5 air port on front of gripper can be used.



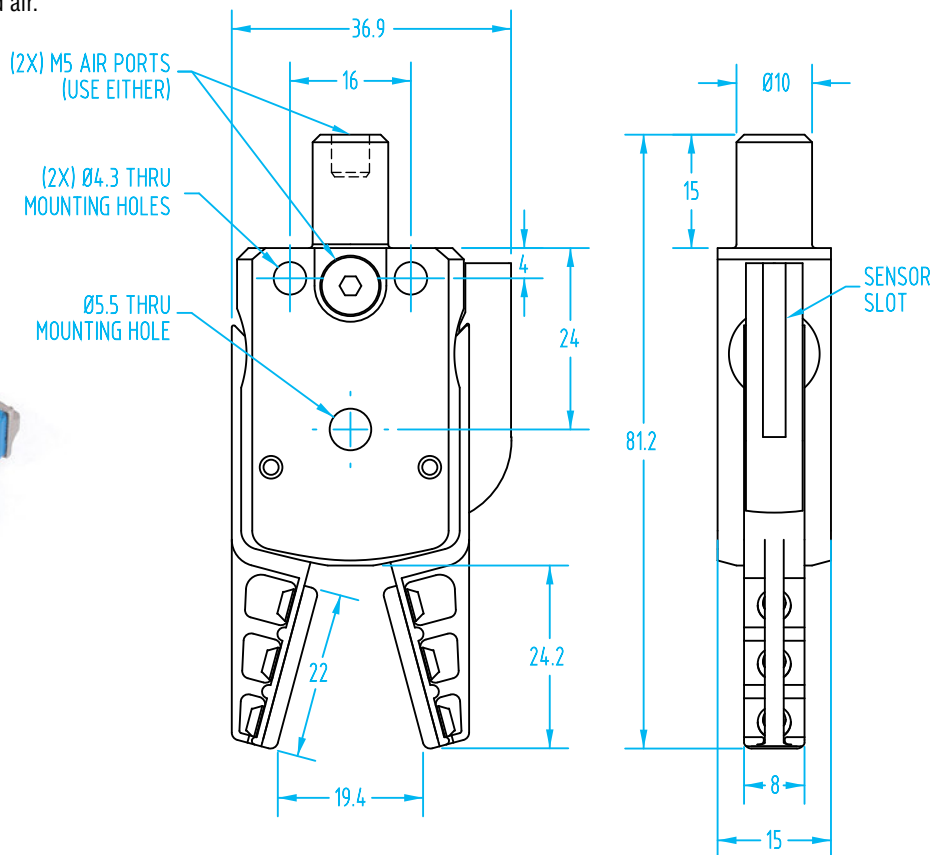
SET-UP NOTE: The sensor will only send a signal when the gripper is actuated with compressed air.



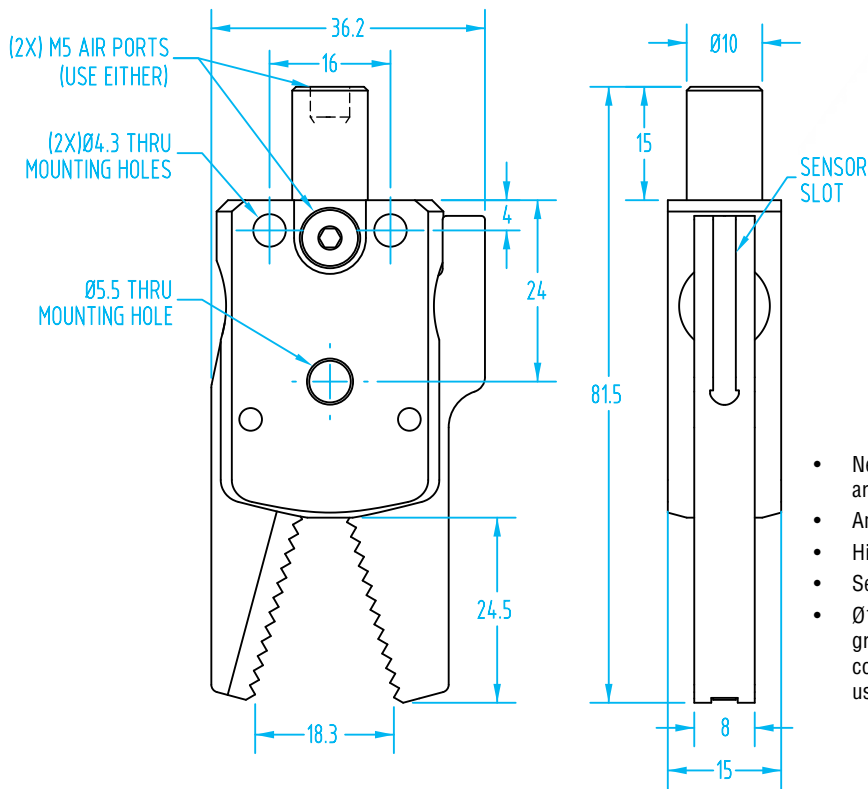
#7702
\$119.00

NEW

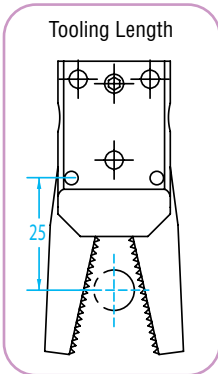
Fittings Available
on page 1047



New Style Mini Sprue Gripper with Sensor Slot – PB-0013-S2



- New Sensor Slot position provides sensing with more space around the jaws due to relocated sensor slot.
- Angular, non-self-centering.
- Higher grip force than other similarly sized sprue grippers.
- Serrated fingers hold small and medium sprues firmly.
- Ø10mm diameter mounting post with M5 air port allows this gripper to be used with standard mounting and air connection components. Alternate M5 air port on front of gripper can be used.



Quick# 7700 features a durable grooved jaw without a moving trigger. Sensing has been moved to the body of the gripper.

Quick#	Part#	Price	Style	Applicable Sprue Ø	Closing Force at 25mm Tooling Length*	Weight
7701	PB-0180-S2	\$109.00	Serrated w/ Sprue Detect	3–9mm	14.5 lbf	60g
7702	PB-0187-S2	\$119.00	HNBR Pads w/ Sprue Detect	3–9mm	11.0 lbf	58g
7700	PB-0013-S2	\$119.00	Grooved w/ Sprue Detect	3–9mm	14.5 lbf	50g
Order sensors separately See Sensor Reference Guide on page 1008 for a complete list of sensors for PB Grippers.						
7591	SSY4N225G	\$27.20	PNP high sensitivity sensor		with lead, 2.5m long	6–30 Vdc
7590	SSY4M225G	\$27.20	NPN high sensitivity sensor		with lead, 2.5m long	6–30 Vdc
7589	SSY3N203G	\$31.16	PNP high sensitivity sensor	M8 male connector, 0.3m long**		6–30 Vdc
7588	SSY3M203G	\$31.16	NPN high sensitivity sensor	M8 male connector, 0.3m long**		6–30 Vdc
7644	PRO-SSR4N225G	\$70.00	PNP teachable sensor		with lead, 2.5m long	24 Vdc
7645	PRO-SSR4M225G	\$70.00	NPN teachable sensor		with lead, 2.5m long	24 Vdc
7646	PRO-SSR3N215G	\$87.00	PNP teachable sensor	M8 male connector, 0.3m long**		24 Vdc
7647	PRO-SSR3M215G	\$87.00	NPN teachable sensor	M8 male connector, 0.3m long**		24 Vdc

SET-UP NOTE: The sensor will only send a signal when the gripper is actuated with compressed air.

Note: 2-wire reed sensors are not recommended for grippers.

* The Closing Force listed is both jaws combined when supplied at 87psi. Tooling length is measured from jaw pivot point.

** M8 Extension cables Quick#'s 2582 & 2583 available on page 985.

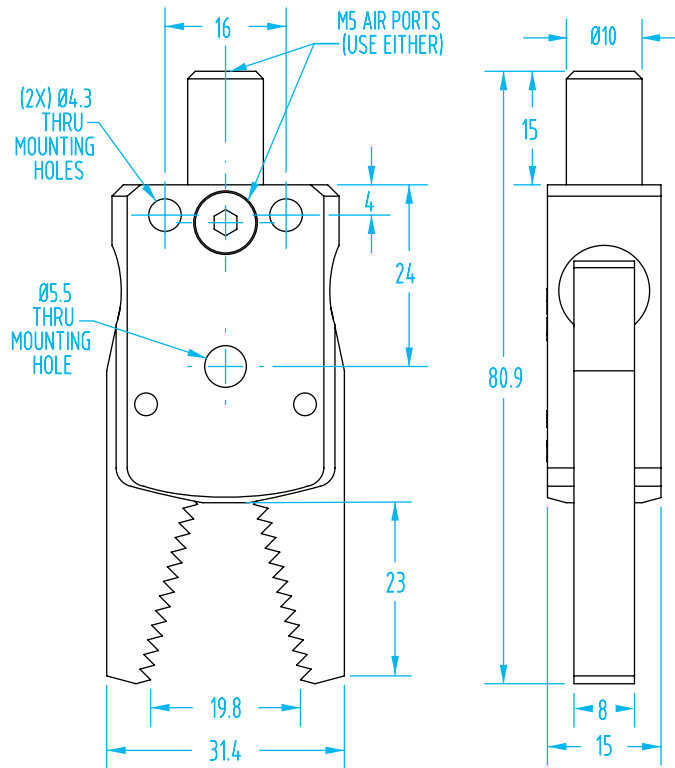
Mini Sprue Gripper – PB-0014 & PB-0015

(Dimensioned drawings shown full scale)



#1879
\$103.00

- Higher grip force than other similarly sized sprue grippers.
- Interlaced and serrated fingers hold small and medium sprues firmly.
- Angular, non-self-centering.
- Ø10mm diameter mounting post with M5 air port allows this gripper to be used with standard mounting and air connection components. Alternate M5 air port on front of gripper can be used.
- Replacement parts available online.



Quick#	Part#	Price	Operation	Applicable Sprue Ø	Closing Force at 25mm Tooling Length*	Weight
1879	PB-0014	\$103.00	Normally Open	3–9mm	14.5 lbf	48g
6473	GSG-PB-0015	\$145.00	Double Acting	3–9mm	11.0 lbf	48g

* The Closing Force listed is both jaws combined when supplied at 87psi. Tooling length is measured from jaw pivot point.

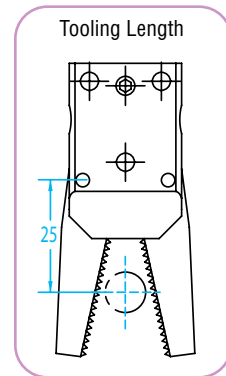
Use Quick#s for easy online ordering.



#6473
\$145.00



Replacement Parts for Gimatic and Senvex components are available on EMIcorp.com
Fingers, Pistons, O-rings, and more!

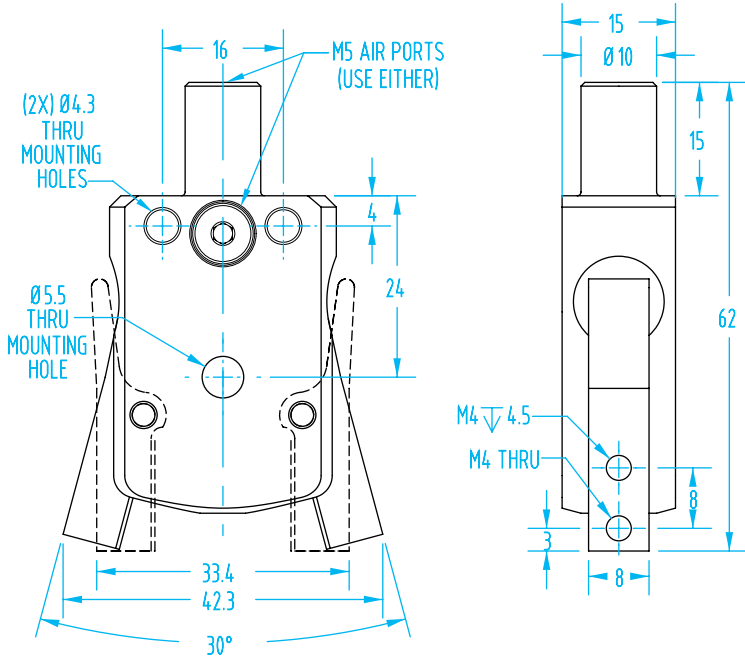


Fittings Available on page 1047



Mini Sprue Gripper with Custom Jaws – PB-0017

(Dimensioned drawings shown full scale)



- Single-acting with protected opening spring.
- Higher grip force than other similarly sized sprue grippers.
- Angular, non-self-centering.
- Ø10mm diameter mounting post with M5 air port allows this gripper to be used with standard mounting and air connection components. Alternate M5 air port on front of gripper can be used.
- Replacement parts available online.

Quick#	Part#	Price	Style	Closing Force at 25mm Tooling Length*	Weight
7116	PB-0017	\$121.00	For custom jaws	11.0 lbf	45g

* The Closing Force listed is both jaws combined when supplied at 87psi. Tooling length is measured from jaw pivot point.



#1236

Finger Blanks - priced per PAIR

Quick#	Part#	Description	Price
1236	PB-0017-FBA	Aluminum, 15mm thick	\$21.83
1237	PB-0017-FBP	Acetal, 15mm thick	\$21.83

Includes fasteners.

Gripper shown fully open:

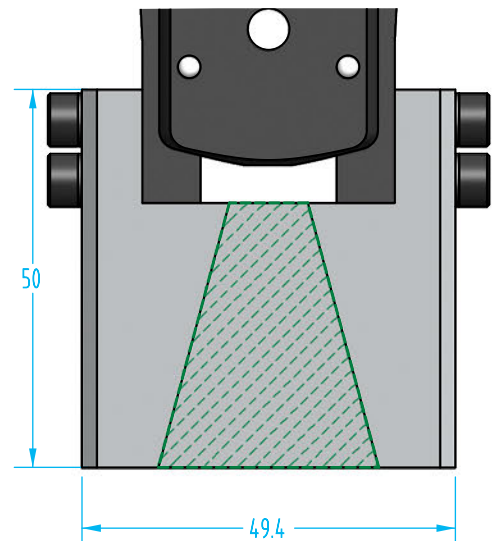
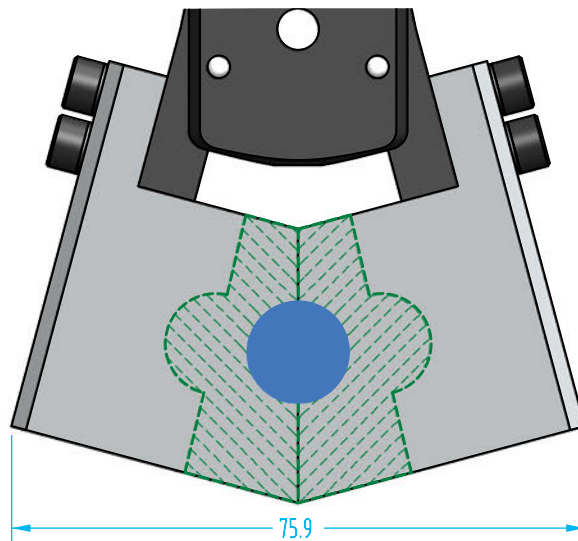
- Part to be gripped (example)
- Material to be machined away (example)

Gripper shown fully closed:

- Overlapping area when gripper is fully closed

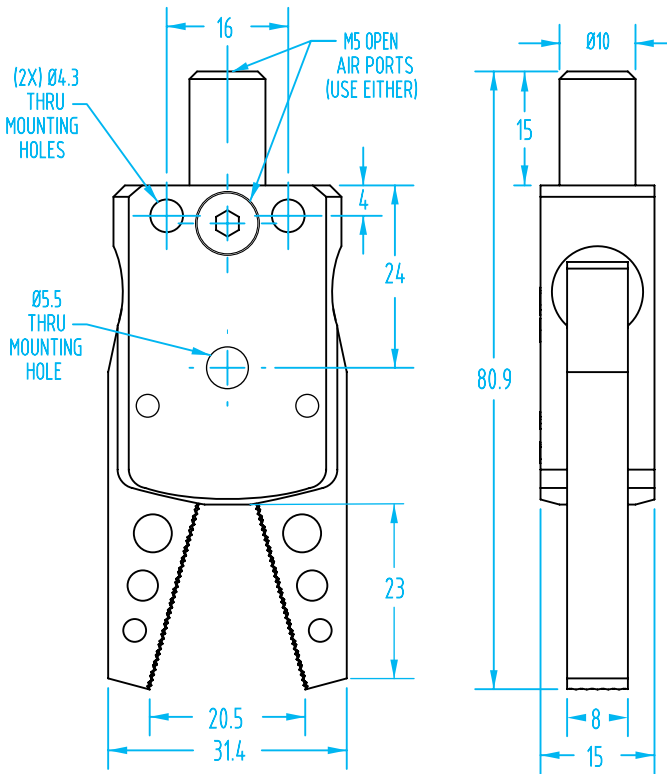
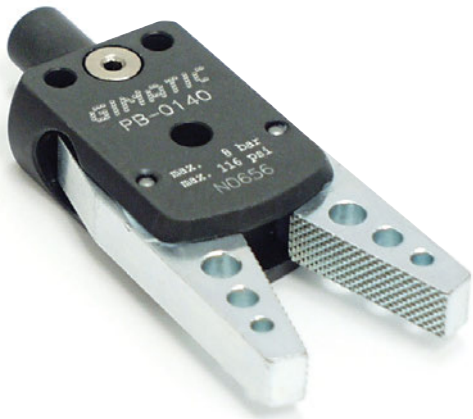


Example Custom Finger



Mini Diamond-Textured Sprue Gripper – PB-0140

(Dimensioned drawings shown full scale)



- This is the same gripper as the PB-0014 except this gripper has diamond textured steel teeth. Holds small and medium sprues firmly.
- Angular, non-self-centering.
- Higher grip force than other similarly sized sprue grippers.
- 10mm diameter mounting post with M5 air port allows this gripper to be used with standard mounting and air connection components. Alternate M5 air port on front of gripper can be used.
- Replacement parts available online.

Quick#	Part#	Price	Style	Applicable Sprue Ø	Closing Force at 25mm Tooling Length*	Weight
6652	PB-0140	\$145.00	Diamond Textured Jaws	1–9mm	14.5 lbf	48g

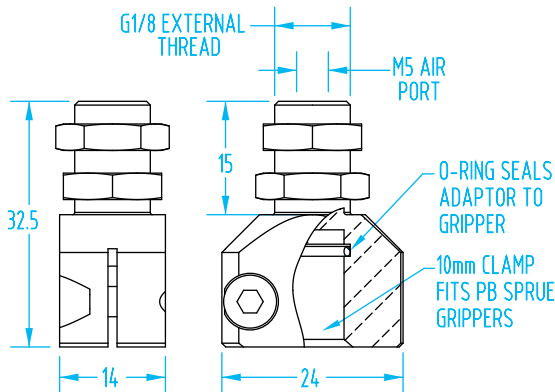
* The Closing Force listed is both jaws combined when supplied at 87psi. Tooling length is measured from jaw pivot point.

Fittings Available on page 1047

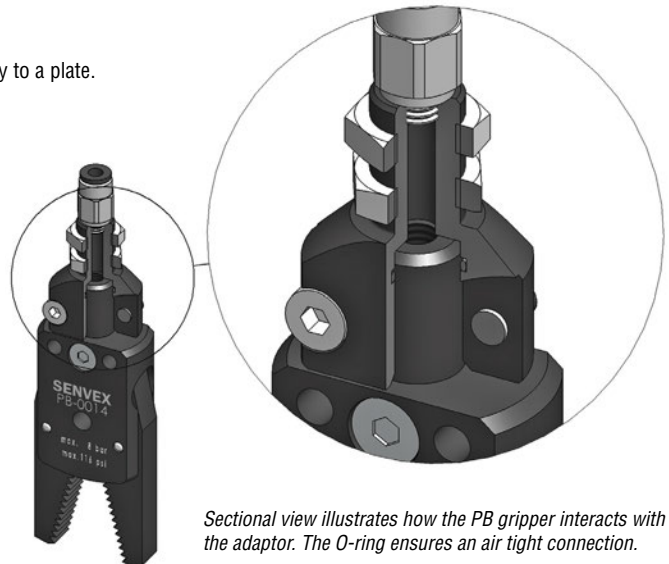


Mini Sprue Gripper Adaptor

- The mini sprue gripper adaptor allows for a more robust mounting option.
- The external threads can be used to mount PB grippers to brackets or directly to a plate.



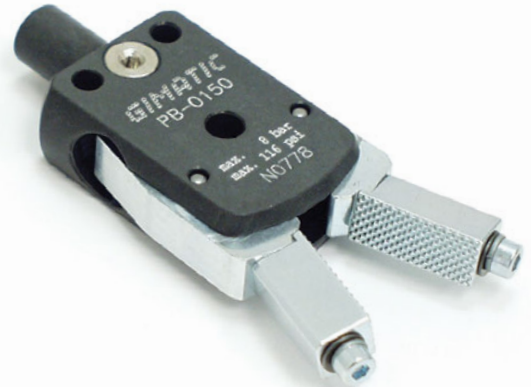
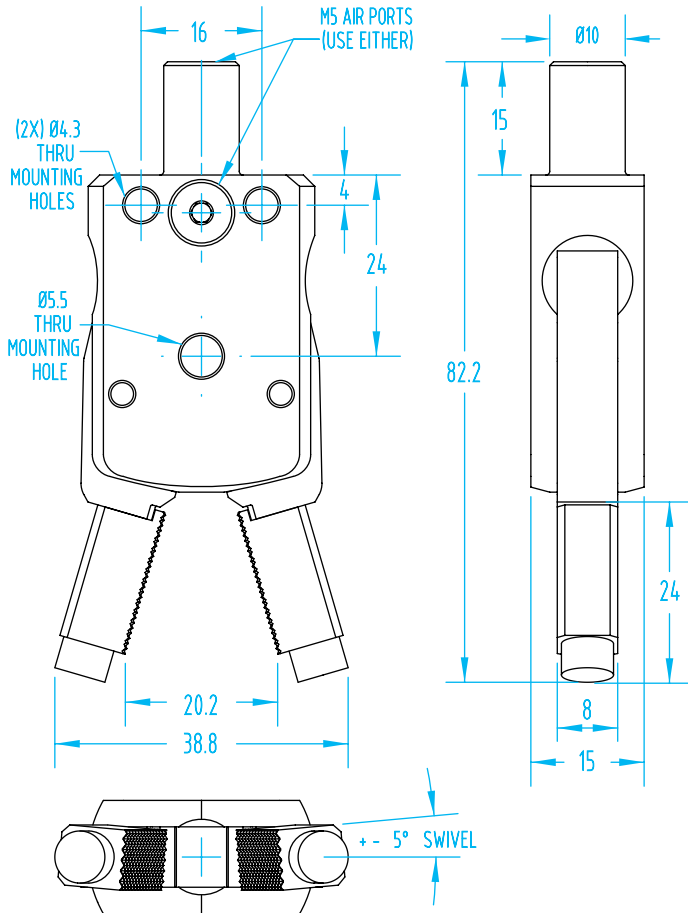
Quick#	Part#	Price	Weight
7249	AF10G18M	\$55.85	22g



Sectional view illustrates how the PB gripper interacts with the adaptor. The O-ring ensures an air tight connection.

Mini Diamond-Textured Sprue Gripper with Swivel Jaws – PB-0150

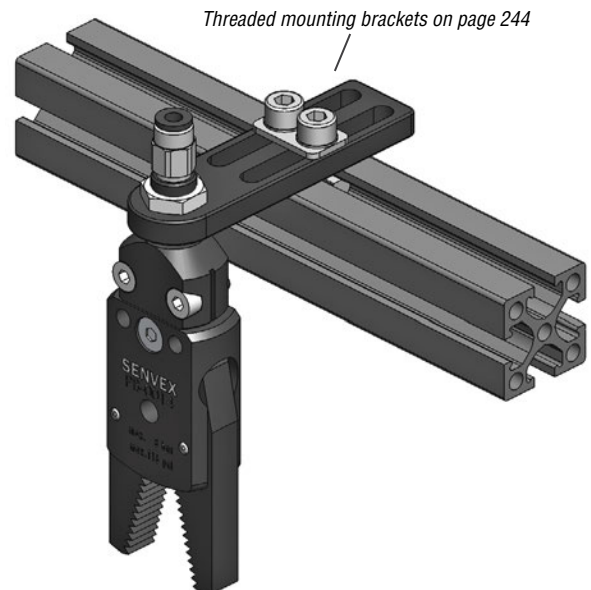
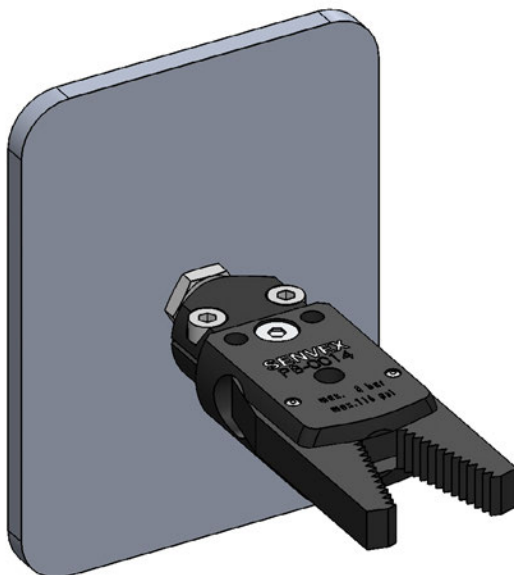
(Dimensioned drawings shown full scale)



- This is the same gripper as the PB-0014 except this gripper has diamond-textured steel teeth that swivel.
- Angular, non-self-centering.
- The teeth independently swivel $\pm 5^\circ$ each to conform to cone shaped sprues for more surface contact and secure grip.
- Higher grip force than other similarly sized sprue grippers.
- 10mm diameter mounting post with M5 air port allows this gripper to be used with standard mounting and air connection components. Alternate M5 air port on front of gripper can be used.
- Replacement parts available online.

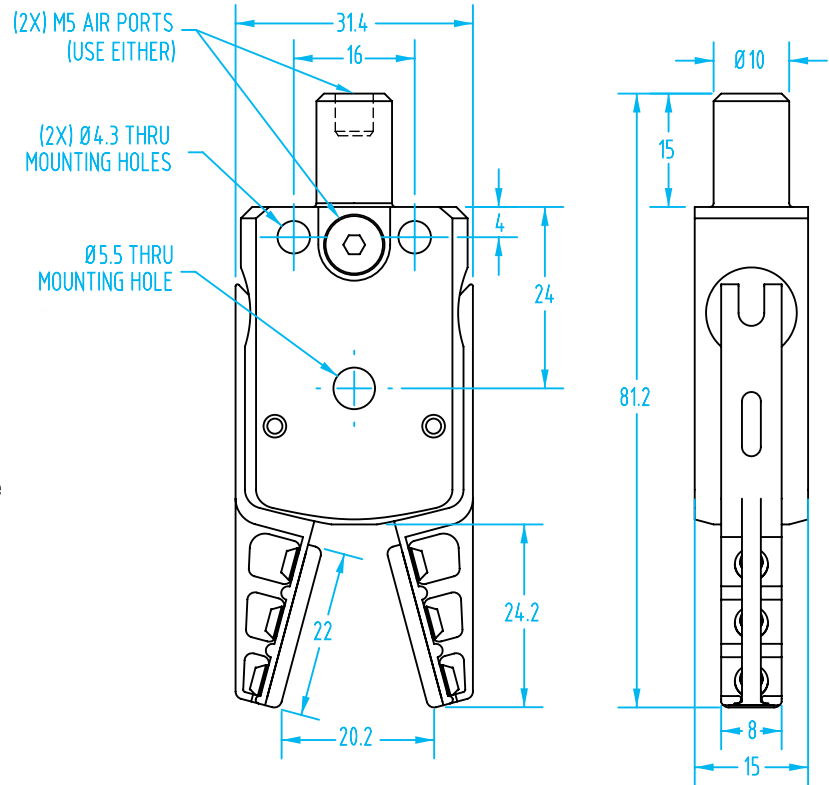
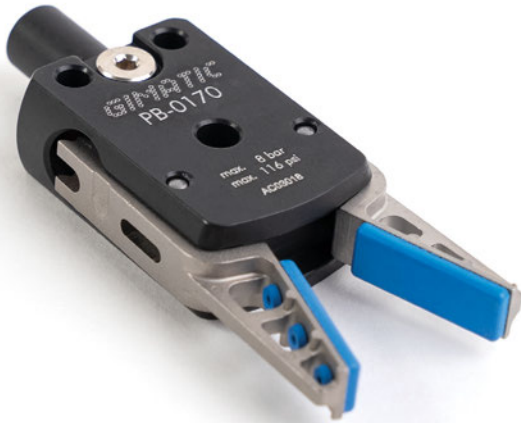
Quick#	Part#	Price	Style	Applicable Sprue Ø	Closing Force at 25mm Tooling Length*	Weight
6653	PB-0150	\$228.00	Diamond Swivel-jaws	3–9mm	14.5 lbf	48g

* The Closing Force listed is both jaws combined when supplied at 87psi. Tooling length is measured from jaw pivot point.



Mini Sprue Gripper with HNBR Padded Jaws – PB-0170

(Dimensioned drawings shown full scale)



- Non-marking HNBR pads have a maximum temperature of 302°F.
- Angular, non-self-centering.
- Higher grip force than other similarly sized sprue grippers.
- Ø10mm diameter mounting post with M5 air ports allows this gripper to be used with standard mounting and air connection components.
- Replacement parts available online.

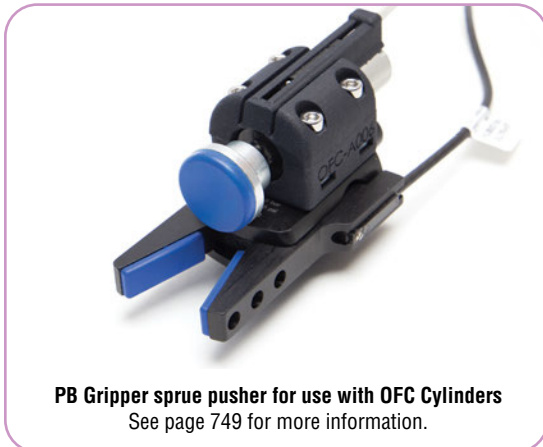
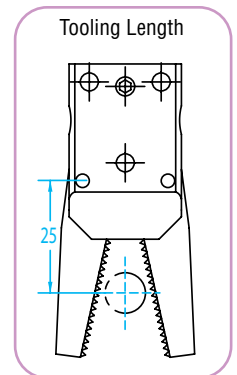


Quick#	Part#	Price	Style	Applicable Sprue Ø	Closing Force at 25mm Tooling Length*	Weight
7119	PB-0170	\$132.00	HNBR Rubber Pads	3–9mm	11.0 lbf	57g

* The Closing Force listed is both jaws combined when supplied at 87psi. Tooling length is measured from jaw pivot point.

Replacement Pads - priced each

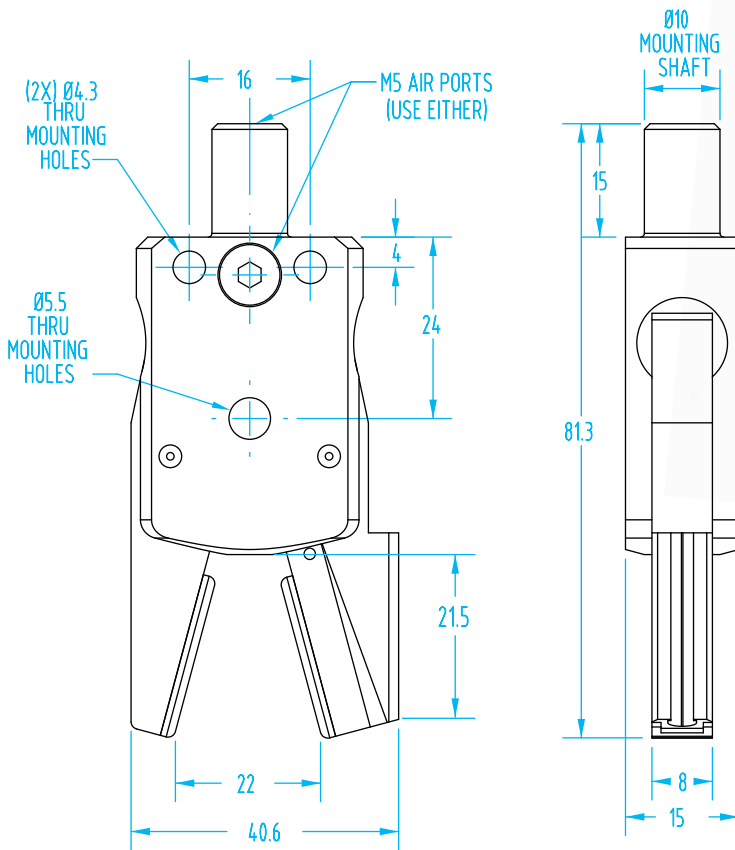
Quick#	Part#	Description	Price
7484	PB-0170-05	New Style HNBR, 22 x 8mm, 2mm thickness	\$5.50
7627	PB-0170-05F	New Style Flocked, 22 x 8mm, 2mm thickness	\$8.39
7519	KIT3-PB0170	Kit includes 2 New Style & 2 Old Style HNBR Pads 22 x 8mm, 2mm thickness	\$10.27



PB Gripper sprue pusher for use with OFC Cylinders
See page 749 for more information.

Mini Sprue Gripper with Padded Jaws & Sensor Finger – PB-0187

(Dimensioned drawings shown full scale)



The Original!



- Unreliable sensing may occur if the part being gripped has a thickness less than 3mm.
- Correct sensor location in the slot is important for proper operation.
- Replacement parts available online.

Quick#	Part#	Price	Style	Applicable Sprue Ø	Closing Force at 25mm Tooling Length*	Weight
7250	PB-0187-S	\$165.00	HNBR Pads & Sprue Detect	3–9mm	11.0 lbf	60g
Order sensors separately See Sensor Reference Guide on page 1008 for a complete list of sensors for PB Grippers.						
1882	SS4N225G	\$27.20	PNP sensor		with lead, 2.5m long	6–24vdc
6282	SS3N203G	\$31.16	PNP sensor		M8 male connector, 0.3m long**	6–24vdc
1883	SS4M225G	\$27.20	NPN sensor		with lead, 2.5m long	6–24vdc
1884	SS3M203G	\$31.16	NPN sensor		M8 male connector, 0.3m long**	6–24vdc

Note: 2-wire reed sensors are not recommended for grippers.

* The Closing Force listed is both jaws combined when supplied at 87psi. Tooling length is measured from jaw pivot point.

** M8 Extension cables Quick#'s 2582 & 2583 available on page 985.

Replacement Pads - priced each

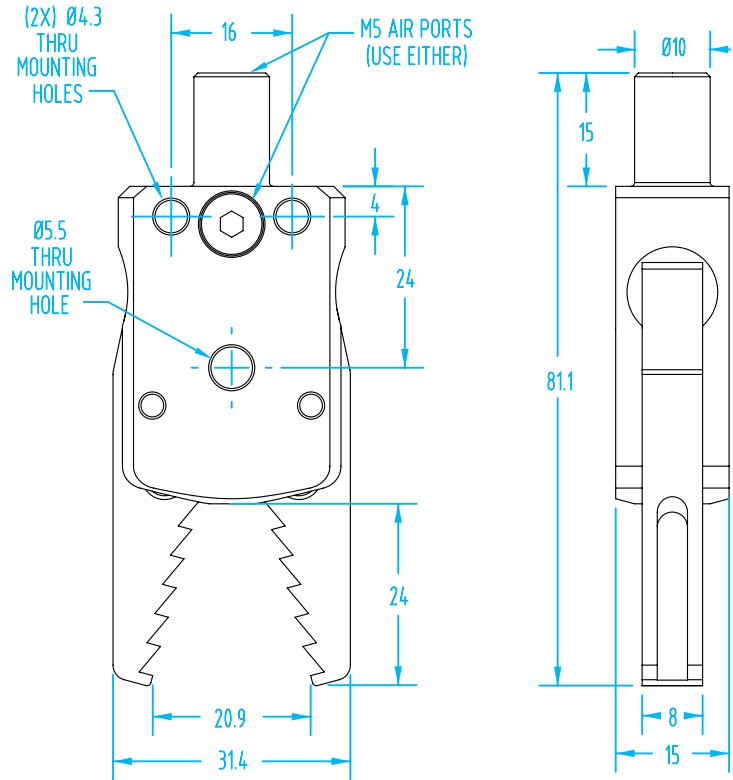
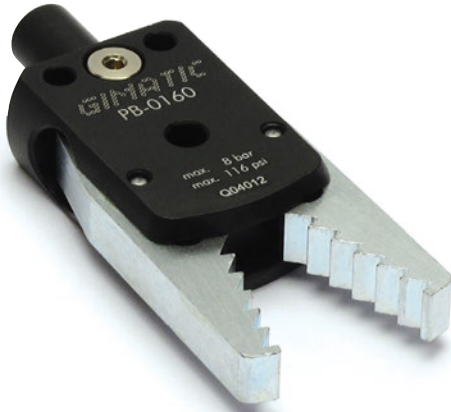
Quick#	Part#	Description	Price
7484	PB-0170-05	1x, New Style HNBR, 22 x 8mm, 2mm thickness	\$5.50
7627	PB-0170-05F	1x New Style Flocked, 22 x 8mm, 2mm thickness	\$8.39
7519	KIT3-PB0170	Kit includes 2 New Style & 2 Old Style HNBR Pads 22 x 8mm, 2mm thickness	\$10.27

Many custom pad options and materials are available from EMI's 3D Printing Department. High temperature, Non-Marking, Flocked, Super Soft Touch, Fiber reinforced, and more.



Mini Sprue Gripper with Steel Jaws – PB-0160

(Dimensioned drawings shown full scale)



- Higher grip force than other similarly sized sprue grippers.
- Angular, non-self-centering.
- Interlaced and serrated steel jaws hold small and medium sprues firmly.
- Ø10mm diameter mounting post with M5 air port allows this gripper to be used with standard mounting and air connection components. Alternate M5 air port on front of gripper can be used.
- Replacement parts available online.



Find nipper mounting clamps for PB grippers on pages 838 – 839.

Quick#	Part#	Price	Style	Applicable Sprue Ø	Closing Force at 25mm Tooling Length*	Weight
7118	PB-0160	\$129.00	Steel Saw Jaws	3–9mm	11.0 lbf	70g

* The Closing Force listed is both jaws combined when supplied at 87psi. Tooling length is measured from jaw pivot point.

Mini Sprue Grippers with Vacuum Detection

- Gripper must be connected to compressed air to get a sprue gripped confirmation.
- Higher grip force than other similarly sized sprue grippers.
- Angular, non-self-centering.
- Ø10mm diameter mounting post with M5 air port allows this gripper to be used with standard mounting and air connection components. Alternate M5 air port on front of gripper can be used.
- Replacement parts available online.
- Find more information including dimensional drawings online!



NEW

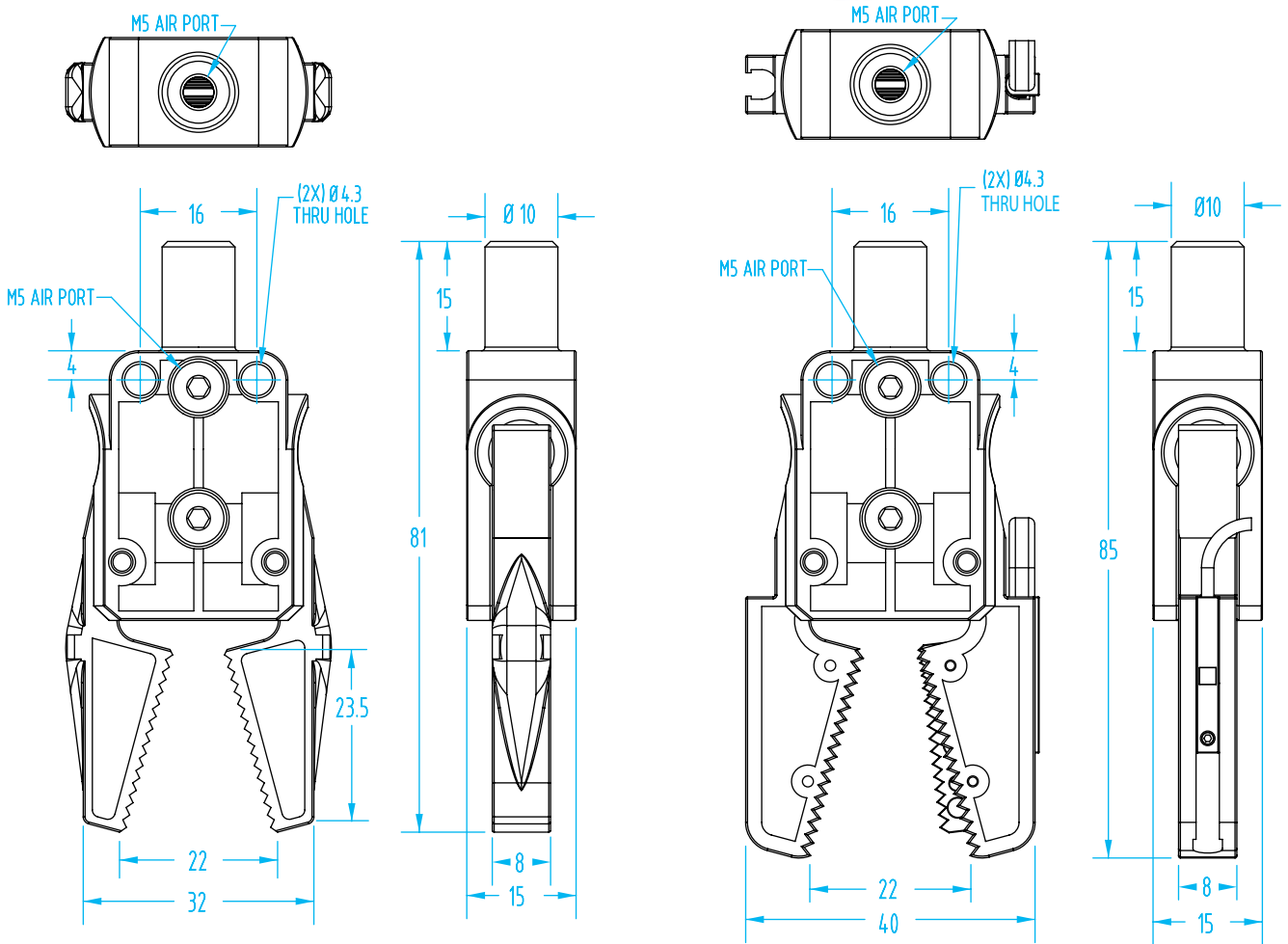
Quick#	Part#	Price	Style	Applicable Sprue Ø	Closing Force at 25mm Tooling Length*	Weight
7797	PB-0180-SV	\$134.00	Aluminum Jaws	2.5–9mm	11.0 lbf	74g
7798	PB-0187-SV	\$134.00	HNBR Padded Jaws	2.5–9mm	11.0 lbf	62g

* The Closing Force listed is both jaws combined when supplied at 87psi. Tooling length is measured from jaw pivot point.

Mini Die Cast Grippers – BB

(Dimensioned drawings shown full scale)

- Utilizes the reliable PB-type of mechanism except this gripper is die cast construction resulting in a lower cost but it is about 50% heavier than aluminum constructed PB grippers of the same size.
- Angular, non-self-centering.
- Sensor models come with the sensor installed and configured. A single sensor mounted on the finger confirms gripping of the sprue.
- Serrated fingers hold small and medium diameter sprues well.
- Made of Zamak™



Quick#	Part#	Price	Style	Operation	Applicable Sprue Ø	Closing Force at 25mm Tooling Length*	Weight
6553	BB-12-NO	\$89.00	No Sensor	Normally Open	3–9mm	11.0 lbf	74g
6554	BB-13-NO	\$99.00	Supplied with PNP Sensor	Normally Open	3–9mm	11.0 lbf	88g
6555	BB-14-NO	\$99.00	Supplied with NPN Sensor	Normally Open	3–9mm	11.0 lbf	88g
6578	BB-13-00	\$103.00	Supplied with PNP Sensor	Double-Acting	3–9mm	11.7 lbf	76g

* The Closing Force listed is both jaws combined when supplied at 87psi. Tooling length is measured from jaw pivot point.

Micro Sprue Gripper – PB-0008 & PB-0007

(Dimensioned drawings shown full scale)

NEW



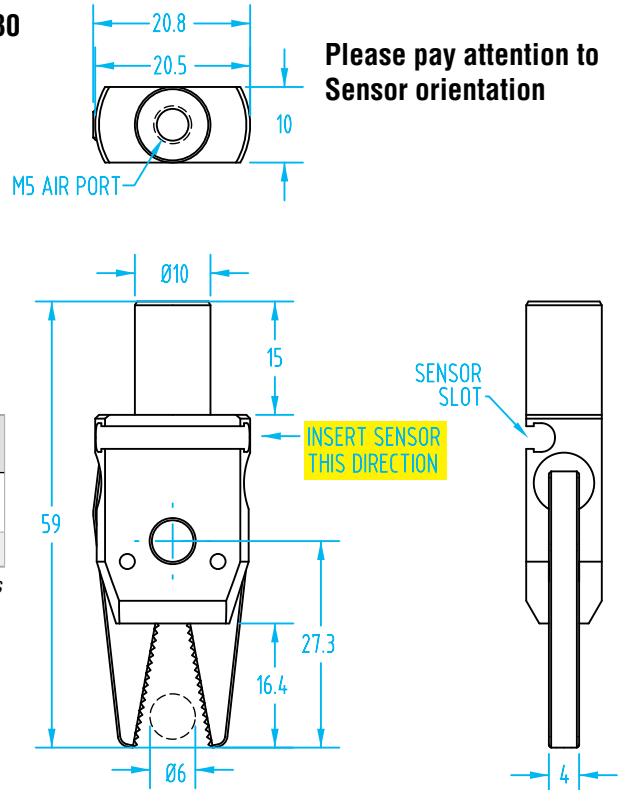
#7280 shown with sensor

Quick#	Part#	Price	Style	Applicable Sprue Ø	Closing Force*	Wt.
7280	PB-0008-S3	\$104.00	Diamond Textured Jaws	1–7mm	6.0 lbf	18g
7461	PB-0007-S3	\$119.00	Padded Jaws	1–7mm	6.0 lbf	17g

* The Closing Force listed is both jaws combined when supplied at 87psi. Tooling length is measured from jaw pivot point.

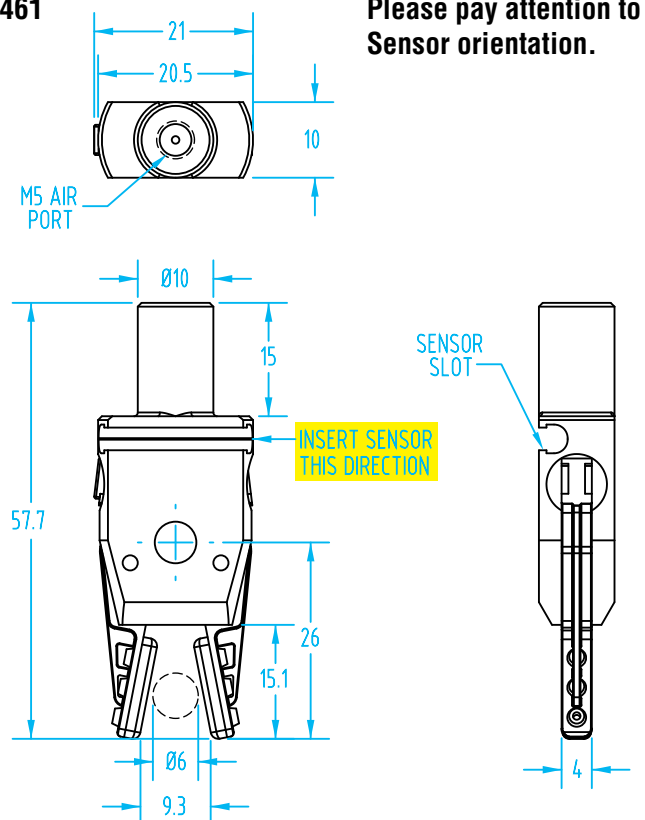
- New sensor slot on the body detects sprue gripped. PRO-SSR.. sensors are recommended and sold separately.
- Angular, non-self-centering.
- Gripper fingers join at the tip to grip small part/sprue diameters as small as 1mm.
- Ø10mm diameter mounting post with M5 airport allows this gripper to be used with standard mounting and air connection components.
- Very compact and lightweight but with enough grip force to reliably grip small parts and sprues.
- Ø5.5 thru hole added for direct plate mounting.
- #7280: Diamond-textured gripping surface is ideal for gripping small diameters.
- #7461: Non-marking HNBR pads have a maximum temperature of 302°F.
- Replacement parts available online.

#7280



Please pay attention to Sensor orientation

#7461



Please pay attention to Sensor orientation.

NEW



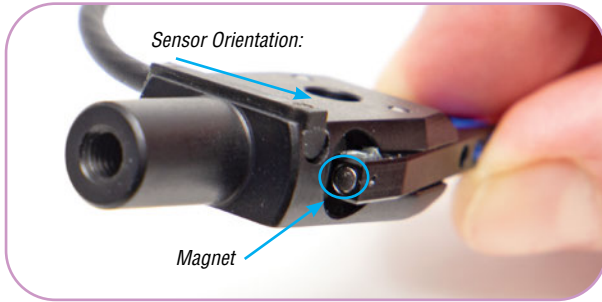
#7461

Replacement Pads for PB-0007 - priced EACH

Quick#	Part#	Material	Price
7373	PB-0007-1	HNBR	\$5.29

13.2mm length, 3.5mm width, 2mm thickness.

Sensors for Micro Sprue Gripper – PB-0008 & PB-0007



Watch our Teachable PRO Sensor video!

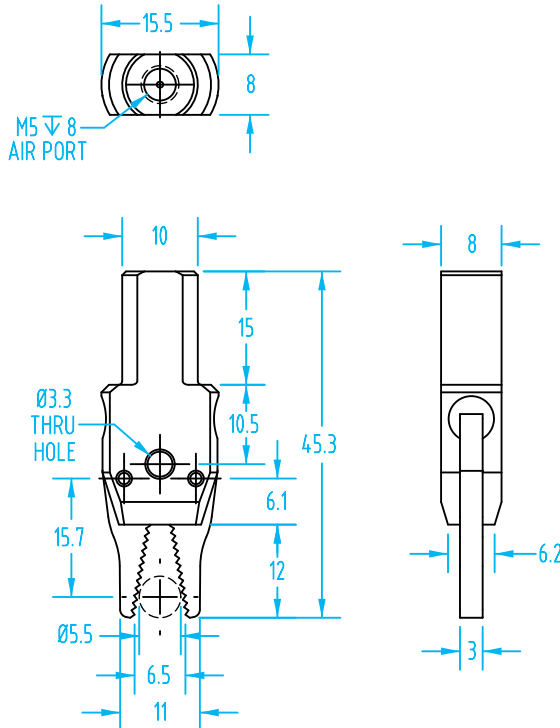
Due to the location of the PB micro grippers magnet, please pay attention to sensor orientation.

Sensors - for PB-0008-S3 (#7280) & PB-0007-S3 (#7461)

Quick#	Part#	Price	Signal & Style	Description
7644	PRO-SSR4N225G	\$70.00	PNP teachable sensor	5-wire with lead, 2.5m long
7645	PRO-SSR4M225G	\$70.00	NPN teachable sensor	5-wire with lead, 2.5m long
7646	PRO-SSR3N215G	\$87.00	PNP teachable sensor	5-wire w/ M8 male connector, 0.3m long*
7647	PRO-SSR3M215G	\$87.00	NPN teachable sensor	5-wire w/ M8 male connector, 0.3m long*

* M8 Extension cables Quick#'s 2582 & 2583 available on page 985.
See Sensor Reference Guide on page 1008 for a complete list of sensors for PB Grippers.

(Dimensioned drawings shown full scale)



Nano Sprue Gripper – PB-0002



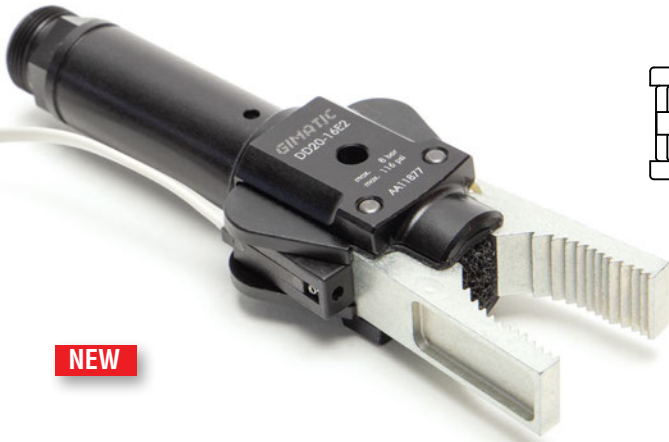
- With a 6mm bore, 8mm thickness and 45mm total length, this is the smallest Gimatic Sprue Gripper available.
- Angular, non-self-centering.
- Ø10mm diameter mounting post with M5 airport allows this gripper to be used with standard mounting and air connection components.
- Gripper fingers join at the tip to grip small part / sprue for diameters as small as 1mm.

Quick#	Part#	Price	Description	Applicable Sprue Ø	Closing Force*	Wt.
7622	PB-0002	\$106.00	Normally Open	1–5.5 mm	2.8 lbf	7g

* The Closing Force listed is both jaws combined when supplied at 87psi. Tooling length is measured from jaw pivot point.

Compact-Body Sensor Sprue Gripper – DD20-16

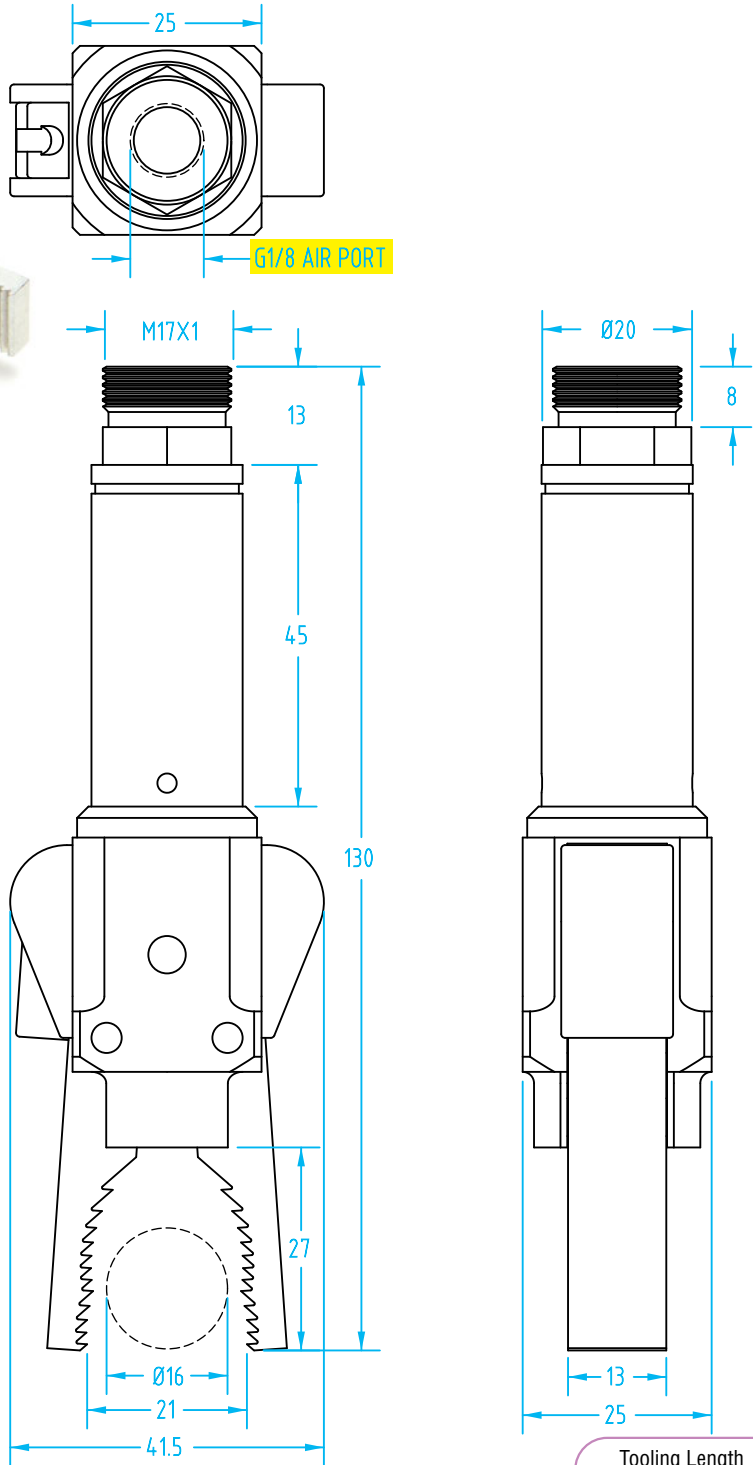
(Dimensioned drawing shown full scale)



NEW

- New Sensor Slot position provides sensing without interfering with the part being gripped.
- Angular, self-centering.
- Gripper has a G1/8" air port.
- Higher grip force than GRZ20-16 grippers.
- Clampable along full length of Ø20mm body.
- Diamond-textured fingers provide excellent gripping of small to large sprues. This design is also excellent for sprues that need to be pulled or stripped from a mold cavity.
- 20mm diameter mounting body allows this gripper to be used with standard mounting components.
- Replacement parts available online.

SET-UP NOTE: The sensor will only send a signal when the gripper is actuated with compressed air.

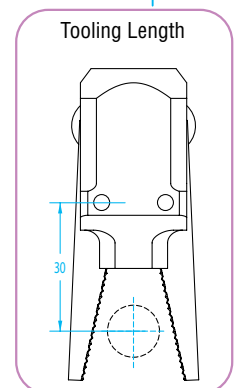


Quick#	Part#	Price	Style	Applicable Sprue Ø	lbs. Force at 30mm Tooling Length*	Weight
7554	DD20-16E2	\$179.00	Concave Diamond Texture	3–12mm	45.0 lbf	138g
Order sensors separately See Sensor Reference Guide on page 1008 for a complete list of sensors for DD Grippers.						
1882	SS4N225G	\$27.20	PNP sensor	with lead, 2.5m long		6–30 Vdc
6282	SS3N203G	\$31.16	PNP sensor	M8 male connector, 0.3m long**		6–30 Vdc
1883	SS4M225G	\$27.20	NPN sensor	with lead, 2.5m long		6–30 Vdc
1884	SS3M203G	\$31.16	NPN sensor	M8 male connector, 0.3m long**		6–30 Vdc

Note: 2-wire reed sensors are not recommended for grippers.

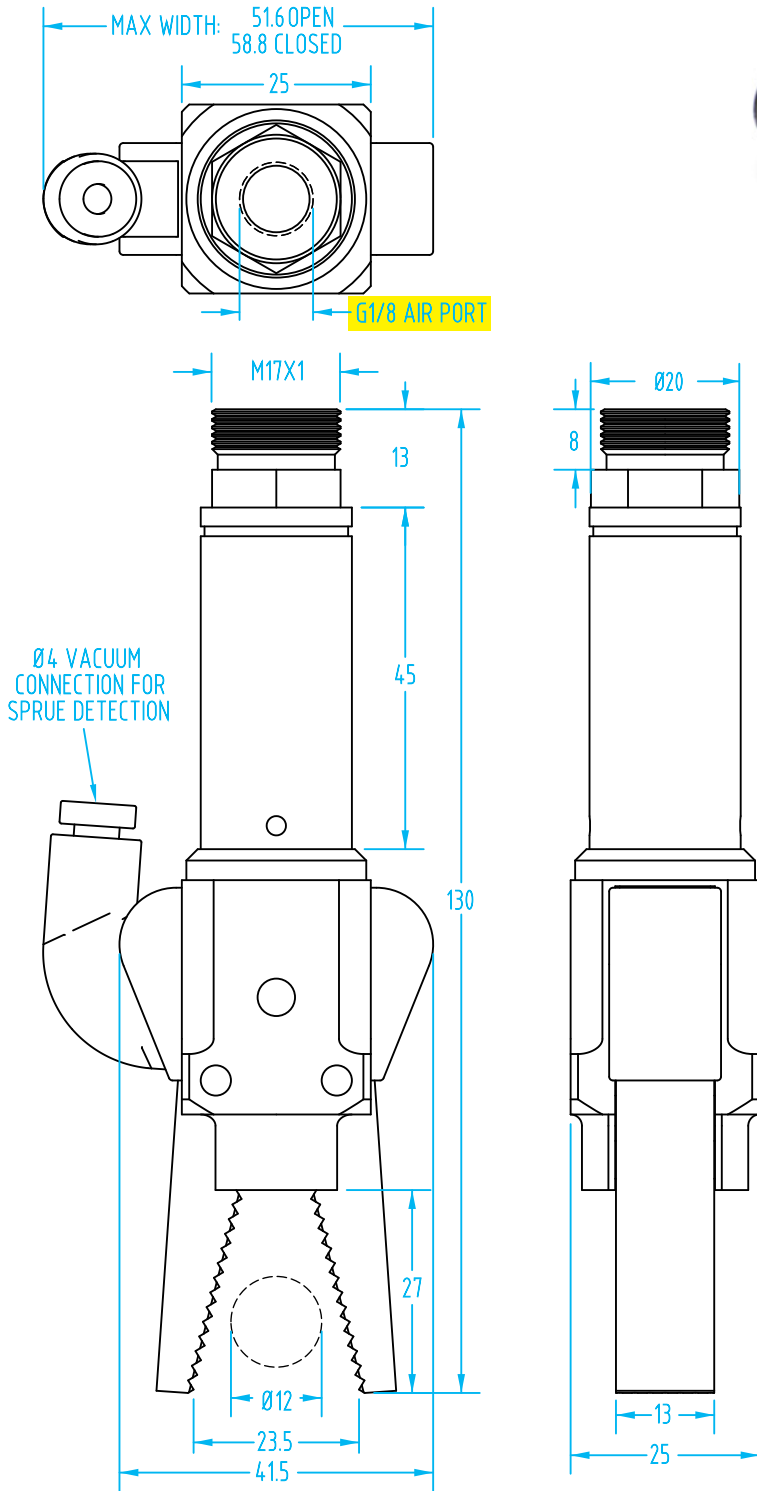
* The Closing Force listed is both jaws combined when supplied at 87psi. Tooling length is measured from jaw pivot point.

** M8 Extension cables Quick#'s 2582 & 2583 available on page 985.



Compact-Body Sensor Sprue Gripper – DD20-16

(Dimensioned drawing shown full scale)



- NEW! Simple to implement and cost effective sensing for sprue gripping. This gripper utilizes a robots existing vacuum detection switch for verification of sprue / part.
- Angular, self-centering.
- Gripper has a G1/8" air port.
- Higher grip force than GRZ20-16 grippers.
- Clampable along full length of Ø20mm body.
- Diamond-textured fingers provide excellent gripping of small to large sprues. This design is also excellent for sprues that need to be pulled or stripped from a mold cavity.
- 20mm diameter mounting body allows this gripper to be used with standard mounting components.
- Replacement parts available online.

SET-UP NOTE: The sensor will only send a signal when the gripper is actuated with compressed air.

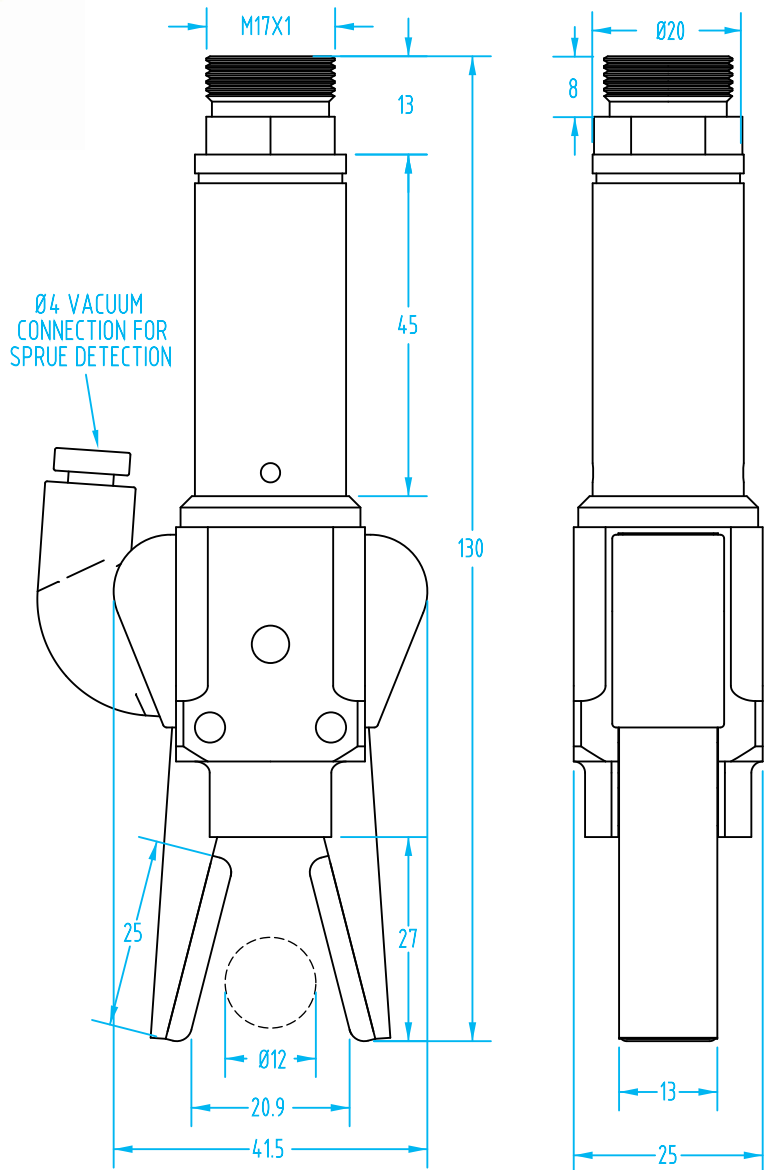
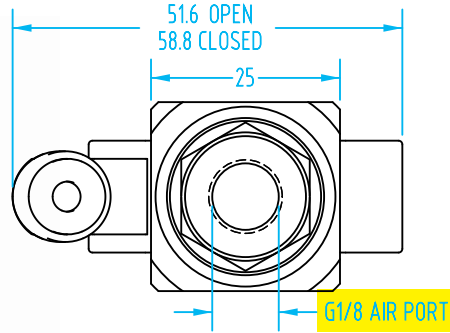


Quick#	Part#	Price	Style	Applicable Sprue Ø	lbs. Force at 30mm Tooling Length*	Weight
7555	DD20-16MV	\$179.00	Diamond Texture with vacuum detection	3–12mm	45.0 lbf	147g

* The Closing Force listed is both jaws combined when supplied at 87psi. Tooling length is measured from jaw pivot point.

Compact-Body Sensor Sprue Gripper – DD20-16

(Dimensioned drawing shown full scale)



- NEW! Simple to implement and cost effective sensing for sprue gripping. This gripper utilizes a robots existing vacuum detection switch for verification of sprue / part.
- Angular, self-centering.
- Gripper has a G1/8" air port.
- Higher grip force than GRZ20-16 grippers.
- Clampable along full length of Ø20mm body.
- Non-marking HNBR pads have a maximum temperature of 302°F. Replacements are listed on page 451.
- 20mm diameter mounting body allows this gripper to be used with standard mounting components.
- Replacement parts available online.

SET-UP NOTE: The sensor will only send a signal when the gripper is actuated with compressed air.

Watch our Compact Sprue Gripper with Vacuum Part Detection video!

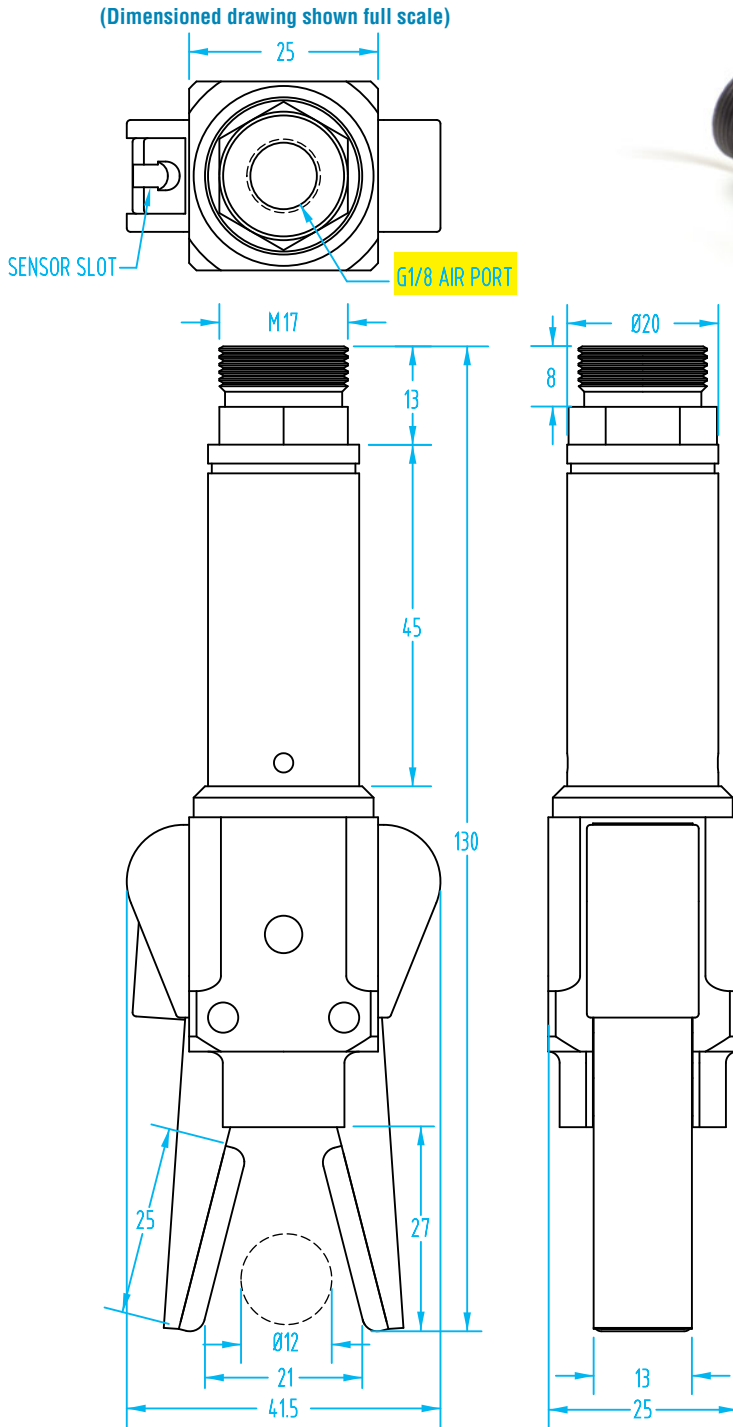
Fittings Available on page 1047



Quick#	Part#	Price	Style	Applicable Sprue Ø	lbs. Force at 30mm Tooling Length*	Weight
7556	DD20-16LV	\$179.00	HNBR Padded Jaws with vacuum detection	3–12mm	45.0 lbf	138g

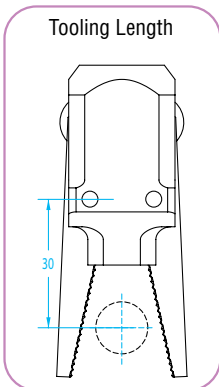
* The Closing Force listed is both jaws combined when supplied at 87psi. Tooling length is measured from jaw pivot point.

Compact-Body Sensor Sprue Gripper – DD20-16



- New Sensor Slot position provides sensing without interfering with the part being gripped.
- Angular, self-centering.
- Gripper has a G1/8" air port.
- Unreliable sensing may occur if the part being gripped has a thickness less than 2mm. Correct sensor location in the slot is important for proper operation.
- Much higher grip force than GRZ20-16 grippers.
- Clampable along full length of Ø20mm body.
- Non-marking HNBR pads have a maximum temperature of 302°F. Replacements are listed on page 451.
- 20mm diameter mounting body allows this gripper to be used with standard mounting components.
- Replacement parts available online.
- Replaces older models: DD20-16P (#7123), DD20-16PS (#7124), & DD20-16L (#7247)

SET-UP NOTE: The sensor will only send a signal when the gripper is actuated with compressed air.



Quick#	Part#	Price	Style	Applicable Sprue Ø	lbs. Force at 30mm Tooling Length*	Weight
7552	DD20-16L2	\$159.00	HNBR Pads	2–12mm	45.0 lbf	132g
Order sensors separately See Sensor Reference Guide on page 1008 for a complete list of sensors for DD Grippers.						
1882	SS4N225G	\$27.20	PNP sensor	with lead, 2.5m long		6–30 Vdc
6282	SS3N203G	\$31.16	PNP sensor	M8 male connector, 0.3m long**		6–30 Vdc
1883	SS4M225G	\$27.20	NPN sensor	with lead, 2.5m long		6–30 Vdc
1884	SS3M203G	\$31.16	NPN sensor	M8 male connector, 0.3m long**		6–30 Vdc

Note: 2-wire reed sensors are not recommended for grippers.
 * The Closing Force listed is both jaws combined when supplied at 87psi. Tooling length is measured from jaw pivot point.
 ** M8 Extension cables Quick#'s 2582 & 2583 available on page 985.

Compact-Body Sensor Sprue Gripper – DD20-16



NEW

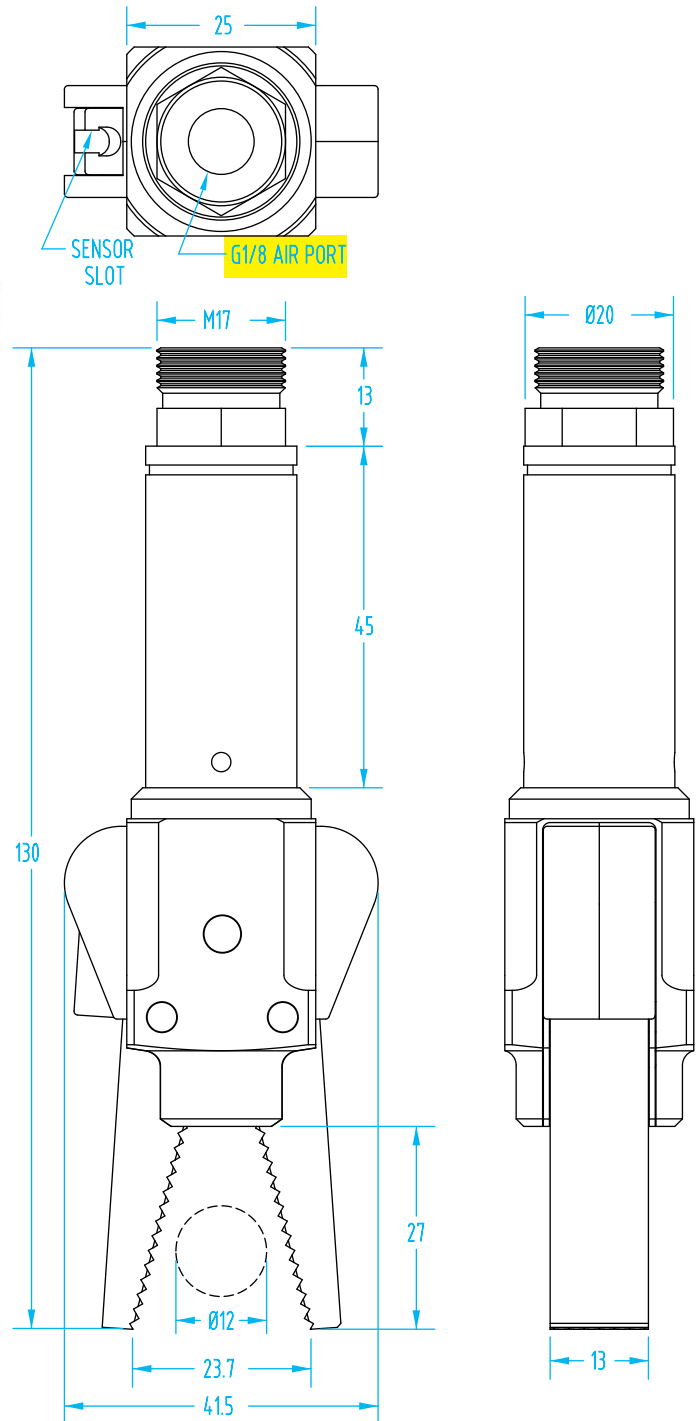
- New Sensor Slot position provides sensing without interfering with the part being gripped.
- Angular, self-centering.
- Gripper has a G1/8" air port.
- Higher grip force than GRZ20-16 grippers.
- Clampable along full length of Ø20mm body.
- Diamond-textured fingers provide excellent gripping of small to large sprues. This design is also excellent for sprues that need to be pulled or stripped from a mold cavity.
- 20mm diameter mounting body allows this gripper to be used with standard mounting components.
- Replacement parts available online.
- Replaces older models: DD20-16R (#5838), DD20-16RS (#5839), DD20-16M (#6779), DD20-16A (#6773), DD20-16AS (#6774), DD20-16T (#7443).

SET-UP NOTE: The sensor will only send a signal when the gripper is actuated with compressed air.

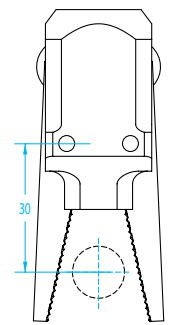
Fittings Available on page 1047



(Dimensioned drawing shown full scale)



Tooling Length



Quick#	Part#	Price	Style	Applicable Sprue Ø	Ibs. Force at 30mm Tooling Length*	Weight
7551	DD20-16M2	\$159.00	Diamond Texture	1-12mm	45.0 lbf	143g
Order sensors separately See Sensor Reference Guide on page 1008 for a complete list of sensors for DD Grippers.						
1882	SS4N225G	\$27.20	PNP sensor	with lead, 2.5m long		6-30 Vdc
6282	SS3N203G	\$31.16	PNP sensor	M8 male connector, 0.3m long**		6-30 Vdc
1883	SS4M225G	\$27.20	NPN sensor	with lead, 2.5m long		6-30 Vdc
1884	SS3M203G	\$31.16	NPN sensor	M8 male connector, 0.3m long**		6-30 Vdc

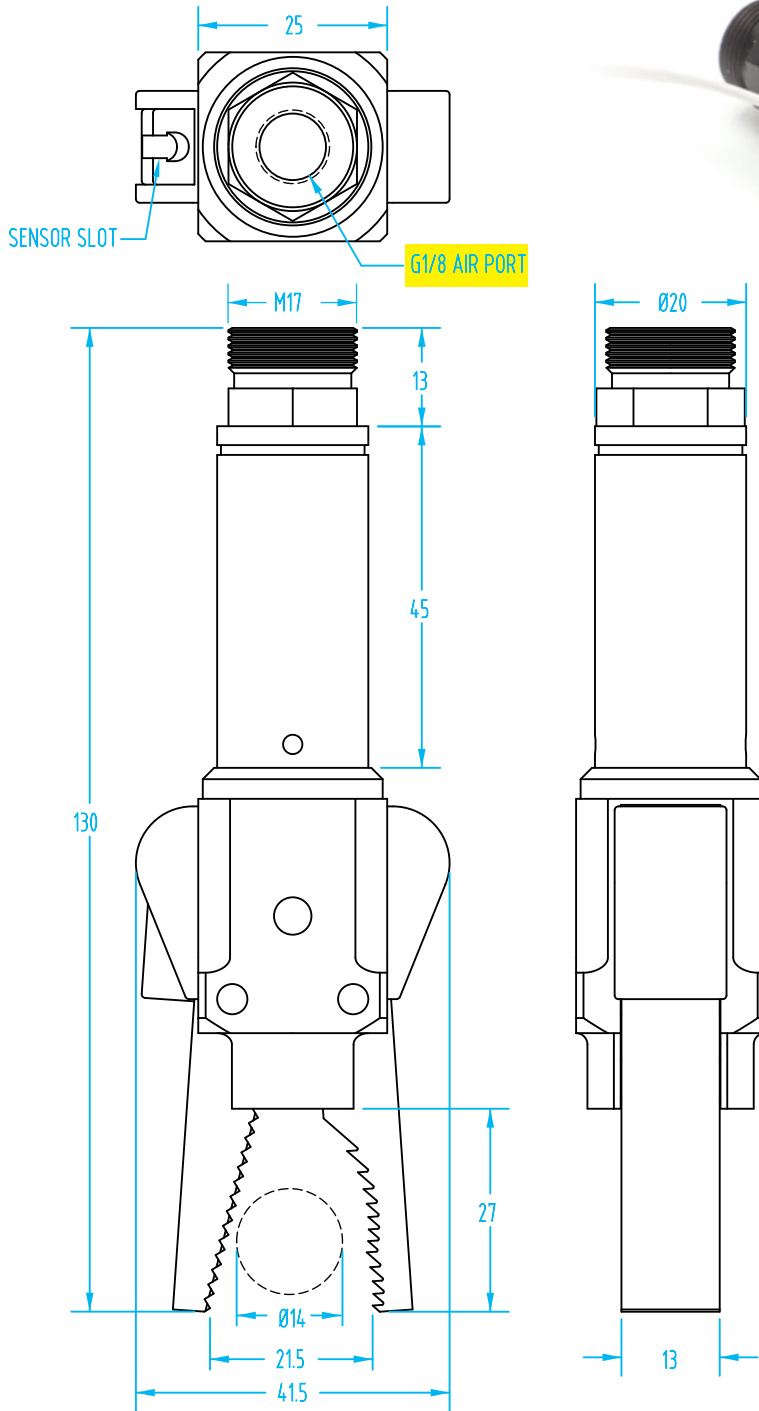
Note: 2-wire reed sensors are not recommended for grippers.

* The Closing Force listed is both jaws combined when supplied at 87psi. Tooling length is measured from jaw pivot point.

** M8 Extension cables Quick#'s 2582 & 2583 available on page 985.

Compact-Body Sensor Sprue Gripper – DD20-16

(Dimensioned drawing shown full scale)



NEW

- New Sensor Slot position provides sensing without interfering with the part being gripped.
 - Angular, self-centering.
 - Gripper has a G1/8" air port.
 - Higher grip force than GR220-16 grippers.
 - Clampable along full length of Ø20mm body.
 - Diamond-textured fingers provide excellent gripping of small to large sprues. This design is also excellent for sprues that need to be pulled or stripped from a mold cavity.
 - 20mm diameter mounting body allows this gripper to be used with standard mounting components.
 - Replacement parts available online.
- Replaces older models: DD20-16E (#6775), & DD20-16ES (#6776)

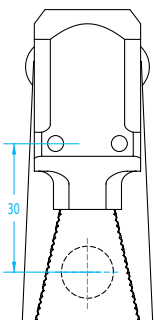
SET-UP NOTE: The sensor will only send a signal when the gripper is actuated with compressed air.



NEW

New DD20-16 sprue pusher for use with OFC Cylinders
See page 751 for more information.

Tooling Length



Quick#	Part#	Price	Style	Applicable Sprue Ø	lbs. Force at 30mm Tooling Length*	Weight
7550	DD20-16W2	\$159.00	Concave Jaw	2–14mm	45.0 lbf	141g
Order sensors separately See Sensor Reference Guide on page 1008 for a complete list of sensors for DD Grippers.						
1882	SS4N225G	\$27.20	PNP sensor	with lead, 2.5m long		6–30 Vdc
6282	SS3N203G	\$31.16	PNP sensor	M8 male connector, 0.3m long**		6–30 Vdc
1883	SS4M225G	\$27.20	NPN sensor	with lead, 2.5m long		6–30 Vdc
1884	SS3M203G	\$31.16	NPN sensor	M8 male connector, 0.3m long**		6–30 Vdc

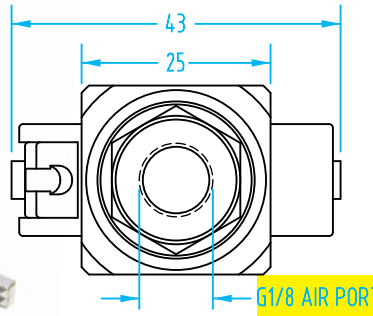
Note: 2-wire reed sensors are not recommended for grippers.

* The Closing Force listed is both jaws combined when supplied at 87psi. Tooling length is measured from jaw pivot point.

** M8 Extension cables Quick#'s 2582 & 2583 available on page 985.

Compact-Body Sensor Sprue Gripper – DD20-16

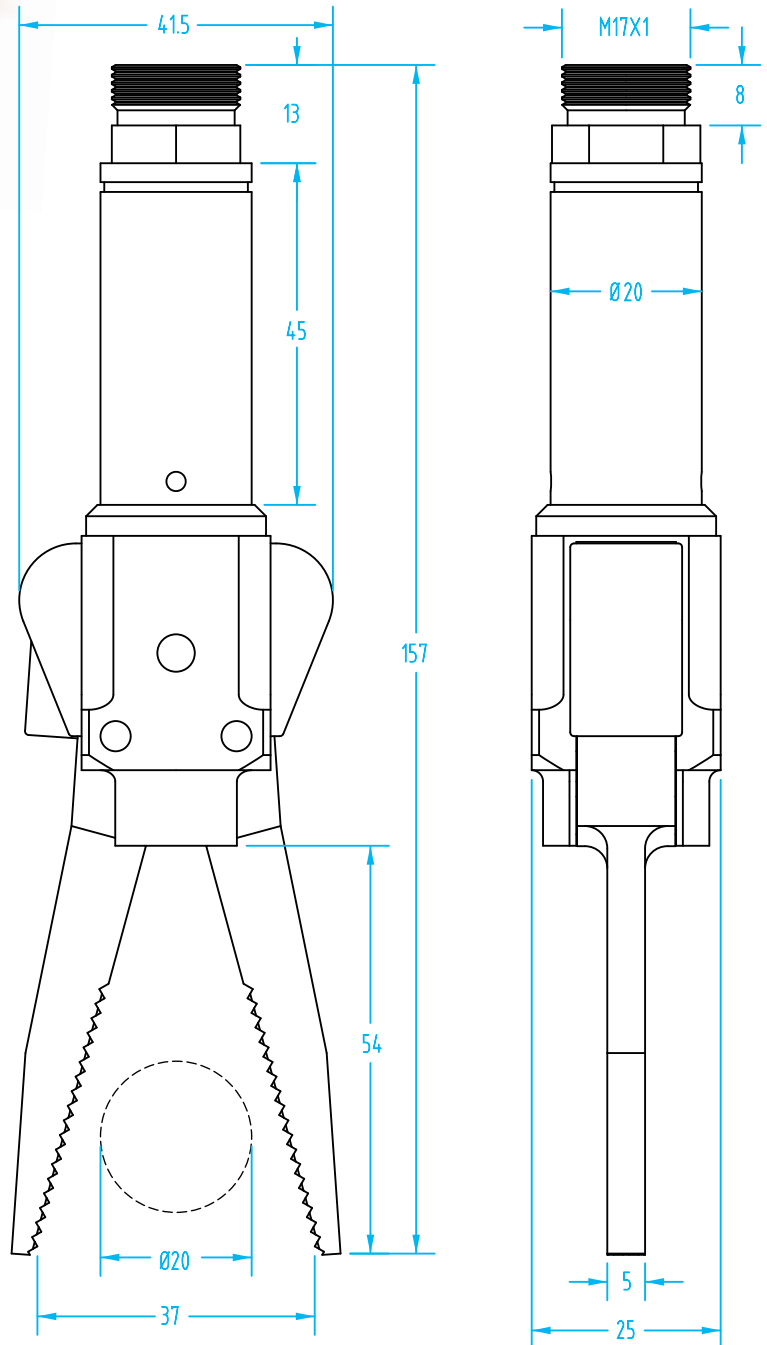
(Dimensioned drawing shown full scale)



Thin Jaws with Long Reach!

- New Sensor Slot position provides sensing without interfering with the part being gripped.
- Angular, self-centering.
- Gripper has a G1/8" air port.
- Sensors sold separately, see page 448.
- Higher grip force than GRZ20-16 grippers.
- Clampable along full length of Ø20mm body.
- Diamond-textured fingers provide excellent gripping of small to large sprues. This design is also excellent for sprues that need to be pulled or stripped from a mold cavity.
- 20mm diameter mounting body allows this gripper to be used with standard mounting components.
- Replacement parts available online.
- Replaces older model: DD20-16B-J (#7444)

SET-UP NOTE: The sensor will only send a signal when the gripper is actuated with compressed air.











NEW

Part#	DD20-16B2
Quick#	7553
Price	\$259.00
Style	Long Saw Jaws
Applicable Sprue	3–20mm
lbs. Force at 30mm Tooling Length*	45.0 lbf
Weight	140g

* The Closing Force listed is both jaws combined when supplied at 87psi. Tooling length is measured from jaw pivot point.

Order sensors separately See Sensor Reference Guide on page 1008 for a complete list of sensors for DD Grippers.

Compact-Body Sprue Gripper – DD20-16

	Quick#	Part#	Material / Shore Rating	Description	Max. Working Temp.	Marking at:				Price
						20°C / 68°F	80°C / 176°F	100°C / 212°F	140°C / 248°F	
	7485	DD20-16P-13	Blue HNBR 60Sh.A	New Style DD20-16	150°C / 302°F	NO	NO	NO	NO	\$3.22 (Qty: 1)
	7518	KIT3-DD2016P	Blue HNBR 60Sh.A	Kit contains 2 new and 2 old style pads	150°C / 302°F	NO	NO	NO	NO	\$9.66 (Qty: 4)
	7357	DD20-16P-11	Blue HNBR 60Sh.A	Old Style DD20-16 (2018 and earlier)	150°C / 302°F	NO	NO	NO	NO	\$5.32 (Qty: 1)
	7639	DD20-16P-13F	Black flocking over HNBR	New Style DD20-16	60°C / 140°F	NO	Small Mark	YES	YES	\$5.37 (Qty: 1)
	7640*	DD20-16P-10	Red TPU 70Sh.A	Old Style DD20-16 (2018 and earlier)	80°C / 176°F	YES	YES	YES	YES	\$3.35 (Qty: 1)
	7641	DD20-16P-17	Black PU 70Sh.A	New Style DD20-16	80°C / 176°F	YES	YES	YES	YES	\$5.58 (Qty: 1)
	7642	DD20-K3	White PTFE over PA12GB	New Style DD20-16	80°C / 176°F	NO	NO	Small Mark	Small Mark	\$8.49 (Qty: 1)
	Contact EMI	Many custom pad options and materials are available from EMI's 3D Printing Department. High temperature, Non-Marking, Flocked, Super Soft Touch, Fiber reinforced, and more.								

*Q#7640: Old style pads that Gimatic suggests melting the pins to fasten to new style grippers
 Dimensions of pads: 25.4mm x 12.7mm, with a 2mm thickness.

Gripper Exploded Views with common Replacement Parts and Related Items online, search by Quick#!



Jaw Hook for DD20-16 Grippers

Quick#	Part#	Price
7592	DD20-K2	\$19.73

Hardware included.

Finger Blanks for Compact Grippers

(Dimensioned drawing shown full scale)

Finger Blanks - priced per PAIR

Quick#	Part#	Material	Price
1240	DD20-16-FBA2	Aluminum	\$27.32
7662	DD20-16-FBN2	Nylon	\$20.35

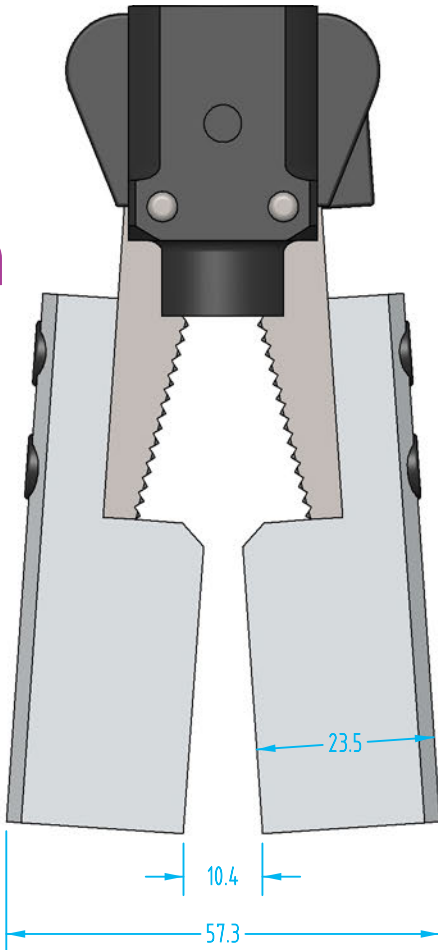
Includes fasteners.

- Don't want to machine custom fingers from scratch? Start with these aluminum, or lightweight nylon finger blanks. They are easy to shape to your particular part.
- For New style Gimatic DD20-16 grippers: #7550, #7551, #7555. Old versions available online at: www.EMlcorp.com.
- For >ASS< GRZ20-16A: #3311.

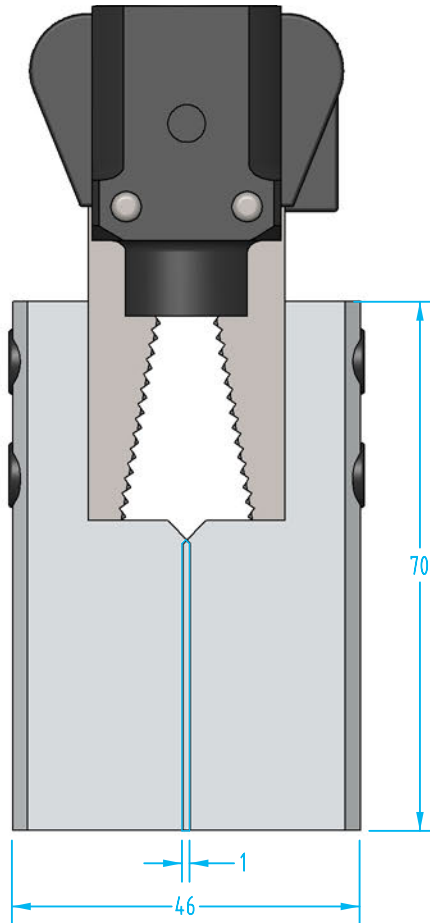
#1240



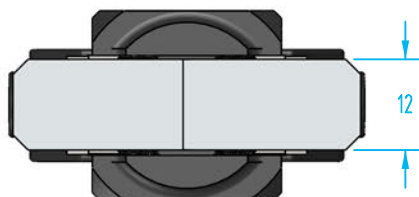
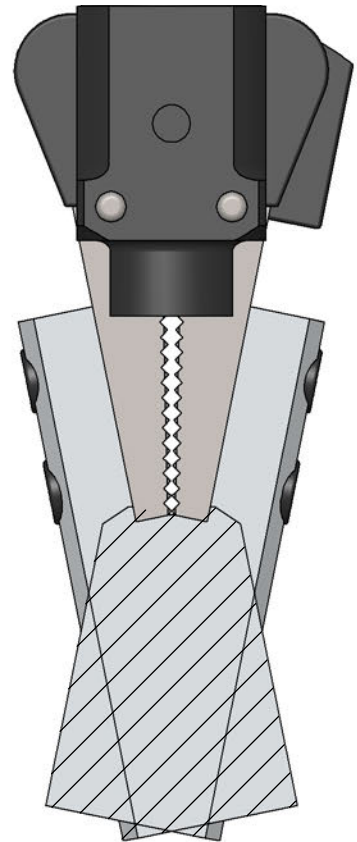
Gripper shown fully open:



Gripper shown in perpendicular position:



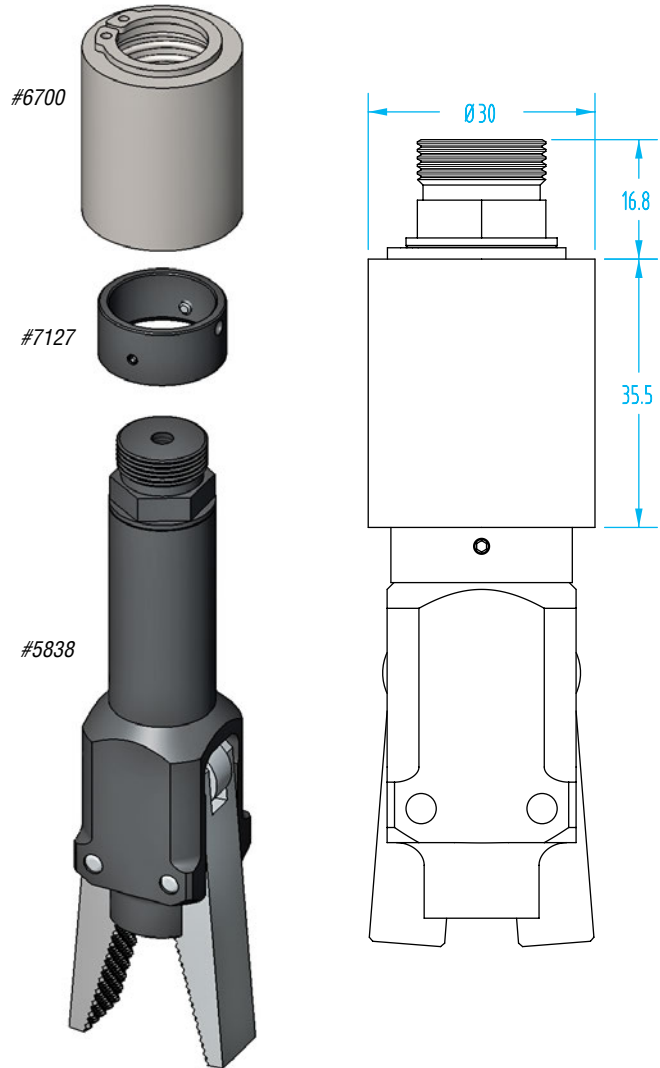
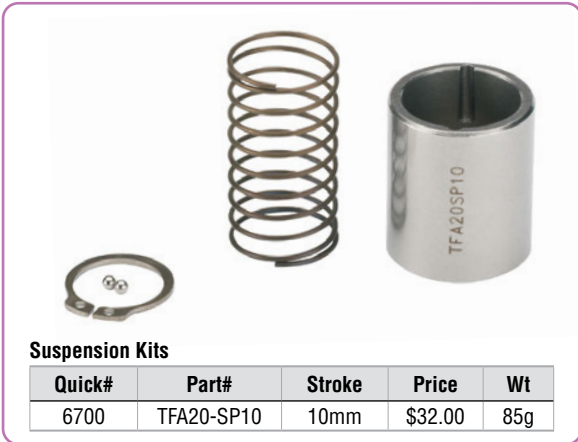
Overlapping area when gripper is fully closed:



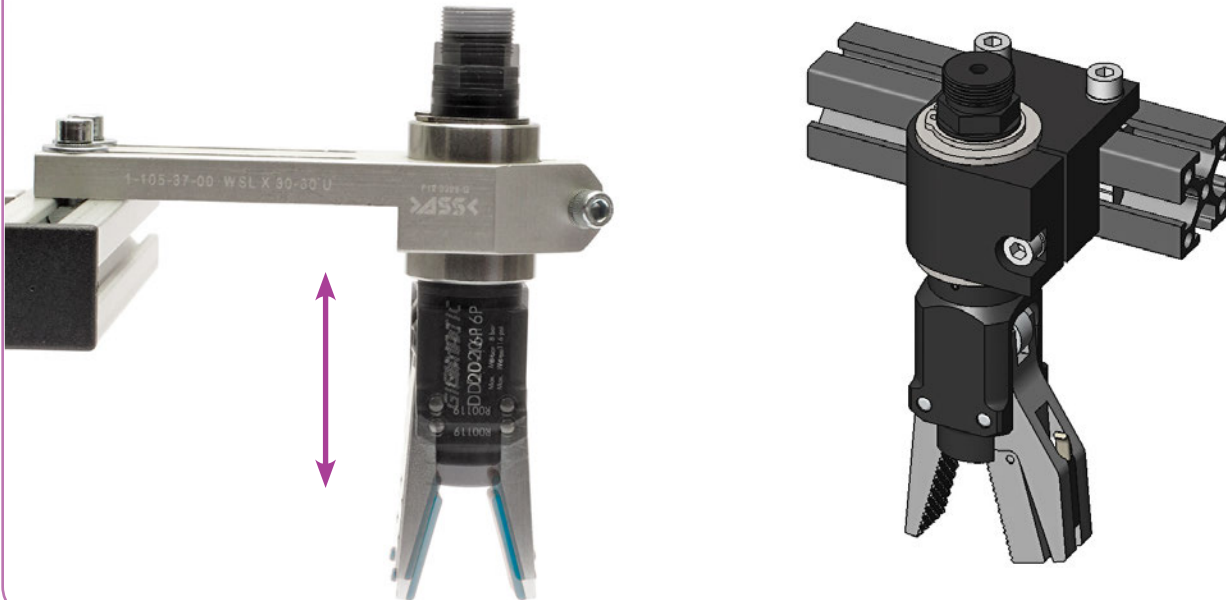
Suspension Kit for DD20 Grippers

(Dimensioned drawing shown full scale)

- Use this suspension kit with DD20 grippers.
- Order suspension kit + adaptor ring + DD20 gripper.

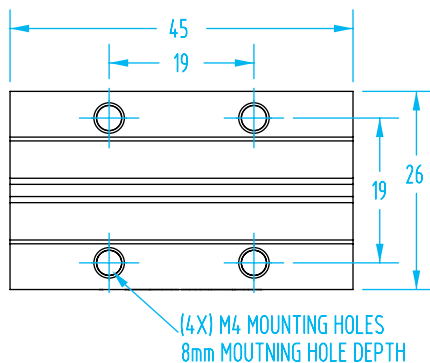


Application Examples

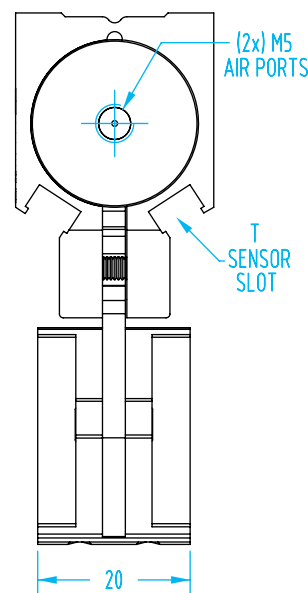
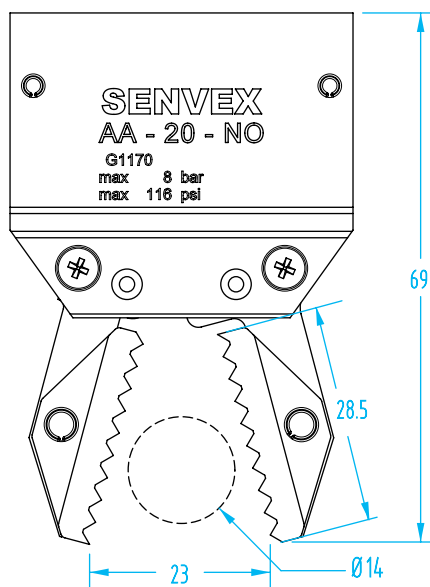


The Original Senvex – AA-20

(Dimensioned drawings shown full scale)



- Internal jaw mechanism is constructed of hardened steel components for a maintenance-free life exceeding 5 million cycles.
- Sprue fingers are made of hard-coat anodized aluminum for long life. Replacement finger kits are available. Replacement does not require disassembly of the gripper.
- Interlaced and serrated fingers allow a wide range of sprue diameters to be gripped. Small diameter sprues can be gripped and sensed. Large diameter sprues are cradled and won't twist out.
- Dual sensor slots allow two sensors to mount on the gripper providing logic confirmation of three positions: gripper open, sprue gripped, and sprue missed.



Quick#	Part#	Price	Operation	Applicable Sprue Ø	lbs. Force at 25mm Tooling Length*	Weight
790	GSG-AA-20-NO	\$237.00	Normally Open	4-14mm	22.5 lbf	107g
791	GSG-AA-20	\$237.00	Double Acting	4-14mm	27.0 lbf	106g
Order sensors separately See Sensor Reference Guide on page 1008 for a complete list of sensors for AA Grippers.						
792	SL4N225G	\$27.20	PNP sensor	T-slot, 3-wire with lead, 2.5m long		
6274	SL3N203G	\$31.16	PNP sensor	T-slot, 3-wire with M8 male connector, 0.3m long**		
793	SL4M225G	\$27.20	NPN sensor	T-slot, 3-wire with lead, 2.5m long		
6456	SL3M203G	\$31.16	NPN sensor	T-slot, 3-wire with M8 male connector, 0.3m long**		

Note: Gimatic SS sensors also available but must buy sensor adaptor #7440 for the T channel slot
 * Force when compressed air is supplied at 87psi. Tooling length is measured from jaw pivot point.
 ** M8 Extension cables Quick#'s 2582 & 2583 available on page 985.

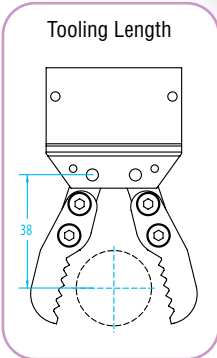
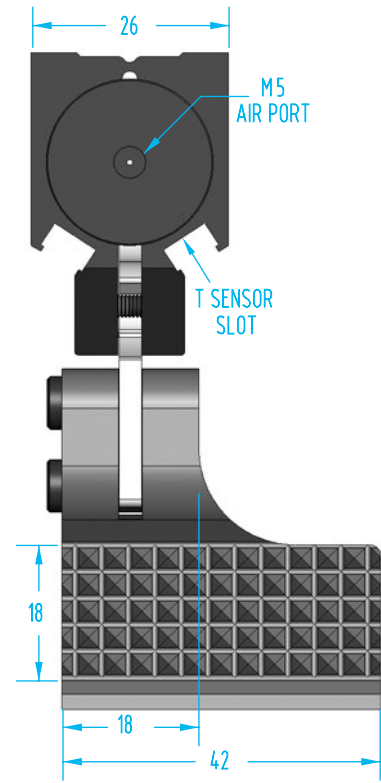
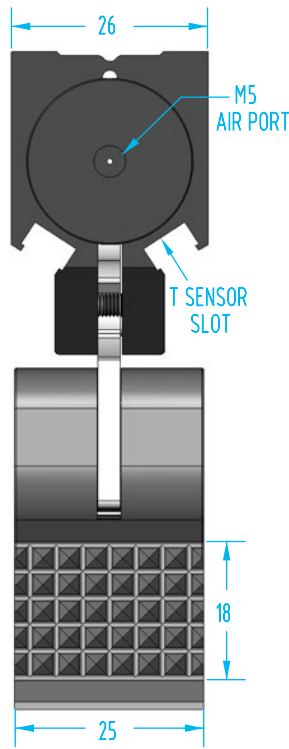
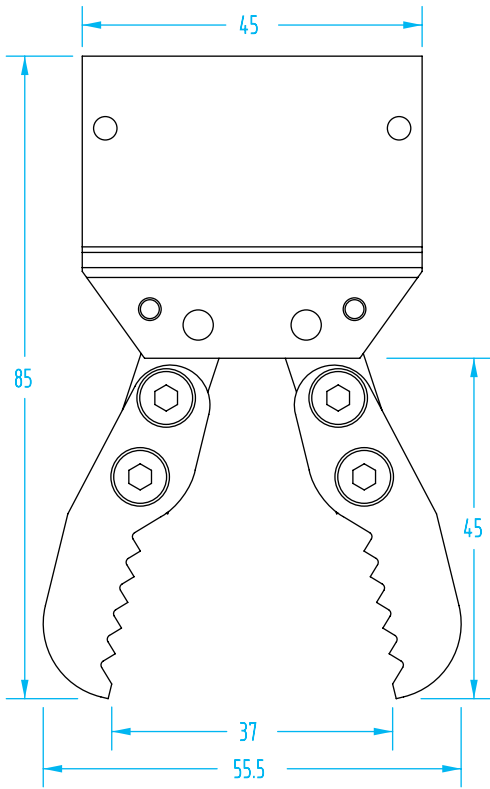
Replacement Fingers - priced per FINGER (each)

Quick#	Part#	Material	Price
794	GSG-AGAF-45	Aluminum	\$18.76
795	GSG-AGSF-45	Tool Steel	\$19.85
600	GSG-ASG-STP	Roll Pins	\$0.30



Large Diameter & Deep Reach – AA-21-LD & AA-21-DR

(Dimensioned drawings shown full scale)



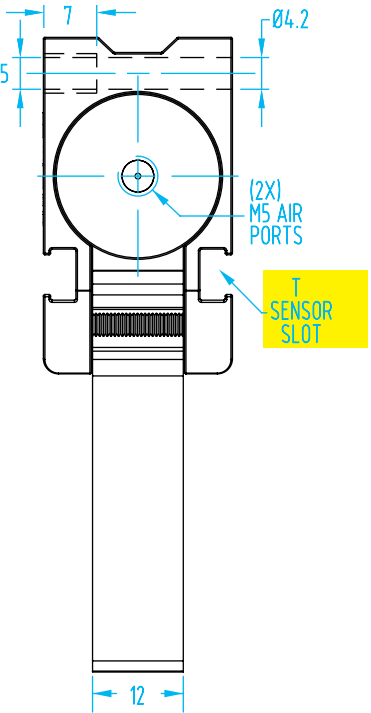
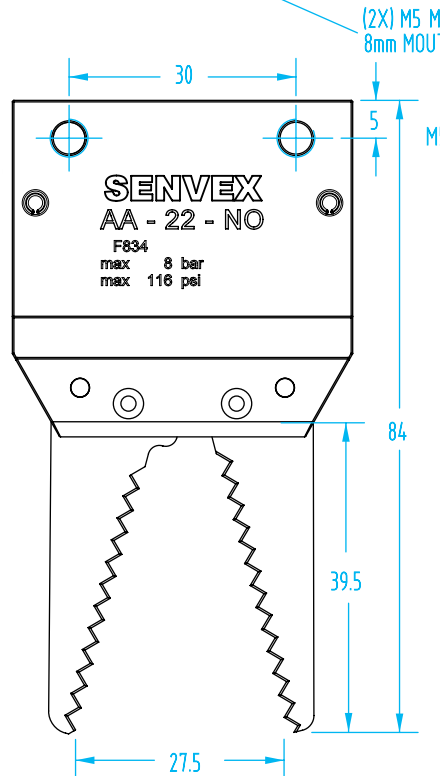
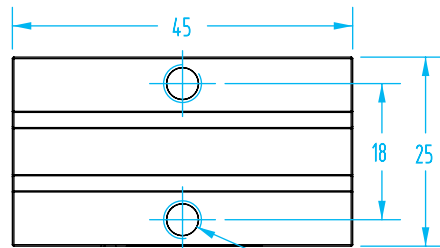
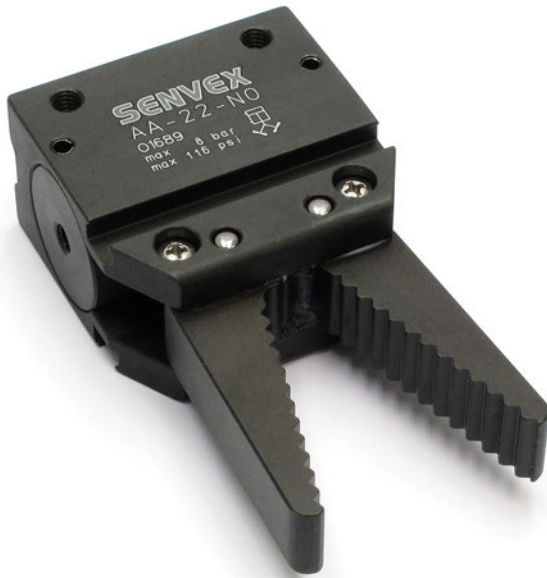
Quick#	Part#	Price	Jaw Style	Operation	Applicable Sprue Ø	lbs. Force at 35mm Tooling Length*	Weight
6660	AA-21-LD-NO	\$259.00	Large Diameter	Normally Open	10–25mm	16.0 lbf	124g
6661	AA-21-LD	\$259.00		Double Acting	10–25mm	19.5 lbf	122g
6658	AA-21-DR-NO	\$290.00	Deep Reach	Normally Open	10–25mm	16.0 lbf	160g
6659	AA-21-DR	\$290.00		Double Acting	10–25mm	19.5 lbf	158g

Note: Order SL.. sensors separately, see page 454.

* Force when compressed air is supplied at 87psi. Tooling length is measured from jaw pivot point.

The Value Sprue Gripper – AA-22

(Dimensioned drawings shown full scale)



- Features high grip force in a compact size, light-weight gripper.
- Threaded holes on three faces provide for many mounting bracket options.
- Sprue fingers are made of anodized extruded aluminum. Replacement finger kits are available in original anodized aluminum. Replacement requires disassembly of the gripper.
- Interlaced and serrated fingers allow a wide range of sprue diameters to be gripped. Small and large diameter sprues can be gripped. Large diameter sprues are cradled and won't twist out.
- **NOTE:** This gripper is very sensitive to sensor positioning. Although sensing is possible with these grippers, we suggest customers wanting sensing use either the AA-20, AA-26, or AA-35 styles.

Quick#	Part#	Price	Operation	Applicable Sprue Ø	lbs. Force at 30mm Tooling Length*	Weight
1473	GSG-AA-22-NO	\$145.00	Normally Open	4–12mm	19.0 lbf	113g
1474	GSG-AA-22	\$145.00	Double Acting	4–12mm	22.5 lbf	112g

Order sensors separately See Sensor Reference Guide on page 1008 for a complete list of sensors for AA Grippers.

Quick#	Part#	Price	Operation	Sensor Slot	Wiring
792	SL4N225G	\$27.20	PNP sensor	T Sensor Slot	3-wire with lead, 2.5m long
6274	SL3N203G	\$31.16	PNP sensor		3-wire with M8 male connector, 0.3m long**
793	SL4M225G	\$27.20	NPN sensor		3-wire with lead, 2.5m long
6456	SL3M203G	\$31.16	NPN sensor		3-wire with M8 male connector, 0.3m long**
1882	SS4N225G	\$27.20	PNP sensor	C Sensor Slot	3-wire with lead, 2.5m long
6282	SS3N203G	\$31.16	PNP sensor		3-wire with M8 male connector, 0.3m long**
1883	SS4M225G	\$27.20	NPN sensor		3-wire with lead, 2.5m long
1884	SS3M203G	\$31.16	NPN sensor		3-wire with M8 male connector, 0.3m long**

* Force when compressed air is supplied at 87psi. Tooling length is measured from jaw pivot point.

** M8 Extension cables Quick#'s 2582 & 2583 available on page 985.

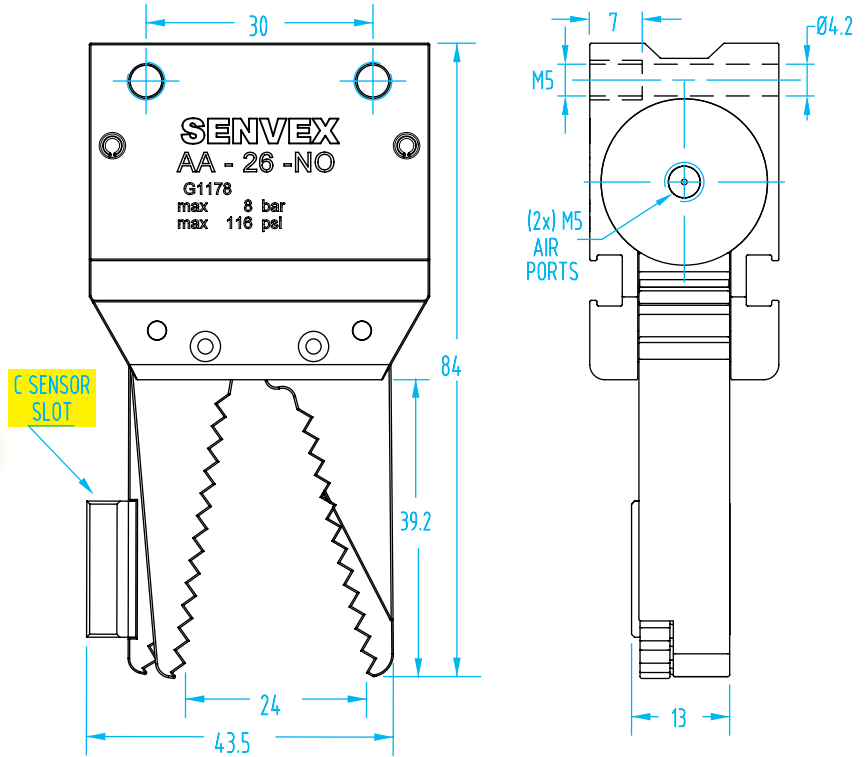
Replacement Fingers - priced per pair

Quick#	Part#	Material	Price
1475	GSG-AA-22-RF	Aluminum	\$33.25

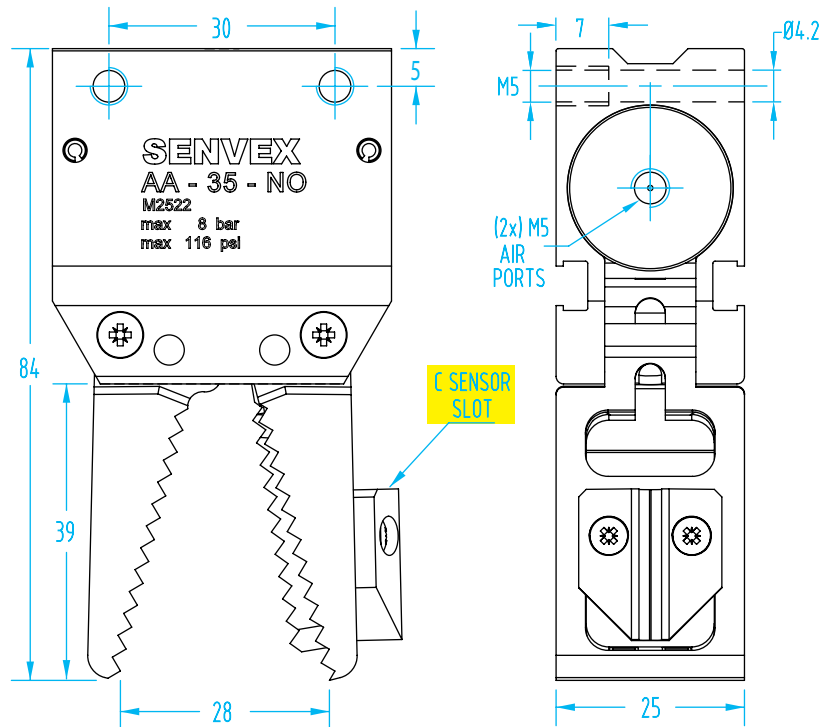


Sensor Finger Sprue Gripper – AA26 & AA-35

(Dimensioned drawings shown full scale)



- **Simple, easy sensing.** A single sensor mounted on the finger confirms 'sprue gripped' and eliminates the typical 'hide and seek' process of sensor set-up.
- The sprue detection mechanism is made of anodized aluminum for long life and built into the finger.
- Interlaced and serrated fingers allow a wide range of sprue diameters to be gripped and sensed.
- The high-power gripper body and closing mechanism are the same as the popular AA-22 and AA-26 models—of which thousands are in reliable operation.



Quick#	Part#	Price	Jaw Style	Operation	Applicable Sprue Ø	lbs. Force at 30mm Tooling Length*	Weight
1880	GSG-AA-26S-NO	\$186.00	Sensor Finger	Normally Open	4–12mm	19.0 lbf	115g
1881	GSG-AA-26S	\$186.00		Double Acting	4–12mm	22.5 lbf	115g
6625	AA-35-NO	\$241.00	Wide Sensor Finger	Normally Open	4–14mm	19.0 lbf	135g
6626	AA-35	\$241.00		Double Acting	4–14mm	22.5 lbf	135g

Note: Order SS.. C-Slot sensors for the jaw separately, see page 456

* Force when compressed air is supplied at 87psi. Tooling length is measured from jaw pivot point.

Mounting Brackets for AA Grippers

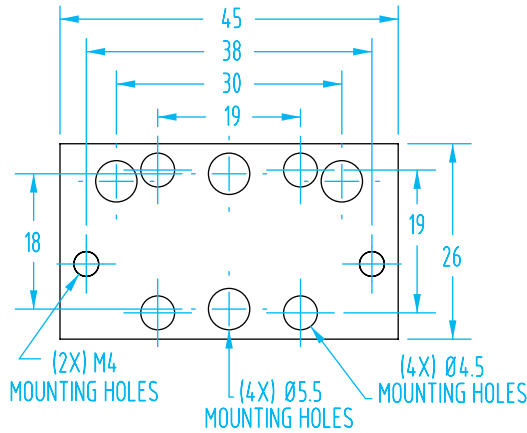
For AA-20, AA-21, AA-22, AA-23, AA-26 and AA-35 Grippers



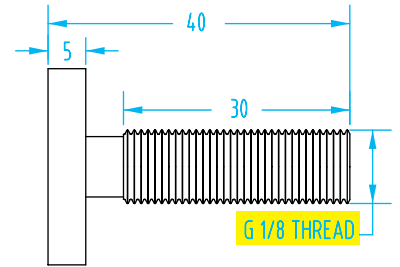
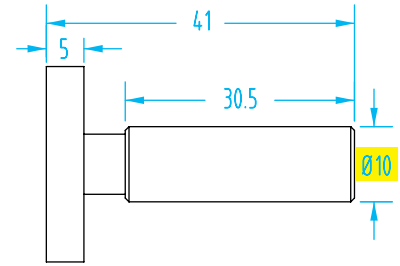
#5465



#1825



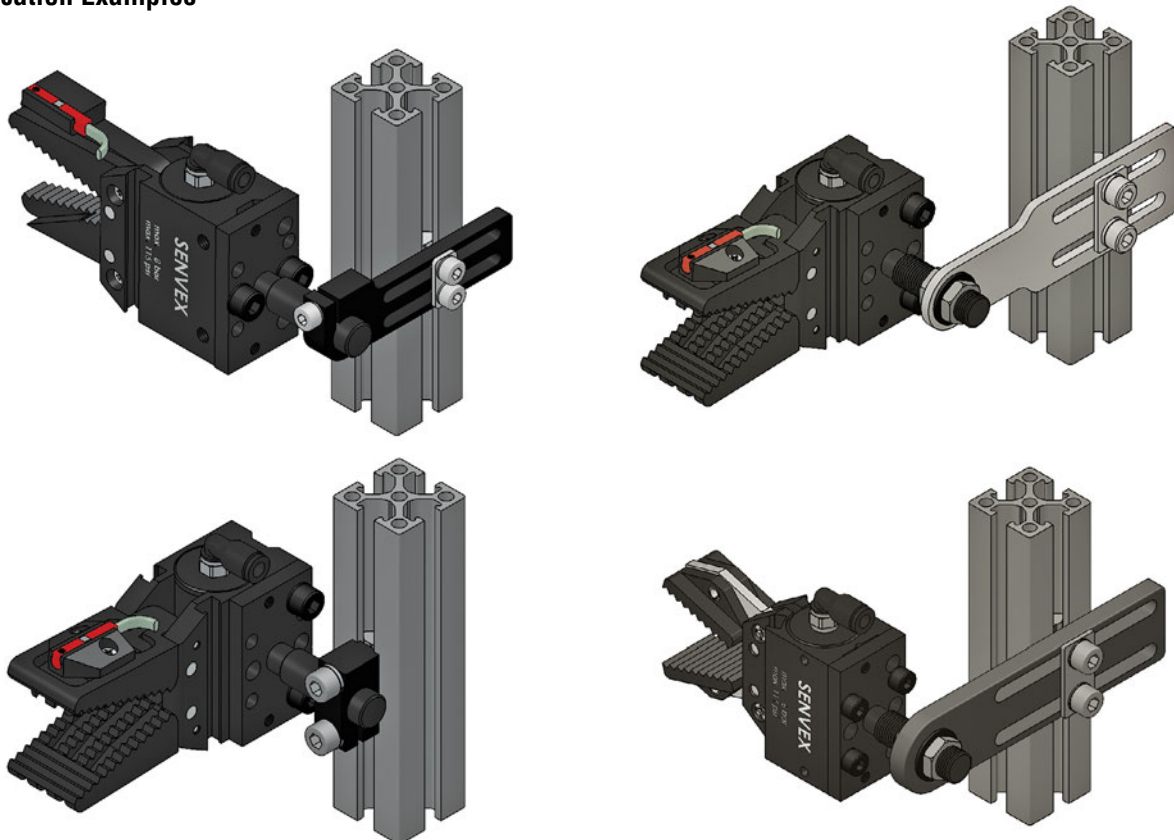
(Dimensioned drawings shown full scale)



Gripper Mounting Bracket

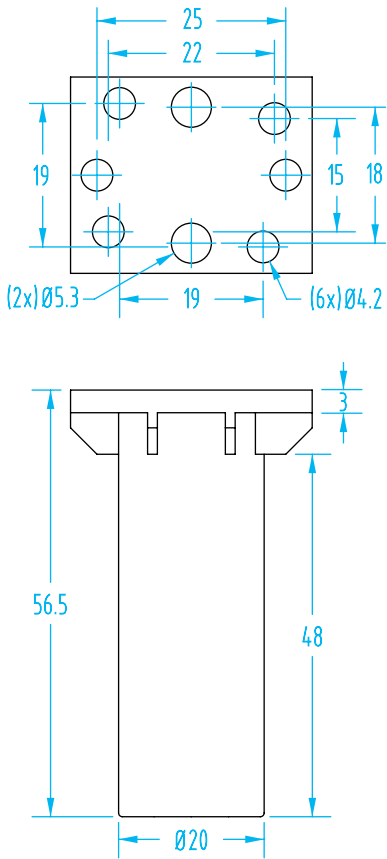
Quick#	Part#	Style	Weight	Price
5465	GSG-SMMB-45	Clampable Ø10mm Shaft	26g	\$28.17
1825	GSC-TMB-45	Threaded G1/8" Shaft	26g	\$28.29
Order separately		<i>See page 1076.</i>		
For AA-20 & AA-21:		4x M4x10mm screws (#834)		
		4x M4 lock washers (#846)		
For AA-22, AA-23, AA-26 & AA-35:		2x M5x10mm screws (#852)		
		2x M5 lock washers (#865)		

Application Examples

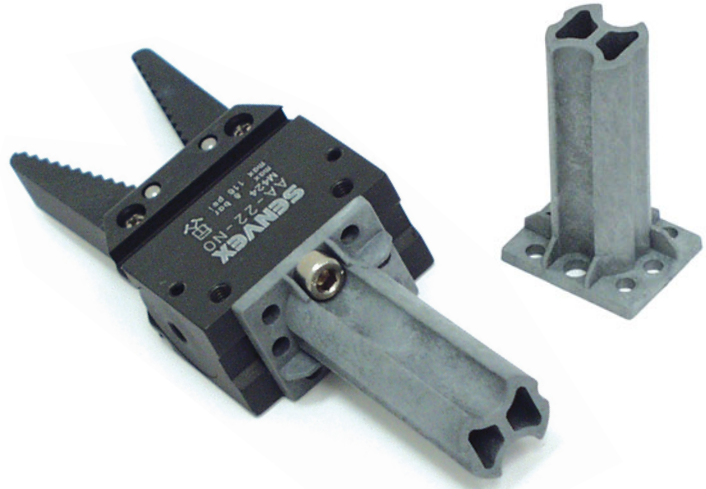


Mounting Brackets for AA Grippers

(Dimensioned drawings shown full scale)



For AA-20, AA-21, AA-22, AA-23, AA-26 & AA-35 Grippers



Composite Mounting Bracket

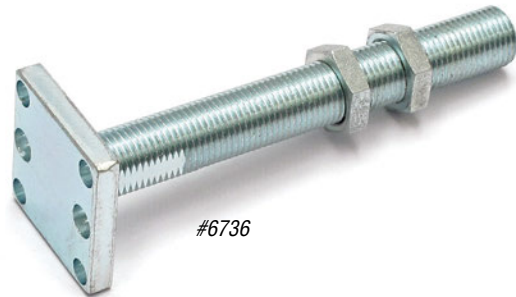
Quick#	Part#	Price	Use with:	Wt.
6375	MFP-A01	\$3.43	AA-20, AA-21, AA-22, AA-23, AA-26 & AA-35	26g
Order separately			<i>Made of GRP. See page 1076.</i>	
For AA-20 & AA-21:		4x M4x8mm screws (#833) 4x M4 lock washers (#846)		
For AA-22, AA-23, AA-26 & AA-35:		2x M5x8mm screws (#851) 2x M5 lock washers (#865)		

Also Available:

Mounting Brackets

Quick#	Part#	For	Wt	Price
798	GSG-SMB-45	AA-20 & AA-21	36g	\$19.87
5466	GSGRMB-M12	All AA- Grippers	24g	\$23.86
6736	I34K	All AA- Grippers	65g	\$34.82

Order hardware separately, see EMIcorp.com for dimensional drawings & related items.



#6736



#5466

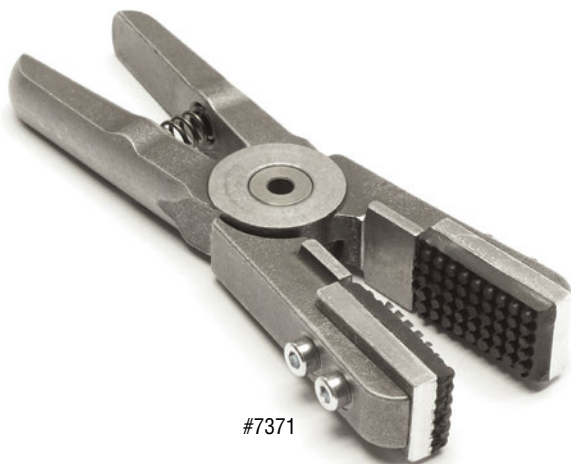
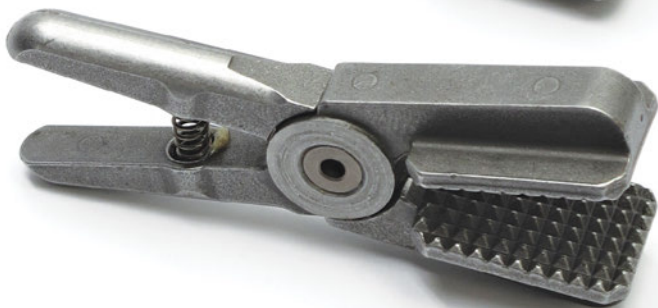
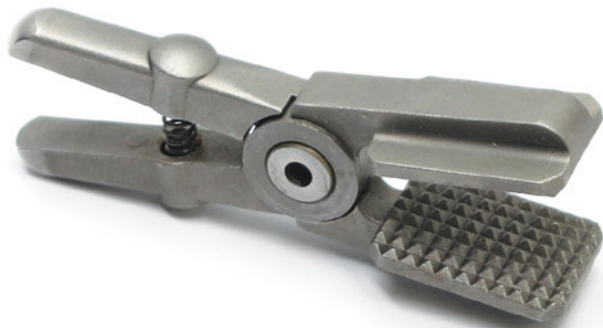


#5466 & VLR Extension



#798

High-Power Sprue Jaws – JGW & JGN



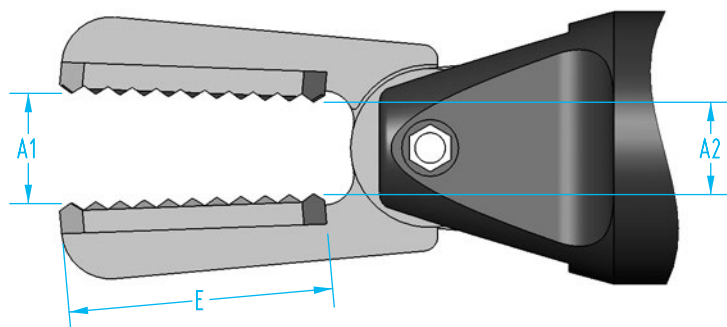
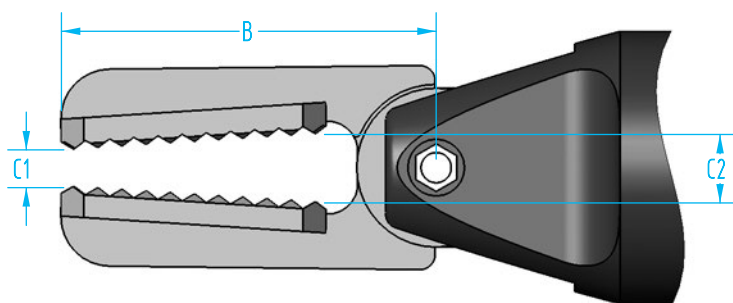
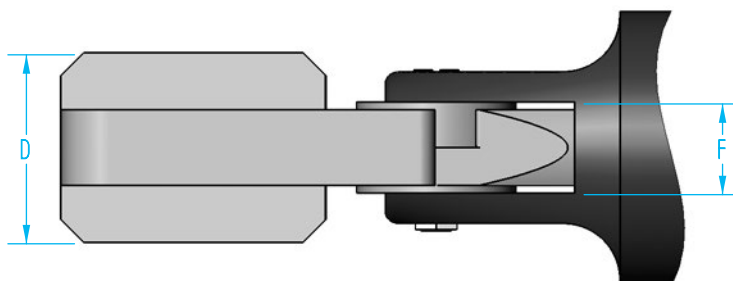
#7371

Sprue Jaws with Nitrile pads

These jaws—combined with size 10 & 20 nipper bodies—are ideal for tough gripping, ripping, and stripping applications. Use these for large sprues that “stick” in the mold and need strong pulling force to remove them or for large runners that have too much rotational torque for standard grippers to handle.

These are also ideal for gripping and stripping wide fan-gates typically used with auto bumper-type parts. These can be used with any size 10 & 20 nipper bodies and all the associated mounting brackets. Gimatic® nipper bodies offer both sensor-equipped bodies and standard non-sensor body styles.

Compared to general-purpose sprue grippers, these jaws have narrower opening and closing angles. Pay careful attention to the open/close dimensions when sizing. Our EOAT Engineering Department is available to assist you in sizing these to your application.



High Power Sprue Jaws - dimensions

Quick#	Part#	A1	A2	B	C1	C2	D	E	F
6100	JGW-10S-A50	14.5	12	49.5	5	9	25	35	12
6125	JGN-10S-A52	9	6.5	49.5	0	3.5	25	35	12
7371	JGN-10N	9	7.5	49.5	0	2	16	24	12

High-Power Sprue Jaws – JGW & JGN

(Dimensioned drawings shown full scale)



Quick#	Part#	Price	Finger Style	Applicable Sprue Ø	For Gimatic Nipper Body:	Gripping Force* when used with Gimatic nipper body**	Wt.
6125	JGN-10S-A52	\$108.00	narrow	5–10mm	Size 10 Nipper Bodies: Quick#'s 1902 & 1903	448.5 lbf (@1½" from pivot point)	190g
6100	JGW-10S-A50	\$108.00	wide	5–10mm		448.5 lbf (@1½" from pivot point)	175g
7371	JGN-10N	\$238.00	narrow	5–10mm		448.5 lbf (@1½" from pivot point)	137g
6458	JGN-20S-A52	\$108.00	narrow	10–15mm	Size 20 Nipper Bodies: Quick#'s 1904 & 1905	790.5 lbf (@1½" from pivot point)	200g
6459	JGW-20S-A50	\$108.00	wide	10–15mm		790.5 lbf (@1½" from pivot point)	185g

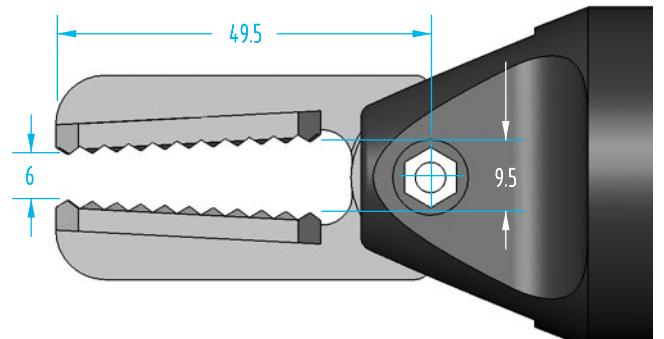
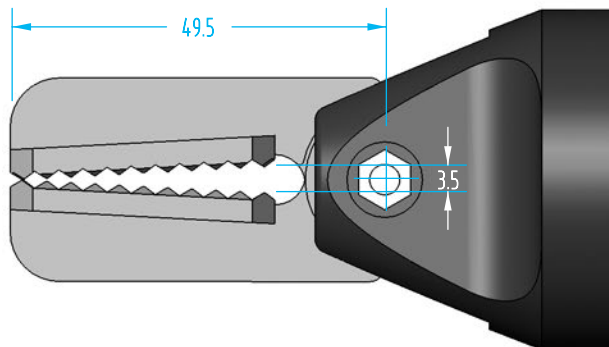
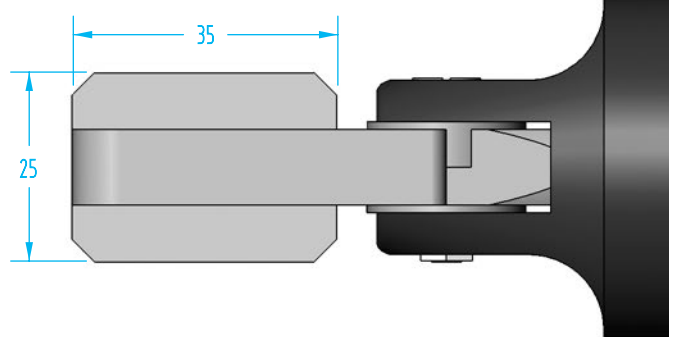
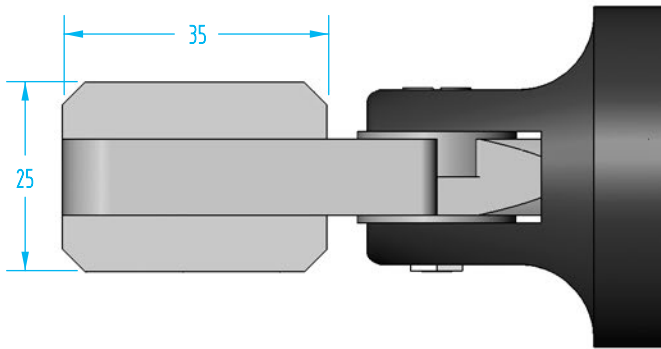
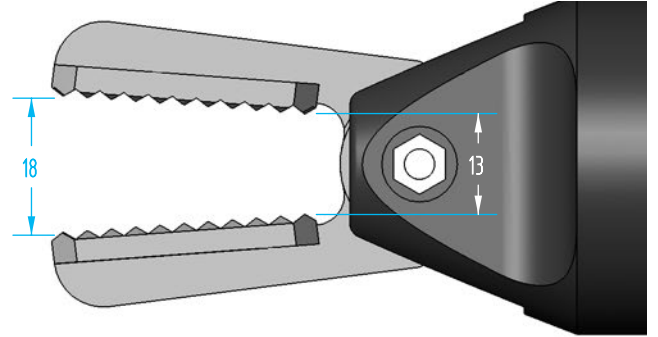
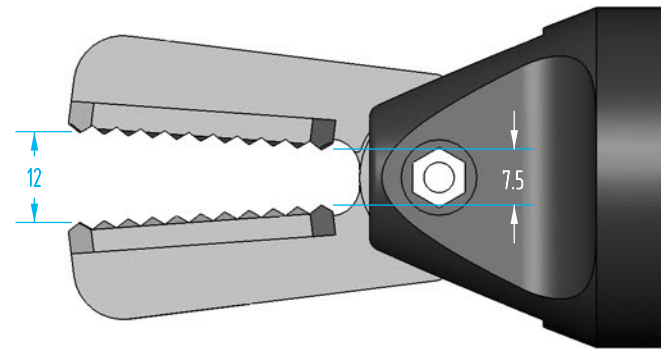
* at 87 psi.

**jaws are compatible with all nipper body brands when fitted with the appropriate size nipper body.

(Order nipper body separately, see page 827)

#6458 - for size 20 nipper body (narrow style):

#6459 - for size 20 nipper body (wide style):

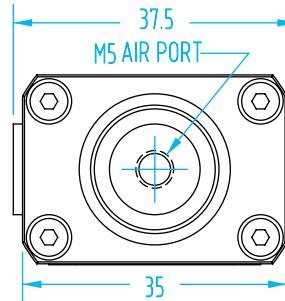


Full-Body Sprue Grippers – GRZ 20-20

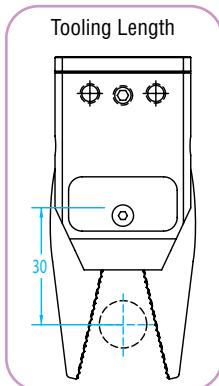
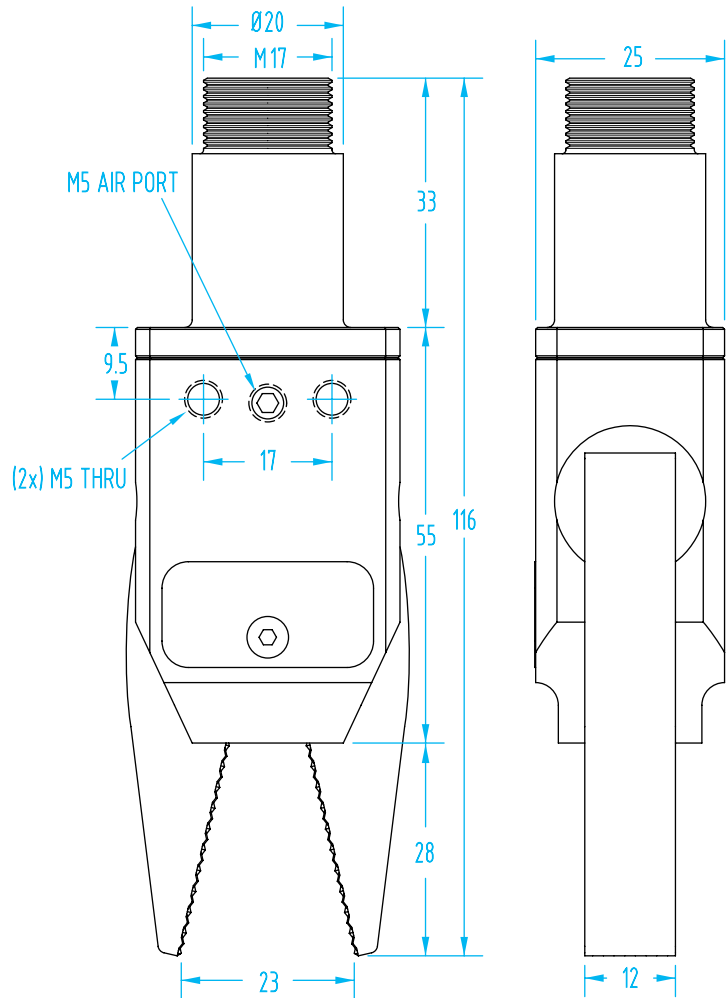
(Dimensioned drawings shown full scale)

GRZ 20-20 Features:

- Single acting with spring opening.
- Jaws are made of hard-coated aluminum, body made of anodized aluminum.
- Many mounting options — Ø20mm clampable body.
- Higher grip force than the GRZ20-16.
- M5 air ports in shaft and side.
- Grippers with sensors also include a 6' extension cable.



#3671 - With hard-coated aluminum jaws



Quick#	Part#	>ASS< #	Price	lbs. Force at 30mm Tooling Length*	Applicable Sprue Ø	Weight
3671	GRZ-20-20	1-417-00-00	\$209.48	32.0 lbf	2-12mm	133g

*Note: Force at 87psi (6 bar)

Use Quick#s for easy online ordering.

Full-Body Sprue Grippers – GRZ 20-20

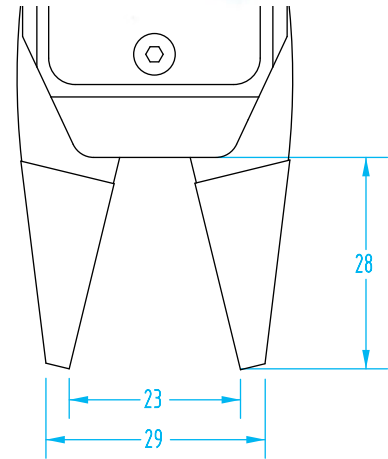
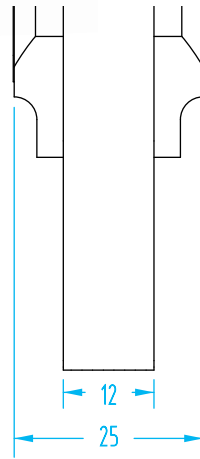
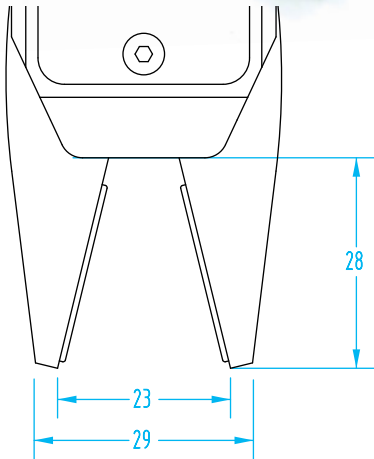
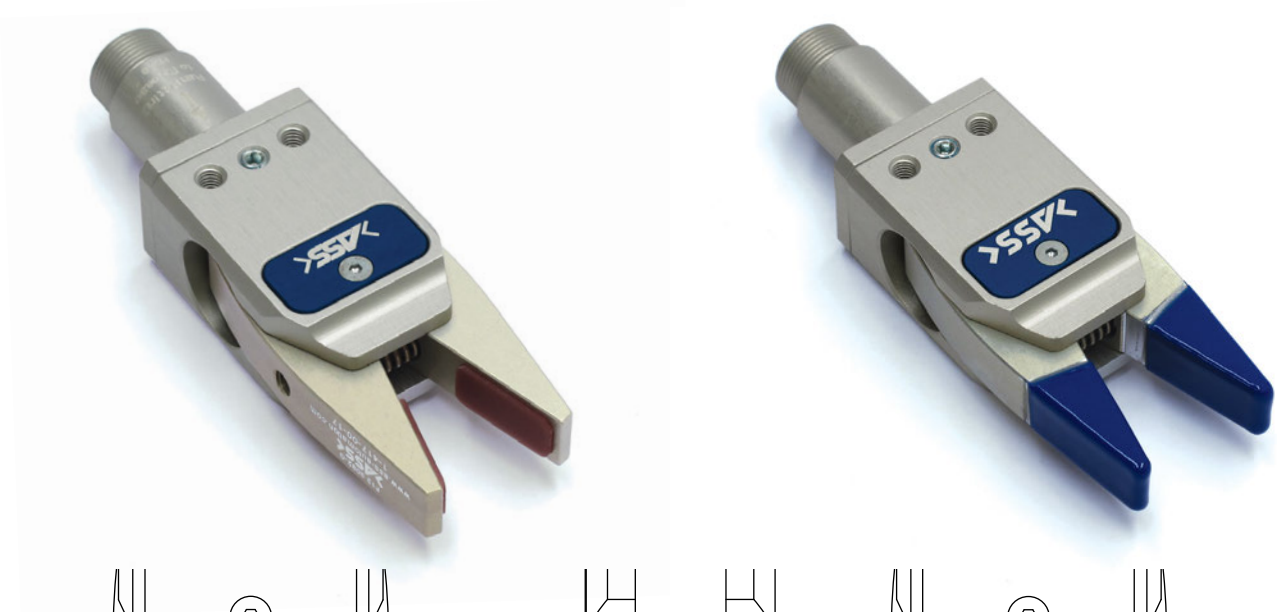
(Dimensioned drawings shown full scale)

#3718 - With polyurethane padded jaws

- Silicone free, non-marking pads
- Short term contact for PU pads is 230° F

#3725 - With soft touch coated jaws

- Silicone free, non-marking coating
- 194°F (266°F short term) max. temperature



Quick#	Part#	>ASS< #	Price	Style	lbs. Force at 30mm Tooling Length*	Applicable Sprue Ø	Weight
3718	GRZ-20-20-PU	1-417-30-00	\$214.20	Padded jaws	32.0 lbf	2-12mm	133g
3725	GRZ-20-20-EP	1-417-65-00	\$288.75	Coated jaws	32.0 lbf	2-12mm	133g

*Note: Force at 87psi (6 bar)

Lateral Mounting Bracket for GRZ-20

Quick#	Part#	>ASS< #	Wt	Price
3477	AD-20-GRZ-20-S	1-417-09-00	41g	\$36.75

NEW

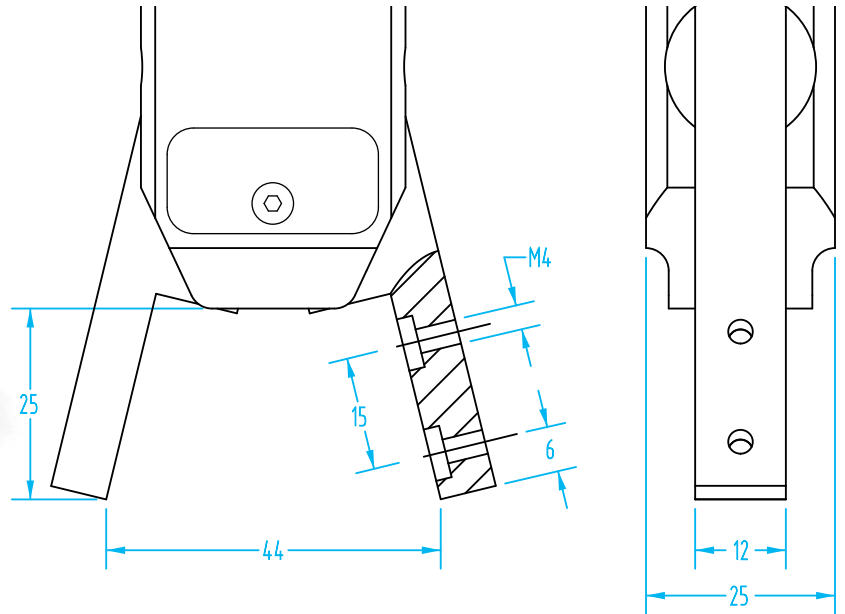
Includes hardware.



Full-Body Sprue Grippers – GRZ 20-20

(Dimensioned drawings shown full scale)

#3717 - With custom jaws



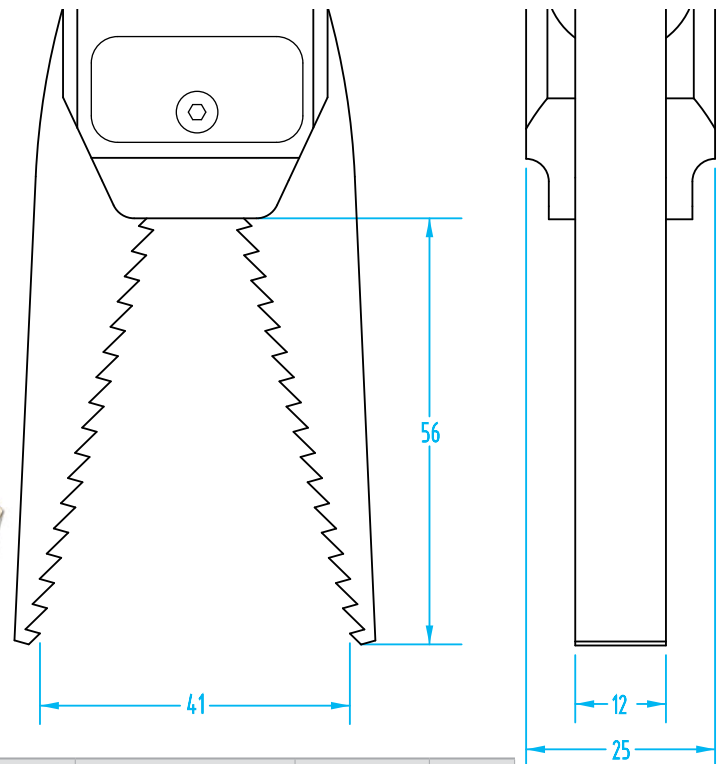
Fittings Available on page 1047



Quick#	Part#	>ASS< #	Price	lbs. Force at 30mm Tooling Length*	Weight
3717	GRZ-20-20-A	1-417-03-00	\$182.18	32.0 lbf	130g

*Note: Force at 87psi (6 bar)

#3641 - With long saw jaws



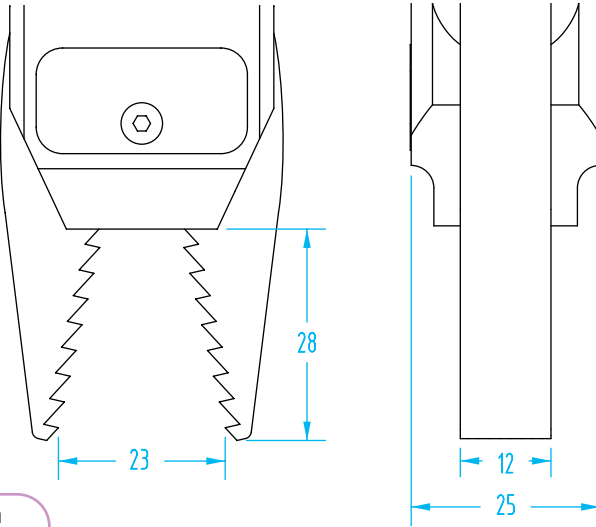
Quick#	Part#	>ASS< #	Price	lbs. Force at 30mm Tooling Length*	Applicable Sprue Ø	Weight
3641	GRZ-20-20-SL	1-417-07-00	\$273.00	32.0 lbf	5–25mm	133g

*Note: Force at 87psi (6 bar)

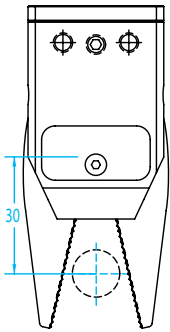
Full-Body Sprue Grippers – GRZ 20-20

(Dimensioned drawings shown full scale)

#3674 - With saw jaws



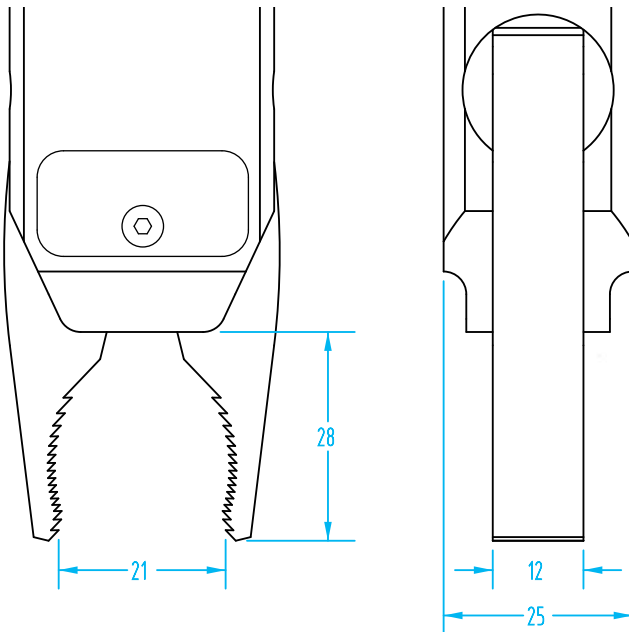
Tooling Length



Quick#	Part#	>ASS< #	Price	lbs. Force at 30mm Tooling Length*	Applicable Sprue Ø	Weight
3674	GRZ-20-20-S	1-417-06-00	\$214.20	32.0 lbf	4-12mm	133g

*Note: Force at 87psi (6 bar)

#3642 - With concave jaws



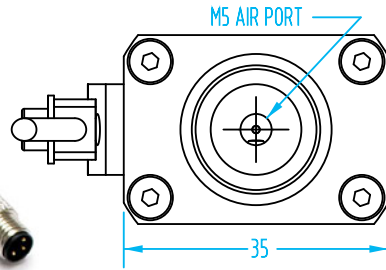
Quick#	Part#	>ASS< #	Price	lbs. Force at 30mm Tooling Length*	Applicable Sprue Ø	Weight
3642	GRZ-20-20-Z	1-417-05-00	\$214.20	32.0 lbf	4-12mm	133g

*Note: Force at 87psi (6 bar)

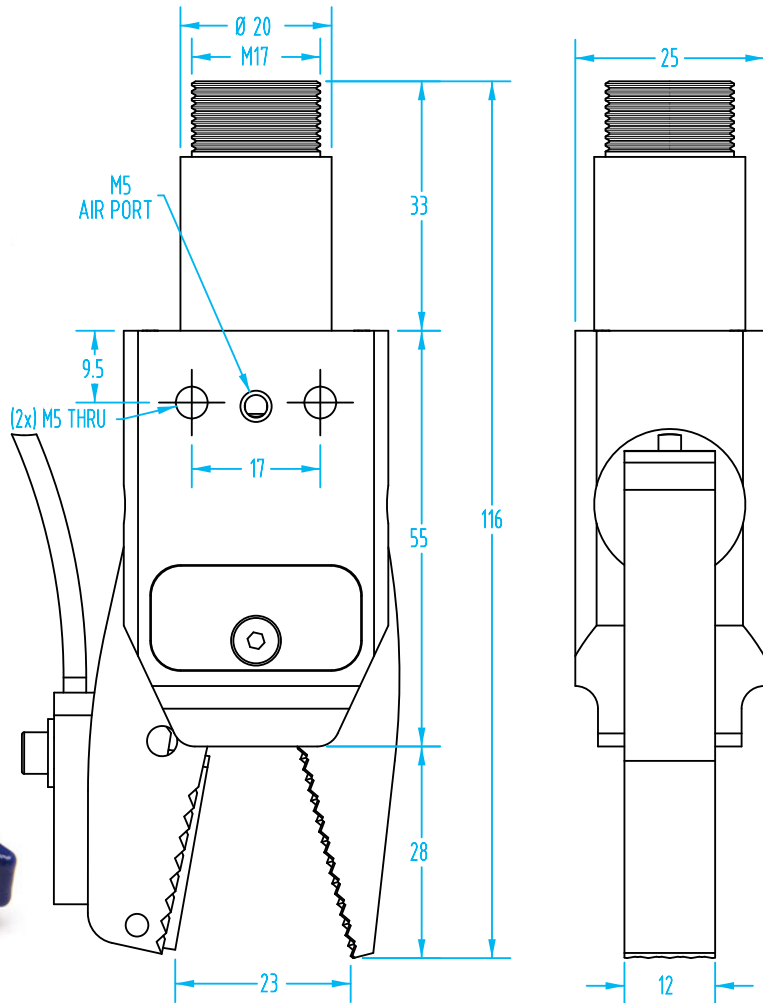
Full-Body Sensor Finger – GRZ 20-20

(Dimensioned drawings shown full scale)

#3672 / #3673 - With diamond textured jaws and sensor



#3739 / 3740 - With coated jaws and sensor



Quick#	Part#	>ASS< #	Price	Sensor	Style	lbs. Force at 30mm Tooling Length*	Applicable Sprue Ø	Wt.
3672	GRZ-20-20-CS-PNP	1-417-20-00	\$304.50	PNP	Diamond Texture	32.0 lbf	4-12mm	145g
3673	GRZ-20-20-CS-NPN	1-417-20-01	\$304.50	NPN				
3739	GRZ-20-20-RCS-PNP-EP	1-417-62-00	\$367.50	PNP	EP Coated	32.0 lbf	4-12mm	153g
3740	GRZ-20-20-RCS-NPN-EP	1-417-63-00	\$367.50	NPN				

Includes sensor with M8 plug and a 6' KG 8-3 extension cable.

Use Quick#s for easy online ordering.

*Note: Force at 87psi (6 bar)

Full-Body Sensor Finger – GRZ 20-20

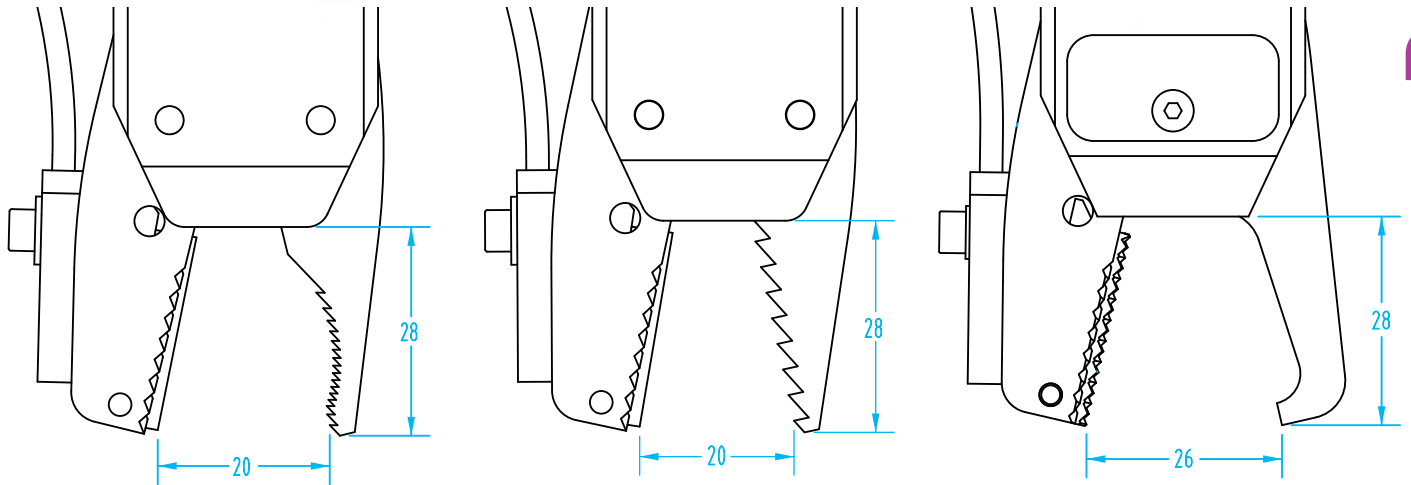
(Dimensioned drawings shown full scale)

#3675 / #3676 - With saw jaws

#3643 / #3644 - With concave jaws

#3888 / #3889 - With parrot jaws

NEW



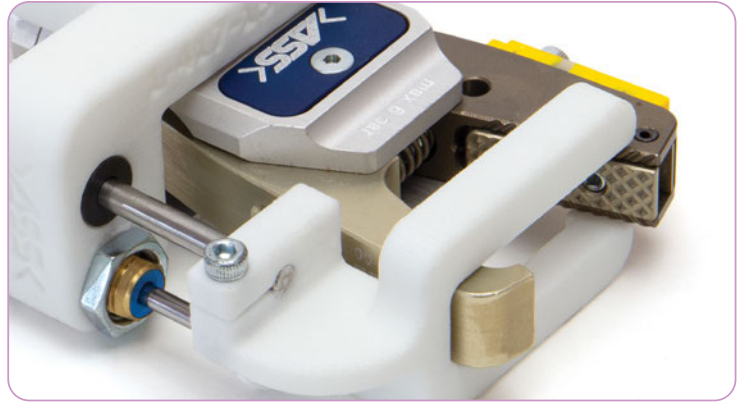
Quick#	Part#	>ASS< #	Price	Sensor	Style	lbs. Force at 30mm Tooling Length*	Applicable Sprue Ø	Wt.
3675	GRZ-20-20-SCS-PNP	1-417-22-00	\$304.50	PNP	Saw Jaws	32.0 lbf	4-12mm	133g
3676	GRZ-20-20-SCS-NPN	1-417-22-01	\$304.50	NPN				
3643	GRZ-20-20-ZC-PNP	1-417-21-00	\$304.50	PNP	Concave Jaws	32.0 lbf	4-12mm	143g
3644	GRZ-20-20-ZC-NPN	1-417-21-01	\$304.50	NPN				
3888	GRZ-20-PS-CS-PNP	1-417-32-00	\$384.30	PNP	Parrot Jaws	32.0 lbf	4-12mm	141g
3889	GRZ-20-PS-CS-NPN	1-417-33-00	\$384.30	NPN				

Includes sensor with M8 plug and a 6' KG 8-3 extension cable.

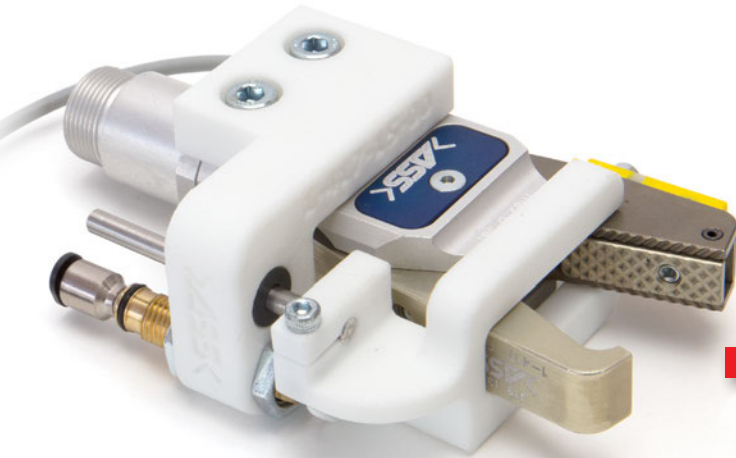
**Note: Force at 87psi (6 bar)*

Sprue Pusher for GRZ-20 Full Body Sprue Grippers

- If attaching to a gripper with a sensor, mount to the opposite side as the sensor finger.
- The AAE Sprue Pusher is 3D printed from a durable plastic material in order to save weight.
- Actuated by a pneumatic micro barrel cylinder, a spring returns the pusher back into its default position.
- Kit includes: Sprue push unit, M3 fitting for 4mm tubing, 6mm to 4mm tubing reducer, 3' (1meter) 4mm tubing.

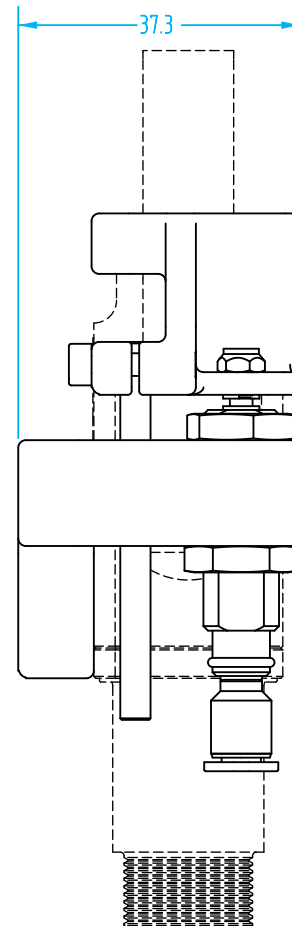
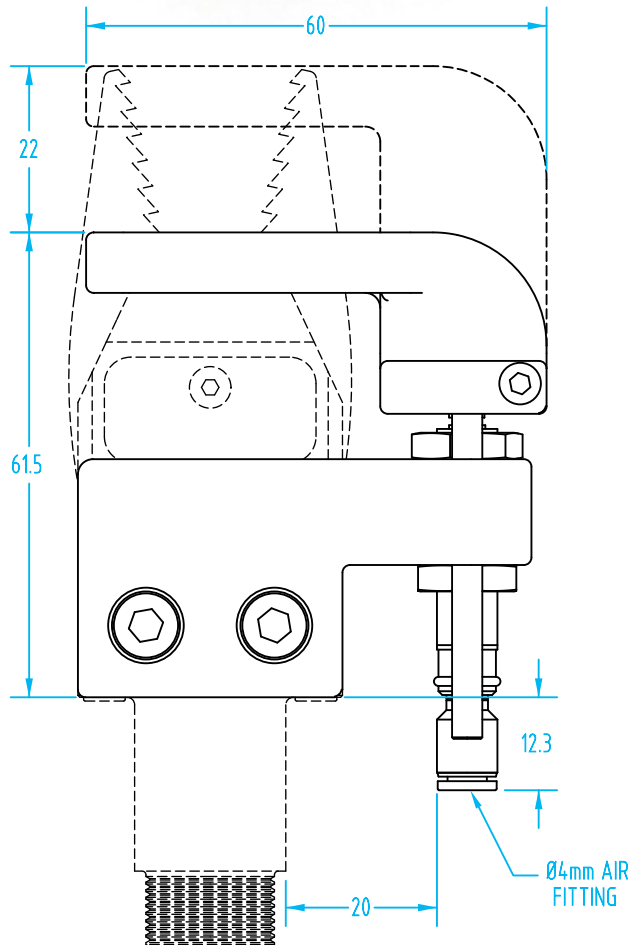


Shown installed on GRZ-20-PS-CS-NPN (Q#3889)

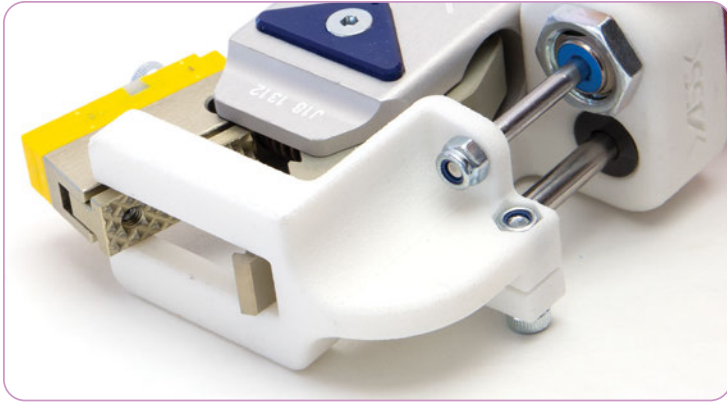


NEW

Quick#	Part#	>ASS< #	Price	Weight
3891	AAE-20	1-417-15-00	\$194.25	60g



Sprue Pusher for GRZ-14 Medium Body Sprue Grippers



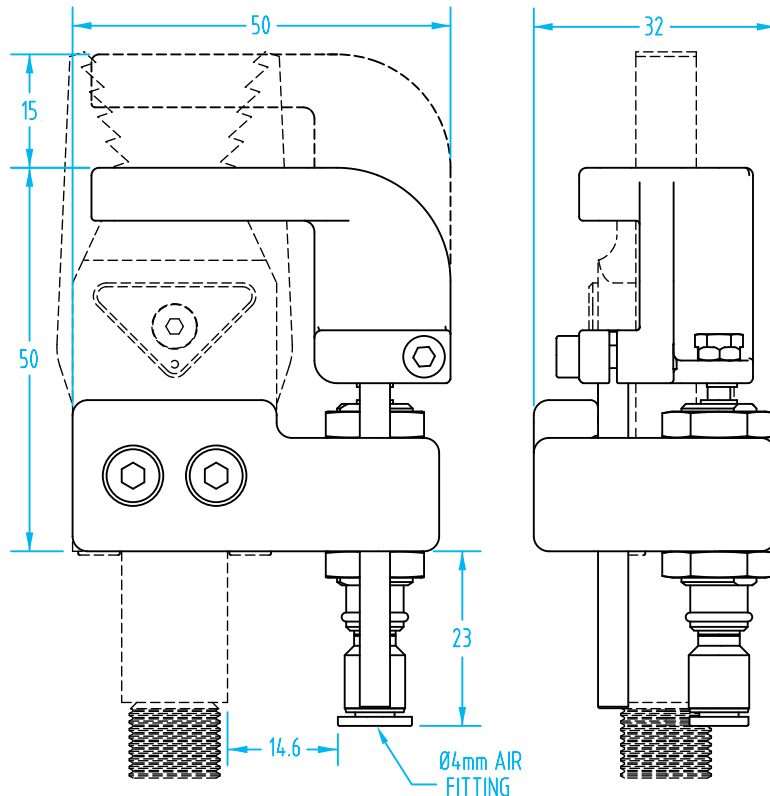
Shown installed on GRZ-14-SCS-PNP (Q#3714)

- If attaching to a gripper with a sensor, mount to the opposite side as the sensor finger.
- The AAE Sprue Pusher is 3D printed from a durable plastic material in order to save weight.
- Actuated by a pneumatic micro barrel cylinder, a spring returns the pusher back into its default position.
- Kit includes: Sprue push unit, M3 fitting for 4mm tubing, 6mm to 4mm tubing reducer, 3' (1meter) 4mm tubing.



NEW

Quick#	Part#	>ASS< #	Price	Weight
3890	AAE-14	1-414-15-00	\$194.25	47g

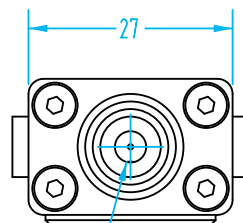


Medium-Body Sprue Grippers – GRZ 14

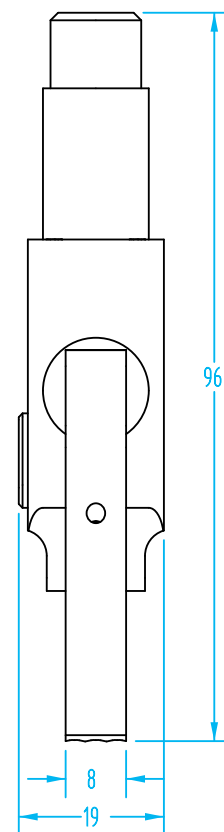
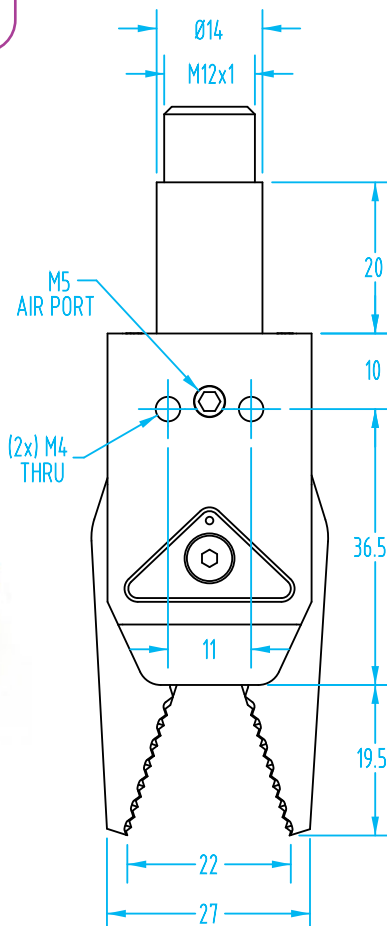
(Dimensioned drawings shown full scale)

GRZ 14 Features:

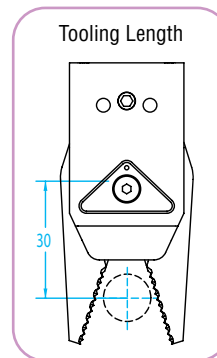
- A push-in fitting for Ø6mm tubing is pre-installed in or on the shaft depending on model number. Check our website for current information.
- Single acting with spring opening.
- Jaws are made of hard-coated aluminum, body made of anodized aluminum.
- Many mounting options — Ø14mm clampable body.
- M5 air ports on shaft and side.
- Grippers with sensors also include a 6' extension cable.



M5 AIR PORT WITH PRE-INSTALLED Ø6MM FITTING



#3723 - with diamond textured jaws

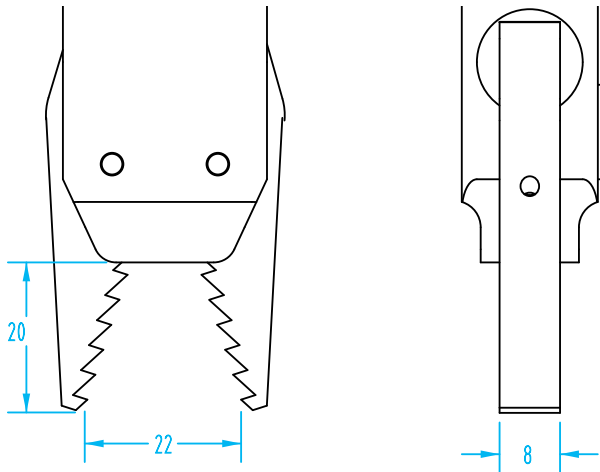


Quick#	Part#	>ASS< #	Price	lbs. Force at 30mm Tooling Length*	Applicable Sprue Ø	Weight
3723	GRZ-14-R	1-414-00-00	\$190.05	18.5lbf	2–12mm	65g

*Note: Force at 87psi (6 bar)

Medium-Body Sprue Grippers – GRZ 14

(Dimensioned drawings shown full scale)



#3713 - with saw jaws



Quick#	Part#	>ASS< #	Price	lbs. Force at 30mm Tooling Length*	Applicable Sprue Ø	Weight
3713	GRZ-14-S	1-414-40-00	\$227.85	18.5lbf	2–12mm	65g

*Note: Force at 87psi (6 bar)

#3710 - with polyurethane padded jaws

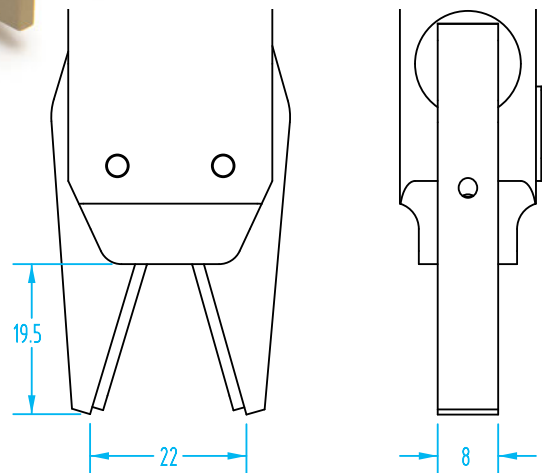
- Silicone free, non-marking pads
- Short term contact for PU pads is 230° F

#3724 - with soft touch coated jaws

- Silicone free, non-marking coating
- 194°F (266°F short term) max. temperature



Starting 2021 GRZ 14 Grippers will have a push-in Ø6mm fitting installed on the shaft. Visit our website to find current information.



Quick#	Part#	>ASS< #	Price	Style	lbs. Force at 30mm Tooling Length*	Applicable Sprue Ø	Weight
3724	GRZ-14-EP	1-414-65-00	\$252.00	Coated jaws	18.5lbf	2–12mm	65g
3710	GRZ-14-PU	1-414-30-00	\$220.50	Padded jaws	18.5lbf	2–12mm	65g

*Note: Force at 87psi (6 bar)

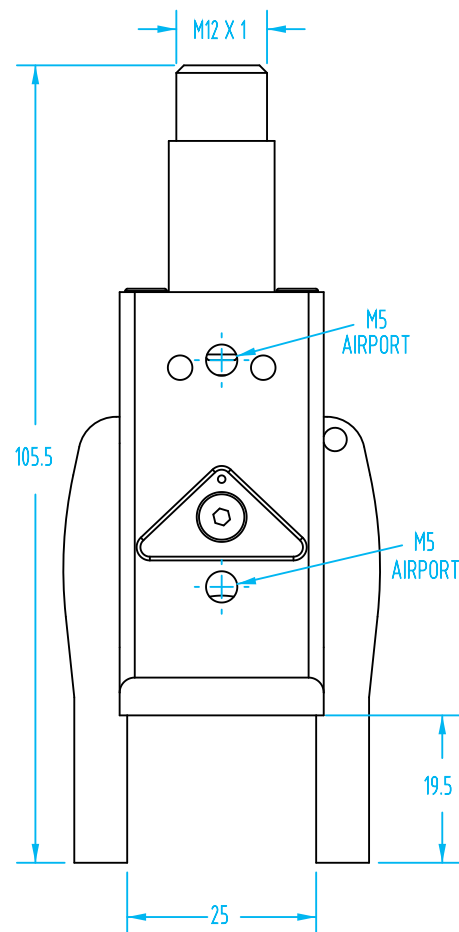
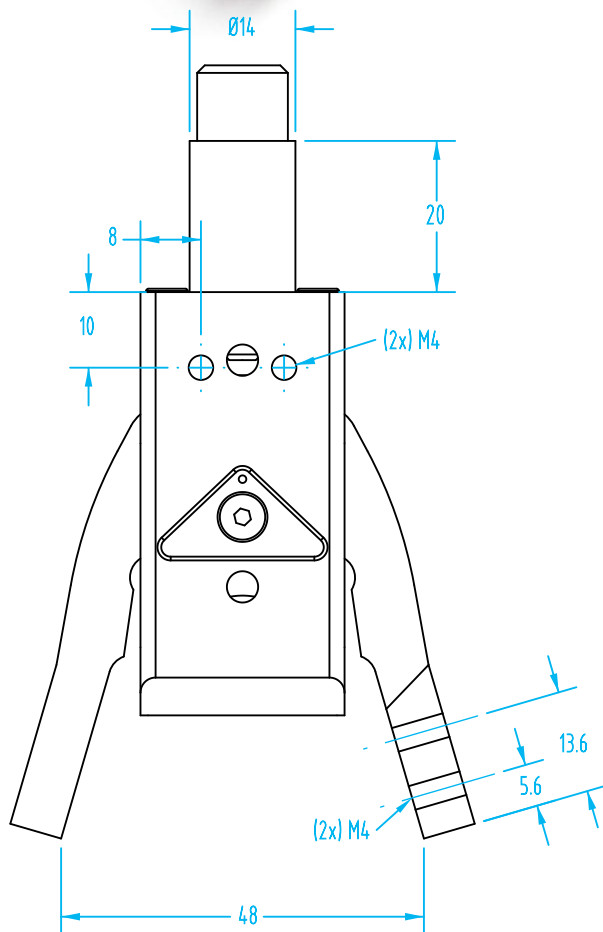
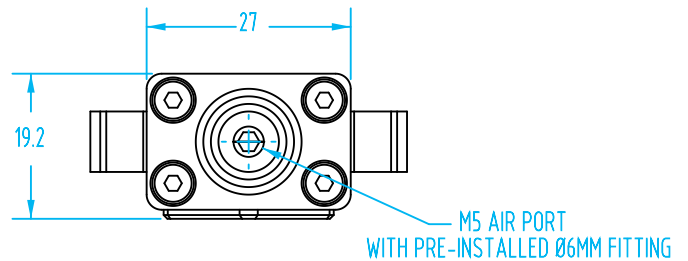
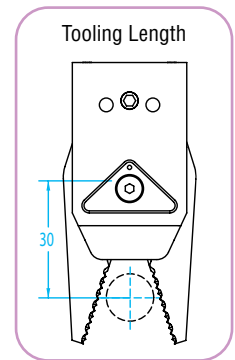
Medium-Body Sensor Finger – GRZ 14

#3741 - Double Acting with custom jaws

- Can be used for ID gripping depending on the application
- Double Acting



Starting 2021 GRZ 14 Grippers will have a push-in Ø6mm fitting installed on the shaft. Visit our website to find current information.



Double Acting GRZ Gripper with custom jaws

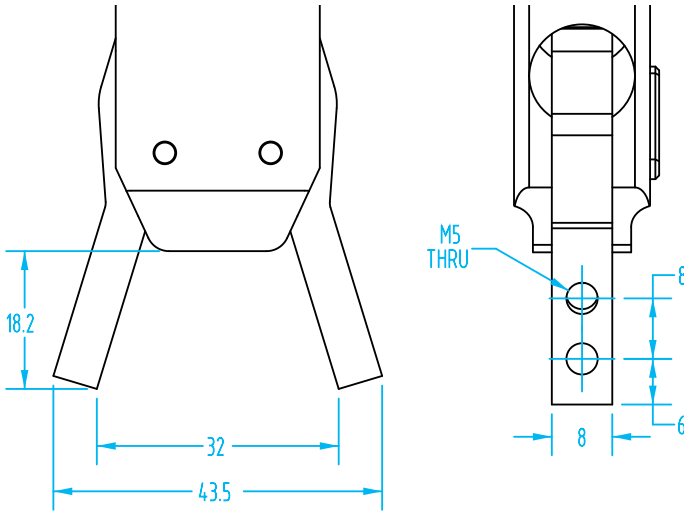
Quick#	Part#	>ASS< #	Price	lbs. Force at 30mm Tooling Length*	Weight
3741	GRZ-14-D-A	1-414-50-00	\$210.00	18.5lbf	82g

*Note: Force at 87psi (6 bar)

Medium-Body Sprue Grippers – GRZ 14

(Dimensioned drawings shown full scale)

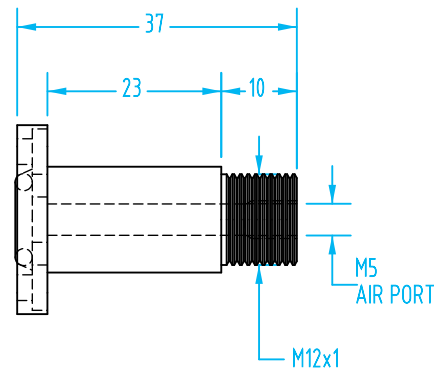
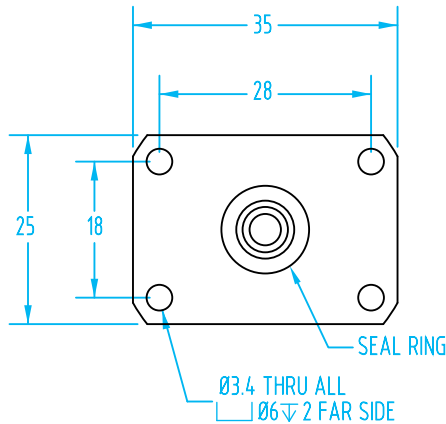
#3716 - Single Acting with custom jaws



Single Acting GRZ Gripper with custom jaws

Quick#	Part#	>ASS< #	Price	lbs. Force at 30mm Tooling Length*	Weight
3716	GRZ-14-A	1-414-09-00	\$183.75	18.5 lbf	65g

*Note: Force at 87psi (6 bar)



Mounting Bracket for GRZ-14 with 20mm Clampable Post

Quick#	Part#	>ASS< #	Wt	Price
NEW 3494	AD-14-GRZ-20-U	1-417-07-00	22g	\$228.90

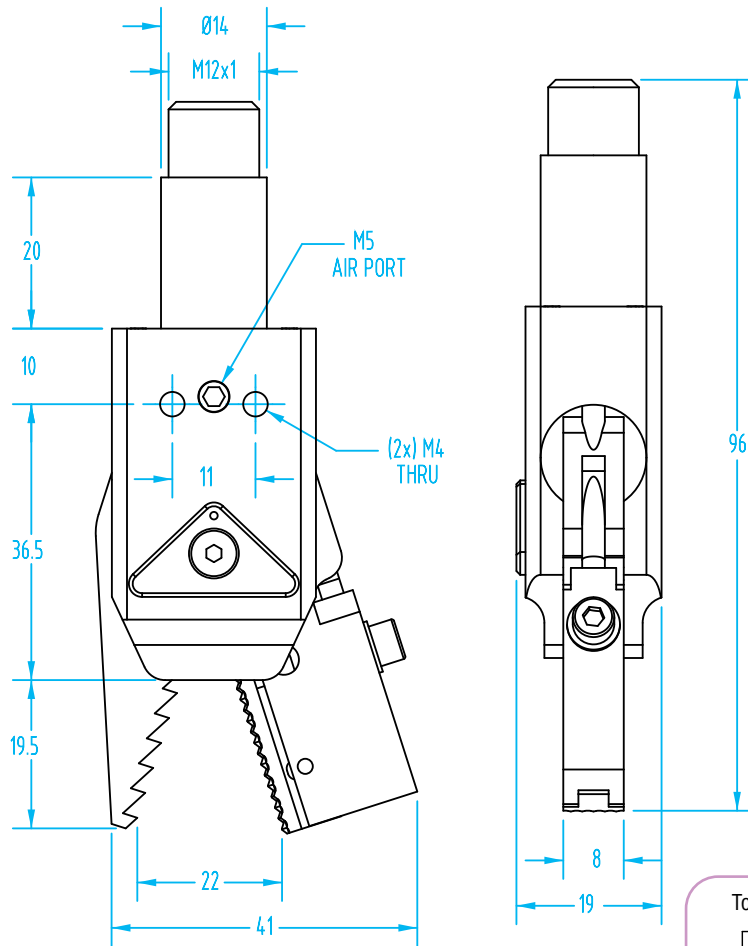
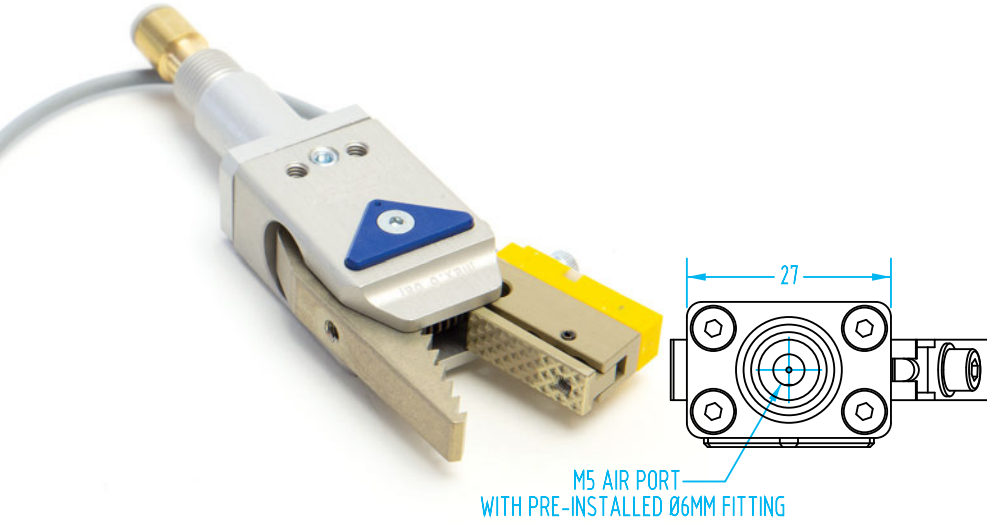
Includes hardware.



Medium-Body Sensor Finger – GRZ 14

(Dimensioned drawings shown full scale)

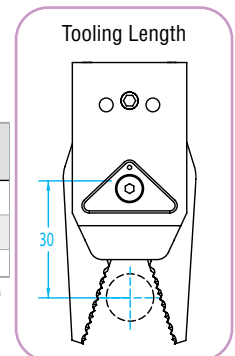
#3714 / #3715 - with saw jaws & sensor



Quick#	Part#	>ASS< #	Price	Style	lbs. Force at 30mm Tooling Length*	Applicable Sprue Ø	Wt.
3714	GRZ-14-SCS-PNP	1-414-42-00	\$269.85	Saw Jaw - PNP	18.5lbf	4-12mm	76g
3715	GRZ-14-SCS-NPN	1-414-44-00	\$269.85	Saw Jaw - NPN	18.5lbf	4-12mm	76g

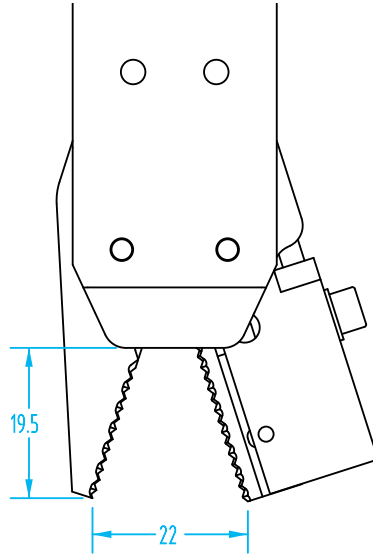
Includes sensor with M8 plug and a 6' KG 8-3 extension cable.

**Note: Force at 87psi (6 bar)*



Medium-Body Sprue Grippers – GRZ 14

#3711 / #3712 - with diamond textured jaws & sensor



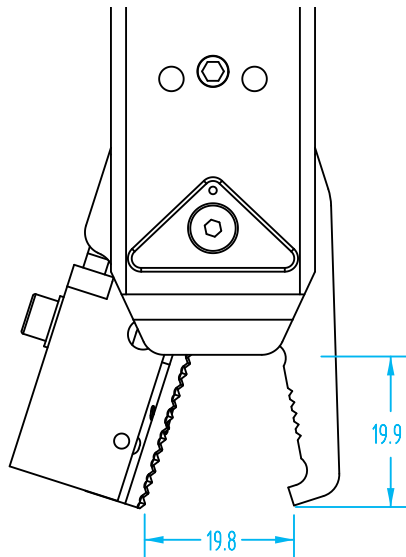
Quick#	Part#	>ASS< #	Price	Style	lbs. Force at 30mm Tooling Length*	Applicable Sprue Ø	Wt.
3711	GRZ-14-RCS-PNP	1-414-20-00	\$269.85	Diamond Texture Jaw - PNP	18.5lbf	4–12mm	76g
3712	GRZ-14-RCS-NPN	1-414-21-00	\$269.85	Diamond Texture Jaw - NPN	18.5lbf	4–12mm	76g

Includes sensor with M8 plug and a 6' KG 8-3 extension cable.

*Note: Force at 87psi (6 bar)

#3742/ 3743 - with parrot style contoured jaws and sensor

- Contour jaws for round and half-round pieces, e.g. cold runner



Quick#	Part#	>ASS< #	Price	Style	lbs. Force at 30mm Tooling Length*	Applicable Sprue Ø	Weight
3742	GRZ-14-PS-CS-PNP	1-414-23-00	\$269.85	Parrot Jaw - PNP	18.5lbf	2–12mm	71g
3743	GRZ-14-PS-CS-NPN	1-414-23-01	\$269.85	Parrot Jaw - NPN	18.5lbf	2–12mm	71g

Includes sensor with M8 plug and a 6' KG 8-3 extension cable.

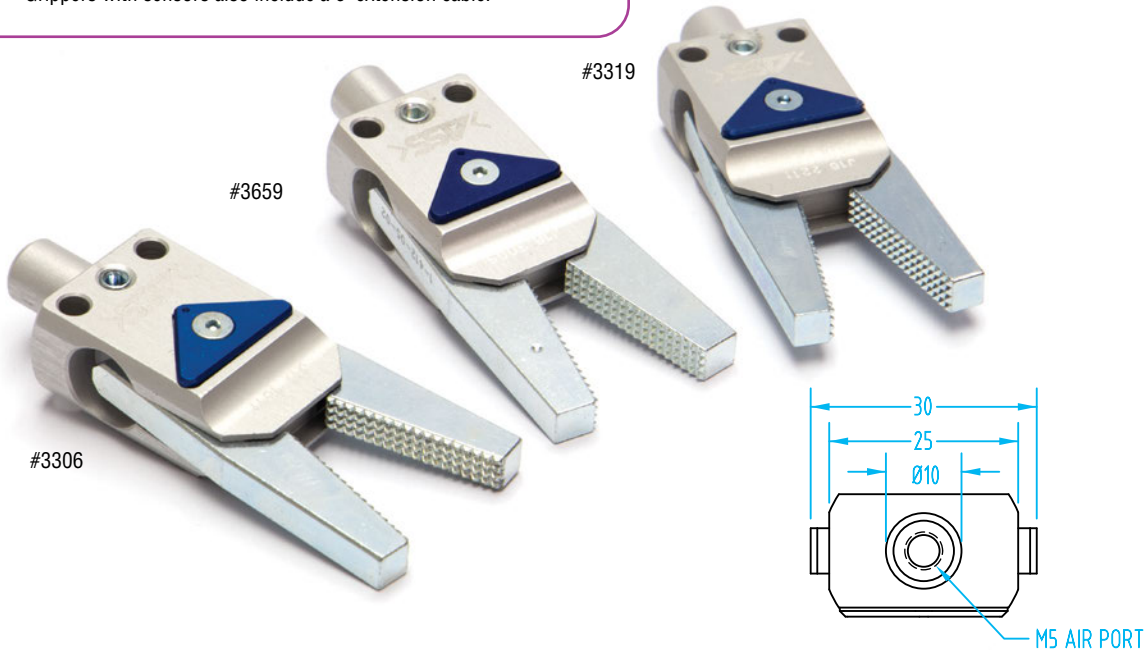
*Note: Force at 87psi (6 bar)

Mini Sprue Grippers – GRZ 10-12

(Dimensioned drawings shown full scale)

GRZ 10-12 Features:

- Single acting with spring opening.
- Jaws are made of steel, body made of anodized aluminum.
- Many mounting options — Ø10mm clampable body.
- M5 air ports on shaft and side.
- Grippers with sensors also include a 6' extension cable.

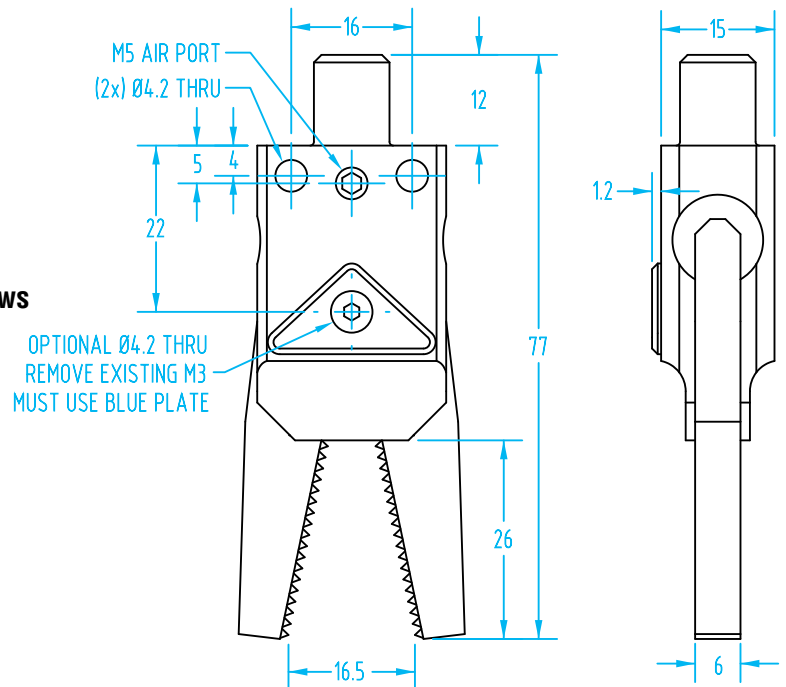


#3306 - With diamond textured jaws

#3659 - With diamond textured, hardened jaws

#3319 - With diamond textured, heat-resistant jaws

- Long term usage up to 302°F air temperature. Higher temperatures have to be tested individually.



Fittings Available on page 1047



Quick#	Part#	>ASS< #	Price	Style	lbs. Force at 25mm Tooling Length*	Applicable Sprue Ø	Wt.
3306	GRZ10-12	1-412-03-00	\$141.23	Diamond textured jaws	11.0 lbf	4–9mm	57.7g
3659	GRZ-10-12-BG	1-412-05-00	\$176.93	Hardened jaws	11.0 lbf	4–9mm	57.7g
3319	GRZ-10-12-R-HT	1-412-66-00	\$174.30	Heat resistant jaws	11.0 lbf	4–9mm	70g

*Note: Force at 87psi (6 bar)

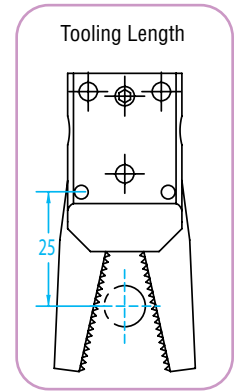
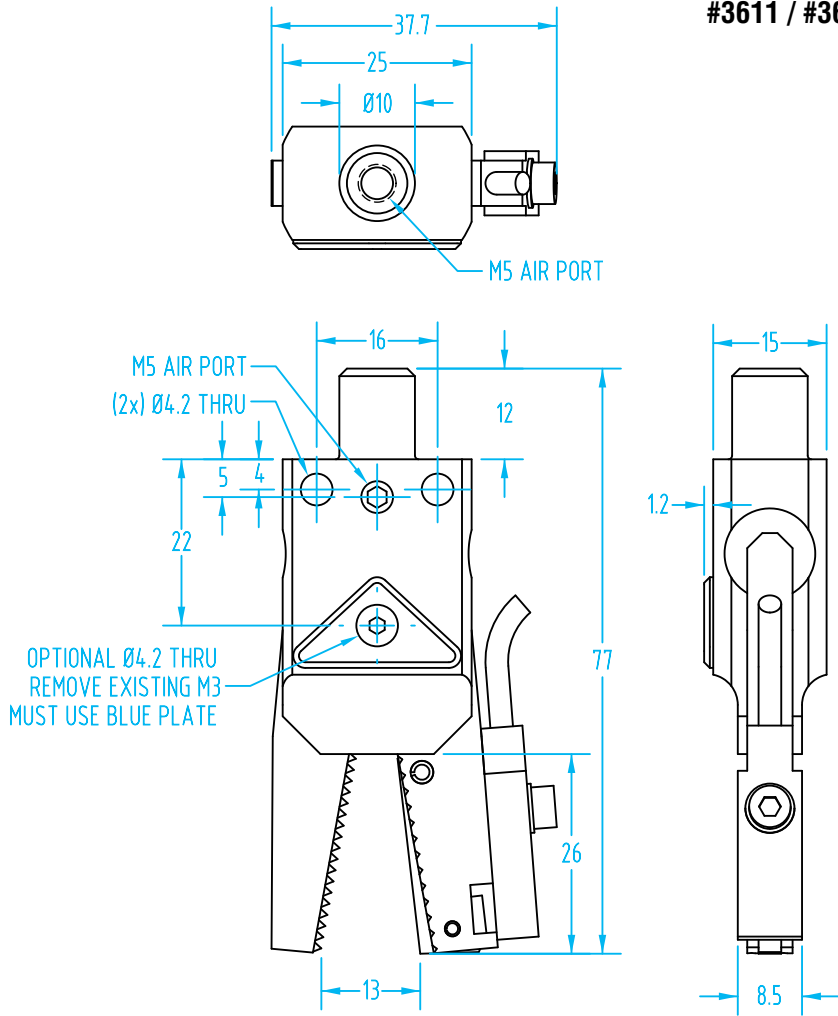
Use Quick#s for easy online ordering.

Mini Sprue Grippers – GRZ 10-12

(Dimensioned drawings shown full scale)

#3611 / #3612 - With diamond textured jaws & sensor

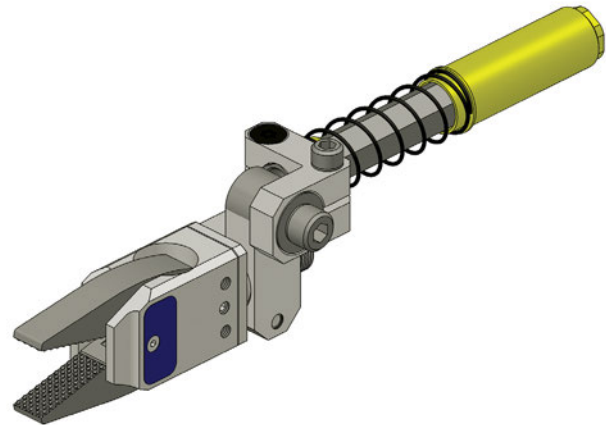
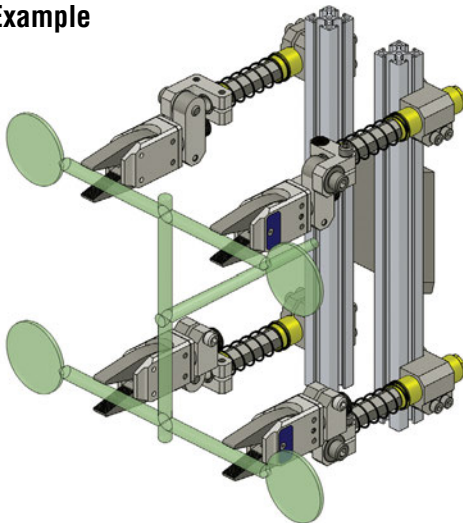
- Grippers with sensors include a 6' extension cable.



Quick#	Part#	>ASS< #	Price	Sensor	lbs. Force at 25mm Tooling Length*	Applicable Sprue Ø	Wt.
3611	GRZ-10-12-CS-PNP	1-412-18-00	\$231.00	PNP	11.0 lbf	3–9mm	63.8g
3612	GRZ-10-12-CS-NPN	1-412-24-00	\$231.00	NPN	11.0 lbf	3–9mm	63.8g

*Note: Force at 87psi (6 bar)

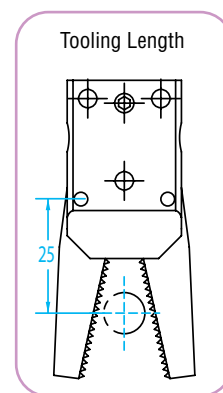
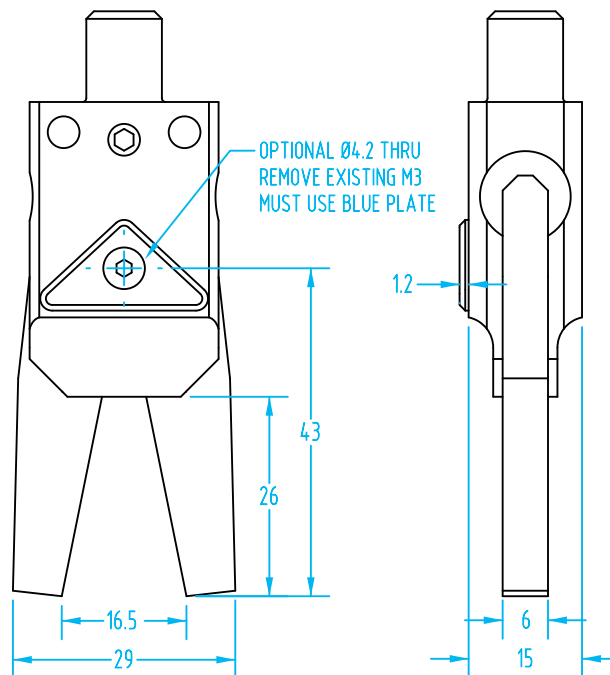
Application Example



Mini Sprue Grippers – GRZ 10-12

See full body dimensions on page 476.
(Dimensioned drawings shown full scale)

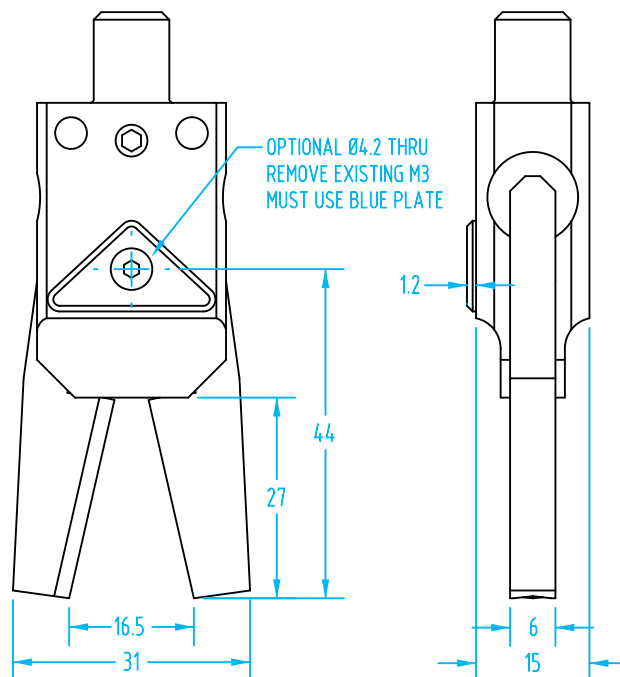
#3655 - With smooth-surface jaws



Quick#	Part#	>ASS< #	Price	lbs. Force at 25mm Tooling Length*	Applicable Sprue Ø	Wt.
3655	GRZ-10-12-G	1-412-60-00	\$160.65	11.0 lbf	2-9mm	57.7g

*Note: Force at 87psi (6 bar)

#3656 / #3657 - With v-groove jaws

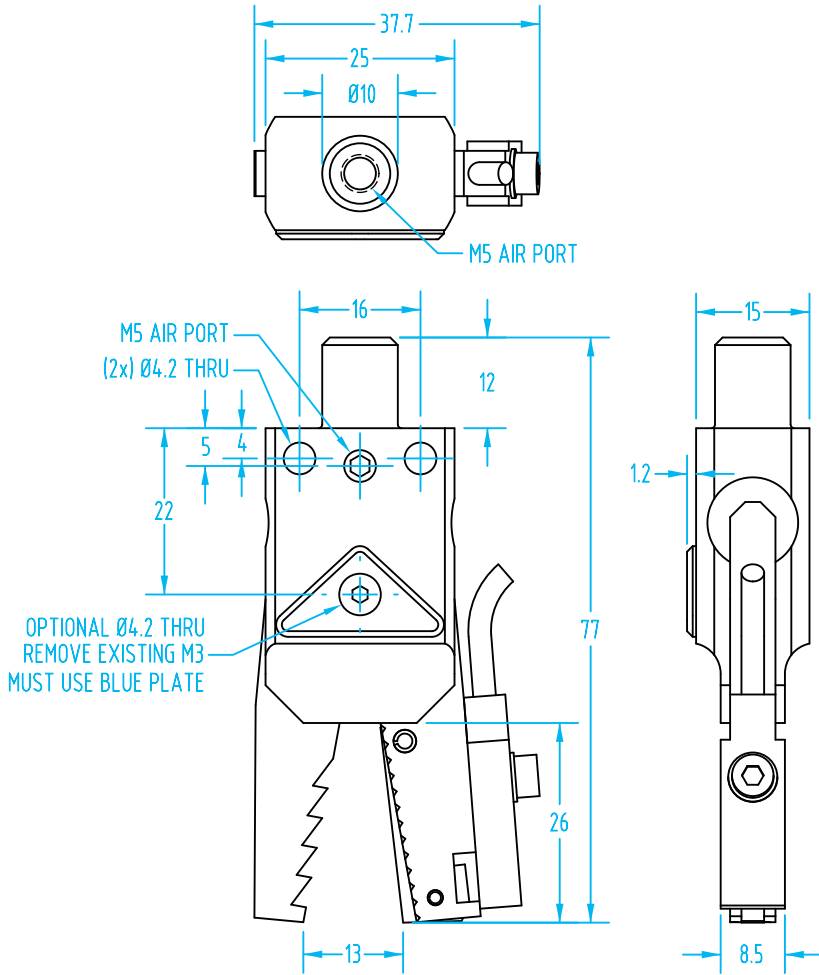


Quick#	Part#	>ASS< #	Price	lbs. Force at 25mm Tooling Length*	Applicable Sprue Ø	Wt.
3656	GRZ-10-12-PK	1-412-12-00	\$160.65	11.0 lbf	2-9mm	53g
3657	GRZ-10-12-KK	1-412-13-00	\$160.65	11.0 lbf	2-9mm	53g

*Note: Force at 87psi (6 bar)

Mini Sprue Grippers – GRZ 10-12

(Dimensioned drawings shown full scale)



#3719 / #3720 - With saw jaw & sensor

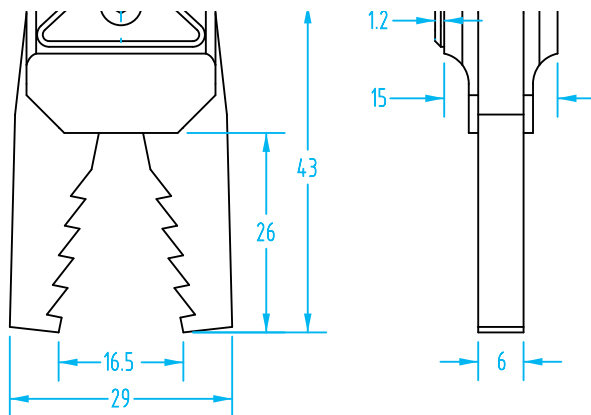
- Grippers with sensors include a 6' extension cable.



Quick#	Part#	>ASS< #	Price	Sensor	lbs. Force at 25mm Tooling Length*	Applicable Sprue Ø	Wt.
3719	GRZ-10-12-SCS-PNP	1-412-37-00	\$241.50	PNP	11.0 lbf	3–9mm	58g
3720	GRZ-10-12-SCS-NPN	1-412-38-00	\$241.50	NPN	11.0 lbf	3–9mm	58g

*Note: Force at 87psi (6 bar)

#3658 - With saw jaws



Quick#	Part#	>ASS< #	Price	lbs. Force at 25mm Tooling Length*	Applicable Sprue Ø	Wt.
3658	GRZ-10-12-S	1-412-35-00	\$160.65	11.0 lbf	4–9mm	39g

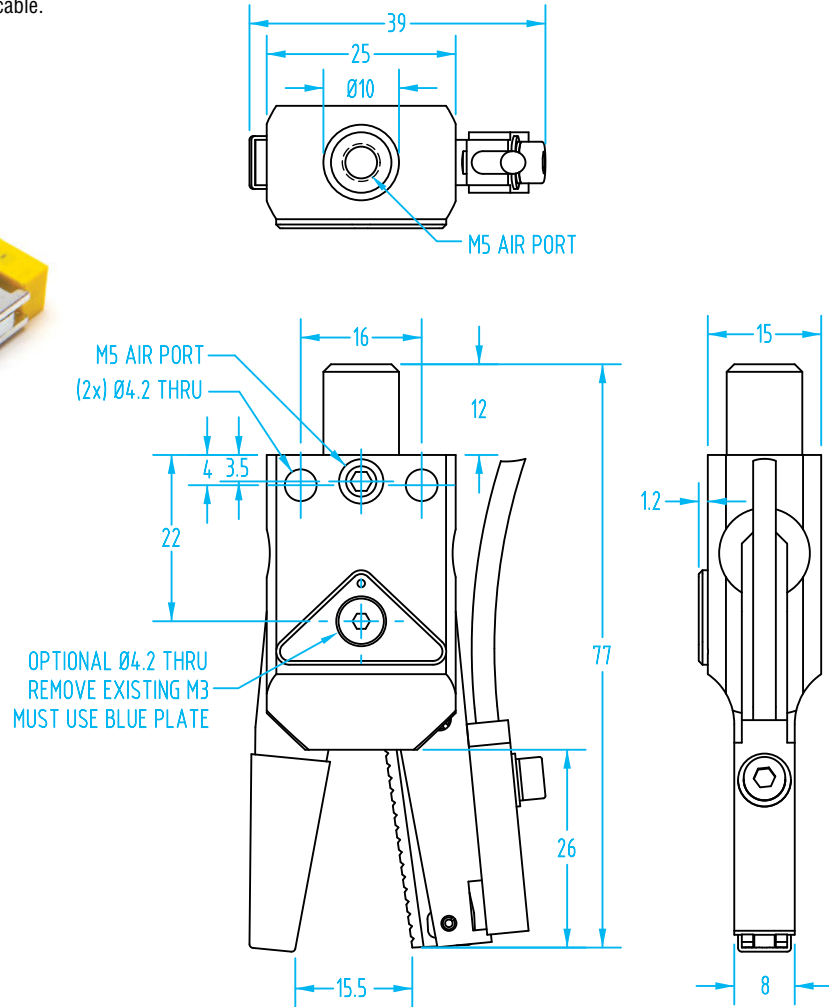
*Note: Force at 87psi (6 bar)

Mini Sprue Grippers – GRZ 10-12

(Dimensioned drawings shown full scale)

#3918, #3919 - with EP coating and sensor

- Silicone free, non-marking coating
- 194°F (266°F short term) max. temperature
- Grippers with sensors include a 6' extension cable.



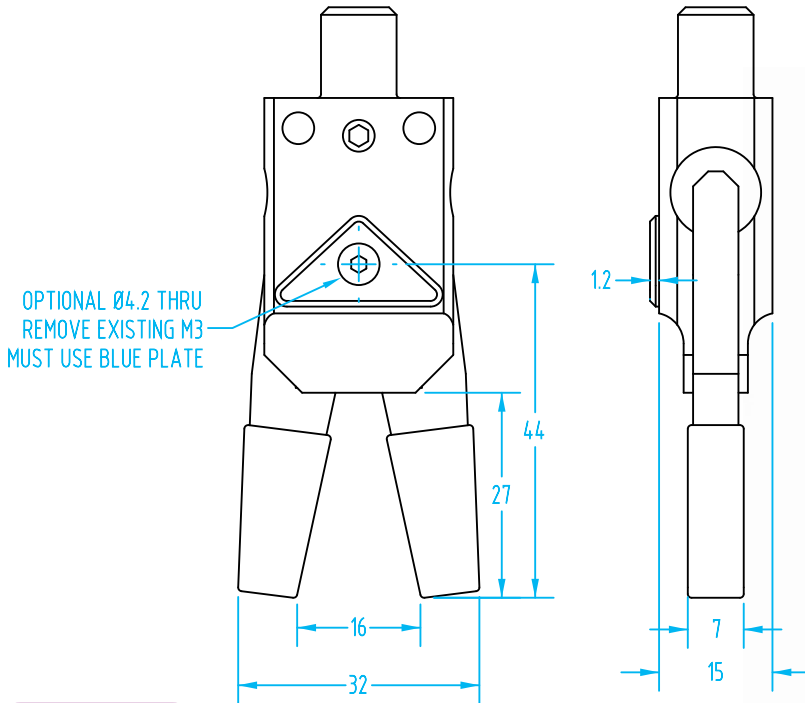
NEW

Quick#	Part#	>ASS< #	Price	lbs. Force at 25mm Tooling Length*	Applicable Sprue Ø	Wt.
3918	GRZ-10-12-CFS-EP-PNP	1-412-22-00	\$285.60	11.0 lbf	2-9mm	65g
3919	GRZ-10-12-CFS-EP-NPN	1-412-27-00	\$285.60	11.0 lbf	2-9mm	65g

*Note: Force at 87psi (6 bar)

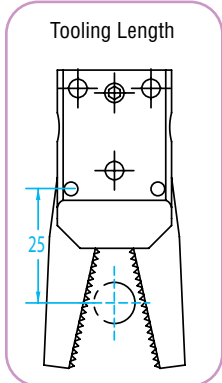
Mini Sprue Grippers – GRZ 10-12

See full body dimensions on page 476.
(Dimensioned drawings shown full scale)



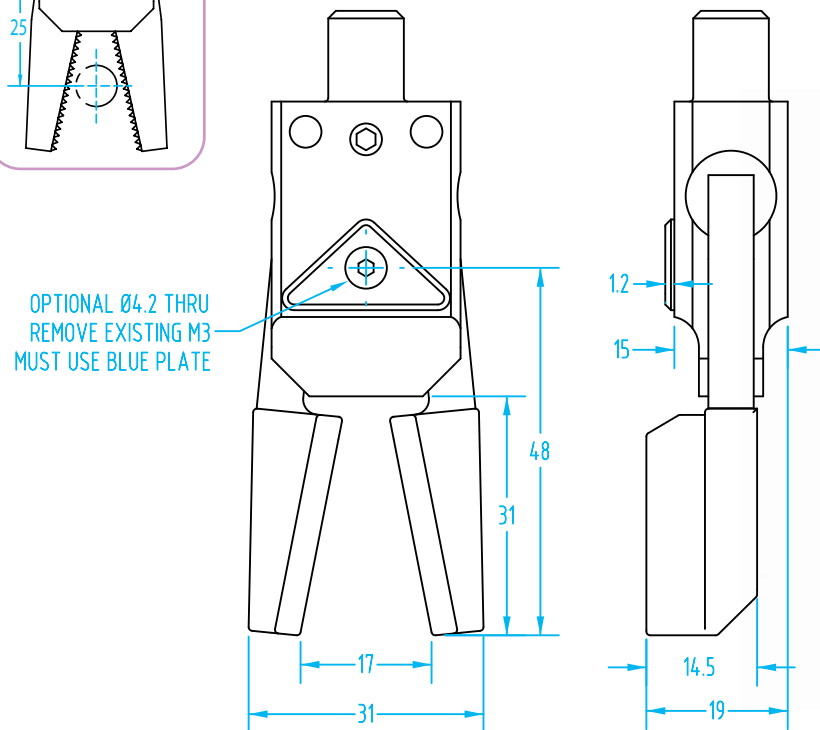
#3722 - With soft touch coated jaws

- Silicone free, non-marking coating
- 194°F (266°F short term) max. temperature



Quick#	Part#	>ASS< #	Price	lbs. Force at 25mm Tooling Length*	Applicable Sprue Ø	Wt.
3722	GRZ-10-12-EP	1-412-65-00	\$243.60	11.0 lbf	2–9mm	57.7g

*Note: Force at 87psi (6 bar)



#3721 - With soft touch coated wide jaws

- Silicone free, non-marking coating
- 194°F (266°F short term) max. temperature



Quick#	Part#	>ASS< #	Price	lbs. Force at 25mm Tooling Length*	Applicable Sprue Ø	Wt.
3721	GRZ-10-12-AH-EP	1-412-39-00	\$252.00	11.0 lbf	2–9mm	72g

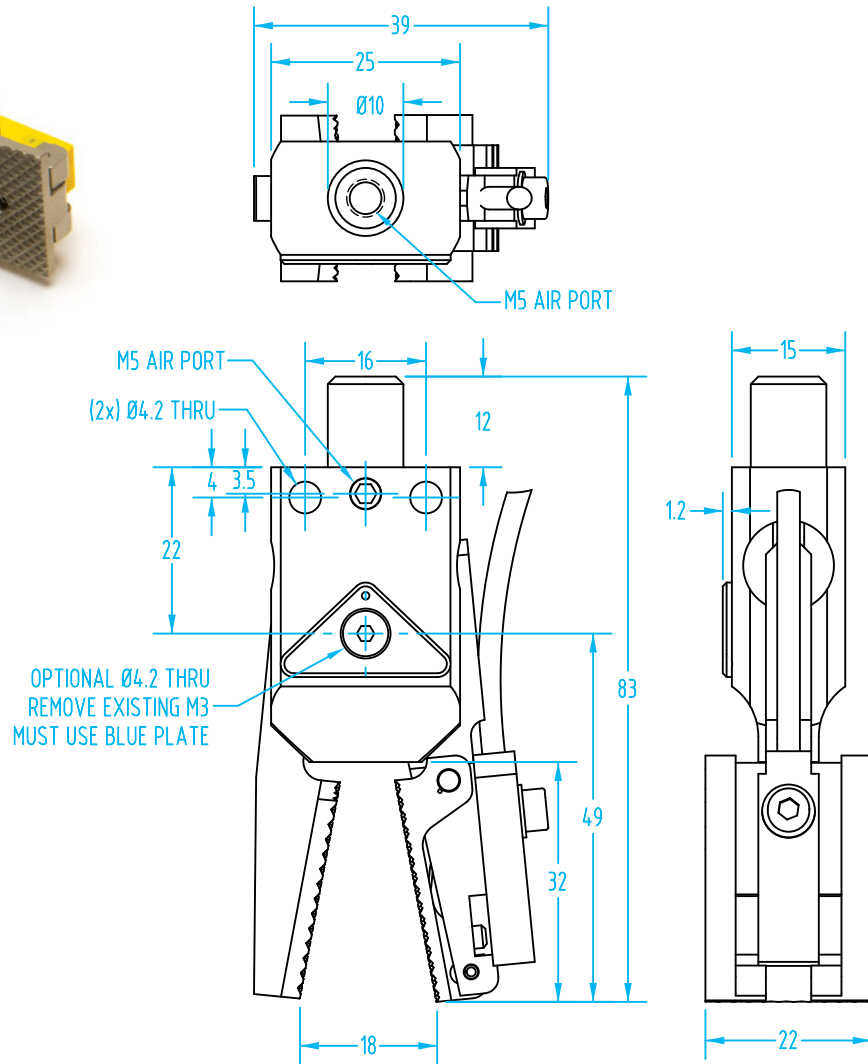
*Note: Force at 87psi (6 bar)

Mini Sprue Grippers – GRZ 10-12

(Dimensioned drawings shown full scale)

#3894 & #3920 - With extra-wide jaws & sensor

- Jaws are made of zinc-plated steel with a checkered surface.
- Grippers with sensors include a 6' extension cable.



NEW

Quick#	Part#	>ASS< #	Price	lbs. Force at 25mm Tooling Length*	Applicable Sprue \varnothing	Wt.
3894	GRZ-10-12-RB-CS-PNP	1-412-43-00	\$229.43	11.0 lbf	2-9mm	75g
3920	GRZ-10-12-RB-CS-NPN	1-412-44-00	\$229.43	11.0 lbf	2-9mm	75g

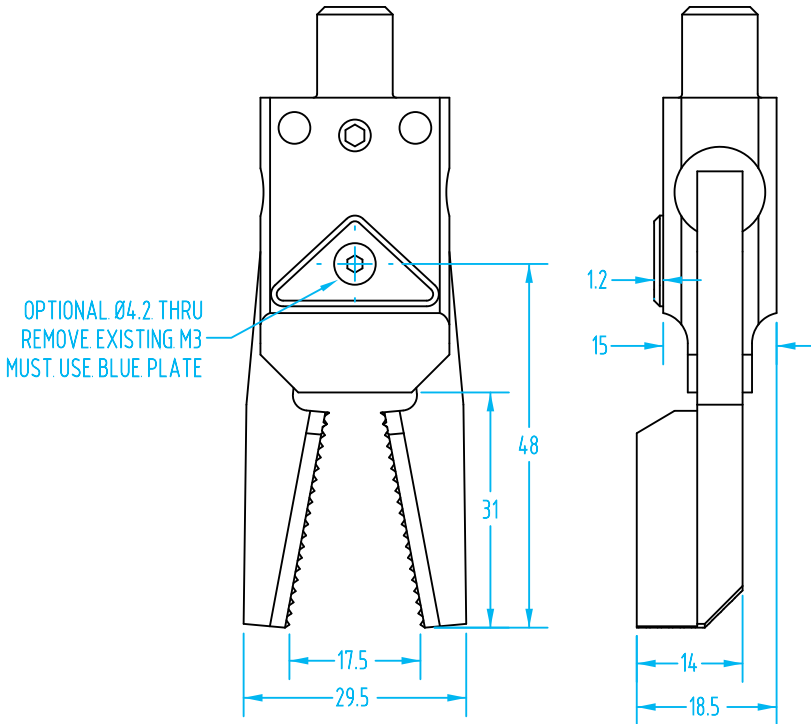
*Note: Force at 87psi (6 bar)

Use Quick#s for easy online ordering.

Mini Sprue Grippers – GRZ 10-12

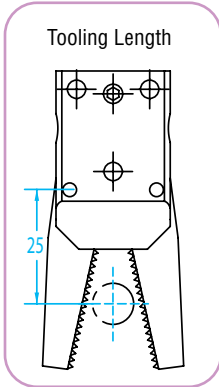
See full body dimensions on page 476.
(Dimensioned drawings shown full scale)

#3661 - With extra-wide jaws



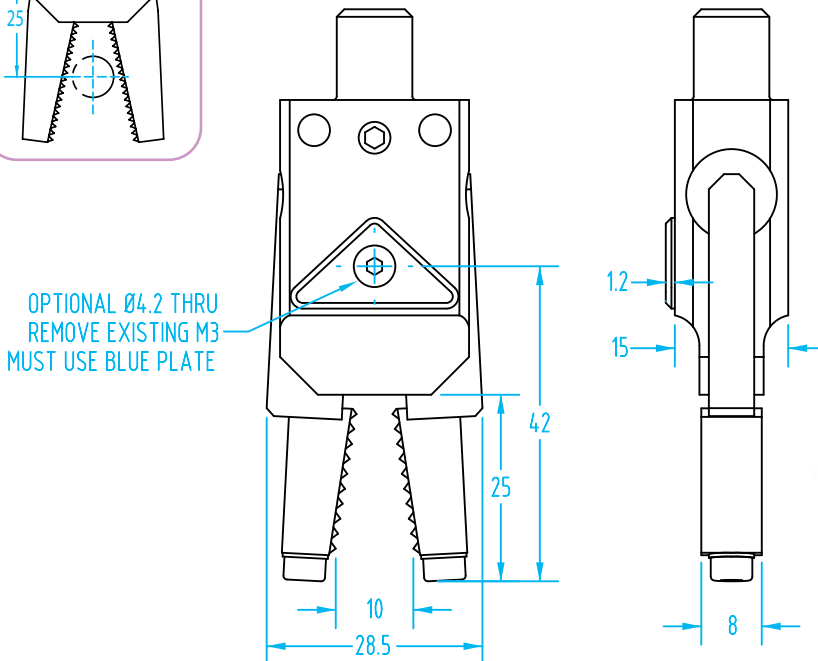
Quick#	Part#	>ASS< #	Price	lbs. Force at 25mm Tooling Length*	Applicable Sprue Ø	Wt.
3661	GRZ-10-12-AH	1-412-34-00	\$160.65	11.0 lbf	1–9mm	43g

*Note: Force at 87psi (6 bar)



#3660 - With swivel jaws

- Designed to grip conical parts or runners.
- Swivel jaws automatically adjust to the shape of the parts/runner.



Quick#	Part#	>ASS< #	Price	lbs. Force at 25mm Tooling Length*	Applicable Sprue Ø	Wt.
3660	GRZ-10-12-DB	1-412-30-00	\$233.10	11.0 lbf	3–9mm	59g

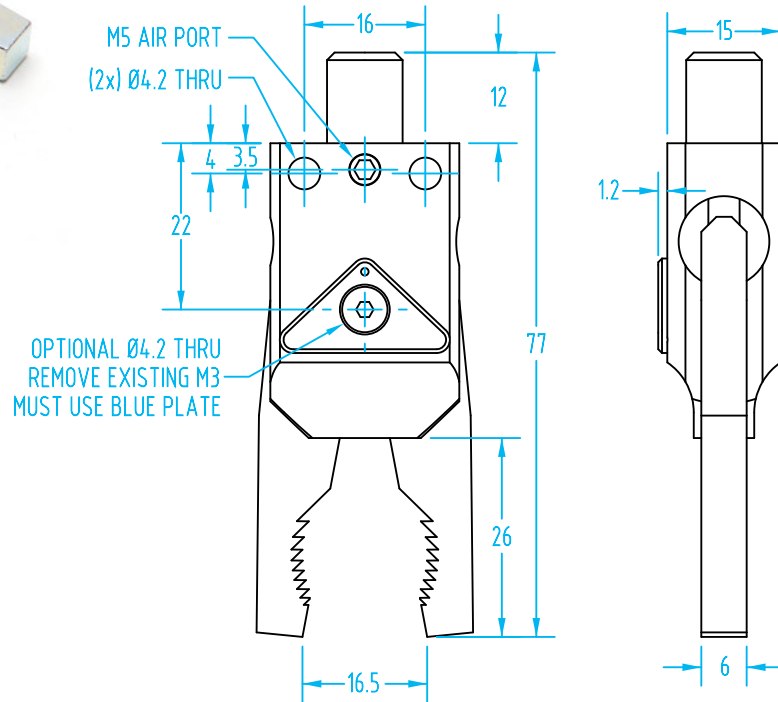
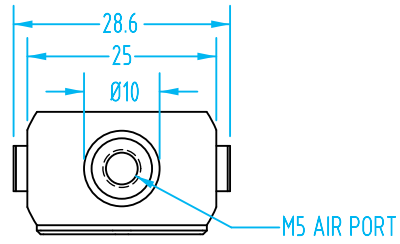
*Note: Force at 87psi (6 bar)

Mini Sprue Grippers – GRZ 10-12

(Dimensioned drawings shown full scale)

#3893 - With chamfer jaws

- This aggressively serrated chamfer design catches a gate or sprue within the GRZ gripper jaws.



NEW

Quick#	Part#	>ASS< #	Price	lbs. Force at 25mm Tooling Length*	Wt.
3893	GRZ-10-12-Z	1-412-46-00	\$160.65	11.0 lbf	58g

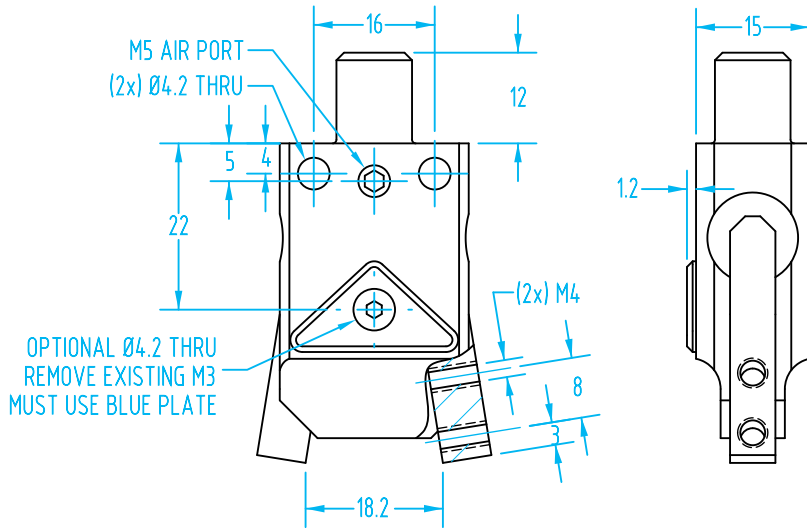
*Note: Force at 87psi (6 bar)

Fittings Available
on page 1047



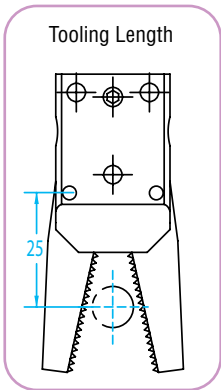
See full body dimensions on page 484.
(Dimensioned drawings shown full scale)

Mini Sprue Grippers – GRZ 10-12



#3662 - For custom-made jaws

- Two M4 tapped holes for each jaw

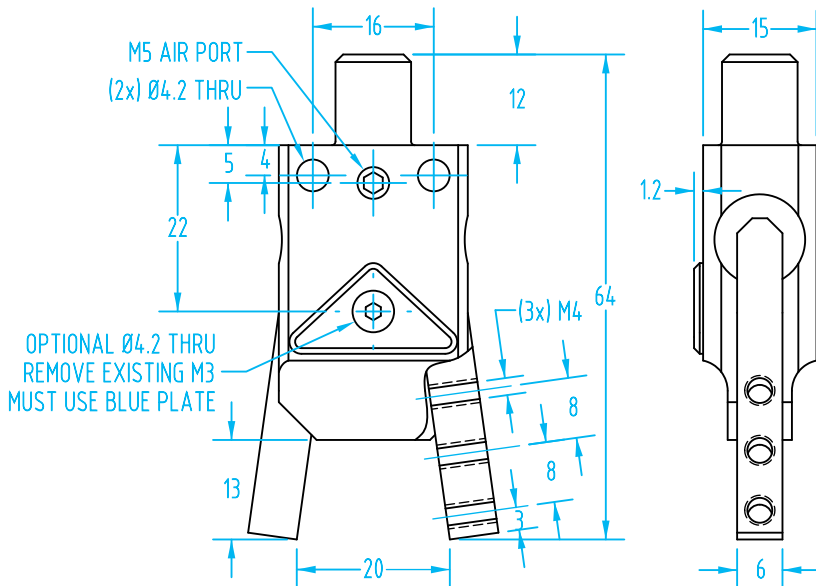


Quick#	Part#	>ASS< #	Price	lbs. Force at 25mm Tooling Length*	Wt.
3662	GRZ-10-12-A	1-412-06-00	\$138.60	11.0 lbf	39g

*Note: Force at 87psi (6 bar)

#3308 - For custom-made jaws

- Three M4 tapped holes for each jaw



Quick#	Part#	>ASS< #	Price	lbs. Force at 25mm Tooling Length*	Wt.
3308	GRZ-10-12-A1	1-412-09-00	\$138.60	11.0 lbf	43g

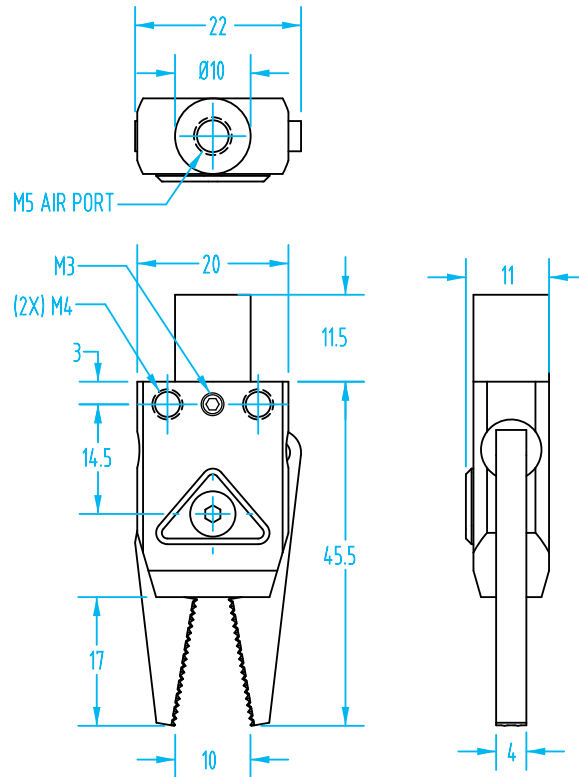
*Note: Force at 87psi (6 bar)

Micro Sprue Grippers – GRZ 10-08

GRZ 10-08 Features:

- Single acting with spring opening.
- Many mounting options — Ø10mm clampable body.
- M5 air ports in shaft and M4 ports on side.
- All grippers include sensors that have a 6 foot long lead (no connector).

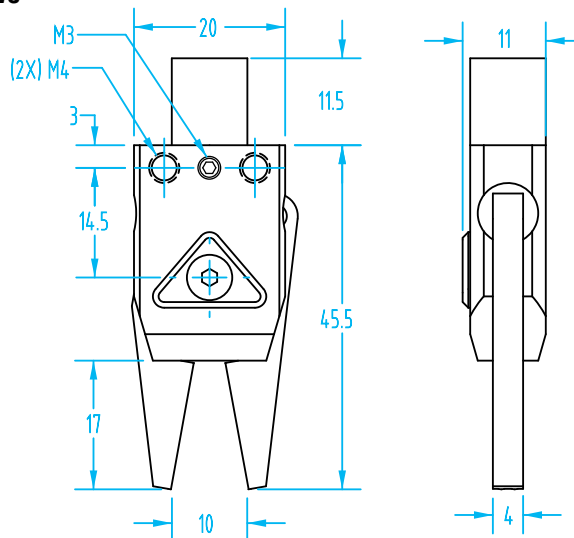
#3654 - Micro gripper with diamond textured jaws



Quick#	Part#	>ASS< #	Price	Style	lbs. Force at 18mm Tooling Length*	Applicable Sprue Ø	Wt.
3654	GRZ-10-08-CM	1-408-14-00	\$124.95	Textured jaws	6.5 lbf	1-6mm	17g

*Note: Force at 87psi (6 bar)

#3726 - Micro gripper with soft touch jaws

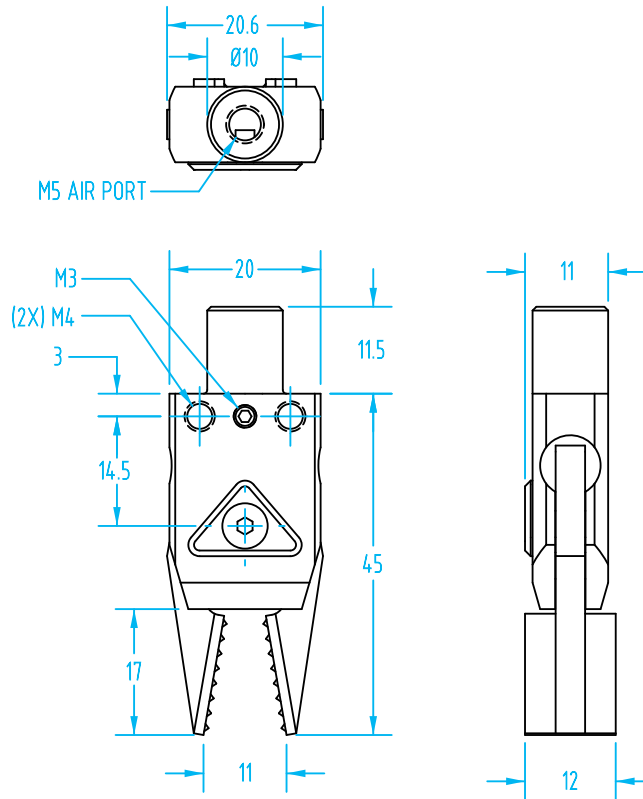


Quick#	Part#	>ASS< #	Price	Style	lbs. Force at 18mm Tooling Length*	Applicable Sprue Ø	Wt.
3726	GRZ-10-08-CMG-EP	1-408-30-00	\$205.80	Coated jaws	6.5 lbf	1-6mm	17g

*Note: Force at 87psi (6 bar)

Micro Sprue Grippers – GRZ 10-08

#3935 - Micro gripper with saw jaws



NEW

Quick#	Part#	>ASS< #	Price	Style	lbs. Force at 18mm Tooling Length*	Applicable Sprue Ø	Wt.
3935	GRZ-10-08-AH	1-408-04-00	\$141.75	Saw Jaws	6.5 lbf	1-6mm	17g

#3679 - Micro gripper sensor bracket



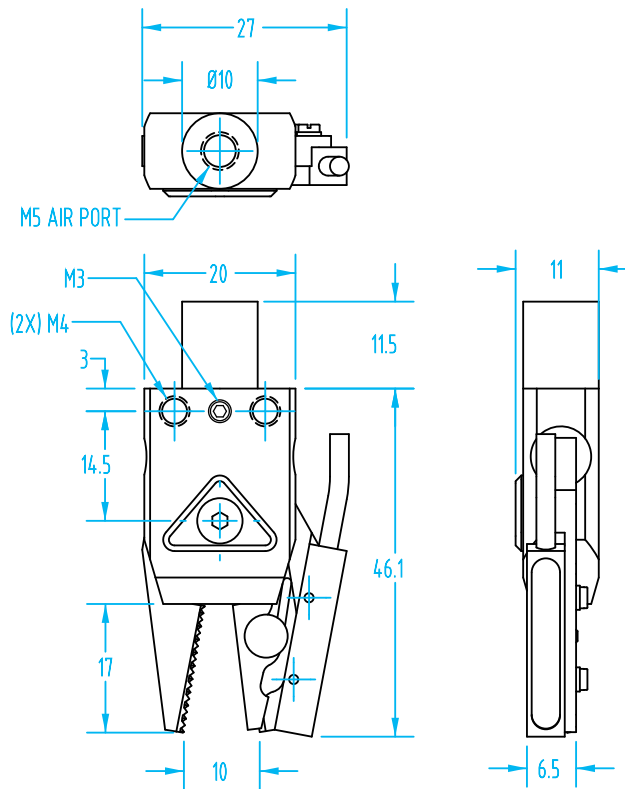
Sensor Bracket for Micro Grippers

Quick#	Part#	>ASS< #	Price	Wt.
3679	SH-GRZ-10-08	1-408-80-00	\$7.88	2g
Order Sensor Separately				
3809	MFS-T2-3-7	1-808-30-00	\$75.21	PNP

Micro Sprue Grippers with Sensor – GRZ 10-08

#3566 / #3567 - Micro gripper with textured jaw and sensor

- An improved trigger mechanism for reliably detecting small parts.



Quick#	Part#	>ASS< #	Price	Style	lbs. Force at 18mm Tooling Length*	Applicable Sprue \varnothing	Wt.
3566	GRZ-10-08-C-PNP	1-408-25-00	\$177.45	Textured Jaw - PNP sensor	6.5 lbf	1-6mm	49g
3567	GRZ-10-08-C-NPN	1-408-26-00	\$252.00	Textured Jaw - NPN sensor	6.5 lbf	1-6mm	49g

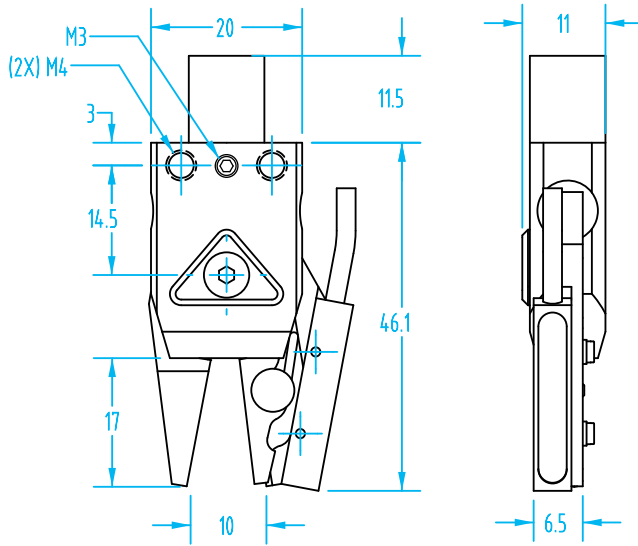
Sensors have 6 foot long cable with no connector.

*Note: Force at 87psi (6 bar)

Micro Sprue Grippers with Sensor – GRZ 10-08

(Dimensioned drawings shown full scale)

#3162 / #3164 - Micro gripper with EP coated jaw and sensor

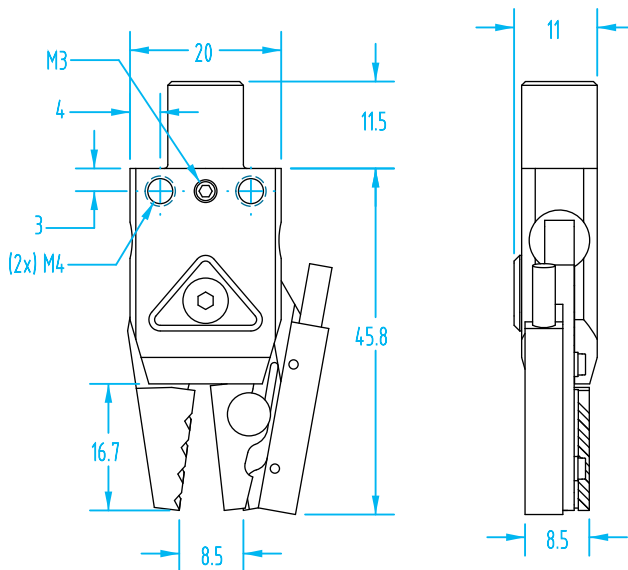


Quick#	Part#	>ASS< #	Price	Style	lbs. Force at 18mm Tooling Length*	Applicable Sprue Ø	Wt.
3162	GRZ-10-08-CF-PNP	1-408-21-00	\$227.85	Coated Jaw - PNP sensor	6.5 lbf	1–6mm	45g
3164	GRZ-10-08-CF-NPN	1-408-22-00	\$227.85	Coated Jaw - NPN sensor	6.5 lbf	1–6mm	45g

Sensors have 6 foot long cable with no connector.

#3317 / #3318 - Micro gripper with radiused jaw and sensor

- Is specifically designed for sensing soft materials.



Quick#	Part#	>ASS< #	Price	Style	lbs. Force at 18mm Tooling Length*	Applicable Sprue Ø	Wt.
3317	GRZ-10-08-C-WK-PNP	1-408-19-00	\$177.45	Radiused Jaw - PNP Sensor	6.5 lbf	1–6mm	50g
3318	GRZ-10-08-C-WK-NPN	1-408-20-00	\$252.00	Radiused Jaw - NPN Sensor	6.5 lbf	1–6mm	50g

Sensors have 6 foot long cable with no connector.

Nano GRZ Sprue Gripper – GRZ 10-06 / GRZ 06-06

(Dimensioned drawings shown full scale)

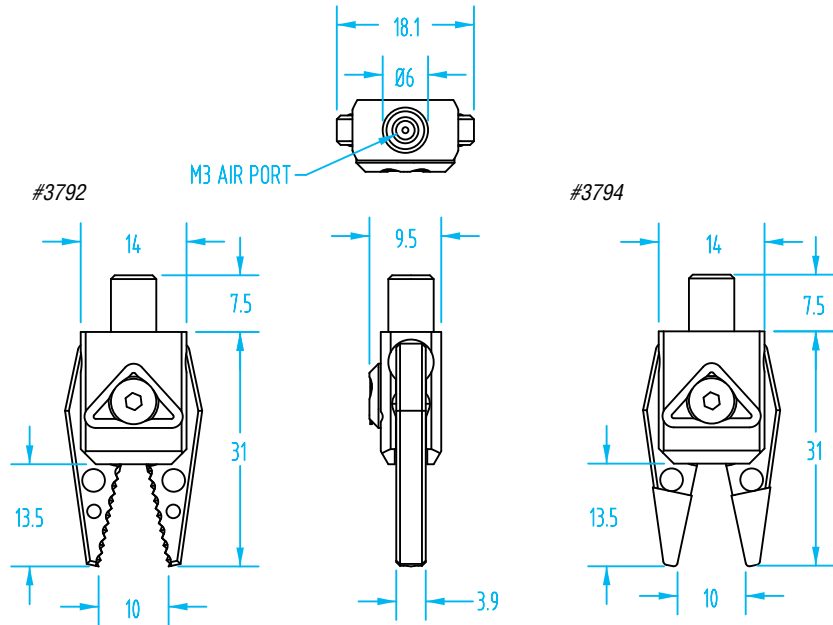
GRZ 06 Features:

- Single acting
- Very lightweight and compact design.
- M3 fittings on page 1047.
- Find Micro Series 6mm framing components on page 222.

#3792 & #3794 – Nano Size Grippers with 6mm Bore, 6mm Stem



NEW



Quick#	Part#	>ASS< #	Jaws	Closing Force*	Price	Wt.
3792	GRZ-06-06	1-406-00-00	Diamond Texture	1.34 lbf	\$91.88	6.5g
3794	GRZ-06-06-EP	1-406-02-00	EP Coated	1.34 lbf	\$151.73	6.5g

*Note: Force at 87psi (6 bar)

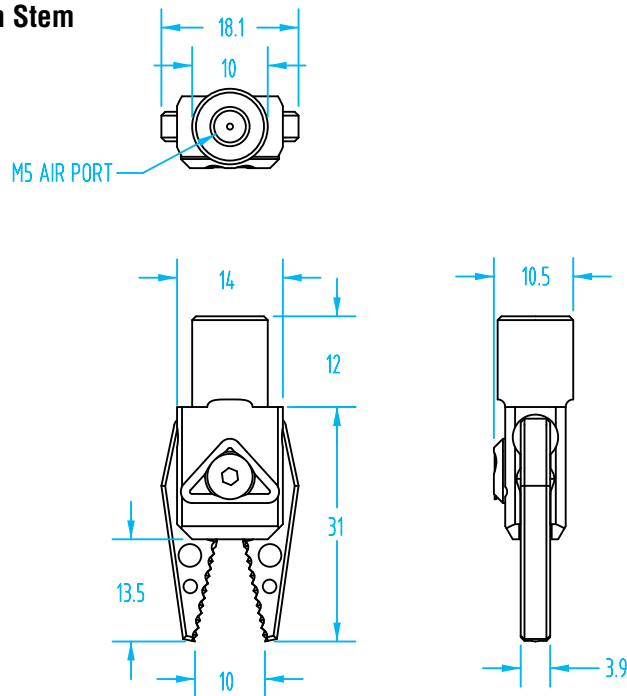
- #3794 with soft EP coating, Shore 60.

#3819 – Nano Gripper with 6mm Bore, 10mm Stem

- #3819 has a 10mm stem for mounting with our 10mm clamps. If a higher closing force is required the #3793 is available.



NEW



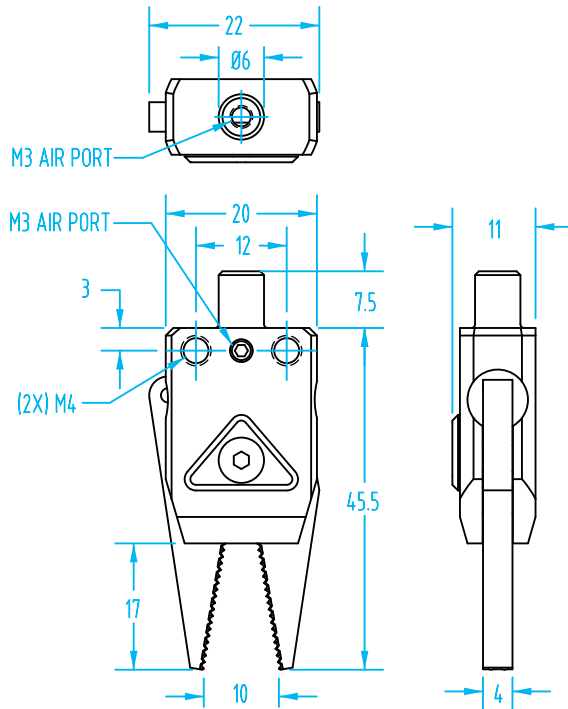
Quick#	Part#	>ASS< #	Closing Force*	Price	Wt.
3819	GRZ-10-06	1-406-01-00	1.34 lbf	\$94.50	8g

*Note: Force at 87psi (6 bar)

Micro GRZ Sprue Gripper – GRZ 10-08

(Dimensioned drawings shown full scale)

#3793 – Micro Size Gripper with 8mm Bore, 6mm Stem



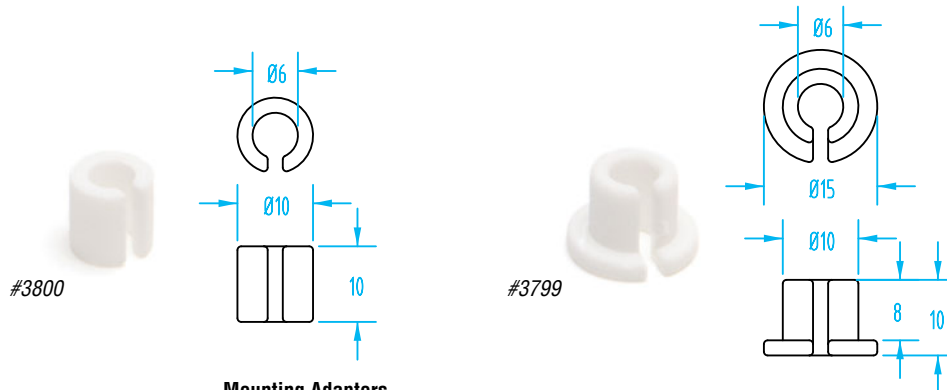
- Very lightweight and compact design.
- Ideal when a higher closing force is required for small EOAT's.
- Optional sensor clamp Quick# 3679 on page 487.



Quick#	Part#	>ASS< #	Price	Closing Force*	Wt.
3793	GRZ-06-08	1-408-01-00	\$111.83	4.27 lbf	15g

*Note: Force at 87psi (6 bar)

Accessories



Mounting Adaptors

Quick#	Part#	>ASS< #	Price	Wt.
3799	RMB-0610-10	1-116-00-16	\$4.73	<1g
3800	ROB-0610-10	1-116-00-17	\$3.68	<1g

Extension for GRZ 10-08 and GRZ 10-12 Grippers

Quick#	Part#	>ASS< #	Price	Wt.
3372	VL-U-25-GRZ-10-08	1-408-70-00	\$24.15	5g

NEW



Compact Sprue Grippers – GRZ 20-16

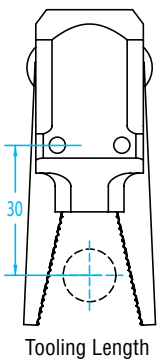
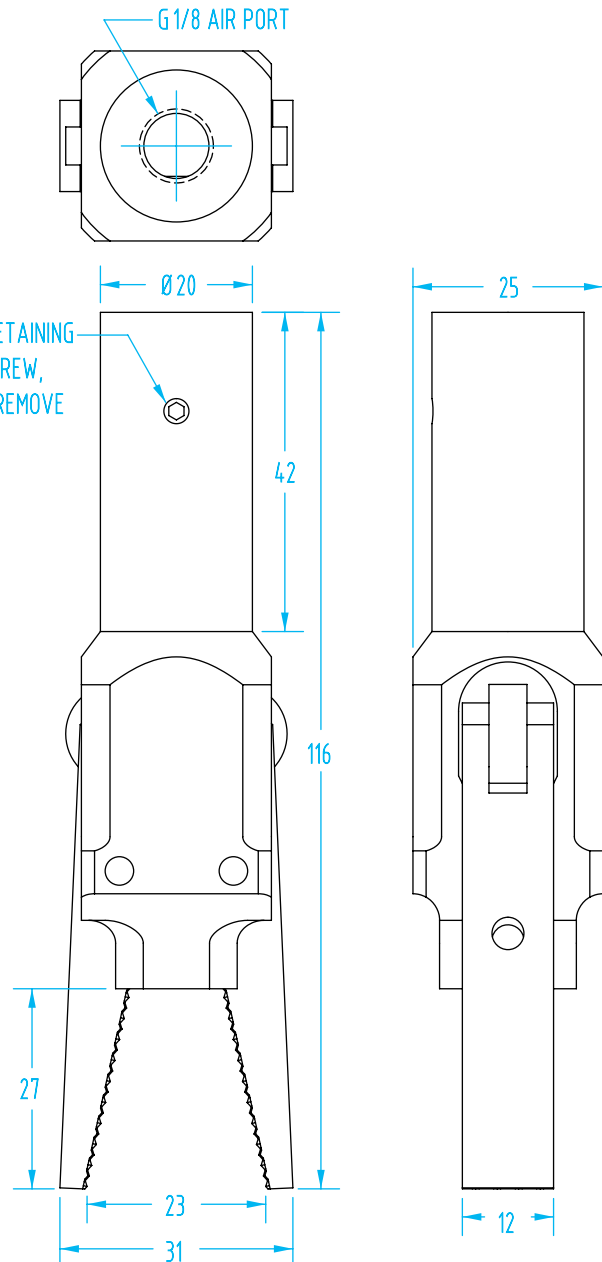
(Dimensioned drawings shown full scale)

GRZ 20-16 Features:

- Single acting with spring opening.
- Lightweight
- Many mounting options — Ø20mm clampable body.
- All have G1/8" air port.

#3528 - With diamond textured jaws

- Jaws are made of hard coated aluminum



Fittings Available on page 1047

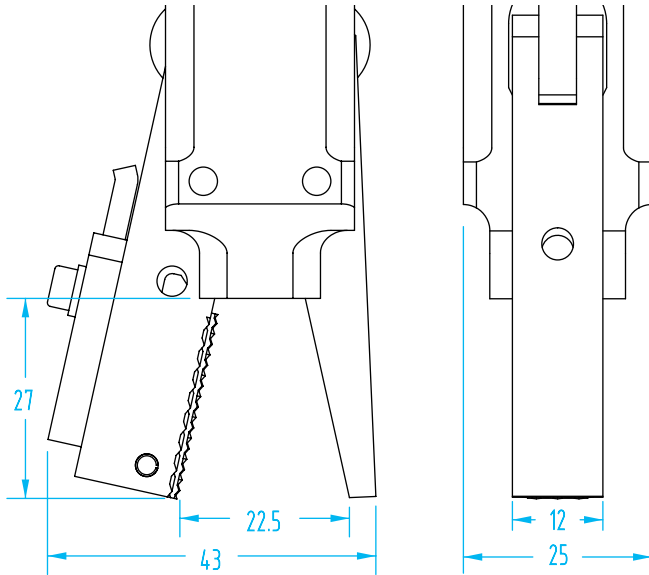


Quick#	Part#	>ASS< #	Price	lbs. Force at 30mm Tooling Length*	Applicable Sprue Ø	Wt.
3528	GRZ20-16R	1-415-06-00	\$209.48	14.6 lbf	2–12mm	96g

*Note: Force at 87psi (6 bar)

Compact Sprue Grippers – GRZ 20-16

#3613 / #3614 – With custom jaw & sensor



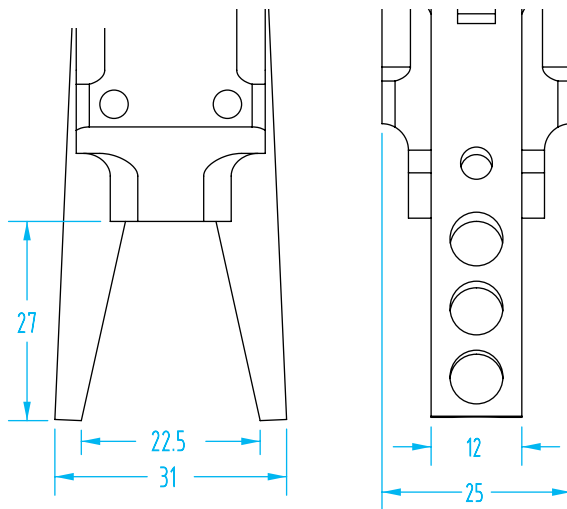
Quick#	Part#	>ASS< #	Price	Sensor	lbs. Force at 30mm Tooling Length*	Applicable Sprue Ø	Wt.
3613	GRZ-20-16-CS-PNP	1-415-18-00	\$281.40	PNP	14.6 lbf	4–12mm	165g
3614	GRZ-20-16-CS-NPN	1-415-24-00	\$281.40	NPN	14.6 lbf	4–12mm	165g

Includes sensor with M8 plug and a 6' KG 8-3 extension cable.

**Note: Force at 87psi (6 bar)*



Use in conjunction with jaw hook on page 499 to improve grip.



#3310 - With custom jaws

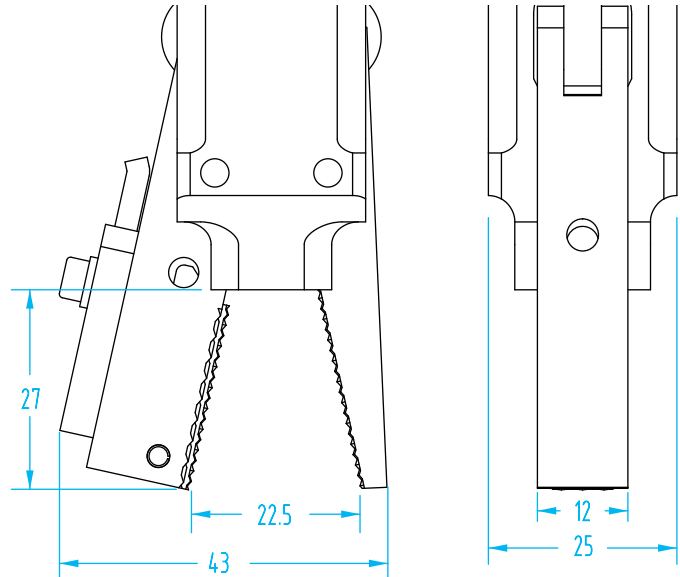
Quick#	Part#	>ASS< #	Price	lbs. Force at 30mm Tooling Length*	Applicable Sprue Ø	Wt.
3310	GRZ20-16	1-415-03-00	\$185.85	14.6 lbf	2–12mm	135g

**Note: Force at 87psi (6 bar)*

Compact Sprue Grippers – GRZ 20-16

(Dimensioned drawings shown full scale)

#3615 / #3617 - With diamond textured jaws and sensor



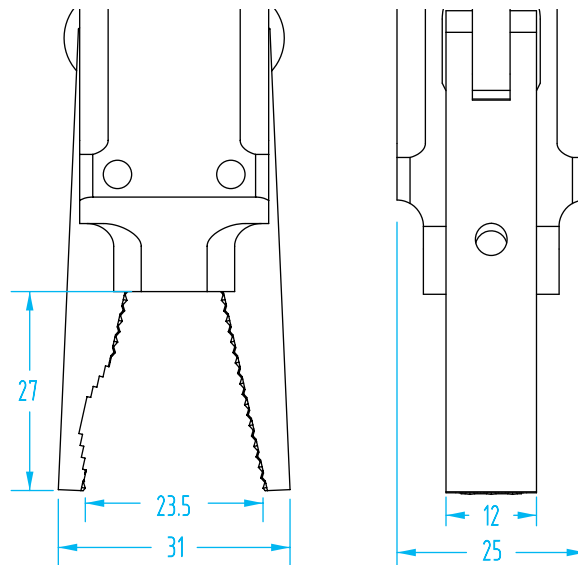
Quick#	Part#	>ASS< #	Price	Sensor	lbs. Force at 30mm Tooling Length*	Applicable Sprue Ø	Wt.
3615	GRZ-20-16-RCS-PNP	1-415-08-00	\$304.50	PNP	14.6 lbf	3–12mm	115g
3617	GRZ-20-16-RCS-NPN	1-415-27-00	\$304.50	NPN	14.6 lbf	3–12mm	115g

Includes sensor with M8 plug and a 6' KG 8-3 extension cable.

*Note: Force at 87psi (6 bar)

#3669 - With radiused jaw

- Part nests in the radiused jaw



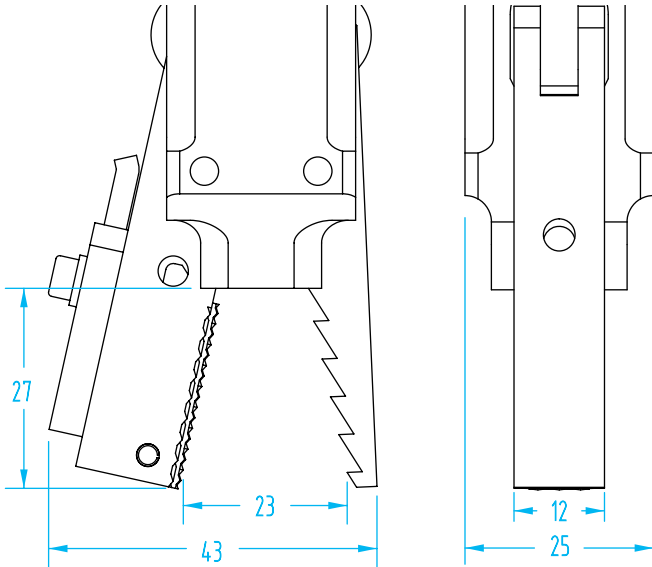
Quick#	Part#	>ASS< #	Price	lbs. Force at 30mm Tooling Length*	Applicable Sprue Ø	Wt.
3669	GRZ-20-16-K	1-415-70-00	\$209.48	14.6 lbf	4–16mm	146g

*Note: Force at 87psi (6 bar)

Compact Sprue Grippers – GRZ 20-16

(Dimensioned drawings shown full scale)

3665 / #3666 - With saw jaws and sensor

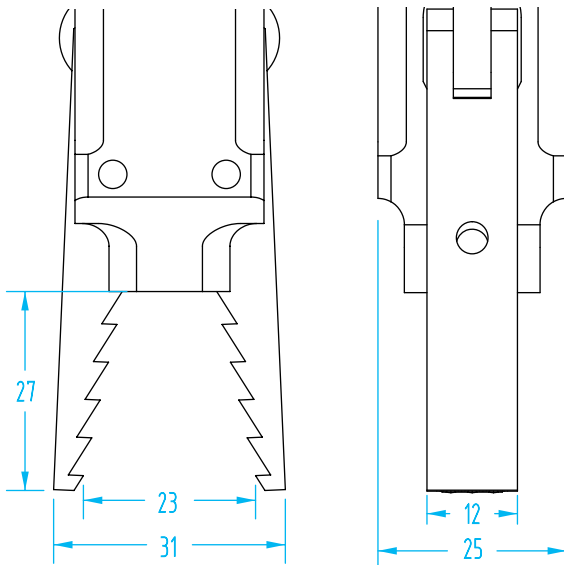


Quick#	Part#	>ASS< #	Price	Sensor	lbs. Force at 30mm Tooling Length*	Applicable Sprue Ø	Wt.
3665	GRZ-20-16-SCS-PNP	1-415-42-00	\$304.50	PNP	14.6 lbf	5–12mm	120g
3666	GRZ-20-16-SCS-NPN	1-415-44-00	\$304.50	NPN	14.6 lbf	5–12mm	120g

Includes sensor with M8 plug and a 6' KG 8-3 extension cable.

*Note: Force at 87psi (6 bar)

#3541 - With saw jaws



Quick#	Part#	>ASS< #	Price	lbs. Force at 30mm Tooling Length*	Applicable Sprue Ø	Wt.
3541	GRZ20-16S	1-415-40-00	\$214.20	14.6 lbf	4–12mm	142g

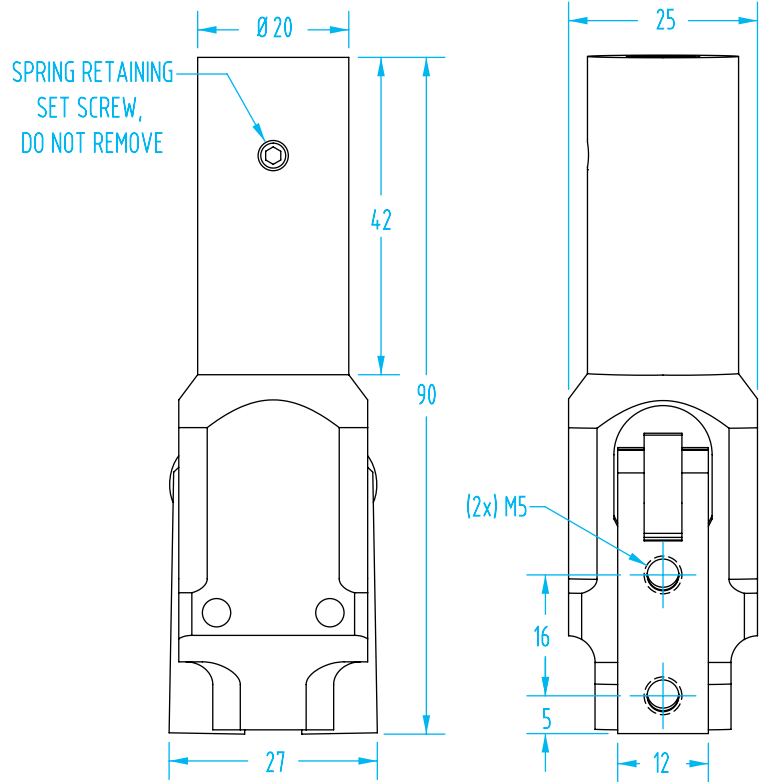
*Note: Force at 87psi (6 bar)

Compact Sprue Grippers – GRZ 20-16

(Dimensioned drawings shown full scale)

#3311 - For custom-made jaws

- Nylon & Aluminum finger blanks available on page 452.



Fittings Available on page 1047

Quick#	Part#	>ASS< #	Price	lbs. Force at 30mm Tooling Length*	Wt.
3311	GRZ20-16A	1-415-09-00	\$182.18	14.6 lbf	119.7g

*Note: Force at 87psi (6 bar)

#3373 - With Booster for High Grip Force

- Single acting gripper with enforced piston.
- See website for more information.



Quick#	Part#	>ASS< #	Price	lbs. Force at 30mm Tooling Length*	Applicable Sprue Ø	Wt.
NEW 3373	GRZ-K-20-16-R	1-416-06-00	\$228.90	26.3 lbf	4–12mm	128g

Compact Sprue Grippers – GRZ 20-16

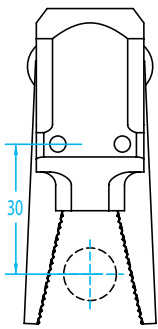
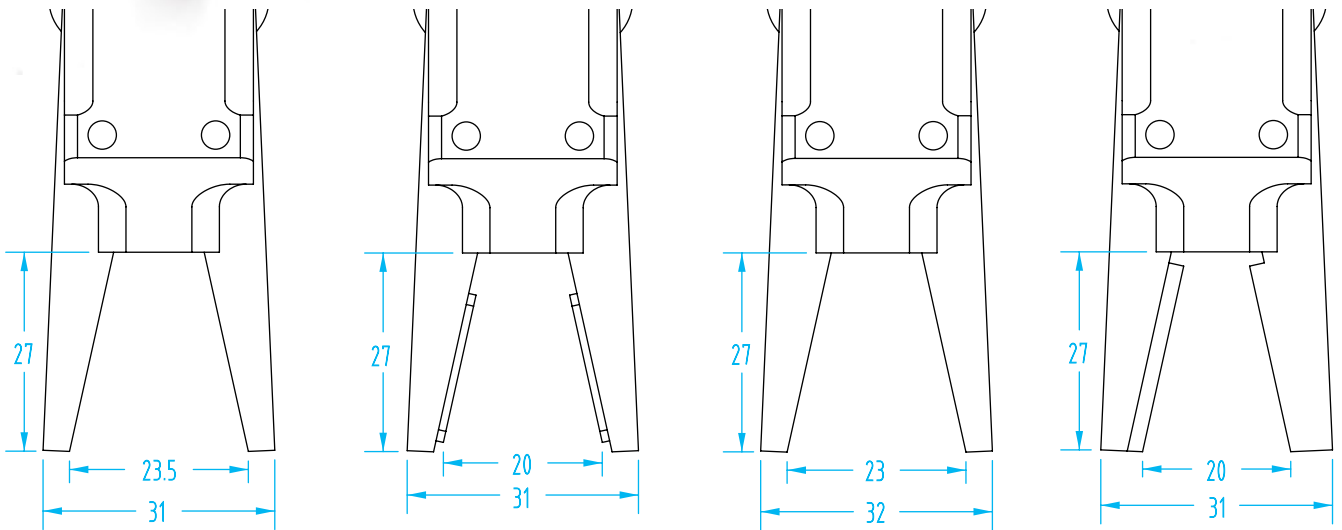
(Dimensioned drawings shown full scale)

#3663 – Smooth jaws

#3667 – Padded jaws

#3727 – Coated jaws

#3664 – V-tooth jaws



Tooling Length

Quick#	Part#	>ASS< #	Price	Style	lbs. Force at 30mm Tooling Length*	Applicable Sprue Ø	Wt.
3663	GRZ-20-16-G	1-415-60-00	\$214.20	Smooth jaws	14.6 lbf	2–12mm	146g
3667	GRZ-20-16-PU	1-415-30-00	\$214.20	Polyurethane pads	14.6 lbf	2–12mm	146g
3727	GRZ-20-16-EP	1-415-61-00	\$288.75	Coated jaws	14.6 lbf	2–12mm	146g
3664	GRZ-20-16-PK	1-415-12-00	\$214.20	V-tooth jaws	14.6 lbf	1–12mm	146g

*Note: Force at 87psi (6 bar)

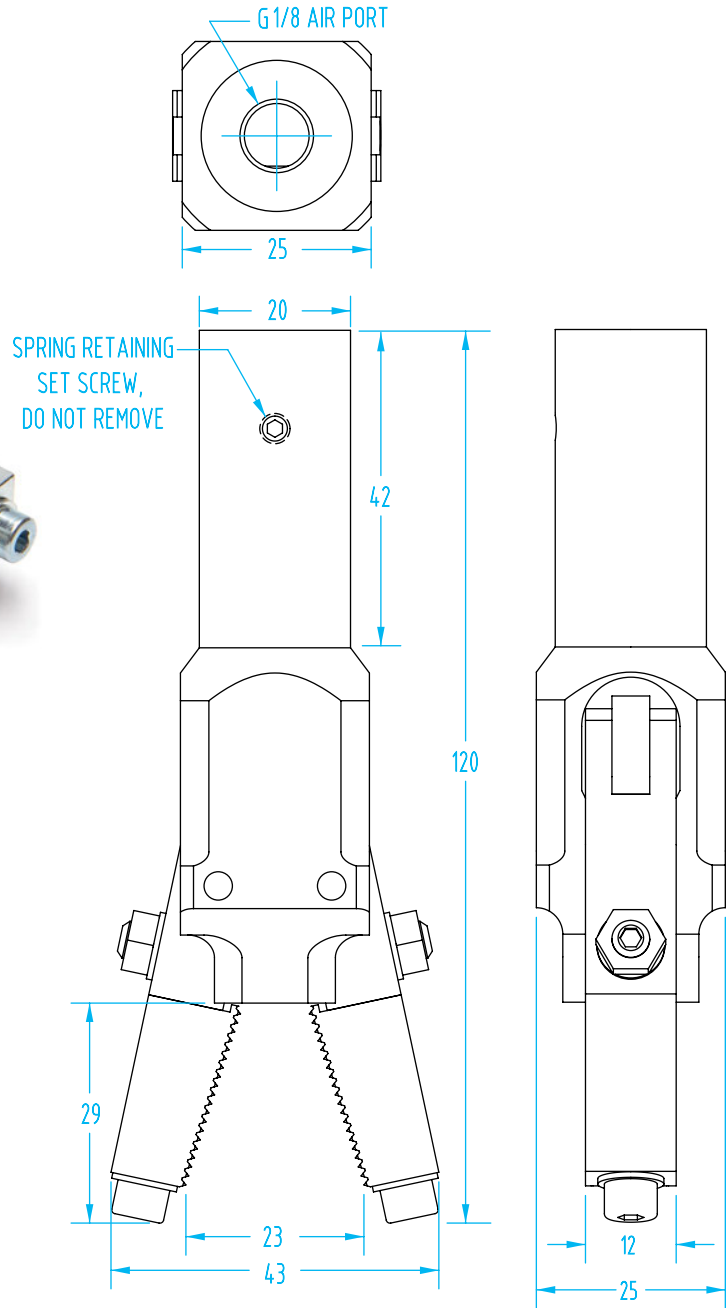
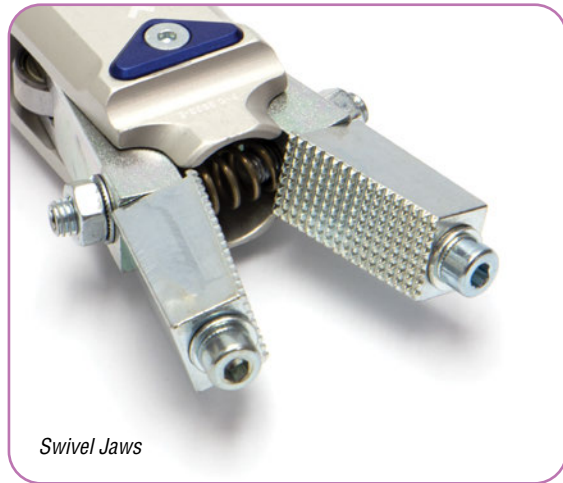
- Padded are silicone free, non-marking polyurethane.
- Short term contact for padded jaws is 230°F.
- Coated jaws have a high strength elastomere polyurethane.
- 194°F (266°F short term) max. temperature for coated jaws.

Compact Sprue Grippers – GRZ 20-16

(Dimensioned drawings shown full scale)

#3668 - With diamond textured swivel jaws

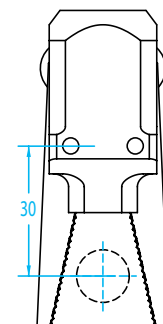
- Designed to grip conical parts or runners.
- Swivel jaws automatically adjust to the shape of the parts/runner.



Quick#	Part#	>ASS< #	Price	lbs. Force at 30mm Tooling Length*	Applicable Sprue Ø	Wt.
3668	GRZ-20-16-DB	1-415-50-00	\$290.33	14.6 lbf	2–12mm	165g

*Note: Force at 87psi (6 bar)

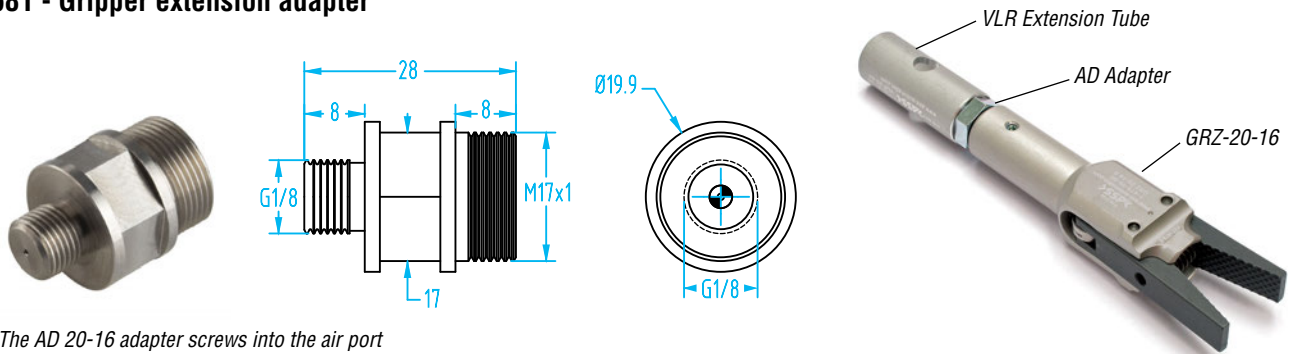
Tooling Length



Compact Sprue Grippers – GRZ 20-16

(Dimensioned drawings shown full scale)

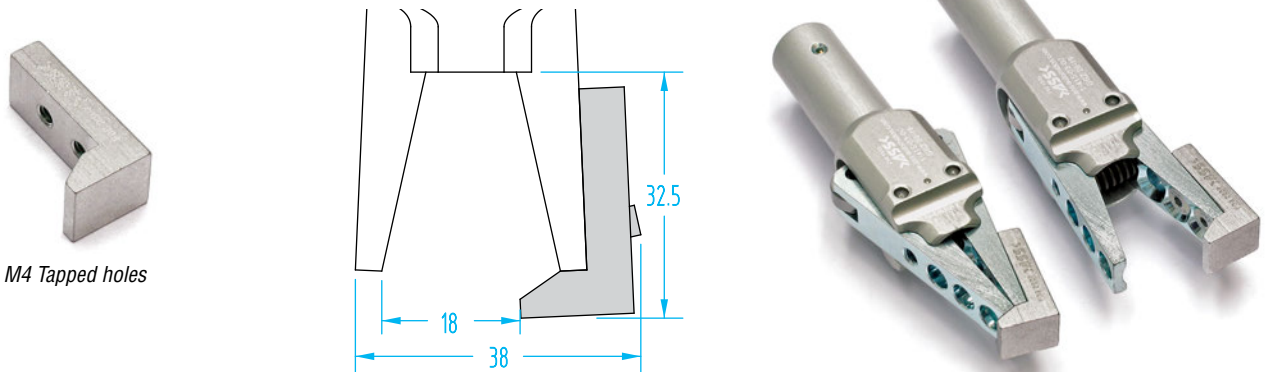
#3681 - Gripper extension adapter



The AD 20-16 adapter screws into the air port of any GRZ 20-16 gripper. The M17x1 thread connects with any VLR 20 extension tube. Manufacturer recommends that the 1/8 thread on the gripper side be sealed with liquid sealant.

Quick#	Part#	>ASS< #	Price	Use with:	Wt.
3681	GRZ-AD-20-16	1-415-03-04	\$8.40	GRZ 20-16	46g

#3680 - Jaw hook for gripper with standard jaws



This gripper jaw hook fits in the GRZ 20-16 gripper with standard jaws for improved rip-off capability. Screws are included.

Quick#	Part#	>ASS< #	Price	Use with:	Wt.
3680	GRZ-20-16-HW	1-415-14-00	\$7.88	#3613, #3614, #3610	21g

#3805 / #3806 - Sensors for GRZ 20-16



Sensor IES 8, 3 pin male plug in PNP or NPN. Extension cable KG 8-3 (6' length) is included.

Quick#	Part#	Price	Type	Signal	Connection	Power Supply	Max. Switching Frequency	Voltage Drop	Operating Temperature	IEC Rating	Cable
3805	IES-8-PNP	\$49.60	3-wire inductive rectangle	PNP	M8 & .16m long	12-30V dc	2000 Hz	1.8V	-22-185°F	IP 67	PUR
3806	IES-8-NPN	\$65.40	3-wire inductive rectangle	NPN	M8 & .16m long	12-30V dc	2000 Hz	1.8V	-22-185°F	IP 67	PUR

Note: >ASS<GRZ 10-08 sprue grippers use IE-AL-K... sensors, see page 1005

Jumbo Grippers – GRZ 32



- Double acting, two airlines are required for open/close.
- Fits in all 20mm clamps
- Very-high gripping force
- Dimensional drawings available online.

Quick#	Part#	>ASS< #	Price	Style	Applicable Sprue Ø	lbs. Force at 25mm Tooling Length*	Weight
3313	GRZ-32	1-420-03-00	\$327.60	Jumbo Gripper without sensor	1–8mm	79.0 lbf	620g
3618	GRZ-32-CS-PNP	1-420-09-00	\$513.98	Jumbo Gripper with PNP sensor ¹	1–8mm	79.0 lbf	665g
3677	GRZ-32-CS-NPN	1-420-08-00	\$513.98	Jumbo Gripper with NPN sensor ¹	1–8mm	79.0 lbf	665g

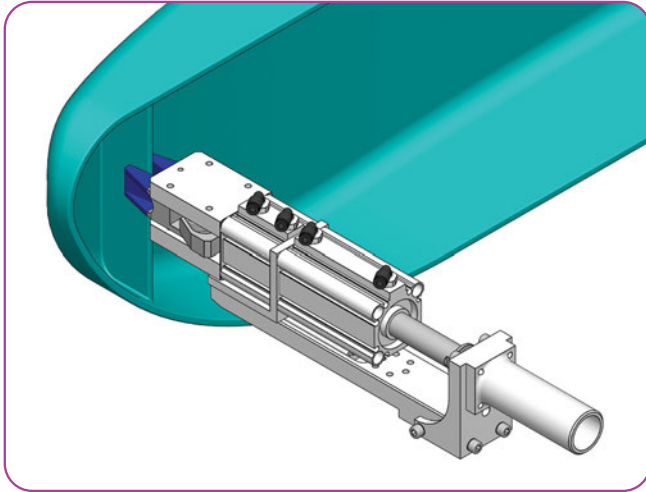
(1) Includes sensor with M8 plug and a 6' KG 8-3 extension cable.

*Note: Force at 87psi (6 bar)

Fittings Available
on page 1047



Self-Adjusting Single Stroke Gripper – HUZ-P

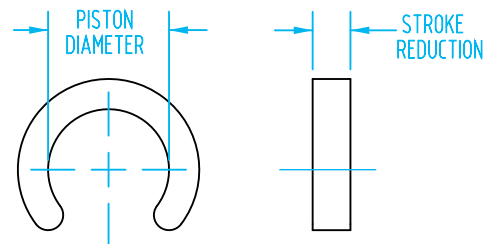


- These HUZ grippers have a built-in single-stroke of 20 or 30mm. They are used to pull a part out of a tool. A pull tab at the part is recommended.
- Single stroke, Double-acting.
- New sliding guides are self-adjusting to compensate any play.
- Three styles; LG: completely closing jaws, CS: jaw sensor with connector, EP: both jaws are EP coated.
- The CS version has a part present PNP sensor built into the jaws. It requires a 8mm 3 pin female connector, see page 987.
- Dimensional drawings available online.
- Self-Adjusting Double Stroke Gripper – HUZ-PD grippers also available online.

Quick#	Part#	>ASS<#	Price	Style	Stroke	Applicable Sprue Ø	Wt.
3769	HUZ-P-32-50-LG	1-743-30-00	\$783.30	-	50mm	12mm	1325g
3770	HUZ-P-32-50-CS	1-739-24-00	\$989.10	with PNP Sensor		12mm	1440g
3771	HUZ-P-32-50-EP	1-743-31-00	\$895.65	EP coated jaws		13mm	1402g



#3770 shown with stroke reducer.



Stroke Reducers for HUZ Cylinders

Quick#	Part#	>ASS<#	Price	Stroke Reduction	Compatible to Compact Cylinder Ø	Ø Piston	Material	Wt.
3758	DB-5-32	1-710-01-00	\$9.45	5mm	32mm	16mm	POM	1g
3759	DB-10-32	1-710-02-00	\$10.50	10mm			POM	2g
3760	DB-15-32	1-710-03-00	\$15.75	15mm			POM/PA	4g

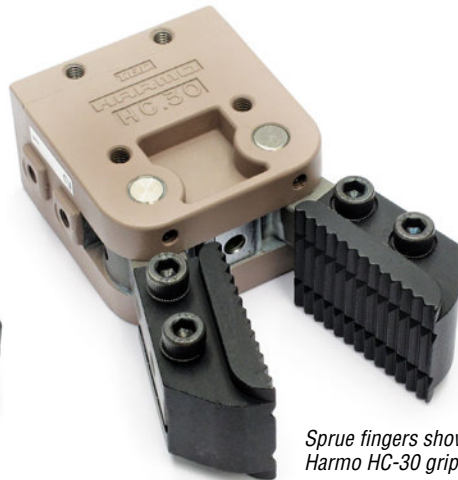
Harmo® Sprue Grippers

- Elliptical piston provides high grip force to size ratio
- Single-acting models can also be used as double acting
- Field repairable, and for those who have older Harmo grippers, we offer rebuild kits.
- Dimensional drawings found online.

Fittings Available
on page 1047



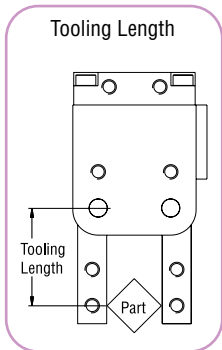
#704



Sprue fingers shown on #767 Harmo HC-30 gripper.



#738 - Sprue fingers sold separately



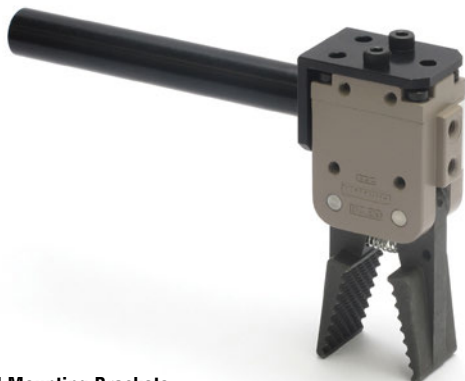
Quick#	Part#	Price	Gripper Size	Jaw Style	Body Material	Applicable Sprue Ø	Force at 35mm Tooling Length*	Weight
704	GSG-HC20-BPX	\$190.00	20	Normally Open	Plastic	4-12mm	13.0 lbf	150g
713	GSG-HC30-CD	\$308.01	30	Normally Closed	Die Cast	58°	34.0 lbf	450g

* Force when compressed air is supplied at 87psi. Tooling length is measured from jaw pivot point.

Sprue Fingers

Quick#	Part#	Gripper Size	Material	Sprue ø	Price / set
1275	GSG-HC30-STF	30	Tool Steel	5-13mm	\$49.15
738	GSG-HC30-F		Aluminum		\$48.15

Includes fasteners.



Round Mounting Brackets

Quick#	Part#	Gripper	Price	Required Hardware
546	GSC-RMB-HC15	15	\$22.87	Q#'s 827 & 815
547	GSC-RMB-HC20	20	\$22.87	Q#'s 846 & 833
548	GSC-RMB-HC30	30	\$24.91	Q#'s 566 & 853

Order gripper mounting screws separately.



Economy Slotted Bracket for Harmo Grippers

Quick#	Part#	Gripper	Price
1850	GSC-VSB-HC15	HC15	\$10.18
1851	GSC-VSB-HC20	HC20	\$10.48

Harmo Angular Grippers

- Elliptical piston provides high grip force to size ratio.
- Internal spring provides reset.
- Field repairable, and for those who have older Harmo grippers, we offer rebuild kits.
- Dimensional drawings found online.



Quick#	Part#	Price	Gripper Size	Jaw Style	Body Material	lbs. Force at Tooling Length:*			Weight
						20mm	25mm	35mm	
706	GSG-HC15-BP	\$160.00	15	Normally Open	Plastic	7.0 lbf	6.0 lbf	4.0 lbf	50g
707	GSG-HC20-BP	\$176.00	20	Normally Open	Plastic	23.0 lbf	18.0 lbf	13.0 lbf	105g
708	GSG-HC20-BD	\$187.01	20	Normally Open	Die Cast	23.0 lbf	18.0 lbf	13.0 lbf	180g
709	GSG-HC30-BD	\$308.01	30	Normally Open	Die Cast	49.0 lbf	39.0 lbf	28.0 lbf	450g

* Force when compressed air is supplied at 87psi. Tooling length is measured from jaw pivot point.

Use Quick#s for easy online ordering.



Gripper Mounting Slotted Bracket

Quick#	Part#	Wt.	Price	Notes
549	GSC-FGB-1	81g	\$22.78	Fits gripper sizes 20 and 30.

For use with gripper size 30, order (2x) M5x10 mm low head, 0.6mm thin lock washer.
See page 1076 for fasteners.



Angular Gripper Brackets

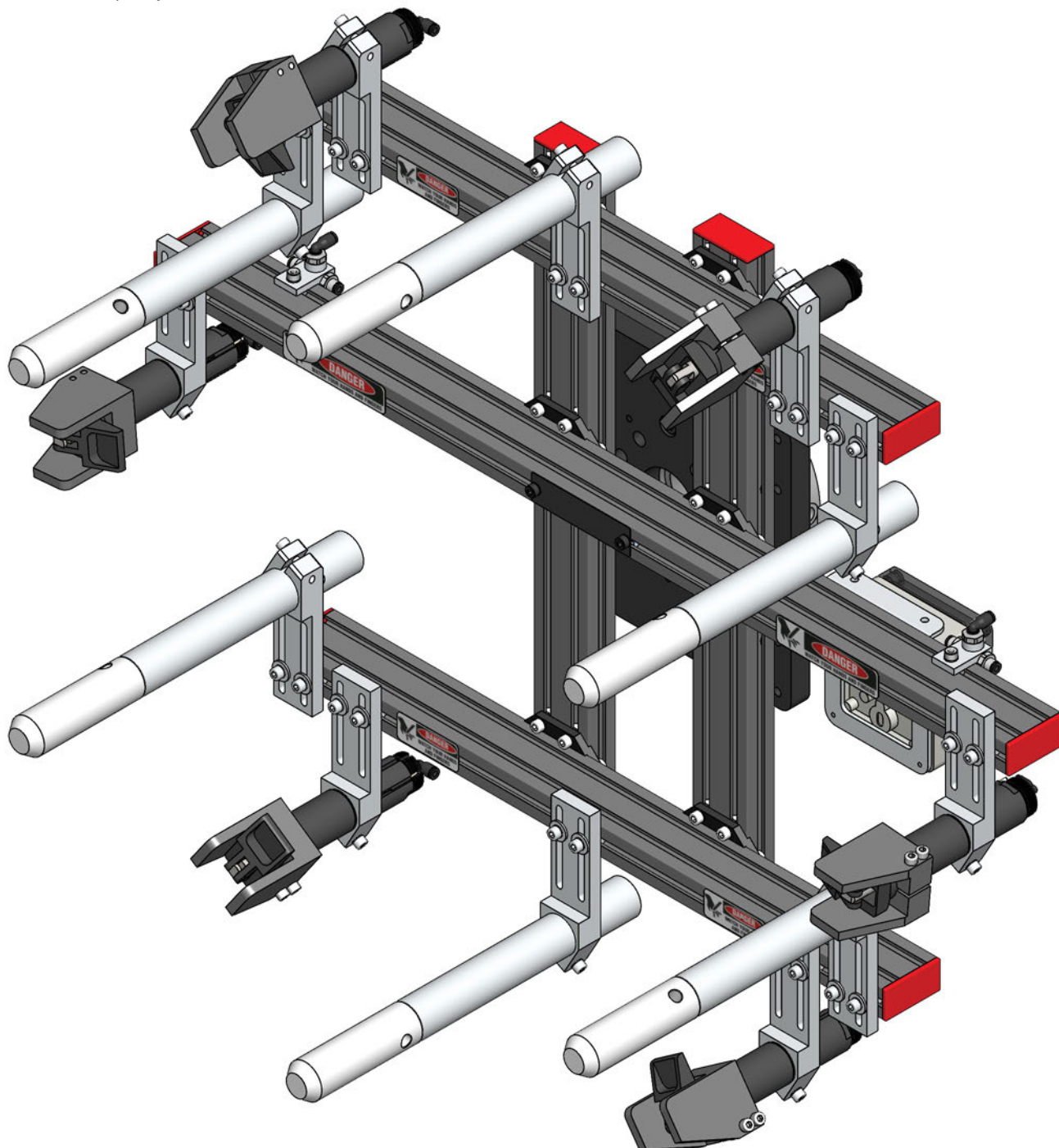
Quick#	Part#	Gripper	Weight	Price
720	GSG-HC15-HBK	HC15	17g	\$13.75
721	GSG-HC20-HBK	HC20	32g	\$13.75

See page 1076 for fasteners.

EOAT Design and Build Service

From the simplest to the most complex EOAT, EMI specializes in designing and building customized End-of-Arm-Tooling— **Priced Competitively.**

Get started by sending us a sample part or 3D part file and a completed datasheet (see page 1082). Our experienced EOAT engineers will design a tool for you and provide you 3D CAD renderings at no cost or obligation. We'll also provide pricing for the tool should you want to purchase the EOAT completely assembled.



Gripper Fingers Overview

Gimatic Gripper Fingers p.510



Gripper Finger Accessories p.526



Parallel Gripper Fingers p.506



>ASS< Gripper Fingers p.522



RBT Tilt Units (wrist-flip) p.542



OFN Tilt Units p.540



Hybrid Gripper Fingers p.530



Star Automation Gripper Fingers p.539



Parallel Gripper Fingers – OFX

- Actuation by a single-acting piston.
- Linear motion of the finger, perpendicular to the piston.
- Thru-hole in the finger, to provide vacuum to a cup.
- Removable HNBR pad on the finger, for soft touch has a maximum temperature of 302°F.
- See Sensor Reference Guide on page 1006 for full list of compatible sensors.
- Replacement parts available online.



Quick#	5840	6598	6599	5841
Part#	OFX14-06	OFX20-10	OFX30-15	OFX50-20
Price	\$172.00	\$190.00	\$242.00	\$296.00
Medium	Filtered, lubricated / non lubricated compressed air			
Pressure range	36.26–116 psi			
Opening force at 87 psi	3–14 lbf	5–26 lbf	10–52 lbf	23–203 lbf
Total stroke (±0.2 mm)	6mm	10mm	15mm	20mm
Weight	30g	65g	190g	740g

Use Quick#s for easy online ordering.

Replacement HNBR Pads for OFX Parallel Gripper Fingers

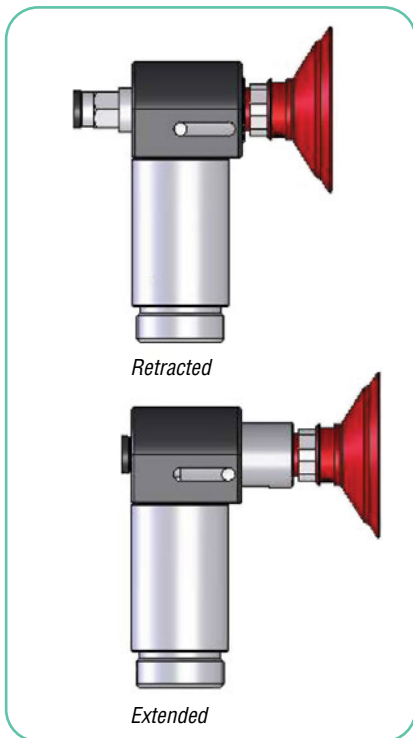
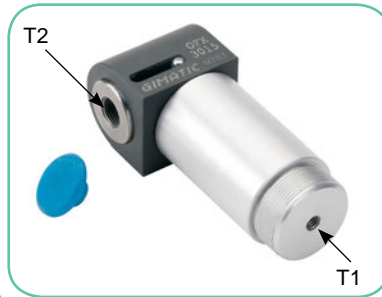
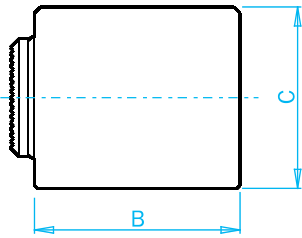
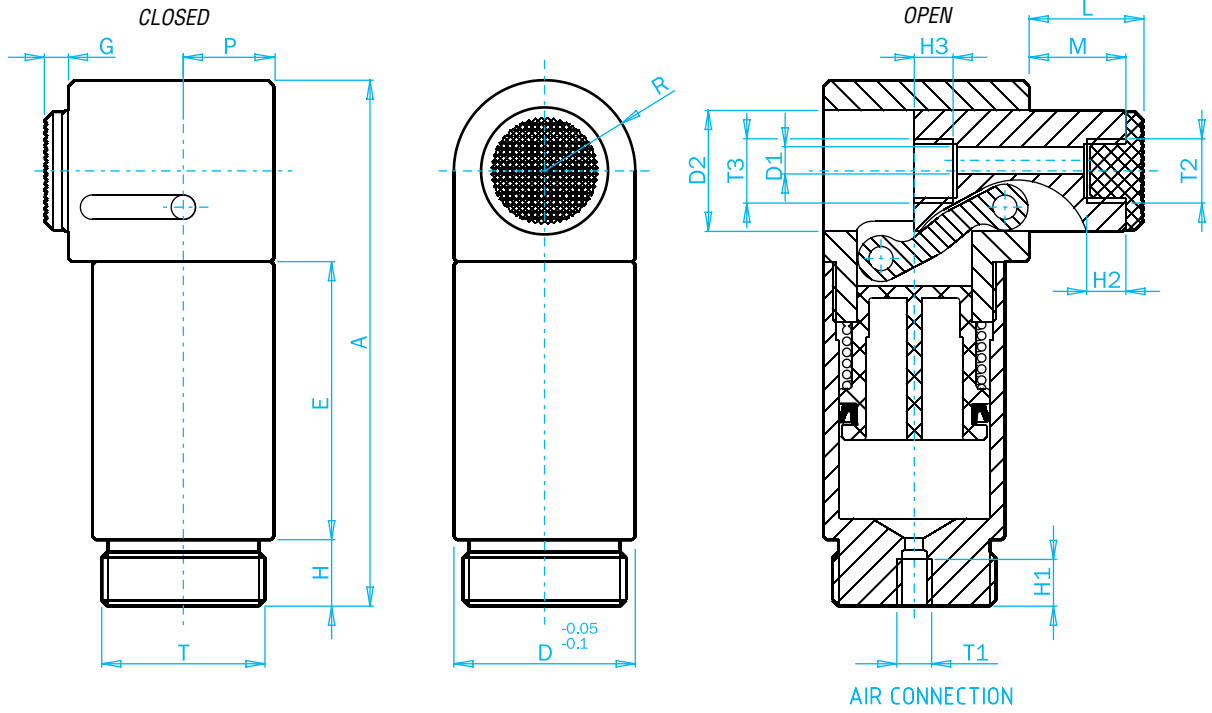
Quick#	Part#	For:	Price
7362	OFX14-06-07	OFX14	\$7.60
7363	OFX20-10-09	OFX20	\$5.60
7364	OFX30-15-09	OFX30	\$8.06
7365	OFX50-20-08	OFX50	\$12.88



Sensor Band for OFX Parallel Gripper Fingers

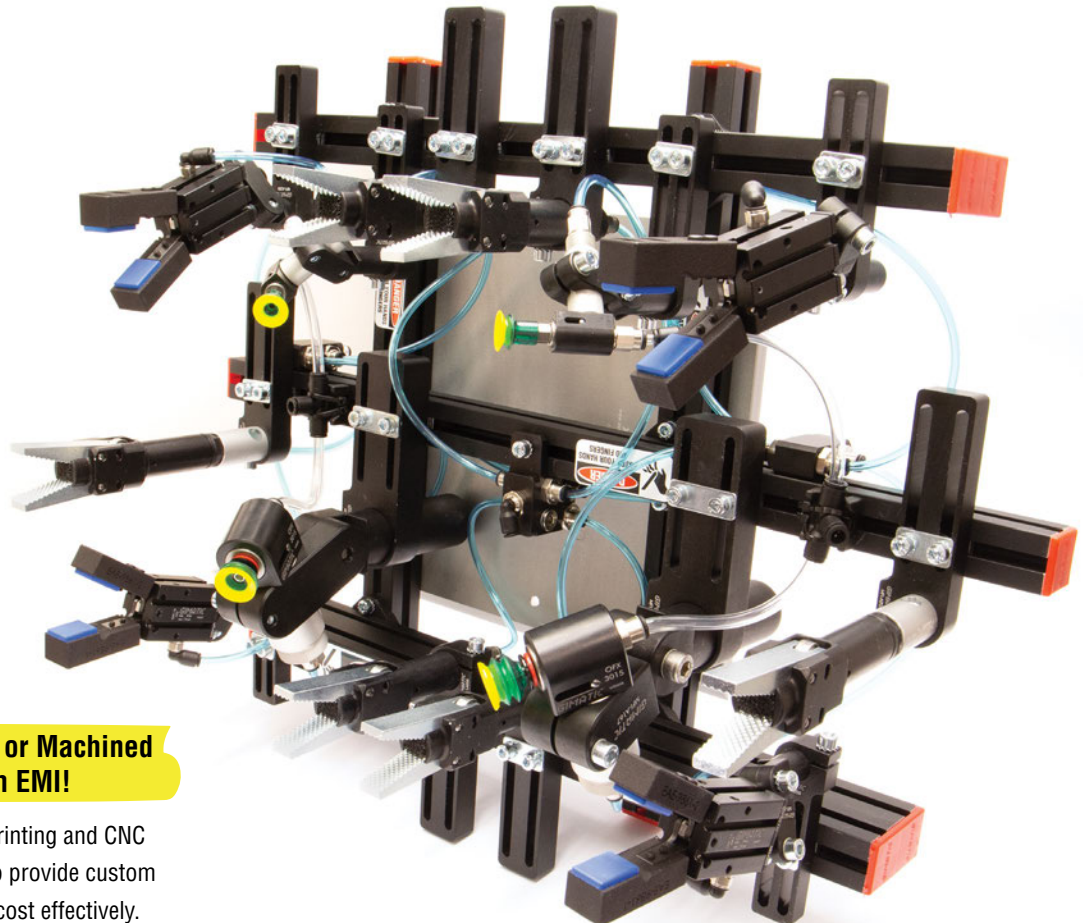
Quick#	Part#	For:	Price
7307	SWP-014	OFX14	\$2.22
7308	SWP-020	OFX20	\$2.22
7309	SWP-030	OFX30	\$2.22
7310	SWP-050	OFX50	\$2.22

Parallel Gripper Fingers – OFX



	OFX14-06	OFX20-10	OFX30-15	OFX50-20
A	52	62.5	87	143
B	23	25	34	60
C	14	20	30	50
D	Ø14	Ø20	Ø30	Ø50
D1	Ø1.5	Ø2.4	Ø4.5	Ø9
D2	Ø10	Ø14	Ø20	Ø35
E	30	34.5	46	68
G	3.5	3.5	4	4
H	8	8	11	25
H1	7	7	7	10
H2	5	5	6	9
H3	5	5	6	9
L	9.5	13.5	19	24
M	7	11	16	21
P	9	10	15	25
R	R7	R10	R15	R25
T	M12x1	M17x1	M27x1	M45x1.5
T1	M5	M5	M5	G1/8"
T2	M5	M5	G1/8"	G1/4"
T3	M5	M5	G1/8"	G1/4"

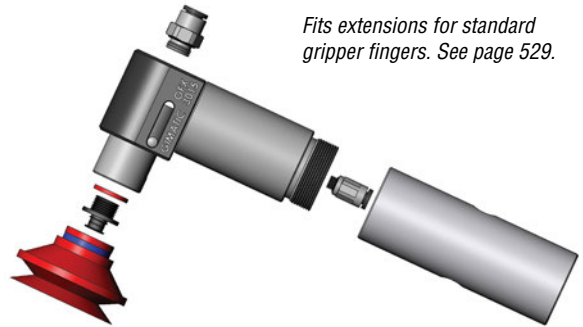
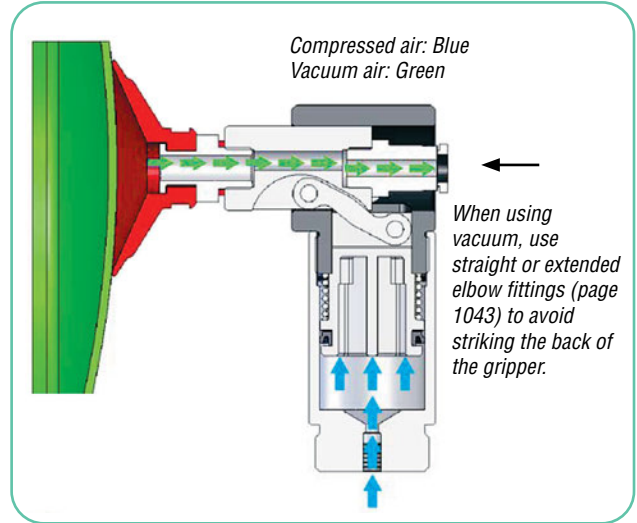
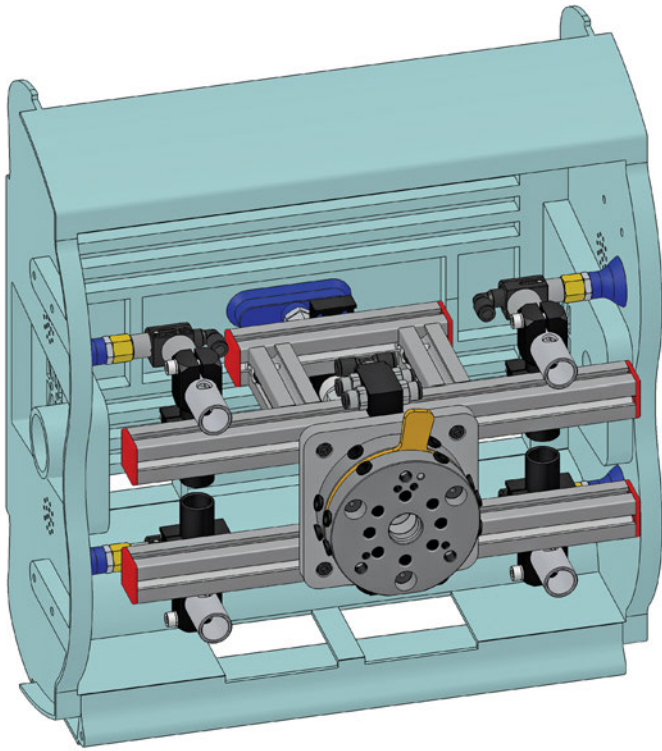
Application with Parallel Gripper Fingers



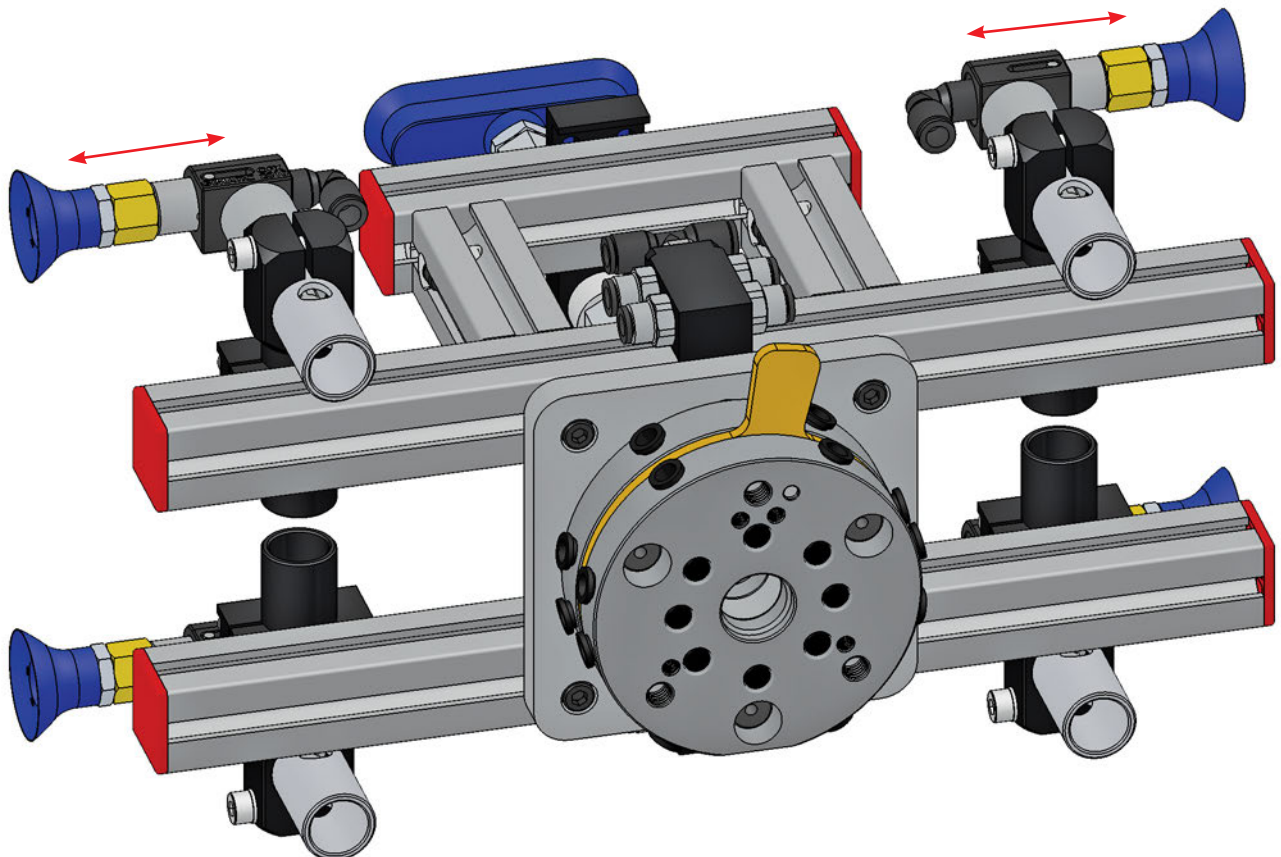
Custom 3D Printed or Machined Fingers from EMI!

EMI's in-house 3D printing and CNC equipment allow us to provide custom fingers quickly and cost effectively.

Application with Parallel Gripper Fingers



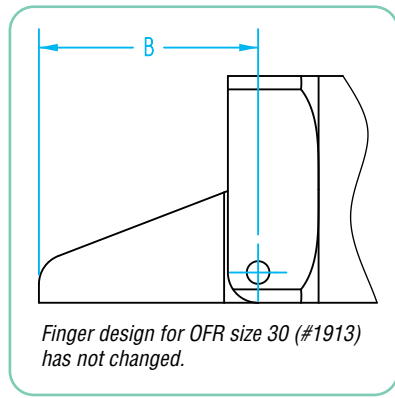
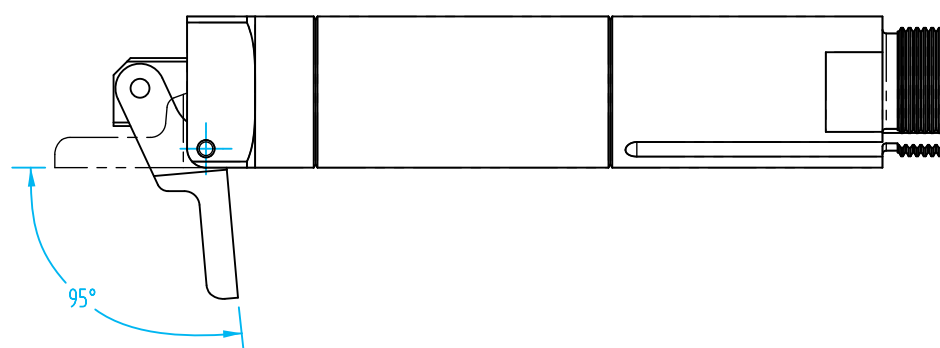
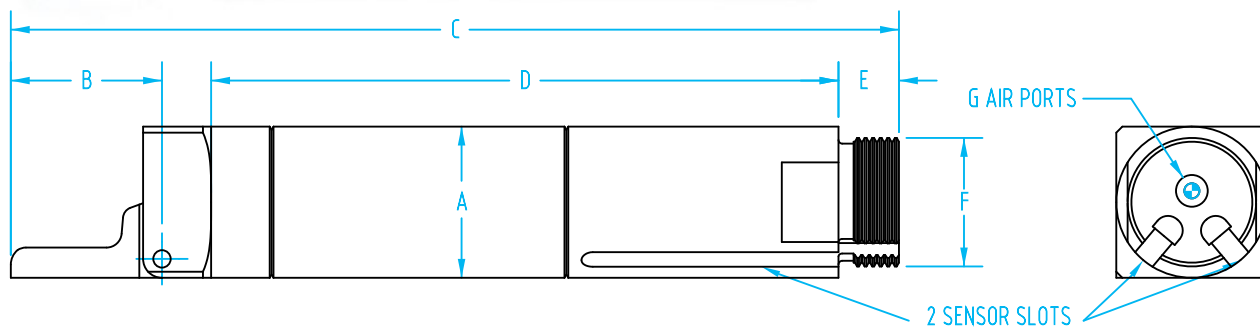
Fits extensions for standard gripper fingers. See page 529.



95° Gripper Finger (Sensor type)

- Single acting
- Longer bodies provide extended reach.
- Sensors are slightly recessed, so mounting clamps can be placed along the full length of the body.
- Provides operation with or without sensors.
- Gripper fingers work with guides and extensions, see page 526.
- Sensor Slot version features two sensor slots to provide confirmation of the finger position.

VLR Extension tubes can be used with sensors for Gimatic gripper fingers. See page 529.



OFR - 95° Gripper Finger (Sensor Slot Version)

Quick#	Part#	Price	ØA	B	C	D	E	F	G	Stroke	Closing force*	Wt.
1911	OFR-20-95S	\$229.00	20	20	117.5	83	8	M17x1	M5	95°	16 lbf	81g
1913	OFR-30-95S	\$236.00	30	29	173	125	11.1	M27x1	M5	95°	68 lbf	257g
Order sensors separately										<i>*Note: Force at 87psi (6 bar)</i>		
1882	SS4N225G	\$27.20	PNP sensor		3-wire with lead, 2.5m long						6-24v dc	
6282	SS3N203G	\$31.16	PNP sensor		3-wire with M8 male connector, 0.3m long						6-24v dc	
1883	SS4M225G	\$27.20	NPN sensor		3-wire with lead, 2.5m long						6-24v dc	
1884	SS3M203G	\$31.16	NPN sensor		3-wire with M8 male connector, 0.3m long						6-24v dc	

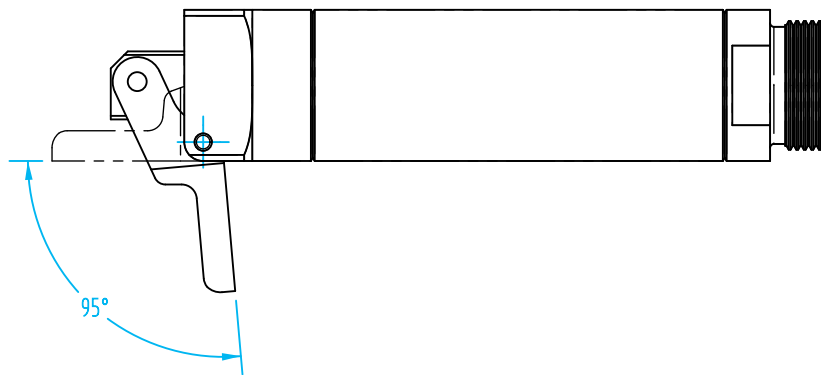
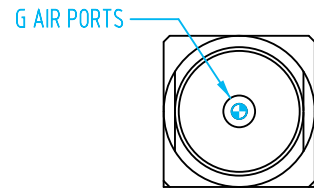
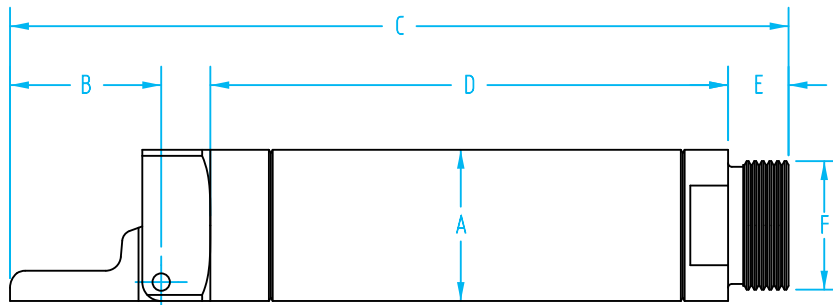
95° Gripper Finger (Standard type)

The gripper body is now all one metal piece, providing a longer service life better performance!

- Plastic molded plug on the top seals the gripper creating a reduced risk of external parts and debris entering the gripper
- New design includes a stronger, safer all metal piston
- Grooved pivot pin for improved reliability.



Optional sensor mounting bands available. See page 529.



Finger design for OFR size (#1912) has not changed.

OFR - 95° Gripper Finger (Non-Sensor Slot Version)

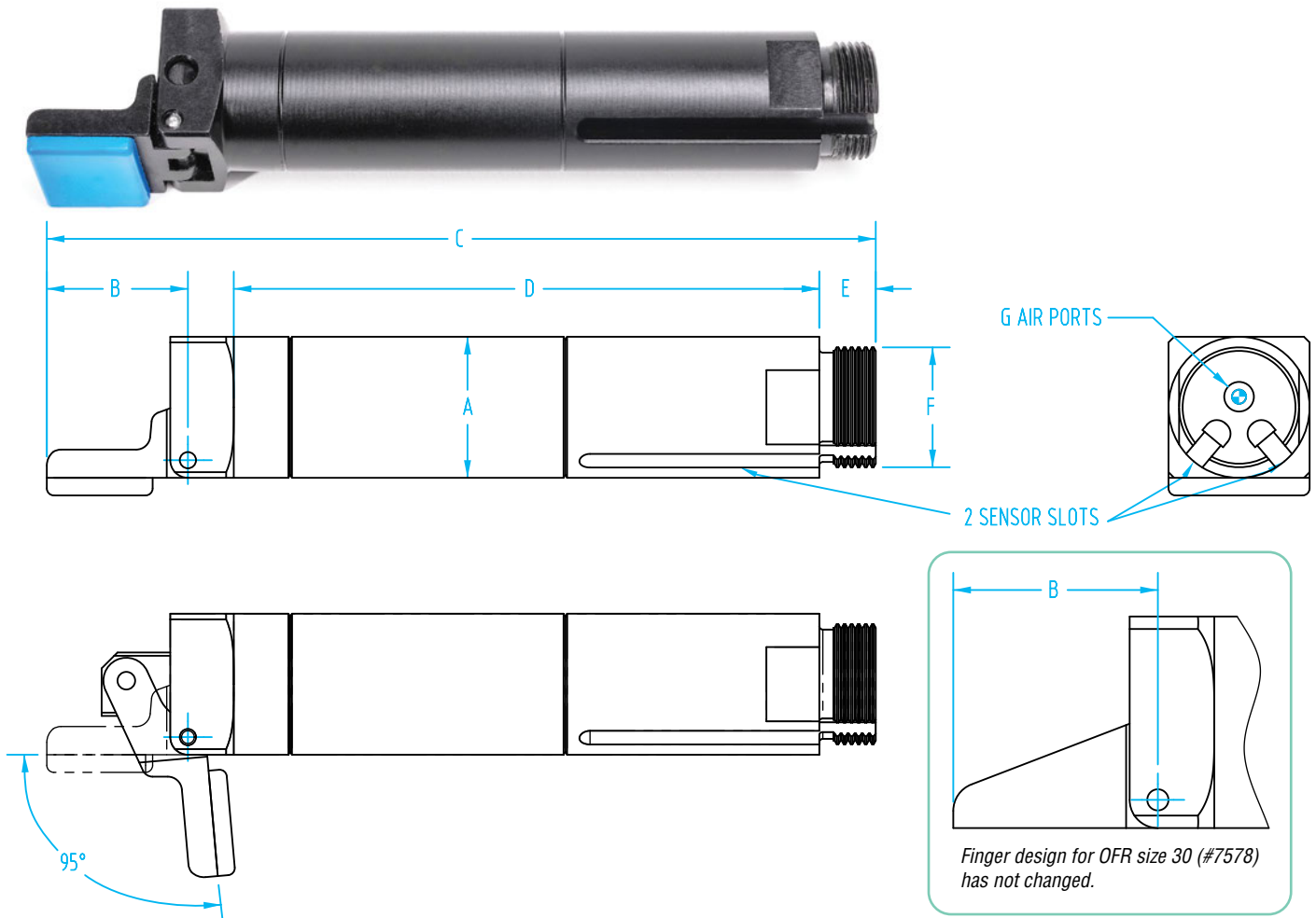
Quick#	Part#	Price	ØA	B	C	D	E	F	G	Stroke	Closing force*	Wt.
5415	OFR14-95	\$189.00	14	14	72	54.5	5.5	M12x1	M5	95°	4 lbf	25g
1910	OFR-20-95	\$197.00	20	20	103	77.5	8	M17x1	M5	95°	16 lbf	60g
1912	OFR-30-95	\$207.00	30	29	148	112	11	M27x1	M5	95°	68 lbf	193g

*Note: Force at 87psi (6 bar)

Application examples are illustrated on page 520.
See page 245–255 for mounting brackets.

95° Gripper Finger with Grip Pad (Sensor type)

- Single acting
- Longer bodies provide extended reach.
- Sensors are slightly recessed, so mounting clamps can be placed along the full length of the body.
- Provides operation with or without sensors.
- Replaceable HNBR soft touch grip, non-marring pads have a 302°F max temp.
- Gripper fingers work with guides and extensions, see page 526.
- Sensor Slot version features two sensor slots to provide confirmation of the finger position.



OFR - 95° Gripper Finger (Sensor Slot Version)

Quick#	Part#	Price	ØA	B	C	D	E	F	G	Stroke	Closing force*	Wt.
7576	OFR20-95SM	\$286.00	20	20	117.5	83	8	M17x1	M5	95°	16 lbf	81g
7578	OFR30-95SM	\$269.00	30	29	173	125	11	M27x1	M5	95°	68 lbf	257g

NEW

Order sensors separately

*Note: Force at 87psi (6 bar)

1882	SS4N225G	\$27.20	PNP sensor	3-wire with lead, 2.5m long							6-24v dc
6282	SS3N203G	\$31.16	PNP sensor	3-wire with M8 male connector, 0.3m long							6-24v dc
1883	SS4M225G	\$27.20	NPN sensor	3-wire with lead, 2.5m long							6-24v dc
1884	SS3M203G	\$31.16	NPN sensor	3-wire with M8 male connector, 0.3m long							6-24v dc

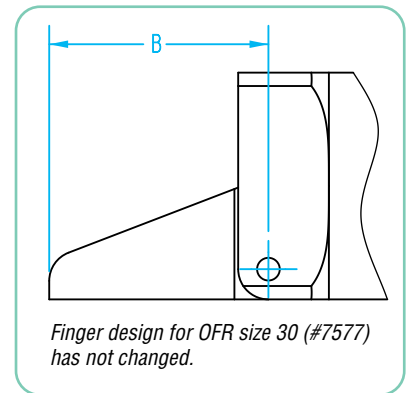
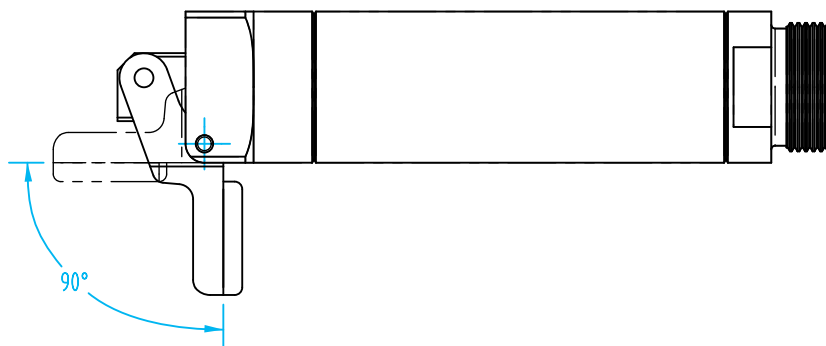
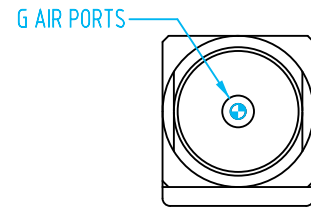
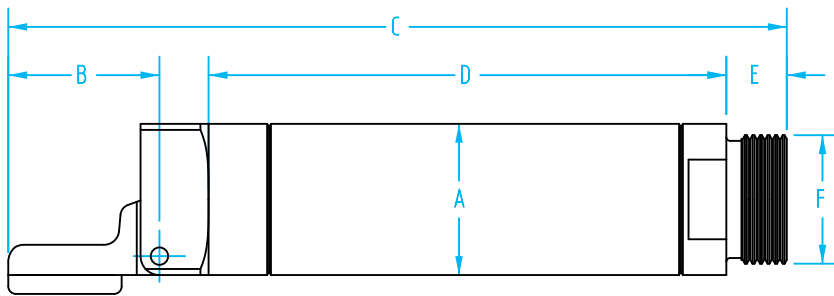
95° Gripper Finger with Grip Pad (Standard type)

The gripper body is now all one metal piece, providing a longer service life better performance!

- Plastic molded plug on the top seals the gripper creating a reduced risk of external parts and debris entering the gripper
- New design includes a stronger, safer all metal piston
- Grooved pivot pin for improved reliability.



New gripper guide with part detection by Gimatic C-slot sensors on page 528.



OFR - 95° Gripper Finger (Non-Sensor Slot Version)

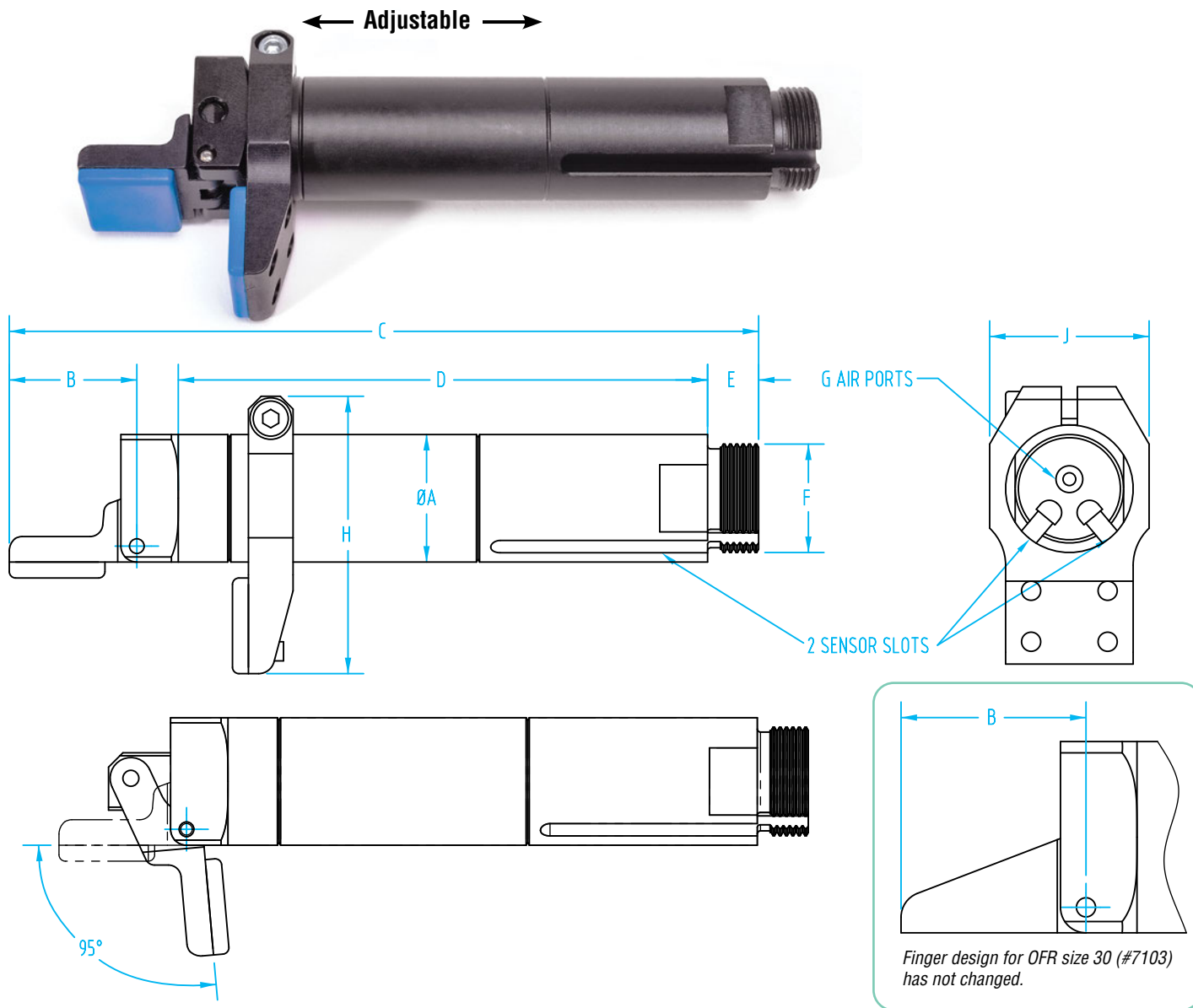
Quick#	Part#	Price	ØA	B	C	D	E	F	G	Stroke	Closing force*	Wt.
7574	OFR14-95M	\$205.00	14	14	72	45.5	5.5	M12x1	M5	95°	4 lbf	25g
7575	OFR20-95M	\$219.00	20	20	103	68.5	8	M17x1	M5	95°	16 lbf	60g
7577	OFR30-95M	\$238.00	30	29	148	100	11	M27x1	M5	95°	68 lbf	193g

NEW

*Note: Force at 87psi (6 bar)

95° Gripper Fingers with Grip Pads (Sensor type)

- Replaceable HNBR soft touch grip, non-marring pads have a 302°F max temp.
- Backstop with HNBR pad is included. One screw easily adjusts location of base grip pad.
- Optional sensor mounting bands available, see page 529.



OFR - 95° Gripper Finger with HNBR Pads (Sensor Slot Version)

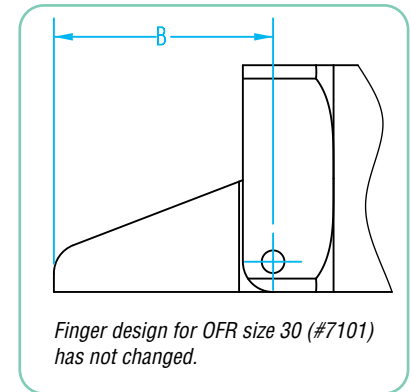
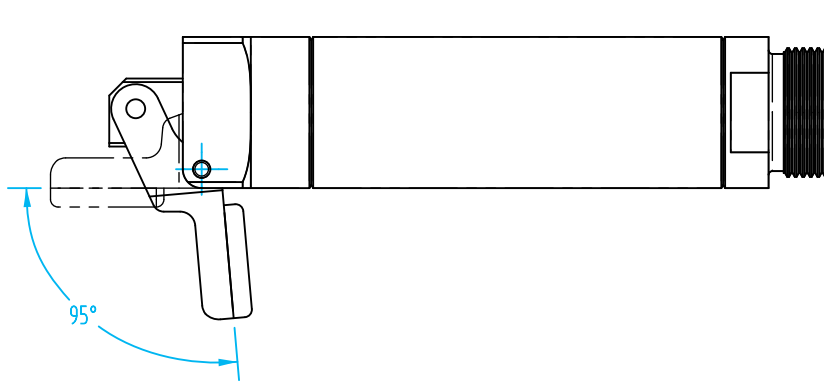
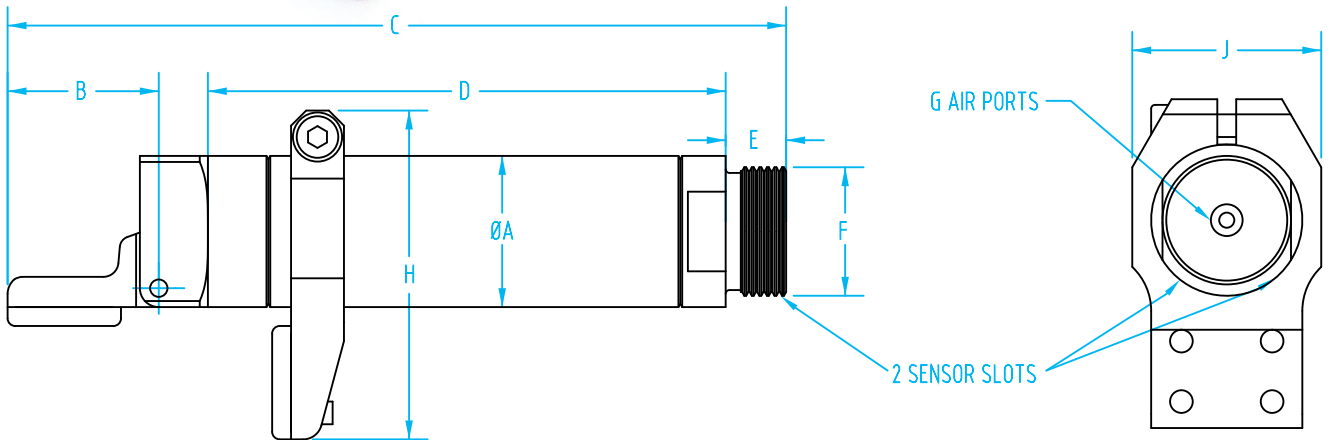
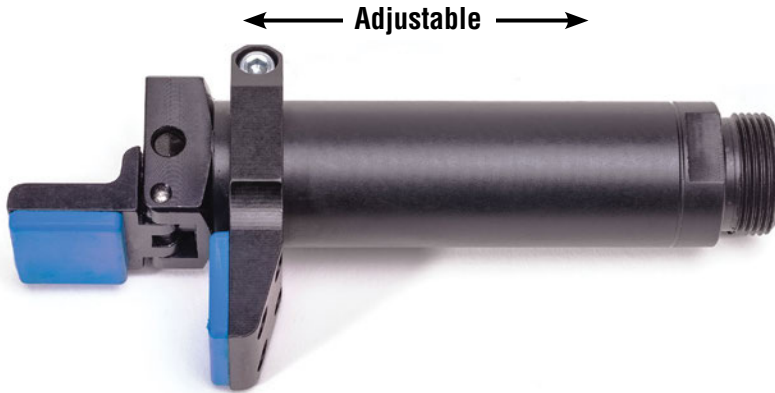
Quick#	Part#	Price	Stroke	ØA	B	C	D	E	F	G	H	J	Closing force*	Weight
7102	OFR20-95SG	\$307.00	95°	20	20	117.5	83	8	M17x1	M5	43.5	25	16 lbf	100g
7103	OFR30-95SG	\$356.00	95°	30	29	173	125	11	M27x1	M5	63	37	68 lbf	300g
Order sensors separately													<i>*Note: Force at 87psi (6 bar)</i>	
1882	SS4N225G	\$27.20	PNP sensor		3-wire with lead, 2.5m long								6-24v dc	
6282	SS3N203G	\$31.16	PNP sensor		3-wire with M8 male connector, 0.3m long								6-24v dc	
1883	SS4M225G	\$27.20	NPN sensor		3-wire with lead, 2.5m long								6-24v dc	
1884	SS3M203G	\$31.16	NPN sensor		3-wire with M8 male connector, 0.3m long								6-24v dc	

Use Quick#s for easy online ordering.

95° Gripper Fingers with Grip Pads (Standard type)

The gripper body is now all one metal piece, providing a longer service life better performance!

- Plastic molded plug on the top seals the gripper creating a reduced risk of external parts and debris entering the gripper
- New design includes a stronger, safer all metal piston
- Grooved pivot pin for improved reliability.



OFR - 95° Gripper Finger with HNBR Pads (Non-Sensor Slot Version)

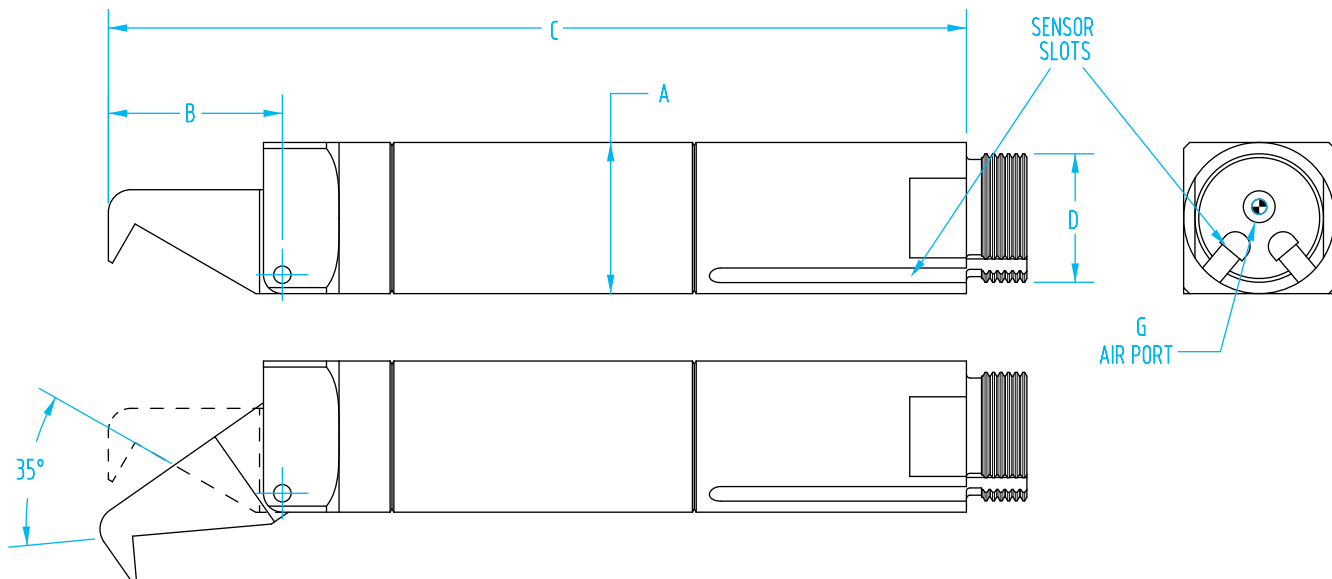
Quick#	Part#	Price	Stroke	ØA	B	C	D	E	F	G	H	J	Closing force*	Weight
7117	OFR14-95G	\$248.00	95°	14	14	72	45.5	5.5	M12x1	M5	32	19	4 lbf	30g
7100	OFR20-95G	\$253.00	95°	20	20	103	68.5	8	M17x1	M5	43.5	25	16 lbf	80g
7101	OFR30-95G	\$293.00	95°	30	29	148	100	11	M27x1	M5	63	37	68 lbf	230g

*Note: Force at 87psi (6 bar)

35° Gripper Finger (Sensor type)

- Longer bodies provide extended reach.
- Sensors are slightly recessed, so mounting clamps can be placed along the full length of the body.
- Provides operation with or without sensors.
- Gripper fingers work with guides and extensions, see page 526.
- Sensor Slot version features two sensor slots to provide confirmation of the finger position.

The sensor slots extend the overall length of the gripper finger body. This is an advantage because gripper fingers almost always require the use of extensions (page 529) for achieving sufficient reach. Strong grip strength ensures that the molded part remains firmly gripped during removal and transport. Contact our application engineering department for assistance in sizing the correct gripper finger for your application.



OFA - 35° Gripper Finger (Sensor Slot Version)

Quick#	Part#	Price	ØA	B	C	D	G	Stroke	Closing force*	Wt.
1915	OFA-20-35S	\$203.00	20	23	113.5	M17x1	M5	35°	23 lbf	86g
1917	OFA-30-35S	\$211.00	30	34	167	M27x1	M5	35°	97 lbf	272g
6597	OFA50-35S	\$309.00	50	56	256	M45x1.5	G 1/8	35°	428 lbf	1060g
Order sensors separately									<i>*Note: Force at 87psi (6 bar)</i>	
1882	SS4N225G	\$27.20	PNP sensor		3-wire with lead, 2.5m long					6-24v dc
6282	SS3N203G	\$31.16	PNP sensor		3-wire with M8 male connector, 0.3m long					6-24v dc
1883	SS4M225G	\$27.20	NPN sensor		3-wire with lead, 2.5m long					6-24v dc
1884	SS3M203G	\$31.16	NPN sensor		3-wire with M8 male connector, 0.3m long					6-24v dc

Use Quick#s for easy online ordering.

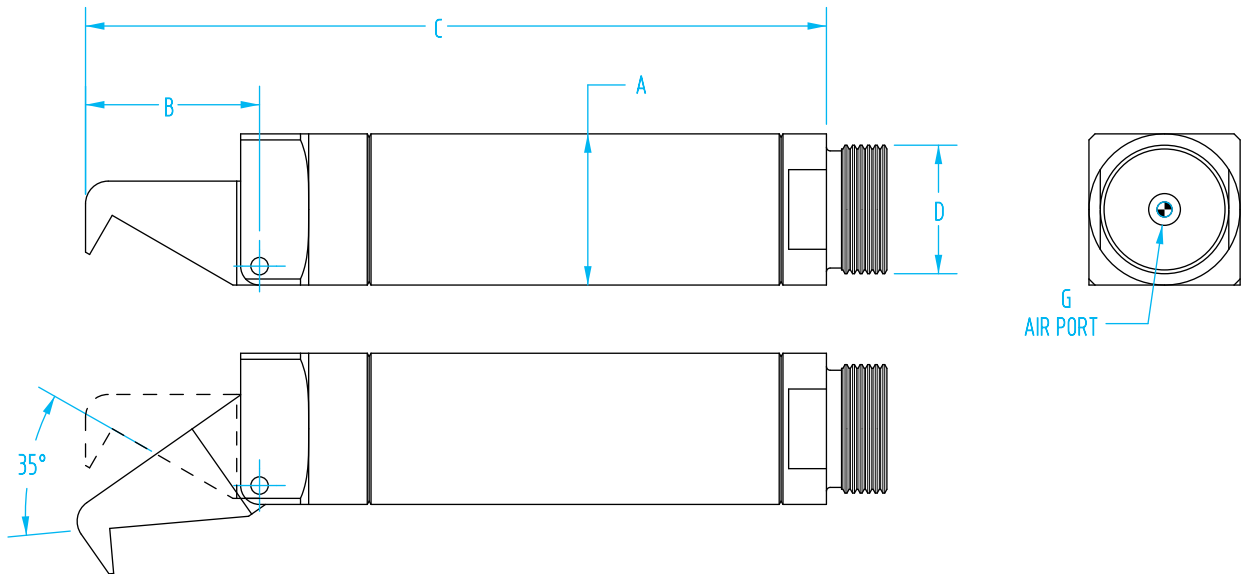
35° Gripper Finger (Standard type)

The gripper body is now all one metal piece, providing a longer service life better performance!

- Plastic molded plug on the top seals the gripper creating a reduced risk of external parts and debris entering the gripper
- New design includes a stronger, safer all metal piston
- Grooved pivot pin for improved reliability.



Optional sensor mounting bands available. See page 529.



OFA - 35° Gripper Finger (Non-Sensor Slot Version)

Quick#	Part#	Price	ØA	B	C	D	G	Stroke	Closing force*	Wt.
5414	OFA14-35	\$191.00	14	16	68.5	M12x1	M5	35°	6 lbf	25g
1914	OFA-20-35	\$196.00	20	23	98	M17x1	M5	35°	23 lbf	65g
1916	OFA-30-35	\$204.00	30	34	142	M27x1	M5	35°	97 lbf	206g
6596	OFA50-35	\$290.00	50	56	211	M45x1.5	G 1/8	35°	428 lbf	860g

*Note: Force at 87psi (6 bar)

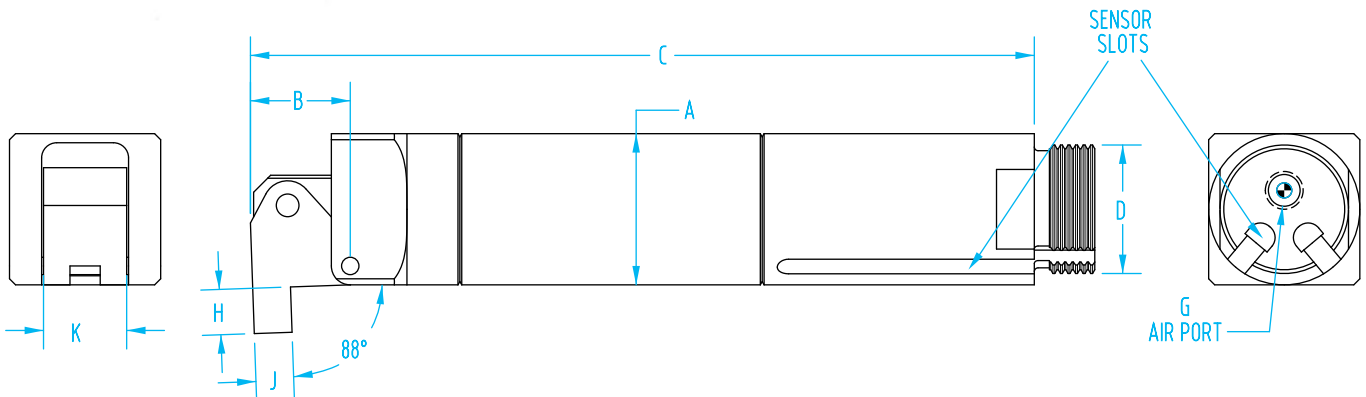
Fittings Available on page 1043



See page 245–255 for mounting brackets.

90° Gripper Finger (Sensor type)

- Longer bodies provide extended reach.
- Sensors are slightly recessed, so mounting clamps can be placed along the full length of the body.
- Provides operation with or without sensors
- Gripper fingers work with guides and extensions, see page 526.
- Sensor Slot version features two sensor slots to provide confirmation of the finger position.



OFS - 90° Gripper Finger (Sensor Slot Version)

Quick#	Part#	Price	ØA	B	C	D	G	Stroke	H	J	K	Closing force*	Wt.
6655	OFS20-90S	\$259.00	20	13.2	103.7	M17x1	M5	90°	6	5	11	16 lbf	80g
6657	OFS30-90S	\$279.00	30	20.1	153.1	M27x1	M5	90°	11	6	14	68 lbf	245g
Order sensors separately												<i>*Note: Force at 87psi (6 bar)</i>	
1882	SS4N225G	\$27.20	PNP sensor		3-wire with lead, 2.5m long				6-24v dc				
6282	SS3N203G	\$31.16	PNP sensor		3-wire with M8 male connector, 0.3m long				6-24v dc				
1883	SS4M225G	\$27.20	NPN sensor		3-wire with lead, 2.5m long				6-24v dc				
1884	SS3M203G	\$31.16	NPN sensor		3-wire with M8 male connector, 0.3m long				6-24v dc				

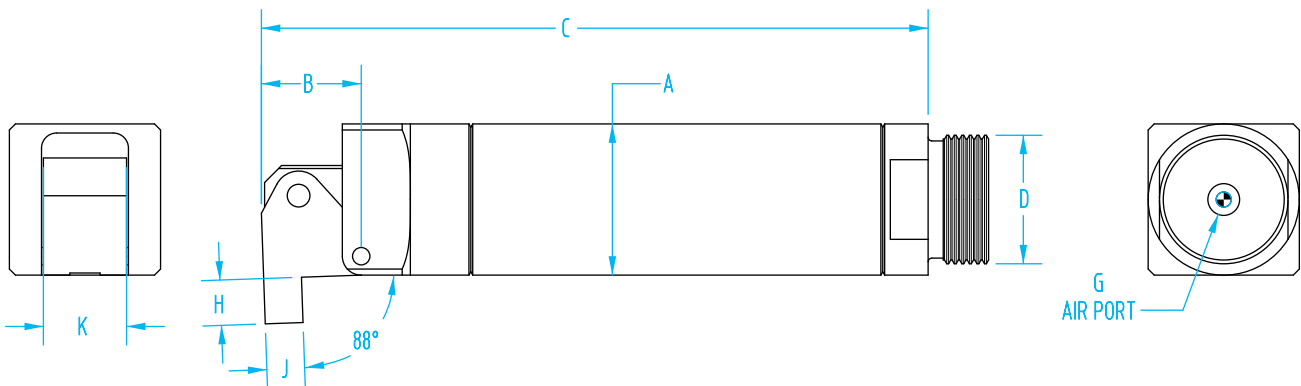
Fittings Available on page 1043



90° Gripper Finger (Standard type)

The gripper body is now all one metal piece, providing a longer service life better performance!

- Plastic molded plug on the top seals the gripper creating a reduced risk of external parts and debris entering the gripper
- New design includes a stronger, safer all metal piston
- Grooved pivot pin for improved reliability.



OFS - 90° Gripper Finger (Non-Sensor Slot Version)

Quick#	Part#	Price	ØA	B	C	D	G	Stroke	H	J	K	Closing force*	Wt.
7216	OFS14-90	\$218.00	14	9.1	61.6	M12x1	M5	90°	4	4	8	4 lbf	23g
6654	OFS20-90	\$228.00	20	13.2	88.2	M17x1	M5	90°	6	5	11	16 lbf	60g
6656	OFS30-90	\$250.00	30	20.1	128.1	M27x1	M5	90°	11	6	14	68 lbf	185g

*Note: Force at 87psi (6 bar)

See page 245–255 for mounting brackets.

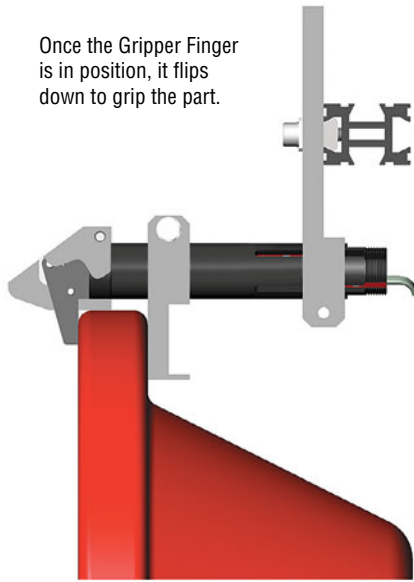
These grippers are compatible and interchangeable with other gripper fingers. They work with guides and extensions included in this catalog, and are ideal when there is little clearance between the part to be gripped and a fixed object. Contact our application engineering department for assistance in sizing the correct gripper finger for your application.

Application with 95° Gripper Fingers

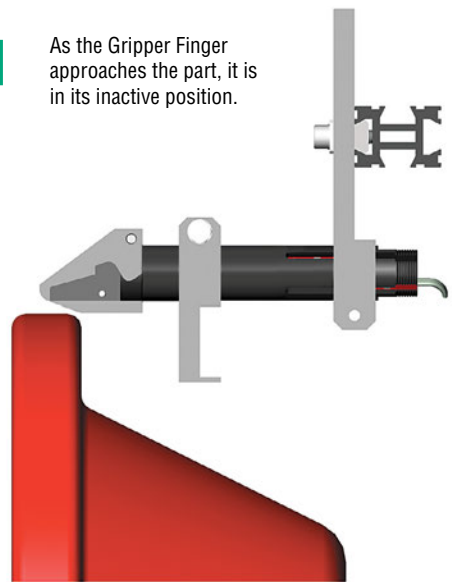


95° gripper fingers are ideal for gripping molded plastic parts that cannot be gripped using vacuum cups or standard grippers. This is typically the case with plastic parts that are cosmetically sensitive, and with parts that do not have surfaces suitable for use with vacuum cups or traditional grippers.

2 Once the Gripper Finger is in position, it flips down to grip the part.



1 As the Gripper Finger approaches the part, it is in its inactive position.

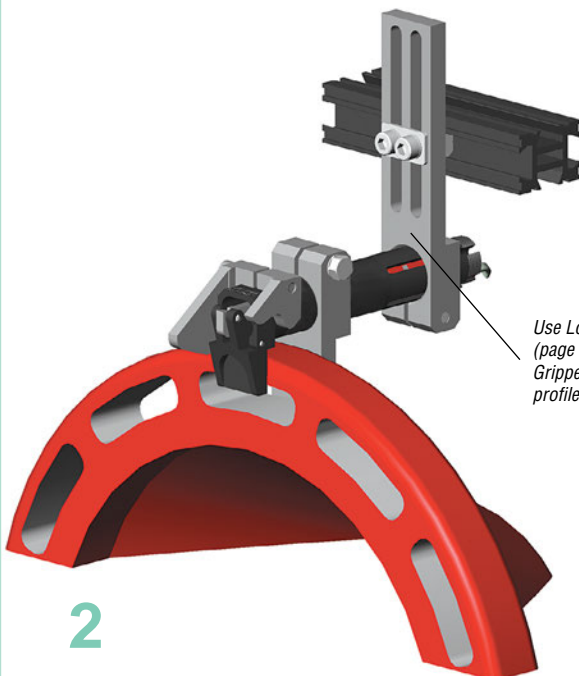


Clamps (page 248) act as supporting backing plates to securely hold the molded plastic part in place against the Gripper Finger

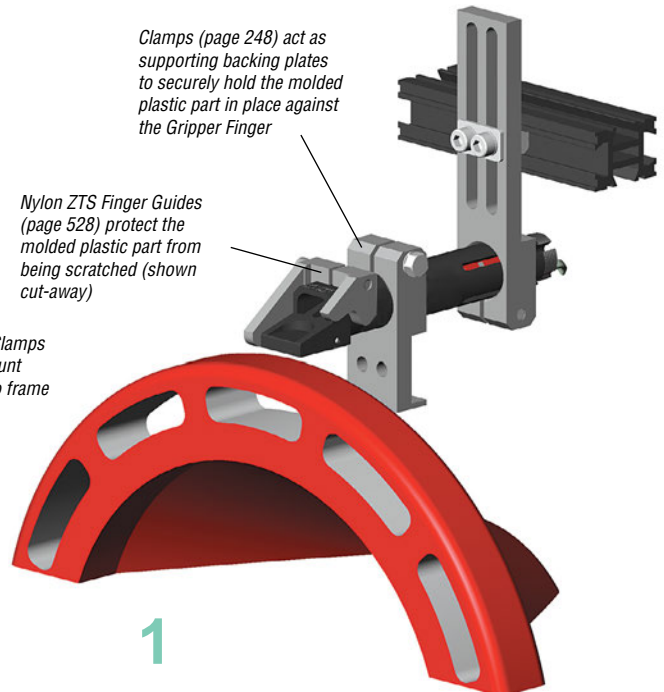
Nylon ZTS Finger Guides (page 528) protect the molded plastic part from being scratched (shown cut-away)

Use Long Angle Clamps (page 249) to mount Gripper Fingers to frame profiles

2



1

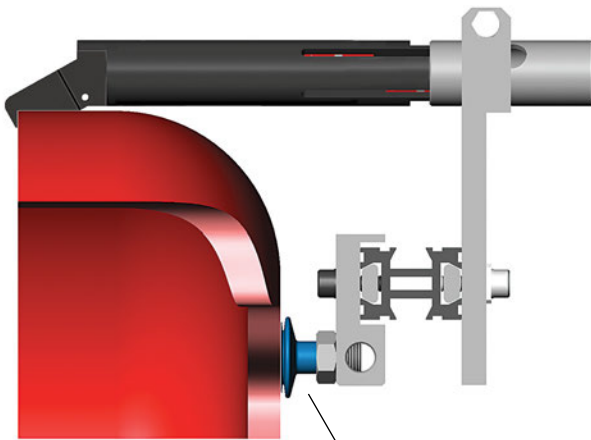


Application with 35° Gripper Fingers

35° gripper fingers are commonly used in two applications. They can reach behind a part and help 'snap' the part out of the mold. They are also used with vacuum cups to help stabilize large or deep core parts. This reduces shear on the vacuum cup and allows it to maintain a good seal.

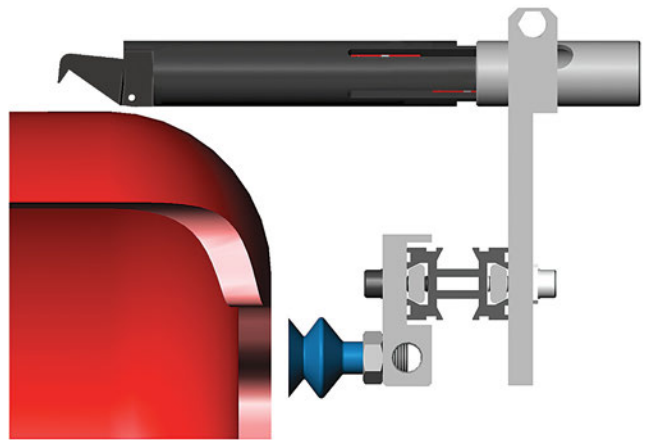


2 Once the Gripper Finger is in position, it flips down to grip the part.



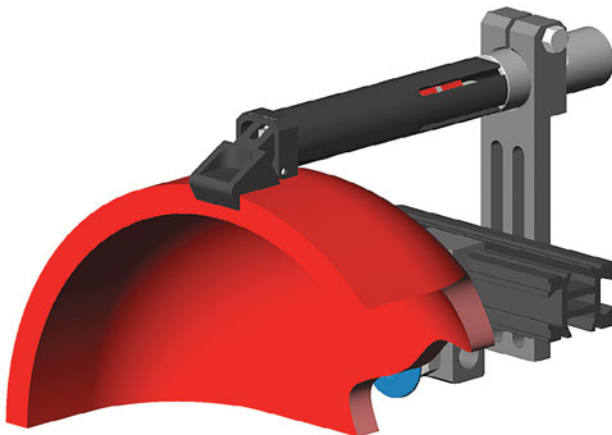
When used with Gripper Fingers, vacuum cups help stabilize deep core and large parts. Remember to allow for vacuum cup compression when using bellows vacuum cups.

1 As the Gripper Finger approaches the part, it is in its inactive position.

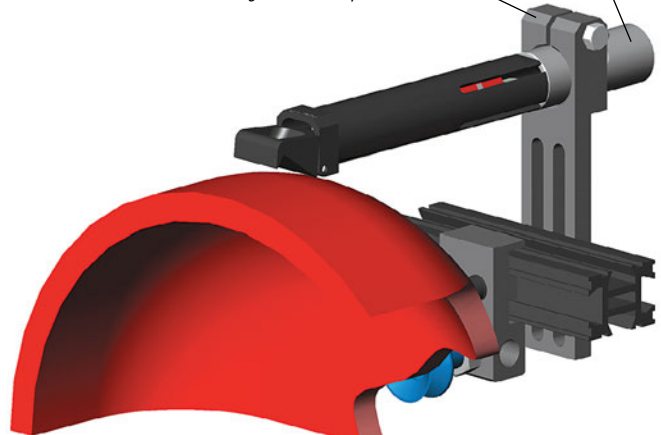


VLR Extensions (page 529) extend the reach of Gripper Fingers

Use Long Angle Clamps (page 249) to mount Gripper Fingers to frame profiles

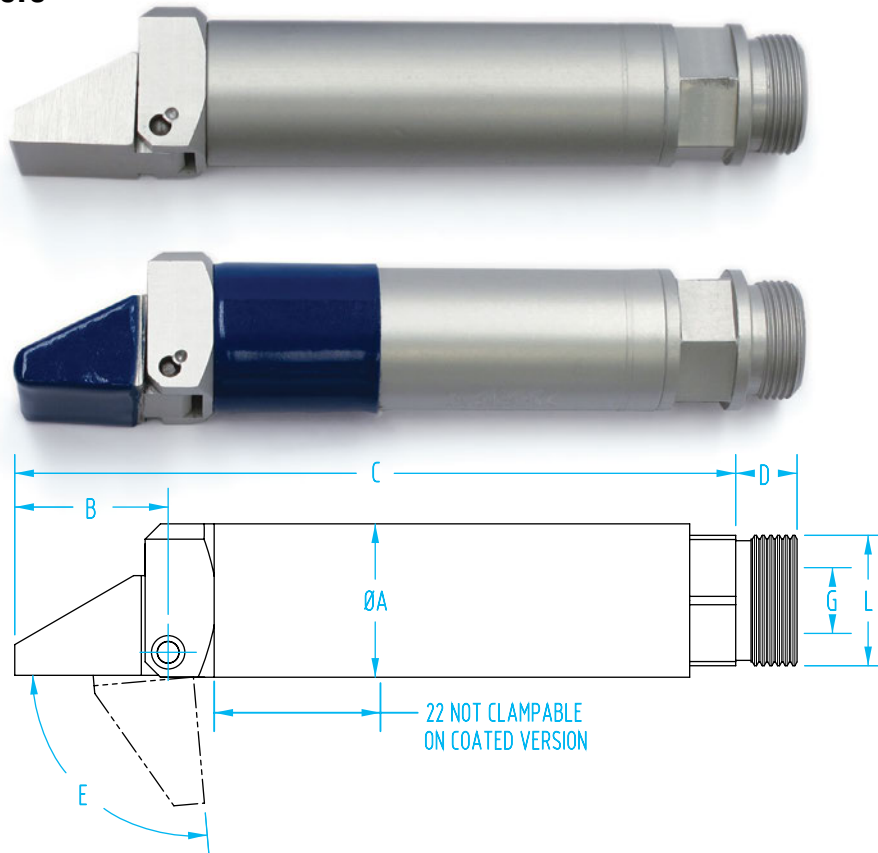


2



1

95° Gripper Fingers



95° Gripper Finger

Quick#	Part#	>ASS<#	Price	ØA	B	C	D	E	G	L	Closing force*	Wt.
3636	GRF-14-95-VA	1-451-03-00	\$240.45	14	15	64	6	95°	M5	M12x1	3 lbf	23g
3320	GRF20-95V	1-450-06-00-1	\$273.00	20	20	95	8	95°	G1/8"	M17x1	10 lbf	58g
3321	GRF30-95V	1-450-23-00-1	\$289.28	30	29	137	11	95°	G1/8"	M27x1	31 lbf	193g

*Note: Force at 87psi (6 bar)

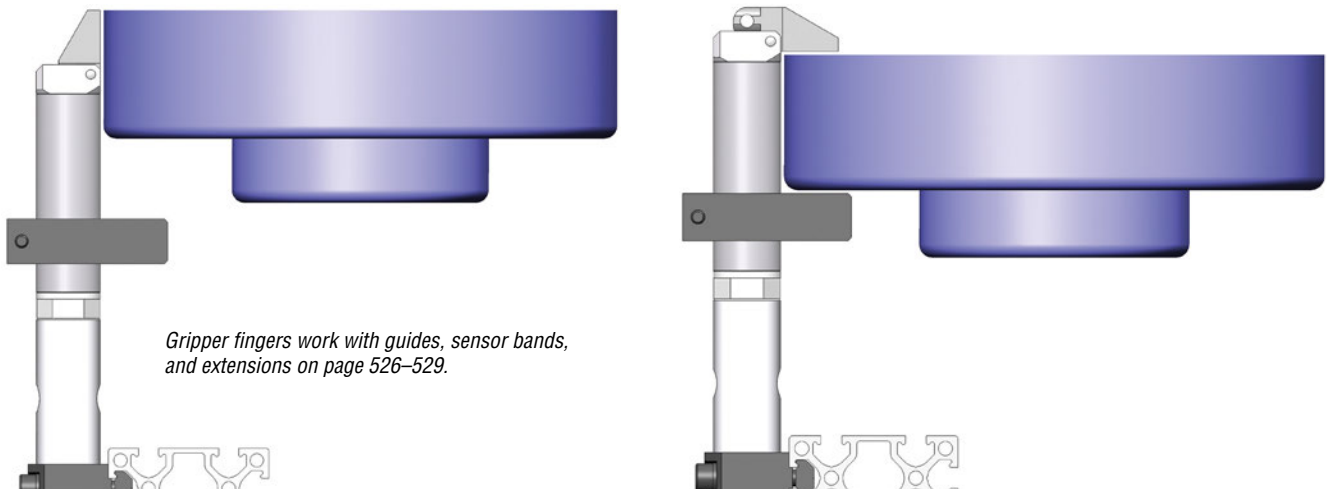
95° Gripper Finger with high strength elastomer polyurethane coated jaw

Quick#	Part#	>ASS<#	Price	ØA	B	C	D	E	G	L	Closing force*	Wt.
3732	GRF-14-95-VA-EP	1-451-04-00	\$262.50	14	15	64	6	95°	M5	M12x1	3 lbf	22g
3728	GRF20-95EP	1-450-07-00-1	\$314.48	20	20	95	8	95°	G1/8"	M17x1	10 lbf	58.1g
3731	GRF-30-95-VA-EP	1-450-22-00-1	\$393.75	30	29	137	11	95°	G1/8"	M27x1	31 lbf	202g

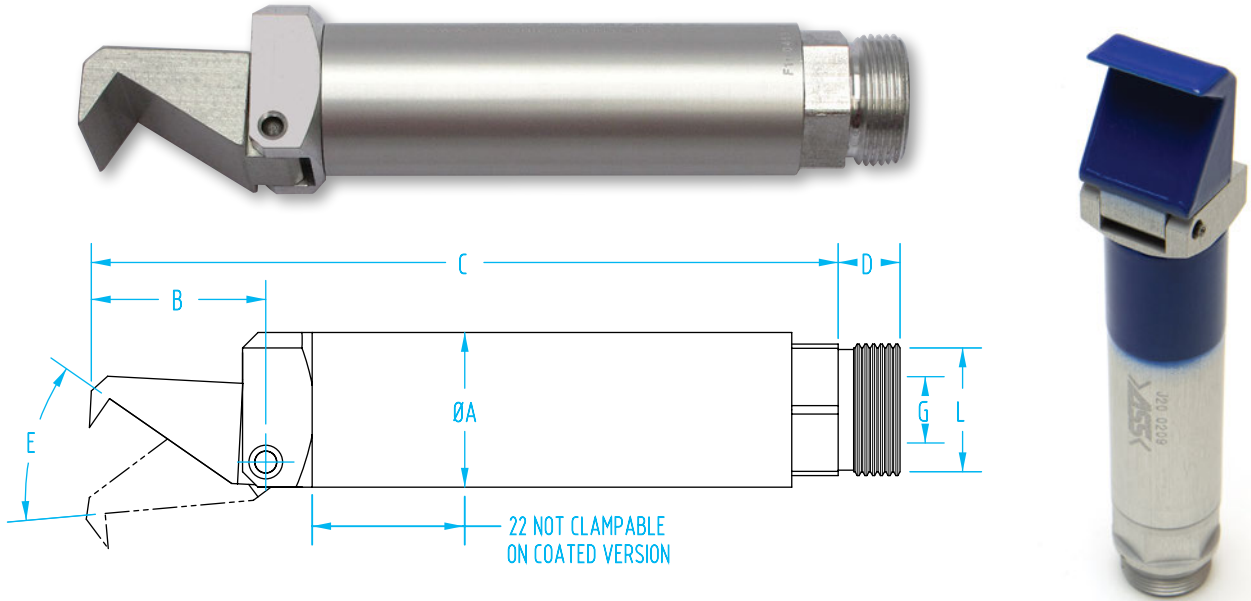
Maximum continuous temperature for these gripper fingers is 194°F with a short term max temp of 266°F.

*Force at 87 psi (6 bar)

95° Gripper Finger Application



35° Gripper Fingers



35° Gripper Finger

Quick#	Part#	>ASS<#	Price	ØA	B	C	D	E	G	L	Closing force*	Wt.
3637	GRF-14-35-VA	1-451-06-00	\$248.85	14	15	64	6	35°	M5	M12x1	10 lbf	23g
3322	GRF20-35V	1-450-03-00-1	\$282.45	20	25	99	8	35°	G1/8"	M17x1	27 lbf	60g
3323	GRF30-35V	1-450-20-00-1	\$299.78	30	34	142	11	35°	G1/8"	M27x1	54 lbf	195g

*Note: Force at 87psi (6 bar)

35° Gripper Finger with high strength elastomer polyurethane coated jaw

NEW

Quick#	Part#	>ASS<#	Price	ØA	B	C	D	E	G	L	Closing force*	Wt.
3921	GRF-20-35-VA-EP	1-450-04-00-1	\$314.48	20	25	99	8	35°	G1/8"	M17x1	27 lbf	60g

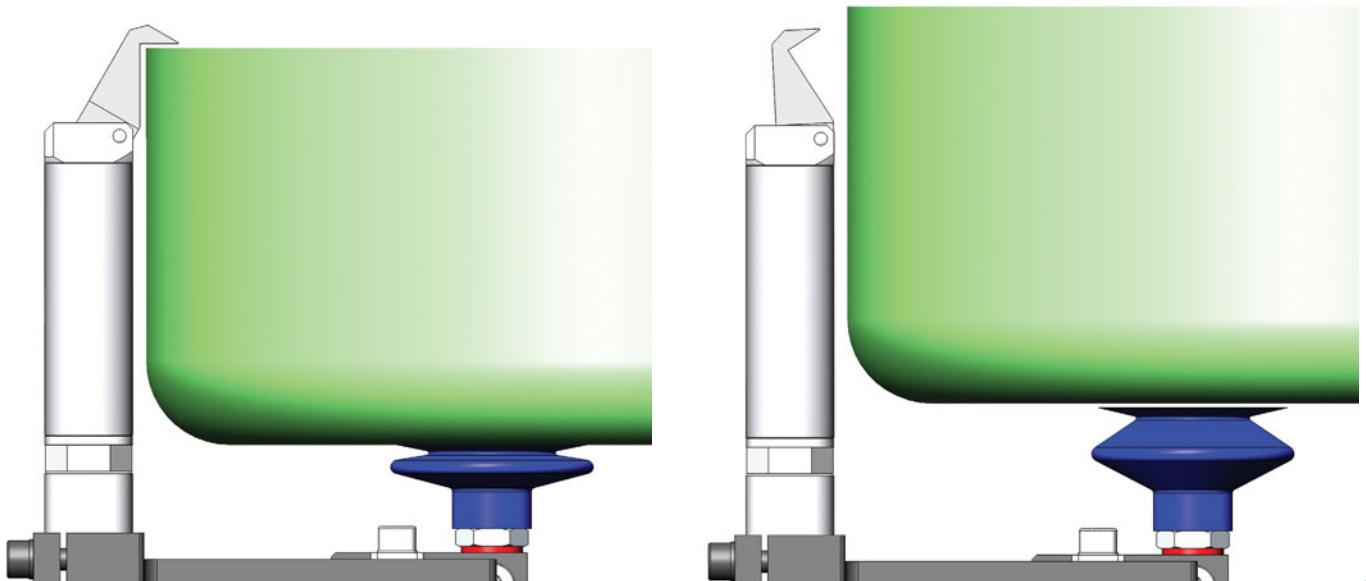
Maximum continuous temperature for these gripper fingers is 194°F with a short term max temp of 266°F.

*Force at 87 psi (6 bar)

Use Quick#s for easy online ordering.

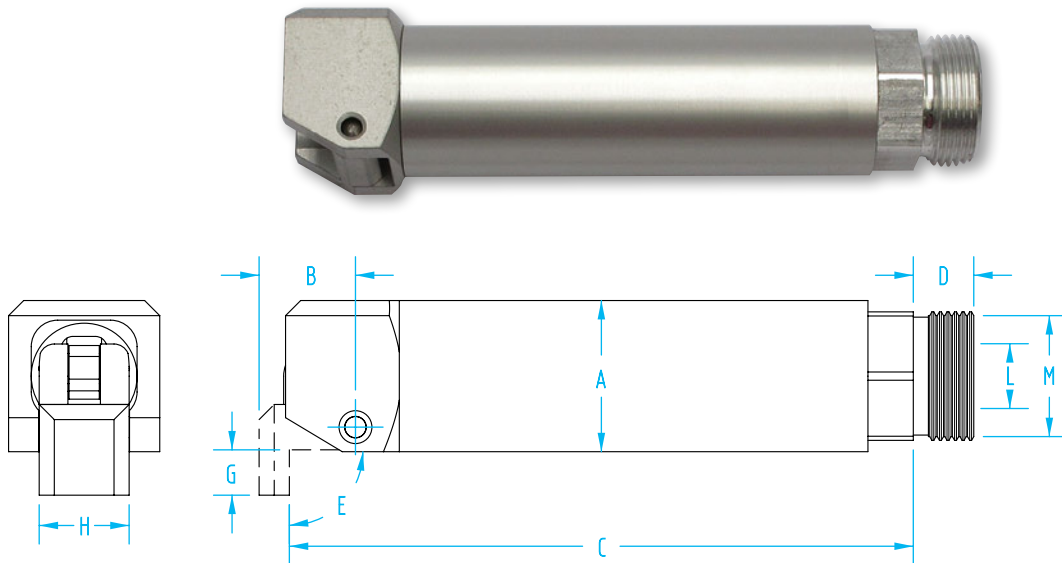
35° Gripper Finger Application

This application using the gripper finger draws the part up to the bellows vacuum cup. This reduces the shear force on the vacuum pad and allows it to maintain good vacuum seal and reduce flexing while in transport. As the gripper finger approaches the part, it is in its inactive position. Once the gripper finger is in position, it flips down to grasp the part.



90° Gripper Fingers

- Gripper fingers work with guides, sensor bands, and extensions on page 526–529.



90° Gripper Finger

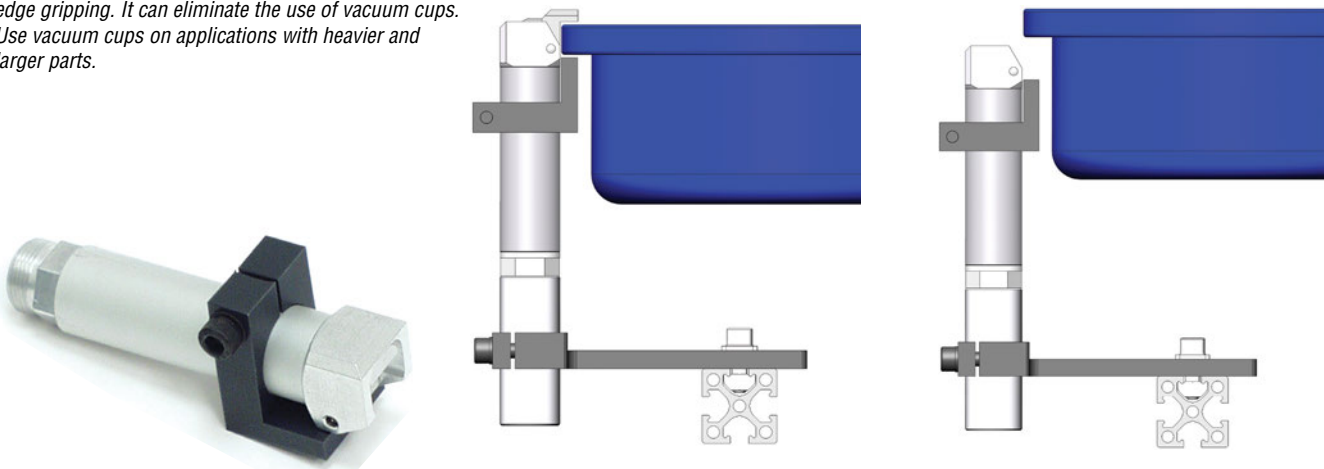
Quick#	Part#	>ASS<#	Price	ØA	B	C	D	E	G	H	L	M	Closing force*	Wt.
3638	GRF-14-90-VA	1-451-09-00	\$256.20	14	9	58	6	90°	4	10	M5	M12x1	9 lbf	22g
3324	GRF20-90V	1-450-15-00-1	\$289.80	20	12	83	8	90°	6	12	G1/8"	M17x1	22 lbf	57g
3325	GRF30-90V	1-450-29-00-1	\$311.85	30	19	124	11	90°	11	20	G1/8"	M27x1	52 lbf	194g

*Note: Force at 87psi (6 bar)

Use Quick#s for easy online ordering.

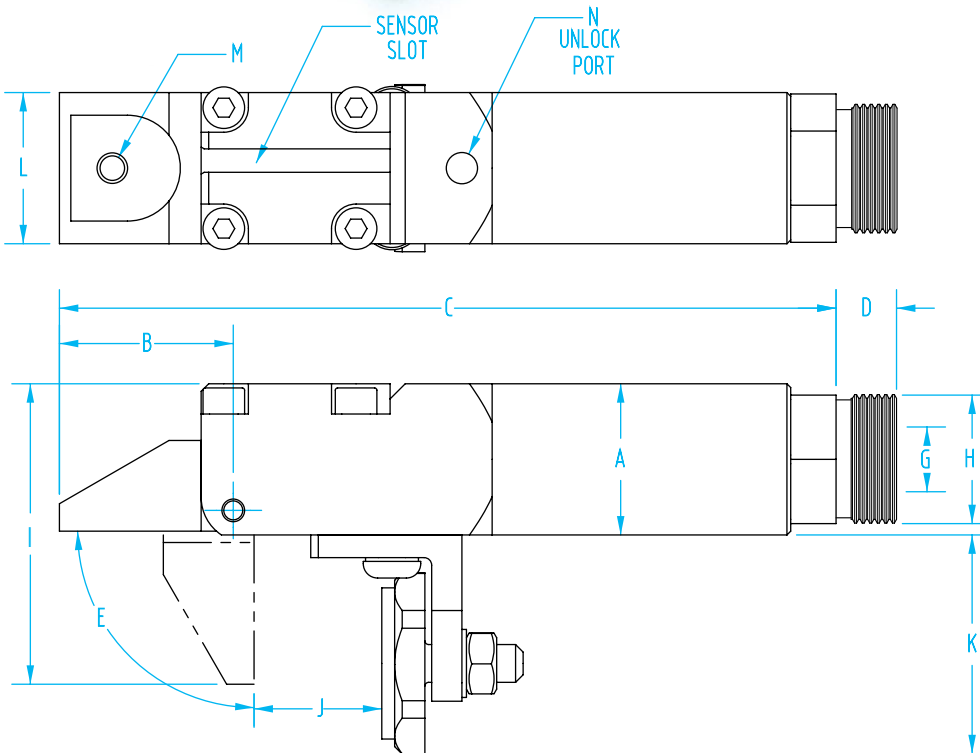
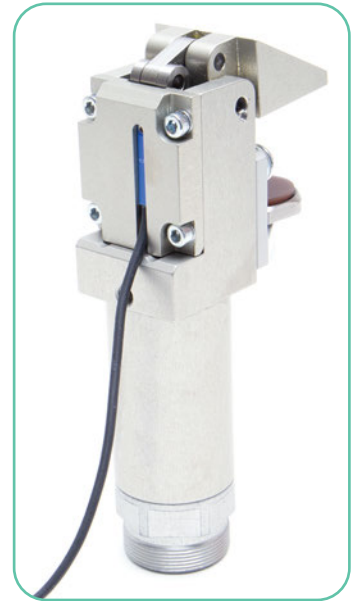
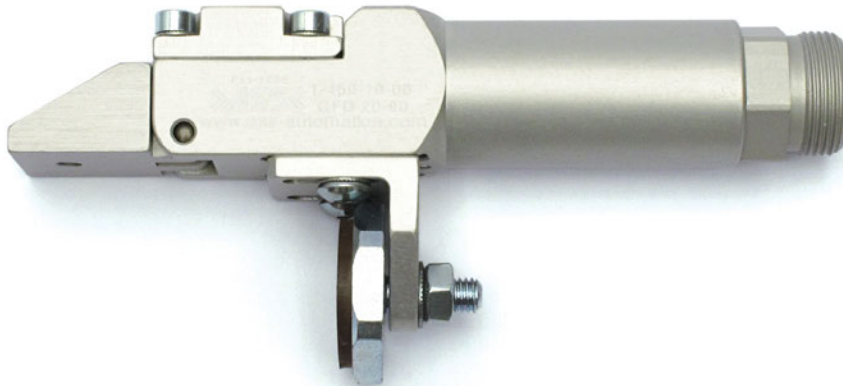
90° Gripper Finger Application

ANS gripper stop is typically used with GRF-90 gripper fingers. These applications are ideally suited for part edge gripping. It can eliminate the use of vacuum cups. Use vacuum cups on applications with heavier and larger parts.



90° Double Acting Gripper Fingers

- Find extensions on page 529.
- As a safety feature, GFD gripper fingers will lock in the closed position (90°) until the release port is supplied with air pressure.
- Programmable sensor (#3809) for detection of two positions on page 1005.



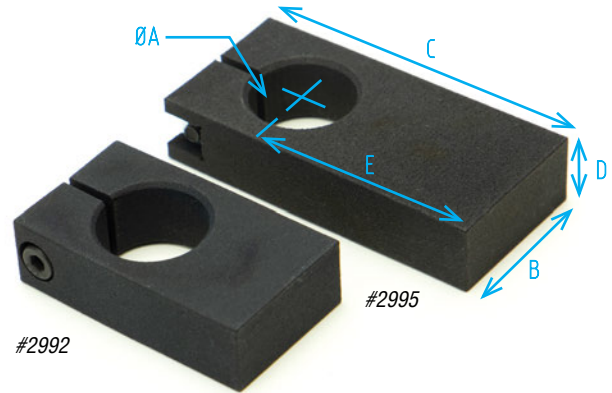
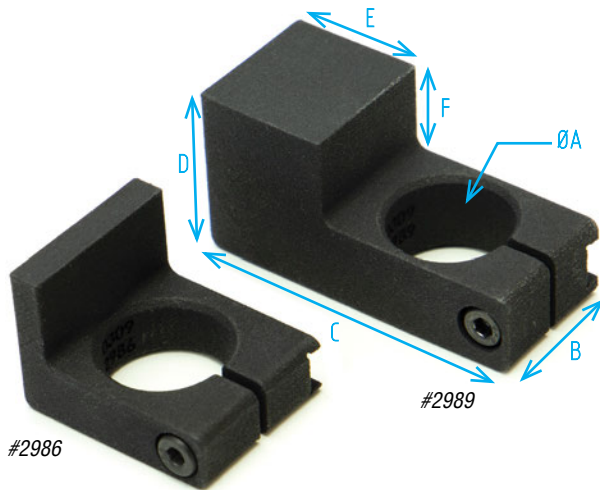
90° Double Acting Gripper Finger

Quick#	Part#	>ASS<#	Price	ØA	B	C	D	E	G	H	I	J	K	L	M	N	Closing force*	Wt.
3639	GFD20-90	1-450-10-00	\$470.40	20	23	103	8	90°	G1/8"	M17x1	40	0-34	28	20	M4	M5	24 lbf	100g
3922	GFD-20-90-EP90	1-450-11-00	\$535.50	23	23	103	8	90°	G1/8"	M17x1	40	0-34	28	20	M4	M5	24 lbf	100g
3640	GFD30-90	1-450-24-00	\$485.10	30	32	134	11	90°	G1/8"	M27x1	57	0-46	28	30	M5	M5	36 lbf	270g
3923	GFD-30-90-EP90	1-450-30-00	\$563.85	30	32	134	11	90°	G1/8"	M27x1	57	0-46	28	30	M5	M5	36 lbf	270g

Maximum continuous temperature for Rubber pad is 160°F. For EP coating is 194°F with a short term max temp of 266°F.

*Force at 87 psi (6 bar)

Gripper Finger Accessories



ANS Nylon Finger Stops

Quick#	Part#	Price	ØA	B	C	D	E	F	Wt.
2985	ANS14N	\$11.00	14	25	31	23	5.5	13	10g
2986	ANS20N	\$12.65	20	29	35	25	5.5	15	13g
2987	ANS30N	\$20.75	30	40	45	25	5.5	15	17g
2988	ANSE14N	\$21.85	14	24	44	30	18	16	21g
2989	ANSE20N	\$23.20	20	25	57	29	23	15	25g
2990	ANSE30N	\$27.50	30	38	74.5	43	30	24	48g

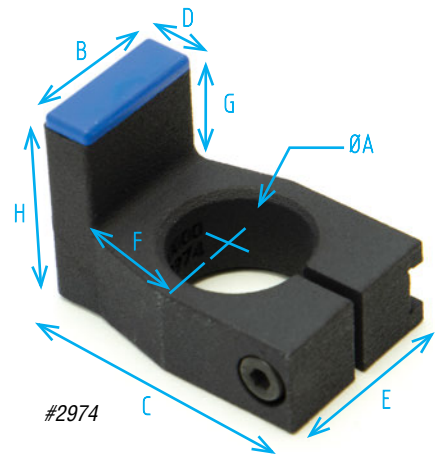
ANF Nylon Finger Stops

Quick#	Part#	Price	ØA	B	C	D	E	Wt.
2991	ANF14N	\$9.75	14	24	42	10	26	10g
2992	ANF20N	\$17.80	20	29	50	14	30	18g
2993	ANF30N	\$26.80	30	38	67	19	43	36g
2994	ANFE14N	\$13.40	14	25	55	10	39	14g
2995	ANFE20N	\$21.45	20	32	67	14	47	28g
2996	ANFE30N	\$27.35	30	42	84	19	60	56g

ANS Nylon Finger Stops with HNBR Pads

Quick#	Part#	Price	Pad Q#	ØA	B	C	D	E	F	G	H	Wt.
2973	ANS14N-P	\$16.40	7484	14	22	33	8	24	9	15	29	9g
2974	ANS20N-P	\$18.30	7484	20	22	42	8	29	14	17	31	11g
2975	ANS30N-P	\$17.90	7484	30	22	54	8	38	22	17	31	17g

Note: Guides include HNBR pads but are listed here in case they need to be replaced.

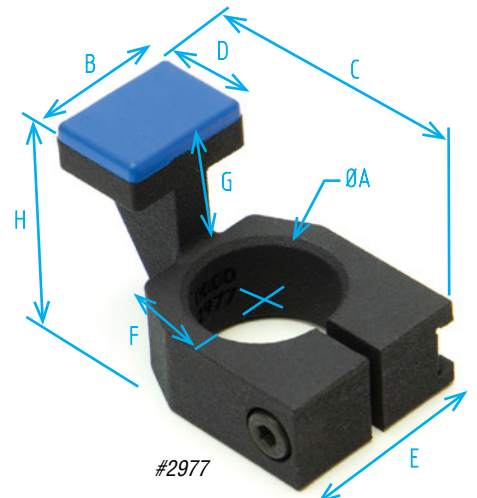


Replaceable HNBR soft-touch, non-marring pads have a 302°F maximum temperature.

ANSE Nylon Finger Stops with HNBR Pads

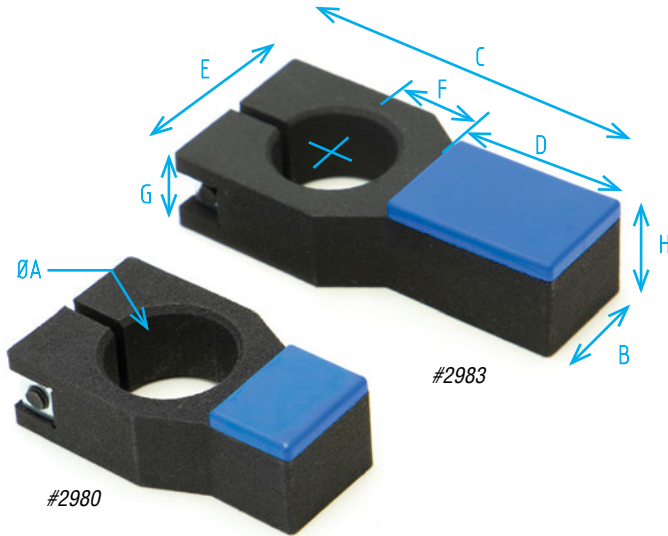
Quick#	Part#	Price	Pad Q#	ØA	B	C	D	E	F	G	H	Wt.
2976	ANSE14N-P	\$18.80	7359	14	14	36	11	24	9	16	30	13g
2977	ANSE20N-P	\$19.80	7360	20	20	47.5	15	29	12.5	18.5	32.5	13g
2978	ANSE30N-P	\$33.25	7361	30	30	64	20	38	20	27	46	31g

Note: Guides include HNBR pads but are listed here in case they need to be replaced.



If you need a custom designed finger stop, see our 3D printing section on page 102 or call EMI Engineering!

Gripper Finger Accessories



ANF Nylon Finger Stops with HNBR Pads

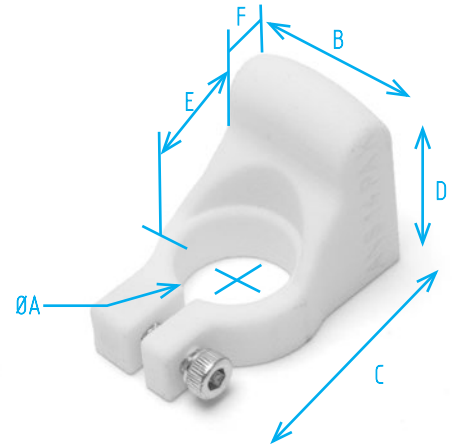
Quick#	Part#	Price	Pad Q#	ØA	B	C	D	E	F	G	H	Wt.
2979	ANF14N-P	\$18.00	7359	14	14	35	11	14	8	10	12.5	9g
2980	ANF20N-P	\$19.40	7360	20	20	47.5	15	29	12.5	14	16.5	15g
2981	ANF30N-P	\$30.40	7361	30	30	64	20	38	20	19	22	31g
2982	ANFE14N-P	\$19.85	7360	14	15	55	20	25	19	10	12.5	18g
2983	ANFE20N-P	\$28.80	7361	20	20	67	30	32	17	14	17	27g
2984	ANFE30N-P	\$34.90	7361	30	30	84	20	42	40	19	22	47g

Note: Guides include HNBR pads but are listed here in case they need to be replaced.

NEW

ANS Nylon Curved Finger Stops

Quick#	Part#	Price	ØA	B	C	D	E	F	Wt.
3924	ANS-14-PA-K	\$18.90	14	20	33	24.5	9	8.1	7g
3925	ANS-20-PA-K	\$26.25	20	30	41	35.5	11	9	17g

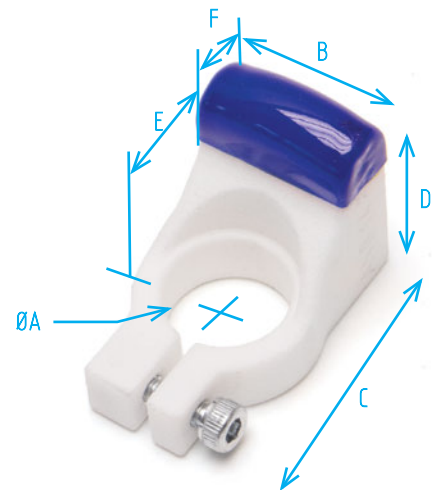


In conjunction with the EP coating this finger gripper bracket is ideally suited for handling sensitive parts. The curved versions are designed for contoured parts. Maximum continuous temperature for these gripper guides is 194°F with a short term maximum temperature of 266°F.

NEW

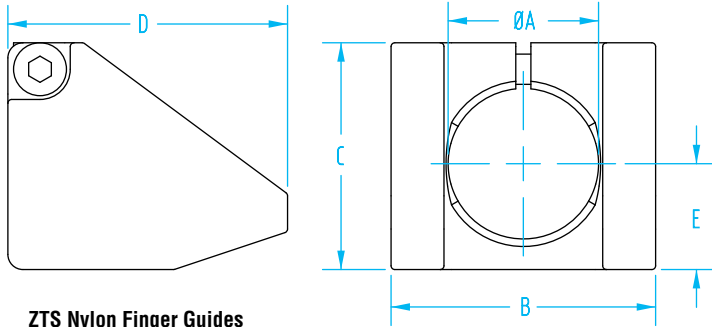
ANS Nylon Curved Finger Stops with EP Coating

Quick#	Part#	Price	ØA	B	C	D	E	F	Wt.
3926	ANS-14-PA-K-EP	\$27.83	14	20	33	24.5	9	8.5	17g
3927	ANS-20-PA-K-EP	\$35.70	20	30	41	35.5	11	9	17g



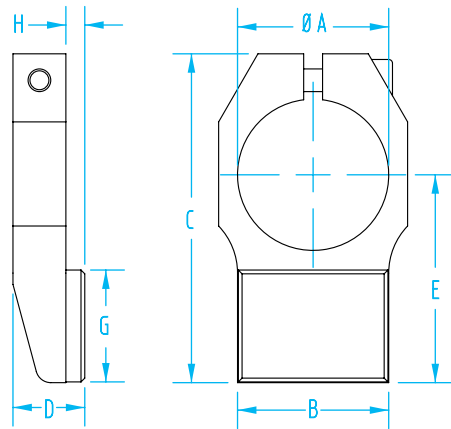
Use Quick#s for easy online ordering.

Gripper Finger Accessories



ZTS Nylon Finger Guides

Quick#	Part#	Price	ØA	B	C	D	E	Wt.
2997	ZTS14N	\$14.00	14	26	25	33	11.5	12g
2998	ZTS20N	\$14.25	20	35	30	37	14	19g
2999	ZTS30N	\$26.70	30	46	46	65.5	20	73g



Adjustable stopper clamps to gripper fingers

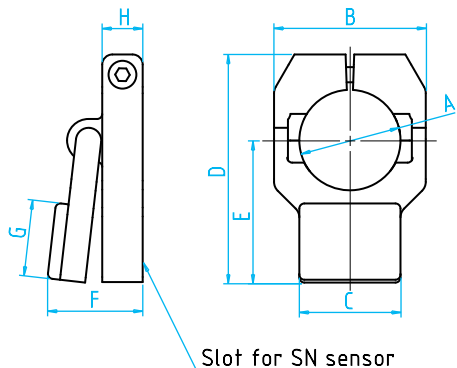
Sensor with adjustable clamp for gripper fingers

Clampable aluminum tubes for extended reach.

Finger Stops with HNBR Pad

Quick#	Part#	Price	Pad Q#	ØA	B	C	D	E	G	H	Wt.
7120	OF14G	\$41.50	7359	14	14	32	10	19	10.8	2.5	6g
7121	OF20G	\$45.50	7360	20	20	43.5	9.5	27.5	14.8	2.5	12g
7122	OF30G	\$56.00	7361	30	30	63	12	40	19.8	3	30g

Note: Guides include HNBR pads but are listed here in case they need to be replaced.



NEW

Finger Stops with HNBR Pad and Sensing

Quick#	Part#	Price	Pad Q#	ØA	B	C	D	E	F	G	H	Wt.
7571	OF14H	\$14.97	7359	14	22	14	34.5	21	17.6	11	8	15g
7572	OF20H	\$23.24	7360	20	30	20	45	28	18.7	15	8	20g
7573	OF30H	\$43.12	7361	30	42	30	64	40	25.5	20	12	28g

Note: Guides include HNBR pads but are listed here in case they need to be replaced. See page 1002 for Gimatic SN.. sensors.



Gripper Finger Accessories

Replacement Gimatic Springs

Quick#	Part#	For:	Price
7663	OFR1495-07	Gimatic Size 14	\$2.15
6616	OFR20-95-09	Gimatic Size 20	\$3.91
5347	OFR-30-95-07	Gimatic Size 30	\$4.38

Replacement >ASS< Springs

Quick#	Part#	For:	Price
3895	GSG-GRF14-PSP	>ASS< Size 14	\$3.68
3896	GSG-GRF20-PSP	>ASS< Size 20	\$4.20
3852	1-450-23-08	>ASS< Size 30	\$3.36

Replacement HNBR Pads - Kits contain 2 Old Style, 2 New Style Pads

Quick#	Part#	For:	Dimensions	Price
7628	KIT3-OFR14	OFR-14	14 x 10.4mm, 2.5mm thick	\$13.06
7629	KIT3-OFR20	OFR-20	20 x 15mm, 2.5mm thick	\$11.13
7630	KIT3-OFR30	OFR-30	30 x 22.3mm, 3mm thick	\$16.87


NEW

#7629

New Style Replacement TPU Pads (176°F Max Temp)

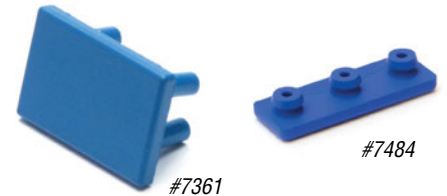
Quick#	Part#	For:	Dimensions	Price
7217	OFR14-95-14	OFR-14	14 x 10.4mm, 2.5mm thick	\$5.19
7218	OFR20-95-14	OFR-20	20 x 15mm, 2.5mm thick	\$5.92
7219	OFR30-95-15	OFR-30	30 x 22.3mm, 3mm thick	\$6.00



#7218

Replacement HNBR Pads (302°F Max Temp, Non-Marking)

Quick#	Part#	For:	Dimensions	Price
7359	OFR1495-16	OFR-14	14 x 10.4mm, 2.5mm thick, Old Style	\$4.42
7360	OFR2095-16	OFR-20 & Guides	20 x 15mm, 2.5mm thick, Old Style	\$4.42
7361	OFR3095-16	OFR-30 & Guides	30 x 22.3mm, 3mm thick, Old Style	\$6.60
7484	PB-0170-05	Gripper Guides	22 x 8mm, 2mm thick, New Style	\$5.50



#7361

#7484

Sensor Band for >ASS< & Gimatic Gripper Fingers

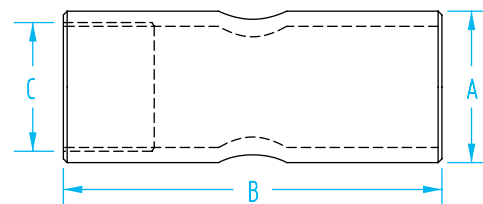
Quick#	Part#	For Body:	Price
7307	SWP-014	Ø14	\$2.22
7308	SWP-020	Ø20	\$2.22
7309	SWP-030	Ø30	\$2.22
7310	SWP-050	Ø50	\$2.22



Note: Use with C-Slot Gimatic Sensors on page 1002 or SMC sensors on page 1004.

Extension Tube

Quick#	Part#	Price	A	B	C	Wt.
3384	VLR14-40	\$8.40	14	40	M12x1	6g
3385	VLR14-80	\$10.50	14	80	M12x1	14g
3386	VLR14-120	\$10.50	14	120	M12x1	23g
3387	VLR20-50	\$10.50	20	50	M17x1	15g
3388	VLR20-100	\$10.50	20	100	M17x1	29g
3389	VLR20-150	\$11.55	20	150	M17x1	44g
3390	VLR30-80	\$13.13	30	80	M27x1	51g
3391	VLR30-140	\$13.65	30	140	M27x1	88g
3392	VLR30-200	\$14.70	30	200	M27x1	128g



Extension Tube (Not for Vacuum)

Quick#	Part#	Price	ØA	B	C	Wt.
5842	OF14L80	\$7.50	14	80	M12x1	10g
5843	OF20L100	\$9.72	20	100	M17x1	30g
5994	OF20L250	\$15.44	20	250	M17x1	75g
5844	OF30L120	\$12.59	30	120	M27x1	65g
5995	OF30L250	\$19.60	30	250	M27x1	145g

Compact Gripper Fingers / Hybrid – OFF

- Hybrid design has a plastic (Nylon) finger mounted to a clampable aluminum body.
- Narrow body design can easily be clamped and placed in tight areas.
- Integrated grip pads & rings are easily replaceable.
- These units are all single acting (spring return).
- Grippers can be equipped with optional sensors.
- Due to their lightweight design, these grippers can be considered in multi-cavity applications where payload is minimal.
- Ø14mm & Ø20mm shaft length can be extended by using a threaded extension. See page 529.



Quick#	7104	6648	6757	6756	6758
Part#	OFP14P-25	OFP21P-20	OFP21N-20	OFP21S-20	OFP21V-20
Price	\$34.95	\$34.95	\$34.95	\$34.95	\$34.95
Style	HNBR Pad	HNBR Pad	Nitrile Rings	Silicone Rings	Viton Rings
Body construction	Aluminum body - Clampable				
Medium	Filtered, lubricated / non lubricated compressed air				
Pressure range	29–116 psi				
Temperature range of gripper	41°–140°F				
Maximum temperature of rings / pads	302°F	302°F	212°F	392°F	392°F
Stroke	25°	21°			
Closing force at 87psi	9 lbf	22 lbf			
Weight	13g	33g	33g	33g	33g

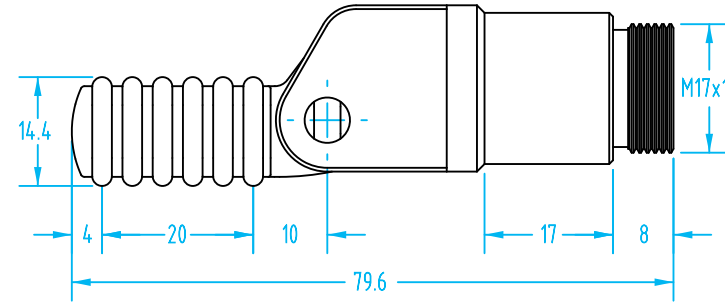
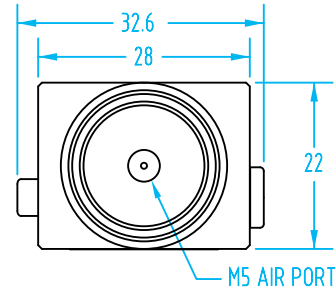
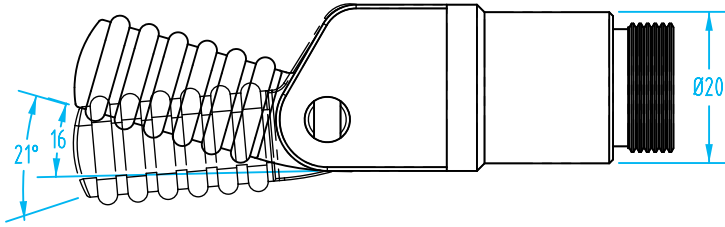
OFF - Replacement Pads & Rings

Quick#	Part#	Description	Price
7729	OFR2095 43	HNBR Pad for #7104	\$4.42
7730	OFR3095-42	HNBR Pad for #6648	\$4.68
5317	OFP20-N-20R	Nitrile Rings (set of 6)	\$7.04
5318	OFP20-S-20R	Silicone Rings (set of 6)	\$8.60
5319	OFP20-V-20R	Viton Rings (set of 6)	\$7.56

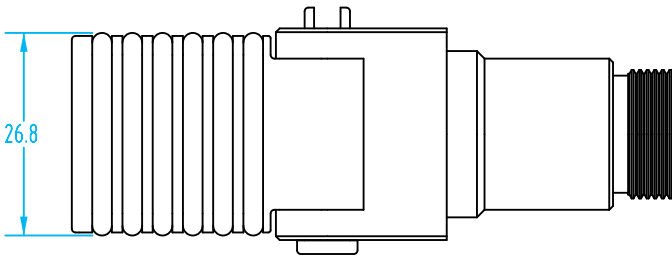
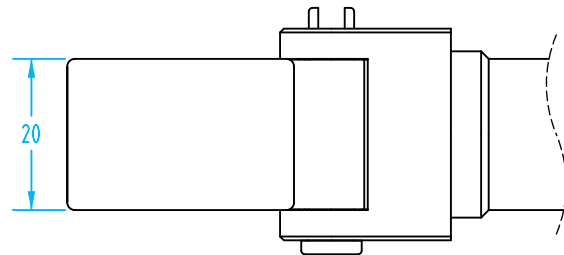
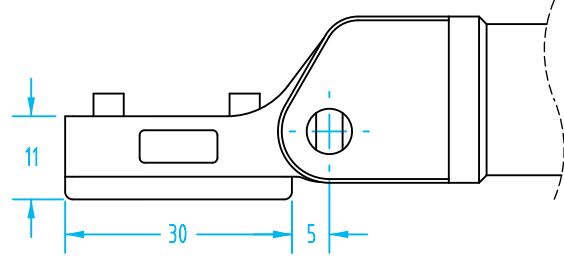
Compact Gripper Fingers / Hybrid – OFP

(Dimensioned drawings shown full scale)

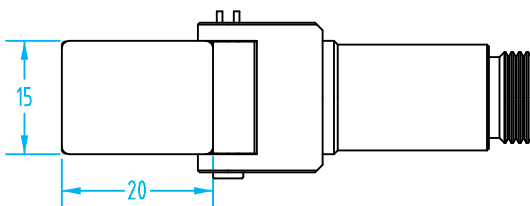
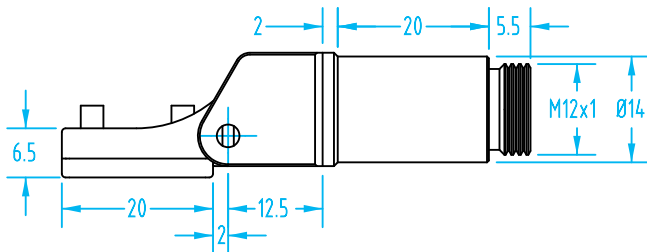
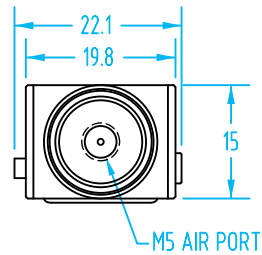
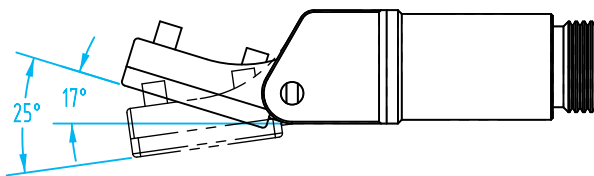
OFP-21...



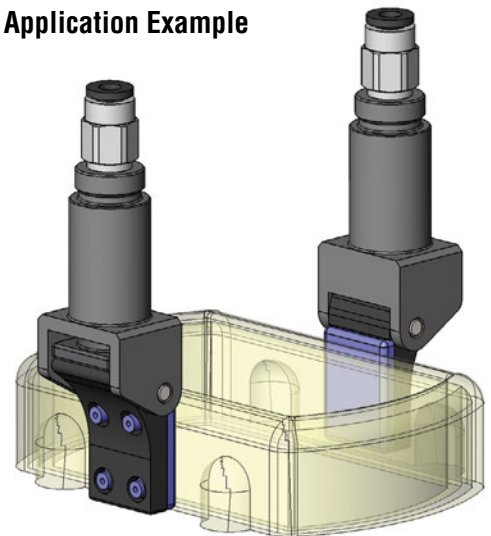
HNBR Pad:



OFP-14...



Application Example



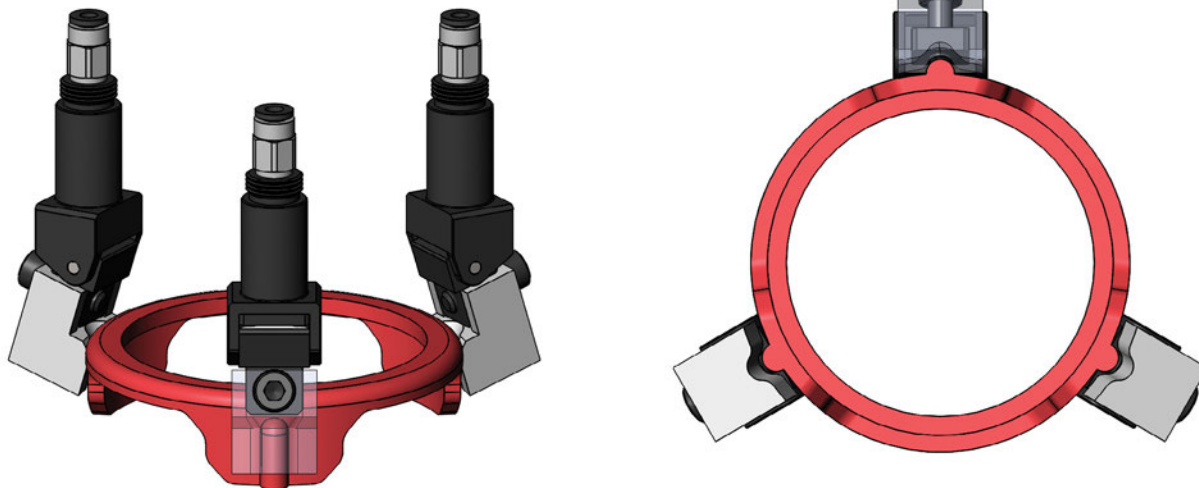
Compact Gripper with Blank Finger – OFP

- Aluminum finger blank mounted to a clampable aluminum body.
- Narrow body design can easily be clamped and placed in tight areas.
- Custom machined or 3D printed fingers can be easily mounted.
- Single acting (spring return).
- Grippers can be equipped with optional sensors.
- Due to their lightweight design, these grippers can be considered in multi-cavity applications where payload is minimal.
- Ø14mm & Ø20mm shaft length can be extended by using a threaded extension. See page 529.



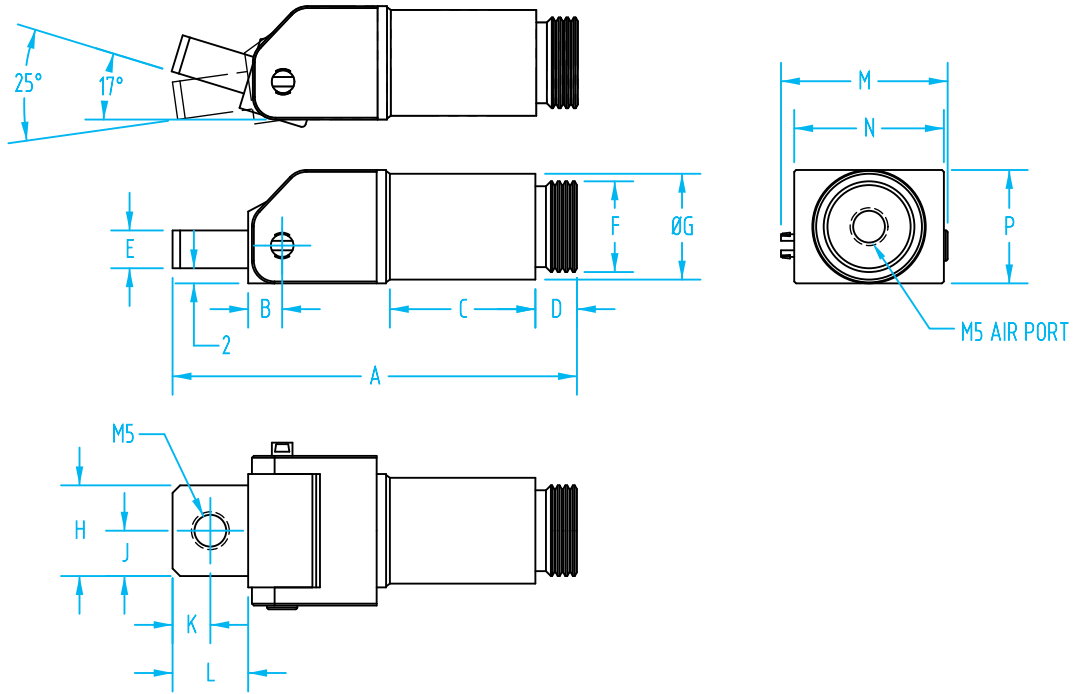
Quick#	7433	7434	7774
Part#	OFP14A-25	OFP21A-20	OFP20A-20
Price	\$79.95	\$79.95	\$79.95
Medium	Filtered, lubricated / non lubricated compressed air		
Pressure range	29–116 psi		
Temperature range of gripper	41°–140°F		
Stroke	25°	21°	21°
Closing force at 87psi	9 lbf	22 lbf	22 lbf
Weight	39g	42g	40g

Application Example



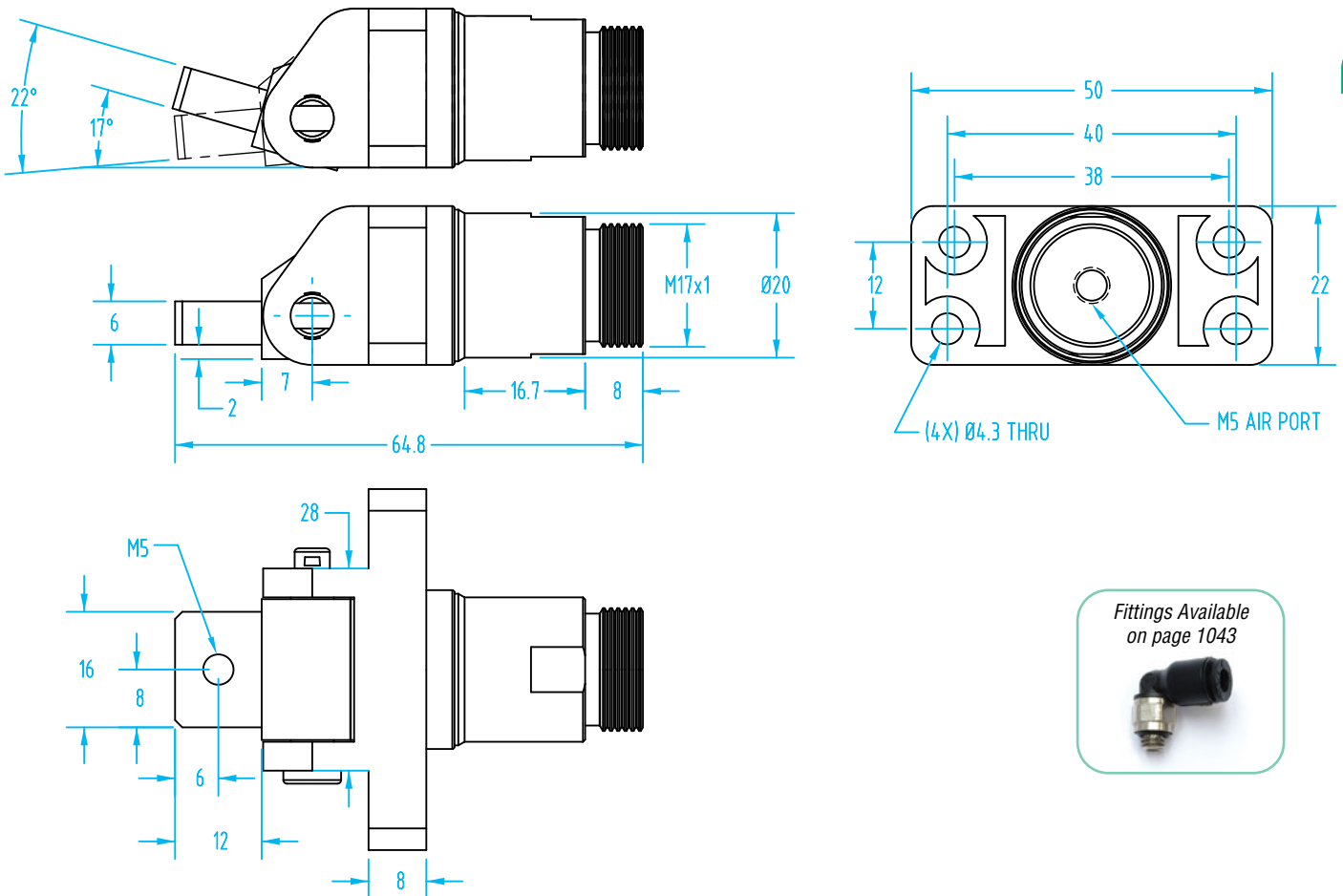
Compact Gripper with Blank Finger – OFP

#7433 & 7434



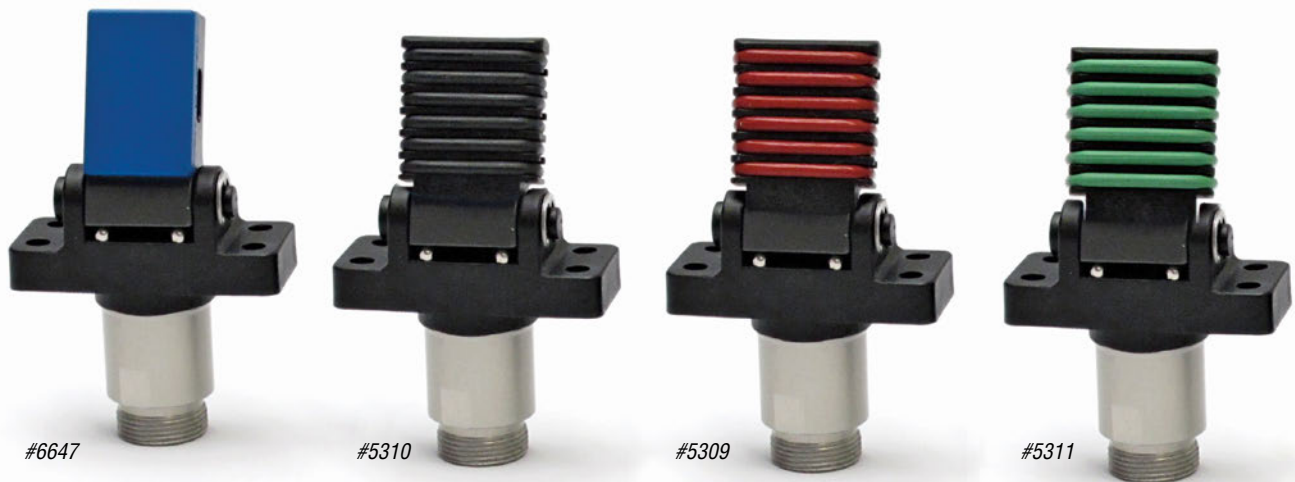
Quick#	A	B	C	D	E	F	ØG	H	J	K	L	M	N	P
7433	53.5	4.5	19	5.5	5	M12x1	14	12	6	5	10	22	19.8	15
7434	64.8	7	25	8	6	M17x1	20	16	8	6	12	32.6	28	22

#7774



Compact Gripper Fingers / Hybrid – OFF

- Hybrid design has a plastic (Nylon) finger mounted to a clampable aluminum body.
- Mounting holes in the plastic body make plate mounting easy.
- Integrated grip pads & rings are easily replaceable.
- These units are all single acting (spring return).
- Grippers can be equipped with optional sensors.
- Due to their lightweight design, these grippers can be considered in multi-cavity applications where payload is minimal.
- Ø20mm shaft length can be extended by using a threaded extension. See page 529.



Quick#	6647	5310	5309	5311
Part#	OFP20P-20	OFP20N-20	OFP20S-20	OFP20V-20
Price	\$34.95	\$34.95	\$34.95	\$34.95
Style	HNBR Pad	Nitrile Rings	Silicone Rings	Viton Rings
Body construction	Hybrid design - Clampable aluminum post			
Medium	Filtered, lubricated / non lubricated compressed air			
Pressure range	29–116psi			
Temperature range of gripper	41°–140°F			
Maximum temperature of rings / pads	302°F	212°F	392°F	392°F
Stroke	21°			
Closing force at 87psi	22 lbf			
Weight	39g	42g	42g	42g

OFF - Replacement Pads & Rings

Quick#	Part#	Description	Price
7361	OFR3095-16	HNBR Pad	\$6.60
5317	OFP20-N-20R	Nitrile Rings (set of 6)	\$7.04
5318	OFP20-S-20R	Silicone Rings (set of 6)	\$8.60
5319	OFP20-V-20R	Viton Rings (set of 6)	\$7.56

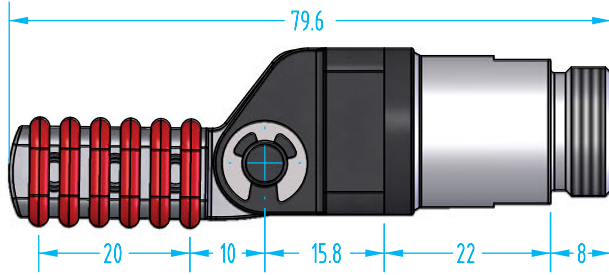
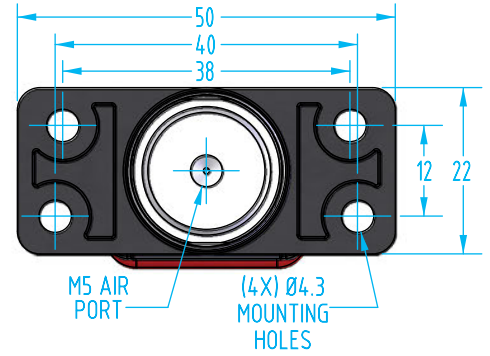
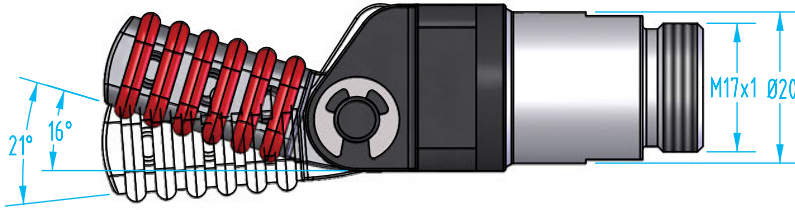
Use Quick#s for easy online ordering.



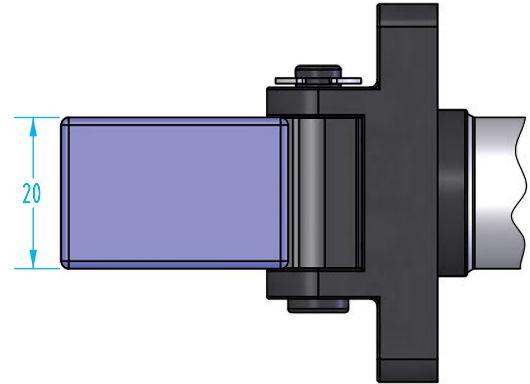
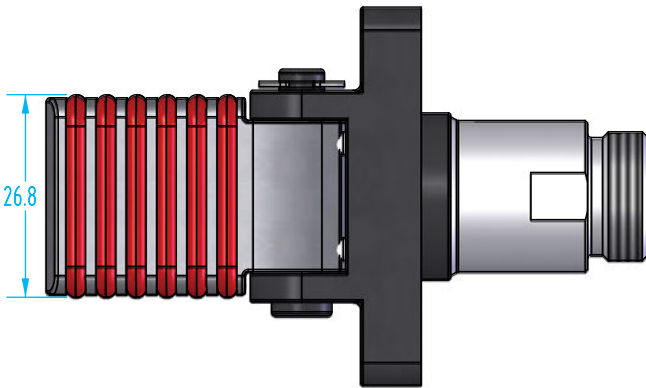
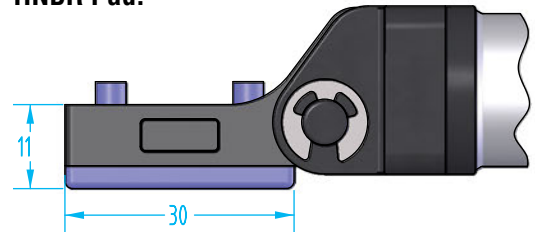
Compact Gripper Fingers / Hybrid – OFP

(Dimensioned drawings shown full scale)

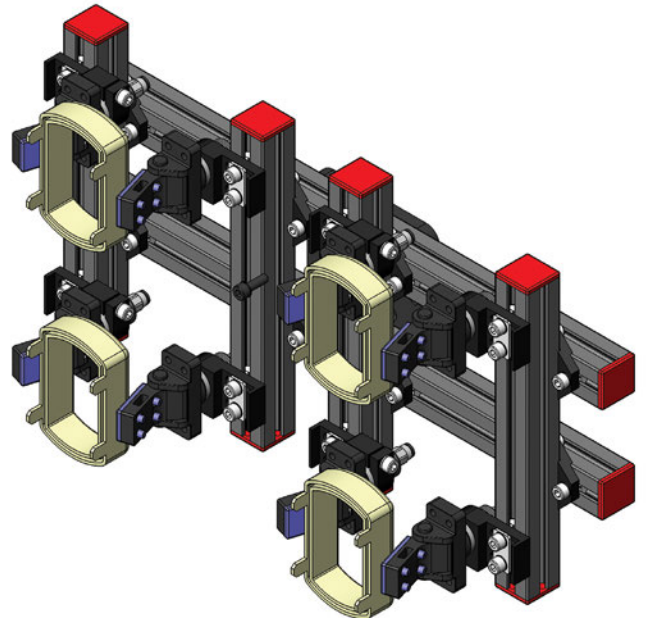
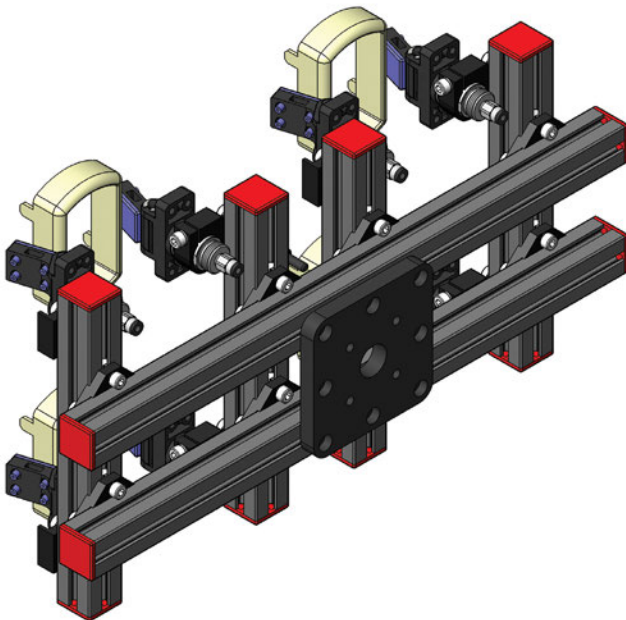
OFP-20...



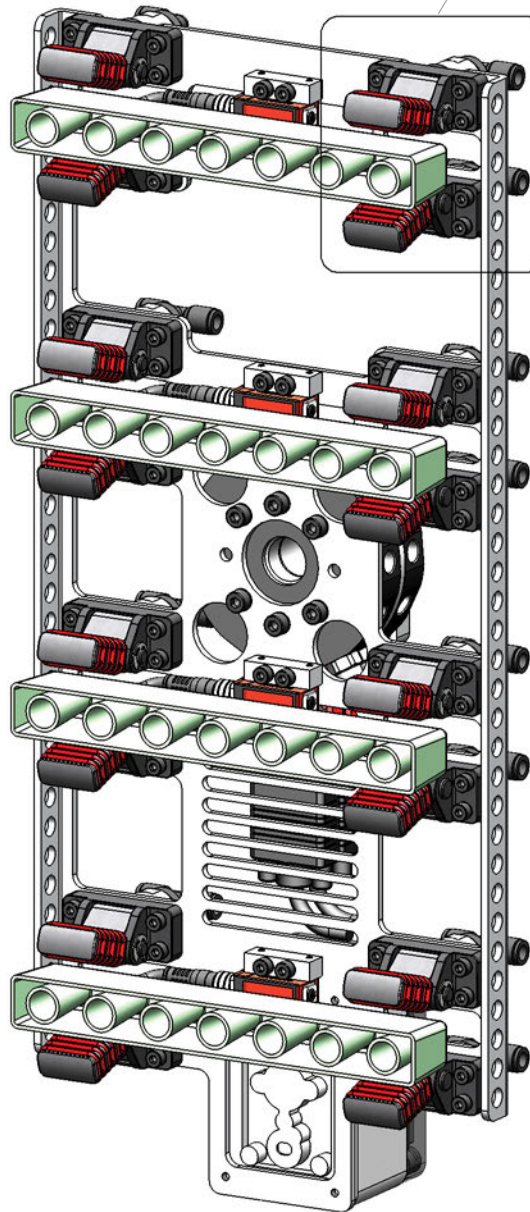
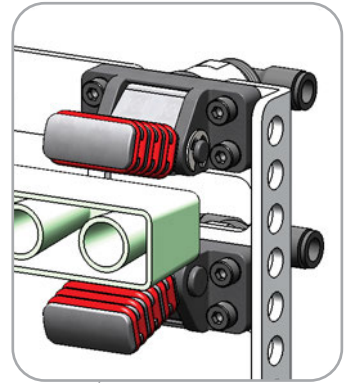
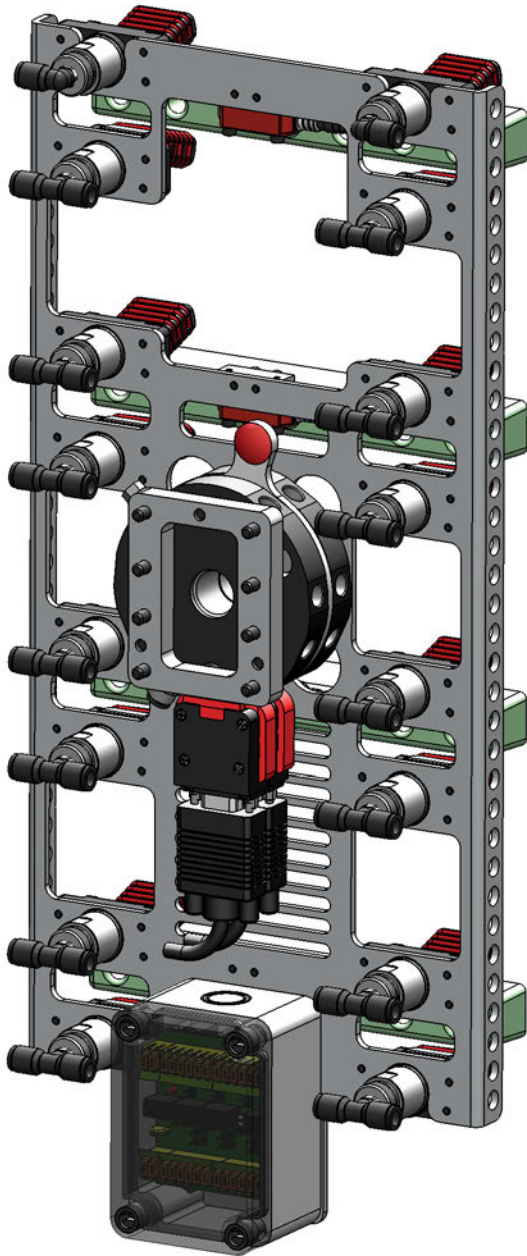
HNBR Pad:

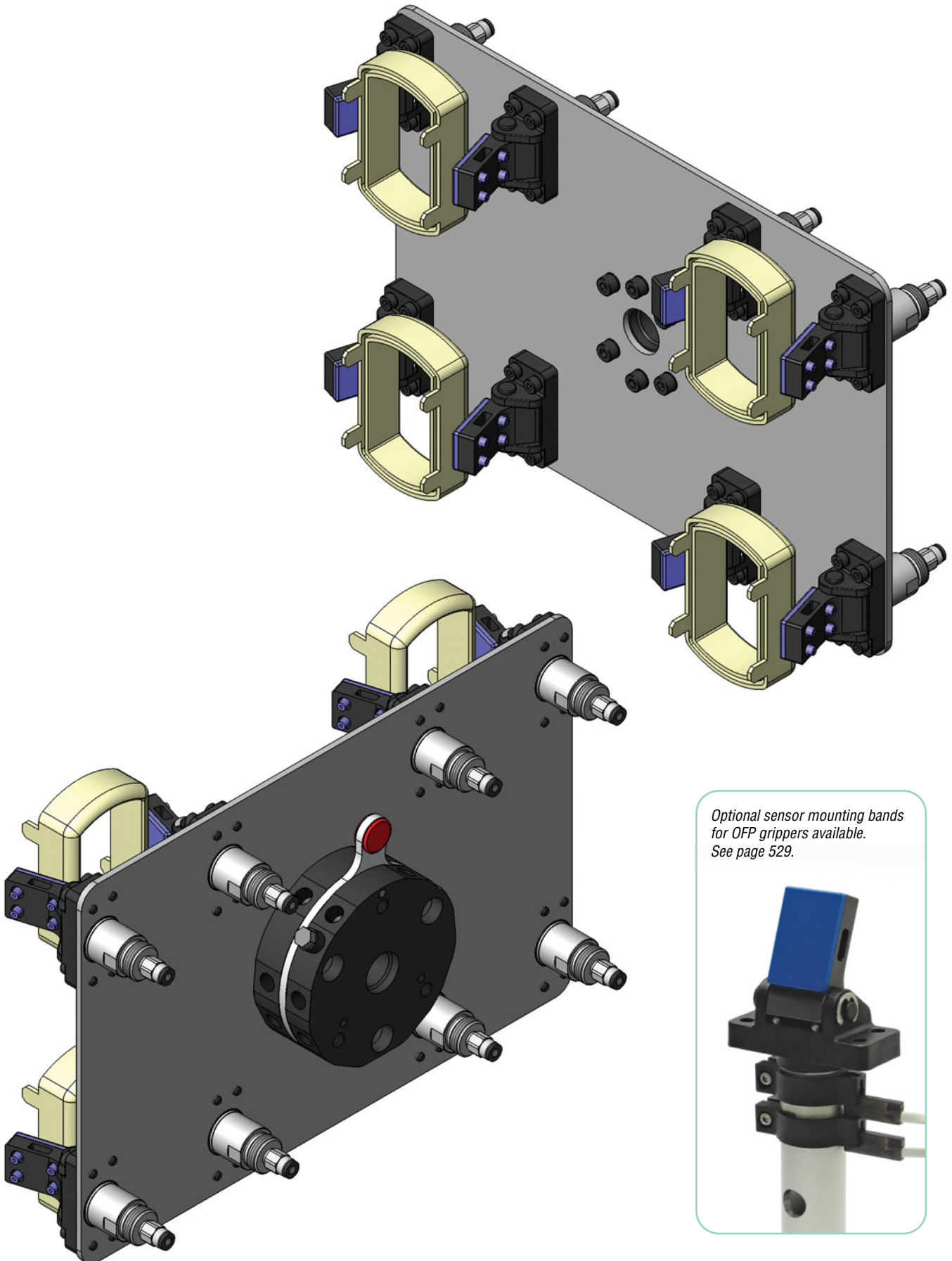


Application Example



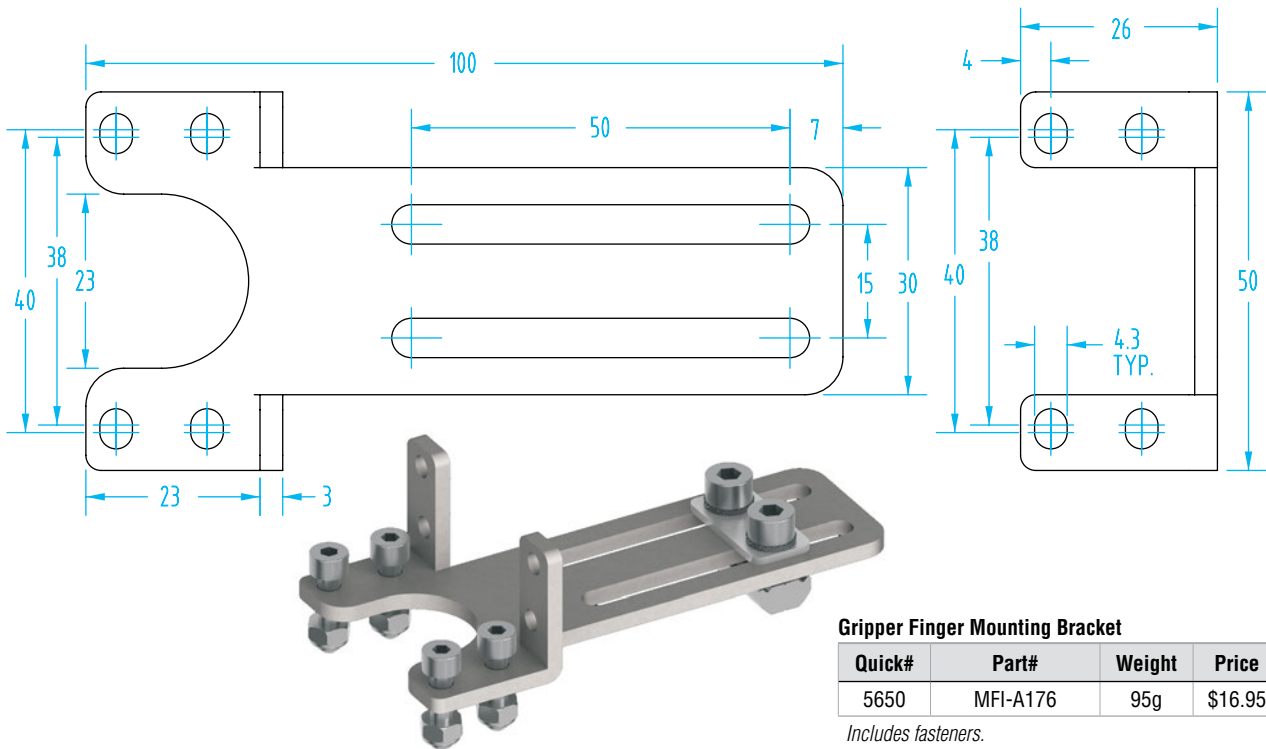
One Finger Angular Grippers – OFP



One Finger Angular Grippers – OFP

Gripper Finger Mounting Bracket

(Dimensioned drawing shown full scale)



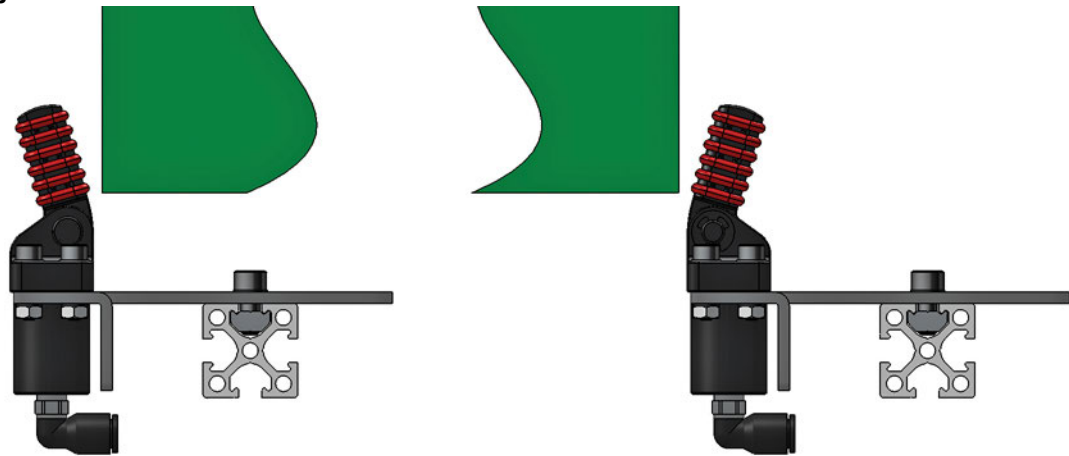
Gripper Finger Mounting Bracket

Quick#	Part#	Weight	Price
5650	MFI-A176	95g	\$16.95

Includes fasteners.

Application Example

Horizontal Mounting:

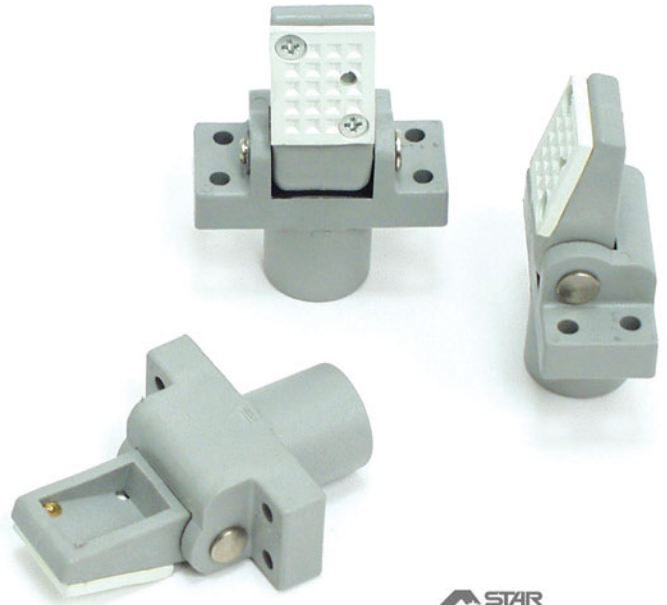
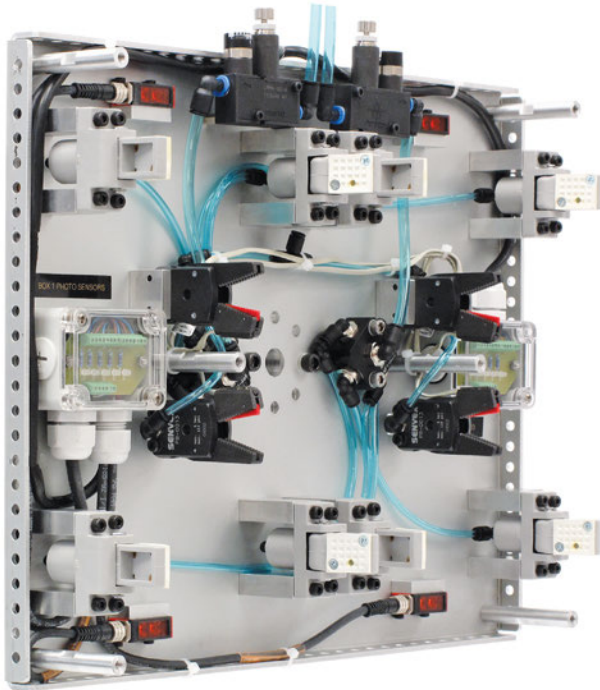


Vertical Mounting:



Plastic Gripper Fingers

(Dimensioned drawings shown full scale)

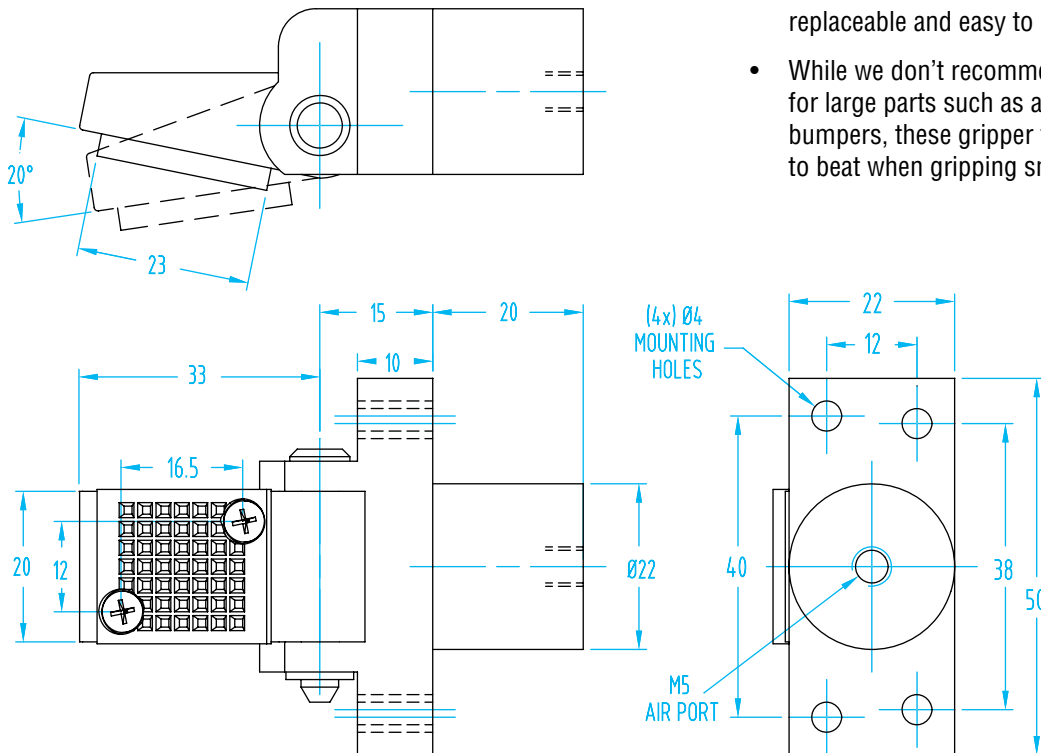


Lightweight Gripper Fingers

Quick#	Part#	Price	Weight	Push force	Air pressure
1711	GSG-MCY-HS	\$38.94	45g	18 lbf	71psi
1712	GSG-MCY-RP	\$0.84	Replacement Silicone Grip Pad		
1829	GSC-VMB-MCHS	\$11.96	MCHS Star Gripper Finger Bracket*		

*Note: see EMI website for dimensions of bracket

- These plastic bodied gripper fingers have a grip force comparable to the 20mm aluminum gripper fingers.
- Their lightweight and low-cost make them the ideal choice for multi-cavity EOATs, where multiple gripper fingers are needed. The silicone grip pads are replaceable and easy to install.
- While we don't recommend using them for large parts such as automobile bumpers, these gripper fingers are hard to beat when gripping smaller parts.



Pneumatic Tilt Unit for Small EOATs – OFN

- One-piece gripper body design.
- 90° actuation
- Single acting #7407 & 5320 & New Double acting tilt units #7451 & #7528.
- Single acting versions lift by compressed air, spring reset
- Double acting versions do not have a spring return.
- See Sensor Reference Guide on page 1006 for full list of compatible sensors.

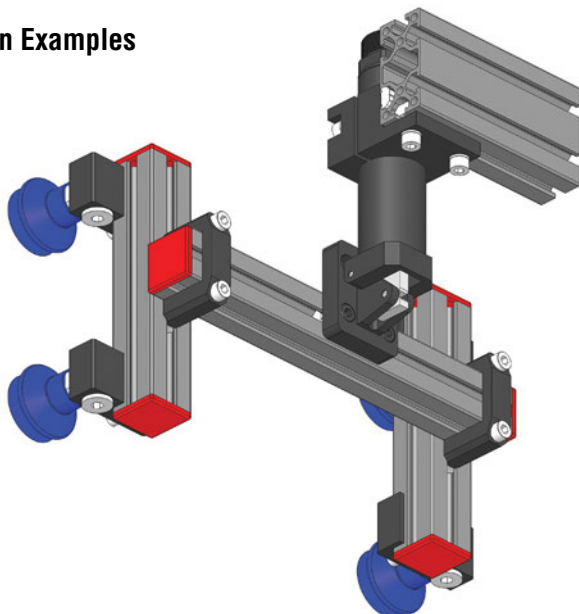


NEW

NEW

Quick#	7407	7528	5320	7451
Part#	OFN20-90	OFN20-90SD	OFN30-90	OFN30-90SD
Price	\$164.00	\$249.00	\$249.00	\$279.00
Function	Single Acting	Double Acting	Single Acting	Double Acting
Air port (thread size)	M5	M3 (see barb fitting suggestion on page 503)	M5	M5
Weight	75g	88g	210g	260g
Pressure range	36–116 psi	22–116 psi	36–116 psi	22–116 psi
Tilt angle	90°			
Lift torque at 87 psi (Mu)	6.19 in-lbf	7.08 in-lbf	26.5 in-lbf	26.5 in-lbf
Drop torque at 87 psi (Md)	1.32 in-lbf	3.54 in-lbf	2.65 in-lbf	13.3 in-lbf

Application Examples



Fittings Available on page 1043

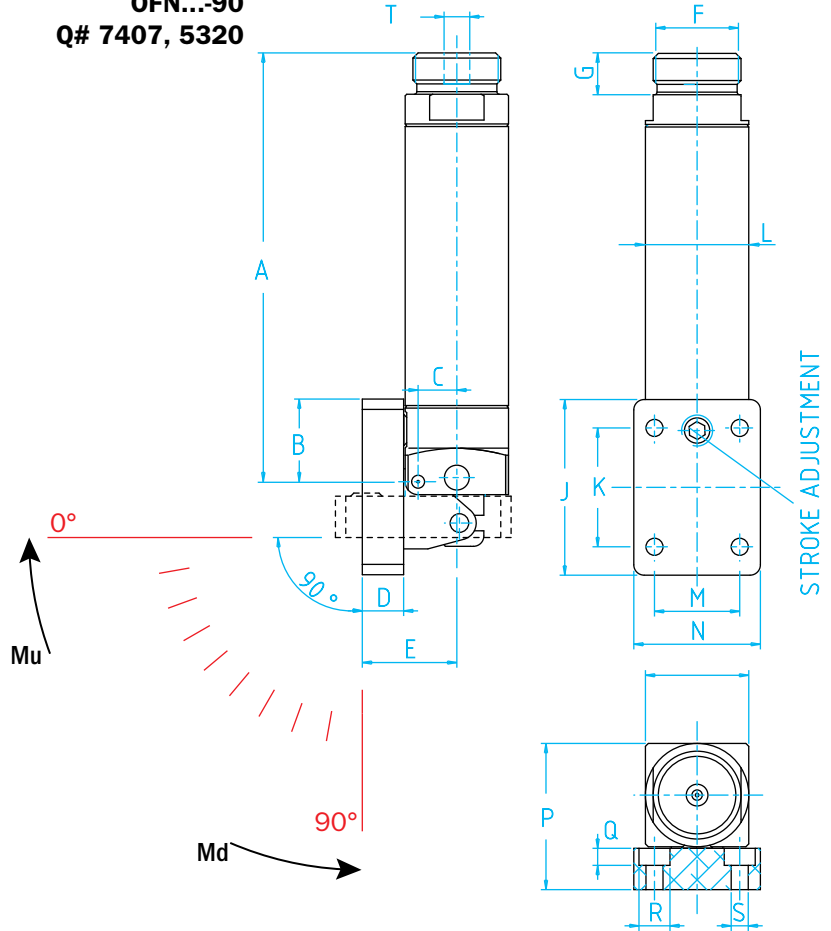


Pneumatic Tilt Unit – OFN

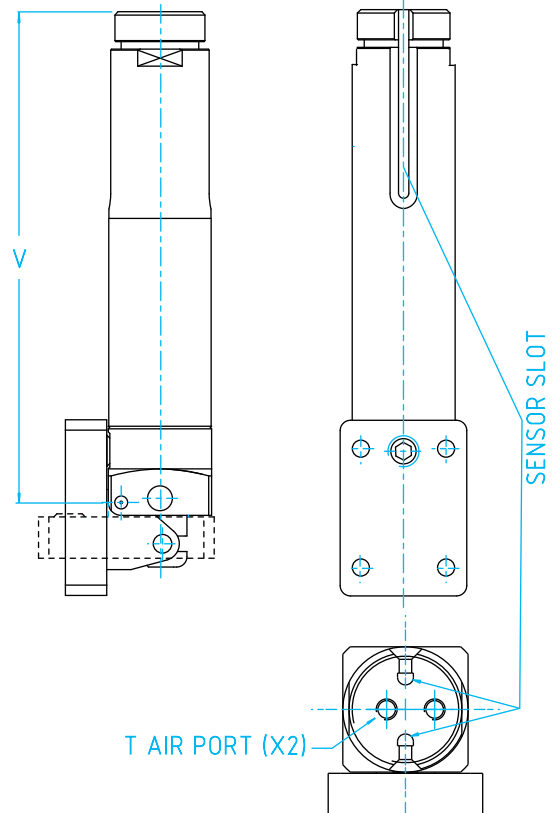


Optional sensor mounting bands for OFN grippers available. See page 529.

OFN...-90
Q# 7407, 5320



OFN...-90SD
Q# 7528, 7451

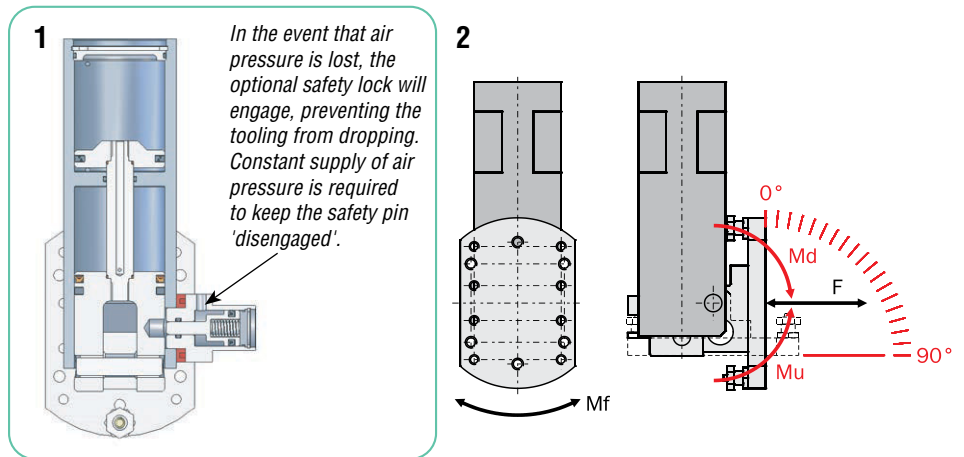


	7407	7528	5320	7451
A	83	-	119	-
B	16		18.5	
C	7.5		11	
D	8		10	
E	18.3		25.3	
F	M17x1		M27x1	
G	8		11	
J	34		46	
K	23		25	
L	20		30	
M	16.5		25	
N	24.5		37	
O	20		30	
P	28.3		40.3	
Q	3.3		5.3	
R	6		10	
S	3.3		5.3	
T	M5	M3	M5	M5
V	-	103.5	-	144

Note: The Q#7528 has two M3 air ports spaced close enough that push-to-connect fittings can not be used, use barbed fitting Quick# 256.

Pneumatic Tilt Unit – RBT

- Double acting.
- 90° actuation (2).
- Two rubber adjustable end strokes included.
- High lifting torque.
- Safety lock included with all except RBT30 (1).
- See Sensor Reference Guide on page 1006 for full list of compatible sensors.
- New flow regulator with 2 stages and buffer recommended for RBT units, available on page 1016.



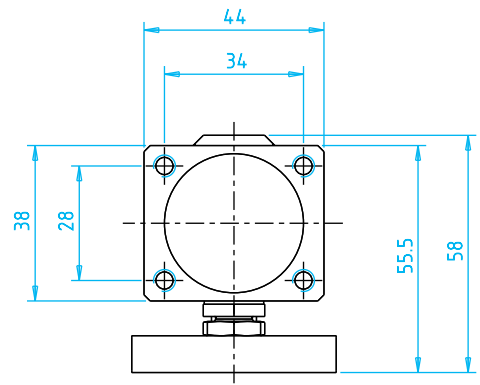
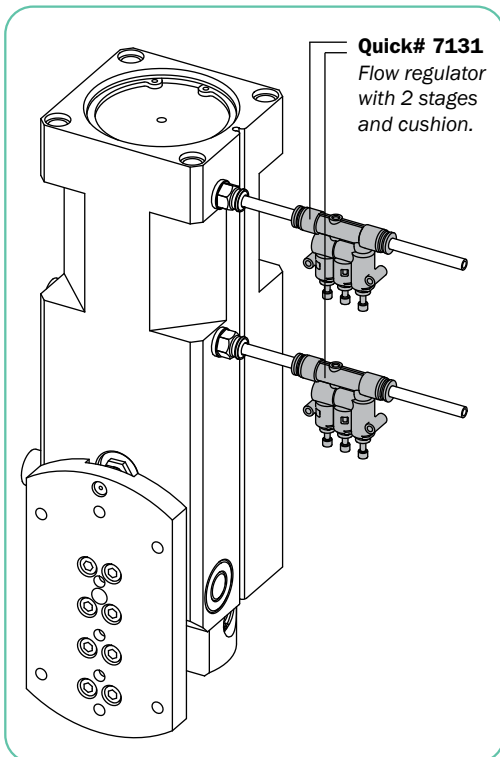
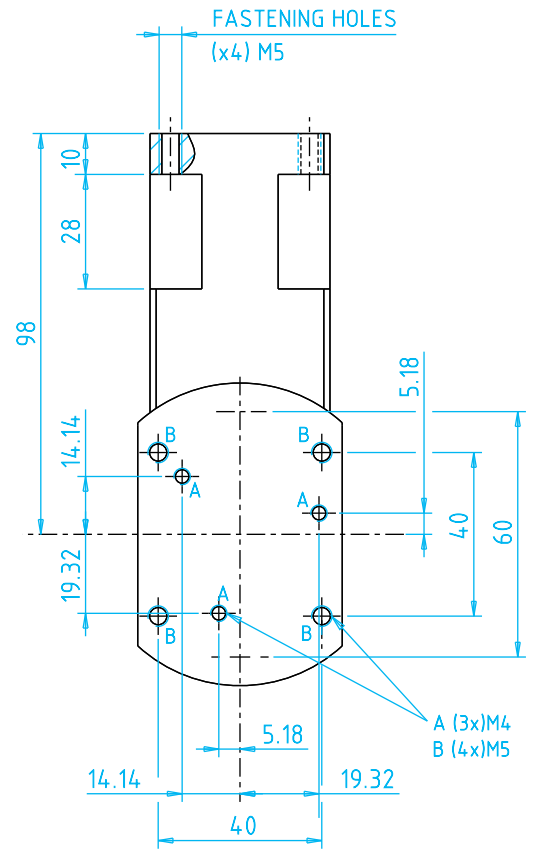
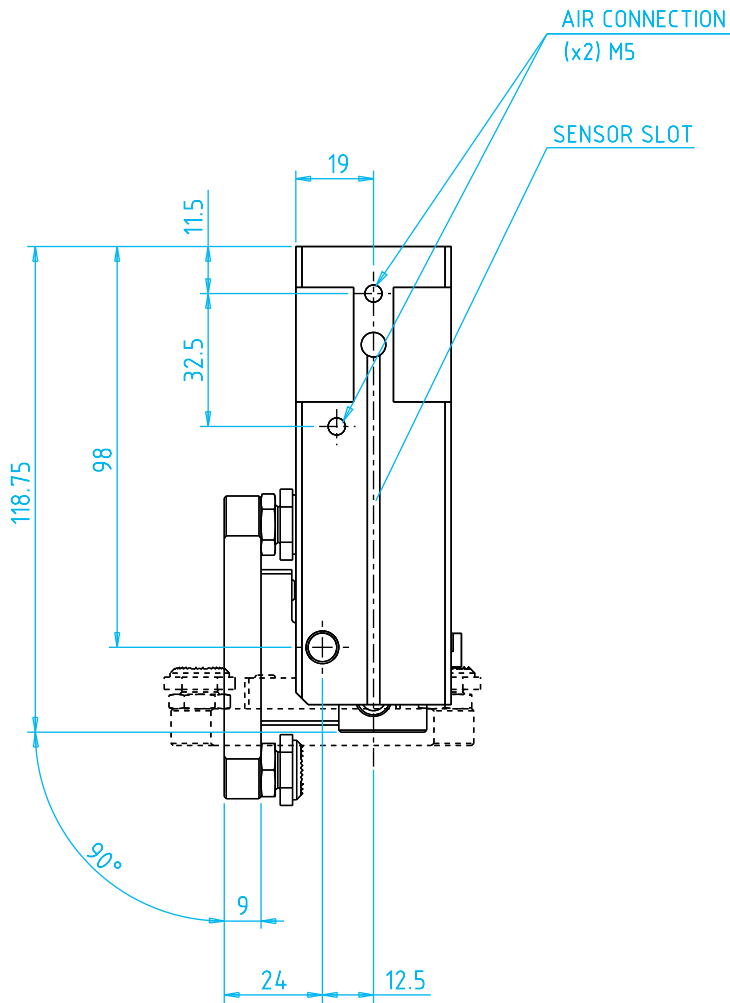
Quick#	6409	6398	6407	6408	6410
Part#	RBT30	RBT40	RBT50	RBT63	RBT80
Price	\$474.00	\$692.00	\$783.00	\$891.00	\$1,138.00
Weight	520g	1050g	1600g	2600g	6500g
Pressure range	36–116 psi				
Unlock pressure	-	> 50 psi			
Tilt angle	90°				
End stroke adjustment	±2°				
Lift torque at 87 psi (Mu)	>79 in-lbf	>212 in-lbf	>400 in-lbf	>700 in-lbf	>1540 in-lbf
Drop torque at 87 psi (Md)	>35 in-lbf	>97 in-lbf	> 194 in-lbf	> 371 in-lbf	>743 in-lbf
Allowed load (F)	11 lbf	22 lbf	45 lbf	67 lbf	134 lbf
Allowed movement (Mf)	>26 in-lbf	61 in-lbf	106 in-lbf	265 in-lbf	>442 in-lbf

Use Quick#s for easy online ordering.

Pneumatic Tilt Unit – RBT

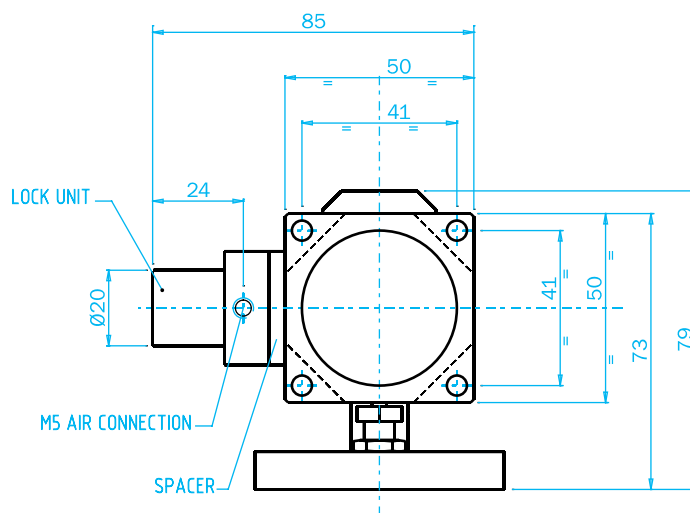
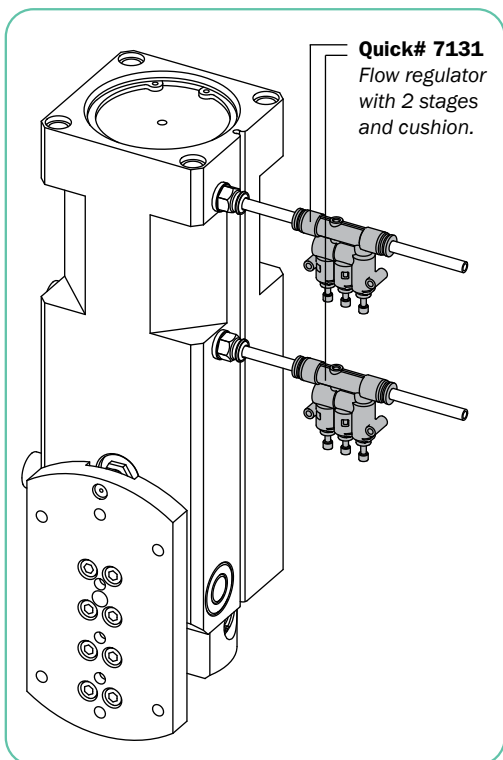
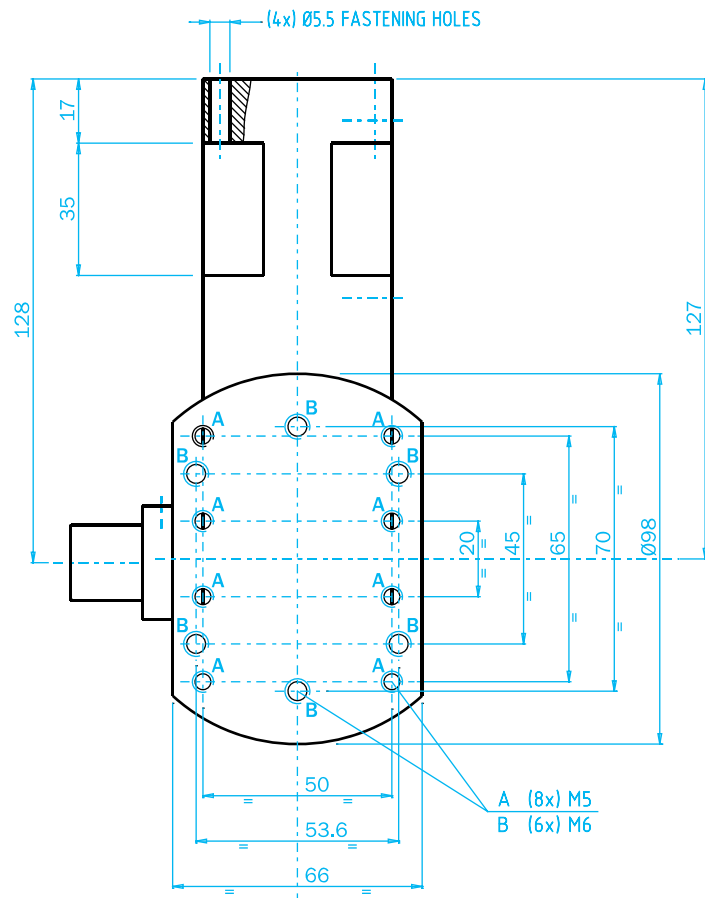
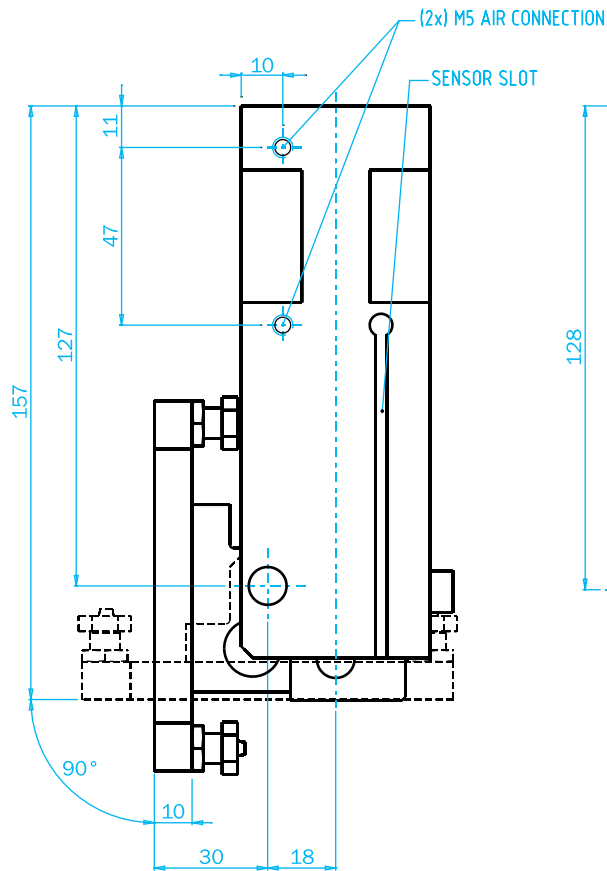
(Dimensioned drawings at 50% scale)

RBT-30, #6409



Pneumatic Tilt Unit – RBT

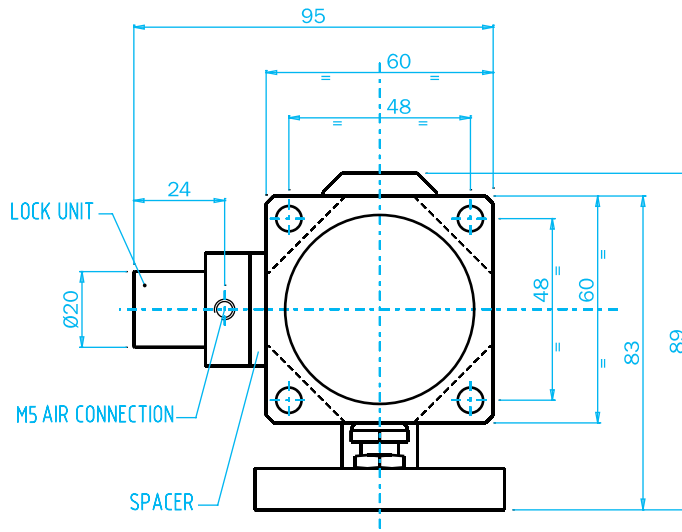
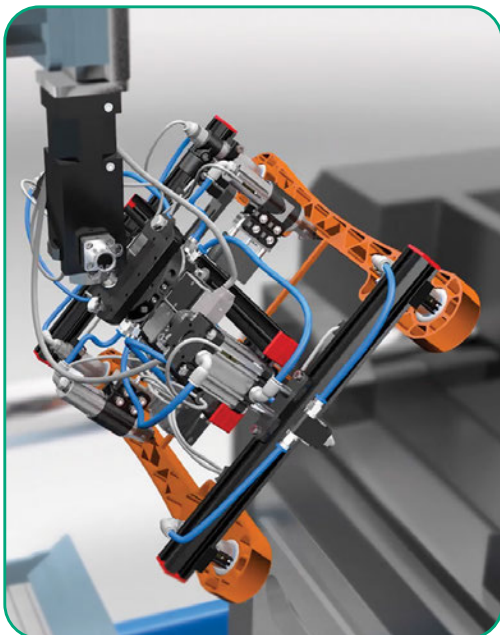
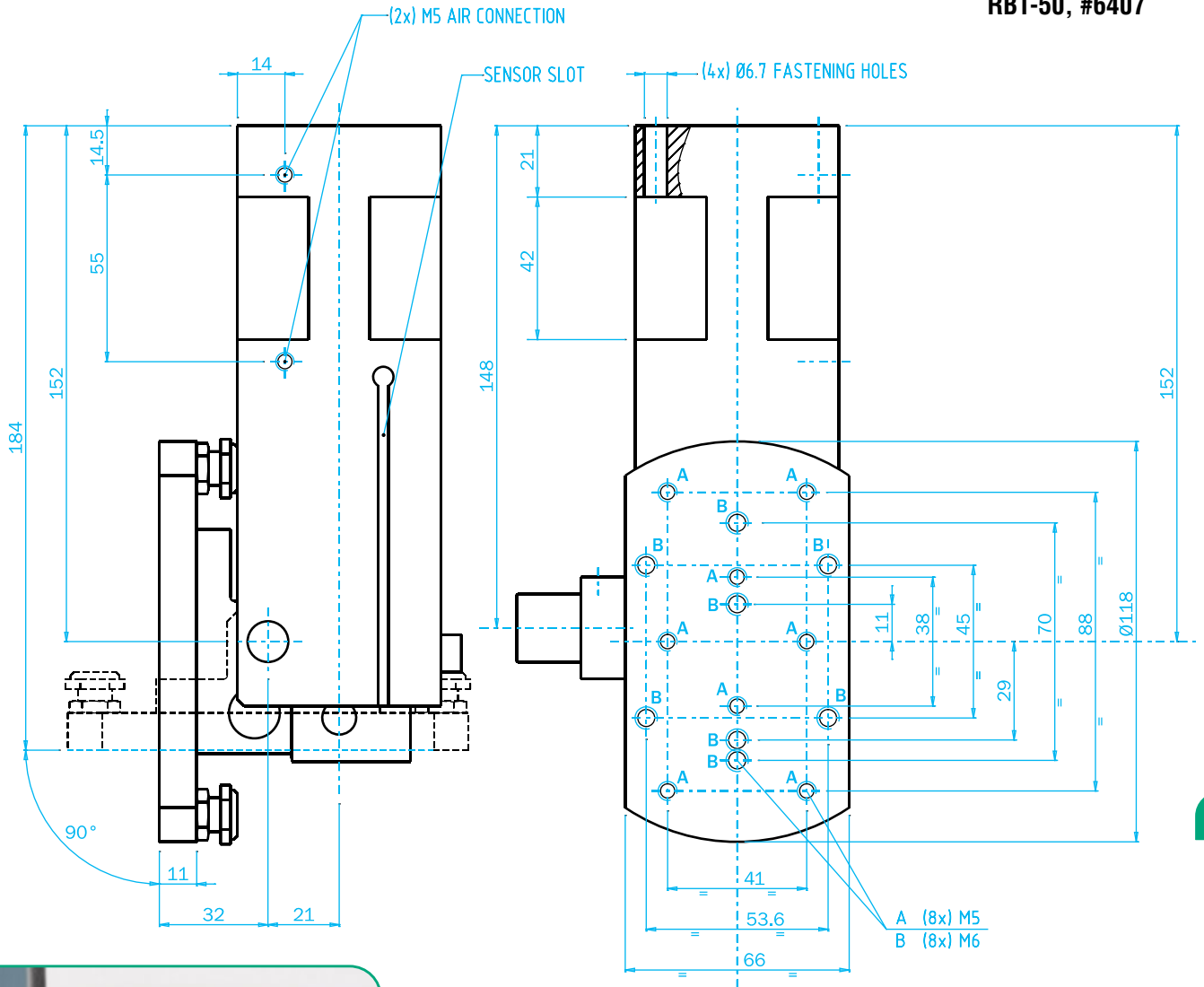
RBT-40, #6398



Pneumatic Tilt Unit – RBT

(Dimensioned drawings at 50% scale)

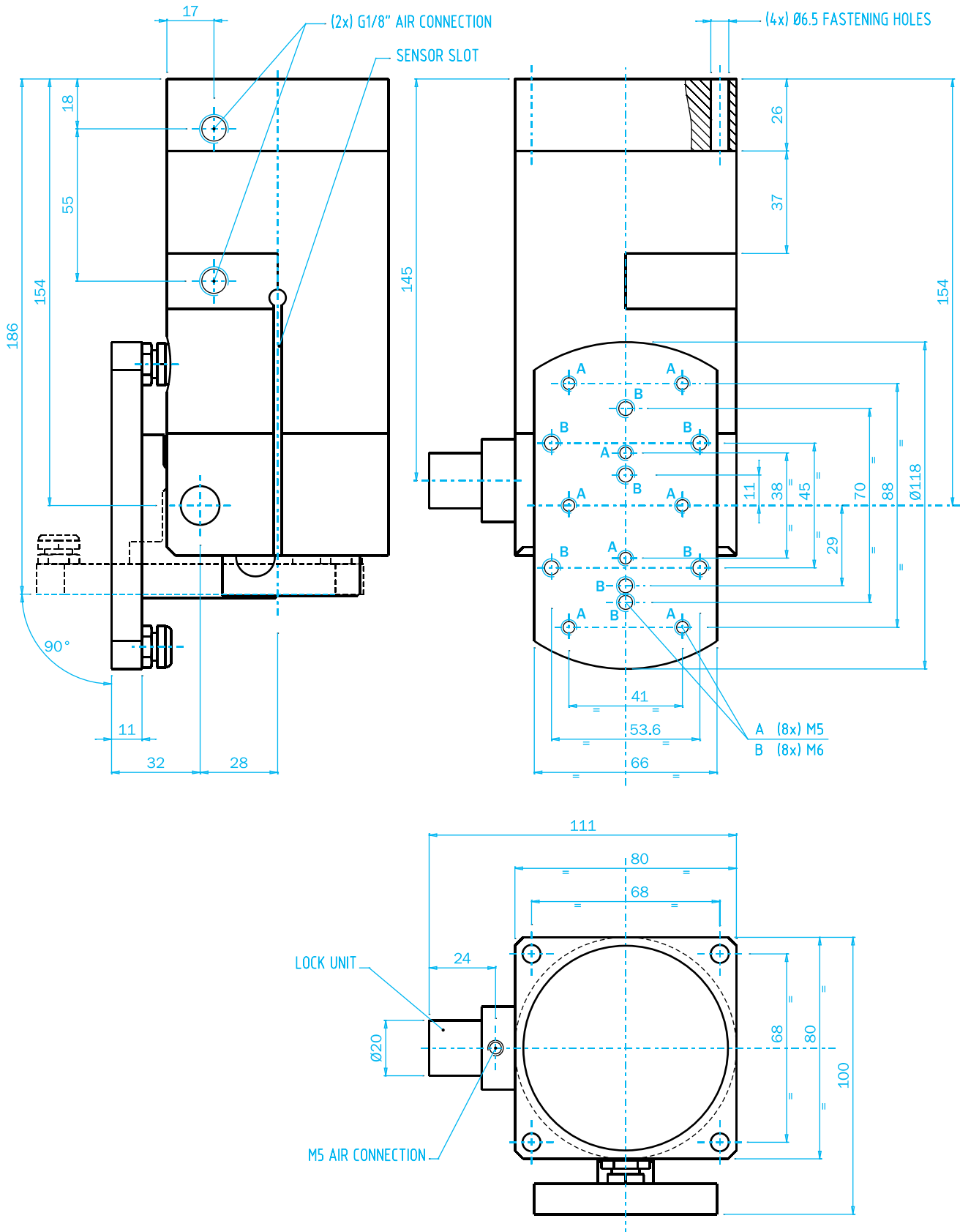
RBT-50, #6407



Pneumatic Tilt Unit – RBT

(Dimensioned drawings shown at 50%)

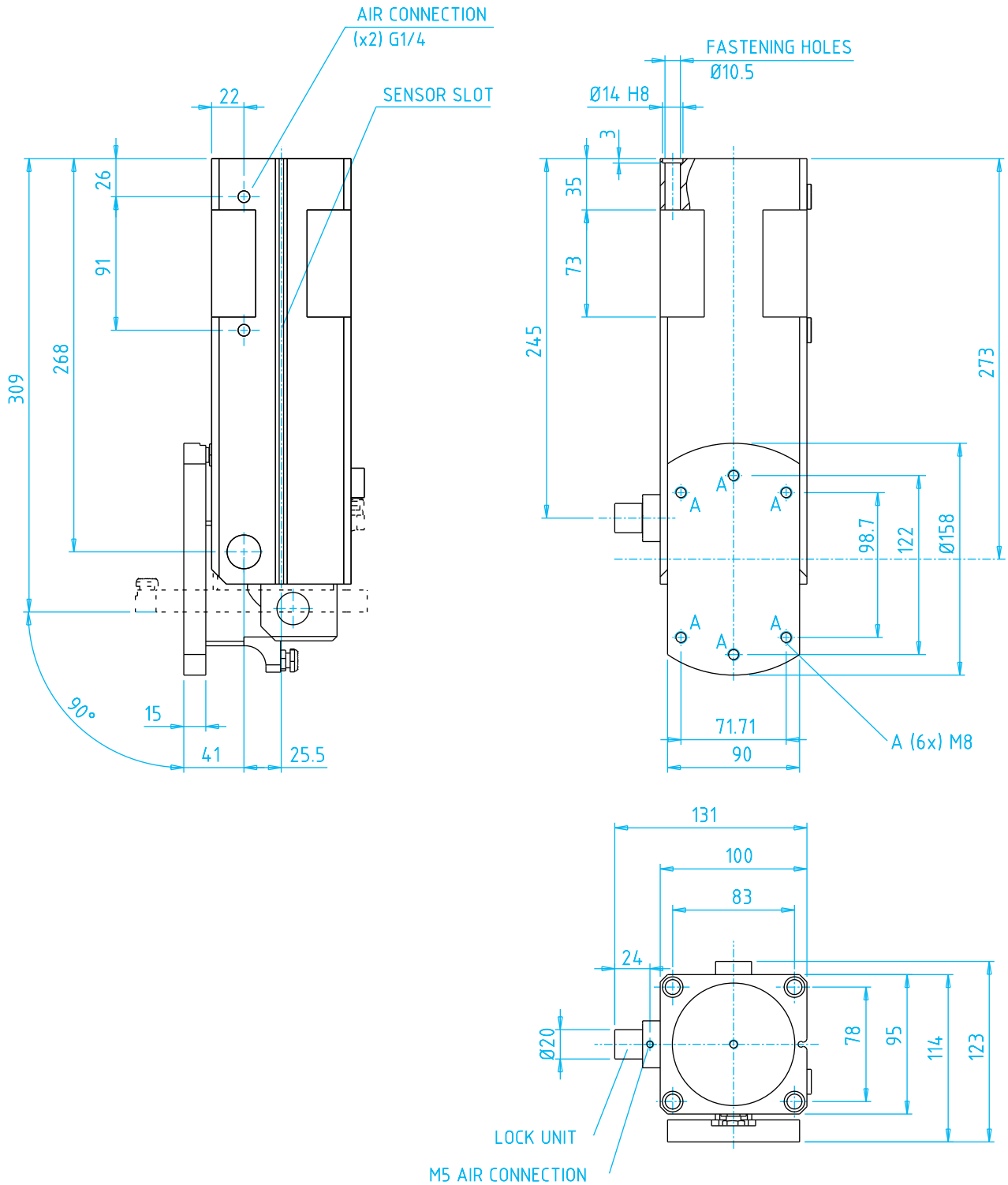
RBT-63, #6408



Pneumatic Tilt Unit – RBT

(Dimensioned drawings reduced to fit)

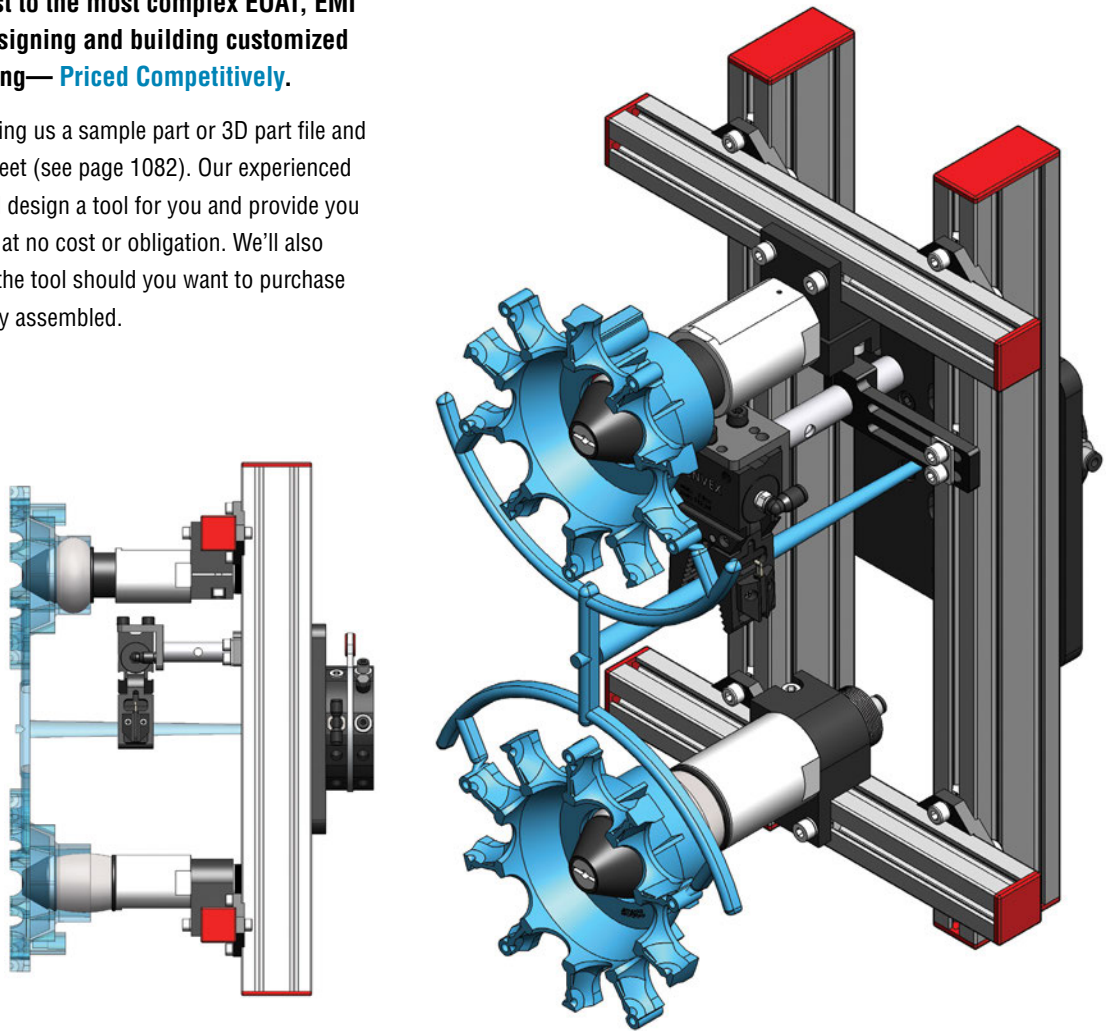
RBT-80, #6410



EOAT Design and Build Service

From the simplest to the most complex EOAT, EMI specializes in designing and building customized End-of-Arm-Tooling— **Priced Competitively.**

Get started by sending us a sample part or 3D part file and a completed datasheet (see page 1082). Our experienced EOAT engineers will design a tool for you and provide you 3D CAD renderings at no cost or obligation. We'll also provide pricing for the tool should you want to purchase the EOAT completely assembled.



Expand
YOUR COBOT CAPABILITIES
 with **EMI**



Specialty Gripper Overview

Mini Grippers p.550



Electric Grippers p.596

These electric grippers are easy to set up and operate and use electricity from your PLC instead of compressed air. Both 2- and 3-jaw models use 24 volt DC and an M8x1, 3-pole standard connection.

Mini Gripper Fingers p.554



Mini Gripper p.556



ID Micro Grippers p.564



ID Expansion Grippers p.566



ID / OD Air Hands p.578



ID Grippers p.580



Dock & Lock Grippers p.560



Needle Gripper for Fabric p.584



Mini Needle Grippers p.586



>ASS< Needle Grippers p.588



Magnetic Grippers p.592



Magnetic Grippers p.590



Mini Angular Gripper – TFA

- Single acting with spring opening.
- Self-centering.
- Finger blanks available.
- Optional suspension kit.
- Easily mounted on EOAT using standard Ø10mm, Ø14mm, or Ø20mm clamps.
- Optional sensors available, see page 553.



Quick#	6694	6695	6696	6697
Part#	TFA10-25	TFA14-25	TFA20-25	TFA20-25S
Price	\$120.00	\$125.00	\$132.00	\$176.00
Pressure range	36–116psi			
Stroke	20° to -5°			
Total closing force at 87 psi	7.5 lbf at 10mm	14.5 lbf at 15mm	38.5 lbf at 25mm	38.5 lbf at 25mm
Weight	12g	30g	95g	120g

Use Quick#s for easy online ordering.

Suspension Mounting



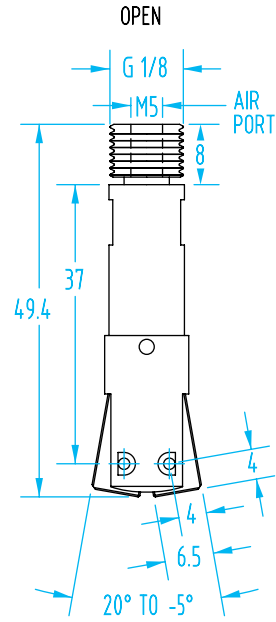
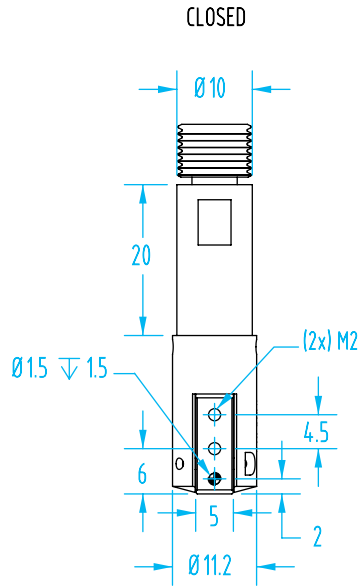
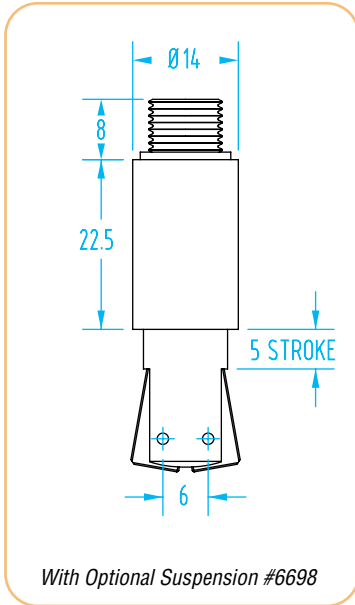
Suspension Kits

Quick#	Part#	For Gripper	Stroke	Price	Weight
6698	TFA10-SP05	TFA10	5mm	\$25.00	10g
6699	TFA14-SP05	TFA14	5mm	\$28.00	35g
6700	TFA20-SP10	TFA20	10mm	\$32.00	85g

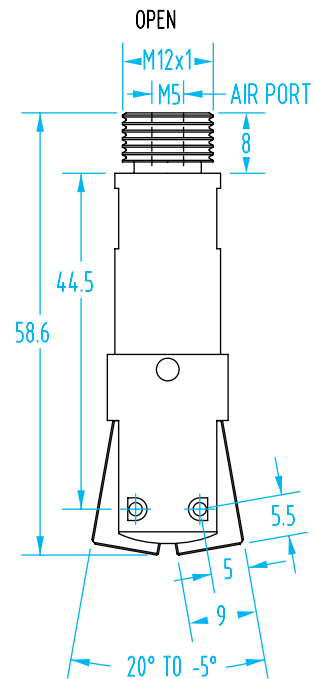
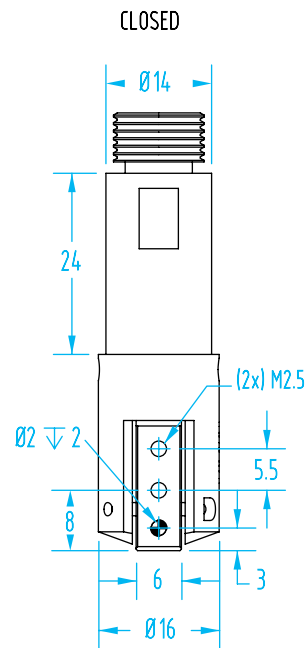
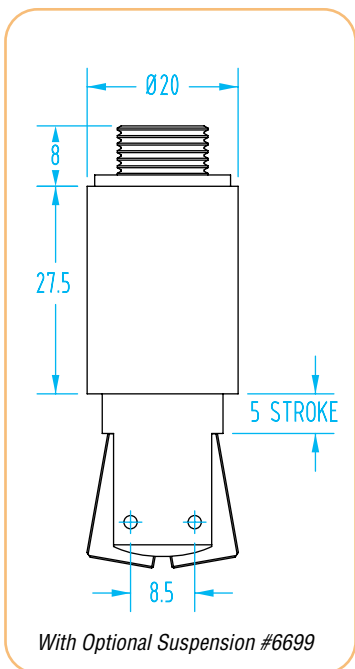
Mini Angular Gripper – TFA

(Dimensioned drawings shown full scale)

TFA10-25, #6694



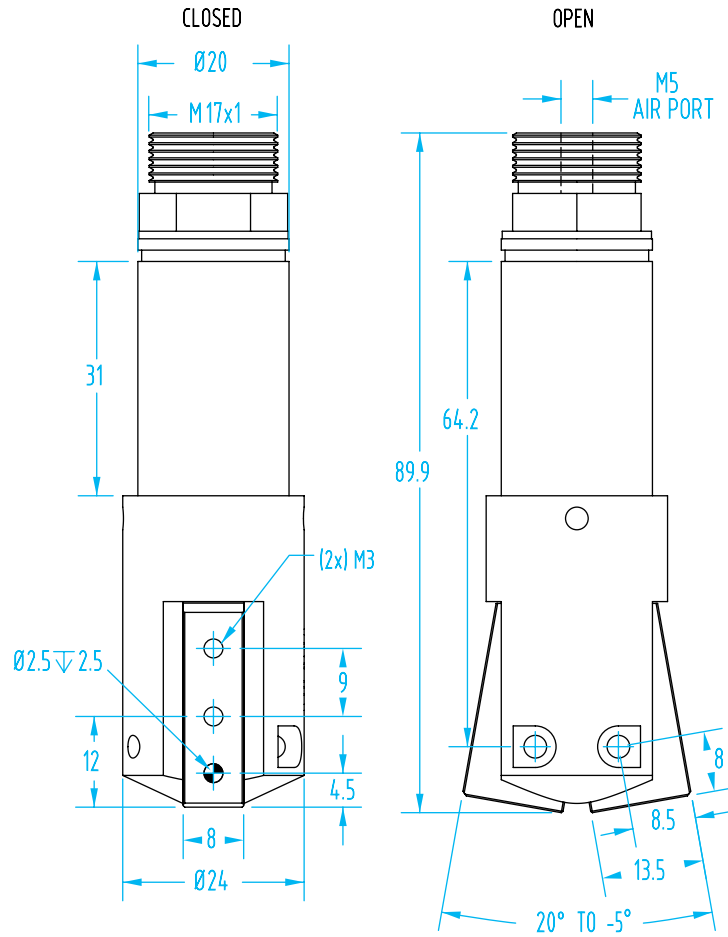
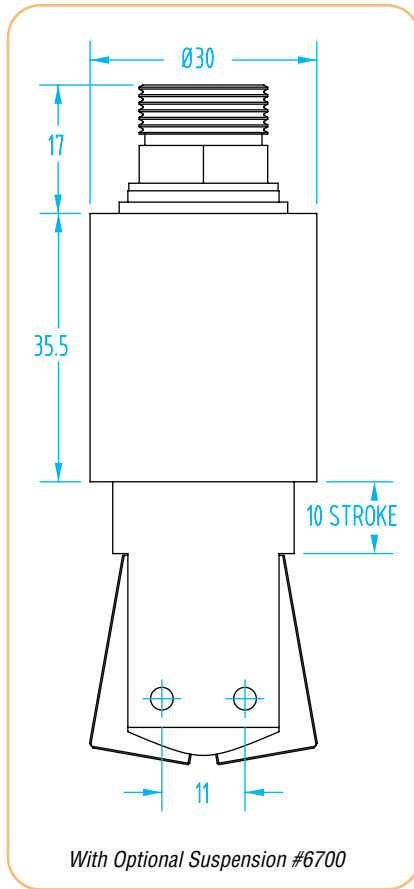
TFA14-25, #6695



Mini Angular Gripper – TFA

TFA20-25, #6696

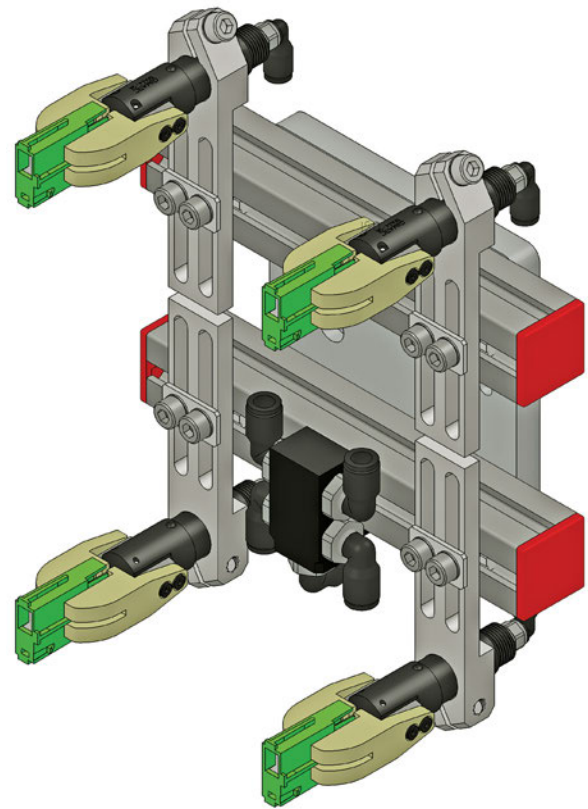
(Dimensioned drawings shown full scale)



Application Examples



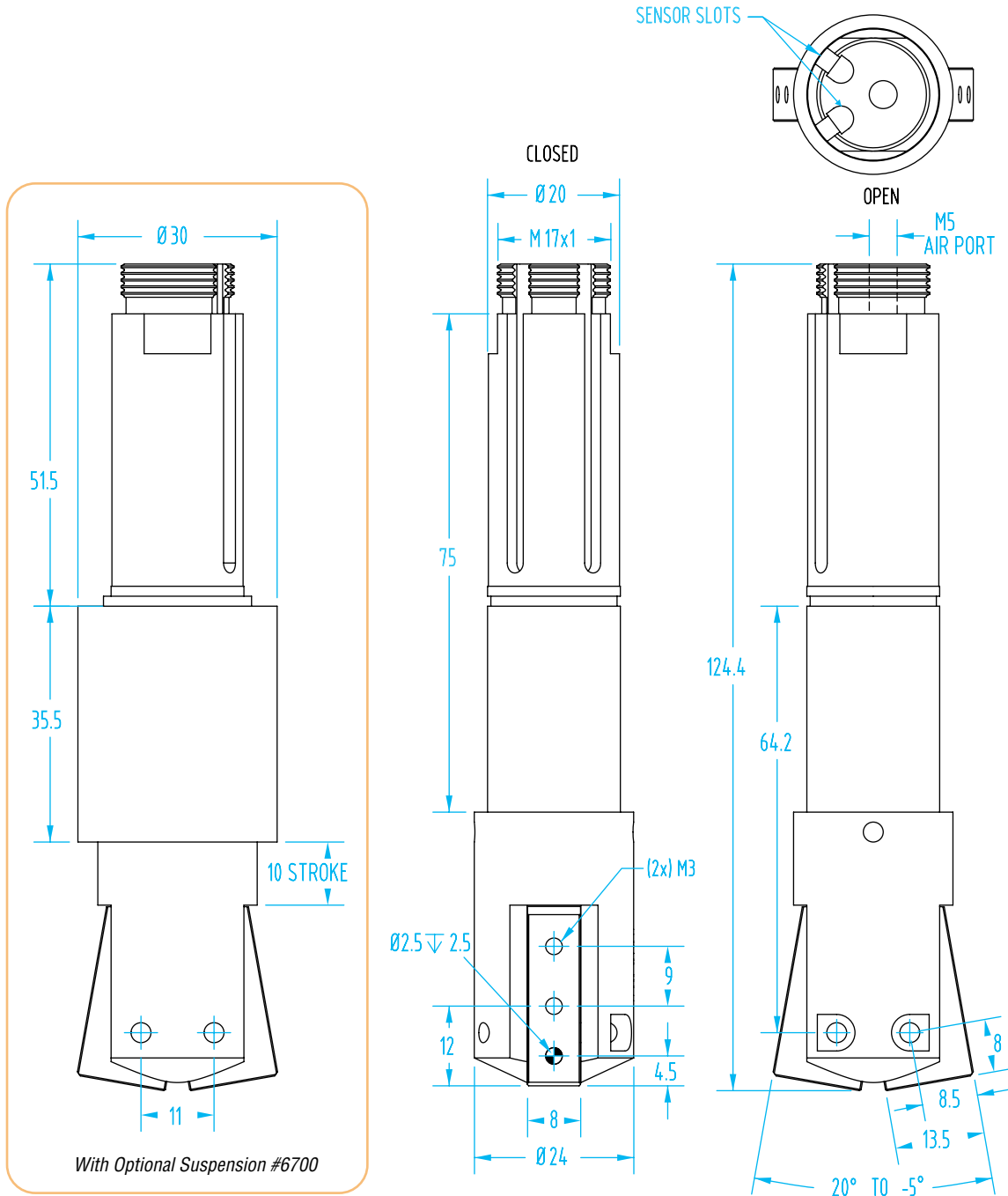
Mounts on standard Ø10mm, Ø14mm, and Ø20mm clamps



Mini Angular Gripper – TFA

(Dimensioned drawings shown full scale)

TFA20-25S, #6697



Sensors for TFA20-25S Angular Grippers (sold separately)

Quick#	Part#	Price	Signal	Connection
1882	SS4N225G	\$27.20	PNP	3-wire with lead, 2.5m long
6282	SS3N203G	\$31.16	PNP	3-wire with M8 male connector, 0.3m long
1883	SS4M225G	\$27.20	NPN	3-wire with lead, 2.5m long
1884	SS3M203G	\$31.16	NPN	3-wire with M8 male connector, 0.3m long
6278	SN4N225G	\$27.20	PNP	3-wire with lead, 2.5m long
6357	SN4M225G	\$27.20	NPN	3-wire with lead, 2.5m long
6277	SN3N203G	\$31.16	PNP	3-wire with M8 male connector, 0.3m long
6356	SN3M203G	\$31.16	NPN	3-wire with M8 male connector, 0.3m long

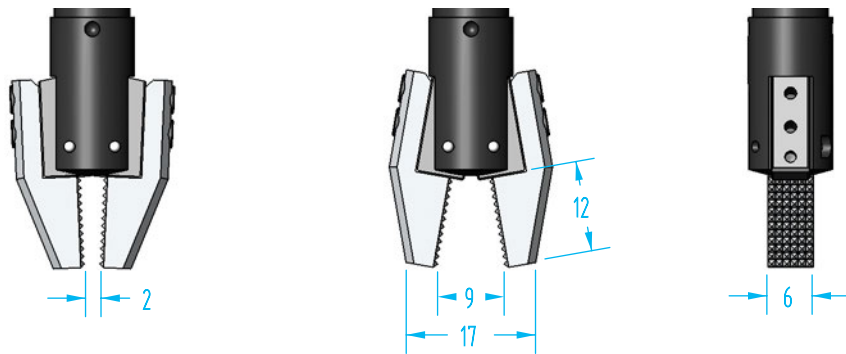
Note: M8 Extension cables Quick#'s 2582 & 2583 available on page 987.
See Sensor Reference Guide on page 1009 for full list of compatible sensors.

TFA Sprue Fingers

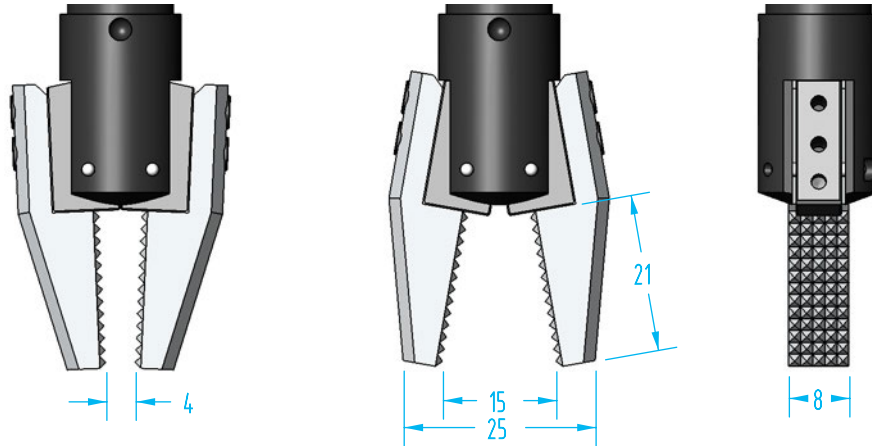
(Dimensioned drawings shown full scale)



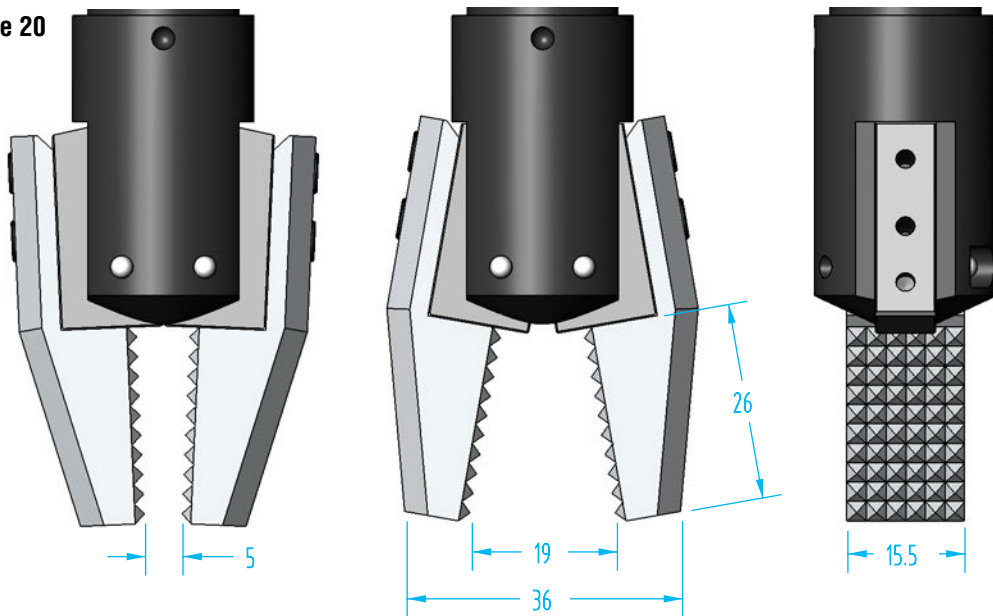
Size 10



Size 14



Size 20



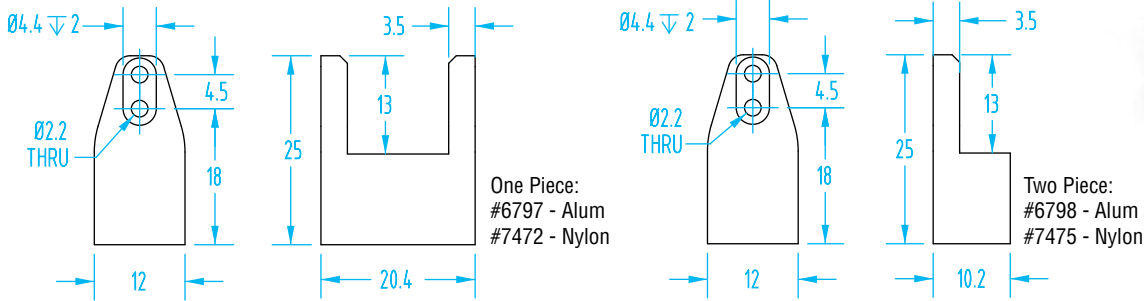
Sprue Fingers for TFA Grippers (priced per pair)

Quick#	6740	6741	6742
Part#	TFA10-SF	TFA14-SF	TFA20-SF
For Gripper:	TFA10	TFA14	TFA20
Price (per pair)	\$32.00	\$35.00	\$38.00
Applicable sprue	Ø3-6mm	Ø6-9mm	Ø7-14mm

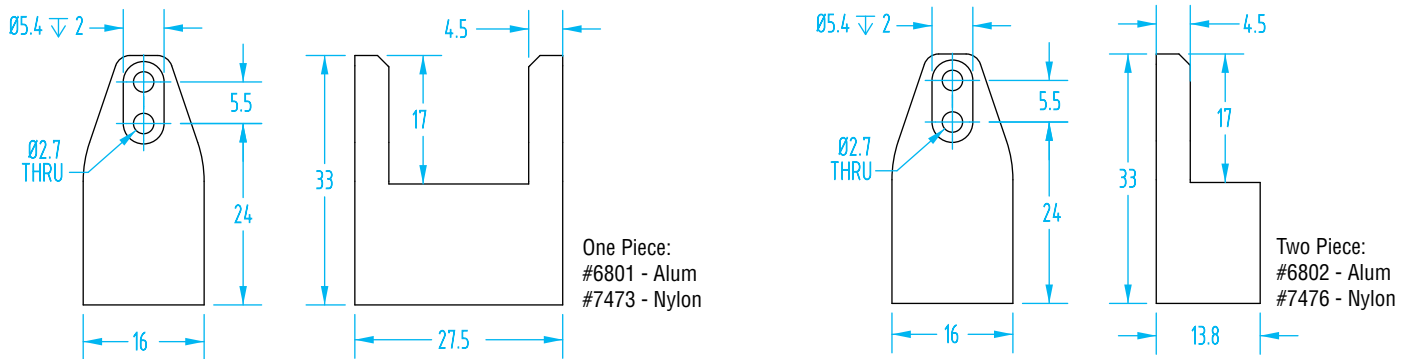
TFA Finger Blanks

(Dimensioned drawings shown full scale)

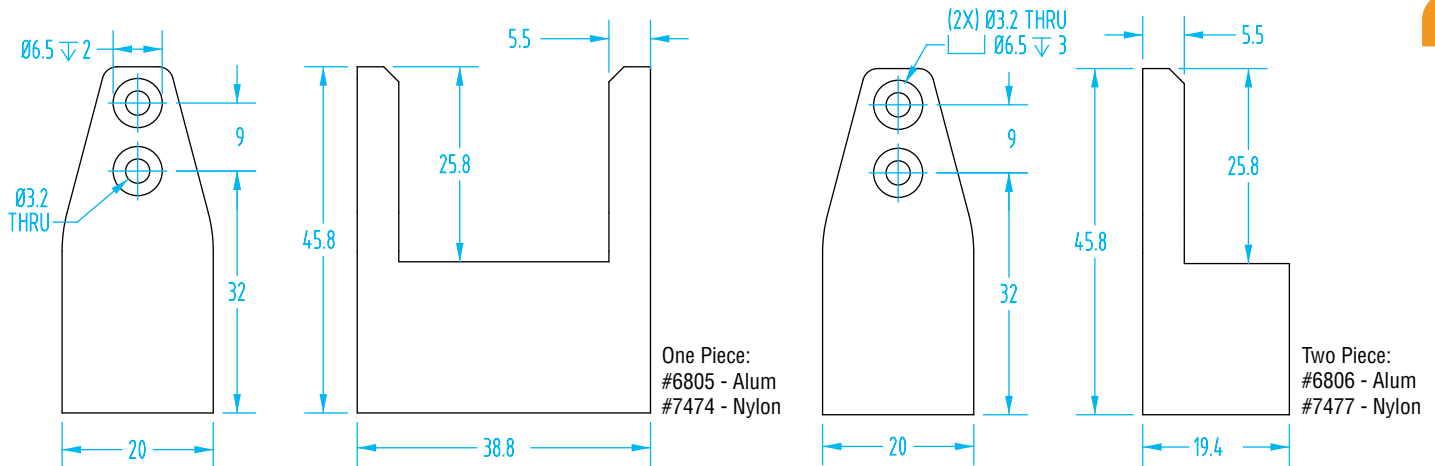
Finger Blanks for Size 10 TFA Gripper



Finger Blanks for Size 14 TFA Gripper



Finger Blanks for Size 20 TFA Gripper



One-Piece Finger Blanks

Quick#	Part#	Material	Size	Weight	Price
6797	TFA10-1A	Aluminum	12x20	10g	\$13.45
7472	TFA10-1N	Nylon	12x20	4g	\$13.45
6801	TFA14-1A	Aluminum	16x28	23g	\$15.60
7473	TFA14-1N	Nylon	16x28	8g	\$15.60
6805	TFA20-1A	Aluminum	20x39	52g	\$17.25
7474	TFA20-1N	Nylon	20x39	19g	\$17.25

All include mounting screws.

Two-Piece Finger Blanks (priced per pair)

Quick#	Part#	Material	Size	Weight	Price
6798	TFA10-2A	Aluminum	12x20	5g each	\$13.95
7475	TFA10-2N	Nylon	12x20	2g each	\$13.95
6802	TFA14-2A	Aluminum	16x28	12g each	\$16.10
7476	TFA14-2N	Nylon	16x28	4.5g each	\$16.10
6806	TFA20-2A	Aluminum	20x39	26g each	\$17.75
7477	TFA20-2N	Nylon	20x39	9.5 each	\$17.75

All include mounting screws.

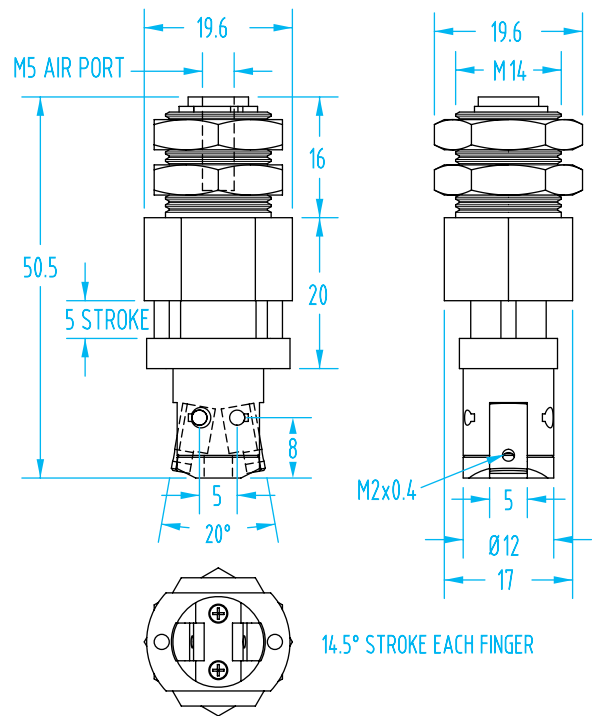
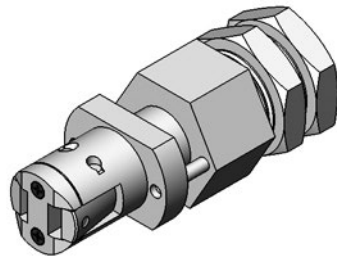
Miniature Grippers – Size 8

- Stainless steel
- Single acting, normally open.
- Finger blanks available.
- Operating pressure range: 29–102 psi.

(Dimensioned drawings shown full scale)



#1834
Size: 08
Panel Mount
Suspension

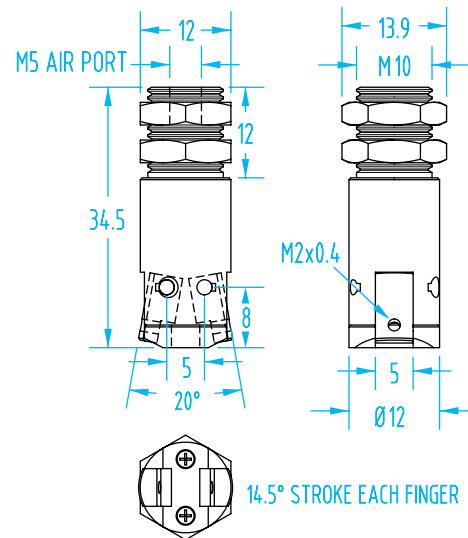
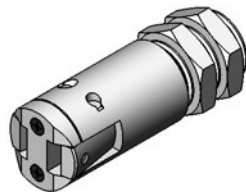


Quick#	Part#	Size	Style	Stroke	Grip Force*	Wt.	Price
1834	GSG-08A-SPMF	8	Panel Mount	5mm	0.71 lbf-in	58g	\$120.00

* Force when compressed air is supplied at 72.5psi.



#1832
Size: 08
Panel Mount

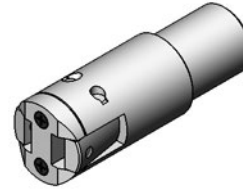
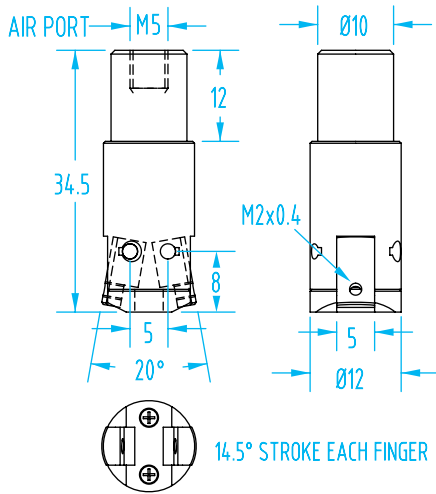


Quick#	Part#	Size	Style	Stroke	Grip Force*	Wt.	Price
1832	GSG-08A-SPM	8	Panel Mount	-	0.71 lbf-in	22g	\$87.00

* Force when compressed air is supplied at 72.5psi.

Miniature Grippers – Size 8

(Dimensioned drawings shown full scale)

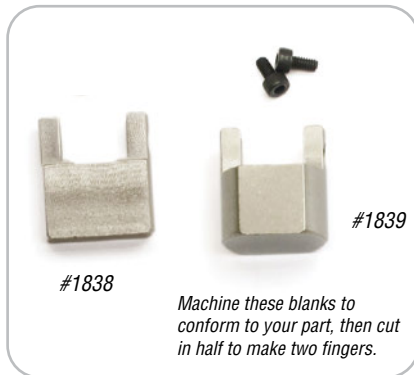


#1831
Size: 08
Shaft Style

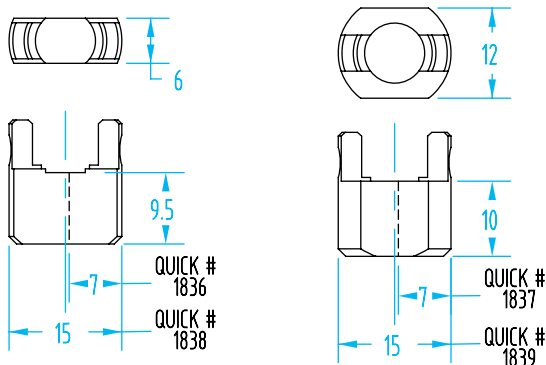
Quick#	Part#	Size	Style	Stroke	Grip Force*	Wt.	Price
1831	GSG-08A-S	8	Shaft	-	0.71 lbf-in	20g	\$83.00

* Force when compressed air is supplied at 72.5psi.

Miniature Finger Blanks - Size 8



Shown with #1836 finger blanks



Miniature Finger Blanks - Size 08 Grippers

Quick#	Part#	Style	Size	Wt.	Price
1836	GSG-08A-FB06	Split	6x15	8g	\$25.00
1837	GSG-08A-FB16	Split	12x15	14g	\$25.00
1838	GSG-08A-FS06	One-Piece	6x15	8g	\$24.00
1839	GSG-08A-FS16	One-Piece	12x15	14g	\$24.00

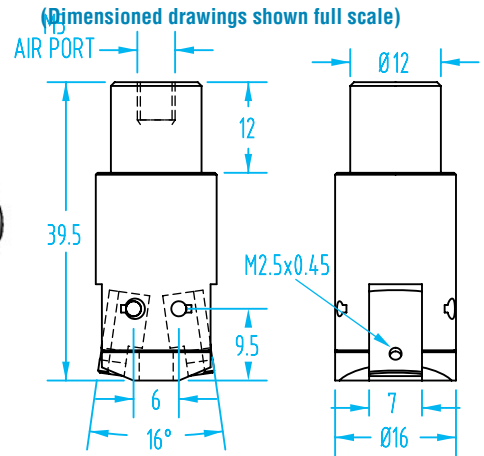
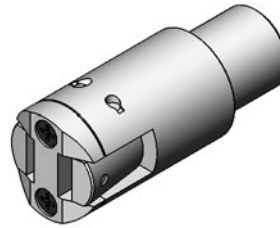
Mounting screws included.

Miniature Grippers – Size 11

- Stainless steel
- Single acting, normally open.
- Finger blanks available.
- Operating pressure range: 29–102 psi.



#727
Size: 11
Shaft Style

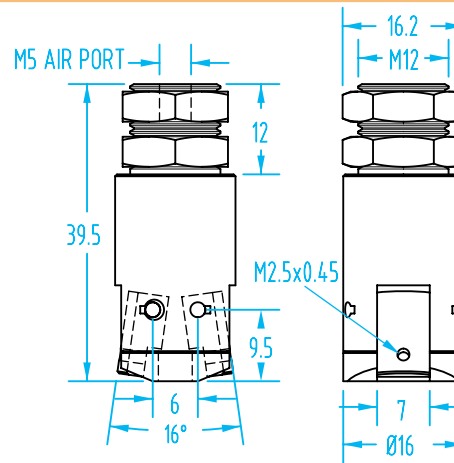
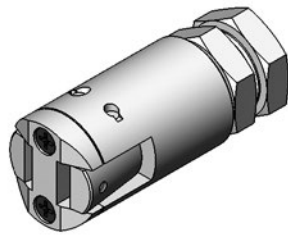


Quick#	Part#	Size	Style	Grip Force*	Wt.	Price
727	GSG-11A-S	11	Shaft	1.77 lbf-in	41g	\$97.00

* Force when compressed air is supplied at 72.5psi.



#1833
Size: 11
Panel Mount

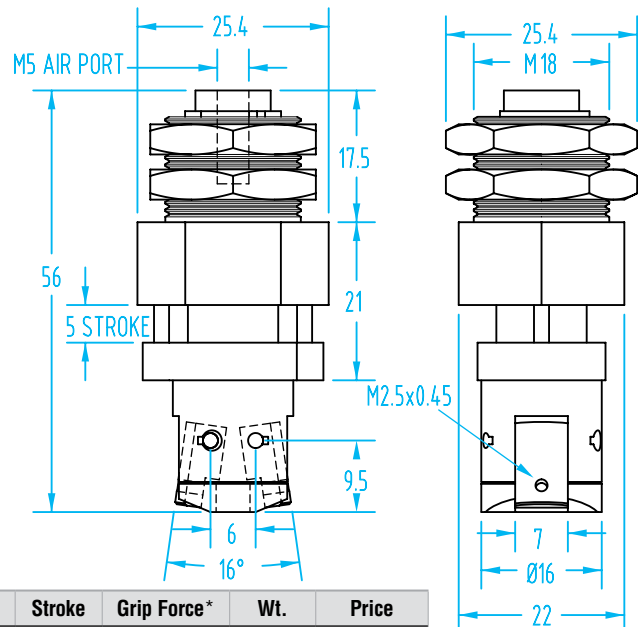
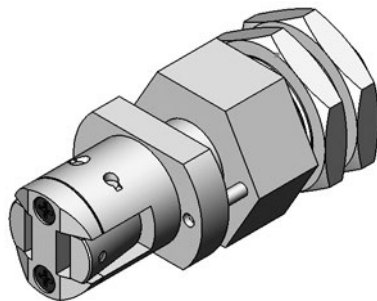


Quick#	Part#	Size	Style	Grip Force*	Wt.	Price
1833	GSG-11A-SPM	11	Panel Mount	1.77 lbf-in	46g	\$101.00

* Force when compressed air is supplied at 72.5psi.



#1835
Size: 11
Panel Mount
Suspension

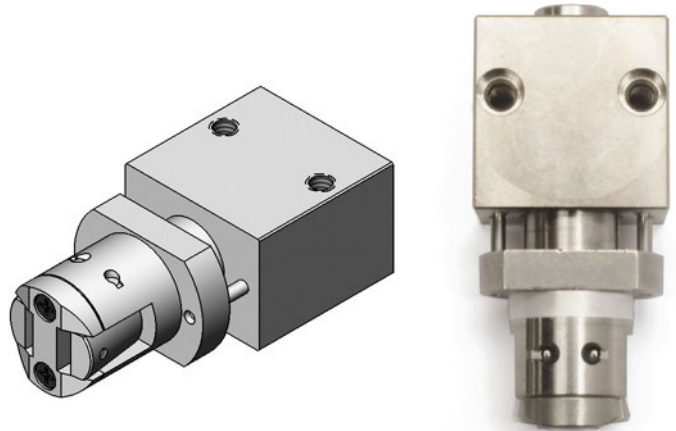
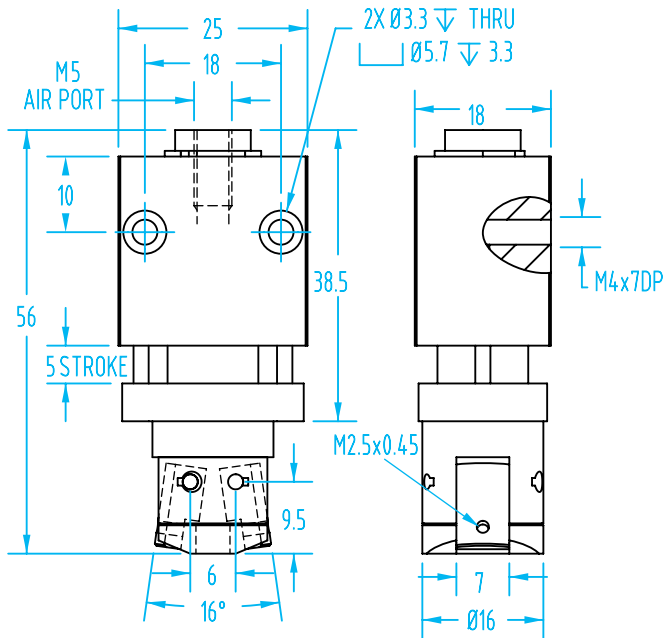


Quick#	Part#	Size	Style	Stroke	Grip Force*	Wt.	Price
1835	GSG-11A-SPMF	11	Panel Mount	5mm	1.77 lbf-in	106g	\$145.00

* Force when compressed air is supplied at 72.5psi.

Miniature Grippers – Size 11

(Dimensioned drawings shown full scale)



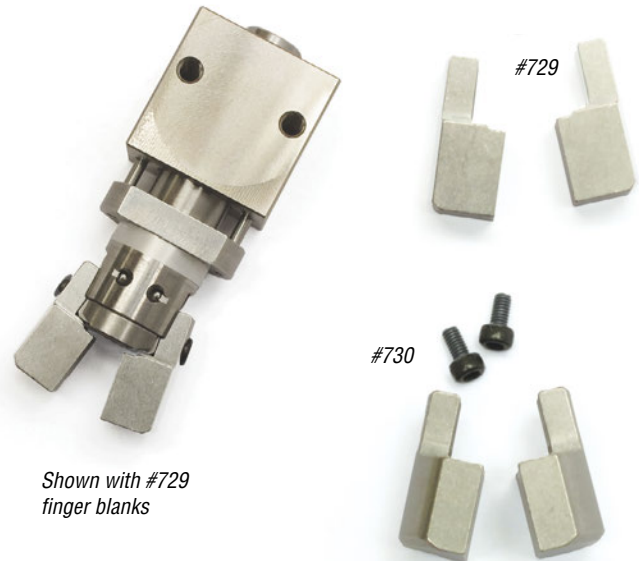
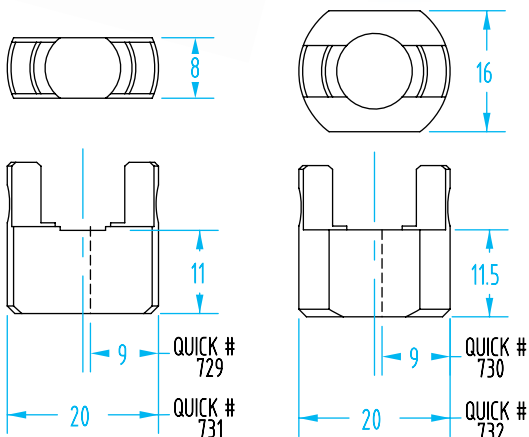
#728
Size: 11
Side Mount
Suspension

Quick#	Part#	Size	Style	Stroke	Grip Force *	Wt.	Price
728	GSG-11A-SF	11	Side Mount	5mm	1.77 lbf-in	117g	\$157.00

* Force when compressed air is supplied at 72.5psi.

Miniature Finger Blanks – Size 11

Machine these blanks to conform to your part, then cut in half to make two fingers.



Shown with #729
finger blanks

Miniature Finger Blanks - Size 11 Grippers

Quick#	Part#	Style	Size	Wt.	Price
729	GSG-11A-FB08	Split	8x20	16g	\$28.00
730	GSG-11A-FB20	Split	16x20	25g	\$28.00
731	GSG-11A-FS08	One-Piece	8x20	17g	\$27.01
732	GSG-11A-FS20	One-Piece	16x20	28g	\$27.01

Mounting screws included.

Dock & Lock Gripper – AGG

Grippers for Engagement

The AGG30 is used to provide precise centering and clamping between the robot and the mold or the robot and a fixture. This is necessary, for example, when metal inserts must be placed in the mold before plastic injection. The gripper AGG30-B is mounted on the EOAT and the steel bushing AGG30-C on the mold or a fixture. After the robot approaches the mold, the AGG30-B is pressurized so it closes and engages the AGG30-C. AGG21-B and AGG30-B are double-acting with a safety spring to keep the gripper engaged even without compressed air (NC). AGG19-B is single-acting with reset spring (NO).

Perfect for Insert Loading!



Quick#	7130	7128	6689
Part#	AGG19-B	AGG21-B	AGG30-B
Price	\$290.00	\$328.00	\$375.00
Diameter	Ø20	Ø20	Ø30
Style	Single Acting	Double Acting	
Maximum axial load without compressed air before releasing	0 lbf	134 lbf	314 lbf
Maximum axial load with compressed air before breakage	449 lbf	449 lbf	1124 lbf
Pressure range	29–116 psi (NO)	35–116 psi (NC)	39–116 psi (NC)
Weight	85g	115g	390g

Locking Collar

Quick#	Part#	Diameter	Weight	Price
7129	AGG21-C	Ø20	25g	\$24.44
6690	AGG30-C	Ø30	75g	\$21.11

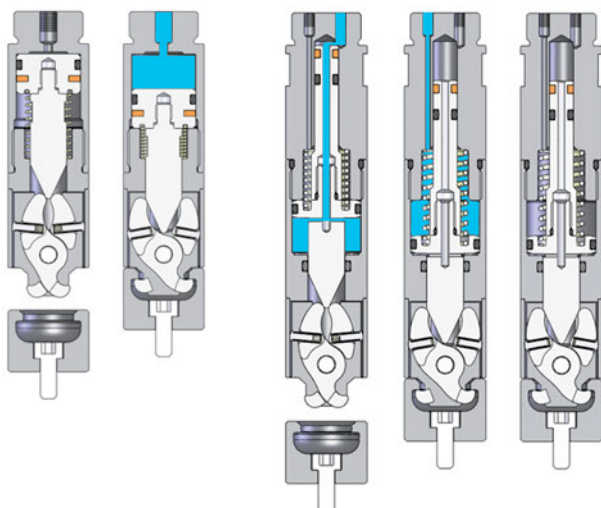
Optional Sensor Mounting Band

Quick#	Part#	Diameter	Price
7308	SWP-020	Ø20	\$2.22

See Sensor Reference Guide on page 1009 for full list of compatible sensors.

AGG19-B

AGG21-B / AGG30-B



Dock & Lock Fitting Compatibility Guide

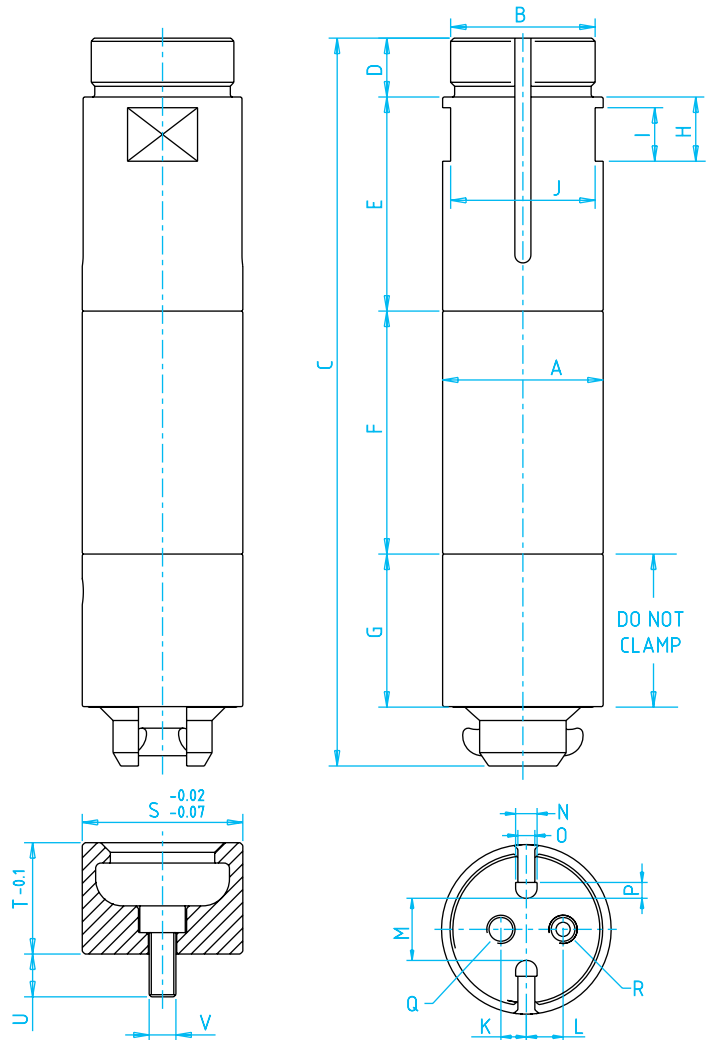
Quick#'s 7128 & 6689 have two closely spaced air ports that don't allow all fittings to work properly.

Fittings	Q# 7130	Q# 7128	Q# 6689	
	4mm OD Tubing	Yes	No	Yes
	6mm OD Tubing	Yes	No	No
	4mm OD Tubing	Yes	Yes, see Q#256	Yes
	6mm OD Tubing	Yes	N/A	Yes

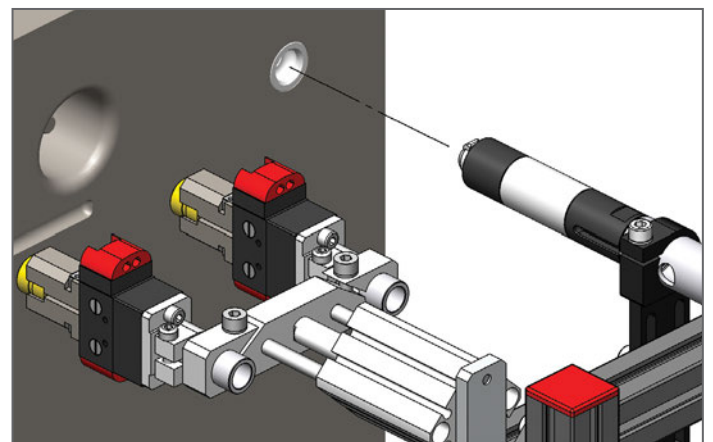
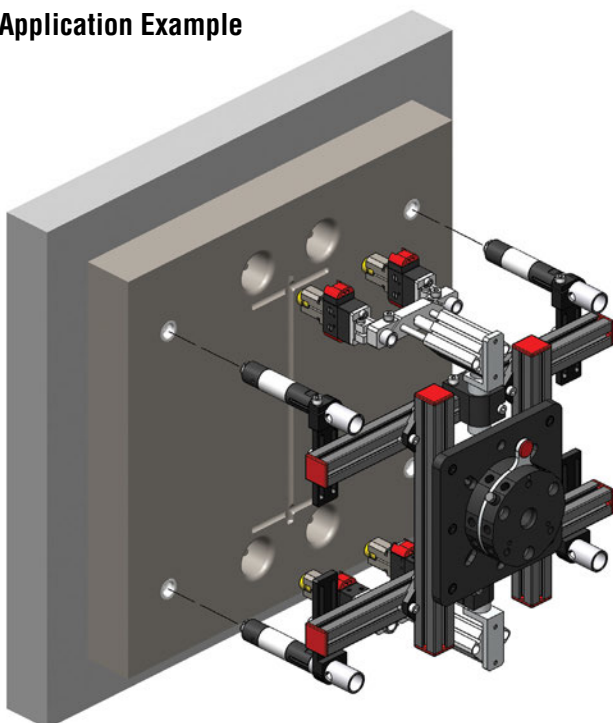
Dock & Lock Gripper – AGG

	AGG19 B	AGG21 B	AGG30 B
Quick#	7130	7128	6689
A	Ø20	Ø20	Ø30
B	M17x1	M17x1	M27x1
C	70.5	96.5	136
D	8	8	11
E	32	28	40
F	4	34	45.4
G	19.5	19.5	28.6
H	10	10	12
I	8	8	10
J	18	18	27
K	0	4.2	4.5
L	-	3.5	6.5
M	-	8	11
N	-	3.8	3.8
O	-	3	3
P	-	2.8	2.8
Q	M5	M3	M5
R	-	M3	M5

	AGG21 C	AGG30 C
Quick#	7129	6690
S	Ø20	Ø30
T	15.3	20.8
U	6.7	8
V	M4	M5



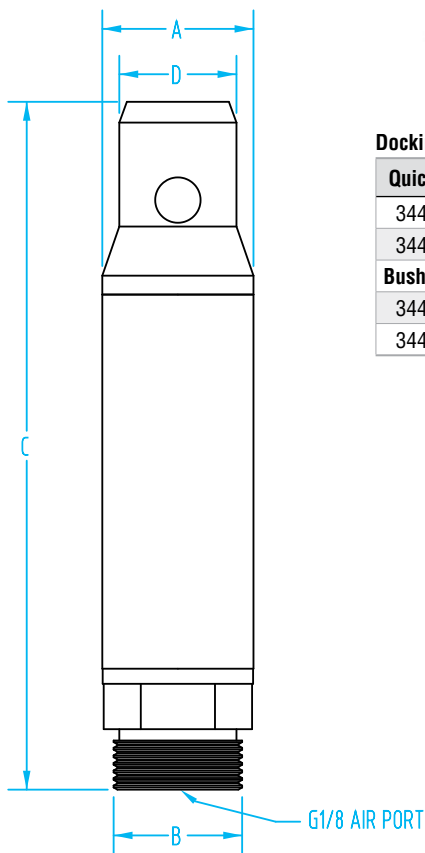
Application Example



Dock & Lock Gripper – ZTE

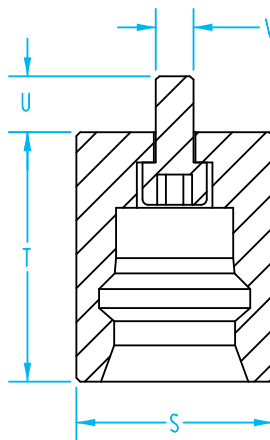
- Used to limit force being applied to the robot arm.
- Use in applications when excessive force is necessary to extract part(s) from the mold. Or, when excessive force is necessary to place insert(s) in the mold.
- Pressurized steel balls lock into the ZBU bushings.
- Magnetic piston for sensing lock or unlock positions.

Perfect for Insert Loading!



Docking Finger

Quick#	Part#	>ASS< #	Price	Closing Force at 87psi	Wt.
3441	ZTE-20-V	1-747-20-00	\$451.50	78.68 lbf	430g
3442	ZTE-30-V	1-747-30-00	\$550.20	337.2 lbf	524g
Bushing					
3443	ZBU-20-V	1-747-21-00	\$69.30		66g
3444	ZBU-30-V	1-747-31-00	\$84.00		80g



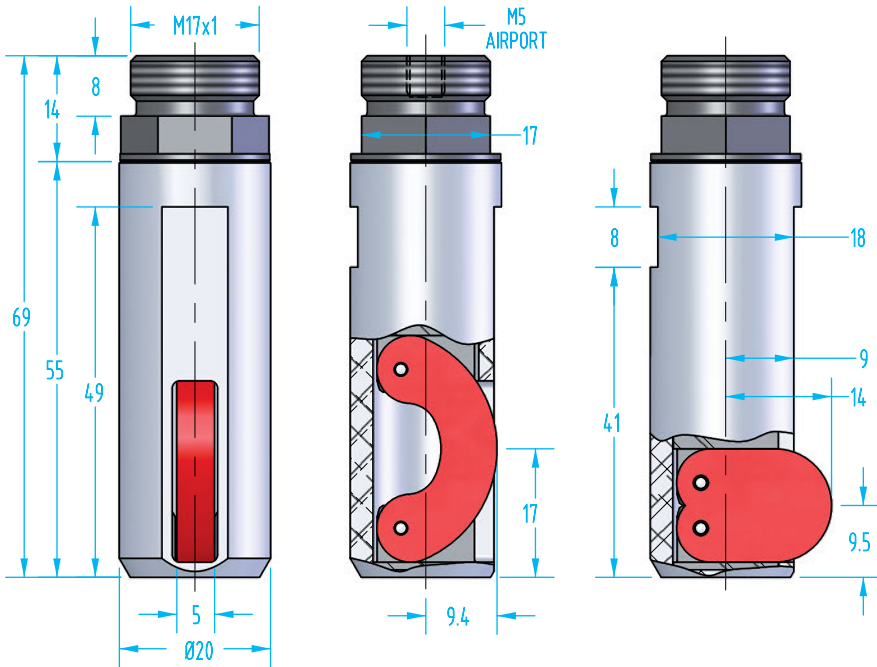
	A	B	C	D
3441	20	M17x1	91	15.5
3442	30	M27x1	133.5	25.5

	S	T	U	V
3443	26h7	33	7.5	M5
3444	40h7	43.5	10	M6

Expansion Finger – OFD

(Dimensioned drawings shown full scale)

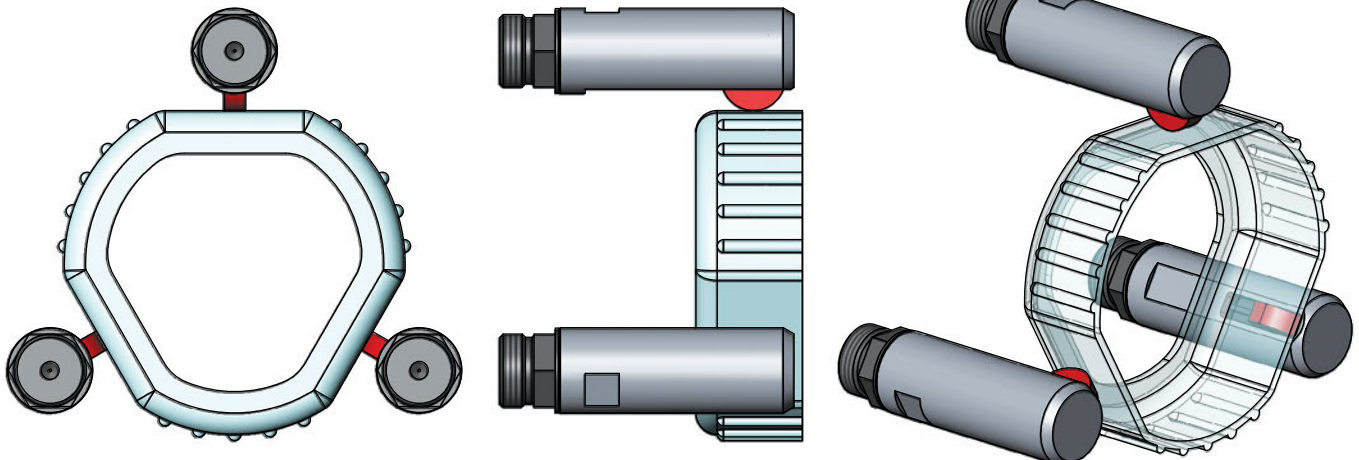
- Single acting with spring reset.
- Clampable Ø20mm body.
- Several mounting options.
- Temperature range: 41–140°F.
- Pressure range: 44–116 psi.
- Elastic TPU expander has a 70° durometer.



Expansion Finger

Quick#	Part#	Price	Closing Force at 87psi	Wt.
7251	OFD20	\$82.00	32.6lbf	40g
Replacement Elastic TPU Expander				
7366	IR01	\$1.56		

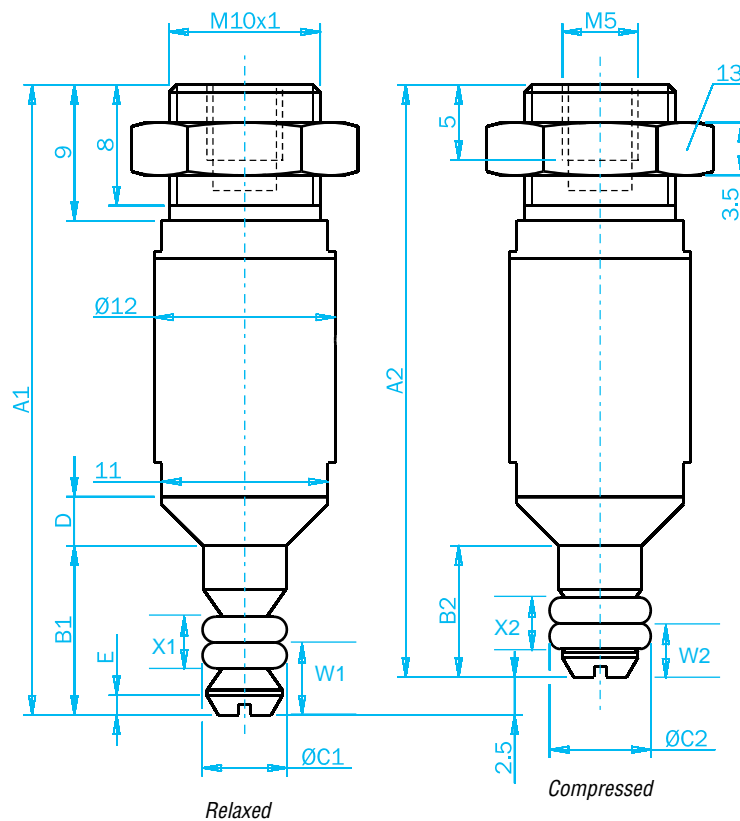
Application Example



Expansion Micro Grippers

(Dimensioned drawings scaled 2:1)

- Upward movement
- Grip diameter from Ø4.5 to Ø8.7mm.
- Silicone expander has a max. temperature of 392°F.
- NBR expander has a max. temperature of 212°F.
- Maximum operating pressure: 87psi.
- Replacement expanders available.
- Patented



Expansion Micro Grippers

Quick#	Part#	Material	Price	Wt.	A1	A2	B1	B2	C1 MIN	C2 MAX	X1	X2	W1	W2	D	E
6637	IFU04S01RT	Silicone	\$117.00	7g	40.9	38.4	9.9	7.4	Ø4.5	Ø5.4	3	2.7	4	2.7	3.75x45°	1x60°
6636	IFU04N03RT	NBR	\$117.00													
6639	IFU05S01RT	Silicone	\$117.00	7g	41.7	39.2	11.2	8.7	Ø5.6	Ø6.7	3.4	3.4	4.8	3.6	3.25x45°	1.3x60°
6638	IFU05N03RT	NBR	\$117.00													
6641	IFU06S01RT	Silicone	\$117.00	8g	42	39.5	11.5	9	Ø6.6	Ø7.6	3.6	3.4	5.1	3.8	2.75x45°	1.4x60°
6640	IFU06N03RT	NBR	\$117.00													
6643	IFU07S01RT	Silicone	\$117.00	9g	42	39.5	11.5	9	Ø7.6	Ø8.7	3.6	3.4	5.1	3.9	2.4x45°	1.5x60°
6642	IFU07N03RT	NBR	\$117.00													

Expansion Micro Grippers

Replacement Rings (priced per pair)

Quick#	Part#	For:	Material	Price
6943	IF04S01	IFU04S01RT	Silicone	\$4.68
6944	IF04N03	IFU04N03RT	NBR	\$4.68
6945	IF05S01	IFU05S01RT	Silicone	\$4.68
6946	IF05N03	IFU05N03RT	NBR	\$4.68
6947	IF06S01	IFU06S01RT	Silicone	\$4.68
6948	IF06N03	IFU06N03RT	NBR	\$4.68
6949	IF07S01	IFU07S01RT	Silicone	\$4.68
6950	IF07N03	IFU07N03RT	NBR	\$4.68



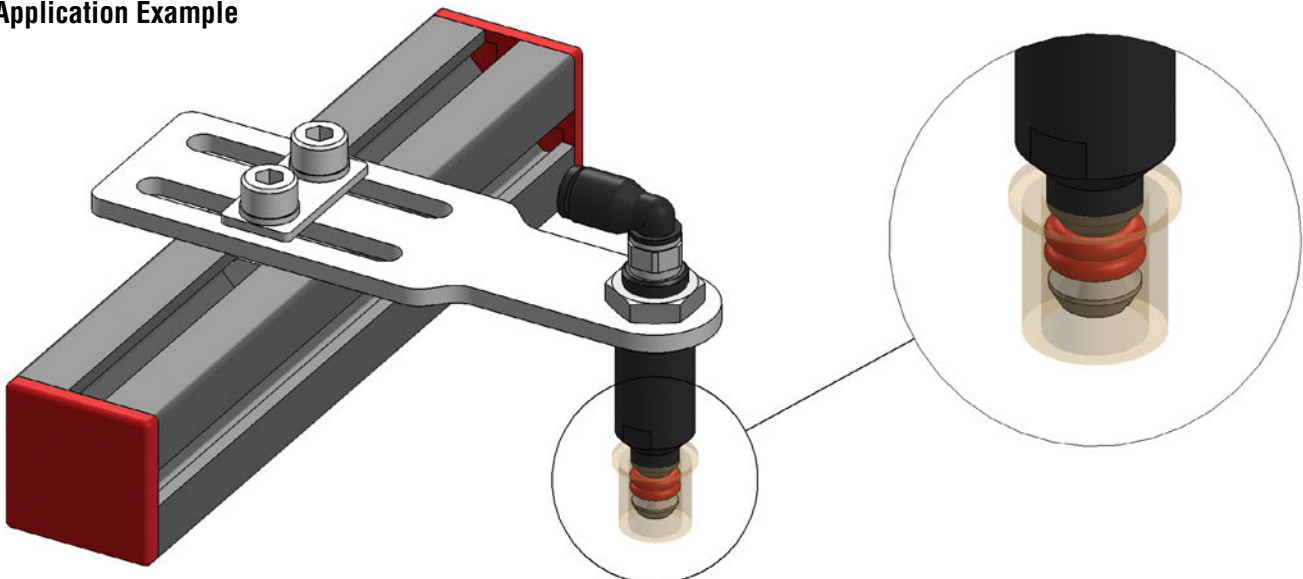
How-To install replacement ring:

While securing the bottom screw with a screw driver, remove the screw. Install the replacement rings and top screw.

[Click here for How-To Video.](#)



Application Example



Expansion Grippers

(Dimensioned drawings shown full scale)

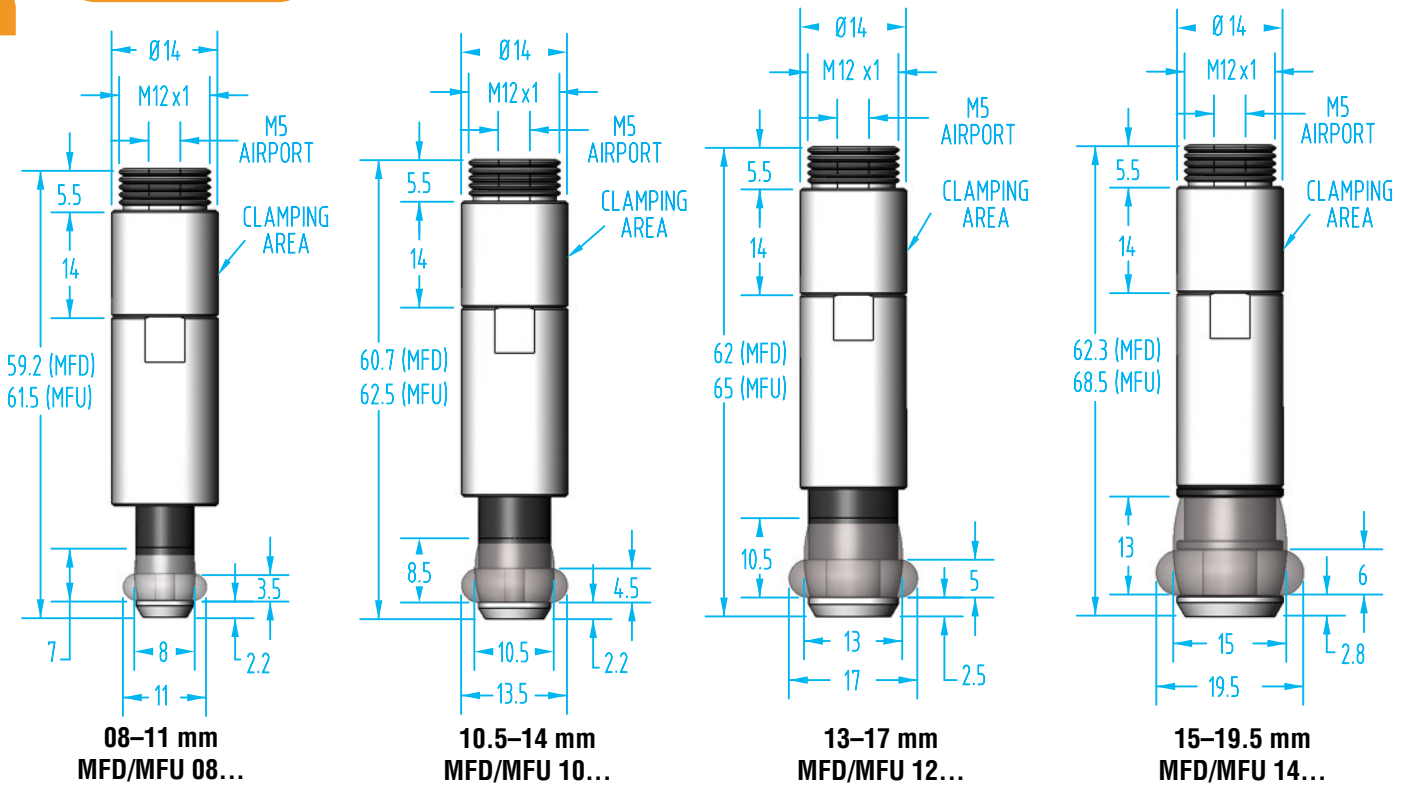
Gimatic's Expansion Grippers rely on compressing an elastic expander rather than inflating a bladder. Gimatic's patented Expansion Grippers have better durability and uptime because leaks and blow outs are eliminated.

- The elastic part can be in Silicone or EPDM.
- Grip diameters from 8 to 85mm.
- Optional nose cones for centering.
- Optional Gimatic SN.. sensors.
- Use standard Ø14, 20, 30mm clamps for mounting.
- Optional mounting adaptors for thread mounting on page 577.



MFD – The MFD has a **downward** motion that compresses the expander. The OAL is unchanged.

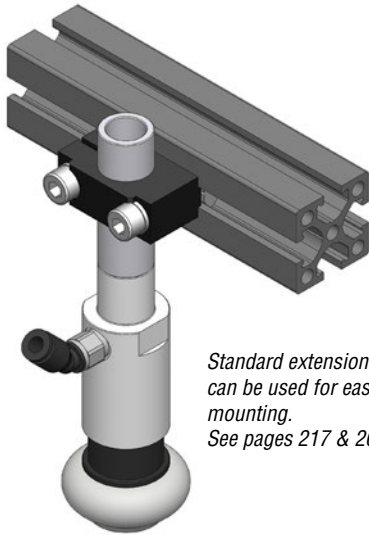
MFU – The MFU has an **upward** motion that compresses the expander. The OAL is reduced.



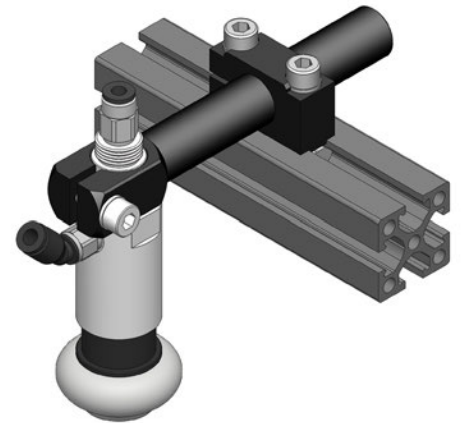
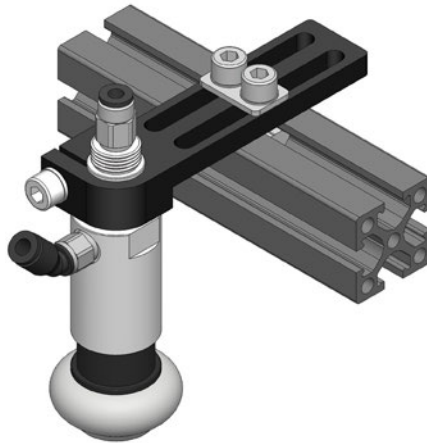
Expansion Grippers

(Dimensioned drawings shown full scale)

Mounting Examples

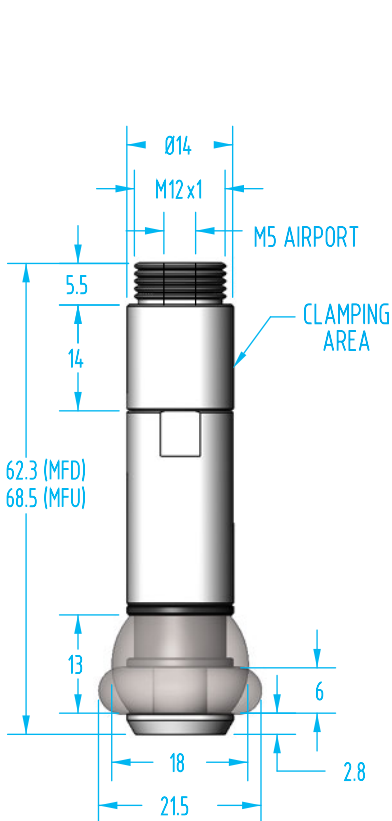


Standard extensions can be used for easy mounting. See pages 217 & 262.

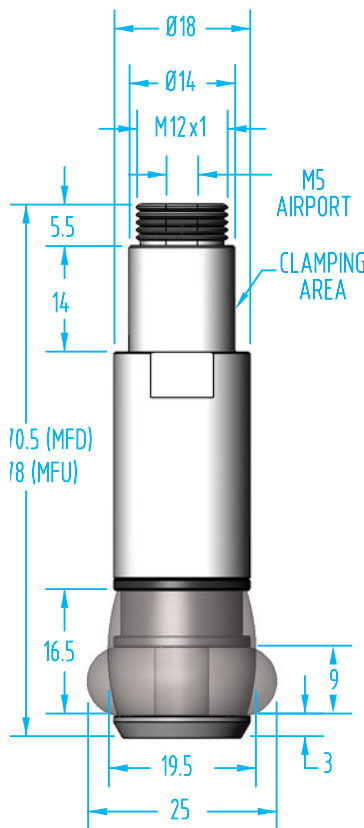


Standard Ø14mm, 20mm, and 30mm clamps can be used for easy mounting. See clamps starting on page 246.

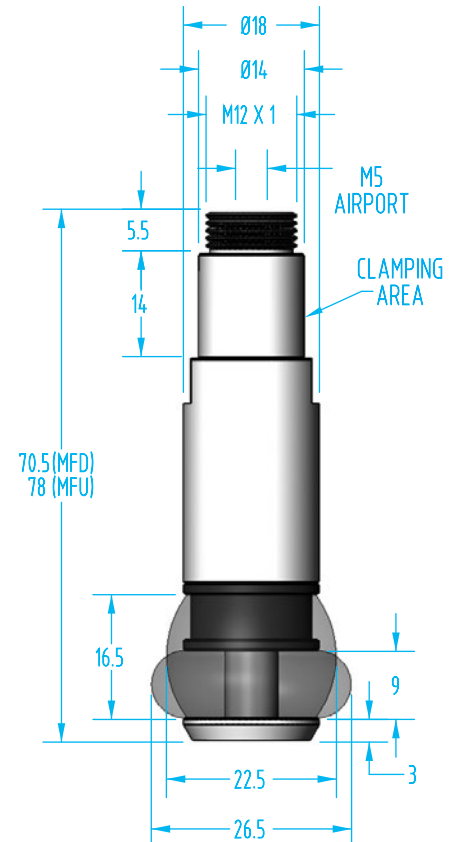
See page 572 for pricing.



**18-21.5 mm
MFD/MFU 16...**



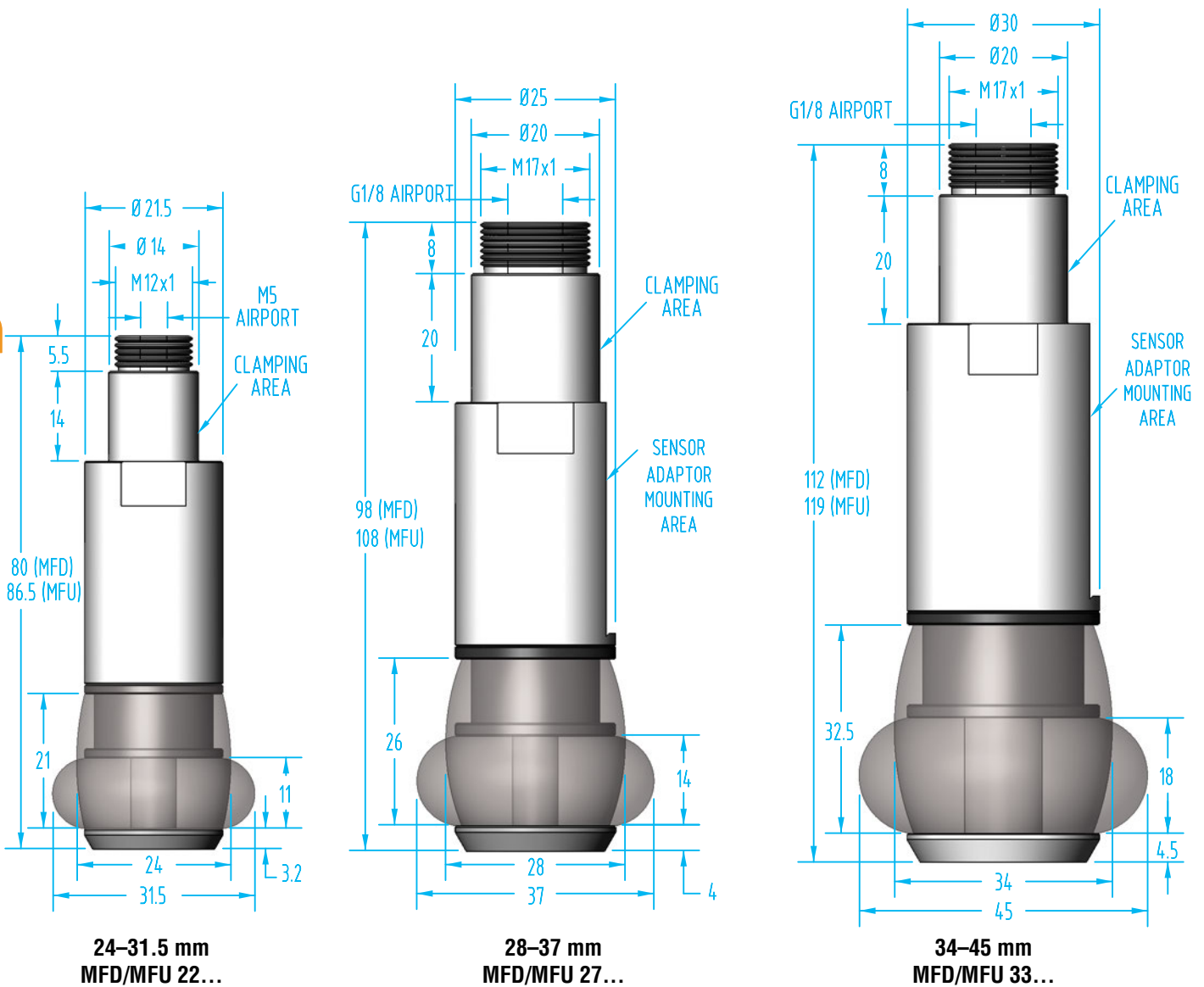
**19.5-24.5 mm
MFD/MFU 18...**



**22.5-26.5 mm
MFD/MFU 20...**

Expansion Grippers

(Dimensioned drawings shown full scale)



Expansion Grippers

(Dimensioned drawings shown full scale)

Silicone or EPDM?



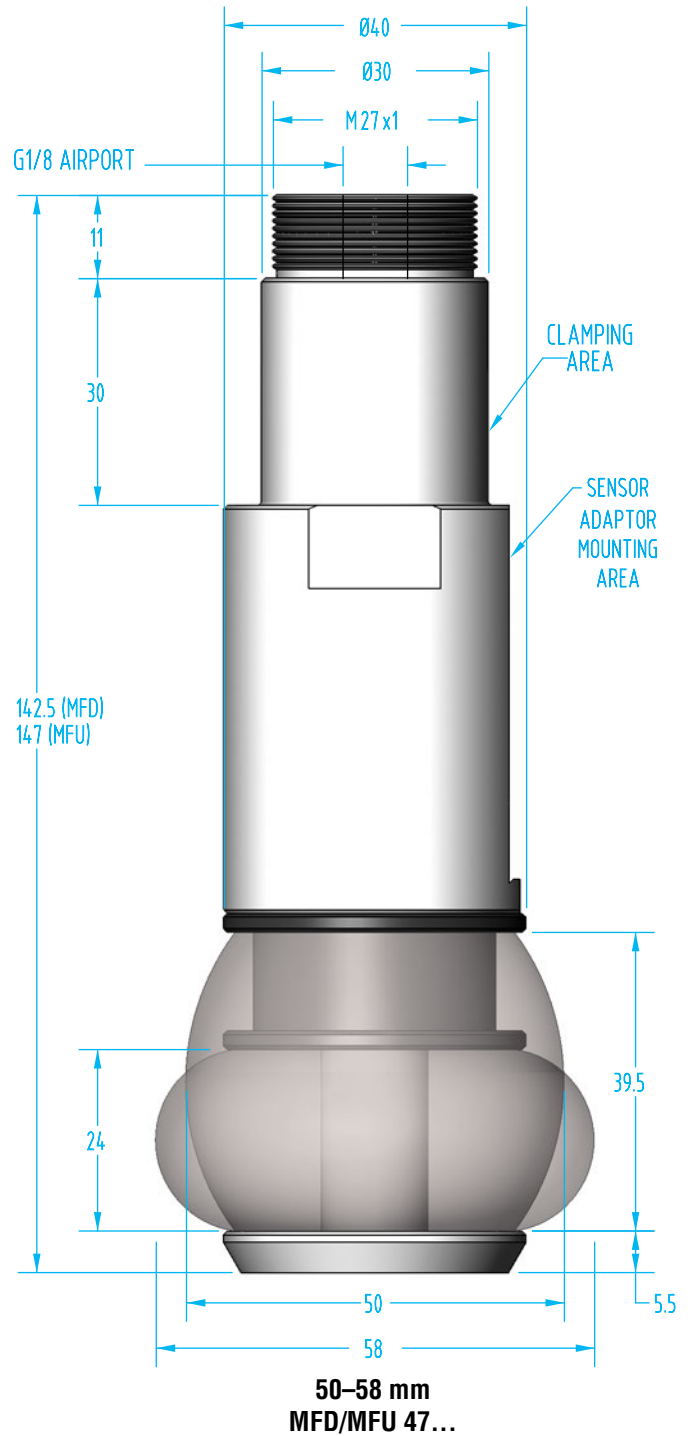
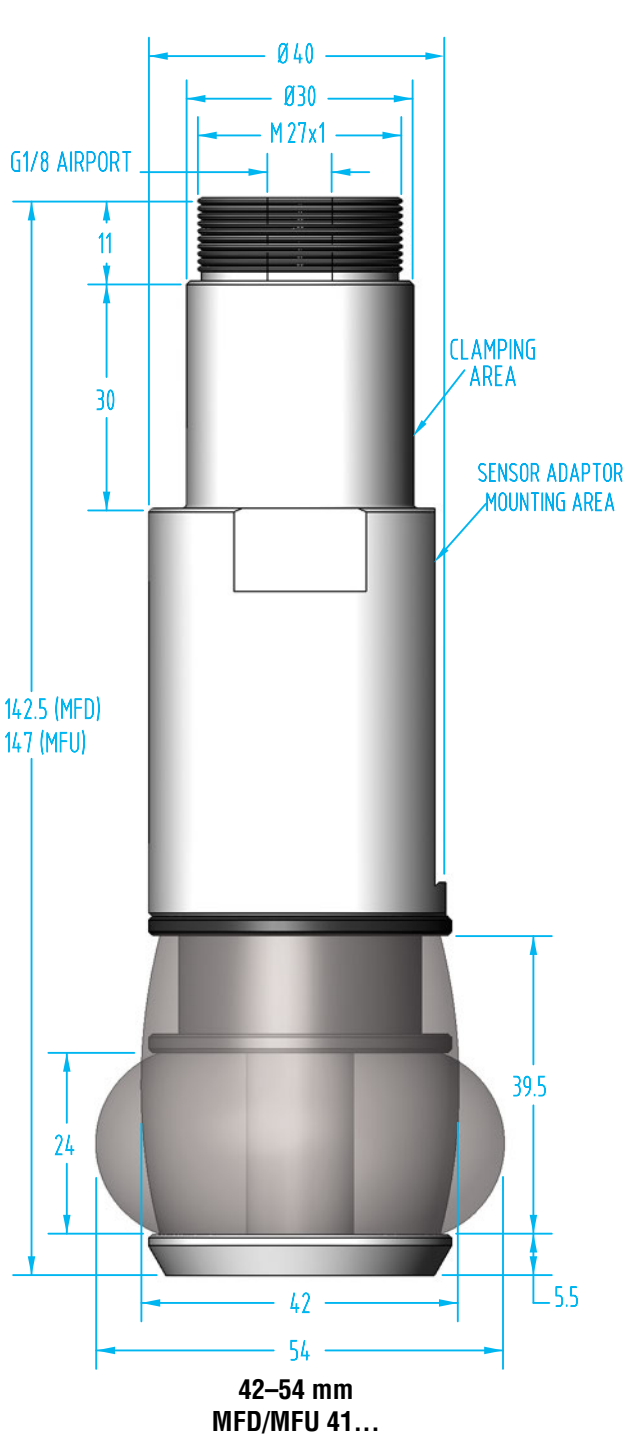
Silicone is non-marking, has a wider temperature range, and longer life span. Max. temperature is 392° F. Silicone is not suitable in some industries, because it makes it difficult to paint or to coat the parts that are touched.

The expected medium life time of the elastic part in Silicone is about 1 million cycles.

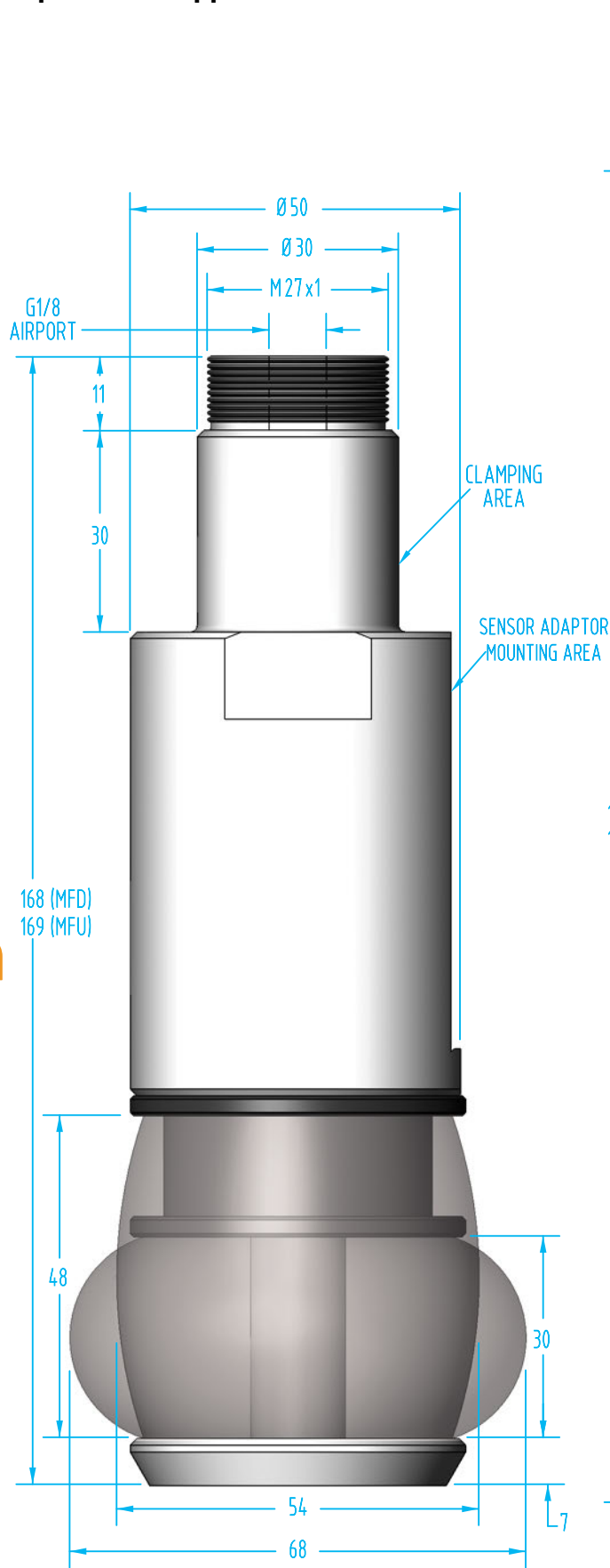


EPDM is non-marking and provides more friction for a stronger grip. Maximum temperature is 284° F.

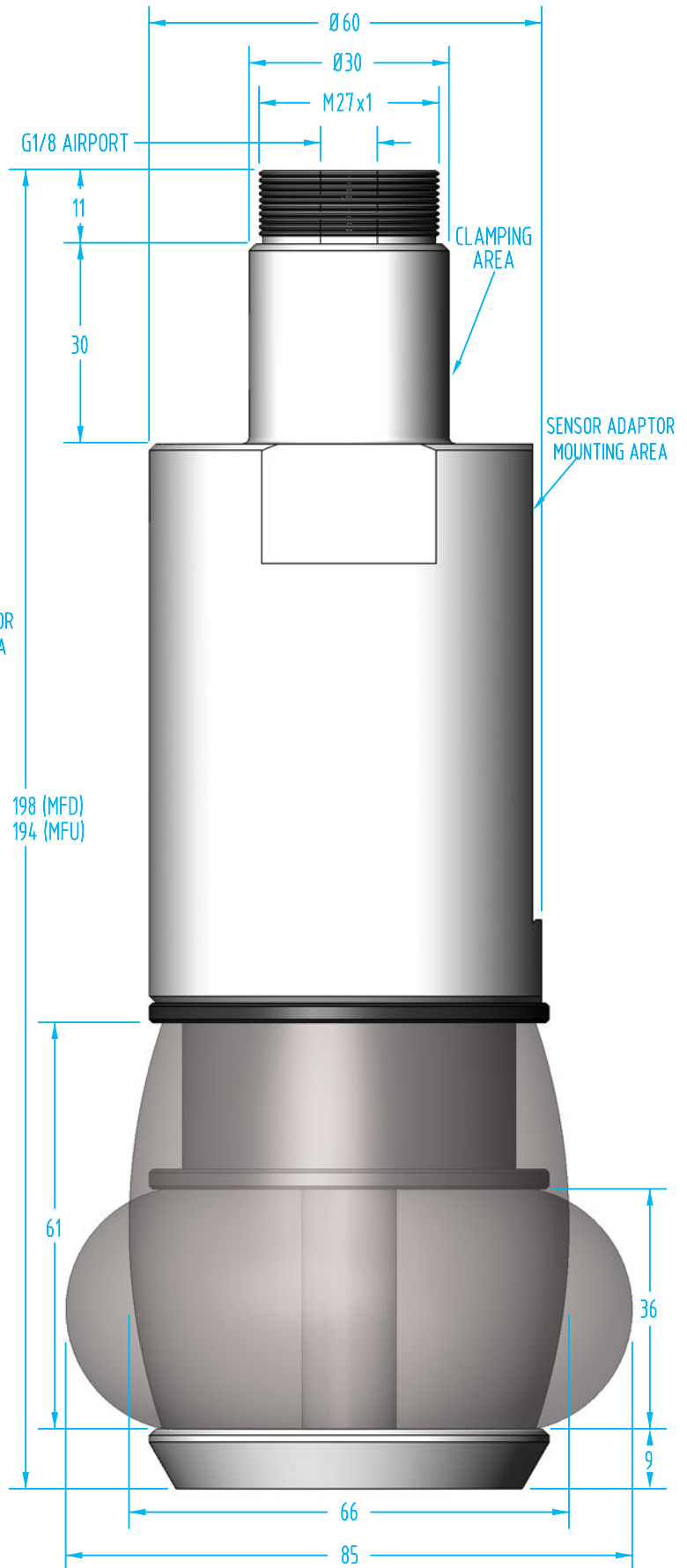
The expected medium life time of the elastic part in EPDM is about 0.5 million cycles.



Expansion Grippers



**54-68 mm
MFD/MFU 51...**



**66-85 mm
MFD/MFU 63...**

Expansion Grippers

Gripping Force

The force output of an MF gripper depends on several variables—the diameter of the picked object, the surface finishing, friction, and air pressure.

The graphs show the extraction force (F) on the gripped object as a function of its diameter (d).

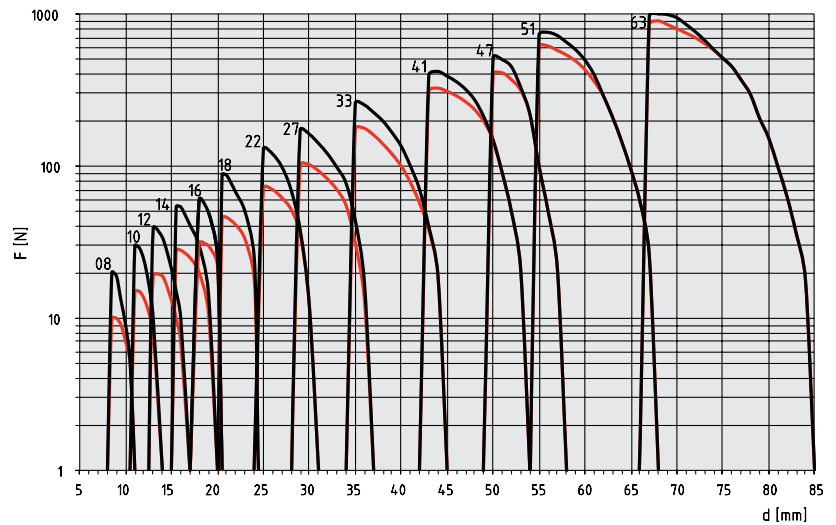
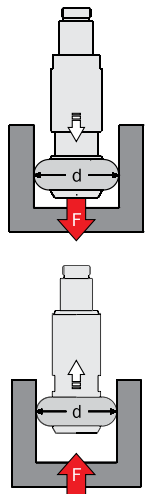
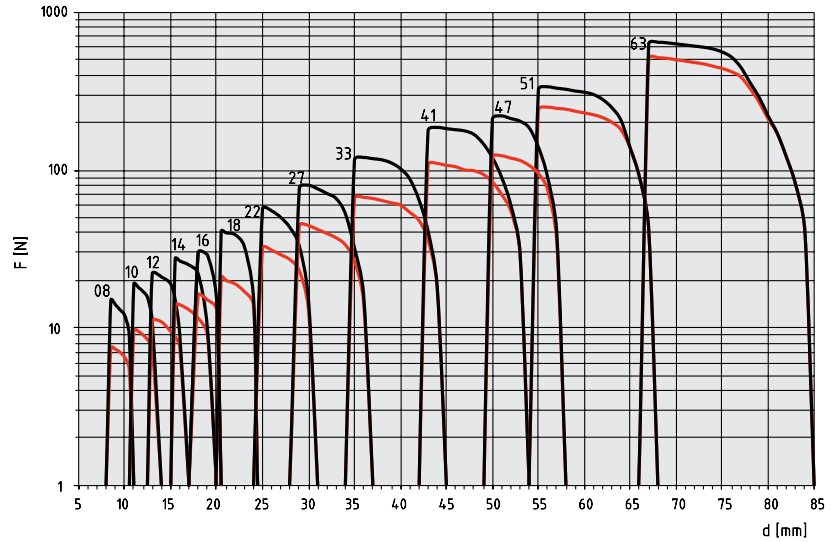
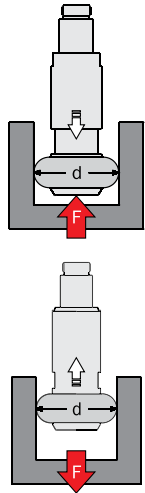
Aluminum rings, with roughness Ra=0.8, have been used

for the measurements and the grippers supplied with 87 psi compressed air.

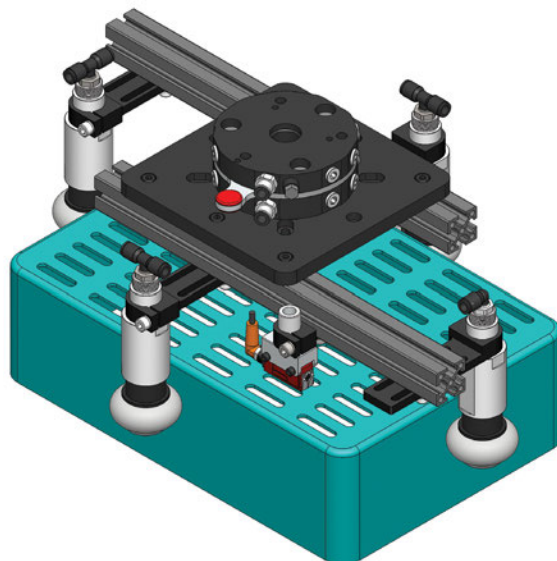
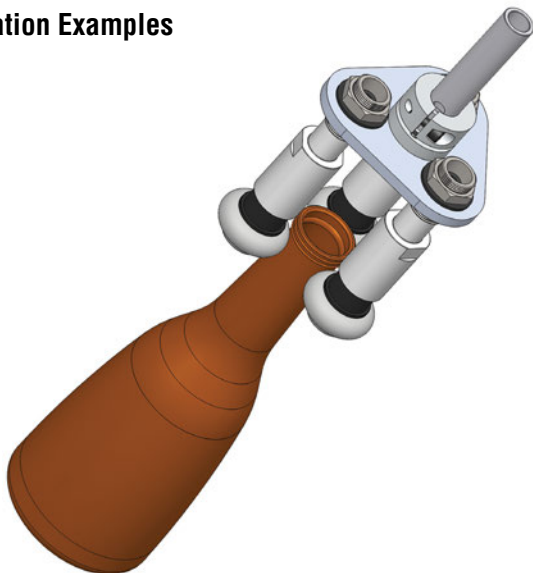
EPDM —————
Silicone —————

Reference:

Force: N x 0.225 = lbf
Pressure: bar x 14.5 = psi



Application Examples



MFD / MFU Standard Models

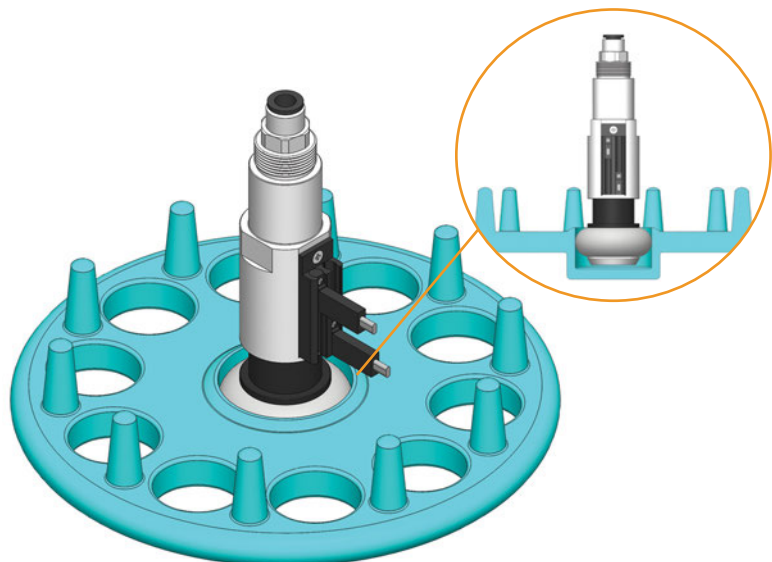
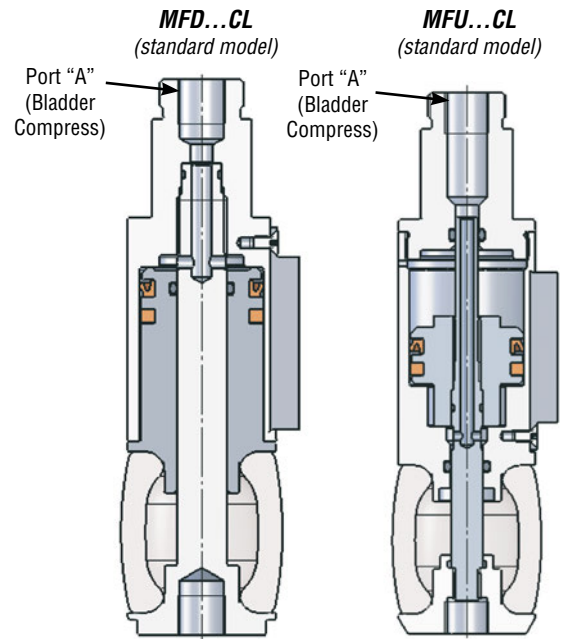
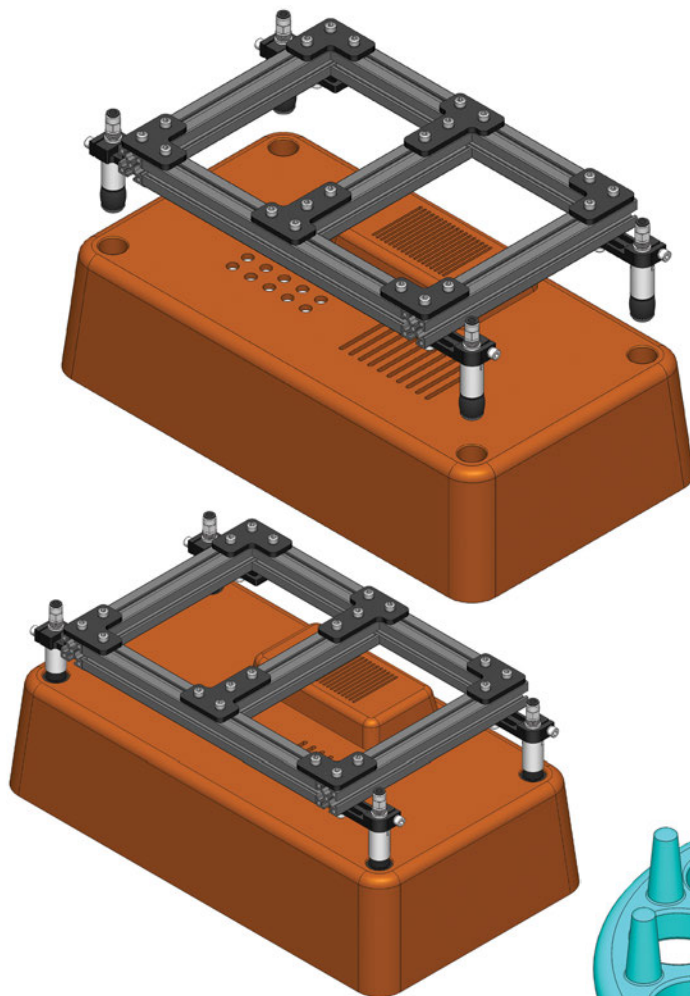
Part#	Quick#	Price	Material	Max Temp	Port "A"	Action	Min. Ø	Max. Ø	Weight	PSI Range
MFD08E02CL	6875	\$105.00	EPDM	284°F	M5	Down	8mm	11mm	15g	58-116psi
MFD08S01CL	6876	\$107.00	Silicone	392°F		Up			16g	
MFU08E02CL	6831	\$174.00	EPDM	284°F					Down	
MFU08S01CL	6832	\$175.00	Silicone	392°F		17g				
MFD10E02CL	6879	\$105.00	EPDM	284°F	M5	Down	10.5mm	13.5mm	16g	58-116psi
MFD10S01CL	6880	\$107.00	Silicone	392°F		Up			17g	
MFU10E02CL	6835	\$174.00	EPDM	284°F					Down	
MFU10S01CL	6836	\$175.00	Silicone	392°F		18g				
MFD12E02CL	6883	\$99.00	EPDM	284°F	M5	Down	13mm	17mm	17g	58-116psi
MFD12S01CL	6884	\$100.00	Silicone	392°F		Up			18g	
MFU12E02CL	6839	\$170.00	EPDM	284°F					Down	
MFU12S01CL	6840	\$171.00	Silicone	392°F		17g				
MFD14E02CL	6887	\$99.00	EPDM	284°F	M5	Down	15mm	19.5mm	17g	58-116psi
MFD14S01CL	6888	\$100.00	Silicone	392°F		Up			18g	
MFU14E02CL	6843	\$171.00	EPDM	284°F					Down	
MFU14S01CL	6844	\$172.00	Silicone	392°F		17g				
MFD16E02CL	7221	\$126.00	EPDM	284°F	M5	Down	18mm	21.5mm	17g	58-116psi
MFD16S01CL	7222	\$127.00	Silicone	392°F		Up			20g	
MFU16E02CL	7229	\$177.00	EPDM	284°F					Down	
MFU16S01CL	7230	\$178.00	Silicone	392°F		28g				
MFD18E02CL	6891	\$128.00	EPDM	284°F	M5	Down	19.5mm	24.5mm	28g	58-116psi
MFD18S01CL	6892	\$129.00	Silicone	392°F		Up			35g	
MFU18E02CL	6847	\$181.00	EPDM	284°F					Down	
MFU18S01CL	6848	\$182.00	Silicone	392°F		29g				
MFD20E02CL	7409	\$124.00	EPDM	284°F	M5	Down	22.5	26.5	29g	58-116psi
MFD20S01CL	7410	\$125.00	Silicone	392°F		Up			35g	
MFU20E02CL	7413	\$175.00	EPDM	284°F					Down	
MFU20S01CL	7414	\$176.00	Silicone	392°F		43g				
MFD22E02CL	6895	\$130.00	EPDM	284°F	M5	Down	24mm	31.5mm	43g	58-116psi
MFD22S01CL	6896	\$132.00	Silicone	392°F		Up			50g	
MFU22E02CL	6851	\$197.00	EPDM	284°F					Down	
MFU22S01CL	6852	\$198.00	Silicone	392°F		79g				
MFD27E02CL	6899	\$134.00	EPDM	284°F	G1/8"	Down	28mm	37mm	79g	58-116psi
MFD27S01CL	6900	\$135.00	Silicone	392°F		Up			100g	
MFU27E02CL	6855	\$217.00	EPDM	284°F					Down	
MFU27S01CL	6856	\$219.00	Silicone	392°F		118g				
MFD33E02CL	6903	\$154.00	EPDM	284°F	G1/8"	Down	34mm	45mm	118g	58-116psi
MFD33S01CL	6904	\$155.00	Silicone	392°F		Up			130g	
MFU33E02CL	6859	\$228.00	EPDM	284°F					Down	
MFU33S01CL	6860	\$231.00	Silicone	392°F		280g				
MFD41E02CL	6907	\$184.00	EPDM	284°F	G1/8"	Down	42mm	54mm	280g	58-116psi
MFD41S01CL	6908	\$189.00	Silicone	392°F		Up			300g	
MFU41E02CL	6863	\$252.00	EPDM	284°F					Down	
MFU41S01CL	6864	\$256.00	Silicone	392°F		280g				

Use Quick#s for easy online ordering.

MFD / MFU Standard Models

Part#	Quick#	Price	Material	Max Temp	Port "A"	Action	Min. Ø	Max. Ø	Weight	PSI Range		
MFD47E02CL	7225	\$210.00	EPDM	284°F	G1/8"	Down	50mm	58mm	280g	58-116psi		
MFD47S01CL	7226	\$216.00	Silicone	392°F					Up		300g	
MFU47E02CL	7233	\$262.00	EPDM	284°F		Down					54mm	68mm
MFU47S01CL	7234	\$265.00	Silicone	392°F					Up			
MFD51E02CL	6911	\$231.00	EPDM	284°F	G1/8"	Down	66mm	85mm		800g		
MFD51S01CL	6912	\$240.00	Silicone	392°F					Up	785g		
MFU51E02CL	6867	\$274.00	EPDM	284°F		Down				66mm	85mm	800g
MFU51S01CL	6868	\$283.00	Silicone	392°F					Up			785g
MFD63E02CL	6915	\$308.00	EPDM	284°F	G1/8"	Down	66mm	85mm				800g
MFD63S01CL	6916	\$293.00	Silicone	392°F					Up			785g
MFU63E02CL	6871	\$314.00	EPDM	284°F		Down				66mm	85mm	800g
MFU63S01CL	6872	\$324.00	Silicone	392°F					Up			785g

Application Examples: (Standard, Top-Ported MFD...CL's)



MFD / MFU Leak Test Models

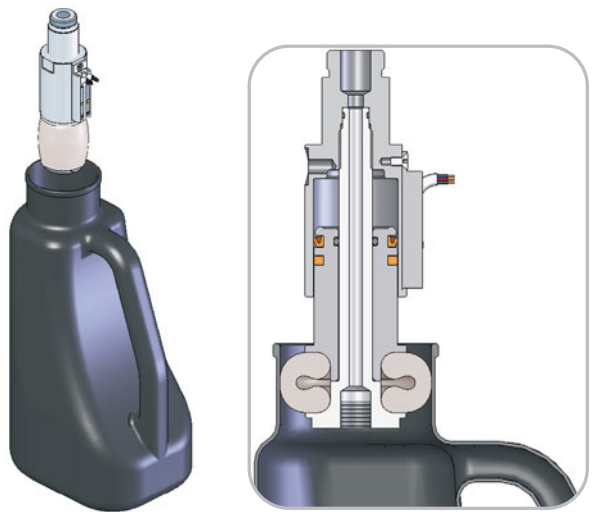
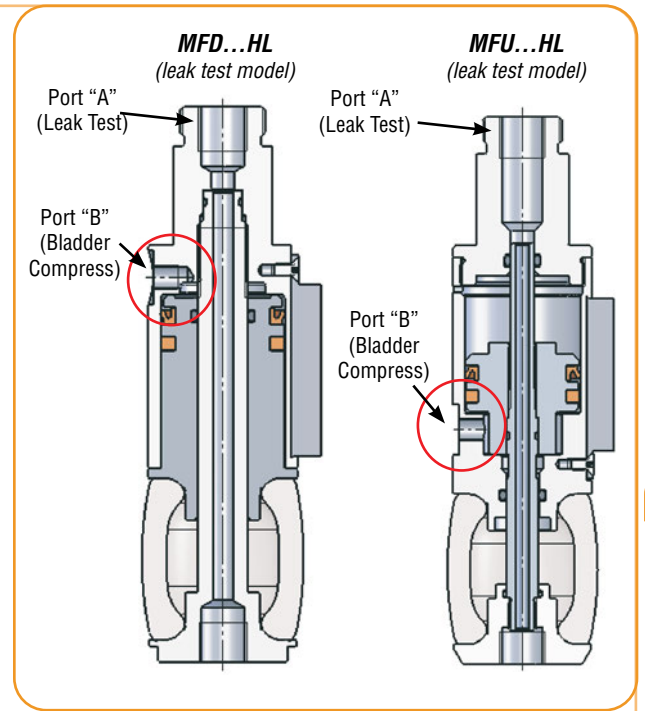
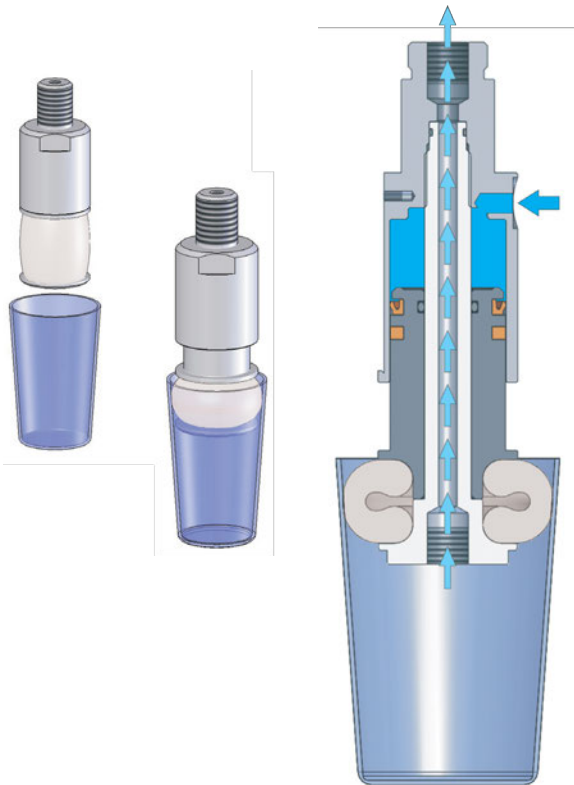
Part#	Quick#	Price	Material	Max. Temp.	Port "A"	Port "B"	Action	Min. Ø	Max. Ø	Wt	PSI Range				
MFD08E02HL	6877	\$119.00	EPDM	284°F	M5	M3	Down	8mm	11mm	15g	58-116psi				
MFD08S01HL	6878	\$125.00	Silicone	392°F			Up			16g					
MFU08E02HL	6833	\$180.00	EPDM	284°F			M5			M3		Down	10.5mm	13.5mm	16g
MFU08S01HL	6834	\$181.00	Silicone	392°F								Up			17g
MFD10E02HL	6881	\$125.00	EPDM	284°F	M5	M3	Down	13mm	17mm	17g	58-116psi				
MFD10S01HL	6882	\$125.00	Silicone	392°F			Up			18g					
MFU10E02HL	6837	\$180.00	EPDM	284°F			M5			M3		Down	15mm	19.5mm	17g
MFU10S01HL	6838	\$181.00	Silicone	392°F								Up			20g
MFD12E02HL	6885	\$125.00	EPDM	284°F	M5	M3	Down	18mm	21.5mm	17g	58-116psi				
MFD12S01HL	6886	\$119.00	Silicone	392°F			Up			20g					
MFU12E02HL	6841	\$172.00	EPDM	284°F			M5			M3		Down	19.5mm	24.5mm	28g
MFU12S01HL	6842	\$174.00	Silicone	392°F								Up			35g
MFD14E02HL	6889	\$119.00	EPDM	284°F	M5	M3	Down	22.5	26.5	17g	58-116psi				
MFD14S01HL	6890	\$120.00	Silicone	392°F			Up			20g					
MFU14E02HL	6845	\$175.00	EPDM	284°F			M5			M3		Down	24mm	31.5mm	28g
MFU14S01HL	6846	\$176.00	Silicone	392°F								Up			35g
MFD16E02HL	7223	\$131.00	EPDM	284°F	M5	M3	Down	28mm	37mm	17g	58-116psi				
MFD16S01HL	7224	\$133.00	Silicone	392°F			Up			20g					
MFU16E02HL	7231	\$179.00	EPDM	284°F			M5			M3		Down	22.5	26.5	28g
MFU16S01HL	7232	\$180.00	Silicone	392°F								Up			35g
MFD18E02HL	6893	\$122.00	EPDM	284°F	M5	M5	Down	19.5mm	24.5mm	28g	58-116psi				
MFD18S01HL	6894	\$133.00	Silicone	392°F			Up			35g					
MFU18E02HL	6849	\$185.00	EPDM	284°F			M5			M5		Down	22.5	26.5	28g
MFU18S01HL	6850	\$186.00	Silicone	392°F								Up			35g
MFD20E02HL	7411	\$128.00	EPDM	284°F	M5	M5	Down	24mm	31.5mm	28g	58-116psi				
MFD20S01HL	7412	\$130.00	Silicone	392°F			Up			35g					
MFU20E02HL	7415	\$179.00	EPDM	284°F			M5			M5		Down	24mm	31.5mm	43g
MFU20S01HL	7416	\$180.00	Silicone	392°F								Up			50g
MFD22E02HL	6897	\$134.00	EPDM	284°F	M5	M5	Down	28mm	37mm	43g	58-116psi				
MFD22S01HL	6898	\$135.00	Silicone	392°F			Up			50g					
MFU22E02HL	6853	\$208.00	EPDM	284°F			M5			M5		Down	28mm	37mm	79g
MFU22S01HL	6854	\$210.00	Silicone	392°F								Up			100g
MFD27E02HL	6901	\$137.00	EPDM	284°F	G1/8"	M5	Down	34mm	45mm	79g	58-116psi				
MFD27S01HL	6902	\$139.00	Silicone	392°F			Up			100g					
MFU27E02HL	6857	\$219.00	EPDM	284°F			G1/8"			M5		Down	34mm	45mm	118g
MFU27S01HL	6858	\$219.00	Silicone	392°F								Up			130g
MFD33E02HL	6905	\$140.00	EPDM	284°F	G1/8"	M5	Down	42mm	54mm	118g	58-116psi				
MFD33S01HL	6906	\$156.00	Silicone	392°F			Up			130g					
MFU33E02HL	6861	\$239.00	EPDM	284°F			G1/8"			M5		Down	42mm	54mm	280g
MFU33S01HL	6862	\$235.00	Silicone	392°F								Up			300g
MFD41E02HL	6909	\$158.00	EPDM	284°F	G1/8"	M5	Down	42mm	54mm	280g	58-116psi				
MFD41S01HL	6910	\$200.00	Silicone	392°F			Up			300g					
MFU41E02HL	6865	\$256.00	EPDM	284°F			G1/8"			M5		Down	42mm	54mm	280g
MFU41S01HL	6866	\$259.00	Silicone	392°F								Up			300g

MFD / MFU Leak Test Models

Part#	Quick#	Price	Material	Max. Temp.	Port "A"	Port "B"	Action	Min. Ø	Max. Ø	Wt	PSI Range
MFD47E02HL	7227	\$223.00	EPDM	284°F	G1/8"	M5	Down	50mm	58mm	280g	58-116psi
MFD47S01HL	7228	\$229.00	Silicone	392°F							
MFU47E02HL	7235	\$268.00	EPDM	284°F			Up				
MFU47S01HL	7236	\$271.00	Silicone	392°F							
MFD51E02HL	6913	\$205.00	EPDM	284°F	G1/8"	G1/8"	Down	54mm	68mm	480g	58-116psi
MFD51S01HL	6914	\$242.00	Silicone	392°F							
MFU51E02HL	6869	\$282.00	EPDM	284°F			Up				
MFU51S01HL	6870	\$289.00	Silicone	392°F							
MFD63E02HL	6917	\$252.00	EPDM	284°F	G1/8"	G1/8"	Down	66mm	85mm	800g	58-116psi
MFD63S01HL	6918	\$285.00	Silicone	392°F							
MFU63E02HL	6873	\$318.00	EPDM	284°F			Up				
MFU63S01HL	6874	\$329.00	Silicone	392°F							

Application Examples: HL Model with Through hole

The ...HL models have a central thru-hole. It can be used to blow compressed air, or provide vacuum, with the purpose to cool a part, or check the sealing.



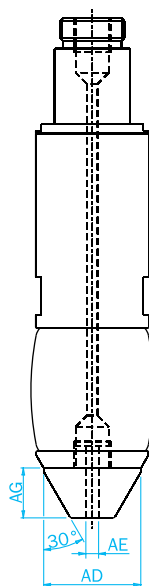
Expansion Gripper Nose Cones & Sensors

Centering Cones

Centering cones in nylon with a stainless screw are available as an option. For sizes larger than 33, they are also provided with a thru-hole.

Nose Cone Dimensions

Quick#	Part#	Wt.	ØAD	ØAE	AG	MFD MFU	Price
6929	MFC10	0.5g	7.8	-	2.9	Ø10	\$2.61
6930	MFC12	1g	10	-	3.5	Ø12	\$2.61
6931	MFC14	1g	11.8	-	4.5	Ø14 / Ø16	\$2.61
6932	MFC18	1.5g	15.5	-	6.5	Ø18/ Ø20	\$2.61
6933	MFC22	2g	18.8	-	8	Ø22	\$3.26
6934	MFC27	5g	21.3	-	9.5	Ø27	\$3.26
6935	MFC33	7g	28	4	12	Ø33	\$3.91
6936	MFC41	12g	37	4	19	Ø41 / Ø47	\$4.57
6937	MFC51	21g	47	4	26	Ø51	\$5.21
6938	MFC63	30g	56	4	30	Ø63	\$5.21



Sensors for Expansion Grippers

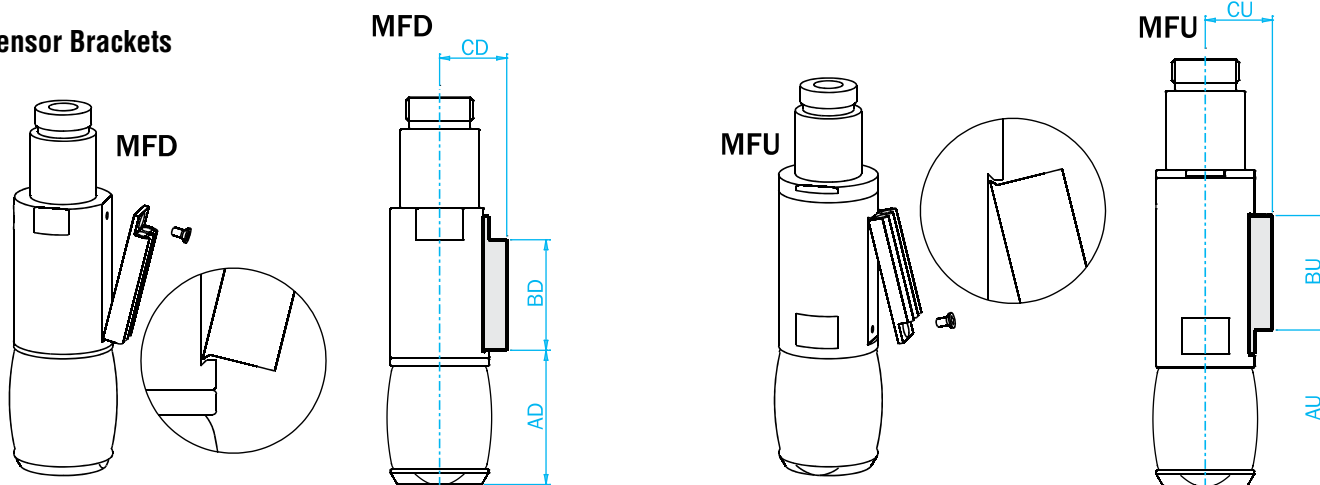
Expansion Grippers size 27 and larger may be equipped with sensors in order to detect position of magnet which is integrated into the piston. Expansion Grippers size 22 and smaller may not be equipped with sensors because the pistons do not have integrated magnets. An optional housing for SN series sensors is available. One or two sensors can be fitted on a gripper.

Quick#	Part#	Type	Connection	Price
6278	SN4N225G	PNP	with lead, 2.5m long	\$27.20
6357	SN4M225G	NPN	with lead, 2.5m long	\$27.20
6277	SN3N203G	PNP	with M8 Connector, 0.3m long	\$31.16
6356	SN3M203G	NPN	with M8 Connector, 0.3m long	\$31.16

See Sensor Reference Guide on page 1009 for full list of compatible sensors.



Sensor Brackets



Quick#	Part#	Wt.	AD	BD	CD	MFD	Price
6919	MFD27K	4g	34	28	17	Ø27	\$16.94
6920	MFD33K	5g	41.5	34.5	19.7	Ø33	\$18.24
6921	MFD41K	5g	52	40.5	23.8	Ø41 / Ø47	\$15.64
6922	MFD51K	6g	65	49	28.5	Ø51	\$15.64
6923	MFD63K	7g	85.5	54.5	33.5	Ø63	\$16.94

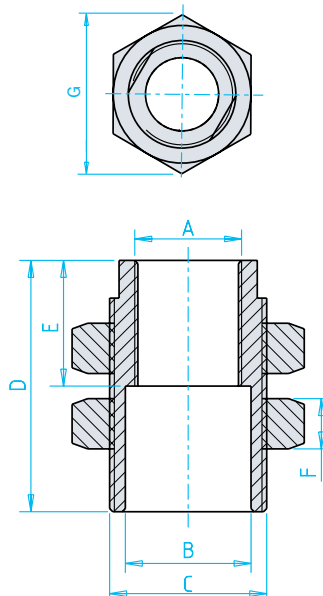
Quick#	Part#	Wt.	AU	BU	CU	MFU	Price
6924	MFU27K	4g	39.5	29	17	Ø27	\$15.64
6925	MFU33K	5g	46.5	33	19.7	Ø33	\$15.64
6926	MFU41K	5g	55.5	36.5	23.8	Ø41 / Ø47	\$15.64
6927	MFU51K	6g	71.5	39	28.5	Ø51	\$15.64
6928	MFU63K	7g	87.5	45	33.5	Ø63	\$15.64

Replacement Expander

Maintenance

No periodic maintenance is necessary. The expander can be replaced when worn. The expected medium life time of the EPDM expander is about 500,000 cycles while silicone is about 1 million cycles.

The expander can be cut (direction showed in the photo) to remove it from the gripper body. It is not necessary to dismantle the gripper to mount the new expander. It must not be glued nor greased.



Quick #	Part #	Size	Material	Price
5377	IF08E02	8mm	EPDM	\$6.55
5378	IF08S01	8mm	Silicone	\$7.80
5379	IF10E02	10mm	EPDM	\$6.55
5380	IF10S01	10mm	Silicone	\$7.80
5381	IF12E02	12mm	EPDM	\$9.15
5382	IF12S01	12mm	Silicone	\$10.40
5383	IF14E02	14mm	EPDM	\$9.15
5384	IF14S01	14mm	Silicone	\$10.40
7304	IF16E02	16mm	EPDM	\$13.00
7305	IF16S01	16mm	Silicone	\$13.00
5385	IF18E02	18mm	EPDM	\$11.75
5386	IF18S01	18mm	Silicone	\$13.00
7438	IF20E02	20mm	EPDM	\$12.07
7439	IF20S01	20mm	Silicone	\$13.29
5387	IF22E02	22mm	EPDM	\$13.00
5388	IF22S01	22mm	Silicone	\$14.35
5389	IF27E02	27mm	EPDM	\$14.35
5390	IF27S01	27mm	Silicone	\$15.60
5391	IF33E02	33mm	EPDM	\$15.60
5392	IF33S01	33mm	Silicone	\$16.95
5393	IF41E02	41mm	EPDM	\$19.55
5394	IF41S01	41mm	Silicone	\$22.15
7347	IF47E02	47mm	EPDM	\$21.39
7348	IF47S01	47mm	Silicone	\$23.29
5395	IF51E02	51mm	EPDM	\$24.75
5396	IF51S01	51mm	Silicone	\$26.10
5397	IF63E02	63mm	EPDM	\$29.95
5398	IF63S01	63mm	Silicone	\$31.30

Mounting Adaptors

	AF12F16M	AF17F25M	AF27F33M
Quick#	6983	6984	6985
A	M12x1	M17x1	M27x1
B	Ø14	Ø20	Ø30
C	M16x1	M25x1.5	M33x1.5
D	25	40	45
E	11	20	15
F	5	8	6.4
G	21	37	47
Weight	25g	130g	140g
Price	\$20.05	\$28.82	\$53.88
Fits Grippers	MFD/MFU08... - MFD/MFU22...	MFD/MFU27... - MFD/MFU33...	MFD/MFU41... - MFD/MFU63...

ID Gripping Air Hands



ID Gripping Air Hands

Quick#	Part#	Price	Material	Part Range ØID	ØA (Deflated)	Maximum Restricted Pressure	Maximum Unrestricted Pressure	Wt.
1300	GSG-IAH-10N	\$422.00	Neoprene (up to 165°F)	8.5-10	8	55psi	25psi	8g
1301	GSG-IAH-12N	\$398.00		10-12	9.5			12g
1302	GSG-IAH-17N	\$384.00		12-17	11			17g
1303	GSG-IAH-21N	\$149.00		16-21	14			28g
1304	GSG-IAH-27N	\$198.00		21-27	19	70psi	35psi	60g
1305	GSG-IAH-32N	\$213.00		24-32	22			85g
1306	GSG-IAH-36N	\$220.00		28-36	25			105g
1307	GSG-IAH-44N	\$240.00		30-44	27			160g
1308	GSG-IAH-52N	\$272.00		32-52	29			245g
1309	GSG-IAH-65N	\$542.00		45-65	41			180g
1310	GSG-IAH-85N	\$610.00		58-85	51			370g
1311	GSG-IAH-105N	\$813.00	70-105	63	610g			
1312	GSG-IAH-25S†	\$276.00	Silicone (up to 320°F)	21-27†	19	25psi	15psi	60g
1313	GSG-IAH-30S	\$294.00		24-32	22			85g
1314	GSG-IAH-35S	\$369.00		28-36	25			105g
1315	GSG-IAH-40S	\$363.00		30-44	27			160g
1316	GSG-IAH-42S	\$1,271.00		32-52	29			245g
1318	GSG-IAH-58S	\$978.00		45-65	41			180g

Use Quick#s for easy online ordering.

- Smaller Air Hands are lightweight and can be used effectively in multi-cavity molds.
- Larger Air Hands, when used in multi-cavity molds, can significantly affect the overall EOAT weight.
- The amount of inflation and grip force can be adjusted as needed with the use of a pressure regulator (see page 1014).
- Choose silicone when high-temperature and non-marking is most important, Neoprene when part temperature is lower and long-life is most important.
- Dimensional drawings online.

Neoprene Protection Sleeves for ID Grippers

Quick#	Part#	Price	Use with:
1923	GSG-IAH-27NS†	\$48.50	#1304 IAH-27N
1924	GSG-IAH-32NS	\$49.00	#1305 IAH-32N
1925	GSG-IAH-36NS	\$49.00	#1306 IAH-36N
1926	GSG-IAH-44NS	\$49.25	#1307 IAH-44N
1927	GSG-IAH-52NS	\$69.50	#1308 IAH-52N
1928	GSG-IAH-65NS	\$86.00	#1309 IAH-65N
1929	GSG-IAH-85NS	\$121.00	#1310 IAH-85N
1930	GSG-IAH-105NS	\$158.00	#1311 IAH-105N

Nose Cones for ID Grippers

Quick#	Part#	Price	Use with:
5261	GSG-IAH-P010NC	\$41.50	#1303 IAH-21N
5262	GSG-IAH-P014NC	\$50.50	#1304, #1312 IAH-27N, IAH-25S
5263	GSG-IAH-P017NC	\$55.50	#1305, #1313 IAH-32N, IAH-30S
5264	GSG-IAH-P019NC	\$64.50	#1306, #1314 IAH-36N, IAH-35S
5265	GSG-IAH-P022NC	\$33.02	#1307, #1315 IAH-44N, IAH-40S
5267	GSG-IAH-P035NC	\$29.56	#1309, #1318 IAH-65N, IAH-58S
5268	GSG-IAH-P045NC	\$35.88	#1310 IAH-85N
5269	GSG-IAH-P055NC	\$34.44	#1311 IAH-105N

Shown with Sleeve + Nose Cone



Shown with Nose Cone only



OD Gripping Air Hands

- The amount of inflation and grip force can be adjusted as needed with the use of a pressure regulator (see page 1014).
- Choose silicone when high-temperature and non-marking is most important, Neoprene when part temperature is lower and long-life is most important.
- Dimensional drawings online.



OD Gripping Air Hands

Quick#	Part#	Price	Material	Part Range Ø ID	ØA (Deflated)	Maximum Restricted Pressure	Maximum Unrestricted Pressure	Wt.
1319	GSG-OAH-15N	\$552.00	Neoprene (up to 165°F)	5-15	19	20psi	10psi	60g
1320	GSG-OAH-25N	\$629.00		10-25	27			145g
1321	GSG-OAH-35N	\$783.00		15-35	37			210g
1322	GSG-OAH-45N	\$878.00		20-45	48			285g
1323	GSG-OAH-15S	\$848.00	Silicone (up to 320°F)	5-15	19	15psi	7.5psi	60g
1324	GSG-OAH-25S	\$926.00		10-25	27			145g
1325	GSG-OAH-35S	\$1,004.00		15-35	37			210g
1326	GSG-OAH-45S	\$1,330.00		20-45	48			285g

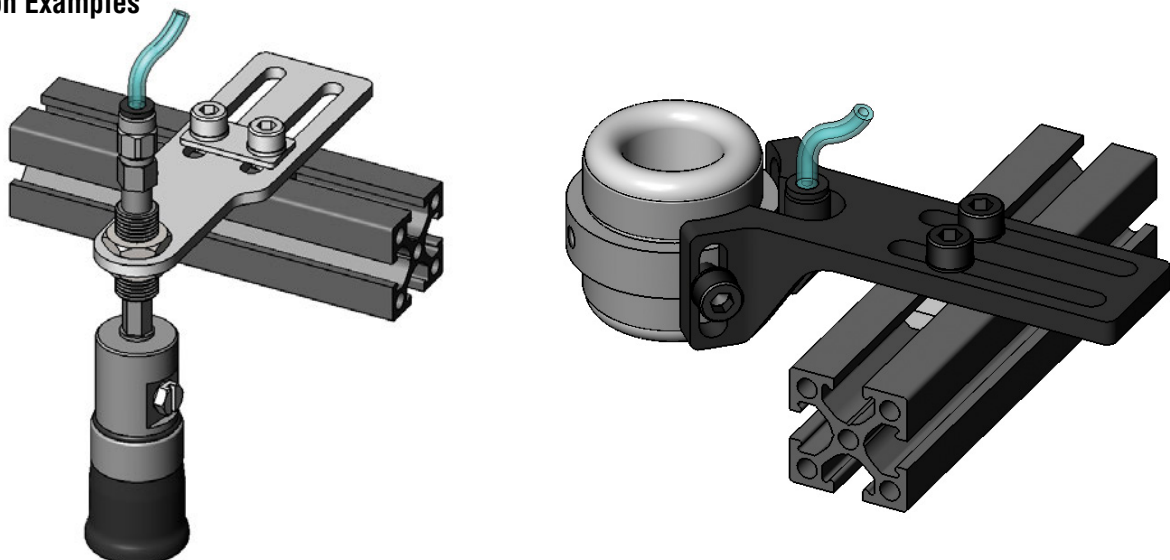
Mounting Brackets for OD Air Hands

Quick#	Part#	Price	Use with	Wt.
1739*	GSC-OAH-15MB	\$39.45	OAH-15	31g
1740*	GSC-OAH-25MB	\$39.45	OAH-25	46g
1741	GSC-OAH-35MB	\$39.87	OAH-35	57g
1742	GSC-OAH-45MB	\$44.75	OAH-45	69g



Order profile mounting fasteners separately
(2x) M5x10, slotted nut & washer, see page 1077.
*Use M5 slotted nut (Q#4951) to fasten brackets #1739 & #1740 to Gimatic & ASS profile on page 1078.

Application Examples



Lightweight ID Gripper – IGP-14

- IGP Grippers with EP Soft Touch Coating, slip resistant and silicone free. Working temp is 194°F with short term temp. resistance of 266°F.
- Twelve models available, all having a Ø14mm clampable stud.
- Extremely lightweight, and normally closed.
- Made utilizing selective laser sintering technology.
- Use D-M9.. sensors to detect closed position only. (D-M9.. sensors properly fasten to detect closed position only.)
- Use programmable sensor Q# 3809 for detection of 2 positions.
- ID grip diameter from 8 to 27mm. EP coated grip diameter from 10 to 29mm.
- Low cost alternative to air hands, tested to last 2 million cycles.
- Maximum operating temperature 176°F.
- Positive / negative pressure filter is recommended, see page 1015.
- Maximum pressure 87psi (6bar).



Lightweight ID Gripper

Quick#	Part#	Price	ID Grip Ø	Wt.	Payload
3630	IGP-14-8-12	\$60.90	8–12mm	14g	100g
3631	IGP-14-11-15	\$60.90	11–15mm	14g	100g
3632	IGP-14-14-18	\$60.90	14–18mm	15g	100g
3633	IGP-14-17-21	\$60.90	17–21mm	16g	100g
3634	IGP-14-20-24	\$60.90	20–24mm	16g	100g
3635	IGP-14-23-27	\$60.90	23–27mm	17g	100g

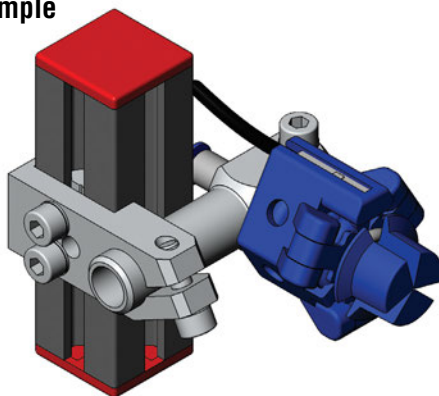
Lightweight ID Gripper with Soft Touch Coating

Quick#	Part#	Price	ID Grip Ø	Wt.	Payload
3745	IGP-14-10-14-EP	\$145.95	10–14mm	14g	100g
3746	IGP-14-13-17-EP	\$145.95	13–17mm	14g	100g
3747	IGP-14-16-20-EP	\$145.95	16–20mm	15g	100g
3748	IGP-14-19-23-EP	\$145.95	19–23mm	16g	100g
3749	IGP-14-22-26-EP	\$145.95	22–26mm	16g	100g
3750	IGP-14-25-29-EP	\$145.95	25–29mm	17g	100g

Replacement Spring (sold individually)

Quick#	Part#	Price	For
3826	MFZ-RZ-024BI	\$4.73	Size 14 IGP grippers

Application Example



Sensors Sold Separately - 3-Wire Sensors Detect Gripper Closed

Quick#	Part#	Price	ID Grip Ø	Wt.	Payload
5497	D-M9P-SAPC	\$42.06	PNP 0.5m long with M8 Connector		
5498	D-M9N-SAPC	\$42.06	NPN 0.5m long with M8 Connector		
5430	D-M9PL	\$33.70	PNP with lead, 3m long		
2412	D-M9NL	\$33.70	NPN with lead, 3m long		

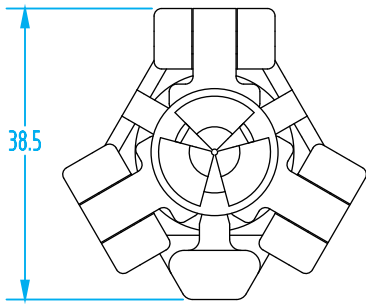
4-Wire Programmable Sensor for Detection of Two Positions

3809	MFS-T2-3-7	\$75.21	PNP, 0.5m long with M8 Connector		
------	------------	---------	----------------------------------	--	--

Use Quick#s for easy online ordering.

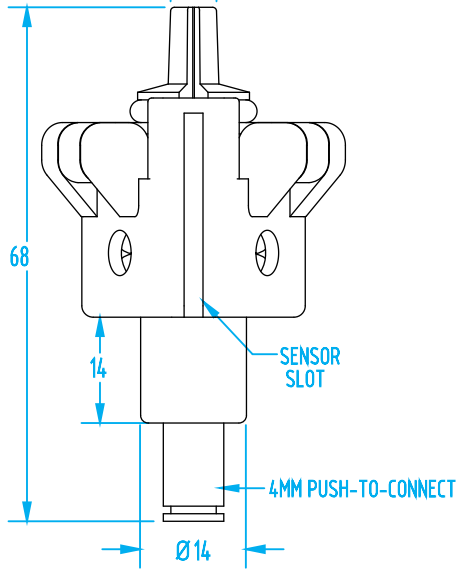
Lightweight ID Gripper – IGP-14

(Dimensioned drawings shown full scale)

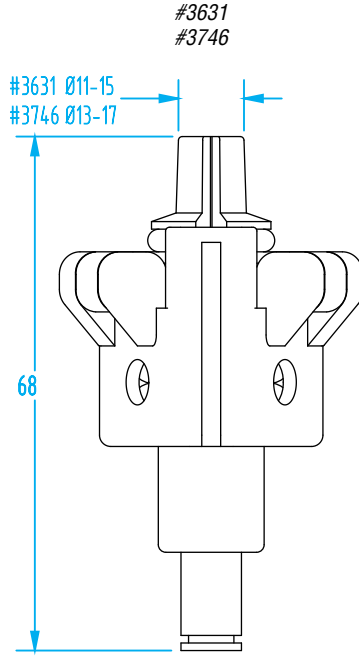


#3630
#3745

#3630 \varnothing 8-12
#3745 \varnothing 10-14

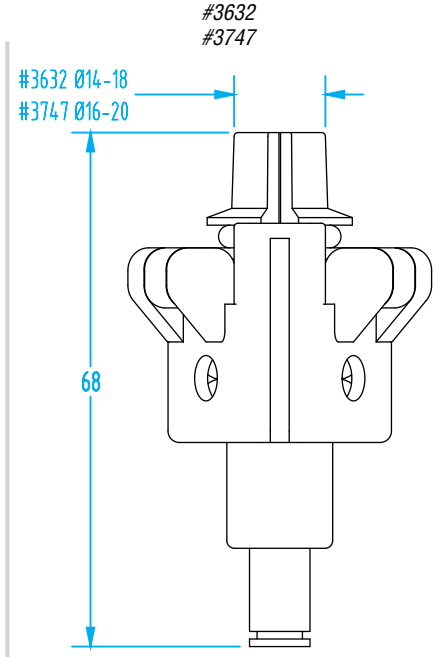


Use these dimensions for each of the Size 14 ID Grippers



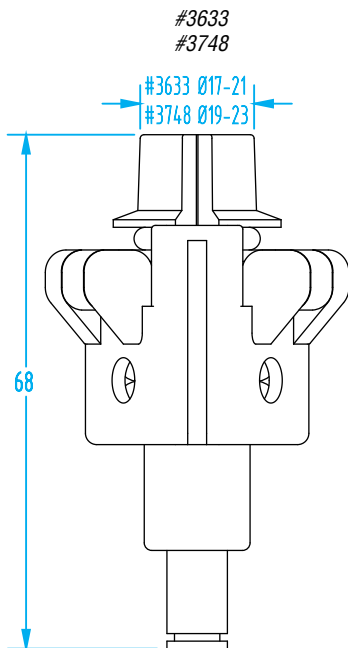
#3631
#3746

#3631 \varnothing 11-15
#3746 \varnothing 13-17



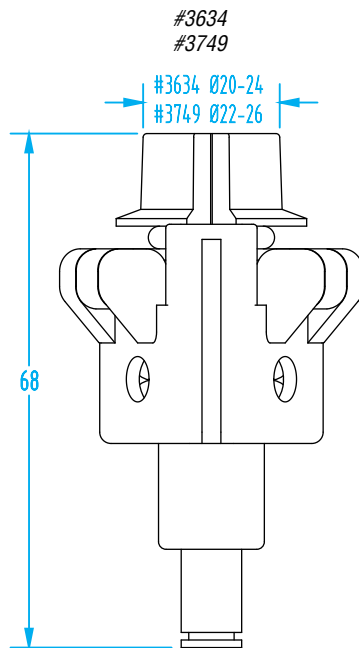
#3632
#3747

#3632 \varnothing 14-18
#3747 \varnothing 16-20



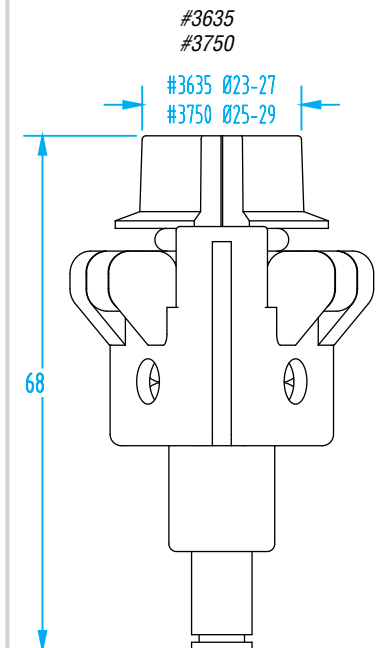
#3633
#3748

#3633 \varnothing 17-21
#3748 \varnothing 19-23



#3634
#3749

#3634 \varnothing 20-24
#3749 \varnothing 22-26



#3635
#3750

#3635 \varnothing 23-27
#3750 \varnothing 25-29

Lightweight ID Gripper – IGP-20

- IGP Grippers with EP Soft Touch Coating, slip resistant and silicone free. Working temp is 194°F with short term temp. resistance of 266°F.
- Fourteen models available, all having a Ø20mm clampable stud.
- Extremely lightweight, and normally closed.
- Made utilizing selective laser sintering technology.
- Use D-M9.. sensors to detect closed position only. (D-M9.. sensors properly fasten to detect closed position only.)
- Use programmable sensor Q# 3809 for detection of 2 positions.
- ID grip diameter from 26 to 49mm. EP coated grip diameter from 28 to 50mm.
- Low cost alternative to air hands, tested to last 2 million cycles.
- Maximum operating temperature 176°F.
- Positive / negative pressure filter is recommended, see page 1015.
- Maximum pressure 87psi (6bar).



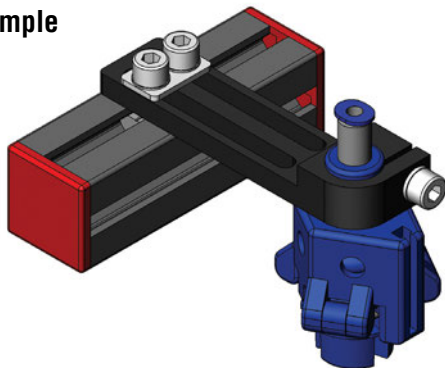
Lightweight ID Gripper

Quick#	Part#	Price	ID Grip Ø	Wt.	Payload
3703	IGP-20-26-30	\$165.90	26–30mm	42g	100g
3704	IGP-20-29-33	\$165.90	29–33mm	43g	100g
3705	IGP-20-32-36	\$165.90	32–36mm	44g	100g
3706	IGP-20-35-39	\$165.90	35–39mm	46g	100g
3707	IGP-20-38-42	\$165.90	38–42mm	46g	100g
3708	IGP-20-41-45	\$165.90	41–45mm	50g	100g
3709	IGP-20-44-49	\$165.90	44–49mm	52g	100g

Replacement Spring (sold individually)

Quick#	Part#	Price	For
3827	MFZ-RZ-042LI	\$5.00	Size 20 IGP grippers

Application Example



Lightweight ID Gripper with Soft Touch Coating

Quick#	Part#	Price	ID Grip Ø	Wt.	Payload
3751	IGP-20-28-32-EP	\$213.15	28–32mm	42g	100g
3752	IGP-20-31-35-EP	\$213.15	31–35mm	43g	100g
3753	IGP-20-34-38-EP	\$213.15	34–38mm	44g	100g
3754	IGP-20-37-41-EP	\$213.15	37–41mm	46g	100g
3755	IGP-20-40-44-EP	\$213.15	40–44mm	46g	100g
3756	IGP-20-43-47-EP	\$213.15	43–47mm	50g	100g
3757	IGP-20-46-50-EP	\$213.15	46–50mm	52g	100g

Sensors Sold Separately - 3-Wire Sensors Detect Gripper Closed

Quick#	Part#	Price	ID Grip Ø	Wt.	Payload
5497	D-M9P-SAPC	\$42.06	PNP 0.5m long with M8 Connector		
5498	D-M9N-SAPC	\$42.06	NPN 0.5m long with M8 Connector		
5430	D-M9PL	\$33.70	PNP with lead, 3m long		
2412	D-M9NL	\$33.70	NPN with lead, 3m long		

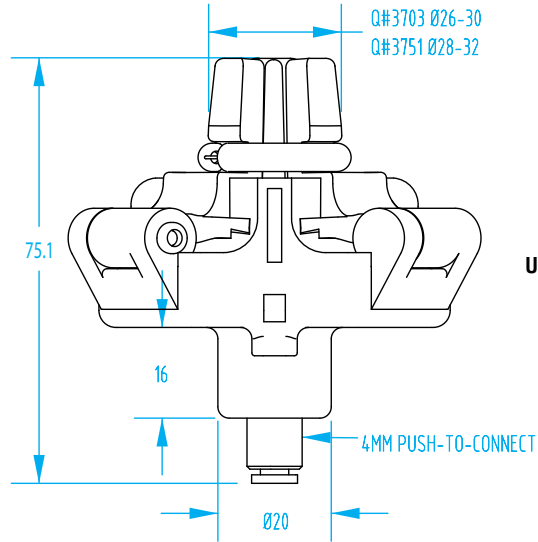
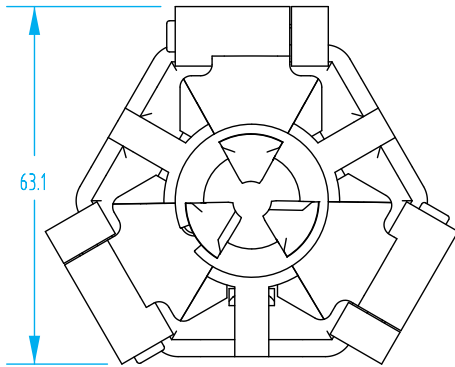
4-Wire Programmable Sensor for Detection of Two Positions

3809	MFS-T2-3-7	\$75.21	PNP, 0.5m long with M8 Connector		
------	------------	---------	----------------------------------	--	--

Lightweight ID Gripper – IGP-20

(Dimensioned drawings shown at 75% scale)

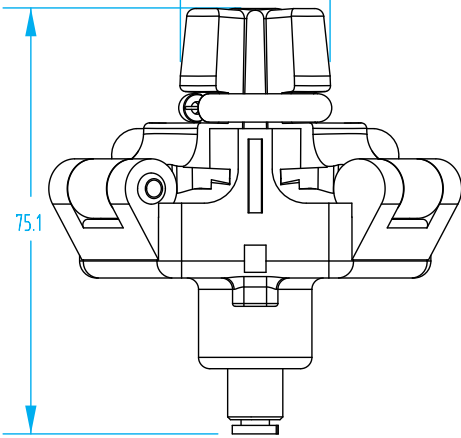
#3703
#3751



Use these dimensions for each of the size 20 ID Grippers

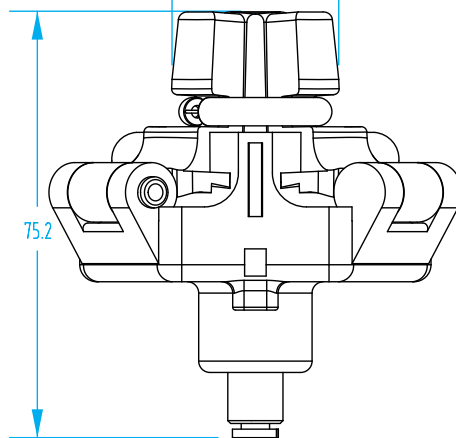
#3704
#3752

Q#3704 Ø29-33
Q#3752 Ø31-35



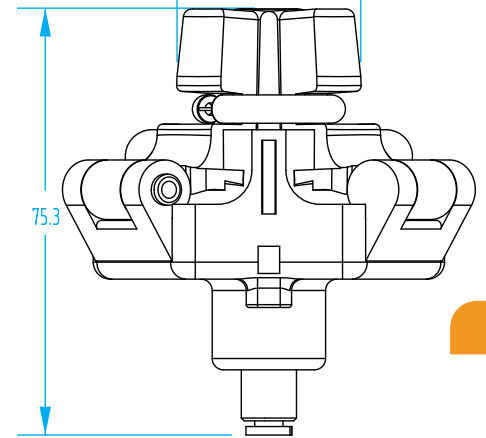
#3705
#3753

Q#3705 Ø32-36
Q#3753 Ø34-38



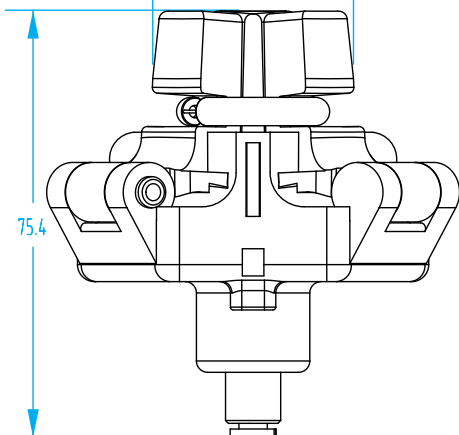
#3706
#3754

Q#3706 Ø35-39
Q#3754 Ø37-41



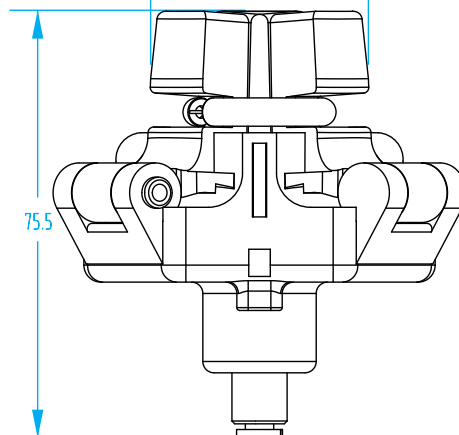
#3707
#3755

Q#3707 Ø38-42
Q#3755 Ø40-44



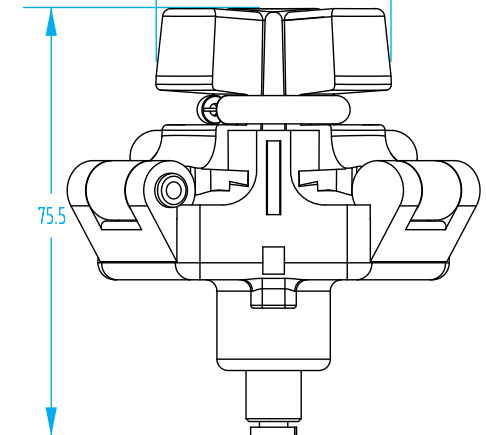
#3708
#3756

Q#3708 Ø41-45
Q#3756 Ø43-47



#3709
#3757

Q#3709 Ø44-49
Q#3757 Ø46-50



Pneumatic Needle Gripper – PT

- Suitable for textile and food industry.
- Double acting & self centering.
- Simultaneous stroke adjustment.
- Several mounting accessories.
- #6759: Large through hole.
- #7370: Blow-off port for cleaning and releasing.
- #7370: PTFE pad for hot surface contact.
- #7370: Optional Gimatic C-slot sensors on page 1002.

PAAT Vacuum Cups on page 420 are an alternative to needle grippers for handling carbon fiber sheet and molded parts. PAAT Vacuum Cups do not damage the structure of composites.



#6759



#7370



Quick#	6759	7370
Part#	PT25	PT28
Price	\$385.00	\$519.00
Medium	Filtered, lubricated/non-lubricated compressed air	
Pressure range	43.5–116 psi	
Total opening force at 87 psi	20.2 lbf	
Needle stroke	1–7mm	
Number of needles	4	8
Needle depth	0–2.5mm	
Weight	165g	182g

Use Quick#s for easy online ordering.

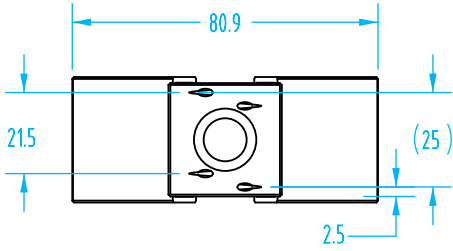
Replacement Needles - sold separately

Quick#	Part#	Price
7199	PT-25-05	\$3.64

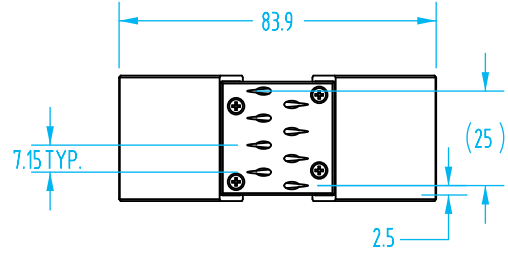
Pneumatic Needle Gripper – PT

(Dimensioned drawings shown 1/2 scale)

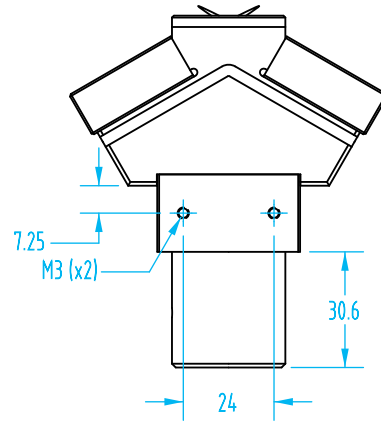
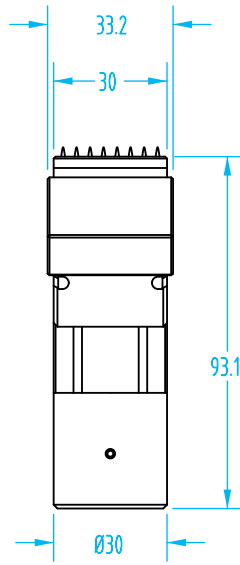
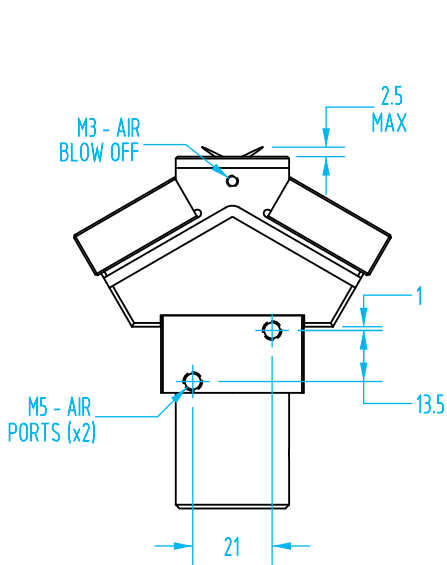
PT25, #6759



PT28, #7370



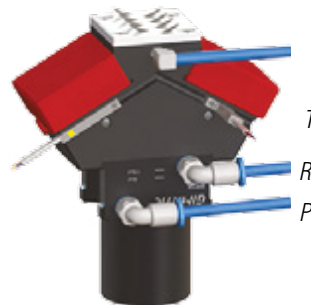
PT28 shown (PT25 has same body dimensions)



Simultaneous stroke adjustment of all 4 or 8 needles.



PT Needle gripper shown with VMK actuator found on page 312.



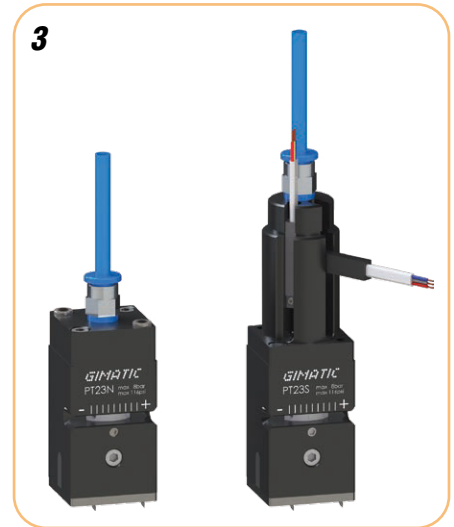
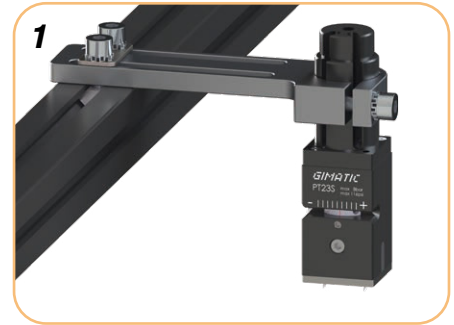
PT-28
T: Blow-off port
R: Needles out
P Needles in



PT-25 Large thru-hole

Self-centering Needle Mini-Gripper – PT

- Four (4) Needle Grippers
- Suitable for plastics, textile and food industry.
- Single acting (normally retracted) & Self centering.
- Needle simultaneous stroke adjustment.
- #7385 & 7520: Clamp mounting [1].
- #7384, #7478: Plate mounting [2].
- Air line and sensor installation [3].
- #7385 & 7520: Optional Gimatic C-slot sensors on page 1002.



Quick#	7384	7478	7385	7520
Part#	PT23N	PT30N	PT23S	PT30S
Price	\$351.00	\$411.00	\$399.00	\$458.00
Medium	Filtered, lubricated/non-lubricated compressed air			
Pressure range	43.5–116 psi			
Total opening force at 87 psi	9 lbf	11.25 lbf	9 lbf	11.25 lbf
Needle stroke	0–4mm	0–7mm	0–4mm	0–7mm
Needle depth	0–2mm max	0–4mm max	0–2mm max	0–4mm max
Weight	74g	115g	92g	145g

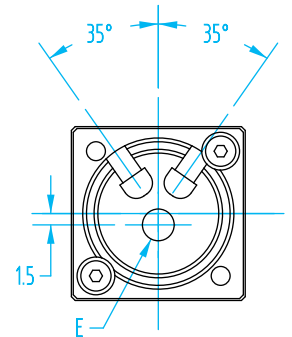
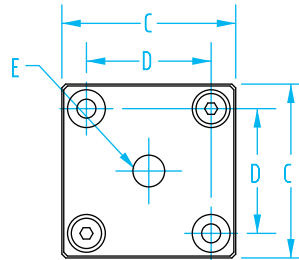
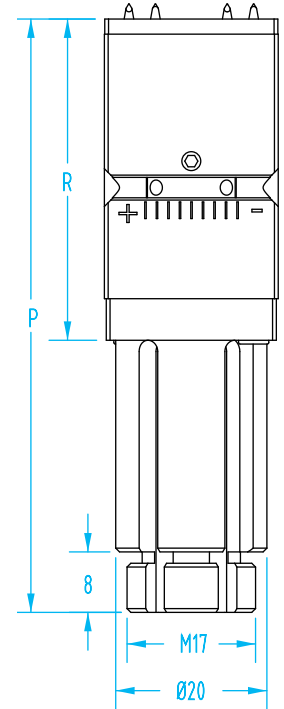
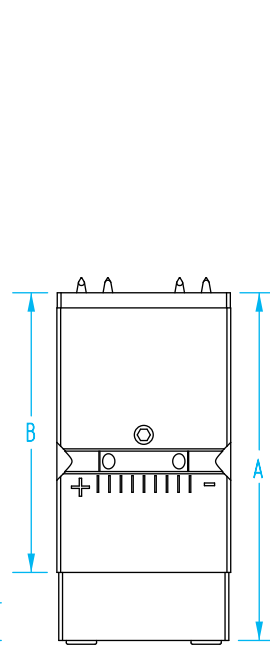
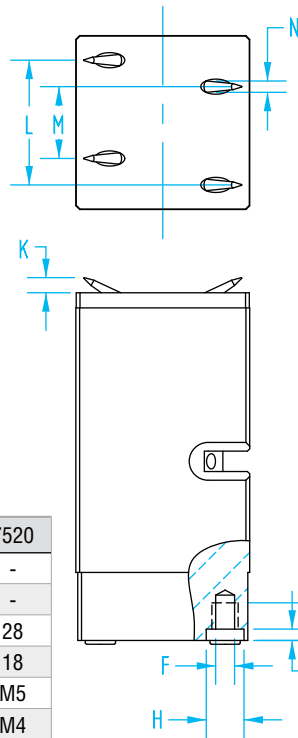
Replacement Needles - sold in a set of 4 needles

Quick#	Part#	For:	Price
7386	PT23-K4	PT23: 7384, 7385	\$92.00
7479	PT30-K4	PT30: 7478, 7520	\$60.00

Self-centering Needle Mini-Gripper – PT

PT23N, PT30N; #7384, #7478

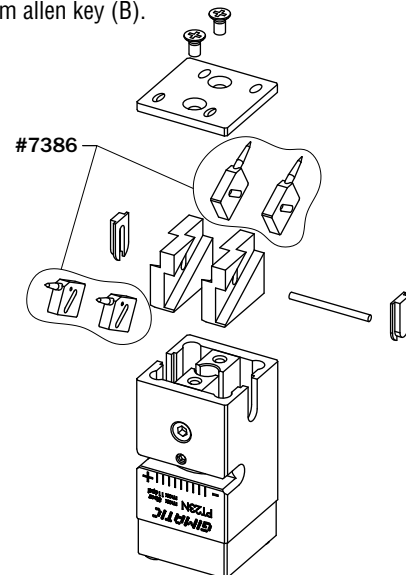
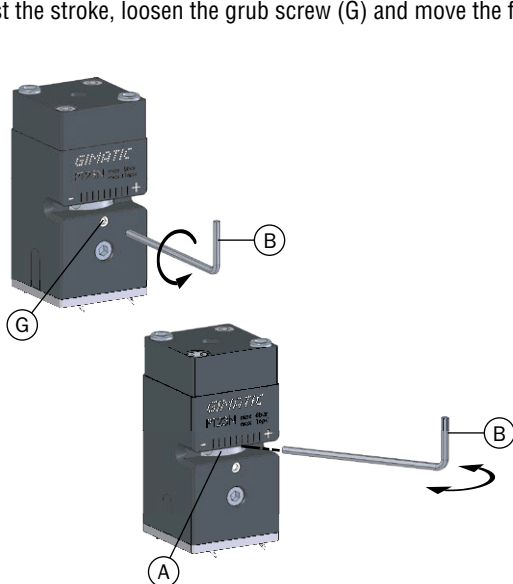
PT23S, PT30S; #7385, #7520



	7384	7478	7385	7520
A	46.5	54	-	-
B	37	45	-	-
C	23	28	23	28
D	16.5	18	16.5	18
E	M5	M5	M5	M5
F	M3	M4	M3	M4
G	6	6	6	6
H	Ø5 h8	Ø7 h8	-	-
J	1.5	1.5	-	-
K	2	4	2	4
L	16.5	18	16.5	18
M	9.5	9	9.5	9
N	1.5	1.5	1.5	1.5
P	-	-	78.5	87.5
R	-	-	42.5	51.5

Stroke Adjustment

The gripper is self-centering. Therefore the piston end-stroke determines the stroke of all needles. To adjust the stroke, loosen the grub screw (G) and move the ferrule (A) by a 1.5mm allen key (B).



>ASS< Needle Grippers

- Features 18 needles.
- Needle depth is adjustable between 0–2mm in 0.025mm increments.
- Single acting
- Air blow-off port
- Optional sensor for needle position.
- The NGR-16-18EZ has thinner needles (0.7mm) and includes a cover for thin and limp materials.



Needle depth is adjustable between 0–2mm in 0.025mm increments.

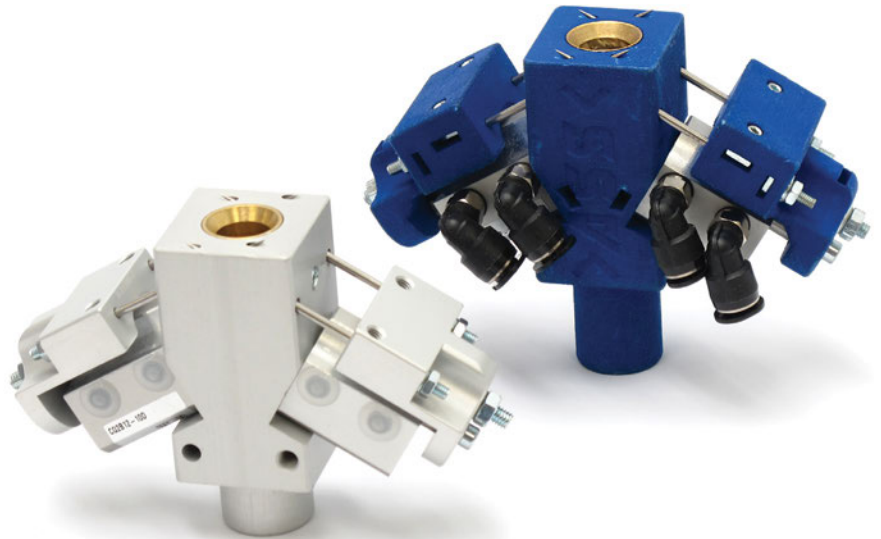
NGR-16-18EZ shown with cover.

Adjustable Needle Gripper

Quick#	Part#	>ASS< #	Price	Needle Depth	Air Connection	Wt.
3767	NGR-16-18EZ	1-460-19-00	\$542.85	(18x) 0–1.75mm*	M5	255g
Replacement Needles for 18 pin - Sold with 2 locators, each with 9 needles						
3825	NEEDLE-NGR-16	1-460-18-20	\$194.78			
Optional Sensor						
3809	MFS-T2-3-7	1-808-30-00	\$75.21	C-Slot with 3m Lead & M8 Connection		

*Note: Measurement with additional cover attached.

- Suitable for textile, cloth, carpet or any other material that can be penetrated.
- Through hole allows placement of cloth onto locating pins.
- New lightweight selective laser sintering version 30% lighter than aluminum body.
- Independent needle positioning and tandem stroke adjustment for fine tuning.
- Each cylinder is double acting.



Through Hole Needle Gripper

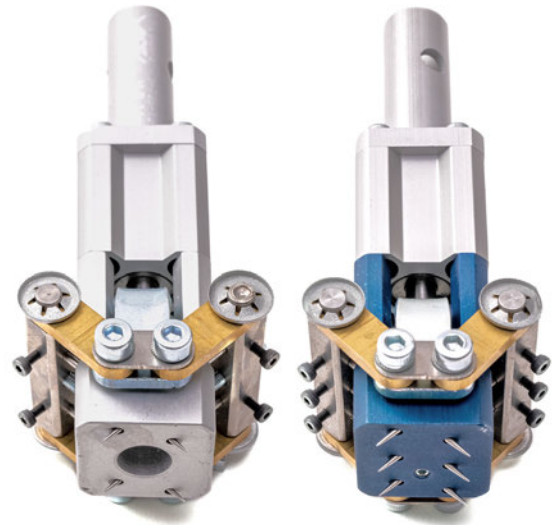
Quick#	Part#	>ASS< #	Price	Body Style	Needle Depth	Air Connection	Wt.
3542	NGR-12-D	1-460-09-00	\$430.50	Aluminum	0–2.5mm	M5	249.2g
3540	NGR-12-DL	1-460-12-00	\$601.13	Laser Sintered	0–2.5mm	M5	160g
50mm Replacement Needles - (1 piece)							
3445	NEEDLE-50	1-460-03-06	\$5.25				

Visit www.EMlcorp.com for dimensional drawings

>ASS< Needle Grippers

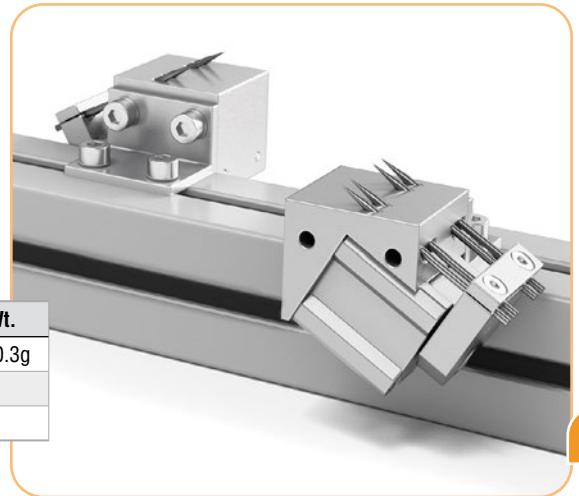
- #3485 features 4 needles while the #3484 has 6 needles for a secure grip of fabrics.
- Needles penetrate over cross and stretch the fabric for a more secure grip.
- Independent needle positioning and stroke adjustment.
- Double acting

Quick#	Part#	>ASS< #	Price	Needle Depth	Air Connection	Wt.
3485	NGR12	1-460-06-00	\$420.00	0-4mm	M5	185g
3484	NGR-12-6	1-460-08-00	\$582.75	0-4mm	M5	190g
37mm Replacement Needles - (1 piece)						
3408	NEEDLE-37	1-460-06-09	\$5.25			



- Features 4 needles, suitable for textile, cloth, carpet or any other material that can be penetrated.
- Designed for installation on X-Profile.
- When used in pairs, the grippers should be facing opposite directions.
- Mounting bracket included.
- Double acting (each unit)

Quick#	Part#	>ASS< #	Price	Needle Depth	Air Connection	Wt.
3535	NGR-X-16-10	1-460-03-00	\$225.75	0-5mm	M5	150.3g
50mm Replacement Needles - (1 piece)						
3445	NEEDLE-50	1-460-03-06	\$5.25			



- Suitable for textile, cloth, carpet or any other material that can be penetrated.
- Able to combine many units into a series.
- 6 PTFE coated needles are stepless adjustable and working position can be monitored with optional sensors.
- Double acting
- Clampable mounting bracket included, remove for direct plate mount.

Quick#	Part#	>ASS< #	Price	Needle Depth	Air Connection	Wt.
3768	NGR-12-6-DS-A	1-460-70-00	\$582.23	0-5mm	M5	241g
Optional Sensor						
3809	MFS-T2-3-7	1-808-30-00	\$75.21	C-Slot with 3m Lead & M8 Connection		



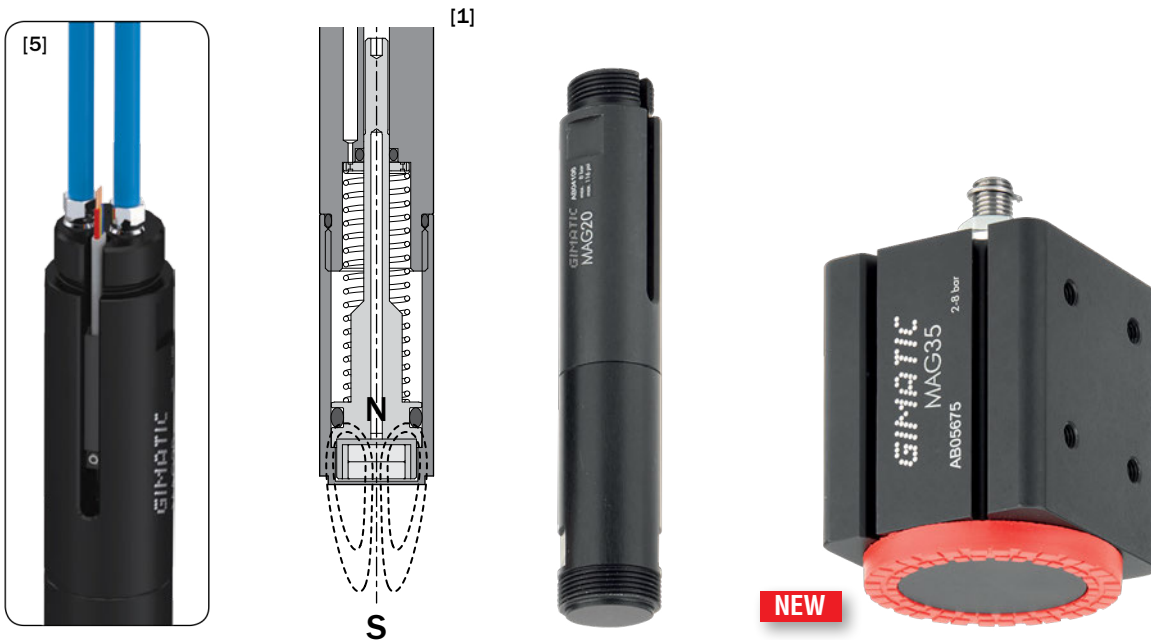
Visit www.EMICorp.com for dimensional drawings

Magnetic Gripper – MAG

- Double-acting pneumatic piston, 16mm bore, with reset spring in holding position [1].
- Many mounting options on the clampable diameter.
- Suitable for handling magnets & small parts.
- Holding point polarity: south.
- Magnetic field concentrated at the holding point [1].
- Easy centering of the handled part.
- Optional C-slot sensors [5] on page 1002.



Because of air port placement, we recommend you use two M3 Barbed fittings Quick#256 found on page 1070, especially when using an extension tube.



Quick#	7383	7776
Part#	MAG20	MAG35
Price	\$399.00	\$399.00
Medium	Filtered, lubricated/non-lubricated compressed air	
Pressure range	30–116 psi	30–87 psi
Stroke	23mm	15mm
Piston Bore	Ø16mm	Ø35mm
Magnetic Strength	7 N	120 N
Max. Working Frequency	1.5 Hz	1 Hz
Cycle air consumption	11.2 cm ³	40 cm ³
Weight	72g	400g

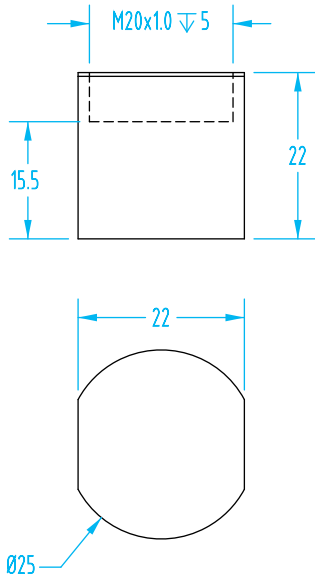
MAG20 Gripper Accessories - sold separately

Quick#	Part#	Description	Price
7452	MAG20-BA	Blank Bushing (machine to your part)	\$11.78
7486	MAG20-IF	Nest Bushing (secures insert)	\$9.60

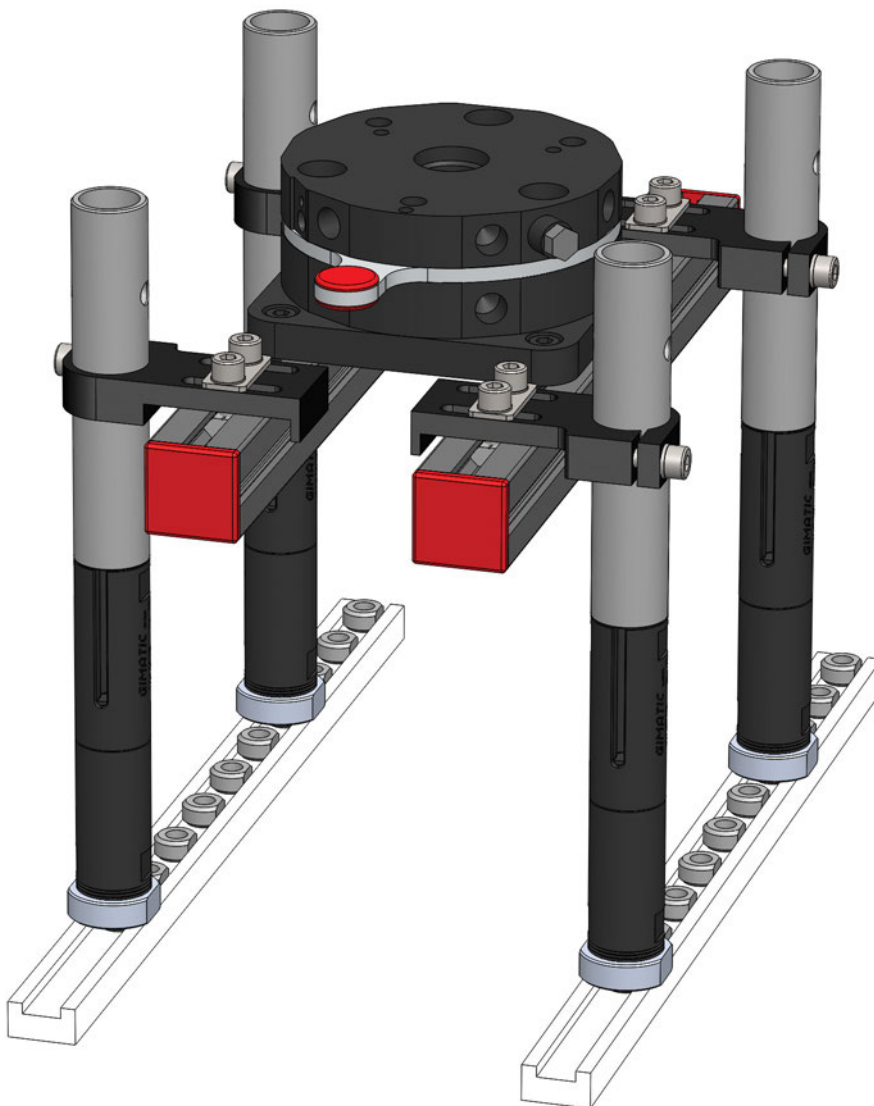
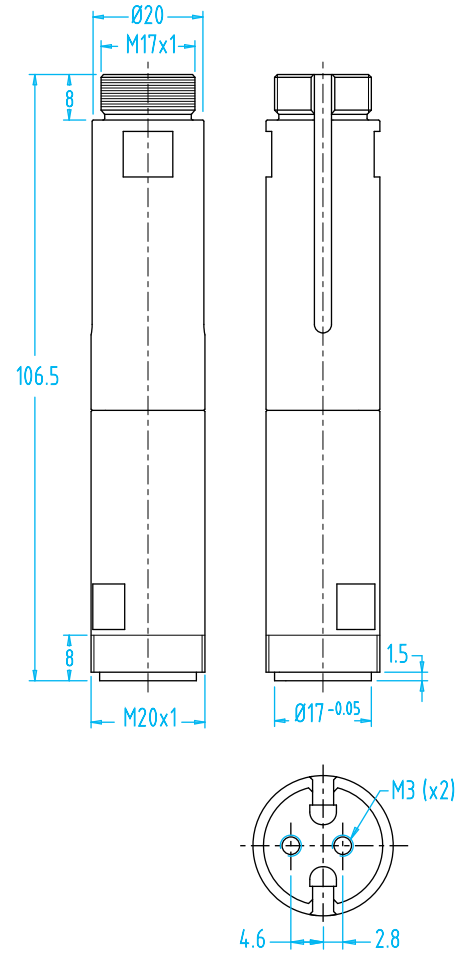
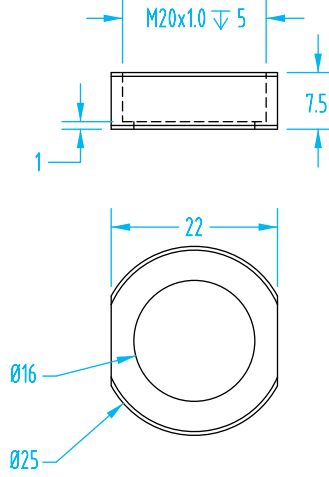
Magnetic Gripper – MAG

(Dimensioned drawings shown full scale)

#7452 (Blank Bushing)



#7486 (Nest Bushing)



Magnetic Gripper – SGM

- Handling of ferromagnetic work-pieces only.
- Compact, heavy-duty aluminum housing with permanent magnet.
- Clip-on, easy to replace friction ring.
- Bistable design: the magnet settings “grip” and “release” are maintained in event of power loss. No electric power required.
- High shear forces can be achieved.
- Flexible mounting options.
- Double acting.



Magnetic Grippers

Quick#	Part#	Price	Holding Force*	Remaining Force	Operating Pressure	Operating Temp.	Wt.
1993	SGM-30-G18-IG	\$381.45	7.8 lbf	0.06 lbf	50.7–87 psi	41°–158°F	130g
1994	SGM-40-G14-IG	\$474.92	22.4 lbf				240g
1995	SGM-50-G14-IG	\$539.57	40.4 lbf				440g

***Note: The value given is a static value with no safety factor; based on a plate with a thickness of 2mm, with friction ring. For system configurations with magnetic grippers, a safety factor of S = 3 must be applied.**

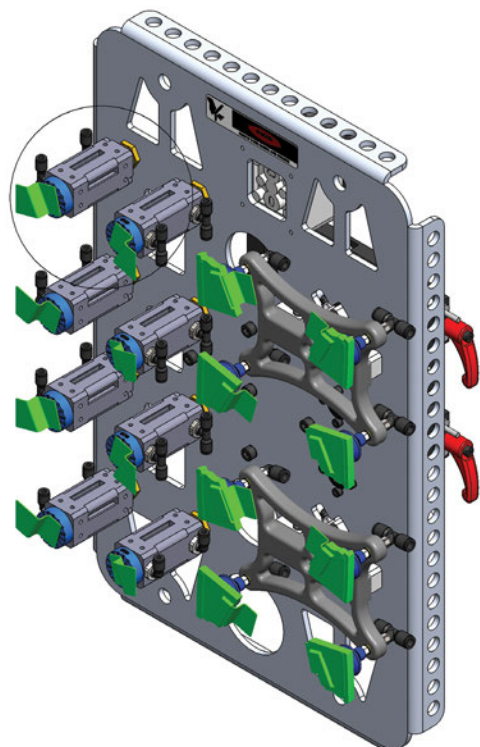
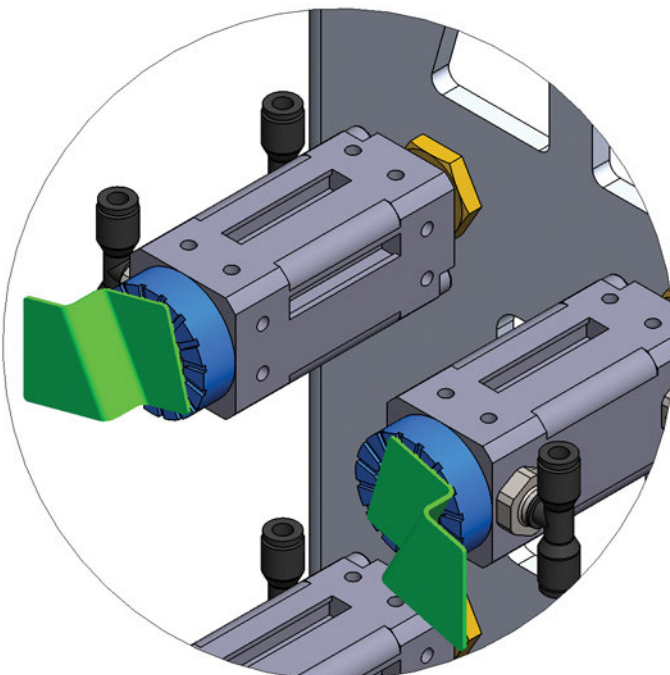
Replacement Friction Rings

Quick#	Part#	For:	Price
1996	SGM-30-RR	SGM-30	\$44.16
1997	SGM-40-RR	SGM-40	\$53.96
1998	SGM-50-RR	SGM-50	\$67.95

Mounting Extensions (see page 1065 for more information)

Quick#	Part#	Price	Thread	Tube Diameter	Length	Wt.
5750	MFI-A150	\$10.93	G1/8"	Ø14	45	15g
5751	MFI-A151	\$12.20	G1/8"	Ø14	90	25g
5752	MFI-A152	\$12.44	G1/4"	Ø20	45	30g
5753	MFI-A153	\$13.33	G1/4"	Ø20	90	55g

Application Examples

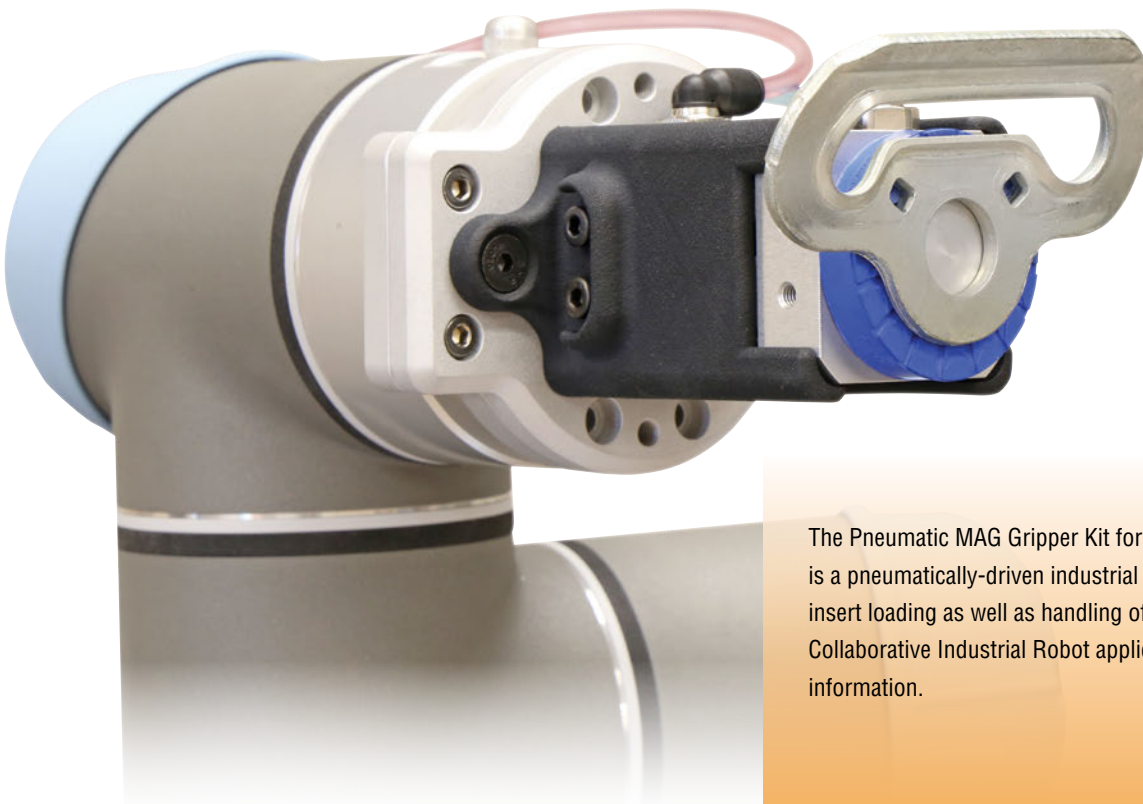
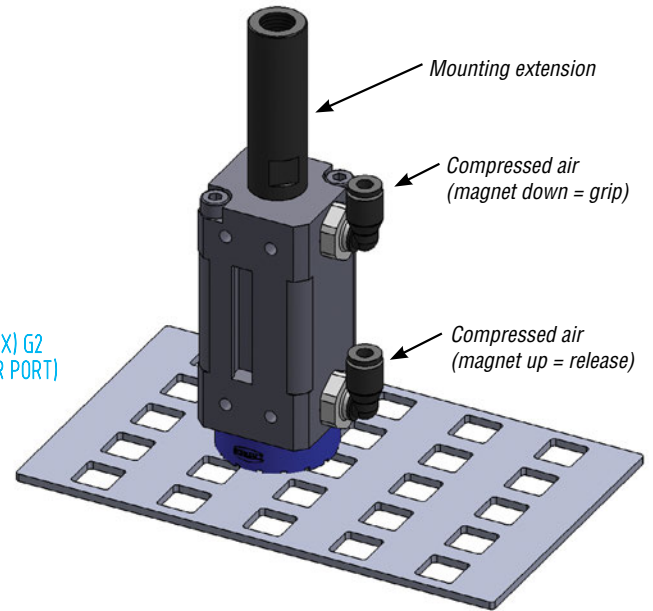
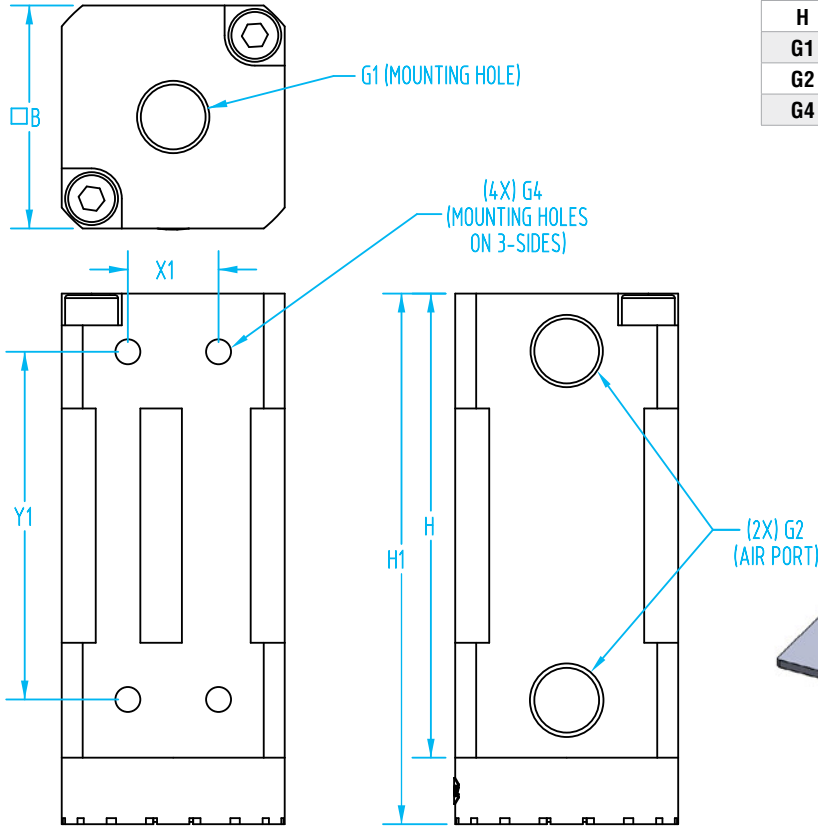


Magnetic Grippers – SGM

(SGM-30 Shown to Scale)

Ferromagnetic materials: Iron, Iron Alloys, Steel, Cobalt, Nickel
Non Ferromagnetic materials: Aluminum, Brass, Stainless Steel, Titanium, Copper

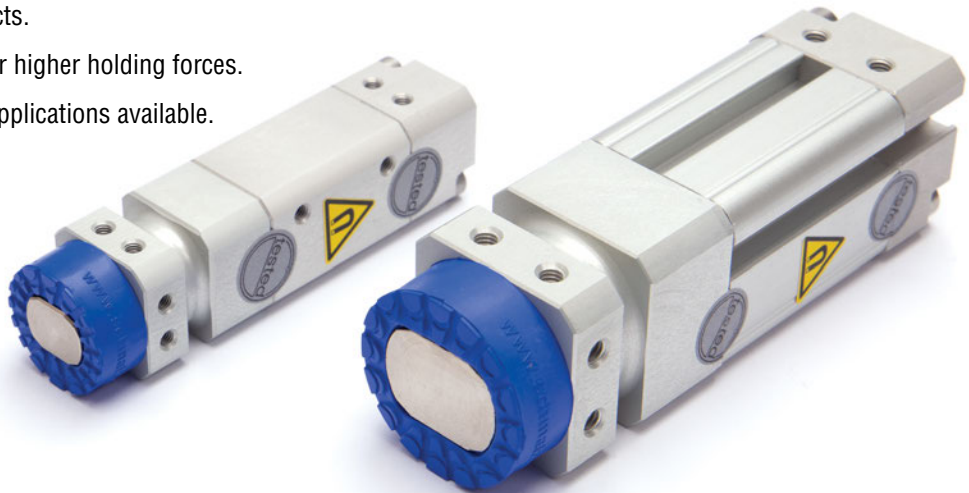
	SGM-30	SGM-40
B	30	40.6
X1	12	12
Y1	46	46
H1	70.2	70.2
H	61.4	61.4
G1	G1/8"	G1/4"
G2	G1/8"	G1/8"
G4	M4	M4



The Pneumatic MAG Gripper Kit for Industrial Cobots by EMI is a pneumatically-driven industrial magnetic gripper ideal for insert loading as well as handling of ferromagnetic work-pieces in Collaborative Industrial Robot applications. See page 177 for more information.

High Performance Magnetic Grippers – SGM

- Handling of ferromagnetic work-pieces only.
- Efficient new magnet gripper with very high holding forces for handling perforated plates, work-pieces with complex laser-cut patterns, and similar objects.
- Can be used without friction ring for higher holding forces.
- HT versions for high-temperature applications available.
- Other sizes available, contact EMI.



Magnetic Grippers

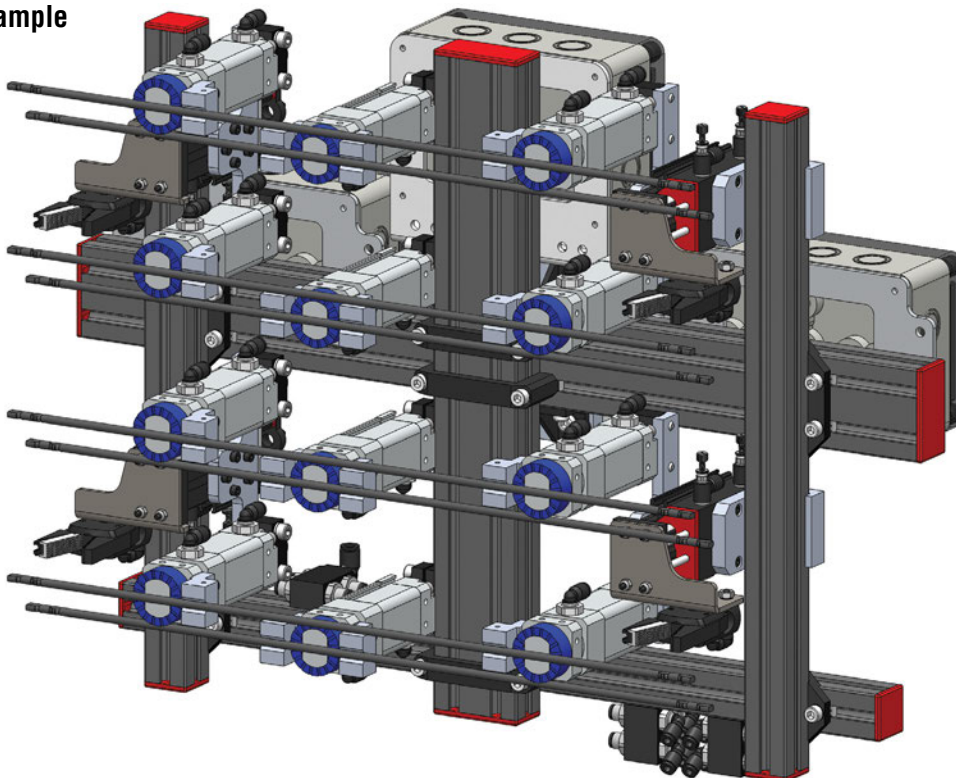
Quick#	Part#	Price	Holding Force*	Remaining Force	Operating Pressure	Operating Temp.	Wt.
1989	SGM-HP-20-G18-IG	\$446.19	4.2 lbf	0.06 lbf	50.7–87 psi	41°–158°F	81g
1990	SGM-HP-30-G18-IG	\$583.61	20.2 lbf				215g

*Note: The value given is a static value with no safety factor; based on a plate with a thickness of 2mm, with friction ring. For system configurations with magnetic grippers, a safety factor of S = 3 must be applied.

Replacement Friction Rings

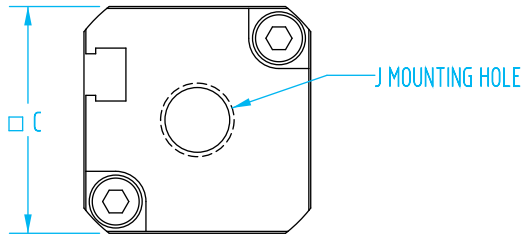
Quick#	Part#	For:	Price
1991	SGM-HP20-RR	SGM-HP-20	\$39.97
1992	SGM-HP30-RR	SGM-HP-30	\$43.55

Application Example

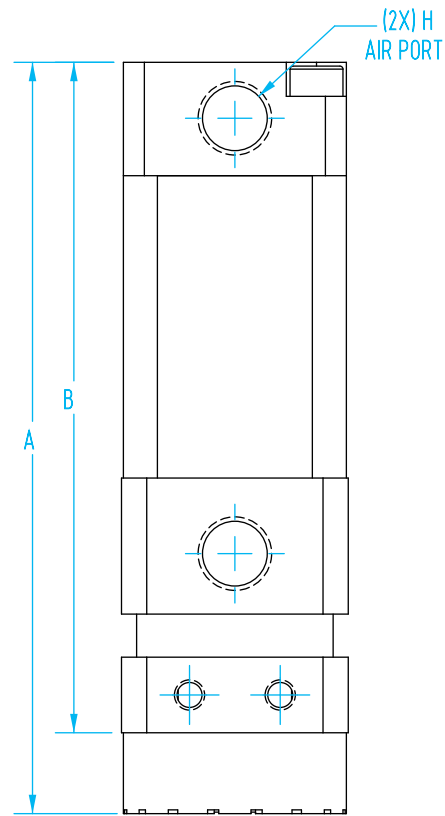
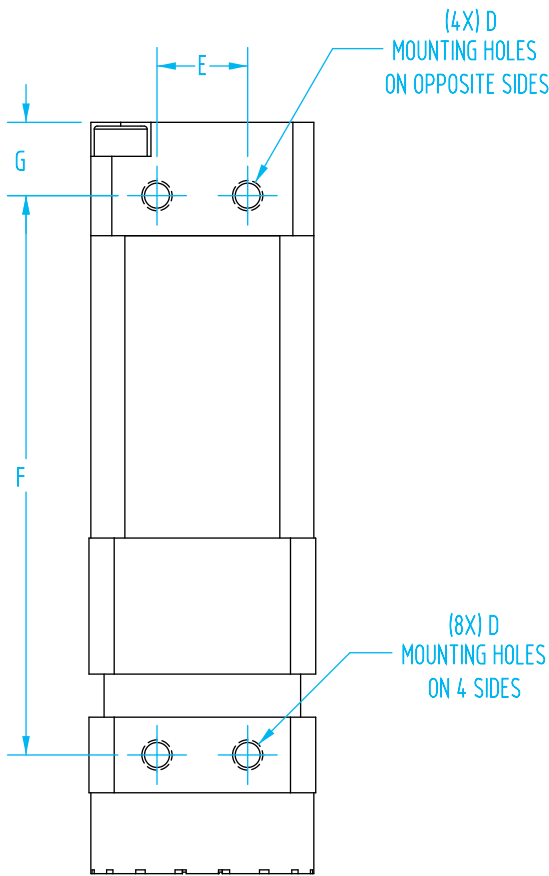


High Performance Magnetic Grippers – SGM

Ferromagnetic materials: Iron, Iron Alloys, Steel, Cobalt, Nickel
Non Ferromagnetic materials: Aluminum, Brass, Stainless Steel, Titanium, Copper



	#1989	#1990
A	78.2	99.4
B	69	88.7
C	20	30
D	M3	M4
E	6.5	12
F	55	74
G	10	9.7
H	M5	G1/8
J	G1/8	G1/8



Electric Gripper Basics

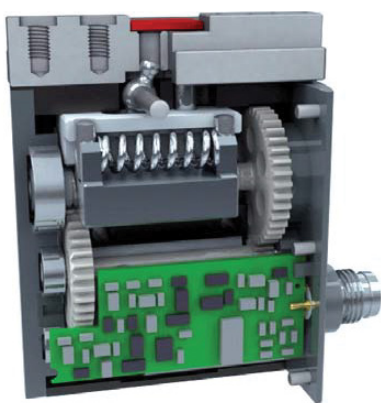
Mechatronics

Mechatronics is the combination of mechanical engineering, electronic engineering, and information technology in order to design and manufacture useful, more reliable and innovative products.

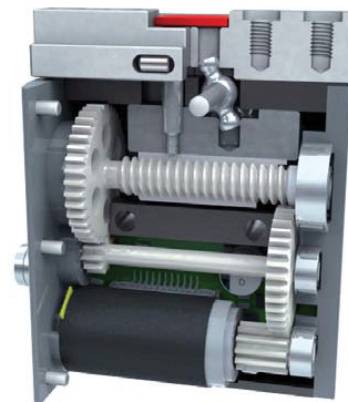
Gimatic's electric grippers are designed to be used in place of traditional pneumatic components where compressed air circuits could be a liability. They operate in an on/off manner receiving their signal directly from a control panel. There is no programming needed or intermediary control device. An added benefit is the energy savings realized because the motor is only used to actuate the device. The actuator position is maintained by mechanical means when an object is gripped and motor cut off.



- No electricity is used when gripper is engaged.
- Gripper retention guaranteed in power loss.
- Long-life brushless DC motor.
- Built in motor driver.
- Operates on 24 volt DC and uses a simple ON/OFF signal from your PLC.
- M8x1, 3 poles standard connection.
- Self-centering jaw system (patented) on many grippers.
- Fiber-carbon gear reduction.
- Maintenance-free for 10 million cycles.
- Optimal force, weight, and dimensions ratio.
- Operating temperature range: 41°–140°F.
- Can be mounted to a rotary actuator without a special mounting plate.
- Optional sensors, see page 1006.
- NPN versions available upon request.



A microprocessor and all electronics are integrated into the gripper so that no other external controller is necessary. The microprocessor operates the motor and turns it off with no programming required.

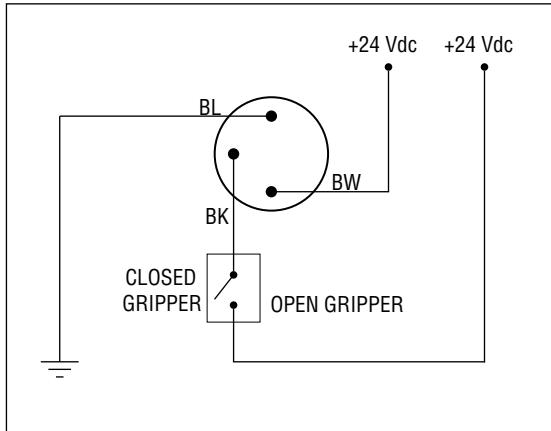


The carrier with the springs is driven by a 2-stage reducer and a worm. The carrier drives two jaws with a patented self-centering mechanism--already tested in other Gimatic grippers.

Electric Gripper Basics

Electrical Connection

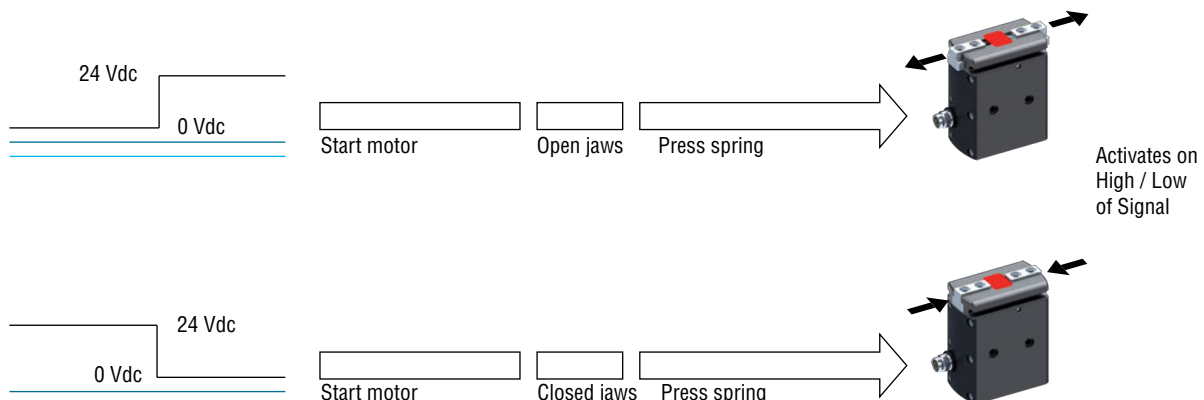
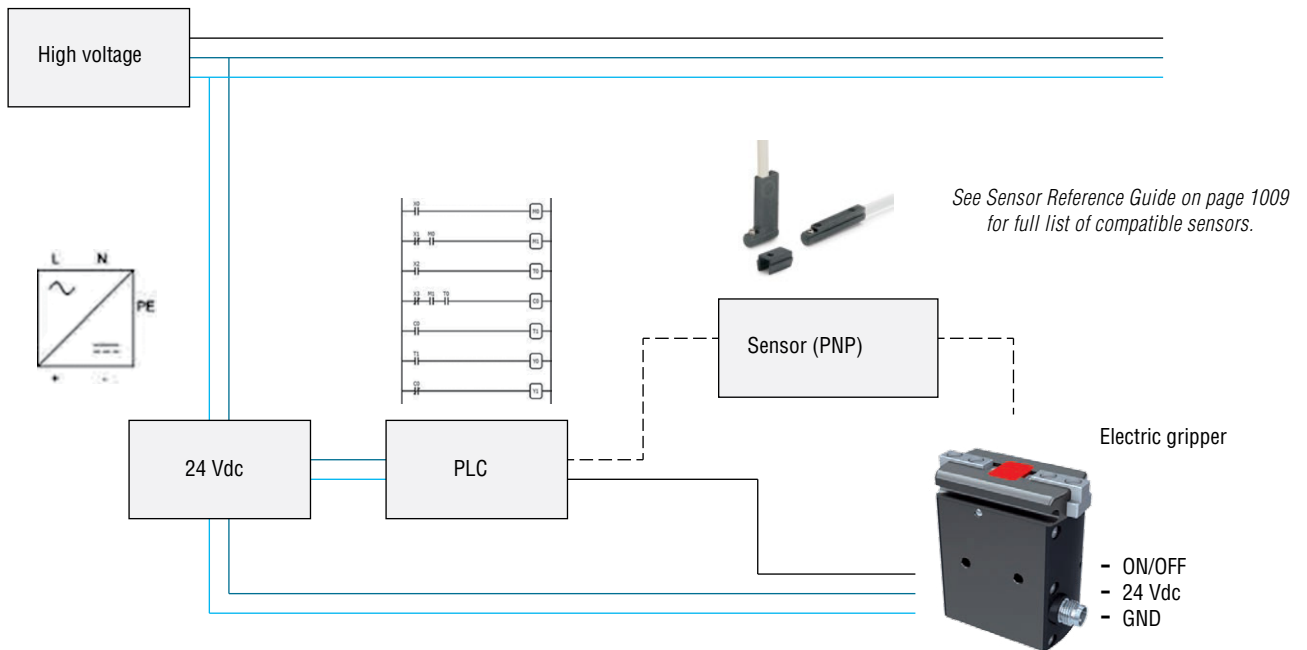
Gimatic mechatronic devices have a 3-pin M8 connection that is used to receive both the 24VDC power and on/off signal.



Continuous Flex Cables

Quick#	Part#	Description	Price
7160	CFG800325P	2.5m cable 3-Wire with Straight M8 Connector	\$13.00
7161	CFG890325P	2.5m cable 3-Wire with 90° M8 Connector	\$13.00

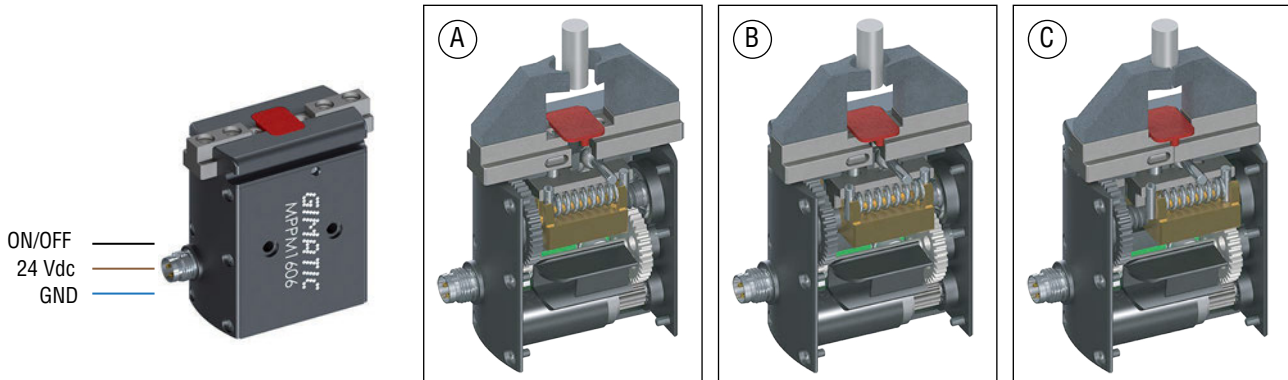
- Additional cables and connectors on pages 181 & 984.
- Sensor diagrams and other specifications can be found on our online product pages at : www.EMlcorp.com
- Contact us with any questions: Sales@EMlcorp.com



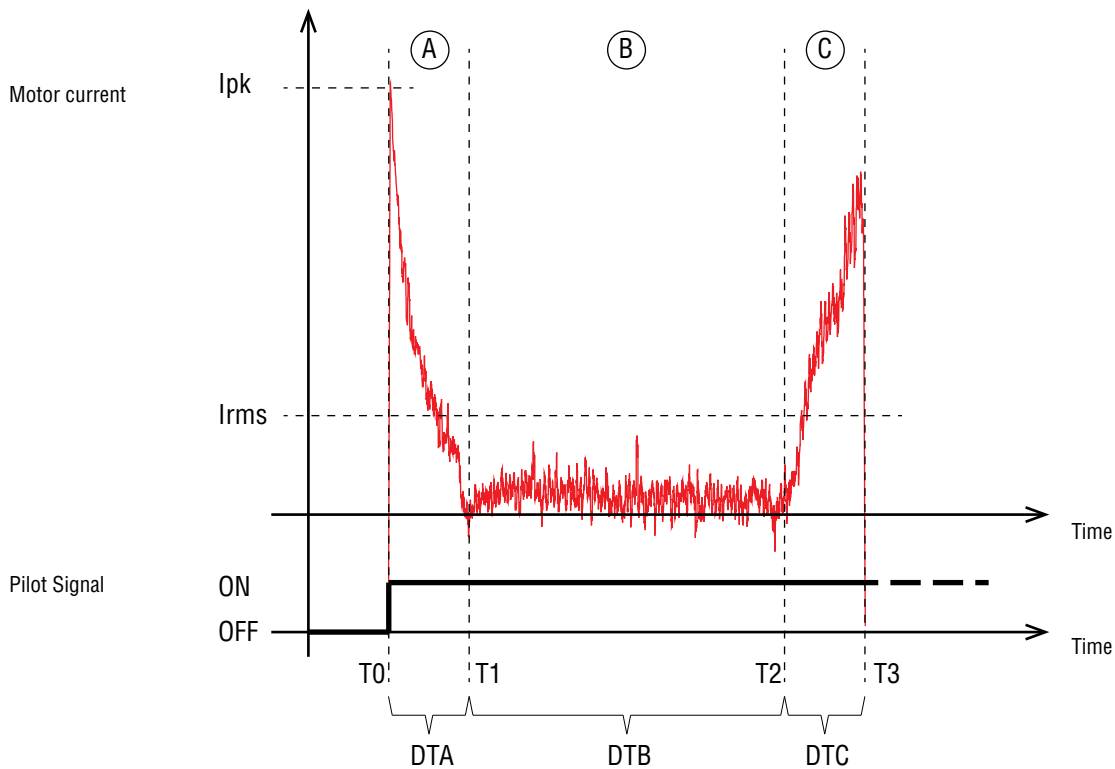
Electric Gripper Basics

Gripping force

These illustrations below show the operating state sequence of the drive system shared by the grippers, the actuators and the electric indexing tables.



These states can also be identified in the motor's power absorption profile.



Operation description

At time T0, the pilot signal switches from OFF to ON status, closing the jaws.

During the DTA time, the motor starts to run; during phase A this causes the extension of the spring, which was initially compressed. In phase B, the spring has reached its free length and the jaws move at constant speed until they come into contact with the work-piece at time T2.

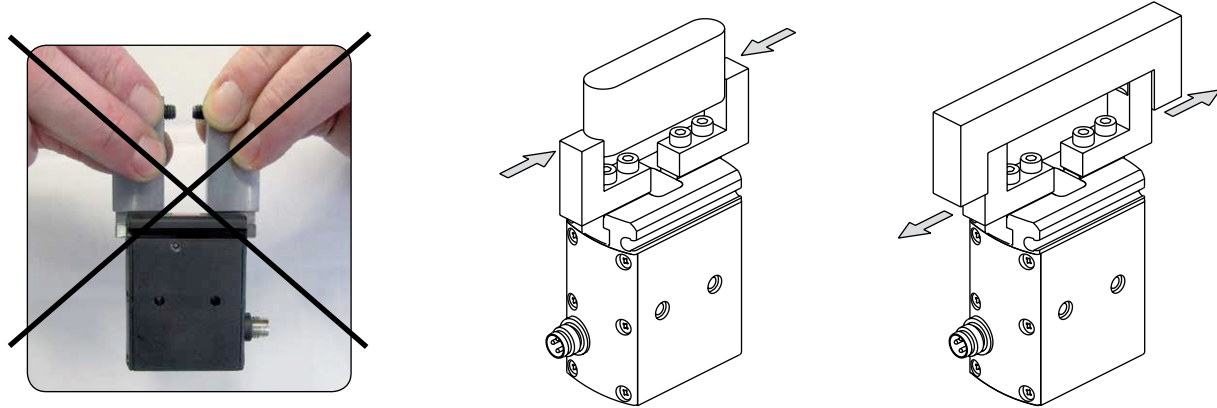
During phase 3, the jaws are in contact with the work-piece, and compression of the spring starts.

At time T3, the motor stops running and the irreversible transmission system maintains the grip even when not powered up, until the next jaw opening command is given (OFF status).

Electric Gripper Basics

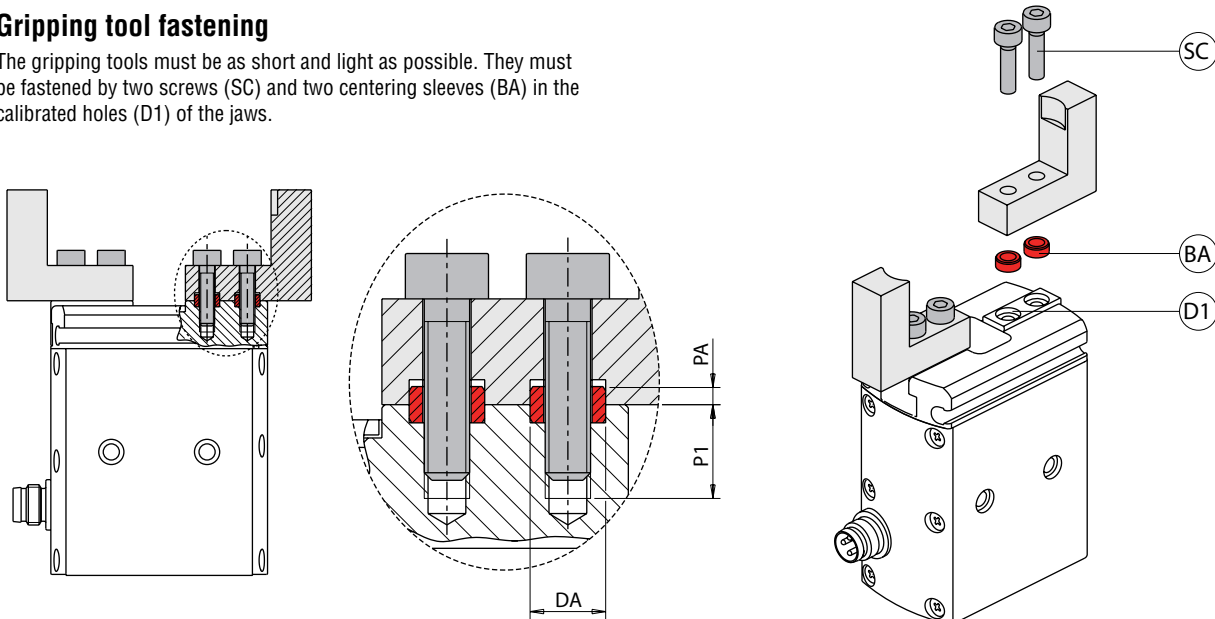
Gripping force

This electric gripper can be used for either external or internal gripping applications. The part will be gripped in any position within the jaw stroke. After the part is gripped, the spring force will hold the part. The gripper mechanism is irreversible, even without a power supply, so do not attempt to open or close the gripper manually.



Gripping tool fastening

The gripping tools must be as short and light as possible. They must be fastened by two screws (SC) and two centering sleeves (BA) in the calibrated holes (D1) of the jaws.

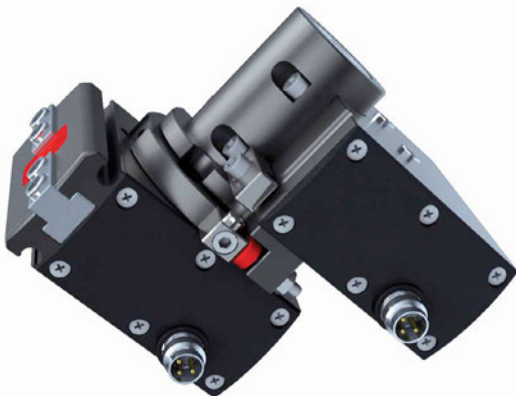


Series compatibility

MPTM grippers are perfectly compatible with MRE rotary actuators without using a special plate.

See page 612 for electric sprue grippers

See pages 616 & 618 for electric rotaries



Mounting Plates

Cost effective interface mounting plates for electric grippers can be found on page 127.



Two-Jaw Electric Grippers – MPPM

- Self-centering jaw system (patented).
- Parallel jaw movement.
- 6–10mm stroke.
- T-slot style jaws for heavy loads.
- Optional Gimatic C-slot sensors on page 1002.
- Cables for direct connection to cobots on page 181.



MPPM gripper series is perfectly compatible with MRE rotary series actuators without any special plate.



Quick#	6989	6990	6991
Part#	MPPM1606	MPPM2508	MPPM3210
Price	\$925.00	\$992.00	\$1059.00
Total gripping force	15 lbf	28 lbf	55 lbf
Stroke	2x3mm	2x4mm	2x5mm
Max frequency	1Hz	0.91Hz	0.91Hz
Jaw closing time	0.08s	0.121s	0.15s
Working gripper time	0.21s	0.3s	0.27s
Duty cycle	43%	55%	50%
Peak current	0.9 A	1.2 A	3.8 A
Brushless motor power	6W	11W	23W
Open/closed input signal	PNP open connector		
Noise level	<70dB		
Weight (motor included)	145g	330g	525g
IPA Clean Room Certification	ISO04	TBA	TBA
CE Certification	CE; EMC		
Environmental Degree	IP54		

Use Quick#s for easy online ordering.

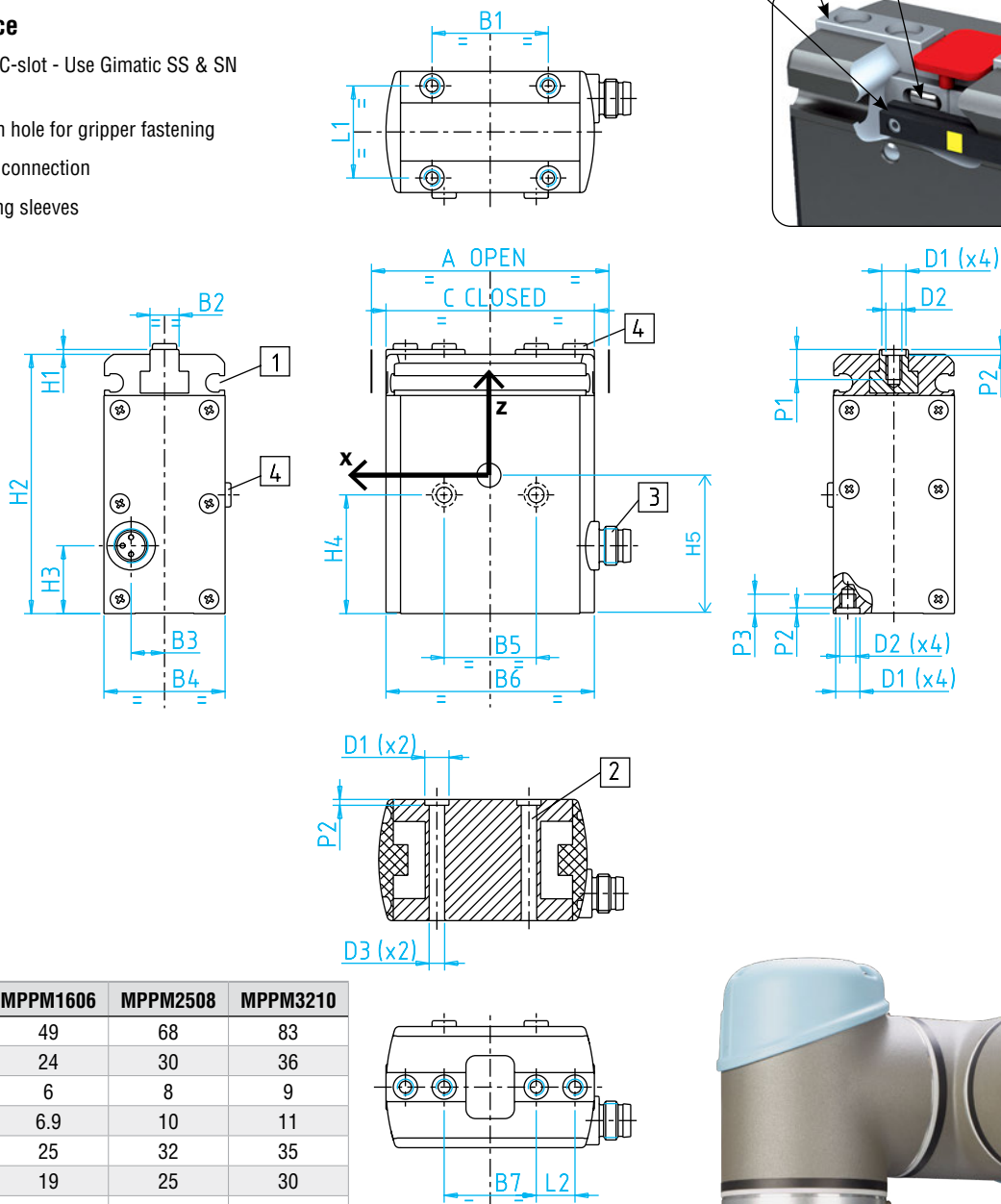
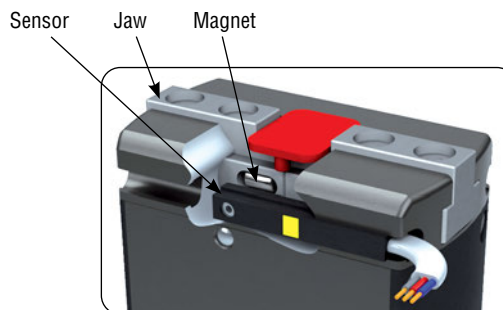
Continuous Flex Cables

Quick#	Part#	Description	Price
7160	CFGM800325P	2.5m cable 3-Wire with Straight M8 Connector	\$13.00
7161	CFGM890325P	2.5m cable 3-Wire with 90° M8 Connector	\$13.00

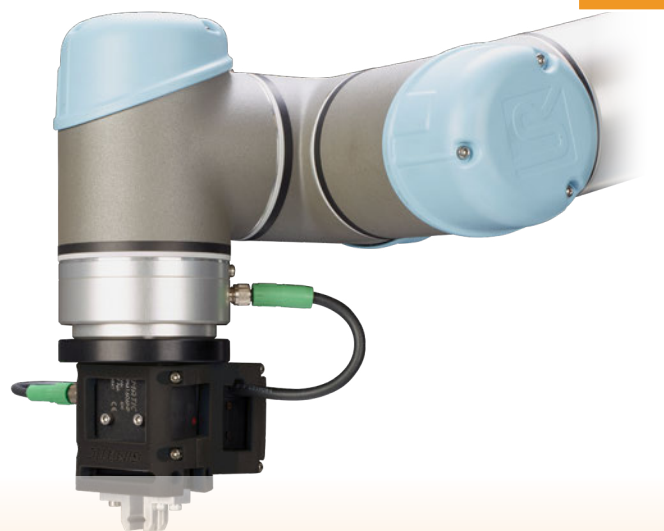
Two-Jaw Electric Grippers – MPPM

Reference

1. Sensor C-slot - Use Gimatic SS & SN sensors
2. Through hole for gripper fastening
3. Electric connection
4. Centering sleeves



		MPPM1606	MPPM2508	MPPM3210
A		49	68	83
B1	±0.02	24	30	36
B2		6	8	9
B3		6.9	10	11
B4		25	32	35
B5	±0.02	19	25	30
B6		45	60	73
B7		19	26	32
C		43	60	73
D1		Ø5 H8	Ø7 H8	Ø7 H8
D2		M3	M4	M5
D3		Ø3.2	Ø4.2	Ø5.2
H1		1	1	1
H2		53.5	70	80
H3		14	17	19
H4	±0.02	24.5	32	38
H5		32.5	42.6	48.4
L1	±0.02	19	24	26
L2	±0.02	8	12	14
P1		6.2	8	8.5
P2	+0.1	1.2	1.5	1.5
P3		4	6	8



KIT-UR-G is an industrial electric gripper that mounts directly to any robot with an ISO-9409-1-50-4-M6 tool flange. Equipped with machined fingers that can be replaced by custom fingers right for your application. See page 152 for more information!

Two-Jaw Electric Grippers – MPXM

- Self-centering jaw system (patented).
- Parallel jaw movement.
- Self-adapting jaws part.
- 12–20mm stroke.
- T-slot style jaws for heavy loads.
- Optional Gimatic C-slot sensors on page 1002.
- Cables for direct connection to cobots on page 181.



Get the custom jaws you need for any gripper from EMI!

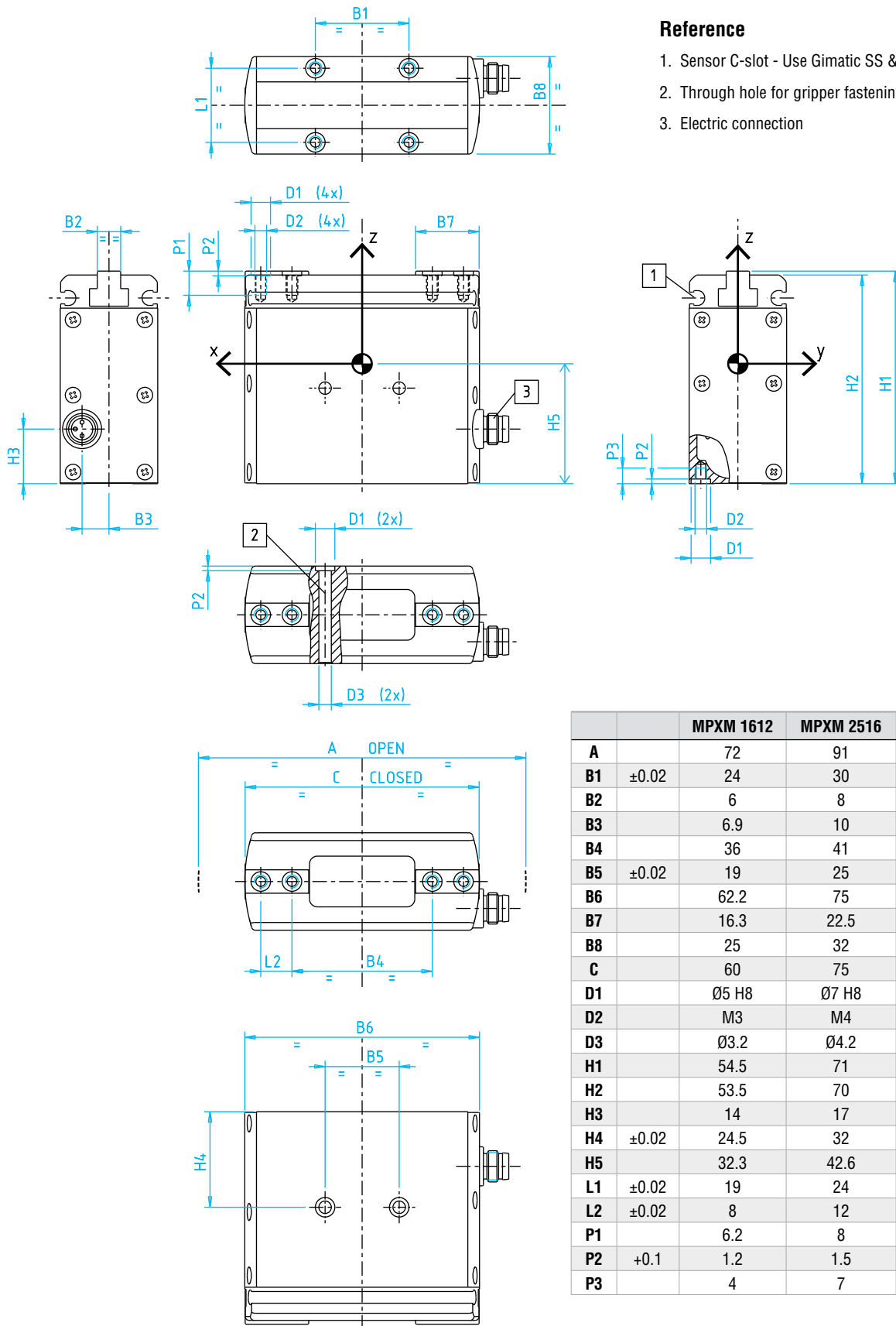


Quick#	7266	7267	7268
Part#	MPXM1612	MPXM2516	MPXM3220
Price	\$1,059.00	\$1,126.00	\$1,193.00
Total gripping force	15.29 lbf	21.36 lbf	48.33 lbf
Stroke	2x6mm	2x8mm	2x10mm
Max frequency	0.75Hz	1.2Hz	0.85Hz
Jaw closing time	0.21s	0.19s	0.23s
Working gripper time	0.3s	0.28s	0.3s
Duty cycle	45%	68%	51%
Peak current	0.9 A	1.2 A	3.8 A
Brushless motor power	6W	11W	23W
Open/closed input signal	PNP open connector		
Repetition accuracy	0.02mm		
Noise level	<70dB		
Weight (motor included)	184g	390g	604g
Environmental Degree	IP54		

Continuous Flex Cables

Quick#	Part#	Description	Price
7160	CFGM800325P	2.5m cable 3-Wire with Straight M8 Connector	\$13.00
7161	CFGM890325P	2.5m cable 3-Wire with 90° M8 Connector	\$13.00

Two-Jaw Electric Grippers – MPXM



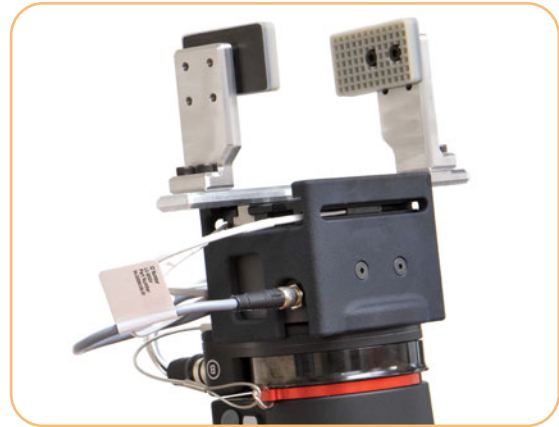
Reference

1. Sensor C-slot - Use Gimatic SS & SN sensors
2. Through hole for gripper fastening
3. Electric connection

		MPXM 1612	MPXM 2516	MPXM 3220
A		72	91	109
B1	±0.02	24	30	36
B2		6	8	9
B3		6.9	10	11
B4		36	41	48
B5	±0.02	19	25	30
B6		62.2	75	89
B7		16.3	22.5	28
B8		25	32	35
C		60	75	89
D1		Ø5 H8	Ø7 H8	Ø7 H8
D2		M3	M4	M5
D3		Ø3.2	Ø4.2	Ø5.2
H1		54.5	71	81
H2		53.5	70	80
H3		14	17	19
H4	±0.02	24.5	32	38
H5		32.3	42.6	48.4
L1	±0.02	19	24	26
L2	±0.02	8	12	14
P1		6.2	8	8.5
P2	+0.1	1.2	1.5	1.5
P3		4	7	8

Two-Jaw Electric Grippers with Long Stroke – MPLM

- Self-centering jaw system (patented).
- Parallel jaw movement.
- 30–40mm stroke.
- Self-adapting jaws part.
- T-slot style jaws for heavy loads.
- Optional Gimatic C-slot sensors on page 1002.
- Cables for direct connection to cobots on page 181.



Contact Cobots@EMlcorp.com for more information about how to use electric grippers with your cobot application.

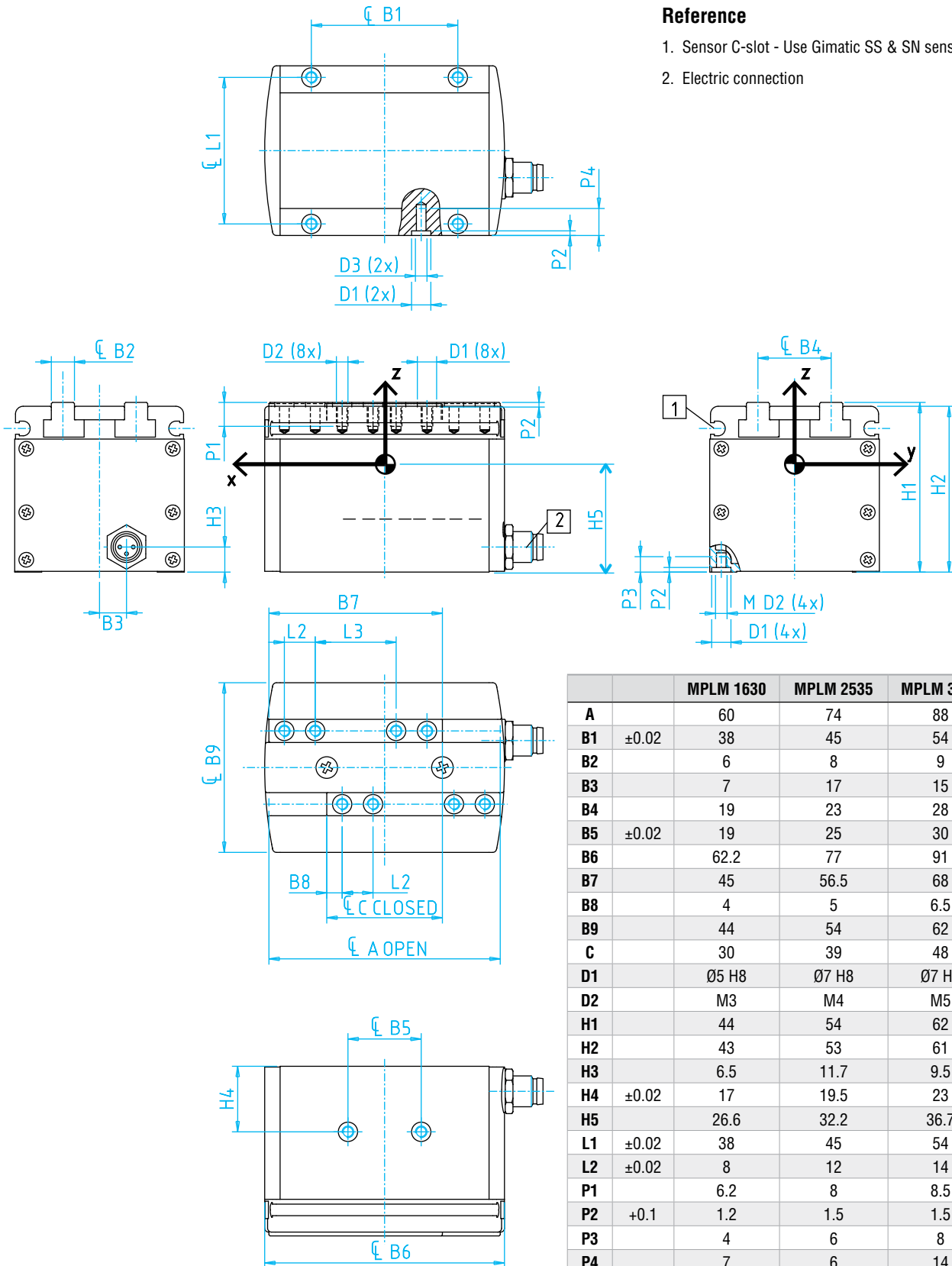


Quick#	7269	7270	7271
Part#	MPLM1630	MPLM2535	MPLM3240
Price	\$1,193.00	\$1,259.00	\$1,327.00
Total gripping force	14.16 lbf	22 lbf	47.2 lbf
Stroke	2x15mm	2x17.5mm	2x20mm
Max frequency	0.51Hz	0.93Hz	0.70Hz
Jaw closing time	0.37s	0.42s	0.50s
Working gripper time	0.52s	0.53s	0.53s
Duty cycle	54%	100%	74%
Peak current	0.9 A	1.2 A	3.8 A
Brushless motor power	6W	11W	23W
Open/closed input signal		PNP open collector	
Environmental Degree		IP54	
Noise level		<70dB	
Weight (motor included)	263g	500g	844g

Continuous Flex Cables

Quick#	Part#	Description	Price
7160	CFGM800325P	2.5m cable 3-Wire with Straight M8 Connector	\$13.00
7161	CFGM890325P	2.5m cable 3-Wire with 90° M8 Connector	\$13.00

Two-Jaw Electric Grippers with Long Stroke – MPLM



Two-Jaw Electric Angular Grippers – MPBM

- Self-centering jaw system (patented).
- Angular jaw movement.
- Self-adapting jaws part.
- Jaws contained within gripper profile.
- Optional Gimatic C-slot sensors on page 1002.
- Cables for direct connection to cobots on page 181.



MPBM gripper series is perfectly compatible with MRE rotary series actuators without any special plate.



#7260



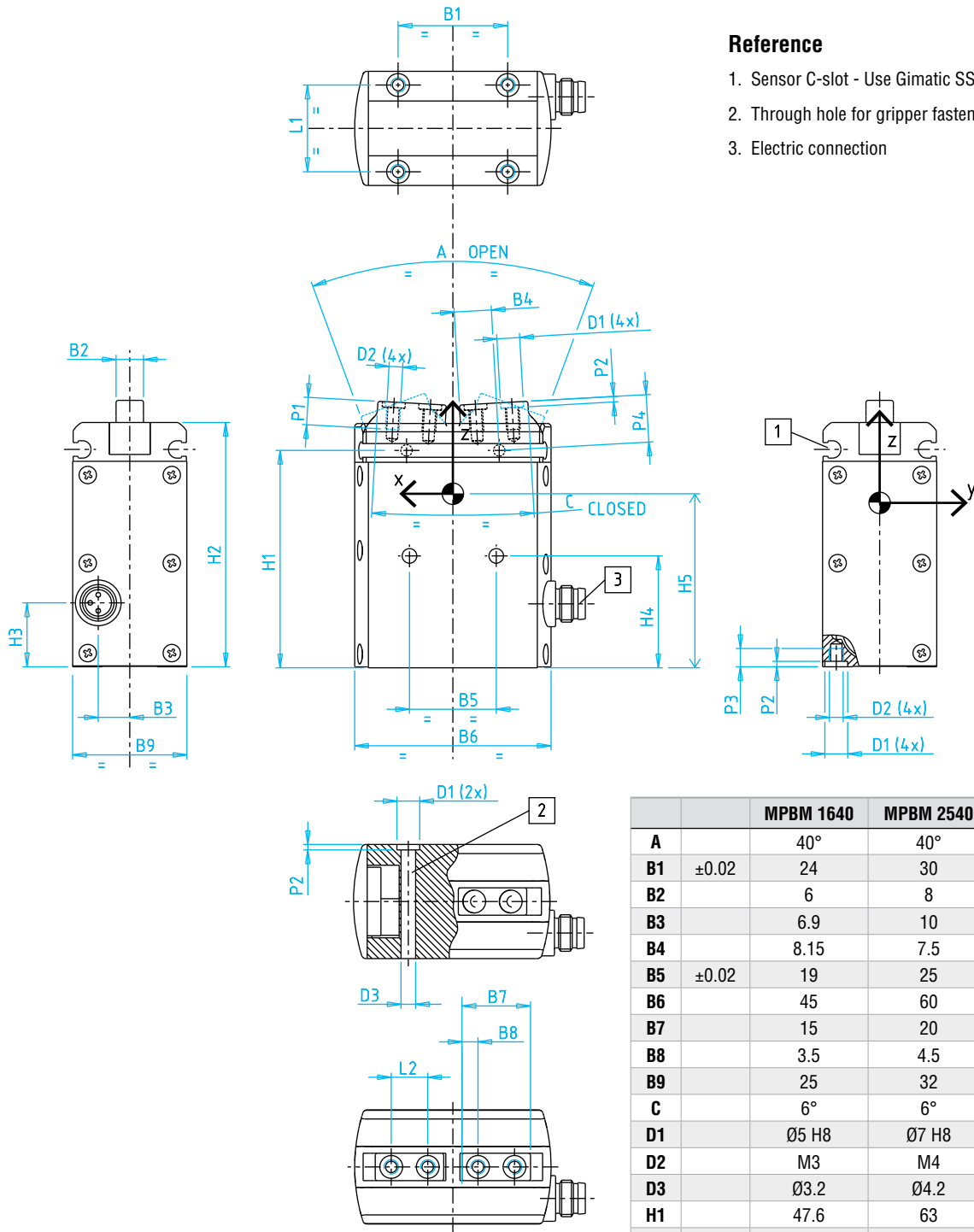
#7262

Quick#	7260	7261	7262
Part#	MPBM1640	MPBM2540	MPBM3240
Price	\$925.00	\$992.00	\$1,059.00
Total gripping force	6 in-lbf	13.4 in-lbf	24.5 in-lbf
Stroke	2x23°	2x23°	2x23°
Max frequency	0.93Hz	0.85Hz	0.81Hz
Jaw closing time	0.09s	0.13s	0.14s
Working gripper time	0.18s	0.31s	0.25s
Duty cycle	34%	53%	41%
Peak current	0.9 A	1.2 A	3.8 A
Brushless motor power	6W	11W	23W
Open/closed input signal	PNP open connector		
Repetition accuracy	0.02mm		
Environmental Degree	IP54		
Noise level	<70dB		
Weight (motor included)	140g	315g	510g

Continuous Flex Cables

Quick#	Part#	Description	Price
7160	CFGM800325P	2.5m cable 3-Wire with Straight M8 Connector	\$13.00
7161	CFGM890325P	2.5m cable 3-Wire with 90° M8 Connector	\$13.00

Two-Jaw Electric Angular Grippers – MPBM



Reference

1. Sensor C-slot - Use Gimatic SS & SN sensors
2. Through hole for gripper fastening
3. Electric connection

		MPBM 1640	MPBM 2540	MPBM 3240
A		40°	40°	40°
B1	±0.02	24	30	36
B2		6	8	9
B3		6.9	10	11
B4		8.15	7.5	12.25
B5	±0.02	19	25	30
B6		45	60	73
B7		15	20	24
B8		3.5	4.5	5
B9		25	32	35
C		6°	6°	6°
D1		Ø5 H8	Ø7 H8	Ø7 H8
D2		M3	M4	M5
D3		Ø3.2	Ø4.2	Ø5.2
H1		47.6	63	72
H2		53.5	70	80
H3		14	17	19
H4	±0.02	24.5	32	38
H5		32.3	42.5	48.5
L1	±0.02	19	24	26
L2	±0.02	8	11	14
P1		6	8	10
P2	+0.1	1.2	1.5	1.5
P3		4	6	8
P4		10.4	14	16

Two-Jaw Radial Self-Centering Electric Gripper – MPRM

- Self-centering jaw system (patented).
- Radial jaw movement.
- Optional Ø4mm inductive sensors on page 1004.
- Cables for direct connection to cobots on page 181.



MPRM gripper series is perfectly compatible with MRE rotary series actuators without any special plate.



#7263



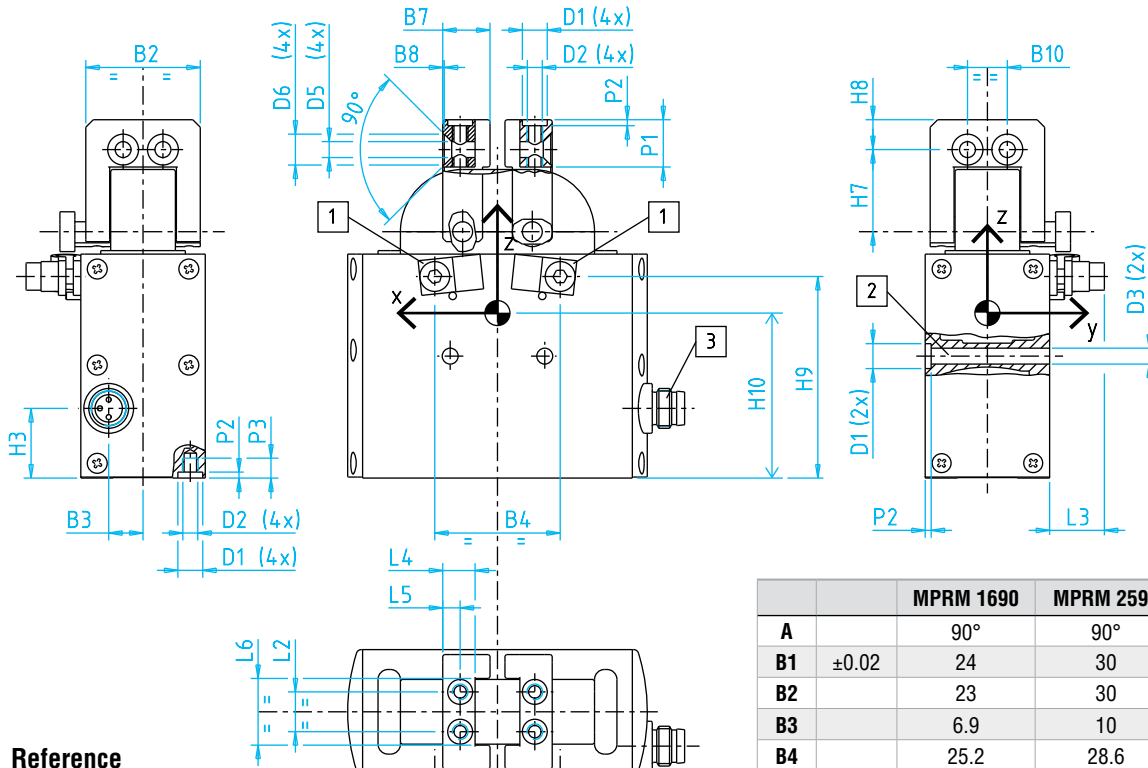
#7265

Quick#	7263	7264	7265
Part#	MPRM1690	MPRM2590	MPRM3290
Price	\$1,193.00	\$1,259.00	\$1,327.00
Total gripping torque	4.6 lbf	8 lbf	22.66 lbf
Stroke	2 x 93°		
Max frequency	0.85Hz	1.2Hz	0.9Hz
Jaw closing time	0.24s	0.31s	0.39s
Working gripper time	0.43s	0.42s	0.45s
Duty cycle	73%	100%	83%
Peak current	0.9 Apk	1.2 Apk	3.8 Apk
Brushless motor power	6W	11W	23W
Open/closed input signal	PNP open connector		
Repetition accuracy	0.02mm		
Environmental Degree	IP54		
Noise level	<70dB		
Weight (motor included)	210g	445g	730g

Continuous Flex Cables

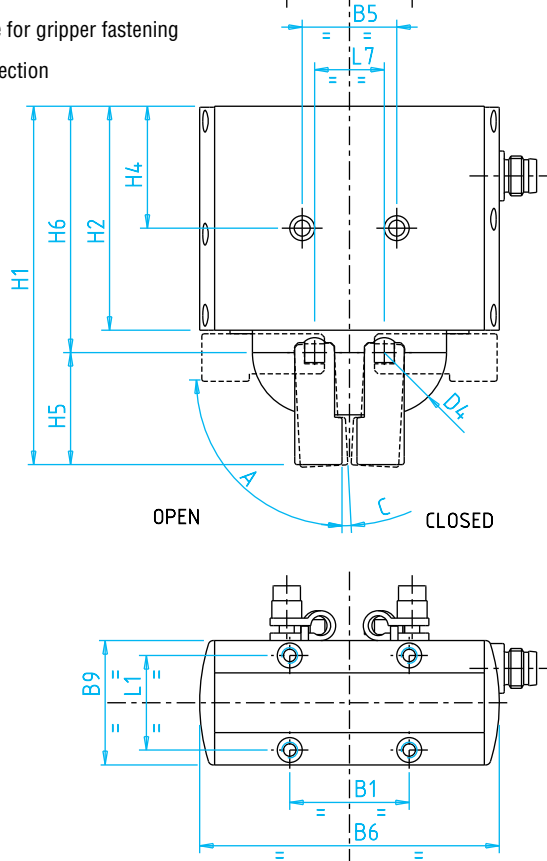
Quick#	Part#	Description	Price
7160	CFGM800325P	2.5m cable 3-Wire with Straight M8 Connector	\$13.00
7161	CFGM890325P	2.5m cable 3-Wire with 90° M8 Connector	\$13.00

Two-Jaw Radial Self-Centering Electric Gripper – MPRM



Reference

- 1. Sensor slot -
Use Ø4mm Inductive sensors
- 2. Through hole for gripper fastening
- 3. Electric connection



	MPRM 1690	MPRM 2590	MPRM 3290
A	90°	90°	90°
B1	±0.02 24	30	36
B2	23	30	34
B3	6.9	10	11
B4	25.2	28.6	33
B5	±0.02 19	25	30
B6	62.2	75	89
B7	9.5	13	16
B8	0.3	0.3	0.3
B9	25	32	35
B10	±0.05 8	10	12
C	3°	3°	3°
D1	Ø5 H8	Ø7 H8	Ø7 H8
D2	M3	M4	M5
D3	Ø3.2	Ø4.2	Ø5.2
D4	R12.5	R15.375	R18
D5	Ø3.2	Ø4.2	Ø5.2
D6	Ø6.2	Ø8.6	Ø10
H1	72	95	111
H2	45	59.5	68.5
H3	14	17	19
H4	±0.05 24.5	32	38
H5	22.5	29	34
H6	49.5	66	77
H7	±0.02 16.5	21	24.5
H8	±0.05 6	8	9.5
H9	40.5	55	64
H10	37	50	58.6
L1	±0.02 19	24	26
L2	±0.02 8	10	12
L3	11	11	11
L4	6.5	9	11
L5	±0.02 3.5	5	5
L6	13.4	18.4	20.4
L7	14	17.5	22
P1	9.5	12.5	15
P2	±0.1 1.2	1.5	1.5
P3	4	6	8

Two-Jaw Parallel Self-Centering Electric Gripper – MPRJ

- Self-adapting jaws part for internal or external applications.
- Exclusive self-centering system.
- Fingers can be mounted on both sides of the jaws.
- Optional Ø4mm inductive sensors on page 1004.
- 10 million cycle maintenance free.
- Well protected against dusty environments.
- Cables for direct connection to cobots on page 181.



MPRJ gripper series is perfectly compatible with MRE rotary series actuators without any special plate.



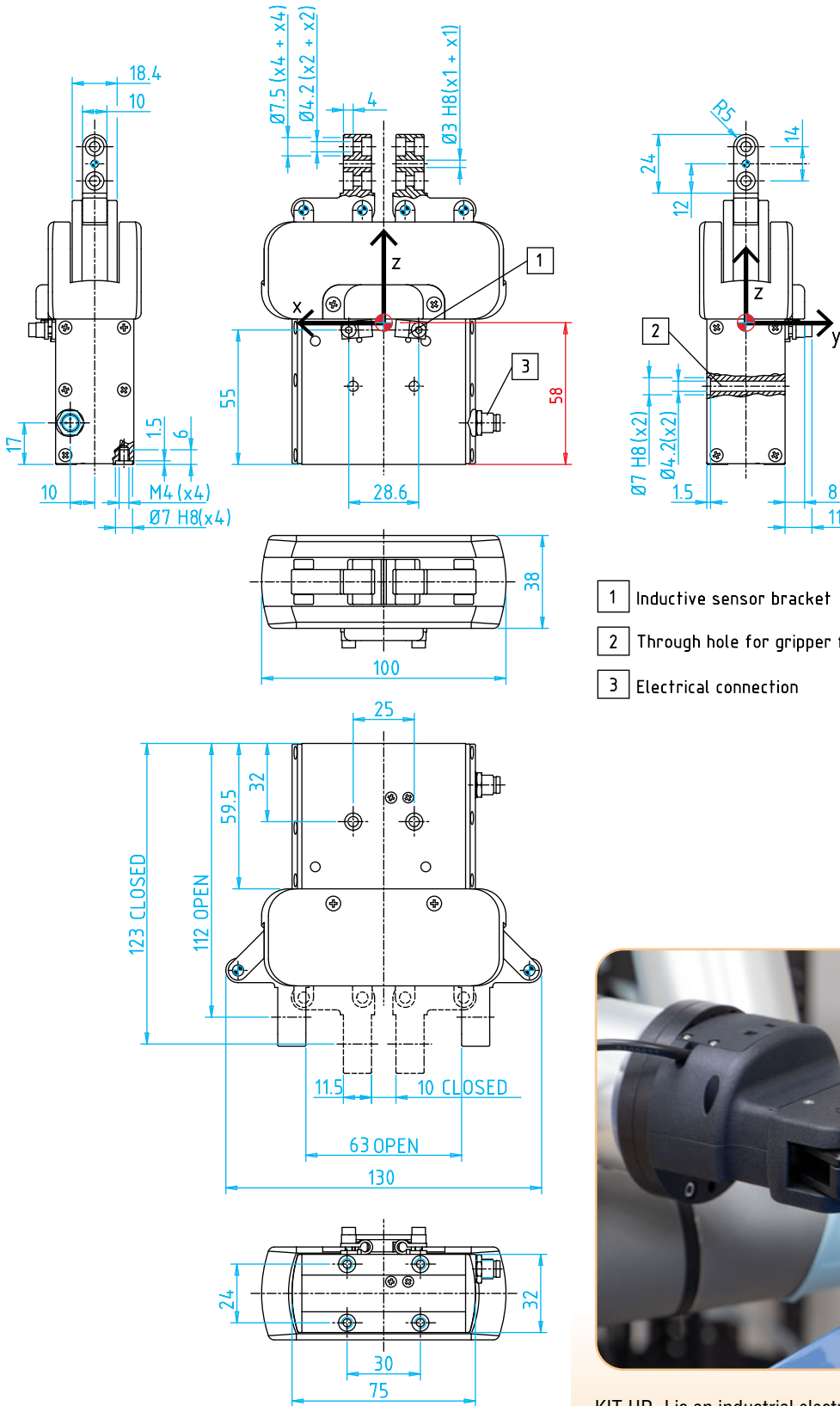
Kit-UR-J shown with 3D Printed Jaws & HNBR pads.

Quick#	7408
Part#	MPRJ2553
Price	\$2,033.00
Total gripping force	5.4 lbf
Stroke	50mm (2 x 26.5mm)
Max frequency	1.6 Hz
Jaw closing time	0.15s
Working gripper time	0.24s
Duty cycle	76%
Peak current	1.2 Apk
Brushless motor power	11W
Open/closed input signal	PNP open collector
Repetition accuracy	0.02mm
Environmental Degree	IP54
Noise level	< 70 dB
Weight (motor included)	480g

Continuous Flex Cables

Quick#	Part#	Description	Price
7160	CFGM800325P	2.5m cable 3-Wire with Straight M8 Connector	\$13.00
7161	CFGM890325P	2.5m cable 3-Wire with 90° M8 Connector	\$13.00

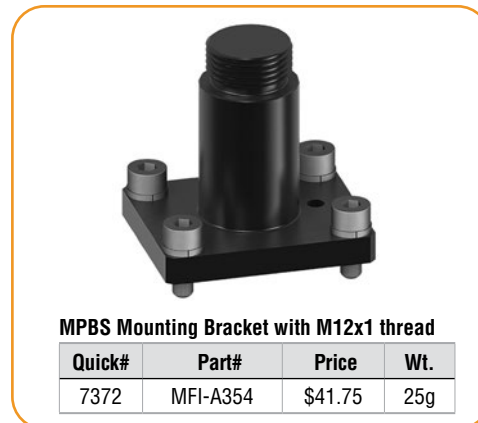
Two-Jaw Parallel Self-Centering Electric Gripper – MPRJ



KIT-UR-J is an industrial electric gripper with a long stroke that plugs straight to your Universal Robot's wrist connector. Equipped with machined jaws that can be fitted with custom jaws specific to your application. See page 153 for more information!

Two-Jaw Angular Self-Centering Electric Sprue Gripper – MPBS

- Self-centering jaw system (patented).
- Angular jaw movement.
- S version with gripping sensor on the jaw.
- Cables for direct connection to cobots on page 181.



MPBS Mounting Bracket with M12x1 thread

Quick#	Part#	Price	Wt.
7372	MFI-A354	\$41.75	25g



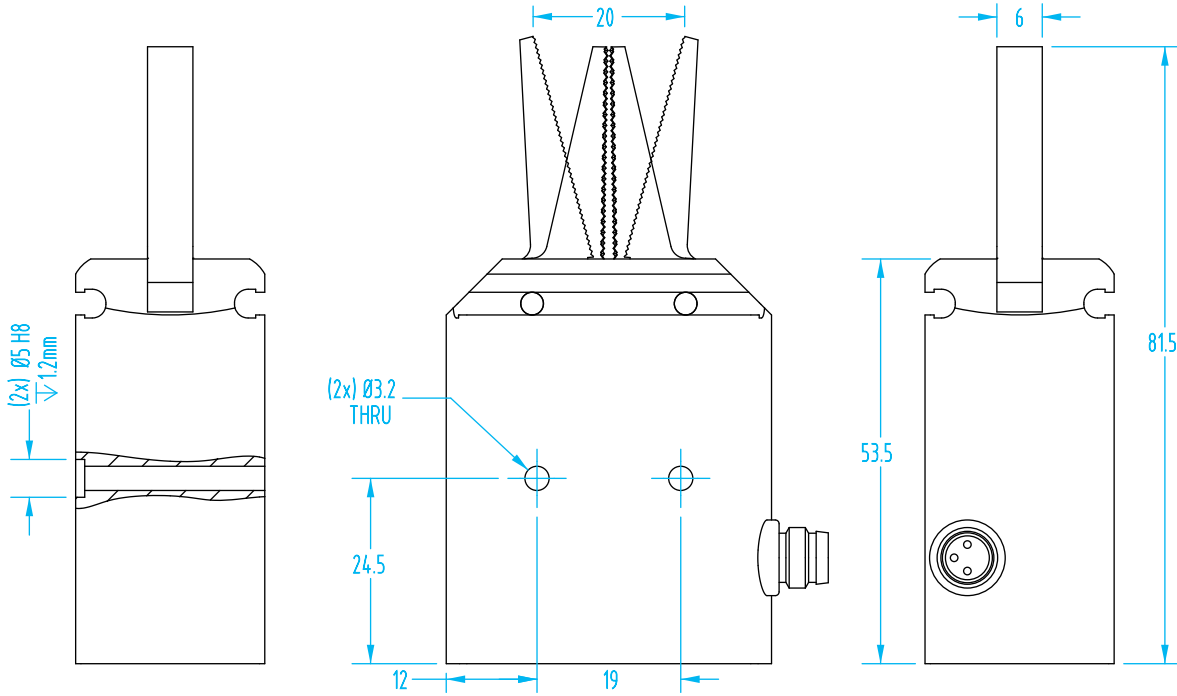
Quick#	7349	7350
Part#	MPBS1630	MPBS1630S*
Price	\$925.00	\$965.00
Total gripping force		6.2 in-lbf
Stroke		2x16mm
Max frequency		1.2Hz
Jaws closing time		0.06s
Working gripper time		0.18s
Duty cycle		41%
Peak current		0.9 Apk
Brushless motor power		6W
Open/closed input signal	PNP open collector	PNP open collector
Repetition accuracy		0.04°
Noise level		<70dB
Environmental Degree		IP54
Weight (motor included)	145g	150g
*Note: Sensing available on finger		

Continuous Flex Cables

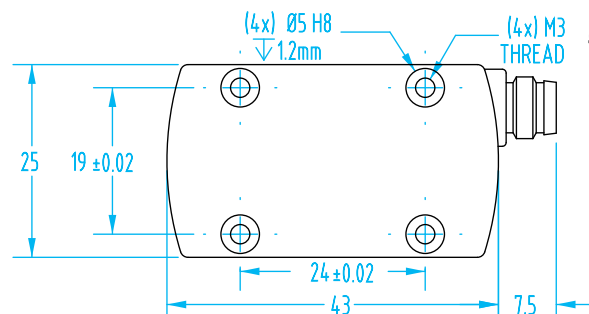
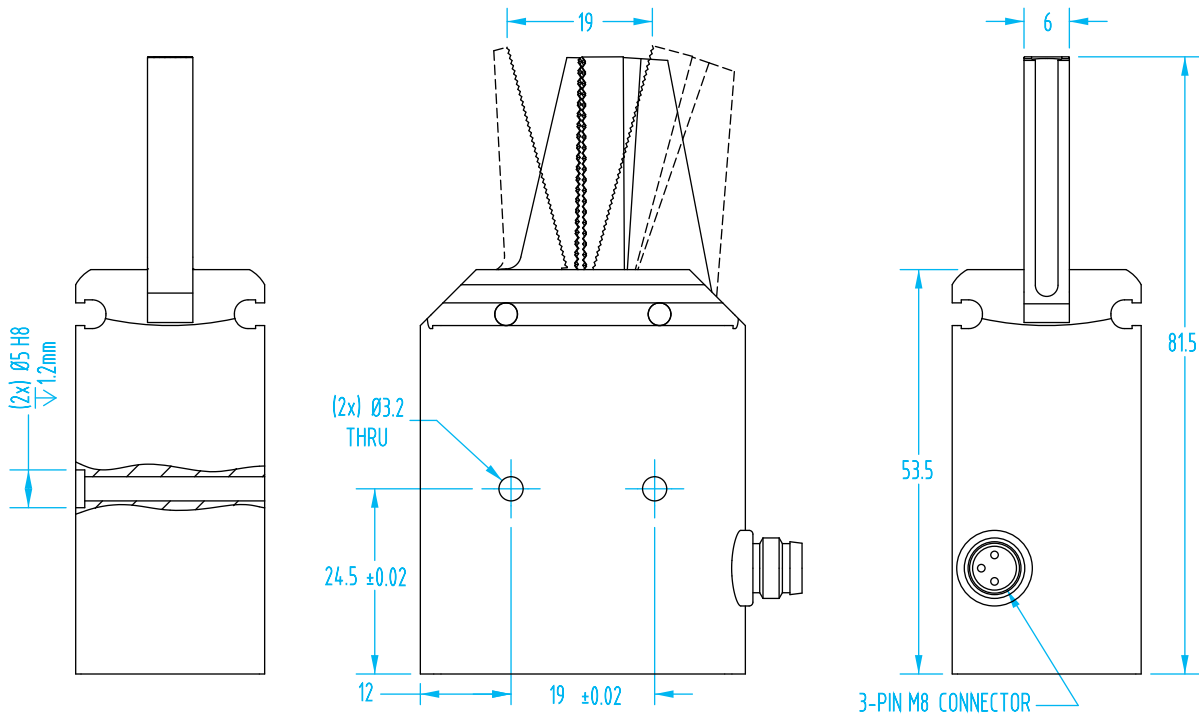
Quick#	Part#	Description	Price
7160	CFG800325P	2.5m cable 3-Wire with Straight M8 Connector	\$13.00
7161	CFG890325P	2.5m cable 3-Wire with 90° M8 Connector	\$13.00

Two-Jaw Angular Self-Centering Electric Sprue Gripper – MPBS

#7349



#7350



#7349 & #7350
bottom view

Three-Jaw Electric Grippers – MPTM

- Self-centering jaw system (patented).
- 3-jaw parallel jaw movement.
- T-slot style jaws for heavy loads.
- Optional Gimatic C-slot sensors on page 1002.
- Cables for direct connection to cobots on page 181.



Quick#	6992	6993	6994
Part#	MPTM1606	MPTM2508	MPTM3210
Price	\$1,059.00	\$1,126.00	\$1,193.00
Total gripping force	11 lbf	22 lbf	54 lbf
Stroke	3x3mm	3x4mm	3x5mm
Max frequency	0.95 Hz	0.83 Hz	0.85 Hz
Jaw closing time	0.08s	0.12s	0.16s
Working gripper time	0.19s	0.31s	0.26s
Duty cycle	36%	52%	44%
Peak current	0.9 A	1.2 A	3.8 A
Brushless motor power	6W	11W	23W
Noise level		<70dB	
Weight (motor included)	183g	430g	693g
Environmental Degree		IP54	

Use Quick#s for easy online ordering.

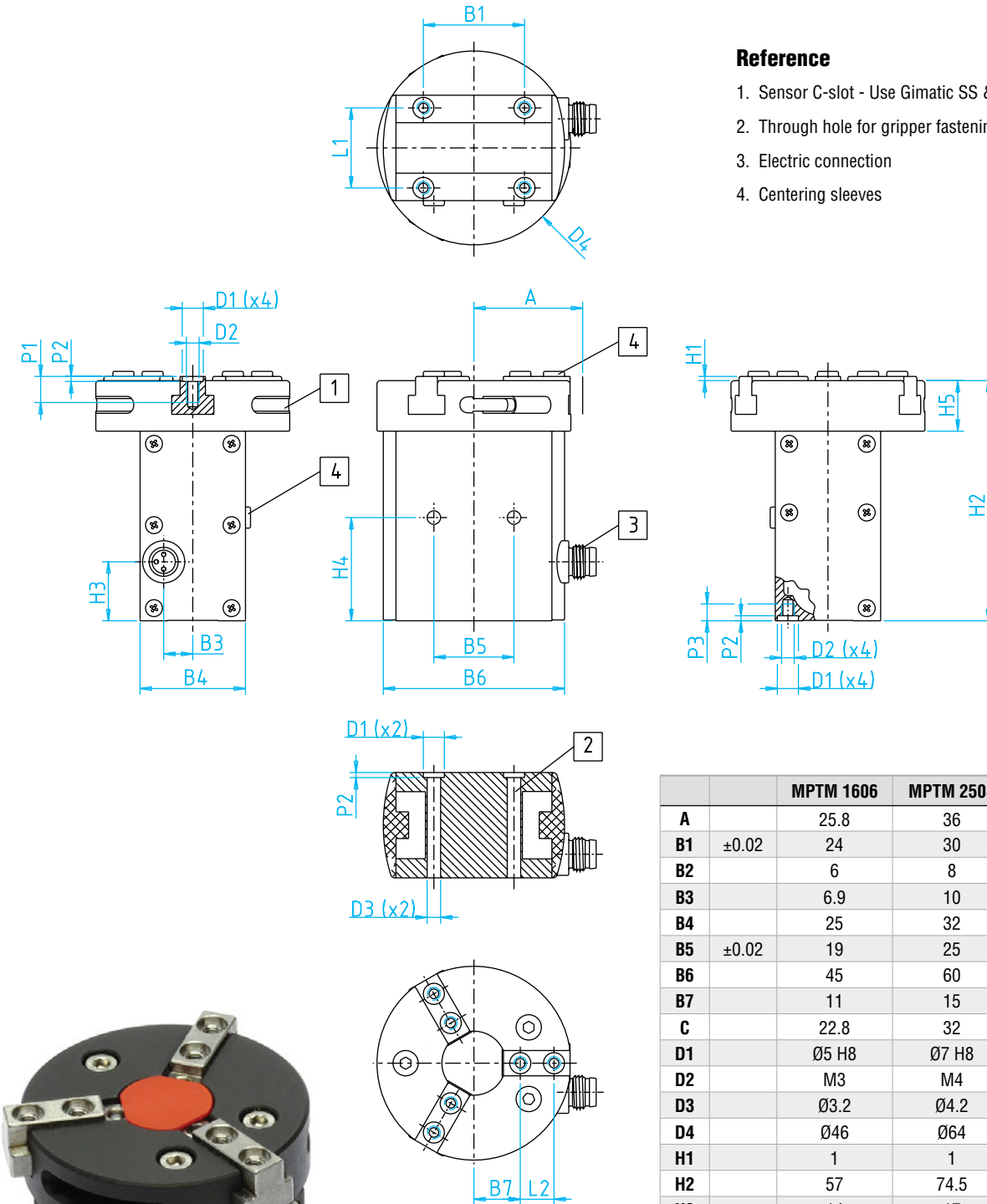
Continuous Flex Cables

Quick#	Part#	Description	Price
7160	CFGM800325P	2.5m cable 3-Wire with Straight M8 Connector	\$13.00
7161	CFGM890325P	2.5m cable 3-Wire with 90° M8 Connector	\$13.00

Three-Jaw Electric Grippers – MPTM

Reference

1. Sensor C-slot - Use Gimatic SS & SN sensors
2. Through hole for gripper fastening
3. Electric connection
4. Centering sleeves



	MPTM 1606	MPTM 2508	MPTM 3210
A	25.8	36	44
B1	±0.02 24	30	36
B2	6	8	9
B3	6.9	10	11
B4	25	32	35
B5	±0.02 19	25	30
B6	45	60	73
B7	11	15	18.5
C	22.8	32	39
D1	Ø5 H8	Ø7 H8	Ø7 H8
D2	M3	M4	M5
D3	Ø3.2	Ø4.2	Ø5.2
D4	Ø46	Ø64	Ø78
H1	1	1	1
H2	57	74.5	85.5
H3	14	17	19
H4	±0.02 24.5	32	38
H5	12	15	17
L1	±0.02 19	24	26
L2	±0.02 8	12	14
P1	6.2	8	8.5
P2	+0.1 1.2	1.5	1.5
P3	4	6	8

Electric Rotary Actuators – MRE

- Capable of 90° or 180° rotation (angle mechanically set).
- Can be fitted to a gripper without a special mounting plate.
- Optional Ø4mm inductive sensors on page 1004.



All electric grippers are perfectly compatible with MRE rotary series actuators without any special plate.



Quick#	6995		6996		6997	
Part#	MRE16180		MRE25180		MRE32180	
Price	\$1,059.00		\$1,126.00		\$1,193.00	
Swivelling torque	4.0 in-lbf		7.1 in-lbf		12.2 in-lbf	
Swivelling angle	90°	180°	90°	180°	90°	180°
Max frequency	0.61 Hz	0.60 Hz	1.46 Hz	0.91 Hz	0.83 Hz	0.62 Hz
Swivelling time without load	0.12s	0.35s	0.22s	0.44s	0.15s	0.35s
Working actuator time	0.35s	0.57s	0.33s	0.55s	0.36s	0.57s
Duty cycle	46%	66%	99%	100%	39%	79%
Power supply	24 Vdc ± 10%					
Peak current	0.9 A		1.2 A		3.8 A	
Brushless motor power	6W		11W		23W	
Connection	M8 - 3 pole					
Open/closed input signal	PNP open connector					
Noise level	<70dB					
Weight (motor included)	195g		400g		738g	
IPA Clean Room Certification	ISO04		TBA		TBA	
Environmental Degree	IP54					

Continuous Flex Cables

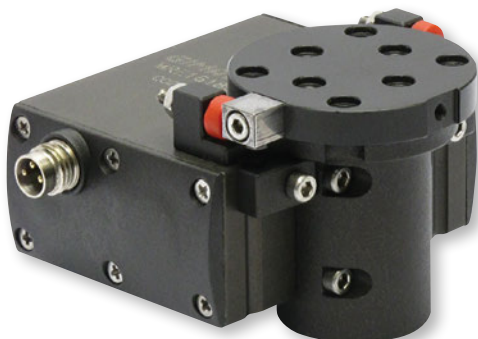
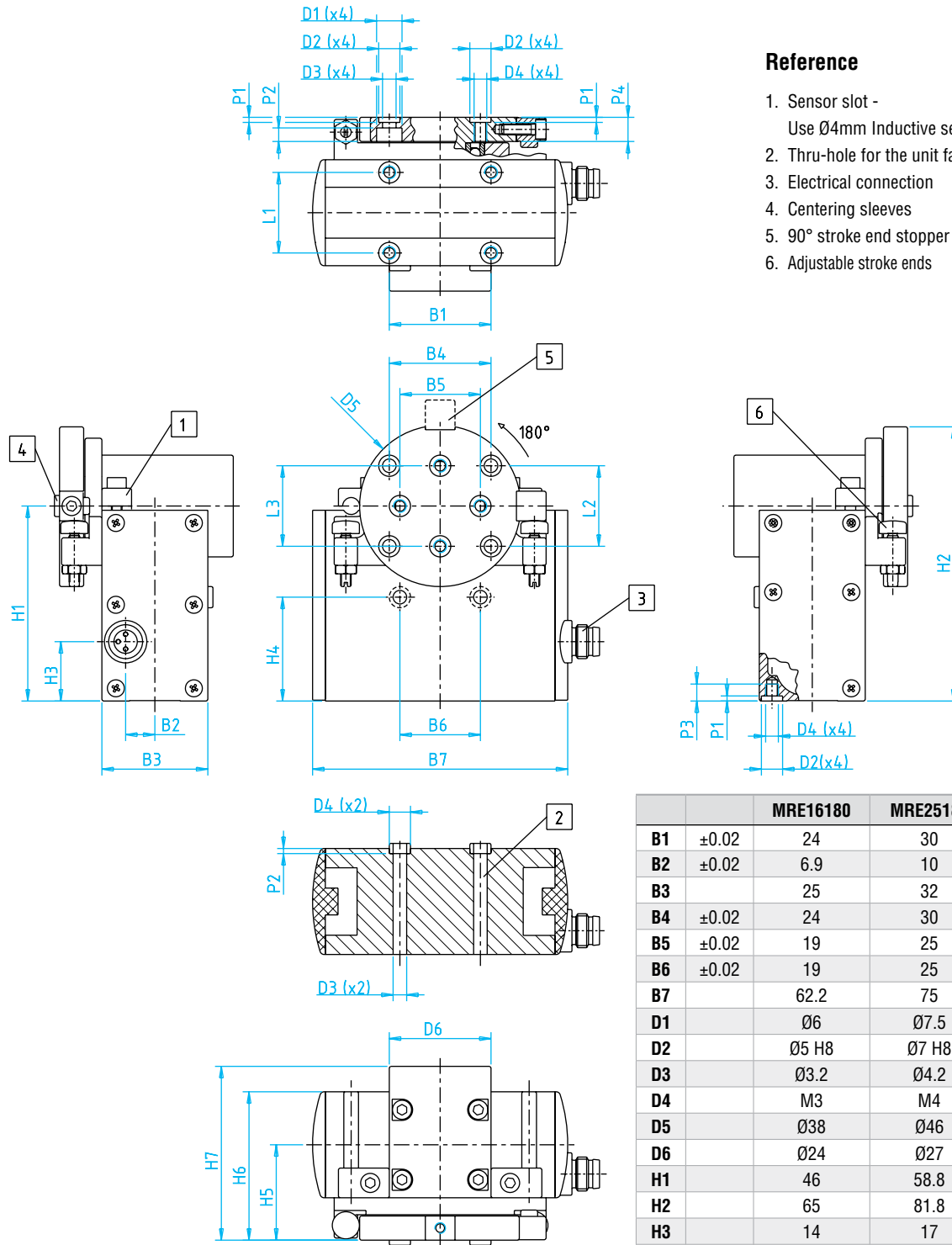
Quick#	Part#	Description	Price
7160	CFGM800325P	2.5m cable 3-Wire with Straight M8 Connector	\$13.00
7161	CFGM890325P	2.5m cable 3-Wire with 90° M8 Connector	\$13.00

For more information visit: www.EMlcorp.com

Electric Rotary Actuators – MRE

Reference

1. Sensor slot -
Use Ø4mm Inductive sensors
2. Thru-hole for the unit fastening
3. Electrical connection
4. Centering sleeves
5. 90° stroke end stopper
6. Adjustable stroke ends



		MRE16180	MRE25180	MRE32180
B1	±0.02	24	30	36
B2	±0.02	6.9	10	11
B3		25	32	35
B4	±0.02	24	30	36
B5	±0.02	19	25	30
B6	±0.02	19	25	30
B7		62.2	75	89
D1		Ø6	Ø7.5	Ø9
D2		Ø5 H8	Ø7 H8	Ø7 H8
D3		Ø3.2	Ø4.2	Ø5.2
D4		M3	M4	M5
D5		Ø38	Ø46	Ø55
D6		Ø24	Ø27	Ø31
H1		46	58.8	67.5
H2		65	81.8	95
H3		14	17	19
H4	±0.02	24.5	32	38
H5		22.5	28.5	33
H6		35	43.5	50.5
H7		41	52	60
L1	±0.02	19	24	26
L2	±0.02	19	22	26
L3	±0.02	19	25	30
P1		1.2	1.5	1.5
P2	+0.1	3.2	4.1	5
P3		4	6	8
P4		5.7	7.2	8.7

Electric Indexing Table – MTRE

- Available with 4, 6, 8 or 12 positions.
- Clockwise rotation.
- High torque.
- Suitable for heavy loads.
- Mechanical indexing reset in the case of accidental block.
- Optional Gimatic C-slot sensors on page 1002.

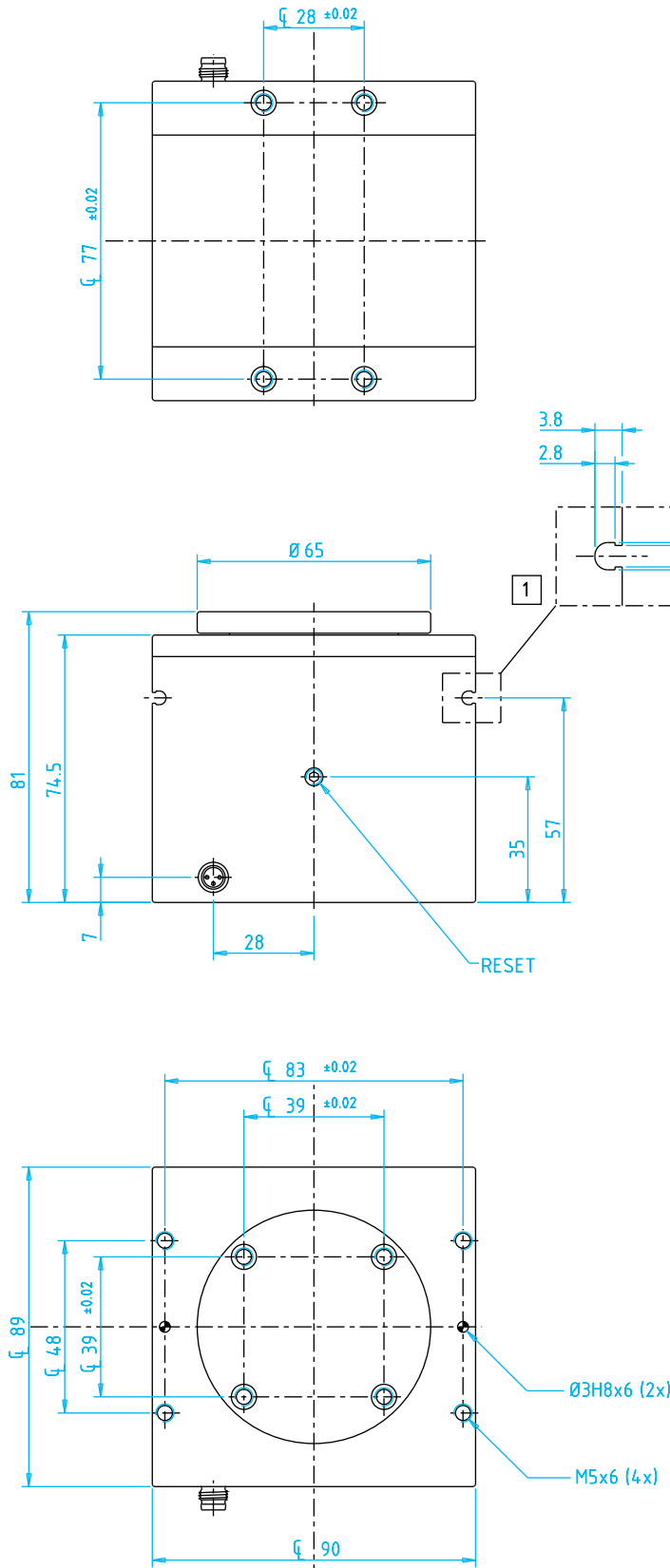


Quick#	7331	7332	7333	7334
Part#	MTRE3204C	MTRE3206C	MTRE3208C	MTRE3212C
Price	\$1,327.00	\$1,327.00	\$1,327.00	\$1,327.00
Swivelling torque	196 Ncm			
Swivelling angle	4x90°	6x60°	8x45°	12x30°
Max frequency	0.95 Hz	0.9 Hz	0.85 Hz	0.8 Hz
Swivelling time without load	0.47s	0.36s	0.29s	0.19s
Working actuator time	0.53s	0.43s	0.47s	0.29s
Duty cycle	100%	80%	60%	50%
Power supply	24 Vdc ± 10%			
Peak current	3.8 Apk			
Brushless motor power	23W			
Connection	M8 - 3 pole			
Open/closed input signal	PNP open connector			
Noise level	<70dB			
Weight (motor included)	1800g			
Environmental Degree	IP54			

Continuous Flex Cables

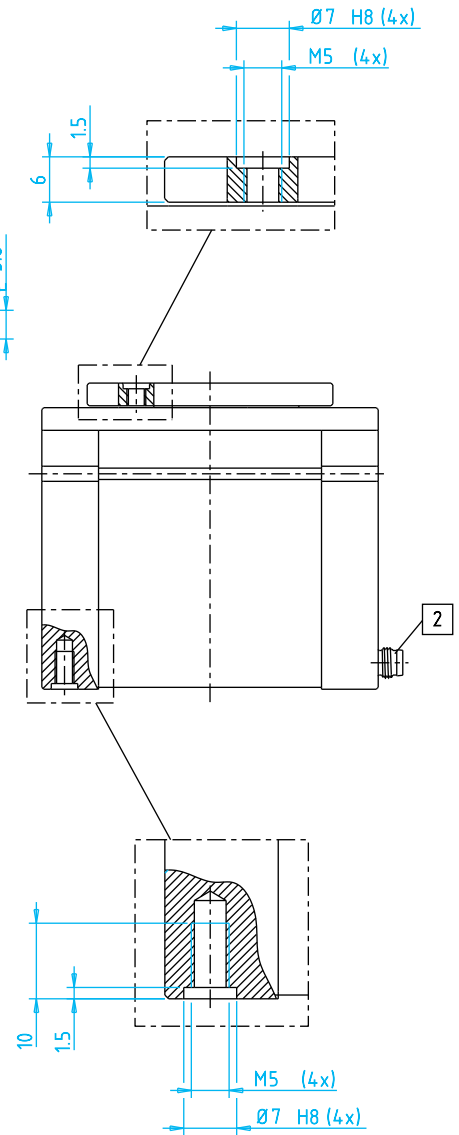
Quick#	Part#	Description	Price
7160	CFG800325P	2.5m cable 3-Wire with Straight M8 Connector	\$13.00
7161	CFG890325P	2.5m cable 3-Wire with 90° M8 Connector	\$13.00

Electric Indexing Table – MTRE



Reference

1. Sensor C-slot - Use Gimatic SS & SN sensors
2. Electrical connection



General Purpose Grippers Overview

GS p.622



Uses linear bearings instead of ball bearings
Normally Open or Normally Closed option
Interchangeable replacement for other OEM styles
Sensor ready

GW p.623



Normally Open or Normally Closed option
Interchangeable replacement for other OEM styles
Sensor ready

GS - Large p.630



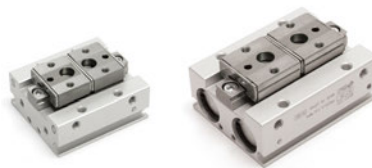
Uses linear bearings instead of ball bearings
Extends the range of standard GS grippers
Excellent large general-purpose parallel gripper

SMC - Parallel & Angular p.624



Good quality, reliable parallel and angular grippers
Fits EMI's Gimatic mounting brackets
Normally Open or Normally Closed option
Sensor ready

SMC - Low Profile Parallel p.668



Height is approximately 1/3rd the size of the MHZ2 / GS gripper.
Double Acting
Fits EMI's Gimatic mounting brackets
Sensor ready

Mounting Brackets p.628



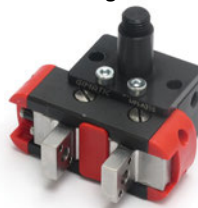
For Gimatic GS & GW Grippers
For SMC MHZ2 & MHC2 Grippers

SGP-S p.654



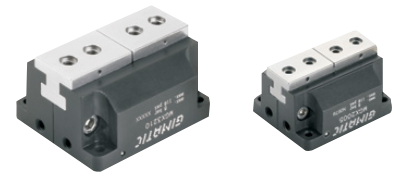
High performance in a very compact size
Interchangeable with >S< Style PGR grippers
Improved jaw design for secure finger mounting
New sensor slot for midstroke detection

SGP-S Mounting Bracket p.660



Aluminum mounting brackets fit size 20–40 grippers
Fits Ø10mm and Ø14mm extension tubes
Plastic mounting brackets fit size 25 and 32 grippers
Can be used with PGR grippers

MGX p.690



Flat profile with robust guidance
High gripping force and dimensional accuracy
Lightweight, small dimensions
Spring open, spring close options

SZ p.676



Long stroke — 8mm to 30mm
Narrow profile, self centering
Improved jaw guidance
Double acting with spring close by special order

PE p.708



Low profile and long stroke: 10mm to 200mm
Consistent grip force in both directions
Strong grip force
Sensor ready

Sensor Reference Guide p.1010



We updated our Sensor Reference Guide to include new SSQ and Teachable PRO sensors. Locate the gripper you need and easily find which sensors are compatible and which detect midstroke.

General Purpose Grippers Overview

DH

p.724



2-jaw, double acting
Normally Open or Normally Closed option
Sensor ready
Interchangeable replacement for other OEM styles

TH

p.726



3-jaw, double acting
Normally Open or Normally Closed option
Sensor ready
Interchangeable replacement for other OEM styles

PQ

p.728



Double acting with spring return, able to be setup as NO or NC depending on jaw choice
Strong & rugged design
Strokes from 15mm to 63mm
Sensor ready

GX-S

p.696



Radial acting
Interchangeable replacement for other OEM styles
Sensor ready

XP / XT

p.718



2-jaw & 3-jaw parallel grippers
Lightweight
Normally Open or Normally Closed option
Sensor ready

T

p.732



Double acting
Sensor ready

XR / XA

p.718



2-jaw radial grippers (XR)
2-jaw angular grippers (XA)
Lightweight, high gripping force
Normally Open or Normally Closed option
Sensor ready

PN

p.692



2 & 3-jaw angular-acting grippers
Easy mounting interface on threaded stud
Lightweight, high efficiency
Sensor ready

Angular AA

p.706



Strong grip force
Hardened steel jaws have mounting holes for custom fingers
Many mounting accessories available

SX

p.720



2-jaw, self-centering gripper
Completely sealed, ideal for Clean Room applications
Very high grip force
Sensor ready

SXT

p.722



3-jaw, self-centering gripper
Completely sealed, ideal for Clean Room applications
Very high grip force
Sensor ready

JP

p.734



High performance in a compact size
Heavy-duty gripping
Sensor ready
Interchangeable replacement for other OEM styles

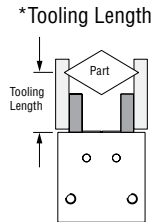
Gimatic Parallel Grippers



GS - Parallel Grippers

	Quick#	Part#	Price	Opening Force at 20mm*	Closing Force at 20mm*	Opening Force at 40mm*	Closing Force at 40mm*	Finger Stroke	Weight
Double Acting	6325	GS-10	\$142.00	5 lbf	4 lbf	4 lbf	4 lbf	4.6mm	45g
	6326	GS-16	\$145.00	16 lbf	13 lbf	12 lbf	11 lbf	6.8mm	98g
	6327	GS-20	\$161.00	38 lbf	32 lbf	31 lbf	28 lbf	10.4mm	207g
	6328	GS-25	\$186.00	52 lbf	47 lbf	43 lbf	38 lbf	14.4mm	365g
Normally Open	6329	GS-10-NO	\$142.00	-	2 lbf	-	1 lbf	4.6mm	46g
	6330	GS-16-NO	\$145.00	-	8 lbf	-	5 lbf	6.8mm	99g
	6331	GS-20-NO	\$161.00	-	21 lbf	-	17 lbf	10.4mm	209g
	6332	GS-25-NO	\$186.00	-	32 lbf	-	23 lbf	14.4mm	369g
Normally Closed	6333	GS-10-NC	\$142.00	3 lbf	-	2 lbf	-	4.6mm	46g
	6334	GS-16-NC	\$145.00	9 lbf	-	5 lbf	-	6.8mm	99g
	6335	GS-20-NC	\$161.00	28 lbf	-	22 lbf	-	10.4mm	209g
	6336	GS-25-NC	\$186.00	37 lbf	-	28 lbf	-	14.4mm	369g

Great grip force, quality, price, and value! Once you try these grippers, you'll probably standardize on using these for all of your robotic EOAT needs.



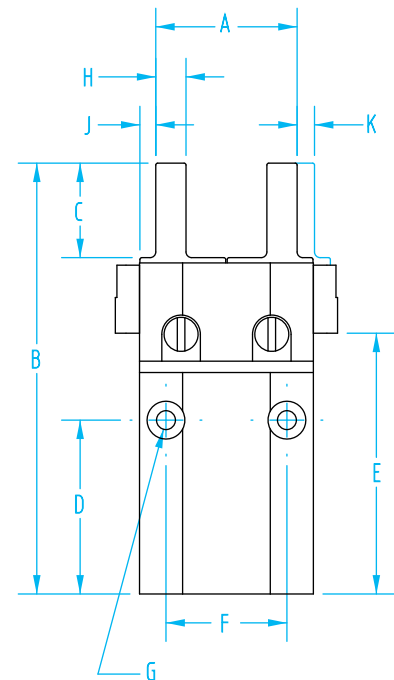
Finger Blanks on page 637



Mounting brackets on page 628

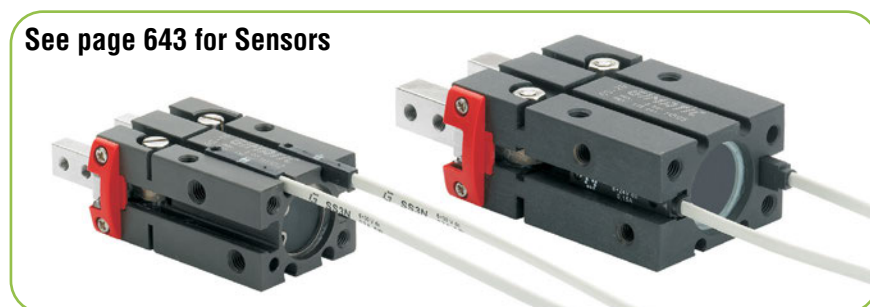


See page 630 for additional sizes and dimensional information



Don't want to machine custom fingers from scratch? Start with these aluminum or nylon finger blanks. They are easy to shape to your particular part.

See page 643 for Sensors



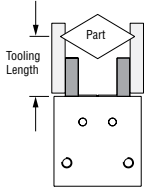
Gimatic Angular Grippers

GW - Angular Grippers

	Quick#	Part#	Price	Opening Force at 20mm*	Closing Force at 20mm*	Opening Force at 40mm*	Closing Force at 40mm*	Finger Stroke	Weight
Double Acting	6337	GW-10	\$99.00	2 lbf	2 lbf	1 lbf	1 lbf	40°	39g
	6338	GW-16	\$122.00	12 lbf	8 lbf	5 lbf	4 lbf		88g
	6339	GW-20	\$124.00	20 lbf	17 lbf	10 lbf	9 lbf		171g
	6340	GW-25	\$139.00	40 lbf	36 lbf	20 lbf	20 lbf		300g
Normally Open	6341	GW-10-NO	\$99.00	-	1 lbf	-	-	40°	39g
	6342	GW-16-NO	\$122.00	-	5 lbf	-	3 lbf		89g
	6343	GW-20-NO	\$124.00	-	11 lbf	-	6 lbf		173g
	6344	GW-25-NO	\$139.00	-	26 lbf	-	15 lbf		304g
Normally Closed	6345	GW-10-NC	\$99.00	2 lbf	-	-	-	40°	39g
	6346	GW-16-NC	\$122.00	9 lbf	-	4 lbf	-		89g
	6347	GW-20-NC	\$124.00	15 lbf	-	8 lbf	-		173g
	6348	GW-25-NC	\$139.00	28 lbf	-	14 lbf	-		304g



*Tooling Length



You can't go wrong with these grippers. They have a high grip force and a life rating of 10,000,000 cycles. Yet they are very competitively priced.

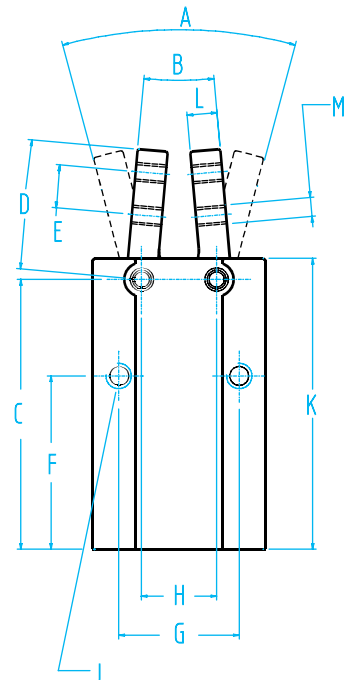
Finger Blanks
on page 649



Mounting brackets
on page 628

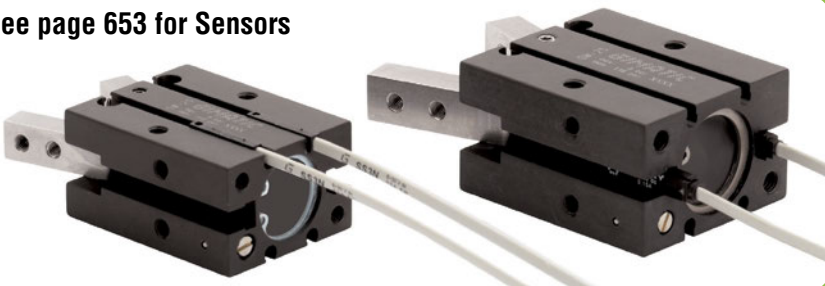


See page 644 for additional sizes and dimensional information



Don't want to machine custom fingers from scratch?
Start with these aluminum or nylon finger blanks.
They are easy to shape to your particular part.

See page 653 for Sensors

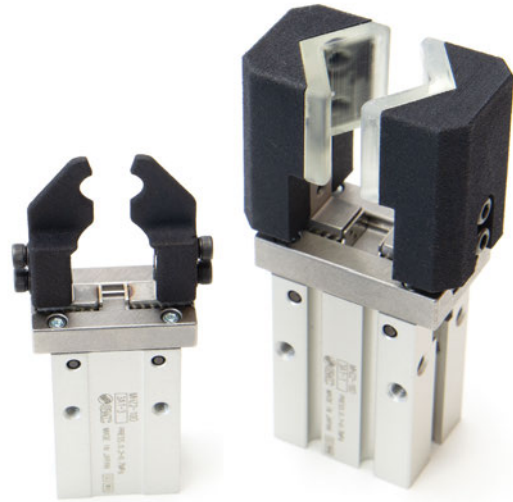


Fittings Available
on page 1047



SMC Parallel Grippers – MHZ2

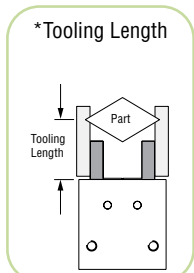
- Double acting (-_D), normally closed (-_C), or normally open (-_S) models.
- Additional narrow jaw models (_DN) available online.
- Bore sizes from 10mm to 40mm.
- Optional sensors available.
- Finger blanks available on page 637.
- Mounting brackets on page 628.
- MHF2 low-profile parallel grippers on page 668.



Contact EMI for custom designed and manufactured fingers.

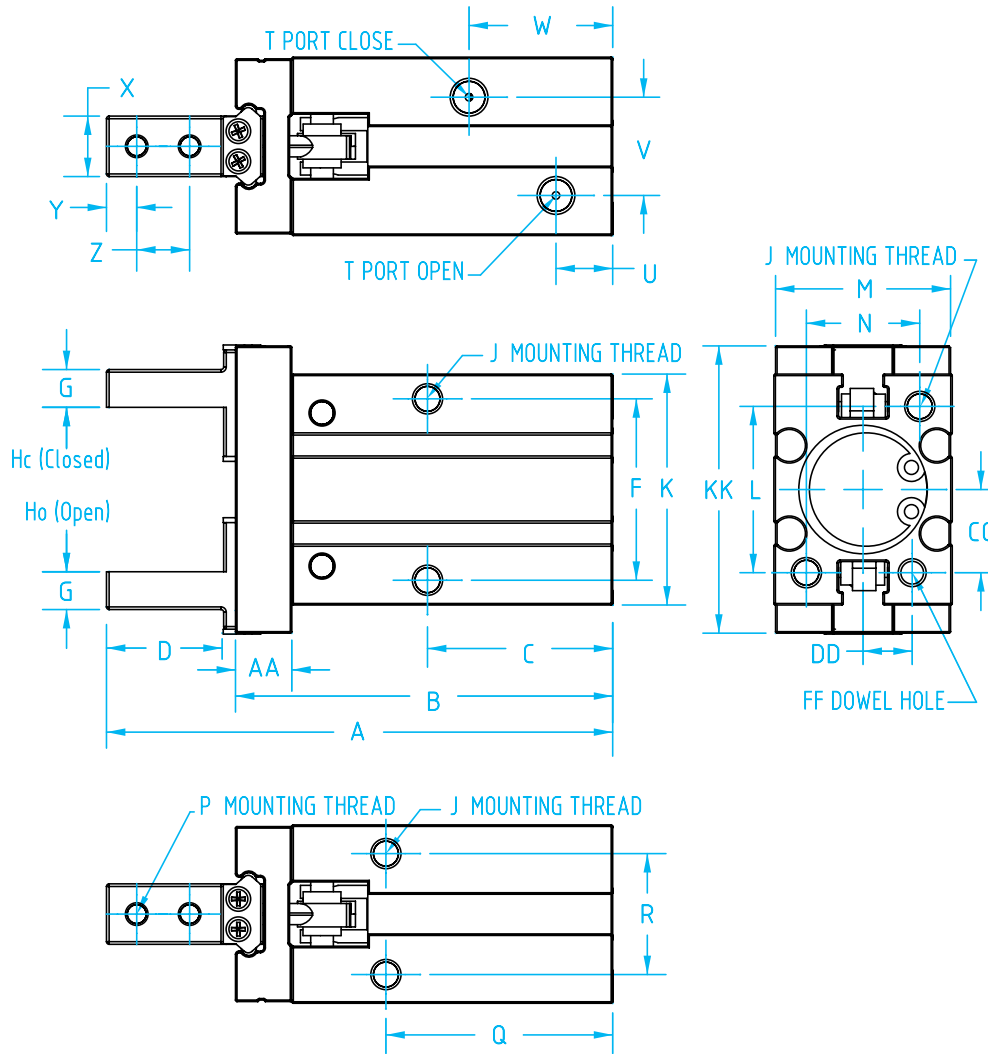


	Quick#	Part#	Price	Opening Force at 20mm*	Closing Force at 20mm*	Opening Force at 40mm*	Closing Force at 40mm*	Finger Stroke	Weight
Double Acting	2109	MHZ2-10D	\$191.30	8 lbf	5 lbf	6 lbf	3 lbf	4mm	55g
	2110	MHZ2-16D	\$196.75	22 lbf	17 lbf	15 lbf	10 lbf	6mm	115g
	2111	MHZ2-20D	\$279.80	33 lbf	22 lbf	32 lbf	21 lbf	10mm	235g
	2112	MHZ2-25D	\$334.45	54 lbf	36 lbf	52 lbf	34 lbf	14mm	430g
Normally Open	2117	MHZ2-10S	\$191.30	-	3 lbf	-	1 lbf	4mm	55g
	2118	MHZ2-16S	\$196.75	-	14 lbf	-	7 lbf	6mm	115g
	2119	MHZ2-20S	\$279.80	-	18 lbf	-	17 lbf	10mm	240g
	2120	MHZ2-25S	\$334.45	-	27 lbf	-	25 lbf	14mm	435g
Normally Closed	2121	MHZ2-10C	\$191.30	6 lbf	-	4 lbf	-	4mm	55g
	2122	MHZ2-16C	\$196.75	19 lbf	-	12 lbf	-	6mm	115g
	2123	MHZ2-20C	\$279.80	29 lbf	-	28 lbf	-	10mm	240g
	2124	MHZ2-25C	\$334.45	44 lbf	-	42 lbf	-	14mm	435g



Use Quick#s for easy online ordering.

SMC Parallel Grippers – MHZ2



	MHZ2-10	MHZ2-16	MHZ2-20	MHZ2-25
A	57.0	67.3	84.8	102.7
AA	6.0	7.5	9.5	11.0
B	43.8	50.0	62.3	74.6
C	23.0	24.5	29.0	30.0
D	12.0	15.0	20.0	25.0
F	16.0	24.0	30.0	36.0
FF	∅2 H9	∅3 H9	∅4 H9	∅4 H9
CC	7.6	11.0	16.8	21.8
DD	5.2	6.5	7.5	10.0
G	4.0	5.0	8.0	10.0
Ho	15.2	20.9	26.3	33.3
Hc	11.2	14.9	16.3	19.3
J	M3	M4	M5	M6
K	23.0	30.6	42.0	52.0
KK	29.0	38.0	50.0	63.0
L	18.0	22.0	32.0	40.0
M	16.4	23.6	27.6	33.6
N	12.0	15.0	18.0	22.0
P	M2.5	M3	M4	M5
Q	27.0	30.0	35.0	36.5
R	11.4	16.0	18.6	22.0
T	M3	M5	M5	M5
U	9.0	7.5	10.0	10.7
V	11.0	13.0	15.0	20.0
W	19.0	19.0	23.0	23.5
X	5.0	8.0	10.0	12.0
Y	3.0	4.0	5.0	6.0
Z	5.7	7.0	9.0	12.0

Quick#	Part#	Signal	Connection	Price	Size 10	All other sizes
SMC 3-wire Straight T-Slot Sensors to detect fully open / fully closed						
2243	Y7PL-PNP	PNP	with lead, 3m long	\$44.00	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2244	Y59AL-NPN	NPN	with lead, 3m long	\$34.95	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SMC 3-wire Straight C-Slot Sensors for midstroke detection						
5430	D-M9PL	PNP	with lead, 3m long	\$33.70	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/>
2412	D-M9NL	NPN	with lead, 3m long	\$33.70	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/>
5497	D-M9P-SAPC	PNP	with M8 male connector, 0.5m long	\$42.06	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/>
5498	D-M9N-SAPC	NPN	with M8 male connector, 0.5m long	\$42.06	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/>
211	SMC-BMG2-012	T-Slot Adaptor for SMC C-Slot Sensors		\$2.66	(*) Purchase separately	

SMC Angular Grippers – MHC2

- Double acting (-_D), or normally open (-_S) models.
- Bore sizes from 10mm to 25mm.
- Built-in variable throttle.
- Optional sensors available.
- Finger blanks available on page 649.
- Mounting brackets on page 628.



	Quick#	Part#	Price	Closing Force at 87psi		Finger Stroke	Weight
				at 20mm	at 40mm		
Double Acting	2101	MHC2-10D	\$129.00	3 lbf	-	40°	39g
	2102	MHC2-16D	\$134.50	10 lbf	6 lbf		91g
	2103	MHC2-20D	\$161.80	20 lbf	10 lbf		180g
	2104	MHC2-25D	\$180.35	37 lbf	20 lbf		311g
Normally Open	2105	MHC2-10S	\$129.00	2 lbf	-	40°	39g
	2106	MHC2-16S	\$134.50	9 lbf	4 lbf		92g
	2107	MHC2-20S	\$161.80	16 lbf	8 lbf		183g
	2108	MHC2-25S	\$180.35	31 lbf	17 lbf		316g

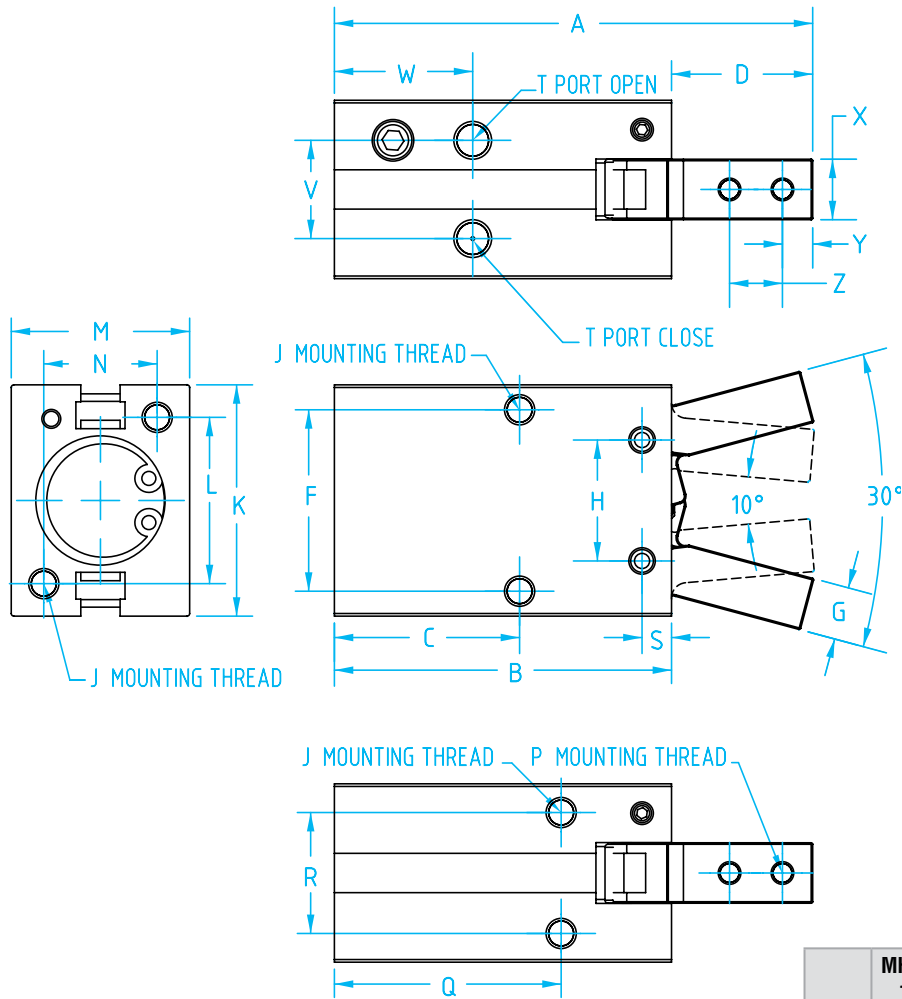
Quick#	Part#	Signal	Connection	Price
SMC 3-wire T-Slot Straight Sensors to detect fully open / fully closed				
2243	Y7PL-PNP	PNP	with lead, 3m long	\$44.00
2244	Y59AL-NPN	NPN	with lead, 3m long	\$34.95
SMC 3-wire C-Slot Straight Sensors for midstroke detection - Purchase Adaptor Separately				
5430	D-M9PL	PNP	with lead, 3m long	\$33.70
2412	D-M9NL	NPN	with lead, 3m long	\$33.70
5497	D-M9P-SAPC	PNP	with M8 male connector, 0.5m long	\$42.06
5498	D-M9N-SAPC	NPN	with M8 male connector, 0.5m long	\$42.06
211	SMC-BMG2-012		T-Slot Adaptor for SMC C-Slot Sensors	\$2.66

Fittings Available
on page 1047



Use Quick#s for easy online ordering.

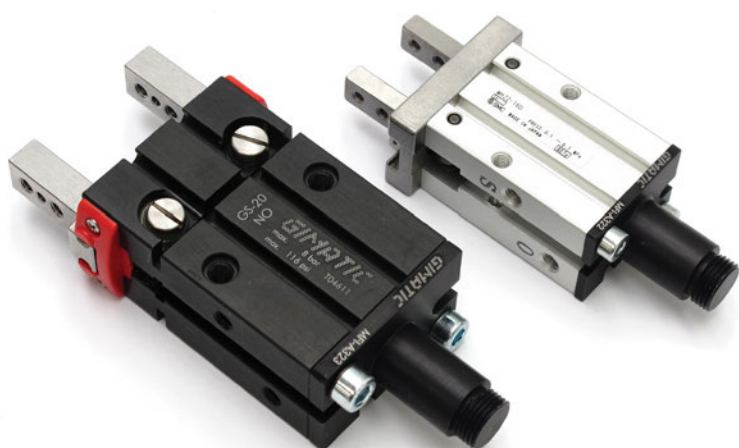
SMC Angular Grippers – MHC2



Contact EMI for custom designed and manufactured fingers.

	MHC2-10	MHC2-16	MHC2-20	MHC2-25
A	52.4	62.5	78.7	92.0
B	38.6	44.6	55.2	60.4
C	23.0	24.5	29.0	30.0
D	13.8	17.9	23.5	31.6
F	16.0	24.0	30.0	36.0
G	4.0	7.0	8.0	10.0
H	10.0	16.0	20.0	25.0
J	M3	M4	M5	M6
K	23.0	30.6	42.0	52.0
L	18.0	22.0	32.0	40.0
M	16.4	23.6	27.6	33.6
N	12.0	15.0	18.0	22.0
P	M2.5	M3	M4	M5
Q	27.0	30.0	35.0	36.5
R	11.4	16.0	18.6	22.0
S	2.8	3.9	4.5	4.6
T	M3	M5	M5	M5
V	10.4	13.0	15.0	20.0
W	18.8	18.3	22.2	23.5
X	6.4	8.0	10.0	12.0
Y	3.0	4.0	5.2	8.0
Z	5.7	7.0	9.0	12.0

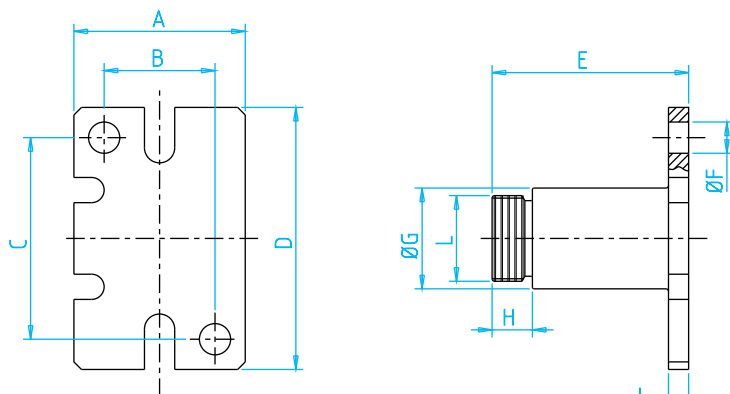
Aluminum Mounting Brackets



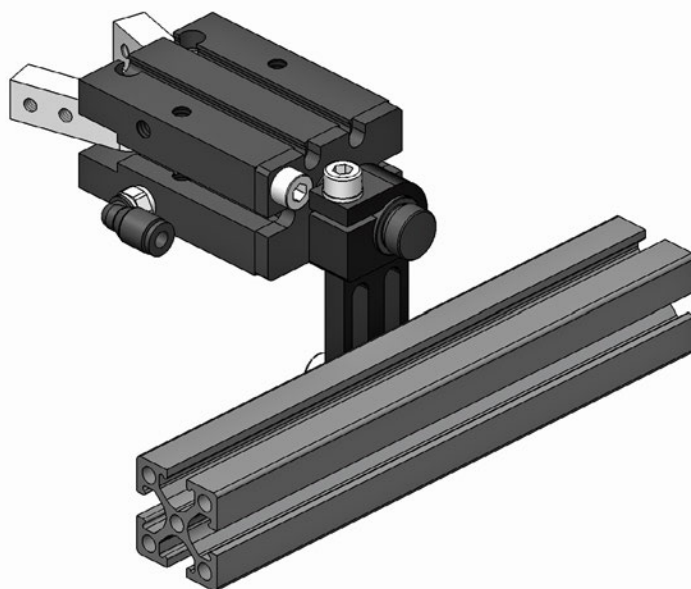
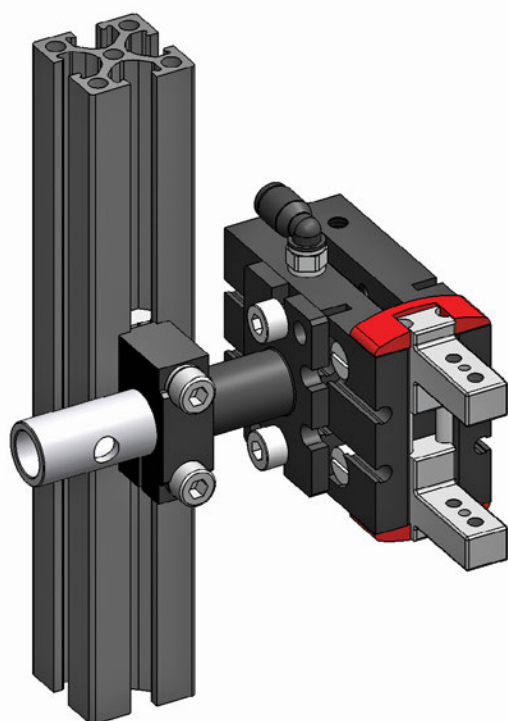
Mounting Brackets for Gimatic GS / GW and SMC MHZ2 / MHC2 Grippers

Quick#	Part#	Price	For gripper	Wt.
7317	MFI-A321	\$26.57	__-10 & GX-16S	8g
7318	MFI-A322	\$29.04	__-16	18g
7319	MFI-A323	\$37.00	__-20	29g
7320	MFI-A324	\$42.11	__-25	57g

Includes fasteners.



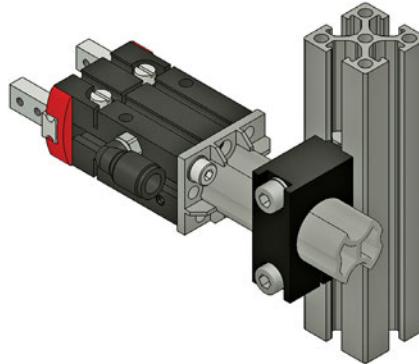
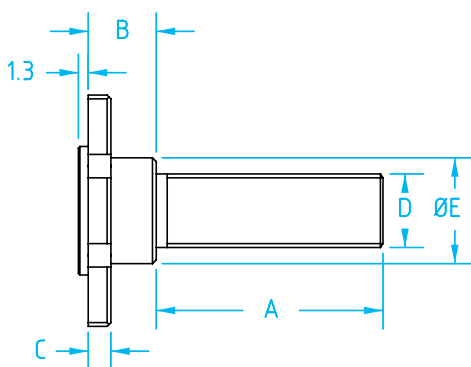
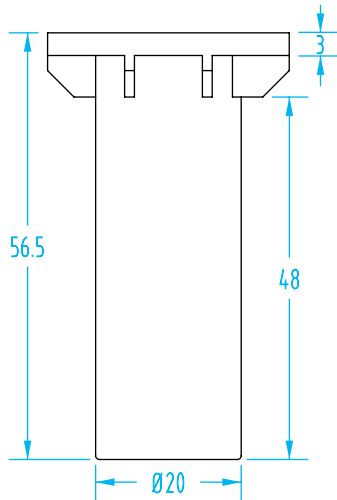
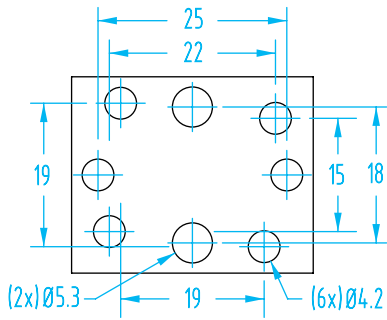
Quick#	7317	7318	7319	7320
For:	__-10	__-16	__-20	__-25
A	17.5	24	28	34
B	12	15	18	22
C	18	22	32	40
D	23.5	31	42	52
E	21	26.5	30	39
F	Ø3.1	Ø4.1	Ø5.2	Ø6.2
G	Ø10	Ø14	Ø14	Ø20
H	5	6	6	8
I	2	2.5	4	4
L	M8x1	M12x1	M12x1	M17x1



Composite Mounting Brackets

For use with Gimatic and SMC

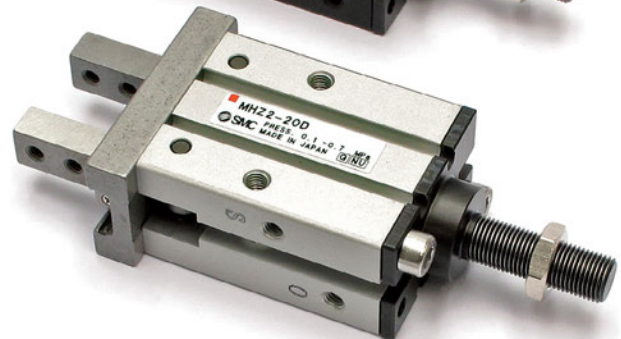
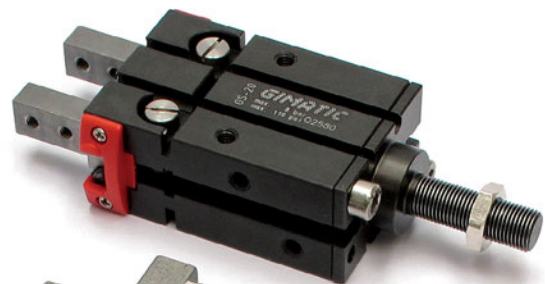
(Dimensioned drawings shown full scale)



Composite Mounting Brackets for Compact Grippers

Quick#	Part#	Price	For gripper	Wt.
6375	MFP-A01	\$3.43	Gimatic: GS-16, GW-16, SMC: MHZ2-16, MHC2-16	26g

Order fasteners separately, see page 1076.



Fittings Available
on page 1047



Mounting Brackets for Gimatic GS- and GW-; and SMC MHZ2- and MHC2- Grippers

Quick#	Part#	Price	For gripper	A	B	C	D	E	Wt.
1918	GMB-GSGW-10	\$32.25	__-10	25	8	3	G1/8"	10	9g
1919	GMB-GSGW-16	\$32.25	__-16	30	9	3	G1/8"	14	14g
1920	GMB-GSGW-20	\$32.25	__-20	30	10	3	G1/8"	20	21g
1921	GMB-GSGW-25	\$32.25	__-25	30	13	5	M15x1	20	43g

Includes fasteners.

Parallel Gripper – GS

- Self-centering.
- Double acting.
- Long life and reliability, maintenance free.
- Different options for fastening.
- Optional sensors available on page 643.
- Spring closed (-NC) or spring open (-NO) option.
- Use FDA approved lubricant and stainless steel parts.
- Finger blanks available on page 637.
- Patented backlash adjusting system.



Double Acting Models

Quick#	6325	6326	6327	6328	6784	6785
Part#	GS-10	GS-16	GS-20	GS-25	GS-32	GS-40
Price	\$142.00	\$145.00	\$161.00	\$186.00	\$514.00	\$717.00
Medium	Filtered, lubricated / non-lubricated compressed air					
Pressure range	36–116 psi	21.7–116 psi		14.5–116 psi		
Opening total gripping force at 87 psi	8 lbf	22.4 lbf	47.6 lbf	63.4 lbf	112.4 lbf	157.4 lbf
Closing total gripping force at 87 psi	6.3 lbf	19.4 lbf	41.8 lbf	57 lbf	96.6 lbf	138 lbf
Total stroke (+/- 0.3mm)	4.6mm	6.8mm	10.4mm	14.4mm	22mm	30mm
Maximum repeatability tolerance	±0.02mm					
Mid-stroke detection with Gimatic Sensor	Yes, see Sensor Reference Guide on page 1010 for details.					
Mid-stroke detection with SMC Sensor	Yes, with D-M9_ SMC sensors and included sensor bracket (see page 1004)					
Weight	45g	98g	207g	365g	645g	1155g

Normally Open Models

Quick#	Part#	Price	Finger Stroke	Wt.
6329	GS-10-NO	\$142.00	4.6mm	46g
6330	GS-16-NO	\$145.00	6.8mm	99g
6331	GS-20-NO	\$161.00	10.4mm	209g
6332	GS-25-NO	\$186.00	14.4mm	369g

Normally Closed Models

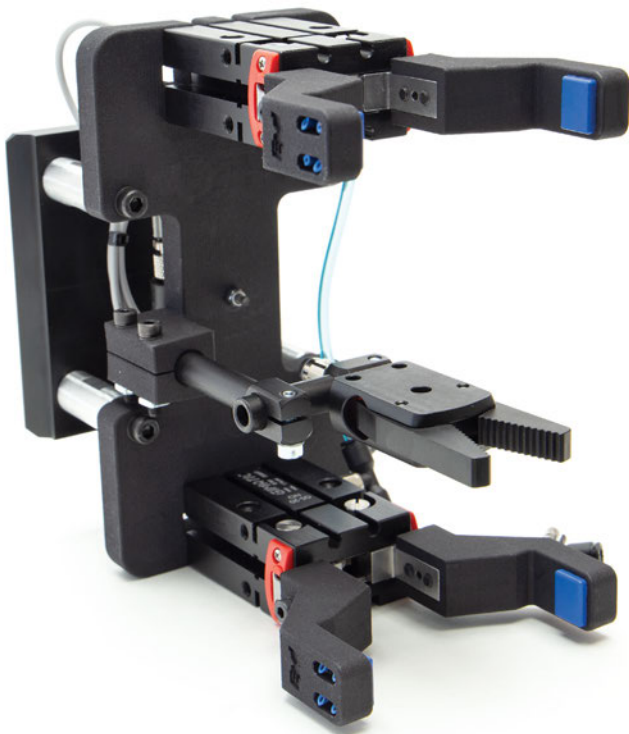
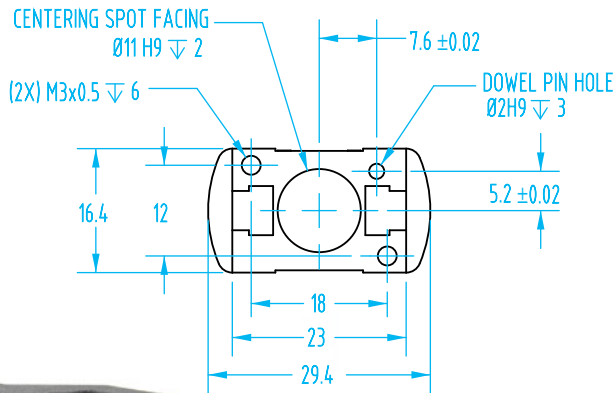
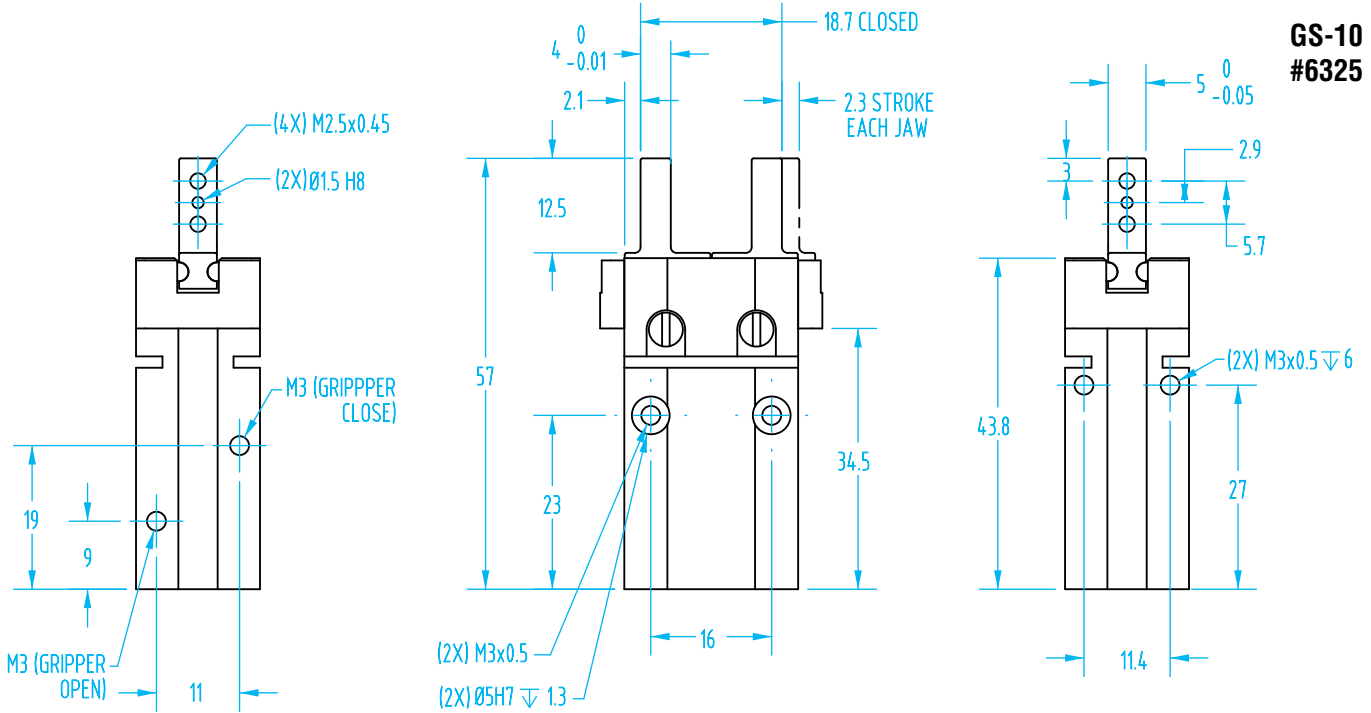
Quick#	Part#	Price	Finger Stroke	Wt.
6333	GS-10-NC	\$142.00	4.6mm	46g
6334	GS-16-NC	\$145.00	6.8mm	99g
6335	GS-20-NC	\$161.00	10.4mm	209g
6336	GS-25-NC	\$186.00	14.4mm	369g

Use Quick#s for easy online ordering.

Parallel Gripper – GS

**GS-10
#6325**

(Dimensioned drawing shown full scale)



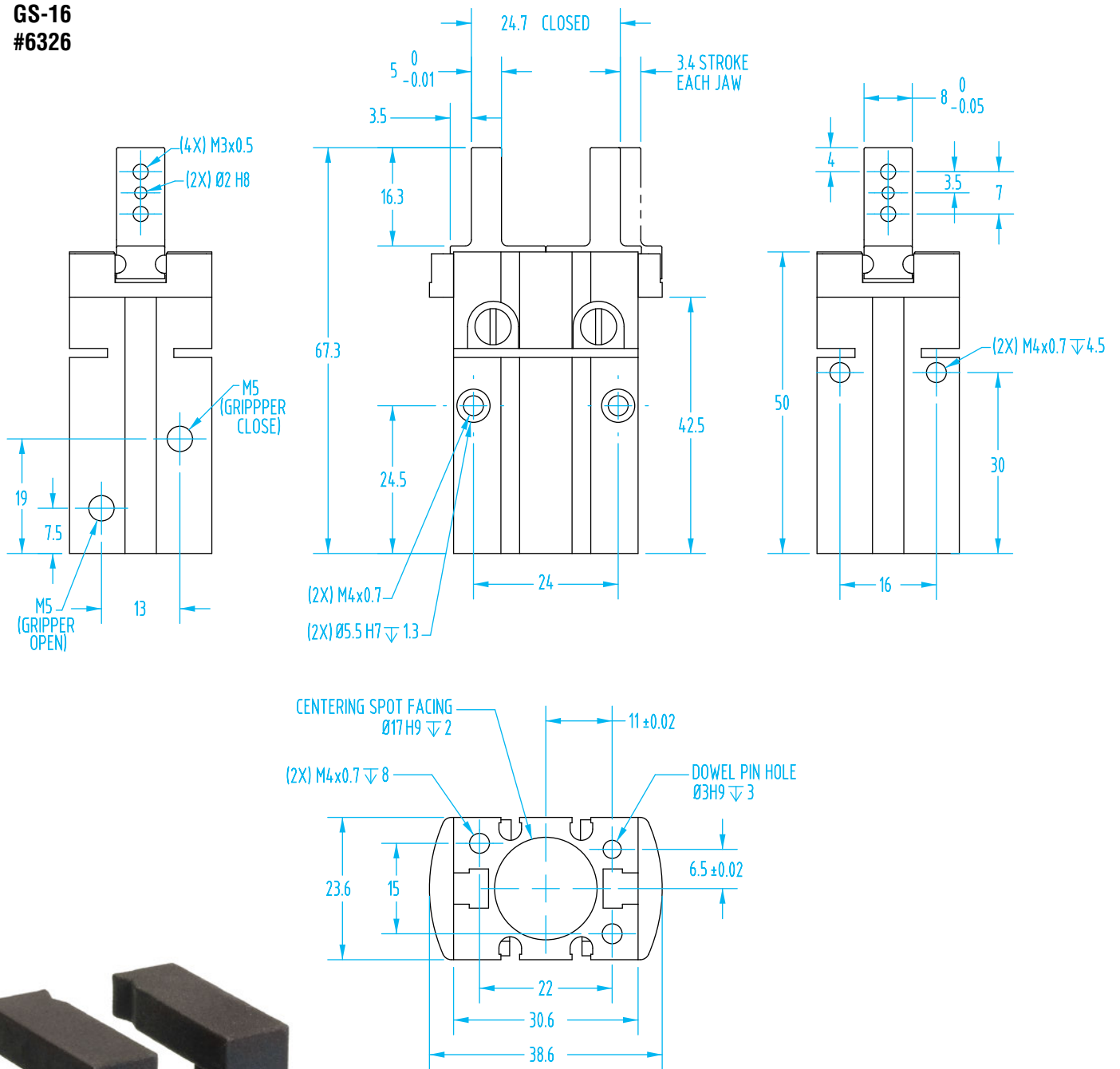
**Custom 3D Printed or Machined
Fingers from EMI!**

EMI's in-house 3D printing and CNC equipment allow us to provide custom fingers quickly and cost effectively.

Parallel Gripper – GS

(Dimensioned drawing shown full scale)

**GS-16
#6326**



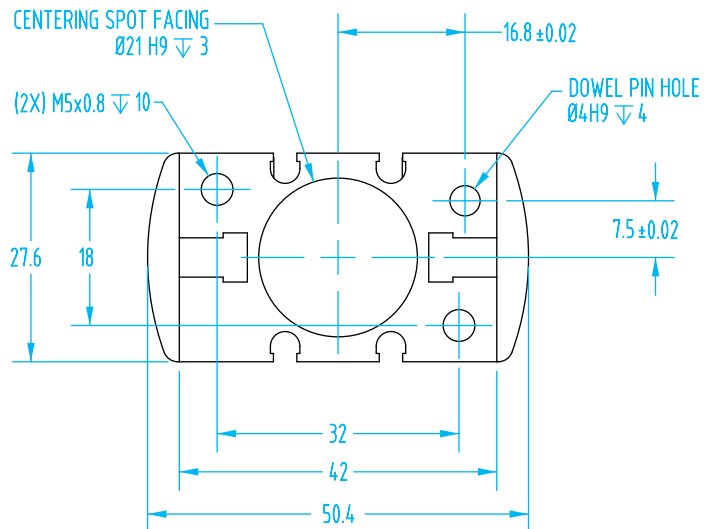
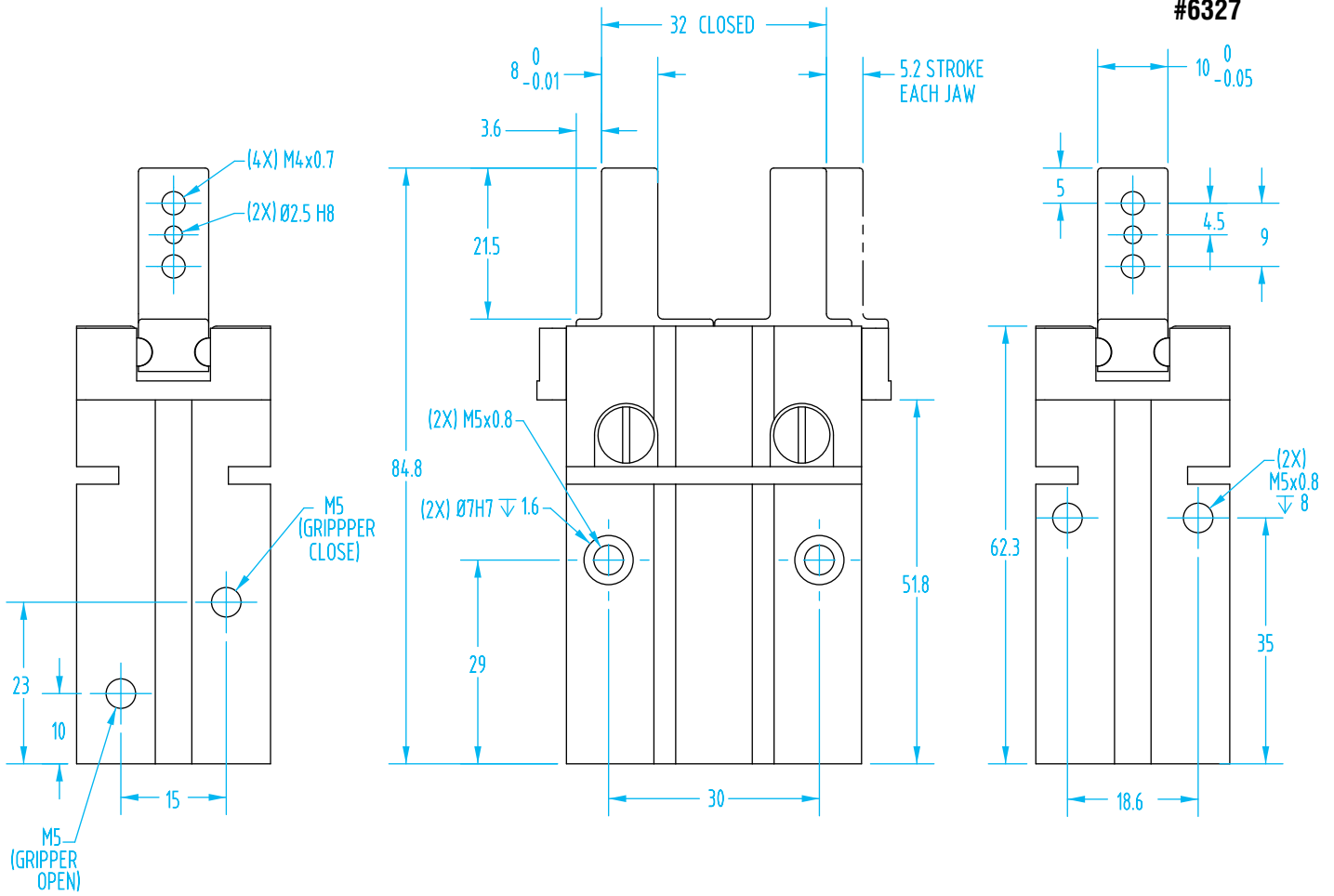
Custom 3D Printed or Machined Fingers from EMI!

EMI's in-house 3D printing and CNC equipment allow us to provide custom fingers quickly and cost effectively.

Parallel Gripper – GS

(Dimensioned drawing shown full scale)

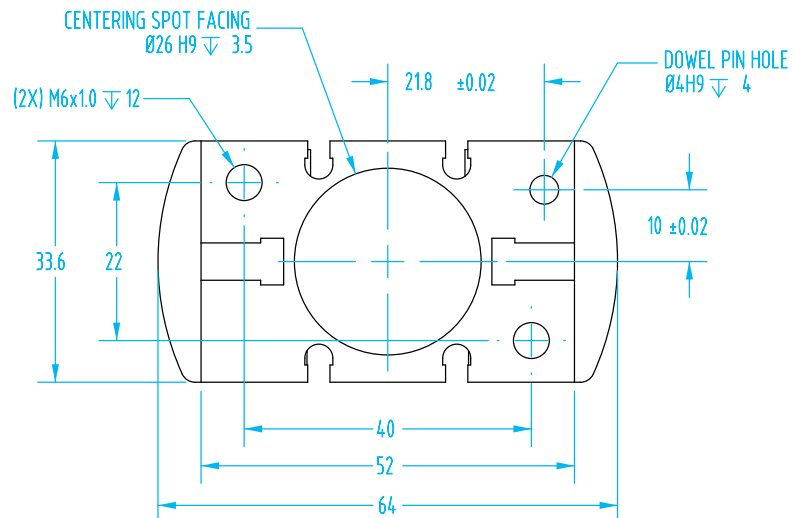
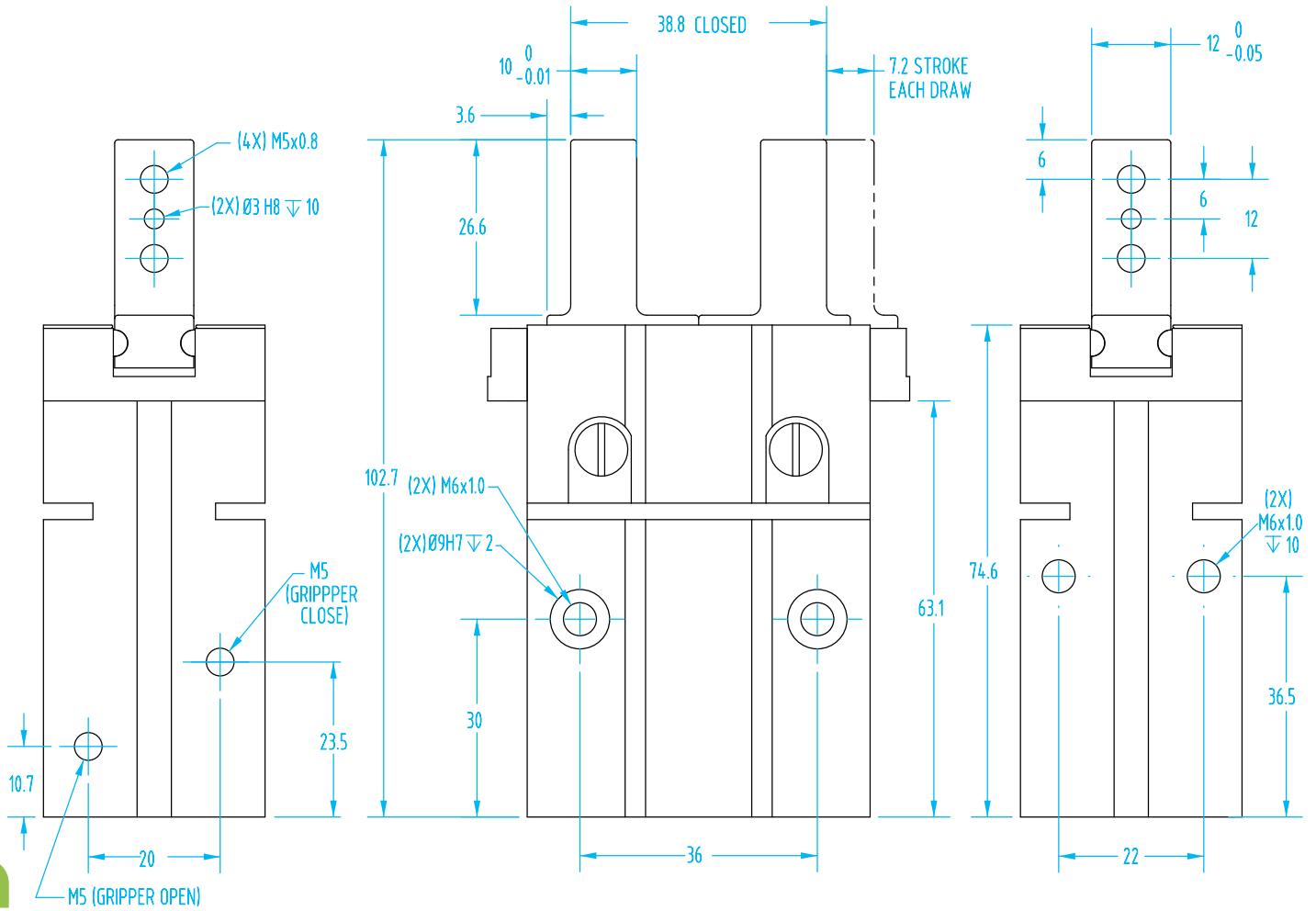
GS-20
#6327



Parallel Gripper – GS

(Dimensioned drawing reduced to fit)

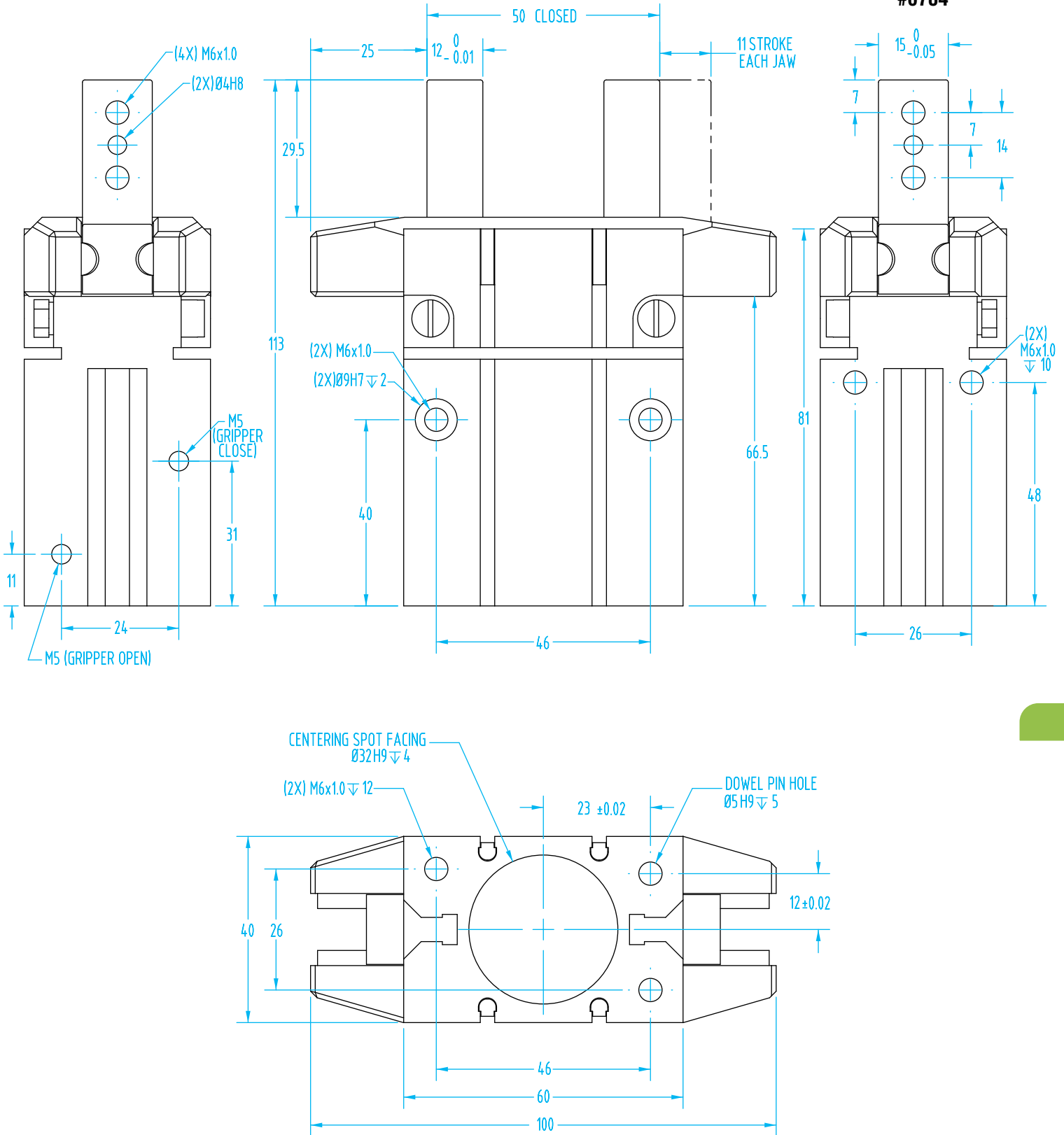
GS-25
#6328



Parallel Gripper – GS

(Dimensioned drawing reduced to fit)

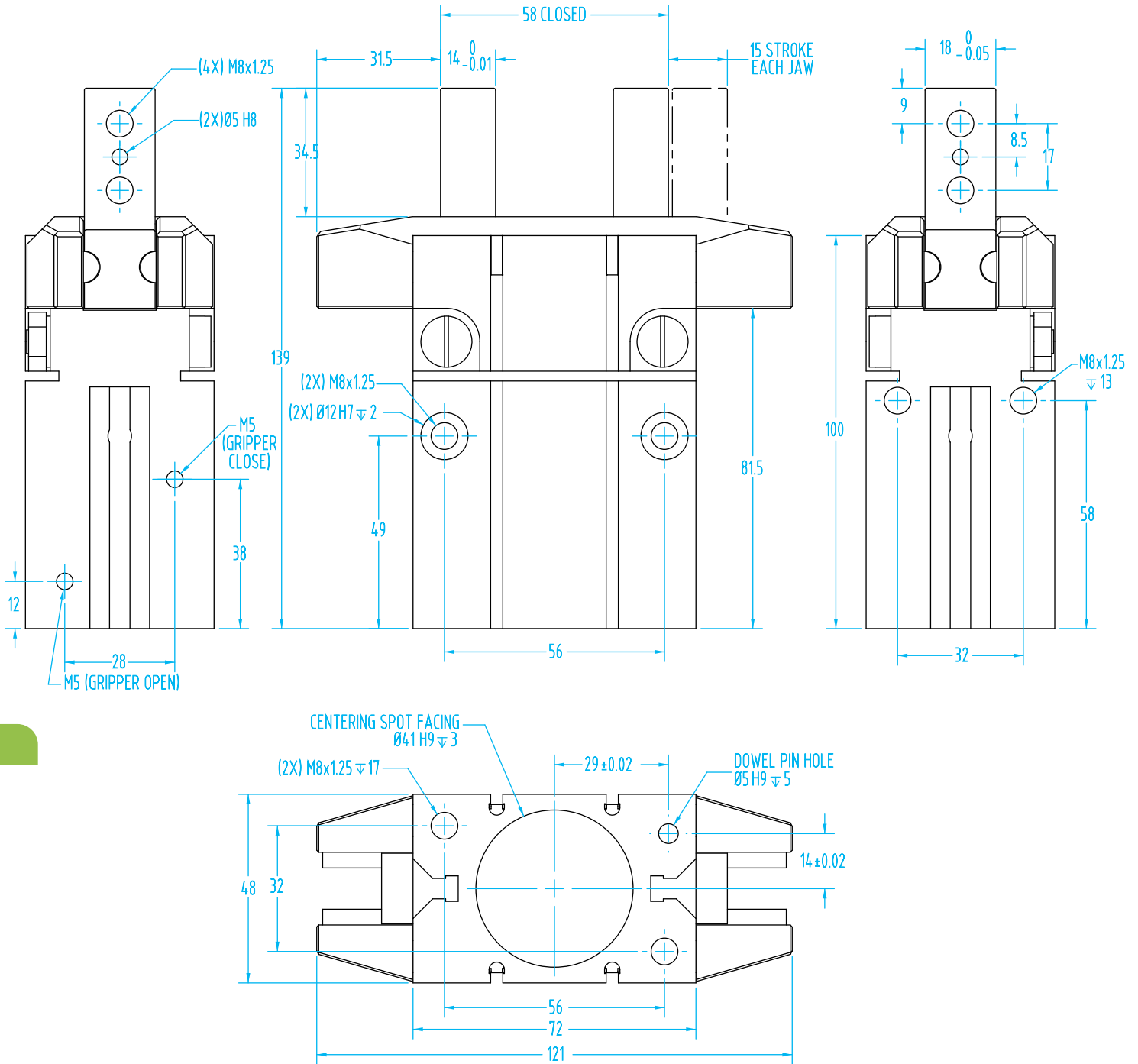
**GS-32
#6784**



Parallel Gripper – GS

(Dimensioned drawing reduced to fit)

**GS-40
#6785**



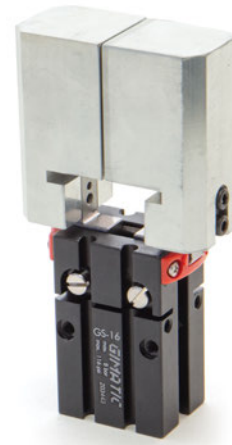
Finger Blanks for GS Grippers

Machine these finger blanks to your part's shape or contact EOAT Engineering for help!

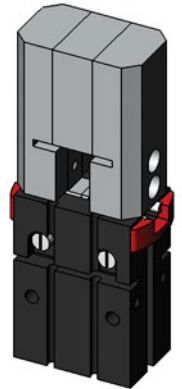
For more information on custom finger blanks for your application visit our 3D printing section on page 102.

Quick#	Part#	Material	For:	Wt. (g)	Price
5884	GS-10-FBA	Aluminum	GS-10 & MHZ2-10	68	\$25.09
7462	GS-10-FBN	Nylon	MHZ2-10	3.5	\$19.30
5886	GS-16-FBA	Aluminum	GS-16 & MHZ2-16	134	\$31.00
7463	GS-16-FBN	Nylon	MHZ2-16	7	\$23.85
5888	GS-20-FBA	Aluminum	GS-20 & MHZ2-20	210	\$35.36
7464	GS-20-FBN	Nylon	MHZ2-20	11	\$27.20
5890	GS-25-FBA	Aluminum	GS-25 & MHZ2-25	338	\$38.55
7465	GS-25-FBN	Nylon	MHZ2-25	18	\$29.65

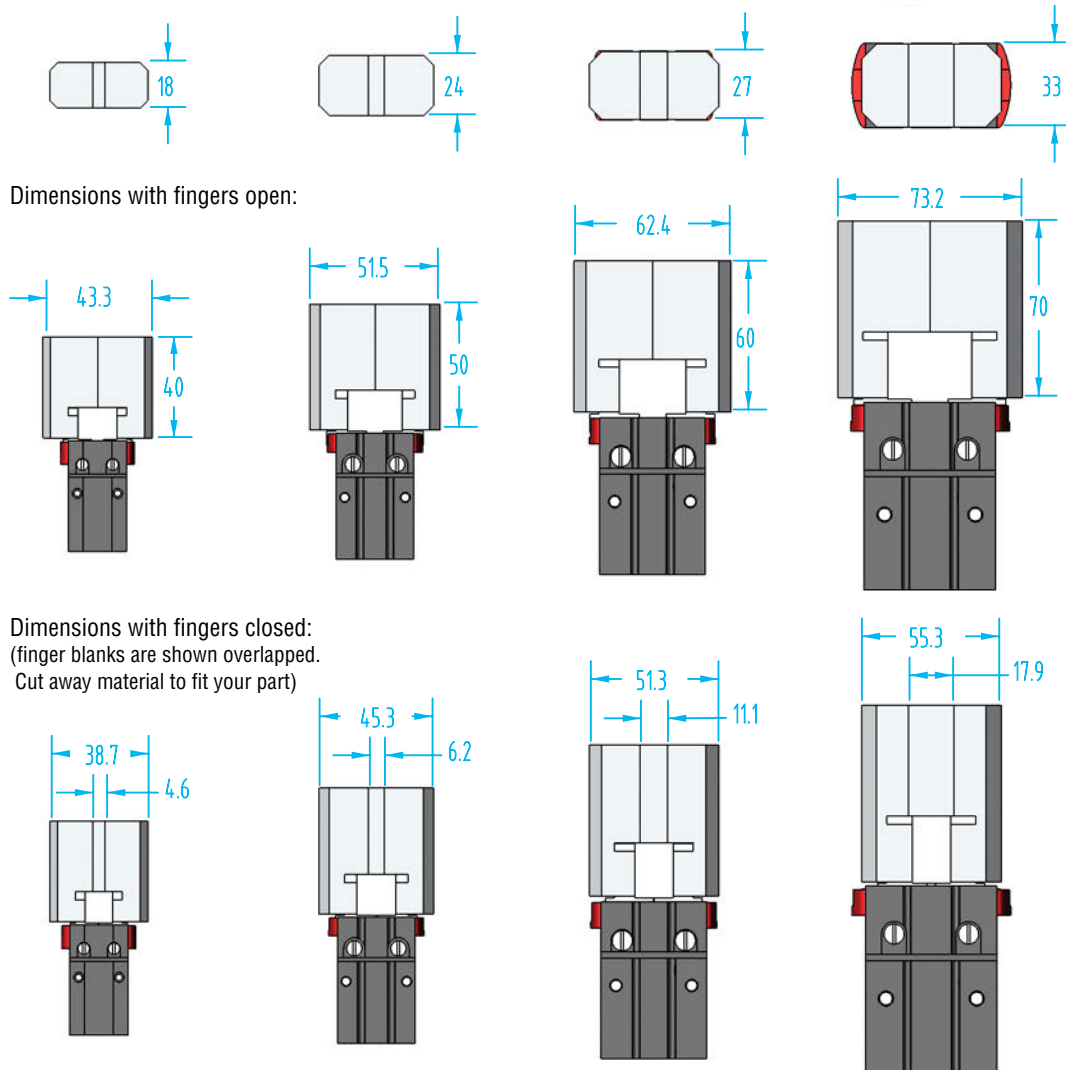
Note: Mounting Hardware Included



Gripper Fingers shown fully open.



Gripper Fingers shown closed. (fingers overlap) Cut away material to fit your part.

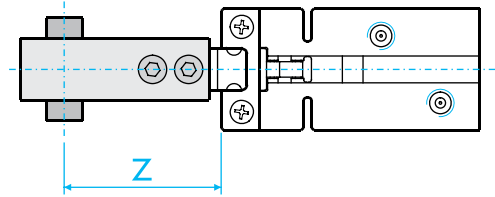


Parallel Gripper – GS

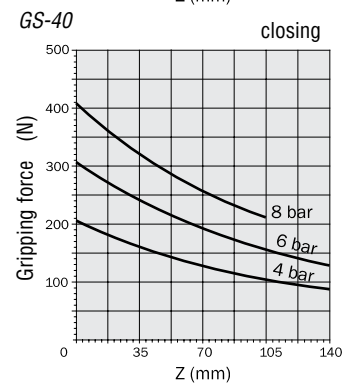
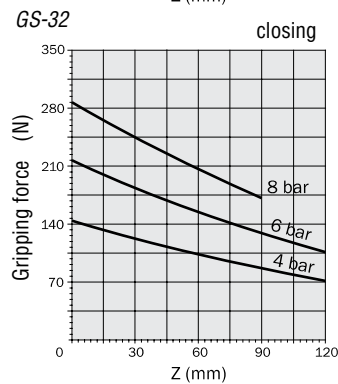
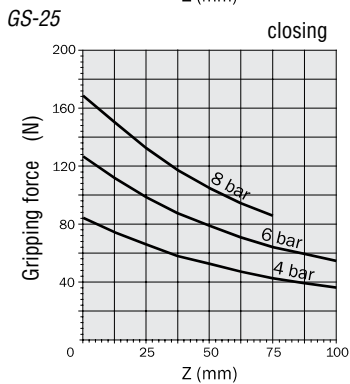
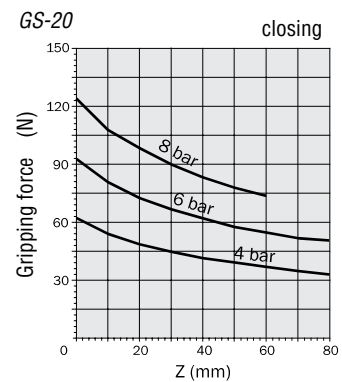
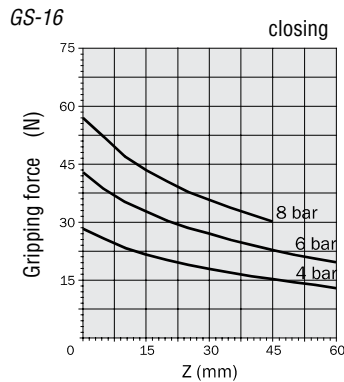
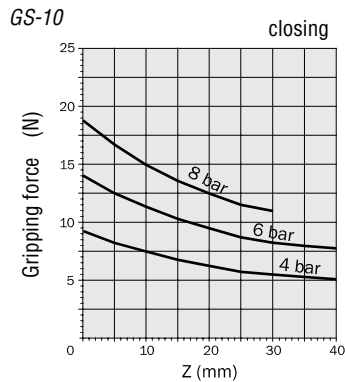
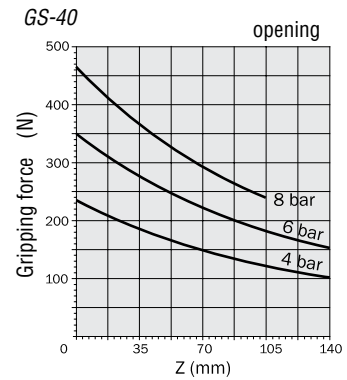
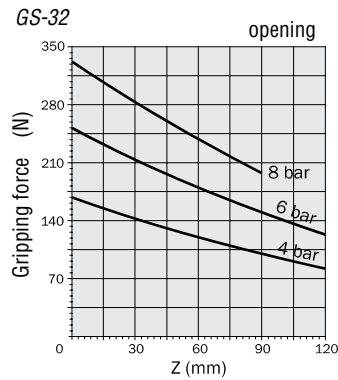
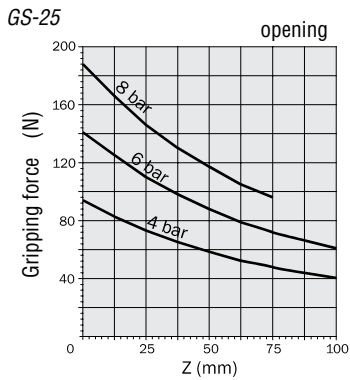
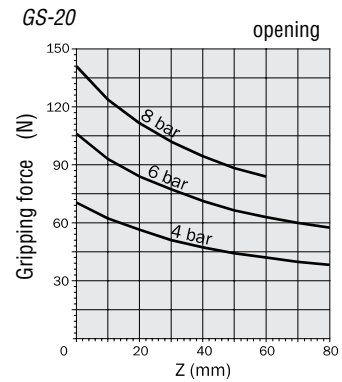
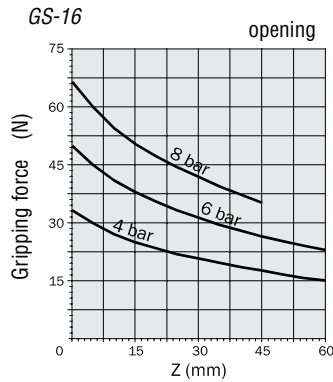
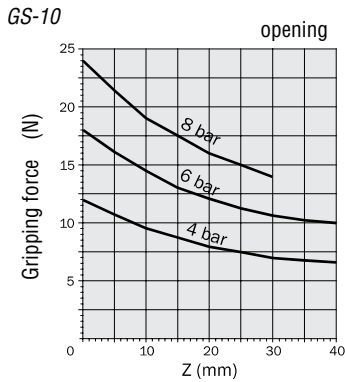
Gripping force

The graphs show the gripping force on each jaw, as a function of the operating pressure and the gripping tool length 'Z'.

The force shown in these graphs refers to one jaw.
The total force is double.



Reference:
Force: N x 0.225 = lbf
Torque: Nm x 8.850 = in-lbf
Pressure: bar x 14.5 = psi

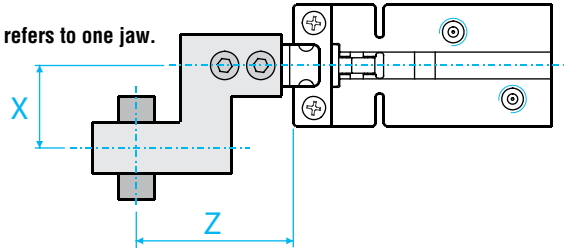


Parallel Gripper – GS

Gripping force

The graphs show the gripping force on each jaw, as a function of the gripping tool length 'Z' and the overhanging 'X' at 6 bar (87psi).

The force shown in these graphs refers to one jaw. The total force is double.



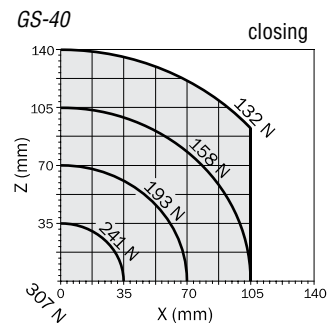
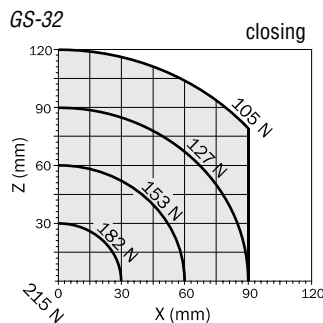
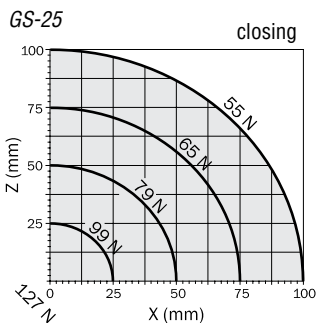
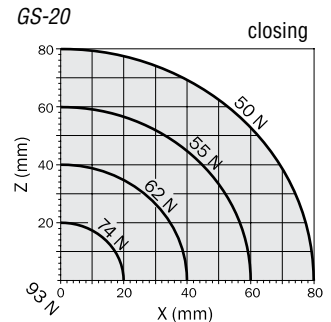
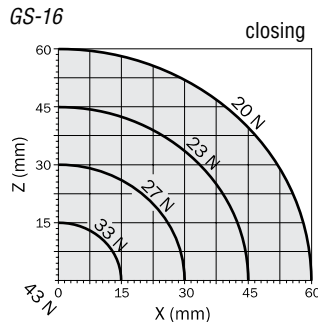
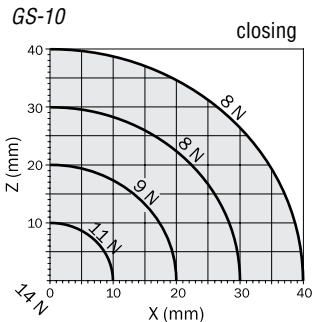
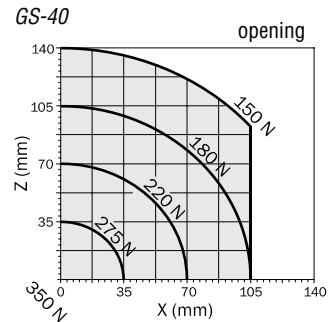
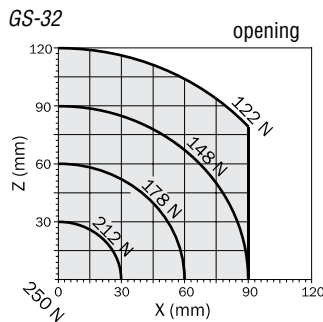
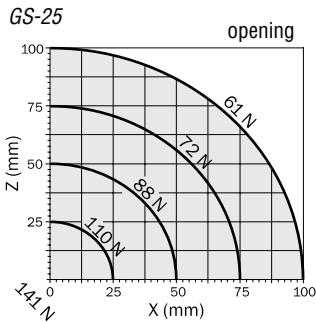
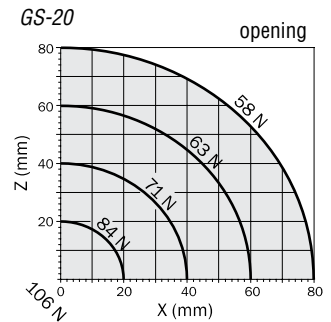
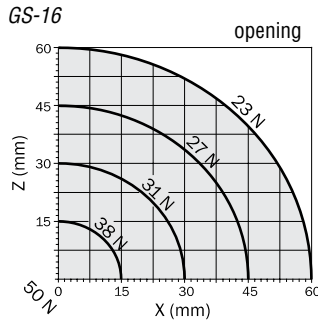
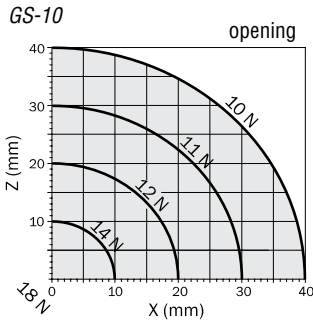
Reference:

Force: N x 0.225 = lbf

Torque: Nm x 8.850 = in-lbf

Torque: Ncm x 0.089 = in-lbf

Pressure: bar x 14.5 = psi



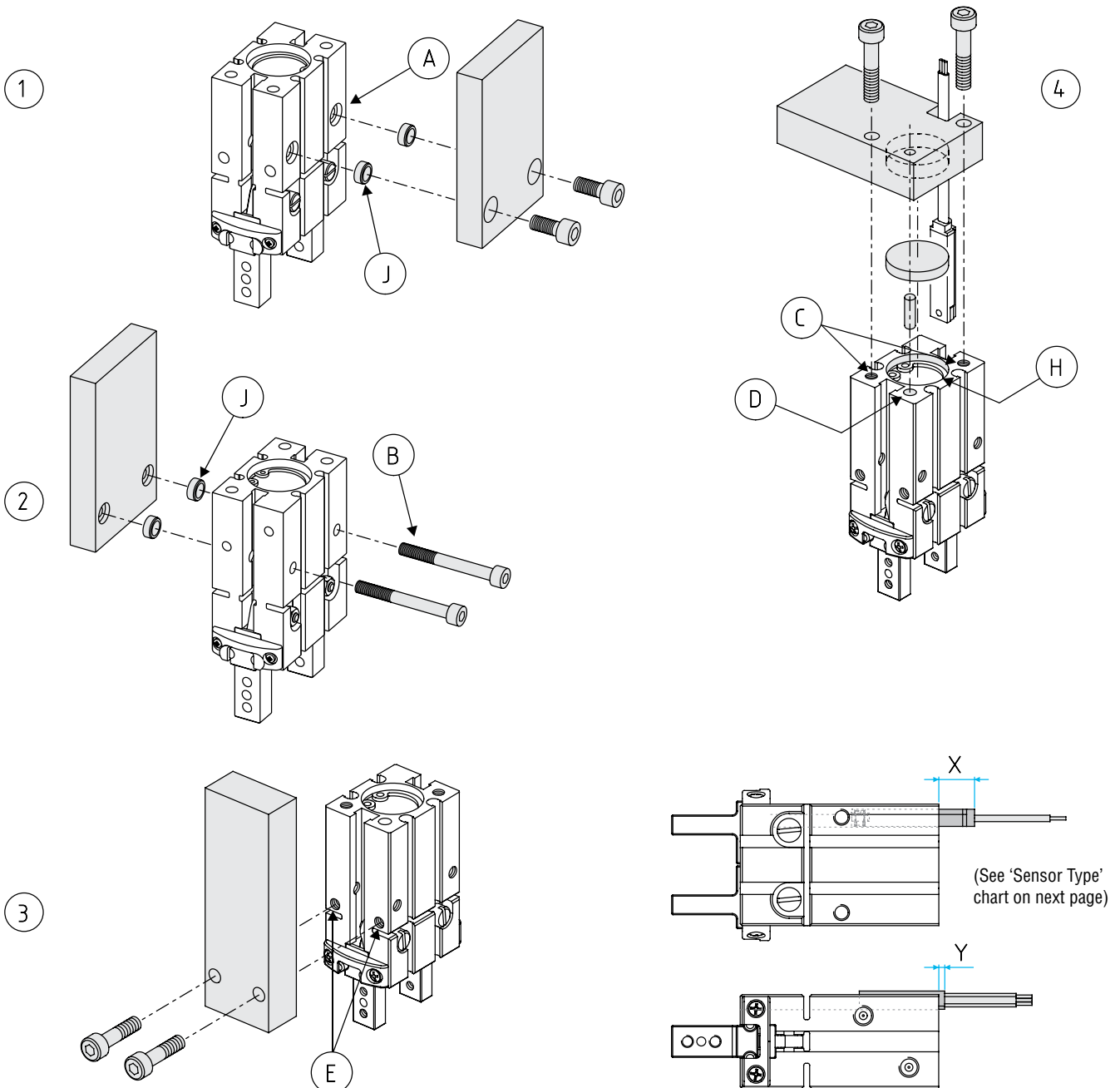
Parallel Gripper – GS

Fastening

The gripper can be fastened to a static or moving part. When on a moving part, you must pay attention to the forces created by inertia over the gripper and its load.

- 1- To fasten the gripper on the wide side, use a plate with two thru-holes and two screws to be screwed on the threaded holes (A) on the gripper housing. Use 2 centering sleeves (J), where available.
- 2- It is possible to fasten the gripper on the wider side also with two screws (B) passing through the threaded holes (A). In this case sensors on the T-slot could be unusable. Use 2 centering sleeves (J), where available.
- 3- To fasten the gripper on the narrow side, two screws passing through the holes on the plate, must be screwed into the threaded holes (E) on the gripper housing.
- 4- The gripper can be fastened on the bottom as well, using two screws passing through the holes on the plate and screwed into the threaded holes (C) on the gripper housing.

For the reference use a pin on the dowel pin hole (D) and centering disc in the spot face (H). In this case the necessary room for sensor must be provided (X and Y).



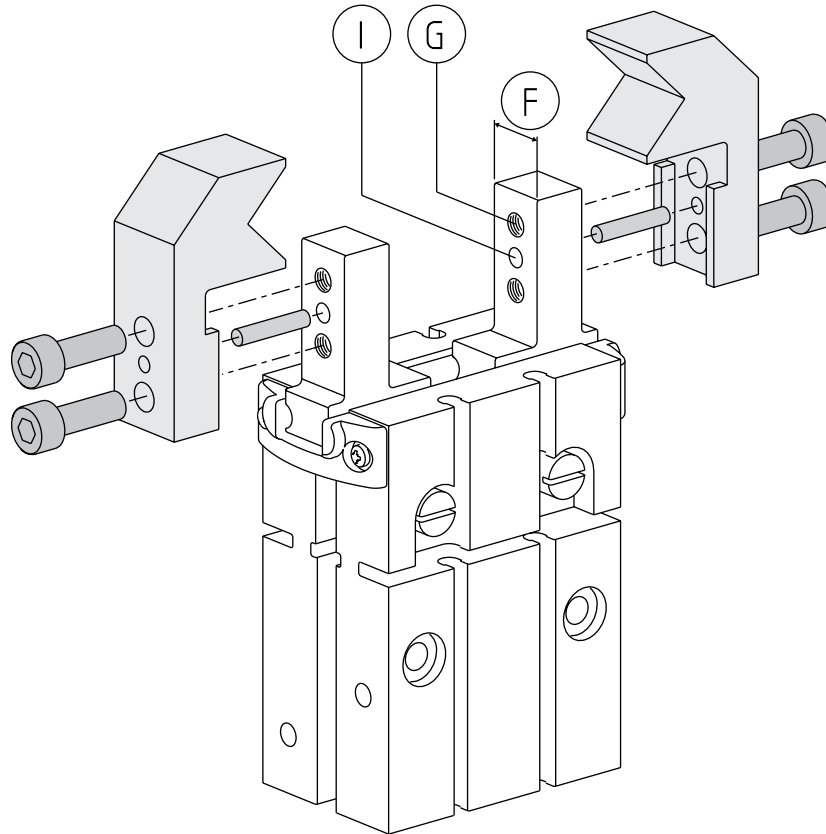
Parallel Gripper – GS

Gripper tool fastening

The gripping tools must be as short and light as possible.

They must be fastened by two screws (G).

For a precise positioning on the jaw use the calibrated dimension (F), or the dowel pin holes (I).



	GS-10	GS-16	GS-20	GS-25	GS-32	GS-40
A	M3 x 5.5mm	M4 x 8mm	M5 x 10mm	M6 x 12mm	M6 x 12mm	M8 x 21mm
B	M2.5 x 22mm	M3 x 30mm	M4 x 35mm	M5 x 45mm	M5 x 50mm	M6 x 60mm
C	M3 x 6mm	M4 x 8mm	M5 x 10mm	M6 x 12mm	M6 x 12mm	M8 x 17mm
D	Ø2H9 x 3mm	Ø3H9 x 3mm	Ø4H9 x 4mm	Ø4H9 x 4mm	Ø5H9 x 5mm	Ø5H9 x 5mm
E	M3 x 6mm	M4 x 4.5mm	M5 x 8mm	M6 x 10mm	M6 x 10mm	M8 x 21mm
F	5 ^{-0.05} mm	8 ^{-0.05} mm	10 ^{-0.05} mm	12 ^{-0.05} mm	12 ^{-0.05} mm	18 ^{-0.05} mm
G	M2.5 x 4mm	M3 x 5mm	M4 x 8mm	M5 x 10mm	M6 x 12mm	M8 x 18mm
H	Ø11H9 x 2mm	Ø17H9 x 2mm	Ø21H9 x 3mm	Ø26H9 x 3.5mm	Ø34H9 x 4mm	Ø41 ^{+0.02} / _{+0.05} x 3mm
I	Ø1.5H8 x 4mm	Ø2H8 x 5mm	Ø2.5H8 x 8mm	Ø3H8 x 10mm	Ø4H8 x 12mm	Ø5H8 x 14mm
J	2.4mm	2.5mm	3mm	4mm	4mm	5mm

	GS-10	GS-16	GS-20	GS-25	GS-32	GS-40
SC	-	X = 2mm	X = 0mm	X = 0mm	X = 0mm	X = 0mm
SL	X = 10mm + cable	X = 10mm + cable	X = 9mm + cable	X = 7mm + cable	X = 7mm + cable	X = 7mm + cable
SN	-	X = 0 mm	X = 0 mm	X = 0 mm	X = 0mm	X = 0mm
SS	X = 2 mm + cable	X = Y = 3 mm + cable	X = Y = 1 mm + cable	X = Y = 1 mm + cable	cable	cable

Sensor Type

Parallel Gripper – GS

Gripping

The gripper is double-acting for either internal (A) or external (B) gripping applications. The opening force is higher.

Reference:

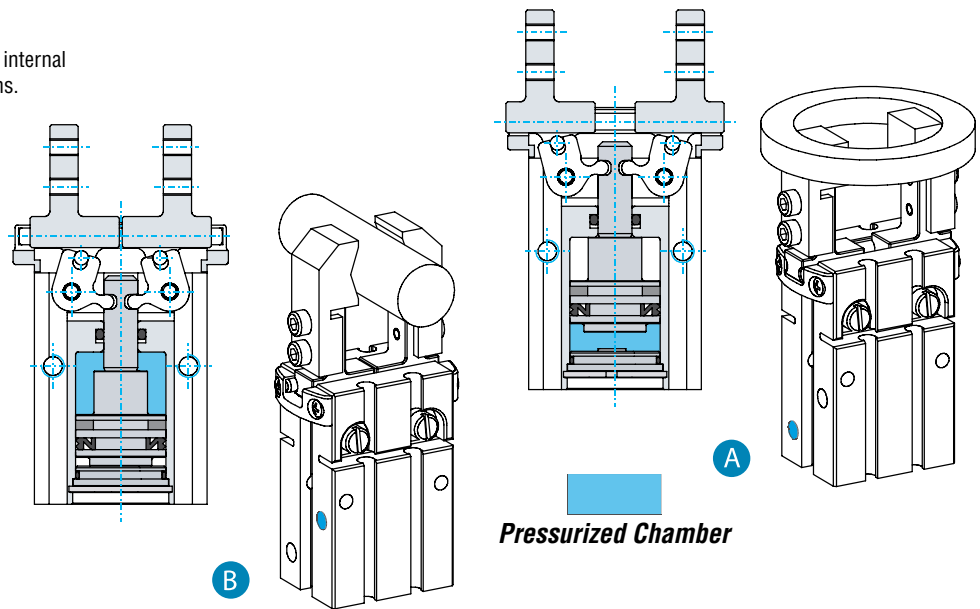
Force: N x 0.225 = lbf

Torque: Nm x 8.850 = in-lbf

Torque: Ncm x 0.089 = in-lbf

Pressure: bar x 14.5 = psi

Call our Engineering Department for assistance



Spring open or Spring close

It is also available, on request, with a closing (-NC) or opening (-NO) spring, providing, after a pressure black-out, about one-fourth of the output force at 87psi.

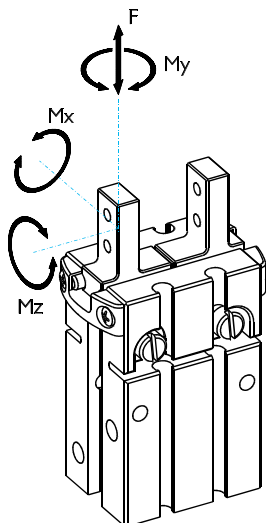
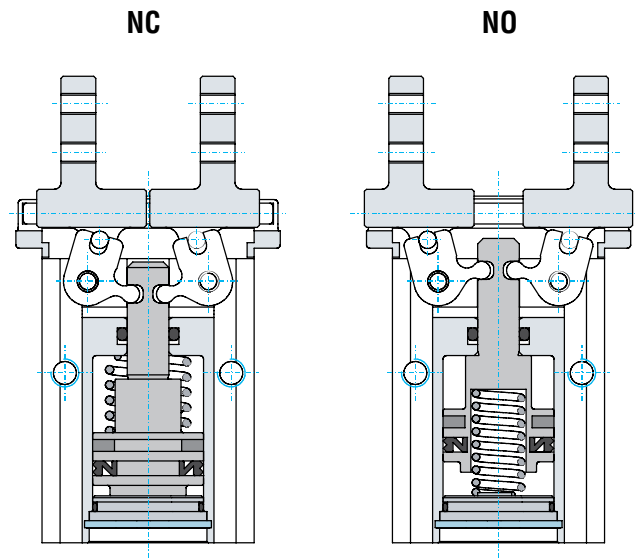
Safety loads

Check the table for maximum permitted loads. Excessive forces or torques can damage the gripper, cause functioning troubles and endanger the safety of the operator.

F s, Mx s, My s, Mz s, are maximum permitted static loads. Static means with motionless jaws.

F d, Mx d, My d, Mz d, are maximum permitted dynamic loads. Dynamic means with running jaws.

The following tables show the specified maximum loads (m) on each gripping tool as function of closing or opening time. Use flow controllers (not supplied) to get the proper speed.



	GS-10	GS-16	GS-20	GS-25	GS-32	GS-40
F s	25N	50N	75N	125N	200N	300N
Mx s	0.4Nm	1.5Nm	5Nm	8Nm	18Nm	30Nm
My s	0.4Nm	1.5Nm	5Nm	8Nm	12Nm	20Nm
Mz s	0.4Nm	1.5Nm	5Nm	8Nm	18Nm	30Nm
F d	0.4N	0.8N	1.5N	2.5N	3.5N	4.5N
Mx d	0.4Ncm	1.5Ncm	5Ncm	8Ncm	18Ncm	30Ncm
My d	0.4Ncm	1.5Ncm	5Ncm	8Ncm	18Ncm	30Ncm
Mz d	0.4Ncm	1.5Ncm	5Ncm	8Ncm	18Ncm	30Ncm
m 0.2s	40g	80g	150g	250g	350g	450g
m 0.12s	35g	65g	125g	200g	250g	300g
m 0.09s	30g	55g	100g	150g	200g	-
m 0.07s	25g	45g	75g	100g	-	-
m 0.05s	20g	35g	50g	-	-	-
m 0.02s	15g	25g	-	-	-	-
m.0.01s	10g	-	-	-	-	-

Parallel Gripper – GS

Sensors

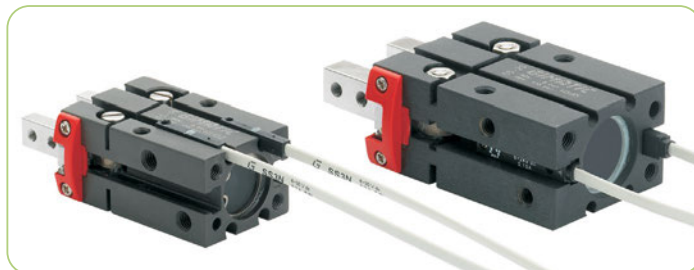
The operating position can be checked by sensors (optional), that detect the magnet on the piston inside. Proximity near a large mass of ferromagnetic material or intense magnetic fields may cause sensing troubles.



Quick#	Part#	Signal	Connection	Price	GS-10	All other GS Grippers	
Gimatic 3-wire Straight SS style magneto-resistive sensors							
1882	SS4N225G	PNP	with lead, 2.5m long	\$27.20	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> (*)
1883	SS4M225G	NPN	with lead, 2.5m long	\$27.20	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> (*)
6282	SS3N203G	PNP	M8 male connector, 0.3m long	\$31.16	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> (*)
1884	SS3M203G	NPN	M8 male connector, 0.3m long	\$31.16	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> (*)
7440	K-SENS	*Allows 'C' channel sensors to work in 'T' channels		\$4.82	(*) Must purchase separately		
Gimatic 90° Lead exit, 3-wire SN style magneto-resistive sensors							
6278	SN4N225G	PNP	with lead, 2.5m long	\$27.20	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6357	SN4M225G	NPN	with lead, 2.5m long	\$27.20	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6277	SN3N203G	PNP	M8 male connector, 0.3m long	\$31.16	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6356	SN3M203G	NPN	M8 male connector, 0.3m long	\$31.16	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Note: M8 Extension cables Quick#'s 2582 & 2583 available on page 985.							

Quick#	Part#	Signal	Description	Price	GS10	All other GS Grippers	
Gimatic Programmable "PRO" magneto-resistive sensors with 3 output signals for C-Slots							
7521	PRO-SS4N225G	PNP	with lead, 2.5m long	\$70.00	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> (*)
7522	PRO-SS4M225G	NPN	with lead, 2.5m long	\$70.00	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> (*)
7525	PRO-SS3N215G	PNP	M8 male connector, 0.3m long	\$92.00	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> (*)
7625	PRO-SS3M215G	NPN	M8 male connector, 0.3m long	\$92.00	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> (*)
7523	PRO-SN4N225G	PNP	with lead, 2.5m long	\$70.00	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7524	PRO-SN4M225G	NPN	with lead, 2.5m long	\$70.00	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7526	PRO-SN3N215G	PNP	M8 male connector, 0.3m long	\$92.00	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7626	PRO-SN3M215G	NPN	M8 male connector, 0.3m long	\$92.00	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Gimatic Programmable "PRO" magneto-resistive sensors with 2 output signals for C-Slots							
7644	PRO-SSR4N225G	PNP	with lead, 2.5m long	\$70.00	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> (*)
7645	PRO-SSR4M225G	NPN	with lead, 2.5m long	\$70.00	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> (*)
7646	PRO-SSR3N215G	PNP	M8 male connector, 0.3m long	\$87.00	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> (*)
7647	PRO-SSR3M215G	NPN	M8 male connector, 0.3m long	\$87.00	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> (*)
7440	K-SENS	*Allows 'C' channel sensors to work in 'T' channels		\$4.82	(*) Must purchase separately		

See Sensor Reference Guide on page 1010 for a complete list of sensors for GS Grippers including those that detect midstroke.



Angular Gripper – GW

- Self-centering
- Double acting
- Long life and reliability, maintenance free.
- Different options for fastening.
- Optional sensors available on page 653.
- Spring closed (-NC) or spring open (-NO) option.
- Finger Blanks available on page 649.



Mounting brackets available on page 628.

The Gimatic GW series piston rod is totally guided for the entire stroke and it can't move from its seat. This feature has been designed to avoid failures on the jaws.



Double Acting Models

Quick#	6337	6338	6339	6340
Part#	GW-10	GW-16	GW-20	GW-25
Price	\$99.00	\$122.00	\$124.00	\$139.00
Medium	Filtered, lubricated / non-lubricated compressed air			
Pressure range	30–116 psi			
Opening total torque at 87 psi	2 in-lbf	8 in-lbf	16 in-lbf	32 in-lbf
Closing total torque at 87 psi	1.4 in-lbf	6.4 in-lbf	14 in-lbf	28 in-lbf
Stroke (±1°)	2x20°			
Maximum repeatability tolerance	±0.04°			
Weight	39g	88g	180g	300g

Normally Open Models

Quick#	Part#	Price	Finger Stroke	Wt.
6341	GW-10-NO	\$99.00	40°	39g
6342	GW-16-NO	\$122.00	40°	89g
6343	GW-20-NO	\$124.00	40°	173g
6344	GW-25-NO	\$139.00	40°	304g

Normally Closed Models

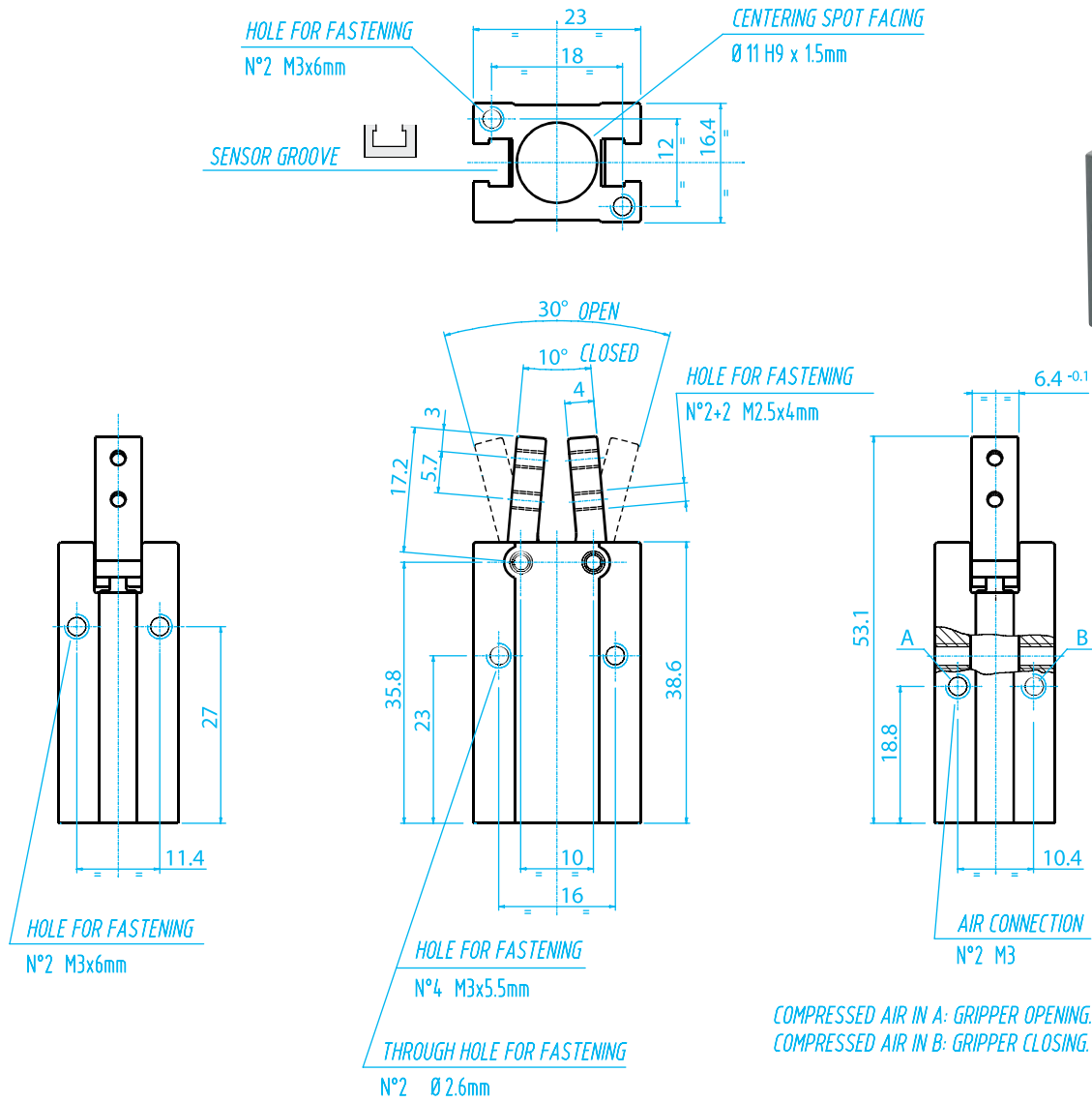
Quick#	Part#	Price	Finger Stroke	Wt.
6345	GW-10-NC	\$99.00	40°	39g
6346	GW-16-NC	\$122.00	40°	89g
6347	GW-20-NC	\$124.00	40°	173g
6348	GW-25-NC	\$139.00	40°	304g

Use Quick#s for easy online ordering.

Angular Gripper – GW

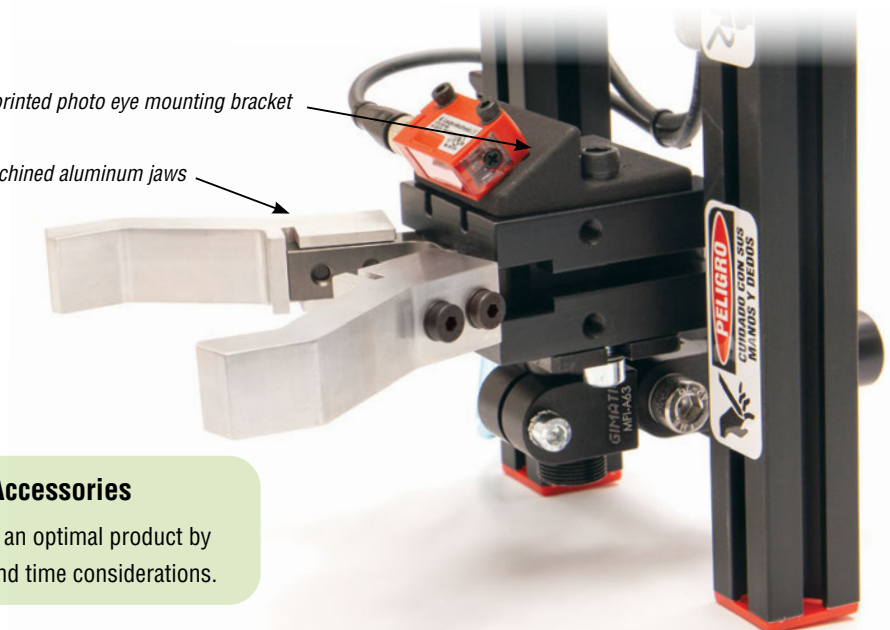
(Dimensioned drawing shown full scale)

**GW-10
#6337**



EMI 3D printed photo eye mounting bracket

EMI Machined aluminum jaws



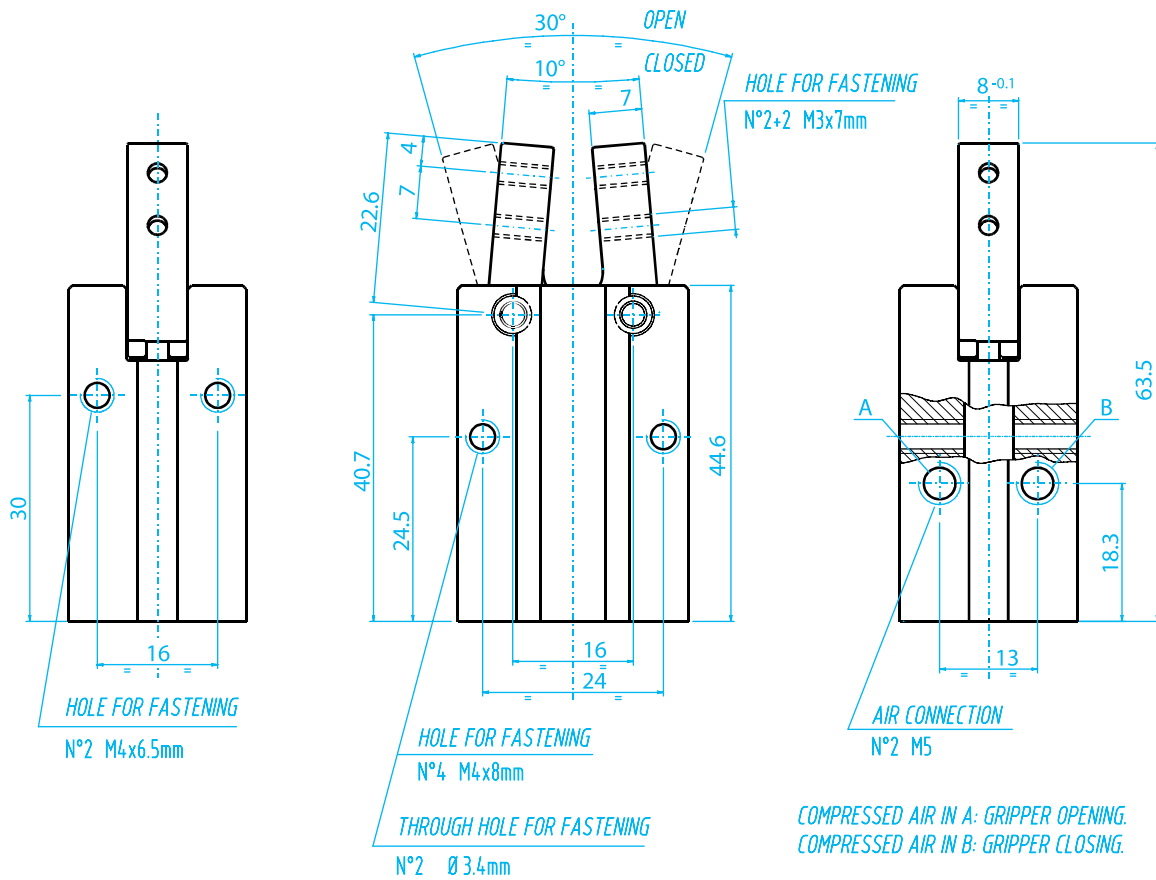
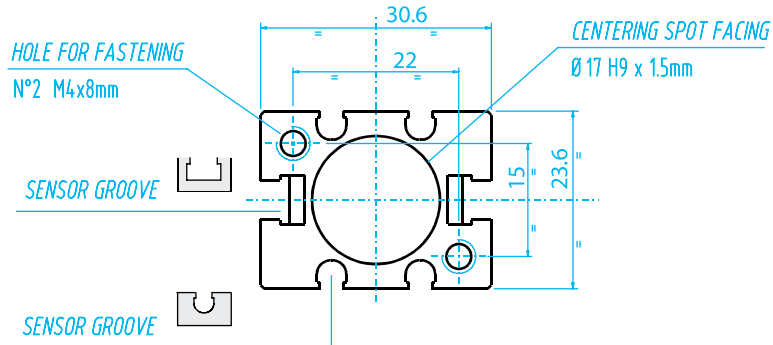
Custom Machined and 3D Printed Accessories

EMI engineers will work with you to develop an optimal product by analyzing your project requirements, cost, and time considerations.

Angular Gripper – GW

(Dimensioned drawing shown full scale)

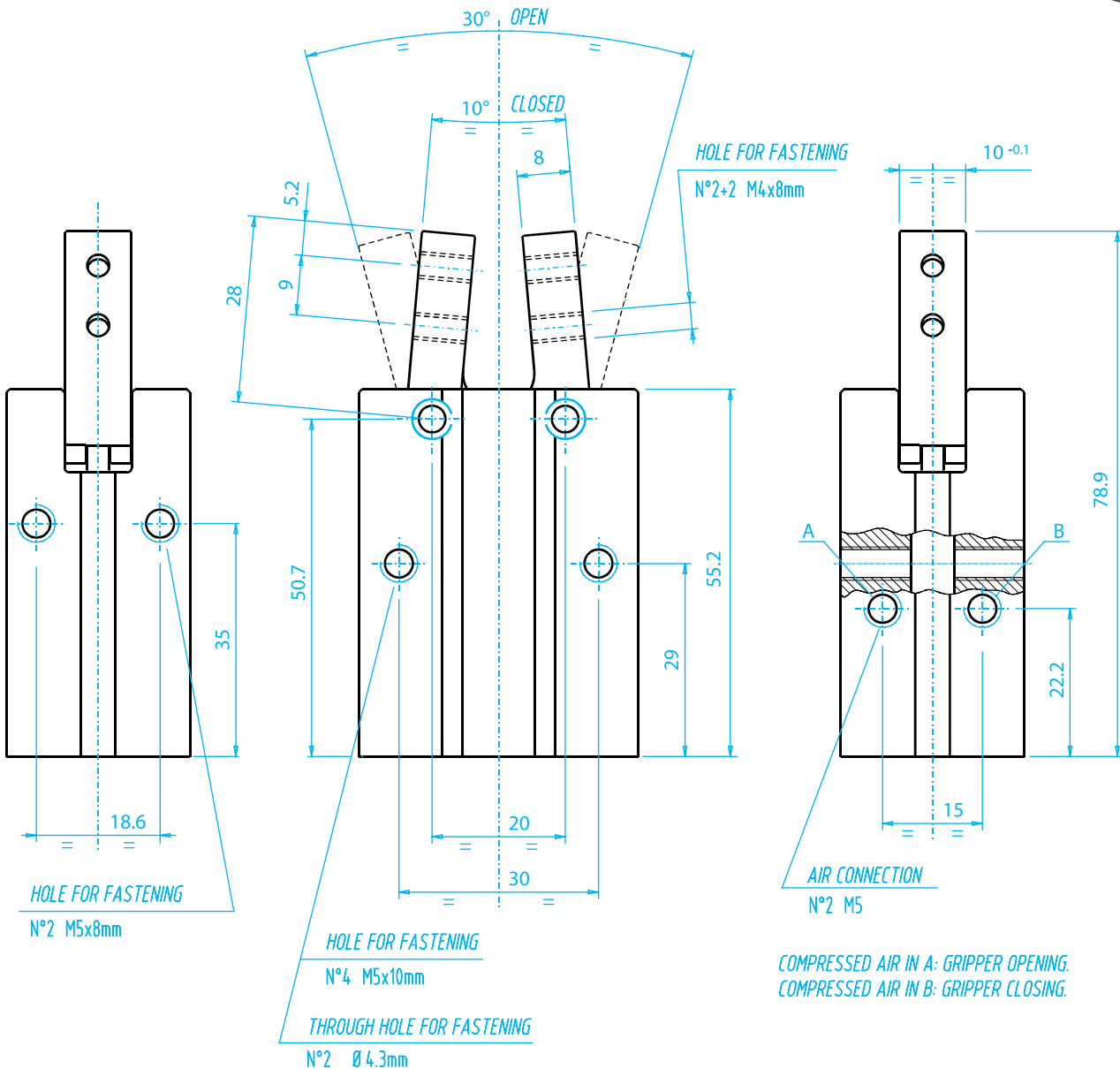
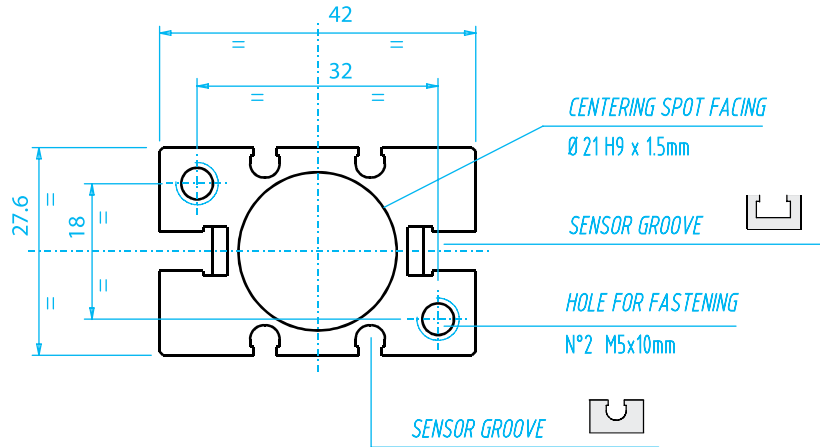
GW-16
#6338



Angular Gripper – GW

**GW-20
#6339**

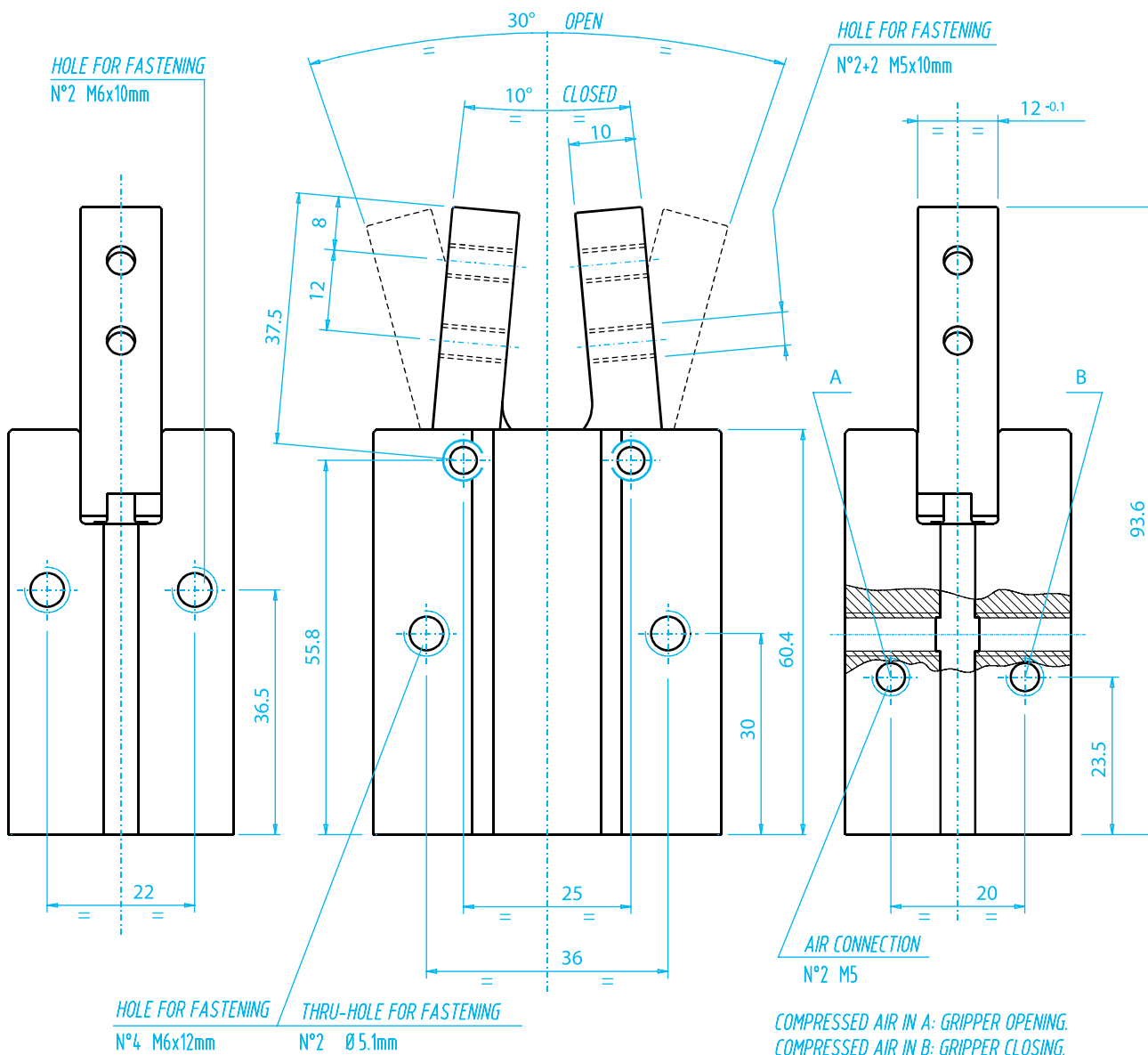
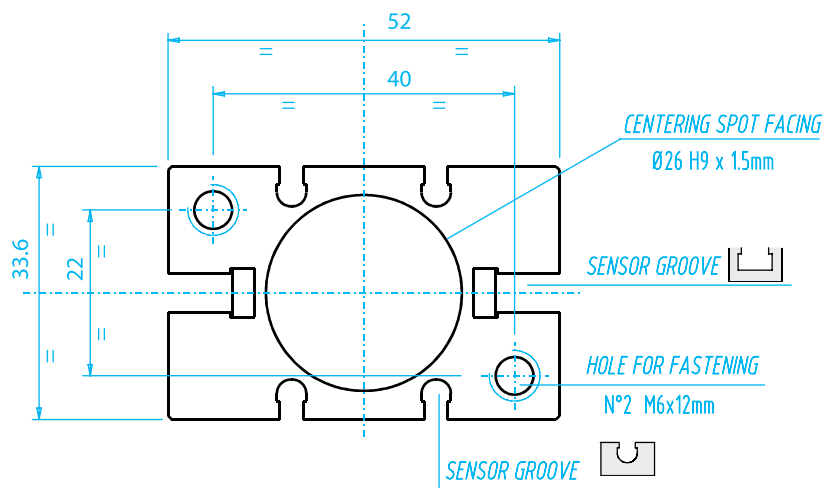
(Dimensioned drawing shown full scale)



Angular Gripper – GW

(Dimensioned drawing shown full scale)

GW-25
#6340



Finger Blanks for GW Grippers

Machine these finger blanks to your part's shape or contact EOAT Engineering for help!

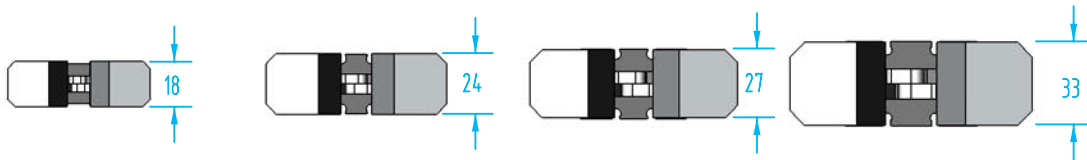
For more information on custom finger blanks for your application visit our 3D printing section on page 102.

Quick#	Part#	Material	For:	Wt. (g)	Price
5892	GW-10-FBA	Aluminum	GW-10 & MHC2-10	57	\$25.09
7466	GW-10-FBN	Nylon		3	\$19.30
5894	GW-16-FBA	Aluminum	GW-16 & MHC2-16	117	\$31.00
7467	GW-16-FBN	Nylon		6	\$23.85
5896	GW-20-FBA	Aluminum	GW-20 & MHC2-20	170	\$35.36
7468	GW-20-FBN	Nylon		9	\$27.20
5898	GW-25-FBA	Aluminum	GW-25 & MHC2-25	268	\$38.55
7469	GW-25-FBN	Nylon		14	\$29.65

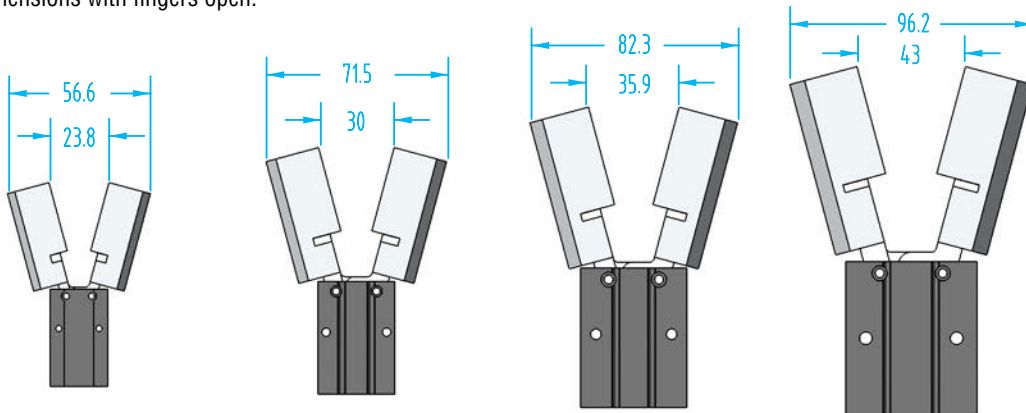
Note: Mounting Hardware Included



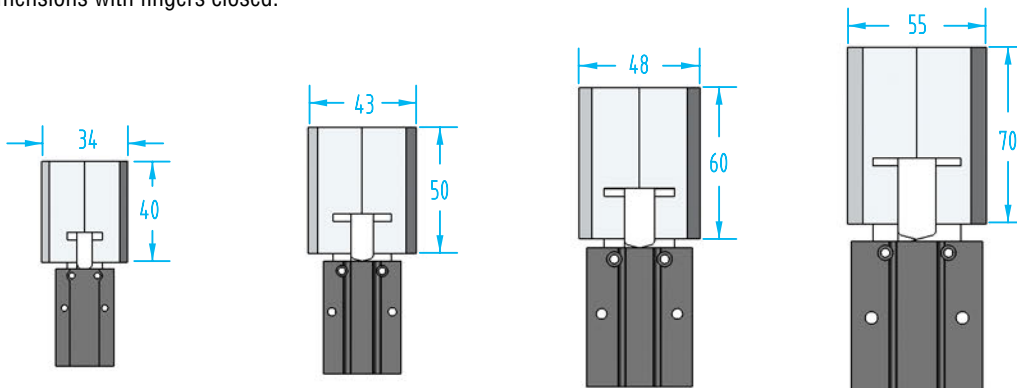
Gripper Fingers shown fully open.



Dimensions with fingers open:



Dimensions with fingers closed:



Angular Gripper – GW

Gripping force

The graphs show the gripping force on each jaw, as a function of the operating pressure and the gripping tool length 'Z'.

The force shown in these graphs refers to one jaw.
The total force is double.

Reference:

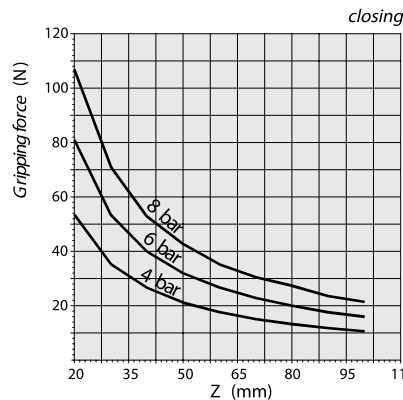
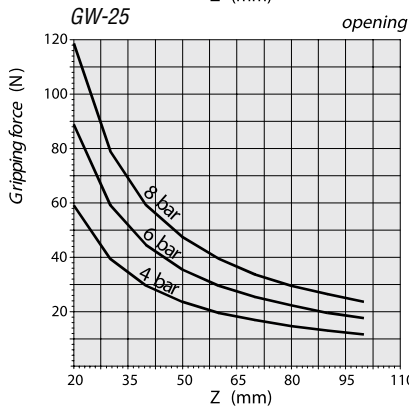
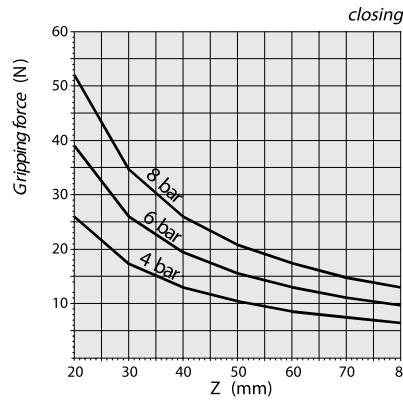
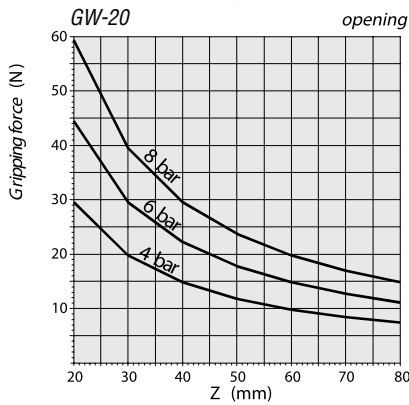
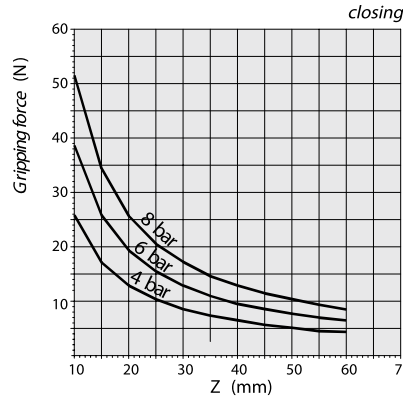
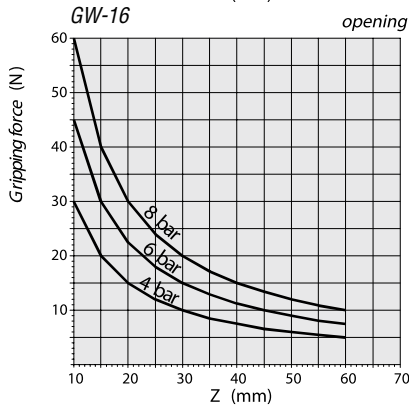
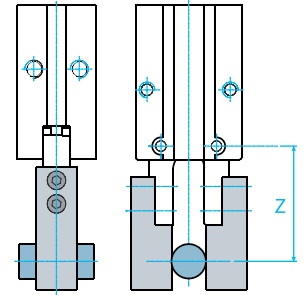
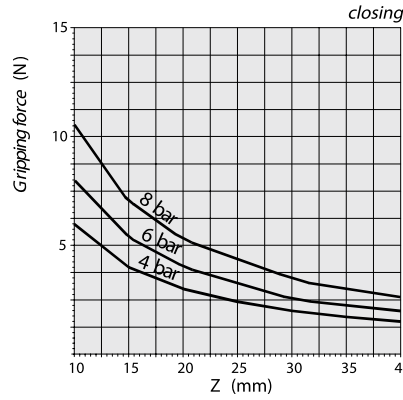
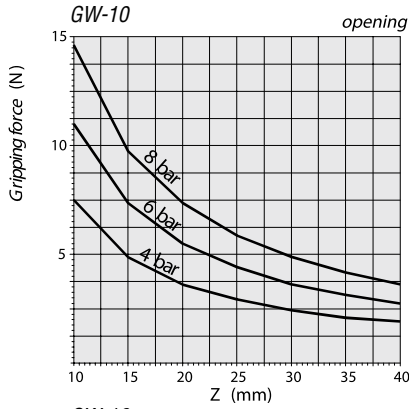
Force: N x 0.225 = lbf

Torque: Nm x 8.850 = in-lbf

Torque: Ncm x 0.089 = in-lbf

Pressure: bar x 14.5 = psi

Call our Engineering Department for assistance



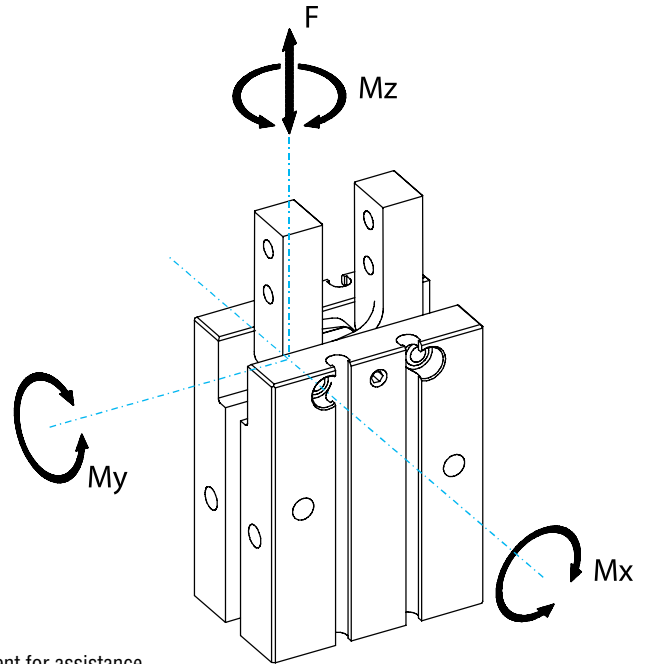
Angular Gripper – GW

Safety loads

Check the table for maximum permitted loads. Excessive forces or torques can damage the gripper, cause functioning troubles and endanger the safety of the operator.

F, Mx, My, Mz, are maximum permitted static loads. Static means with motionless jaws.

	GW-10	GW-16	GW-20	GW-25
F	40 N	60 N	100 N	100 N
Mx	0.4 Nm	1.2 Nm	1.5 Nm	2.2 Nm
My	0.5 Nm	0.9 Nm	2.2 Nm	2.2 Nm
Mz	0.5 Nm	0.9 Nm	2.2 Nm	2.2 Nm

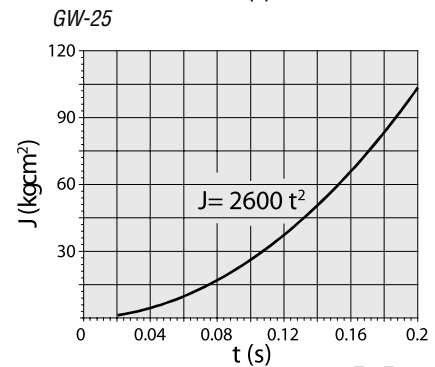
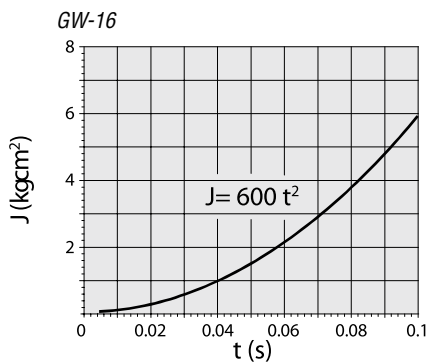
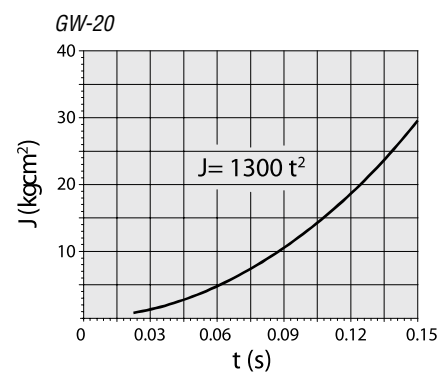
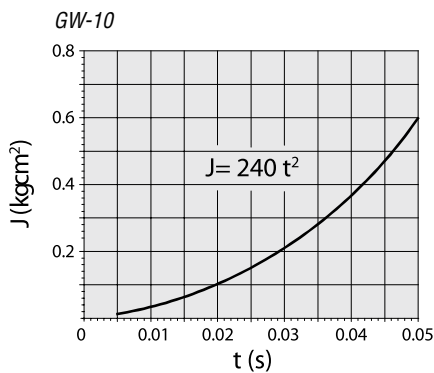


Reference:
Force: N x 0.225 = lbf
Torque: Nm x 8.850 = in-lbf
Torque: Ncm x 0.089 = in-lbf
Pressure: bar x 14.5 = psi
 Call our Engineering Department for assistance

Speed adjustment

The graphs show the maximum permitted moment of inertia on each gripping tool (J), as a factor of the opening or closing time (t).

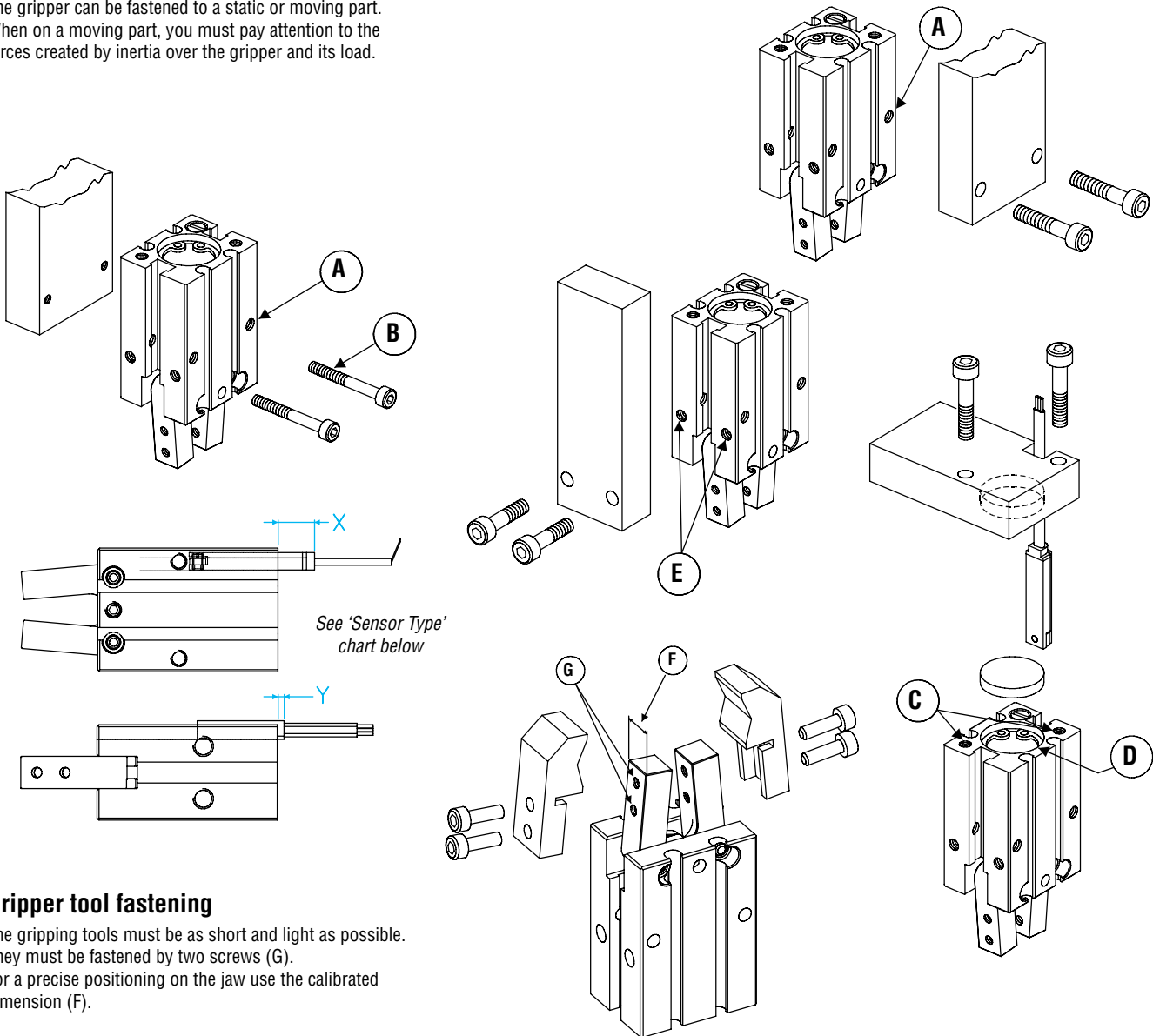
Use flow controllers (not supplied) to get the proper speed.



Angular Gripper – GW

Fastening

The gripper can be fastened to a static or moving part. When on a moving part, you must pay attention to the forces created by inertia over the gripper and its load.



Gripper tool fastening

The gripping tools must be as short and light as possible. They must be fastened by two screws (G). For a precise positioning on the jaw use the calibrated dimension (F).

	GW-10	GW-16	GW-20	GW-25
A	M3 x 5.5mm	M4 x 8mm	M5 x 10mm	M6 x 12mm
B	M2.5 x 22mm	M3 x 30mm	M4 x 35mm	M5 x 45mm
C	M3 x 6mm	M4 x 8mm	M5 x 10mm	M6 x 12mm
D	ø11H9 x 1.5mm	ø17H9 x 1.5mm	ø21H9 x 1.5mm	ø26H9 x 1.5mm
E	M3 x 6mm	M4 x 6.5mm	M5 x 8mm	M6 x 10mm
F	6.4 ^{-0.1} mm	8 ^{-0.1} mm	10 ^{-0.1} mm	12 ^{-0.1} mm
G	M2.5 x 4mm	M3 x 7mm	M4 x 8mm	M5 x 10mm

	GW-10	GW-16	GW-20	GW-25
Sensor Type	SC	X = 2mm	X = 0mm	X = 0mm
	SL	X = 10mm + cable	X = 10mm + cable	X = 10mm + cable
	SN	X = 2mm	X = Y = 3mm	X = Y = 3mm
	SS	X = 2mm + cable	X = Y = 3mm + cable	X = Y = 3mm + cable

Angular Gripper – GW

Sensors

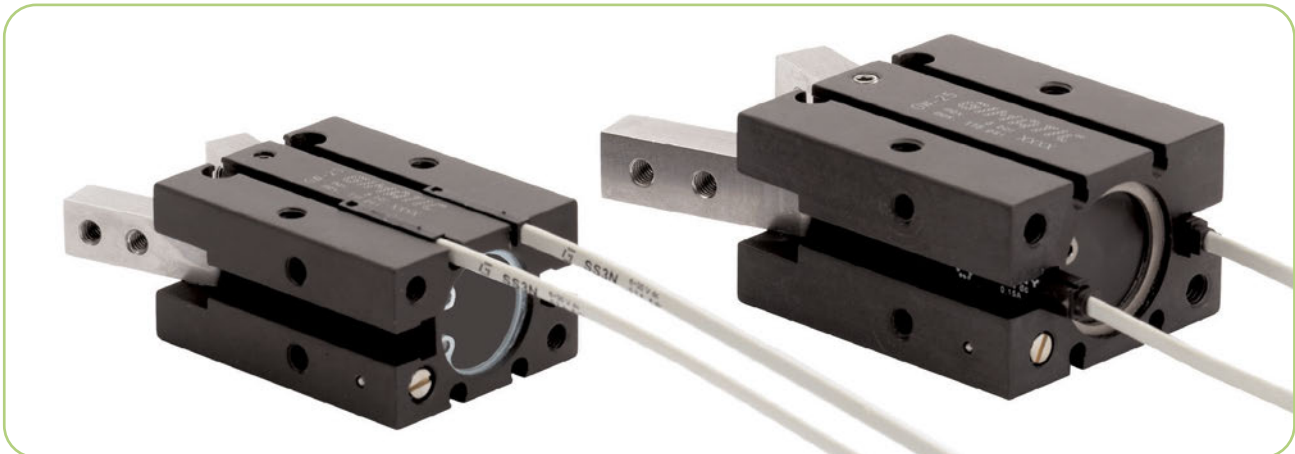
The operating position can be checked by sensors (optional), that detect the magnet on the piston inside. Proximity near a large mass of ferromagnetic material or intense magnetic fields may cause sensing troubles.



Quick#	Part#	Signal	Connection	Price	GW-10	All other GW Grippers	
3-wire SL & SS style magneto-resistive sensors					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
792	SL4N225G	PNP	with lead, 2.5m long	\$27.20	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
793	SL4M225G	NPN	with lead, 2.5m long	\$27.20	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6274	SL3N203G	PNP	M8 male connector, 0.3m long	\$31.16	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6456	SL3M203G	NPN	M8 male connector, 0.3m long	\$31.16	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1882	SS4N225G	PNP	with lead, 2.5m long	\$27.20	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> (*)
1883	SS4M225G	NPN	with lead, 2.5m long	\$27.20	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> (*)
6282	SS3N203G	PNP	M8 male connector, 0.3m long *	\$31.16	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> (*)
1884	SS3M203G	NPN	M8 male connector, 0.3m long *	\$31.16	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> (*)
7440	K-SENS	*Allows 'C' channel sensors to work in 'T' channel slots		\$4.82	*Must purchase separately		
90° Lead exit, 3-wire SC & SN style magneto-resistive sensors					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6273	SC4N225G	PNP	with lead, 2.5m long	\$30.30	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6455	SC3N203G	PNP	M8 male connector, 0.3m long	\$34.62	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6278	SN4N225G	PNP	with lead, 2.5m long	\$27.20	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6357	SN4M225G	NPN	with lead, 2.5m long	\$27.20	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6277	SN3N203G	PNP	M8 male connector, 0.3m long	\$31.16	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6356	SN3M203G	NPN	M8 male connector, 0.3m long	\$31.16	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Note: M8 Extension cables Quick#s 2582 & 2583 available on page 985.

See Sensor Reference Guide on page 1010 for a complete list of sensors for GW Grippers.



Compact Parallel Gripper – SGP-S

- Self-centering.
- Double acting.
- High performance in a compact size.
- Patented backlash adjusting system.
- The rugged construction lends itself to heavy-duty applications for a trouble-free long life without maintenance.
- Mounting Brackets available on page 660.
- Finger Blanks available on page 662.
- Sensor ready.

New Sizes, Check EMI's Website for Info!



Quick#	7693	6780	6781	6782	6783	7694
Part#	SGP-16S	SGP-20S	SGP-25S	SGP-32S	SGP-40S	SGP-50S
Price	\$237.00	\$271.00	\$271.00	\$307.00	\$320.00	\$336.00
Medium	Filtered, lubricated / non-lubricated compressed air					
Pressure range	36–116 psi			30–116 psi		
Opening total gripping force at 87 psi	7.2 lbf	10.4 lbf	23.4 lbf	30.2 lbf	36 lbf	65.2 lbf
Closing total gripping force at 87 psi	6.2 lbf	9 lbf	21.2 lbf	27 lbf	32.8 lbf	56.6 lbf
Total stroke (± 0.3mm)	3mm	4mm	6mm	8mm	12mm	16mm
Maximum repeatability tolerance	±0.02mm					
Mid-stroke detection capability	with PRO-SN	Yes, with use of PRO-SN..HSG sensors				
Weight	19g	33g	43g	86g	170g	250g

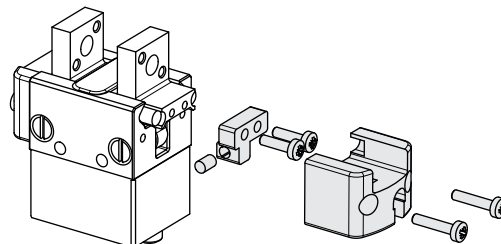
***New Sensor Slot Design Changes* Grippers Now Accept PRO-SN Teachable Sensors**

Upgrade Earlier Grippers

Old grippers can be upgraded to use new teachable PRO-SN.. sensor.

SGP-S Kit to Upgrade

Quick#	Part#	For:	Price
7596	SGP-20S-KU	SGP-20S	\$6.70
7597	SGP-25S-KU	SGP-25S	\$6.70
7598	SGP-32S-KU	SGP-32S	\$6.70
7599	SGP-40S-KU	SGP-40S	\$6.70



Compact Parallel Gripper – SGP-S

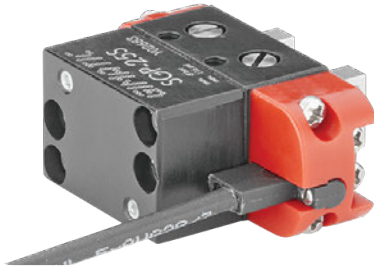
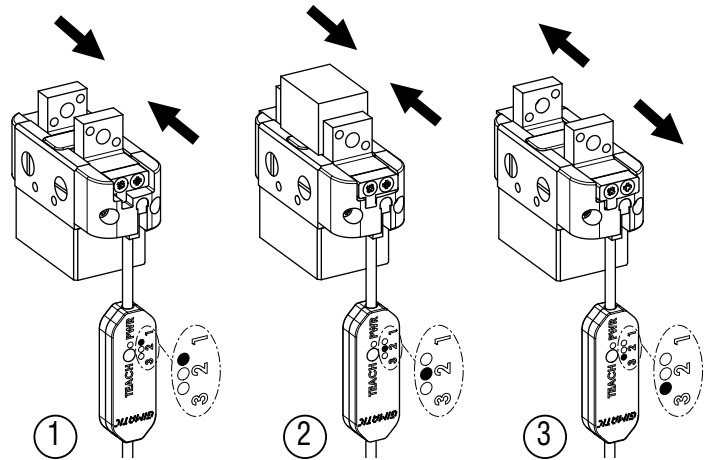
Sensors

With teachable PRO sensors, the detected positions can be adjusted by a teaching procedure, so that 3 digital outputs can be:

- Output 1 - totally closed gripper [1];
- Output 2 - gripped part intermediate position [2];
- Output 3 - totally open gripper [3].

This achieves accurate three position sensing with one sensor: open, part captured, part missed.

PRO-SN and PRO-SN..HSG teachable sensors are highly accurate and ideal for part confirmation/ mid-stroke detection. See page 978 for more information.



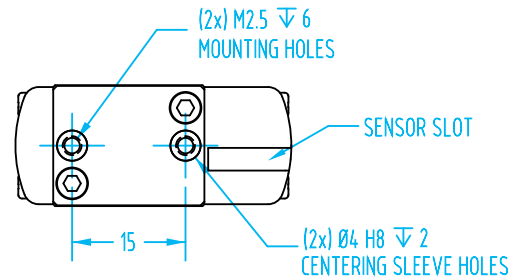
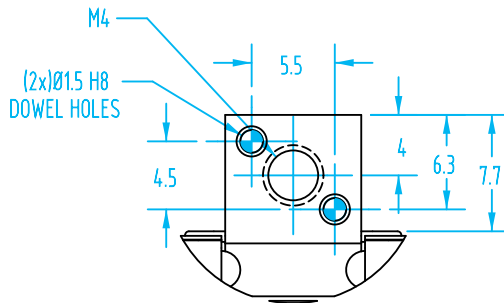
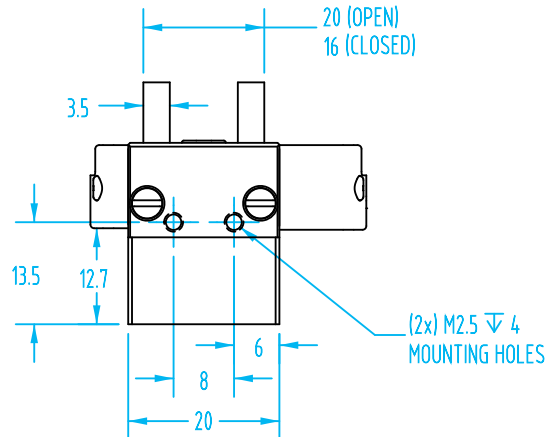
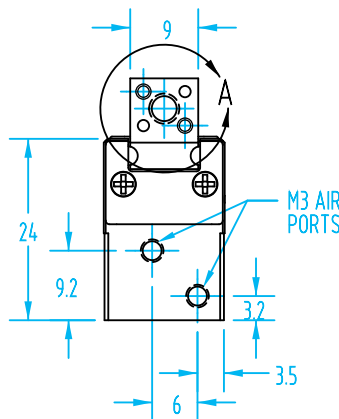
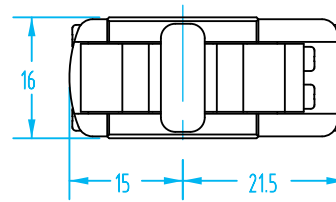
Quick#	Part#	Signal	Description	Price	SGP-16S	All other SGP's
Gimatic Programmable "PRO" magnetoresistive sensors with 3 output signals						
7523	PRO-SN4N225G	PNP	with lead, 2.5m long	\$70.00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7524	PRO-SN4M225G	NPN	with lead, 2.5m long	\$70.00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7526	PRO-SN3N215G	PNP	with M8 connector, 1.5m long	\$92.00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7626	PRO-SN3M215G	NPN	with M8 connector, 1.5m long	\$92.00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Gimatic Programmable, "PRO...HSG" magnetoresistive sensors with 3 output signals						
7635	PRO-SN4N225HSG	PNP	with lead, 2.5m long	\$70.00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7636	PRO-SN4M225HSG	NPN	with lead, 2.5m long	\$70.00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7633	PRO-SN3N215HSG	PNP	with M8 connector, 1.5m long	\$80.00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7634	PRO-SN3M215HSG	NPN	with M8 connector, 1.5m long	\$80.00	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Compact Parallel Gripper – SGP-S

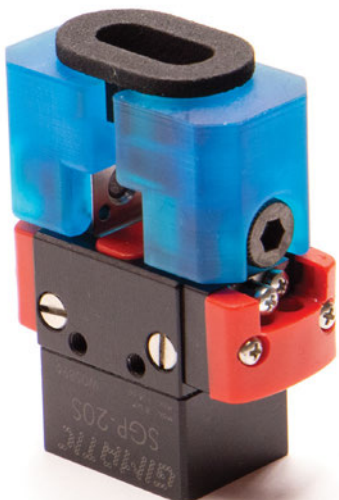
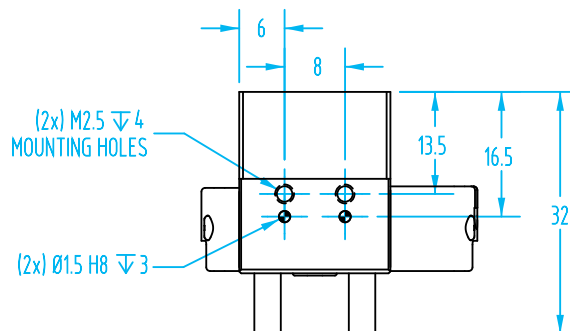
(Dimensioned drawing shown full scale)

SGP-20S
#6780

#6780 & #6781 must use
barb fittings, see page 1070.



DETAIL A
SCALE 2 : 1



Custom 3D Printed or Machined Fingers from EMI!

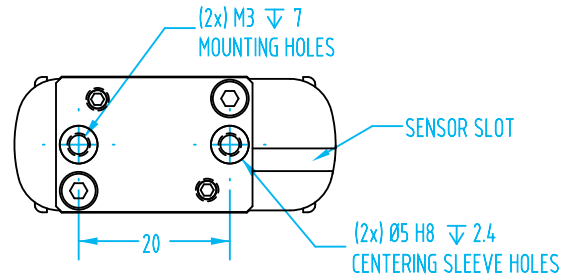
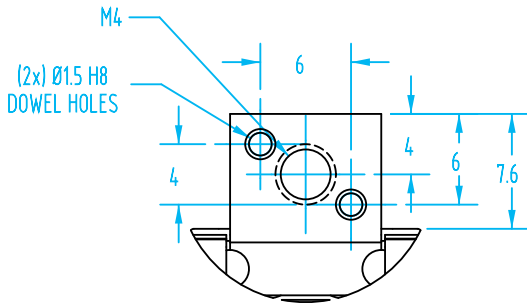
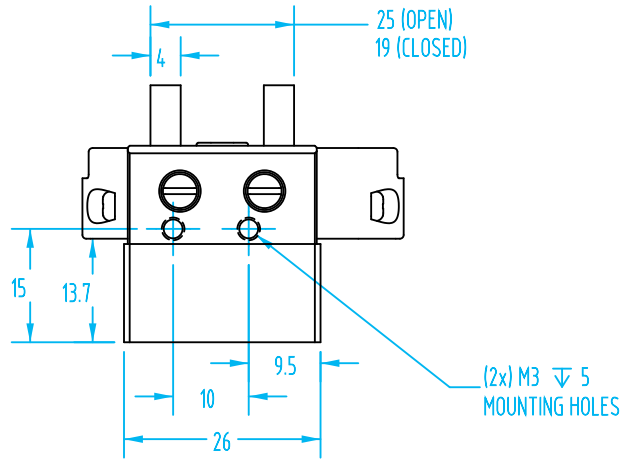
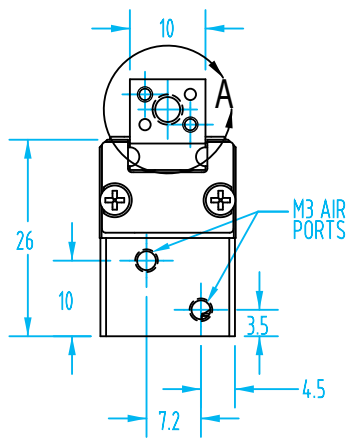
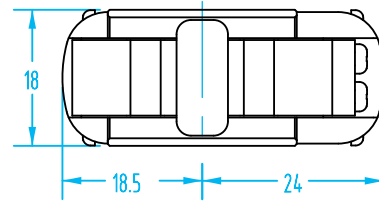
EMI's in-house 3D printing and CNC equipment allow us to provide custom fingers quickly and cost effectively.

Compact Parallel Gripper – SGP-S

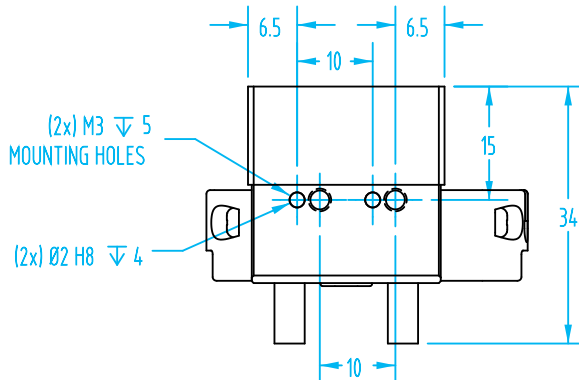
(Dimensioned drawing shown full scale)

**SGP-25S
#6781**

#6780 & #6781 must use barb fittings, see page 1070.



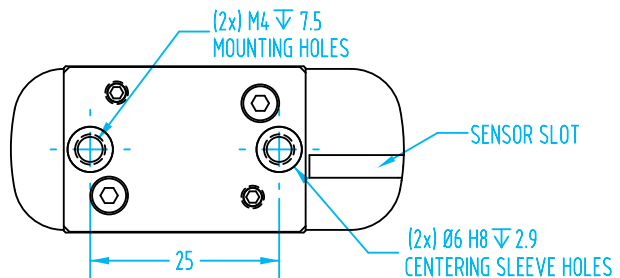
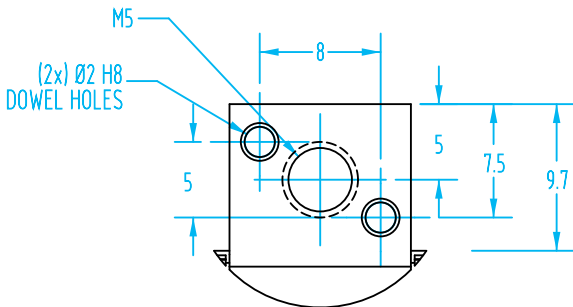
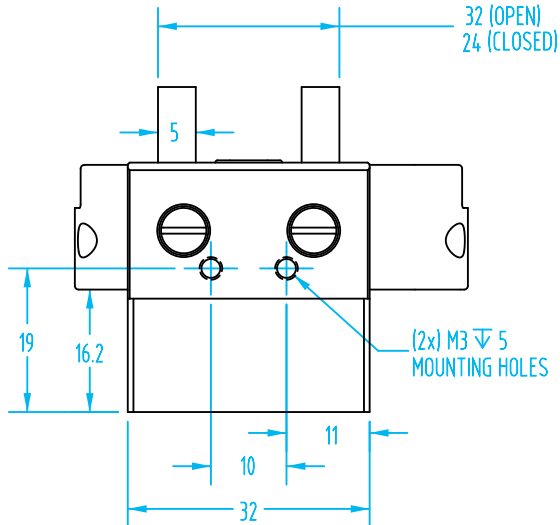
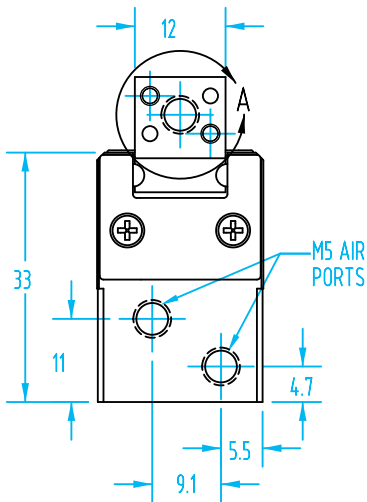
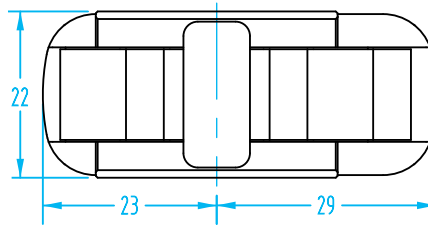
DETAIL A
SCALE 2 : 1



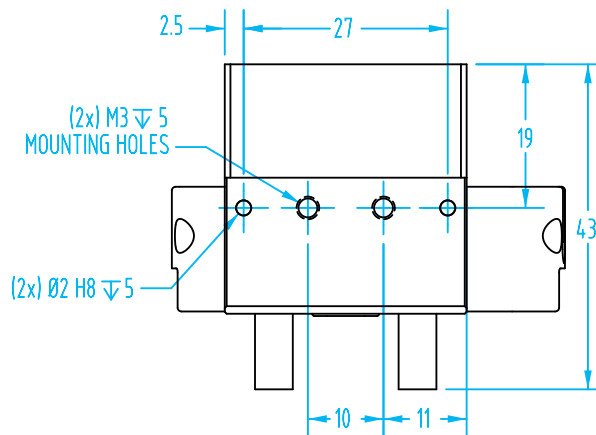
Compact Parallel Gripper – SGP-S

(Dimensioned drawing shown full scale)

SGP-32S
#6782



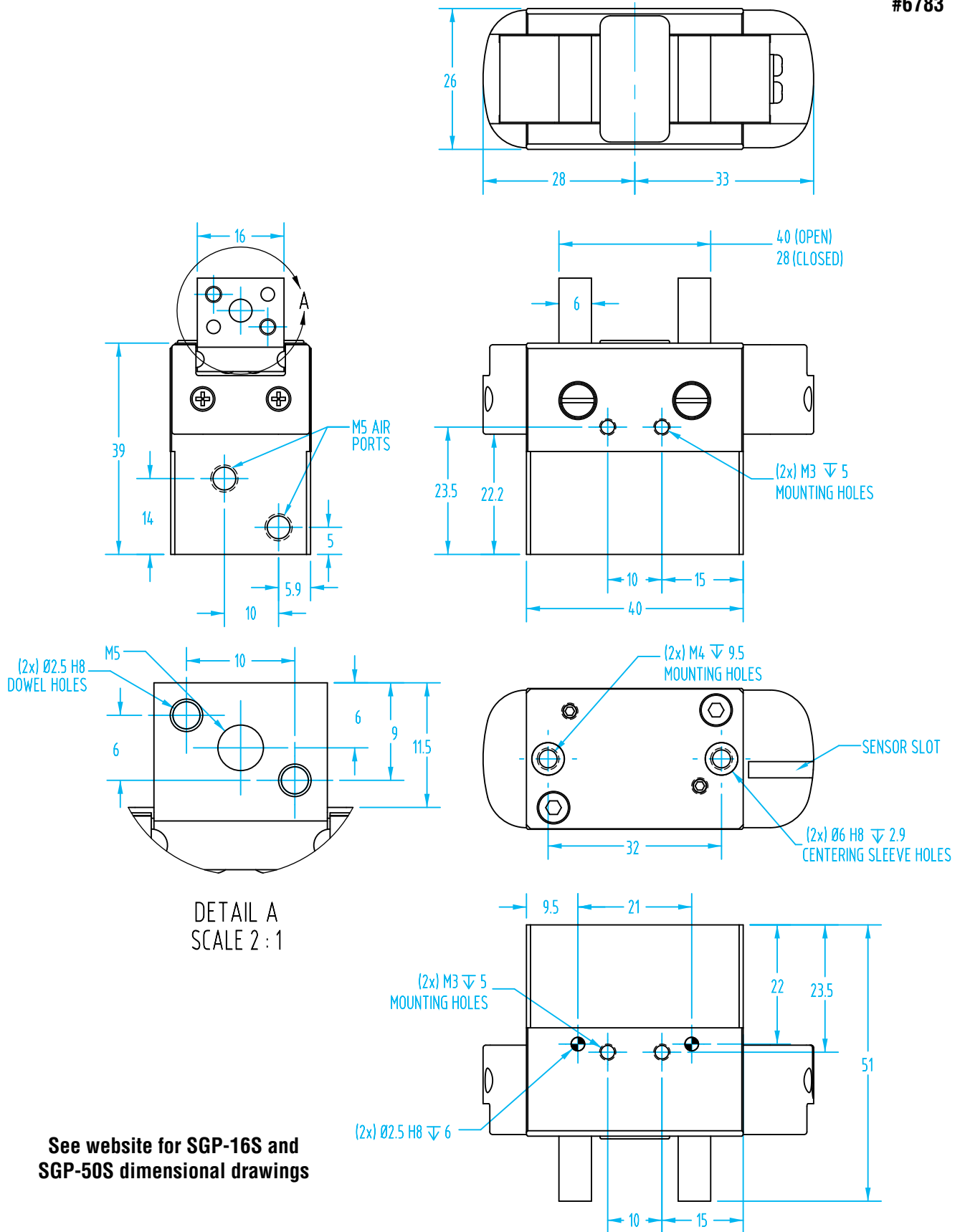
DETAIL A
SCALE 2 : 1



Compact Parallel Gripper – SGP-S

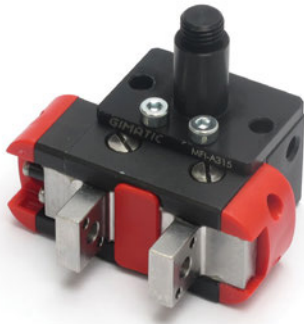
(Dimensioned drawing shown full scale)

**SGP-40S
#6783**

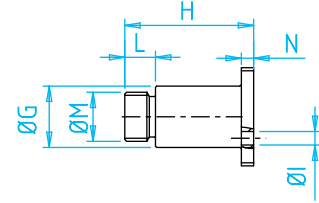
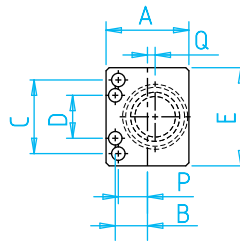


See website for SGP-16S and SGP-50S dimensional drawings

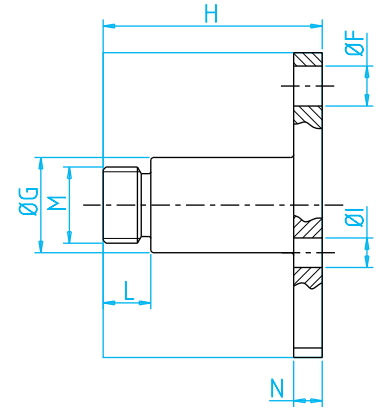
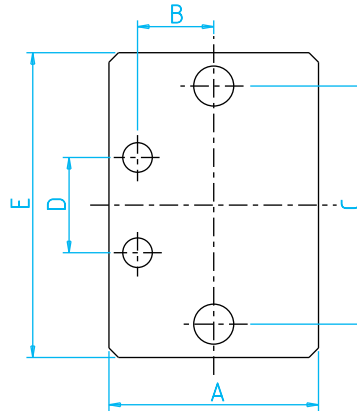
SGP-S Compact Parallel Gripper Aluminum Mounting Brackets



For Q#7726, MFI-A502:



For all others:



Mounting Brackets for Compact Grippers

Quick#	Part#	Price	Use with:	Wt.
7726	MFI-A502	\$27.92	SGP-16S	4.2
7324	MFI-A317	\$30.78	SGP-20S	7g
7325	MFI-A316	\$25.41	SGP-25S	9g
7326	MFI-A315	\$25.70	SGP-32S	11g
7327	MFI-A314	\$30.50	SGP-40S	25g
7727	MFI-A503	\$33.44	SGP-50S	43.2

Hardware Included.

	A	B	C	D	E	F	G	H	I	L	M	N	P	Q
MFI-A502	13.5	5.25	12	7	16	/	Ø10	21	Ø2.2	5	M8x1	2	4.75	1.25
MFI-A317	16	5.5	15	8	20	Ø2.6	Ø10	21	Ø2.6	5	M8x1	2	/	/
MFI-A316	18	6	20	10	26	Ø3.1	Ø10	22	Ø3.1	5	M8x1	3	/	/
MFI-A315	22	8	25	10	32	Ø4.2	Ø10	23	Ø3.1	5	M8x1	3	/	/
MFI-A314	26.5	10.25	32	10	40	Ø4.1	Ø10	34	Ø3.1	6	M12x1	4	/	/
MFI-A503	30	/	40	/	50	Ø5.2	Ø20	39	/	8	M17x1	4	/	/

Fittings Available
on page 1047



Extension Tube

Quick#	Part#	Price	OD	Length	Thread	Wt.
5993	OF10L60	\$7.64	10	60	M8x1	7g
5842	OF14L80	\$7.50	14	80	M12x1	10g

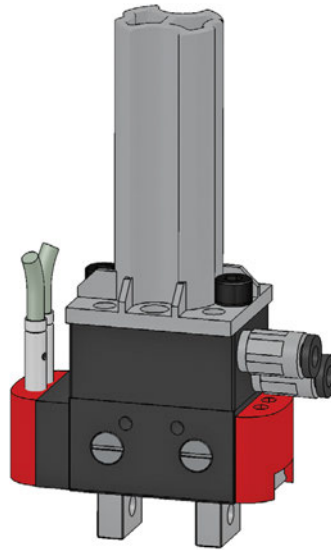
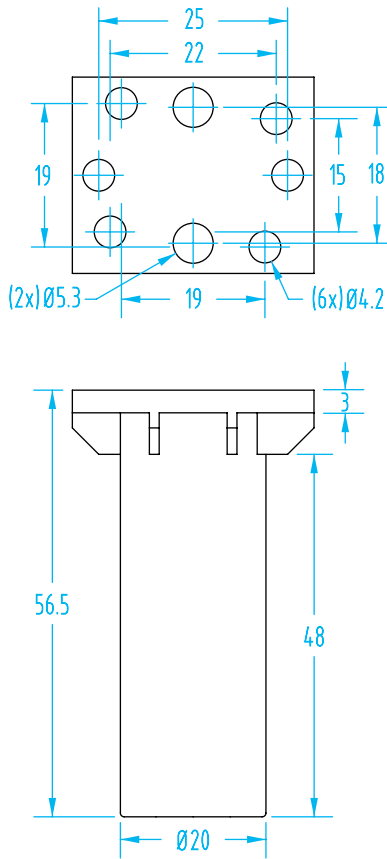


Extension Tube

Quick#	Part#	Price	OD	Length	Thread	Wt.
3562	VLR10-30	\$8.40	10	30	M8x1	3g
3563	VLR10-60	\$8.40	10	60	M8x1	7g
3531	VLR10-90	\$8.40	10	90	M8x1	11g
3384	VLR14-40	\$8.40	14	40	M12x1	6g
3385	VLR14-80	\$10.50	14	80	M12x1	14g
3386	VLR14-120	\$10.50	14	120	M12x1	23g

SGP-S Compact Parallel Gripper Composite Mounting Brackets

(Dimensioned drawings shown full scale)

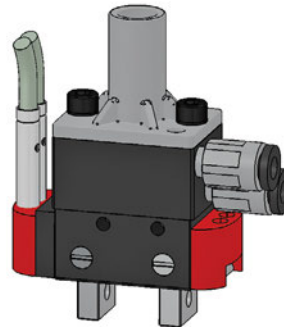
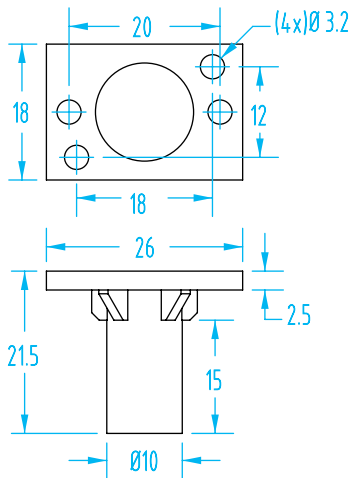


#6375 for use with SGP-32S

Composite Mounting Brackets for Compact Grippers

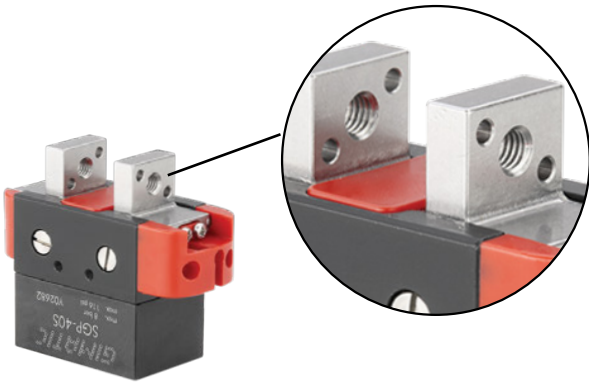
Quick#	Part#	Price	Use with:	Wt.
6375	MFP-A01	\$3.43	SGP-32S	26g
6378	MFP-A04	\$3.02	SGP-25S	5g

Order fasteners separately, see 1077.



#6378 for use with SGP-25S

Compact Parallel Gripper Finger Blanks for SGP-S & PGR-P – NEW STYLE

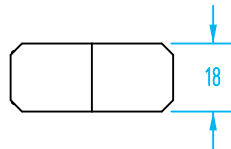
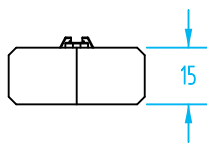


Finger Blanks on this page are intended to fasten to SGP-S grippers that have a threaded mounting hole on the jaw.

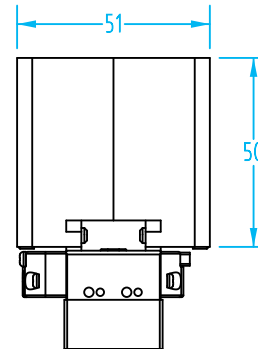
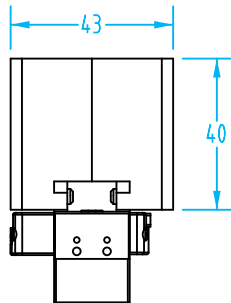
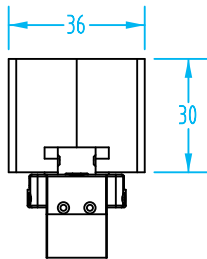
Finger Blanks for SGP-S Grippers

Quick#	Part#	Price	Fits SGP-S	Material	Wt.
7722	SGP-16-FBA2	\$26.02	SGP-16S	Aluminum	40g
7723	SGP-16-FBP2	\$26.02		Nylon	17g
7392	SGP-20-FBA2	\$25.09	SGP-20S & PGR-P20	Aluminum	35g
7393	SGP-20-FBP2	\$19.30		Nylon	19g
7395	SGP-25-FBA2	\$31.00	SGP-25S & PGR-P25	Aluminum	72g
7396	SGP-25-FBP2	\$23.85		Nylon	38g
7397	SGP-32-FBA2	\$35.36	SGP-32S & PGR-P32	Aluminum	117g
7398	SGP-32-FBP2	\$27.20		Nylon	61g
7399	SGP-40-FBA2	\$38.55	SPG-40S & PGR-P40	Aluminum	196g
7400	SGP-40-FBP2	\$29.65		Nylon	102g
7724	SGP-50-FBA2	\$32.29	SGP-50S & PGR-P50	Aluminum	640g
7725	SGP-50-FBP2	\$32.29		Nylon	247g

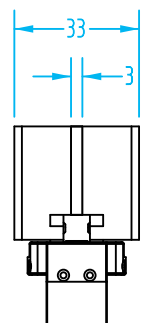
Machine these finger blanks to your part's shape or contact EOAT Engineering for help! For more information on custom finger blanks for your application visit our 3D printing section on page 102.



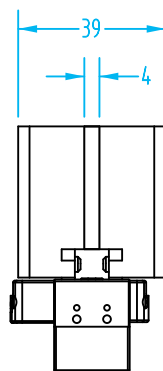
Dimensions with fingers open:



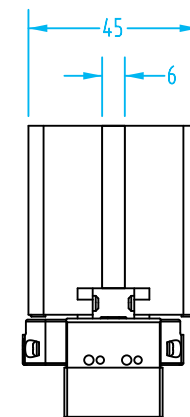
Dimensions with fingers closed:
(finger blanks are shown overlapped. Cut away material to fit your part)



Size 16



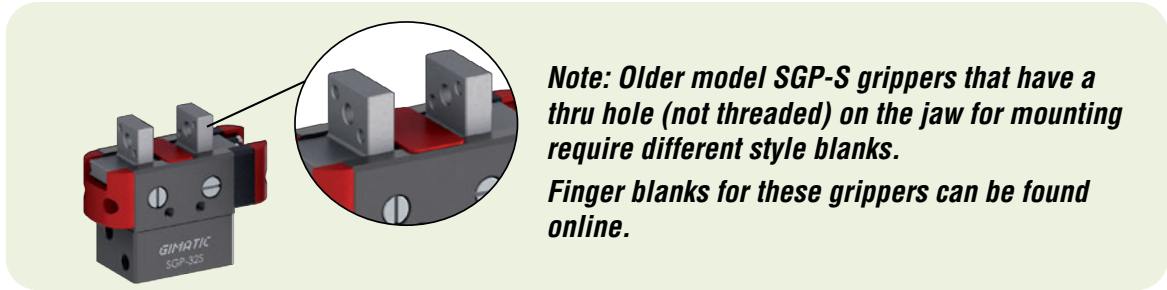
Size 20



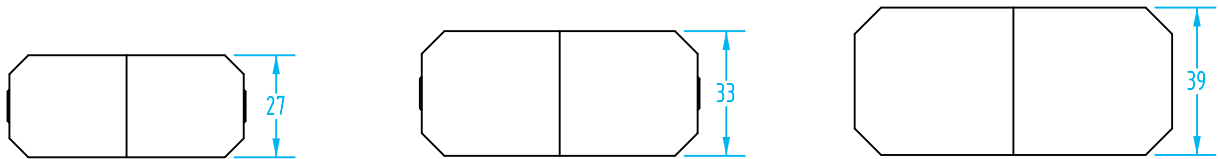
Size 25

Compact Parallel Gripper Finger Blanks for SGP-S & PGR-P – NEW STYLE

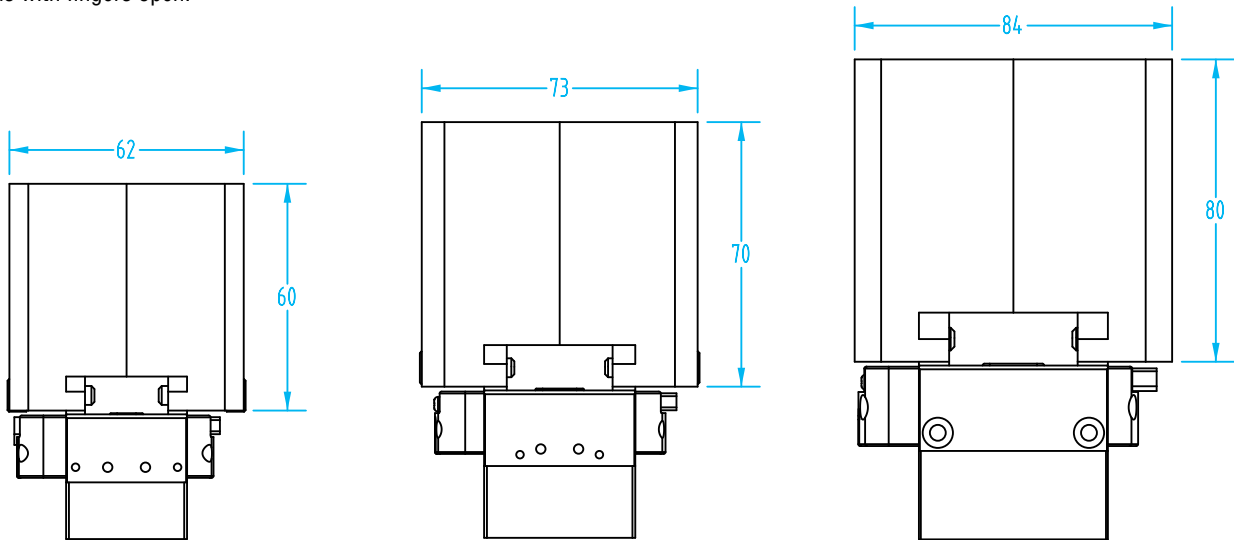
(Dimensioned drawings shown half scale)



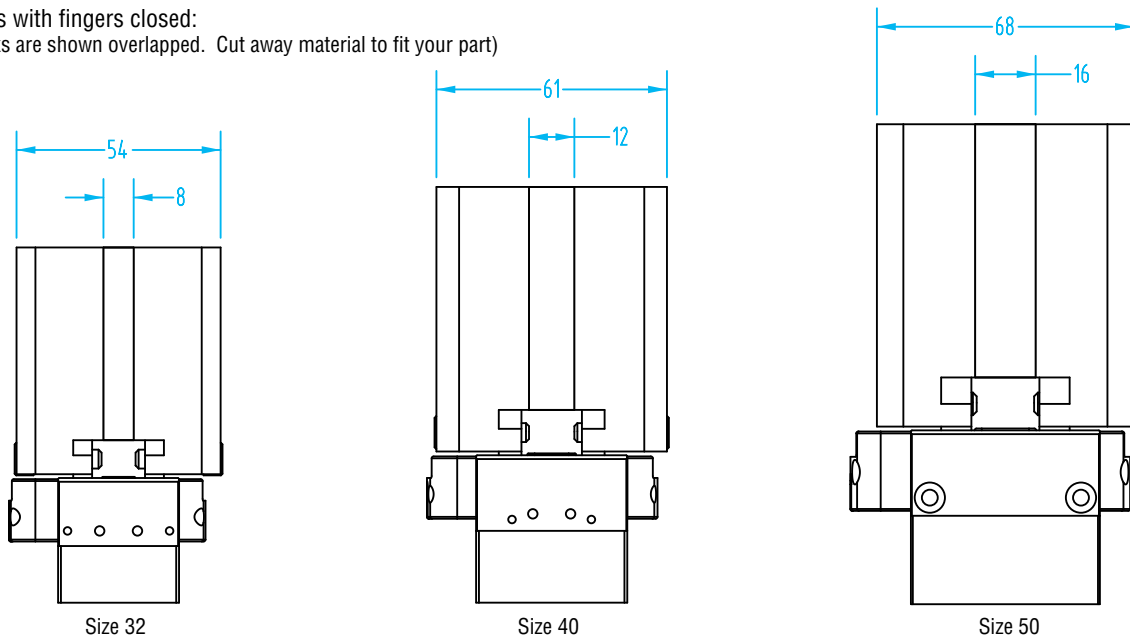
Note: Older model SGP-S grippers that have a thru hole (not threaded) on the jaw for mounting require different style blanks. Finger blanks for these grippers can be found online.



Dimensions with fingers open:



Dimensions with fingers closed:
(finger blanks are shown overlapped. Cut away material to fit your part)



Size 32

Size 40

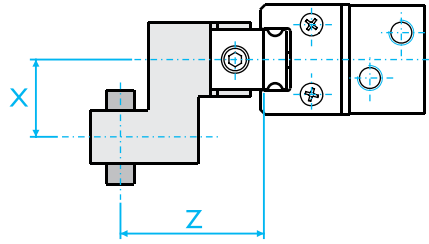
Size 50

Compact Parallel Gripper – SGP-S

Gripping force

The graphs show the medium gripping force on each jaw, as a function of the operating pressure, the gripping tool length 'Z' and the overhanging 'X'.

The force shown in these graphs refers to one jaw. The total force is double.



Reference:

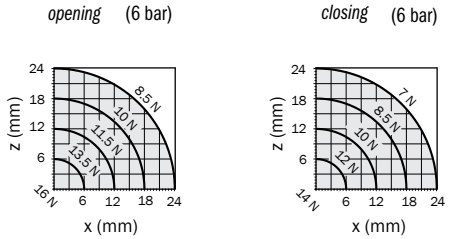
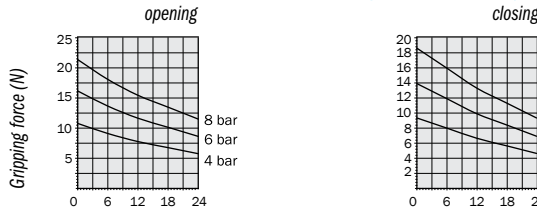
Force: N x 0.225 = lbf

Torque: Nm x 8.850 = in-lbf

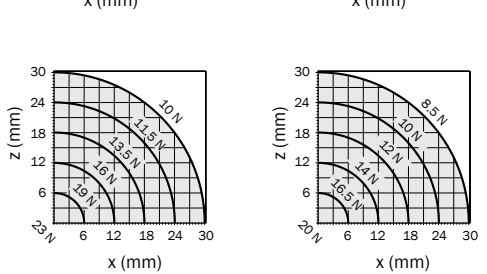
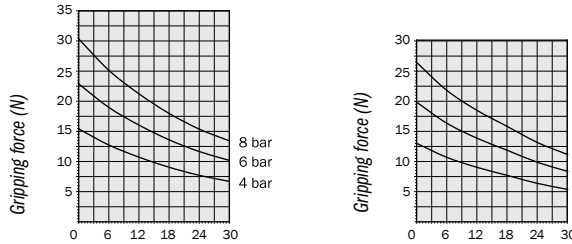
Torque: Ncm x 0.089 = in-lbf

Pressure: bar x 14.5 = psi

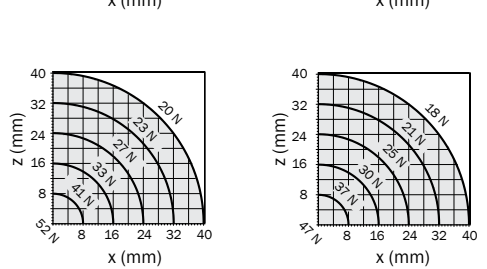
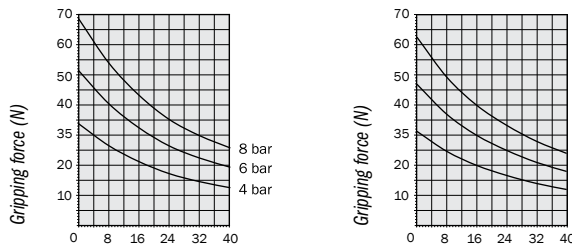
SGP-16S



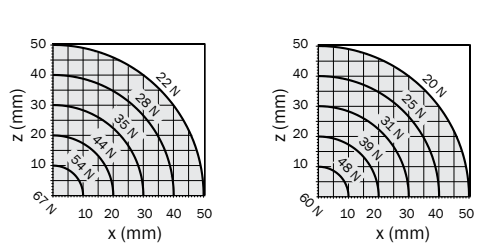
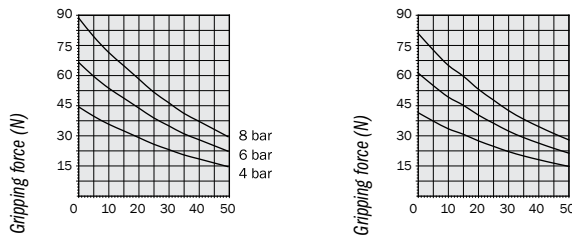
SGP-20S



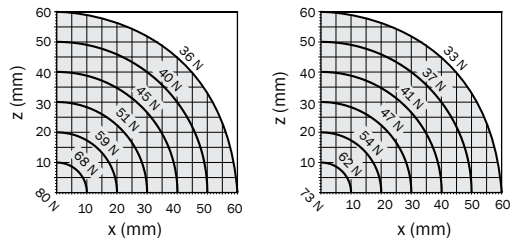
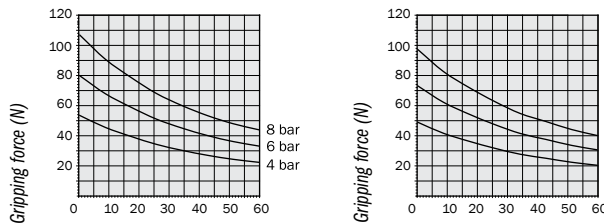
SGP-25S



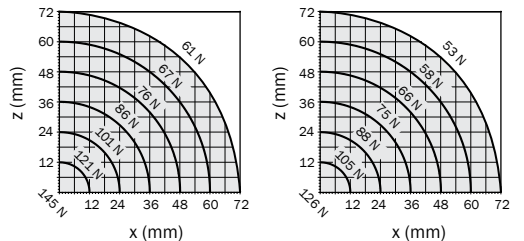
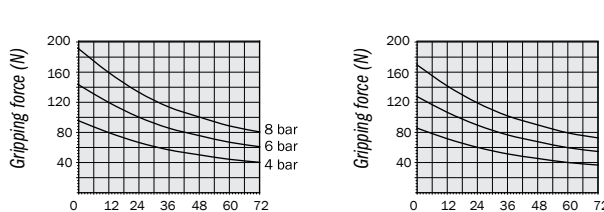
SGP-32S



SGP-40S



SGP-50S

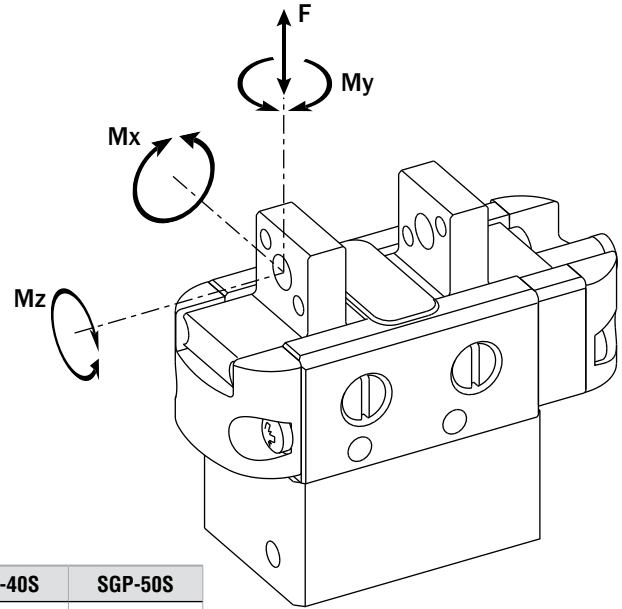


Compact Parallel Gripper – SGP-S

Safety loads

Check the table for maximum permitted loads.
Excessive forces or torques can damage the gripper, cause functioning troubles and endanger the safety of the operator.

F s, Mx s, My s, Mz s, are maximum permitted static loads.
Static means with motionless jaws.
F d, Mx d, My d, Mz d, are maximum permitted dynamic loads. Dynamic means with running jaws.
The following tables show the specified maximum loads (m) on each gripping tool as function of closing or opening time. Use flow controllers (not supplied) to get the proper speed.



	SGP-16S	SGP-20S	SGP-25S	SGP-32S	SGP-40S	SGP-50S
F s	20 N	30 N	50 N	100 N	160 N	240 N
Mx s	0.5 Nm	1 Nm	2 Nm	4 Nm	6 Nm	10 Nm
My s	0.5 Nm	1 Nm	2 Nm	4 Nm	6 Nm	10 Nm
Mz s	0.5 Nm	1 Nm	2 Nm	4 Nm	6 Nm	10 Nm
F d	0.2 N	0.3 N	0.5 N	1 N	1.6 N	2.4 N
Mx d	0.5 Ncm	1 Ncm	2 Ncm	4 Ncm	6 Ncm	10 Ncm
My d	0.5 Ncm	1 Ncm	2 Ncm	4 Ncm	6 Ncm	10 Ncm
Mz d	0.5 Ncm	1 Ncm	2 Ncm	4 Ncm	6 Ncm	10 Ncm
m 0.2s	20g	30g	50g	100g	160g	240g
m 0.05s	13g	15g	30g	60g	80g	150g
m 0.02s	10g	10g	20g	40g	-	-

Reference:
Force: N x 0.225 = lbf
Torque: Nm x 8.850 = in-lbf
Torque: Ncm x 0.089 = in-lbf
Pressure: bar x 14.5 = psi

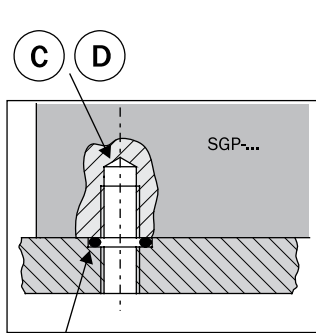
Compressed air feeding

The compressed air feeding can be accomplished on the lateral air ports (A and B) with fittings and hoses (not supplied). Or it can be accomplished directly through the bottom air ports (C and D) removing the plugs, except SGP-20S.

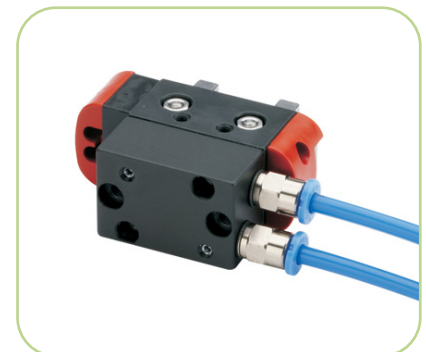
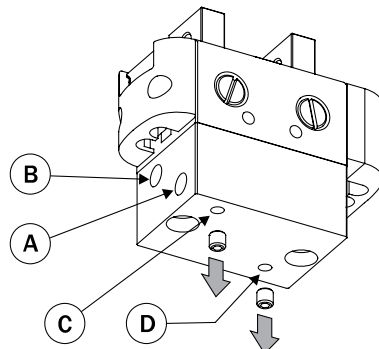
Compressed air in A or C: gripper opening.
 Compressed air in B or D: gripper closing.

The compressed air, must be filtered from 5 to 40µm. Maintain the medium selected at the start, lubricated or not, for the complete service life of the gripper. The pneumatic circuit must be pressurized progressively, to avoid uncontrolled movements.

Fittings Available on page 1047



O-Ring Ø1x3
 O-Ring groove Ø5H11x0.65^{+0.1}

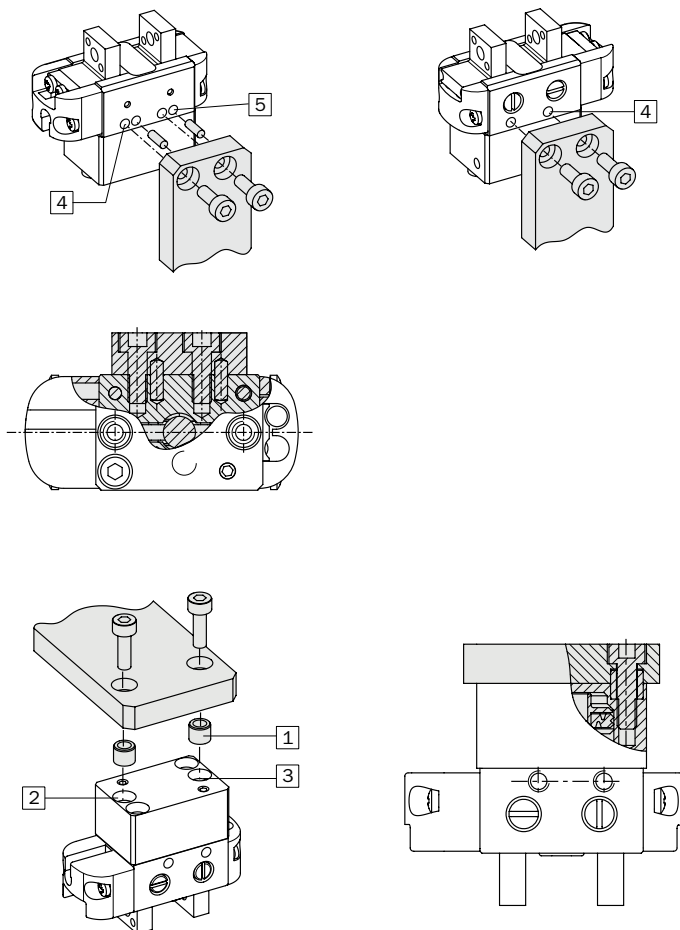


Compact Parallel Gripper – SGP-S

Mounting

The gripper can be mounted to a static or moving part. When on a moving part, you must pay attention to the forces created by inertia over the gripper and its load.

1. To fasten the gripper on one side, use a plate with two through holes and two screws to be screwed on the threaded holes (4). They are on both sides of the gripper housing. The dowel pin holes (5) are on one only side.
2. To fasten gripper to base use two screws passing through the holes in the plate and screwed in the threaded holes (2). Use also the two centering sleeves (1) supplied in the packaging, in the calibrated holes (3).



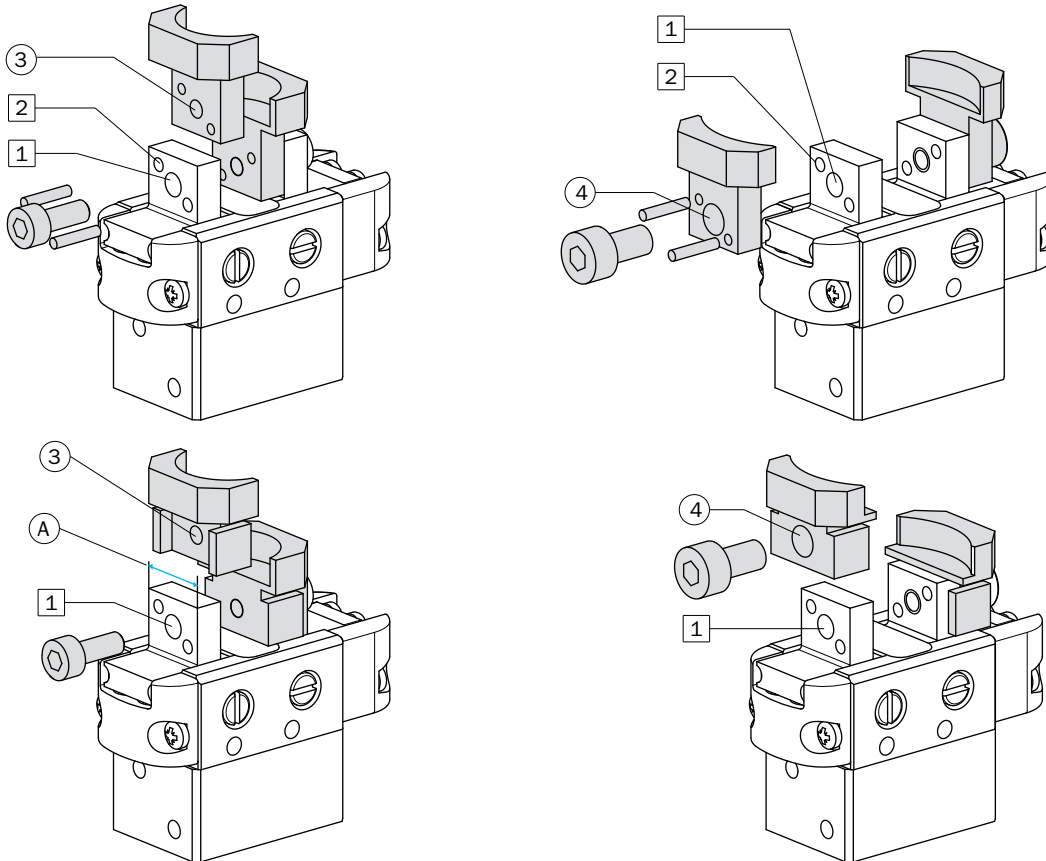
	SGP-16S	SGP-20S	SGP-25S	SGP-32S	SGP-40S	SGP-50S
1	Ø4h8 x Ø2 x 3 mm	Ø4h8 x Ø2.6 x 4 mm	Ø5h7 x Ø3.2 x 4.4 mm	Ø6h7 x Ø4.2 x 5.3 mm	Ø6h7 x Ø4.2 x 5.3 mm	Ø8h8 x Ø5.2 x 5.3 mm
2	M2x2.8 mm	M2.5x6 mm	M3x7 mm	M4x7.5 mm	M4x9.5 mm	M5x8 mm
3	Ø3H8 x 1.2 mm	Ø4H8 x 2 mm	Ø5H8 x 2.4 mm	Ø6H8 x 2.9 mm	Ø6H8 x 2.9 mm	Ø8H8 x 2.5 mm
4	M1.6x2.4 mm	M2.5x4 mm	M3x5 mm	M3x5 mm	M3x5 mm	M5x8.4 mm
5	Ø3H8 x 1.5 mm	Ø1.5H8 x 3 mm	Ø2H8 x 4 mm	Ø2H8 x 5 mm	Ø2.5H8 x 6 mm	Ø8H8 x 2.5 mm

Compact Parallel Gripper – SGP-S

Jaw Fastening

The gripping tools must be as short and light as possible.

They must be fastened by one screw in the threaded hole (1) to be screwed in the threaded hole (3) on the gripping tool. Or, by a screw passing through (4) and tightened into (1). For a precise positioning on the jaw use the calibrated dimension (A), or the dowel pin holes (2).

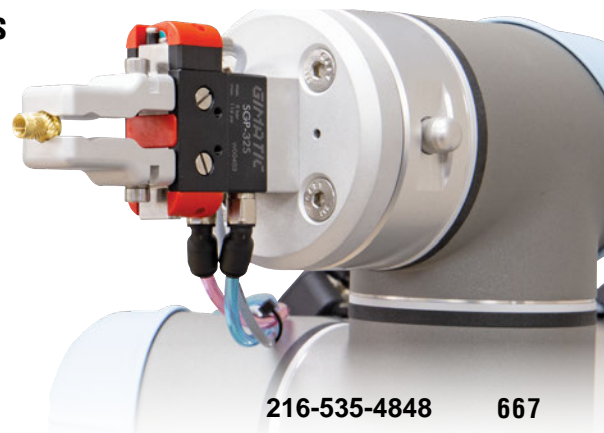


	SGP-16S	SGP-20S	SGP-25S	SGP-32S	SGP-40S	SGP-50S
1	M3	M4	M4	M5	M5	M6
2	Ø1.5H8 x 3.5 mm	Ø1.5H8 x 3.5 mm	Ø1.5H8 x 4 mm	Ø2H8 x 5 mm	Ø2.5H8 x 6 mm	Ø3H8 x 8 mm
3	M2	M3	M3	M4	M4	M5
4	Ø3.3 mm	Ø4.3 mm	Ø4.3 mm	Ø5.3 mm	Ø5.3 mm	Ø6.3 mm
A	7.5 mm	9 -0.05 mm	10 -0.05 mm	12 -0.05 mm	16 -0.05 mm	18 -0.05 mm

Note: '1' dimension is now a threaded mounting hole - 2/2018

EMI Gripper Kit – Two-Jaw SGP32-S for Industrial Cobots

- This versatile kit can be adapted to other SGP Gripper sizes.
- CRK-SGP32S-A Mass: 285g (subject to change per configuration).
- Includes 5/2 solenoid valve and cable management clamps.
- Includes 1 inductive sensor for mid-stroke workpiece detection.
- Includes an interface plate that mounts directly to any robot.
- Includes 0–8mm V-Groove fingers.
- See 150 page for more information.

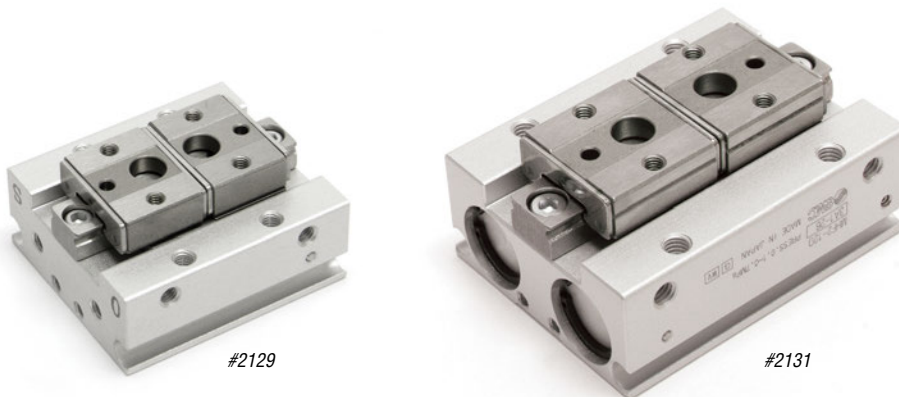


Low Profile Parallel Gripper – MHF2

- Double acting.
- Low profile gripper with space-saving design.
- Height is approximately 1/3rd the size of the MHZ2 / GS gripper.
- Double piston construction achieves strong gripping force.
- Many options for fastening and feeding.
- Optional sensors available.
- Additional MHF2 grippers with 16mm & 20mm bore also available.



Height is approximately 1/3rd of the MHZ2 / GS gripper.

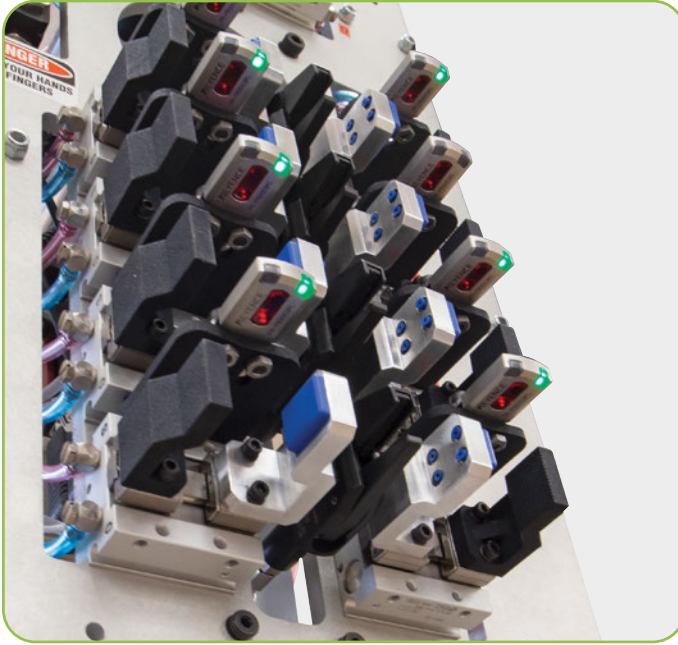


Quick#	2129	2130	2131	2132
Part#	MHF2-8D	MHF2-8D1	MHF2-12D	MHF2-12D1
Price	\$265.00	\$276.00	\$303.00	\$321.00
Medium	Filtered, lubricated / non-lubricated compressed air			
Pressure range	21–101.5 psi		14–101.5 psi	
Total gripping force at 87psi	4.2 lbf		10.7 lbf	
Total stroke	8mm	16mm	12mm	24mm
Cylinder bore	8mm	8mm	12mm	12mm
Mid-stroke detection capability	Yes with SMC D-M9... sensors			
Weight	65g	85g	155g	190g

Optional Sensors for MHF2 Grippers

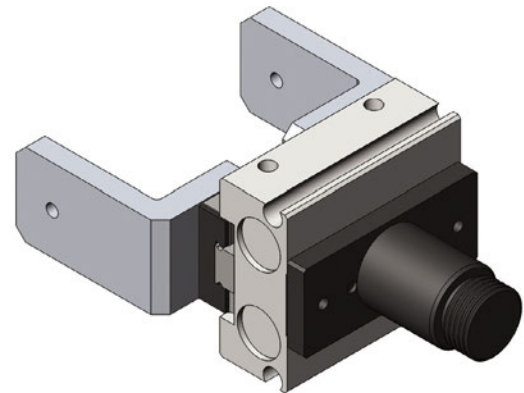
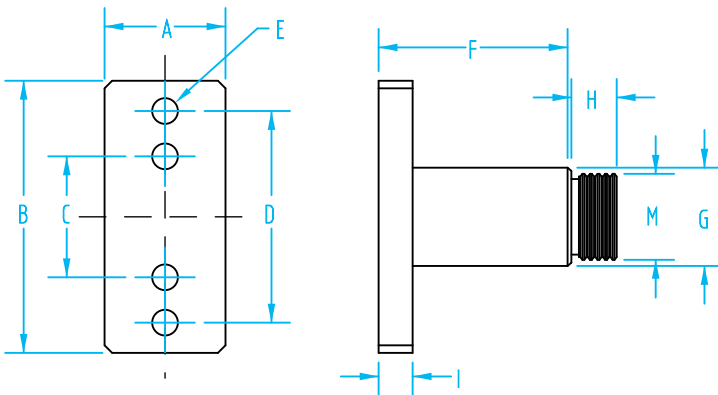
Quick#	Part#	Price	Description
5430	D-M9PL	\$33.70	PNP, 3-wire Straight wit lead, 3m long
2412	D-M9NL	\$33.70	NPN, 3-wire Straight with lead, 3m long
5497	D-M9P SAPC	\$42.06	PNP, 3-wire Straight with M8 connector, 0.5m long
5498	D-M9N SAPC	\$42.06	NPN, 3-wire Straight with M8 connector, 0.5m long

Low Profile Parallel Gripper – MHF2



Custom machined or 3D printed gripper fingers from EMI are ideal for use on EOAT in plastics as well as on collaborative robot grippers. We've been designing 3D printed gripper fingers since 2013. Take advantage of EMI's experience and talk with an EMI engineer about custom designed gripper fingers for your application.

Direct mount these low profile grippers for a plate-based EOAT. Brackets are also available with Ø14 clampable post and M12x1 threads for extensions.



Mounting Brackets for MHF2 Grippers

Quick#	Part#	Price	Description
2155	GSG-LPG8-MB	\$36.43	For 2129, 2130
2156	GSG-LPG12-MB	\$36.90	For 2131, 2132

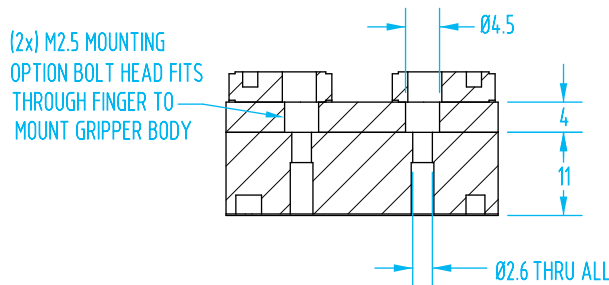
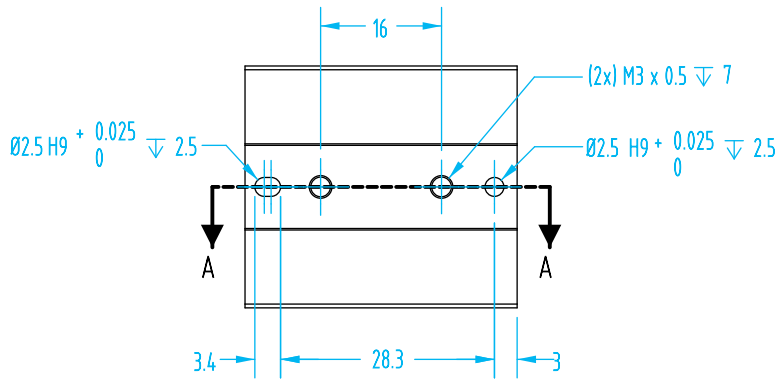
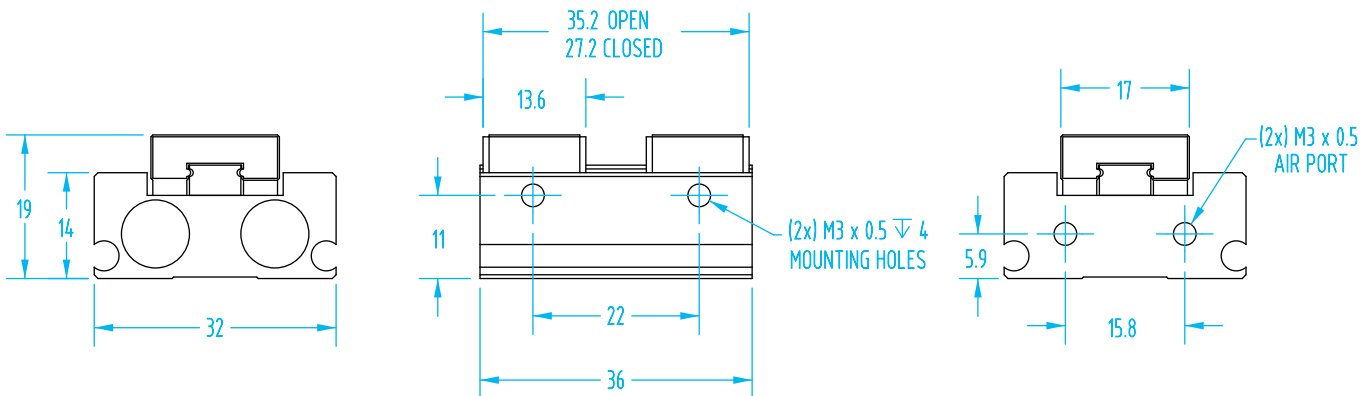
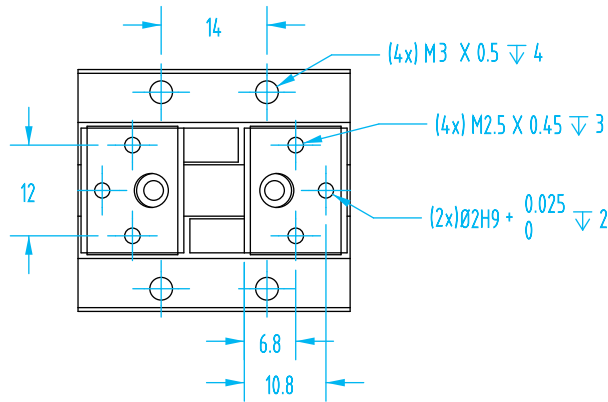
**Note: mounting hardware included*

	2155	2156
For:	2129, 2130	2131, 2132
A	16	16
B	36	50
C	16	26
D	28	42
E	Ø3.4 Thru	Ø4.5 Thru
F	25	25
G	14	14
H	6	6
J	4.5	4.5
M	M12x1	M12x1

Low Profile Parallel Gripper – MHF2

(Dimensioned drawing shown full scale)

**MHF2-8D
#2129**

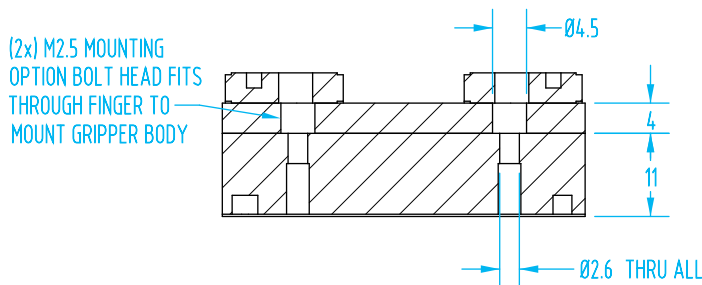
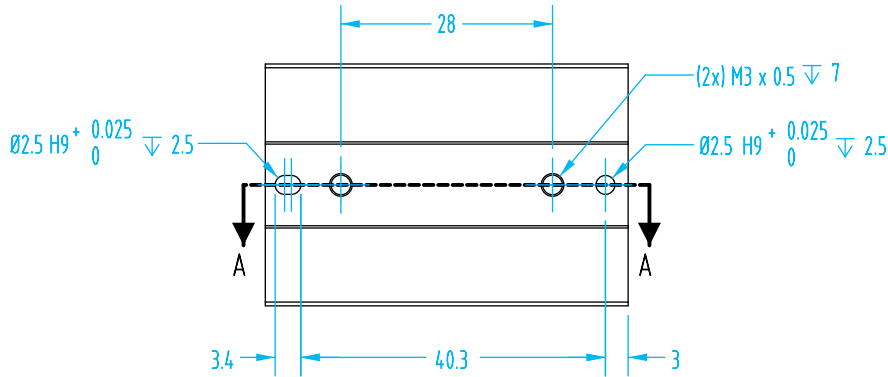
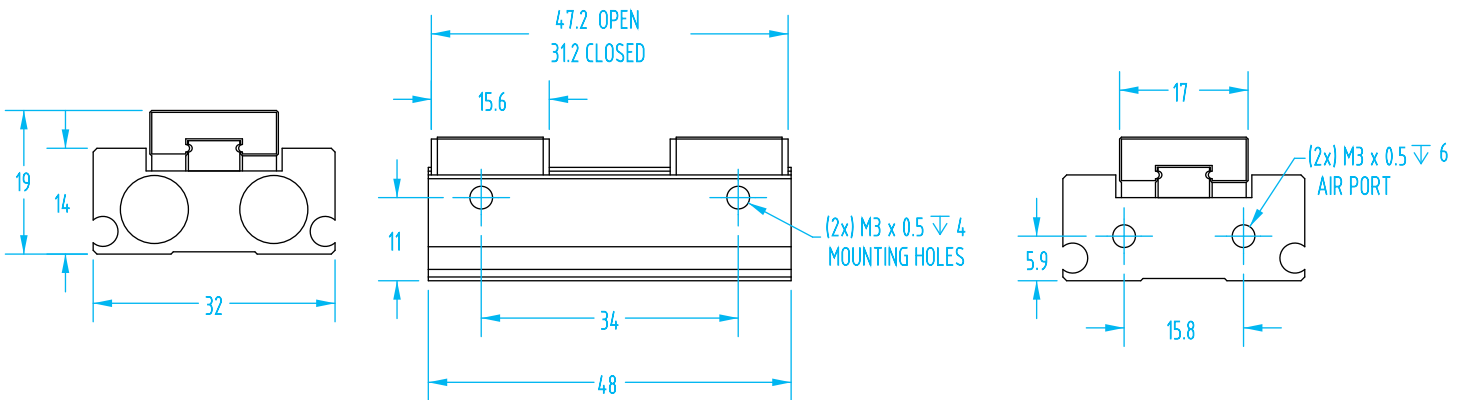
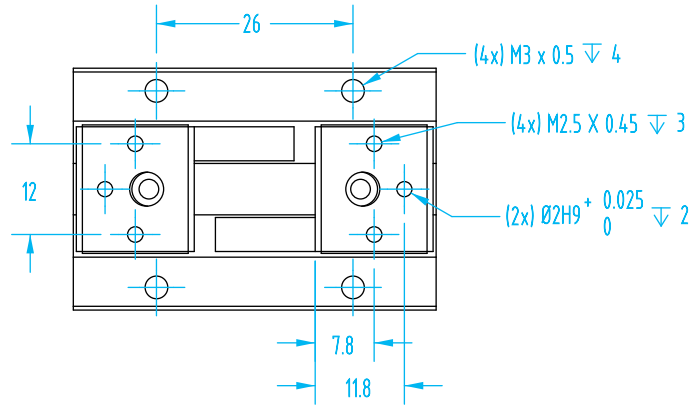


SECTION A-A

Low Profile Parallel Gripper – MHF2

(Dimensioned drawing shown full scale)

**MHF2-8D1
#2130**

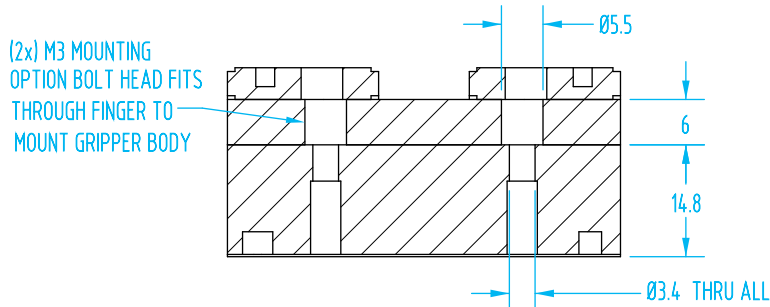
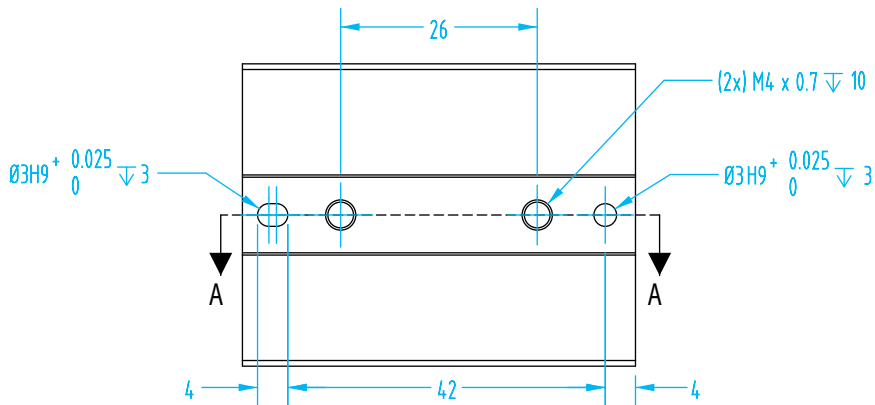
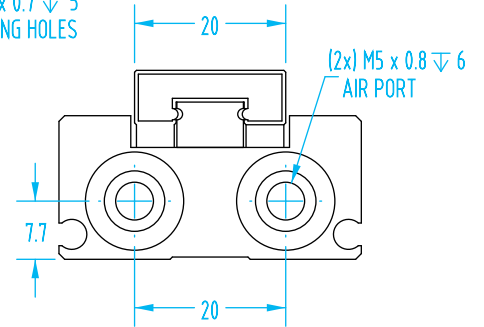
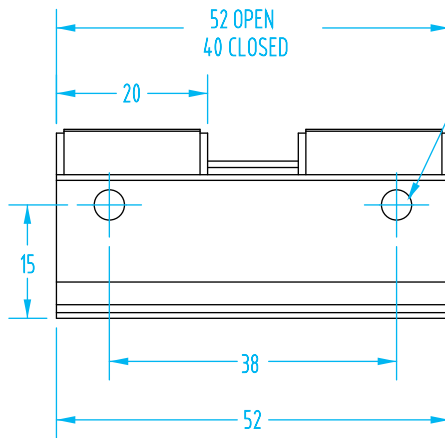
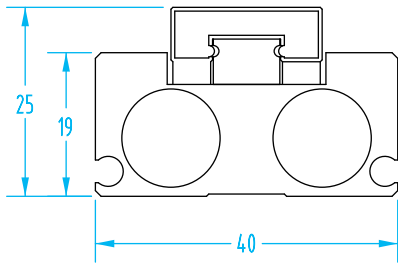
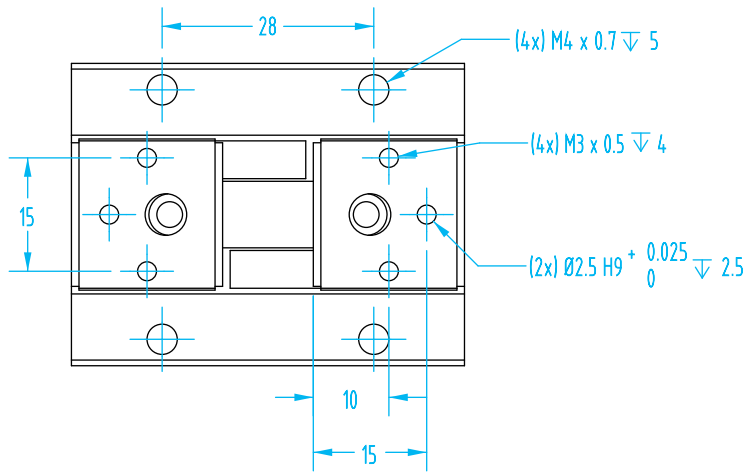


SECTION A-A

Low Profile Parallel Gripper – MHF2

(Dimensioned drawing shown full scale)

MHF2-12D
#2131

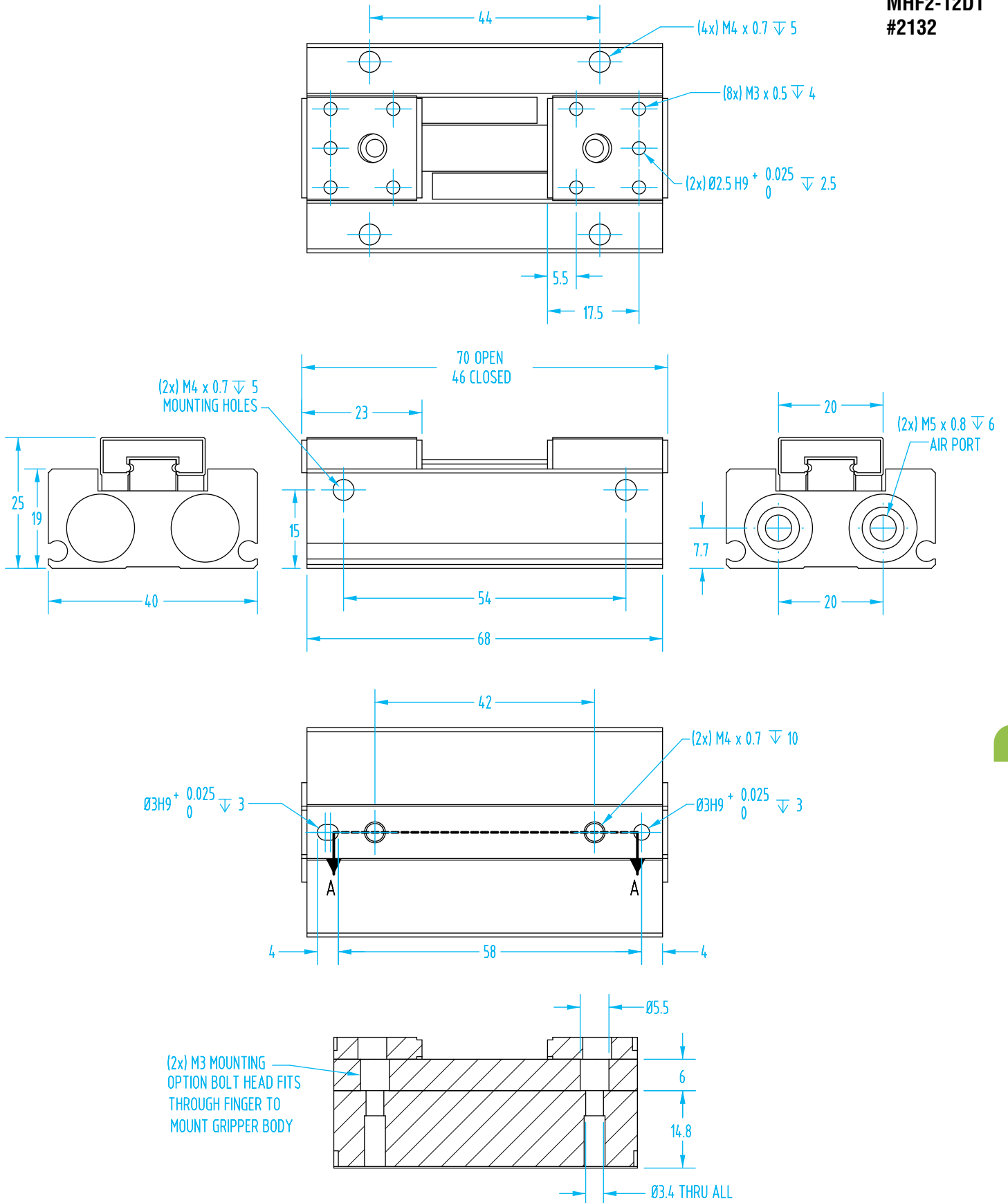


SECTION A-A

Low Profile Parallel Gripper – MHF2

(Dimensioned drawing shown full scale)

MHF2-12D1
#2132

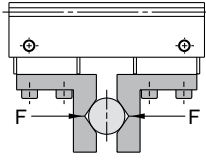


SECTION A-A

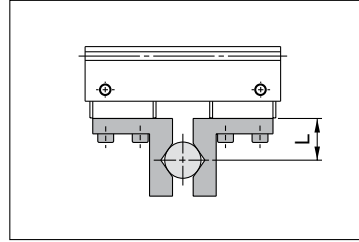
Low Profile Parallel Gripper – MHF2

Gripping force

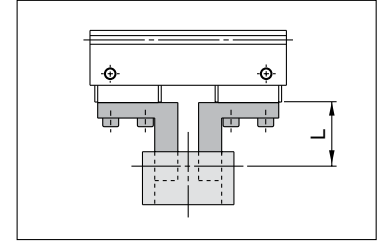
The effective gripping force shown in the graphs below is expressed as F , which is the thrust of one finger when both fingers are in full contact with the workpiece as shown in the figure.



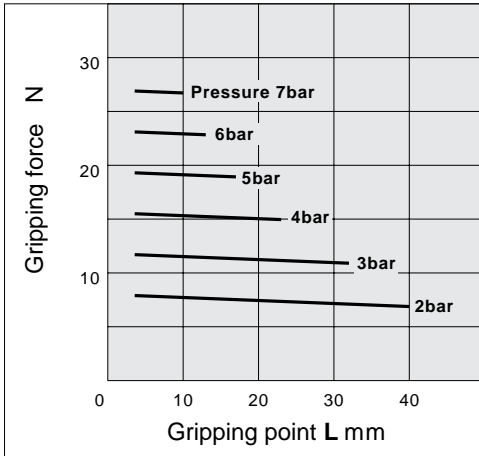
External Gripping



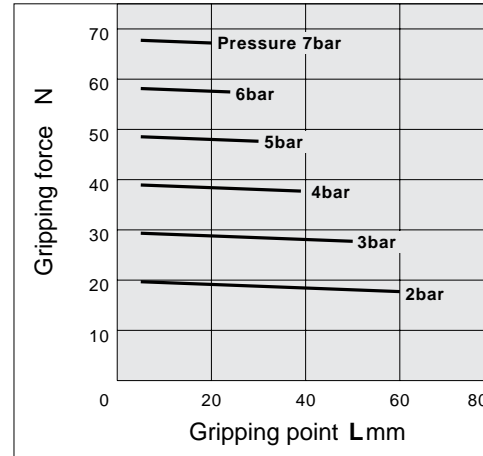
Internal Gripping



MHF2-8D



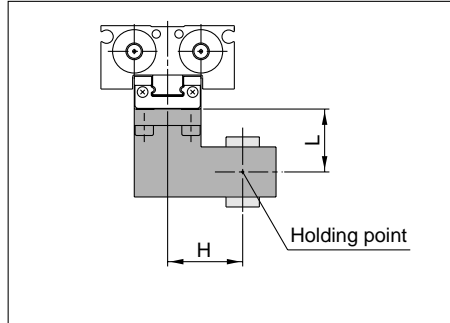
MHF2-12D



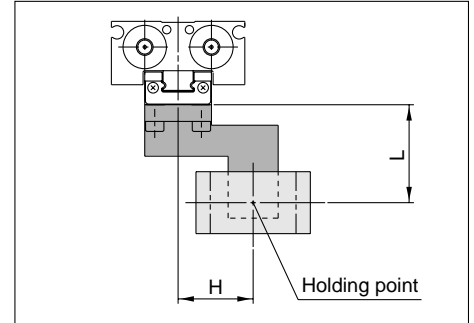
The gripper should be operated so that the amount of overhang "H" will stay within the range given in the graphs.

If the workpiece gripping point goes beyond the range limits, this will have an adverse effect on the life of the gripper.

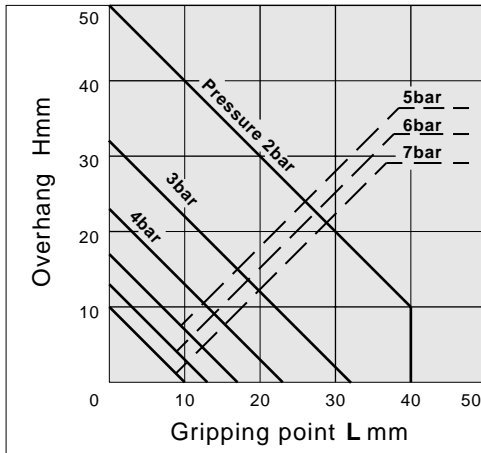
External Gripping



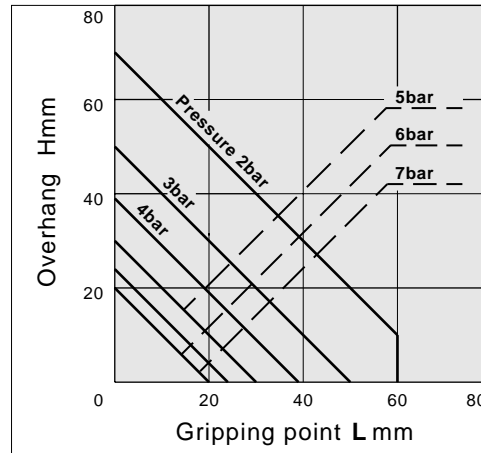
Internal Gripping



MHF2-8D



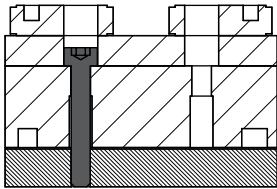
MHF2-12D



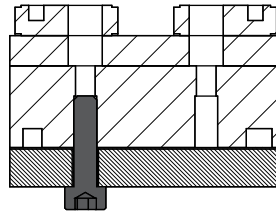
Low Profile Parallel Gripper – MHF2

**MHF2-8D
#2129**

M2.5 X 0.45 THROUGH
GRIPPER MOUNTING OPTION

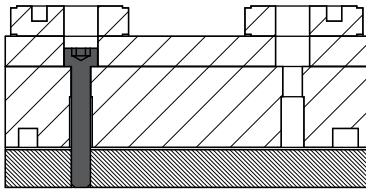


M3 X 0.5 BEHIND
GRIPPER MOUNTING OPTION

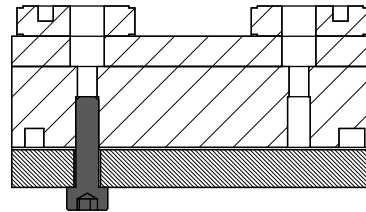


**MHF2-8D1
#2130**

M2.5 X 0.45 THROUGH
GRIPPER MOUNTING OPTION

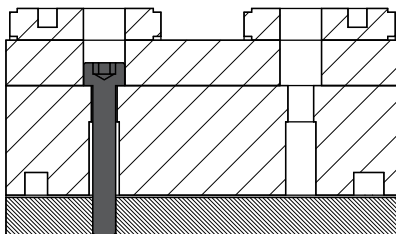


M3 X 0.5 BEHIND
GRIPPER MOUNTING OPTION

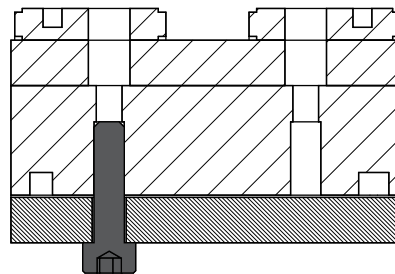


**MHF2-12D
#2131**

M3 X 0.5 THROUGH
GRIPPER MOUNTING OPTION

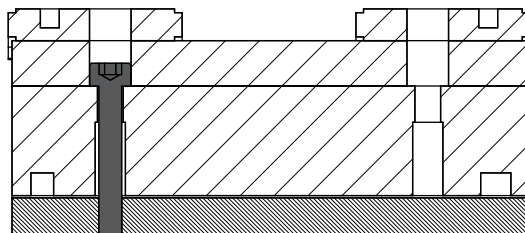


M4 X 0.7 BEHIND
GRIPPER MOUNTING OPTION

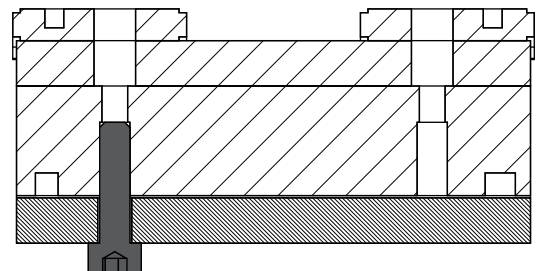


**MHF2-12D1
#2132**

M3 X 0.5 THROUGH
GRIPPER MOUNTING OPTION



M4 X 0.7 BEHIND
GRIPPER MOUNTING OPTION



Wide Angle Gripper – SZ

- Improved jaw guidance.
- Self-centering.
- Double acting, Normally Open, and Normally Closed models available.
- Different options for fastening and feeding.
- Stainless steel jaws.
- Optional sensors on page 684.
- New sizes 08 & 20.



Double Acting

Quick#	7655	6760	6761	7657	6762	6763	6764
Part#	SZ08	SZ12	SZ16	SZ20	SZ25	SZ32	SZ40
Price	\$172.00	\$181.00	\$192.00	\$194.00	\$218.00	\$268.00	\$297.00
Medium	Filtered, lubricated / non-lubricated compressed air						
Pressure range	29–116 psi			14.5–116 psi			
Opening total gripping force at 87 psi	6.2 lbf	11.2 lbf	20.2 lbf	33.7 lbf	51.7 lbf	85.4 lbf	139.4 lbf
Closing total gripping force at 87 psi	6.2 lbf	11.2 lbf	20.2 lbf	33.7 lbf	51.7 lbf	85.4 lbf	139.4 lbf
Total stroke (± 0.4mm)	7mm	8mm	12mm	16mm	20mm	25mm	30mm
Maximum working frequency	3 Hz	3Hz	3Hz	2 Hz	2Hz	2Hz	2Hz
Mid-stroke detection capability	Yes, see Sensor Reference Guide on page 1010 for details.						
Weight	32g	101g	164g	290g	474g	783g	1135g

Normally Open

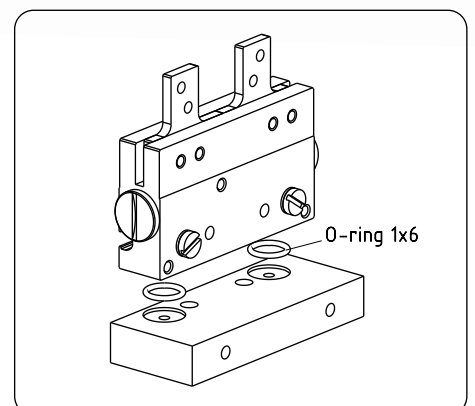
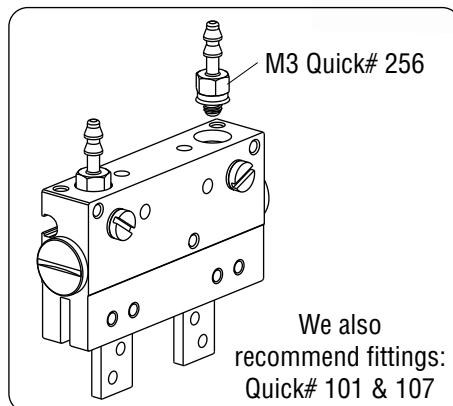
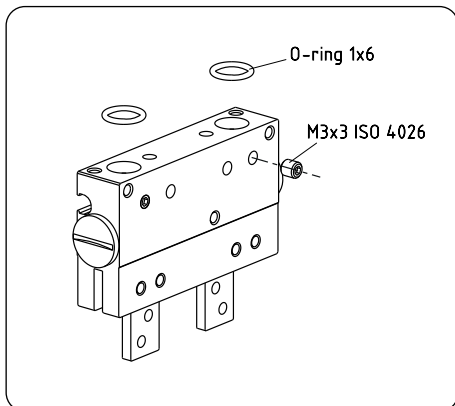
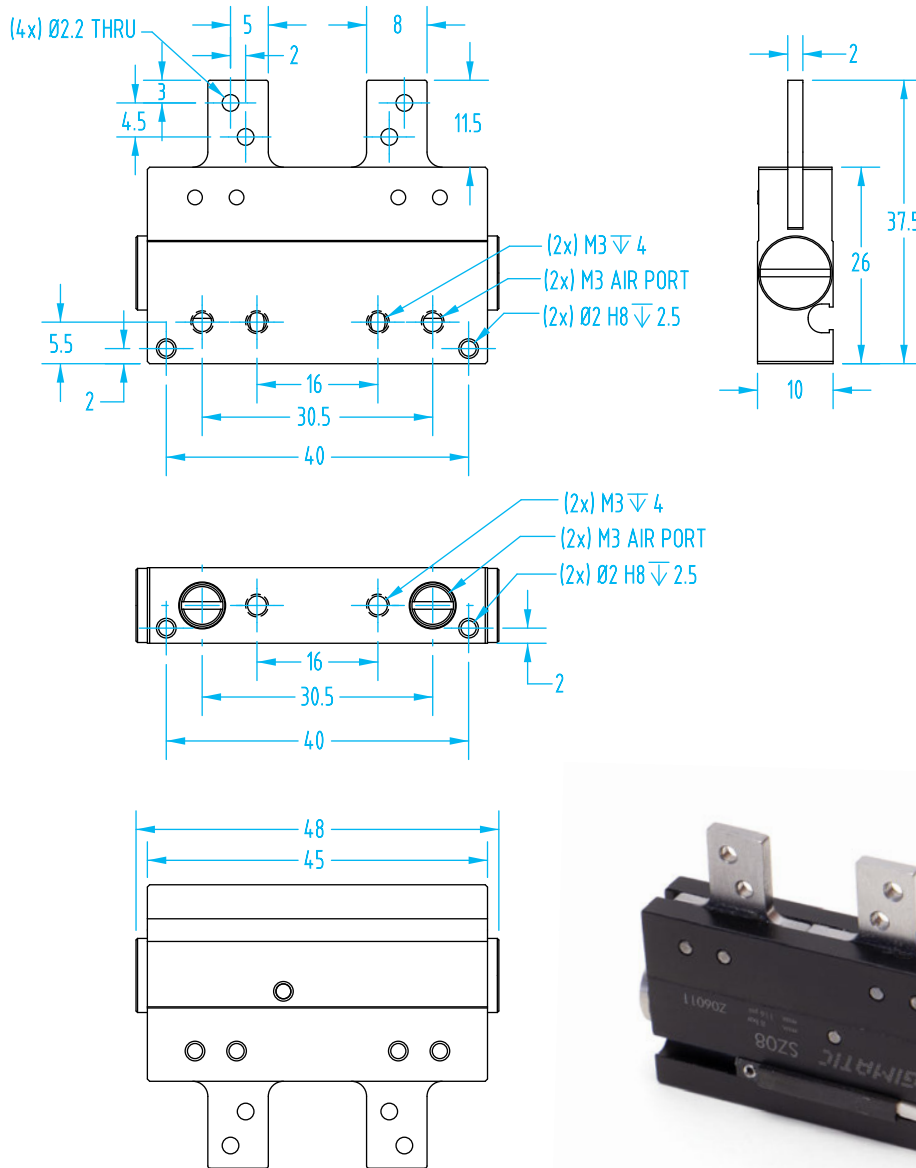
Quick#	7656	7651	7652	7658	7653	7654	Not available
Part#	SZ08-NO	SZ12-NO	SZ16-NO	SZ20-NO	SZ25-NO	SZ32-NO	SZ40-NO
Price	\$180.00	\$189.00	\$201.00	\$210.00	\$228.00	\$278.00	-
Opening total gripping force at 87 psi	8.5 lbf	13.4 lbf	24.2 lbf	41.3 lbf	62.9 lbf	102.1 lbf	-
Closing total gripping force at 87 psi	4 lbf	8.9 lbf	16.1 lbf	26 lbf	40.4 lbf	68.7 lbf	-

See EMI website for more information about SZ Normally Open and Normally Closed grippers

Wide Angle Gripper – SZ

SZ08, SZ08-NO
#7655 , #7656

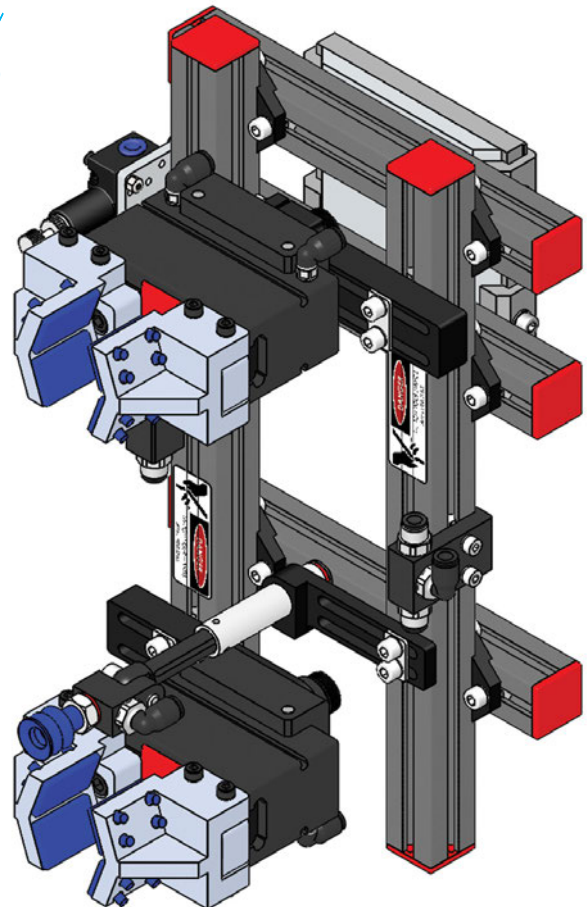
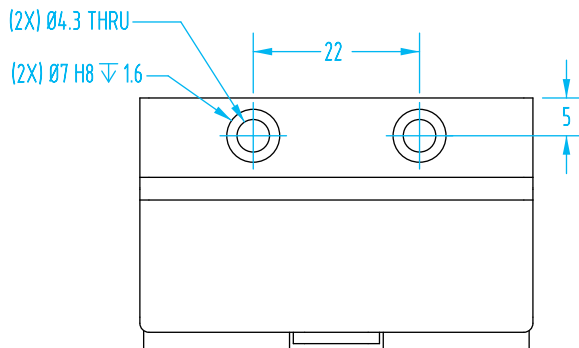
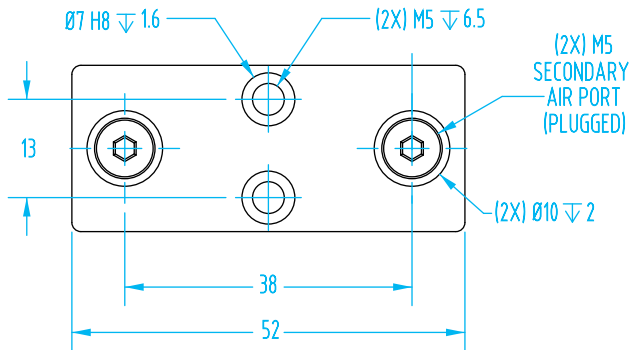
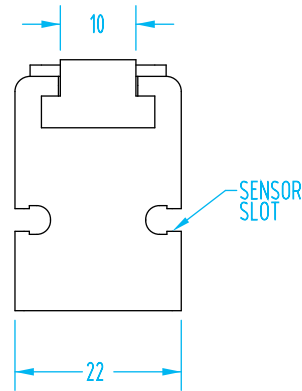
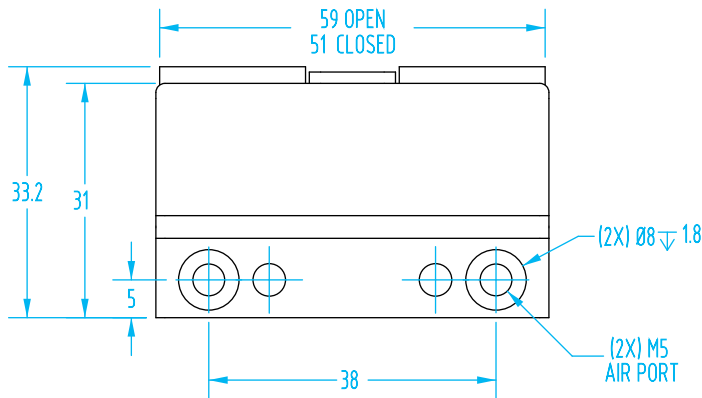
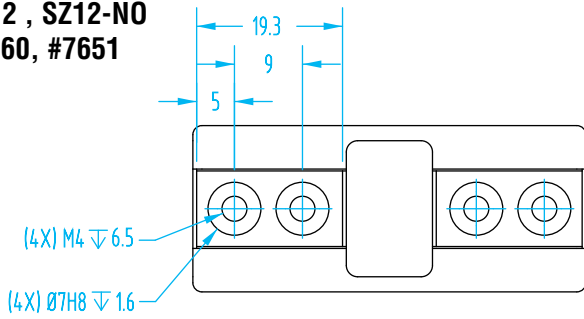
(Dimensioned drawing shown full scale)



Wide Angle Gripper – SZ

(Dimensioned drawing shown full scale)

**SZ12 , SZ12-NO
#6760, #7651**

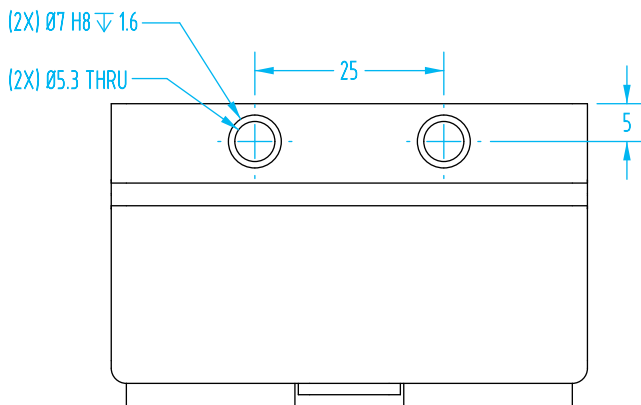
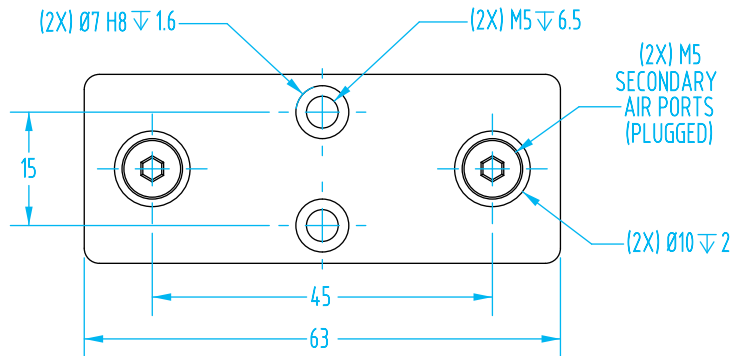
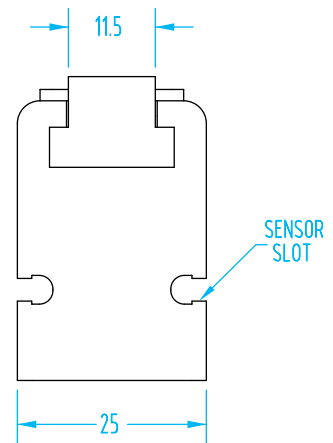
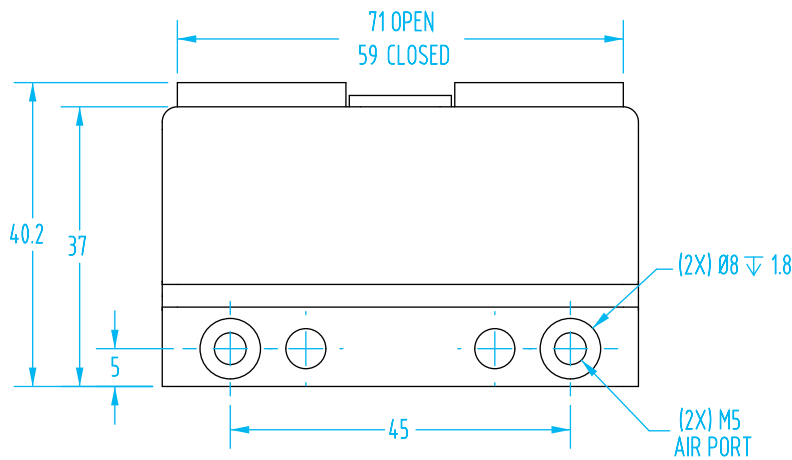
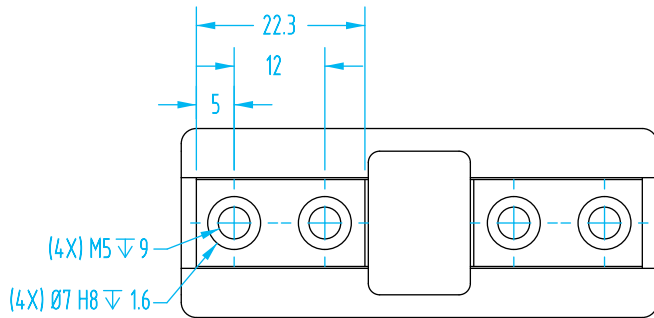


**Custom 3D Printed or Machined
Fingers from EMI!**

Wide Angle Gripper – SZ

(Dimensioned drawing shown full scale)

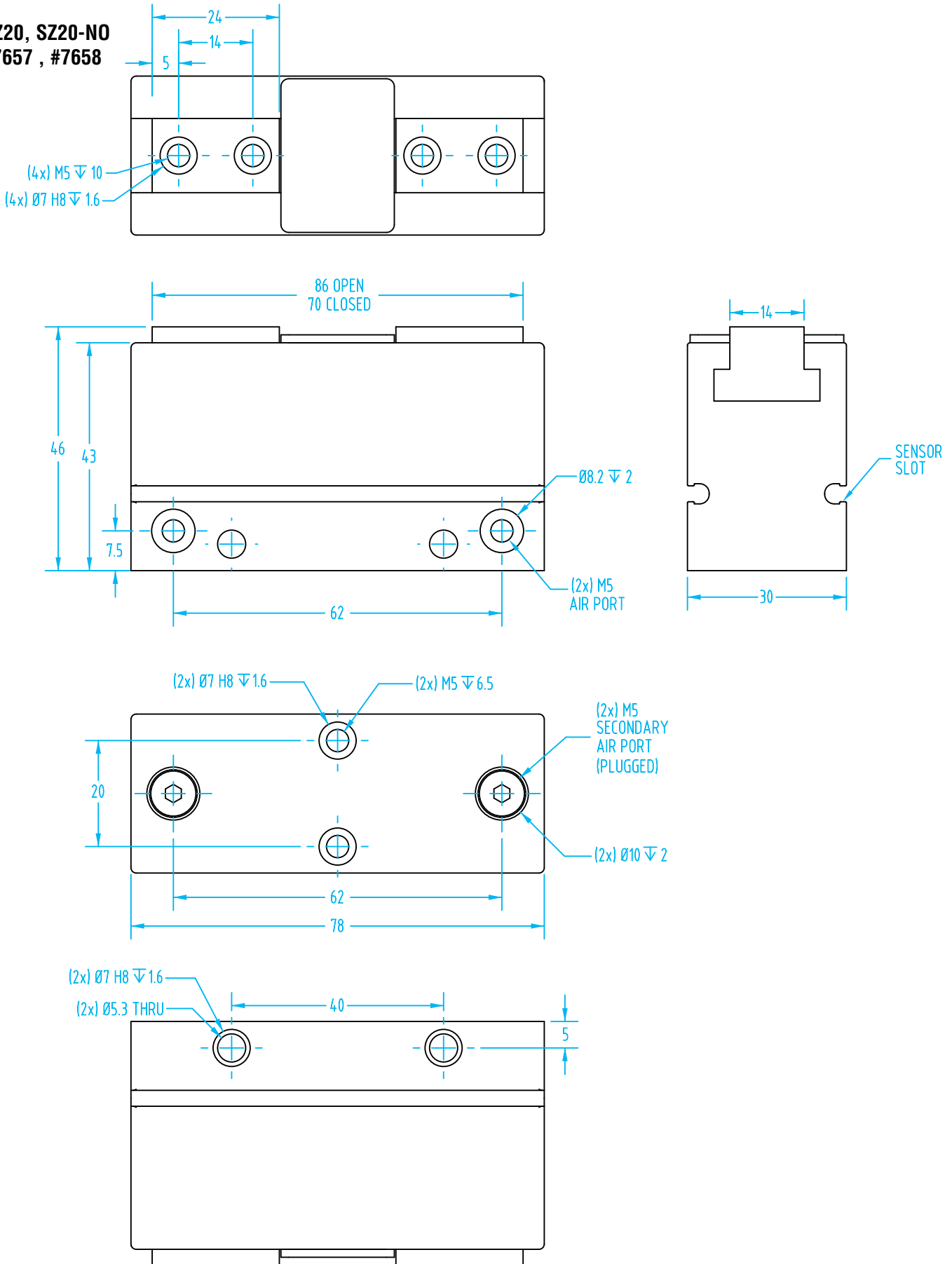
**SZ16, SZ16-NO
#6761, #7652**



Wide Angle Gripper – SZ

(Dimensioned drawing shown full scale)

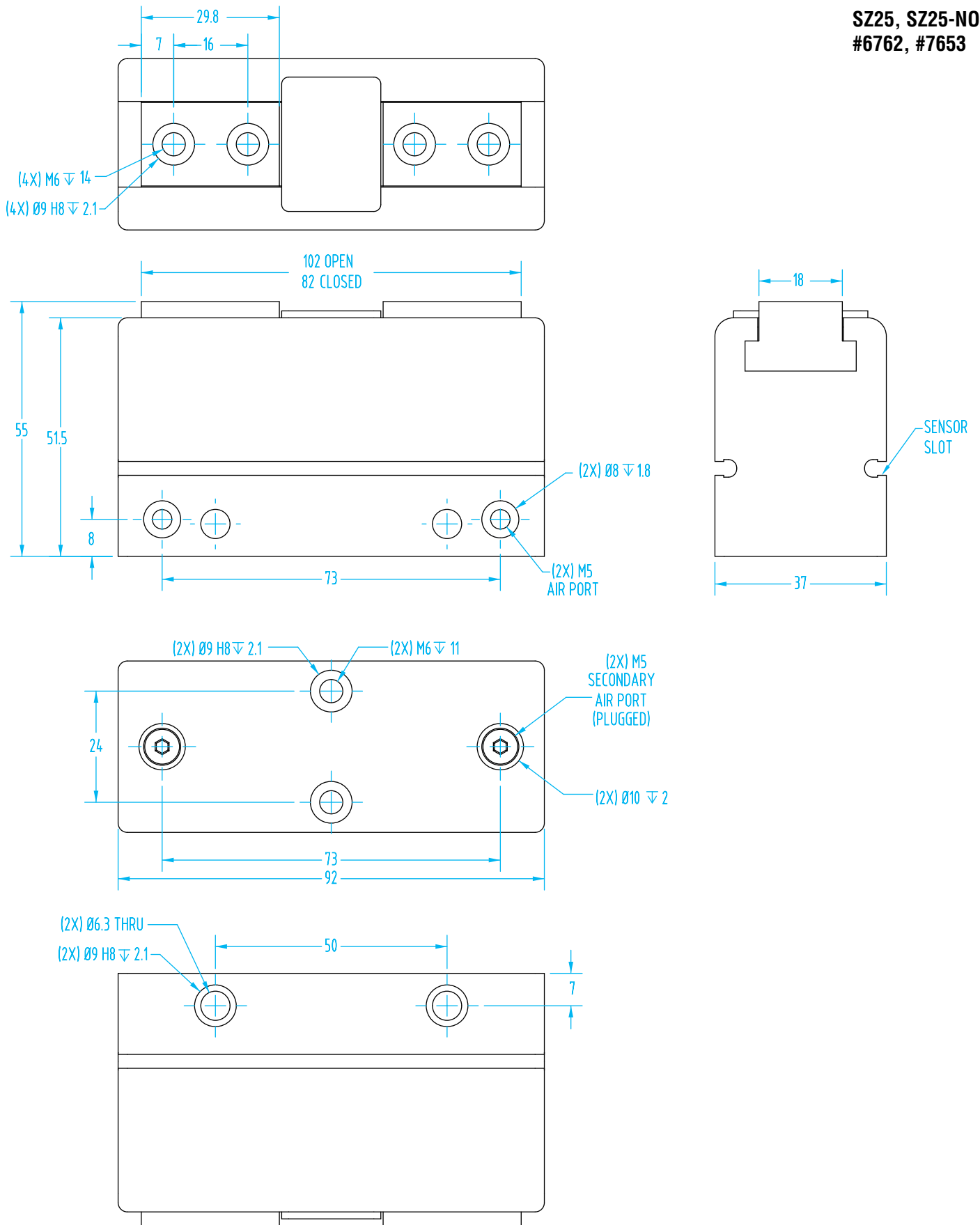
**SZ20, SZ20-N0
#7657, #7658**



Wide Angle Gripper – SZ

(Dimensioned drawing shown at 90% scale)

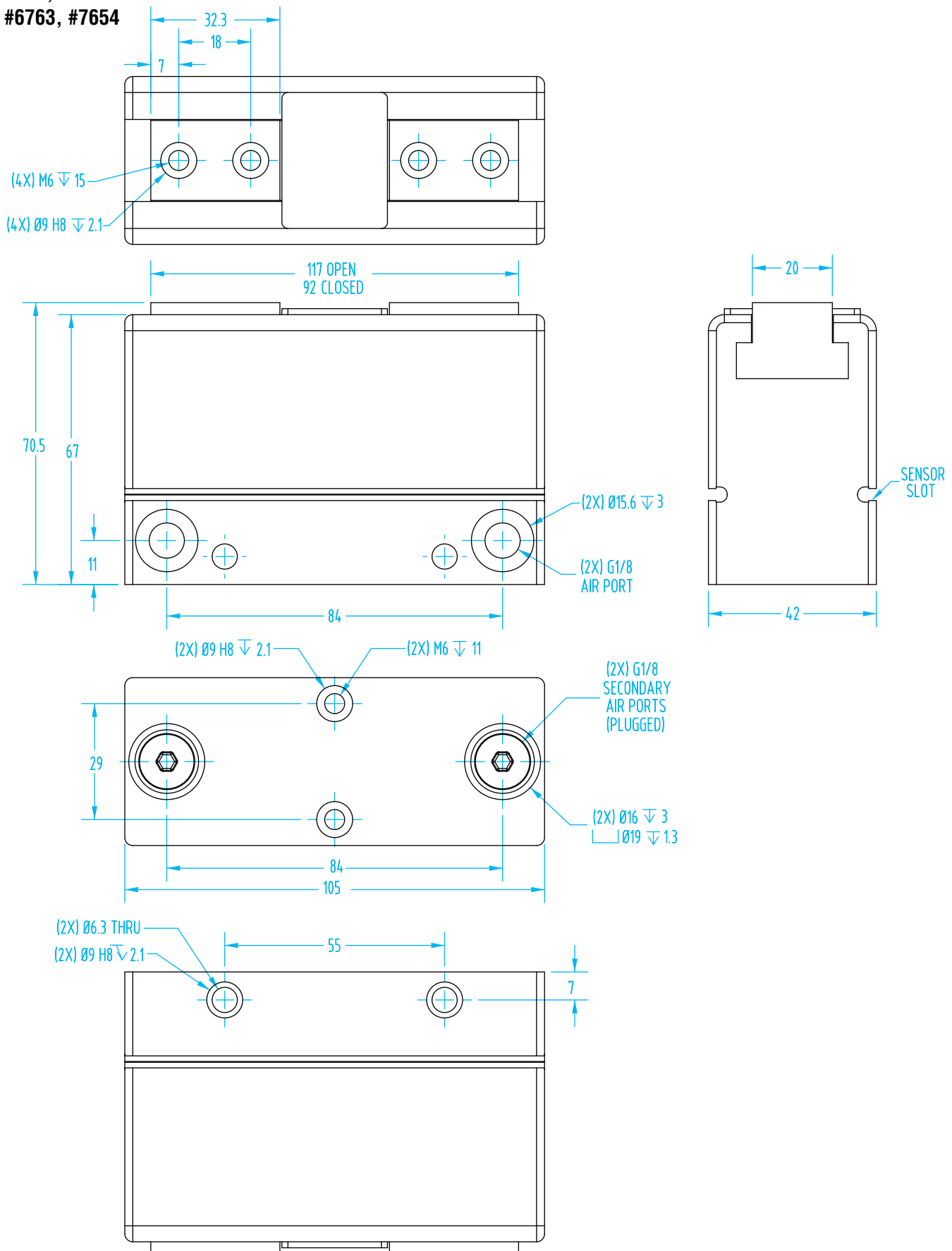
**SZ25, SZ25-N0
#6762, #7653**



Wide Angle Gripper – SZ

(Dimensioned drawing shown at 75% scale)

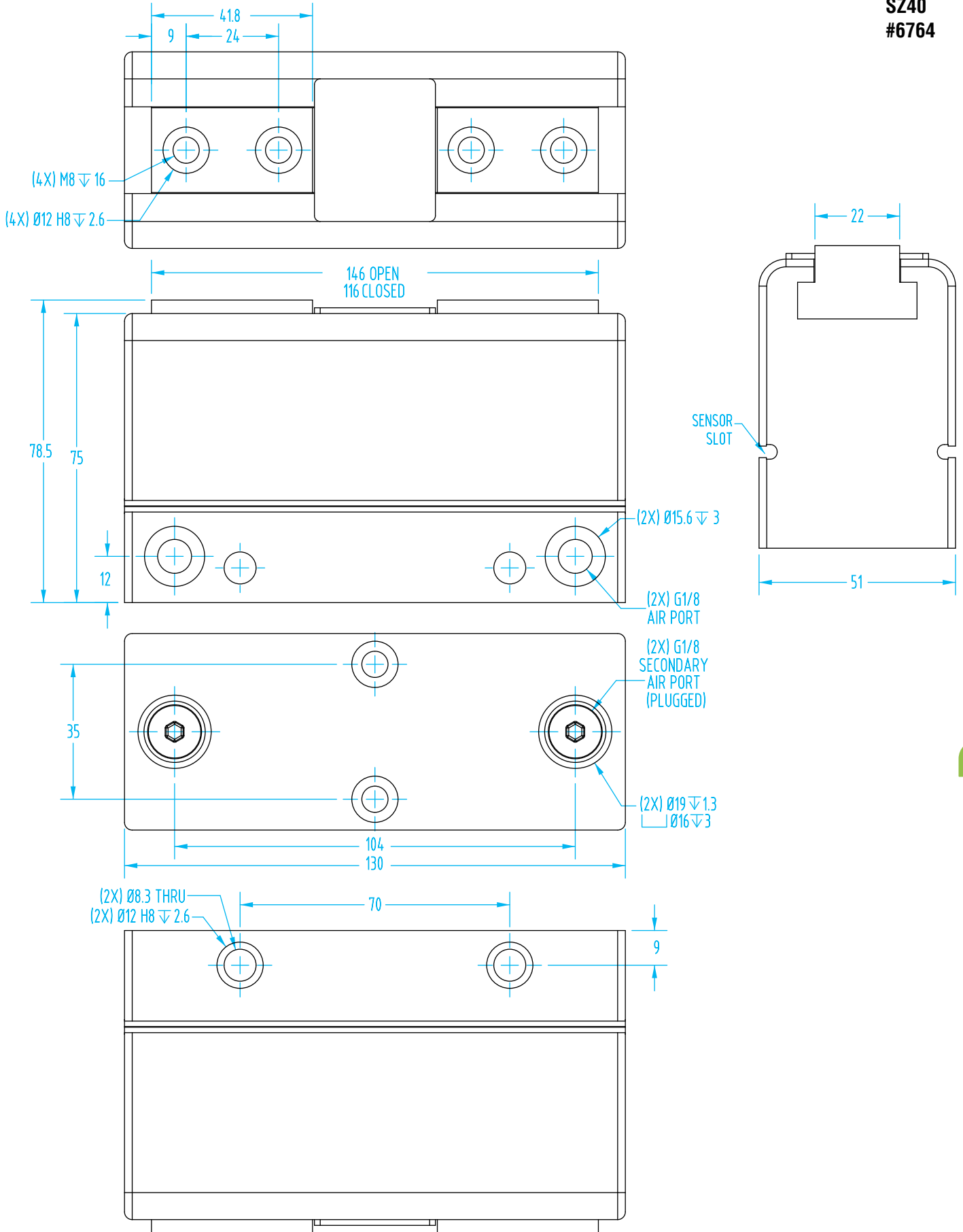
SZ32, SZ32-N0
#6763, #7654



Wide Angle Gripper – SZ

**SZ40
#6764**

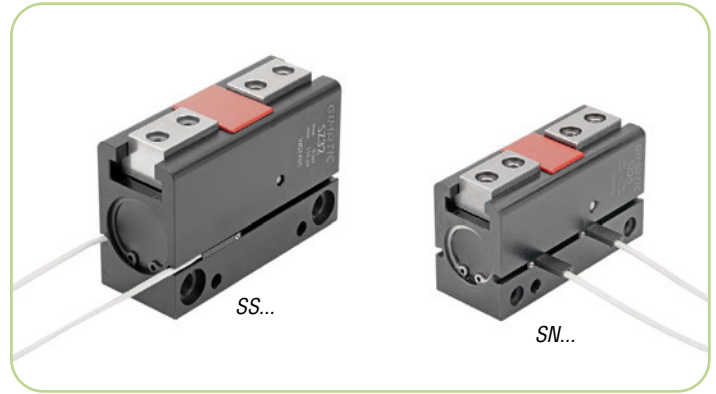
(Dimensioned drawing shown at 75% scale)



Wide Angle Gripper – SZ

Sensors

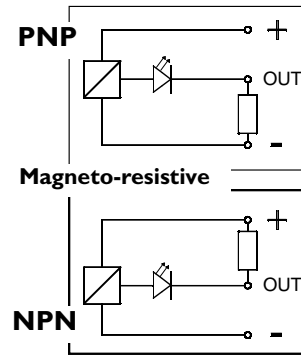
The operating position can be checked by sensors (optional), that detect the magnet on the piston inside. Therefore a nearby big mass of ferromagnetic material or intense magnetic fields may cause sensing troubles.



Quick#	Part#	Type	Connection	Price
3-wire, SS type 'C' slot magnetoresistive sensor				
1882	SS4N225G	PNP	with lead, 2.5m long	\$27.20
1883	SS4M225G	NPN	with lead, 2.5m long	\$27.20
6282	SS3N203G	PNP	M8 male connector, 0.3m long	\$31.16
1884	SS3M203G	NPN	M8 male connector, 0.3m long	\$31.16
3-wire, 90° Lead exit, SN type 'C' slot magnetoresistive sensor				
6278	SN4N225G	PNP	with lead, 2.5m long	\$27.20
6357	SN4M225G	NPN	with lead, 2.5m long	\$27.20
6277	SN3N203G	PNP	M8 male connector, 0.3m long	\$31.16
6356	SN3M203G	NPN	M8 male connector, 0.3m long	\$31.16

Note: M8 Extension cables Quick#'s 2582 & 2583 available on page 985.

See Sensor Reference Guide on page 1010 for a complete list of sensors for SZ Grippers.

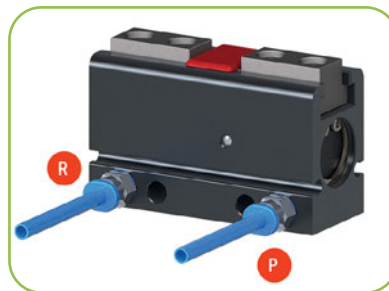
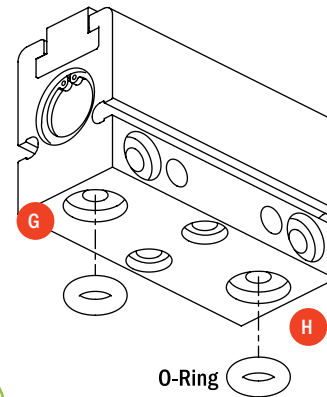


Compressed air feeding

The compressed air feeding can be accomplished on the lateral air ports (P and R) with fittings and hoses (not supplied). Or it can be accomplished directly through the bottom air ports (G and H) by removing the plugs (E and F).

Compressed air in P - H: gripper opening.
Compressed air in R - G: gripper closing.

The compressed air, must be filtered from 5 to 40 µm. Maintain the medium selected at the start, lubricated or not, for the complete service life of the gripper. The pneumatic circuit must be pressurized progressively, to avoid uncontrolled movements.



	SZ08	SZ12	SZ16	SZ20	SZ25	SZ32	SZ40
O-Ring	Ø1x6	Ø2.62x5.23	Ø2.62x5.23	Ø2.62x5.23	Ø2.62x5.23	Ø1.78x15.6	Ø1.78x15.6

Wide Angle Gripper – SZ

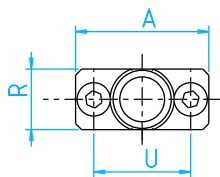
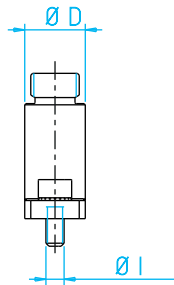
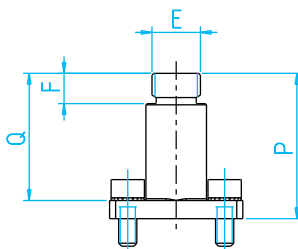
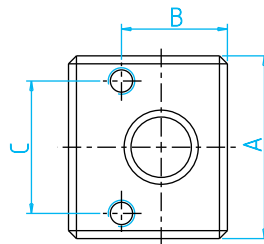
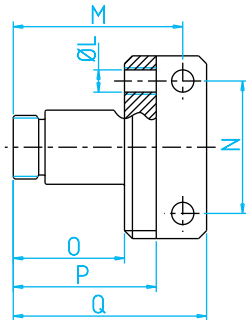
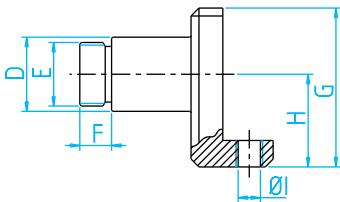


#7322

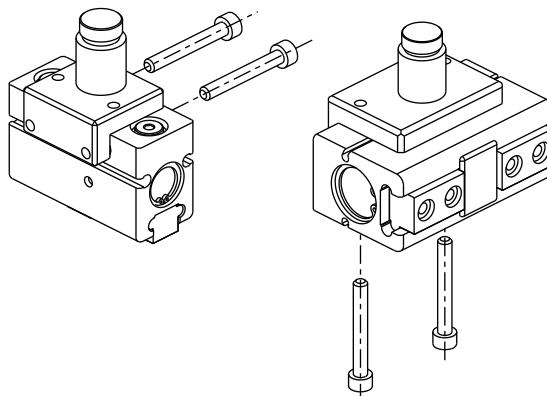
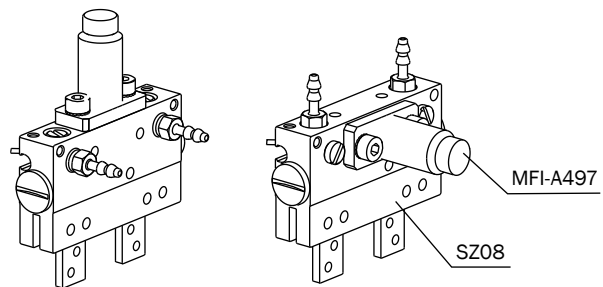
Mounting Brackets for SZ Grippers

Quick#	Part#	Price	Use with:	Wt.
7716	MFI-A497	\$23.04	SZ08..	8g
7321	MFI-A325	\$33.40	SZ12..	33g
7322	MFI-A326	\$34.41	SZ16..	41g
7717	MFI-A499	\$53.88	SZ20..	90g
7323	MFI-A327	\$56.34	SZ25..	140g

Hardware included.



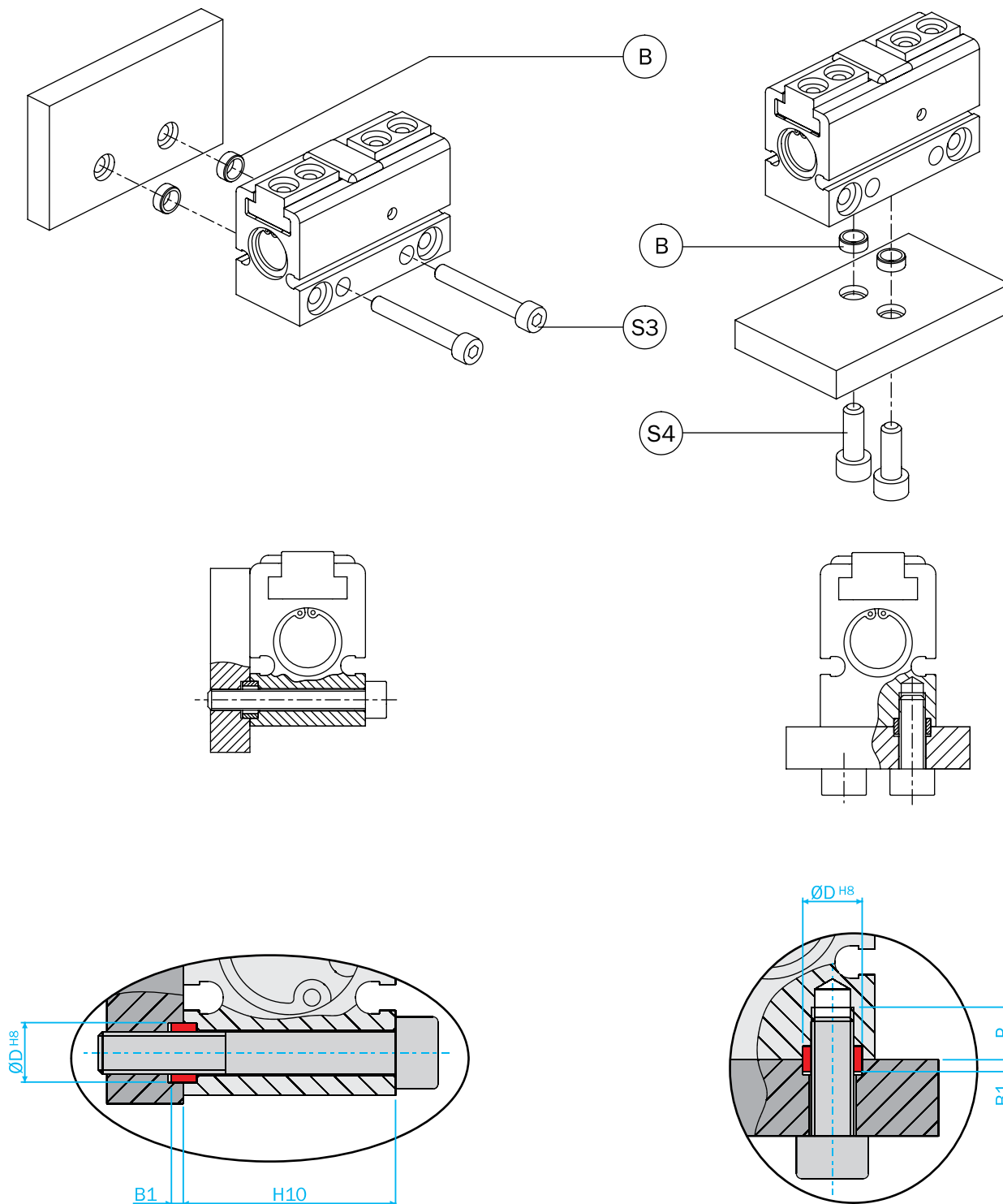
Quick#	7716	7321	7322	7717	7323
For:	SZ08	SZ12	SZ16	SZ20	SZ25
A	22	29	34.5	50	62
B	-	17	20	25	30
C	16	22	25	40	50
D	Ø10	Ø14	Ø14	Ø20	Ø20
E	M8x1	M12x1	M12x1	M17x1	M17x1
F	5	6	6	8	8
G	-	28	30	38	45
H	-	17	17.5	23	26.5
I	M3	M4	M5	M5	M6
L	-	M4	M5	M5	M6
M	-	32	32	42	46
N	-	22	25	40	50
O	-	21	21	29	29
P	24	27	27	37	39
Q	21	35.5	36.5	49	52
R	10	-	-	-	-



Wide Angle Gripper – SZ

Fastening

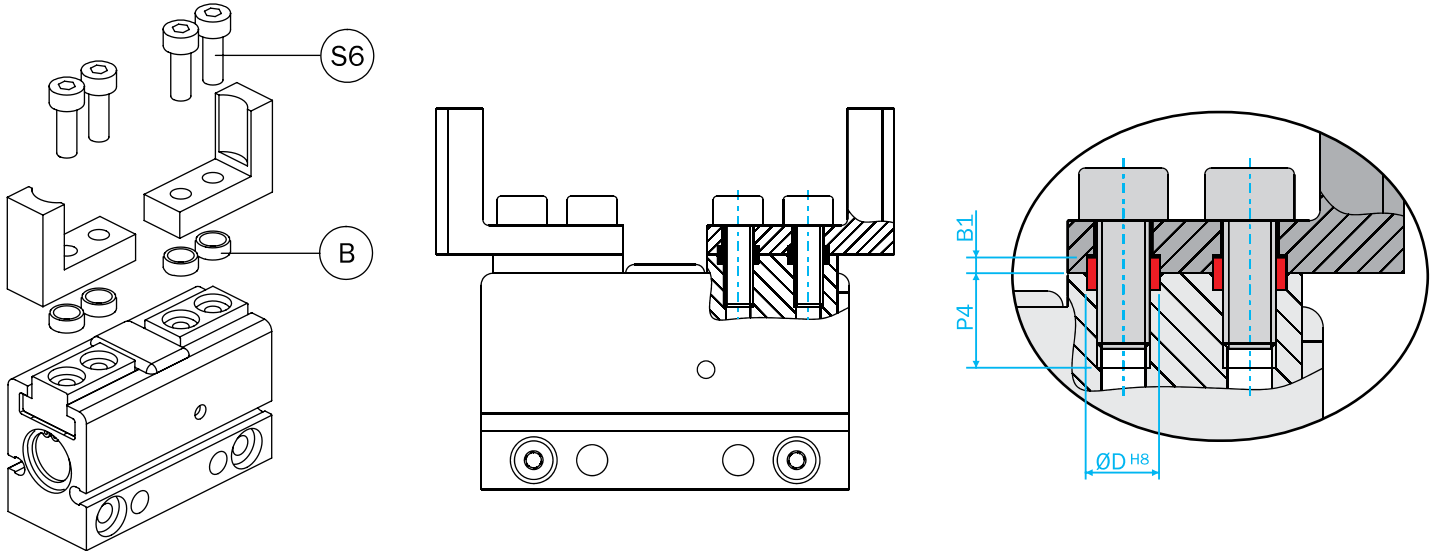
The gripper can be fastened to a static or moving part. When on a moving part, you must pay attention to the forces created by inertia over the gripper and its load. It can be fastened to one side or to the base. Use two(2) screws (S3) and two(2) centering sleeves (B).



Wide Angle Gripper – SZ

Jaw Fastening

The gripping jaws should be as short and light as possible. They must be fastened by two(2) screws (S6) and two(2) centering sleeves (B).



Four (4) centering sleeves (B) for the gripping tools and two (2) centering sleeves (B) for housing are supplied in the packaging.

	SZ08	SZ12	SZ16	SZ20	SZ25	SZ32	SZ40
B	-	Ø7 H=3	Ø7 H=3	Ø7 H=3	Ø9 H=4	Ø9 H=4	Ø12 H=5
B1	-	1.4	1.4	1.4	1.9	1.9	2.4
D	-	Ø7 H ⁸	Ø7 H ⁸	Ø7 H ⁸	Ø9 H ⁸	Ø9 H ⁸	Ø12 H ⁸
S3	M3	M4	M5	M5	M6	M6	M8
S4	M3	M5	M5	M5	M6	M6	M8
P5	-	6.5	6.5	6.5	11	11	15
H10	-	22	25	30	37	42	51
S6	M2	M4	M5	M5	M6	M6	M8
P4	-	6.5	9	10	14	15	16

Custom 3D Printed or Machined Fingers from EMI!

See our Material Comparison Charts on page 109 to choose the best material for your application!

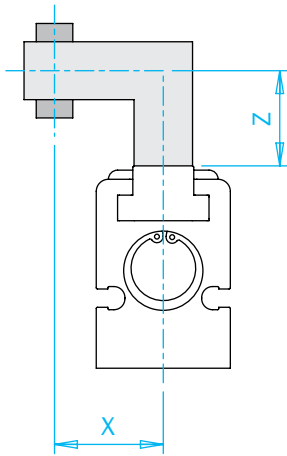


Wide Angle Gripper – SZ

Gripping force

The graphs show the gripping force on each jaw, as a function of the operating pressure, the gripping tool length 'Z' and the overhanging 'X'.

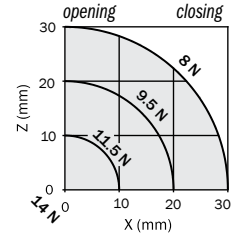
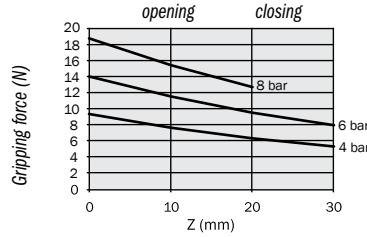
The force shown in these graphs refers to one jaw. The total force is double.



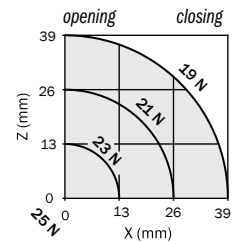
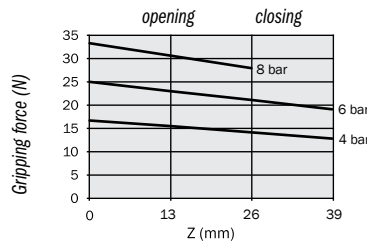
Reference:

- Force:** N x 0.225 = lbf
- Torque:** Nm x 8.850 = in-lbf
- Torque:** Ncm x 0.089 = in-lbf
- Pressure:** bar x 14.5 = psi

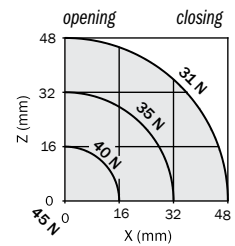
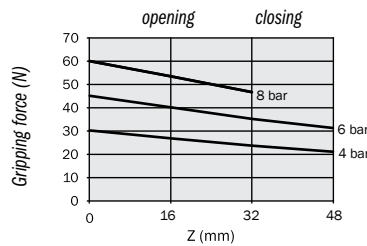
SZ08



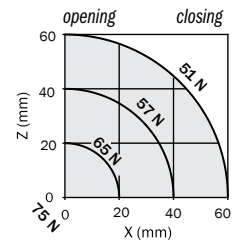
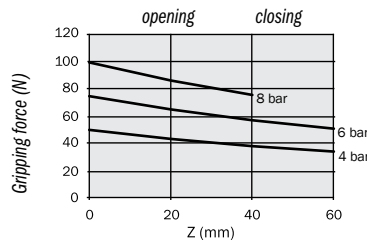
SZ12



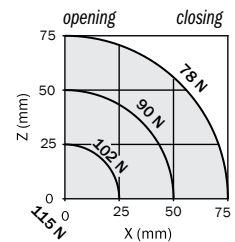
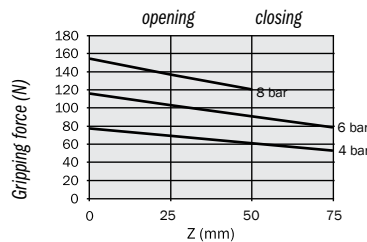
SZ16



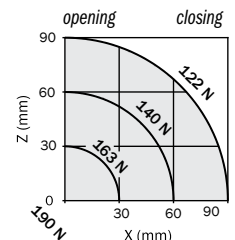
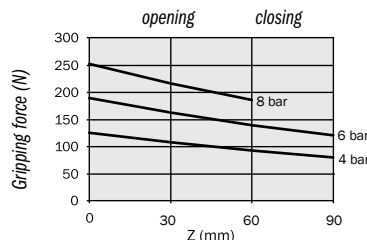
SZ25



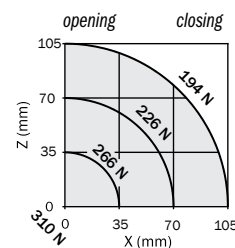
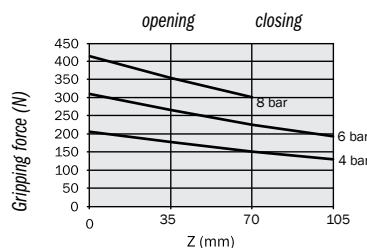
SZ25



SZ32



SZ40



Wide Angle Gripper – SZ

Safety loads

Check the table for maximum permitted loads. Excessive forces or torques can damage the gripper, cause functioning troubles and endanger the safety of the operator.

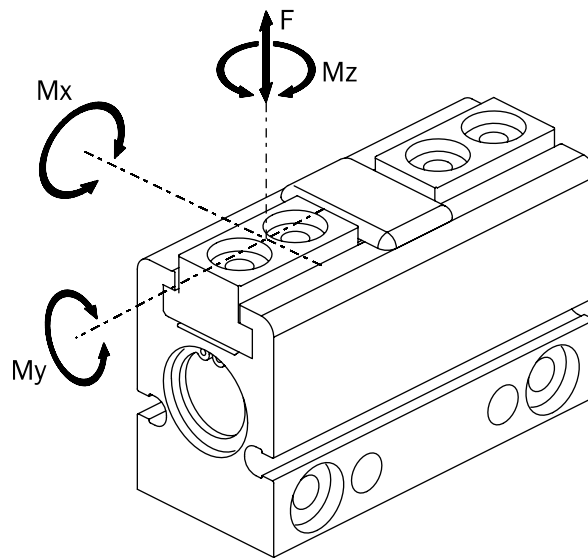
F_s , $M_x s$, $M_y s$, $M_z s$, are maximum permitted static loads.

Static means with motionless jaws.

F_d , $M_x d$, $M_y d$, $M_z d$, are maximum permitted dynamic loads. Dynamic means with running jaws.

The following tables show the specified maximum loads (m) on each gripping tool as function of closing or opening time. Use flow controllers (not supplied) to get the proper speed.

Fittings Available
on page 1047



Reference:

Force: $N \times 0.225 = \text{lbf}$

Torque: $Nm \times 8.850 = \text{in-lbf}$

Torque: $Ncm \times 0.089 = \text{in-lbf}$

Pressure: $\text{bar} \times 14.5 = \text{psi}$

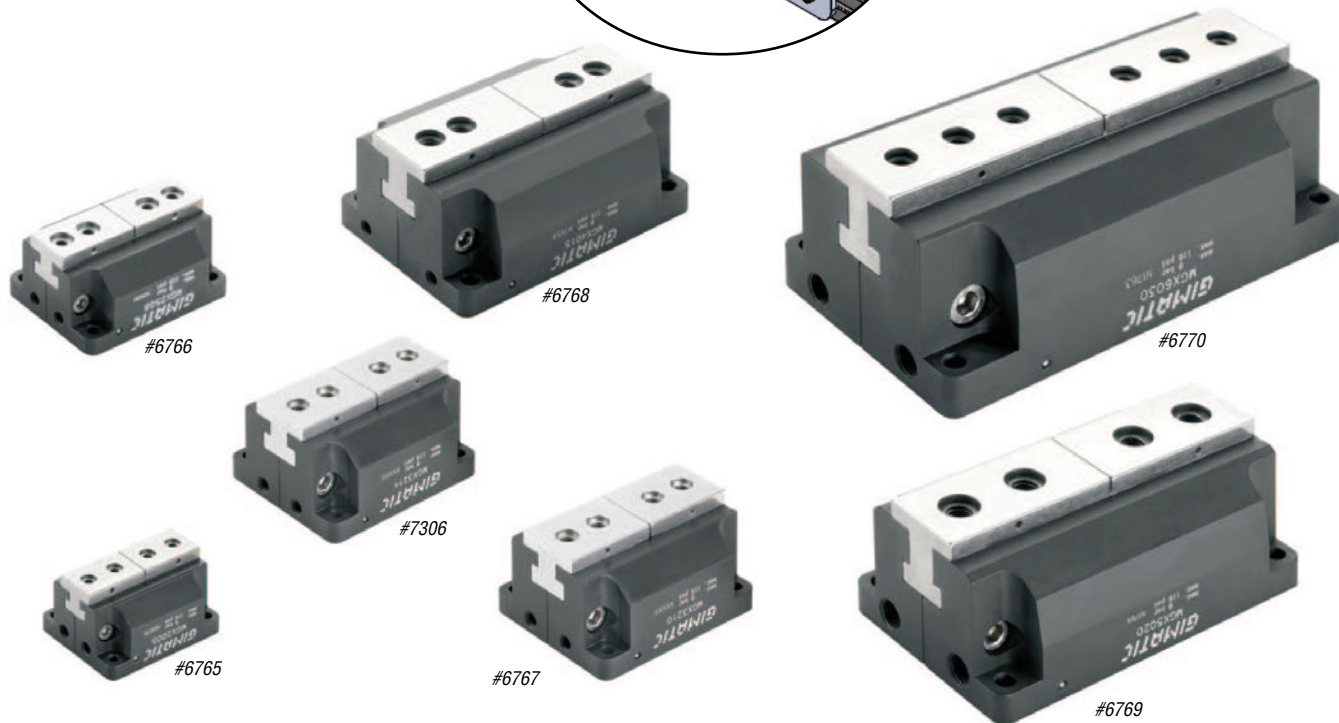
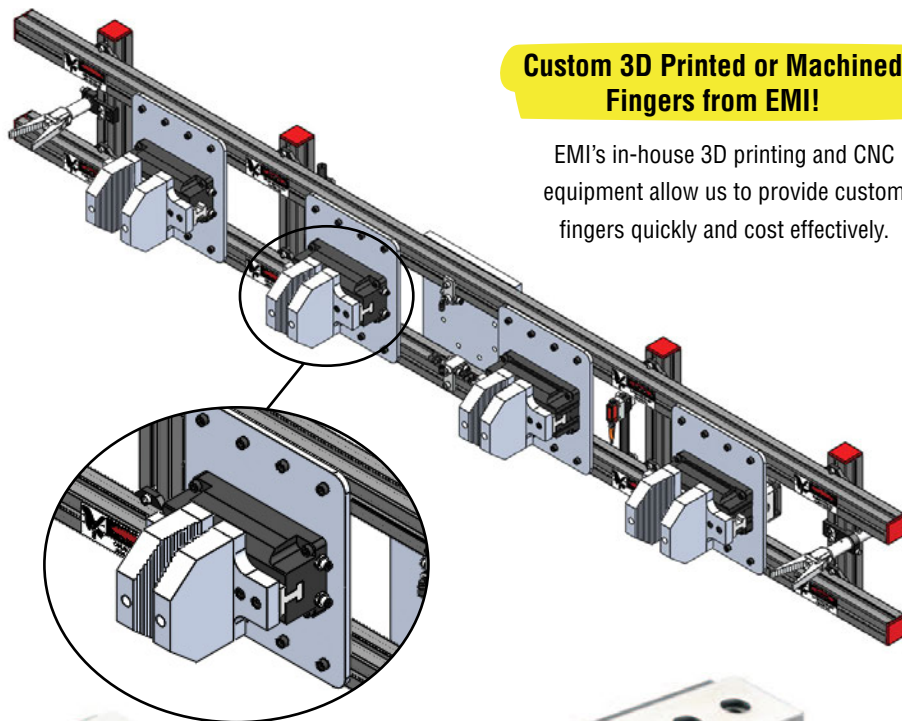
	SZ08	SZ12	SZ16	SZ20	SZ25	SZ32	SZ40
F s	10 N	50 N	100 N	150 N	200 N	400 N	700 N
Mx s	0.25 Nm	0.5 Nm	2 Nm	4 Nm	6 Nm	18 Nm	36 Nm
My s	0.25 Nm	0.3 Nm	1.5 Nm	3 Nm	4 Nm	12 Nm	24 Nm
Mz s	0.25 Nm	0.5 Nm	2 Nm	4 Nm	6 Nm	18 Nm	36 Nm
F d	0.2 N	1 N	2 N	3 N	4 N	8 N	12 Nm
Mx d	0.25 Nm	1Ncm	4 Ncm	8 Ncm	12 Ncm	24 Ncm	36 Ncm
My d	0.25 Nm	0.8 Ncm	3 Ncm	6 Ncm	8 Ncm	16 Ncm	24 Ncm
Mz d	0.25 Nm	1 Ncm	4 Ncm	8 Ncm	12 Ncm	24 Ncm	36 Ncm
m 0.3s	-	-	-	-	-	800g	1200g
m 0.2s	-	-	-	300g	400g	600g	900g
m 0.12s	-	-	200g	250g	320g	400g	600g
m 0.07s	20g	100g	160g	200g	240g	300g	-
m 0.05s	15g	80g	120g	150g	160g	-	-
m 0.04s	10g	60g	80g	-	-	-	-
m 0.02s	8g	40g	-	-	-	-	-

High-Precision Gripper – MGX

- Flat profile.
- Self-centering.
- Robust guidance.
- High gripping force.
- Lightweight and small size.
- High dimensional accuracy.
- Spring closed (-NC) or spring open (-NO) option available.
- See Sensor Reference Guide on page 1010 for a complete list of compatible sensors.

Custom 3D Printed or Machined Fingers from EMI!

EMI's in-house 3D printing and CNC equipment allow us to provide custom fingers quickly and cost effectively.



Quick#	6765	6766	6767	7306	6768	6769	6770
Part#	MGX2005	MGX2508	MGX3210	MGX3214	MGX4015	MGX5020	MGX6030
Price	\$484.00	\$546.00	\$609.00	\$609.00	\$641.00	\$703.00	\$766.00
Medium	Filtered, lubricated / non-lubricated compressed air						
Pressure range	30–116 psi						
Total gripping force at 87 psi	40.2 lbf	65.2 lbf	103.4 lbf	72 lbf	168.6 lbf	292.2 lbf	373.2 lbf
Total stroke (±0.3mm)	5mm	8mm	10mm	14.6mm	15mm	20mm	30mm
Maximum repeatability tolerance	±0.02mm						
Midstroke detection capability	Yes, see Sensor Reference Guide on page 1010 for details.						
Weight	95g	150g	270g	270g	545g	900g	1525g

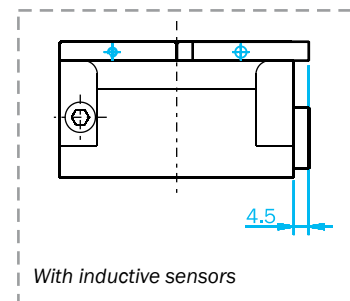
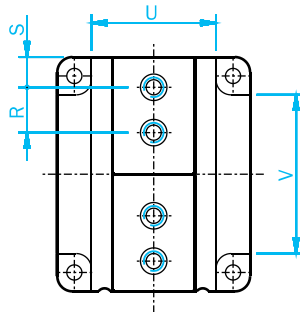
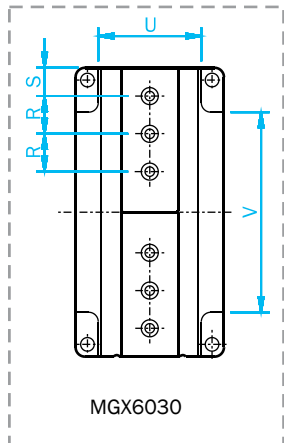
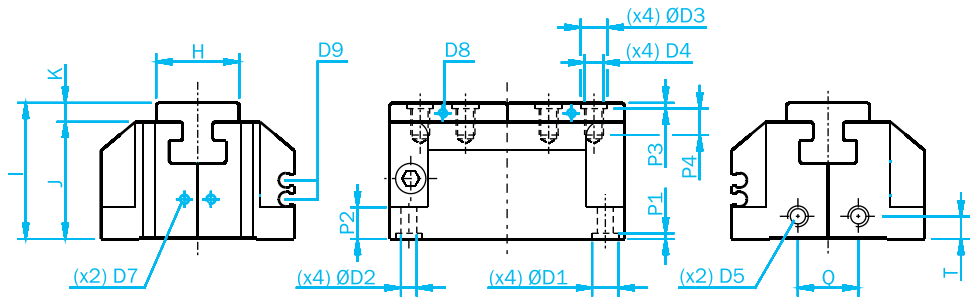
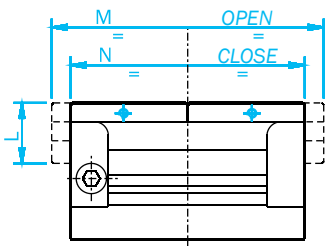
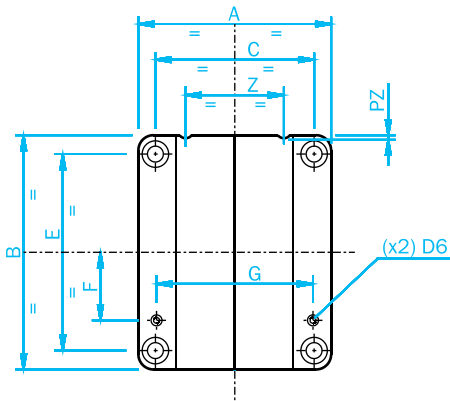
For more information visit: www.EMICorp.com

High-Precision Gripper – MGX

Reference:

- D2-** Thru-hole for gripper fastening
- D5-** Air Connection
- D6-** Direct air feeding
- D7-** Inductive sensor mounting hole
- D8-** Inductive sensor mounting hole
- D9-** Sensor slot

	MGX2005	MGX2508	MGX3210	MGX3214	MGX4015	MGX5020	MGX6030
A	35.8	42	51	51	61.2	70	78.6
B	44	55	62	62	93	118	153
C	28.3	33	42	42	51	58	66
D1	Ø5 H7	Ø7 H7	Ø7 H7	Ø7 H7	Ø7 H7	Ø9 H7	Ø9 H7
D2	Ø3.2	Ø4.2	Ø4.2	Ø4.2	Ø5.2	Ø6.2	Ø6.2
D3	Ø5 H7	Ø7 H7	Ø7 H7	Ø7 H7	Ø9 H7	Ø12 H7	Ø9 H7
D4	M3	M4	M5	M5	M6	M8	M6
D5	M5	M5	M5	M5	M5	G1/8"	G1/8"
D6	M3	M3	M3	M3	M3	M3	M3
E	36.5	46	52	52	80	105	140
F	12.5	15.5	18	18	27.5	37	43.5
G	27.2	333.6	41.4	41.4	49.6	58.6	67.6
H	14	16	22	22	25	28	30
I	26	28.5	36	36	42	49	58
J	22	24	31	31	37	43	51
K	4	4.5	5	5	5	6	7
L	11.2	12.7	16	16	20	25	29
M	49	63	72	76	108	138	183
N	44	55	62	62	93	118	153
P1	1.2	1.5	1.5	1.5	1.5	2	2
P2	5.5	6	8.4	8.4	9	10	13.5
P3	1.2	1.5	1.5	1.5	2	2.5	2.5
P4	5	5.2	7	7	9	12	12
Q	11	12	16	16	31.2	32	40
R	9	10	12	12	12	24	20
S	5.5	6	8	8	12.5	14	15
T	5.8	6	6	6	6	8	8
U	20.8	24	33	33	41.2	46	54.6
V	29	37	42	42	65	88	106
Z	17	20	26	26	30	33	35
PZ	0.5	0.5	0.8	0.8	0.8	0.8	0.8



Compact Angular Gripper – PN

- Double acting.
- Self-centering.
- High efficiency and reliability due to few moving parts.
- Two or three jaws.
- Optional sensors available.

**2022–2023 Design Changes,
Now accept SN Style Sensors**



**Fittings Available
on page 1047**



Quick#	7735	7736	7737	7738	7739	7740
Part#	GSG-PN-010-2	GSG-PN-010-3	GSG-PN-016-2	GSG-PN-016-3	GSG-PN-025-2	GSG-PN-025-3
Price	\$162.00	\$234.00	\$208.00	\$280.00	\$367.00	\$477.00
Medium	Filtered, lubricated / non-lubricated compressed air					
Pressure range	30–116 psi					
Max. torque at 87 psi each jaw	1.32 in-lbf	0.88 in-lbf	5 in-lbf	3.36 in-lbf	22.03 in-lbf	14.69 in-lbf
Total gripper torque at 87 psi	2.65 in-lbf	2.65 in-lbf	10.08 in-lbf	10.08 in-lbf	44.07 in-lbf	44.07 in-lbf
Stroke ($\pm 1^\circ$)	2 x 19°	3 x 19°	2 x 19°	3 x 19°	2 x 19°	3 x 19°
Maximum repeatability tolerance	$\pm 0.1^\circ$					
Weight	32g	36g	100g	110g	340g	400g

Use Quick#s for easy online ordering.

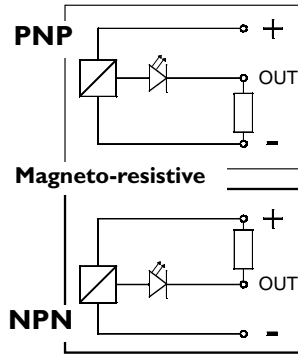
For more information visit: www.EMlcorp.com

Compact Angular Gripper – PN

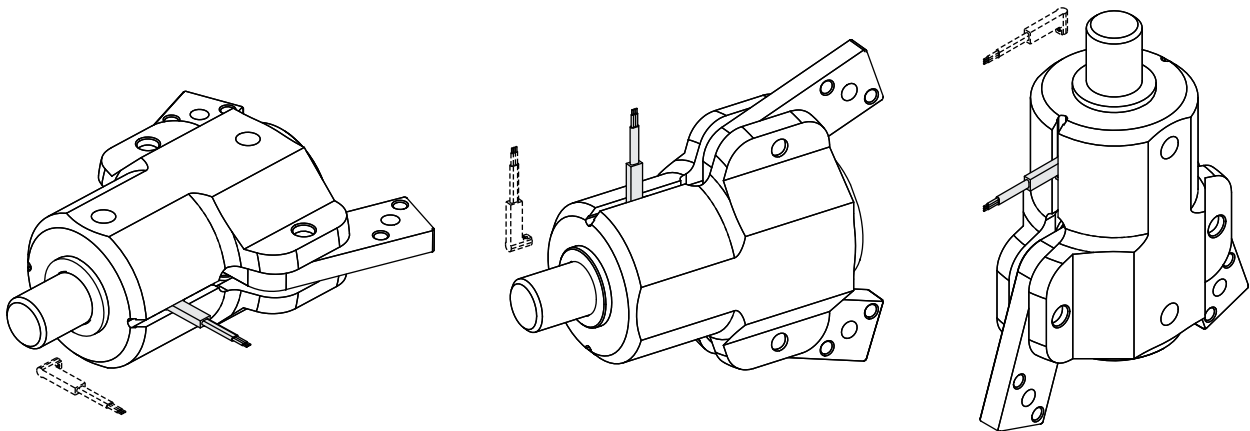
Sensors

The operating position can be checked by sensors fitted in the guides of the grippers body. These sensors detect the position by means of a magnet placed in the piston.

SN...



Quick#	Part#	Signal	Connection	Price
90° Lead exit, 3-wire SN style magneto-resistive sensors				
6278	SN4N225G	PNP	with lead, 2.5m long	\$27.20
6357	SN4M225G	NPN	with lead, 2.5m long	\$27.20
6277	SN3N203G	PNP	M8 male connector, 0.3m long	\$31.16
6356	SN3M203G	NPN	M8 male connector, 0.3m long	\$31.16



Safety loads

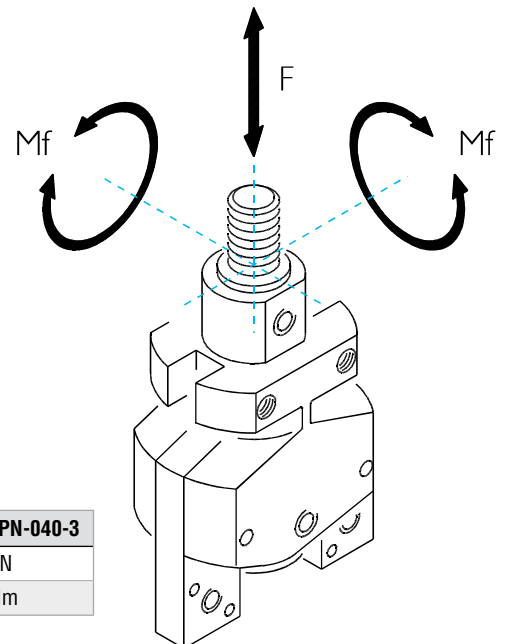
Please observe on the following table the maximum permitted values. Overloading can damage the gripper cause functioning troubles and endanger the safety of the operator. F, Mf: are maximum permitted static loads.

Reference:

Force: N x 0.225 = lbf

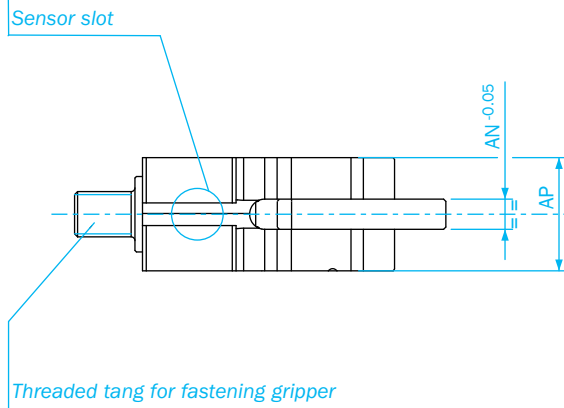
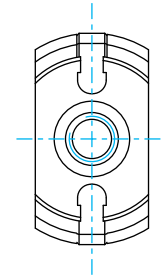
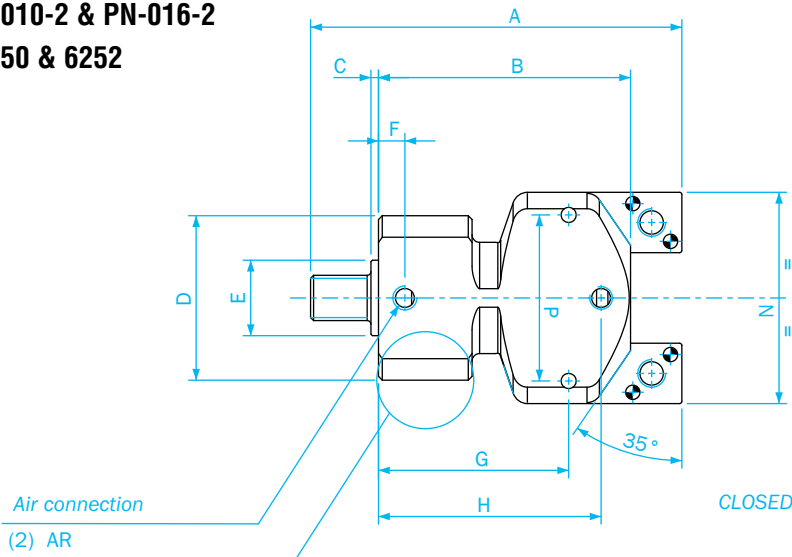
Torque: Nm x 8.850 = in-lbf

	PN-010-2	PN-010-3	PN-016-2	PN-016-3	PN-025-2	PN-025-3	PN-040-2	PN-040-3
F	12N		23N		103N		191N	
Mf	0.2 Nm		0.4 Nm		4 Nm		10 Nm	

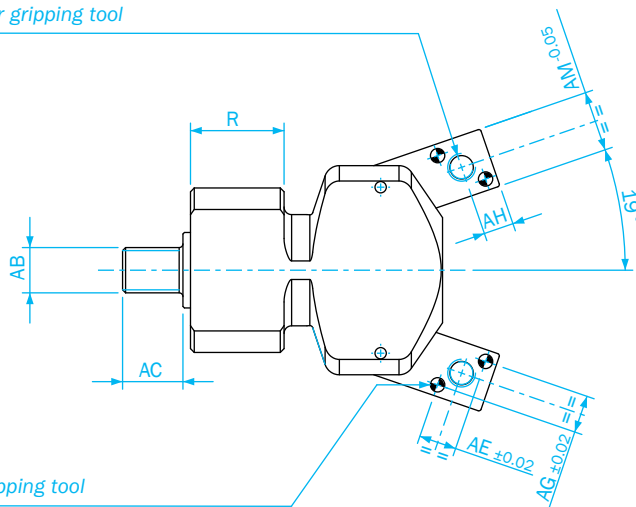


Compact Angular Gripper – PN

PN-010-2 & PN-016-2
#6250 & 6252



Threaded hole for gripping tool
(1+1) AS



Dowel pin hole for gripping tool
(2+2) AT

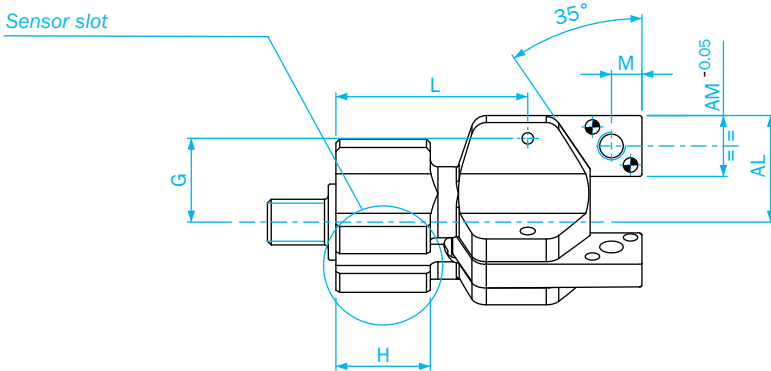
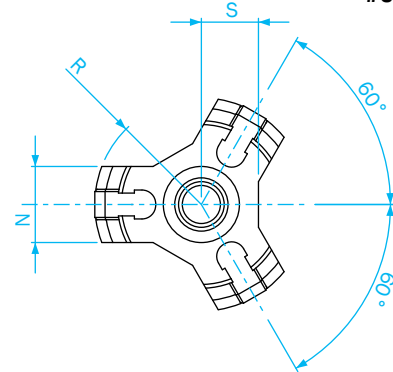
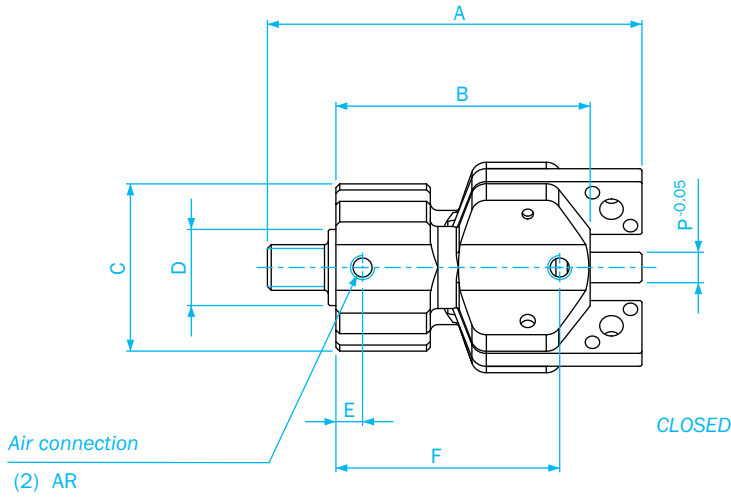
OPEN

Two-Finger Style

	GSG-PN-010-2	GSG-PN-016-2
A	49.2	70.5
B	33.4	48.2
C	1	1
D	Ø22	Ø28.8
E	Ø10 h8	Ø10 h8
F	3.5	4.5
G	26.2	36
H	29.5	41
N	28	44
P	22	35
R	12.4	19.5
AB	M6	M8
AC	8	11.5
AE	5	7
AG	5	8
AH	4	5.5
AM	8	12
AN	4	6
AP	15	22
AR	M3	M5
AS	M3	M4
AT	Ø1.5 H8	Ø2 H8
AV	Ø28	Ø44

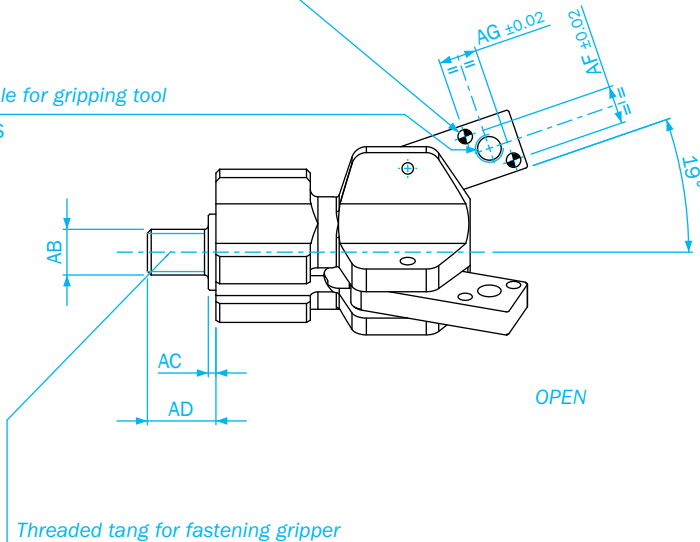
Compact Angular Gripper – PN

**PN-016-3
#6253**



Dowel pin hole for gripping tool
(2+2+2) AT

Threaded hole for gripping tool
(1+1+1) AS



Three-Finger Style

	GSG-PN-010-3	GSG-PN-016-3
A	49.2	70.5
B	33.4	48.2
C	Ø22	Ø28.8
D	Ø10 h8	Ø10 h8
E	3.5	4.5
F	29.4	41
G	11	17.5
H	12.4	19.5
L	25.2	36
M	4	5.5
N	10	15
P	4	6
R	Ø28	Ø44
S	7.5	11
AB	M6	M8
AC	1	1
AD	9	12.5
AF	5	8
AG	5	7
AL	14	22
AM	8	12
AR	M3	M5
AS	M3	M5
AT	Ø1.5 H8	Ø2 H8

Radial Gripper – GX-S

- Double acting.
- Self-centering.
- Very high gripping force at the end of the closing stroke.
- Long life and reliability, maintenance free.
- Optional sensors available on page 705.



Quick#	6939	6940	6941	6942
Part#	GX-10S	GX-16S	GX-20S	GX-25S
Price	\$228.00	\$244.00	\$256.00	\$270.00
Medium	Filtered, lubricated / non-lubricated compressed air			
Pressure range	36–116 psi			
Opening maximum total torque at 87 psi	6.2 in-lbf	21.2 in-lbf	40.8 in-lbf	76 in-lbf
Closing maximum total torque at 87 psi	4.6 in-lbf	18.6 in-lbf	37.2 in-lbf	70.8 in-lbf
Stroke (±4°)	2 x 90°			
Maximum repeatability tolerance	±0.05°			
Midstroke detection capability	Yes, see Sensor Reference Guide on page 1010 for details.			
Weight	70g	140g	290g	510g

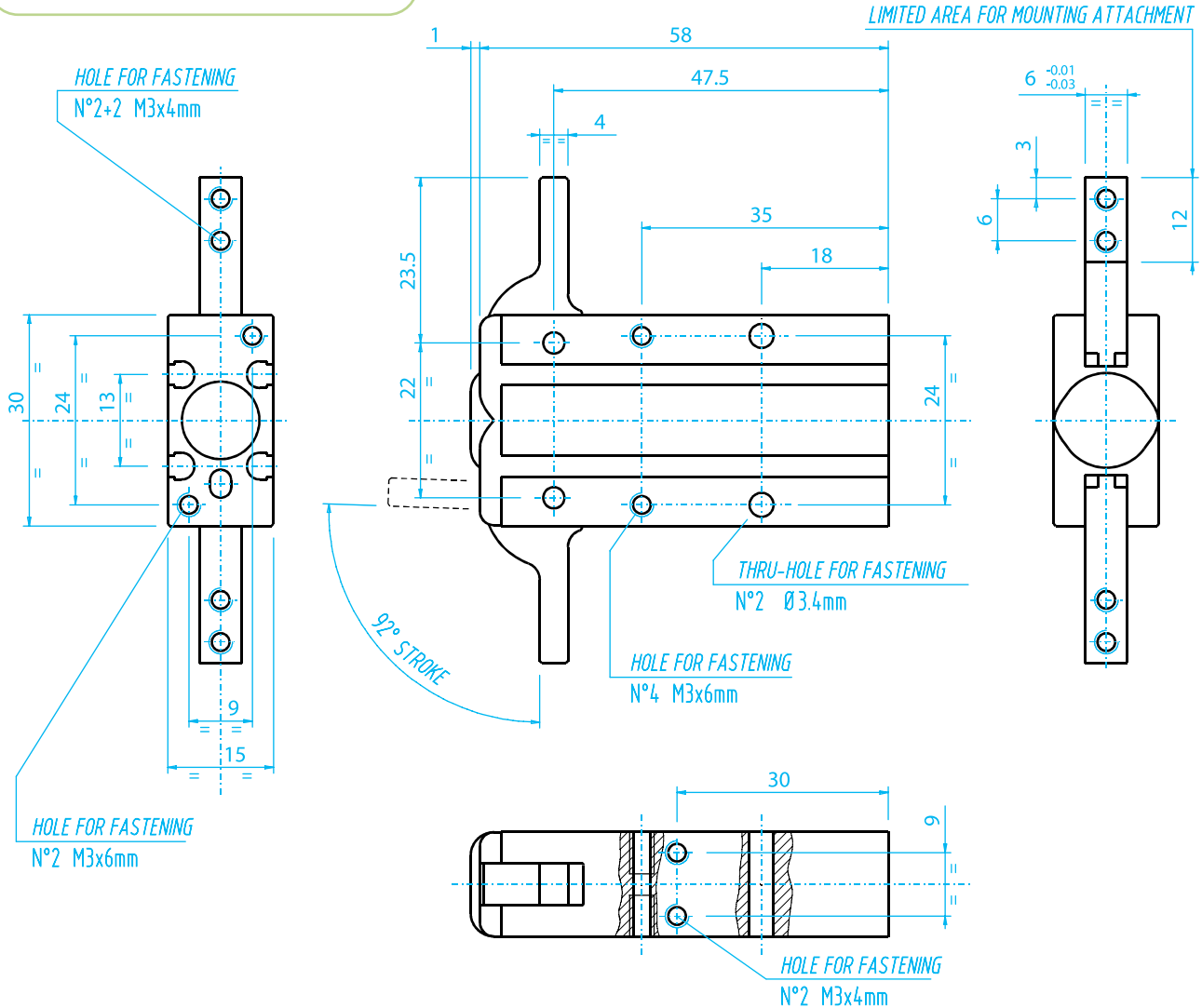
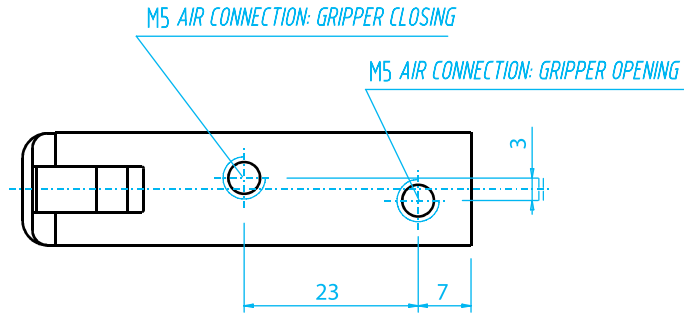
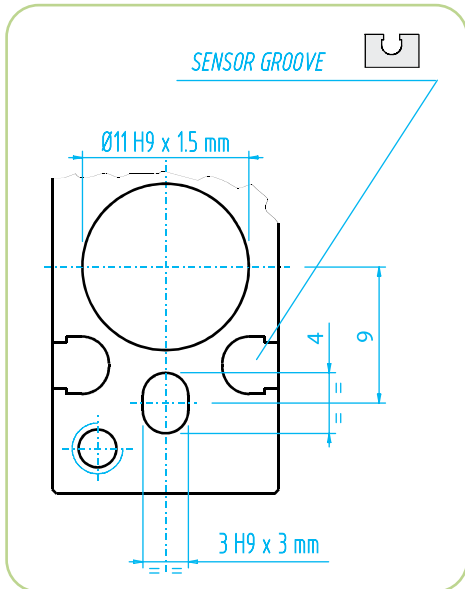


Custom 3D Printed Fingers from EMI!

Radial Gripper – GX-S

**GX-10S
#6939**

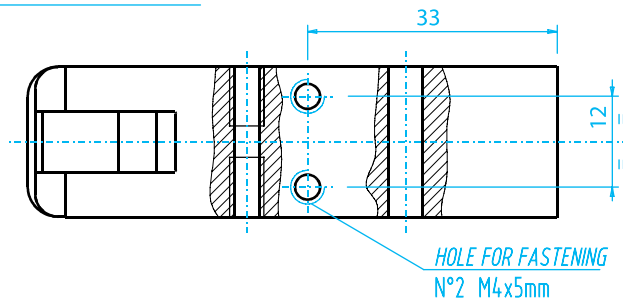
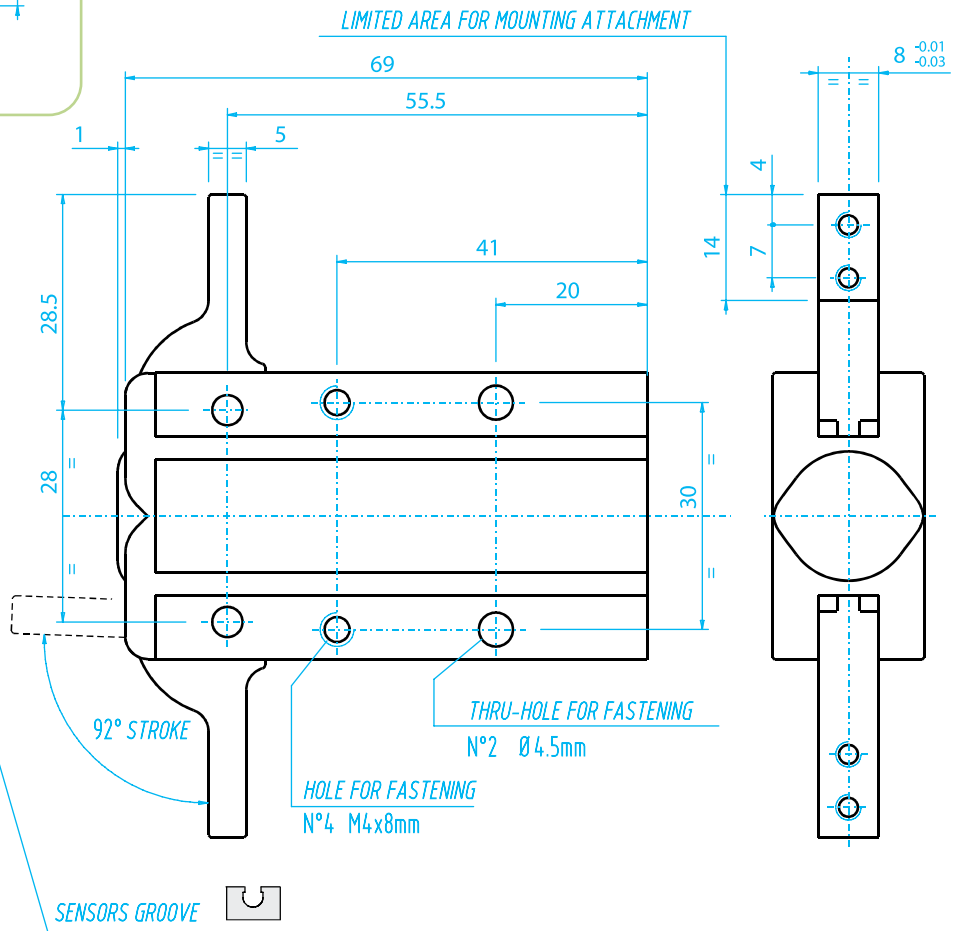
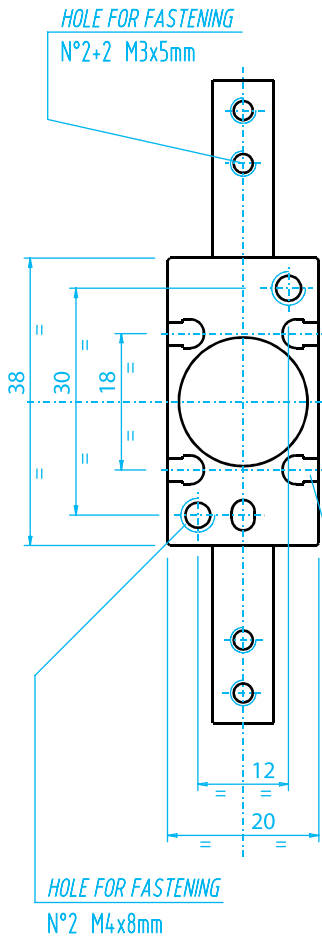
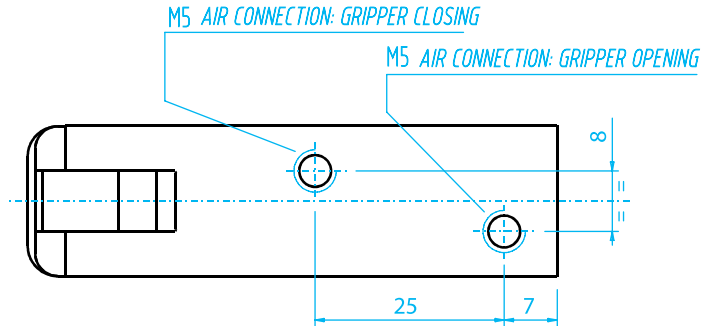
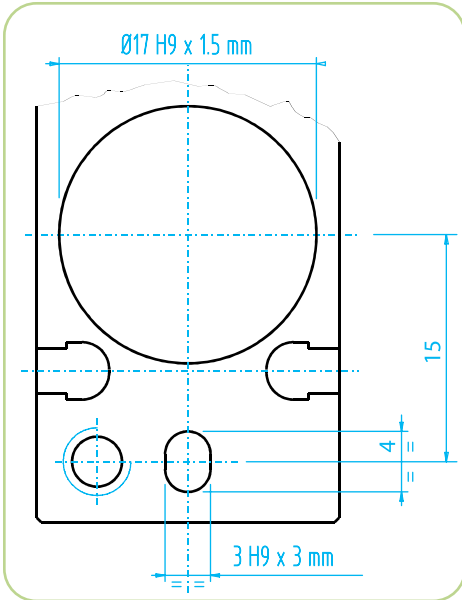
(Dimensioned drawing shown full scale)



Radial Gripper – GX-S

(Dimensioned drawings shown full scale)

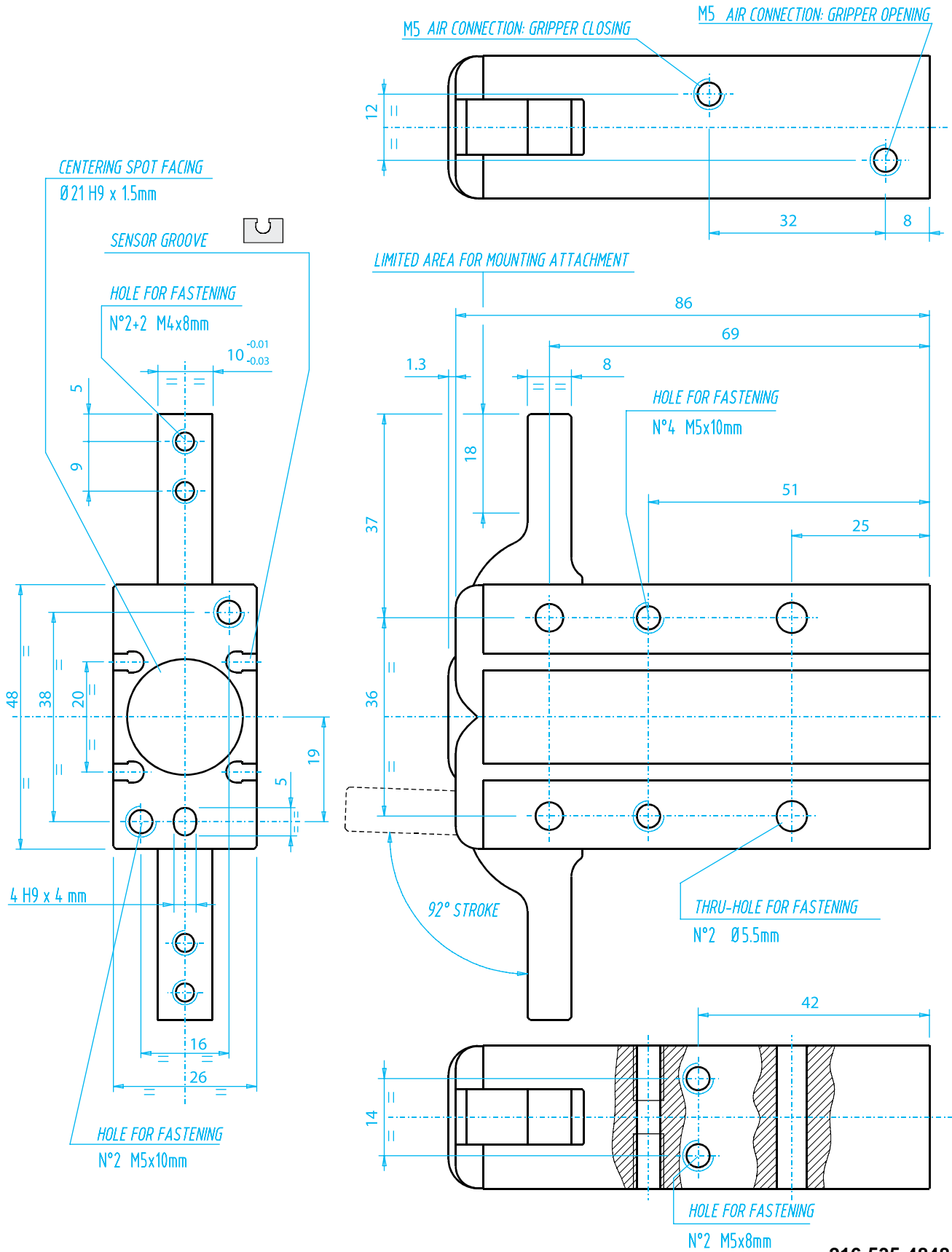
GX-16S
#6940



Radial Gripper – GX-S

(Dimensioned drawings shown full scale)

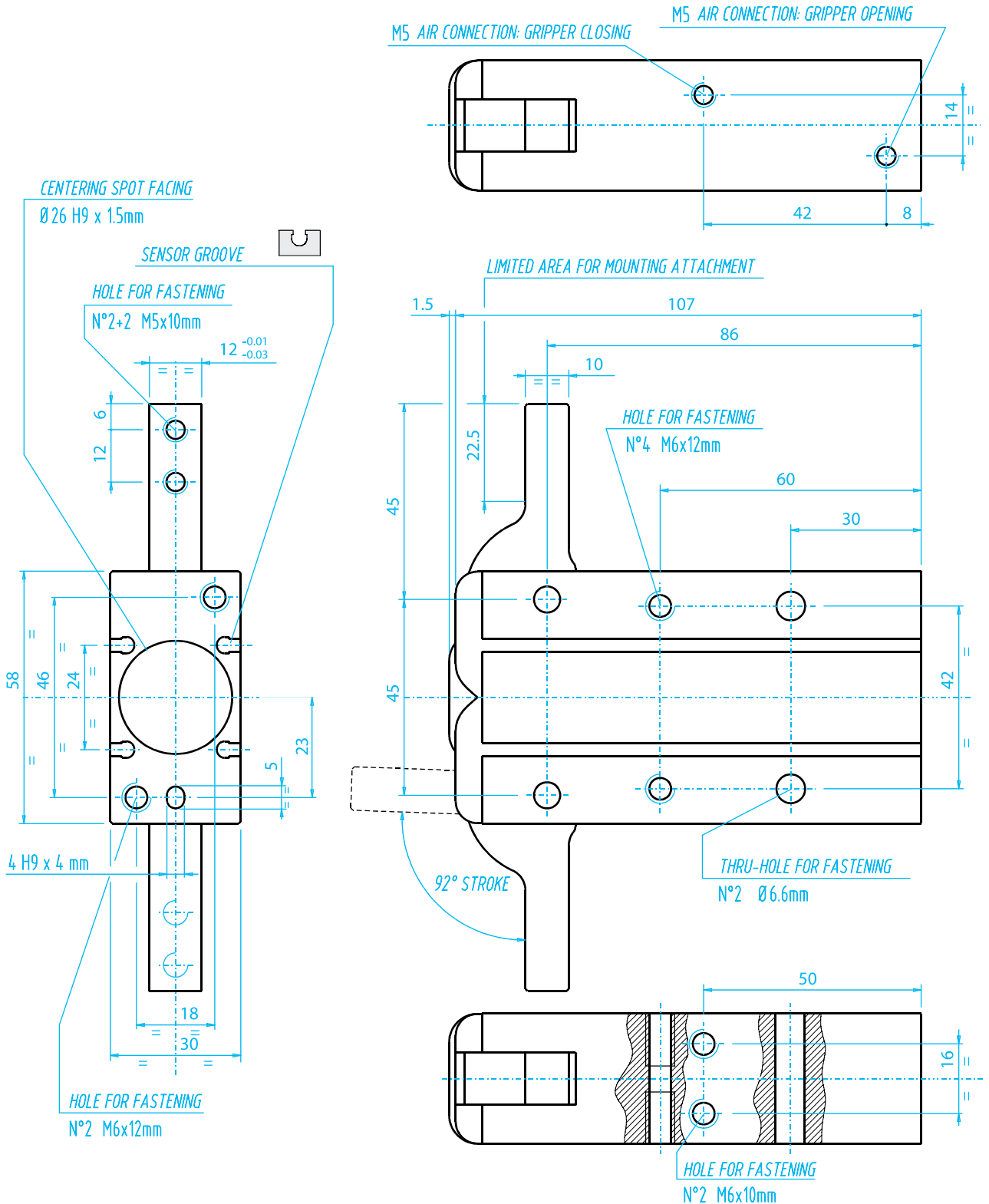
**GX-20S
#6941**



Radial Gripper – GX-S

(Dimensioned drawings reduced to fit)

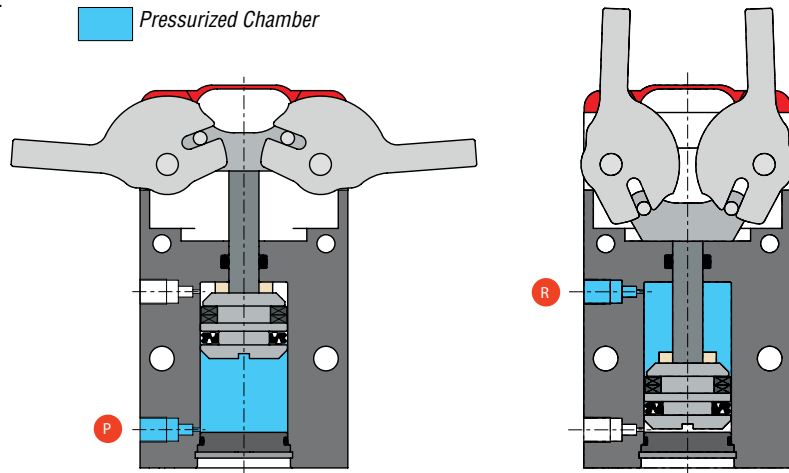
GX-25S
#6942



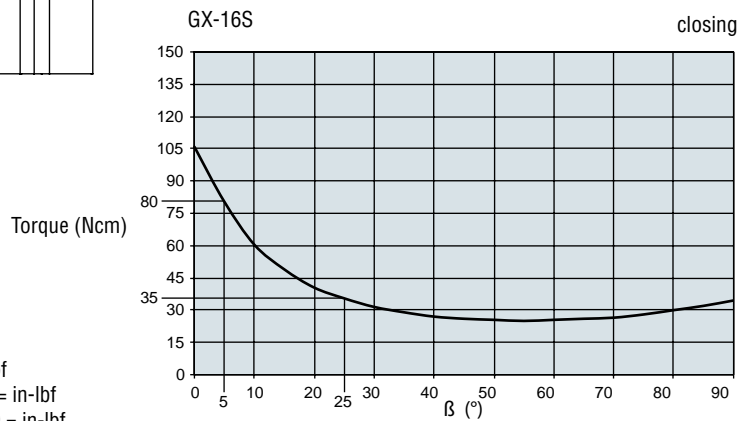
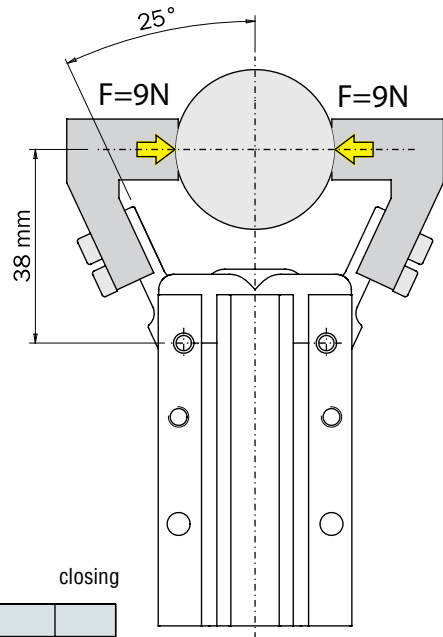
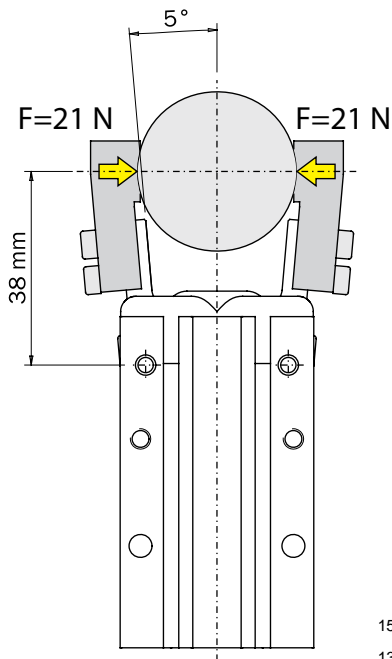
Radial Gripper – GX-S

Gripping

Because the gripper has a double-acting motion, it can be used for internal or external gripping.



The gripping force depends on the shape of the gripping tools.



Reference:

Force: N x 0.225 = lbf

Torque: Nm x 8.850 = in-lbf

Torque: Ncm x 0.089 = in-lbf

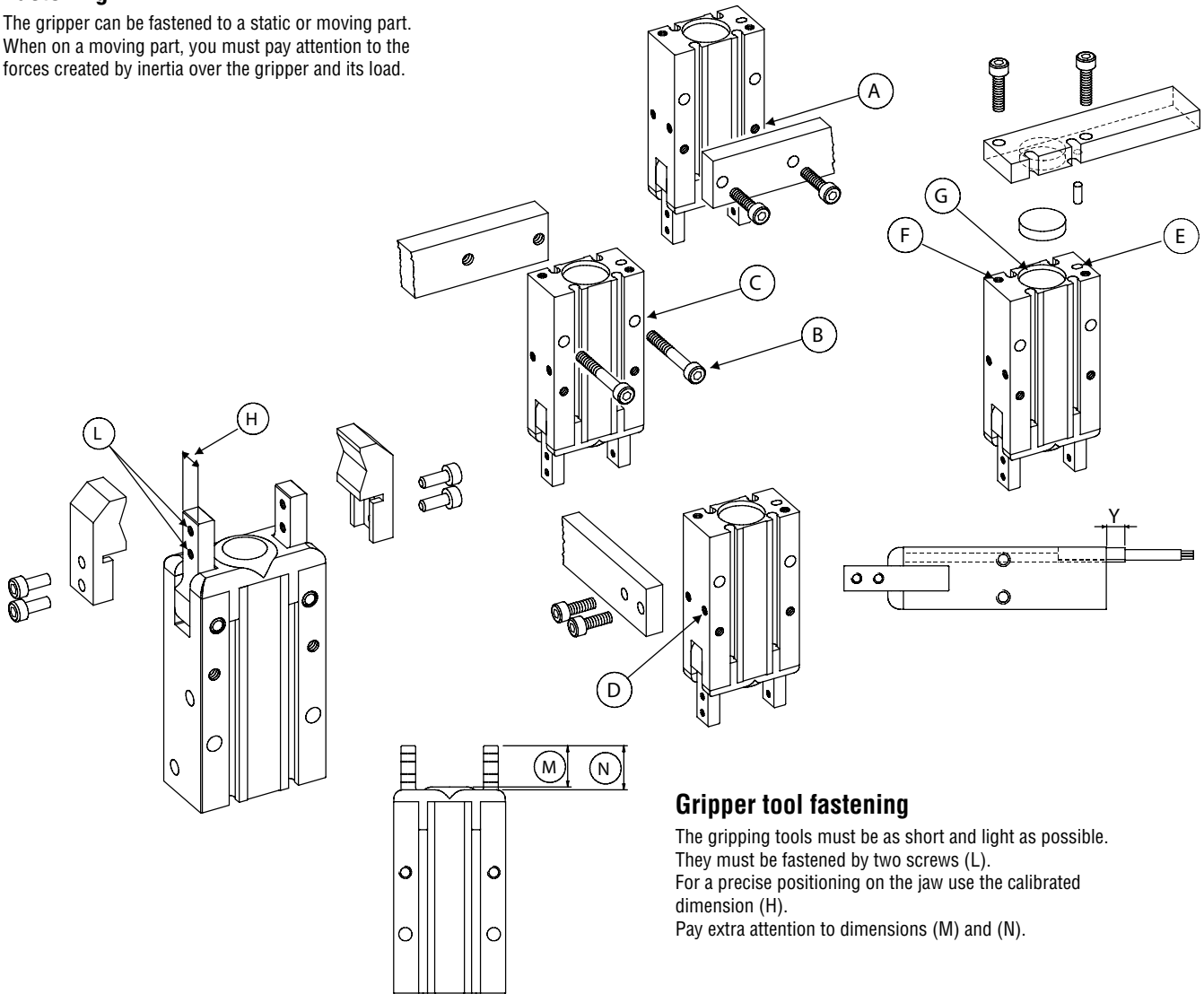
Pressure: bar x 14.5 = psi

Call our Engineering Department for assistance

Radial Gripper – GX-S

Fastening

The gripper can be fastened to a static or moving part. When on a moving part, you must pay attention to the forces created by inertia over the gripper and its load.



Gripper tool fastening

The gripping tools must be as short and light as possible. They must be fastened by two screws (L). For a precise positioning on the jaw use the calibrated dimension (H). Pay extra attention to dimensions (M) and (N).

	GX-10S	GX-16S	GX-20S	GX-25S
A	M3 x 6mm	M4 x 8mm	M5 x 10mm	M6 x 12mm
B	M3 x 22mm	M4 x 30mm	M5 x 35mm	M6 x 40mm
C	ø3.4mm	ø4.5mm	ø5.5mm	ø6.6mm
D	M3 x 4mm	M4 x 5mm	M5 x 8mm	M6 x 10mm
E	3H9 x 3mm	3H9 x 3mm	4H9 x 4mm	4H9 x 4mm
F	M3 x 6mm	M4 x 8mm	M5 x 10mm	M6 x 12mm
G	ø11H9 x 1.5mm	ø17H9 x 1.5mm	ø21H9 x 1.5mm	ø26H9 x 1.5mm
H	6 ^{-0.01} mm	8 ^{-0.01} mm	10 ^{-0.01} mm	12 ^{-0.01} mm
L	M3 x 4mm	M3 x 5mm	M4 x 8mm	M5 x 10mm
M	11.7mm	14mm	18.7mm	22.5mm
N	13mm	15mm	20mm	24mm

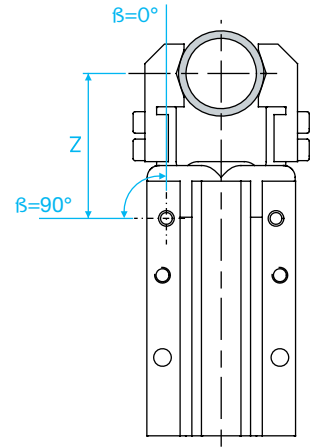
Sensor Type	GX-10S	GX-16S	GX-20S	GX-25S
SN	Y = 4mm	Y = 2mm	Y = 1mm	Y = 0mm
SS	Y = 4 mm + cable	Y = 2mm + cable	Y = 1mm + cable	Y = 0mm + cable

Radial Gripper – GX-S

Gripping force

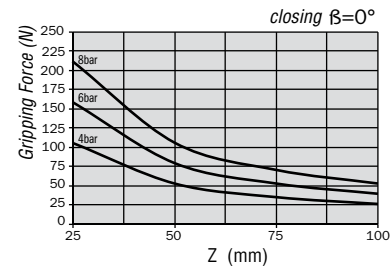
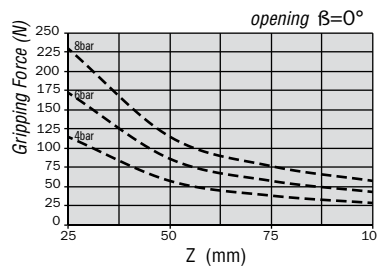
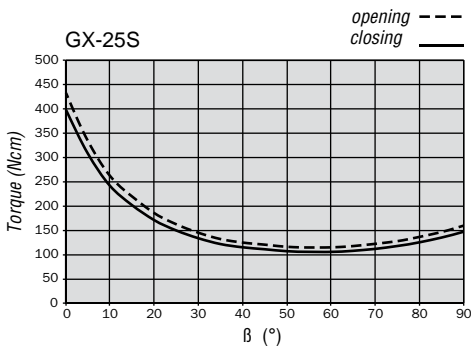
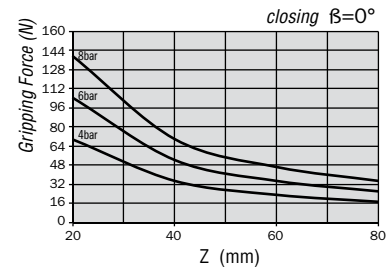
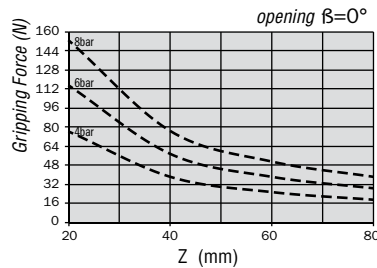
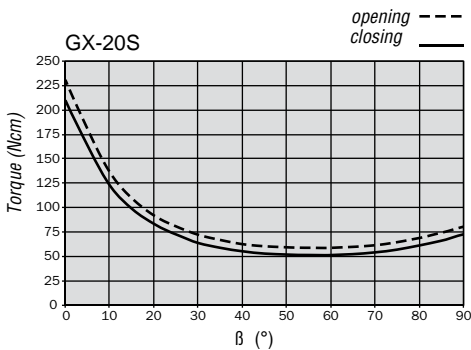
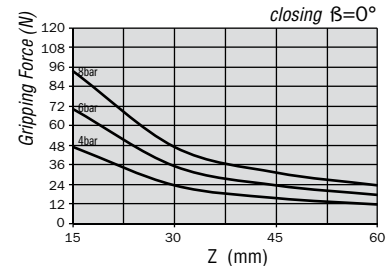
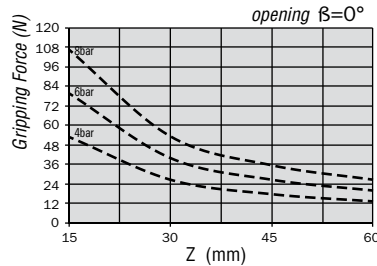
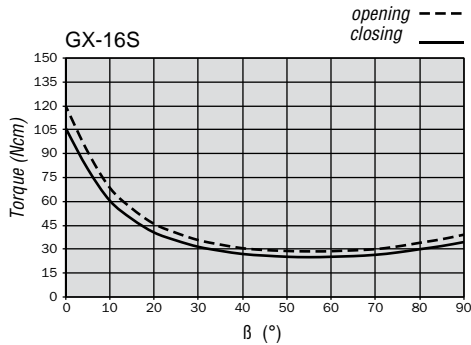
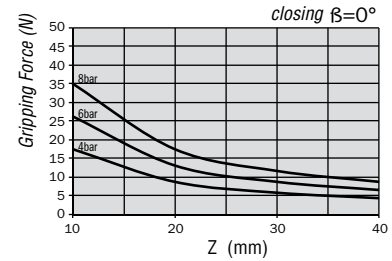
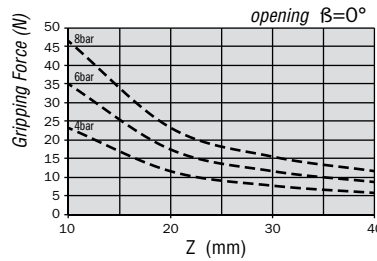
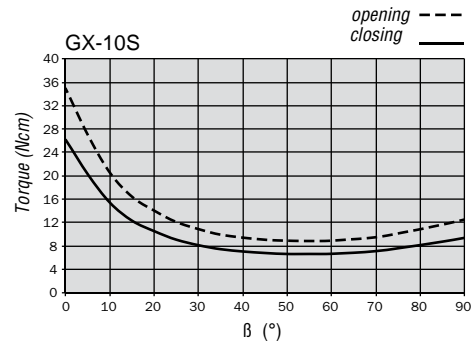
The graphs show the gripping force on each jaw, as a function of the operating pressure, the gripping tool length 'Z' and the angular position 'β' of the jaw.

The force shown in these graphs refers to one jaw.
The total force is double.



Reference:

- Force:** N x 0.225 = lbf
- Torque:** Nm x 8.850 = in-lbf
- Torque:** Ncm x 0.089 = in-lbf
- Pressure:** bar x 14.5 = psi



Radial Gripper – GX-S

Safety loads

Check the table for maximum permitted loads. Excessive forces or torques can damage the gripper, cause functioning troubles and endanger the safety of the operator.

F, Mx, My, Mz, are maximum permitted static loads. Static means with motionless jaws.

	GX-10S	GX-16S	GX-20S	GX-25S
F	35 N	60 N	100 N	140 N
Mx	0.5 Nm	2 Nm	4 Nm	7 Nm
My	0.5 Nm	1 Nm	2 Nm	4 Nm
Mz	0.5 Nm	2 Nm	4 Nm	7 Nm

Reference:

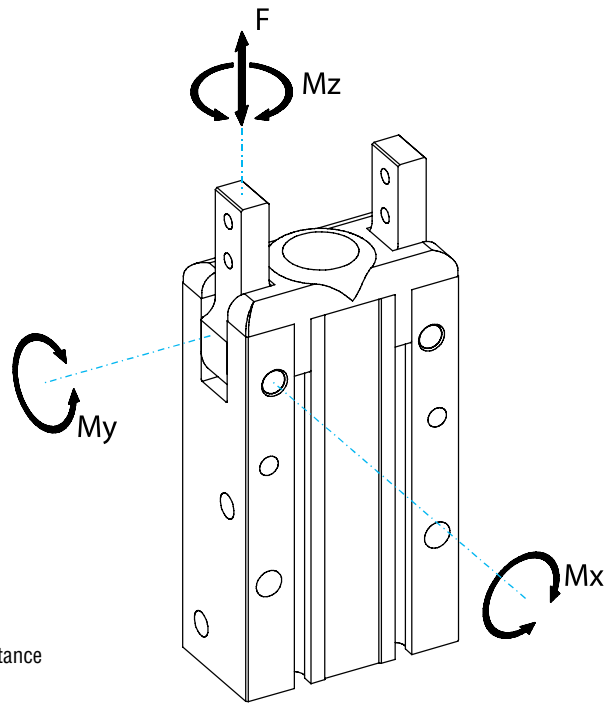
Force: N x 0.225 = lbf

Torque: Nm x 8.850 = in-lbf

Torque: Ncm x 0.089 = in-lbf

Pressure: bar x 14.5 = psi

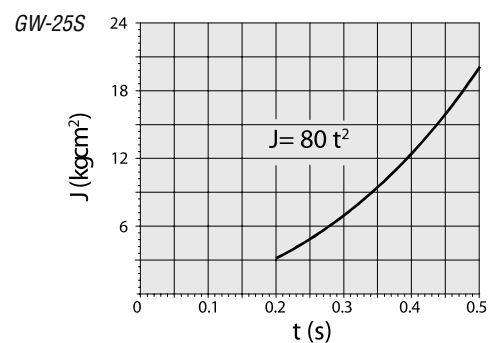
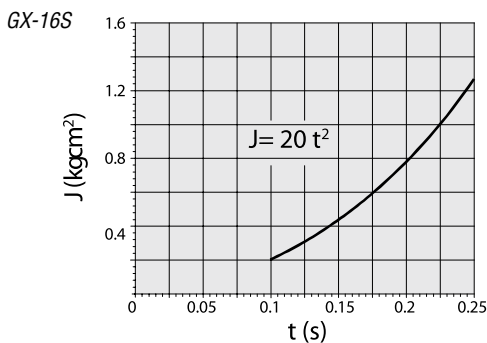
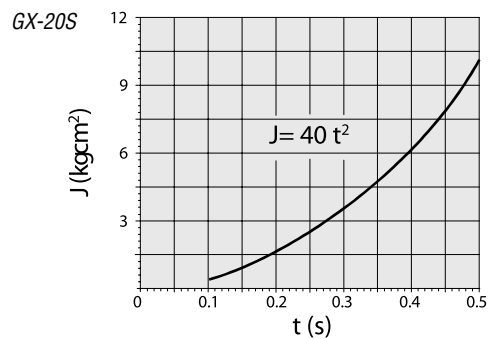
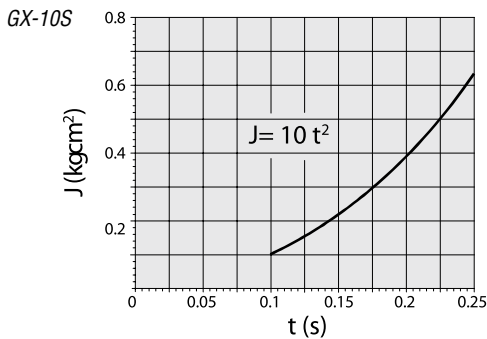
Call our Engineering Department for assistance



Speed adjustment

The graphs show the maximum permitted moment of inertia on each gripping tool (J), as a factor of the opening or closing time (t).

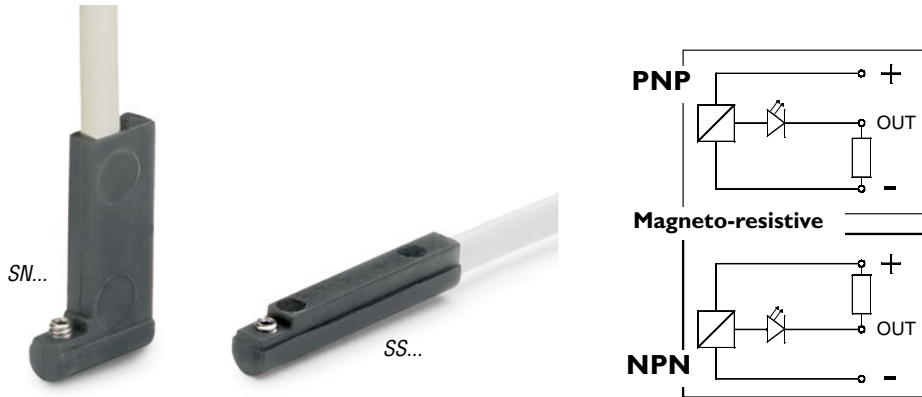
Use flow controllers (not supplied) to get the proper speed.



Radial Gripper – GX-S

Sensors

The operating position can be checked by sensors (optional), that detect the magnet on the piston inside. Proximity near a large mass of ferromagnetic material or intense magnetic fields may cause sensing troubles.



Quick#	Part#	Signal	Connection	Price
3-wire, SS style magneto-resistive sensors				
1882	SS4N225G	PNP	with lead, 2.5m long	\$27.20
1883	SS4M225G	NPN	with lead, 2.5m long	\$27.20
6282	SS3N203G	PNP	M8 male connector, 0.3m long	\$31.16
1884	SS3M203G	NPN	M8 male connector, 0.3m long	\$31.16
90° Lead exit, 3-wire SN style magneto-resistive sensors				
6278	SN4N225G	PNP	with lead, 2.5m long	\$27.20
6357	SN4M225G	NPN	with lead, 2.5m long	\$27.20
6277	SN3N203G	PNP	M8 male connector, 0.3m long	\$31.16
6356	SN3M203G	NPN	M8 male connector, 0.3m long	\$31.16

Note: M8 Extension cables Quick#'s 2582 & 2583 available on page 987.
See Sensor Reference Guide on page 1010 for a complete list of compatible sensors.

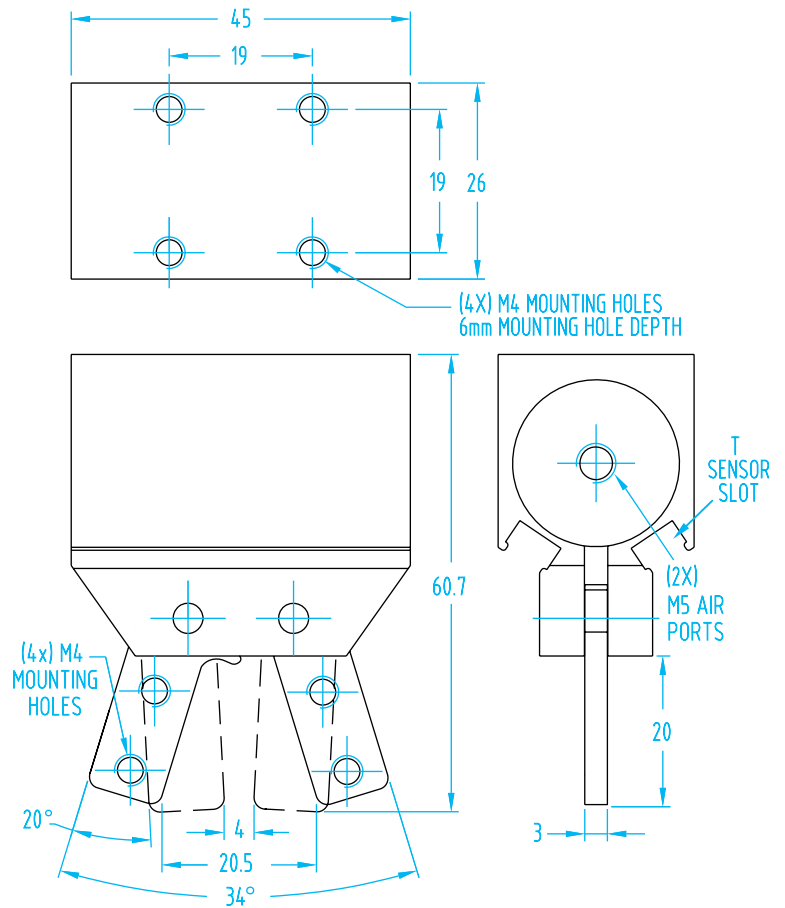


Angular Gripper – AA



- M4 threads on the jaw to mount your own fingers.
- The AA-21 features the same strong mechanism used for the popular #790 & #791 sprue grippers. Its practical design and strong grip force have become the standard for many sprue gripping applications. The hardened steel jaws have mounting holes for custom made fingers used in very specific applications. The AA-21 is the base gripper we use for our special deep reach and large diameter grippers.
- Mounting Brackets available on page 458–459.

(Dimensioned drawings shown full scale)

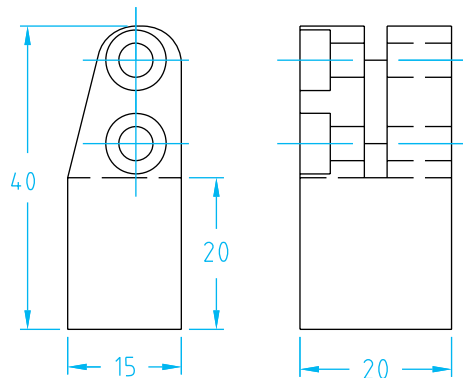


AA-21 - Angular Gripper

Quick#	Part#	Price	Weight	Style	lbs. Force at 25mm Tooling Length*	lbs. Force at 35mm Tooling Length*
1476	GSG-AA-21-NO	\$235.00	94g	Spring Open	22.5 lbf	16.0 lbf
1477	GSG-AA-21	\$235.00	92g	Double Acting	27.0 lbf	19.5 lbf
<i>Order sensors separately</i> * Force when compressed air is supplied at 87psi. Tooling length is measured from jaw pivot point.						
792	SL4N225G	\$27.20	PNP	T-slot, 3-wire with lead, 2.5m long		
6274	SL3N203G	\$31.16	PNP	T-slot, 3-wire with M8 male connector, 0.3m long*		
793	SL4M225G	\$27.20	NPN	T-slot, 3-wire with lead, 2.5m long		
6456	SL3M203G	\$31.16	NPN	T-slot, 3-wire with M8 male connector, 0.3m long*		

See Sensor Reference Guide on page 1010 for a complete list of compatible sensors.

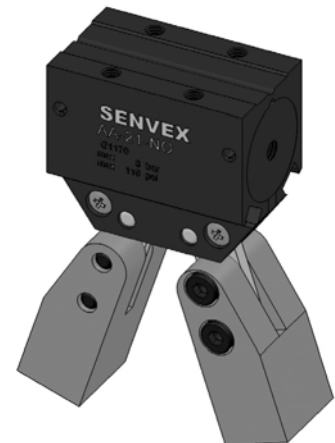
Don't want to machine custom fingers from scratch? Start with these aluminum finger blanks. They are easy to shape to your particular part.



AA-21 - Finger Blanks - priced per pair

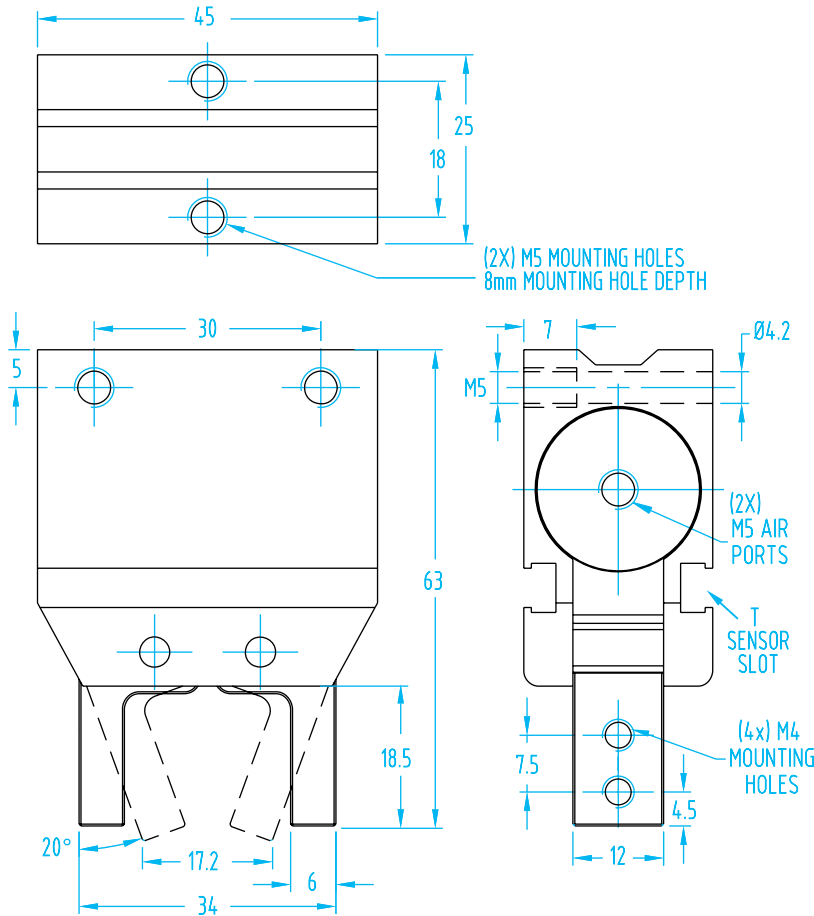
Quick#	Part#	Material	Price
1858	GSG-FB-AA21	Aluminum	\$29.76

Includes fasteners.



Angular Gripper – AA

(Dimensioned drawings shown full scale)



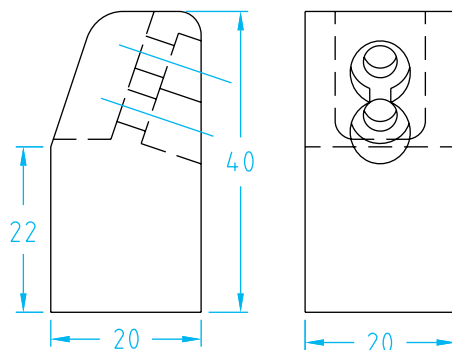
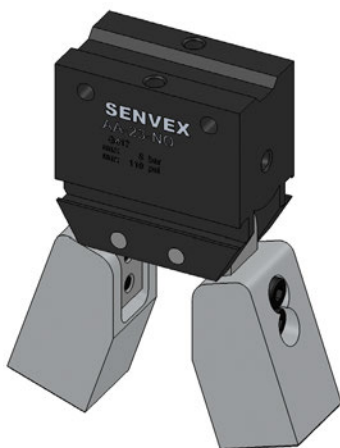
- This is the same gripper body as the #1473 and #1474 sprue grippers. It has excellent grip force, dual sensor grooves, and jaws with M4 threads to mount your own fingers.
- Mounting Brackets available on page 458–459.



AA-23 - Angular Gripper

Quick#	Part#	Price	Weight	Style	lbs. Force at 25mm Tooling Length*	lbs. Force at 35mm Tooling Length*
1753	GSG-AA-23-NO	\$205.00	102g	Spring Open	22.5 lbf	16.0 lbf
1754	GSG-AA-23	\$205.00	100g	Double Acting	27.0 lbf	19.5 lbf
<i>Order sensors separately</i>		* Force when compressed air is supplied at 87psi. Tooling length is measured from jaw pivot point.				
792	SL4N225G	\$27.20	PNP	T-slot, 3-wire with lead, 2.5m long		
6274	SL3N203G	\$31.16	PNP	T-slot, 3-wire with M8 male connector, 0.3m long*		
793	SL4M225G	\$27.20	NPN	T-slot, 3-wire with lead, 2.5m long		
6456	SL3M203G	\$31.16	NPN	T-slot, 3-wire with M8 male connector, 0.3m long*		

See Sensor Reference Guide on page 1010 for a complete list of compatible sensors.



Don't want to machine custom fingers from scratch? Start with these aluminum finger blanks. They are easy to shape to your particular part.

AA-23 - Finger Blanks - priced per pair

Quick#	Part#	Material	Price
1859	GSG-FB-AA23	Aluminum	\$29.76

Includes fasteners.

Parallel Gripper – PE

- Double acting (single acting upon request for PE-25... and PE-45...).
- Self centering
- High efficiency and reliability due to few moving parts.
- Wide choice of stroke.
- The gripping force is constant in both directions along total stroke.
- Optional sensors available on page 717.



#6247



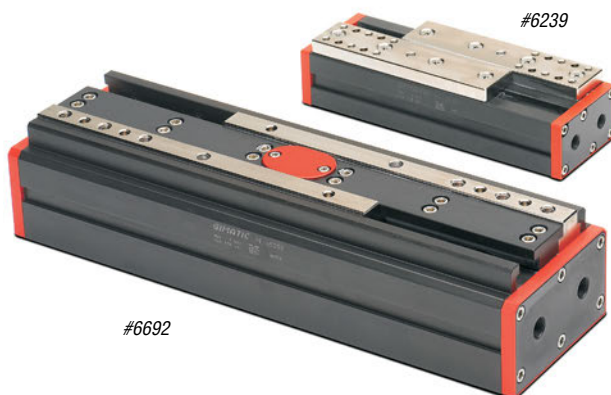
#6246



#6245



#6244



#6692



#6239



#6241



#6243



#6242



#6240



#6235



#6234



#6238



#6237



#6236



#6233

Parallel Gripper – PE

PE-1610, PE-1625, PE-1640, PE-1680, PE-16150 and PE-16200

Quick#	6233	6236	6237	6238	6234	6235
Part#	PE-1610	PE-1625	PE-1640	PE-1680	PE-16150	PE-16200
Price	\$290.00	\$436.00	\$476.00	\$705.00	\$1,130.00	\$1,229.00
Medium	Filtered, lubricated / non-lubricated compressed air					
Pressure range	30–116 psi					
Total gripping force at 87 psi	45 lbf					
Stroke (± 0.25mm)	2x5mm	2x12.5mm	2x20mm	2x40mm	2x75mm	2x100mm
Cycle air consumption	7cm ³	14cm ³	21cm ³	39cm ³	71cm ³	97cm ³
Maximum repeatability tolerance	0.03mm					
Mid-stroke detection capability	Yes, see Sensor Reference Guide on page 1010 for details.					
Weight	200g	250g	350g	500g	900g	1200g

Use Quick#s for easy online ordering.



PE-16.. Mounting Bracket

Quick#	Part#		Price
7620	I36K	M16x1 Thread, 56mm long post	\$44.15

Dimensional drawing online.

Gripping Force

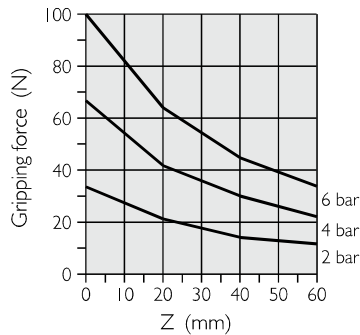
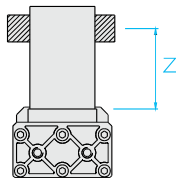
The graphs show the gripping force on each jaw, as a function of the operating pressure, the gripping tool length 'Z' and the overhanging 'X'.

Reference:

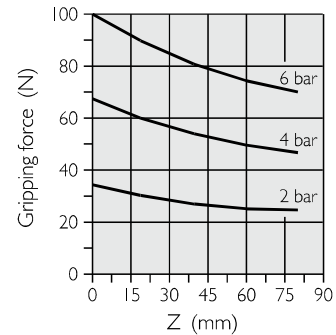
Force: N x 0.225 = lbf

Pressure: bar x 14.5 = psi

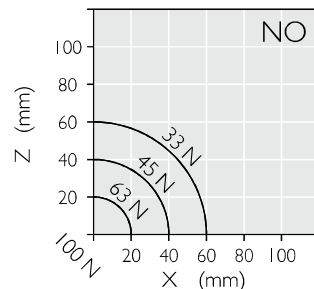
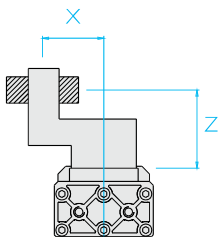
PE-1610



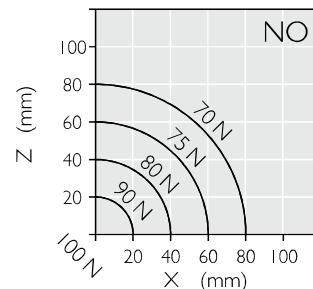
PE-1625/40/80/150/200



PE-1610 (6 bar)



PE-1625/40/80/150/200 (6 bar)



Parallel Gripper – PE

PE-2520, PE-2540, PE-2560, PE-25100 and PE-25200

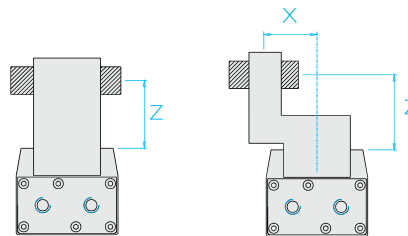
Quick#	6240	6242	6243	6239	6241
Part#	PE-2520	PE-2540	PE-2560	PE-25100	PE-25200
Price	\$509.00	\$622.00	\$685.00	\$1,074.00	\$1,413.00
Medium	Filtered, lubricated / non-lubricated compressed air				
Pressure range	30–116 psi				
Total gripping force at 87 psi	103.4 lbf				
Stroke ($\pm 0.25\text{mm}$)	2x10mm	2x20mm	2x30mm	2x50mm	2x100mm
Cycle air consumption	44cm ³	74cm ³	102cm ³	146cm ³	263cm ³
Maximum repeatability tolerance	0.04mm				
Mid-stroke detection capability	Yes, see Sensor Reference Guide on page 1010 for details.				
Weight	700g	980g	1285g	1235g	2800g

Sensors available on page 717.

Gripping Force

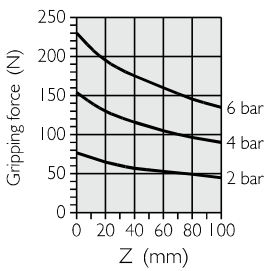
The graphs show the gripping force on each jaw, as a function of the operating pressure, the gripping tool length 'Z' and the overhanging 'X'.

The force shown in these graphs refers to one jaw.
The total force is double.

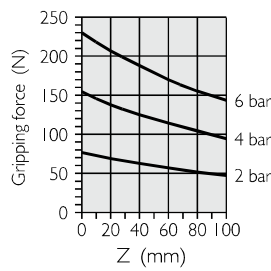


Reference:
Force: N x 0.225 = lbf
Pressure: bar x 14.5 = psi

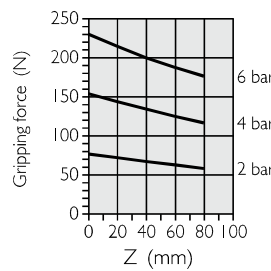
PE-2520



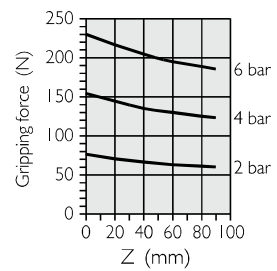
PE-2540



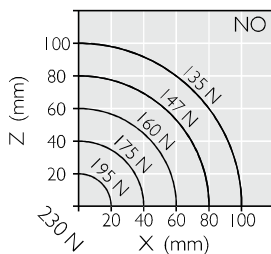
PE-2560



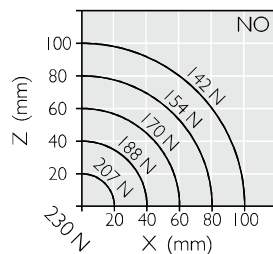
PE-25100/200



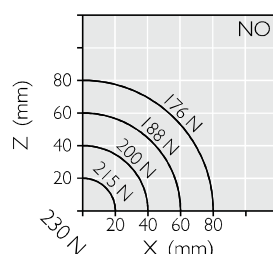
PE-2520 (6 bar)



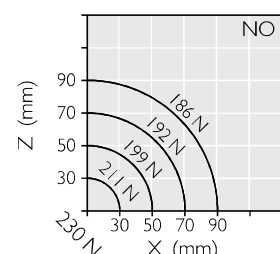
PE-2540 (6 bar)



PE-2560 (6 bar)



PE-25100/200 (6 bar)



Parallel Gripper – PE

PE-4520, PE-4540, PE-4560, PE-4580 and PE-45200

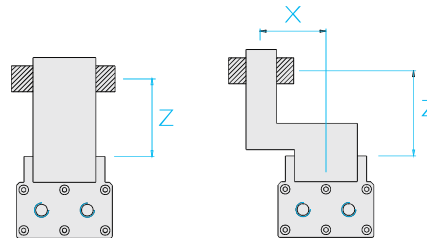
Quick#	6244	6245	6246	6247	6692
Part#	PE-4520	PE-4540	PE-4560	PE-4580	PE-45200
Price	\$883.00	\$976.00	\$1,060.00	\$1,626.00	\$1,724.00
Medium	Filtered, lubricated / non-lubricated compressed air				
Pressure range	30–116 psi				
Total gripping force at 87 psi	314.8 lbf				404.6 lbf
Stroke (± 0.25mm)	2x10mm	2x20mm	2x30mm	2x40mm	2x100mm
Cycle air consumption	132cm ³	208cm ³	257cm ³	371cm ³	940cm ³
Maximum repeatability tolerance	0.04mm				
Mid-stroke detection capability	Yes, see Sensor Reference Guide on page 1010 for details.				
Weight	1840g	2250g	2715g	3300g	3800g

Sensors available on page 717.

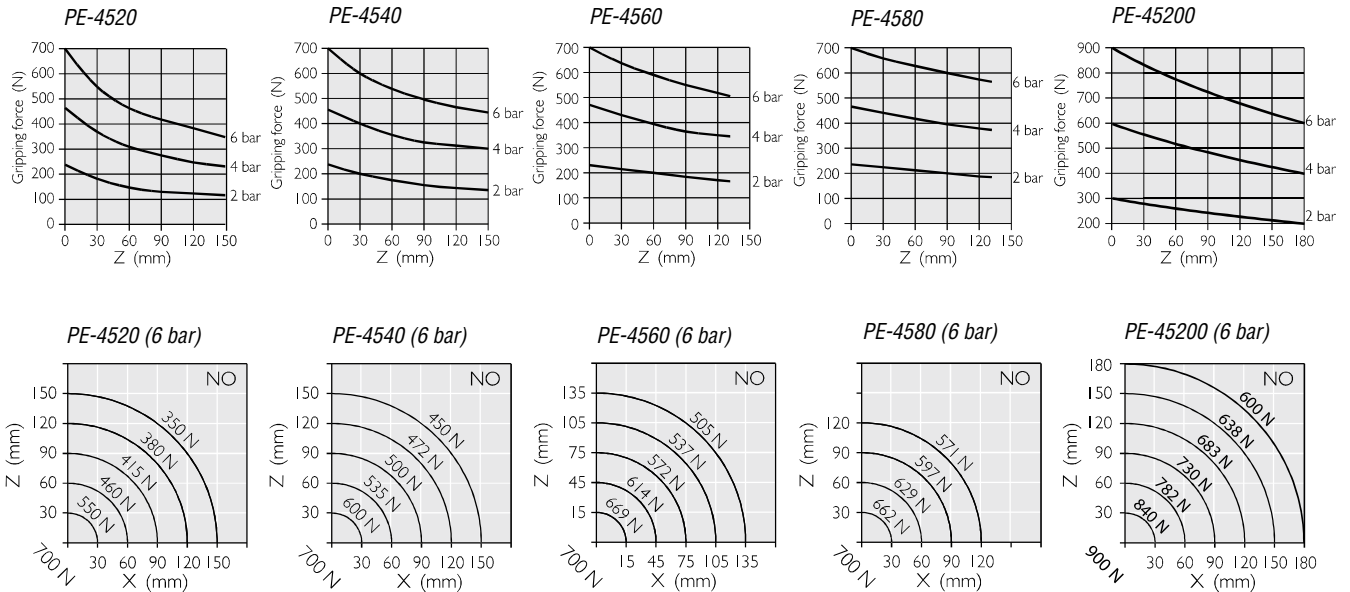
Gripping Force

The graphs show the gripping force on each jaw, as a function of the operating pressure, the gripping tool length 'Z' and the overhanging 'X'.

The force shown in these graphs refers to one jaw. The total force is double.



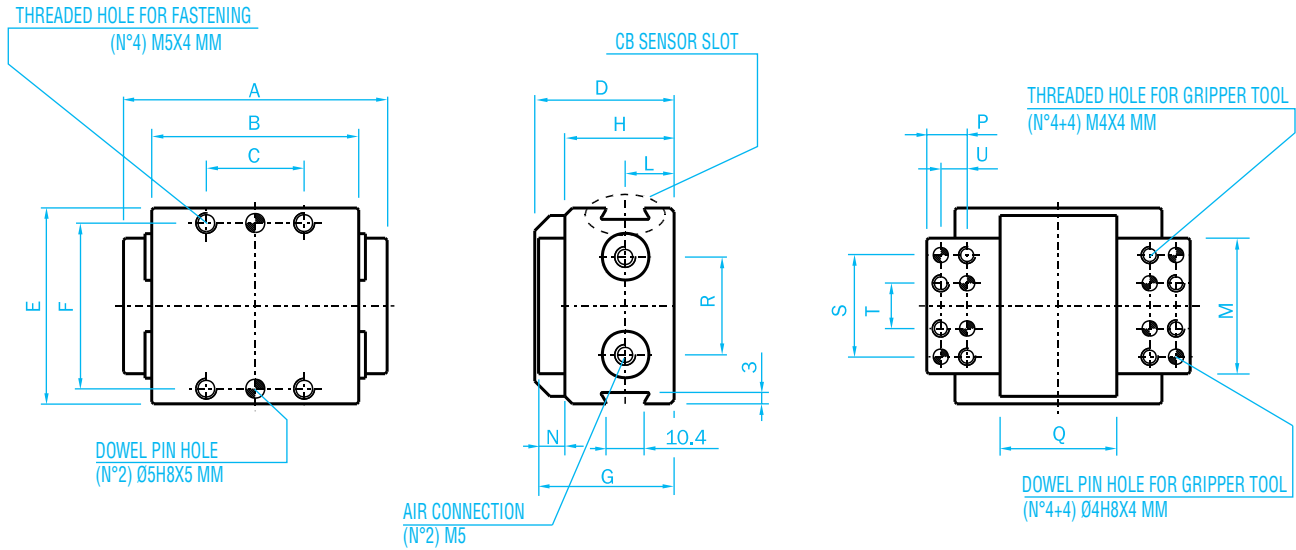
Reference:
Force: N x 0.225 = lbf
Pressure: bar x 14.5 = psi



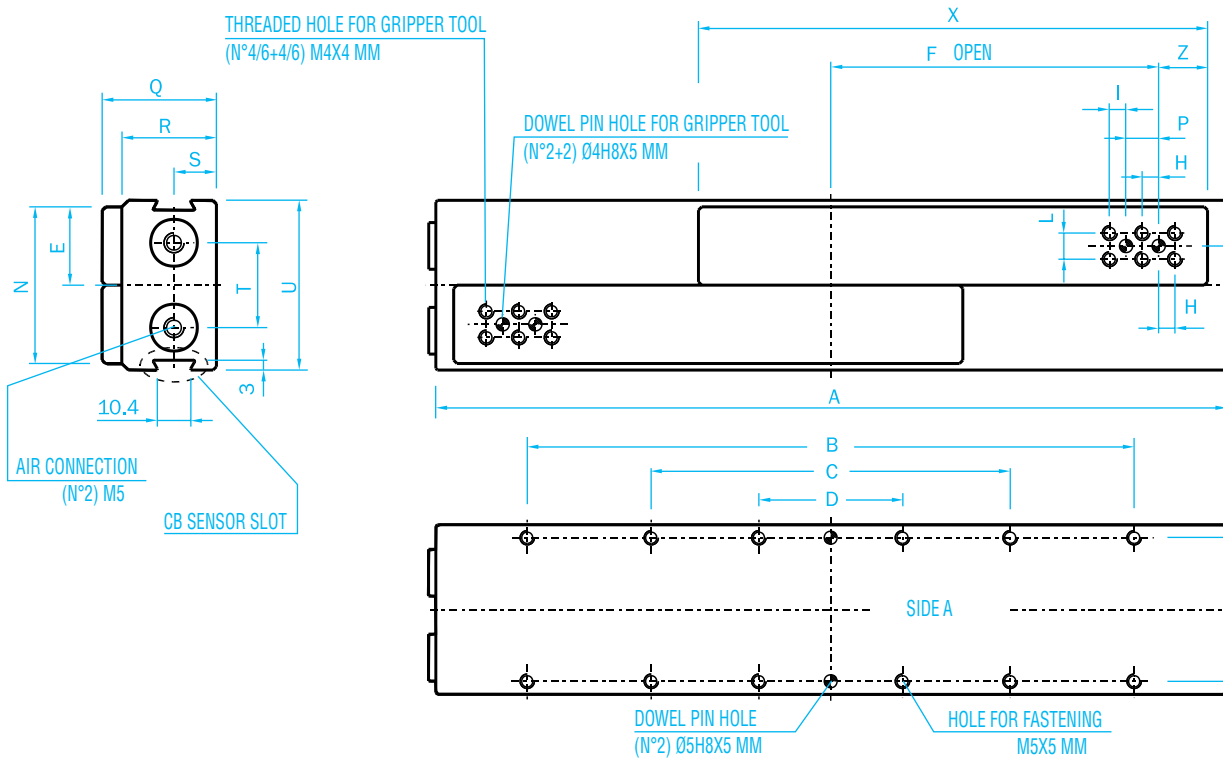
Parallel Gripper – PE

PE-1610

	A	B	C	D	E	F ± 0.02	G	H	L	M	N	P	Q	R ± 0.02	S ± 0.02	T ± 0.02	U ± 0.02
PE-1610	62	60	26	37	52	44	36	29	13	36	7	11.75	31	26	27	12	7



PE-1625, PE-1640, PE-1680, PE-16150 & PE-16200

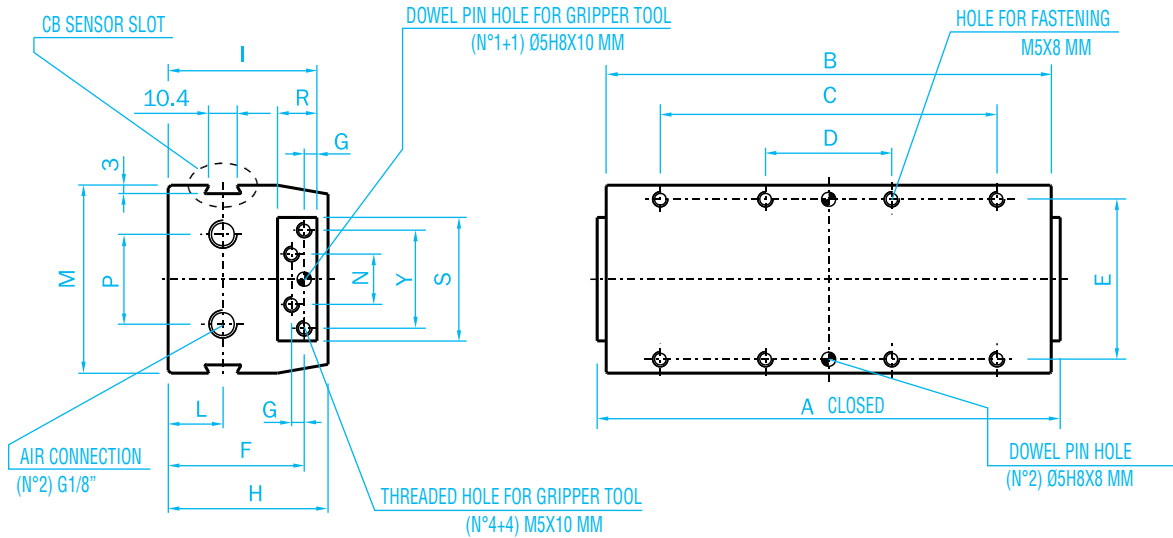


	A	B	C	D	E	F	G ± 0.02	H	I	L	M	N	P ± 0.02	Q	R	S	T	U	X	Z
PE-1625	70	-	-	26	24	12.5	44	5	-	12	12	48	12	37	29	13	26	52	41.5	14.5
PE-1640	99	-	-	60	24	26.5	44	5	-	8	12	48	10	37	29	13	26	52	63	15
PE-1680	155	-	-	60	24	54.5	44	5	5	8	12	48	10	37	29	13	26	52	99	15
PE-16150	263	-	200	60	24	108.5	44	5	5	8	12	48	10	37	29	13	26	52	172	15
PE-16200	337	280	200	60	24	145.5	44	5	5	8	12	48	10	37	29	13	26	52	221	15

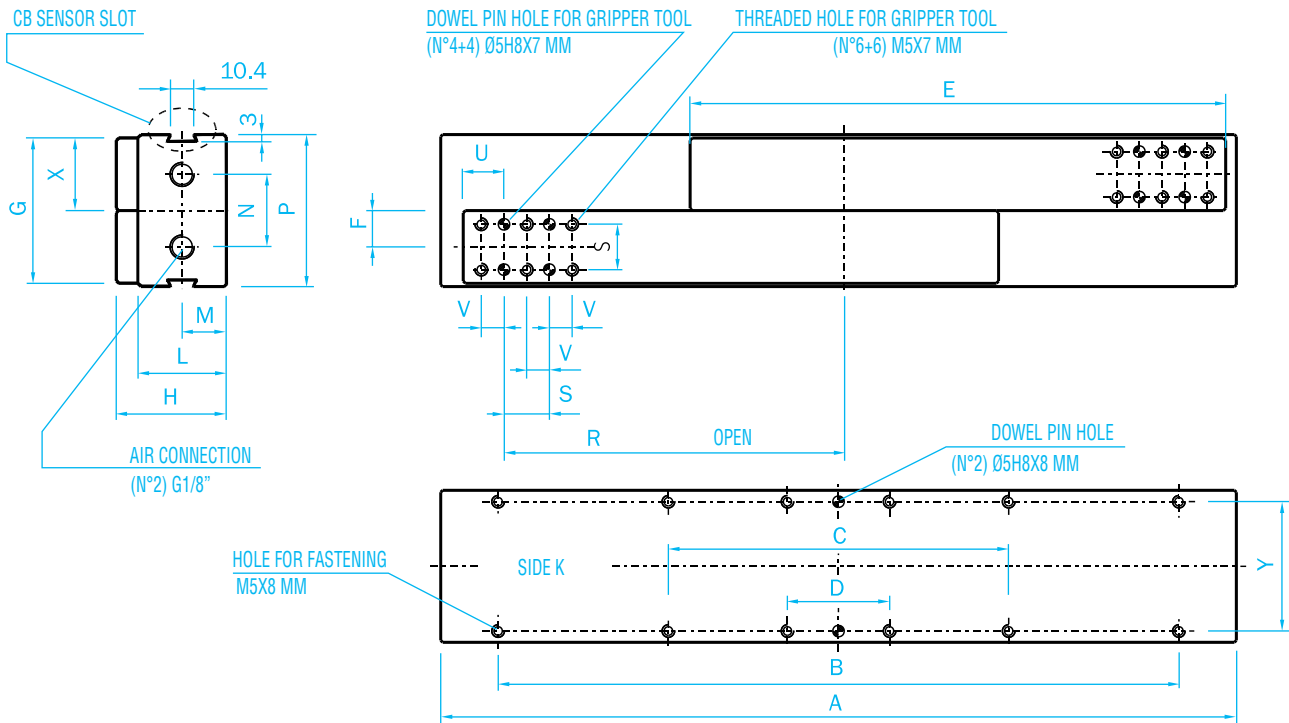
Parallel Gripper – PE

PE-2520, PE-2540, & PE-2560

	A	B	C	D	E	F	G	H	I	L	M	N	P	Y	R	S
					± 0.02		± 0.02								-0.05	-0.05
PE-2520	90	83.6	-	45	57	48.5	4.5	57	53	19.5	67	18	32	35	14	44
PE-2540	130	123.6	-	45	57	48.5	4.5	57	53	19.5	67	18	32	35	14	44
PE-2560	165	158.6	120	45	57	48.5	4.5	57	53	19.5	67	18	32	35	14	44



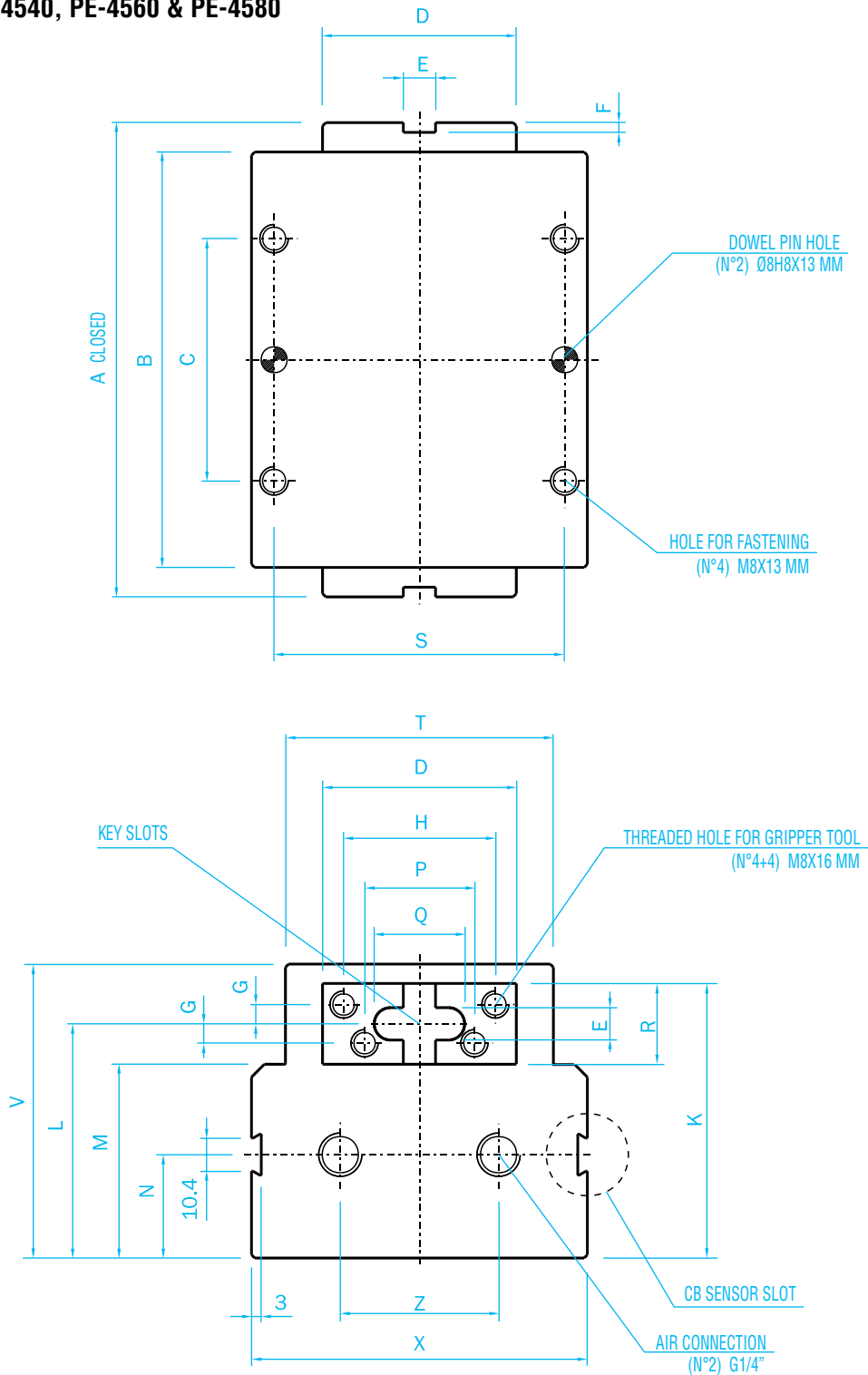
PE-25100 & PE-25200



	A	B	C	D	E	F	G	H	L	M	N	P	Y	R	S	U	X	V
													± 0.02		± 0.02			
PE-25100	200.6	-	150	45	136	16	64	48.5	39	19.5	32	67	57	75	20	18	32	10
PE-25200	350.6	300	150	45	236	16	64	48.5	39	19.5	32	67	57	150	20	18	32	10

Parallel Gripper – PE

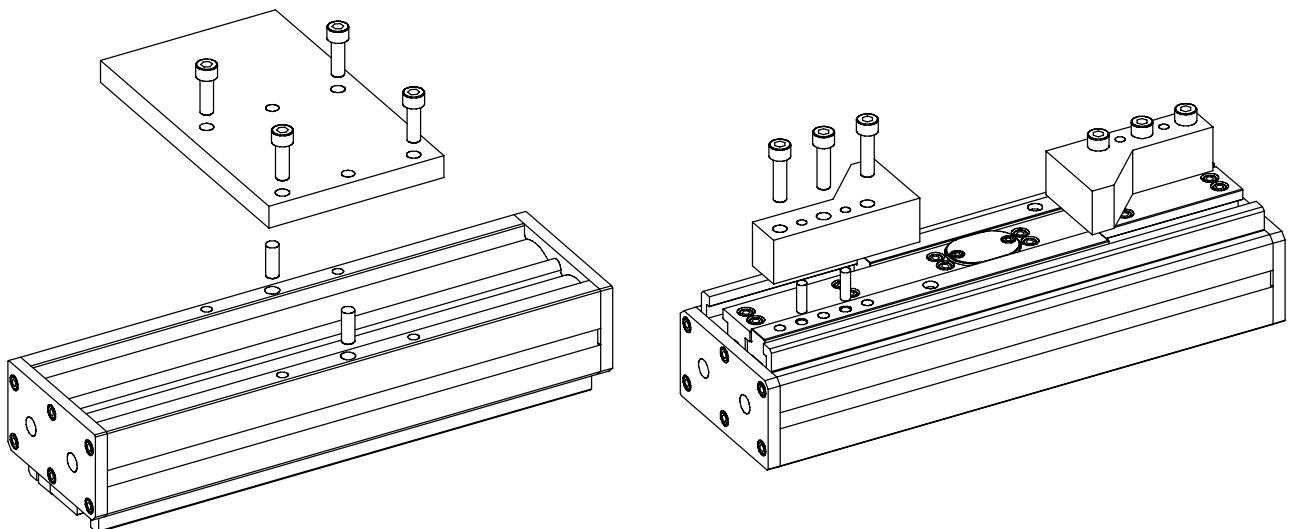
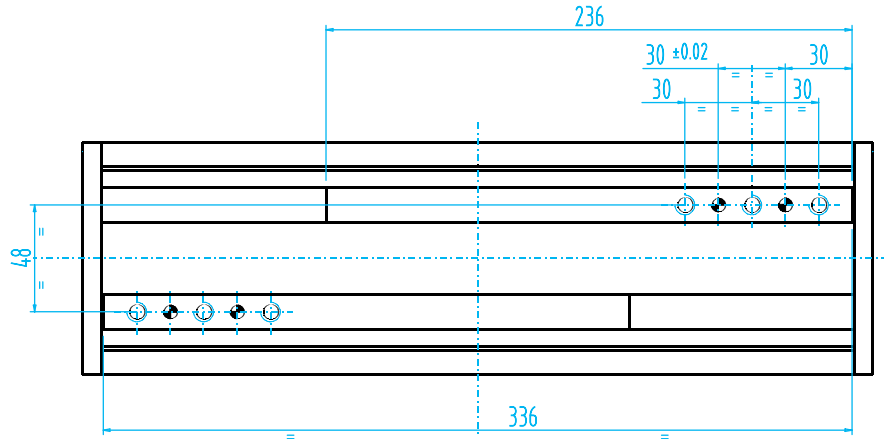
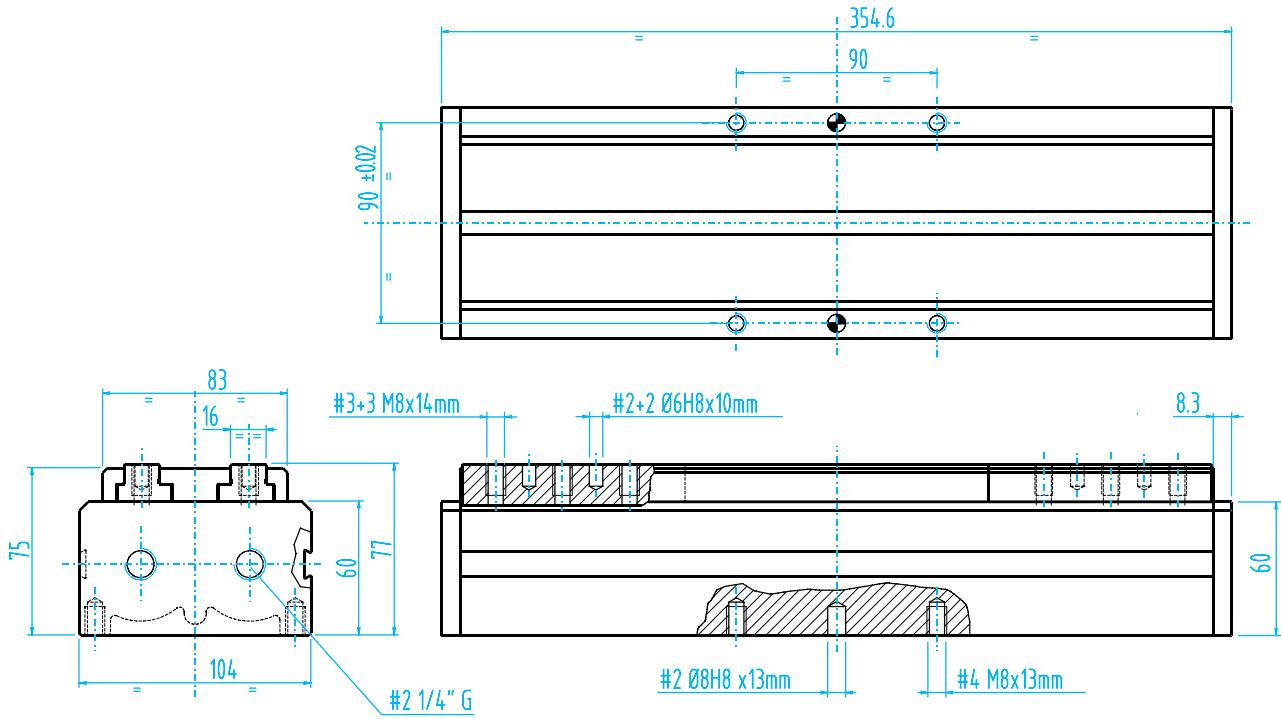
PE-4520, PE-4540, PE-4560 & PE-4580



	A	B	C	D -0.05	E +0.05	F	G	H	L	M	N	P	Q	R -0.05	S ± 0.02	T	V	X	K	Z
PE-4520	110	100.6	50	60	10	3	6	47	72.5	60	32	34	28	25	90	83	91	104	85	49
PE-4540	140	128.6	75	60	10	3	6	47	72.5	60	32	34	28	25	90	83	91	104	85	49
PE-4560	170	160.6	90	60	10	3	6	47	72.5	60	32	34	28	25	90	83	91	104	85	49
PE-4580	210	200.6	90	60	10	3	6	47	72.5	60	32	34	28	25	90	83	91	104	85	49

Parallel Gripper – PE

PE-45200



Parallel Gripper – PE

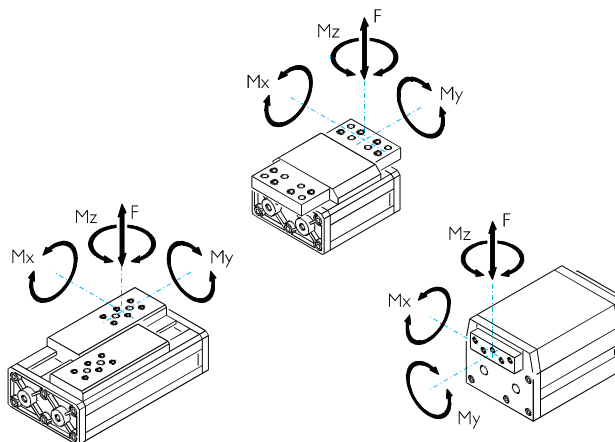
Safety loads

Check the table for maximum permitted loads. Excessive forces or torques can damage the gripper, cause functioning troubles and endanger the safety of the operator.

F_s , M_x_s , M_y_s , M_z_s , are maximum permitted static loads. Static means motionless jaws.

F_d , M_x_d , M_y_d , M_z_d , are maximum permitted dynamic loads. Dynamic means running jaws.

The following tables show the specified maximum loads (m) on each gripping tool as a function of closing or opening time. Use flow controllers (not supplied) to get the proper speed.



	PE-1610	PE-1625	PE-1640	PE-1680	PE-16150	PE-16200
F s	48 N	166 N	166 N	163 N	163 N	163 N
Mx s	2.4 Nm	5.6 Nm	5.6 Nm	5.6 Nm	5.6 Nm	5.6 Nm
My s	2.4 Nm	2.9 Nm	2.9 Nm	2.9 Nm	2.9 Nm	2.9 Nm
Mz s	2.4 Nm	5.6 Nm	5.6 Nm	5.6 Nm	5.6 Nm	5.6 Nm
F d	0.48 N	1.7 N	1.7 N	1.6 N	1.6 N	1.6 N
Mx d	2.4 Ncm	5.6 Ncm	5.6 Ncm	5.6 Ncm	5.6 Ncm	5.6 Ncm
My d	2.4 Ncm	2.9 Ncm	2.9 Ncm	2.9 Ncm	2.9 Ncm	2.9 Ncm
Mz d	2.4 Ncm	4 Ncm	4 Ncm	4 Ncm	4 Ncm	4 Ncm
m 0.8s	-	166g	166g	163g	163g	163g
m 0.5s	-	108g	108g	106g	106g	106g
m 0.3s	48g	93g	93g	91g	-	-
m 0.2s	31g	83g	83g	81g	-	-
m 0.1s	24g	60g	60g	-	-	-

	PE-2520	PE-2540	PE-2560	PE-25100	PE-25200
F s	326 N	326 N	326 N	300 N	300 N
Mx s	14 Nm	15 Nm	18 Nm	21 Nm	21 Nm
My s	5 Nm	5 Nm	5 Nm	6 Nm	6 Nm
Mz s	14 Nm	15 Nm	18 Nm	21 Nm	21 Nm
F d	3.3 N	3.3 N	3.3 N	3 N	3 N
Mx d	14 Ncm	15 Ncm	18 Ncm	21 Ncm	21 Ncm
My d	5 Ncm	5 Ncm	5 Ncm	6 Ncm	6 Ncm
Mz d	14 Ncm	15 Ncm	18Ncm	21 Ncm	21 Ncm
m 0.5s	-	-	-	300g	300g
m 0.3s	326g	326g	326g	195g	195g
m 0.2s	212g	212g	212g	150g	150g
m 0.1s	163g	163g	163g	105g	-

	PE-4520	PE-4540	PE-4560	PE-4580	PE-45200
F s	730 N	730 N	730 N	730 N	730 N
Mx s	69 Nm	86 Nm	88 Nm	88 Nm	110 Nm
My s	41 Nm	41 Nm	41 Nm	41 Nm	40 Nm
Mz s	69 Nm	86 Nm	88 Nm	88 Nm	110 Nm
F d	7 N	7 N	7 N	7 N	14 N
Mx d	69 Ncm	86 Ncm	88 Ncm	88 Ncm	110 Ncm
My d	41 Ncm	41 Ncm	41 Ncm	41 Ncm	40 Ncm
Mz d	69 Ncm	86 Ncm	88 Ncm	88 Ncm	110 Ncm
m 0.5s	-	-	-	700g	1400g
m 0.3s	700g	450g	450g	350g	700g
m 0.2s	450g	350g	350g	300g	500g
m 0.1s	350g	300g	300g	-	-

Reference: Force: $N \times 0.225 = lbf$ | Torque: $Nm \times 8.850 = in-lbf$ | Torque: $Ncm \times 0.089 = in-lbf$ | Pressure: $bar \times 14.5 = psi$

Parallel Gripper – PE

Sensors

The operating position can be checked by sensors (optional), that detect the magnet on the piston inside. Therefore, proximity near a large mass of ferromagnetic material or intense magnetic field may cause sensing trouble.

CB... sensors are recommended for midstroke detection.

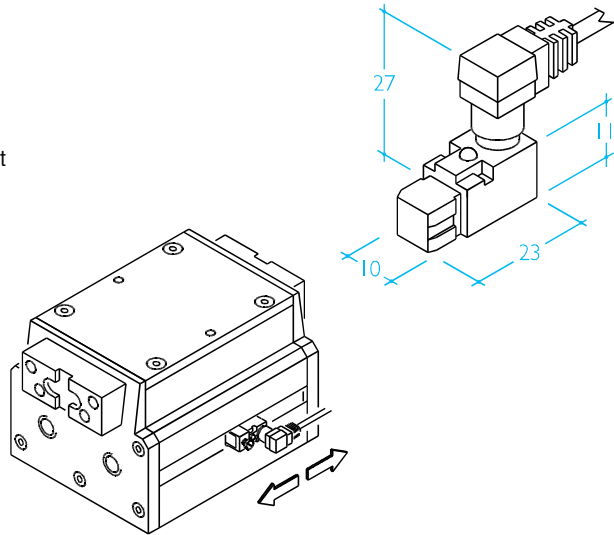
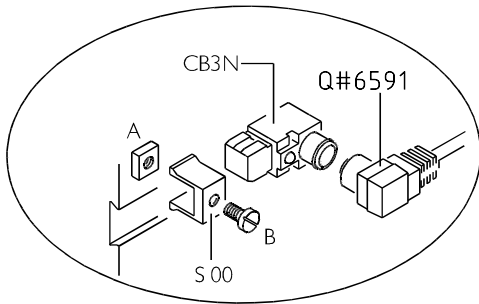


Quick#	Part#	Signal	Connection	Price
6126	CB3N2-G	PNP	3-wire sensor with M8 Connector	\$22.88
1794	CB3M2-G	NPN	3-wire sensor with M8 Connector	\$22.90
(*) Purchase extension cable #6591 separate for these sensors.				
6591	CFSM890325	3m 3-wire extension with M8 female connector		\$7.18

See Sensor Reference Guide on page 1010 for a complete list of compatible sensors.

For mounting:

- 1- Insert the square nut (A) in its seat on the "S 00" bracket
- 2- Insert the bracket into the groove
- 3- Insert the sensor into the bracket
- 4- Run the sensor until the lamp is on
- 5- Lock the bracket with the screw (B) but don't overtighten it



PLG-PRO Gripper Kit for Sawyer with PE-1640

Contact: Cobots@EMICorp.com

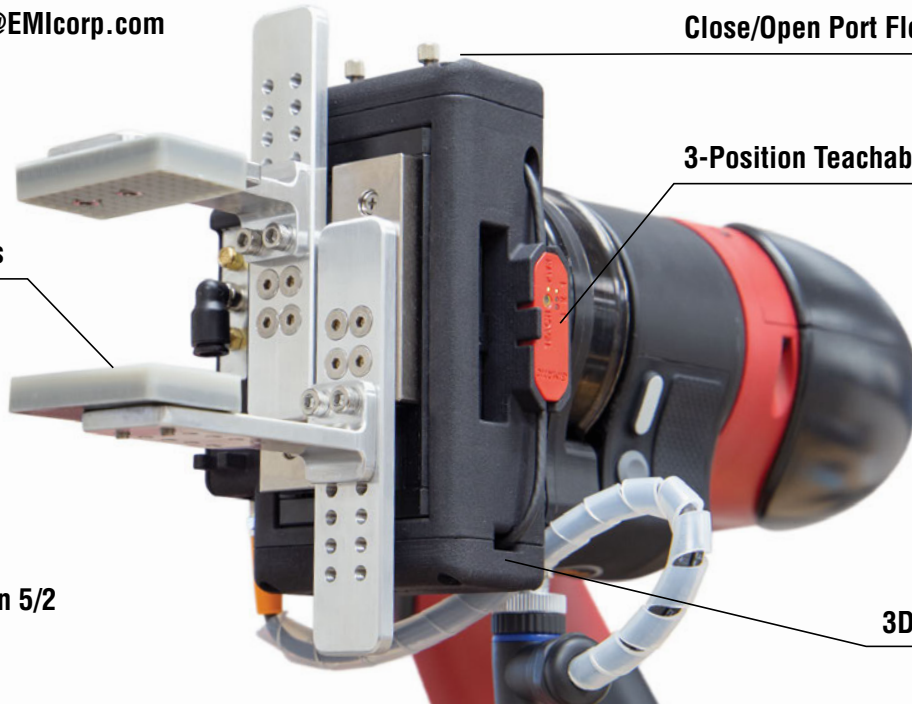
Close/Open Port Flow Controls

Silicone Pads

3-Position Teachable Sensor

Not shown: Built-in 5/2 solenoid valve

3D Printed Shroud



X-Grippers

- XP-...: Two-jaw parallel gripper.
- XT-...: Three-jaw parallel gripper.
- XA-...: Two-jaw angular gripper.
- XR-...: Two-jaw radial gripper.
- Double acting.
- Self-centering.
- Very high performance/cost ratio.
- Gripper mounting possible on two sides.
- See Sensor Reference Guide on page 1010 for a complete list of compatible sensors.



#6292



#6291



#6288



#6287



#6290



#6289



#6294



#6293

For more information visit: www.EMlcorp.com

X-Grippers

Note: XP-20 and XP-26 use special FDA approved 'Molykote white bearing grease' and have stainless screws. Both can be used in food applications. Bodies are made of POM (-58°–210°F) and are not recommended for wash down.

Part#	XP-20	XP-26
Quick#	6289	6290
Price	\$279.00	\$388.00
Pressure range	30–116 psi	
Closing total gripping force at 87 psi	38 lbf	49.4 lbf
Opening total gripping force at 87 psi	45 lbf	54 lbf
Total stroke (± 0.2 mm)	8mm	13.2mm
Closing time without load	0.02s	0.05s
Maximum repeatability tolerance	± 0.02 mm	
Mid-stroke detection capability	Yes, see Sensor Reference Guide on page 1010 for details.	
Weight	160g	300g

Part#	XT-20	XT-26
Quick#	6293	6294
Price	\$345.00	\$475.00
Pressure range	36–116 psi	
Closing total gripping force at 87 psi	38.4 lbf	49.2 lbf
Opening total gripping force at 87 psi	45 lbf	54 lbf
Stroke (± 0.2 mm)	3 x 3.6mm	3 x 6.6mm
Closing time without load	0.02s	0.05s
Maximum repeatability tolerance	± 0.02 mm	
Mid-stroke detection capability	Yes, see Sensor Reference Guide on page 1010 for details.	
Weight	210g	350g

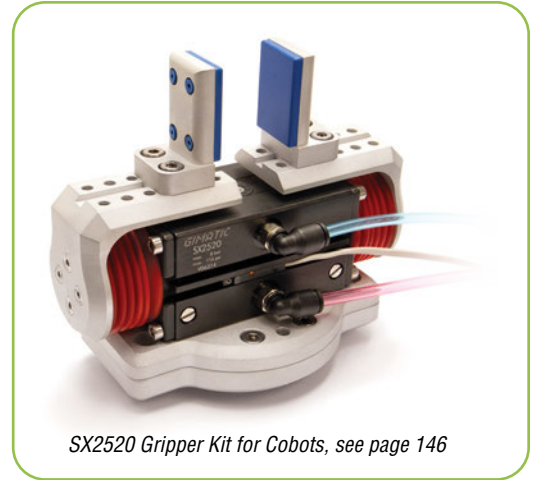
Part#	XA-20	XA-26
Quick#	6287	6288
Price	\$235.00	\$305.00
Pressure range	30–116 psi	
Closing total torque at 87 psi	8.2 in-lbf	14 in-lbf
Opening total torque at 87 psi	8.8 in-lbf	15 in-lbf
Stroke ($\pm 2^\circ$)	2 x 30°	2 x 32°
Closing time without load	0.02s	0.03s
Maximum repeatability tolerance	$\pm 0.04^\circ$	
Mid-stroke detection capability	Yes, see Sensor Reference Guide on page 1010 for details.	
Weight	140g	250g

Part#	XR-20	XR-26
Quick#	6291	6292
Price	\$268.00	\$336.00
Pressure range	30–116 psi	
Closing maximum torque at 87 psi each jaw	13.3 in-lbf	26.5 in-lbf
Opening maximum torque at 87 psi each jaw	14.2 in-lbf	28.3 in-lbf
Stroke ($\pm 2^\circ$)	2 x 92°	2 x 92°
Closing time without load	0.08s	0.12s
Maximum repeatability tolerance	$\pm 0.06^\circ$	
Mid-stroke detection capability	Yes, see Sensor Reference Guide on page 1010 for details.	
Weight	140g	260g

Use Quick#s for easy online ordering.

Two-Jaw Completely Sealed Gripper – SX

- Parallel, self-centering gripper.
- Suitable for Clean Room applications.
- Designed for use in harsh environments.
- Completely sealed, with IP67 protection class.
- Very high grip force.
- Normally closed models available on request.
- See Sensor Reference Guide on page 1010 for a complete list of compatible sensors.



Quick#	7164	7165	7166	7167	7168	7169	7170	7171
Part#	SX2510	SX2520	SX4020	SX4040	SX5030	SX5060	SX6340	SX6380
Price	\$587.00	\$594.00	\$808.00	\$827.00	\$1042.00	\$1121.00	\$1199.00	\$1433.00
Medium	Filtered, lubricated / non-lubricated compressed air							
Operating pressure range	30–116 psi							
Total Opening force at 87 psi	112.4 lbf	112.4 lbf	292 lbf	292 lbf	472 lbf	472 lbf	764 lbf	764 lbf
Total Closing force at 87 psi	87.6 lbf	87.6 lbf	224.8 lbf	224.8 lbf	360 lbf	360 lbf	562 lbf	562 lbf
Stroke (±0.5mm)	10mm	20mm	20mm	40mm	30mm	60mm	40mm	80mm
Opening / closing time without load	0.03s	0.05s	0.03s	0.08s	0.06s	0.10s	0.20s	0.30s
Repetition accuracy	0.05mm							
Mid-stroke detection capability	Yes, see Sensor Reference Guide on page 1010 for details.							
Weight	260g	310g	750g	900g	1300g	1700g	2800g	3500g

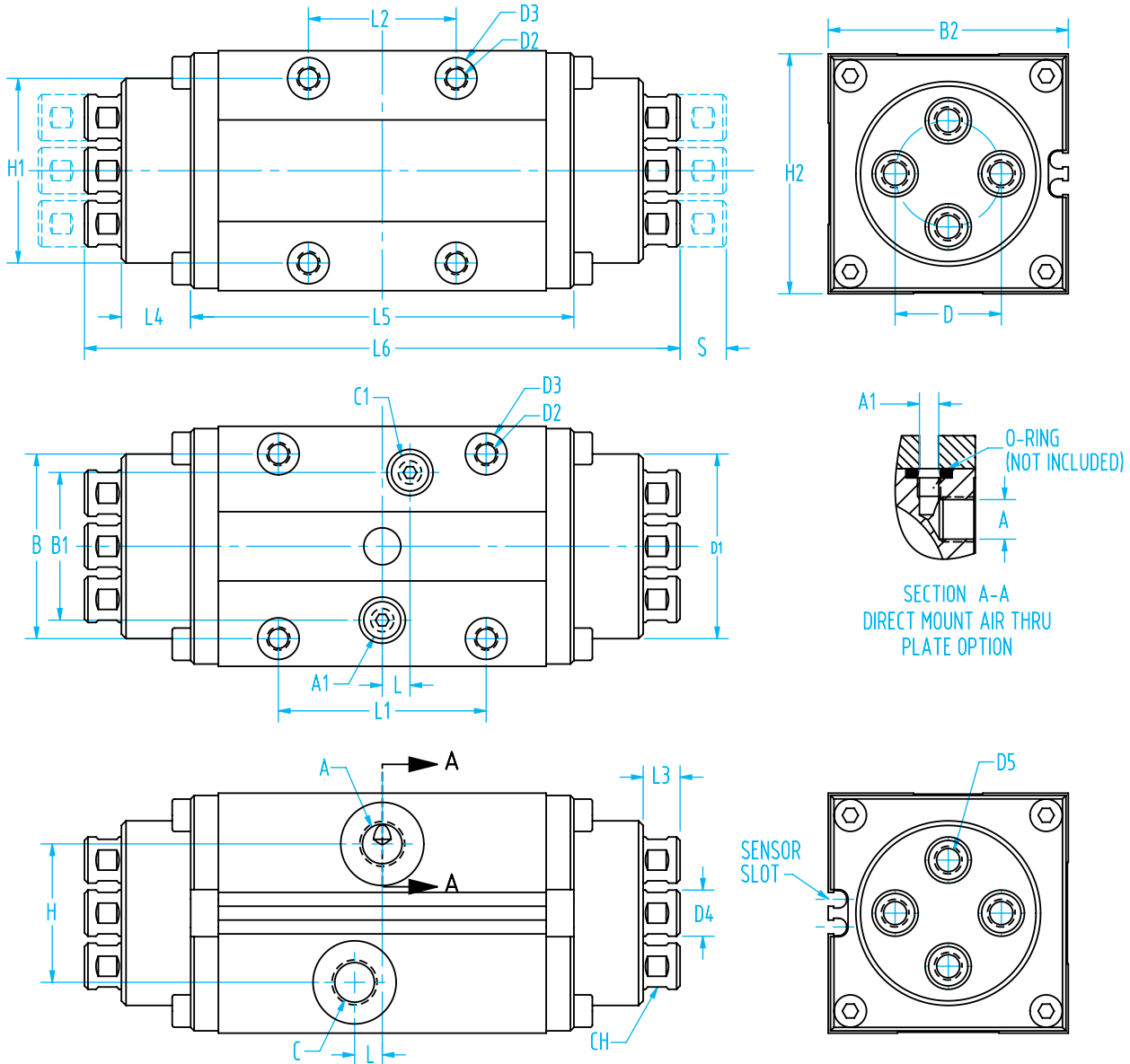


Optional Silicone Bellows to protect columns (sold individually)

Quick#	Part#	Price	For Gripper
7176	SX25S01	\$26.10	SX25__
7177	SX40S01	\$27.35	SX40__
7178	SX50S01	\$28.70	SX50__
7179	SX63S01	\$30.06	SX63__

For more information visit: www.EMlcorp.com

Two-Jaw Completely Sealed Gripper – SX

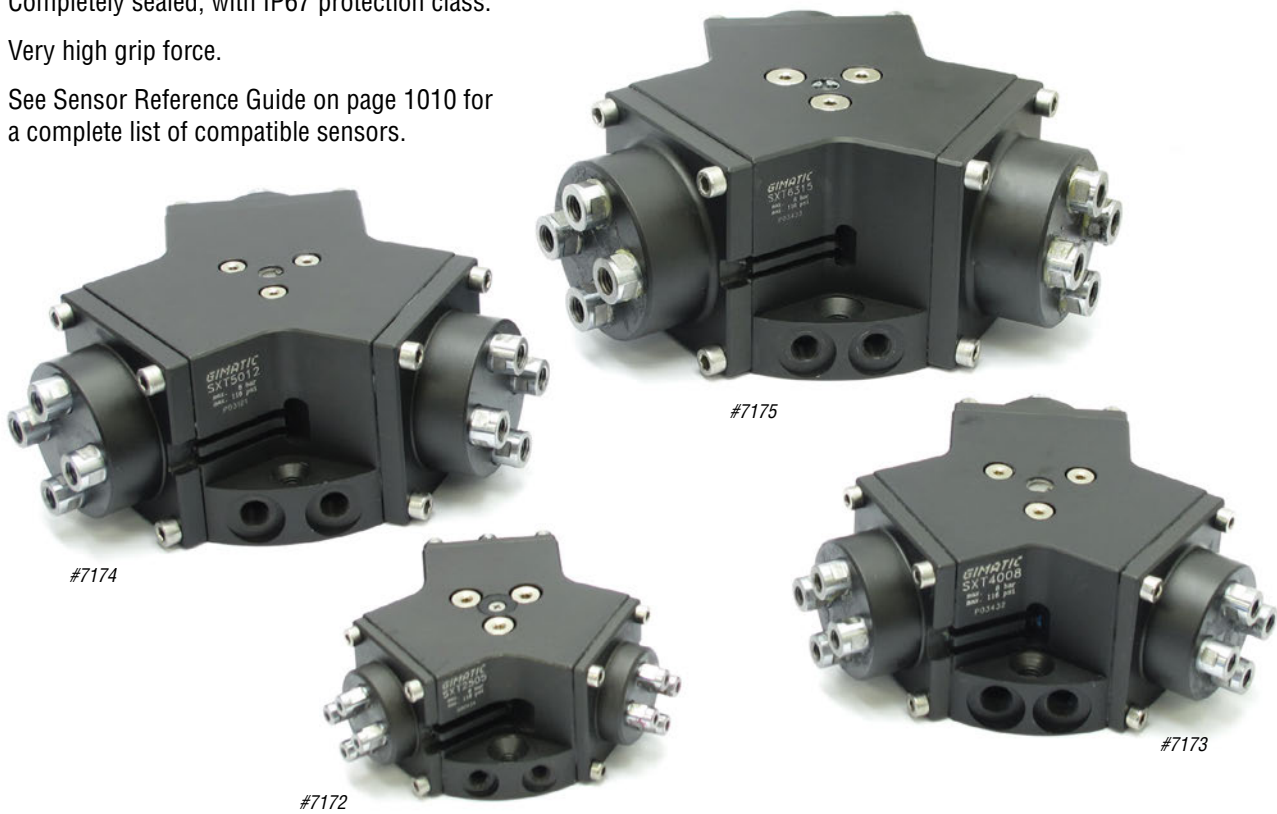


	SX2510	SX2520	SX4020	SX4040	SX5030	SX5060	SX6340	SX6380
A	M5	M5	G1/8	G/8	G1/8	G1/8	G1/8	G1/8
A1	M5	M5	M5	M5	M5	M5	G1/8	G1/8
B	±0.02	23	23	40	40	50	50	60
B1		22.5	22.5	32	32	38	38	45
B2		38	38	52	52	64	64	79
C	M5	M5	G1/8	G1/8	G1/8	G1/8	G1/8	G1/8
C1	M5	M5	M5	M5	M5	M5	G1/8	G1/8
D	±0.02	Ø15	Ø15	Ø23	Ø23	Ø33	Ø33	Ø38
D1		Ø27	Ø27	Ø40	Ø40	Ø50	Ø50	Ø63
D2		M4 ↓ 6.5	M4 ↓ 6.5	M5 ↓ 10	M5 ↓ 10	M6 ↓ 10	M6 ↓ 10	M8 ↓ 15
D3	H8	Ø7	Ø7	Ø9	Ø9	Ø9	Ø9	Ø12
D4	f7	Ø6	Ø6	Ø10	Ø10	Ø12	Ø12	Ø16
D5		M3 ↓ 6	M3 ↓ 6	M6 ↓ 12	M6 ↓ 12	M8 ↓ 20	M8 ↓ 20	M10 ↓ 20
H		22.5	22.5	30	30	40	40	45
H1	±0.02	23	23	40	40	50	50	60
H2		38	38	52	52	64	64	79
L		-	-	6	6	10	10	10
L1	±0.02	30	30	45	45	50	50	70
L2	±0.02	30	30	32	32	35	35	50
L3		7.5	7.5	8	8	8.5	8.5	9.5
L4		7.5	7.5	15	15	18	18	26
L5		59	73	84	110	106	146	133
L6		89	103	130	156	159	199	204
S		5	10	10	20	15	30	20
CH		5	5	9	9	11	11	14

A/A1: Supply compressed air to open gripper
 C/C1: Supply compressed air to close gripper
 S: Stroke per finger (x2 for full gripper stroke)
 CH: Wrench size
 Options: Direct mount/air through plate option requires an o-ring to seal air between the plate and gripper (see section view A-A). This option also requires a plug to be placed in the A/C ports since compressed air will be supplied to the A1/C1 ports.

Three-Jaw Completely Sealed Gripper – SXT

- Parallel, self-centering gripper.
- Suitable for Clean Room applications.
- Designed for use in harsh environments.
- Completely sealed, with IP67 protection class.
- Very high grip force.
- See Sensor Reference Guide on page 1010 for a complete list of compatible sensors.



Quick#	7172	7173	7174	7175
Part#	SXT2505	SXT4008	SXT5012	SXT6315
Price	\$813.00	\$978.00	\$1147.00	\$1433.00
Medium	Filtered, lubricated / non-lubricated compressed air			
Operating pressure range	36–116 psi			
Total Opening force at 87 psi	168.6 lbf	438 lbf	708 lbf	1113 lbf
Total Closing force at 87 psi	131.4 lbf	337.2 lbf	540 lbf	810 lbf
Stroke (±0.5mm)	3x5mm	3x8mm	3x12mm	3x15mm
Opening / closing time without load	0.02s	0.02s	0.05s	0.15s
Repetition accuracy	0.05mm			
Mid-stroke detection capability	Yes, see Sensor Reference Guide on page 1010 for details.			
Weight	420g	1100g	2000g	3800g

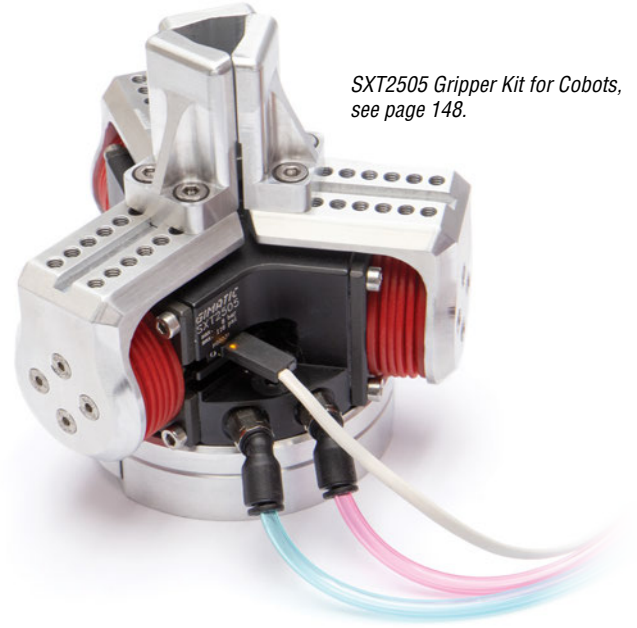


Optional Silicone Bellows to protect columns (sold individually)

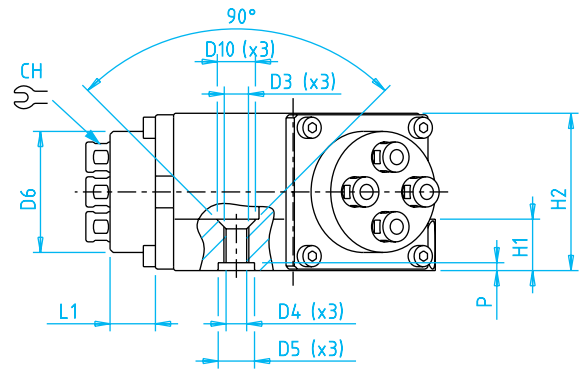
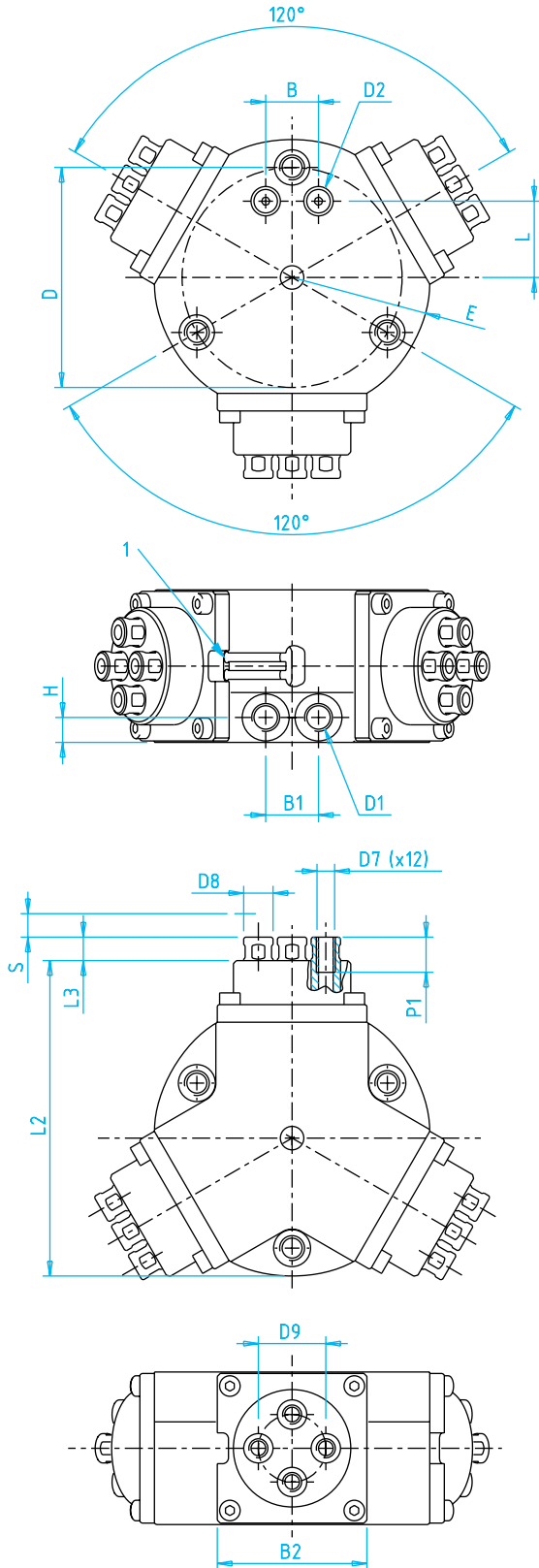
Quick#	Part#	Price	For Gripper
7176	SX25S01	\$26.10	SXT2505
7177	SX40S01	\$27.35	SXT4008
7178	SX50S01	\$28.70	SXT5012
7179	SX63S01	\$30.06	SXT6315

For more information visit: www.EMlcorp.com

Three-Jaw Completely Sealed Gripper – SXT



SXT2505 Gripper Kit for Cobots, see page 148.



	SXT2505	SXT4008	SXT5012	SXT6315	
B	16	18	24	24	
B1	16	18	24	24	
B2	38	51	63	78	
D	±0.02	Ø59	Ø75	Ø98	Ø114
D1	M5	G1/8	G1/8	G1/8	
D2	M3	M5	M5	M5	
D3	Ø5.2	Ø6.8	Ø6.8	Ø8.5	
D4	M6	M8	M8	M10	
D5	H8	Ø9	Ø12	Ø12	Ø14
D6	Ø27	Ø40	Ø50	Ø63	
D7	M3	M6	M8	M10	
D8	f7	Ø6	Ø10	Ø12	Ø14
D9	±0.02	15	Ø23	Ø33	Ø38
D10		Ø11.2	Ø12.6	Ø12.6	Ø17.3
E		R36	R47	R58	R69
H		6	8.5	10	11
H1		12	17	20	22
H2		38	52	64	80
L		24	26	38	45
L1		7.5	15	18	26
L2		78	107.5	141.5	162
L3		7.5	8	8.5	9.5
P	±0.1	2.1	2.6	2.6	2.6
P1		6	12	20	20
S (x2)		5	8	12	15
CH		5	9	11	14

Two-Jaw Parallel Self-Centering Gripper – DH

- Double acting, with normally closed (-NC) or normally open (-NO) option.
- Self-centering.
- Many jaw strokes available.
- See Sensor Reference Guide on page 1010 for a complete list of compatible sensors.

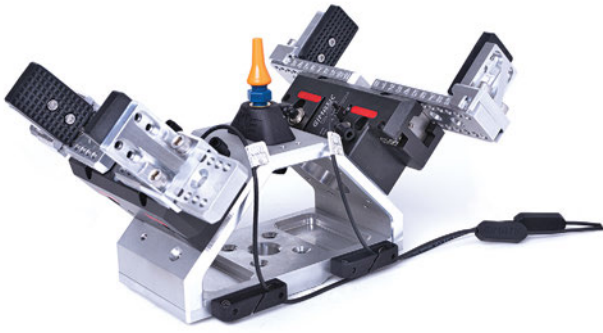


Quick#	7180	7181	7182	7183	7184	7185	7186
Part#	DH1905	DH2208	DH2204	DH2712	DH2706	DH3516	DH3508
Price	\$618.00	\$650.00	\$650.00	\$707.00	\$707.00	\$786.00	\$786.00
Medium	Filtered, lubricated / non-lubricated compressed air						
Operating pressure range	29–116 psi				22–116 psi		
Total opening force at 87 psi	33.7 lbf	45 lbf	90 lbf	65.2 lbf	130.4 lbf	112.4 lbf	224.8 lbf
Total closing force at 87 psi	30.6 lbf	40.4 lbf	80.9 lbf	58.5 lbf	116.9 lbf	98.9 lbf	197.8 lbf
Stroke (± 0.3 mm)	5mm	8mm	4mm	12mm	6mm	16mm	8mm
Opening / closing time without load	0.01s	0.02s	0.02s	0.03s	0.03s	0.03s	0.03s
Repetition accuracy	0.02mm						
Mid-stroke detection capability	Yes, see Sensor Reference Guide on page 1010 for details.						
Weight	87g	148g	150g	255g	260g	460g	470g

Use Quick#s for easy online ordering.

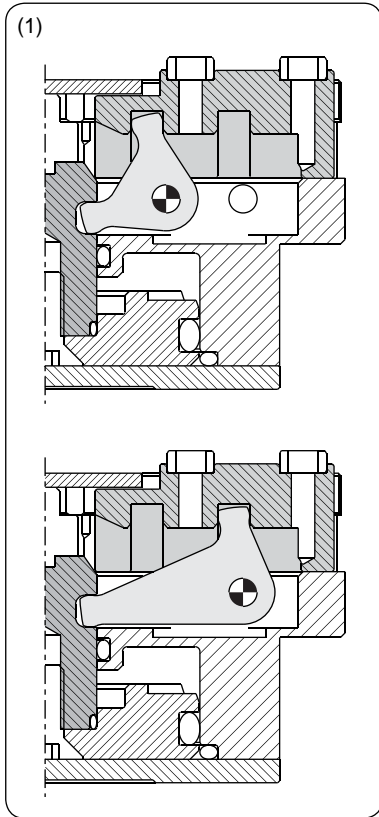
For more information visit: www.EMlcorp.com

Two-Jaw Parallel Self-Centering Gripper – DH

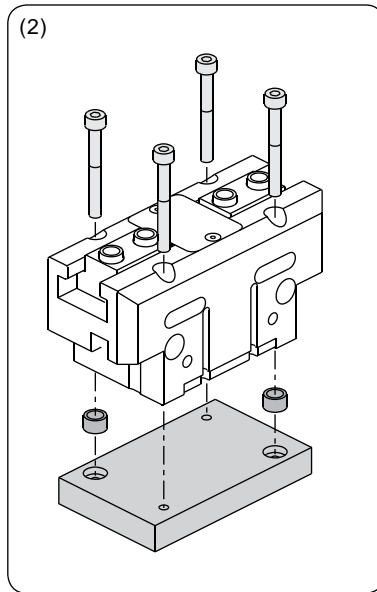


NEW

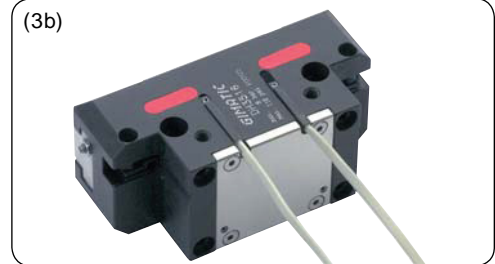
Automate your Machine Tending Process!
Find our Machine Tending Gripper Kits for DH & TH grippers on page 162.



(1) High efficiency force transmission / long stroke or short stroke.



(2) Possibility of front fastening with through screws.



(3) Optional teachable PRO (3a), SS or SN (3b), or inductive (3c) sensors available.

Quick#	7187	7188	7189	7190	7191	7192	7193	7194
Part#	DH4420	DH4410	DH5526	DH5512	DH6632	DH6616	DH8750	DH8728
Price	\$894.00	\$894.00	\$1044.00	\$1044.00	\$1405.00	\$1405.00	\$1796.00	\$1796.00
Medium	Filtered, lubricated / non-lubricated compressed air							
Operating pressure range	22–116 psi							
Total opening force at 87 psi	182 lbf	364.2 lbf	281 lbf	607 lbf	413.6 lbf	827.3 lbf	701.4 lbf	1236.4 lbf
Total closing force at 87 psi	164.1 lbf	328.2 lbf	249.5 lbf	539.5 lbf	368.7 lbf	737.4 lbf	638.4 lbf	1124 lbf
Stroke (±0.3mm)	20mm	10mm	26mm	12mm	32mm	16mm	50mm	28mm
Opening / closing time without load	0.08s	0.08s	0.11s	0.08s	0.15s	0.15s	0.21s	0.21s
Repetition accuracy	0.02mm							
Mid-stroke detection capability	Yes, see Sensor Reference Guide on page 1010 for details.							
Weight	780g	800g	1350g	1370g	2630g	2670g	4990g	5050g

Three-Jaw Parallel Self-Centering Gripper – TH

- Double acting, with normally closed (-NC) or normally open (-NO) option.
- Self-centering.
- Three jaw stroke range from 2 to 16mm.
- See Sensor Reference Guide on page 1010 for a complete list of compatible sensors.
- Optional pusher bar to assist in part retention or release.



Optional Push Bar

Quick#	Part#	Price	For Gripper
7530	TH27K	\$103.00	#7146
7531	TH33K	\$109.00	#7147 & #7148
7532	TH45K	\$115.00	#7149 & #7150
7533	TH54K	\$123.00	#7151 & #7152
7534	TH76K	\$134.00	#7153 & #7154
7535	TH96K	\$140.00	#7155 & #7156
7536	TH125K	\$153.00	#7157 & #7158



TH76..



TH33..



TH54..



TH45..



TH2725

Quick#	7146	7147	7148	7149	7150	7151	7152
Part#	TH2725	TH3304	TH3302	TH4506	TH4503	TH5408	TH5404
Price	\$758.00	\$786.00	\$786.00	\$804.00	\$804.00	\$846.00	\$846.00
Medium	Filtered, lubricated / non-lubricated compressed air						
Operating pressure range	22–116 psi						
Total opening force at 87 psi	64.2 lbf	96 lbf	192 lbf	178.8 lbf	357 lbf	256.2 lbf	512.4 lbf
Total closing force at 87 psi	58.7 lbf	85.5 lbf	168.6 lbf	165 lbf	330 lbf	236.1 lbf	478.8 lbf
Stroke (±0.5mm)	3x2.5mm	3x4mm	3x2mm	3x6mm	3x3mm	3x8mm	3x4mm
Opening / closing time without load	0.02s	0.02s	0.02s	0.05s	0.05s	0.05s	0.05s
Repetition accuracy	0.02mm						
Mid-stroke detection capability	Yes, see Sensor Reference Guide on page 1010 for details.						
Weight	117g	237g	240g	430g	440g	760g	770g

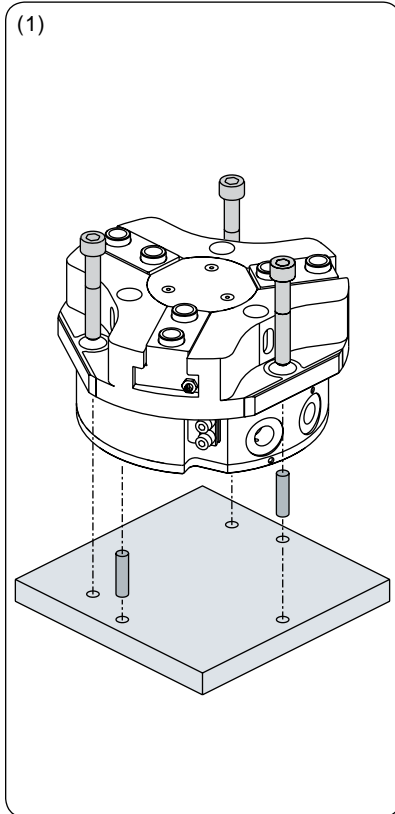
For more information visit: www.EMlcorp.com

Three-Jaw Parallel Self-Centering Gripper – TH

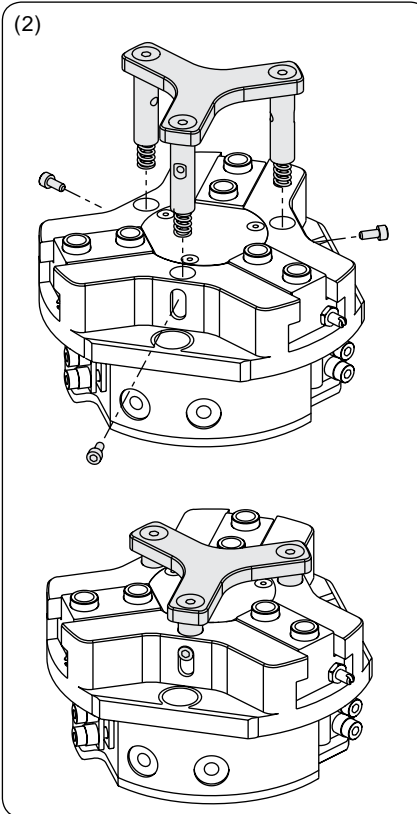


NEW

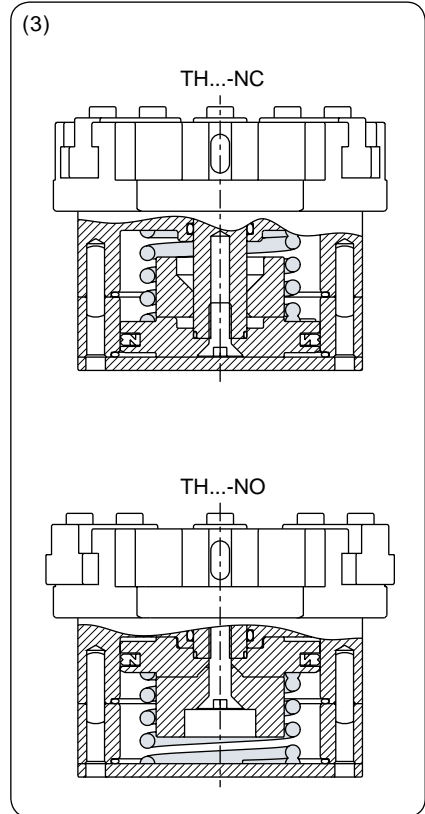
Automate your Machine Tending Process!
Find our Machine Tending Gripper Kits for
DH & TH grippers on page 162.



(1) Possibility of front fastening with through screws.



(2) This accessory is NOT included and can be installed to hold payload during the gripper release.



(3) Double acting with optional springs (normally closed or normally open).

Quick#	7153	7154	7155	7156	7157	7158
Part#	TH7610	TH7605	TH9613	TH9606	TH12516	TH12508
Price	\$946.00	\$946.00	\$1134.00	\$1134.00	\$1787.00	\$1787.00
Medium	Filtered, lubricated / non-lubricated compressed air					
Operating pressure range	22–116 psi					
Total opening force at 87 psi	512.4 lbf	1011.6 lbf	816 lbf	1767 lbf	1382.4 lbf	2745 lbf
Total closing force at 87 psi	485.4 lbf	964.5 lbf	782.4 lbf	1686 lbf	1267.8 lbf	2522.4 lbf
Stroke (±0.5mm)	3x10mm	3x5mm	3x13mm	3x6mm	3x16mm	3x8mm
Opening / closing time without load	0.20s	0.20s	0.20s	0.20s	0.30s	0.30s
Repetition accuracy	0.02mm					
Mid-stroke detection capability	Yes, see Sensor Reference Guide on page 1010 for details.					
Weight	1420g	1430g	2450g	2490g	4920g	4990g

Two-Jaw Self-Centering Parallel Gripper – PQ

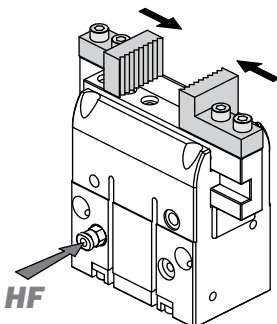
- Double acting, can be NO or NC.
- Can be setup as Normally Open or Normally Closed by swapping the jaw that each gripper finger is mounted to. See website for additional information.
- Robust guidance.
- Self-centering.
- Strokes from 8mm to 63mm.
- See Sensor Reference Guide on page 1010 for a complete list of compatible sensors.



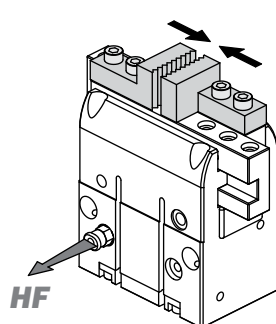
Quick#	7138	7139	7140	7141	7142	7143	7144	7145
Part#	PQ1608	PQ2012	PQ2516	PQ3015	PQ3523	PQ4533	PQ5047	PQ6063
Price	\$315.00	\$327.00	\$361.00	\$650.00	\$705.00	\$854.00	\$935.00	\$1,166.00
Medium	Filtered, lubricated / non-lubricated compressed air							
Operating pressure range	51–116 psi							
Total gripping force at 87 psi	27 lbf	40.4 lbf	64.4 lbf	90 lbf	126 lbf	206.8 lbf	301.2 lbf	418 lbf
Stroke (±0.5mm)	8mm	12mm	16mm	15mm	23mm	33mm	47mm	63mm
Maximum working frequency	2Hz	2Hz	2Hz	2Hz	2Hz	1Hz	1Hz	1Hz
Repetition accuracy	0.02mm							
Mid-stroke detection capability	Yes, see Sensor Reference Guide on page 1010 for details.							
Weight	63g	110g	200g	330g	610g	1270g	2430g	4900g

Use Quick#s for easy online ordering.

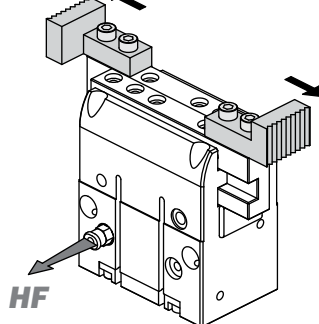
Normally open with outside gripping



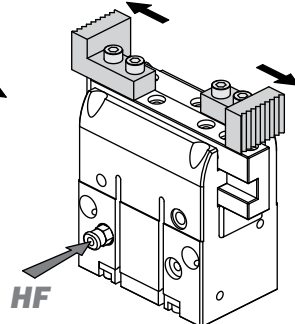
Normally closed with outside gripping



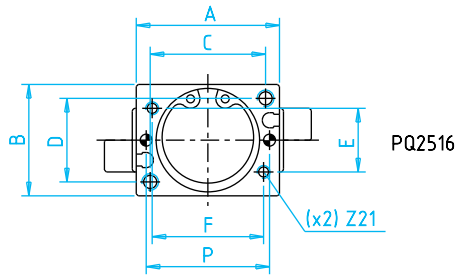
Normally open with inside gripping



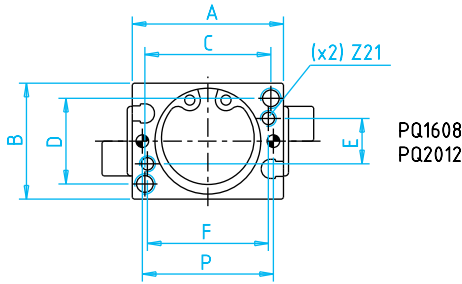
Normally closed with inside gripping



Two-Jaw Self-Centering Parallel Gripper – PQ

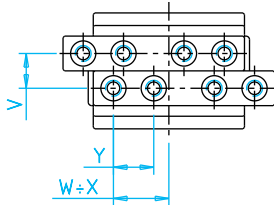
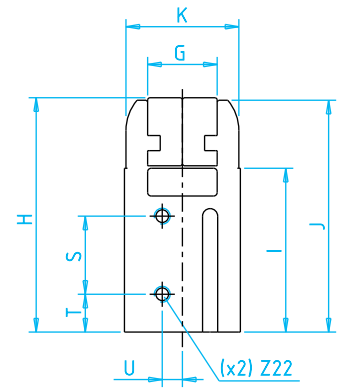
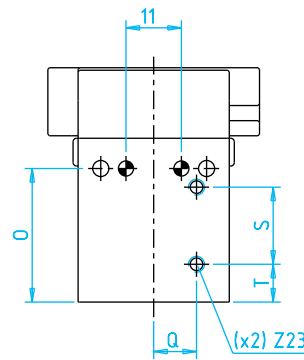
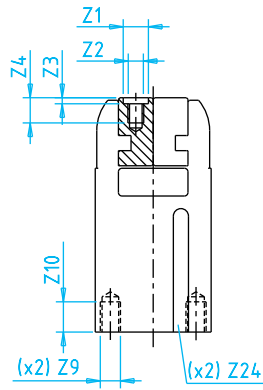
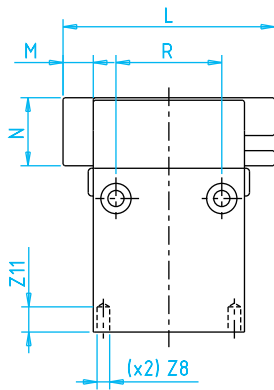
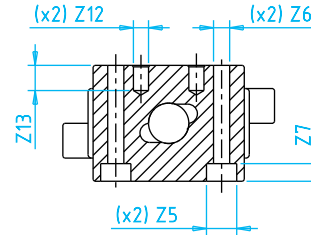


PQ2516



PQ1608
PQ2012

- Z1 - Spot face for the centering sleeve of the gripping tool
- Z2 - Threaded hole for the gripping tool fastening
- Z6 - Through hole for the gripper side fastening
- Z9 - Threaded hole for the gripper fastening on the bottom
- Z12 - Spot face for the centering sleeve of the gripper body
- Z15 - Through hole for the gripper fastening on the bottom
- Z17 - Main port for air fittings
- Z21 - Ports for direct air supply from the bottom
- Z22 - Air supply ports
- Z23 - Air supply ports
- Z24 - C-slot sensor slots

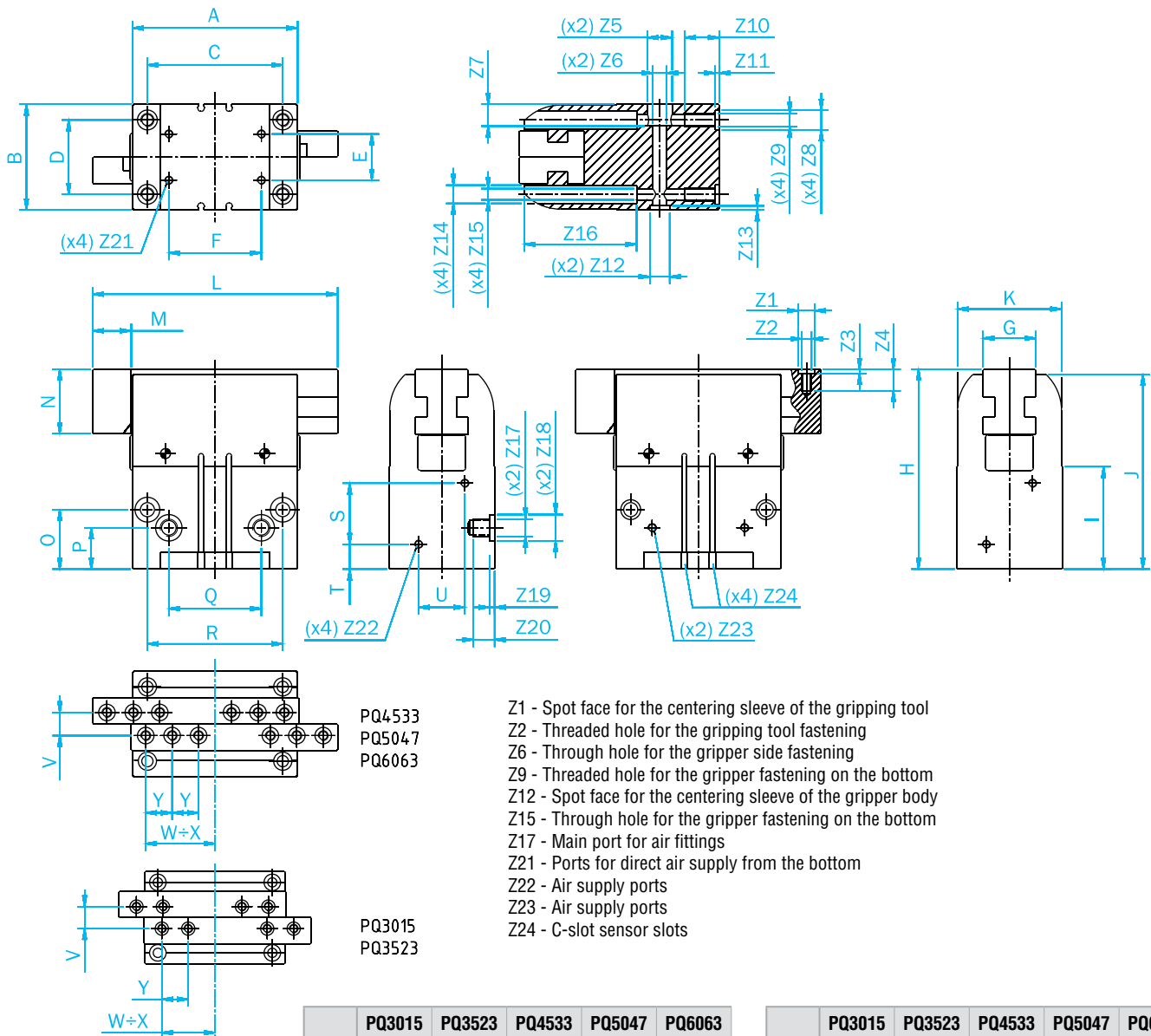


W ÷ X is the range of distance from centerline (min to max). Minimum is the X dimension (fully closed), Maximum is the W dimension (fully open).

	PQ1608	PQ2012	PQ2516
A	24	30	36
B	18	23	28
C	20	25	29
D	14	17	21
E	7	9	16
F	19.4	24	28
G	11	13.8	16
H	44	46.5	57
I	32.5	32.5	37.5
J	43.5	46	56
K	17.5	22.4	27
L	32	42	52
M	4	6	8
N	11	13.5	18
O	26	26.5	28.5
P	21	26	31
Q	7.5	8.5	11
R	17	21	24
S	13.5	15.3	16
T	7	7.5	8
U	3.7	4	8
V	5.5	6.9	8
W	13	17	21
X	9	11	13
Y	6	8	9

	PQ1608	PQ2012	PQ2516
Z1	5	5	6
Z2	M3	M3	M4
Z3	1.2	1.2	2.5
Z4	4	5	7.5
Z5	Ø5	Ø6	Ø6
Z6	Ø2.6	Ø3.2	Ø3.2
Z7	3	3.5	3.5
Z8	Ø2H7	Ø2.5H7	Ø3H7
Z9	M3	M4	M4
Z10	5	6	6
Z11	3	5	5
Z12	Ø2.5H7	Ø3H7	Ø3H7
Z13	3	5	5
Z14	M2.5	M3	M3
Z15	M3	M3	M5
Z16	M2.5	M3	M3
Z17	M5	M5	M5
Z18	-	-	-
Z19	-	-	-
Z20	5	5	5
Z21	M3	M4	M3
Z22	-	-	-
Z23	M5	M5	M5

Two-Jaw Self-Centering Parallel Gripper – PQ



- Z1 - Spot face for the centering sleeve of the gripping tool
- Z2 - Threaded hole for the gripping tool fastening
- Z6 - Through hole for the gripper side fastening
- Z9 - Threaded hole for the gripper fastening on the bottom
- Z12 - Spot face for the centering sleeve of the gripper body
- Z15 - Through hole for the gripper fastening on the bottom
- Z17 - Main port for air fittings
- Z21 - Ports for direct air supply from the bottom
- Z22 - Air supply ports
- Z23 - Air supply ports
- Z24 - C-slot sensor slots

	PQ3015	PQ3523	PQ4533	PQ5047	PQ6063
A	50	64	80	100	125
B	38	42	50	64	80
C	42	52	66	82	100
D	27	32	38	45	56
E	20	18	26	28	34
F	28	36	44	56	70
G	20	24	28	32	42
H	55	70	93	121	156
I	30	38	45	62	85
J	53	68	90	118	153
K	37.6	41.6	49	63	79
L	65.5	87.5	118.5	148.5	191.5
M	7.5	11.5	16.5	23.5	31.5
N	18	22	33	39	45
O	25	22	34	36	55
P	17	25	24	25	40
Q	28	35	44	56	70
R	42	52	66	82	100
S	-	-	-	37	44
T	-	-	-	15	24
U	-	-	-	28	34
V	8	10	12	14	16
W	24.8	35.7	52.2	65.6	79.8
X	17.3	24.2	35.7	42	48.3
Y	10	12	14	16	20

	PQ3015	PQ3523	PQ4533	PQ5047	PQ6063
Z1	Ø5 H8	Ø6 H8	Ø8 H8	Ø10 H8	Ø12 H8
Z2	M3	M4	M5	M6	M6
Z3	1.2	2.5	2.5	2.5	2.5
Z4	7.2	9.5	11.5	13	12.5
Z5	Ø6	Ø9	Ø11	Ø15	Ø15
Z6	Ø3.5	Ø5.2	Ø6.6	Ø8.5	Ø8.5
Z7	10	10	9	13.2	17
Z8	Ø6 H8	Ø8 H8	Ø10 H8	Ø12 H8	Ø12 H8
Z9	M4	M5	M6	M8	M8
Z10	10.5	14	18	21	22.5
Z11	2.5	2.5	2.5	2.5	2.5
Z12	Ø6 H8	Ø8 H8	Ø10 H8	Ø12 H8	Ø12 H8
Z13	2.5	2.5	2.5	2.5	2.5
Z14	Ø6	Ø7.5	Ø9	Ø11	Ø11
Z15	Ø3.3	Ø4.2	Ø5	Ø6.8	Ø6.8
Z16	22	38	45	68	82
Z17	M5	M5	M5	G1/8	G1/8
Z18	-	-	Ø10	Ø16	Ø18
Z19	-	-	2.5	3	3
Z20	5	5	9.3	13	16.3
Z21	M3	M4	M5	M5	M5
Z22	-	-	-	M5	M5
Z23	M5	M5	M5	M5	M5

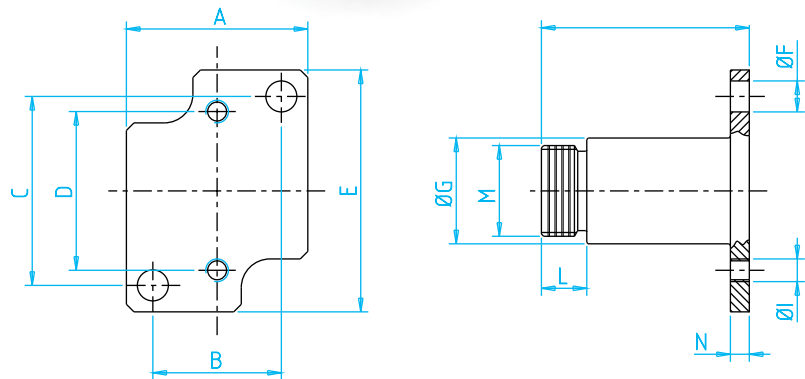
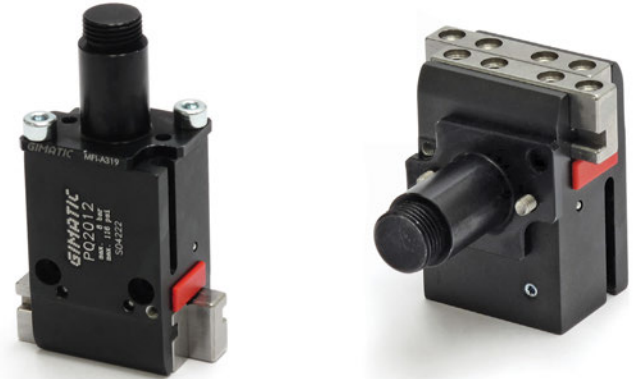
Two-Jaw Self-Centering Parallel Gripper – PQ

Mounting Brackets for PQ Grippers

Quick#	Part#	Price	Use with:	Wt.
7328	MFI-A318	\$28.00	PQ1608	11g
7329	MFI-A319	\$30.50	PQ2012	18g
7330	MFI-A320	\$27.60	PQ2516	20g


Includes Fasteners.

Quick#	7328	7329	7330
For:	PQ1608	PQ2012	PQ2516
A	19.5	24	28
B	14	17	21
C	20	25	29
D	17	21	24
E	25.5	32	36
F	Ø3.1	Ø4.2	Ø4.2
G	Ø10	Ø14	Ø14
H	22	27.5	29
I	M2.5	M3	M3
L	5	6	6
M	M8x1	M12x1	M12x1
N	3	2.5	4



Online product pages have all the information you need!

Product Detail



6327 GIMATIC Parallel Gripper GS-20

A reliable, maintenance-free gripper with many different options for fastening. GS Grippers feature a patented backlash adjusting system. Great grip force, quality, price, and value! Once you try these grippers, you'll probably standardize on using these for all of your robotic/EOAT needs.

Custom 3D printed gripper fingers are available, Contact EOAT Engineering today!

Item #: GS 20
\$161.00 Each
 Quantity:

Available: In Stock
 CAD File Download
 Exploded View & Parts List
 Technical Specifications
 Additional Specifications
 360 Degree View













Overview | Technical Specifications | Dimensional Drawing | Sensor Options | Midstroke Sensor Detection

- 207g
- 10.4mm Stroke
- Double Acting
- MS Air port
- Finger blanks & Mounting brackets available
- Optional magnetic sensors available
- Mid-stroke detection capability with use of hall effect sensor or GIMATIC PRO sensor
- Opening total gripping force at 87psi: 48lbf
- Closing total gripping force at 87psi: 42lbf

Related Items

- Application examples
- CAD file downloads
- Additional specifications
- Dimensional drawings
- Related items
- Replacement parts

Related Items

 1920 Aluminum Mounting Bracket for size 20 Grippers Item #: GMB G5GW 20 \$31.00 Each Qty: <input type="text"/> <input type="button" value="Add to Cart"/>	 5888 Aluminum Finger Blanks for GS-20 Why machine custom fingers from scratch? Start with these aluminum finger blanks. They are easy to shape to your part. Item #: GS 20 FBA \$27.20 Each Qty: <input type="text"/> <input type="button" value="Add to Cart"/>	 5889 Acetal Finger Blanks for GS-20 Why machine custom fingers from scratch? Start with these acetal finger blanks. They are easy to shape to your part. Item #: GS 20 FBP \$27.20 Each Qty: <input type="text"/> <input type="button" value="Add to Cart"/>	 102 Threaded Male MS Push-In Fitting for 4mm Tube Item #: GSF QMC M504 \$3.10 Each Qty: <input type="text"/> <input type="button" value="Add to Cart"/>
 104 Threaded Male MS Push-In Fitting for 6mm Tube Item #: GSF QMC M506 \$4.40 Each Qty: <input type="text"/> <input type="button" value="Add to Cart"/>	 118 Threaded Male MS Push-In Elbow Fitting for 4mm Tube Item #: GSF QME M504 \$3.30 Each Qty: <input type="text"/> <input type="button" value="Add to Cart"/>	 120 Threaded Male MS Push-In Elbow Fitting for 6mm Tube Item #: GSF QME M506 \$3.50 Each Qty: <input type="text"/> <input type="button" value="Add to Cart"/>	 7319 Mounting Bracket for GIMATIC & SMC size 20 Item #: MFI A323 \$37.00 Each Qty: <input type="text"/> <input type="button" value="Add to Cart"/>
 960 4mm Blue Polyurethane Tubing - 25' Coil Item #: GSU PB 0424	 957 4mm Clear Polyurethane Tubing - 25' Coil Item #: GSU PB 0424	 966 4mm Red Polyurethane Tubing - 25' Coil Item #: GSU PB 0424	 961 6mm Blue Polyurethane Tubing - 25' Coil Item #: GSU PB 0604



Easy online ordering!

- Track Orders
- Create Supply Lists
- Order from History
- Export Purchase Orders

Parallel Pneumatic Gripper – T

- Double acting
- Self-centering
- Air feeding accessible directly from the fixing plate.
- Possible to mount it on front with through screws.
- High gripping force with low weight.
- See Sensor Reference Guide on page 1010 for a complete list of compatible sensors.

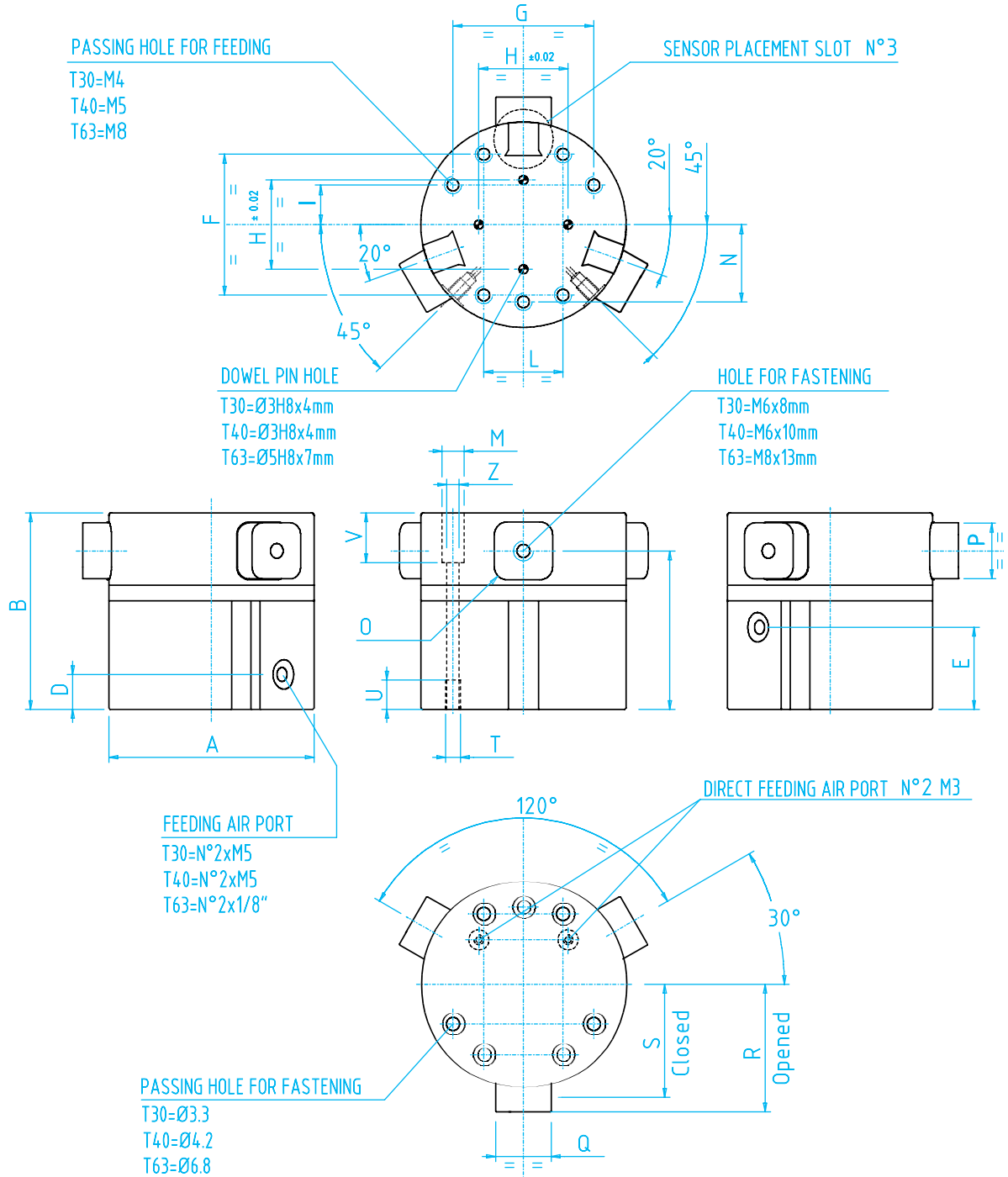


Quick#	6284	6285	6286
Part#	T30	T40	T63
Price	\$489.00	\$591.00	\$698.00
Medium	Filtered, lubricated / non lubricated compressed air		
Pressure range	36–116 psi		
Repeatability	±0.02mm	±0.02mm	±0.02mm
Closing time without load	0.01s	0.01s	0.05s
Maximum working frequency	4Hz	3Hz	2Hz
Air consumption per cycle	12cm ³	19cm ³	94cm ³
Stroke (±0.2mm)	3x3mm	3x5mm	3x9mm
Opening gripping force at 87 psi	77.4 lbf	135 lbf	324 lbf
Closing gripping force at 87 psi	70.8 lbf	121.5 lbf	297 lbf
Mid-stroke detection capability	Yes, see Sensor Reference Guide on page 1010 for details.		
Weight	325g	745g	1680g

For more information visit: www.EMlcorp.com

Parallel Pneumatic Gripper – T

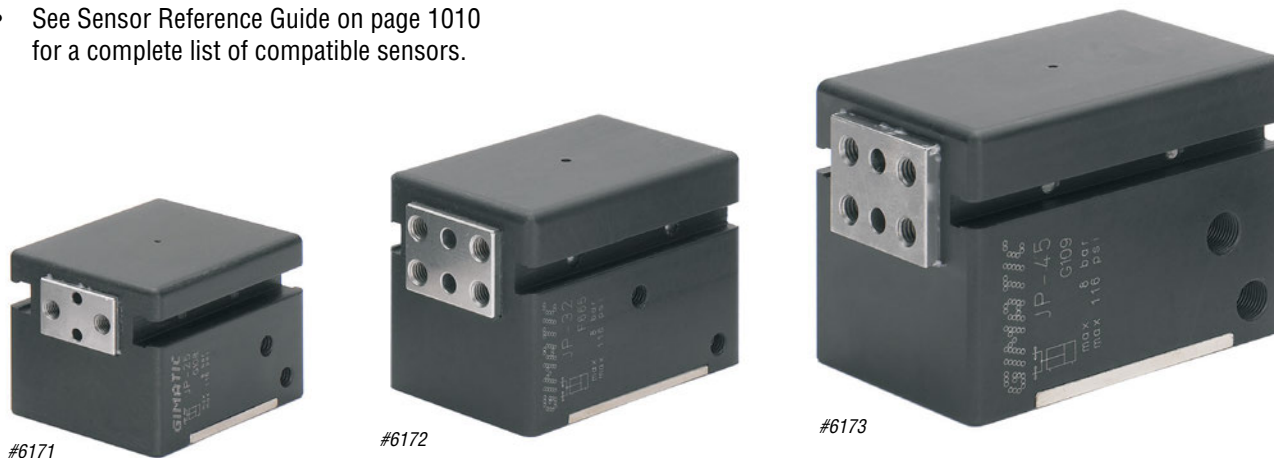
T30, T40, & T63



	A	B	C	D	E	F	G	H ±0.02	I	L	M	N	O	P -0.05	Q -0.05	R	S	T	U	V	Z
T30	ø50	59	49.5	8	27	37	-	30.4	-	21	ø6	-	3	14	14	30.5	27.5	M4	8	14	ø3.3
T40	ø70	67	54	11.9	28	48	48	30.4	13.5	27	ø7.5	26.3	4	19	19	43.6	38.5	M5	10	17	ø4.2
T63	ø90	90.5	72.8	12	38	66	-	59	-	38	ø10.5	-	5	26	26	60.6	51.5	M8	16	28.5	ø6.8

Parallel Gripper – JP

- Double acting.
- Self-centering.
- High gripping force.
- Suitable for heavy-duty applications.
- See Sensor Reference Guide on page 1010 for a complete list of compatible sensors.

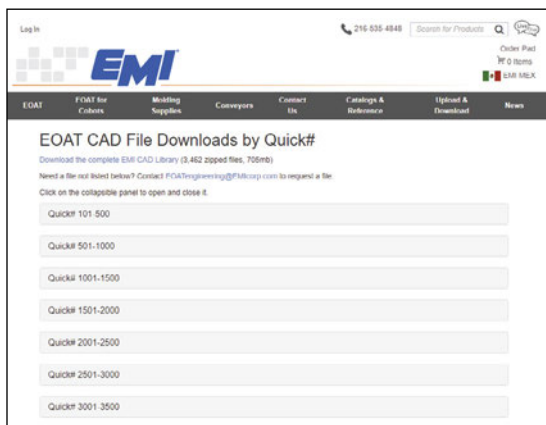


Quick#	6171	6172	6173
Part#	JP-25	JP-32	JP-45
Price	\$436.00	\$484.00	\$586.00
Medium	Filtered, lubricated / non-lubricated compressed air		
Pressure range	36–116 psi		
Opening total gripping force at 87 psi	60.7 lbf	157.4 lbf	224.8 lbf
Closing total gripping force at 87 psi	54 lbf	134.8 lbf	209 lbf
Total stroke (± 0.2 mm)	9.5mm	12mm	18.9mm
Maximum repeatability tolerance	0.02mm		
Mid-stroke detection capability	Yes, see Sensor Reference Guide on page 1010 for details.		
Weight	240g	450g	1050g

Use Quick#s for easy online ordering.

Building your own EOAT? Download the 3D CAD files you need to ensure an accurate design.

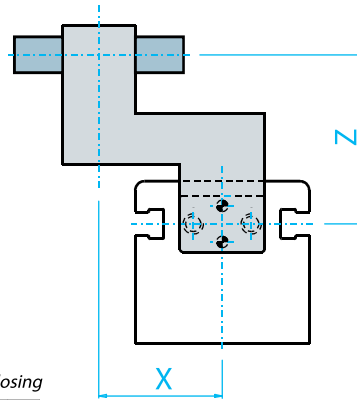
Our EOAT CAD Library has over 3,400 components and is updated daily. Download all or individual files, or preview them by Quick# with EMI's 360° View before downloading!



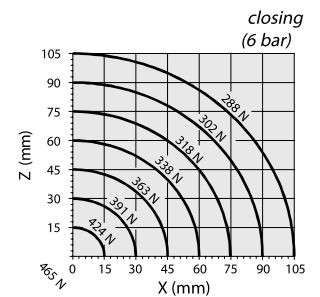
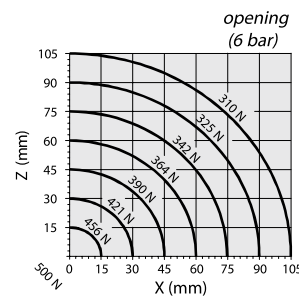
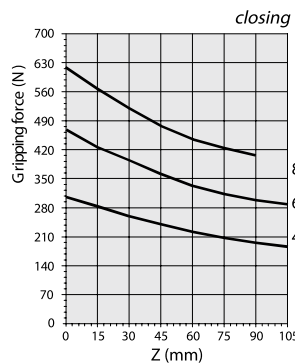
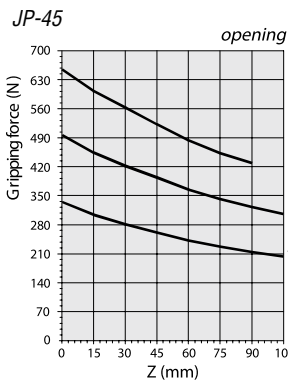
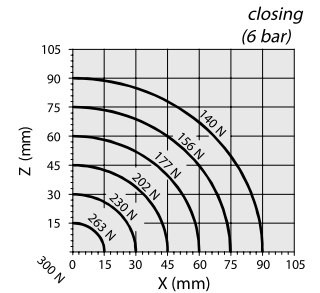
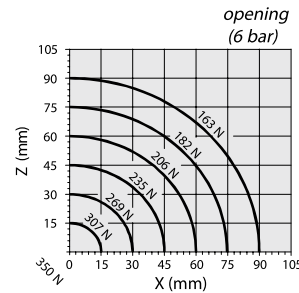
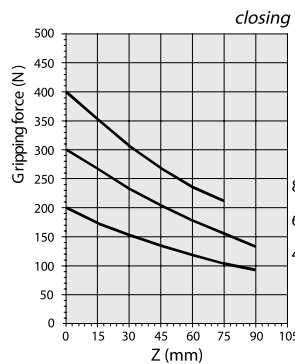
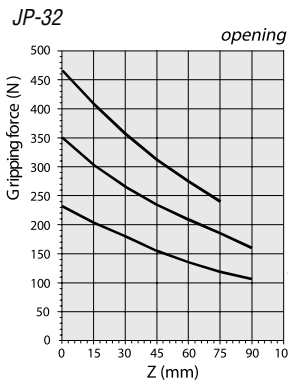
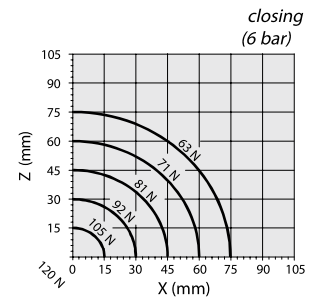
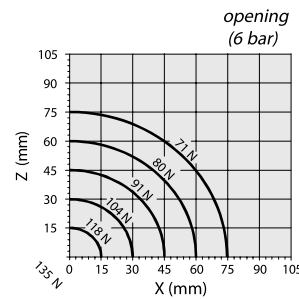
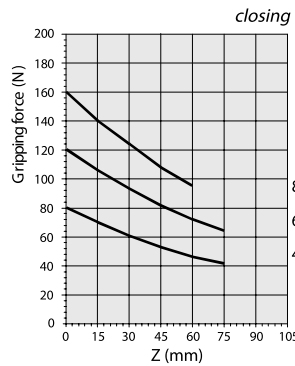
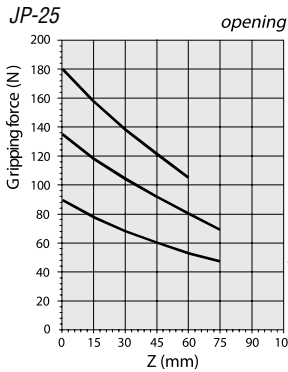
Parallel Gripper – JP

Gripping force

The graphs show the medium gripping force on each jaw, as a function of the operating pressure, the gripping tool length 'Z' and the overhanging 'X'.



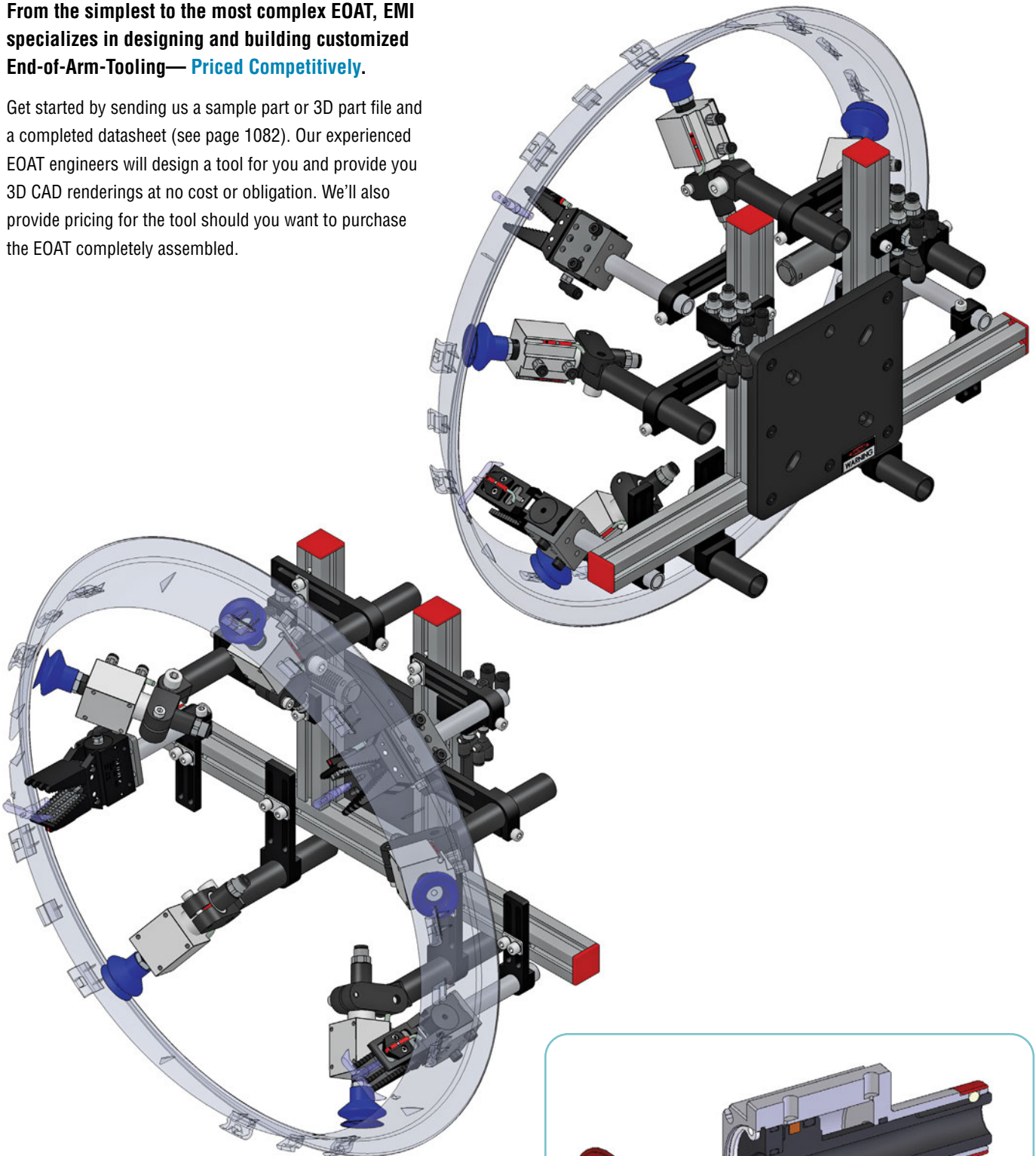
Reference:
Force: N x 0.225 = lbf
Pressure: bar x 14.5 = psi



EOAT Design and Build Service

From the simplest to the most complex EOAT, EMI specializes in designing and building customized End-of-Arm-Tooling— **Priced Competitively.**

Get started by sending us a sample part or 3D part file and a completed datasheet (see page 1082). Our experienced EOAT engineers will design a tool for you and provide you 3D CAD renderings at no cost or obligation. We'll also provide pricing for the tool should you want to purchase the EOAT completely assembled.



Air Cylinder & Slides Overview

Vacuum Cylinder

p.738



Parallel Gripper Finger

p.742



Clampable Barrel Cylinder

p.745



Clampable Mini-Cylinder

p.746



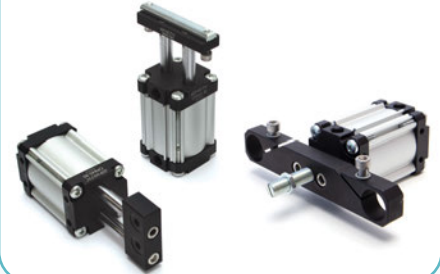
Compact Cylinder & Accessories

p.752



Short Stroke Cylinder

p.756



Cylinder with Arm

p.760



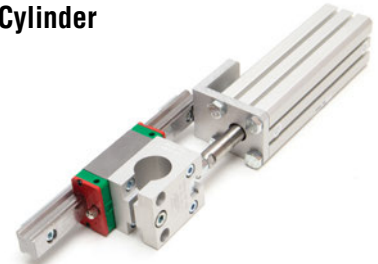
Compact Cylinder & Accessories

p.762
p.766



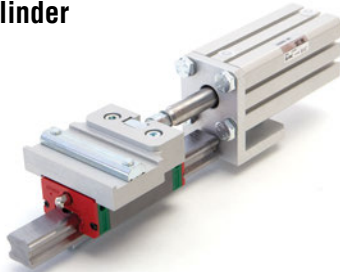
Heavy-Duty Guided Cylinder

p.770



Heavy-Duty Guided Cylinder

p.772



Heavy-Duty Gripper Slide

p.774



MXS Precision Slide

p.776



Slide for EOAT

p.786



Mini Slide

p.778



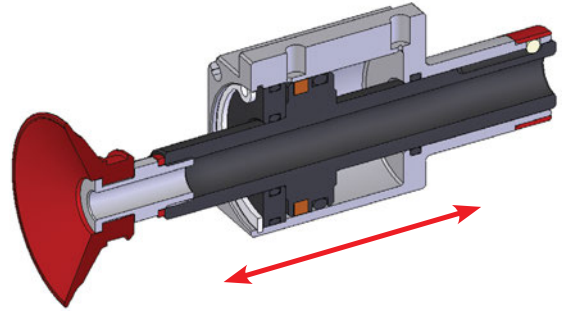
Heavy-Duty Guided Cylinder

p.794



Vacuum Cylinder – OFL

- Double acting with 20mm or 30mm piston bore.
- Large thru-hole for M5 or G1/8" vacuum cup fittings.
- Smooth, non-rotating activation for consistent positioning.
- Ø20mm clampable shaft.
- See Sensor Reference Guide on page 1007 for a full list of compatible sensors.



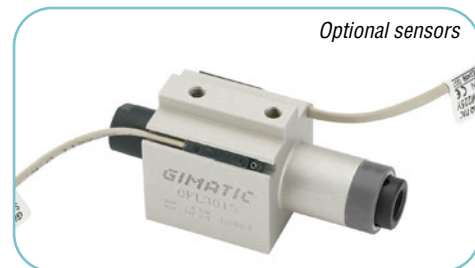
Quick#	6771	6772	7126
Part#	OFL2010	OFL3015	OFL3030
Price	\$113.00	\$123.00	\$202.00
Medium	Filtered, lubricated / non lubricated compressed air		
Pressure range	29–116 psi		
Temperature range	41°–140°F		
Extension / retraction force at 87 psi	29 lbf	67 lbf	67 lbf
Total stroke (±0.2 mm)	10mm	15mm	30mm
Weight	60g	110g	140g

Use Quick#s for easy online ordering.

Sensors

Quick#	Part#	Price	Signal	Description
1882	SS4N225G	\$27.20	PNP	3-wire SS Style with lead
1883	SS4M225G	\$27.20	NPN	3-wire SS Style with lead
1884	SS3M203G	\$31.16	NPN	3-wire SS Style with M8 connector
6282	SS3N203G	\$31.16	PNP	3-wire SS Style with M8 connector

Optional sensors



Thru-hole for vacuum feed.

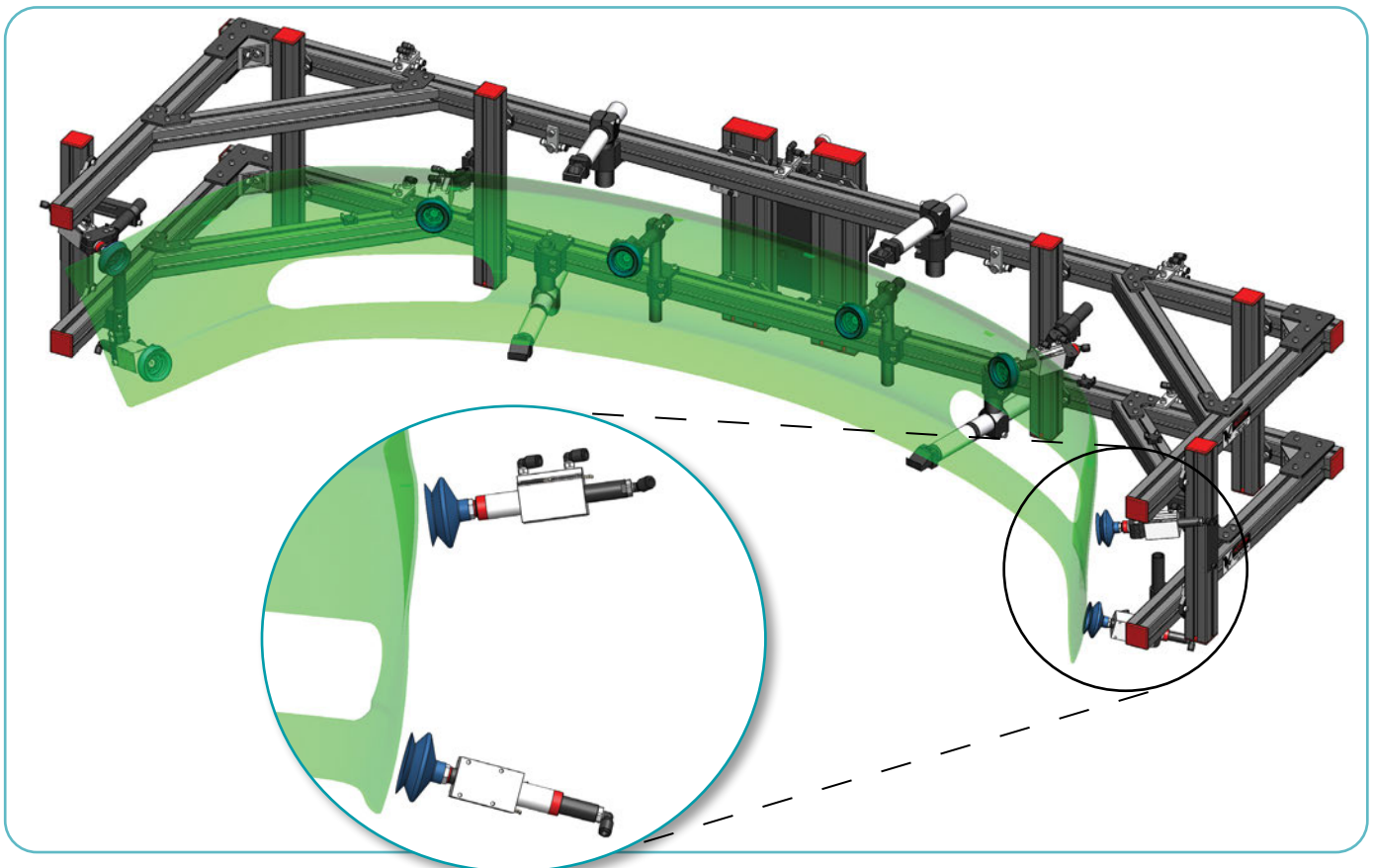
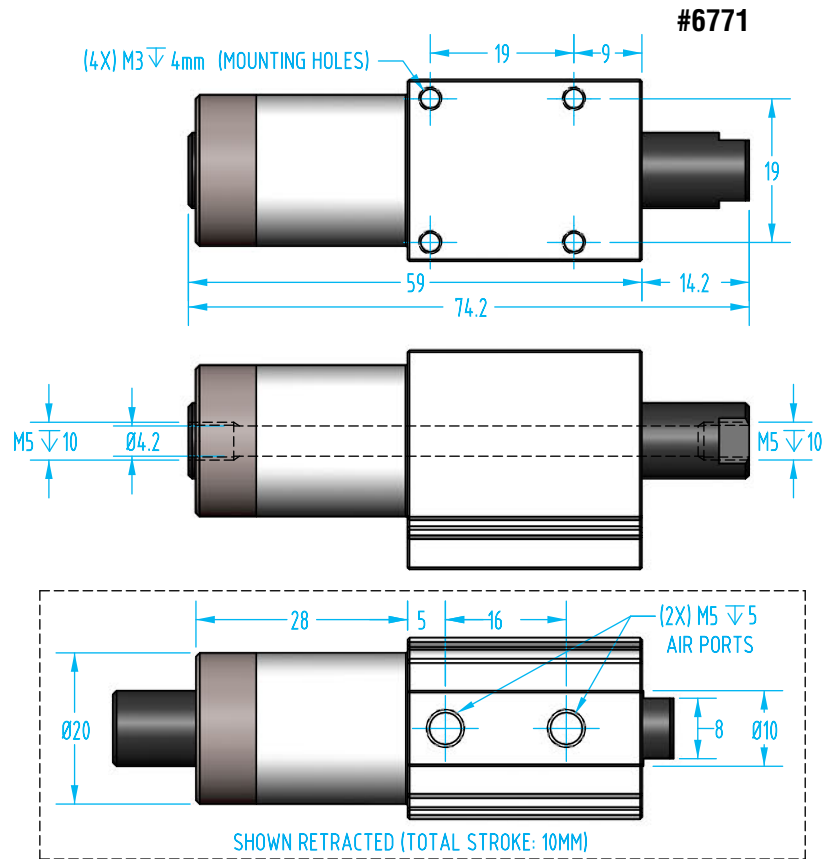
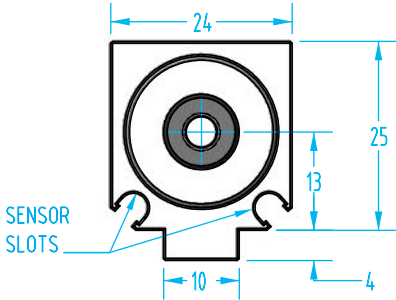
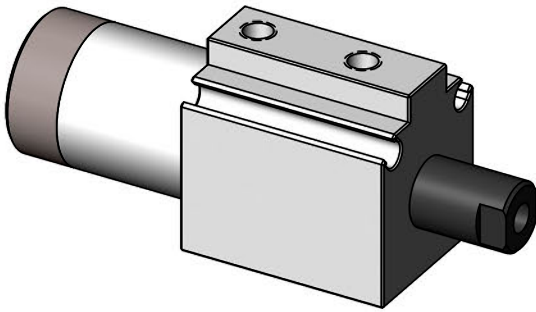


Non-rotating



Vacuum Cylinder – OFL

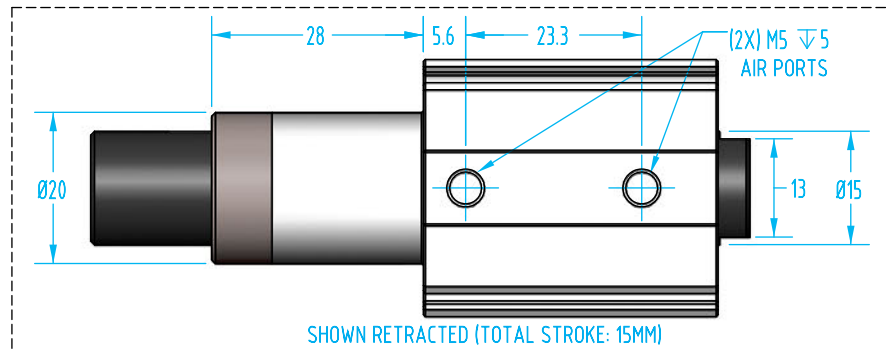
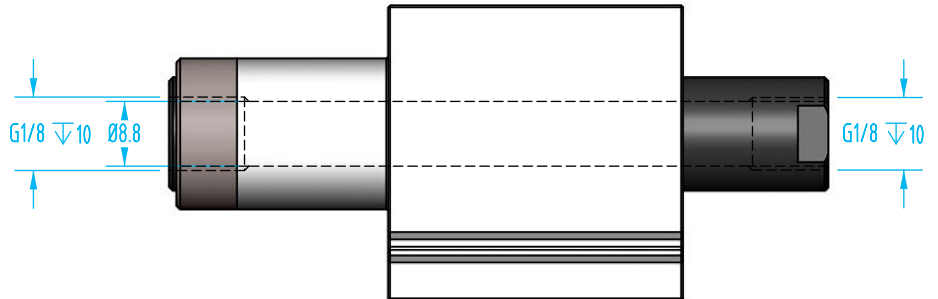
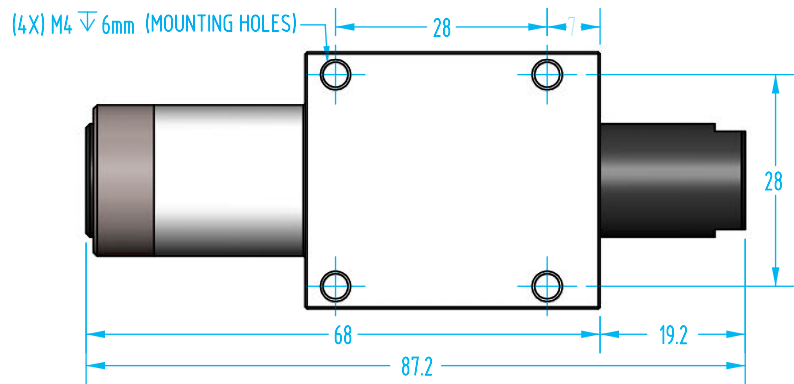
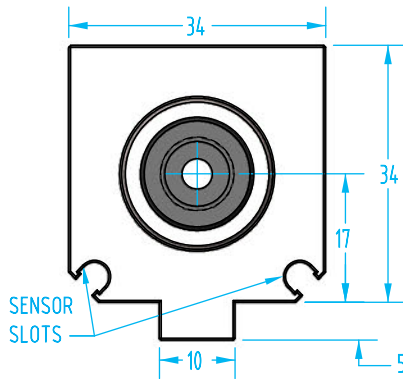
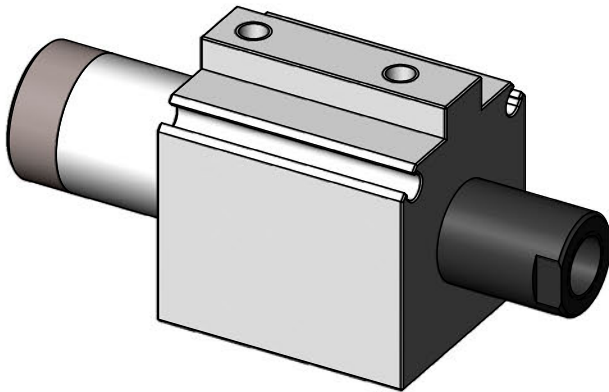
(Dimensioned drawings shown full scale)



Vacuum Cylinder – OFL

#6772

(Dimensioned drawings shown full scale)



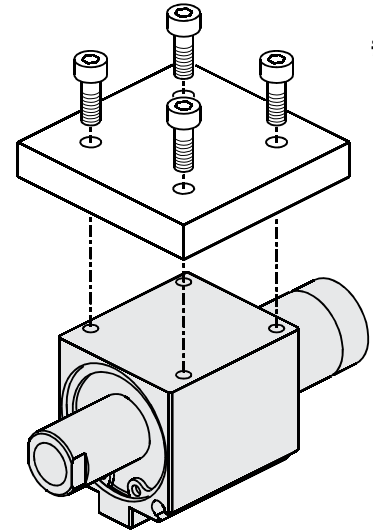
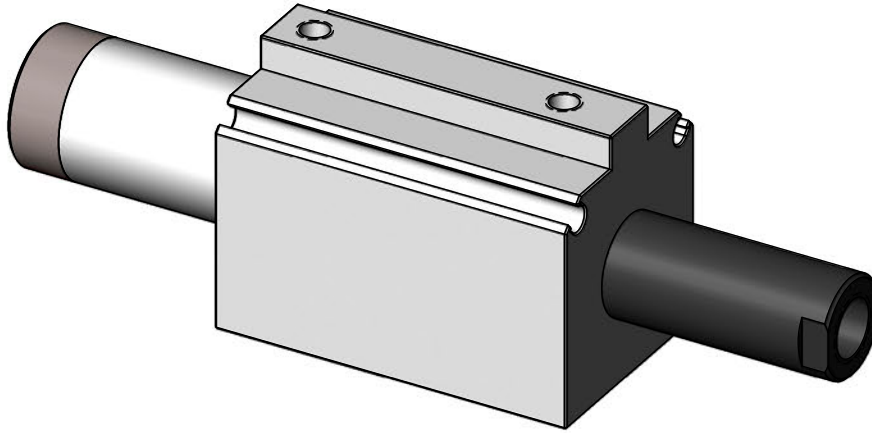
Fittings Available
on page 1043



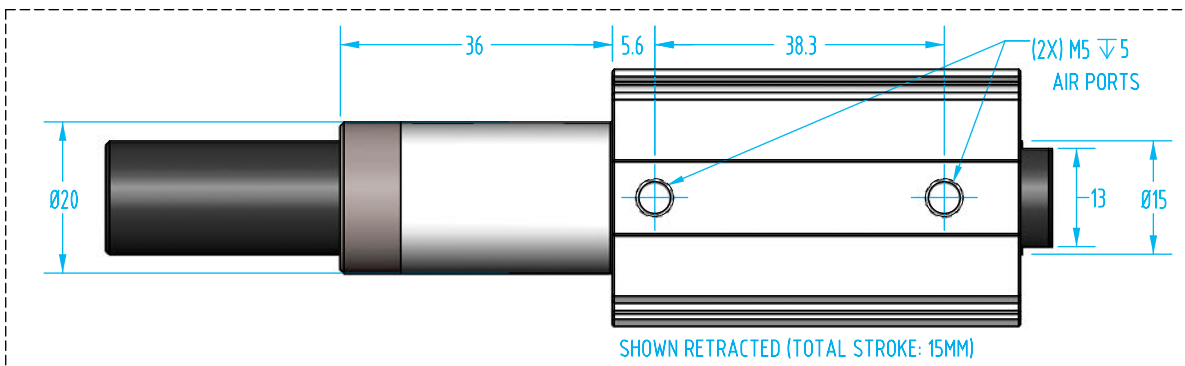
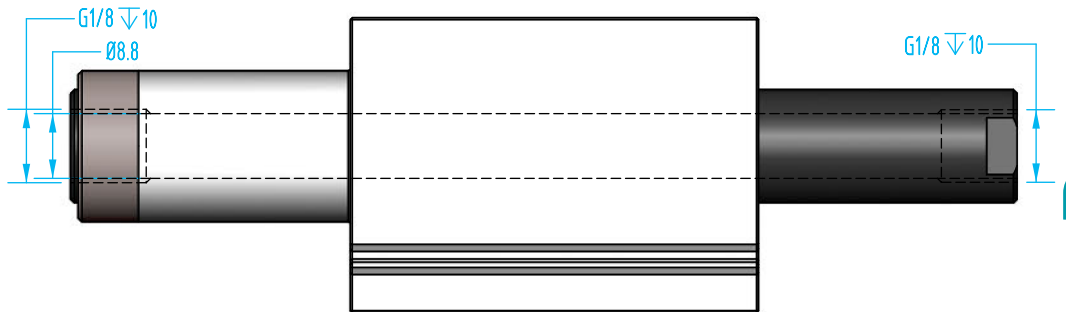
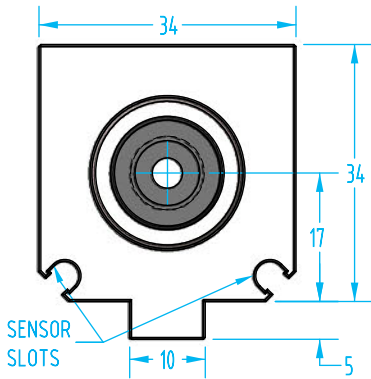
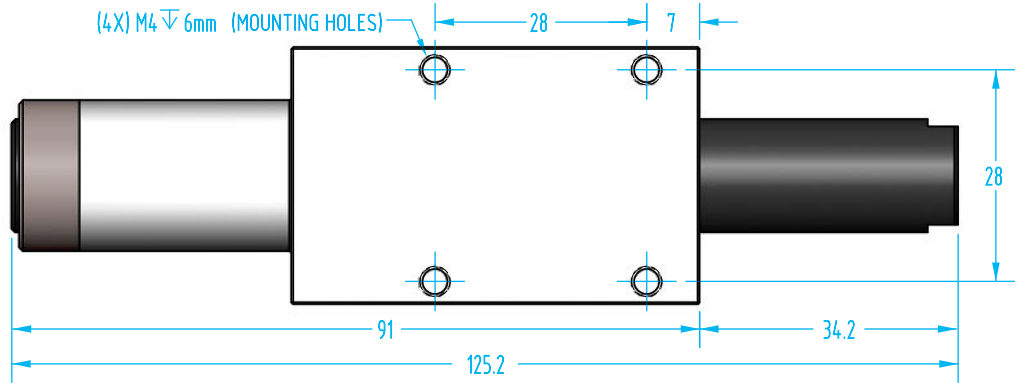
Vacuum Cylinder – OFL

#7126

(Dimensioned drawings shown full scale)



(4X) M4 ∇ 6mm (MOUNTING HOLES)



Parallel Gripper Fingers – OFX

- Actuation by a single-acting piston.
- Linear motion of the finger, perpendicular to the piston.
- Thru-hole in the finger, to provide vacuum to a cup.
- Removable HNBR pad on the finger, for soft, non-marring touch.
- See page 508 for application examples and dimensional drawings.
- See Sensor Reference Guide on page 1007 for a full list of compatible sensors.



Quick#	5840	6598	6599	5841
Part#	OFX14-06	OFX20-10	OFX30-15	OFX50-20
Price	\$172.00	\$190.00	\$242.00	\$296.00
Medium	Filtered, lubricated / non lubricated compressed air			
Pressure range	36.26–116 psi			
Opening gripping force at 87 psi	3–14 lbf	5–26 lbf	10–52 lbf	23–203 lbf
Total stroke (±0.2 mm)	6mm	10mm	15mm	20mm
Weight	30g	65g	190g	740g

HNBR Pads for OFX Parallel Gripper Fingers

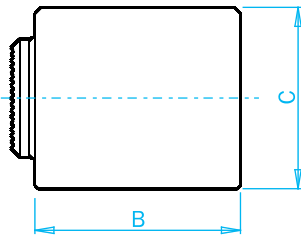
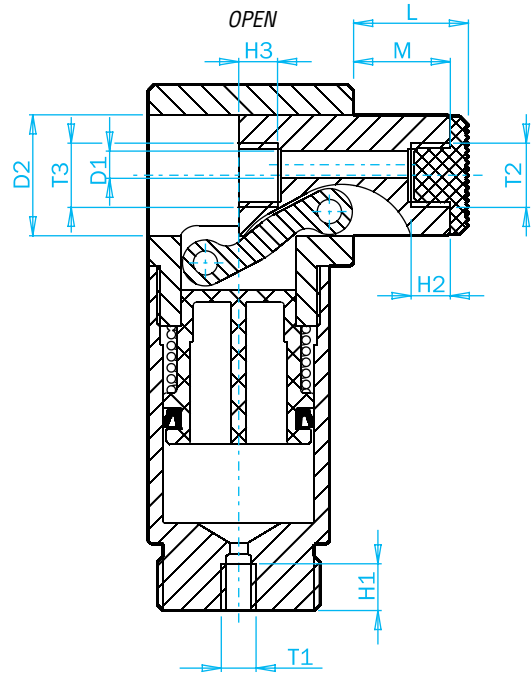
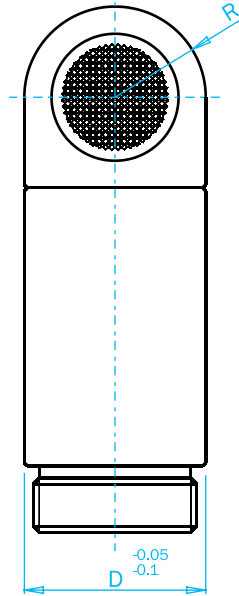
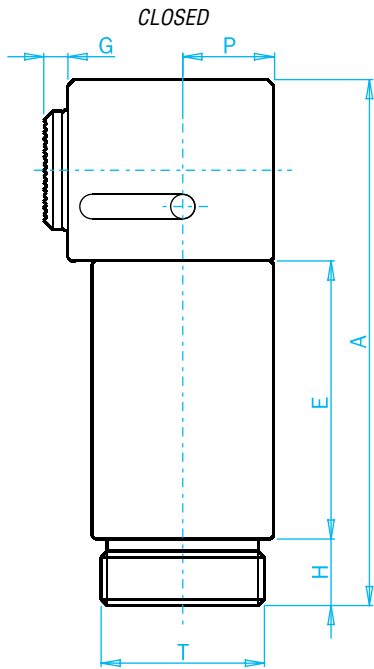
Quick#	Part#	For:	Price
7362	OFX14-06-07	OFX14	\$7.60
7363	OFX20-10-09	OFX20	\$5.60
7364	OFX30-15-09	OFX30	\$8.06
7365	OFX50-20-08	OFX50	\$12.88



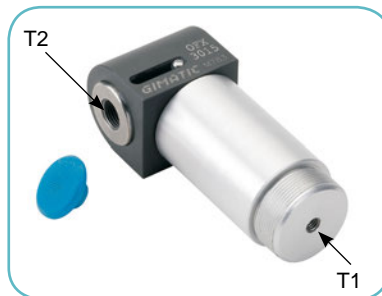
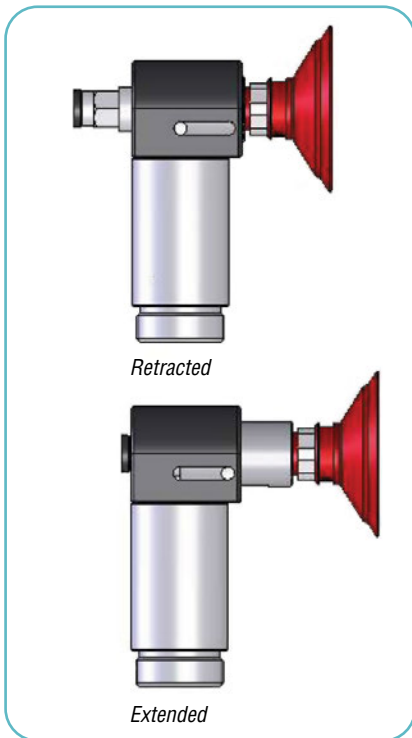
Sensor Band for OFX Parallel Gripper Fingers

Quick#	Part#	For:	Price
7307	SWP-014	OFX14	\$2.22
7308	SWP-020	OFX20	\$2.22
7309	SWP-030	OFX30	\$2.22
7310	SWP-050	OFX50	\$2.22

Parallel Gripper Fingers – OFX



	OFX14-06	OFX20-10	OFX30-15	OFX50-20
A	52	62.5	87	143
B	23	25	34	60
C	14	20	30	50
D	Ø14	Ø20	Ø30	Ø50
D1	Ø1.5	Ø2.4	Ø4.5	Ø9
D2	Ø10	Ø14	Ø20	Ø35
E	30	34.5	46	68
G	3.5	3.5	4	4
H	8	8	11	25
H1	7	7	7	10
H2	5	5	6	9
H3	5	5	6	9
L	9.5	13.5	19	24
M	7	11	16	21
P	9	10	15	25
R	R7	R10	R15	R25
T	M12x1	M17x1	M27x1	M45x1.5
T1	M5	M5	M5	G1/8"
T2	M5	M5	G1/8"	G1/4"
T3	M5	M5	G1/8"	G1/4"

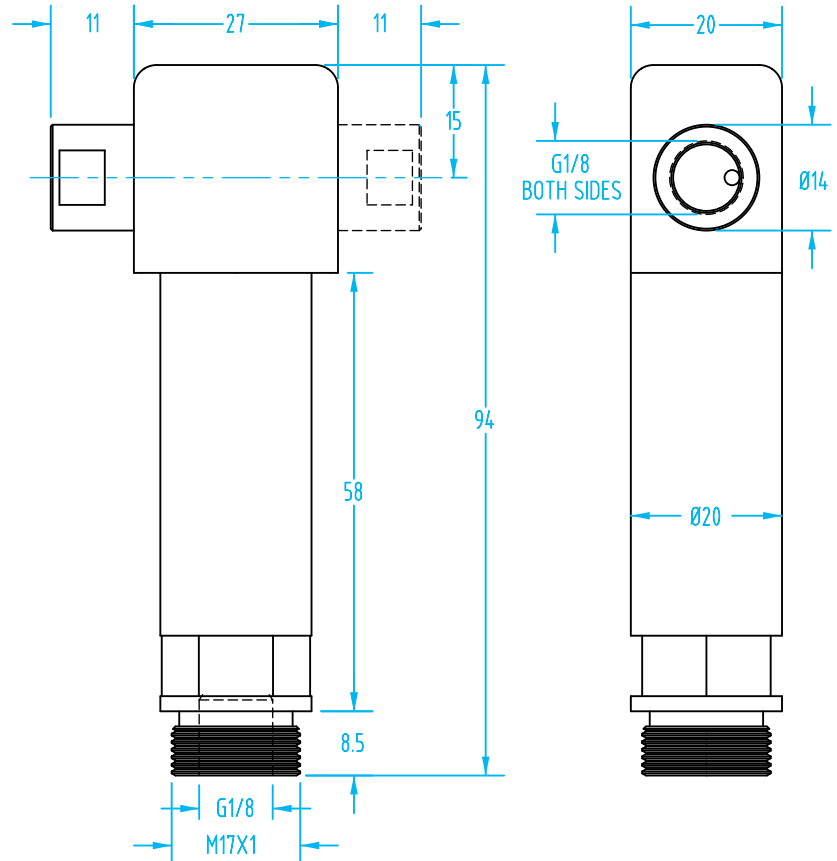


Parallel Gripper Finger – QGR

- Single acting, spring return.
- The rod-end has a G1/8 thread to accept an adapter to install a vacuum cup or pressure plate.
- To push or clamp parts, use a DPL pressure plate (Q#3440, page 769) with a G1/8" to M5 reducer (Quick# 224, page 1069).
- Sensing capable, bands and sensors sold separately.



(Dimensioned drawings shown full scale)



NEW

Quick#	Part#	>ASS< #	Stroke	Extension Force*	Ø	Price	Wt.
3892	QGR-20	1-455-20-00	10mm	17.98 lbf	20	\$192.15	102g

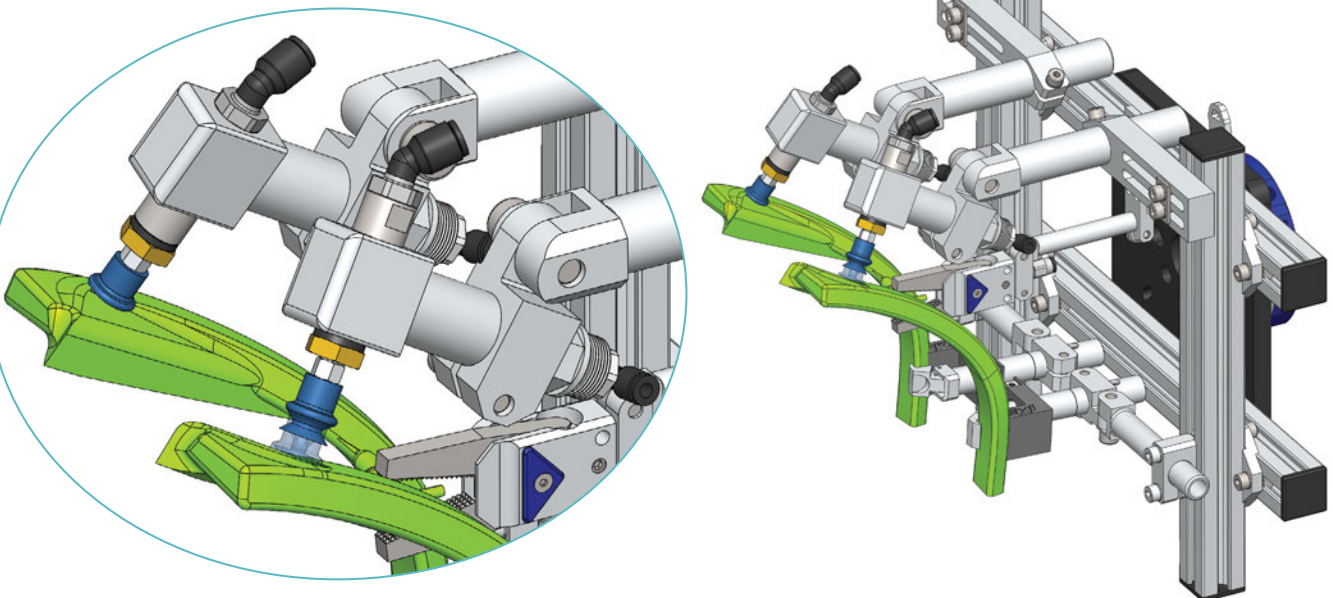
*Note: Force at 87psi (6 bar)

Sensor Band

Quick#	Part#	Ø	Price
7308	SWP-020	20mm	\$2.13

Note: Use with D-M9.. SMC sensors on page 1004 or Gimatic SS or SN series sensors on page 1002.

Application Example

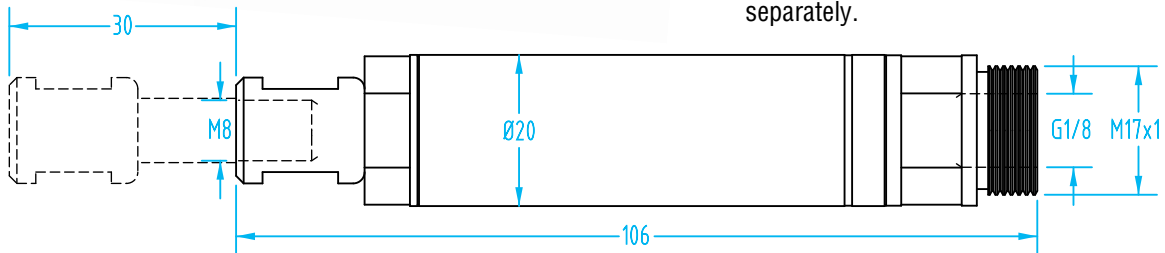


Clampable Rotating Cylinder – ZHS

(Dimensioned drawings shown full scale)



- Single acting, spring return.
- Available with rotative or non-rotative with Ø20mm clampable body.
- Apply compressed air to the G1/8" port to extend cylinder.
- The rod-end has a M8 thread to accept an adapter to install a vacuum cup or pressure plate.
- To push or clamp parts, use a DPL pressure plate (Q#3440, page 769) with adaptor (#3300, page 769), and a G1/8" to M5 reducer (Quick# 224, page 1069).
- Sensing capable, bands and sensors sold separately.



NEW

Quick#	Part#	>ASS< #	Syle	Stroke	Extension Force*	Ø	Price	Wt.
3900	ZHS-20-30	1-776-000-00	Rotative	30mm	20.23 lbf	20mm	\$185.85	62g
3375	ZHS-20-30-VG	1-776-00-00-1	Non-Rotative				\$185.85	62g

*Note: Force at 87psi (6 bar)

Sensor Band

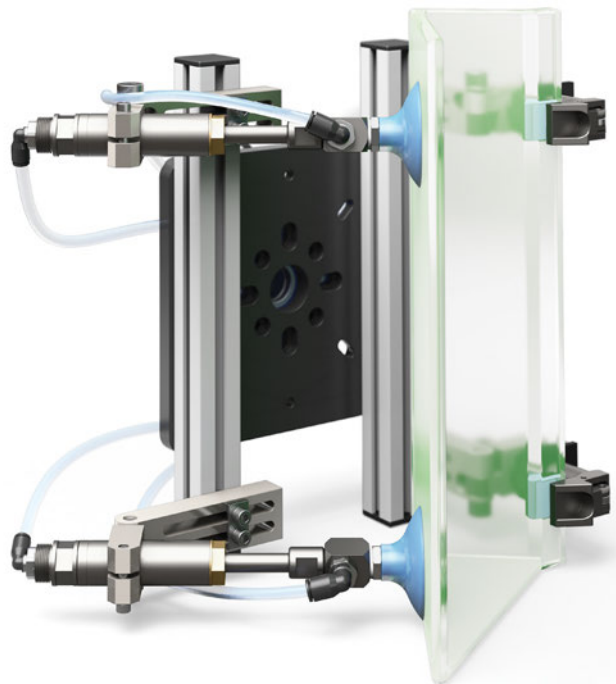
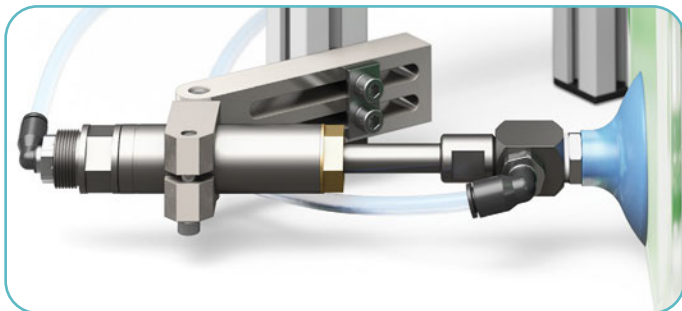
Quick#	Part#	Ø	Price
7308	SWP-020	20mm	\$2.22

Note: Use with D-M9.. SMC sensors on page 1004 or Gimatic SS or SN series sensors on page 1002.

Application Example



#3300 Manifold adaptor M3 to M5



Clampable Mini Cylinders – OFC

(Dimensioned drawings shown full scale)

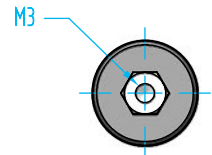
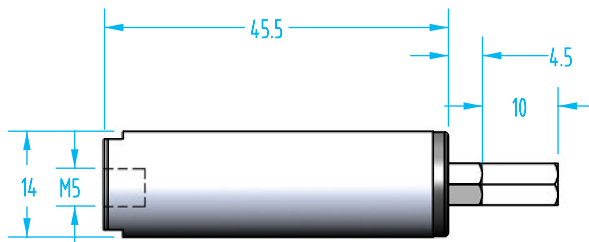
- Lightweight and compact clampable aluminum body in Ø14mm, Ø20mm, and Ø30mm diameters.
- Non-rotating M3 and M4 female threaded rod allows use of common mini-cylinder grip pads (see pages 755 & 769).
- Single-acting with spring retract.
- M3, M4 mounting adaptors available.
- New mounting bracket for DD20-16 grippers.
- New needle attachment for gripping soft materials and fabrics.



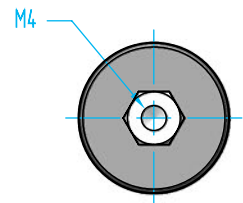
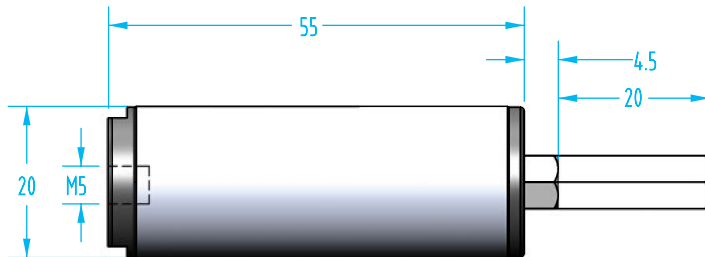
Quick#	Part#	Price	Extension force	Piston bore	Clampable body	Stroke	Wt.
7134	OFC14-10	\$20.62	10 lbf	Ø10mm	Ø14mm	10mm	20g
7133	OFC20-20	\$29.86	25 lbf	Ø16mm	Ø20mm	20mm	40g
7132	OFC30-30	\$36.31	63 lbf	Ø25mm	Ø30mm	30mm	85g

*Note: Force at 87psi (6 bar)

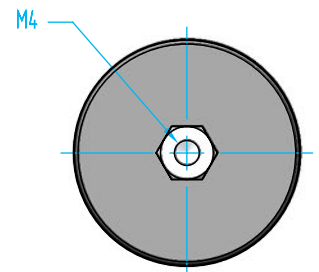
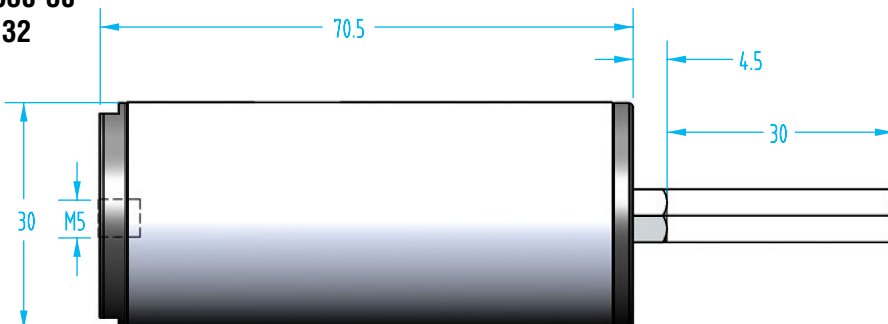
**OFC14-10
#7134**



**OFC20-20
#7133**



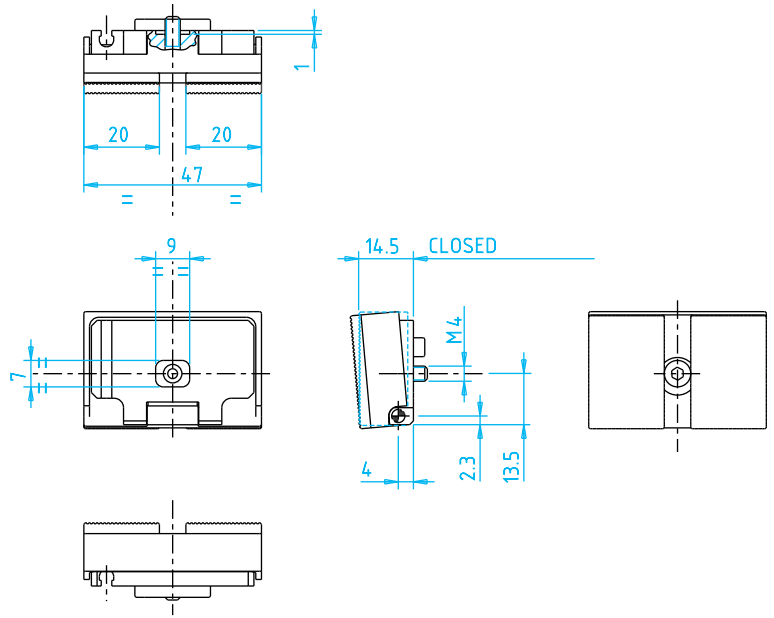
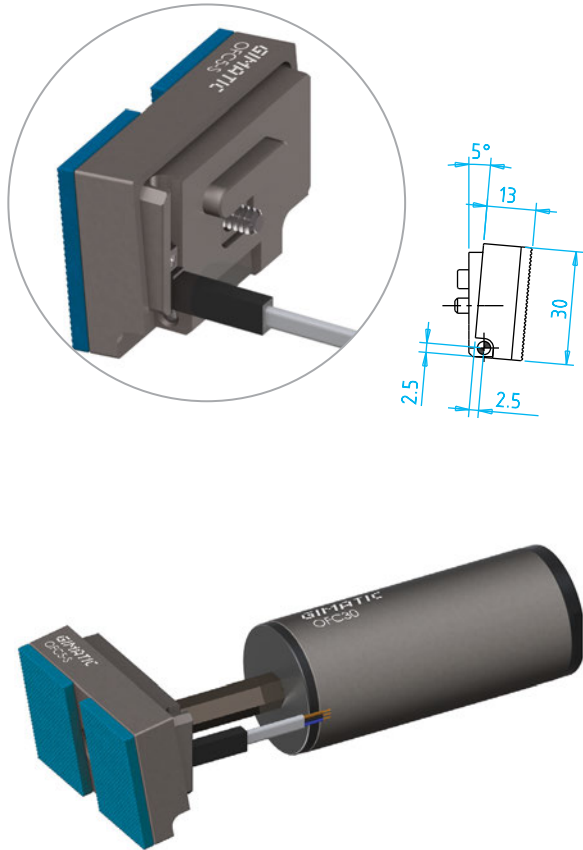
**OFC30-30
#7132**



Clampable Mini Cylinders – OFC

(Dimensioned drawings shown 1/2 scale)

Sensor Switch



Sensor Switch

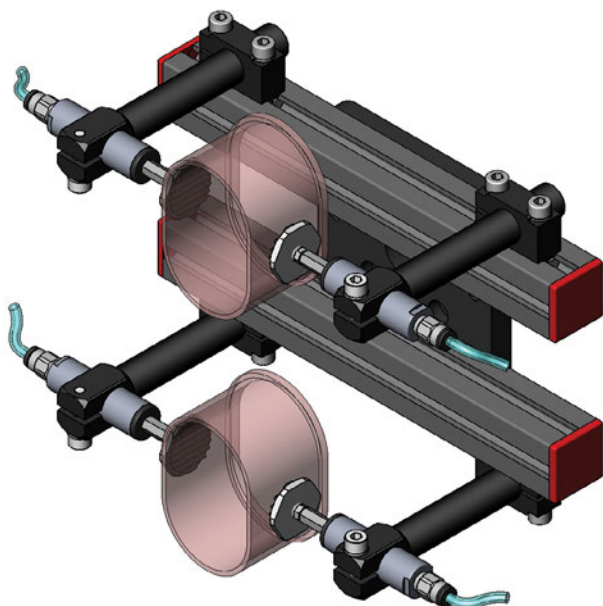
Quick#	Part#	Description	Price
7195	OFC5-S	Switch pad for SN sensor	\$58.24

Sensors

Quick#	Part#	Signal	Connection	Price
6278	SN4N225G	PNP	with lead, 2.5m long	\$27.20
6357	SN4M225G	NPN	with lead, 2.5m long	\$27.20
6277	SN3N203G	PNP	M8 Connector, 0.3m long	\$31.16
6356	SN3M203G	NPN	M8 Connector, 0.3m long	\$31.16

Use Quick#s for easy online ordering.

Application Example



Optional Sensor Mounting Band

Quick#	Part#	Diameter	Price
7307	SWP-014	Ø14	\$2.22
7308	SWP-020	Ø20	\$2.22
7309	SWP-030	Ø30	\$2.22

SN or SS series sensors on page 1002.

Mounting Adaptor

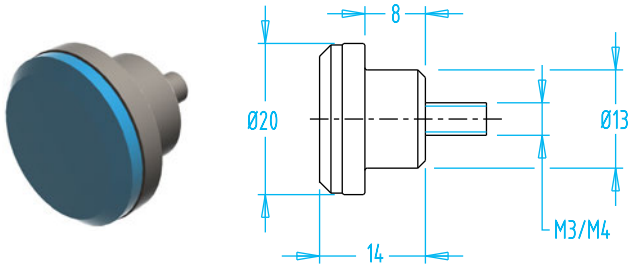
Quick#	Part#	Price	Top Thread	Side & Bottom Ports	Wt.
7390	MFI-A365	\$6.14	M3	M5	1.6g
7389	MFI-A364	\$6.14	M4	M5	1.8g

Full dimensional drawing on page 1067.

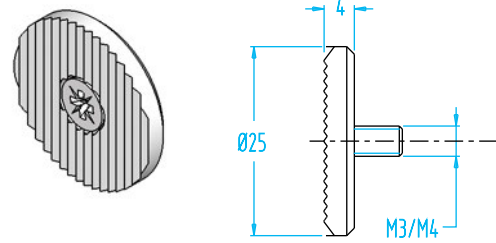


Clampable Mini Cylinder Accessories

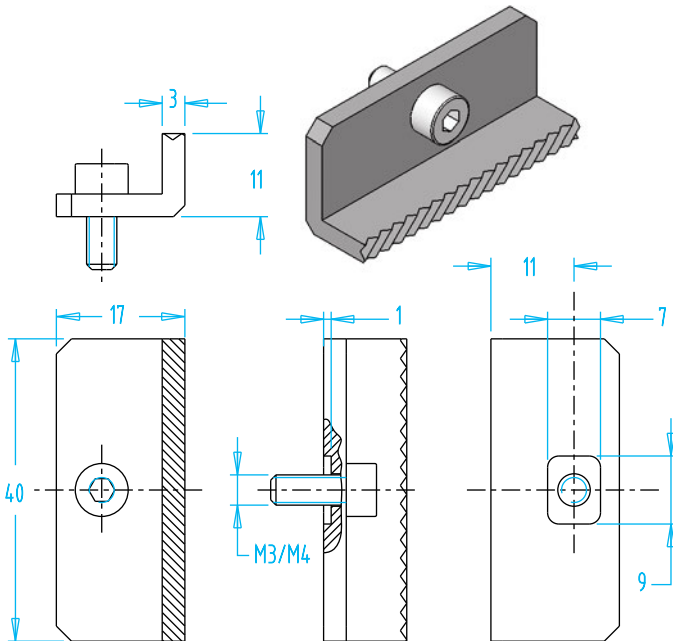
(Dimensioned drawings shown full scale)



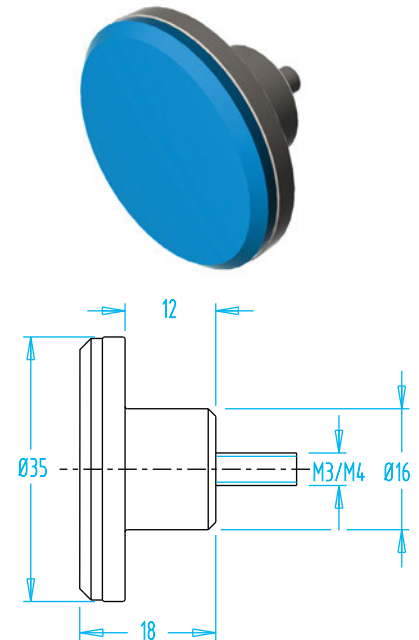
Quick#	Part#	Price	Face	Use with:	Wt.
7211	OFC-A001	\$7.96	HNBR	OFC- 14, 20, 30	15g



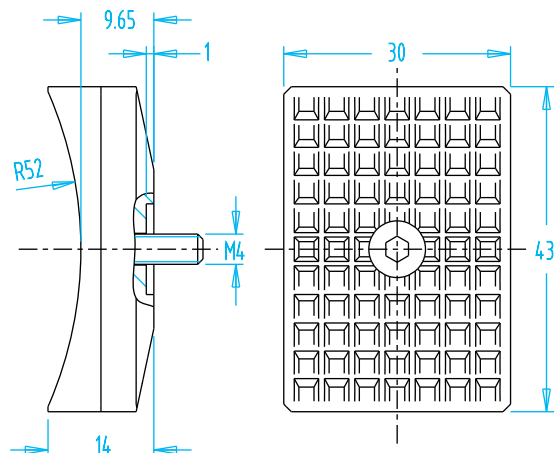
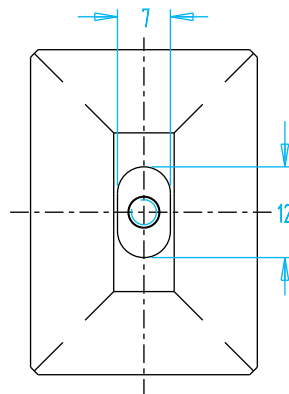
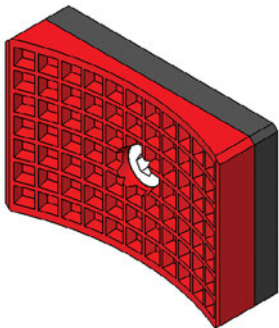
Quick#	Part#	Price	Face	Use with:	Wt.
7213	OFC-A003	\$7.80	Steel	OFC- 14, 20, 30	15g



Quick#	Part#	Price	Face	Use with:	Wt.
7212	OFC-A002	\$17.94	Steel	OFC- 14, 20, 30	23g



Quick#	Part#	Price	Face	Use with:	Wt.
7215	OFC-A005	\$9.26	HNBR	OFC- 14, 20, 30	35g

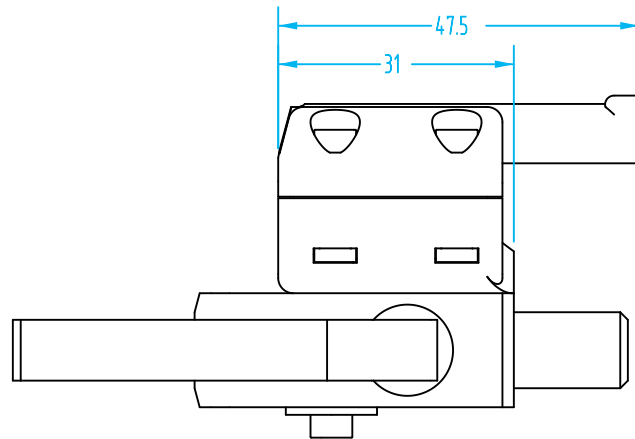
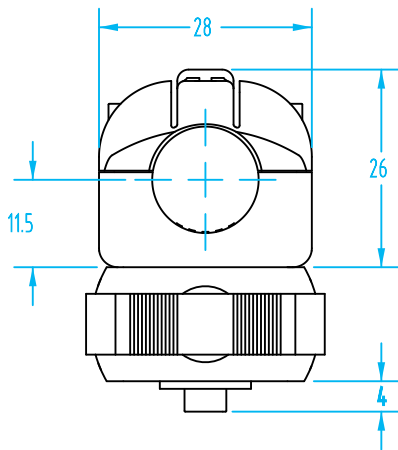


Quick#	Part#	Price	Face	Use with:	Wt.
7214	OFC-A004	\$17.94	TPU	OFC- 20, 30	24g

Clampable Mini Cylinder Accessories

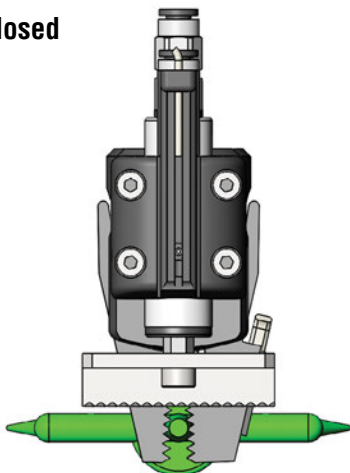
- This bracket allows a OFC-14-10 Cylinder to be mounted to Gimatic PB grippers, see page 430.
- Bracket can be equipped with optional accessories intended to eject a runner stuck to the jaw of the gripper.
- The position of an OFC-14 cylinder can be detected using SS... sensors.
- Not compatible with accessories #7214 & #7215.

Quick#	Part#	Price	Use with:	Wt.
7446	OFC-A006	\$36.18	OFC-14	19g

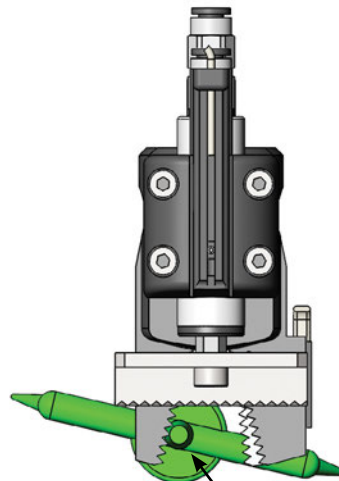


Application Example

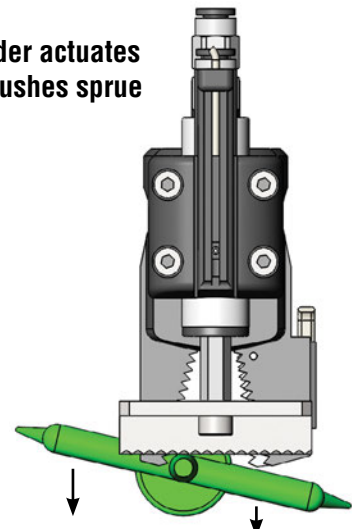
Closed



Sprue stuck to jaw



Cylinder actuates and pushes sprue



Clampable Mini Cylinder Accessories



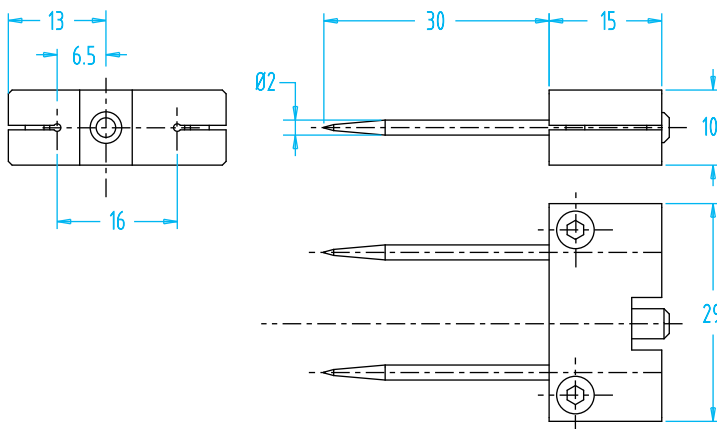
(Dimensioned drawings shown full scale)



Safety cover included, and can be stored on profile.

NEW

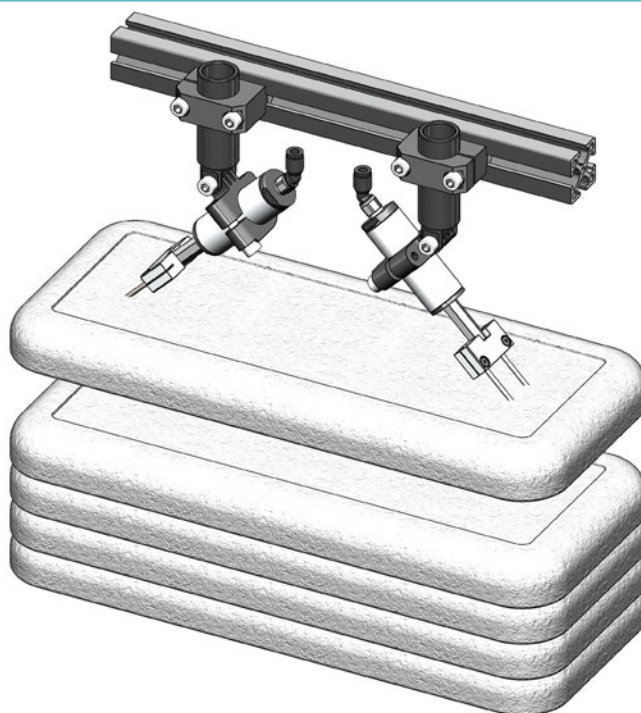
Quick#	Part#	Price	Use with:	Wt.
7579	OFC-A007	\$41.38	OFC-20, OFC-30	11g



Fittings Available
on page 1043



Application Example



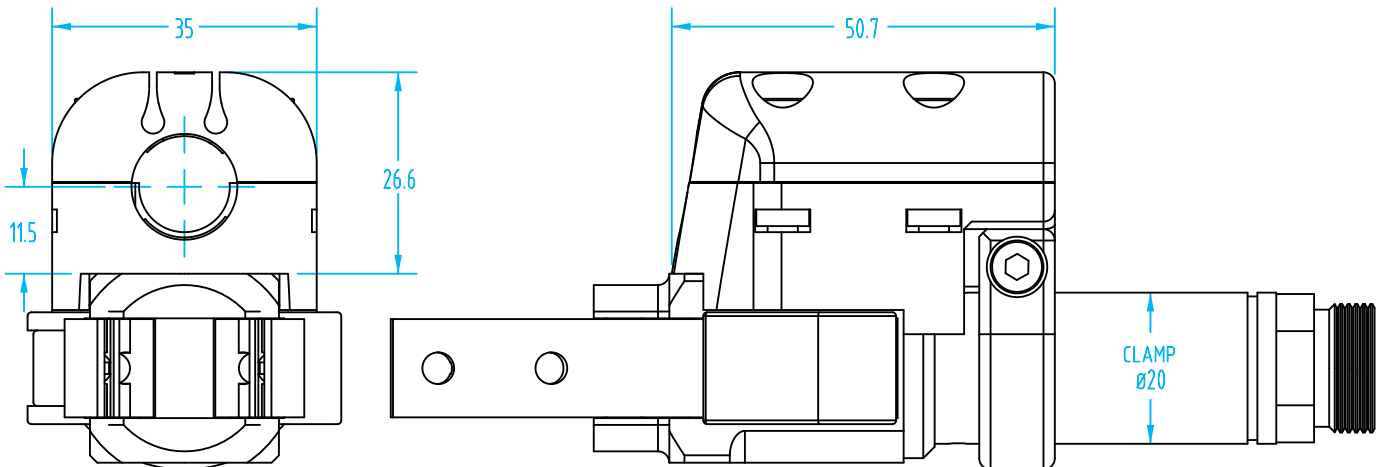
Clampable Mini Cylinder Accessories

- This bracket allows a OFC-14-10 Cylinder to be mounted to a Gimatic DD20 gripper, see page 444.
- Bracket can be equipped with optional accessories intended to eject a runner stuck to the jaw of the gripper.
- The position of an OFC-14 cylinder can be detected using SS... sensors.
- Not compatible with accessories #7214 & #7215.

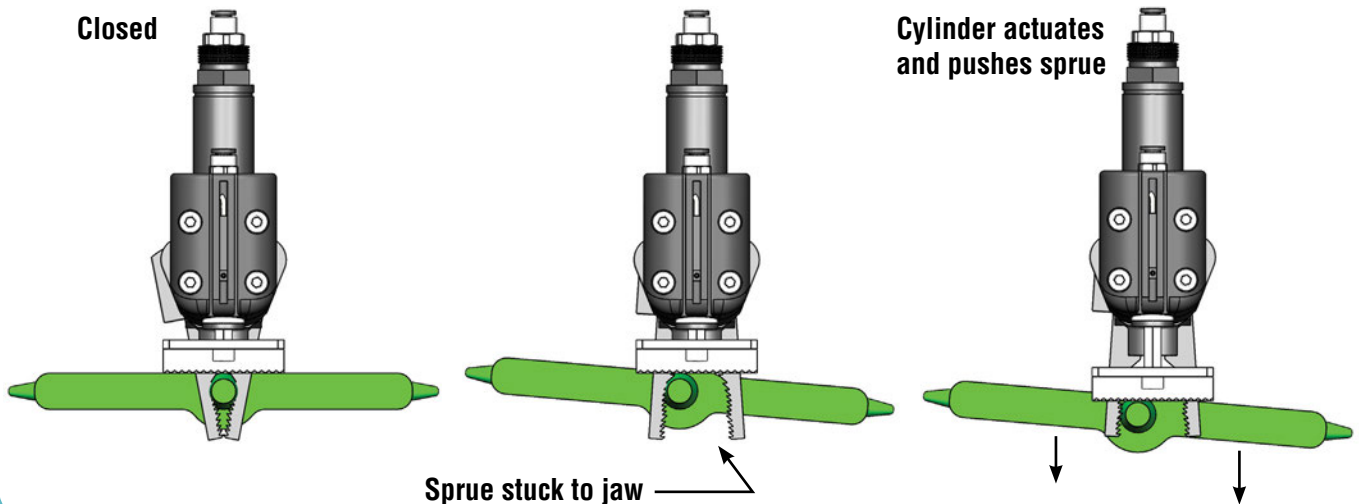


NEW

Quick#	Part#	Price	Use with:	Wt.
7623	OFC-A008	\$71.66	OFC-14	48g



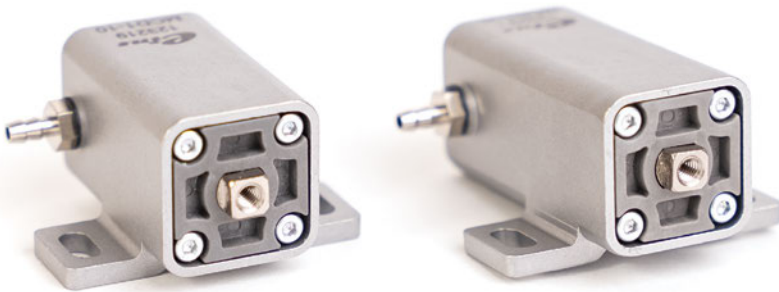
Application Example



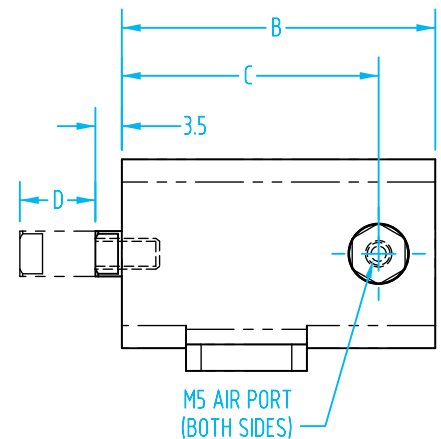
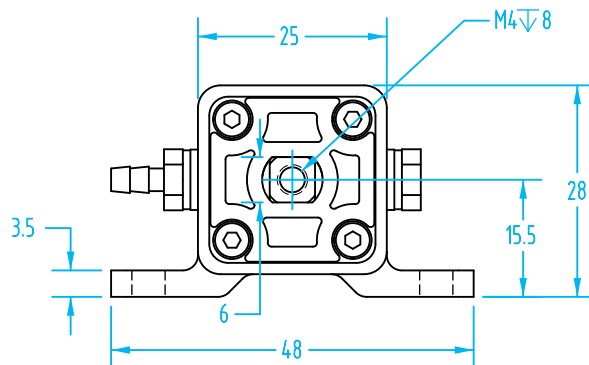
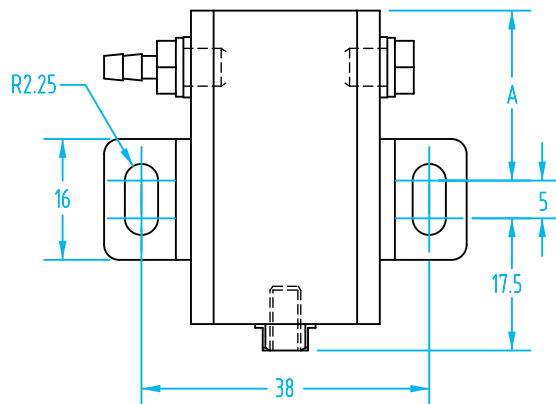
Aluminum Mini-Cylinders – MCD

(Dimensioned drawings shown full scale)

- Aluminum-bodied version.
- Lightweight and more compact than comparable cylinders.
- Non-rotating rod makes them very versatile.
- Mounting brackets, grip pads and accessories available.
- Additional mounting brackets and mounting spacers can be found online.
- Single acting with spring return.



These are great little cylinders. They are lightweight, low cost, and have good push force. They are single acting with a spring return which make them very easy to install on robot EOAT. The rod is non-rotating due to its elliptical shape which makes them even more versatile. They have a variety of complementary grip pads and accessories shown on page 753–755. These mini-cylinders have many uses: sprue grippers, wide-part grippers, vacuum pad actuators, heavy-part support actuators, and much more.



Fittings Available on page 1043



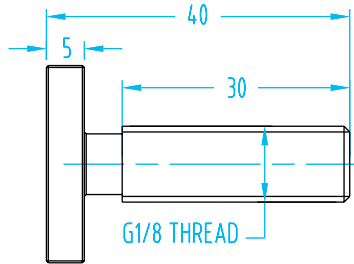
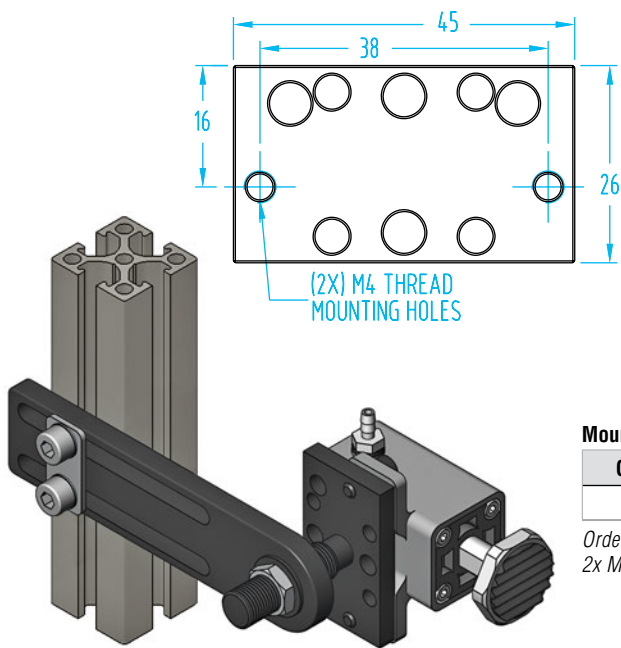
Lightweight Aluminum Cylinders

Quick#	Part#	Price	Stroke	Weight	Extension force*	A	B	C	D	Air pressure
1705	GSG-MCD-10	\$26.66	10mm	65g	22 lbf	22.8	41.5	34	10	71psi
1706	GSG-MCD-20	\$31.55	20mm	80g	22 lbf	32.8	51.5	44	20	71psi

*Note: Force at 87psi (6 bar)

Mini Cylinder Mounting Brackets

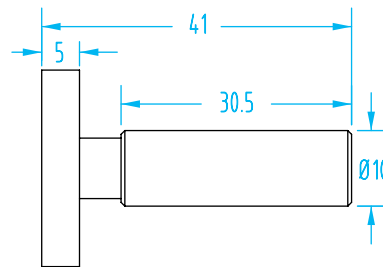
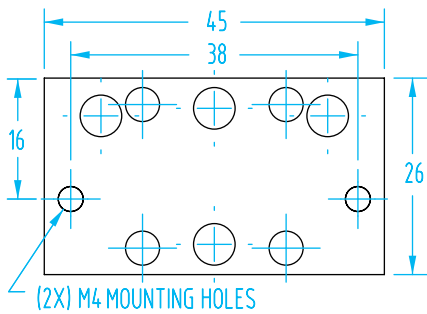
(Dimensioned drawings shown full scale)



Mounting Bracket for Mini-Cylinders: #1705, & 1706

Quick#	Part#	Weight	Price
1825	GSC-TMB-45	26	\$28.29

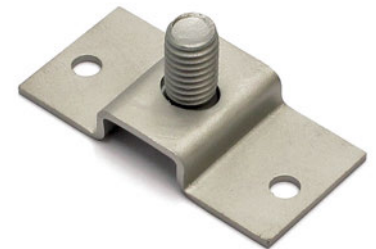
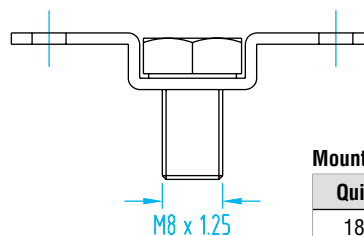
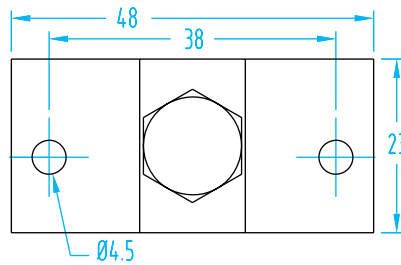
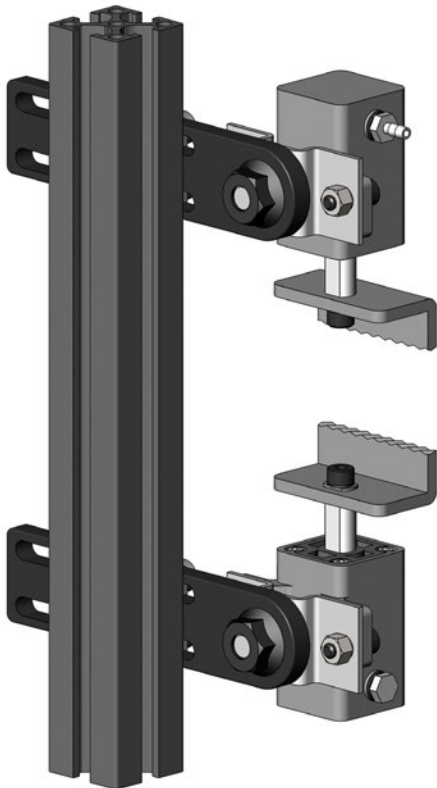
Order separately on page 1077: 2x M4x12mm screws (#835)
2x M4 nuts (#849) 2x washers (#846)



Mounting Bracket for Mini-Cylinders: #1705, & 1706

Quick#	Part#	Weight	Price
5465	GSG-SMMB-45	26g	\$28.17

Order separately on page 1077: 2x M4x12mm screws (#835)
2x M4 nuts (#849) 2x washers (#846)



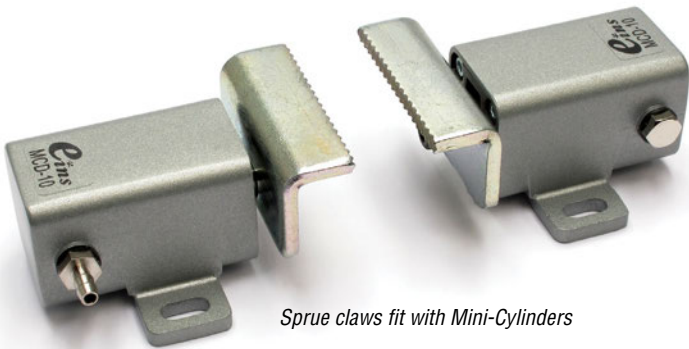
Mounting Bracket for Mini-Cylinders: #1705, & 1706

Quick#	Part#	Price	Weight
1828	GSC-VMB-MCY	\$9.75	26g

Includes M8 Hex Bolt.

Mini-Cylinder Accessories

(Dimensioned drawings shown full scale)



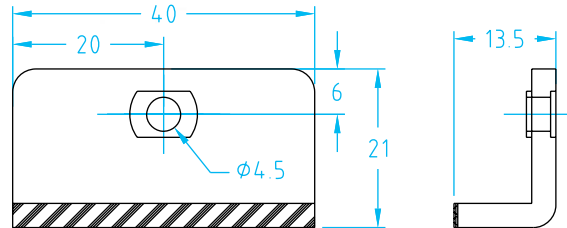
Sprue claws fit with Mini-Cylinders

Combine two #1705 lightweight cylinders with two #1730 claws and you have a lightweight (186g) sprue gripper for only \$51.52. With total grip force of 44 lbf and 20mm stroke, most any sprue can be reliably gripped.

#1733



#1730



Sprue Claws

Quick#	Part#	Wt.	Description	Price
1730	GSG-CP-014	28g	L-shaped Metal Claw	\$7.38
1733	GSG-CP-013	11g	Round, Aluminum ø25mm	\$5.02

M4 fasteners available on page 1077.

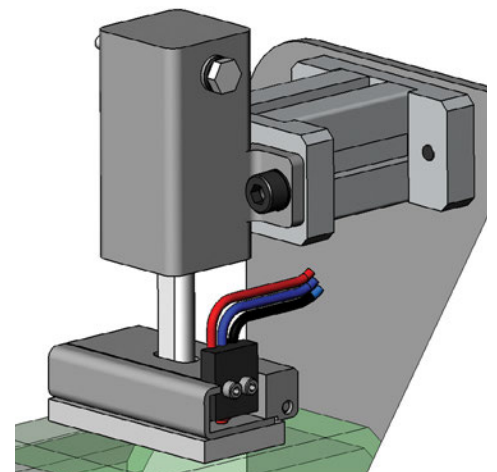
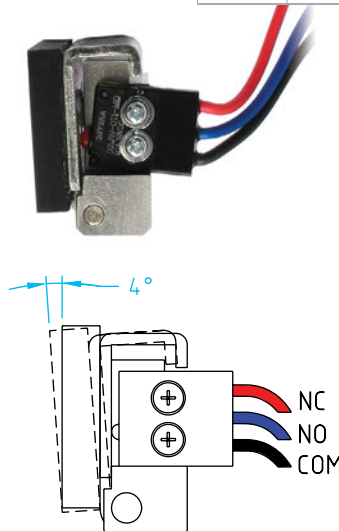
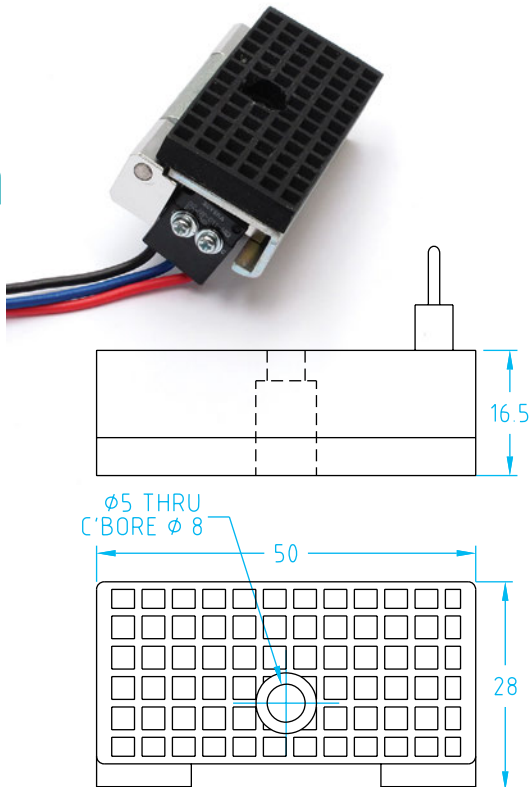
This combination relay switch and grip pad provides reliable part confirmation when used in conjunction with a mini-cylinder. The mini-cylinder extends its rod and grip pad switch to contact the part. The switch is made and closes the circuit to send confirmation to the controller.



Product Confirmation Switch

Quick#	Part#	Wt.	Description	Price
1731	GSG-KRC-5	59g	Rubber Pad w/Switch	\$76.31
5273	GSG-KRCW-5000	59g	Silicone Pad w/Switch	\$72.82
1877	GSG-KRC-5-SW	-	Replacement Switch	\$9.84

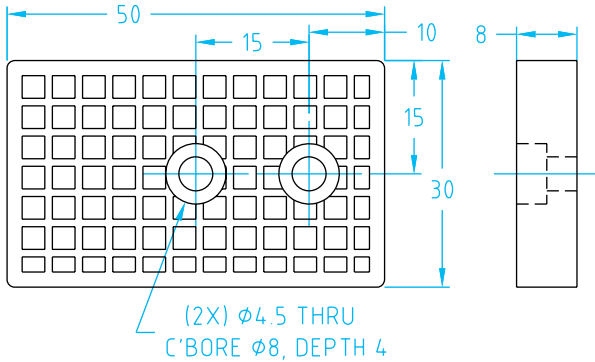
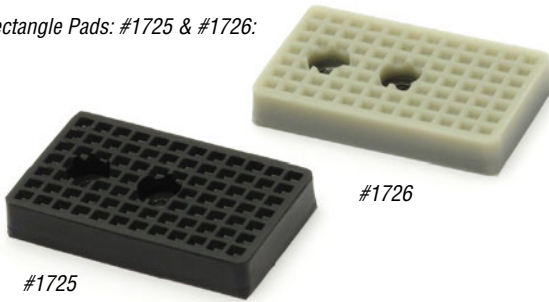
M4 fasteners available on page 1077.



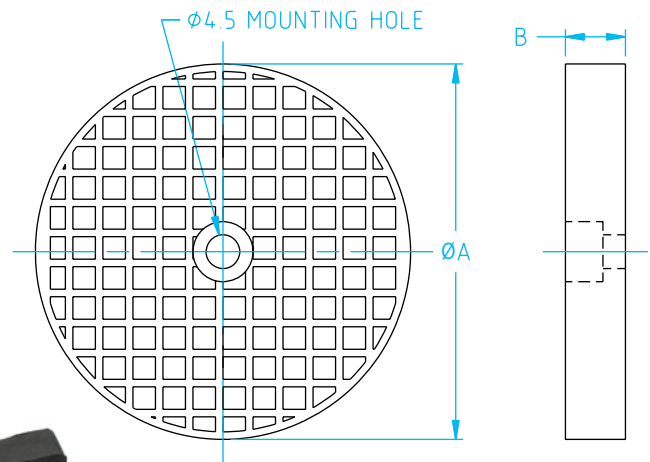
Mini-Cylinder Grip Pads

(Dimensioned drawings shown full scale)

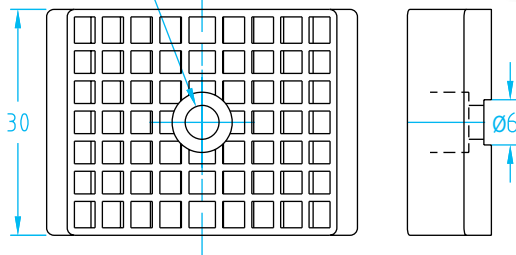
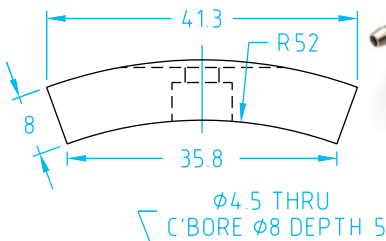
Rectangle Pads: #1725 & #1726:



Round Pads: #1728, #1732, #1729, #5272:



Curved Pads: #1727 & #5090:

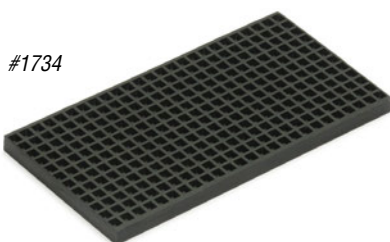


- Silicone Temperature range to 356°F
- Rubber Temperature range to 158°F

Grip Pads for Mini-Cylinders

Quick#	Part#	Style	Material	A	B	Weight	Price
1725	GSG-CP-060	Rectangle	Rubber	-	-	42g	\$8.98
1726	GSG-CP-061	Rectangle	Silicone	-	-	42g	\$8.18
1727	GSG-CP-018	Curved	Rubber	-	-	46g	\$7.76
5090	GSG-CP-072	Curved	Silicone	-	-	46g	\$7.47
1728	GSG-CP-016	Round - Lg.	Rubber	50	8	54g	\$4.85
1732	GSG-CP-071	Round - Lg.	Silicone	50	8	54g	\$4.85
1729	GSG-CP-015	Round - Sm.	Rubber	25	8	14g	\$2.91
5272	GSG-CP-074	Round - Sm.	Silicone	25	8	14g	\$3.92

M4 fasteners available on page 1077.

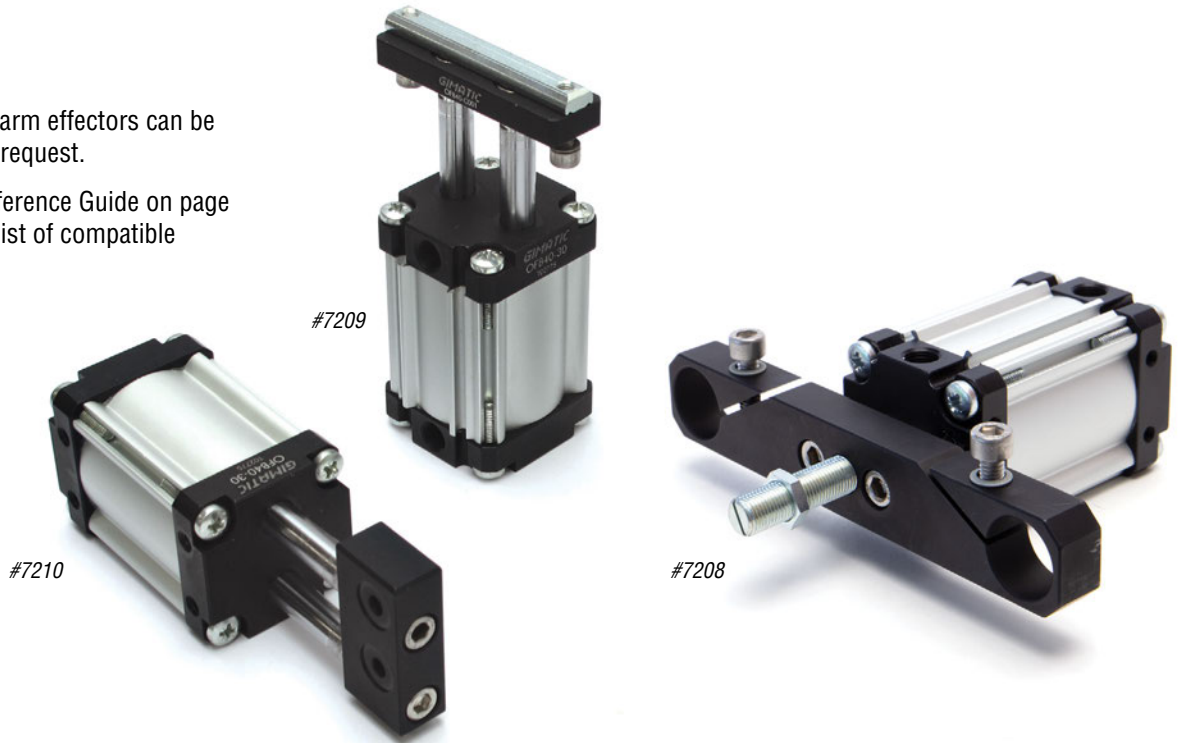


Grip Pad

Quick#	Part#	Size	Material	Mounting	Price
1734	GSG-CP-R	50x100x5	Rubber	No backing plate	\$2.68
5274	GSG-CP-SI	50x100x5	Silicone	No backing plate	\$11.26
584	GSG-GP-300	300x150x3.3mm	Elastomer	No backing plate	\$61.50
585	GSG-GP-300B	300x150x6.3mm	Elastomer	3mm Aluminum plate	\$99.50

Heavy-Duty Short Stroke Cylinder – OFB

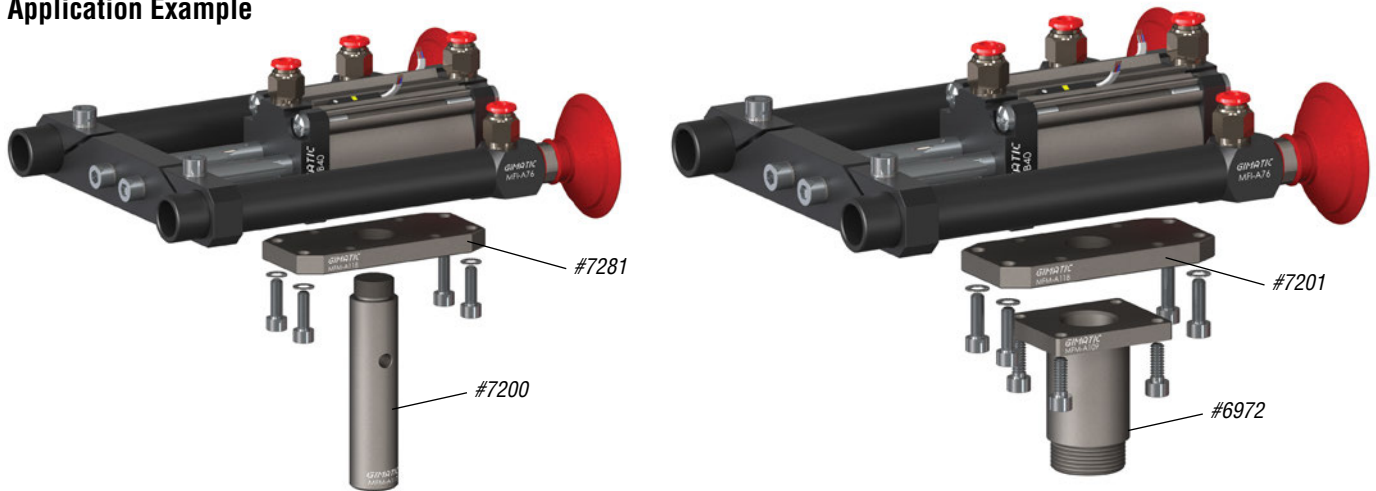
- Double acting
- Custom clamp arm effectors can be made per your request.
- See Sensor Reference Guide on page 1007 for a full list of compatible sensors.



Quick#	Part#	Price	End effector	Stroke	Extension force*	Retraction force*	Piston bore	Wt.
7208	OFB40-A30	\$186.00	Clamp for vacuum cup arms	30mm	148lbf	169lbf	40mm	475g
7209	OFB40-C30	\$186.00	Profile adaptor					397g
7210	OFB40-B30	\$186.00	Nipper clamp adaptor					406g
7196	OFB40-A50	\$187.00	Clamp for vacuum cup arms	50mm	148lbf	169lbf	40mm	523g
7197	OFB40-C50	\$187.00	Profile adaptor					445g
7198	OFB40-B50	\$187.00	Nipper clamp adaptor					454g

*Note: Force at 87psi (6 bar)

Application Example

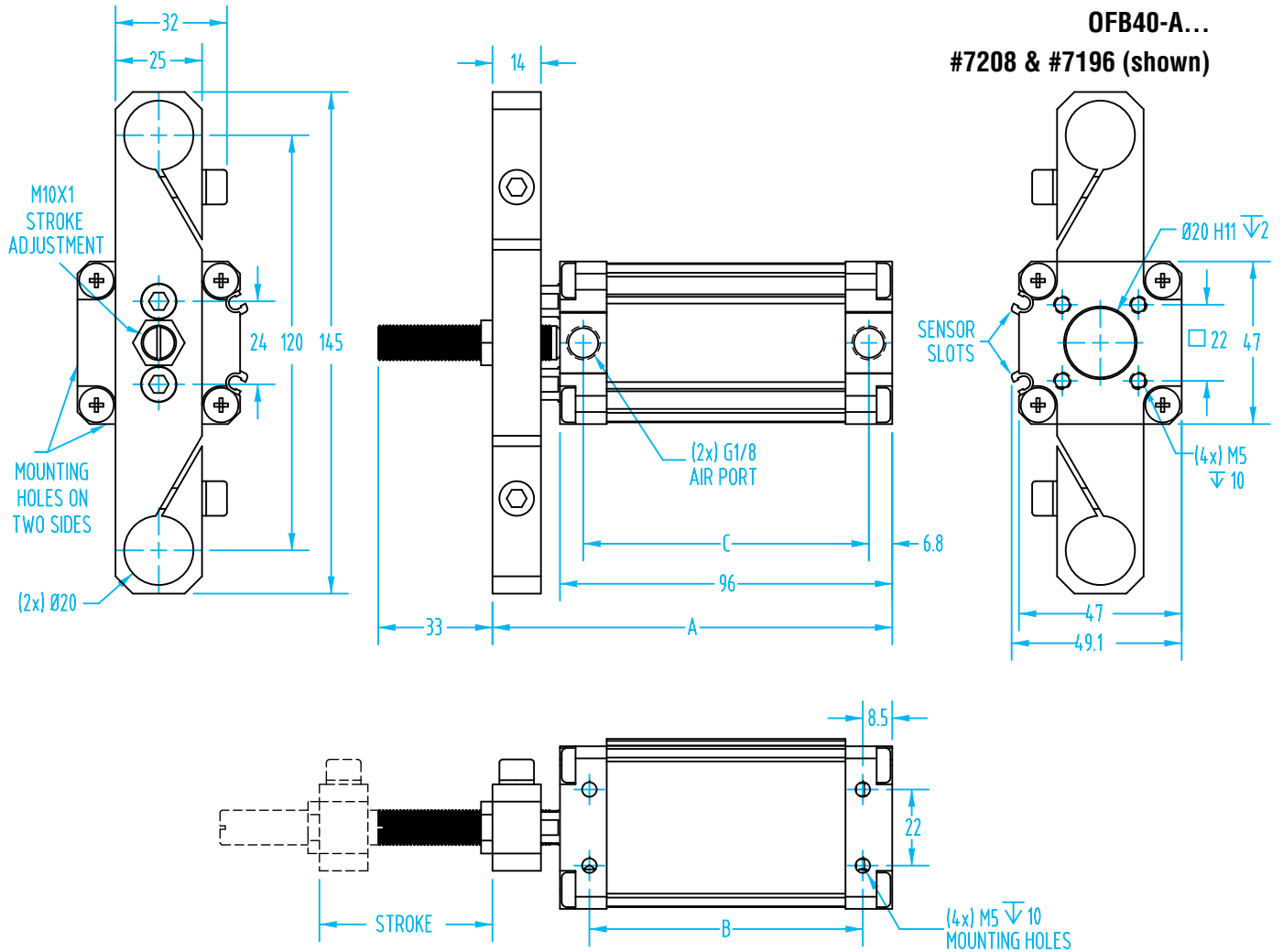


Mounting Accessories - Fasteners Included

Quick#	Part#	Price	Description	Dimensions	Thread
7281	MFM-A119	\$23.24	Interface Plate for OFB40-30	69L x 39W x 8H	M17x1
7201	MFM-A118	\$25.40	Interface Plate for OFB40-50	89L x 39W x 8H	M17x1
6972	MFM-A109	\$37.44	Ø30 stud	32mm Clampable Length	M27x1
7200	MFM-A117	\$15.00	Ø20 stud	80mm Clampable Length	M17x1

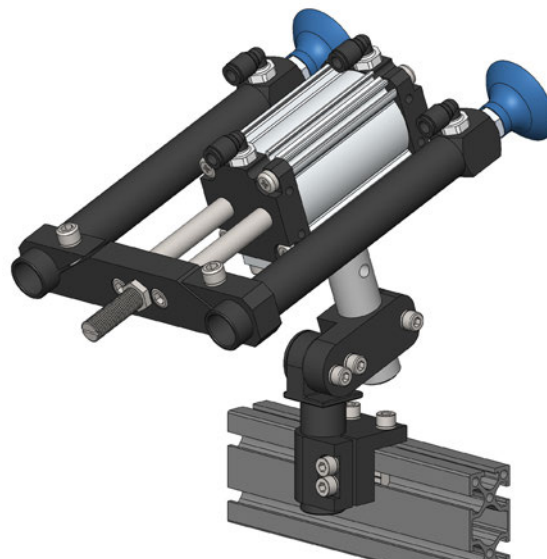
Heavy-Duty Short Stroke Cylinder – OFB

(Dimensioned drawings shown 1/2 scale)



Quick#	Stroke	A	B	C
7208	30mm	95.5	59	62.6
7196 (shown)	50mm	115.5	79	82.6

Application Example

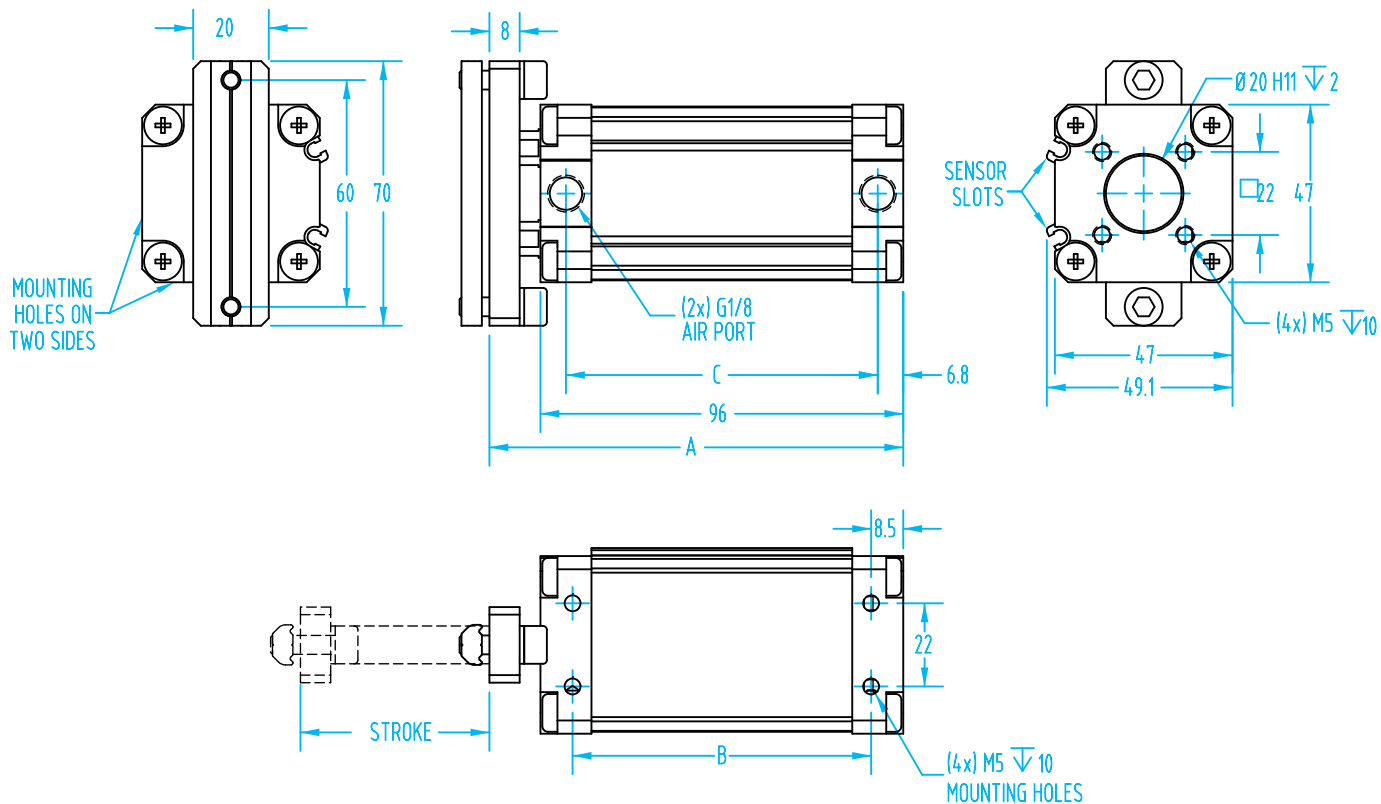


Heavy-Duty Short Stroke Cylinder – OFB

(Dimensioned drawings shown 1/2 scale)

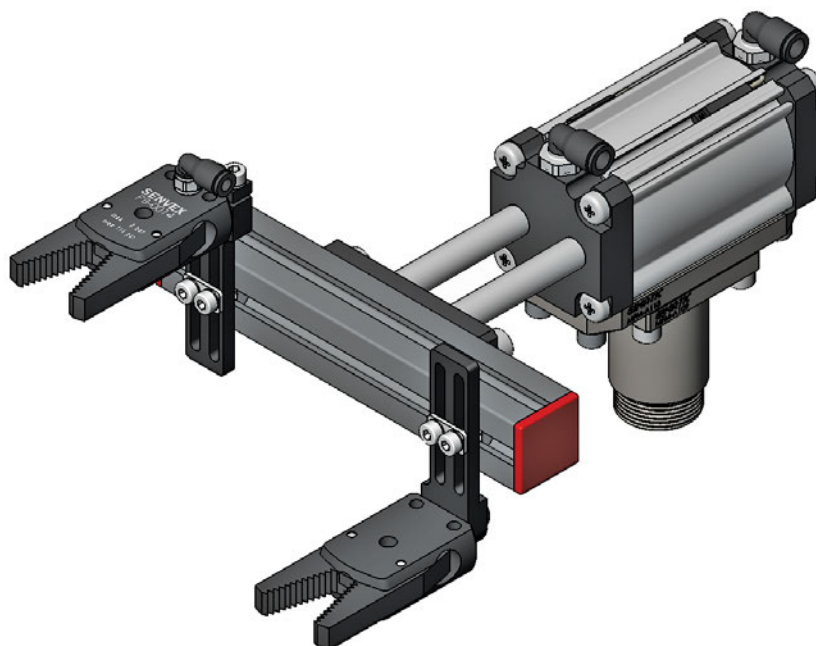
OFB40-C...

#7209 & #7197(shown)



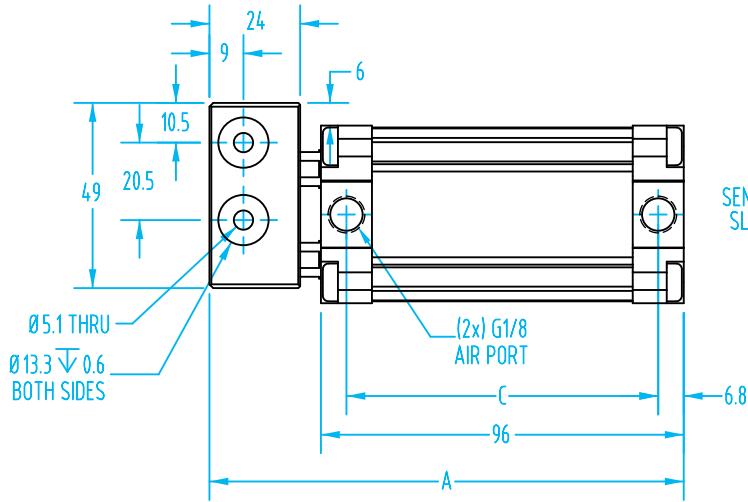
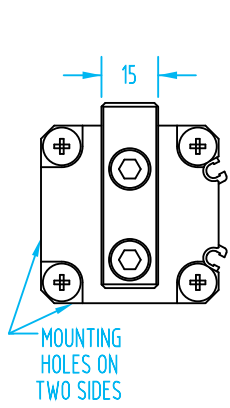
Quick#	Stroke	A	B	C
7209	30mm	89.5	59	62.6
7197 (shown)	50mm	109.5	79	82.6

Application Example

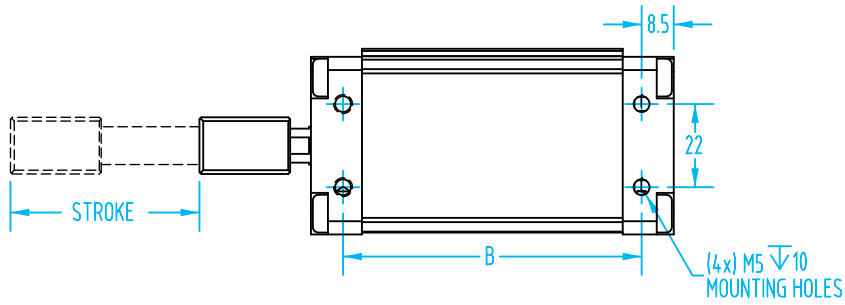
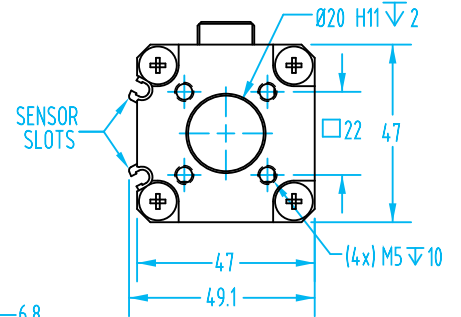


Heavy-Duty Short Stroke Cylinder – OFB

(Dimensioned drawings shown 1/2 scale)

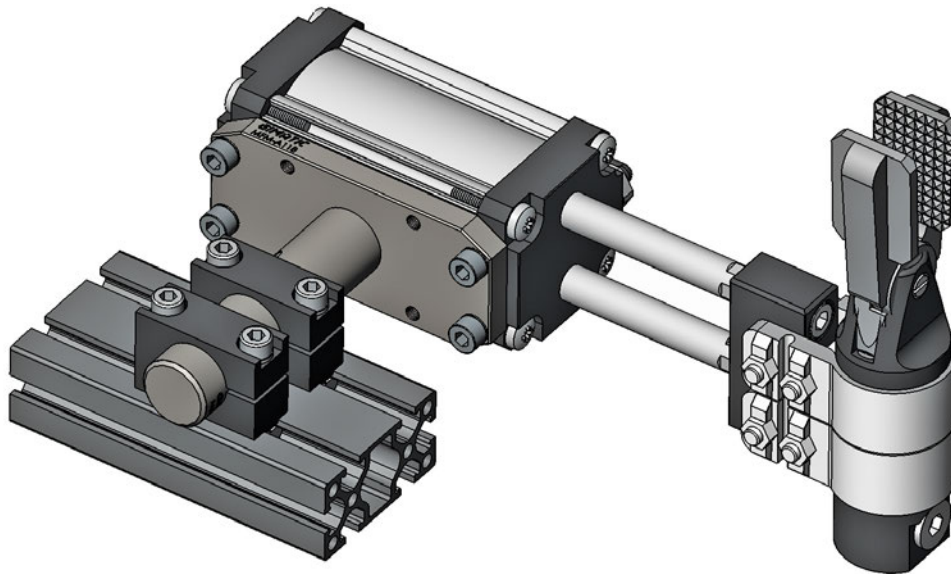


**OFB40-B...
#7210 & #7198(shown)**



Quick#	Stroke	A	B	C
7210	30mm	105.5	59	62.6
7198 (shown)	50mm	125.5	79	82.6

Application Example



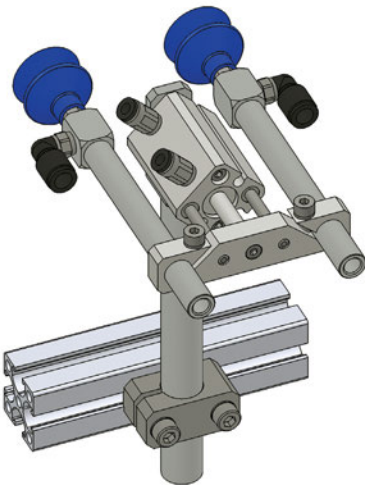
Compact Cylinders with Integrated Clamp Arm – SZD

(Dimensioned drawings shown 2/3 scale)



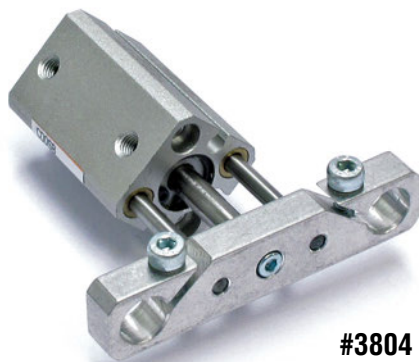
Deep-cored parts such as cups, pails, and buckets usually require gripping on the side of the part. To prevent the vacuum cups from dragging against the part, a separately actuated assembly is required. As the EOAT advances toward the part in the mold, there must be clearance between vacuum cups and the part. Once the EOAT is in position, the vacuum cups generate vacuum as they make contact with the part. Initially, the cylinder in this illustration appears to be mounted 'backwards.' But actually, this mounting configuration is preferred because it eliminates the torsional force on the air cylinder rod. When the cylinder rod is retracted into the cylinder body, it pulls the vacuum cups in contact with the part. And because the cylinder rod is not extended, there is no torsional force on it.

Mounting brackets on pages 766–767

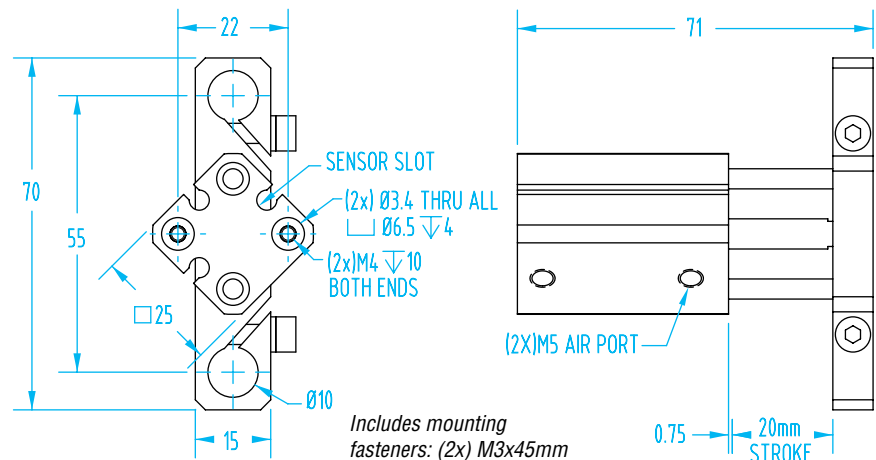


Quick#	Part#	>ASS< #	Price	Stroke	Extension force*	Retraction force*	Wt.
3804	SZD12-20A	1-715-06-00	\$156.45	20mm	15 lbf	11 lbf	98g
3814	SZD20-50A	1-715-42-00	\$169.05	50mm	42 lbf	32 lbf	334g
3824	SZD32-50A	1-715-72-00	\$189.53	50mm	108 lbf	81 lbf	567g
<i>Order 3-wire sensors separately</i>				<i>*Note: Force at 87psi (6 bar)</i>			
5430	D-M9PL	\$33.70	PNP, Straight with lead, 3m long				
2412	D-M9NL	\$33.70	NPN, Straight with lead, 3m long				
5497	D-M9P SAPC	\$42.06	PNP, Straight with M8 connector, 0.5m long				
5498	D-M9N SAPC	\$42.06	NPN, Straight with M8 connector, 0.5m long				

Note: Additional cylinder strokes from 10mm–50mm of each bore can be found online.



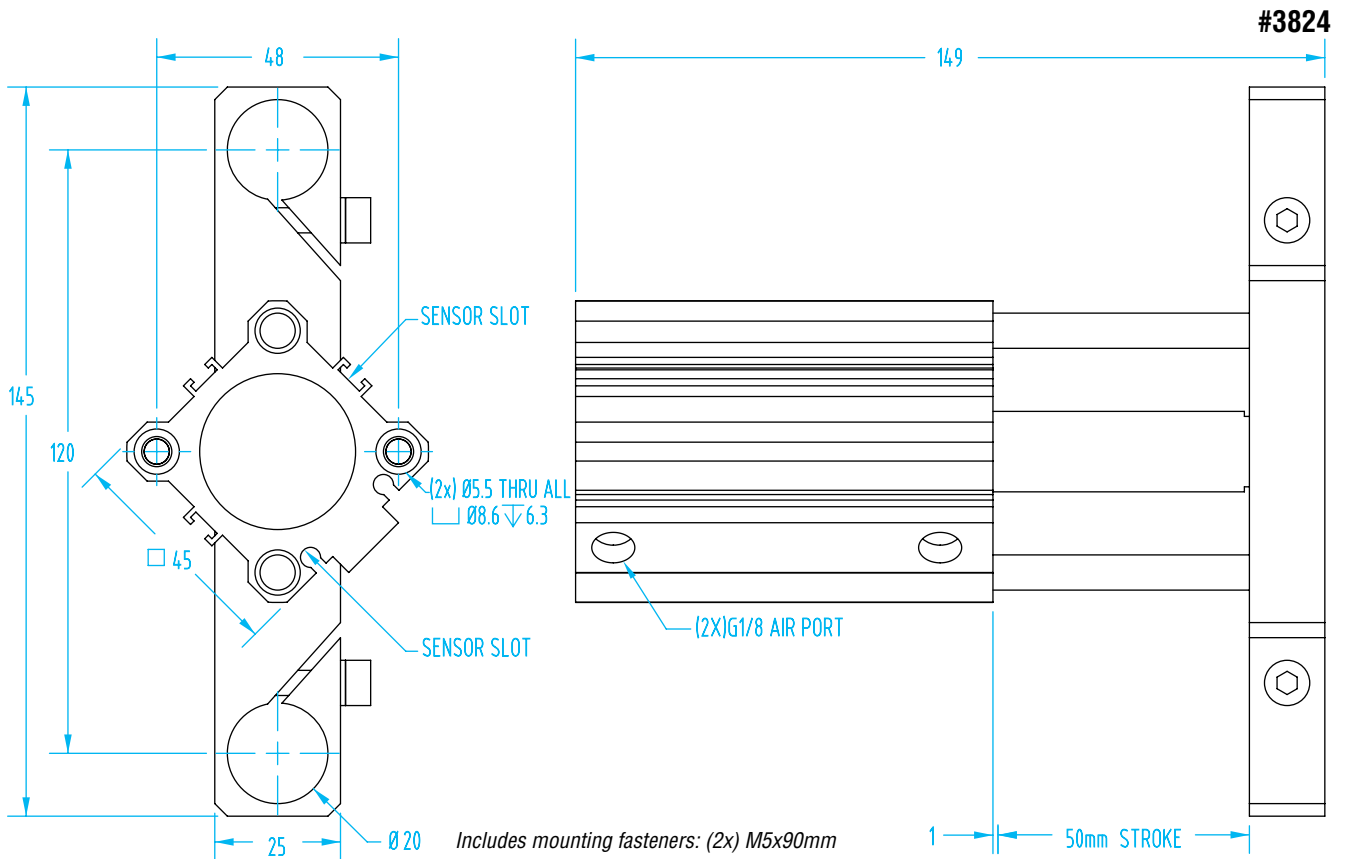
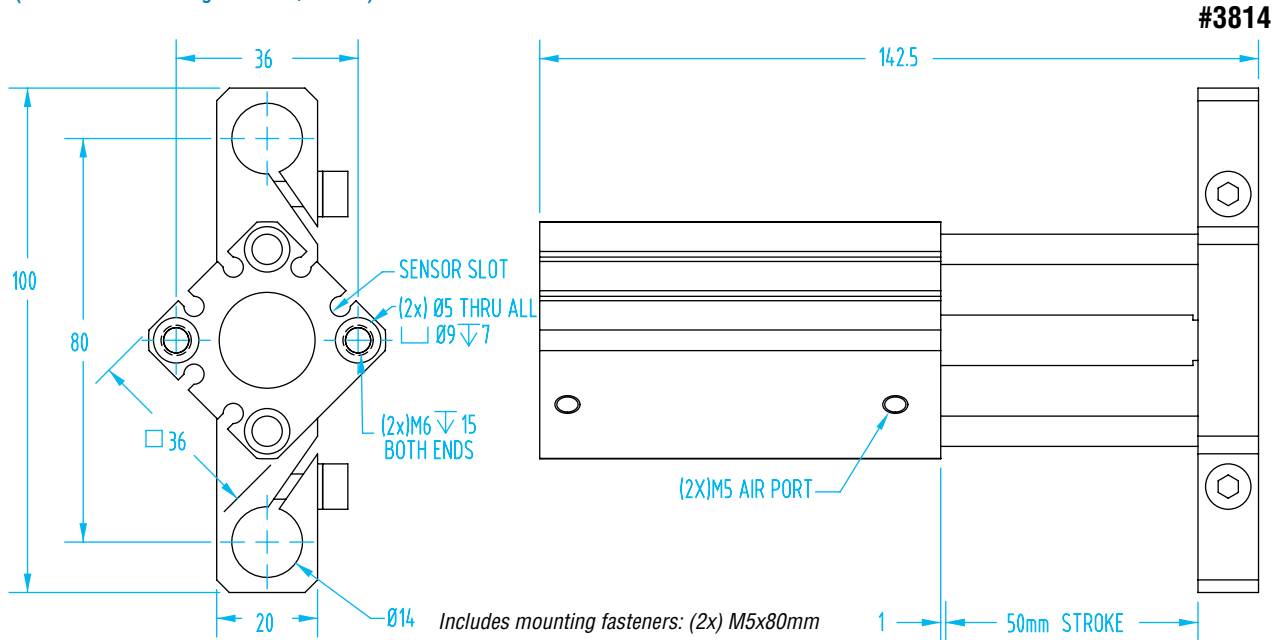
#3804



Includes mounting fasteners: (2x) M3x45mm

Compact Cylinders with Integrated Clamp Arm – SZD

(Dimensioned drawings shown 2/3 scale)



Stroke Reducers for SZD Compact Cylinders



Quick#	Part#	Price	Description	Stroke Reduction
3764	DB-5-20	\$11.55	For Cylinders with 20mm bore (#3814)	5mm
3765	DB-10-20	\$12.60		10mm
3766	DB-15-20	\$14.18		15mm
3758	DB-5-32	\$9.45	For Cylinders with 32mm bore (#3824)	5mm
3759	DB-10-32	\$10.50		10mm
3760	DB-15-32	\$15.75		15mm

SMC® Compact Cylinders with Integrated Guide Rod & Tooling Plate

- Non-rotating accuracy is ± 0.2 .
- Maximum operating pressure: 145.03 psi.
- Custom workpiece to be mounted directly to tooling plate.
- Double acting
- Standard with internal magnet for sensors.
- Standard with internal bumpers.
- Mounting hardware for GAZ, GAZ-S, & ADZ included.



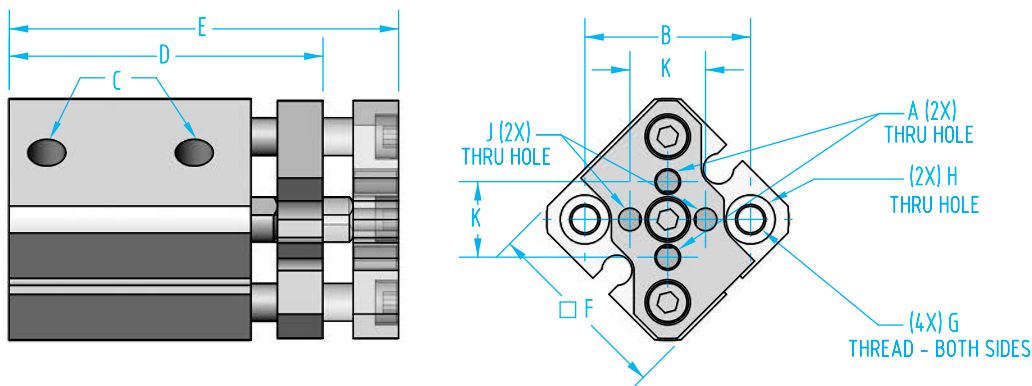
Quick#	Part#	Price	Stroke	Piston bore	Extension force*	Retraction force*	Wt.
5142	ECDQ-GR-12-10	\$45.15	10mm	12mm	17.76 lbf	13.26 lbf	59g
5143	ECDQ-GR-12-20	\$48.75	20mm				77g
5144	ECDQ-GR-12-30	\$52.35	30mm				93g
5145	ECDQ-GR-20-10	\$61.90	10mm	20mm	49.46 lbf	37.09 lbf	136g
5146	ECDQ-GR-20-20	\$65.50	20mm				168g
5147	ECDQ-GR-20-30	\$69.10	30mm				197g
5148	ECDQ-GR-20-40	\$72.70	40mm				227g
5149	ECDQ-GR-20-50	\$76.30	50mm				257g
5150	ECDQ-GR-32-10	\$88.80	10mm				32mm
5151	ECDQ-GR-32-20	\$92.60	20mm	309g			
5152	ECDQ-GR-32-30	\$96.40	30mm	356g			
5153	ECDQ-GR-32-40	\$100.20	40mm	401g			
5154	ECDQ-GR-32-50	\$104.00	50mm	448g			
5155	ECDQ-GR-32-75	\$113.50	75mm	564g			
5156	ECDQ-GR-32-100	\$123.00	100mm	680g			

Sensors

*Note: Force at 100psi (6.8 bar)

Quick#	Part#	Price	Description
5430	D-M9PL	\$33.70	PNP, Straight with lead, 3m long
2412	D-M9NL	\$33.70	NPN, Straight with lead, 3m long
5497	D-M9P SACP	\$42.06	PNP, Straight with M8 connector, 0.5m long
5498	D-M9N SACP	\$42.06	NPN, Straight with M8 connector, 0.5m long

#5142-5144

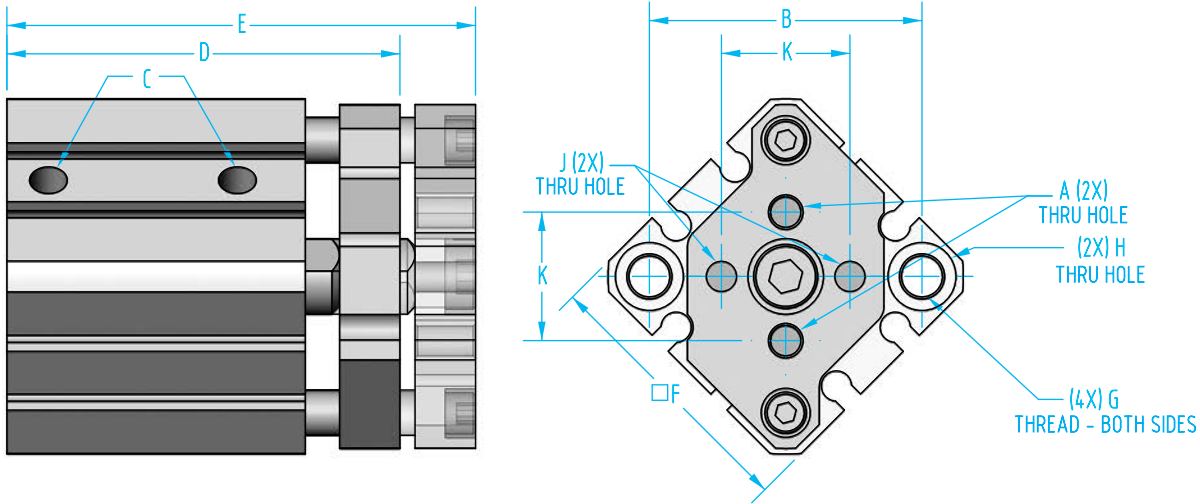


Compact Cylinders with Integrated Guide Rod & Tooling Plate - 12mm Bore

Quick#	Part#	A	B	C	D	E	F	G	H	J	K
5142	ECDQ-GR-12-10	M3 x0.5	22	M5	41.5	51.5	25	M4 ∇ 7	3.5	3 $\frac{+0.2}{0}$	10
5143	ECDQ-GR-12-20				51.5	71.5					
5144	ECDQ-GR-12-30				61.5	91.5					

SMC Compact Cylinders with Integrated Guide Rod & Tooling Plate

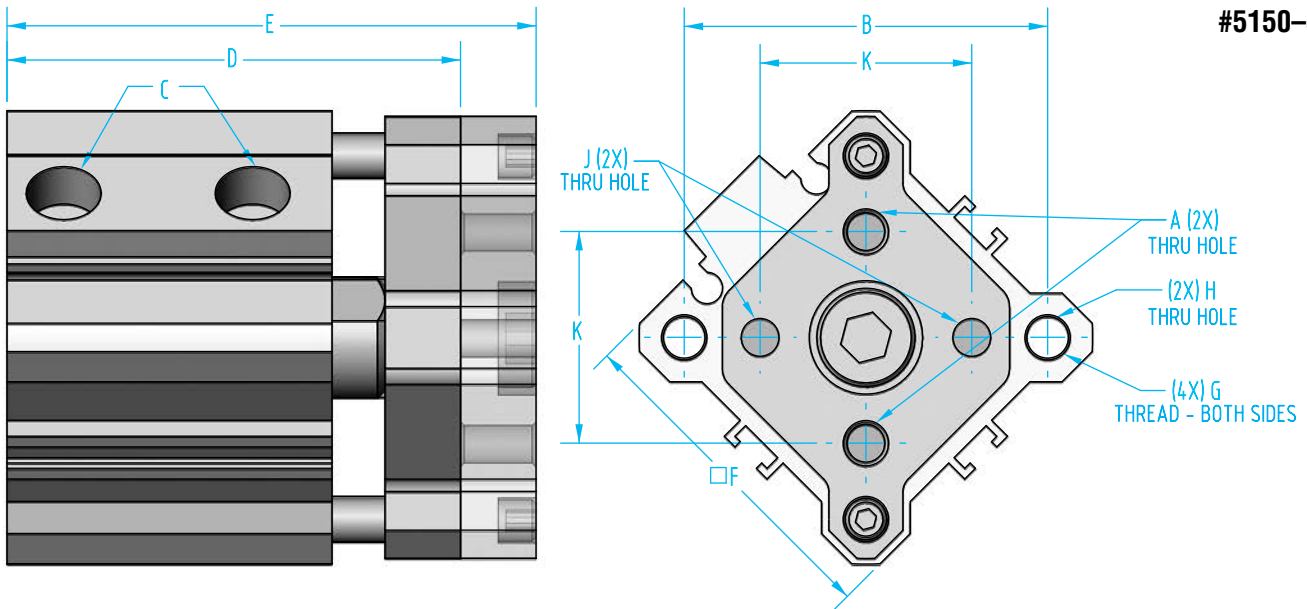
#5145-5149



Compact Cylinders with Integrated Guide Rod & Tooling Plate - 20mm Bore

Quick#	Part#	A	B	C	D	E	F	G	H	J	K
5145	ECDQ-GR-20-10	M4 x0.7	36	M5	52	62	36	M6T10	5.4	$4^{+0.2}_0$	17
5146	ECDQ-GR-20-20				62	82					
5147	ECDQ-GR-20-30				72	102					
5148	ECDQ-GR-20-40				82	122					
5149	ECDQ-GR-20-50				92	142					

#5150-5156

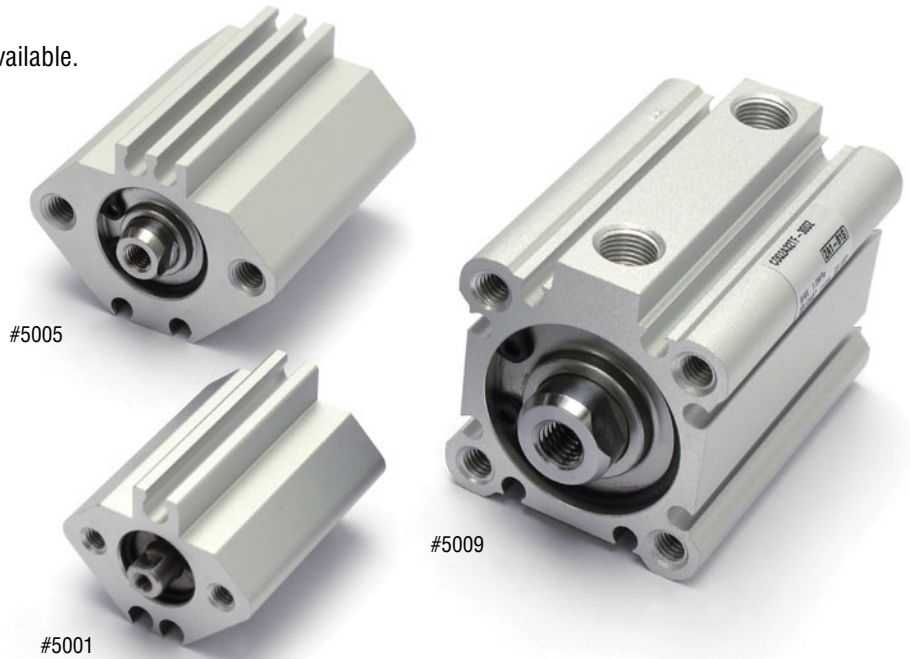


Compact Cylinders with Integrated Guide Rod & Tooling Plate - 32mm Bore

Quick#	Part#	A	B	C	D	E	F	G	H	J	K
5150	ECDQ-GR-32-10	M5 x0.8	48	G1/8"	60	70	45	M6T10	5.5	$5^{+0.2}_0$	28
5151	ECDQ-GR-32-20				70	90					
5152	ECDQ-GR-32-30				80	110					
5153	ECDQ-GR-32-40				90	130					
5154	ECDQ-GR-32-50				100	150					
5155	ECDQ-GR-32-75				125	200					
5156	ECDQ-GR-32-100				150	250					

SMC Compact Cylinders with Single Rod

- Compact, lightweight shape.
- Double acting, single acting also available.
- Maximum operating pressure: 145.03 psi.
- Standard with internal magnets for sensors.
- Standard with internal bumpers.
- Round, rotating shaft*
*Non-rotating, hexagon shaft version available.
- Mounting hardware for GAZ, GAZ-S, & ADZ included.



Quick#	Part#	Price	Stroke	Piston bore	Extension force*	Retraction force*	Wt.
5001	ECDQ-12-10	\$27.00	10mm	12mm	17.75 lbf	13.26 lbf	58g
5002	ECDQ-12-20	\$27.70	20mm				68g
5003	ECDQ-12-30	\$28.40	30mm				81g
5004	ECDQ-20-10	\$30.65	10mm	20mm	49.45 lbf	37.09 lbf	113g
5005	ECDQ-20-20	\$31.35	20mm				140g
5006	ECDQ-20-30	\$32.05	30mm				158g
5007	ECDQ-32-10	\$43.65	10mm	32mm	126.56 lbf	94.86 lbf	217g
5008	ECDQ-32-20	\$44.55	20mm				240g
5009	ECDQ-32-30	\$45.45	30mm				281g
5010	ECDQ-32-50	\$47.25	50mm				362g
5011	ECDQ-32-75	\$49.50	75mm				453g
5012	ECDQ-32-100	\$51.75	100mm				536g

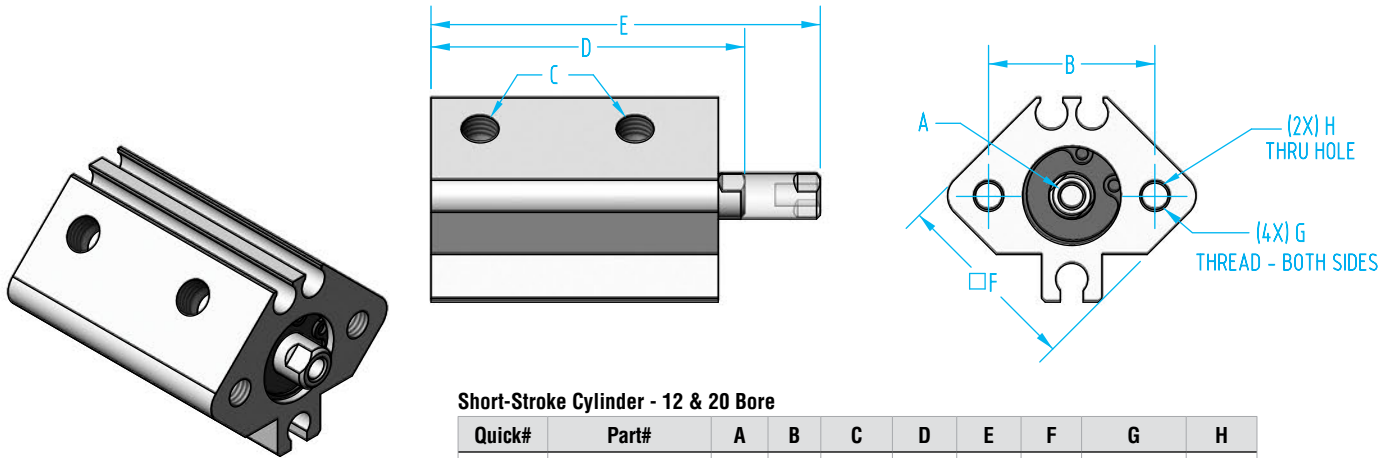
*Note: Force at 100psi (6.8 bar)

Sensors

Quick#	Part#	Price	Description
5430	D-M9PL	\$33.70	PNP, Straight with lead, 3m long
2412	D-M9NL	\$33.70	NPN, Straight with lead, 3m long
5497	D-M9P SAPC	\$42.06	PNP, Straight with M8 connector, 0.5m long
5498	D-M9N SAPC	\$42.06	NPN, Straight with M8 connector, 0.5m long

SMC Compact Cylinders with Single Rod

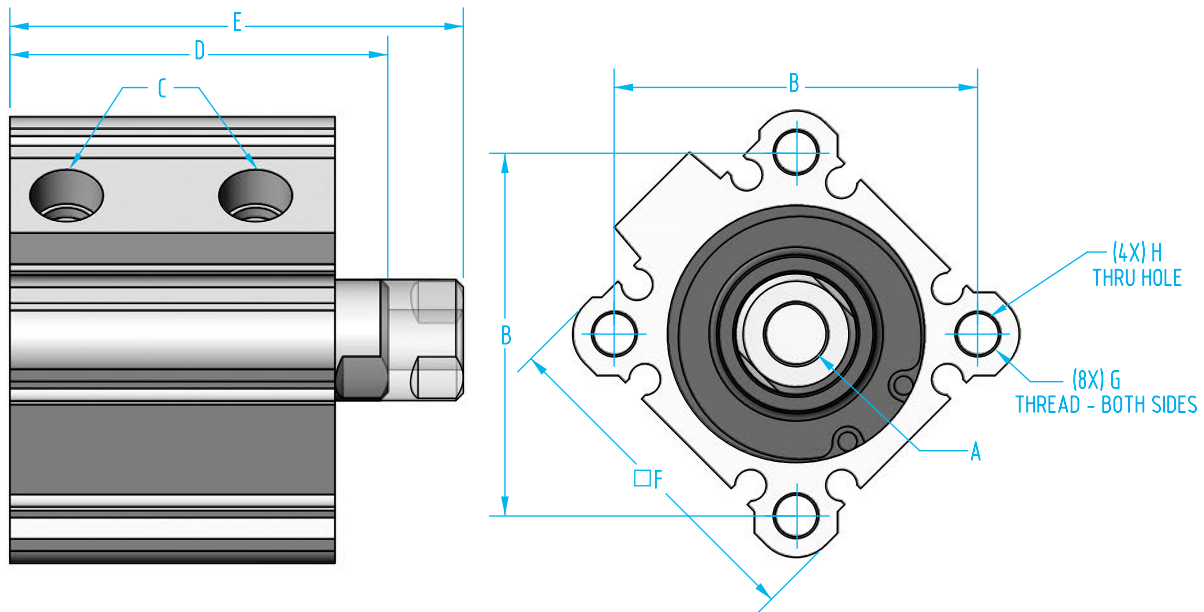
#5001-5006



Short-Stroke Cylinder - 12 & 20 Bore

Quick#	Part#	A	B	C	D	E	F	G	H
5001	ECDQ-12-10				41.5	51.5			
5002	ECDQ-12-20	M3	22	M5	51.5	71.5	25	M4 ∇ 7	3.5
5003	ECDQ-12-30				61.5	91.5			
5004	ECDQ-20-10				46	56			
5005	ECDQ-20-20	M5	36	M5	56	76	36	M6 ∇ 10	5.5
5006	ECDQ-20-30				66	96			

#5007-5012



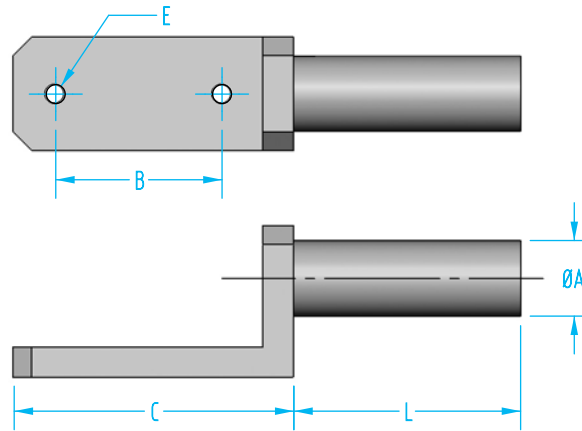
Short-Stroke Cylinder - 32 Bore

Quick#	Part#	A	B	C	D	E	F	G	H
5007	ECDQ-32-10				50	60			
5008	ECDQ-32-20				60	80			
5009	ECDQ-32-30	M8	48	G1/8"	70	100	45	M6 ∇ 10	5.5
5010	ECDQ-32-50	x1.25			90	140			
5011	ECDQ-32-75				115	190			
5012	ECDQ-32-100				140	240			

Compact Cylinder Mounting Brackets



#3431



Gripper Arm for Compact Cylinders

Quick#	Part#	>ASS< #	Price	Use with:	ØA	B	C	E	L	Wt.
3425	GAZ12-10-30	1-720-03-00	\$22.05	Compact Cylinders with 12mm bore	10	22	36	M3	30	12g
3426	GAZ12-10-60	1-720-06-00	\$23.63						60	16g
3427	GAZ12-10-90	1-720-09-00	\$24.68						90	22g
3428	GAZ12-14-40	1-720-12-00	\$23.10	Compact Cylinders with 12mm bore	14	22	36	M3	40	15g
3429	GAZ12-14-80	1-720-15-00	\$24.15						80	24g
3430	GAZ12-14-120	1-720-18-00	\$26.25						120	32g
3431	GAZ20-20-50	1-720-21-00	\$30.45	Compact Cylinders with 20mm bore	20	36	52	M5	50	35g
3432	GAZ20-20-100	1-720-24-00	\$32.55						100	58g
3433	GAZ20-20-150	1-720-27-00	\$33.60						150	79g
3434	GAZ32-20-50	1-720-30-00	\$36.23	Compact Cylinders with 32mm bore	20	48	66	M5	50	46g
3435	GAZ32-20-100	1-720-33-00	\$38.85						100	64g
3436	GAZ32-20-150	1-720-36-00	\$40.43						150	73g

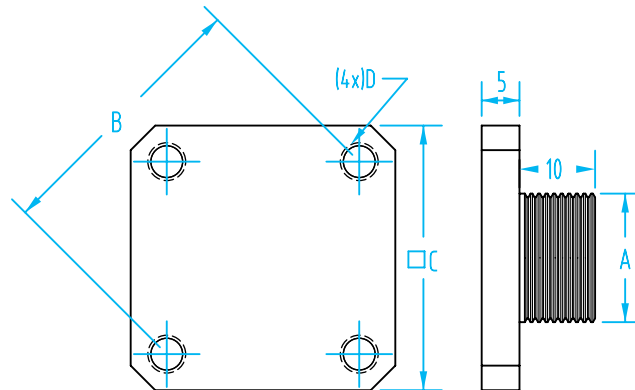
Use Quick#s for easy online ordering.



#3421



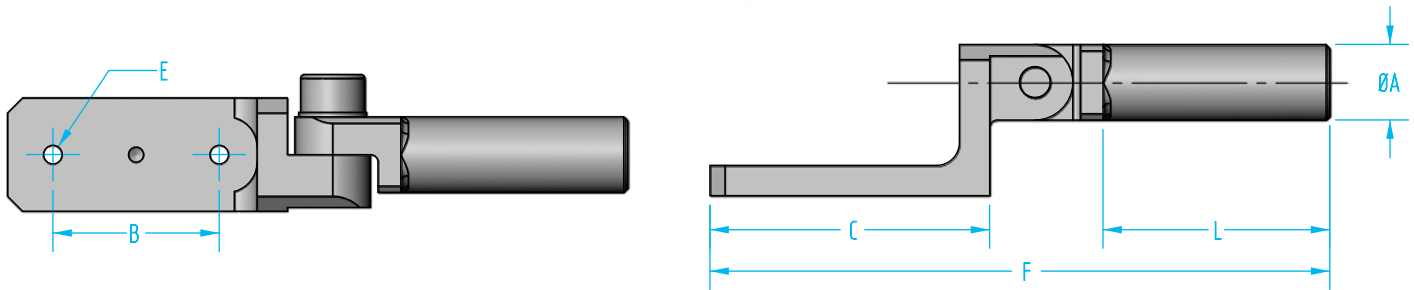
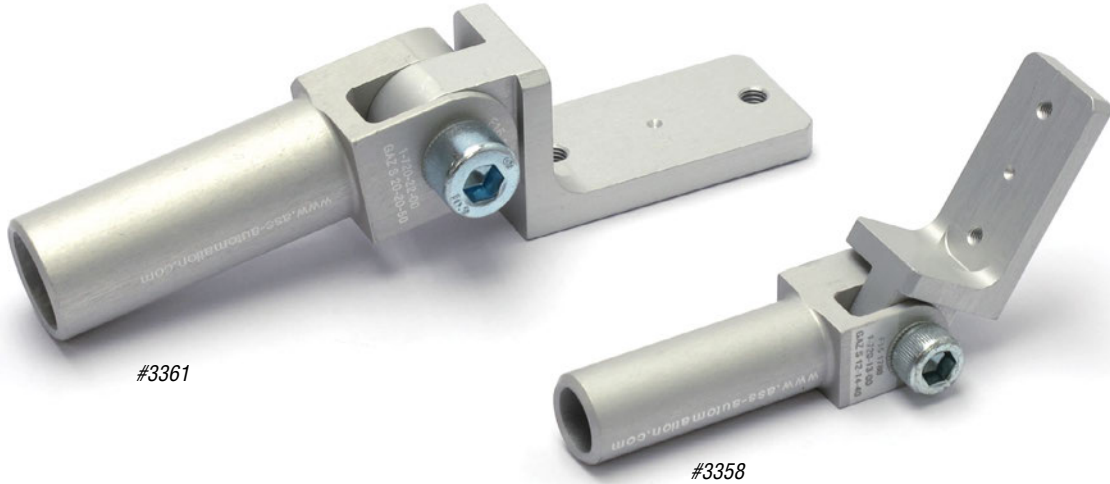
#3423



Mounting Plate for Compact Cylinders

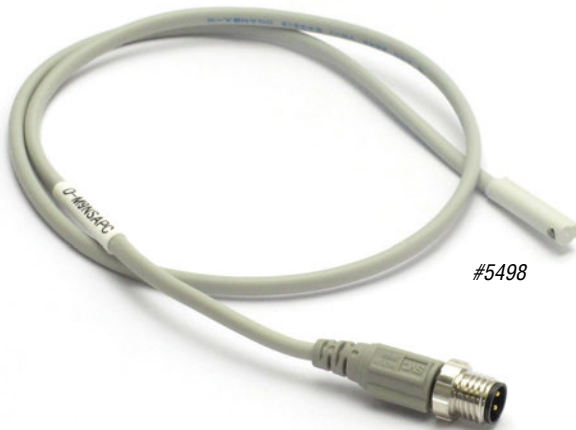
Quick#	Part#	>ASS< #	Price	Use with:	A	B	C	D	Wt.
3421	ADZ14-12	1-725-03-00	\$29.93	Compact Cylinders with 12mm bore	M12x1	22	25	M3	10g
3422	ADZ20-30	1-725-06-00	\$31.50	Compact Cylinders with 20mm bore	M17x1	36	35	M5	21g
3423	ADZ20-32	1-725-09-00	\$33.08	Compact Cylinders with 32mm bore	M17x1	48	45	M5	32g
3424	ADZ30-32	1-725-12-00	\$34.65	Compact Cylinders with 32mm bore	M27x1	48	45	M5	41g

Compact Cylinder Mounting Brackets



Swivel Gripper Arm for Compact Cylinders

Quick#	Part#	>ASS< #	Price	Use with:	ØA	B	C	E	F	L	Wt.
3355	GAZ-S-12-10-30	1-720-04-00	\$43.58	Compact Cylinders with 12mm bore	10	22	37	M3	82	30	17g
3356	GAZ-S-12-10-60	1-720-07-00	\$46.20						112	60	20g
3357	GAZ-S-12-10-90	1-720-10-00	\$48.30						142	90	24g
3358	GAZ-S-12-14-40	1-720-13-00	\$50.40	Compact Cylinders with 12mm bore	14	22	37	M3	97	40	38g
3359	GAZ-S-12-14-80	1-720-16-00	\$53.03						137	80	46g
3360	GAZ-S-12-14-120	1-720-19-00	\$55.65						177	120	55g
3361	GAZ-S-20-20-50	1-720-22-00	\$61.95	Compact Cylinders with 20mm bore	20	36	52	M5	129.5	50	80g
3362	GAZ-S-20-20-100	1-720-25-00	\$64.05						179.5	100	96g
3363	GAZ-S-20-20-150	1-720-28-00	\$65.63						229.5	150	111g
3364	GAZ-S-32-20-50	1-720-31-00	\$67.20	Compact Cylinders with 32mm bore	20	48	66	M5	143.5	50	86g
3365	GAZ-S-32-20-100	1-720-34-00	\$72.45						193.5	100	101g
3366	GAZ-S-32-20-150	1-720-37-00	\$75.60						243.5	150	117g

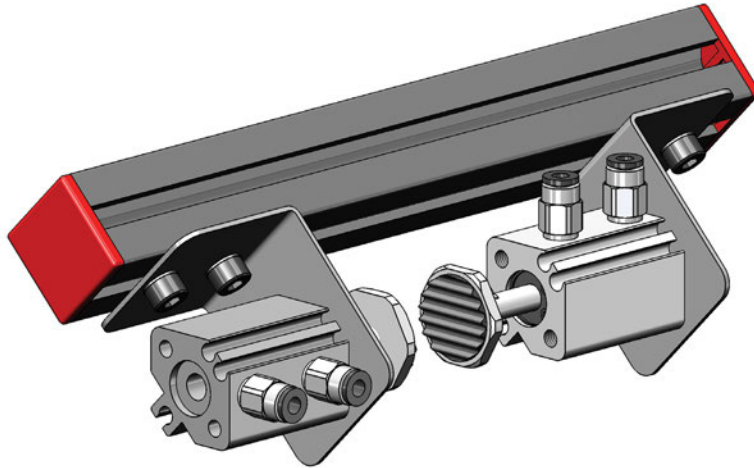


Sensors

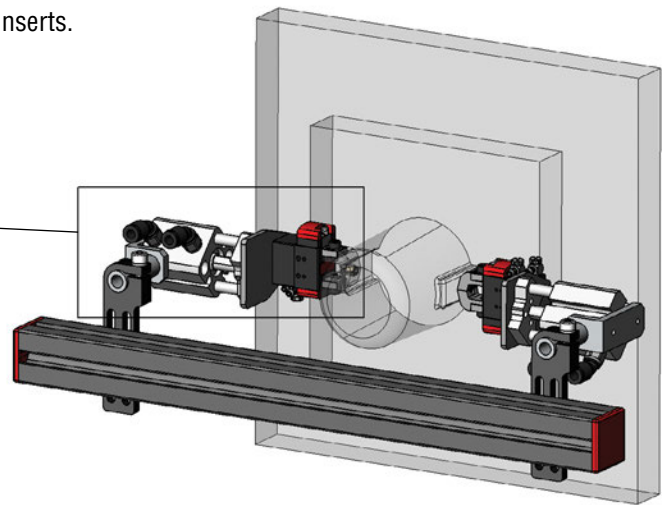
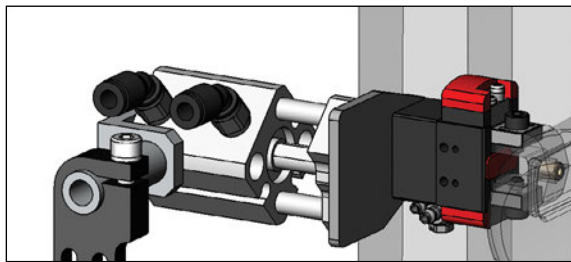
Quick#	Part#	Price	Operation
5430	D-M9PL	\$33.70	PNP, Straight with 3m lead
2412	D-M9NL	\$33.70	NPN, Straight with 3m lead
5497	D-M9P SAPC	\$42.06	PNP, Straight 0.5m long with M8 connector
5498	D-M9N SAPC	\$42.06	NPN, Straight 0.5m long with M8 connector

SMC Compact Cylinder Application Examples

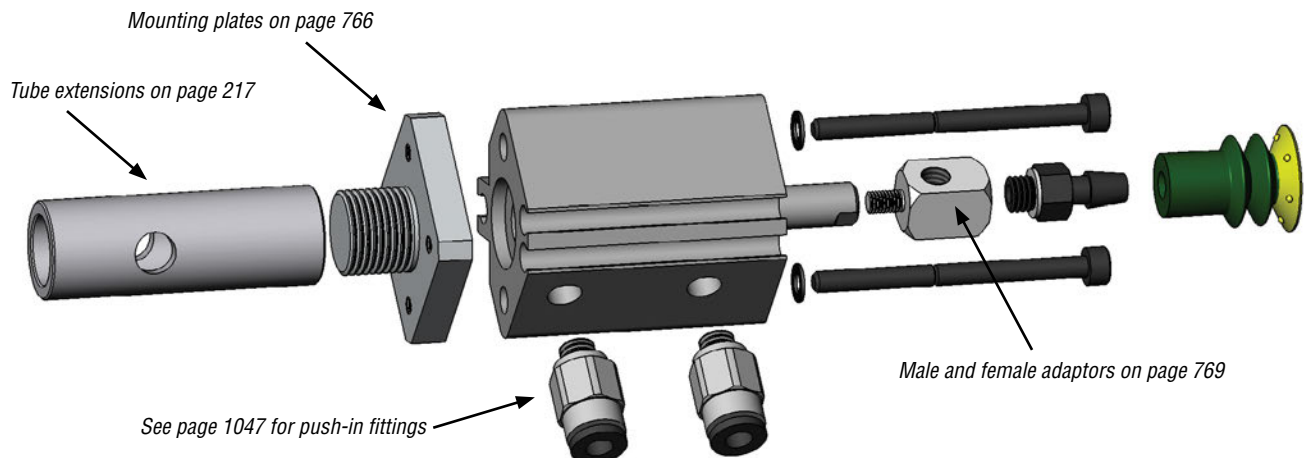
- Cylinders can be mounted directly from the front or back to plates. Necessary hardware to fasten cylinders to brackets GAZ, GAZ-S, & ADZ is included.



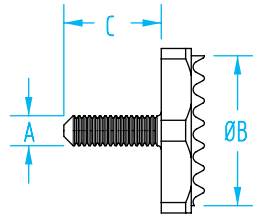
- Cylinders may be used for linear movement of lightweight inserts.



Exploded View with Accessories

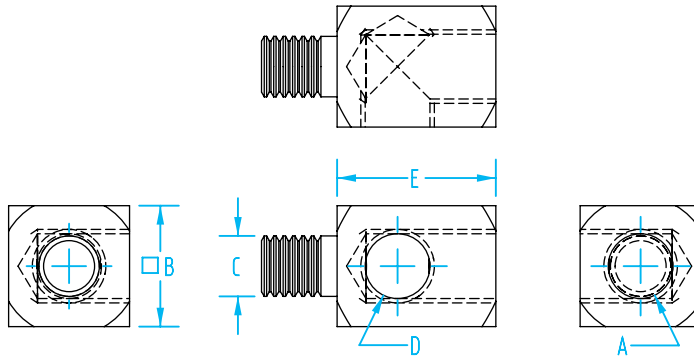


Compact Cylinder Components



Pressure Plate

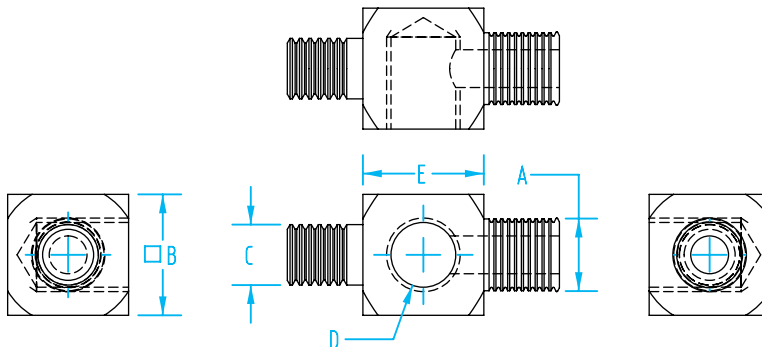
Quick#	Part#	>ASS< #	Price	Description	A	B	C	Wt.
3437	DPL12-3	1-790-03-00	\$5.25	NO RUBBER PAD	M3	12	9	2g
3438	DPL25-3	1-790-06-00	\$4.73	Includes Rubber pad	M3	22	7	7g
3439	DPL25-4	1-790-09-00	\$5.25		M4	22	13	12g
3440	DPL25-5	1-790-12-00	\$7.35		M5	22	13	12g
742	GSC-CCPP-1	-	\$16.10	Includes Elastomer pad with EPDM backing	M5	30	8	29g



#3300

Female Adaptor

Quick#	Part#	>ASS< #	Price	A	B	C	D	E	Wt.
3299	AVI5i-8-3	1-290-75-00	\$7.35	M5	8	M3	M5	12	4g
3689	AVI5i-8-5	1-290-73-00	\$7.35	M5	8	M5	M5	12	5g
3530	AVI1/8i-16-5	1-290-76-00	\$10.50	G1/8"	16	M5	G1/8"	21	32g
3300	AVI1/8i-16-8	1-290-77-00	\$10.50	G1/8"	16	M8	G1/8"	21	39g
3301	AVI1/4i-16-8	1-290-79-00	\$10.50	G1/4"	16	M8	G1/8"	26	35g



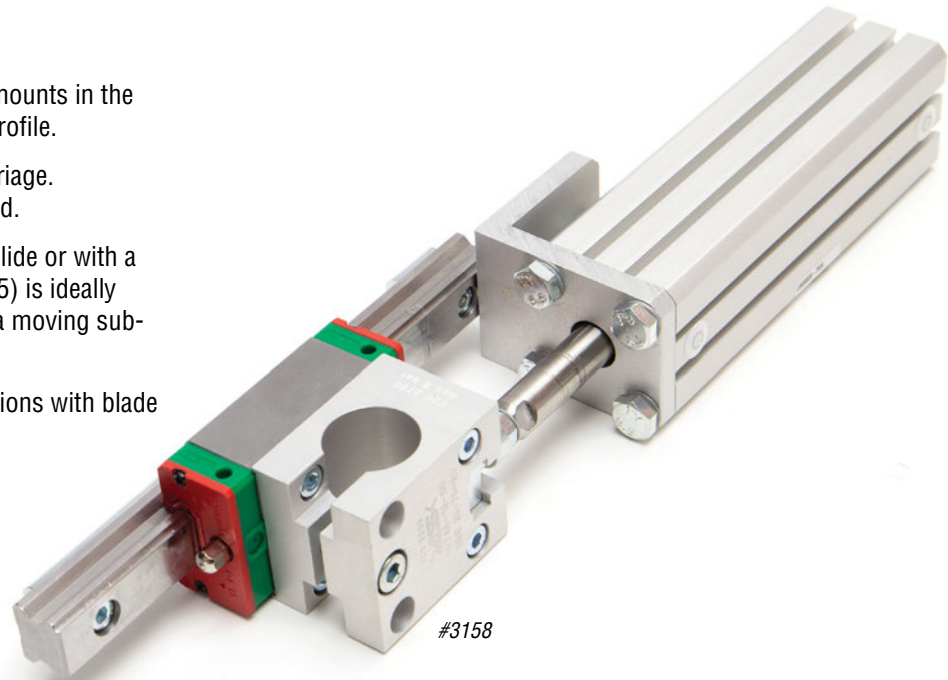
#3304

Male Adaptor

Quick#	Part#	>ASS< #	Price	A	B	C	D	E	Wt.
3302	AVA1/8a-16-6	1-290-81-00	\$10.50	G1/8"	16	M6	G1/8"	16	29g
3303	AVA1/8a-16-8	1-290-83-00	\$10.50	G1/8"	16	M8	G1/8"	16	29g
3304	AVA1/4a-16-6	1-290-85-00	\$10.50	G1/4"	16	M6	G1/8"	16	32g
3305	AVA1/4a-16-8	1-290-87-00	\$10.50	G1/4"	16	M8	G1/8"	16	32g

Heavy-Duty Guided Cylinders – HUE

- Double acting.
- Consists of a linear bearing that mounts in the channel of all >ASS< & Gimatic profile.
- A clamp assembly sits on the carriage. The pneumatic cylinder is included.
- Can be used as a precise nipper slide or with a DKS mounting post (see page 215) is ideally suited for building an EOAT with a moving sub-frame.
- Can be used for degating applications with blade holders found on page 911.
- Sensors available on page 771.

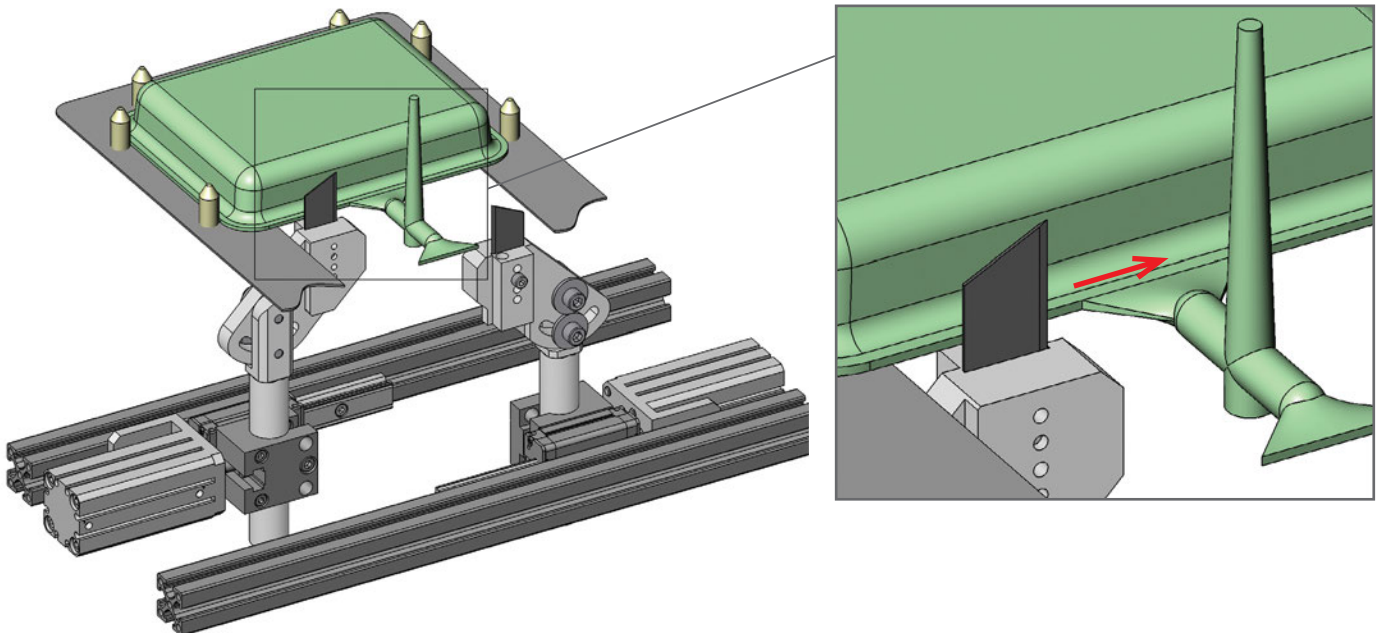


Quick#	Part#	>ASS<#	Price	Stroke	Extension force*	Retraction force*	Piston bore	Wt.
3156	HUE-20-30-20	1-745-10-00	\$293.48	30mm	42 lbf	32 lbf	20mm	588g
3157	HUE-20-50-20	1-745-11-00	\$293.48	50mm				636g
3158	HUE-20-75-20	1-745-12-00	\$313.95	75mm				747g
3159	HUE-20-100-20	1-745-13-00	\$334.43	100mm				717g
3161	HUE-20-125-20	1-745-14-00	\$352.28	125mm				849g

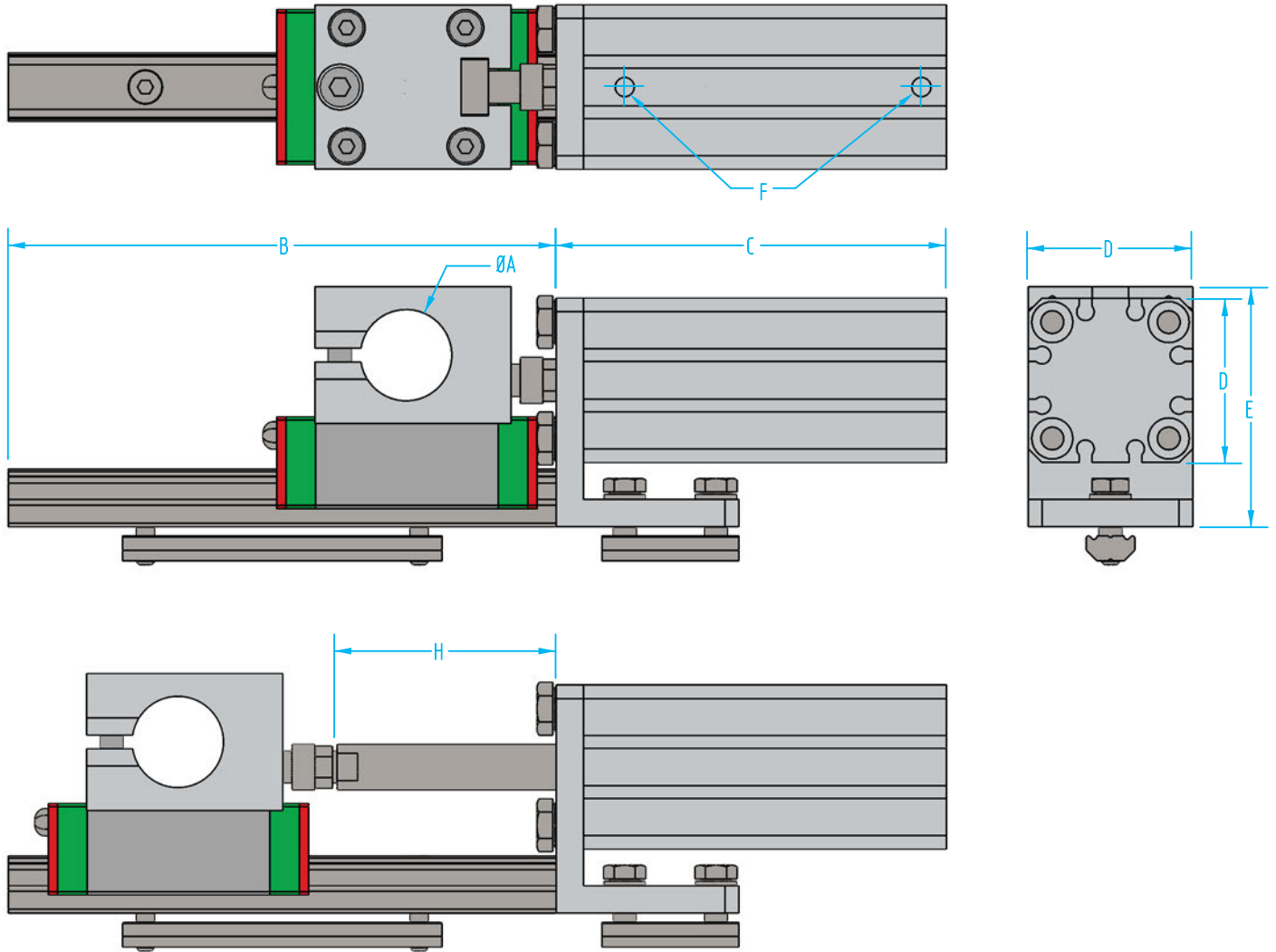
*Note: Force at 87psi (6 bar)

Use Quick#s for easy online ordering.

Application Example



Heavy-Duty Guided Cylinders – HUE



Quick#	Part#	A	B	C	D	E	F	H
3156	HUE-20-30-20	20	100	65.5	36	52.5	M5	30mm
3157	HUE-20-50-20	20	120	85.5	36	52.5	M5	50mm
3158	HUE-20-75-20	20	145	122	36	52.5	M5	75mm
3159	HUE-20-100-20	20	170	147	36	52.5	M5	100mm
3161	HUE-20-125-20	20	195	172	36	52.5	M5	125mm

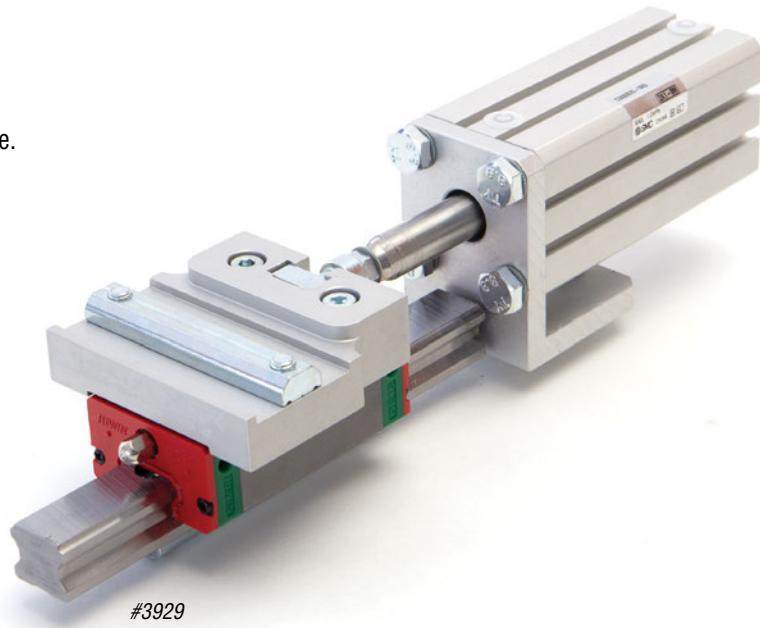


Sensors

Quick#	Part#	Price	Description
5430	D-M9PL	\$33.70	PNP, Straight with lead, 3m long
2412	D-M9NL	\$33.70	NPN, Straight with lead, 3m long
5497	D-M9P SAPC	\$42.06	PNP, Straight with M8 connector, 0.5m long
5498	D-M9N SAPC	\$42.06	NPN, Straight with M8 connector, 0.5m long

Heavy-Duty Guided Cylinders – HUE-X

- Double acting.
- Consists of a linear bearing that mounts in the channel of all 25mm X >ASS< & Gimatic profile.
- Excellent for precise linear movements.
- Sensors available.

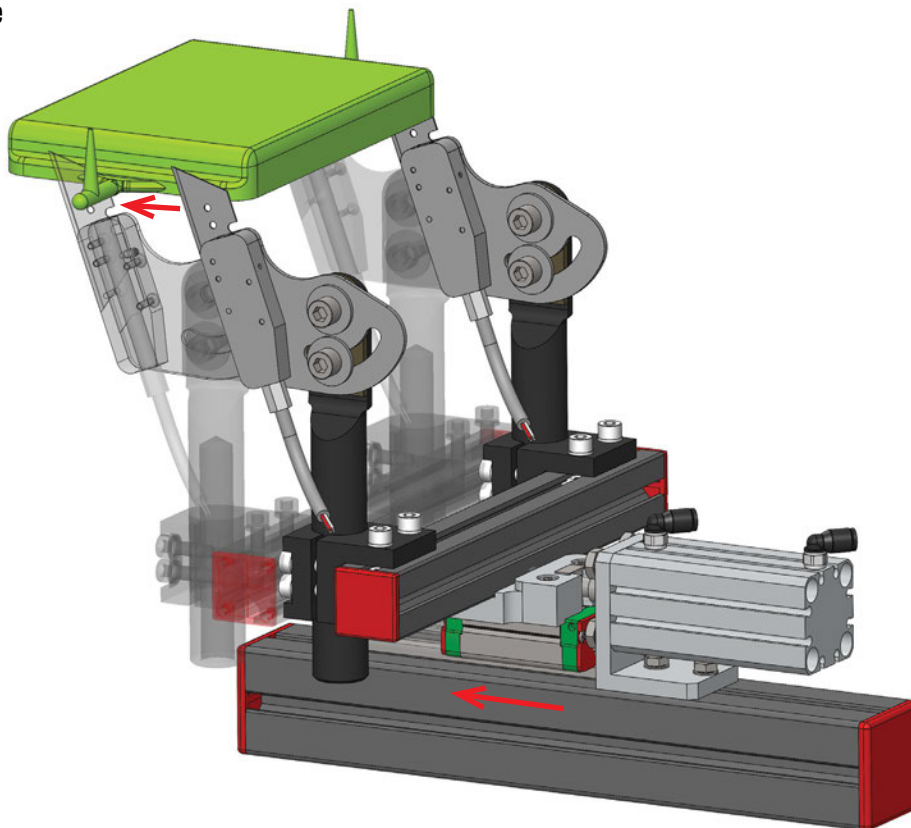


NEW

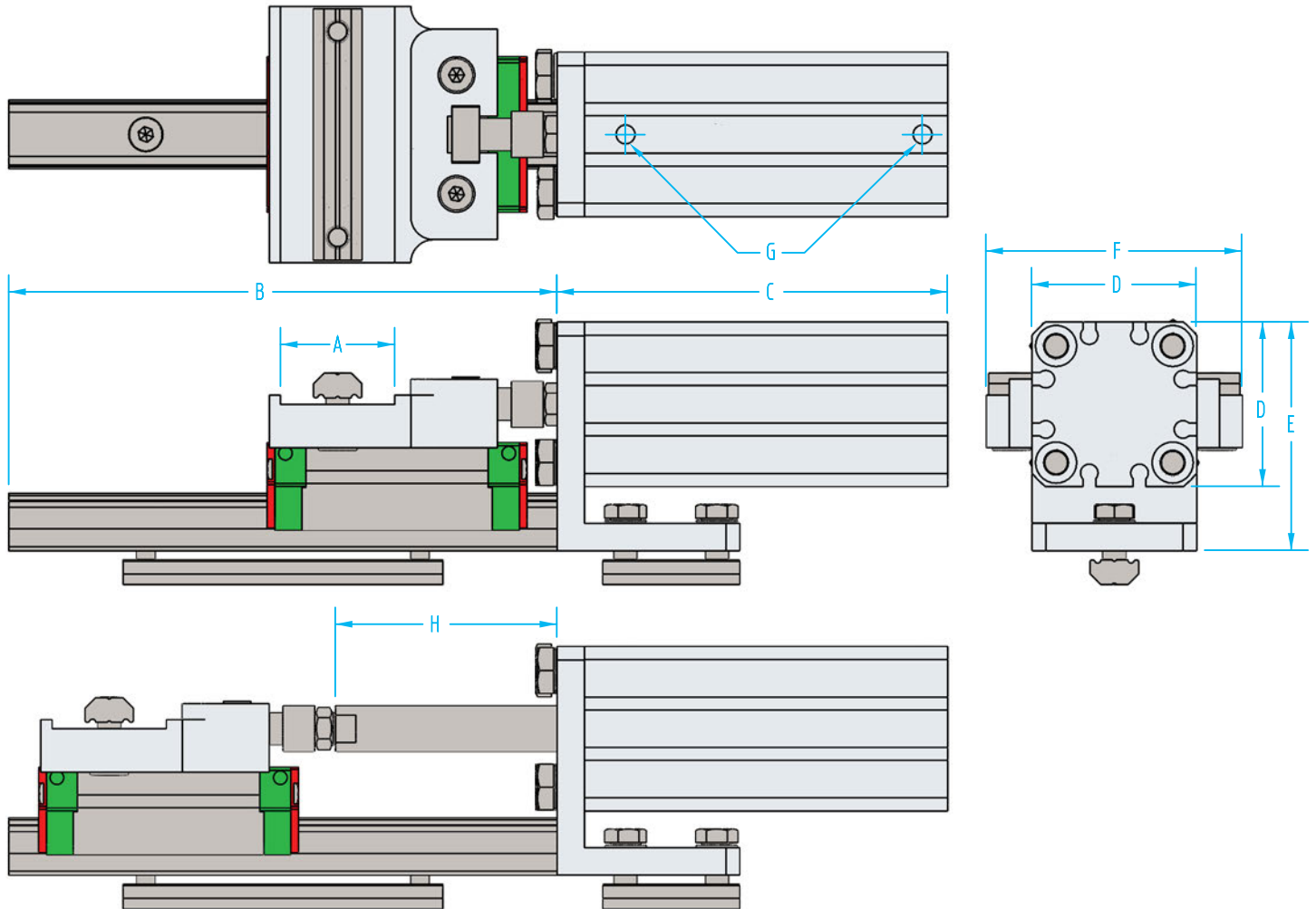
Quick#	Part#	>ASS<#	Price	Stroke	Extension force*	Retraction force*	Piston bore	Wt.
3928	HUE-X-25-30-20	1-745-50-00	\$246.75	30mm	42.3 lbf	31.9 lbf	20mm	656g
3929	HUE-X-25-50-20	1-745-51-00	\$246.75	50mm				740g
3930	HUE-X-25-75-20	1-745-52-00	\$266.18	75mm				869g
3931	HUE-X-25-100-20	1-745-53-00	\$279.30	100mm				967g
3932	HUE-X-25-125-20	1-745-54-00	\$294.00	125mm				1089g

*Note: Force at 87psi (6 bar)

Application Example



Heavy-Duty Guided Cylinders – HUE-X



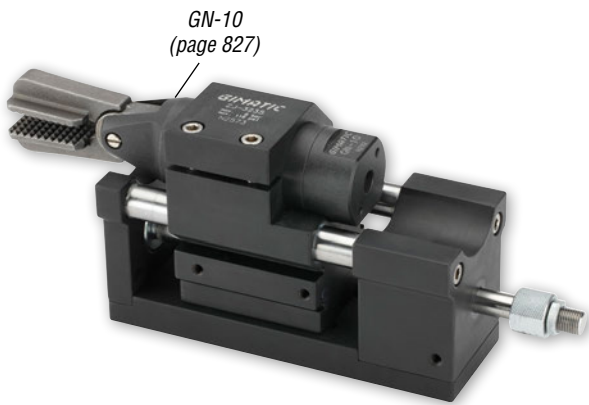
Quick#	Part#	A	B	C	D	E	F	G	H
3928	HUE-X-25-30-20	25	100	65.5	36	50	56	M5	30
3929	HUE-X-25-50-20	25	120	85.5	36	50	56	M5	50
3930	HUE-X-25-75-20	25	145	122	36	50	56	M5	75
3931	HUE-X-25-100-20	25	170	147	36	50	56	M5	100
3932	HUE-X-25-125-20	25	195	172	36	50	56	M5	125

Sensors

Quick#	Part#	Price	Description
5430	D-M9PL	\$33.70	PNP, Straight with lead, 3m long
2412	D-M9NL	\$33.70	NPN, Straight with lead, 3m long
5497	D-M9P SACP	\$42.06	PNP, Straight with M8 connector, 0.5m long
5498	D-M9N SACP	\$42.06	NPN, Straight with M8 connector, 0.5m long

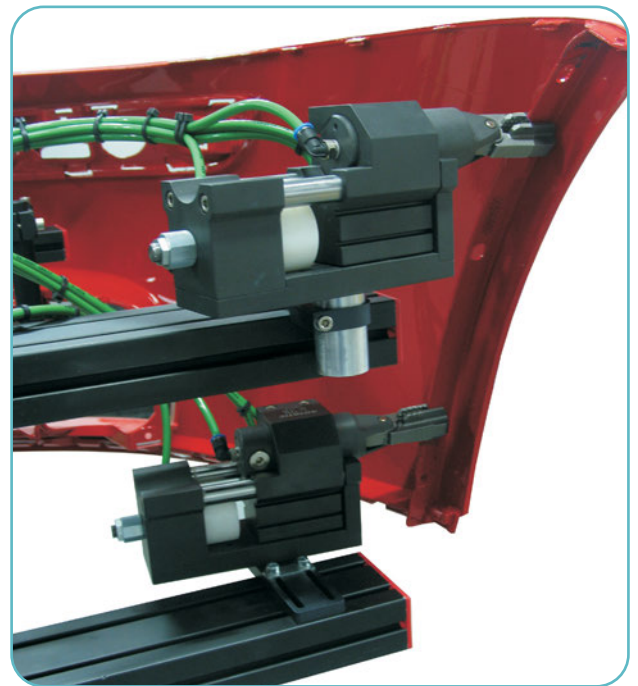
Gripper / Nipper Slide – ZJ

- Double-acting main cylinder and dual tie rods to precisely guide size 10 nippers.
- 32mm piston bore and 35mm adjustable stroke.
- Single-acting intermediate stopper.
- Ø36mm diameter clamp for GN-10 nipper body.
- See Sensor Reference Guide on page 1007 for a full list of compatible sensors.
- Optional 10mm spacer included.



Quick#	6475
Part#	ZJ-3235
Price	\$479.00
Weight	1330g
Pressure range	36–116 psi
Main stroke	35mm
Intermediate stroke	10–20mm
Main stroke with spacer	25mm
Extension force at 87psi	101 lbf

Use Quick#s for easy online ordering.



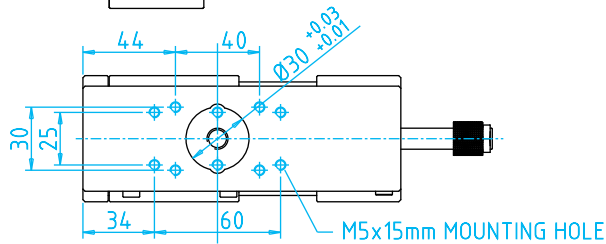
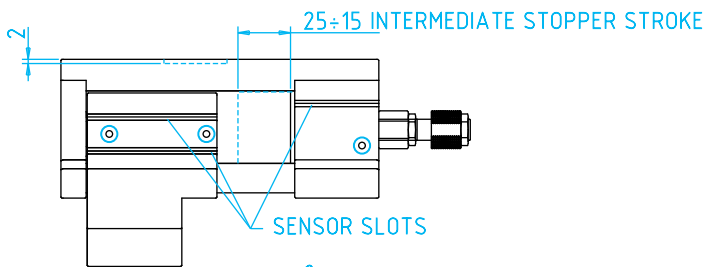
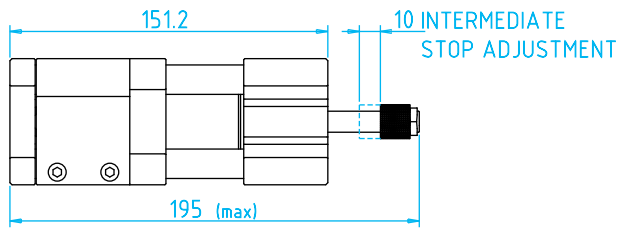
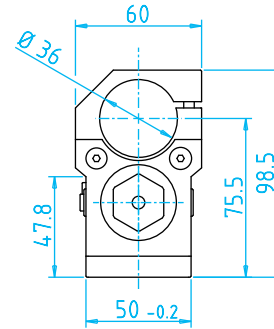
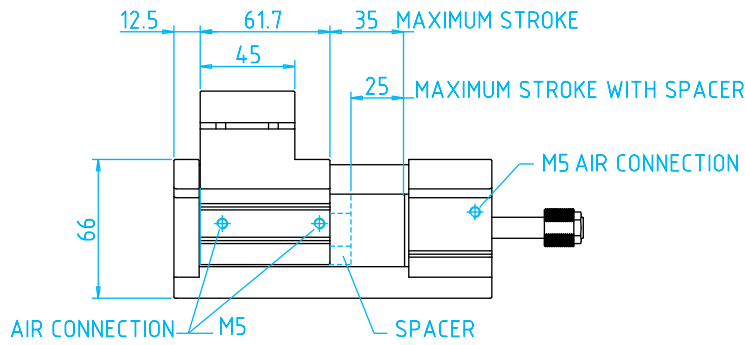
Mounting Accessories - Fasteners Included

Quick#	Part#	Price	Dimensions	Thread
7445	MFI-A360	\$48.00	Ø30 stud 79mm Clampable Length	M27x1
6972	MFM-A109	\$37.44	Ø30 stud 32mm Clampable Length	M27x1

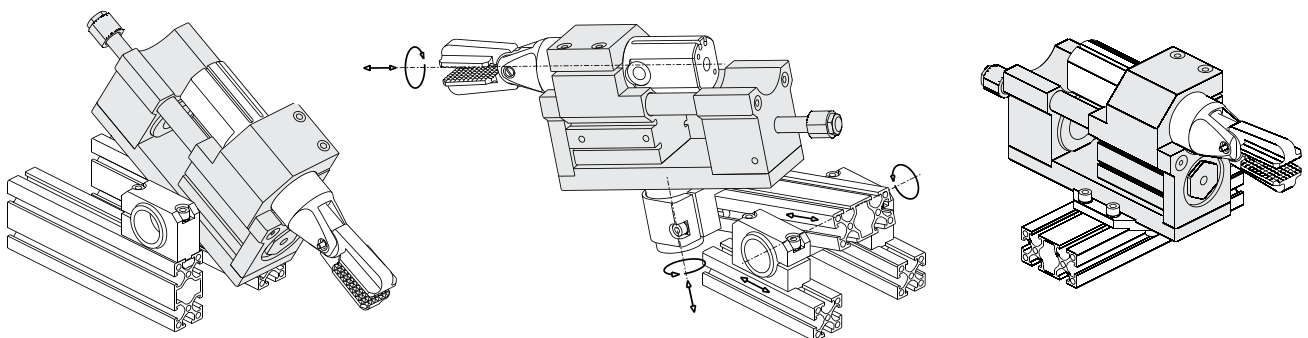
Note: Dimensional drawings at EMlcorp.com

Gripper / Nipper Slide – ZJ

(Dimensioned drawing reduced to fit)



Mounting Examples



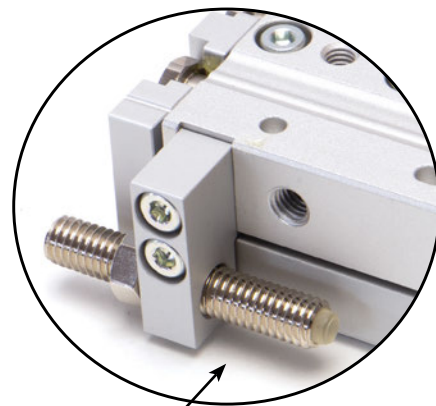
Precision Slides – MXS

- MXS Double acting slides are available in 6, 8, and 12mm bore sizes. Bore sizes 16, 20, and 25mm are available but are non-stock.
- Integrated guide rails and cross roller bearings allow for a smooth linear movement.
- MXS slides are recommended to be fitted with either rubber stoppers or shock absorbers (sold separately) in order to stop the slide table at a precise position.
- Optional sensors available.

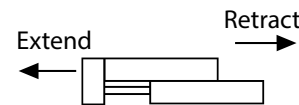


MXS Precision Slides

Quick#	Part#	Price	Piston bore	Stroke
2740	MXS6-10	\$210.45	6mm	10mm
2741	MXS6-20	\$233.75		20mm
2742	MXS6-30	\$257.10		30mm
2743	MXS6-40	\$283.10		40mm
2744	MXS6-50	\$307.75		50mm
2745	MXS8-10	\$231.85	8mm	10mm
2746	MXS8-20	\$240.55		20mm
2747	MXS8-30	\$265.15		30mm
2748	MXS8-40	\$287.65		40mm
2749	MXS8-50	\$295.30		50mm
2750	MXS8-75	\$367.50		75mm
2751	MXS12-10	\$273.45	12mm	10mm
2752	MXS12-20	\$273.45		20mm
2753	MXS12-30	\$273.45		30mm
2754	MXS12-40	\$298.00		40mm
2755	MXS12-50	\$322.55		50mm
2756	MXS12-75	\$371.45		75mm
2757	MXS12-100	\$442.95		100mm



Shown with Rubber Stopper



Theoretical Output:

Bore size	Rod size	Operating direction	Piston area	Output Force at listed supply pressure (psi)*					
				29.01	43.51	58.02	72.52	87.02	101.5
6mm	3mm	Extend	57mm ²	2.473 lbf	3.822 lbf	5.171 lbf	6.519 lbf	7.644 lbf	8.992 lbf
		Retract	42mm ²	1.798 lbf	2.923 lbf	3.822 lbf	4.721 lbf	5.62 lbf	6.519 lbf
8mm	4mm	Extend	101mm ²	4.496 lbf	6.744 lbf	8.992 lbf	11.47 lbf	13.71 lbf	15.96 lbf
		Retract	75mm ²	3.372 lbf	5.171 lbf	6.744 lbf	8.543 lbf	10.12 lbf	11.91 lbf
12mm	6mm	Extend	226mm ²	10.12 lbf	15.29 lbf	20.23 lbf	25.40 lbf	30.57 lbf	35.52 lbf
		Retract	170mm ²	7.644 lbf	11.47 lbf	15.29 lbf	9.11 lbf	22.93 lbf	26.75 lbf

*Note: Theoretical output (lbf) = Pressure (PSI) x Piston area (in²)

Additional information can be found online: www.EMICorp.com

Precision Slides – MXS

Sensors

Quick#	Part#	Price	Description
5430	D-M9PL	\$33.70	PNP, Straight with lead, 3m long
2412	D-M9NL	\$33.70	NPN, Straight with lead, 3m long
5497	D-M9P SAPC	\$42.06	PNP, Straight with M8 connector, 0.5m long
5498	D-M9N SAPC	\$42.06	NPN, Straight with M8 connector, 0.5m long

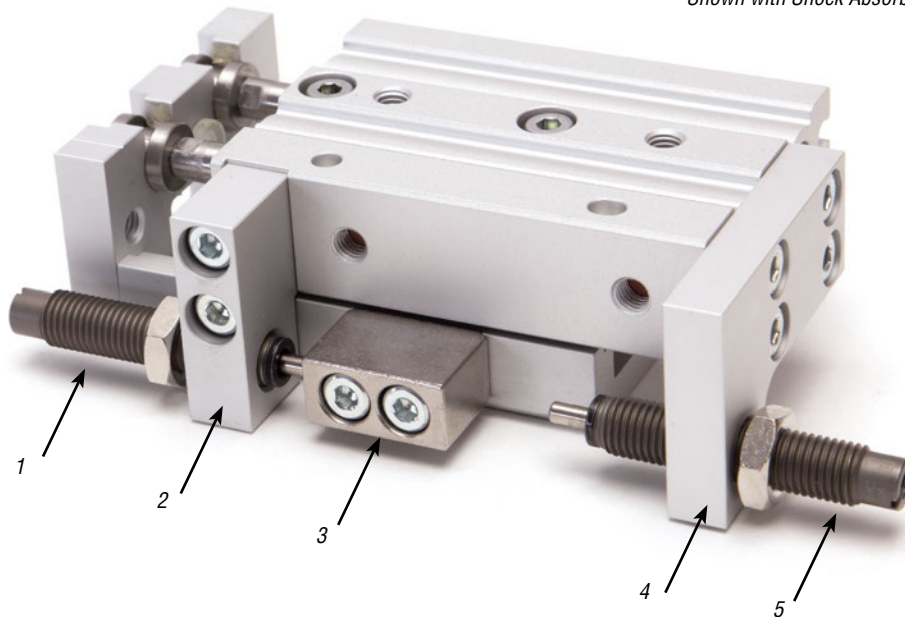
Rubber Stopper

Piston Bore	Extend				Retract			
	Includes: All hardware & parts 1–3				Includes: All hardware & parts 3–5			
	Quick#	Part#	Stroke adjustment	Price	Quick#	Part#	Stroke adjustment	Price
6mm	2758	MXS-AS6-X11	0–15mm	\$41.20	2761	MXS-AT6-X11	0–15mm	\$44.20
8mm	2759	MXS-AS8-X11	0–15mm	\$44.10	2762	MXS-AT8-X11	0–15mm	\$44.10
	or				or			
12mm	2764	MXS-AS8-X12	0–25mm	\$55.15	2766	MXS-AT8-X12	0–25mm	\$55.15
	2760	MXS-AS12-X11	0–15mm	\$44.10	2763	MXS-AT12-X11	0–15mm	\$44.10
	or				or			
	2765	MXS-AS12-X12	0–25mm	\$62.85	2767	MXS-AT12-X12	0–25mm	\$62.85

Shock Absorber

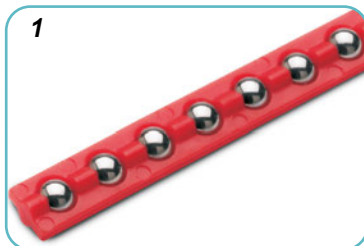
Piston Bore	Extend				Retract			
	Includes: All hardware & parts 1–3				Includes: All hardware & parts 3–5			
	Quick#	Part#	Stroke adjustment	Price	Quick#	Part#	Stroke adjustment	Price
6mm	not available				not available			
8mm	2768	MXS-BS8	0–30mm	\$60.10	2770	MXS-BT8	0–30mm	\$61.50
12mm	2769	MXS-BS12	0–30mm	\$44.10	2771	MXS-BT12	0–30mm	\$61.50

Shown with Shock Absorbers



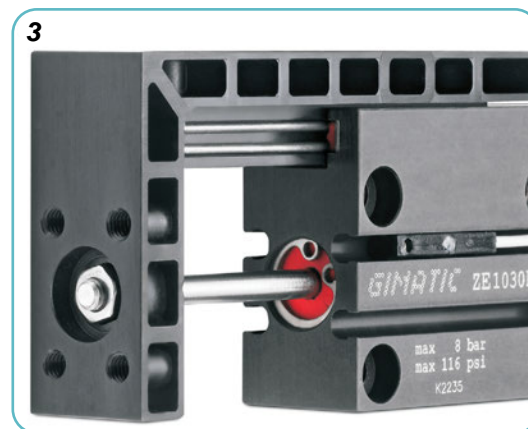
Mini-Slides – ZE-P

- Piston bore 6mm, 10mm, or 16mm
- Stroke 10mm, 20mm, 30mm
- Several fastening options.
- Double acting.
- Internal elastic bumpers.
- Optional Gimatic C-slot sensors, see page 785.



Features:

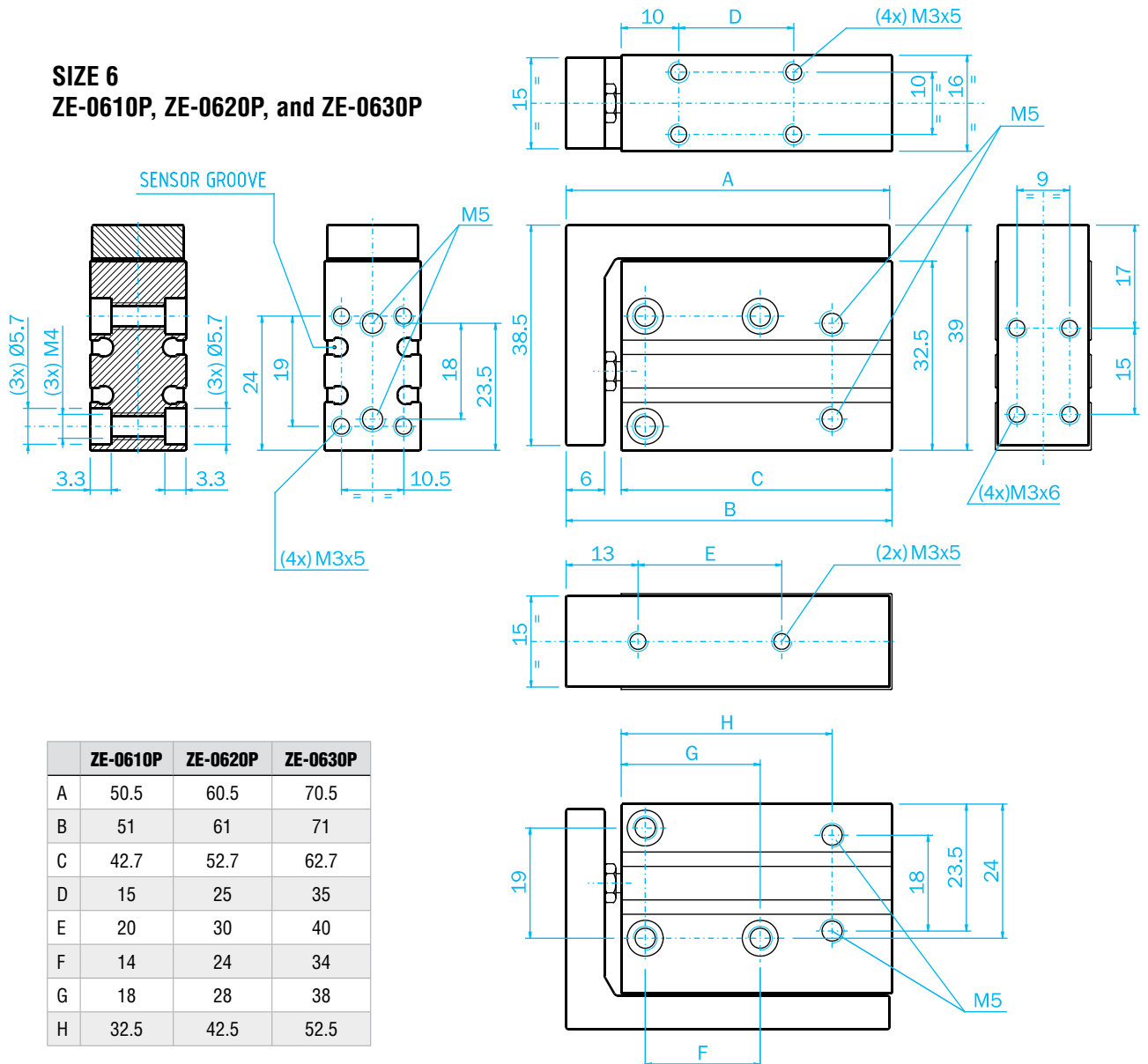
- 1- Linear ball bearings, encased in POM
- 2- Guide with built-in hardened and ground shafts
- 3- One-block carrier molded in a lightweight zinc alloy



Mini-Slides – ZE-P

(Dimensioned drawing reduced to fit)

SIZE 6
ZE-0610P, ZE-0620P, and ZE-0630P



	ZE-0610P	ZE-0620P	ZE-0630P
A	50.5	60.5	70.5
B	51	61	71
C	42.7	52.7	62.7
D	15	25	35
E	20	30	40
F	14	24	34
G	18	28	38
H	32.5	42.5	52.5

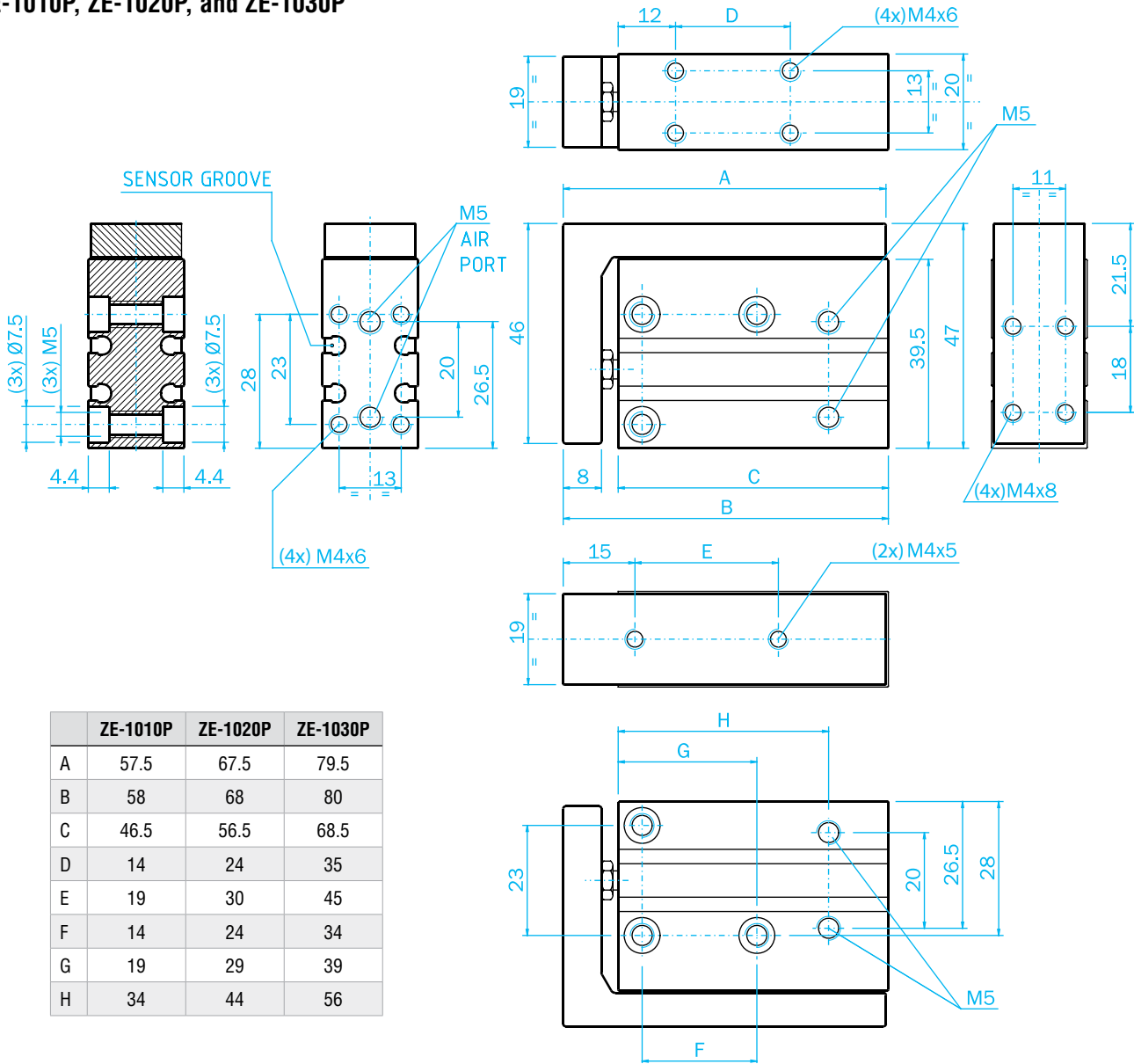
Quick#	6581	6582	6583
Part#	ZE-0610P	ZE-0620P	ZE-0630P
Price	\$160.00	\$161.00	\$163.00
Weight	90g	105g	120g
Minimum actuating time	0.015s	0.020s	0.030s
Maximum working frequency	3Hz		
Air consumption per cycle	0.7cm ³	1.3cm ³	1.9cm ³
Stroke (+ 1 mm)	10mm	20mm	30mm
Extension force at 87 psi	3 lbf		
Retraction force at 87 psi	2 lbf		
Pressure range	36–116 psi		



Mini-Slides – ZE-P

(Dimensioned drawing reduced to fit)

SIZE 10
ZE-1010P, ZE-1020P, and ZE-1030P



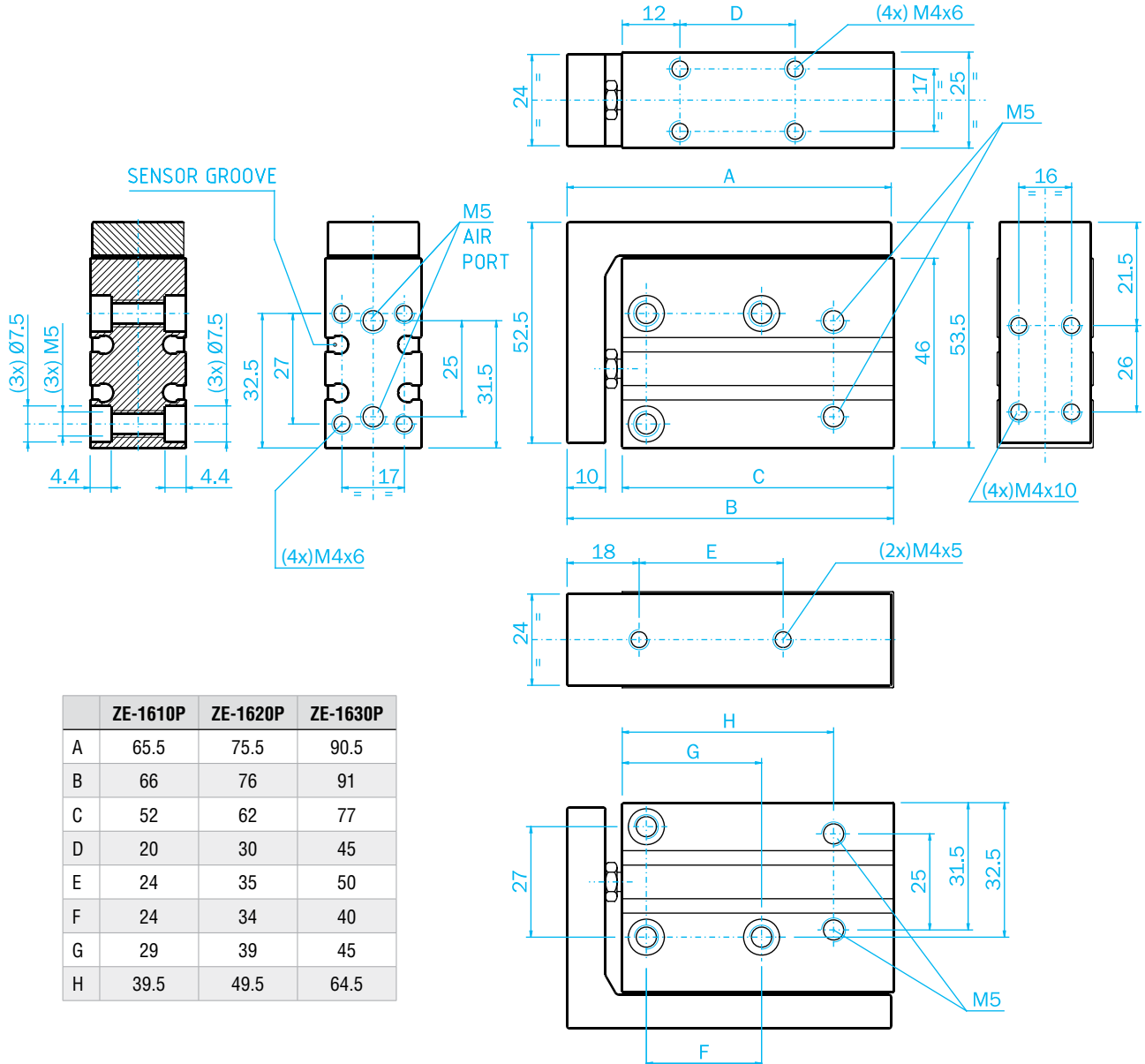
	ZE-1010P	ZE-1020P	ZE-1030P
A	57.5	67.5	79.5
B	58	68	80
C	46.5	56.5	68.5
D	14	24	35
E	19	30	45
F	14	24	34
G	19	29	39
H	34	44	56

Quick#	6584	6579	6585
Part#	ZE-1010P	ZE-1020P	ZE-1030P
Price	\$168.00	\$171.00	\$175.00
Weight	150g	175g	200g
Minimum actuating time	0.030s	0.050s	0.060s
Maximum working frequency	3Hz		
Air consumption per cycle	1.7cm ³	3.3cm ³	4.9cm ³
Stroke (+ 1 mm)	10mm	20mm	30mm
Extension force at 87 psi	9 lbf		
Retraction force at 87 psi	7 lbf		
Pressure range	36–116 psi		

Mini-Slides – ZE-P

(Dimensioned drawing reduced to fit)

SIZE 16
ZE-1610P, ZE-1620P, and ZE-1630P



	ZE-1610P	ZE-1620P	ZE-1630P
A	65.5	75.5	90.5
B	66	76	91
C	52	62	77
D	20	30	45
E	24	35	50
F	24	34	40
G	29	39	45
H	39.5	49.5	64.5

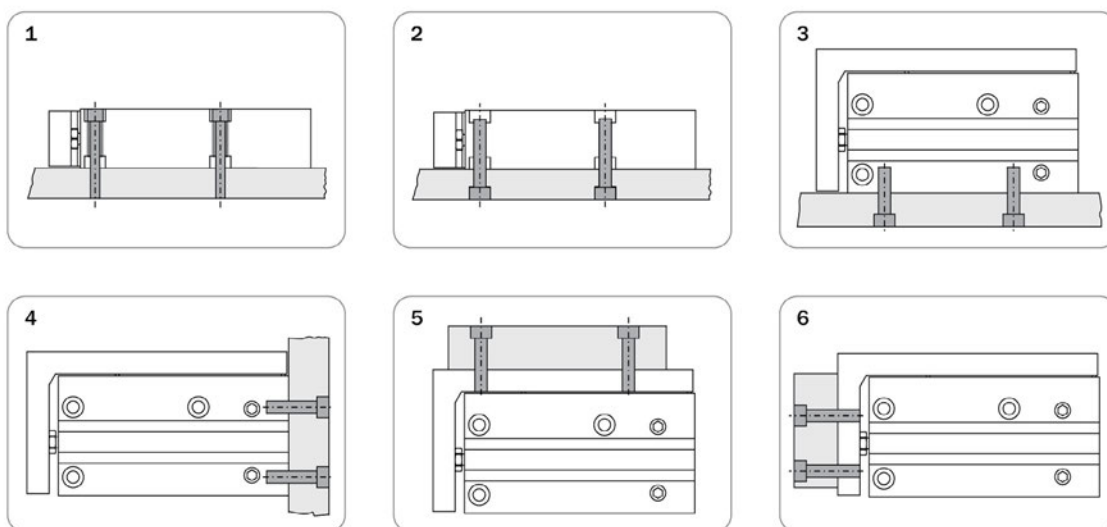
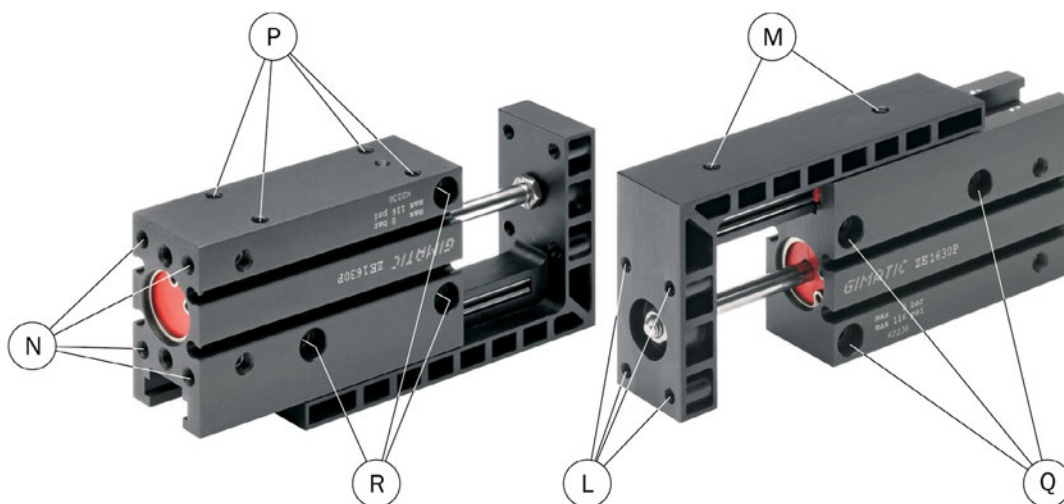
Quick#	6586	6587	6580
Part#	ZE-1610P	ZE-1620P	ZE-1630P
Price	\$194.00	\$198.00	\$203.00
Weight	265g	295g	340g
Minimum actuating time	0.050s	0.070s	0.090s
Maximum working frequency	3Hz		
Air consumption per cycle	4.4cm ³	8.3cm ³	12cm ³
Stroke (+ 1 mm)	10mm	20mm	30mm
Extension force at 87 psi	25 lbf		
Retraction force at 87 psi	22 lbf		
Pressure range	36–116 psi		

Mini-Slides – ZE-P

Fastening

The slide can be fastened to a stationary or moving part. When on a moving part, you must pay attention to the forces created by inertia over the slide and its load.

The slide housing can be fastened on four sides as shown in pictures 1–4. The load can be fastened on two sides of the carrier as shown in pictures 5 and 6.



	ZE-06...P	ZE-10...P	ZE-16...P
L	M3x6mm	M4x8mm	M4x10mm
M	M3x5mm	M4x5mm	M4x5mm
N	M3x5mm	M4x6mm	M4x6mm
P	M3x5mm	M4x6mm	M4x6mm
Q	Ø 5.7x3.3mm	Ø 7.5x4.4mm	Ø 7.5x4.4mm
R	M4	M5	M5

Mini-Slides – ZE-P

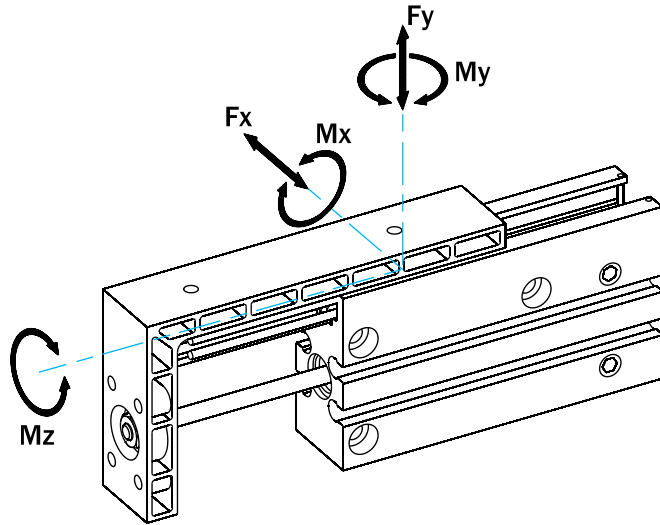
Safety loads

Check the tables below.
Excessive loads can damage the slide, cause functioning troubles, and endanger the safety of the operator.

$F_x s$, $F_y s$, $M_x s$, $M_y s$, $M_z s$ are maximum permitted static loads. $F_x d$, $F_y d$, $M_x d$, $M_y d$, $M_z d$ are maximum permitted dynamic loads.
It is also indicated the minimum actuating time 't' as a factor of the pay-load 'm'.

(*) When the actuating time and pay-load produce an excessive kinetic energy, the speed must be reduced by flow controllers (not supplied).

In any case, the pay-load 'm' is max.
100g (ZE06P), 250g (ZE10P), 500g (ZE16P).



	ZE-06...P	ZE-10...P	ZE-16...P
$F_x s$	10N	25N	50N
$F_y s$	10N	25N	50N
$M_x s$	1Nm	2Nm	3Nm
$M_y s$	1Nm	2Nm	3Nm
$M_z s$	1Nm	2Nm	3Nm
$F_x d$	1N	2.5N	5N
$F_y d$	1N	2.5N	5N
$M_x d$	0.2Nm	0.4Nm	0.6Nm
$M_y d$	0.2Nm	0.4Nm	0.6Nm
$M_z d$	0.2Nm	0.4Nm	0.6Nm
m max	100g	250g	500g

Reference:
Force: N x 0.225=lbf
Torque: Nm x 8.850=in-lbf
Torque: Ncm x 0.089=in-lbf
Pressure: bar x 14.5=psi

Minimum Actuating time as a factor of the payload

m	t ZE-0610P	t ZE-0620P	t ZE-0630P	t ZE-1010P	t ZE-1020P	t ZE-1030P	t ZE-1610P	t ZE-1620P	t ZE-1630P
10 g	15ms	28ms (*)	44ms (*)	30ms	50ms	60ms	50ms	70ms	90ms
40 g	18ms (*)	37ms (*)	57ms (*)	30ms	50ms	60ms	50ms	70ms	90ms
70 g	22ms (*)	45ms (*)	68ms (*)	30ms	50ms	61ms (*)	50ms	70ms	90ms
100 g	25ms (*)	51ms (*)	77ms (*)	30ms	50ms	68ms (*)	50ms	70ms	90ms
150 g	-	-	-	30ms	51ms (*)	78ms (*)	50ms	70ms	90ms
200 g	-	-	-	30ms	58ms (*)	87ms (*)	50ms	70ms	90ms
250 g	-	-	-	31ms (*)	63ms (*)	96ms (*)	50ms	70ms	90ms
300 g	-	-	-	-	-	-	50ms	70ms	94ms (*)
400 g	-	-	-	-	-	-	50ms	70ms	105ms (*)
500 g	-	-	-	-	-	-	50ms	76ms (*)	115ms (*)

Mini-Slides – ZE-P

Compressed air feeding

The compressed air feeding can be accomplished on the lateral or rear air ports with M5 fittings (not supplied).

Compressed air in S: extension stroke.

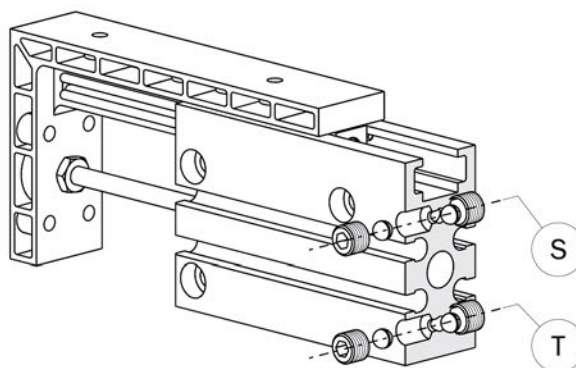
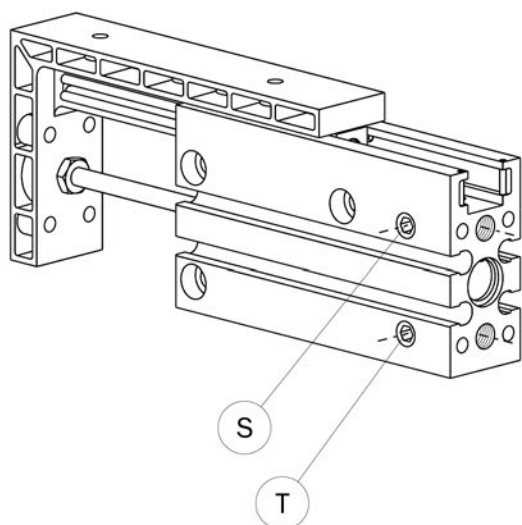
Compressed air in T: retraction stroke.

To ease application and provide mounting options, air lines can be connected in three possible locations. Two of the three sets of ports must be plugged with M5 plugs (supplied).

All Gimatic cylinders, grippers, and slides are shipped pre-lubricated, so applying lubricated air is not necessary.

A soft start is recommended to avoid uncontrolled movements.

Fittings Available
on page 1043



Mini-Slides – ZE-P

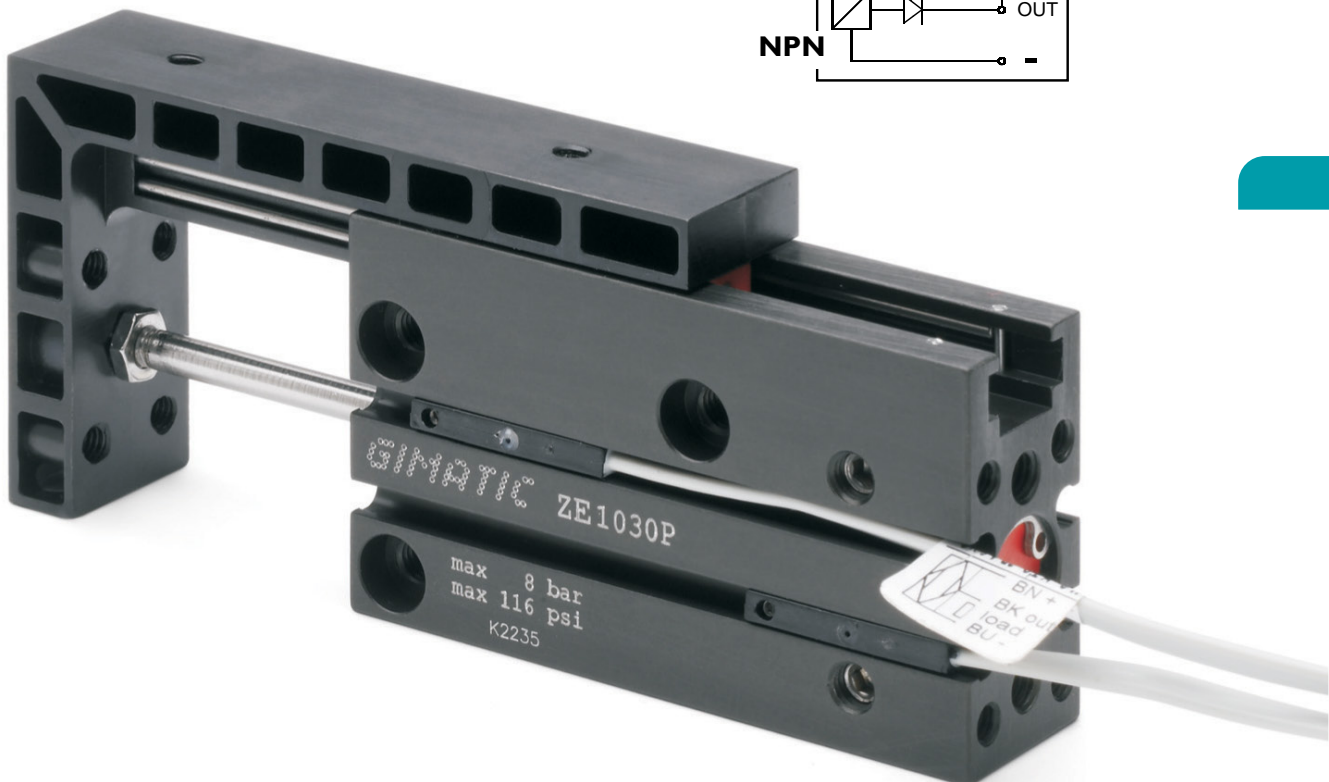
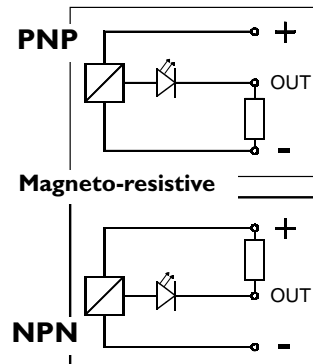
Sensors

The operating position can be checked by sensors (optional), that detect the inner magnet. Therefore, a nearby large mass of ferromagnetic material or intense magnetic fields may cause sensing troubles.



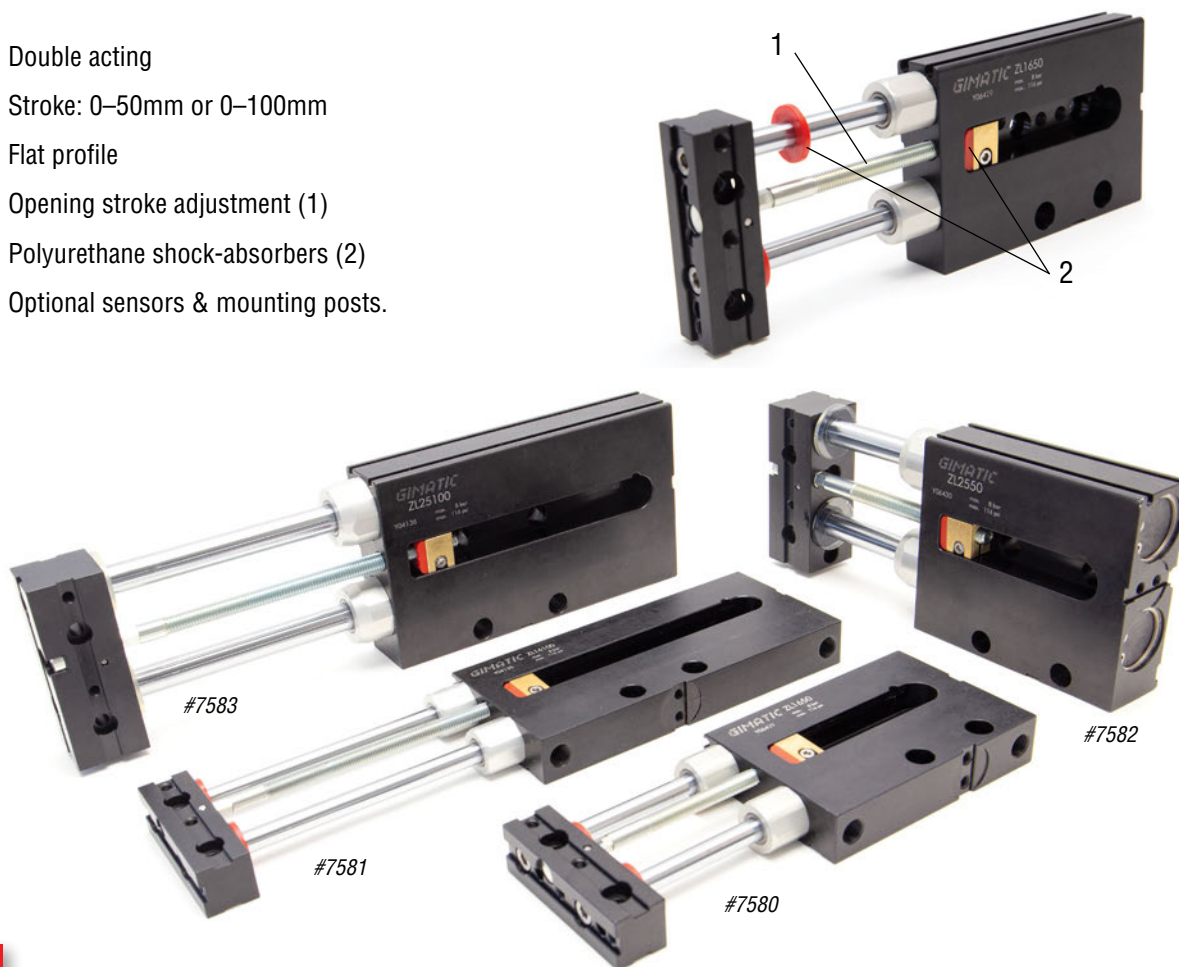
Sensor Type	Quick#	Part#	Signal	Connection	Price
90° Lead Exit SN Style Sensor	6278	SN4N225G	PNP	with lead, 2.5m long	\$27.20
	6357	SN4M225G	NPN	with lead, 2.5m long	\$27.20
	6277	SN3N203G	PNP	M8 Connector, 0.3m long	\$31.16
	6356	SN3M203G	NPN	M8 Connector, 0.3m long	\$31.16
3-wire SS Style Sensor	1882	SS4N225G	PNP	with lead, 2.5m long	\$27.20
	1883	SS4M225G	NPN	with lead, 2.5m long	\$27.20
	6282	SS3N203G	PNP	M8 Connector, 0.3m long	\$31.16
	1884	SS3M203G	NPN	M8 Connector, 0.3m long	\$31.16

See Sensor Reference Guide on page 1007 for a full list of compatible sensors.



Low-Profile Pneumatic Slides for EOAT – ZL

- Double acting
- Stroke: 0–50mm or 0–100mm
- Flat profile
- Opening stroke adjustment (1)
- Polyurethane shock-absorbers (2)
- Optional sensors & mounting posts.




NEW

Quick#	7775	7580	7581	7582	7583
Part#	ZL1030	ZL1650	ZL16100	ZL2550	ZL25100
Price	\$265.00	\$379.00	\$393.00	\$443.00	\$461.00
Medium	Filtered, lubricated / non lubricated compressed air				
Pressure range	29–116 psi				
Retraction force at 87 psi	13.4 lbf	33.7 lbf		85.4 lbf	
Extension force at 87 psi	17.9 lbf	45 lbf		112.4 lbf	
Stroke	0–30mm	0–50mm	0–100mm	0–50mm	0–100mm
Minimum actuating time	0.06s	0.18s	0.24s	0.30s	0.45s
Cycle air consumption	9 cm ³	37 cm ³	70 cm ³	90 cm ³	177 cm ³
Weight	130g	420g	580g	880g	1160g

Sensors

The operating position can be checked by sensors (optional), that detect the inner magnet. Therefore, a nearby large mass of ferromagnetic material or intense magnetic fields may cause sensing troubles.

Sensors

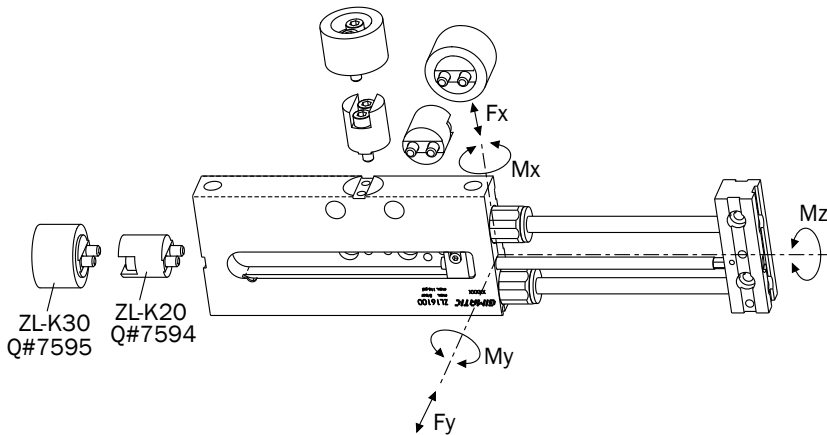


Quick#	Part#	Price	Signal	Description
1882	SS4N225G	\$27.20	PNP sensor	with lead, 2.5m long
1883	SS4M225G	\$27.20	NPN sensor	with lead, 2.5m long
1884	SS3M203G	\$31.16	NPN sensor	M8 Connector, 0.3m long
6282	SS3N203G	\$31.16	PNP sensor	M8 Connector, 0.3m long

Low-Profile Pneumatic Slides for EOAT – ZL

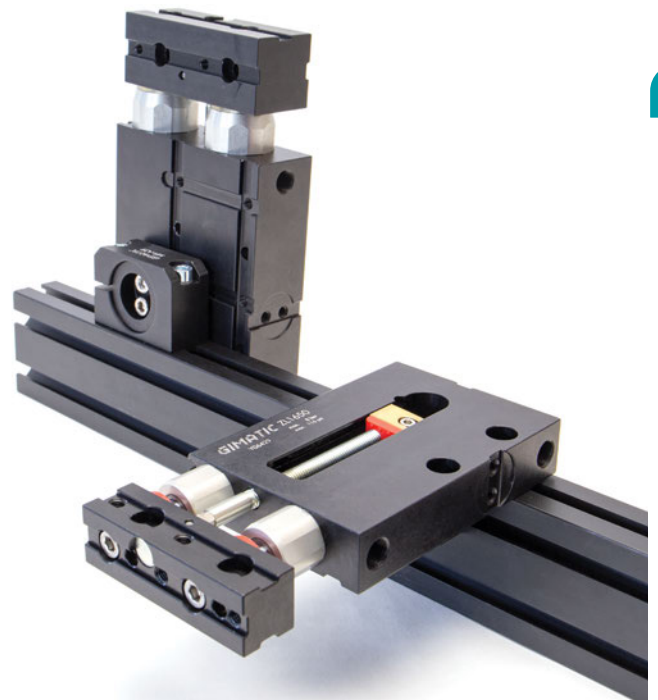
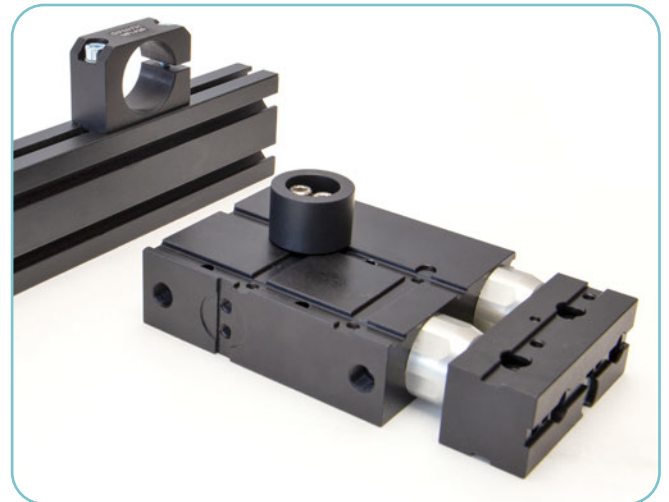
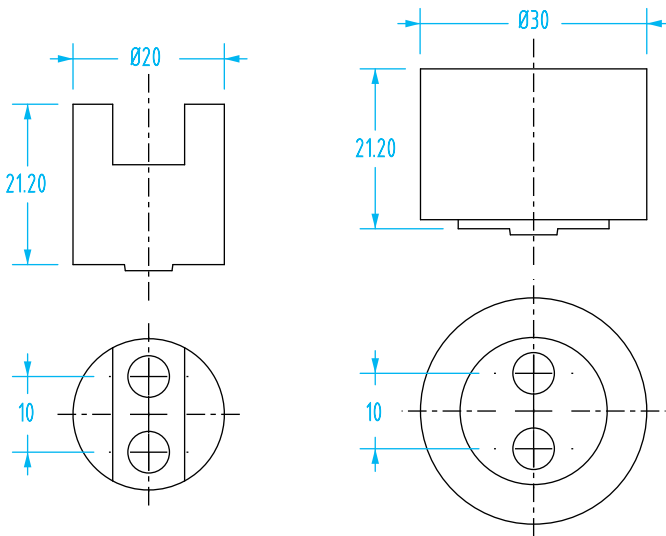
(Dimensioned drawings shown full scale)

Safety loads



	ZL1650	ZL16100	ZL2550	ZL25100
F_x s	60N	60N	120N	120N
F_y s	40N	40N	80N	80N
M_x s	6Nm	6Nm	14Nm	14Nm
M_y s	8Nm	8Nm	20Nm	20Nm
M_z s	4Nm	4Nm	10Nm	10Nm
F_x d	30N	30N	60N	60N
F_y d	20N	20N	40N	40N
M_x d	3Nm	3Nm	7Nm	7Nm
M_y d	4Nm	4Nm	10Nm	10Nm
M_z d	2Nm	2Nm	5Nm	5Nm
m max	3000g	3000g	6000g	6000g

Mounting post



Cylinder Mounting Post

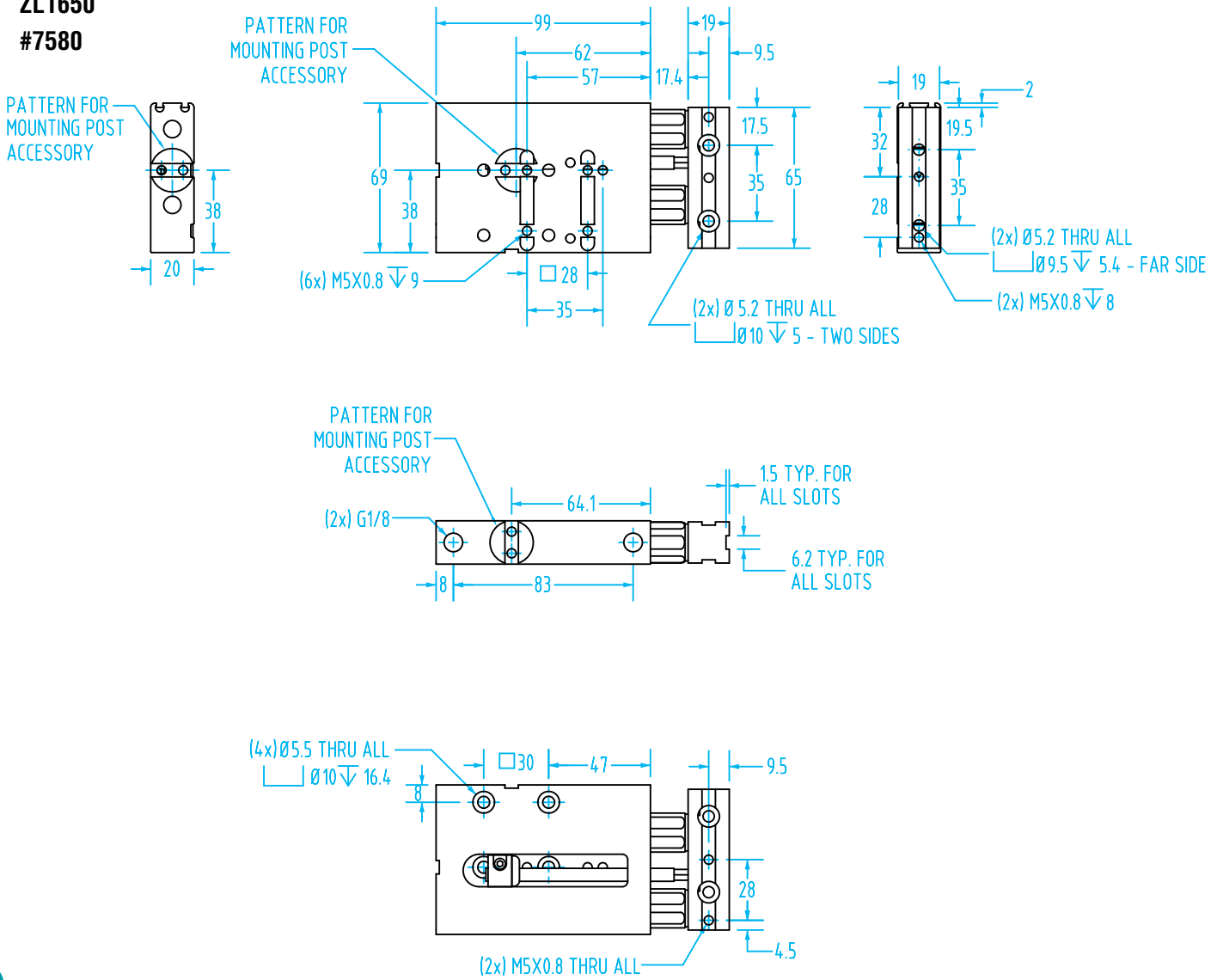
Quick#	Part#	Price	For
7799	ZL-K14	\$0.00	Q# 7775
7594	ZL-K20	\$34.96	Q# 7580-7581
7595	ZL-K30	\$37.75	Q# 7582-7583

Hardware included

Low-Profile Pneumatic Slides for EOAT – ZL

(Dimensioned drawing shown at 1/3 scale)

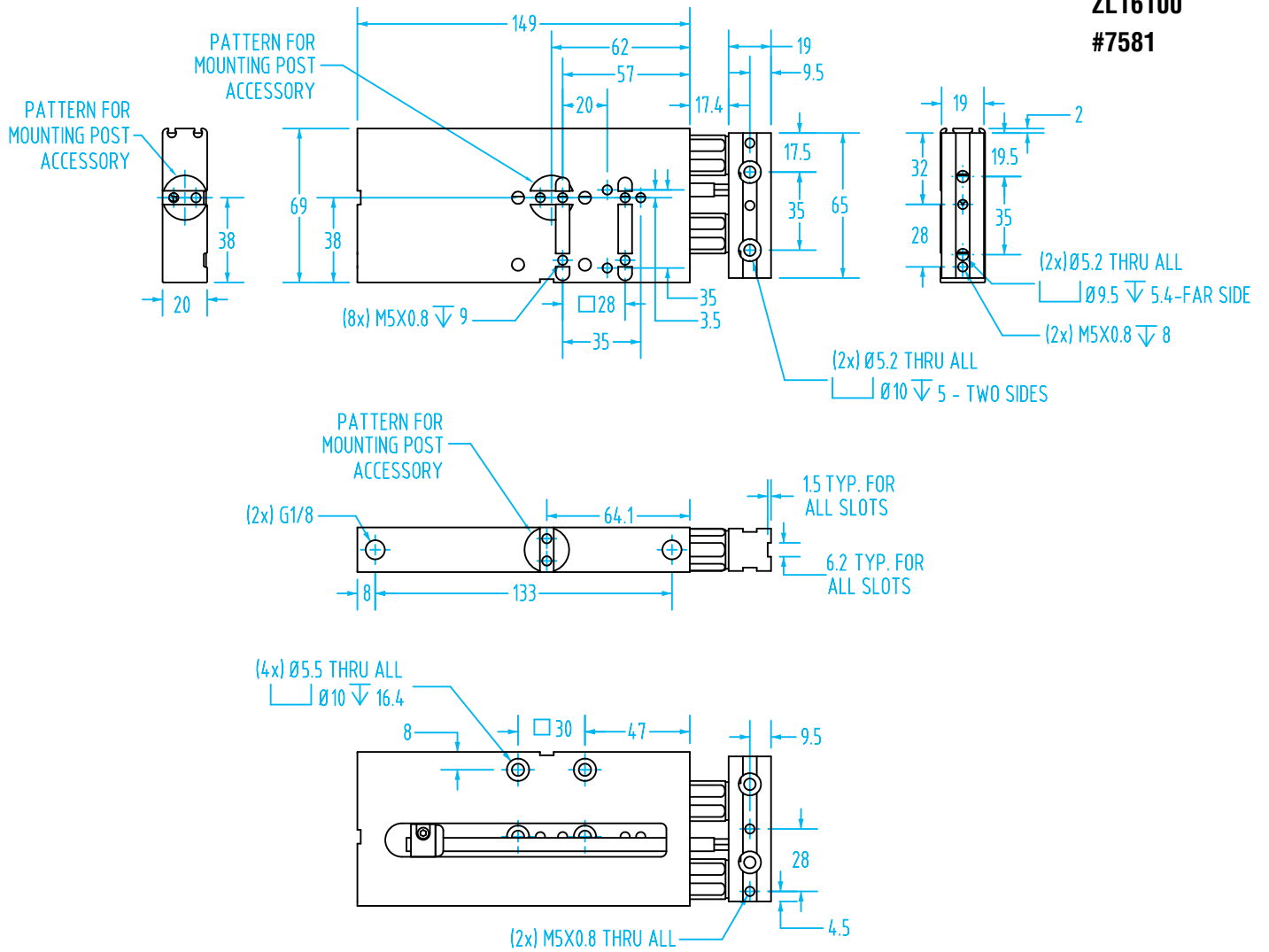
ZL1650
#7580



Low-Profile Pneumatic Slides for EOAT – ZL

(Dimensioned drawing shown at 1/3 scale)

**ZL16100
#7581**

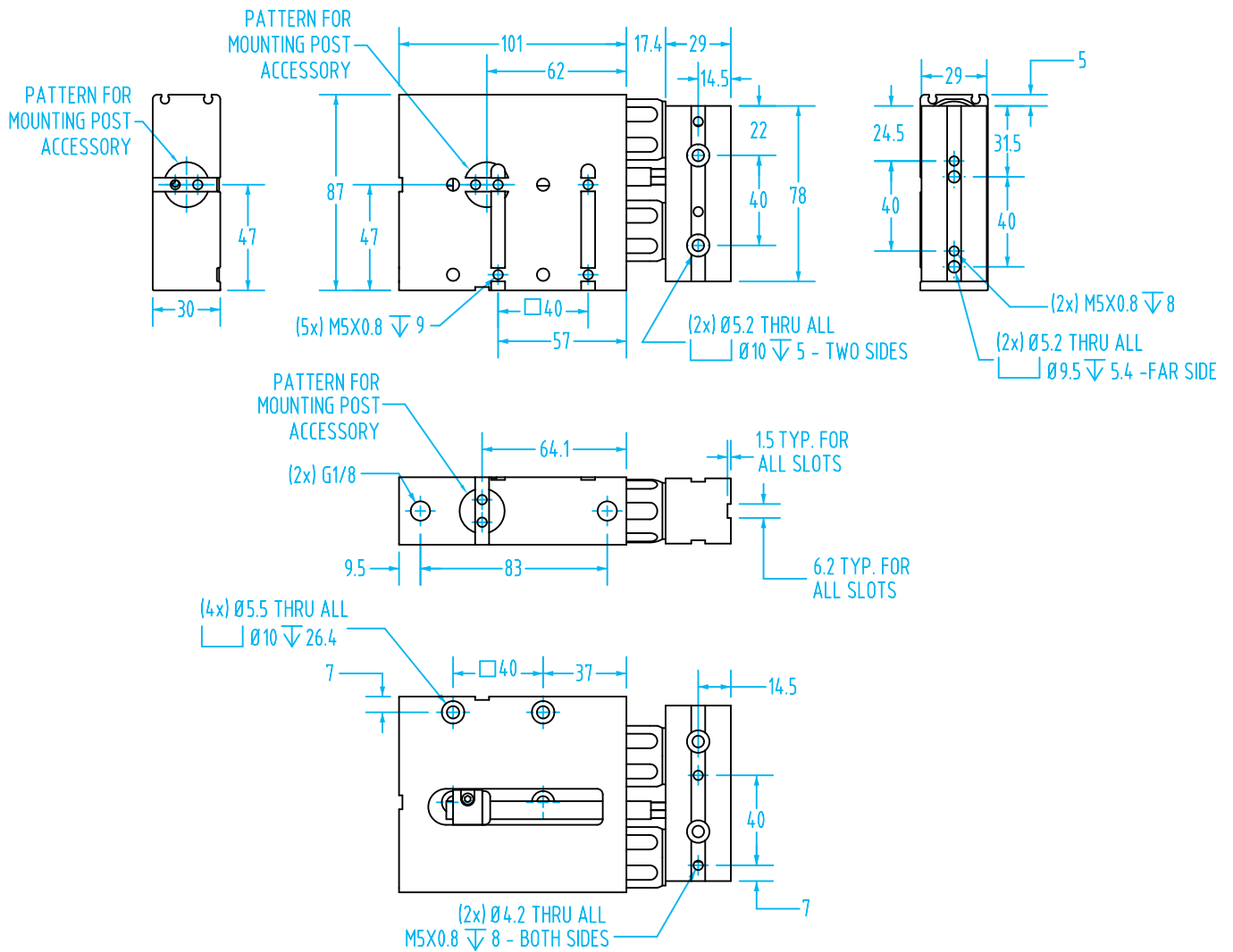


Low-Profile Pneumatic Slides for EOAT – ZL

(Dimensioned drawing shown at 1/3 scale)

ZL2550

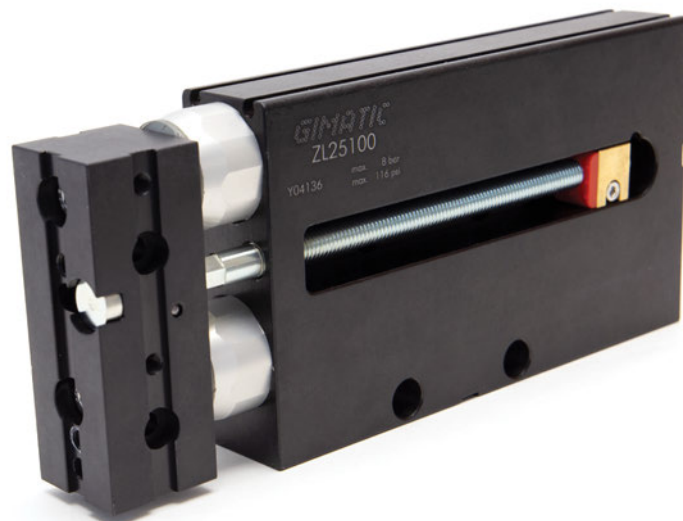
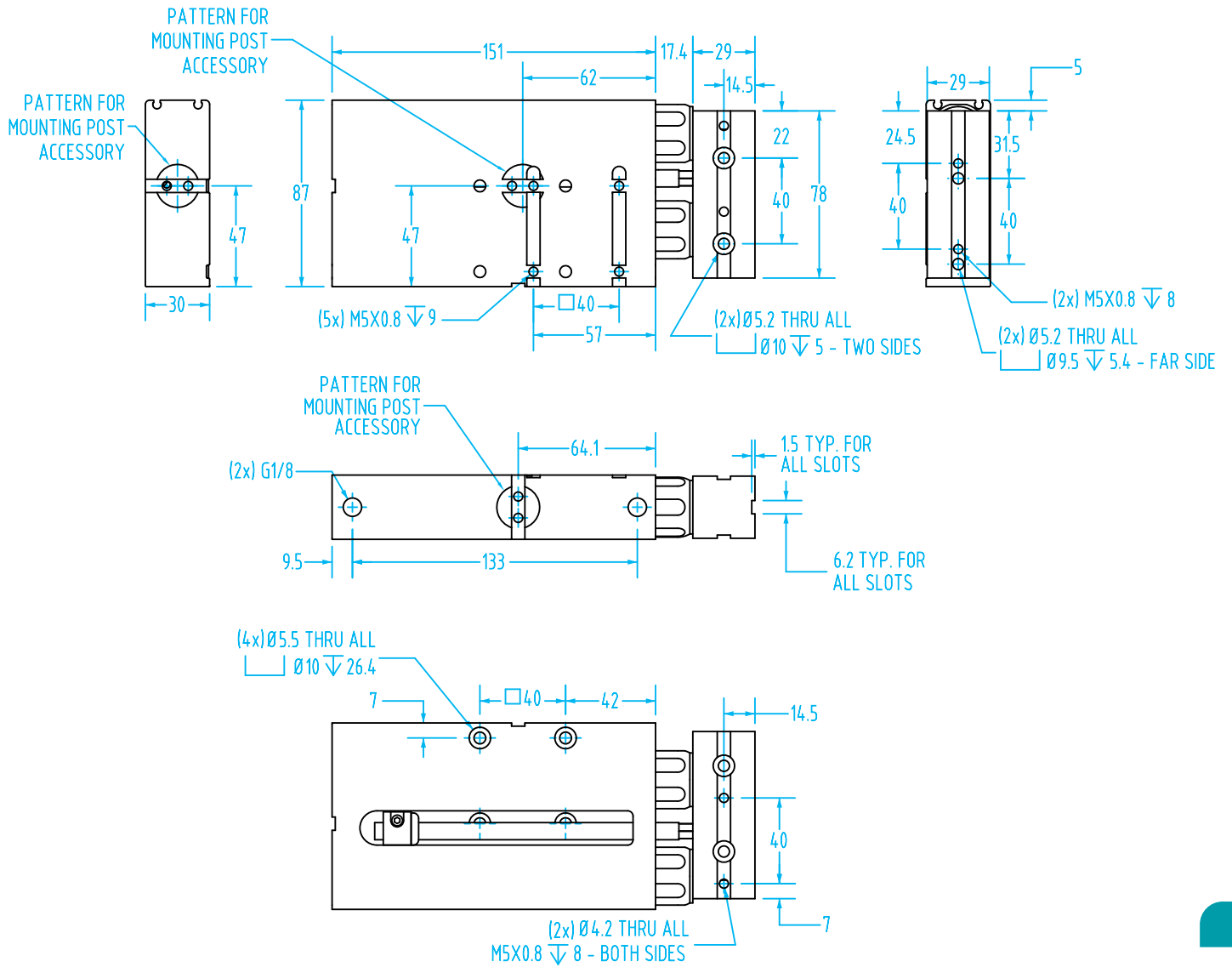
#7582



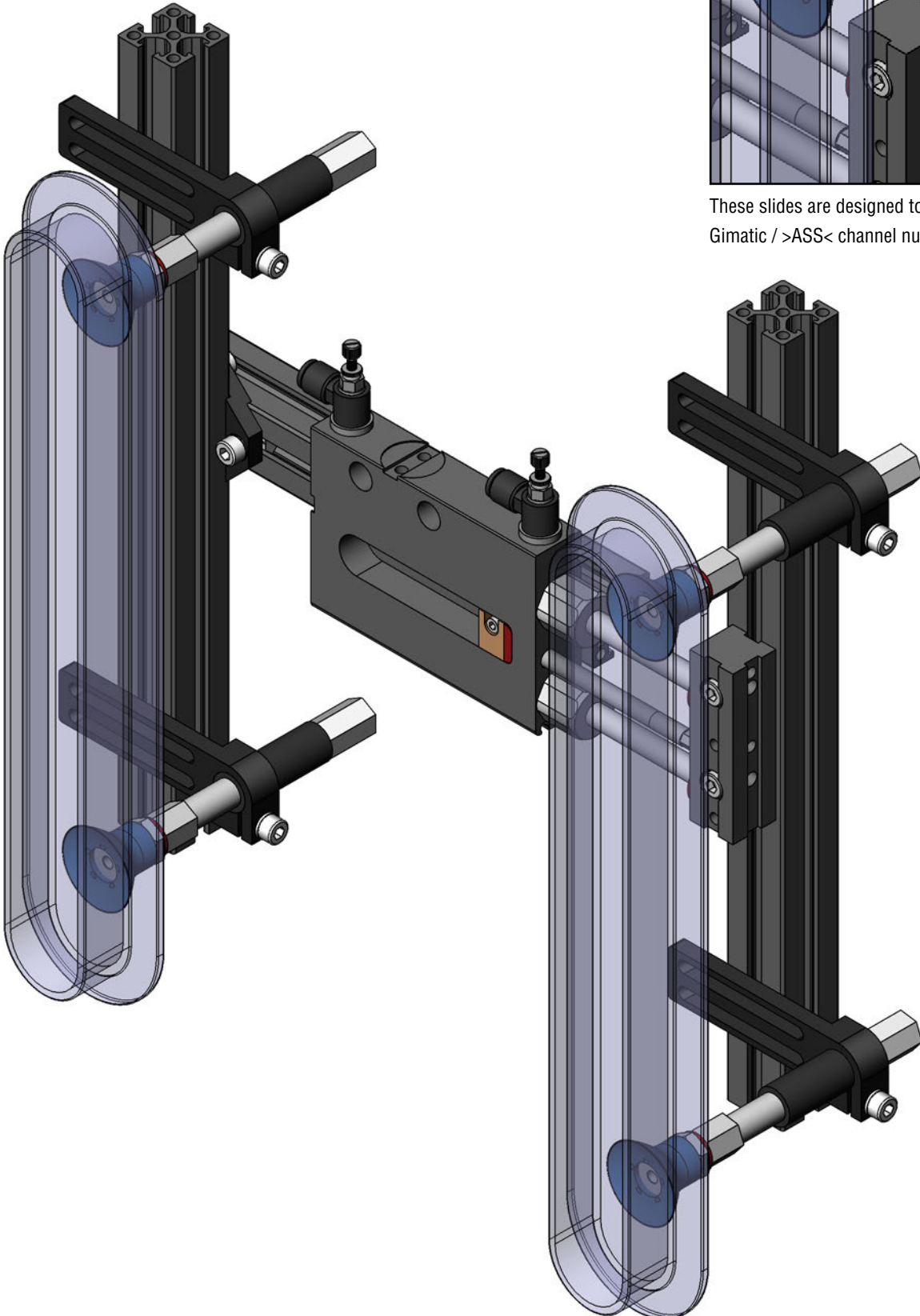
Low-Profile Pneumatic Slides for EOAT – ZL

(Dimensioned drawing shown at 1/3 scale)

ZL25100
#7583

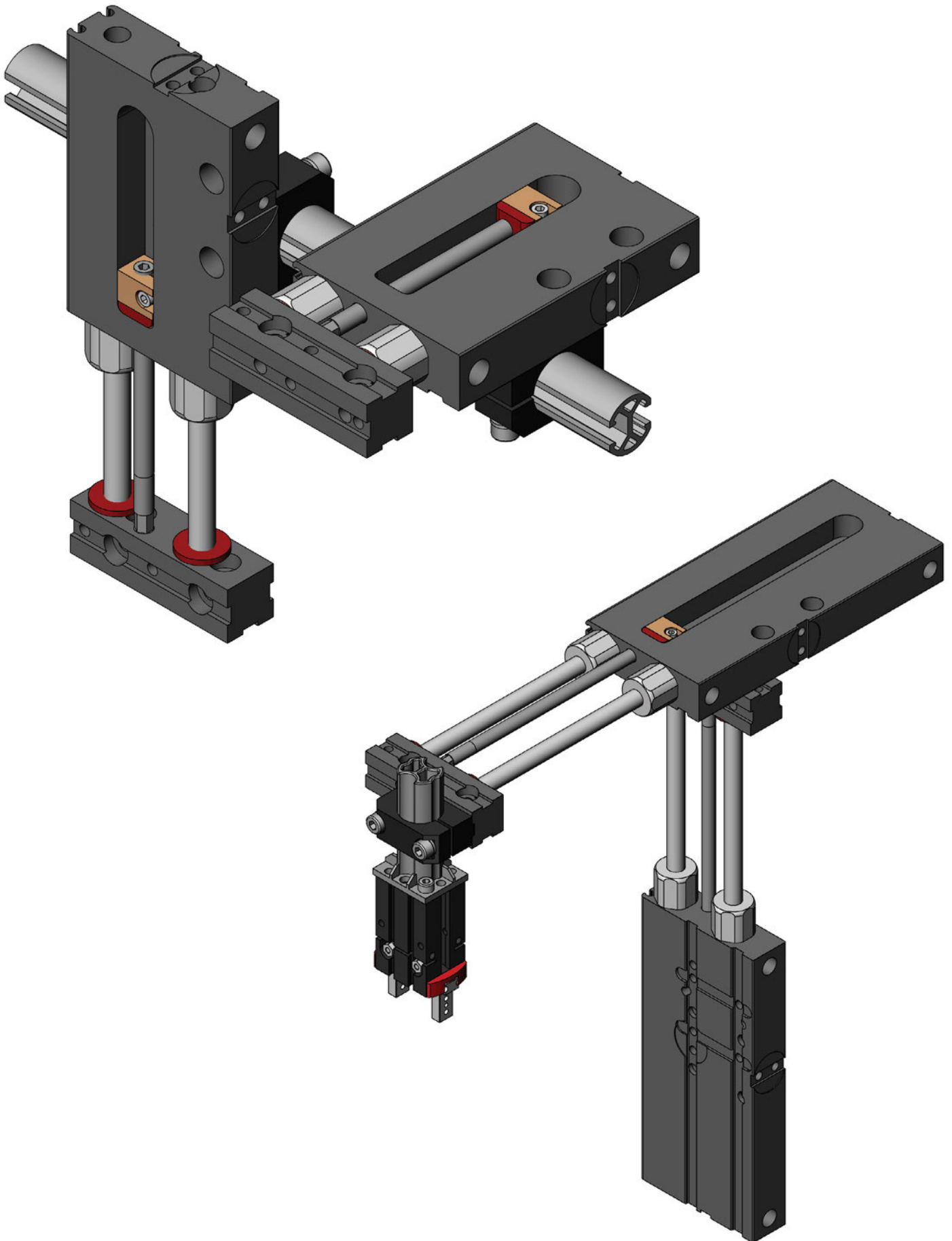


Low-Profile Pneumatic Slides for EOAT – ZL



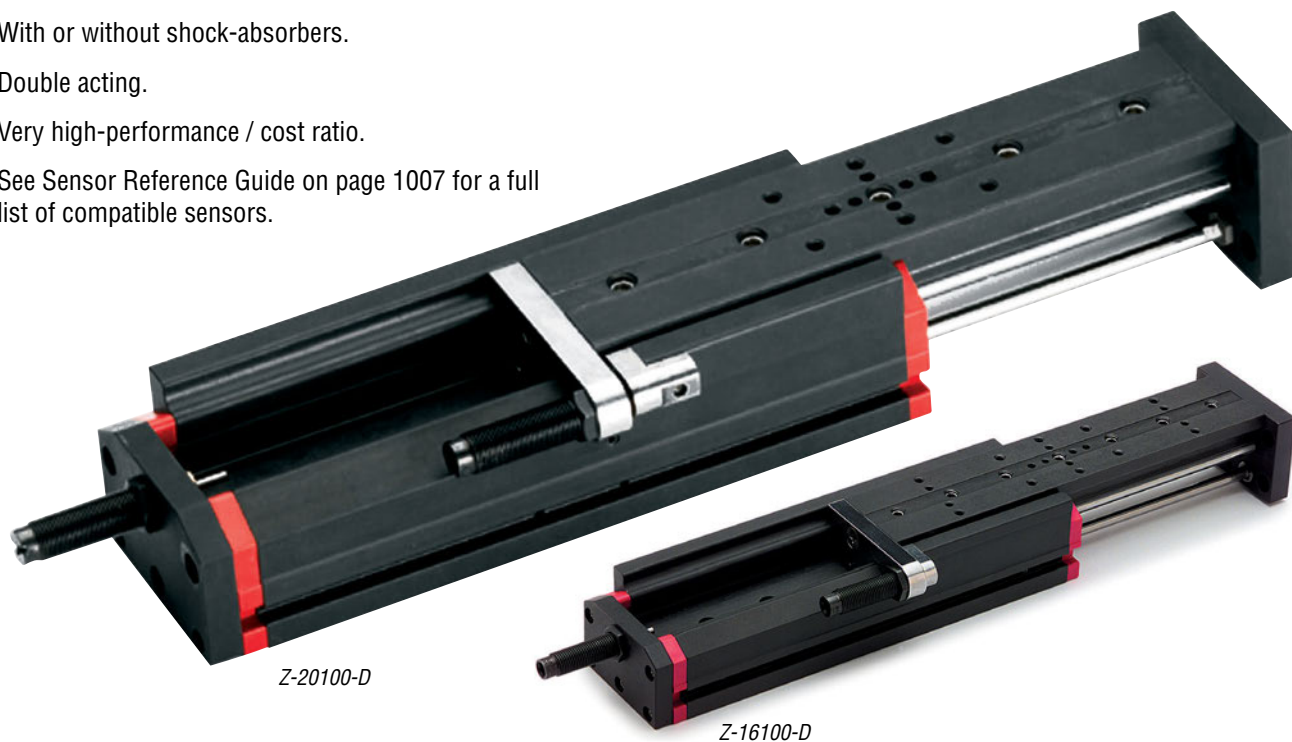
These slides are designed to interface with Gimatic / >ASS< channel nuts.

Low-Profile Pneumatic Slides for EOAT – ZL



Z Slides – Pneumatic Slides

- Bore: 2x8mm, 2x16 or 2x20mm
- Stroke: 25mm, 50mm, 100mm, 150mm and 200mm
- With or without shock-absorbers.
- Double acting.
- Very high-performance / cost ratio.
- See Sensor Reference Guide on page 1007 for a full list of compatible sensors.



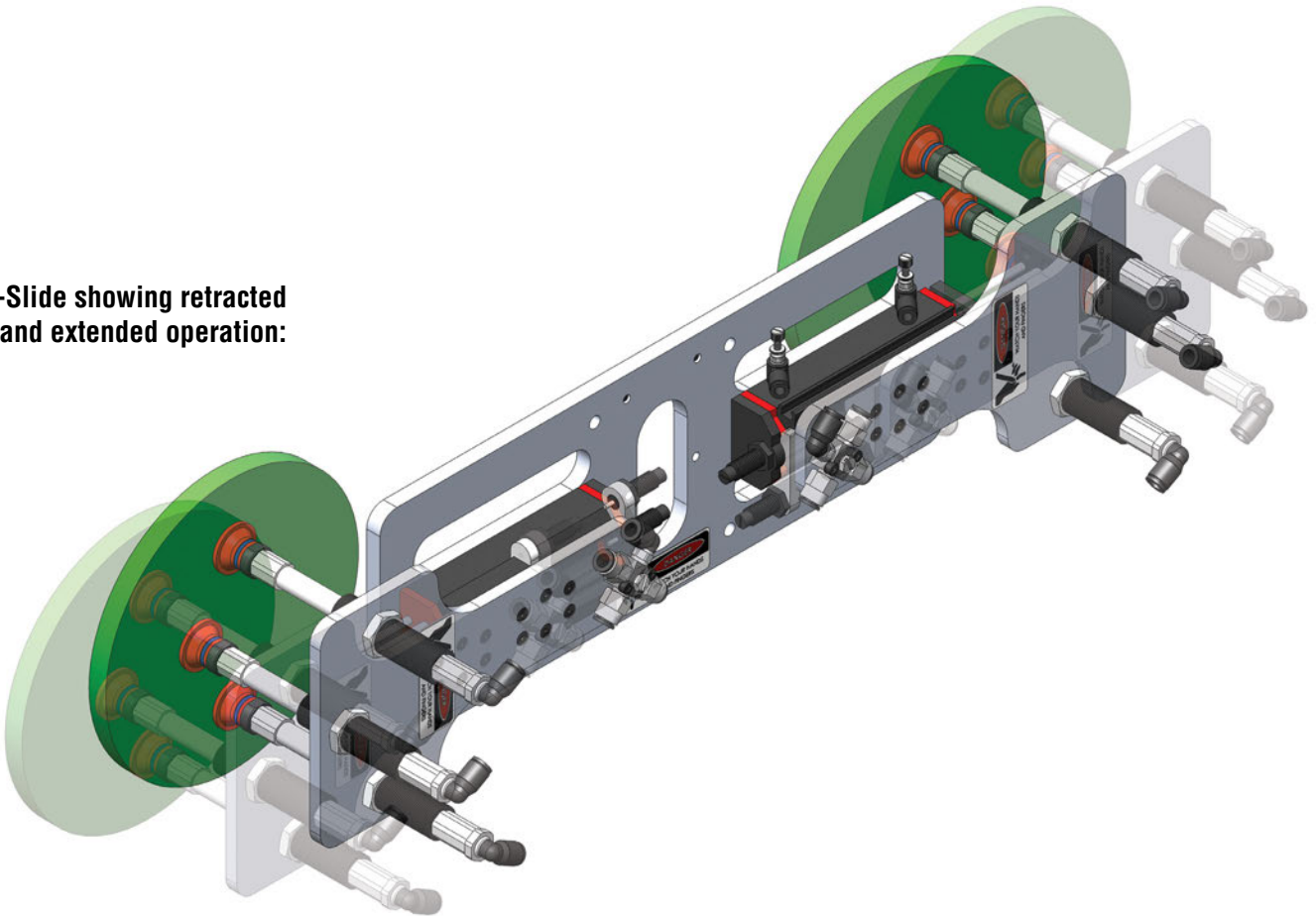
Quick#	Part#	Price	Piston bore	Stroke	Extension force*	Retraction force*	Style
6295	Z-0825	\$303.00	08mm	25mm	11.2 lbf	8.3 lbf	Includes Rubber Bumper
6296	Z-0825-D	\$508.00					Includes Shock-Absorber
6297	Z-0825-DS	\$369.00					Customer Supplied Shock-Absorber
6298	Z-0850	\$328.00	08mm	50mm	11.2 lbf	8.3 lbf	Includes Rubber Bumper
6299	Z-0850-D	\$532.00					Includes Shock-Absorber
6300	Z-0850-DS	\$393.00					Customer Supplied Shock-Absorber
6307	Z-1650	\$445.00	16mm	50mm	44.9 lbf	38.2 lbf	Includes Rubber Bumper
6308	Z-1650-D	\$679.00					Includes Shock-Absorber
6309	Z-1650-DS	\$526.00					Customer Supplied Shock-Absorber
6301	Z-16100	\$466.00	16mm	100mm	44.9 lbf	38.2 lbf	Includes Rubber Bumper
6302	Z-16100-D	\$701.00					Includes Shock-Absorber
6303	Z-16100-DS	\$548.00					Customer Supplied Shock-Absorber
6304	Z-16150	\$492.00	16mm	150mm	44.9 lbf	38.2 lbf	Includes Rubber Bumper
6305	Z-16150-D	\$726.00					Includes Shock-Absorber
6306	Z-16150-DS	\$573.00					Customer Supplied Shock-Absorber
6314	Z-2050-D	\$905.00	20mm	50mm	74.2 lbf	67.4 lbf	Includes Shock-Absorber
6315	Z-2050-DS	\$675.00					Customer Supplied Shock-Absorber
6310	Z-20100-D	\$945.00	20mm	100mm	74.2 lbf	67.4 lbf	Includes Shock-Absorber
6311	Z-20100-DS	\$716.00					Customer Supplied Shock-Absorber
6312	Z-20150-D	\$967.00	20mm	150mm	74.2 lbf	67.4 lbf	Includes Shock-Absorber
6313	Z-20150-DS	\$737.00					Customer Supplied Shock-Absorber
6476	Z-20200-D	\$1,002.00	20mm	200mm	74.2 lbf	67.4 lbf	Includes Shock-Absorber
6565	Z-20200-DS	\$636.00					Customer Supplied Shock-Absorber

*Note: Force at 87psi (6 bar)

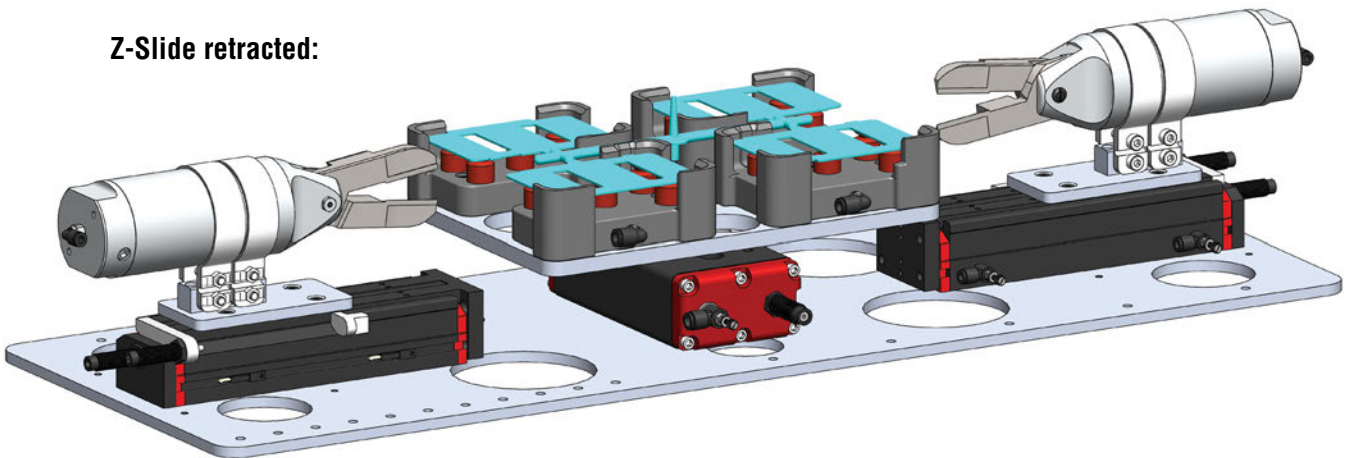
Additional information can be found online: www.EMlcorp.com

Pneumatic Slides – Z

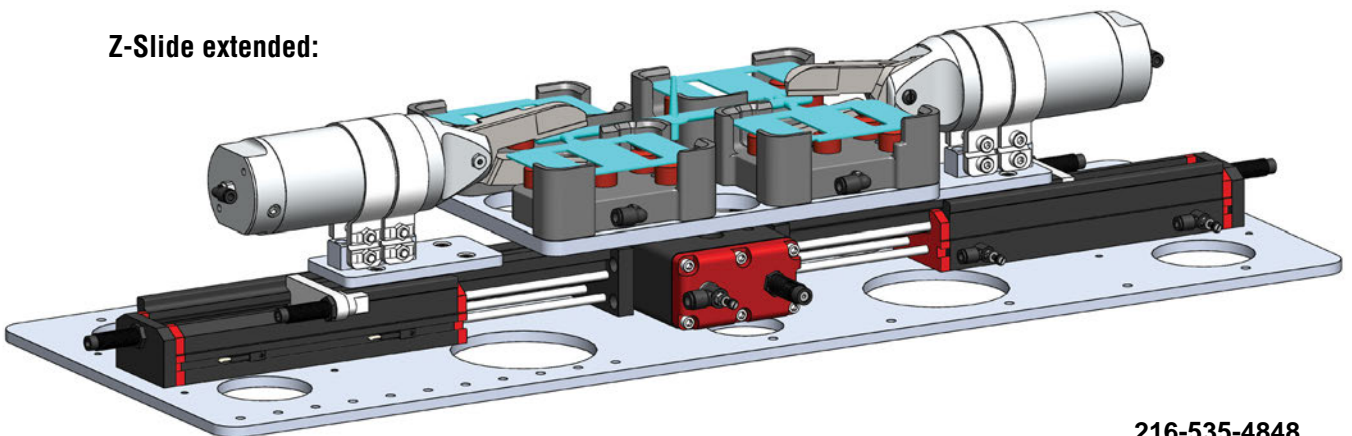
Z-Slide showing retracted and extended operation:



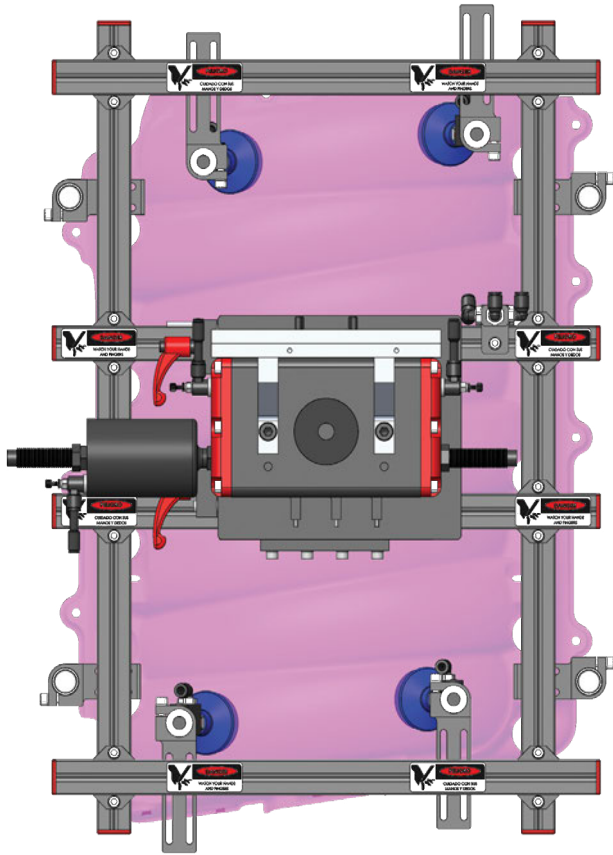
Z-Slide retracted:



Z-Slide extended:

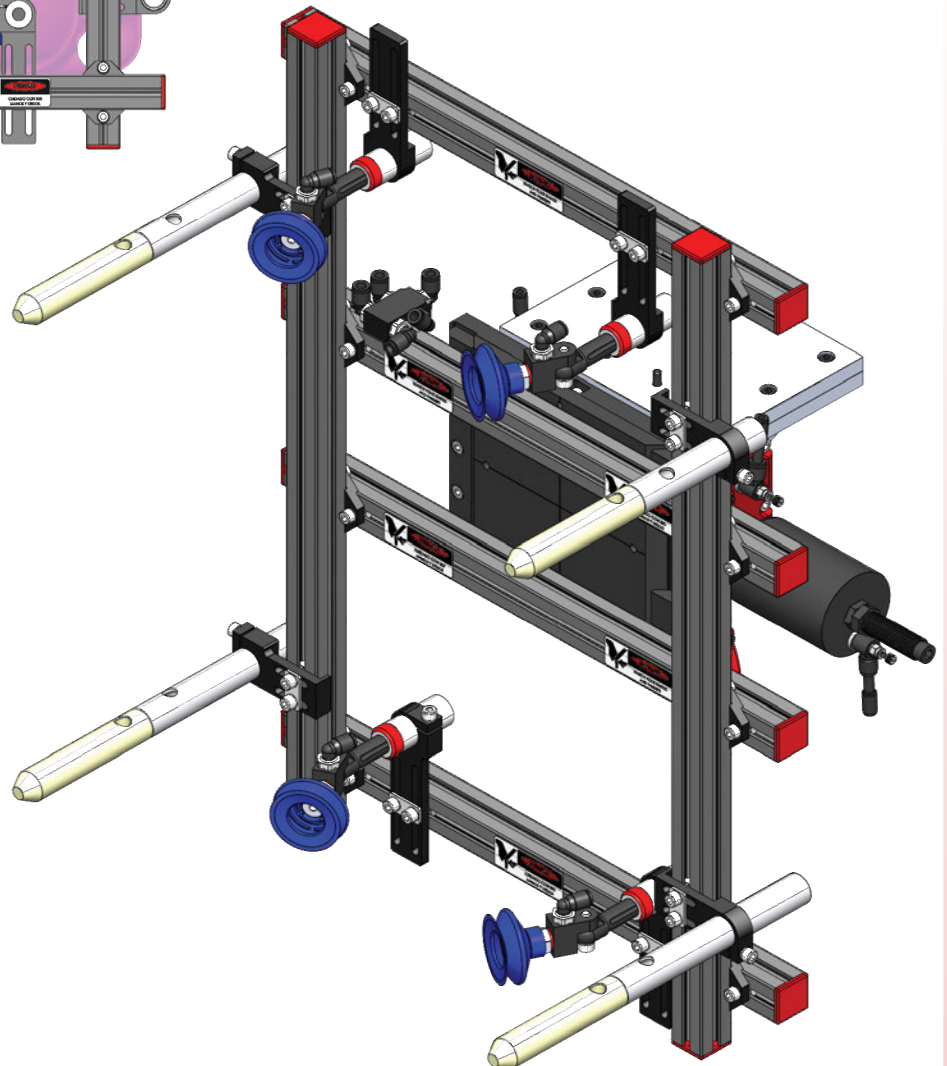


EOAT Design and Build Service



From the simplest to the most complex EOAT, EMI specializes in designing and building customized End-of-Arm-Tooling— **Priced Competitively.**

Get started by sending us a sample part or 3D part file and a completed datasheet (see page 1082). Our experienced EOAT engineers will design a tool for you and provide you 3D CAD renderings at no cost or obligation. We'll also provide pricing for the tool should you want to purchase the EOAT completely assembled.



Rotary Overview

Rotary Actuators p.798

- Rack and pinion swiveling mechanism
- Adjustable stroke
- High torque
- Sensor ready



Electric Rotary Actuators

p.616



- Capable of 90° or 180° rotation
- Same features as the electric grippers
- Sensor ready
- 10 million cycles maintenance free

Two-Position Rotary Actuators

p.806



- Two-position swiveling mechanism
- High-dampening performance
- Adjustable positions
- Sensor ready

Three-Position Rotary Actuators

p.808



- Three-position swiveling mechanism
- High-dampening performance
- Adjustable positions
- Sensor ready

Rotary Indexing Tables

p.818



- 4, 6, or 8-position indexing tables
- Counter clockwise option
- High torque
- Sensor ready

Intermediate Stopping

p.804



- The intermediate stopping unit RTD is a stroke reducer, acting against the rack of the swiveling unit RT, by a piston rod.
- When not pressurized a spring keeps the RTD piston rod against the RT rack.

Low-Profile Rotary Actuators

p.820



- Low profile, high torque from elliptical piston
- Disc style and shaft styles available
- Separate cushion, angle, backlash adjustments
- Sensor ready

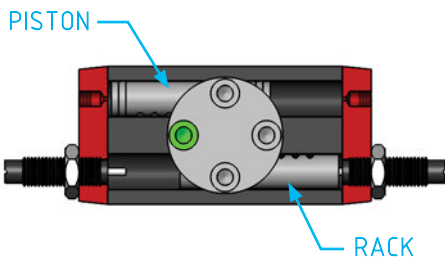
Swiveling Rotary – RT

- Rack and pinion patented movement.
- Continuously adjustable stroke.
- Large ball bearings on the shaft.
- Thru-hole in the pinion.
- Optional rubber bumpers or hydraulic shock-absorber.
- Optional sensors available.
- We recommend the use of exhaust flow controls (not included) to achieve the desired speed. See page 801.

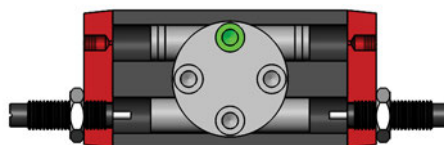


Part#	RT-10	RT-12	RT-20	RT-25	RT-35	RT-45	RT-63
Quick#	6571	6572	6573	6574	6575	6576	6577
Price	\$390.00	\$402.00	\$458.00	\$505.00	\$627.00	\$815.00	\$1,041.00
Weight	235g	560g	965g	1680g	2475g	5250g	8185g
Medium	Filtered, lubricated / non lubricated compressed air						
Pressure range	22–116 psi						
Maximum swiveling angle	190°						
Theoretical torque at 87 psi	2.5 in-lbf	5 in-lbf	17.5 in-lbf	35 in-lbf	69 in-lbf	148 in-lbf	349 in-lbf
Max. working frequency	3Hz	3Hz	2Hz	2Hz	2Hz	2Hz	1Hz
Swiveling time without load	0.05s	0.06s	0.11s	0.19s	0.08s	0.16s	0.23s
Max repeatability tolerance w/ shock-absorber	±0.02°	±0.02°	±0.02°	±0.02°	±0.02°	±0.02°	±0.02°

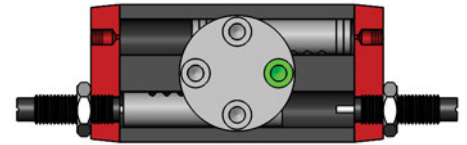
Rack and Piston at 0°



Rack and Piston at 90°



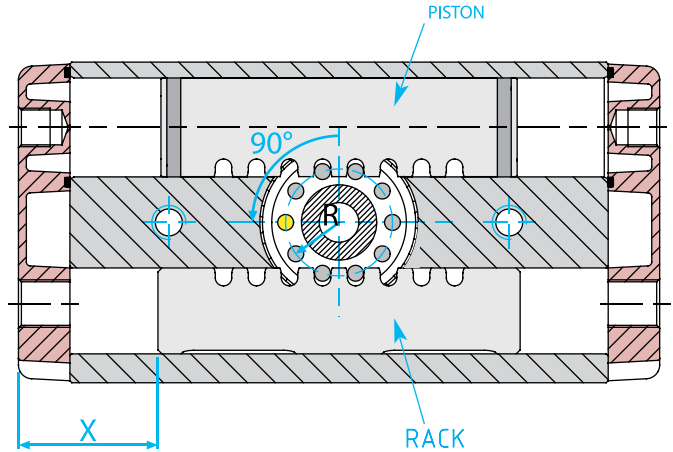
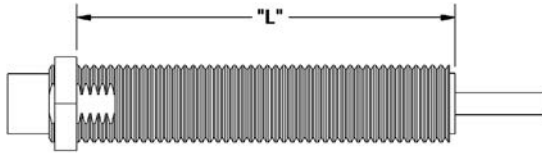
Rack and Piston at 180°



Swiveling Rotary – RT

End stroke accessories

For the stroke adjustment you can use hydraulic shock-absorbers, rubber bumpers (FGD), or only grub screws, according with the kinetic energy the unit has to bear. NEVER USE THE SWIVELING UNIT WITHOUT STROKE ADJUSTERS.



Part#	RT-10	RT-12	RT-20	RT-25	RT-35	RT-45	RT-63
Quick#	6571	6572	6573	6574	6575	6576	6577
Thread size (shock absorber / bumper)	M8x1	M10x1	M12x1	M12x1	M14x1.5	M20x1.5	M25x1.5
"X" Shock length needed to keep rack at 90° (mm)	18.5	24	27.5	35.5	37	53.5	60
Rack movement per degree of RT rotation	0.1047	0.1417	0.1802	0.2317	0.2296	0.2976	0.3571

Ace Hydraulic Shock-Absorbers

Quick#	6619	-	6627	6627	6359	6705	Call
Part#	MC10MH	-	MC-75M3NB-111	MC-75M3NB-111	SC190-HD-M4	MC225MH2	MC600MH2
Price	\$63.60	-	\$162.89	\$162.89	\$160.00	\$135.46	Call
Shock thread length "L" (mm)	20	-	42	42	55	62	93

Enidine Hydraulic Shock-Absorbers

Quick#	-	6621	6628	6628	6509	6624	6645
Part#	-	TK10M-1-SP18482	ECO-15MF-4	ECO-15MF-4	ECO-25-MC-4	ECO-50-MC-3	ECO-100-MF-4
Price	-	\$89.00	\$75.00	\$75.00	\$111.00	\$87.00	\$144.00
Shock thread length "L" (mm)	-	27	38	38	68	82	85

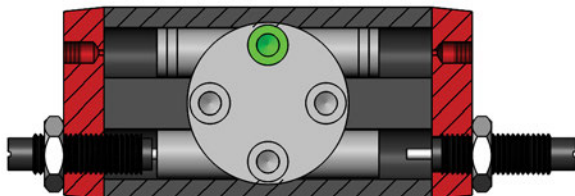
Gimatic "FGD" Rubber Bumpers

Quick#	6620	6622	6623	-	-	-	-
Part#	FGD0830	FGD1030	FGD1235	-	-	-	-
Price	\$7.29	\$7.58	\$7.95	-	-	-	-
Bumper thread length "L" (mm)	27	27	30	-	-	-	-

NEVER USE SWIVELING UNIT WITHOUT STROKE ADJUSTERS

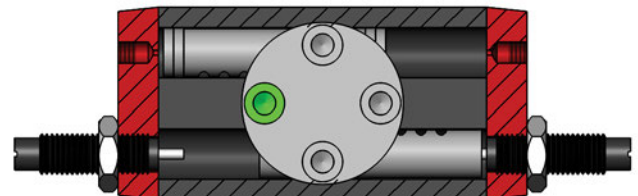
Shock placement method #1

One shock holds rack at 90°, while the other shock can be adjusted to achieve desired rotation. This method may be necessary on some rotations below 90°.

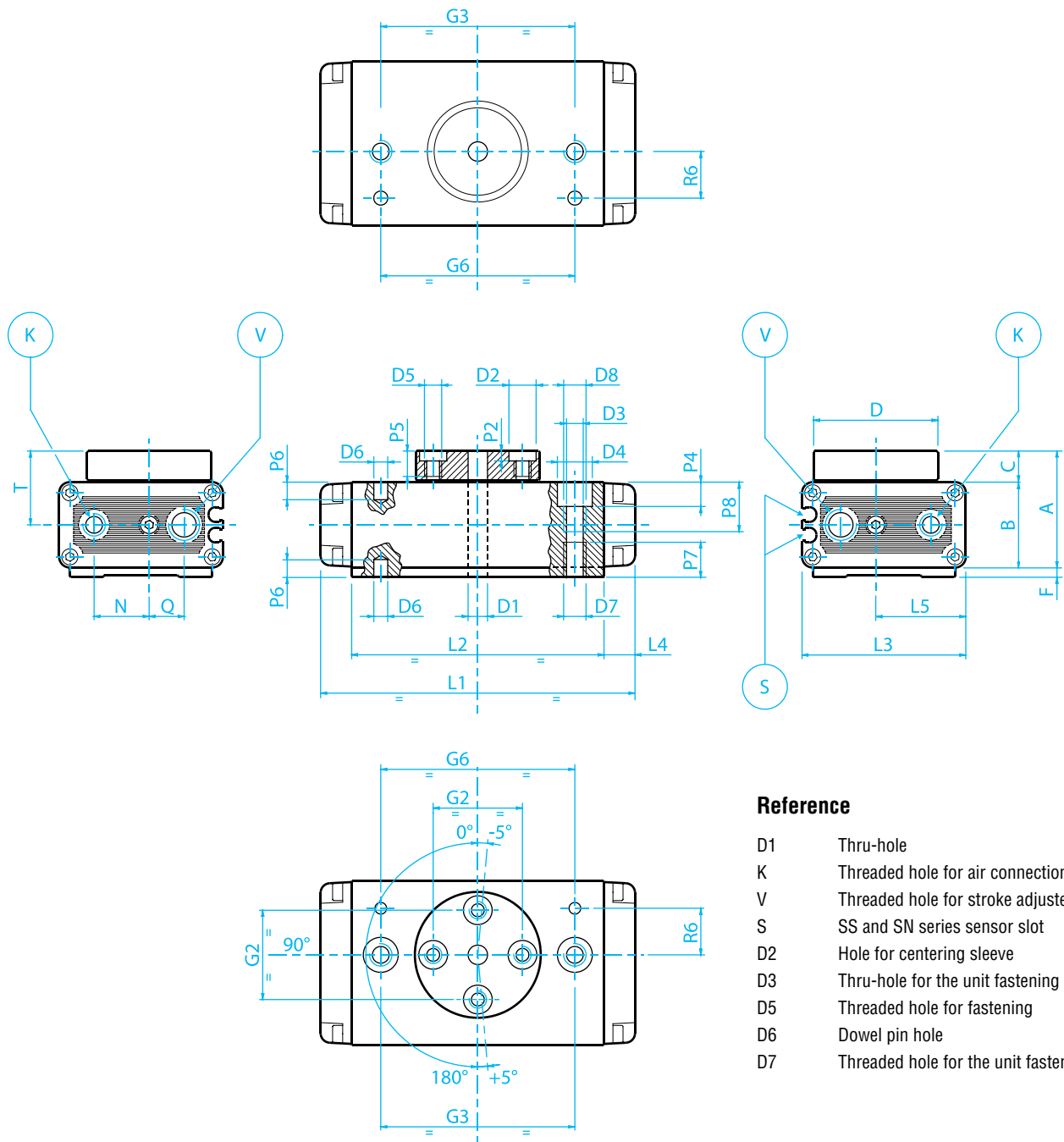


Shock placement method #2

One shock holds rack at 0°, while the other shock can be adjusted to achieve desired rotation. This method may be necessary on some rotations above 90°.



Swiveling Rotary – RT



Reference

- D1 Thru-hole
- K Threaded hole for air connection
- V Threaded hole for stroke adjuster
- S SS and SN series sensor slot
- D2 Hole for centering sleeve
- D3 Thru-hole for the unit fastening
- D5 Threaded hole for fastening
- D6 Dowel pin hole
- D7 Threaded hole for the unit fastening



Swiveling Rotary – RT

	RT-10	RT-12	RT-20	RT-25	RT-35	RT-45	RT-63
	6571	6572	6573	6574	6575	6576	6577
A	29.75	45	49	59	71	90.5	108.5
B	21.75	32	39	45	57	72	90
C	8	10	10	14	14	18.5	18.5
D	ø32	ø45	ø45	ø65	ø65	ø100	ø100
D1	ø5	ø6	ø8	ø10	ø12	ø18	ø20
D2	ø7 H8	ø7 H8	ø7 H8	ø9 H8	ø9 H8	ø15 H8	ø15 H8
D3	ø4.3	ø5.2	ø5.2	ø6.8	ø6.8	ø10.5	ø10.5
D4	ø9	ø11	ø11	ø15	ø15	ø19	ø19
D5	M4	M4	M4	M5	M5	M8	M8
D6	ø3 H8	ø4 H8	ø4 H8	ø6 H8	ø6 H8	ø8 H8	ø8 H8
D7	M5	M6	M6	M8	M8	M12	M12
D8	M5	M6	M6	M8	M8	M12	M12
F	2.75	/	/	/	/	/	/
G2	23 ±0.02	31.5 ±0.02	31.5 ±0.02	50 ±0.02	50 ±0.02	76 ±0.02	76 ±0.02
G3	50	59	72	86	86	140	140
G6	50 ±0.02	59 ±0.02	72 ±0.02	86 ±0.02	86 ±0.02	140 ±0.02	140 ±0.02
K	M5	M5	M5	G1/8	G1/8	G1/4	G1/4
L1	81	108	130	162	170	230	265
L2	65	88	110	136	140	180	215
L3	38	50	65	81	100	120	150
L4	8	10	10	13	15	25	25
L5	19	25	32.5	40.5	53	64	87
N	10	13	16	24	28.5	37	48.5
P2	2.5	2.5	2.5	3	3	3.5	3.5
P4	6	6	6	10	10	13	13
P5	6.5	8	8	12	12	16	16
P6	3	4	4	6	6	8	8
P7	24.5	12	12	14	18	24	24
P8	24.5	12	12	14	18	24	24
Q	9	13	16	20.5	22	26	27
R6	12 ±0.02	13 ±0.02	13 ±0.02	25 ±0.02	25 ±0.02	30 ±0.02	30 ±0.02
V	M8x1	M10x1	M12x1	M12x1	M14x1.5	M20x1.5	M25x1.5
T	19	26	29.5	36.5	42.5	54.5	63.5



#300

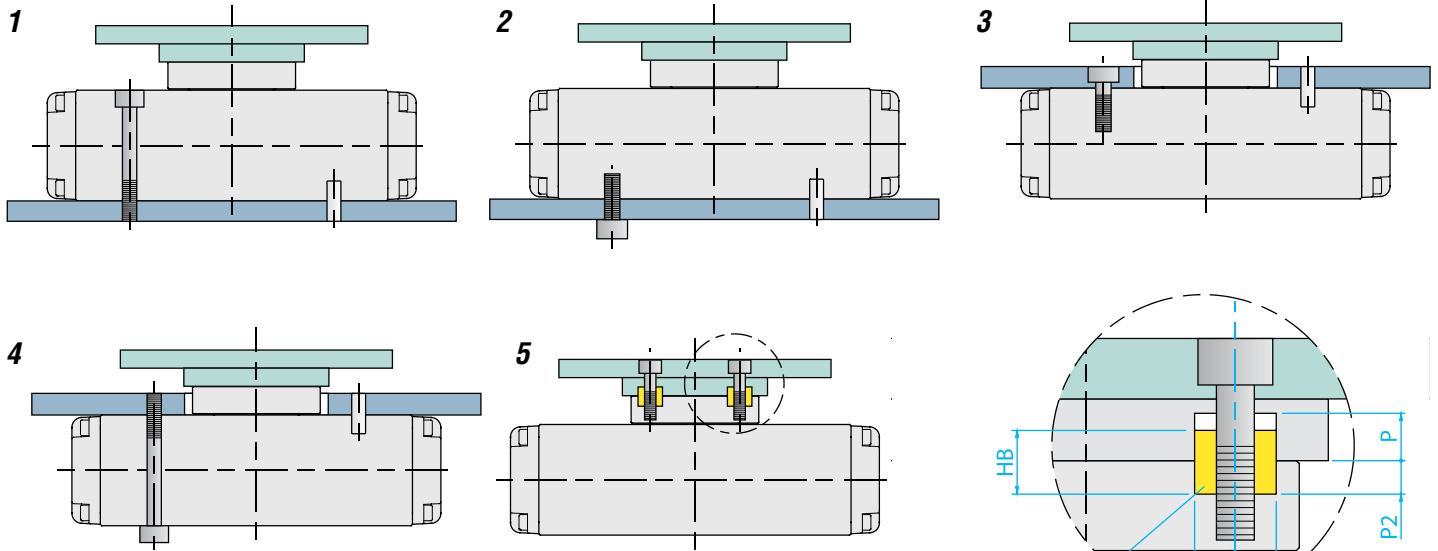
Exhaust Control

Quick#	Part#	Thread	Tubing ØD	For	Price
300	GSF-FCE-M504	M5	4	RT-10, RT-12, RT-20, ITSC-16...	\$11.70
301	GSF-FCE-M506	M5	6	RT-10, RT-12, RT-20, ITSC-16...	\$14.90
302	GSF-FCE-G806	G1/8"	6	RT-25, RT-35	\$14.90
433	GSF-FCE-G1406	G1/4"	6	RT-45, RT-63, ITSC-45...	\$19.08

Swiveling Rotary – RT

Mounting

The swiveling unit can be fastened to a static or a moving part. When on a moving part, you must pay attention to the forces created by inertia over the unit and its load. Use the four sleeves provided in the packaging to center the rotating load on the pinion.

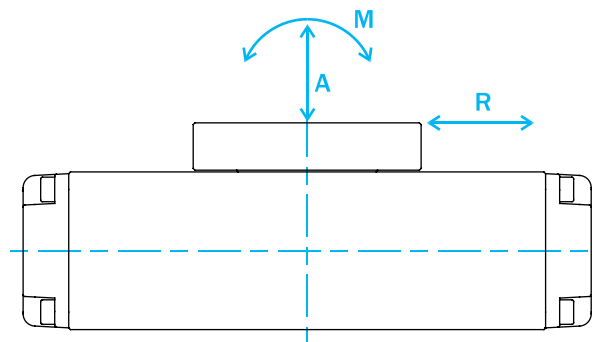


	RT-10	RT-12	RT-20	RT-25	RT-35	RT-45	RT-63
SLEEVE BC	RT-20-15		RT-35-15		RT-63-15		
DB	Ø7 h8	Ø7 h8	Ø7 h8	Ø9 h8	Ø9 h8	Ø15 h8	Ø15 h8
HB	5	5	5	6	6	7	7
P	3	3	3	3.5	3.5	4	4
P2	2.5	2.5	2.5	3	3	3.5	3.5

SLEEVE BC

Safety loads

Check the table for maximum permitted loads. Excessive loads or kinetic energy can damage the unit, cause functioning troubles and endanger the safety of the operator. Use flow controllers (not supplied) to get the right speed. Periodically check the efficiency of the shock-absorbers and replace them immediately if their damping performances decrease.



Reference:

Force: N x 0.225=lbf

Torque: Nm x 8.850=in-lbf

Torque: Ncm x 0.089=in-lbf

Pressure: bar x 14.5=psi

See also: Call our Engineering Department for assistance

	RT-10	RT-12	RT-20	RT-25	RT-35	RT-45	RT-63
A	232N	375N	650N	800N	800N	1075N	1550N
R	279N	450N	780N	960N	960N	1290N	1860N
M	4.7Nm	9.7Nm	22Nm	34Nm	42Nm	84Nm	143Nm

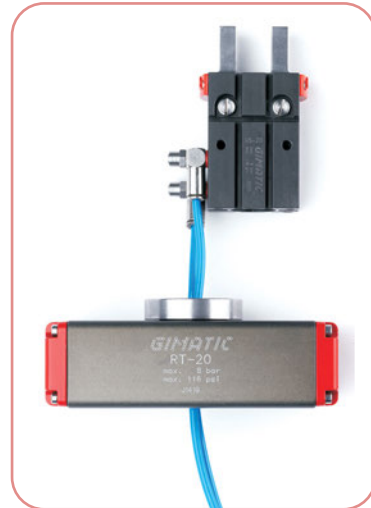
Swiveling Rotary – RT

Compressed air feeding

The compressed-air feeding must be accomplished on the lateral air ports (K) with fittings and hoses (not supplied).

The compressed air must be filtered from 5 to 40µm. Maintain the medium selected at the start, lubricated or not, for the complete service life of the swiveling unit.

The pneumatic circuit must be pressurized progressively, to avoid uncontrolled movements.



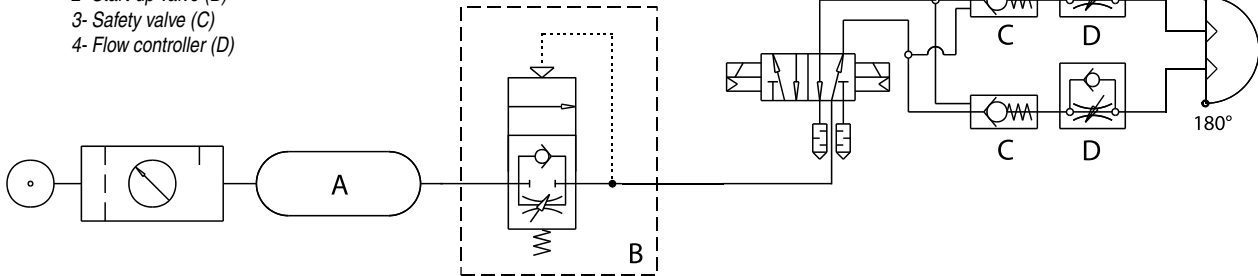
Pneumatic circuit

Possible problems on a compressed air circuit:

- 1- Pressure variation
- 2- Pressurizing with empty cylinder
- 3- Sudden pressure black-out
- 4- Excessive speed

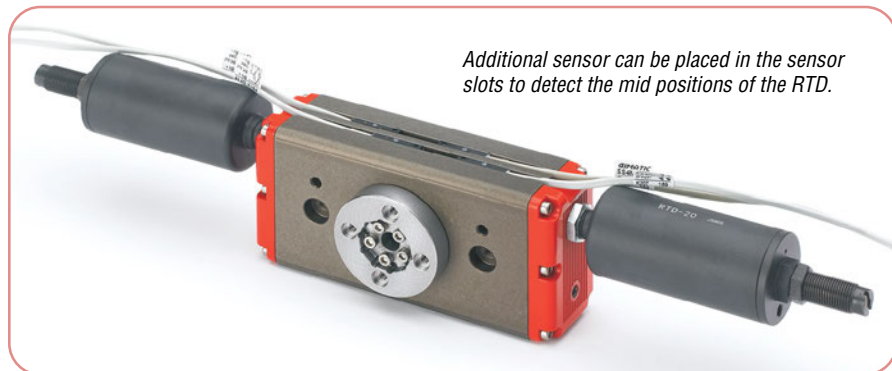
Possible solutions:

- 1- Compressed air storage (A)
- 2- Start-up valve (B)
- 3- Safety valve (C)
- 4- Flow controller (D)



Sensors

The operating position can be checked by sensors (optional) that detect the inner magnet. Therefore, a nearby large mass of ferromagnetic material or intense magnetic fields may cause sensing troubles.



Quick#	Part#	Signal	Connection	Price
3-wire, 90° Lead exit SN type Sensor				
6278	SN4N225G	PNP	2.5m lead	\$27.20
6357	SN4M225G	NPN	2.5m lead	\$27.20
6277	SN3N203G	PNP	0.3m lead with M8 male Connector	\$31.16
6356	SN3M203G	NPN	0.3m lead with M8 male Connector	\$31.16
3-wire, Straight SS type Sensor				
1882	SS4N225G	PNP	2.5m lead	\$27.20
1883	SS4M225G	NPN	2.5m lead	\$27.20
6282	SS3N203G	PNP	0.3m lead with M8 male Connector	\$31.16
1884	SS3M203G	NPN	0.3m lead with M8 male Connector	\$31.16

Intermediate Stopping Unit – RTD

The intermediate stopping unit RTD is a stroke reducer, acting against the rack of the swiveling unit RT by a piston rod.

The RTD piston bore is larger than RT and, pressurized at the same pressure, it stops in the middle of the RT stroke. When not pressurized, a spring keeps the RTD piston rod against the RT rack.



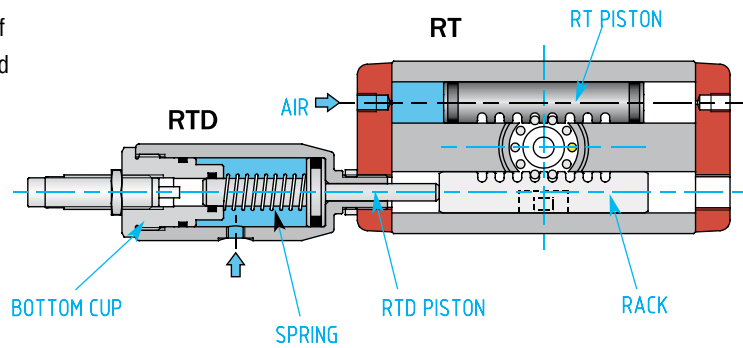
Part#	RTD-10	RTD-12	RTD-20	RTD-25	RTD-35	RTD-45	RTD-63
Quick#	6790	6791	6792	6793	6794	6795	6796
Price	\$152.00	\$164.00	\$189.00	\$202.00	\$226.00	\$273.00	\$365.00
Medium	Filtered, lubricated / non lubricated, compressed air						
Max. pressure range	116 psi						
Stroke for 90°	9.42mm	12.75mm	16.22mm	20.85mm	20.66mm	26.78mm	32.14mm
Piston bore Ø	15mm	20mm	30mm	35mm	50mm	63mm	80mm
Consumption each stroke	2cm ³	7cm ³	21cm ³	37cm ³	74cm ³	154cm ³	339cm ³
Weight	55g	100g	190g	300g	450g	1000g	1675g
To be used with:	RT-10	RT-12	RT-20	RT-25	RT-35	RT-45	RT-63

Use Quick#s for easy online ordering.

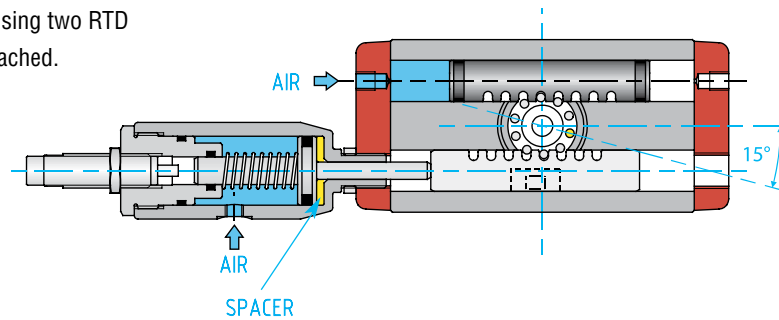


Intermediate Stopping Unit – RTD

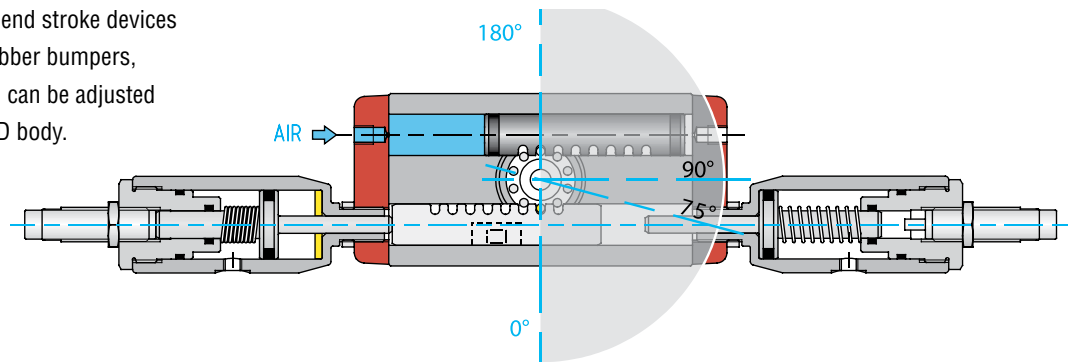
The RTD stroke can be modified by spacers in front of the piston, so that the intermediate stop can be moved in a different position. To mount a spacer the RTD must be open to extract the piston.



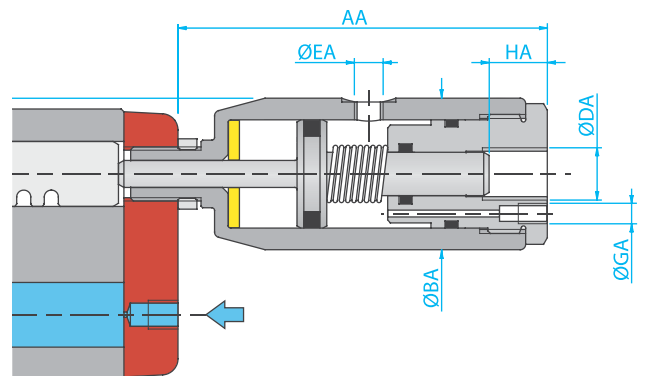
Two intermediate stops are possible using two RTD units, so that four positions can be reached.



The external end stroke positions can be adjusted ($0^\circ \pm 5^\circ$ or $180^\circ \pm 5^\circ$) by the same end stroke devices used in the RT (shock-absorbers, rubber bumpers, grub screws). The mid-stop position can be adjusted ($90^\circ \pm 5^\circ$) by moving the whole RTD body.



	RTD-10	RTD-12	RTD-20	RTD-25	RTD-35	RTD-45	RTD-63
AA	48.8	68.3	85.3	97.8	96	124.6	143.6
BA	Ø23	Ø28	Ø36	Ø44	Ø56	Ø70	Ø89
CA	20.5	27	34	42.5	50	61	71.5
DA	M8x1	M10x1	M12x1	M12x1	M14x1.5	M20x1.5	M25x2.5
EA	(n°3)M5	(n°3) M5	/	/	/	/	/
GA	/	/	M5	M5	G1/8	G1/4	G1/4
L5	19	25	32.5	40.5	53	64	87
HA	7.2	10.7	11.8	14	15.9	21.7	27.4



Two-Position Swiveling Rotary – R

- Suitable for 90° and 180° rotation angles.
- Shock-absorbers.
- Integrated rotating distributor of compressed air.
- Air feeding possible directly from the mounting plate.
- Optional sensors on page 815.



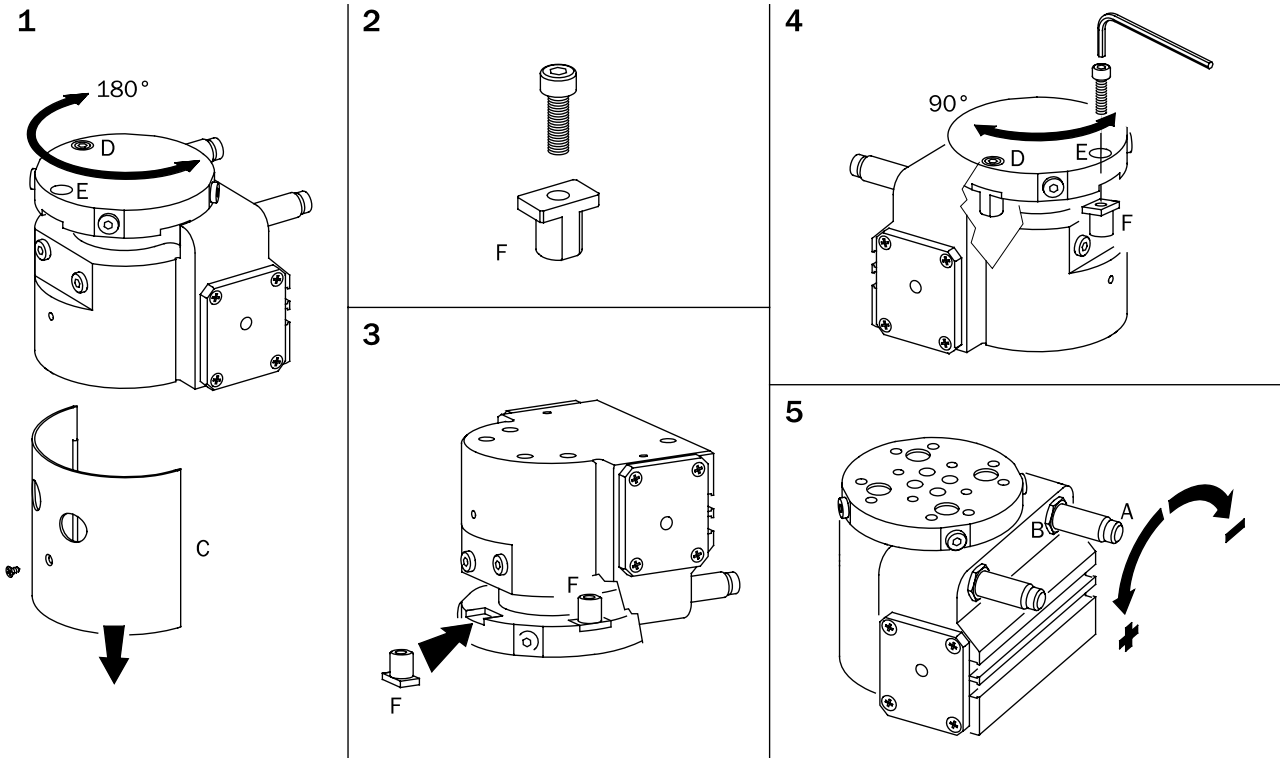
Part#	R20		R32		R63	
Quick#	6264		6265		6267	
Price	\$728.00		\$905.00		\$1,309.00	
Weight	400g		1100g		2800g	
Medium	Filtered lubricated / non lubricated compressed air					
Pressure range	30–116 psi					
Swiveling angle	90°	180°	90°	180°	90°	180°
Swiveling time without load	0.09s	0.017s	0.08s	0.15s	0.2s	0.3s
Theoretical torque at 87 psi	10 in-lbf		38 in-lbf		199 in-lbf	
180° angle adjustment	±8°		±8°		±8°	
Maximum repeatability tolerance	±0.02°		±0.02°		±0.02°	

Use Quick#s for easy online ordering.

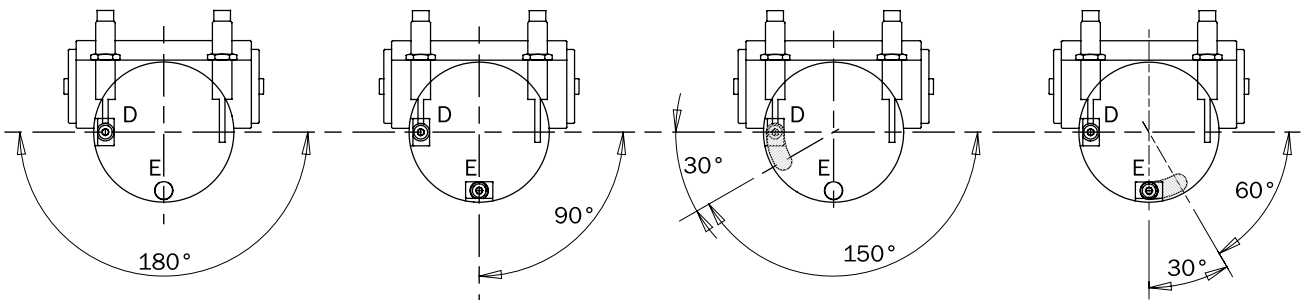
Two-Position Swiveling Rotary – R

Rotation angle

The units R20, R32 and R63 are supplied with one end-stroke block (F) in the seat (D). In this configuration they get a 180° rotation angle. However, a second block is supplied in the product packaging: mounting it in the seat (E), it reduces the stroke at 90°. It is necessary to remove the protection (C), before mounting the second block. Glue the screw of the second block by an anaerobic adhesive (medium resistance). At the end, the rotation angle can be further adjusted by changing the position of the shock-absorbers (A), after loosening the nuts (B). Each shock-absorber can change the end-stroke position of about ±4°.



To get other angles, it is necessary to build end-stroke blocks (not supplied) with a proper shape.



See page 810 for dimensions.

Three-Position Swiveling Rotary – R

- Suitable for 90° and 180° rotation angles.
- Cushioned end-stroke in every position.
- Air feeding possible directly from the mounting plate.
- Optional sensors on page 815.



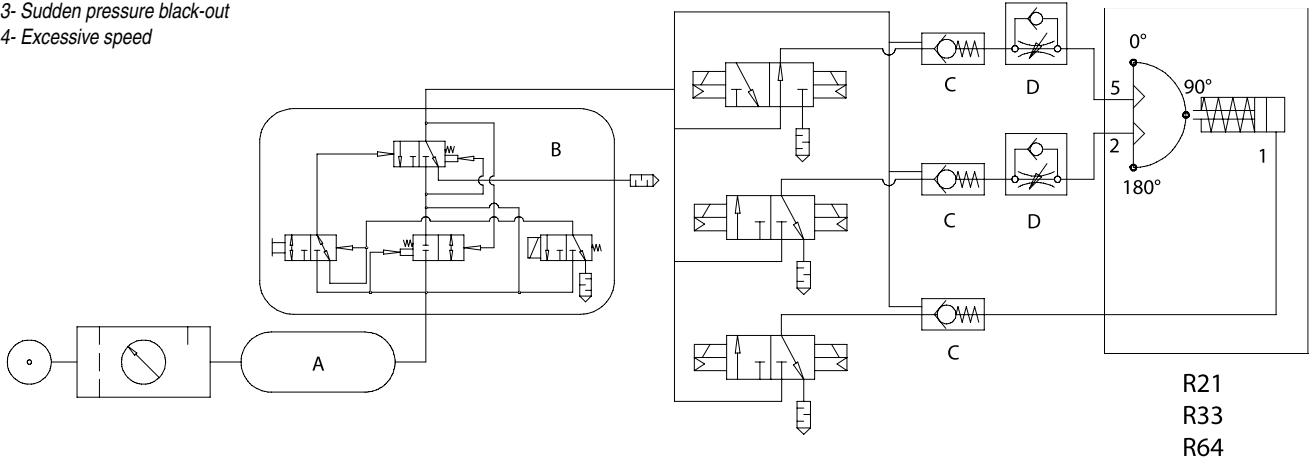
Part#	R21		R33		R64	
Quick#	6558		6266		6268	
Price	\$1,124.00		\$1,317.00		\$1,577.00	
Weight	500g		1200g		3200g	
Medium	Filtered lubricated / non lubricated compressed air					
Pressure range	44–116 psi					
Swiveling angle	90°	180°	90°	180°	90°	180°
Swiveling time without load	0.09s	0.017s	0.08s	0.15s	0.2s	0.3s
Theoretical torque at 87 psi	10 in-lbf		38 in-lbf		199 in-lbf	
180° angle adjustment	±8°		±8°		±8°	
Maximum repeatability tolerance	±0.02°		±0.02°		±0.02°	

Three-Position Swiveling Rotary – R

Pneumatic circuit

Possible problems on a compressed air circuit:

- 1- Pressure variation
- 2- Pressurizing with empty cylinder
- 3- Sudden pressure black-out
- 4- Excessive speed



Compressed air feeding

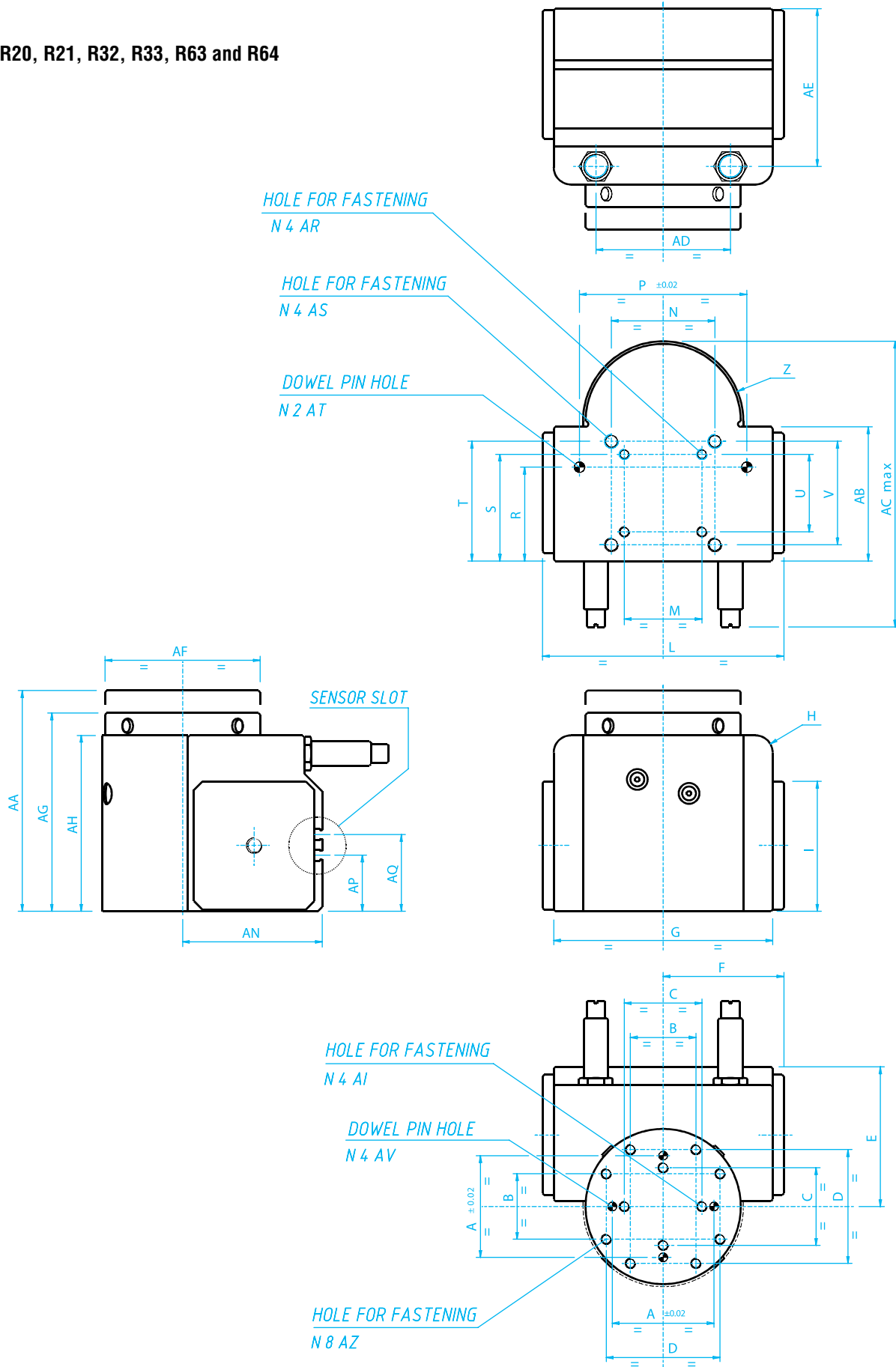
The compressed air feeding can be accomplished on the lateral air ports with fittings and tubes (not supplied), or directly on the bottom air ports, through the mounting plate. As all the air ports are plugged, it is necessary to remove only the plugs where the compressed air is needed. The air ports identified with the same number are communicating.

*Fittings Available
on page 1043*



Swiveling Rotary – R

R20, R21, R32, R33, R63 and R64

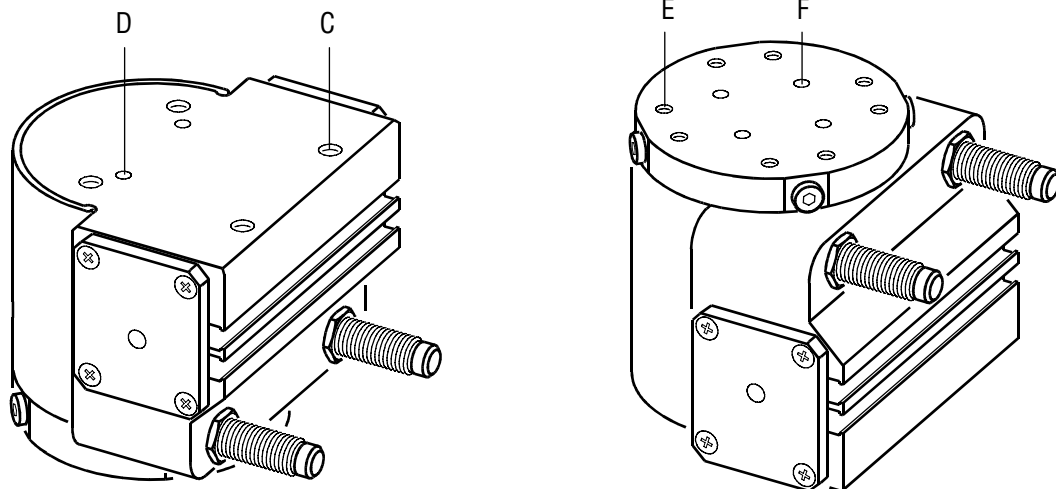


Swiveling Rotary – R

Part#	R20	R21	R32	R33	R63	R64
Quick#	6264	6558	6265	6266	6267	6268
A	30.4	30.4	30.4	30.4	59	59
B	21	21	27	27	38	-
C	-	-	-	-	45	45
D	37	37	48	48	66	66
E	32	32	47	47	81	81
F	35	35	49	49	70	70
G	64.5	64.5	90	90	127	127
H	R5	R5	R8	R8	R10	R10
I	36	36	44.5	44.5	75.4	75.4
L	70	70	98	98	140	140
M	-	-	-	-	45	45
N	34	34	45	45	60	60
P	30.4	30.4	30.4	30.4	97	97
R	32	32	47	47	54.5	54.5
S	-	-	-	-	62	62
T	40.5	40.5	52.5	52.5	69.5	69.5
U	-	-	-	-	45	45
V	34	34	45	45	60	60
Z	R 26	R 26	R 36	R 36	R 46.5	R 46.5
AA	-	71	-	92	-	134
AB	30.4	30.4	45	45	77.9	77.9
AC	58	58	105	105	165.7	165.7
AD	42	42	60	60	78	78
AE	43	43	59	59	91.5	91.5
AF	ø50	ø50	ø70	ø70	ø90	ø90
AG	59	-	78	-	115	-
AH	51	51	67.5	67.5	102	102
AI	-	-	-	-	M6 x 12mm	M6 x 12mm
AN	32	32	47	47	81	81
AP	14	14	20.5	20.5	40	40
AQ	23	23	29.5	29.5	-	-
AR	-	-	-	-	M6 x 10mm	M6 x 10mm
AS	M4 x 8mm	M4 x 8mm	M6 x 10mm	M6 x 10mm	M8 x 14mm	M8 x 14mm
AT	ø3 H8 x 6mm	ø3 H8 x 6mm	ø3 H8 x 6mm	ø3 H8 x 6mm	ø6 H8x8	ø6 H8x8
AV	ø3 H8 x 6mm	ø3 H8 x 6mm	ø3 H8 x 6mm	ø3 H8 x 6mm	ø5 H8 x 8mm	ø5 H8 x 8mm
AZ	M3 x 6mm	M3 x 6mm	M4 x 10mm	M4 x 10mm	M6 x 12mm	M6 x 12mm

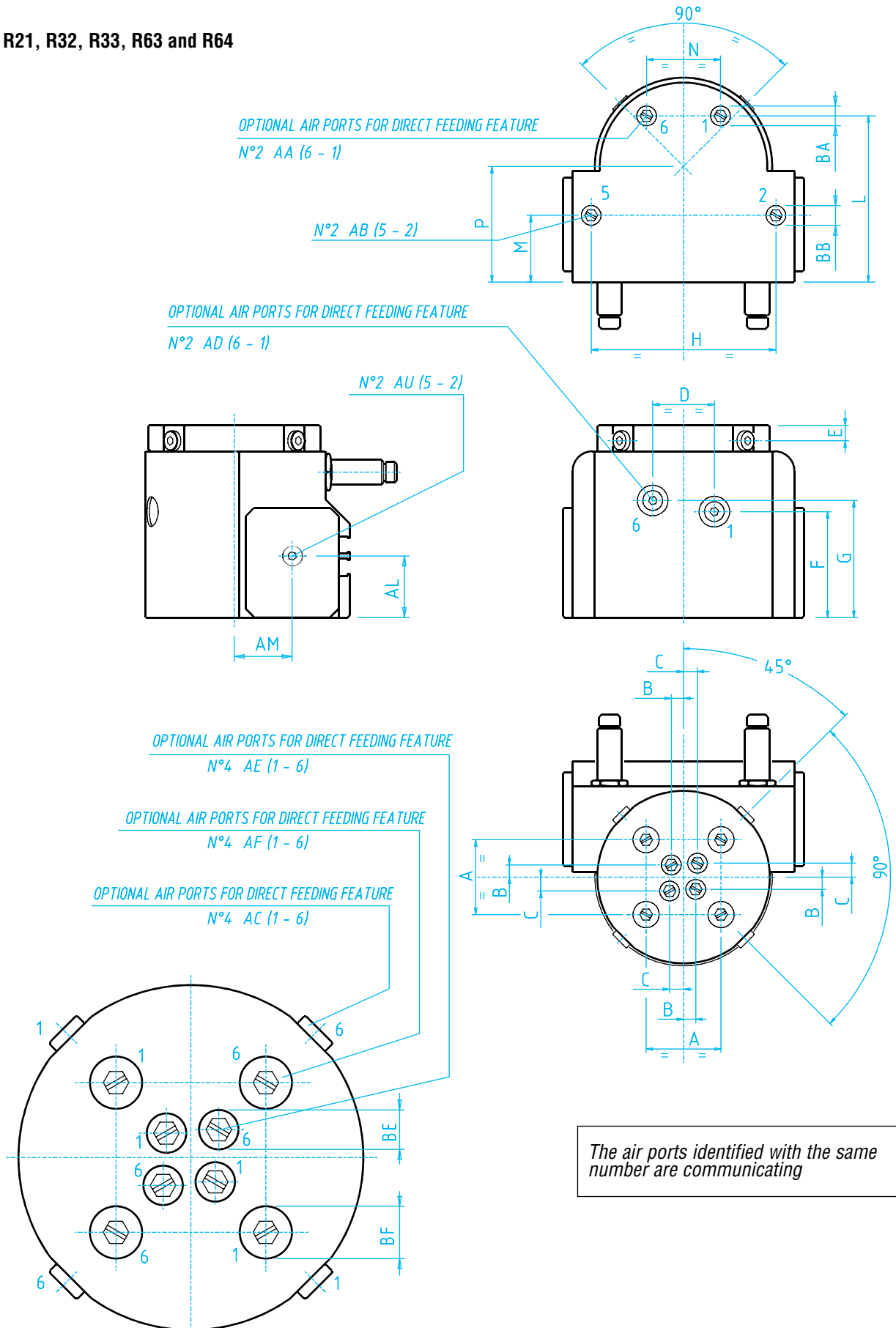
Fastening

The swiveling actuator must be fastened by four screws in the threaded holes (C) and centered by two dowel pins in the holes (D).
The rotating load must be fastened on the disc using at least four threaded holes (E) and at least two dowel pin holes (F).



Swiveling Rotary – R

R20, R21, R32, R33, R63 and R64

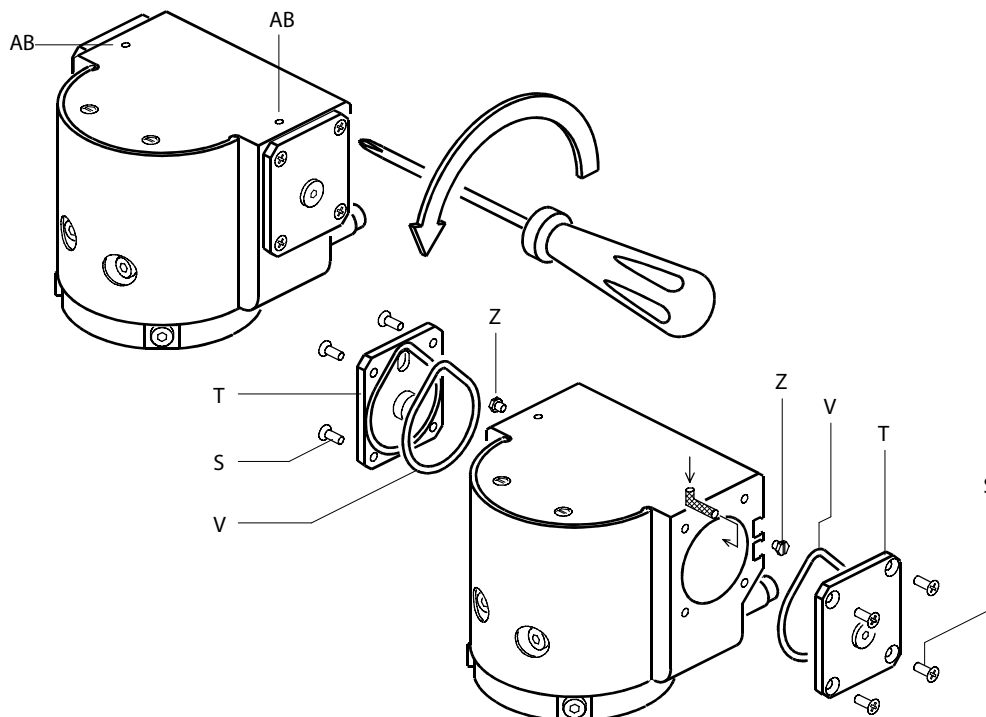


Swiveling Rotary – R

Part#	R20	R21	R32	R33	R63	R64
Quick#	6264	6558	6265	6266	6267	6268
A	24	-	30.4	-	48	-
B	2.7	-	4.9	-	6.2	-
C	3.4	-	5.7	-	7.25	-
D	13	13	25	25	30	30
E	4.5	-	6.25	-	7.5	-
F	32	32	43	43	68.35	68.35
G	37.7	-	47.5	-	76.45	-
H	52	52	75	75	109	109
L	46	46	67.5	67.5	103.5	103.5
M	17	17	27.1	27.1	39.5	39.5
N	13	13	30	30	30	30
P	32	32	47	47	81	81
AA	M3	M3	M3	M3	M5	M5
AB	M3	M3	ø2	ø2	M3	M3
AC	M3	-	M5	-	M5	-
AD	M3	-	M5	-	M5	-
AE	M3	-	M3	-	M3	-
AF	M3	-	M3	-	M3	-
AL	18.5	18.5	25	25	38.15	38.15
AM	15	15	23.5	23.5	41.5	41.5
AU	M5	M5	M5	M5	G 1/8	G 1/8
BA	ø6	ø6	ø6	ø6	ø9	ø9
BB	ø6	ø6	-	-	ø6	ø6
BE	ø5.5	-	ø6	-	ø6	-
BF	ø9.4 x 1.3mm	-	ø9.4 x 1.3mm	-	ø9.4 x 1.3mm	-

Warning

The direct feeding of the rotary units R32 and R33 from the bottom air ports (AB) is possible only by removing the plugs (Z) placed behind the covers (T). When reassembling the covers pay attention to the correct position of the gaskets (V), before placing the screws (S).



Three-Position Swiveling Rotary – R

Rotating distributor

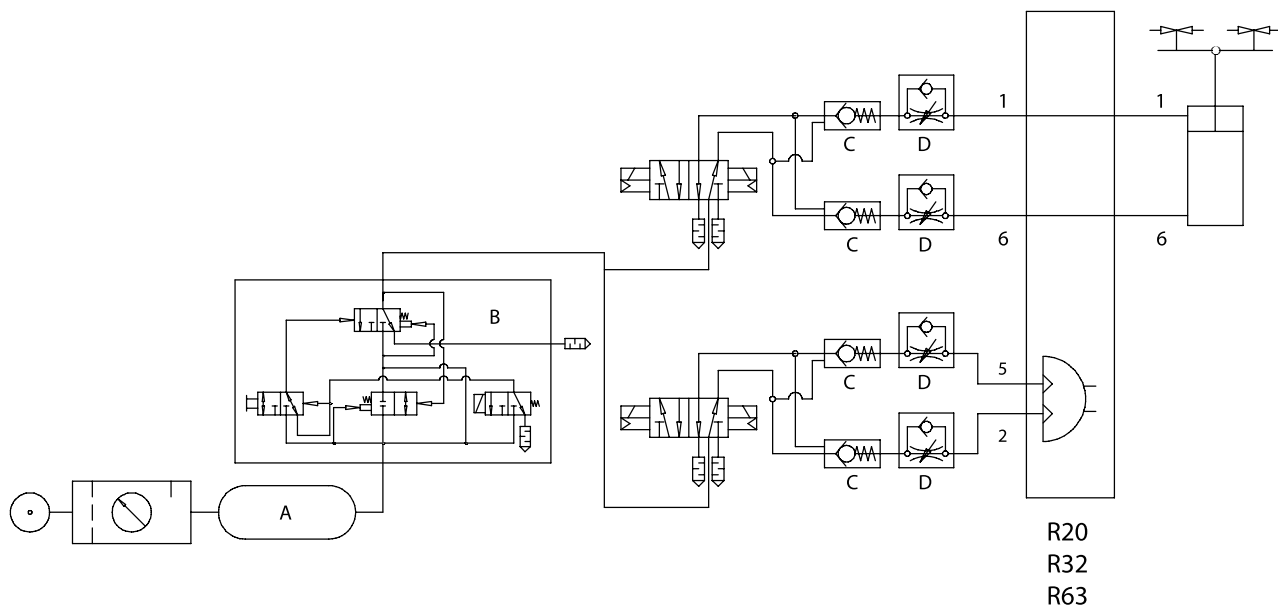
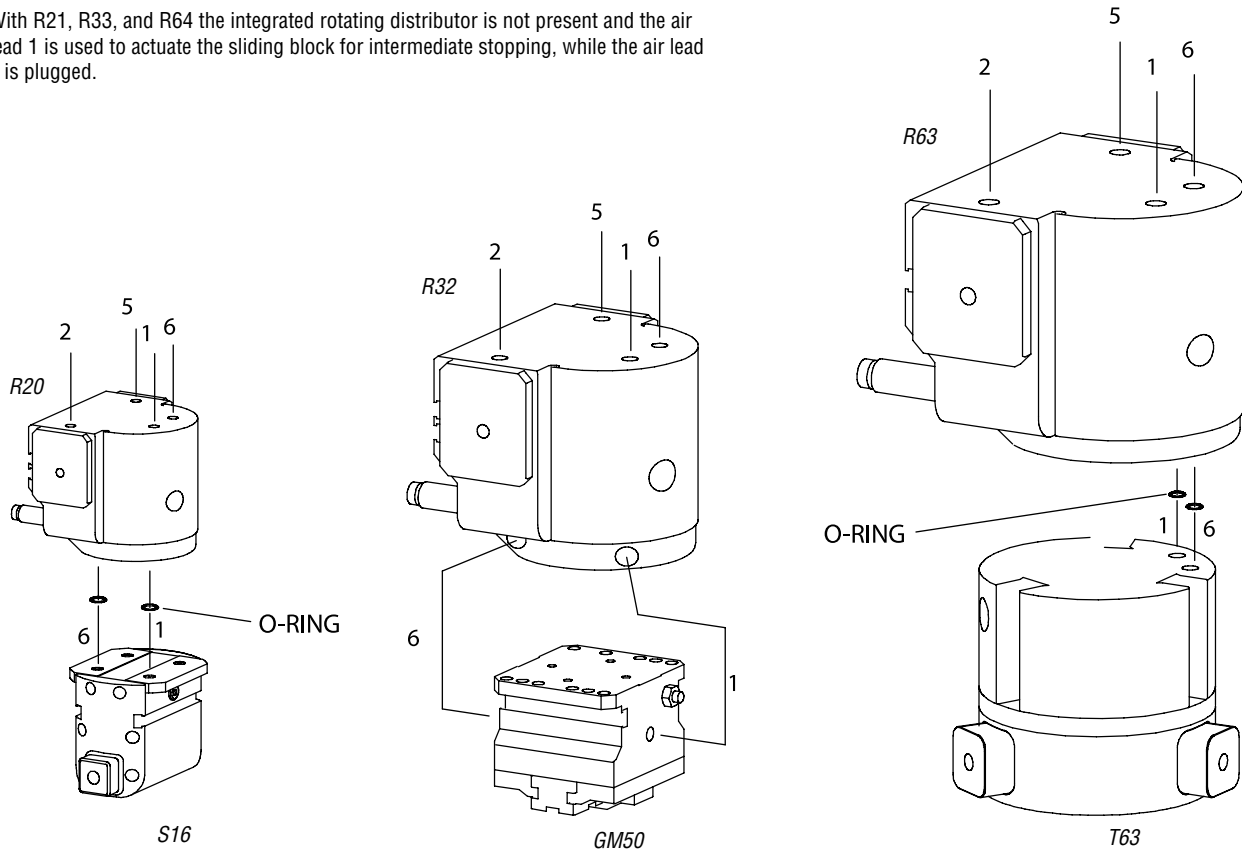
With the R20, R32 and R63 the integrated rotating distributor of compressed air, with two leads (1 and 6), feeds compressed air to the pneumatic devices on the disc without the use of hoses.

S16 and T30 can be fitted directly on R20 the grippers.

T40, GM-0025/6/7 and GM-0050/1/2 on R32 grippers.

S32 and T63 on R63 grippers.

With R21, R33, and R64 the integrated rotating distributor is not present and the air lead 1 is used to actuate the sliding block for intermediate stopping, while the air lead 6 is plugged.



Three-Position Swiveling Rotary – R

Sensors

The operating position can be checked by sensors (optional), that detect the inner magnet. Close proximity to a large mass of ferromagnetic material or intense magnetic fields may cause sensing troubles.



					R-20	R-32	R-63	R-21	R-33	R64
Quick#	Part#	Signal	Connection	Price						
3-Wire, 'T' Slot Sensors										
6273	SC4N225G	PNP	2.5m lead	\$30.30	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6455	SC3N203G	PNP	.3m lead & M8	\$34.62	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
792	SL4N225G	PNP	2.5m lead	\$27.20	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
793	SL4M225G	NPN	2.5m lead	\$27.20	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6274	SL3N203G	PNP	.3m lead & M8	\$31.16	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6456	SL3M203G	NPN	.3m lead & M8	\$31.16	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3-Wire, 'C' Slot Sensors										
1882	SS4N225G	PNP	2.5m lead	\$27.20	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/> (*)
1883	SS4M225G	NPN	2.5m lead	\$27.20	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/> (*)
6282	SS3N203G	PNP	.3m lead & M8	\$31.16	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/> (*)
1884	SS3M203G	NPN	.3m lead & M8	\$31.16	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/> (*)	<input checked="" type="checkbox"/> (*)
7440	K-SENS	*Must purchase separately	\$4.82		*Allows 'C' channel sensors to work in 'T' channel slots					



Three-Position Swiveling Rotary – R

Rotation angle

R21, R33 and R64 are swivelling units with three positions: 0°, 90° and 180°.

These movements are possible:

From 0° to 180°.

From 180° to 0°.

From 0° to 90°.

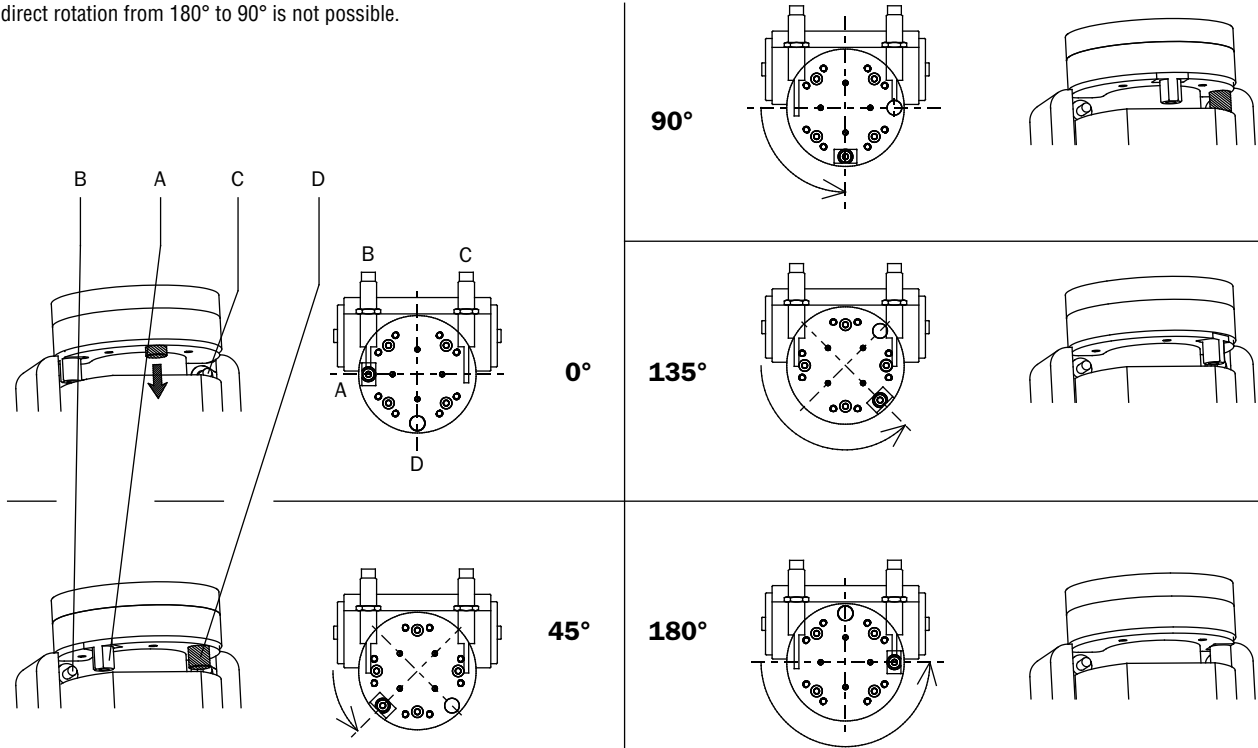
From 90° to 0°.

From 90° to 180°, before to retract the moving block (D), the pressure must be balanced on both sides of the piston.

The direct rotation from 180° to 90° is not possible.

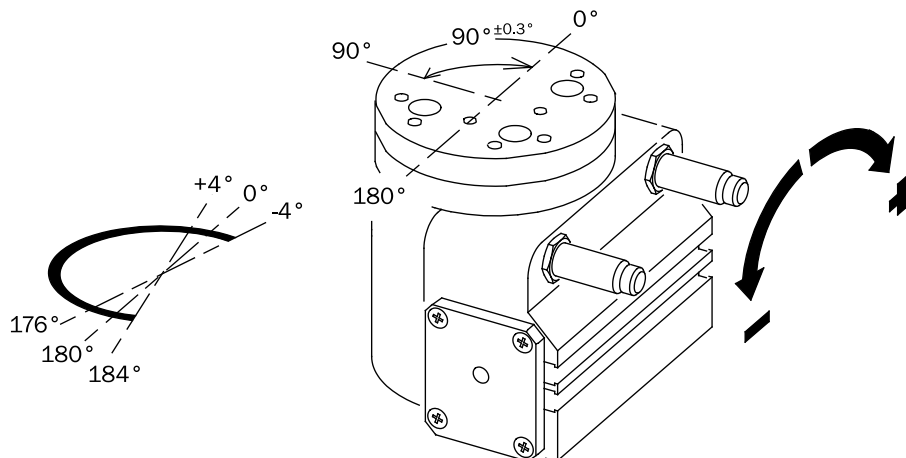
The fixed block (A) gives the end-stroke at 0° against the shock-absorber (B) and at 180° against the shock-absorber (C), the moving block (D) at 90° against the shock-absorber (C).

The moving block (D) can't be put out between 70° to 180°.



You can adjust of about $\pm 4^\circ$ on both sides the 180° angle, by the shock-absorbers.

It is not possible to adjust the 90° (tolerance $\pm 0.3^\circ$) angle.



Three-Position Swiveling Rotary – R

Safety loads

Check the table for maximum permitted loads. Excessive forces or torques can damage the unit, cause functioning troubles, endanger the safety of the operator.

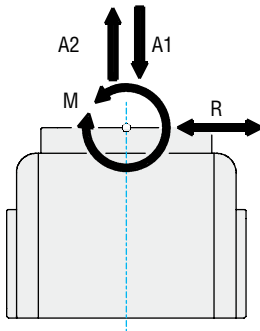
Reference:

- A1 and A2 (N): maximum axial loads, compressive and tractive.
- R (N): maximum radial load.
- M (Nm): maximum bending torque.
- J (kgcm²): moment of inertia of the rotating loads.
- t (s): swiveling time (for 90° and 180°).
- E (kgcm²/s²): kinetic energy dissipated by the shock absorber each shock.
- Eh (kgcm²/s²): kinetic energy dissipated by the shock absorber per hour.
- Nh: number of shocks per hour per shock absorber.

Reference:

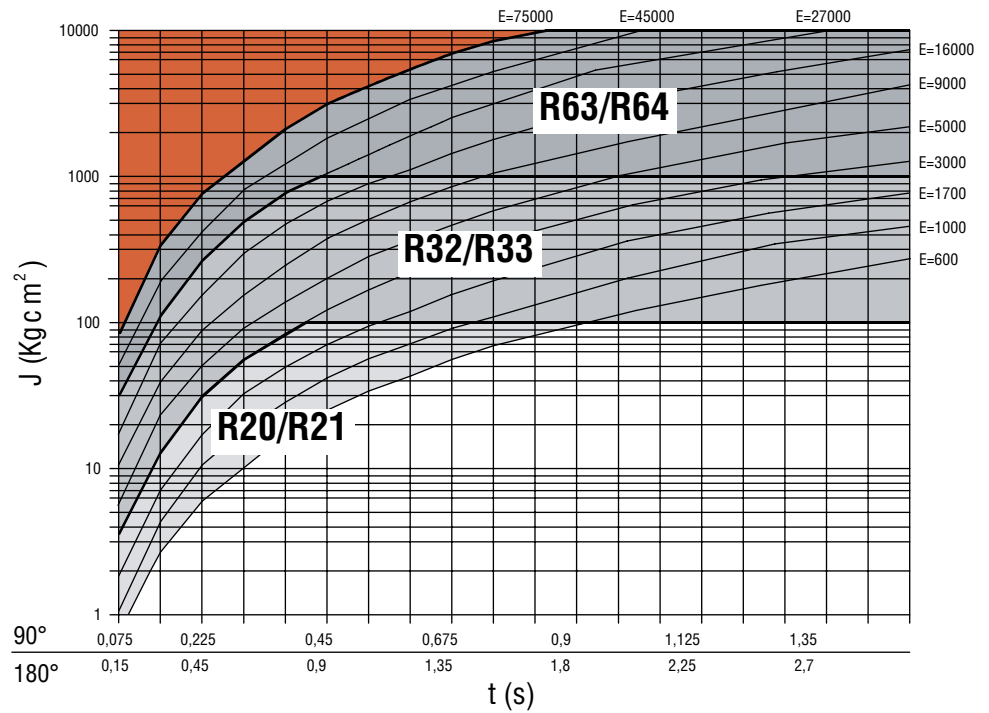
- Force: N x 0.225=lbf
- Torque: Nm x 8.850=in-lbf
- Torque: Ncm x 0.089=in-lbf
- Pressure: bar x 14.5=psi
- See also: Call our Engineering Department for assistance

	R20/R21	R32/R33	R63/R64
A1	230N	650N	1100N
A2	140N	245N	800N
R	180N	810N	1500N
M	5Nm	12Nm	32Nm
E max	3000 kgcm ² /s ²	27000 kgcm ² /s ²	75000 kgcm ² /s ²
Eh	(E+3000) x Nh	(E+10 ⁴) x Nh	(E+10 ⁵) x Nh
Eh max	40 x 10 ⁶ kgcm ² /s ²	67.8 x 10 ⁶ kgcm ² /s ²	34 x 10 ⁷ kgcm ² /s ²

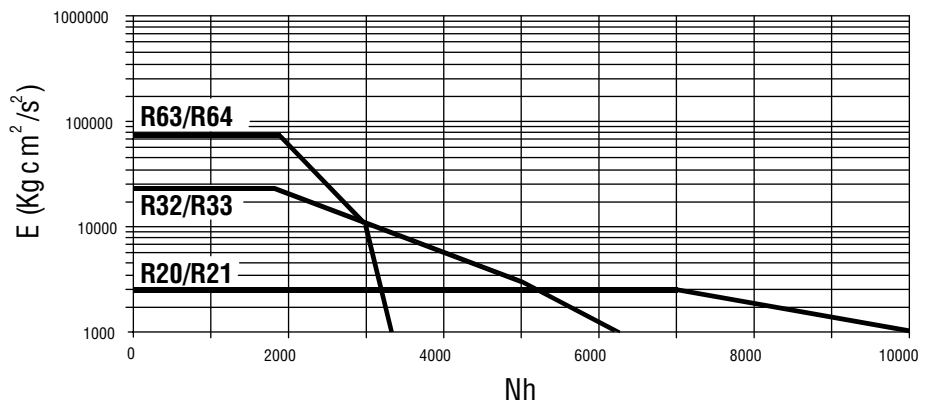


ENERGY PER SHOCK

90°: $E=4.935xJ/t^2$
 180°: $E=19.74xJ/t^2$

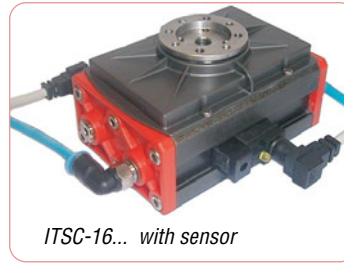


ENERGY PER HOUR



Index Tables – ITSC

- Available in two sizes with 4, 6 or 8 positions.
- Available in clockwise or counter clockwise (ending -A).
- High torque
- Suitable for heavy loads.
- Thru-hole for cables and hoses.
- We recommend the use of exhaust flow controls (not included) to achieve the desired speed. See page 801.
- Shock absorbers and cam crown for ITSC-45.. are recommended for dissipating kinetic energy and are not included.



ITSC-16... with sensor



ITSC-45... with shock absorber

Clockwise	Part#	ITSC-164	ITSC-166	ITSC-168	ITSC-454	ITSC-456	ITSC-458
	Quick#	6155	6157	6159	6161	6163	6165
Counter-clock	Part#	ITSC-164A	ITSC-166A	ITSC-168A	ITSC-454A	ITSC-456A	ITSC-458A
	Quick#	6156	6158	6160	6162	6164	6166
Price		\$489.00	\$489.00	\$489.00	\$1,067.00	\$1,067.00	\$1,067.00
Swiveling angle		4x90°	6x60°	8x45°	4x90°	6x60°	8x45°
Weight		320g	320g	320g	3900g	3900g	3900g
Medium		Filtered lubricated / non lubricated compressed					
Pressure range		36–116 psi					
Air consumption		8 cm ³ x 90°	7 cm ³ x 60°	7 cm ³ x 45°	159 cm ³ x 90°	146 cm ³ x 60°	136 cm ³ x 45°
Indexing time without load		0.10s x 90°	0.08s x 60°	0.06s x 45°	0.15s x 90°	0.12s x 60°	0.09s x 45°
Theoretical torque at 87 psi		12 in-lbf	15 in-lbf	16 in-lbf	203 in-lbf	234 in-lbf	250 in-lbf
Angular precision		±0.12°					
Positioning repeatability (360°)		±0.02°					
Shock absorber		-	-	-	6167	6167	6177
Cam crown		-	-	-	6168	6169	6170

Shock-absorbers: Accessories for ITSC...45... are available to dissipate kinetic energy by means of one or two shock-absorbers. They allow shorter indexing times. Dimensional drawings for these parts can be found on our website by searching by quick number.



Part#	ITSC-45-DE	ITSC-45-S4	ITSC-45-S6	ITSC-45-S8
Quick#	6167	6168	6169	6170
Description	shock absorber with housing	4-cam crown	6-cam crown	8-cam crown
Weight	290g	90g	105g	120g
To use on:	ITSC-45...	ITSC-454, ITSC-454-A	ITSC-456, ITSC-456-A	ITSC-458, ITSC-458-A
Price	\$363.00	\$72.28	\$72.28	\$72.28

Sensors: The operating position can be checked by sensors (optional). These sensors will detect the magnets on the pistons inside. Therefore a near large mass of ferromagnetic material or intense magnetic fields may cause sensing troubles.

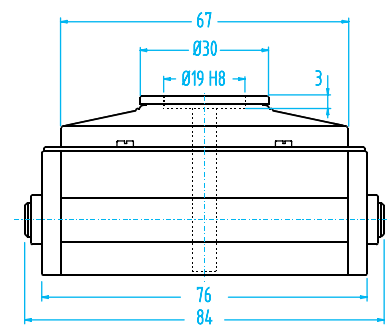
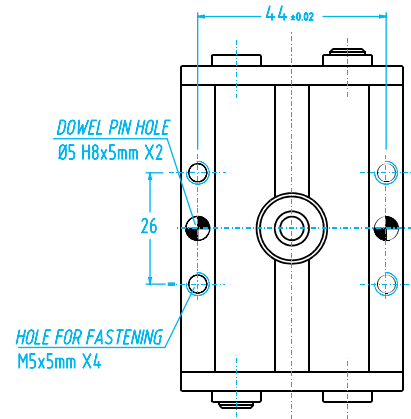
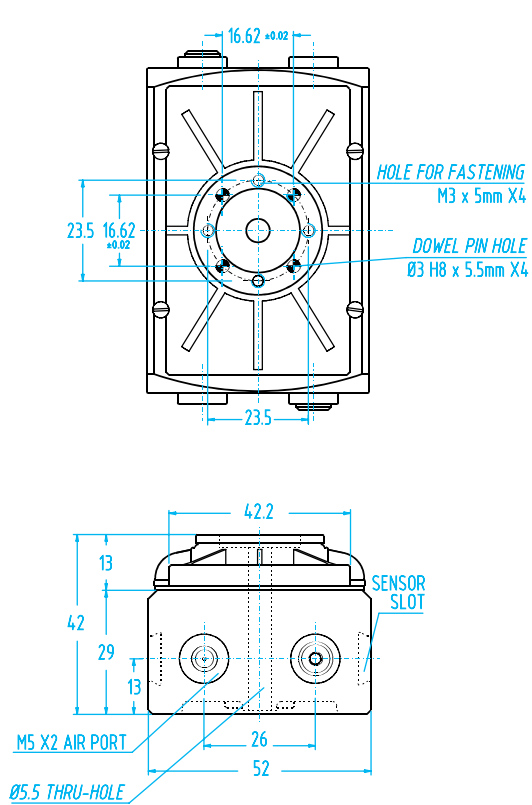
Quick#	Part#	Signal	Description	Price
6126	CB3N2-G	PNP	3 Wire CB Style REED w/ M8 Connection	\$22.88
1794	CB3M2-G	NPN		\$22.88

See page 1003 for more information about CB3.. sensors

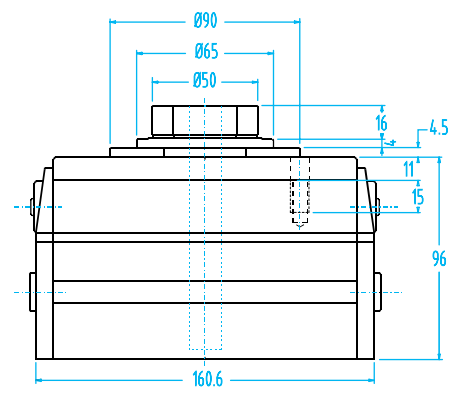
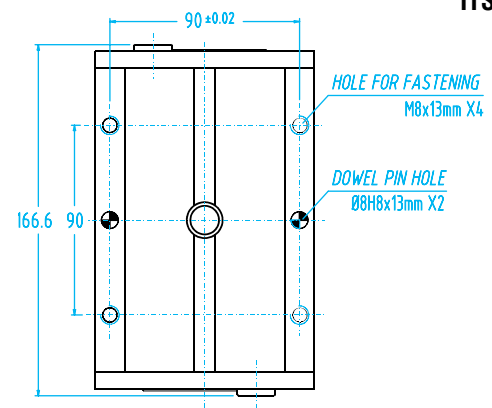
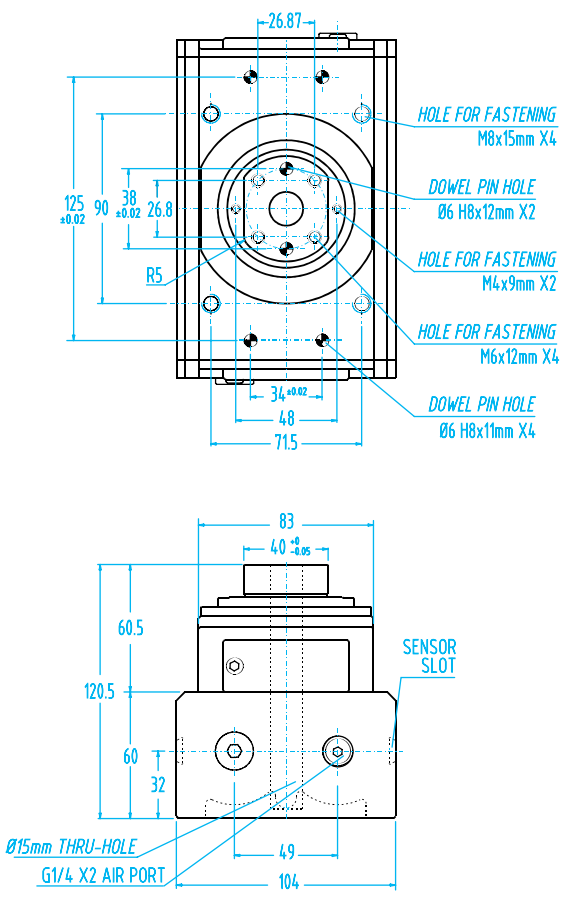
For more information see www.EMlcorp.com

Index Tables – ITSC

(Dimensioned drawing reduced to fit)



ITSC-16...



ITSC-45...

Harmo® Rotary Actuators – Shaft Style

- Low-profile, high-torque from elliptical position.
- Separate cushion, angle, and backlash adjustments.
- Sensor ready.
- Air connections are M5 - Full dimensional drawings found online.



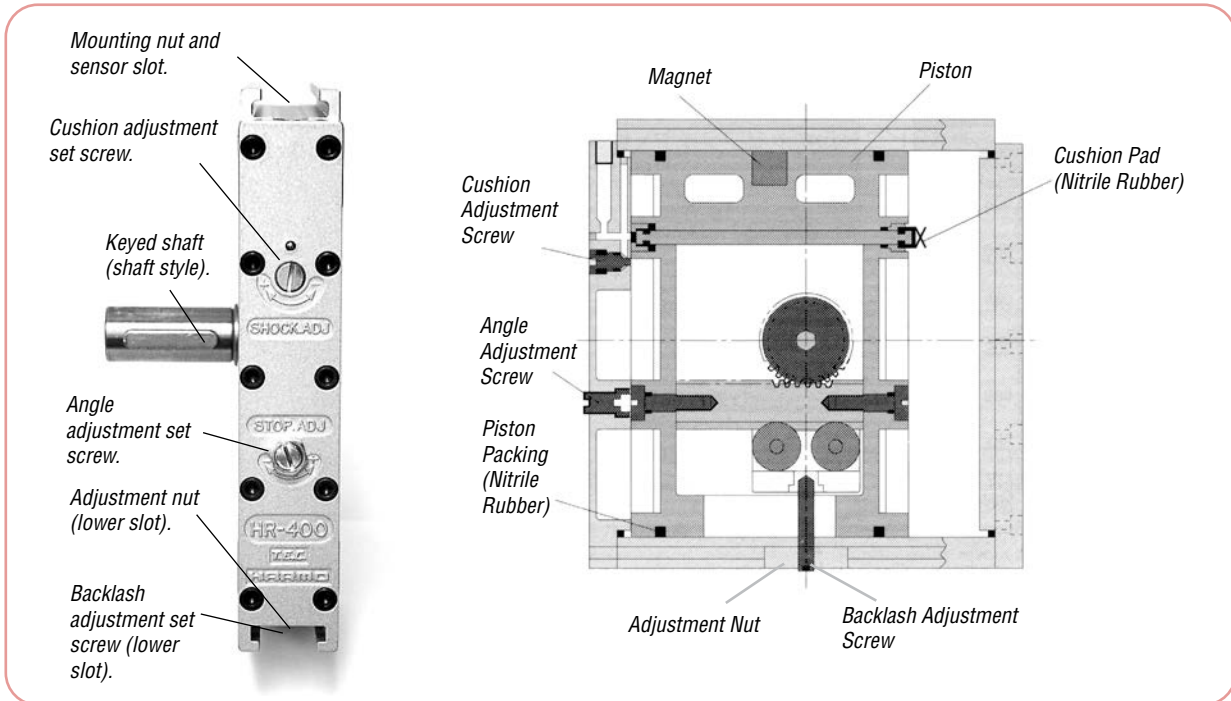
Harmo Rotary Actuators - Shaft Style

Quick#	Part#	Rotation	Torque	Allowable Radial Load (lbf)	Allowable Thrust Load (lbf)	Weight	Price
1105	GSG-HR200-90	0–90°–95°	16.8 in-lb	5.96	5.96	400g	\$355.00
1106	GSG-HR400-90	0–90°–95°	52.8 in-lb	10.14	5.96	850g	\$360.00
722	GSG-HR400-180	0–180°–185°	52.8 in-lb	10.14	5.96	1050g	\$390.01
Order Sensors Separately							
6126	CB3N2G	PNP, 3-Wire CB Style Sensor with M8 Connector					\$22.00
1794	CB3M2G	NPN, 3-Wire CB Style Sensor with M8 Connector					\$22.00

Note: Rotary Actuators come with Sensor Adaptor Bracket.

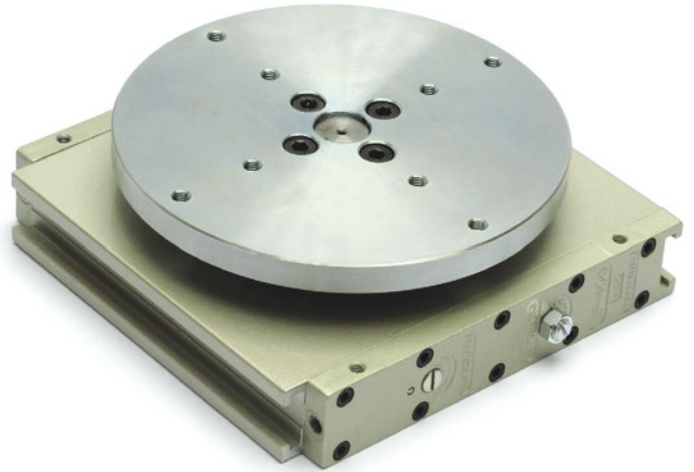
Mounting Nuts (4 per pack - dimensions found online)

Quick#	Part#	Fits Size	Price
725	GSG-HR200-MH	200	\$42.00
726	GSG-HR400-MH	400	\$43.00



Harmo® Rotary Actuators – Disk Style

- Feature ultra-thin size and high power because they utilize a long elliptical piston
- The internal rack and pinion are made of steel for long life and precise operation
- Separate adjustments provide control for cushion, angle, and backlash
- Speed control valves are available
- An internal magnet is standard on all units for sensing
- Air connections are M5 - Full dimensional drawings found online.



Harmo Rotary Actuators - Disk Style

Quick#	Part#	Rotation	Torque	Allowable Radial Load (lbf)	Allowable Thrust Load (lbf)	Weight	Price
723	GSG-HR200-90D	0-90°-95°	16.8 in-lb	5.96	5.96	600g	\$443.00
1109	GSG-HR400-90D	0-90°-95°	52.8 in-lb	10.14	5.96	1600g	\$448.00
724	GSG-HR400-180D	0-180°-185°	52.8 in-lb	10.14	5.96	1800g	\$478.01
Order Sensors Separately							
6126	CB3N2-G	PNP, 3-Wire CB Style Sensor with M8 Connector					\$22.00
1794	CB3M2-G	NPN, 3-Wire CB Style Sensor with M8 Connector					\$22.00

Note: Rotary Actuators come with Sensor Adaptor Bracket.

Mounting Nuts (4 per pack - dimensions found online)

Quick#	Part#	Fits Size	Price
725	GSG-HR200-MH	200	\$42.00
726	GSG-HR400-MH	400	\$43.00

*Fittings Available
on page 1043*



Nipper Overview

Gimatic with Sensors p.826



Gimatic Nippers p.827



Vessel Nippers p.828



Swanstrom Nippers p.829



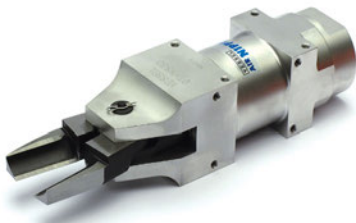
Nile Nippers p.830



OEM Nippers p.831



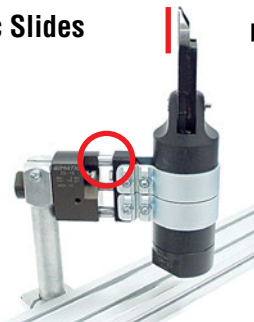
Surface Mount Nippers p.850



Mounting Brackets p.832



Gimatic Slides p.841



Blade Holder p.910



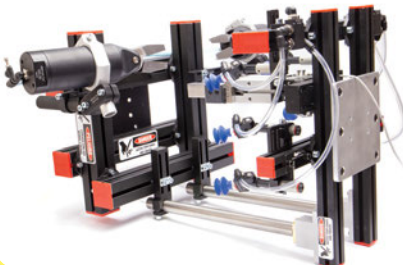
Vessel Slides p.840



Intensifiers p.853



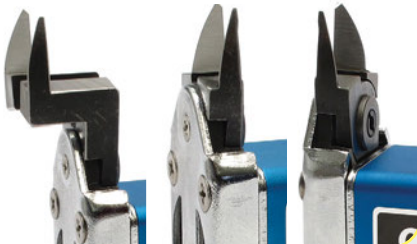
Degating Applications p.854



Blades Swanstrom Tools USA **VESEL AIR NIPPER** **GIMATIC** p.858



Size 5 Size 10 Size 20 Size 30 Size 50

Nipper Overview**Thrust Cut** p.904**Gimatic Square Nippers** p.912**NY Sliding Nippers** p.920**NF Stationary** p.921**NY-S Guided Slide** p.924**NT Sliding Nippers** p.940**NY, NF, NT Blades** p.930**Timing Controller** p.925**Mounting Brackets** p.939**ME Sliding Nippers** p.946**MG Pivoting Nippers** p.950**Hand Nippers** p.936**More Vessel Blades** p.954**Parts** p.959**Resharpener** p.962

Gimatic Nippers

Gimatic® nippers with sensor capability are available in sizes from 5–50 with cutting force from 259 lbf to 1327 lbf. These nipper bodies don't require special blades—use blades interchangeably with Vessel®, Swanstrom®, and Gimatic standard nipper bodies.



Gimatic nipper blades include blade covers for safe handling that can be stored along the profile.



Clamps can be mounted along the length of Gimatic nippers.



Designed for robotic EOAT applications, Gimatic nippers with sensor capability provide the feedback you need for reliable, unattended automation. These nippers can also function as standard nippers by simply not using sensors.

Standard Nipper Bodies

Only EMI brings you such a wide selection of nipper bodies. Although prices and features vary, all are normally in stock. Our EOAT engineers are available to help you choose the best nipper for your application.

GNATIC**VESSEL** AIR NIPPER

**Swanstrom
Tools USA**
nile air tools**OEM Nippers**

Gimatic Nippers – Sensor Version



These Gimatic® nippers have all the features and quality of the Gimatic nippers on the following page, with the additional feature of being capable of providing sensor feedback. These have been specifically designed for robotic EOAT applications to provide the confirmation you need for reliable, unattended automation.

Full list of Replacement Parts found online, search by Quick#. Service Kits for Gimatic Nippers found on page 959.

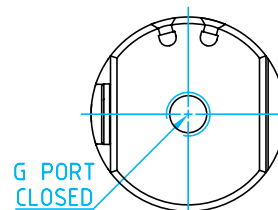
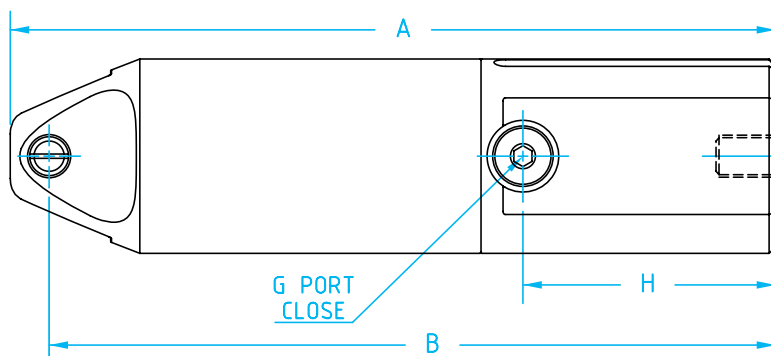
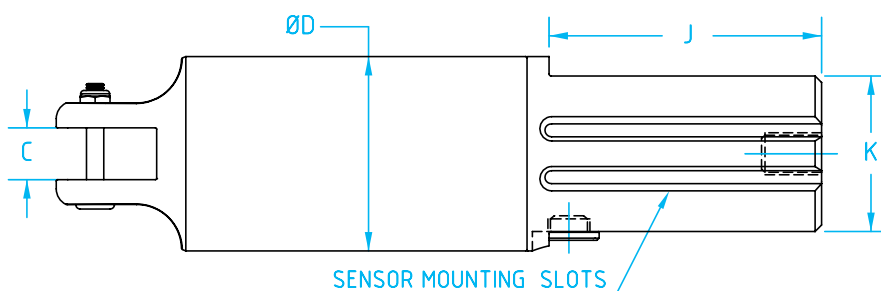
Nippers with Sensor Slots - (Order blades and sensors separately)

Quick#	Part#	Price	Sprue Ø Cut	A	B	C	ØD	G	H	J	K	Cutting Pressure*	Air Consumption	Wt.
1901	GSN-GN-05S	\$193.00	2mm	118	111	7	30	G1/8"	34	40	24	259 lbf	0.85 in ³	125g
1903	GSN-GN-10S	\$206.00	4mm	144	137	12	36	G1/8"	41	46	30	611 lbf	1.53 in ³	210g
1905	GSN-GN-20S	\$237.00	7mm	177	168	12	45	G1/8"	58	63	36	988 lbf	4.76 in ³	360g
1907	GSN-GN-30S	\$251.00	10mm	230	220	17	56	G1/8"	75	80	46	1,327 lbf	10.37 in ³	670g
1909	GSN-GN-50S	\$543.00	12mm	238	229	17	75	G1/8"	70	75	70	1,026 lbf	16.42 in ³	1100g

Order sensors separately * Force when compressed air is supplied at 87psi.

1882	SS4N225G	\$27.20	PNP	3-wire SS Style with 2.5m lead, 6–24vdc										
6282	SS3N203G	\$31.16	PNP	3-wire SS Style with 0.3m lead and M8 connector*, 6–24vdc										
1883	SS4M225G	\$27.20	NPN	3-wire SS Style with 2.5m lead, 6–24vdc										
1884	SS3M203G	\$31.16	NPN	3-wire SS Style with 0.3m lead and M8 connector*, 6–24vdc										

(* M8 Extension cables Quick#'s 2582 & 2583 available on page 987



Order blades on pages 858–902.

Gimatic Nippers – Non-Sensor Version



Gimatic applies their pneumatic technology in grippers to make nipper bodies for plastic degating applications. The Gimatic GN series round body nippers have higher cutting force ratings compared to similarly sized units. This means a smaller nipper can often be applied minimizing space, weight, and cost.

Full list of Replacement Parts found online, search by Quick#. Service Kits for Gimatic Nippers found on page 959.



Fittings Available on page 1043

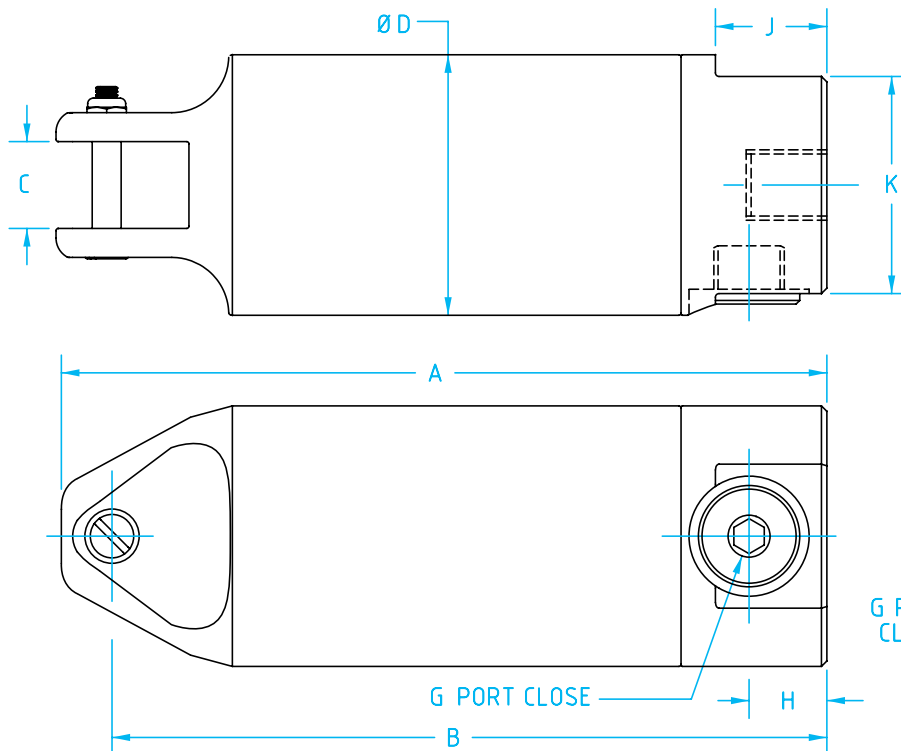


Nippers - (Order blades separately)

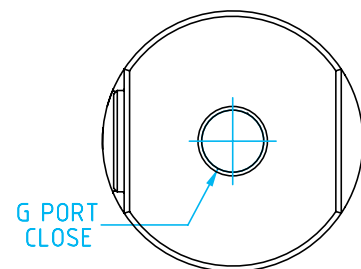
Quick#	Part#	Price	Sprue Ø Cut	A	B	C	ØD	G	H	J	K	Cutting Pressure*	Air Consumption	Wt.
1900	GSN-GN-05	\$177.00	2mm	94	87	7	30	G1/8"	11	15	24	259 lbf	0.85 in ³	103g
1902	GSN-GN-10	\$182.00	4mm	113	106	12	36	G1/8"	11	15	30	611 lbf	1.53 in ³	158g
1904	GSN-GN-20	\$192.00	7mm	129	120	12	45	G1/8"	11	15	36	988 lbf	4.76 in ³	264g
1906	GSN-GN-30	\$203.00	10mm	165	155	17	56	G1/8"	11	15	46	1,327 lbf	10.37 in ³	476g
1908	GSN-GN-50	\$473.00	12mm	178	169	17	75	G1/8"	11	15	70	1,026 lbf	16.42 in ³	1099g

* Force when compressed air is supplied at 87psi.

Use Quick#s for easy online ordering.



Order blades on pages 858-902.



Vessel Nippers

VESSEL® AIR NIPPER



Vessel® nippers are top quality and perform reliably. The nipper body housings are made of aluminum, and are lighter than comparable nippers. Vessel nippers have two available input ports for compressed air. Use one while the other is plugged. Vessel nippers also have bottom mounting holes for mounting options. A wide variety of mounting clamps are available starting on page 832.

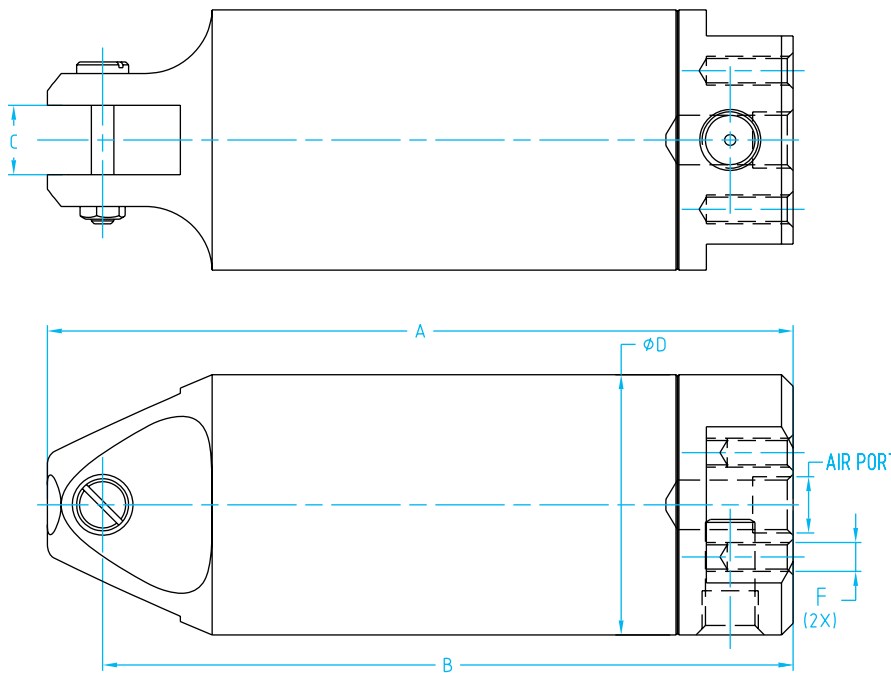
Full list of Replacement Parts found online, search by Quick#.

Standard Nippers - (Order blades separately)

Quick#	Part#	Model	Price	Sprue Ø Cut	A	ØD	B	C	E	F	Cutting Pressure*	Working Air Pressure	Air Port	Weight
601	GSN-NR5	GT-NR5	\$188.00	2mm	94	30	87	7	20	M4x10	88 lbf	57–71 psi	R1/8"	100g
603	GSN-NR10L	GT-NR10L	\$227.00	4mm	113	36	106	12	24	M4x10	132 lbf	57–85 psi	R1/8"	160g
606	GSN-NR20	GT-NR20	\$272.00	7mm	129	45	120	12	30	M5x12	308 lbf	71–85 psi	R1/8"	280g
611	GSN-NR30	GT-NR30	\$327.00	10mm	165	56	155	17	40	M6x12	617 lbf	71–85 psi	R1/8"	510g
699	GSN-NR50	GT-NR50	\$896.00	12mm	222	75	207	25.2	50	M6x12	1058 lbf	71–85 psi	R1/4"	1200g

Vessel Size 50 take select # of blades.
Please contact an EMI Engineer

* Force when compressed air is supplied at recommended psi.



Note: Rotating endcap can change the orientation of the air inlet port.

Swanstrom Nippers



Swanstrom® nippers are top quality and perform reliably. The nipper body housings are made of aluminum, and are lighter than comparable nippers. Swanstrom nippers have two available input ports for compressed air. Use one while the other is plugged.

These are a very nice “Made in the USA” nipper alternative at a competitive price.

Full list of Replacement Parts found online, search by Quick#.



Fittings Available on page 1043



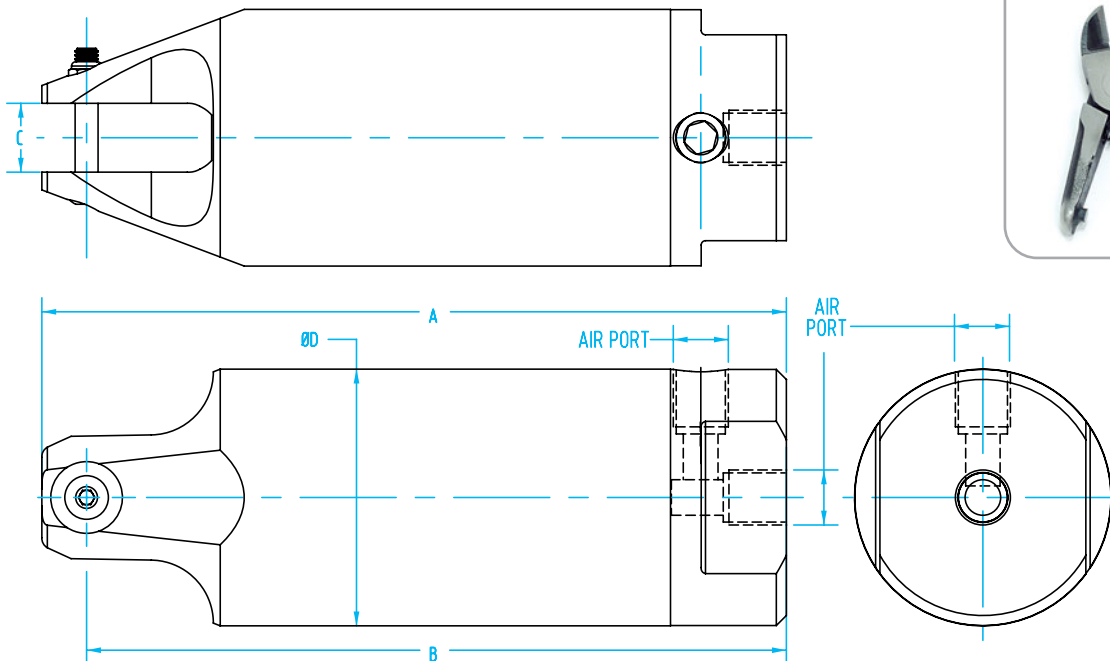
Swanstrom Standard Nippers - (Order blades separately)

Quick#	Part#	Price	Sprue Ø Cut	A	ØD	B	C	Cutting Pressure*	Working Air Pressure	Air Port	Weight
5041	SPT-05R	\$223.00	2mm	95	30	90	7	88 lbf	57–71 psi	G1/8"	106g
5042	SPT-10R	\$248.00	4mm	114	36	110	12	132 lbf	57–85 psi	G1/8"	162g
5043	SPT-20R	\$265.00	7mm	130	45	126	12	308 lbf	71–85 psi	G1/8"	272g
5045	SPT-30R	\$288.00	10mm	166	56	163	17	617 lbf	71–85 psi	G1/8"	508g
5046	SPT-50R	\$628.00	12mm	171	75	170	17	1058 lbf	71–85 psi	NPT1/4"	896g

* Force when compressed air is supplied at recommended psi.

Use Quick#s for easy online ordering.

Order blades on pages 858–902.



Note: Rotating endcap can change the orientation of the air inlet port.

Nile Nippers



Nile® nippers are good quality and perform reliably. The nipper body housings are cast metal, and are therefore heavier than comparable aluminum nippers. Nile nippers only have one input port for compressed air, and no bottom mounting holes. Nipper holding clamps fit Nile, Vessel®, etc. interchangeably.

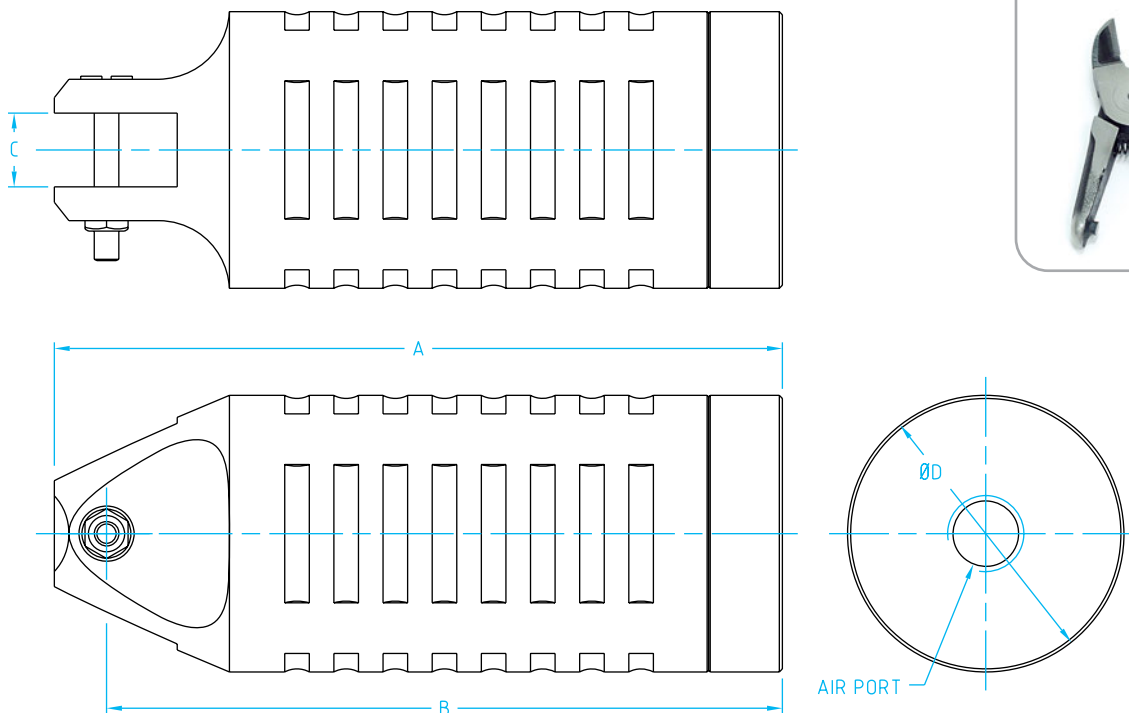
Nippers - (Order blades separately)

Quick#	Part#	Price	Sprue Ø Cut	A	B	C	ØD	Cutting Pressure*	Working Air Pressure	Port (Female)	Weight
1564	GSN-MR-10M	\$99.00	4mm	124	106	12	36	132 lbf	57–85 psi	G1/4"	200g
1565	GSN-MR-20M	\$114.00	7mm	140	120	12	45	308 lbf	71–85 psi	G1/4"	340g
1566	GSN-MR-30AM	\$148.00	10mm	176	155	17	56	617 lbf	71–85 psi	G1/4"	520g
1567	GSN-MR-50FM	\$433.00	12mm	176	165	17	75	1058 lbf	71–85 psi	G1/4"	1290g

* Force when compressed air is supplied at recommended psi.

Use Quick#s for easy online ordering.

Order blades on pages 858–902.



OEM Nippers

OEM Nippers

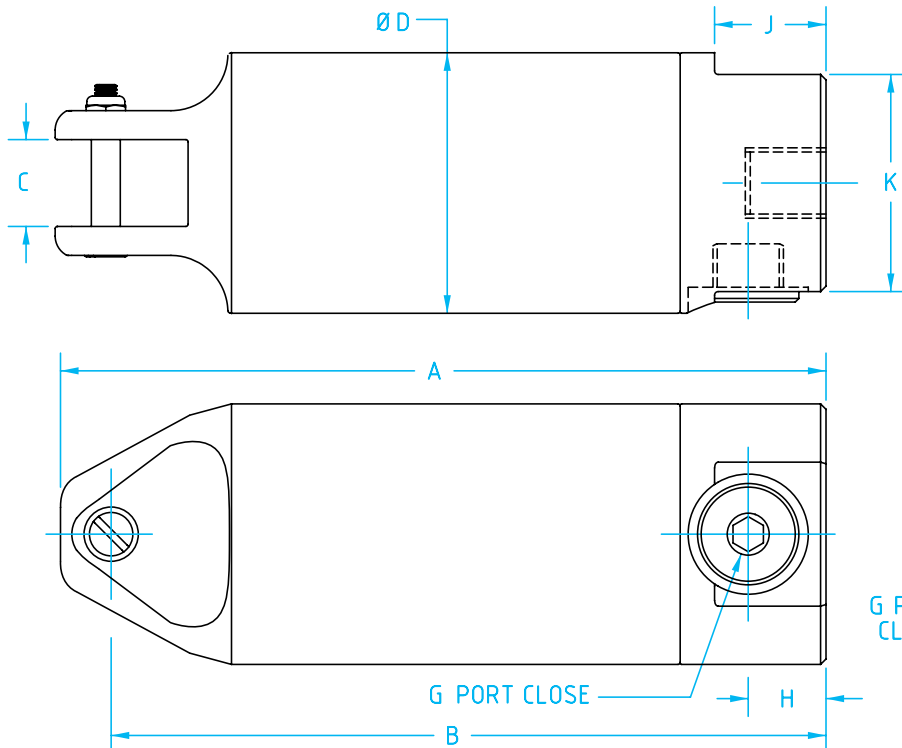
OEM® nippers are good quality and perform reliably. The new style nipper body housings are aluminum, making them lighter than the previous bodies. OEM nippers only have one input port for compressed air. Nipper holding clamps fit OEM, Nile®, Vessel®, etc. interchangeably. This is a great low-cost alternative to any of the nipper brands. Note: there are no brand logos on the bodies making them ideal for contract builders.



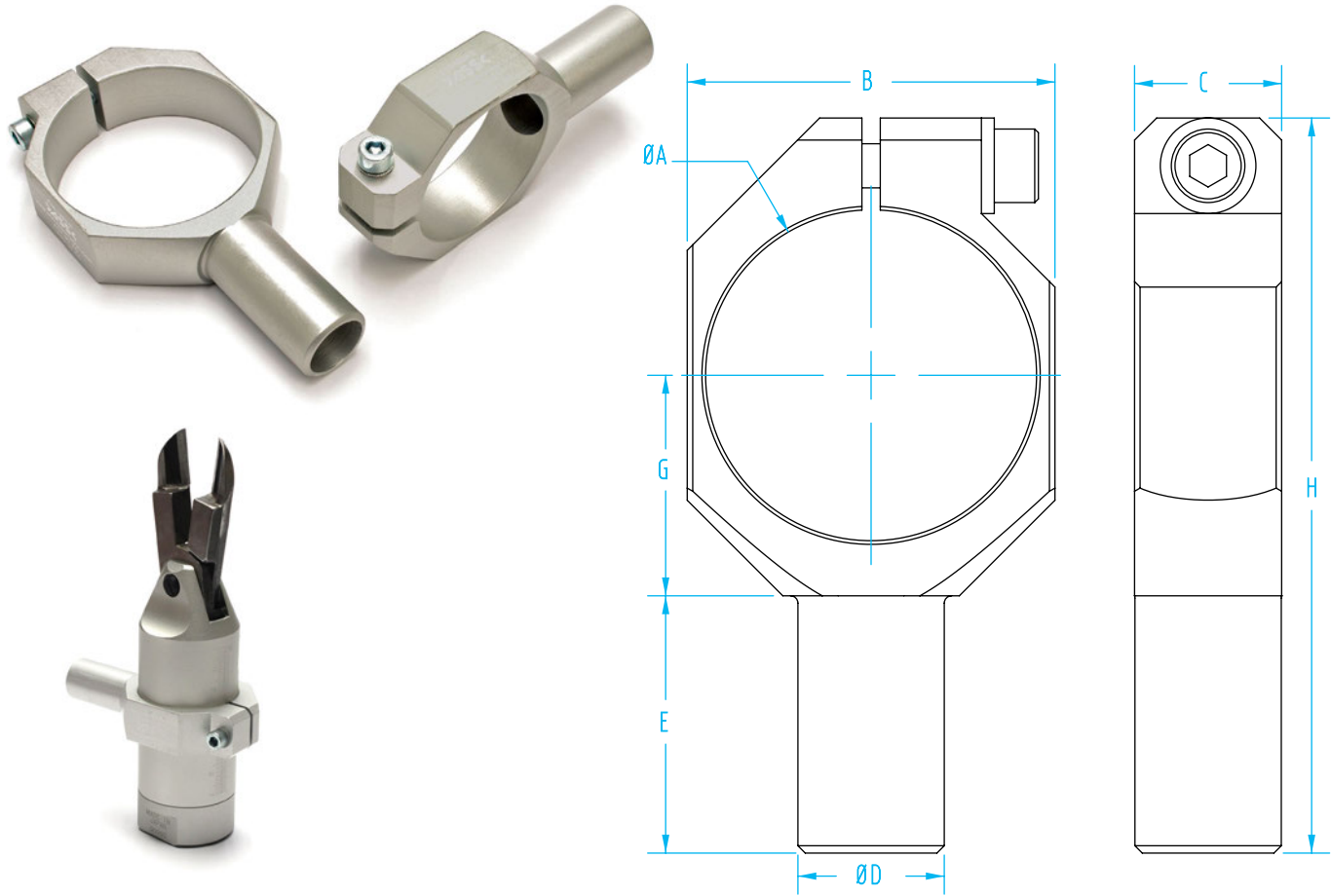
OEM Nippers - (Order blades separately)

Quick#	Part#	Price	Sprue Ø Cut	A	B	C	ØD	G	H	J	K	Cutting Pressure*	Air Consumption	Wt.
311	GNG-05	\$82.00	2mm	94	87	7	30	G1/8"	11	15	24	258 lbf	0.85 in ³	100g
312	GNG-10	\$93.00	4mm	113	106	12	36	G1/8"	11	15	30	609 lbf	1.53 in ³	160g
313	GNG-20	\$103.00	7mm	129	120	12	45	G1/8"	11	15	36	986 lbf	4.76 in ³	267g
314	GNG-30	\$139.00	10mm	165	155	17	56	G1/8"	11	15	46	1,325 lbf	10.37 in ³	480g

* Force when compressed air is supplied at 87psi.



Nipper Mounting Brackets



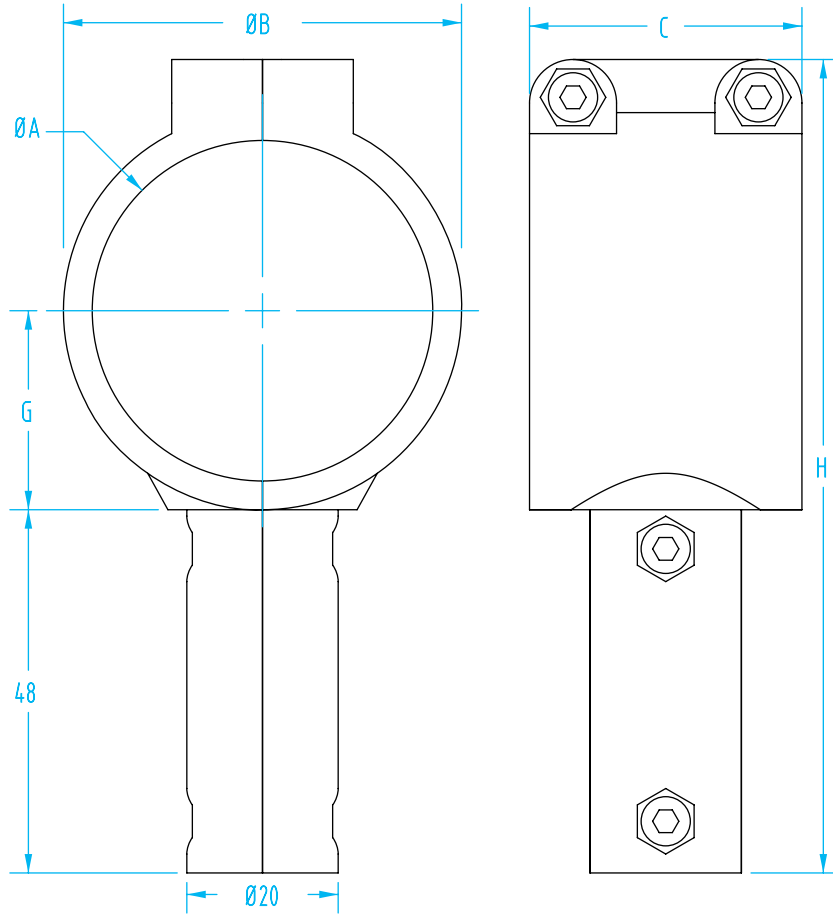
Nipper Mounting Brackets

Quick#	Part#	Price	>ASS< #	Use with Nipper	ØA	B	C	D	E	G	H	Wt.
3346	ASZ-KS10	\$44.63	1-640-31-00	size 10 bodies	36	40	15	14	25	22	76	56g
3347	ASZ-KS20	\$45.68	1-640-34-00	size 20 bodies	45	50	20	20	35	30	100	69g
3348	ASZ-KS30	\$49.88	1-640-37-00	size 30 bodies	56	60	20	20	40	35	115	79g
3349	ASZ-KS50	\$59.33	1-640-40-00	size 50 bodies	75	85	20	20	55	45	150	158g
6396	MFM-A11	\$71.76	-	size 50 bodies	75	83	40	30	48	41	138	308g

Application Examples



Nipper Mounting Brackets



These nipper mounting clamps are made of glass-filled nylon. They are very strong, yet lightweight and economical. Their Ø20mm stud make them compatible with many profile mounting clamps.

Nipper Mounting Brackets

Quick#	Part#	Price	Use with Nipper	ØA	B	C	G	H	Wt.
6382	MFP-A08	\$6.24	size 05 bodies	30	36	30	18	90	48g
6379	MFP-A05	\$6.76	size 10 bodies	36	43	32	21.5	96.5	54g
6380	MFP-A06	\$9.36	size 20 bodies	45	52.6	36	26.3	107.5	65g
6381	MFP-A07	\$10.19	size 30 bodies	56	64	40	32	118.5	82g

Made of GRP. Includes fasteners.

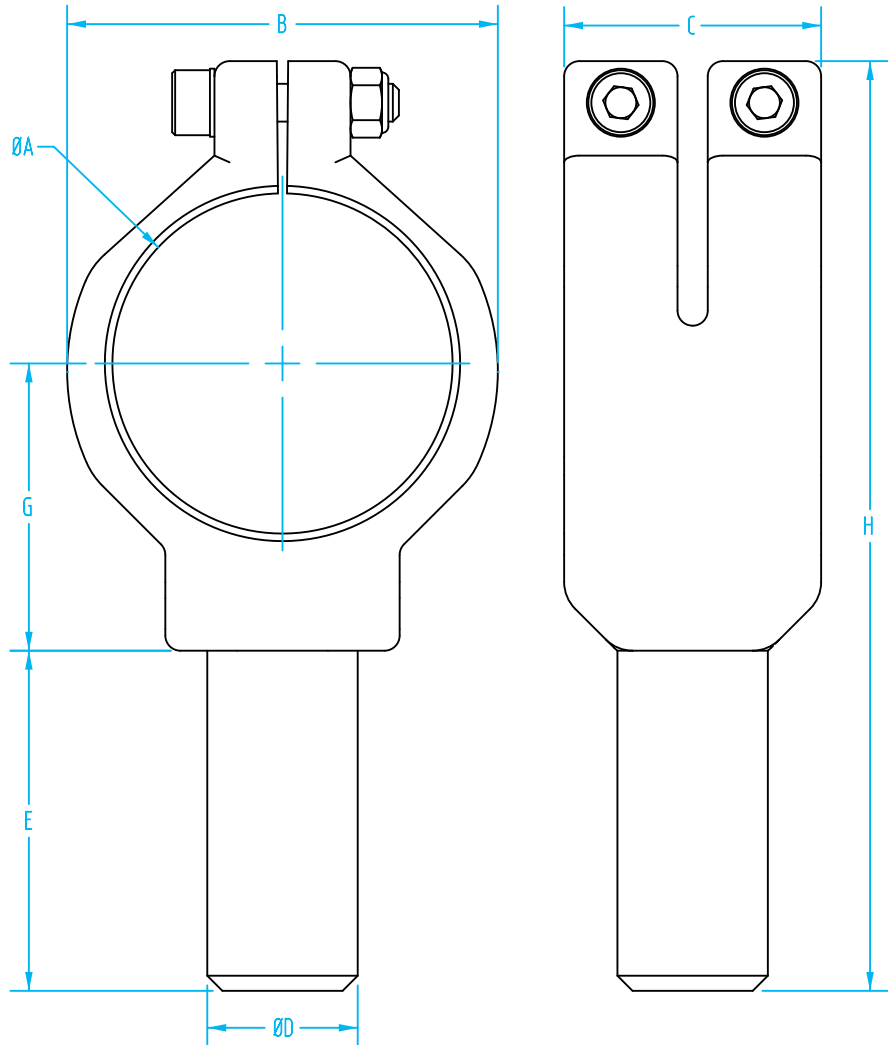
Application Examples



Nipper Mounting Brackets



Lightweight yet strong, the design makes these clamps optimal for use on EOAT. These 3D printed mounting brackets have two integrated clamps, which provides an extra layer of security.



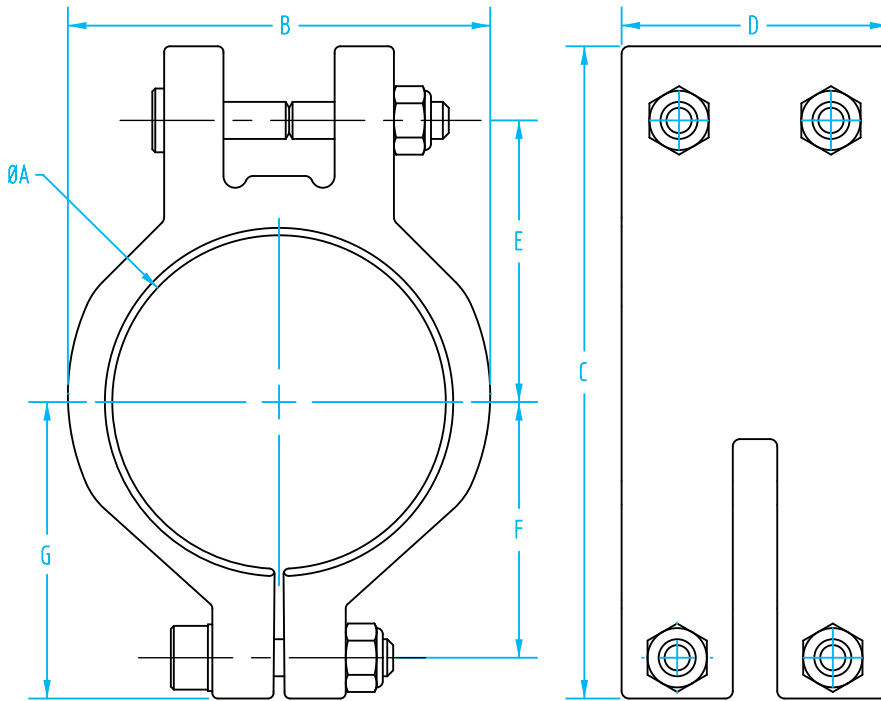
Nipper Mounting Brackets

NEW

Quick#	Part#	Price	Use with Nipper	ØA	B	C	ØD	E	G	H	Wt.
2058	GSN-NMCP-05	\$19.00	size 5 bodies	30	39	36	20	35	28	93	70g
2059	GSN-NMCP-10	\$22.50	size 10 bodies	36	47	36	20	40	33	108	78g
2060	GSN-NMCP-20	\$28.50	size 20 bodies	45	57	36	20	45	38	123	80g
2061	GSN-NMCP-30	\$34.50	size 30 bodies	56	72	36	20	50	43	141	90.4g

Includes fasteners.

Mounting Brackets for ZG Nipper Slides



These new clamps are made to integrate with Gimatic ZG Nipper Slides. After years of implementing 3D printing to enhance custom Degate Applications, these EMI nipper clamps are a part of our Engineers toolbox and now available to you. Like the clamps on page 834, these brackets have two integrated clamps, which provides an extra layer of security.

Mounting Brackets for ZG Nipper Slides

Quick#	Part#	Price	Use with Nipper	ØA	B	C	D	E	F	G	Wt.
2043	GSN-NMC-05	\$20.50	size 5 bodies	30	39	68	36	28	24.5	30	50g
2044	GSN-NMC-10	\$24.00	size 10 bodies	36	47	78	36	33	29.5	35	58g
2045	GSN-NMC-20	\$27.50	size 20 bodies	45	57	88	36	38	34.5	40	70g
2046	GSN-NMC-30	\$32.50	size 30 bodies	56	72	101	36	43	42.5	48	82g

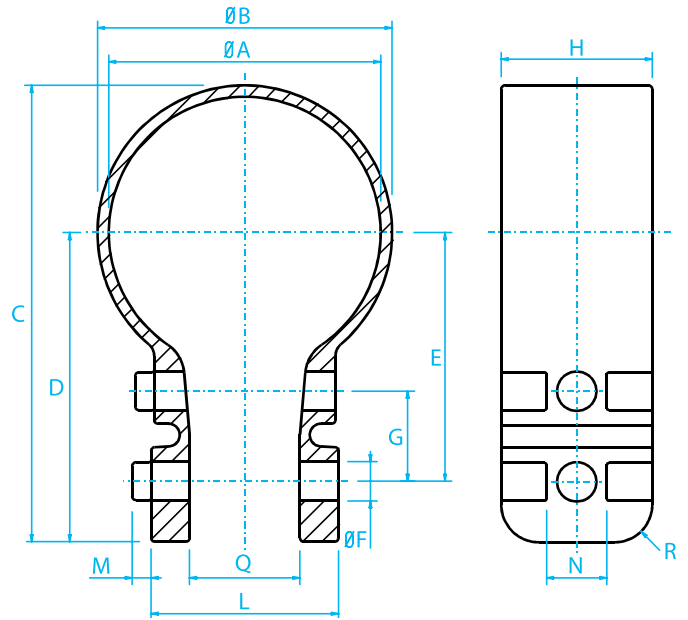
NEW

Includes fasteners.

Application Examples



Nipper Mounting Brackets

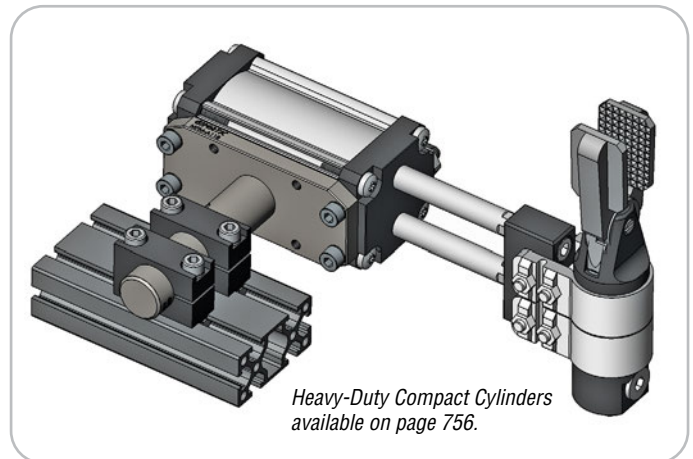


The top screw of these plated steel nipper mounting brackets securely holds the nipper, and the bottom screw securely holds any 15mm mounting hinge. If you loosen one screw to make an adjustment, the other screw maintains its secure clamp.

Nipper Mounting Brackets

Quick#	Part#	Price	Use with Nipper	ØA	ØB	C	D	E	ØF	G	H	L	M	N	Q	R	Wt.
6370	MFM-A30	\$17.37	size 5 bodies	30	33	55	38.5	30.5	5.2	12	20	25	2.5	8	15	5	69g
6371	MFM-A36	\$21.84	size 10 bodies	36	39	60.5	41	33	5.2	12	20	25	2.5	8	15	5	75g
6372	MFM-A45	\$23.61	size 20 bodies	45	48	70	46	38	5.2	12	20	25	2.5	8	15	5	80g
6373	MFM-A56	\$26.42	size 30 bodies	56	60	83.5	53.5	45.5	5.2	12	20	25	2.5	8	15	5	102g

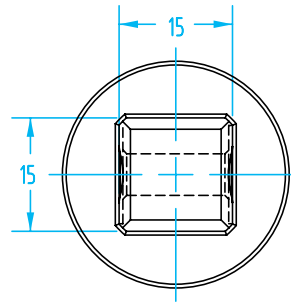
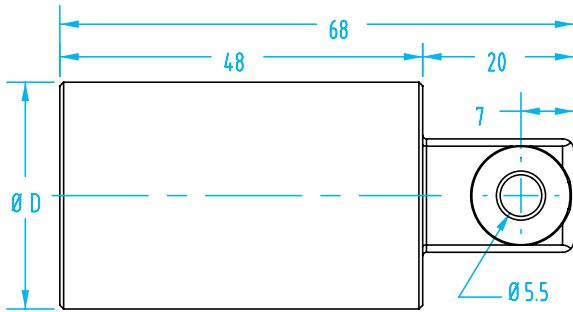
Includes fasteners.



Heavy-Duty Compact Cylinders available on page 756.

Nipper Mounting Posts

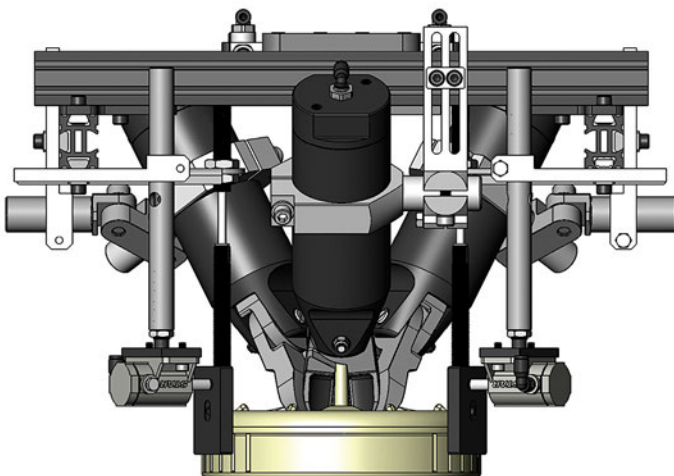
(Dimensioned drawing shown full scale)



Nipper Mounting Post

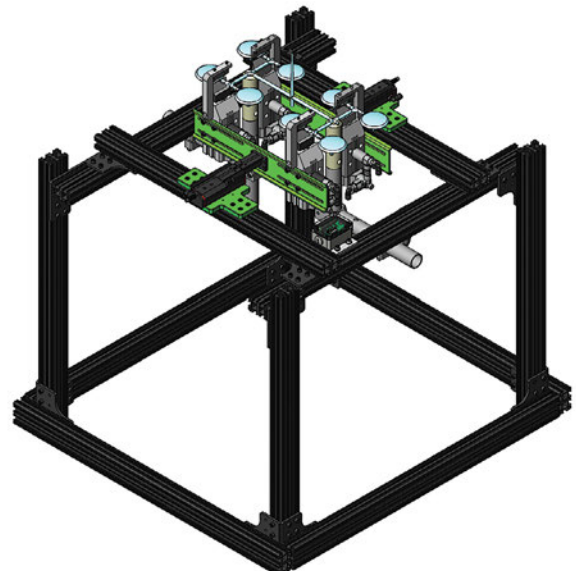
Quick#	Part#	Price	ØD	Wt.
6400	MFM-A17	\$30.06	20mm	56g
6401	MFM-A18	\$33.18	30mm	82g

Degating on the EOAT



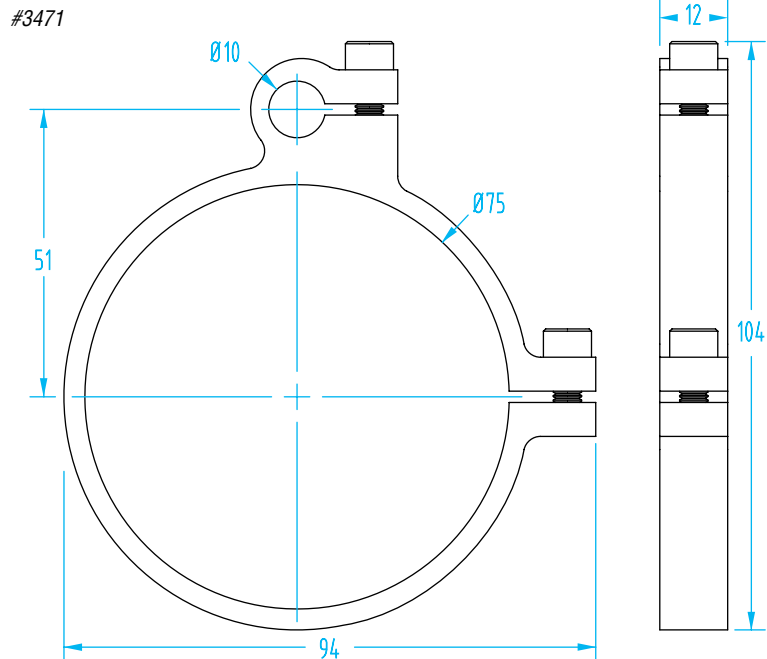
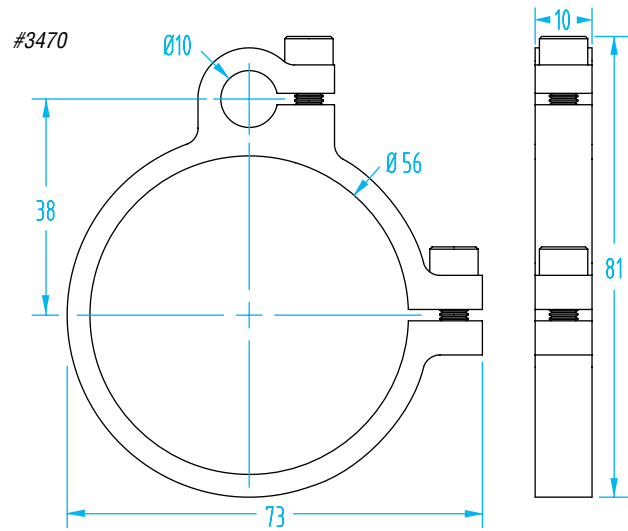
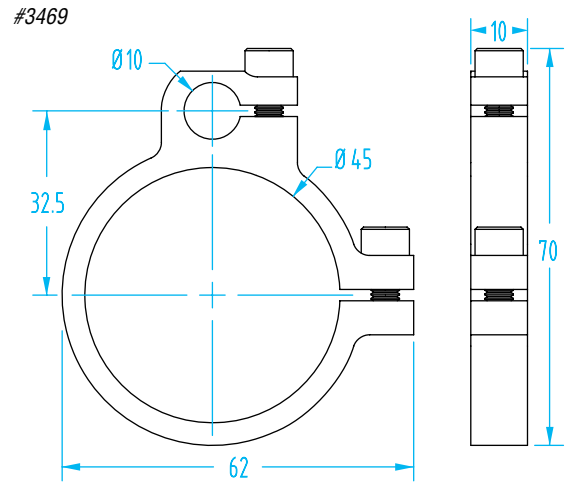
Call EMI for All Your Degating Applications

Stand-Alone Degating Stations



Nipper Mounting Clamps

(Dimensioned drawings shown 3/4 scale)



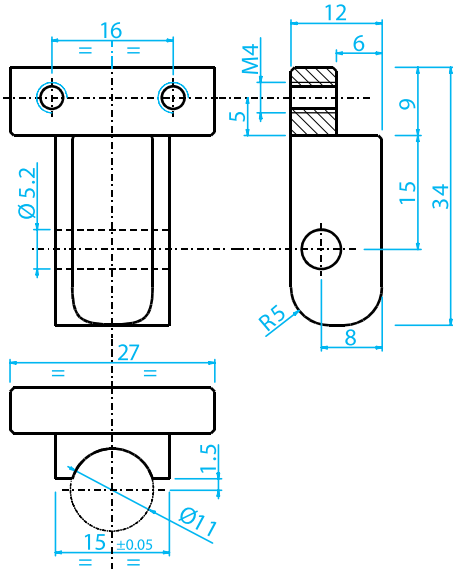
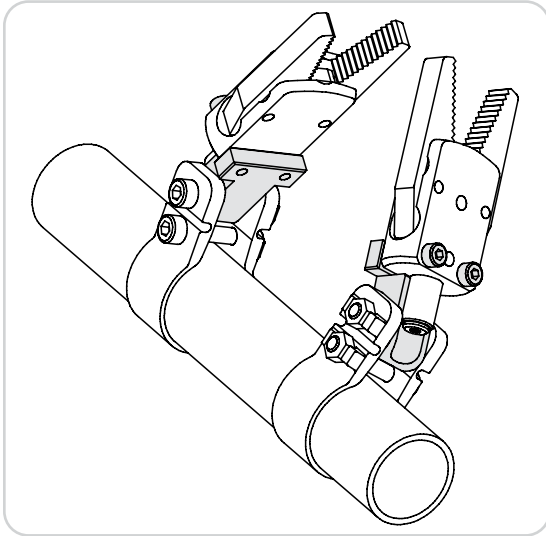
Nipper / Gripper Combination Clamp

Quick#	Part#	>ASS< #	Use with Nipper	Price	Wt.
3469	ASZ-KA20	1-640-13-00	size 20 bodies	\$67.73	32g
3470	ASZ-KA30	1-640-16-00	size 30 bodies	\$86.10	36g
3471	ASZ-KA50	1-640-19-00	size 50 bodies	\$92.40	42g



Gripper Adaptor Mount

(Dimensioned drawing shown full scale)



Mounting Bracket for Mini Grippers

Quick#	Part#	Price	Use with:	Wt.
6421	MFM-A57	\$37.75	Gimatic PB Grippers >ASS< GRZ-10-12 Grippers	25g

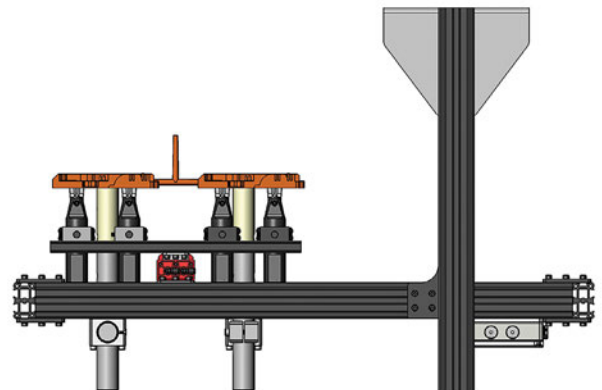
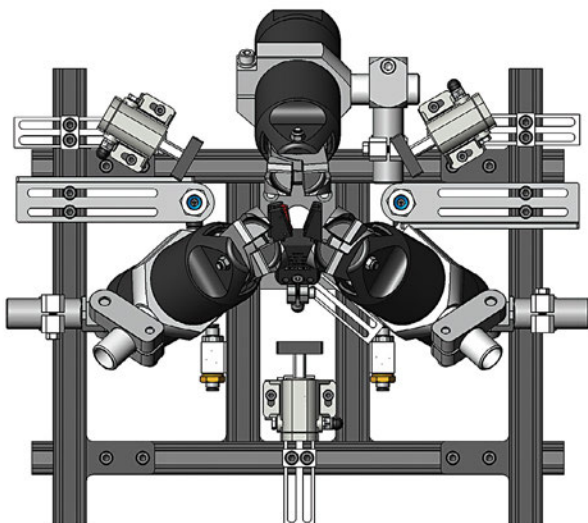
Includes fasteners.

See page 430 for Gimatic PB Grippers.

See page 476 for >ASS< GRZ-10-12 Grippers.

Call EMI for All Your Degating Applications

Robot Beam-Mounted Degating Stations



Vessel Nipper Slides

These models combine the strong nipper cutting capability of NS bodies with a linear slide and an air cylinder. Their upright, fixed right-angle make them convenient for use on separate degating stations. Inline blades (ordered separately) such as AJ and AJL are typically used with these nipper slide systems.



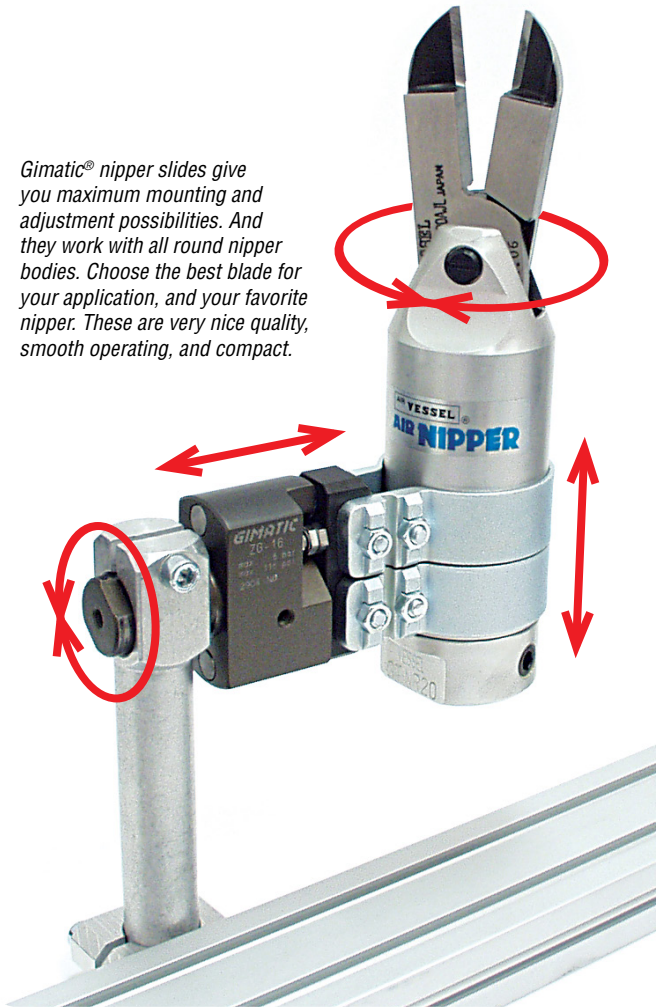
Large Sliding Nippers

Quick#	Part#	Action	Stroke	Includes nipper body:	Cutting force	Price
2315	GSN-NB10LLW-10SM	Push	10mm	NS-10L	132 lbf	\$611.00
2316	GSN-NB10LLW-10TM	Pull				\$611.00
2317	GSN-NB20LW-10SM	Push	10mm	NS-20	309 lbf	\$639.00
2063	GSN-NB20LW-10TM	Pull				\$639.00
2318	GSN-NB30LW-10SM	Push	10mm	NS-30	617 lbf	\$807.00
2319	GSN-NB30LW-10TM	Pull				\$807.00

Order blades on pages 858–890.

Gimatic Nipper Slides

Gimatic® nipper slides give you maximum mounting and adjustment possibilities. And they work with all round nipper bodies. Choose the best blade for your application, and your favorite nipper. These are very nice quality, smooth operating, and compact.



These are the best slide nipper combinations available. They combine the strong cutting capability of the round-type nipper bodies with a slide actuator. The slides fit nipper bodies from size 05–30. They all have an adjustable stroke from 0–10mm. They are available in normally open and normally closed. All can be made double-acting by removing the internal spring, or use the spring in combination with the standard double acting porting to boost pressure. They are available as a sensor slot version, or non-sensor version. To provide maximum mounting possibilities the clampable bodies are Ø20mm and Ø30mm to fit standard mounting clamps.

When angled blades are required, use one clamp and adjust the angle as necessary. This configuration is very strong and won't slip. (Single clamp configuration is only recommended for sizes 5 & 10.)



Cost Comparison

ZG Slide	Price	Nipper Body	Price	Clamp Brackets (2)	Cutting Force	Total Price
ZG-16	\$203.00	GN-05	\$177.00	\$34.74	259 lbf	\$414.74
ZG-16	\$203.00	GN-10	\$182.00	\$43.68	611 lbf	\$428.68
ZG-25	\$257.00	GN-20	\$192.00	\$47.22	988 lbf	\$496.22
ZG-25	\$257.00	GN-30	\$203.00	\$52.84	1,327 lbf	\$512.84

Order Blades Separately. Try new brackets on page 835 for a more cost effective solution.

ZG-16 with size 05 Nipper



ZG-16 with size 10 Nipper



ZG-16 with size 20 Nipper



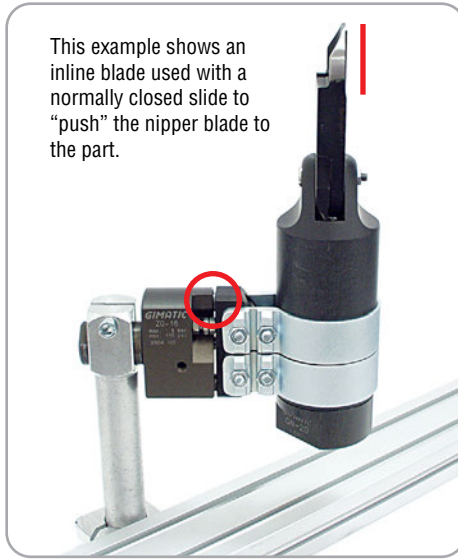
ZG-25 with size 30 Nipper



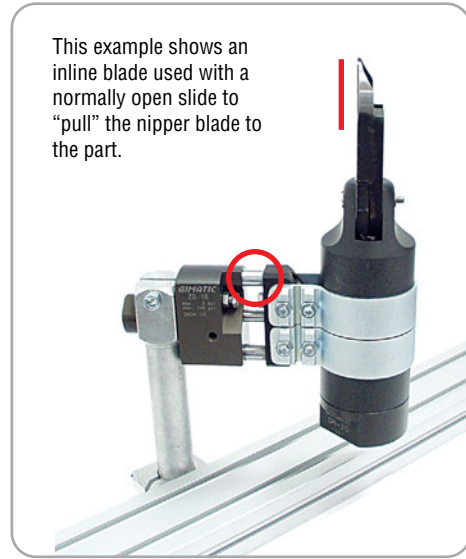
Nipper Slide Examples

**Ideal for
Robotic EOAT
Applications.**

This example shows an inline blade used with a normally closed slide to “push” the nipper blade to the part.



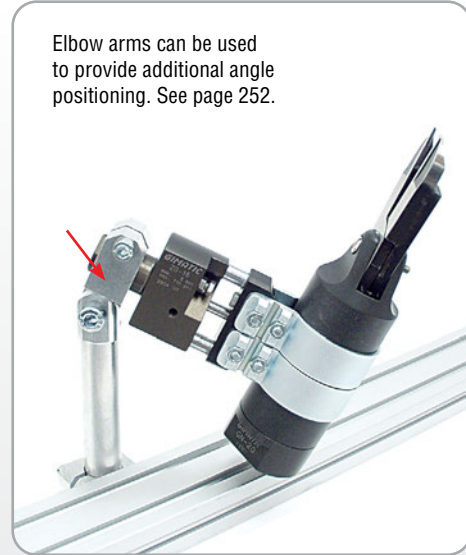
This example shows an inline blade used with a normally open slide to “pull” the nipper blade to the part.



Angle arms can be used to provide angle positioning around the slide’s clampable body. See page 254.

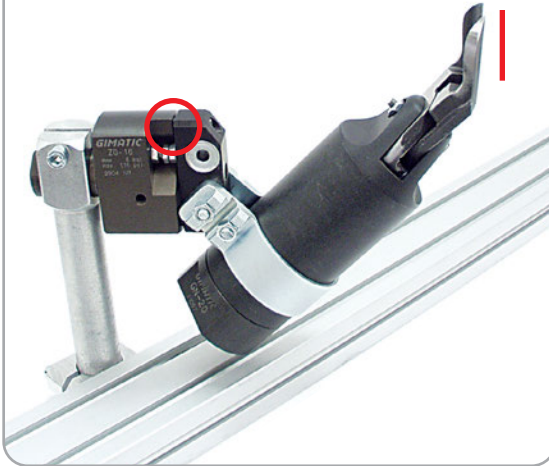


Elbow arms can be used to provide additional angle positioning. See page 252.

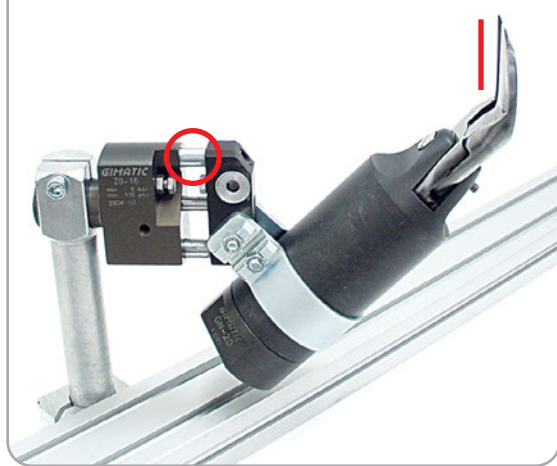


Nipper Slide Examples

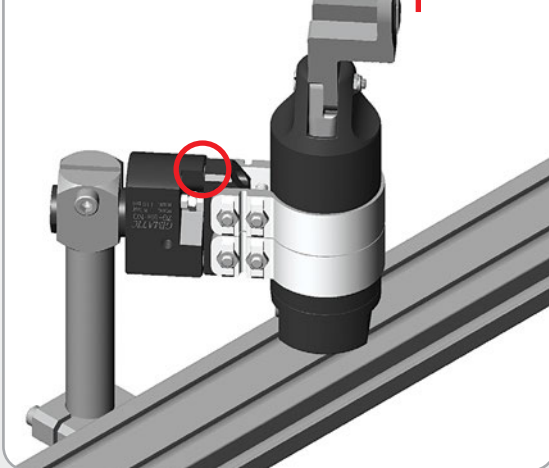
This example shows a deep angle blade used with a normally closed slide to “push” the nipper blade to the part.



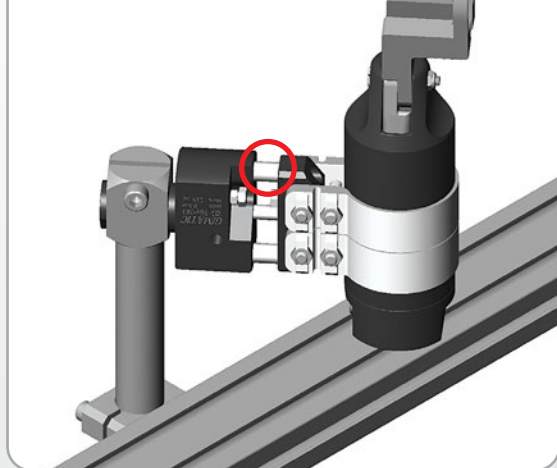
This example shows an reverse angle blade used with a normally open slide to “pull” the nipper blade to the part.



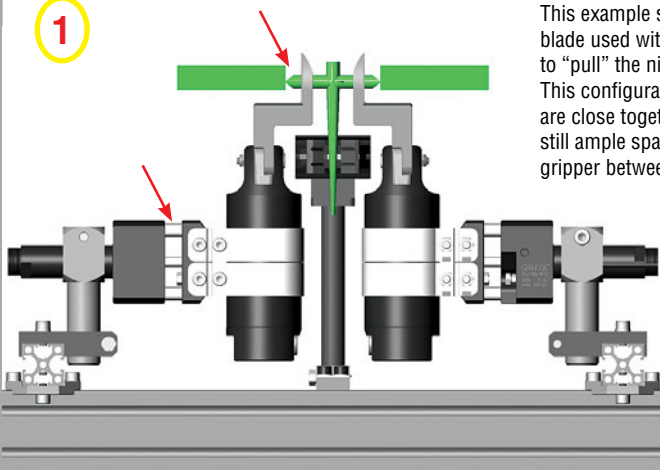
This example shows an offset blade used with a normally closed slide to “push” the nipper blade to the part.



This example shows an offset-reverse blade used with a normally open slide to “pull” the nipper blade to the part.

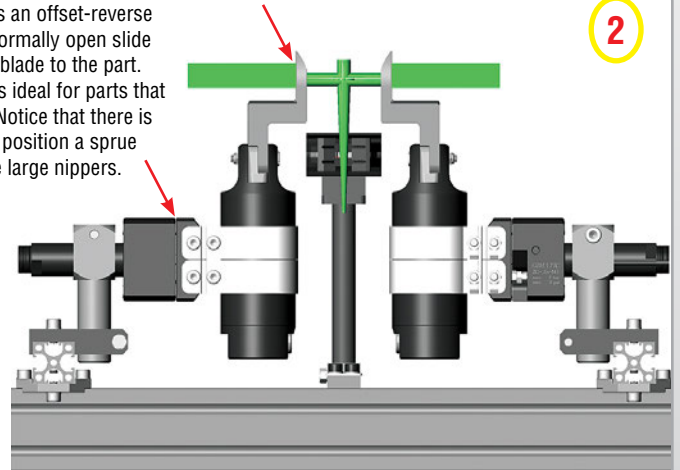


1



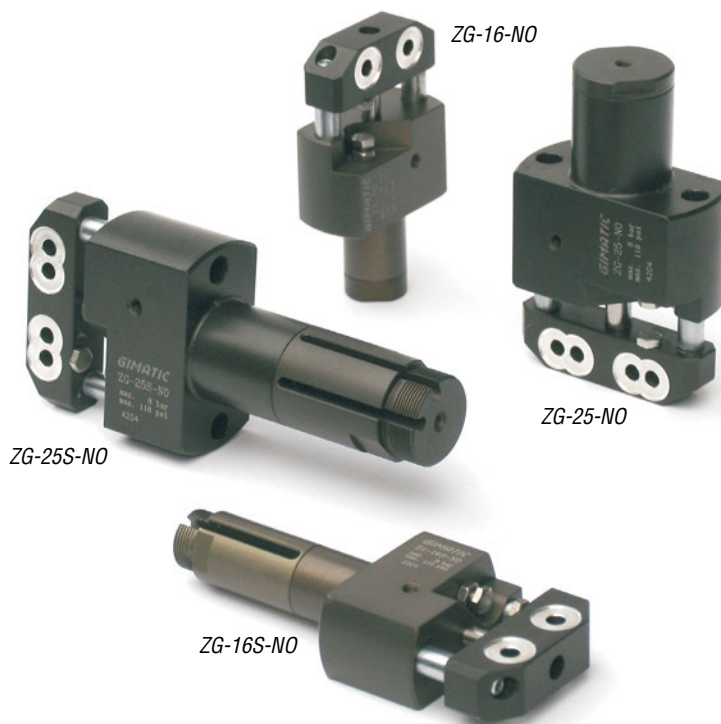
This example shows an offset-reverse blade used with a normally open slide to “pull” the nipper blade to the part. This configuration is ideal for parts that are close together. Notice that there is still ample space to position a sprue gripper between the large nippers.

2



Nipper Slides

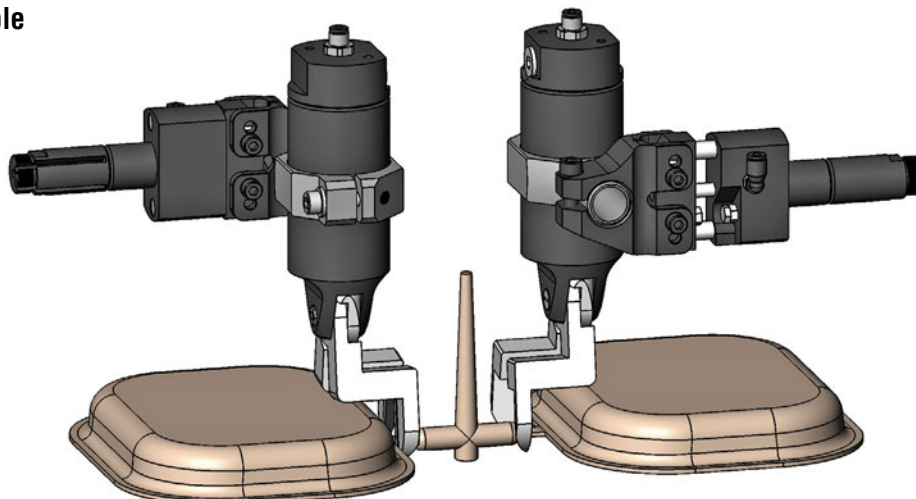
- Sliding nippers allow precise blade positioning for accurate cuts with no to minimal vestage.
- Available in two sizes: Bore 16 and 25mm.
- All can be used as double acting.
- Internal spring can be removed, or used for: spring open (NO), or spring closed (NC).
- Available with or without sensor slots.
- Unique configuration allows for unlimited positioning.
- New mounting brackets on page 835.



Pricing: See Next Page.

Part#	ZG-16-NO	ZG-16-NC	ZG-25-NO	ZG-25-NC
	(with sensor slots)	ZG-16S-NO	ZG-16S-NC	ZG-25S-NO
Quick#	6362	6364	6366	6368
(with sensor slots)	6363	6365	6367	6369
Medium	Filtered, lubricated/non-lubricated compressed air			
Pressure range	43–116 psi			
Stroke	0–10mm			
Piston bore	16mm		25mm	
Retraction force at 87 psi	15 lbf	27 lbf	47 lbf	62 lbf
Extension force at 87 psi	30 lbf	18 lbf	67 lbf	54 lbf
Retraction force at 0 psi	0 lbf	6 lbf	0 lbf	7 lbf
Extension force at 0 psi	6 lbf	0 lbf	7 lbf	0 lbf
Weight without air nipper ZG-...	180g	180g	360g	360g
Weight without air nipper XG-...S-...	200g	200g	425g	425g

Application Example



Sizing and Ordering Nipper Slide Packages

STEP 1 SELECT NIPPER BODY AND BLADE

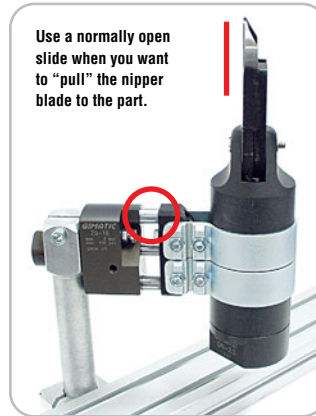
Select any round nipper body size from 05 to 30 and an appropriate blade. Order separately.



STEP 2 DETERMINE NORMALLY OPEN OR NORMALLY CLOSED

If you are going to “Push” the blade to the part, you will be using a Normally Closed slide.
If you are going to “Pull” the blade to the part, you will be using a Normally Open slide.

NOTE: If you want strict double acting, order the Normally Closed version and remove the spring. The spring is easier to remove from Normally Closed slides. (All ZG Slides are plumbed for double-acting operation.)



STEP 3 DETERMINE MOUNTING ANGLE AND NUMBER OF BRACKETS

Depending upon your configuration, one or two brackets will be used. Single clamp configuration is only recommended for sizes 5 & 10 nippers. Order brackets on pages 835 & 836.



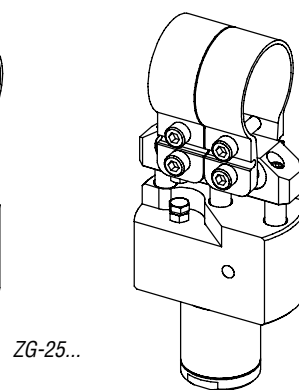
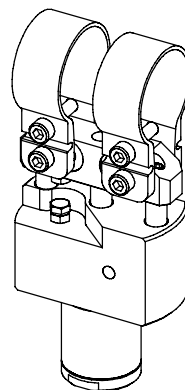
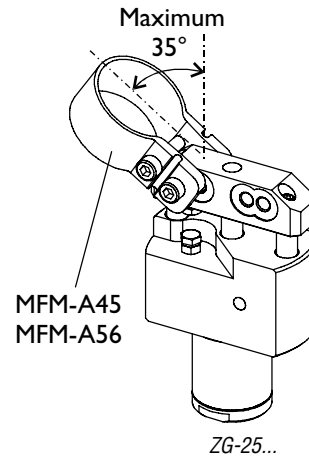
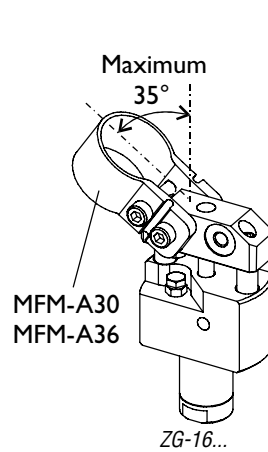
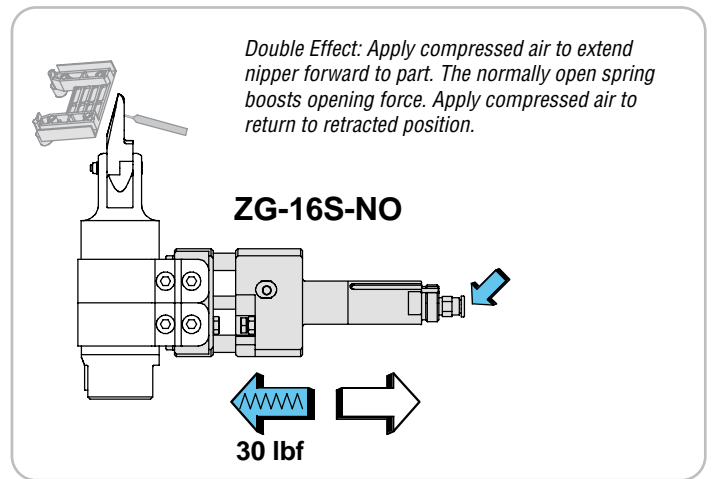
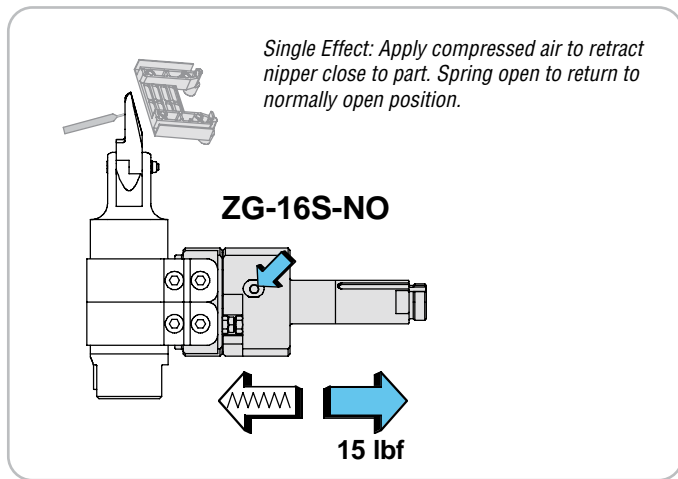
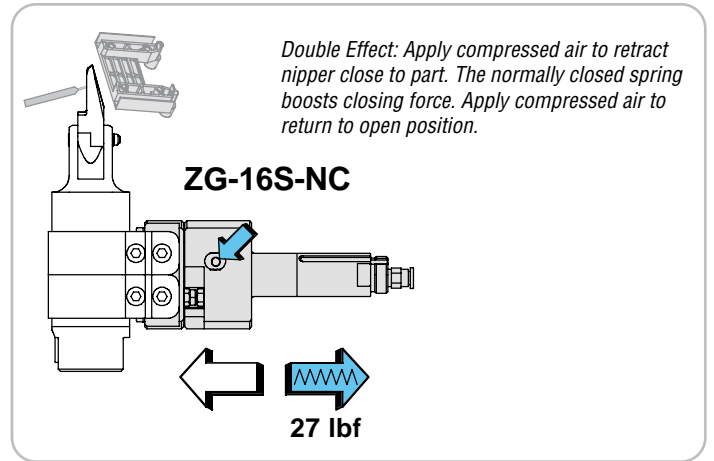
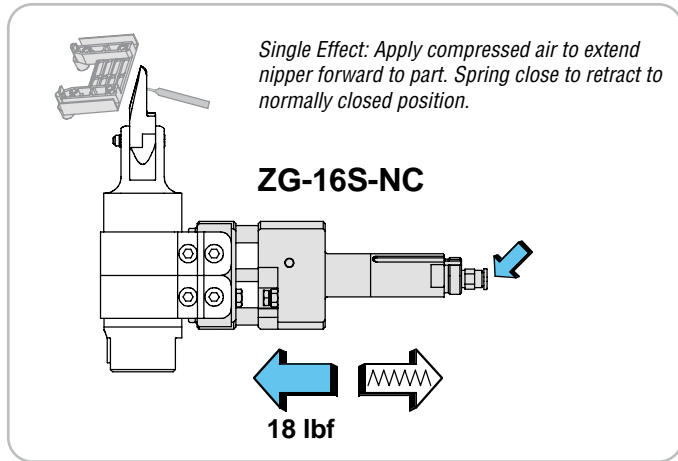
STEP 4 ORDER THE APPROPRIATE ZG SLIDE

- A. If you are using nipper body sizes 5 or 10, order ZG-16 slides. If you are using size 20 bodies, order size ZG-16. If you are using size 30 nippers, order ZG-25 slides.
- B. Determine if you want sensor capability, or not. Other sensor options for the ZG Nipper Slides including sensors with M8 connectors are available on page 1007.

Quick#	Part#	Normal State	Style	Use with Nipper Sizes	Price
6362	ZG-16-NO	Open	Non-Sensor	05, 10, 20	\$203.00
6363	ZG-16S-NO	Open	Sensor Style	05, 10, 20	\$189.00
6364	ZG-16-NC	Closed	Non-Sensor	05, 10, 20	\$203.00
6365	ZG-16S-NC	Closed	Sensor Style	05, 10, 20	\$189.00
6366	ZG-25-NO	Open	Non-Sensor	20, 30	\$257.00
6367	ZG-25S-NO	Open	Sensor Style	20, 30	\$285.00
6368	ZG-25-NC	Closed	Non-Sensor	20, 30	\$257.00
6369	ZG-25S-NC	Closed	Sensor Style	20, 30	\$285.00

Quick#	Part#	Price	Cable	Signal	Voltage
1882	SS4N225G	\$27.20	3-wire, 2.5m leads	PNP	6-24v dc
1883	SS4M225G	\$27.20	3-wire, 2.5m leads	NPN	6-24v dc

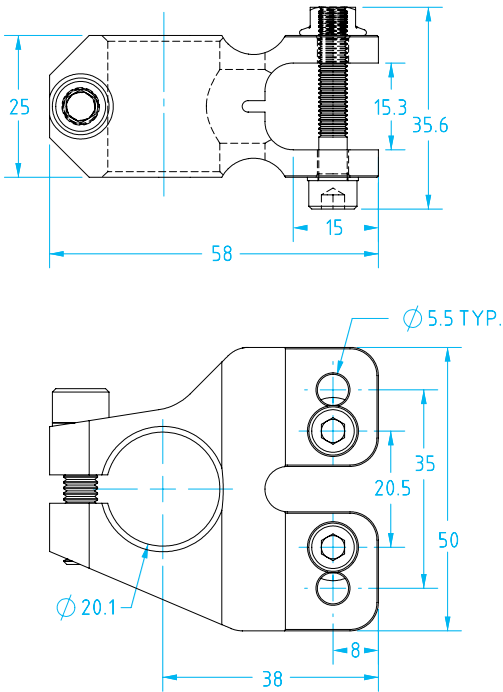
Nipper Slides



1	2	3
GN-05	MFM-A30	ZG-16...
GN-05S		ZG-16...
GN-10	MFM-A36	ZG-16...
GN-10S		ZG-16...
GN-20	MFM-A45	ZG-25...
GN-20S		ZG-25...
GN-30	MFM-A56	ZG-25...
GN-30S		ZG-25...

ZG Nipper Slide Mounting Bracket

(Dimensioned drawings shown 3/4 scale)



Mounting for Nipper

Quick#	Part#	Price	Wt.
5350	GSC-MB-ZG1625	\$54.27	92g



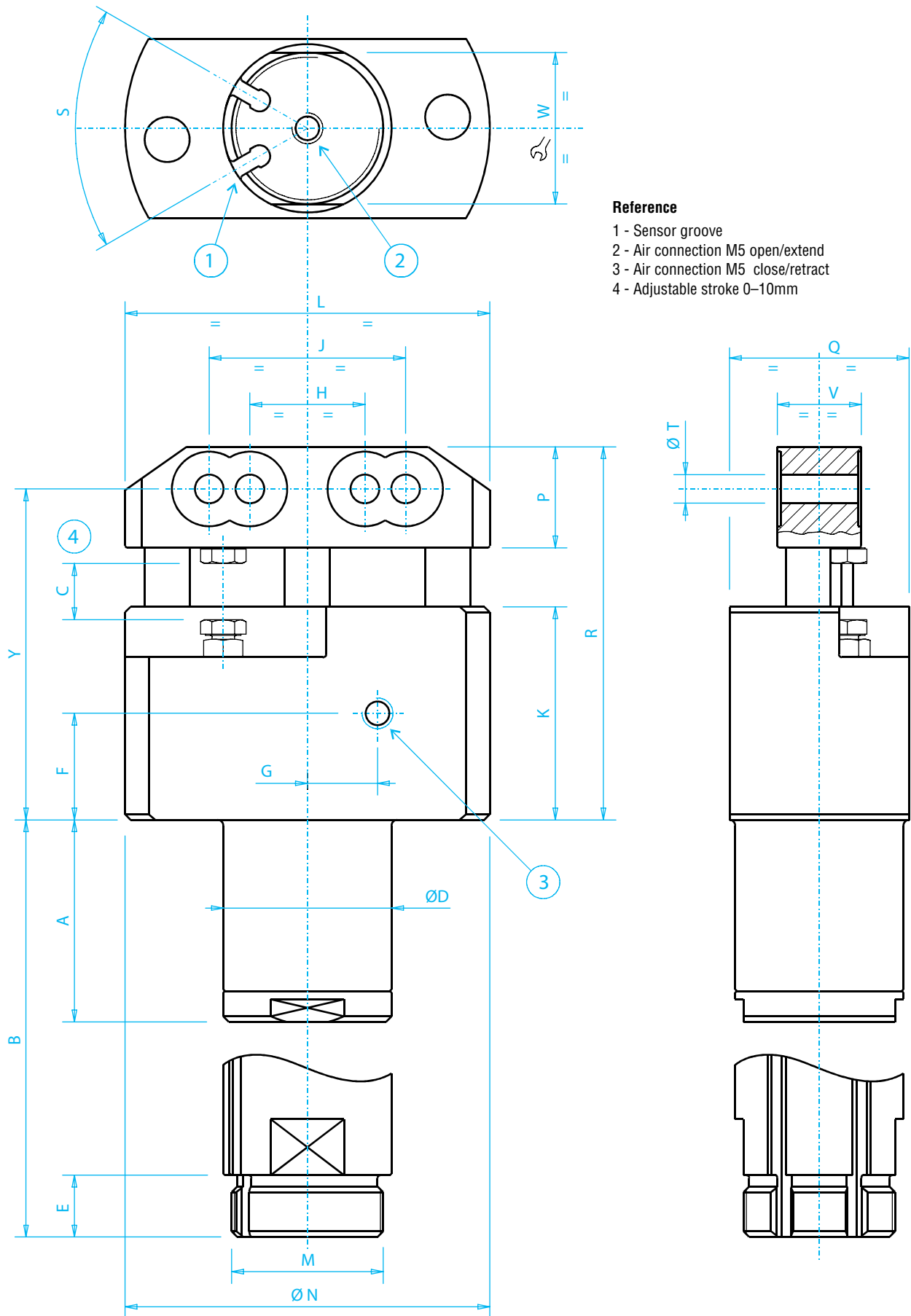
Sensors

The operating position can be checked by sensors (optional), that detect the magnet on the position inside. Therefore, a nearby large mass of ferromagnetic material or intense magnetic fields may cause sensing troubles.



Quick#	Part#	Type	Connection	Price
3-wire, SS type 'C' slot sensor				
1882	SS4N225G	PNP	2.5m long lead	\$27.20
1883	SS4M225G	NPN	2.5m long lead	\$27.20
6282	SS3N203G	PNP	w/ M8 connector 0.3m long	\$31.16
1884	SS3M203G	NPN	w/ M8 connector 0.3m long	\$31.16
3-wire, 90° Lead exit, SN type 'C' slot sensor				
6278	SN4N225G	PNP	2.5m long lead	\$27.20
6357	SN4M225G	NPN	2.5m long lead	\$27.20
6277	SN3N203G	PNP	w/ M8 connector 0.3m long	\$31.16
6356	SN3M203G	NPN	w/ M8 connector 0.3m long	\$31.16

ZG Nipper Slide Dimensions



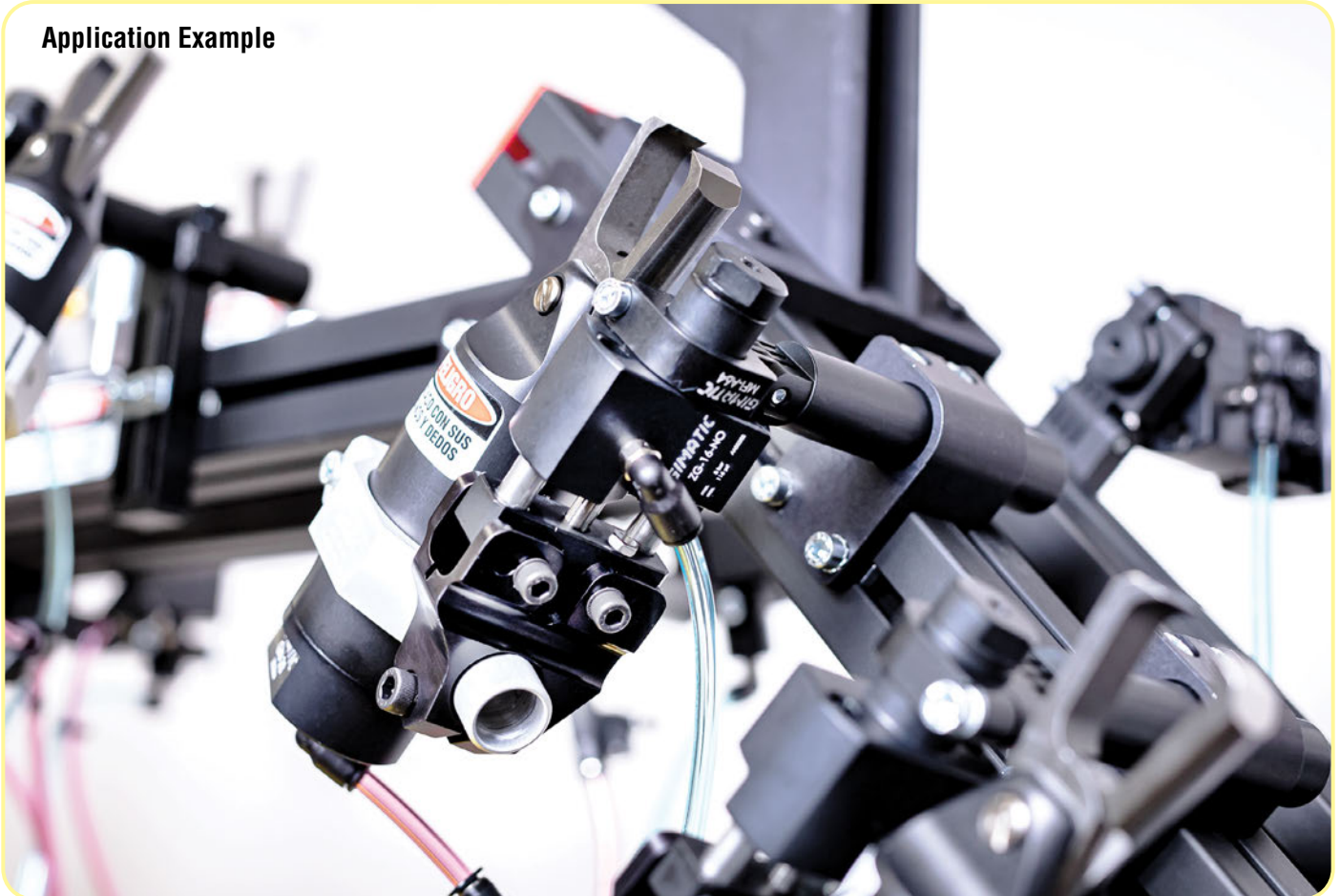
Reference

- 1 - Sensor groove
- 2 - Air connection M5 open/extend
- 3 - Air connection M5 close/retract
- 4 - Adjustable stroke 0–10mm

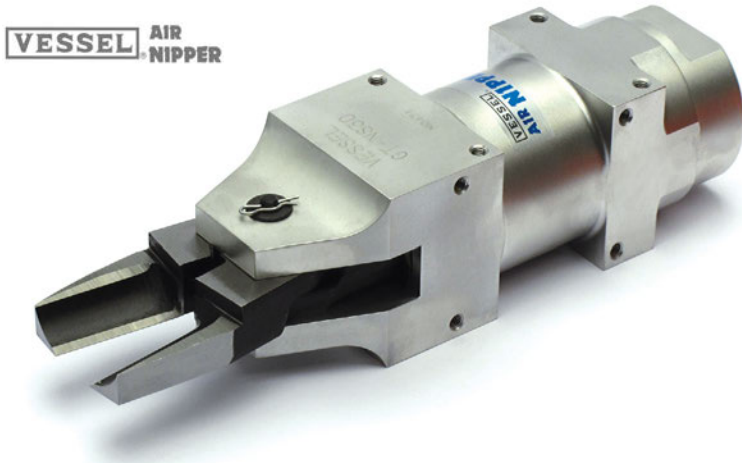
ZG Nipper Slide Dimensions

	ZG-16...	ZG-16S...	ZG-25...	ZG-25S...
A	29	/	36	/
B	/	63	/	78.5
C	10 max	10 max	10 max	10 max
D	Ø20	Ø20	Ø30	Ø30
E	/	8	/	11
F	17	17	19	19
G	6	6	12.5	12.5
H	20.5	20.5	20.5	20.5
J	/	/	35	35
K	31	31	38	38
L	50	50	65	65
M	/	M17x1	/	M27x1
N	Ø50	Ø50	Ø65	Ø65
P	18	18	18	18
Q	25	25	32	32
R	59.5	59.5	66.5	66.5
S	/	80°	/	60°
T	Ø5.1	Ø5.1	Ø5.1	Ø5.1
V	15	15	15	15
W	17	17	27	27
Y	52	52	59	59

Application Example



NS Nippers



Square Mounting Surfaces

The square mounting surfaces of these Vessel® nippers allow them to be easily mounted to an EOAT or to a degating station. Air ports on both the bottom and sides of the nipper body allow a wide choice of positioning options.

Single-acting, spring return and reset allows simple valving.

NS Standard Nippers - (Order blades separately)

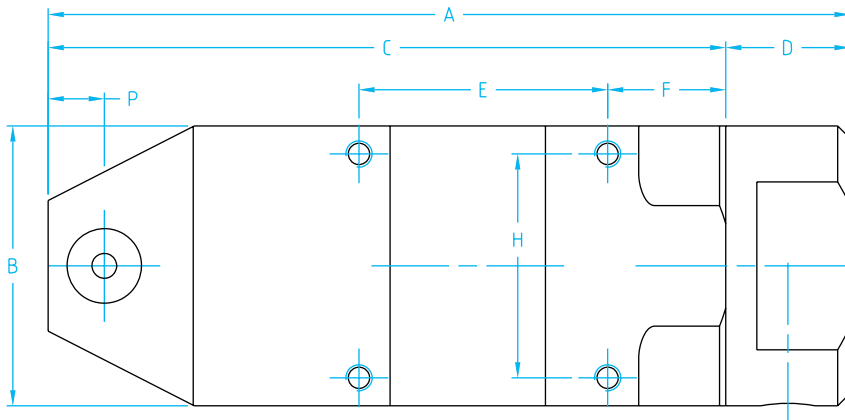
Quick#	Part#	Price	Sprue Ø Cut	A	Body (Square)	Cutting Pressure	Working Air Pressure	Air Port	Weight
1484	GSN-NS5	\$238.00	2mm	94	30	88 lbf	57-71 psi	R1/8"	148g
1485	GSN-NS10L	\$267.00	4mm	113	36	132 lbf	57-85 psi	R1/8"	230g
1486	GSN-NS20	\$337.00	7mm	129	45	308 lbf	71-85 psi	R1/8"	390g
1487	GSN-NS30	\$399.00	10mm	170	56	617 lbf	71-85 psi	R1/8"	705g

Order Blades Separately
See pages 858-890.

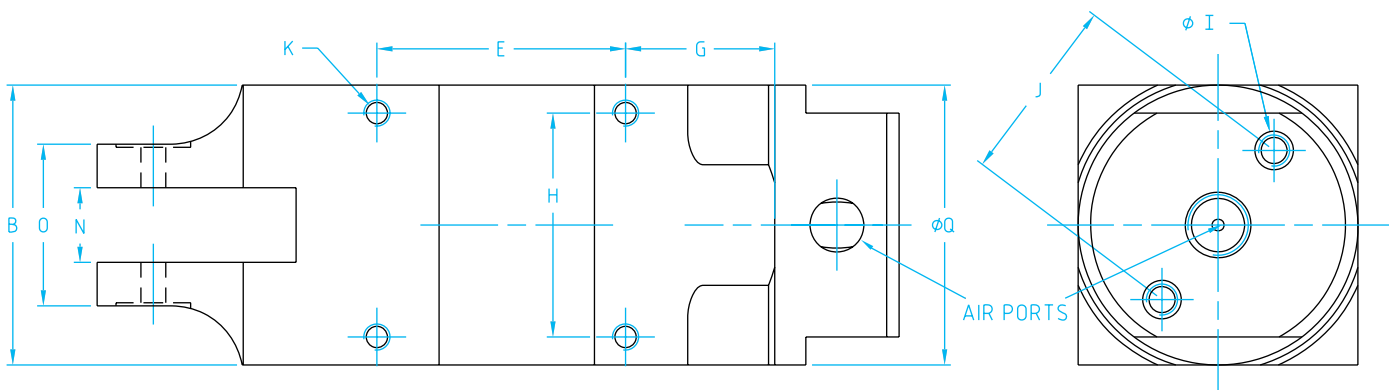


NS Standard Nippers - dimensions

Quick#	Part#	A	B	C	D	E	F	G	H	I	J	K	N	O	P	ØQ
1484	GSN-NS5	94	30	74	20	30	14	19	24	M4x10	20	M3x5	7	23	7	30
1485	GSN-NS10L	113	36	93	20	30	18	23	28	M4x10	24	M4x5	12	26	7	36
1486	GSN-NS20	129	45	109	20	40	19	24	36	M4x12	30	M4x7	12	26	9	45
1487	GSN-NS30	170	56	150	20	60	20	30	46	M6x12	40	M5x10	17	36	15	56



Note: Rotating end cap can change the orientation of the air inlet port.



MS Nippers

Square Mounting Surfaces

The square mounting surfaces of these Nile® nippers allow them to be easily mounted to an EOAT or to a degating station. Air ports on both the bottom and sides of the nipper body allow a wide choice of positioning options.

Single-acting, spring return and reset allows simple valving.



MS Nippers - (Order blades separately)

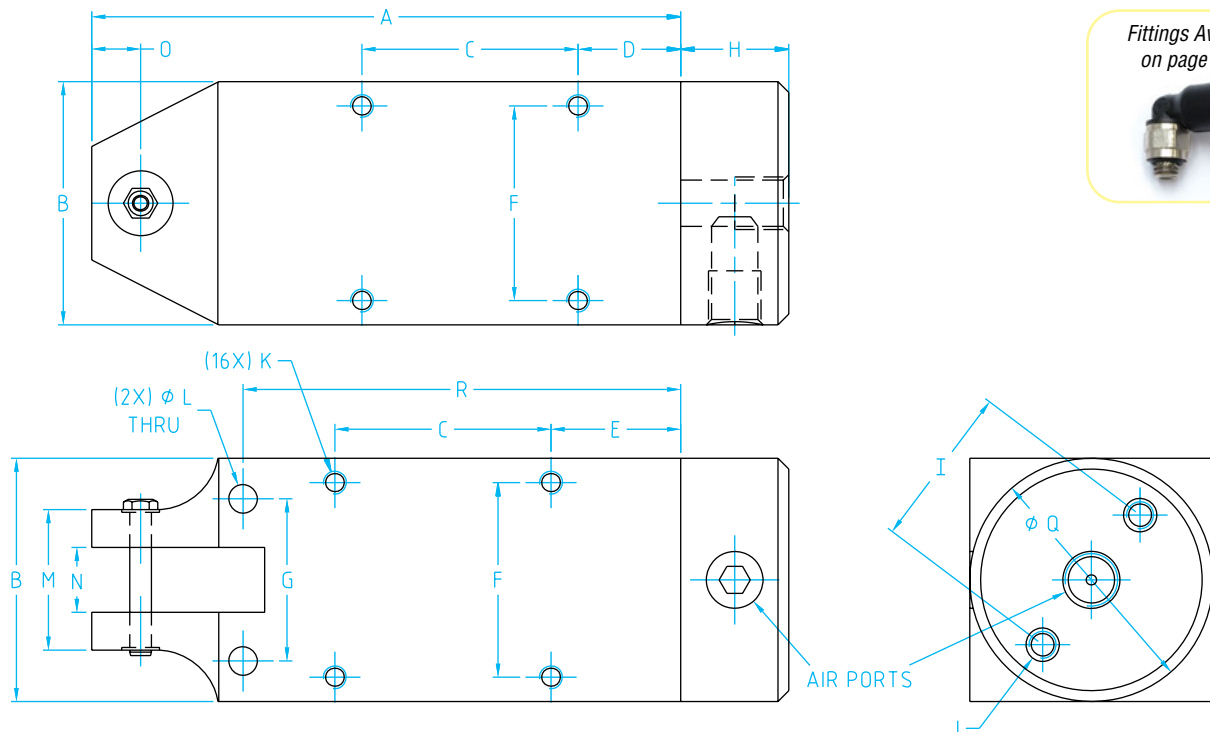
Quick#	Part#	Price	Sprue Ø Cut	A	Body (Square)	Cutting Pressure	Working Air Pressure	Port	Weight
1670	GSN-MS-5	\$181.00	2mm	74	30	88 lbf	57-71 psi	G1/8"	160g
1671	GSN-MS-10	\$164.50	4mm	93	36	132 lbf	57-71 psi	G1/8"	260g
1672	GSN-MS-20	\$217.00	7mm	109	45	308 lbf	71-85 psi	G1/8"	430g
1673	GSN-MS-30	\$277.00	10mm	150	56	617 lbf	71-85 psi	G1/8"	810g

Order Blades Separately
See pages 858-890.



MS Nippers - dimensions

Quick#	Part#	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	ØQ	R
1670	GSN-MS-5	74	30	30	14	19	24	20	20	20	M4x10	M3x6	4.3	20	7	7	30	55
1671	GSN-MS-10	93	36	30	18	23	28	28	20	24	M4x10	M4x6	4.3	20	9	7	36	65
1672	GSN-MS-20	109	45	40	19	24	36	30	20	30	M5x12	M4x8	5.3	26	12	9	45	81
1673	GSN-MS-30	150	56	60	20	30	46	40	20	40	M6x12	M5x11	5.3	36	17	15	56	110



Double-Acting Nippers



Double-Acting Nippers

Double-Acting Nippers –

Positive open, positive close, double-acting nippers provide the highest reliability with minimal downtime.

Double-Acting Nippers - (Order blades separately)

Quick#	Part#	Price	Sprue Ø Cut	A	Body (Square)	Cutting Pressure	Working Air Pressure	Port	Weight
1818	GSN-MS-5V	\$289.00	2mm	92	30	88 lbf	57-71 psi	M5	185g
1819	GSN-MS-10V	\$297.00	4mm	116	36	132 lbf	57-71 psi	R1/8"	345g
1820	GSN-MS-20V	\$359.00	7mm	147	45	308 lbf	71-85 psi	R1/8"	650g
1821	GSN-MS-30V	\$529.00	10mm	185	56	617 lbf	71-85 psi	R1/8"	1150g

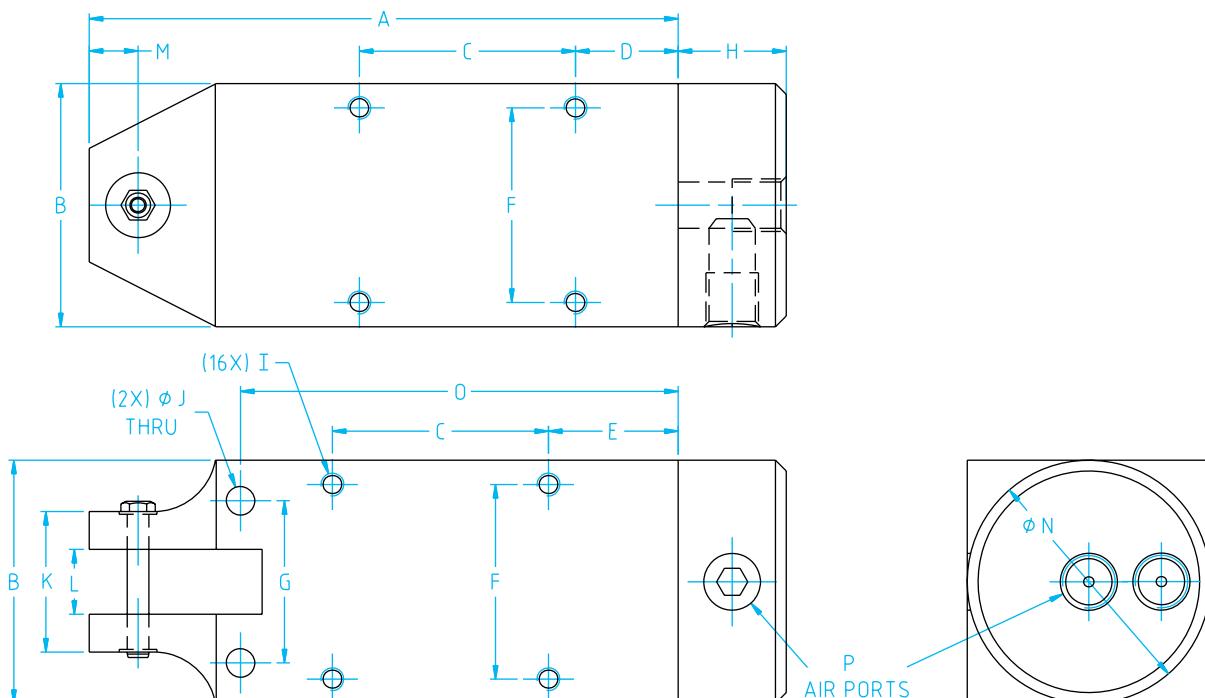
Order Blades Separately
See pages 858-890.



Double-Acting Nippers - dimensions

Quick#	Part#	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1818	GSN-MS-5V	92	30	30	32	37	24	20	18	M3x6.5	4.3	20	7	7	30	72	M5
1819	GSN-MS-10V	116	36	30	41	46	28	28	23	M4x6.5	4.3	20	9	7	36	88	G1/8"
1820	GSN-MS-20V	147	45	40	57	62	36	30	31	M4x8	5.3	26	12	9	45	119	G1/8"
1821	GSN-MS-30V	185	56	60	55	65	46	40	33	M5x11	5.3	36	17	15	56	145	G1/8"

Fittings Available
on page 1043



Double-Acting Nippers & Intensifiers

Double-Acting Nippers

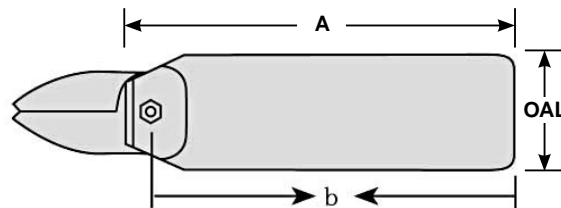


Double-Acting Nippers – Positive open, positive close, double-acting nippers eliminate the piston spring to provide the highest reliability with minimal downtime.

Note: Standard blades do not work with these double-acting Nippers. Use blades listed on this page.

Double-Acting Nipper BLADES

Quick#	Part#	Price	Style
1810	GSN-NW10-AJ	\$203.00	AJ
1811	GSN-NW20-AJ	\$280.00	AJ
1812	GSN-NW30-AJ	\$373.00	AJ



Double-Acting Nipper BODIES

Quick#	Part#	Price	Sprue Ø Cut	A	ØD	B	Cutting Pressure	Working Air Pressure	Air Port	Weight
692	GSN-NWR10	\$380.00	4mm	153	36	146	132 lbf	57–85 psi	ø4mm	280g
693	GSN-NWR20	\$567.00	7mm	174	45	165	308 lbf	71–85 psi	ø6mm	523g
694	GSN-NWR30	\$668.00	10mm	226	56	216	617 lbf	71–85 psi	ø6mm	980g

Intensifiers for Single-Acting Nippers

Intensifiers (Pressure Boosters) are an ideal supplement for facilities with low air pressure, or for cutting applications requiring extra power.

Assembly is easy; simply unscrew the end cap from the standard nipper body, screw the intensifier on, then screw the end cap back on. Fits Vessel nippers only.



Part# (Intensifier only)	Quick#	Price	Recommended for use with:	OAL of Booster	Body Dia.	Weight	Air Con Cm ³ /Stroke	Applied Force (lbf)	Cutting Capacity Ø (mm)	
									Plastic	Hard Plastic
GSN-P10L	5215	\$127.00	#603, #1485	71	36	115g	223	221	5.0	4.0
GSN-P20	5216	\$161.00	#2312, #606, #1486	87	45	215g	508	507	8.0	6.0
GSN-P30	5217	\$203.00	#2280, #611, #1487	92	56	330g	956	992	13.0	7.0
GSN-P50	2328	\$431.00	#2325, #699, #2342	133	75	840g	2,670	1,742		

Degating Alignment Pins & Bushings

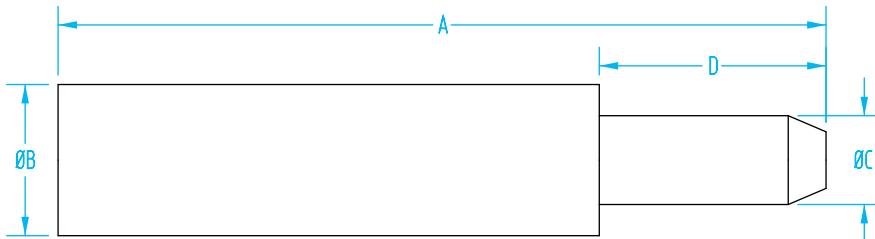
Alignment pins and bushings are a great help in providing the accuracy required for most degating applications.

Available in 3 standard lengths but can be ordered to fit your application needs. Contact EMI today to discuss your degating application.

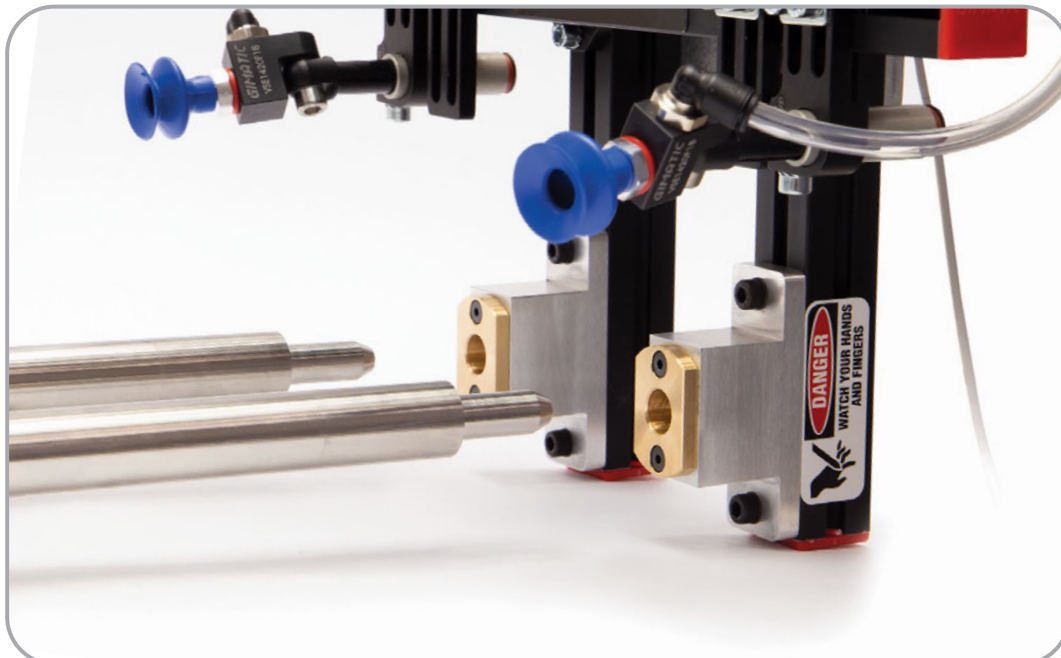


Alignment Pins

Quick#	Part#	Price	Description
2970	GSC-20100-A	\$40.29	20mm Dia. 100mm Long Stainless Steel Alignment Pin
2971	GSC-20200-A	\$42.76	20mm Dia. 200mm Long Stainless Steel Alignment Pin
2972	GSC-20300-A	\$51.44	20mm Dia. 300mm Long Stainless Steel Alignment Pin



Quick#	A	B	C	D
2970	101.6	20	11.8	30
2971	203.2	20	11.8	30
2972	304.8	20	11.8	30

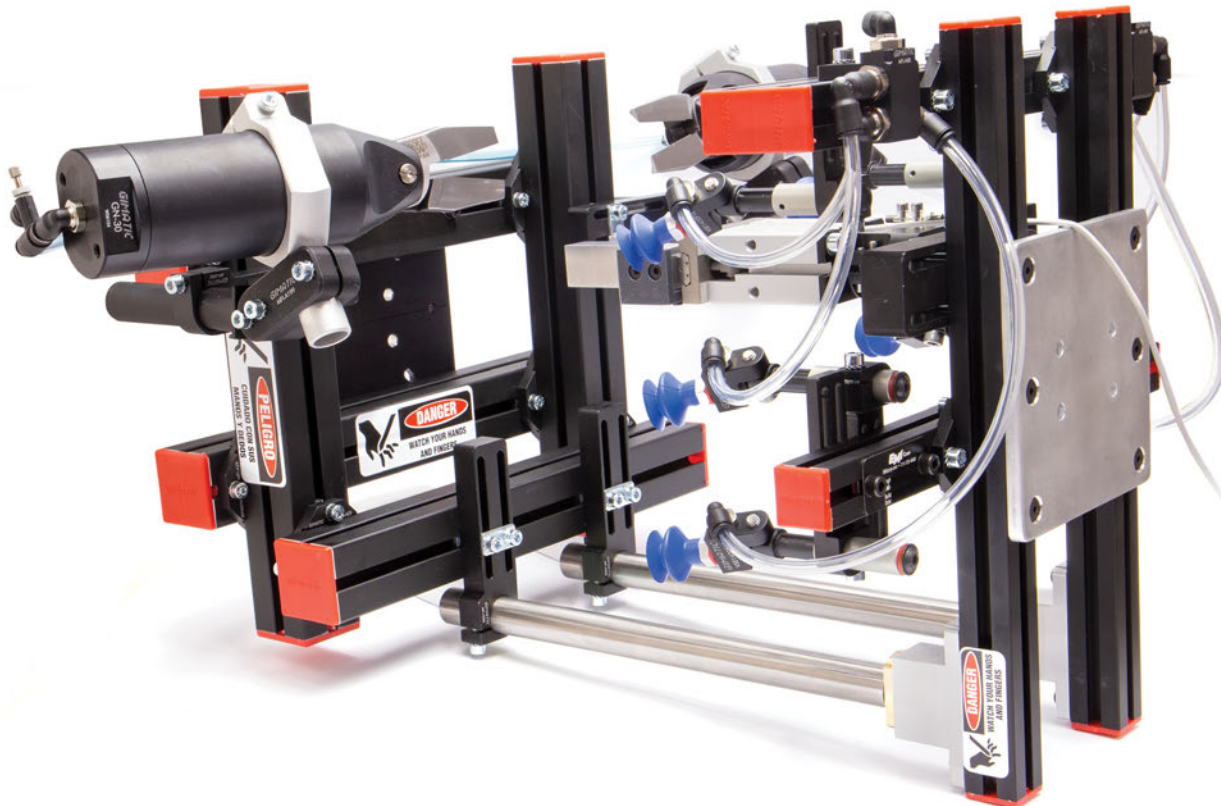
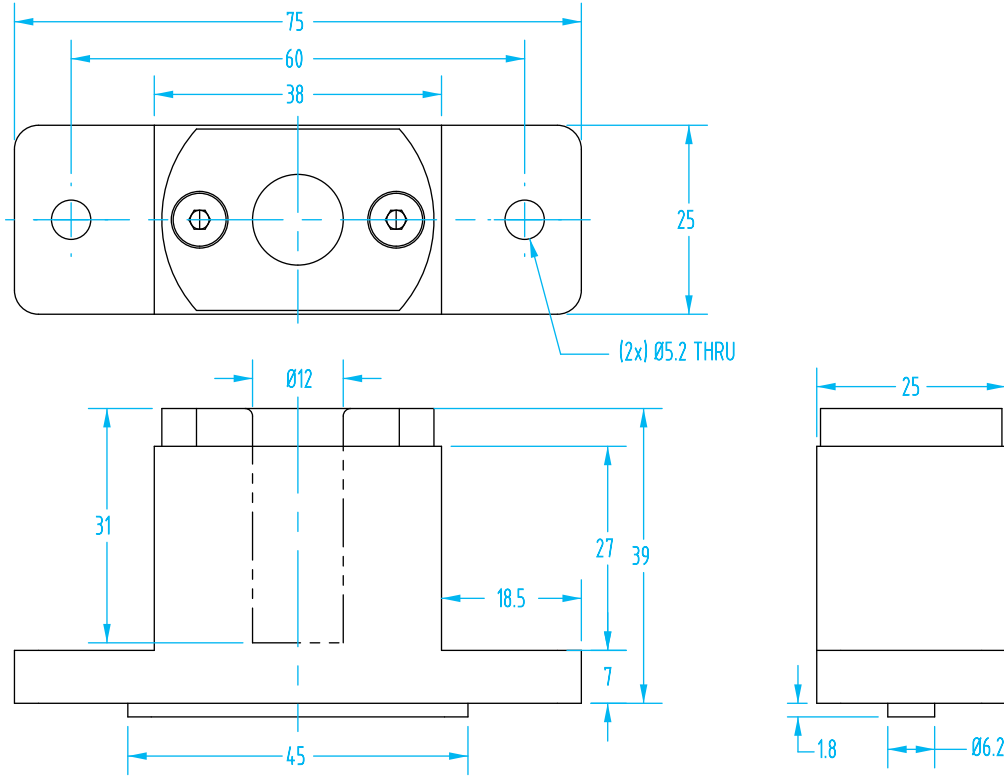


Degating Alignment Pins & Bushings

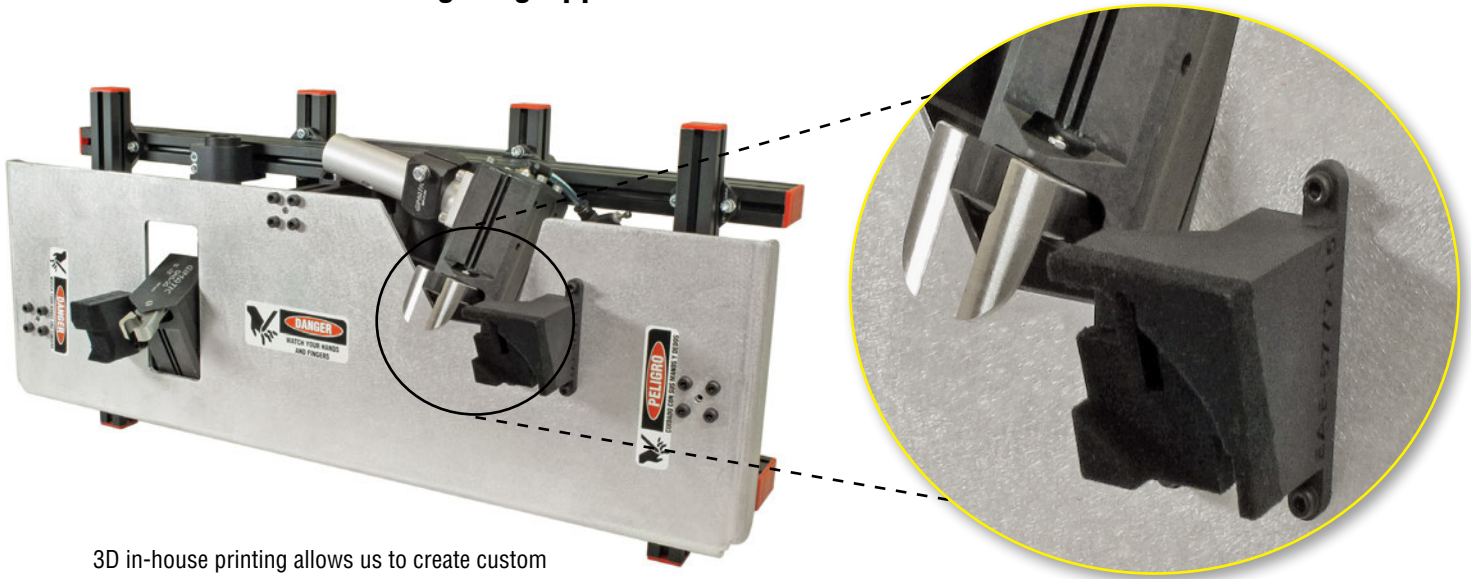
Alignment Bushing

Quick#	Part#	Price	Description
2969	GSC-20ABB-B	\$71.55	Alignment Bushing Bracket with Bronze Bushing & Flange

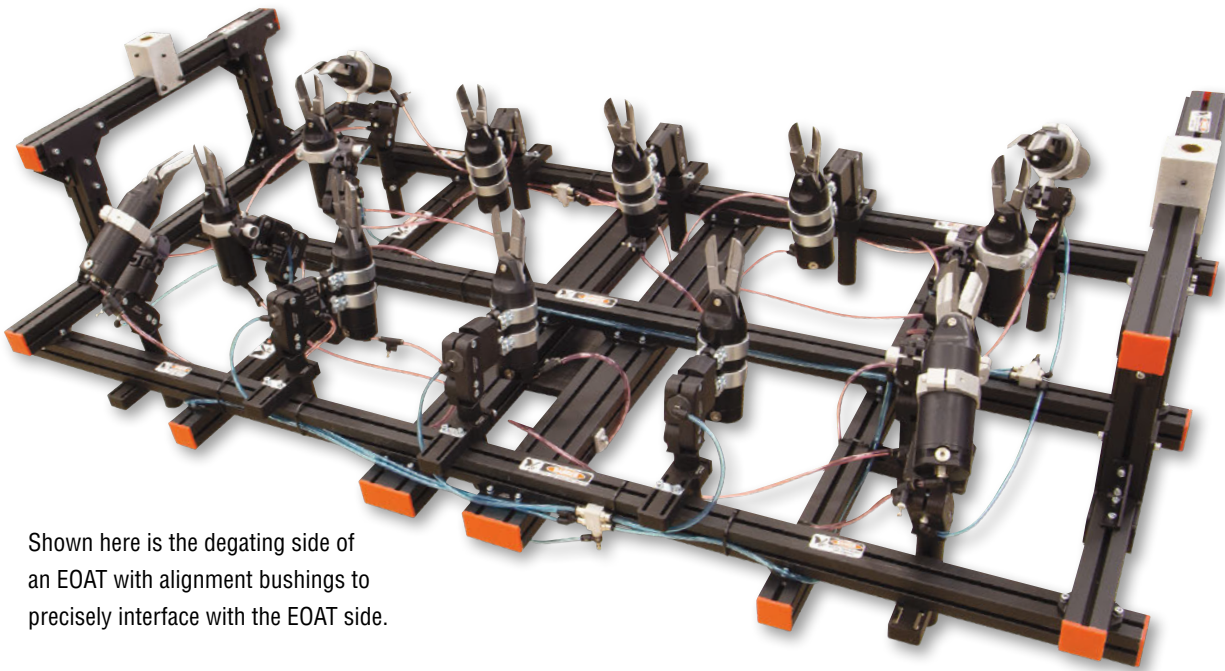
Fasteners Included.



Contact EMI for All Your Degating Applications



3D in-house printing allows us to create custom and cost effective nests for parts, enabling precise degating! Fiber-lined nests are used here for a soft-touch interface.



Shown here is the degating side of an EOAT with alignment bushings to precisely interface with the EOAT side.

Degate Stand Price Examples

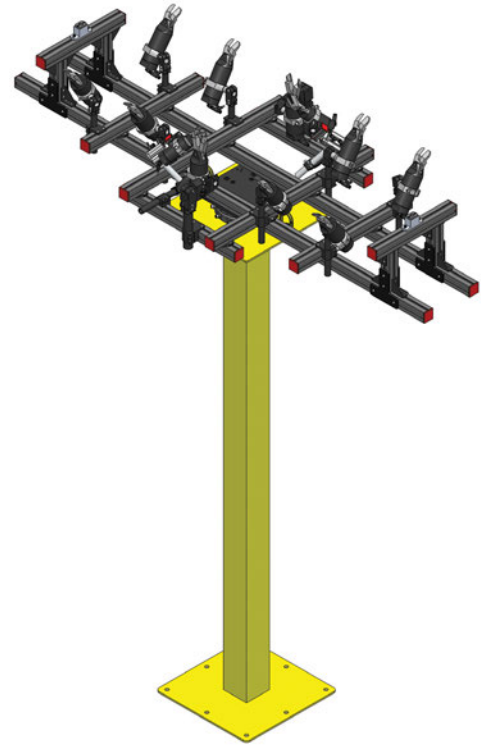
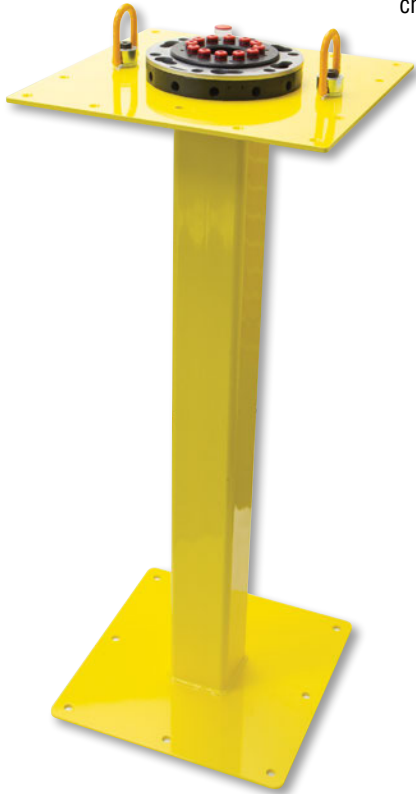
Stand Type	Total US\$
1m Profile Floor Mounted	\$1,319.75
1m Profile With Castors	\$1,478.43
1m Welded & Floor Mounted	\$1,250.00
2m Profile Floor Mounted	\$1,420.29
2m Profile With Castors	\$1,577.98
2m Welded & Floor Mounted	\$1,350.00

*Castors available, Call EMI for pricing.

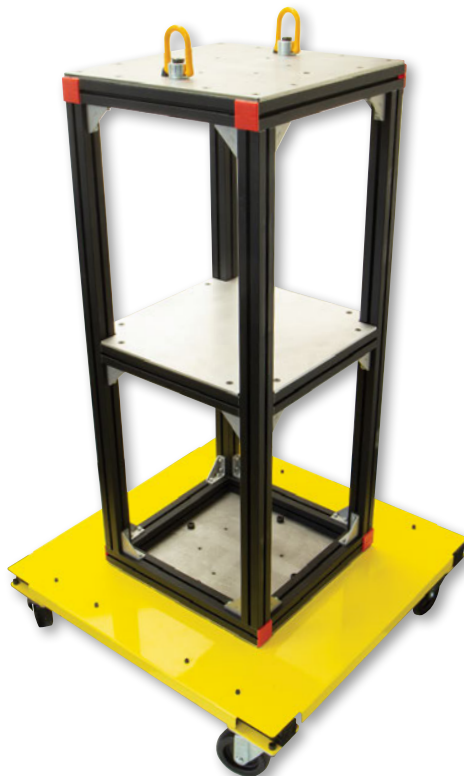
**Pricing listed is for stands only, quick changers, lifting rings and other accessories are sold separately.

Welded and Profile Frame Degate Stands

Manufactured in our Jackson Center, Ohio facility, these powder-coated degate stands can be custom painted per your specifications. These are completely modular and can include: quick changers, lifting hoist rings, and through holes for floor mounting.



Profile based degate stands are another option from EMI. These are also modular and can include: quick changers, lifting hoist rings, and a mobile stand with locking castors.



Blade Brands

Only EMI gives you this wide of a selection of in-stock blade brands. Mix and match blade brands with nipper body brands to best suit your application. Check out all the alternatives!

Or call our EOAT engineering department for assistance.



- Very good quality at a competitive cost
- Set-screw mechanical stops are pre-set at the factory ensuring proper blade pressure for a clean, flush cut and long blade life.
- Should the blade need resharpening, the mechanical stop screw can be reset to allow the resharpened blade to meet original performance specifications.
- Forged blades from high chromium, high carbon alloy steel and hardened to 60-64 HRC.
- Reasonable cost and reasonable lead times for custom and carbide blades.
- Best quality joint of any blade brand, helps reduce the need for sharpening.



GIMATIC

- Top quality blades.
- "Benchmark" quality blade.
- Very high initial sharpness. Excellent for harder to cut plastics. May take more maintenance to keep blades sharp.
- Permanent mechanical stops are pre-set at the factory. Should the blade need resharpening, the mechanical stop must be welded and reground to meet original performance specifications. (Higher cost).
- Forged blades from high-speed steel and hardened.
- Very high cost and long lead times for custom and carbide blades.
- A top performing, brand alternative



VESSEL AIR NIPPER

- Top quality blades
- The "benchmark" quality blade that others are compared to.
- Very high initial sharpness. Excellent for harder to cut plastics. May take more maintenance to keep blades sharp.
- Permanent mechanical stops are pre-set at the factory. Should the blade need resharpening, the mechanical stop must be reground to meet original performance specifications.
- Forged blades from high speed steel and hardened.
- Very high cost and long lead times for custom and carbide blades.



nile air tools

- A good, basic quality blade at a competitive cost.
- Blade sharpness has an initial tendency to be more blunt compared to other blades; however, this design will stay sharper longer when other initially sharper blades lose their sharpness. Good for general purpose plastics.
- Mechanical stops are at the crotch of the blade which ensures a very precise stop, preventing blade bypass and overlap. Should the blade need resharpening, the mechanical stop can usually be hand honed to meet original performance specifications. (Moderate cost).
- Forged blades from high-speed steel and hardened.
- Very long lead times for custom blades.



Nipper / Blade Compatibility

Nipper / Blade Interchangeability:

		Blade Brand			
		Vessel	Swanstrom	Gimatic	Nile
Nipper Brand & Size	Size 5 (nippers)	Size 5 (Blades) see page 860			
	Vessel	✓	✓	✓	✓
	Gimatic	✓	✓	✓	✓
	Swanstrom	✓	✓	✓	✓
	Nile	x	x	x	x
	OEM	✓	✓	✓	✓
	Size 10 (nippers)	Size 10 (Blades) see page 864			
	Vessel	✓	✓	✓	x
	Gimatic	✓	✓	✓	x
	Swanstrom	✓	✓	✓	x
	Nile	x	x	x	✓
	OEM	✓	✓	✓	x
	Size 20 (nippers)	Size 20 (Blades) see page 870			
	Vessel	✓	✓	✓	✓
	Gimatic	✓	✓	✓	✓
	Swanstrom	✓	✓	✓	✓
	Nile	✓	✓	✓	✓
	OEM	✓	✓	✓	✓
	Size 30 (nippers)	Size 30 (Blades) see page 880			
	Vessel	✓	✓	✓	✓
	Gimatic	✓	✓	✓	✓
	Swanstrom	✓	✓	✓	✓
	Nile	✓	✓	✓	✓
	OEM	✓	✓	✓	✓
	Size 50 (nippers)	Size 30 (Blades) see page 892			
	Vessel	x	x	x	x
	Gimatic	✓	✓	✓	✓
	Swanstrom	✓	✓	✓	✓
Nile	✓	✓	✓	✓	
Size 50 (nippers)	Size 50 (Blades)				
Vessel	call for availability				
Gimatic					
Swanstrom					
Nile					



Size 5 Blades

Blade	Part#	Price	Style	Brand	Page	#2053 Blade Cover Compatibility	Nipper Body				Wt.
							Vessel 5	Gimatic 5	Swanstrom 5	OEM 5	
							Tip to Tip Opening (mm)*				
602	GSN-N5-AP	\$78.00	Std. Angle	Vessel	861	✓	3	3	3.5	3	32g
1002	X-5-ST	\$61.90	Std. Angle	Swanstrom	861	✓	5	5	5.5	5	34g
5024	GN5AP	\$98.00	Std. Angle	Gimatic	861	✓	3.5	3.5	3.5	3.5	32g
1813	GSN-F1	\$61.50	Std. Angle	Nile	861	✓	3	3	3	3	34g
5025	GN5PF	\$102.00	Deep Angle	Gimatic	862	✓	3.5	3.5	4	3.5	34g
1814	GSN-FD1	\$75.50	Deep Angle	Nile	863	✓	3	3	3.5	3	34g
1003	X-5-LI	\$80.25	Inline	Swanstrom	862	✓	6	6	6.5	6	40g
5023	GN5AJ	\$113.00	Inline	Gimatic	862	✓	5	5	5.5	5	32g
1035	X-05-OS	\$368.00	Offset	Swanstrom	863	✗	7	7	7.5	7	50g
1036	X-05-OR	\$404.00	Offset	Swanstrom	863	✗	7	7	7.5	7	50g
1044	X-05-SI	\$71.22	Inline	Swanstrom	862	✓	5.5	5.25	5.5	5.25	32g

*Note: Tip-to-tip opening dimensions are approximate and can vary from blade to blade because blades are hand finished.

Carbide and Custom blades are available, call EMI

Gimatic Blade Styles:



Style PF



Style AP



Style AJ

Gimatic Blade Covers:

- Gimatic blades include protective blade covers, if you need additional covers they are listed here.
- Cover snaps into profile for storage, and ring can be used for zip-ties.



Gimatic Size 5 Blade Covers

Quick#	Part#	Price
6085	COJ05	\$2.07

Universal Blade Covers:

- Provides protection without compressing the nipper blade's spring.
- See reference chart above for compatibility.

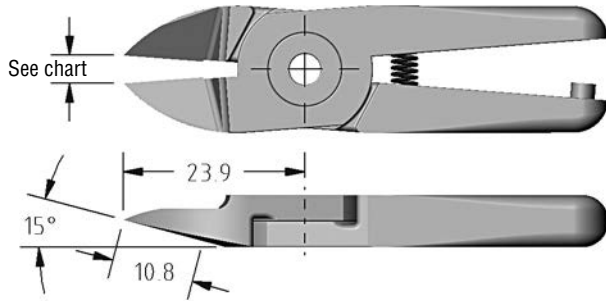


Universal Size 5 Blade Covers

Quick#	Part#	Price
2053	GSN-BC-05	\$4.97

Size 5 Blades

(Dimensioned drawings shown full scale)

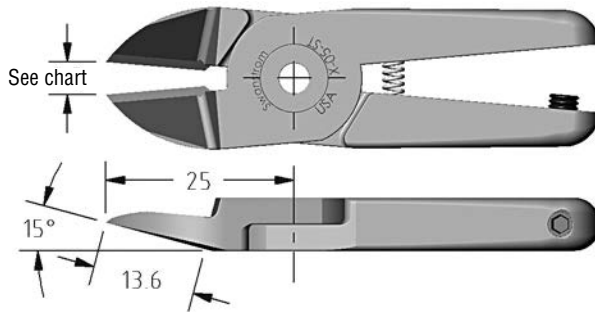


Vessel

Quick#	Part#	Price	Ø Sprue	Wt.
602	GSN-N5-AP	\$78.00	2mm	32g
Replacement Spring				
1281	SPR-01	\$1.90		

Size 5 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	OEM
3mm	3mm	3.5mm	3mm

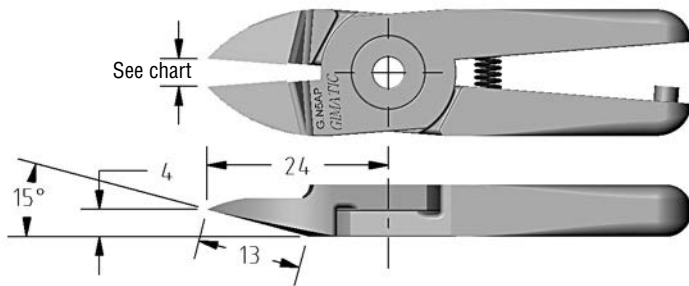


Swanstrom

Quick#	Part#	Price	Ø Sprue	Wt.
1002	X-5-ST	\$61.90	2mm	34g
Replacement Spring				
1095	GSN-SP-002	\$0.55		

Size 5 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	OEM
5mm	5mm	5.5mm	5mm

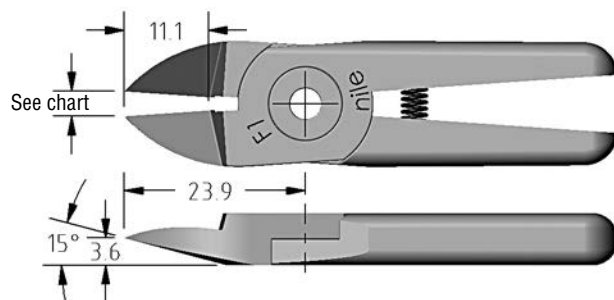


Gimatic

Quick#	Part#	Price	Ø Sprue	Wt.
5024	GN5AP	\$98.00	2mm	32g
Replacement Spring				
1281	SPR-01	\$1.90		

Size 5 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	OEM
3.5mm	3.5mm	3.5mm	3.5mm



Nile

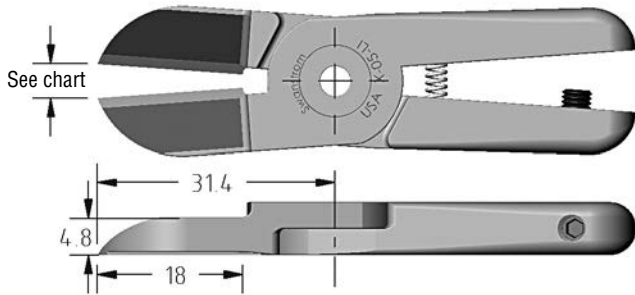
Quick#	Part#	Price	Ø Sprue	Wt.
1813	GSN-F1	\$61.50	2mm	34g
Replacement Spring				
2314	NILE-SP1	\$2.09		

Size 5 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	OEM
3mm	3mm	3mm	3mm

Size 5 Blades

(Dimensioned drawings shown full scale)

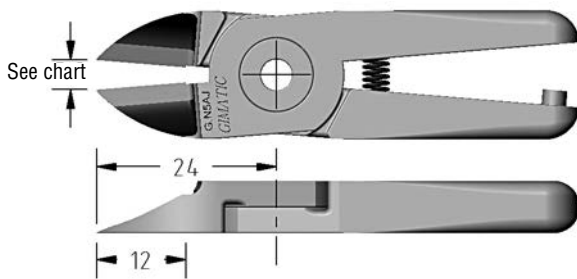


Swanstrom

Quick#	Part#	Price	Ø Sprue	Wt.
1003	X-5-LI	\$80.25	2mm	40g
Replacement Spring				
1095	GSN-SP-002	\$0.55		

Size 5 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	OEM
6mm	6mm	6.5mm	6mm

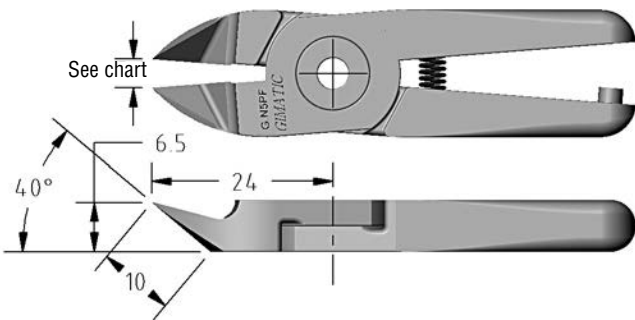


Gimatic

Quick#	Part#	Price	Ø Sprue	Wt.
5023	GN5AJ	\$113.00	2mm	32g
Replacement Spring				
1281	SPR-01	\$1.90		

Size 5 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	OEM
5mm	5mm	5.5mm	5mm

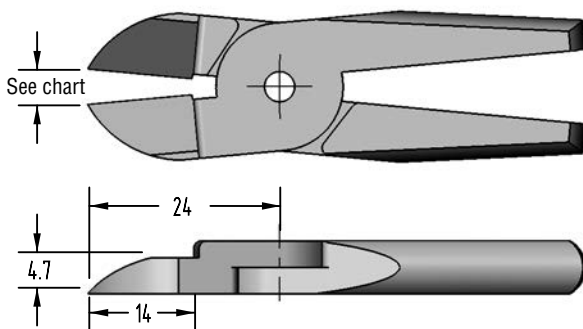


Gimatic

Quick#	Part#	Price	Ø Sprue	Wt.
5025	GN5PF	\$102.00	2mm	34g
Replacement Spring				
1281	SPR-01	\$1.90		

Size 5 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	OEM
3.5mm	3.5mm	4mm	3.5mm



Swanstrom

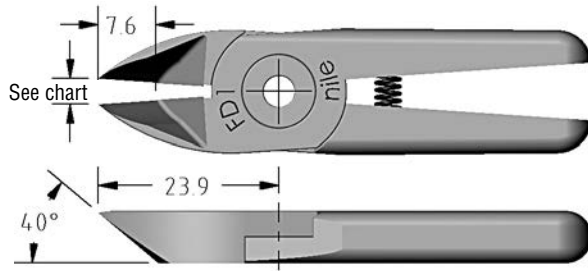
Quick#	Part#	Price	Ø Sprue	Wt.
1044	X-05-SI	\$71.22	2mm	32g
Replacement Spring				
1095	GSN-SP-002	\$0.55		

Size 5 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	OEM
5.5mm	5.25mm	5.5mm	5.25mm

Size 5 Blades

(Dimensioned drawings shown full scale)

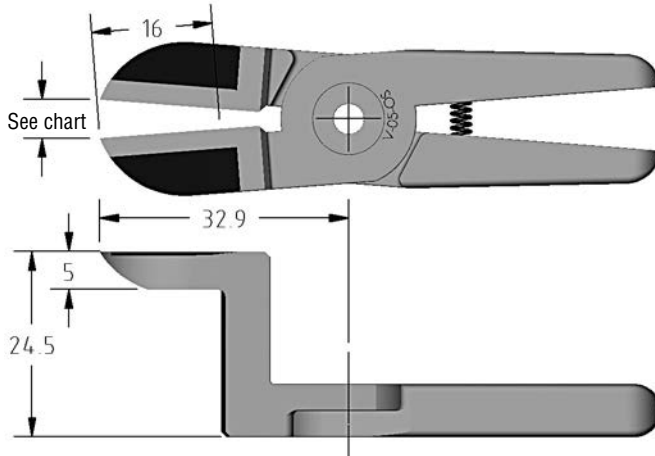


Nile

Quick#	Part#	Price	Ø Sprue	Wt.
1814	GSN-FD1	\$75.50	2mm	34g
Replacement Spring				
2314	NILE-SP1	\$2.09		

Size 5 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	OEM
3mm	3mm	3.5mm	3mm

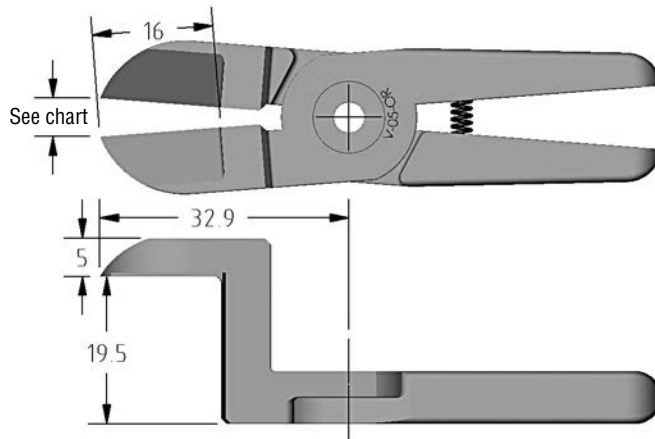


Swanstrom

Quick#	Part#	Price	Ø Sprue	Wt.
1035	X-05-OS	\$368.00	3mm	50g
Replacement Spring				
1095	GSN-SP-002	\$0.55		

Size 5 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	OEM
7mm	7mm	7.5mm	7mm



Swanstrom

Quick#	Part#	Price	Ø Sprue	Wt.
1036	X-05-OR	\$404.00	3mm	50g
Replacement Spring				
1095	GSN-SP-002	\$0.55		

Size 5 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	OEM
7mm	7mm	7.5mm	7mm

Use Quick#s for easy online ordering.

Size 10 Blades

Blade	Part#	Price	Style	Brand	Page	#2054 Blade Cover Compatibility	Nipper Body				Wt.
							Vessel 10	Gimatic 10	Swanstrom 10	OEM 10	
							Tip to Tip Opening (mm) *				
604	GSN-N10L-AP	\$100.00	Std. Angle	Vessel	865	✓	5.5	6	6	6	114g
1004	X-10-ST	\$75.67	Std. Angle	Swanstrom	865	✓	4.5	5	5	5	110g
5027	GN10LAP	\$102.00	Std. Angle	Gimatic	865	✓	5.5	5	4	5	116g
605	GSN-N10L-PF	\$115.00	Deep Angle	Vessel	865	✓	6	6.5	6.5	6.5	112g
1005	X-10-DA	\$89.43	Deep Angle	Swanstrom	866	✓	6.5	7	7	7	112g
5028	GN10LPF	\$134.00	Deep Angle	Gimatic	866	✓	5.5	6	6.5	6	114g
1006	X-10-LI	\$82.56	Inline	Swanstrom	866	✓	8	8.5	9	8.5	122g
1045	X-10-SI	\$89.43	Inline	Swanstrom	867	✓	5.5	6	6	6	117g
5026	GN10LAJ	\$144.00	Inline	Gimatic	866	✓	6	5.5	5.5	5.5	118g
1037	X-10-OS	\$427.00	Offset	Swanstrom	867	✗	8.5	8.5	7.5	8.5	135g
1038	X-10-OR	\$463.00	Offset	Swanstrom	867	✗	9	9	9.5	9	135g

Blade	Part#	Price	Style	Brand	Page	#2054 Blade Cover Compatibility	Nile 10 Nipper Body	Weight
							Tip to Tip Opening (mm) *	
1568	GSN-F3	\$61.50	Std. Angle	Nile	869	✓	5	62g
1569	GSN-FD3	\$66.50	Deep Angle	Nile	869	✓	5	62g

**Note: Tip-to-tip opening dimensions are approximate and can vary from blade to blade because blades are hand finished. Carbide and Custom blades are available, call EMI.*

Gimatic Blade Covers:

- Gimatic blades include protective blade covers, if you need additional covers they are listed here.
- Cover snaps into profile for storage, and ring can be used for zip-ties.



Gimatic Size 10 & 20 Blade Covers

Quick#	Part#	Price
6086	COJ12	\$2.34

Universal Blade Covers:

- Provides protection without compressing the nipper blade's spring.
- See reference chart above for compatibility.

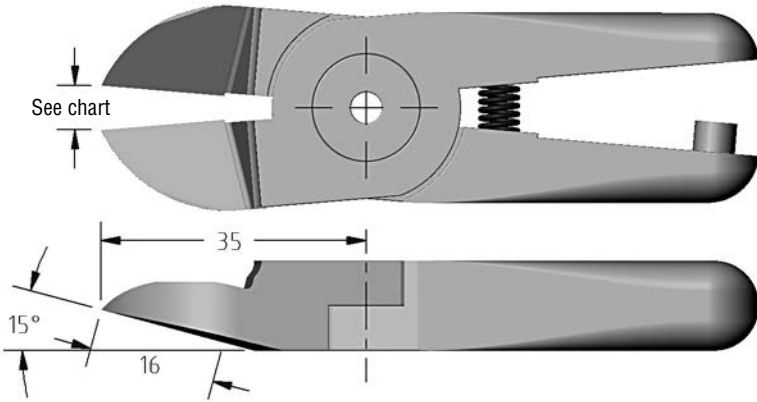


Universal Size 10 Blade Covers

Quick#	Part#	Price
2054	GSN-BC-10	\$6.90

Size 10 Blades

(Dimensioned drawings shown full scale)

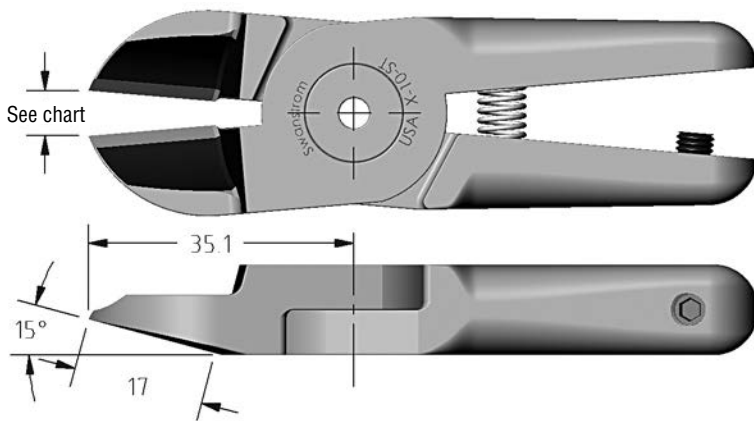


Vessel

Quick#	Part#	Price	Ø Sprue	Wt.
604	GSN-N10L-AP	\$100.00	3mm	114g
Replacement Spring				
1283	SPR-03	\$1.90		

Size 10 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
5.5mm	6mm	6mm	No	6mm

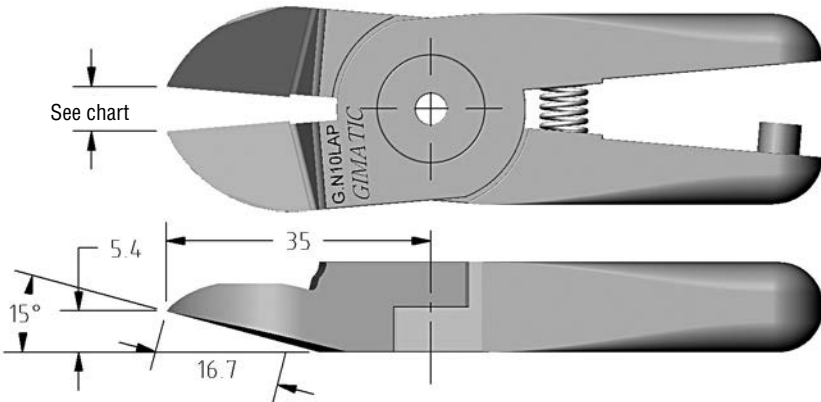


Swanstrom

Quick#	Part#	Price	Ø Sprue	Wt.
1004	X-10-ST	\$75.67	3mm	110g
Replacement Spring				
1099	GSN-SPR-029	\$1.10		

Size 10 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
4.5mm	5mm	5mm	No	5mm

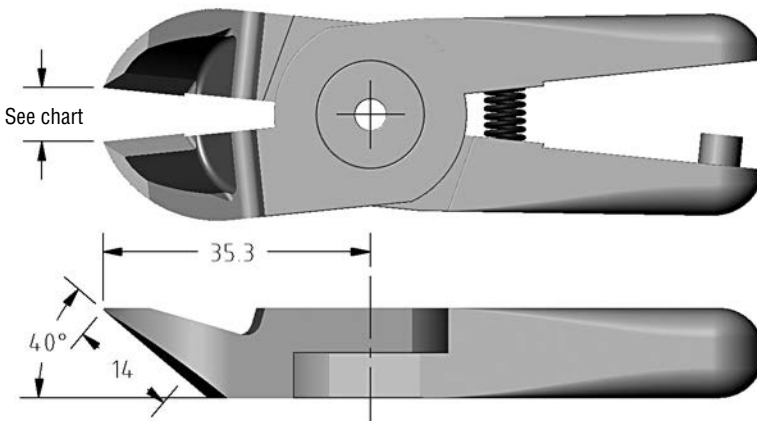


Gimatic

Quick#	Part#	Price	Ø Sprue	Wt.
5027	GN10LAP	\$102.00	3mm	116g
Replacement Spring				
1283	SPR-03	\$1.90		

Size 10 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
5.5mm	5mm	4mm	No	5mm



Vessel

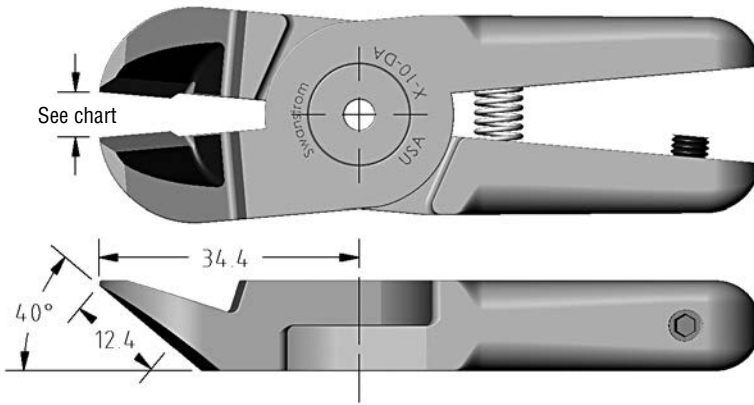
Quick#	Part#	Price	Ø Sprue	Wt.
605	GSN-N10L-PF	\$115.00	4mm	112g
Replacement Spring				
1283	SPR-03	\$1.90		

Size 10 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
6mm	6.5mm	6.5mm	No	6.5mm

Size 10 Blades

(Dimensioned drawings shown full scale)

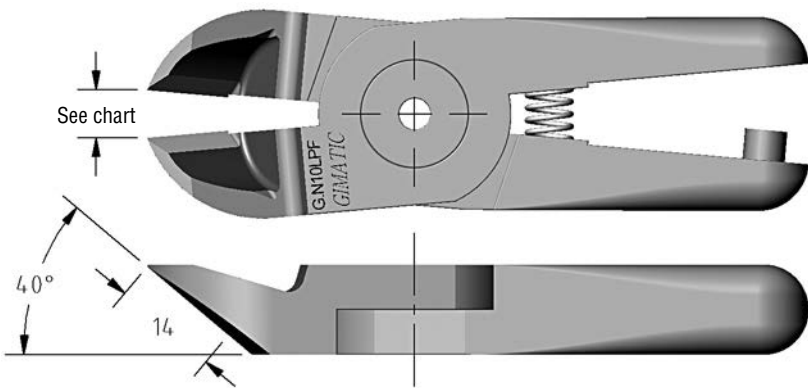


Swanstrom

Quick#	Part#	Price	Ø Sprue	Wt.
1005	X-10-DA	\$89.43	4mm	112g
Replacement Spring				
1099	GSN-SPR-029	\$1.10		

Size 10 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
6.5mm	7mm	7mm	No	7mm

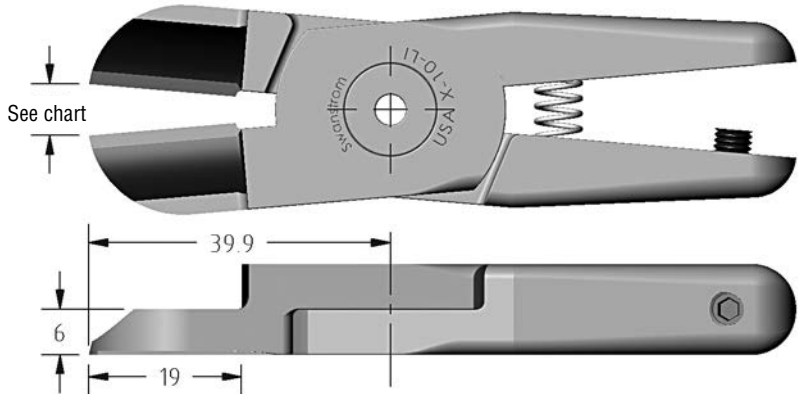


Gimatic

Quick#	Part#	Price	Ø Sprue	Wt.
5028	GN10LPP	\$134.00	4mm	114g
Replacement Spring				
1283	SPR-03	\$1.90		

Size 10 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
5.5mm	6mm	6.5mm	No	6mm

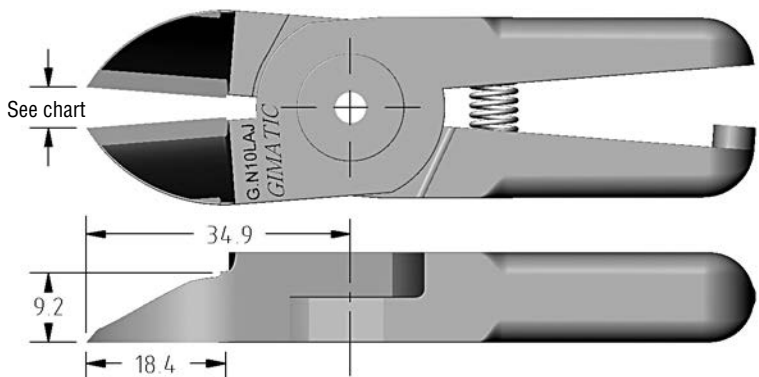


Swanstrom

Quick#	Part#	Price	Ø Sprue	Wt.
1006	X-10-LI	\$82.56	4mm	122g
Replacement Spring				
1099	GSN-SPR-029	\$1.10		

Size 10 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
8mm	8.5mm	9mm	No	8.5mm



Gimatic

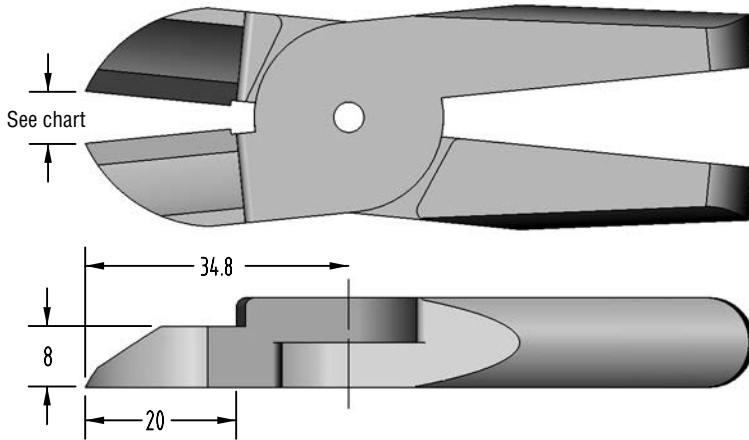
Quick#	Part#	Price	Ø Sprue	Wt.
5026	GN10LAJ	\$144.00	3mm	118g
Replacement Spring				
1283	SPR-03	\$1.90		

Size 10 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
6mm	5.5mm	5.5mm	No	5.5mm

Size 10 Blades

(Dimensioned drawings shown full scale)

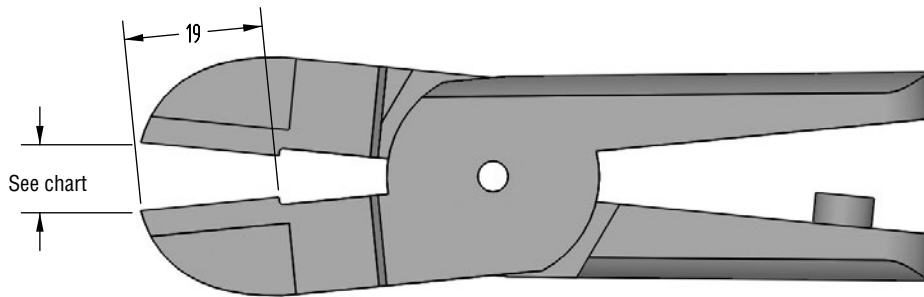


Swanstrom

Quick#	Part#	Price	Ø Sprue	Wt.
1045	X-10-SI	\$89.43	4mm	117g
Replacement Spring				
1099	GSN-SPR-029	\$1.10		

Size 10 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
5.5mm	6mm	6mm	No	6mm

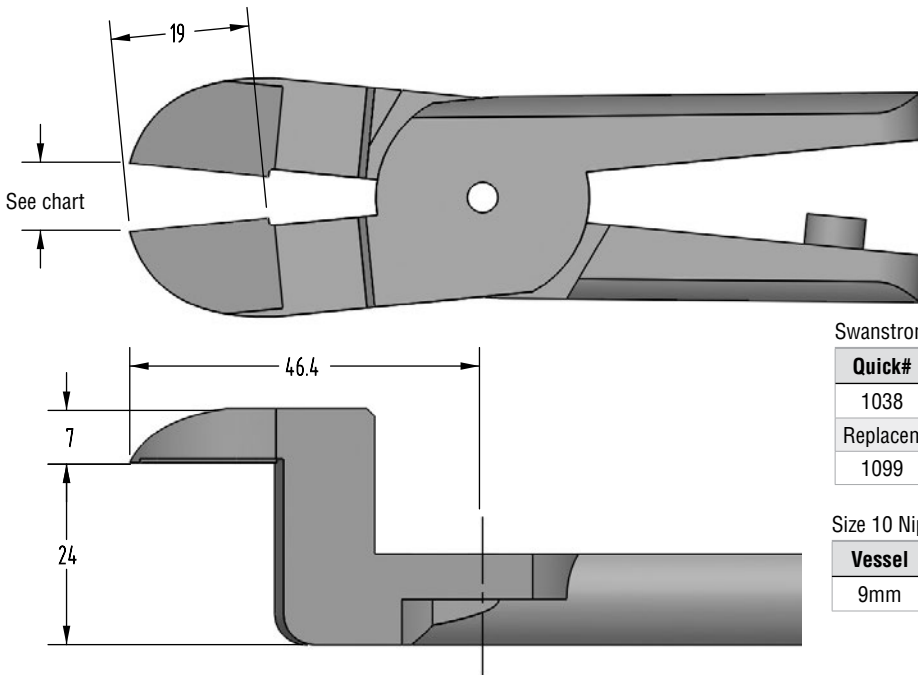


Swanstrom

Quick#	Part#	Price	Ø Sprue	Wt.
1037	X-10-OS	\$427.00	4mm	135g
Replacement Spring				
1099	GSN-SPR-029	\$1.10		

Size 10 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
8.5mm	8.5mm	7.5mm	No	8.5mm



Swanstrom

Quick#	Part#	Price	Ø Sprue	Wt.
1038	X-10-OR	\$463.00	4mm	135g
Replacement Spring				
1099	GSN-SPR-029	\$1.10		

Size 10 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
9mm	9mm	9.5mm	No	9mm

Size 10 High-Power Sprue Jaws (JGW & JGN) for Vessel, Gimatic & Swanstrom Bodies Only

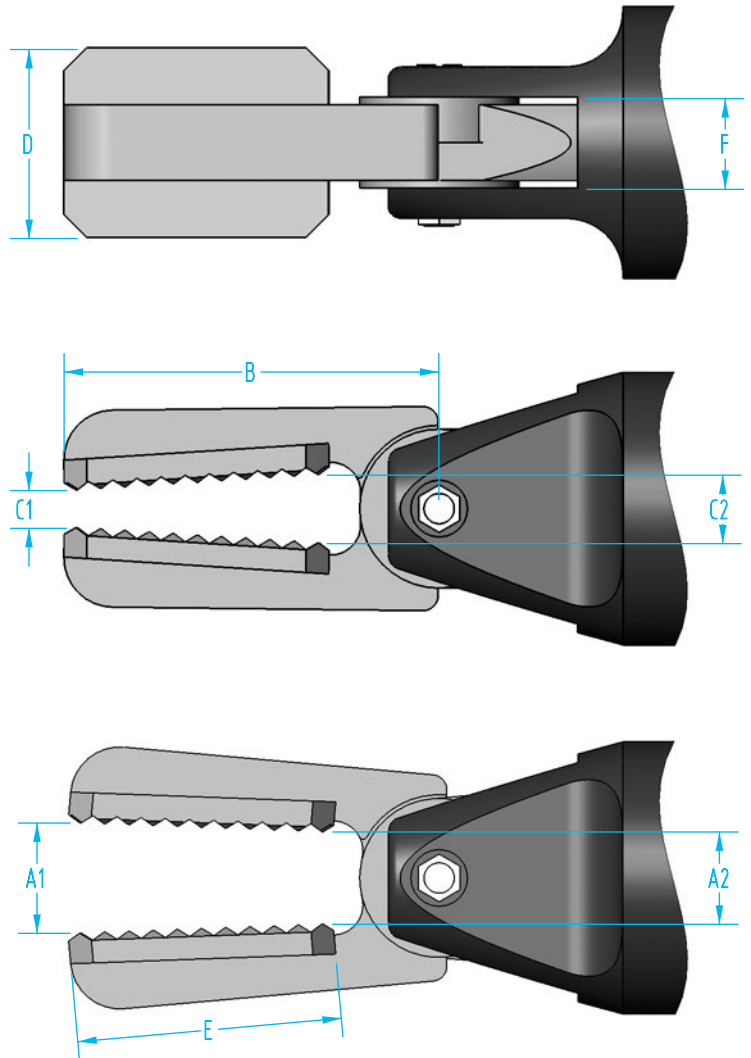
(Dimensioned drawings shown full scale)

High Power Sprue Jaws - dimensions

Quick#	Part#	A1	A2	B	C1	C2	D	E	F
6100	JGW-10S-A50	14.5	12	49.5	5	9	25	35	12
6125	JGN-10S-A52	9	6.5	49.5	0	3.5	25	35	12
7371	JGN-10N	9	7.5	49.5	0	2	16	24	12



#7371
Sprue Jaws with
Nitrile pads



Quick#	Part#	Price	Finger Style	Applicable Sprue Ø	Gripping Force ¹ when used with Gimatic nipper body ²	Weight
6100	JGW-10S-A50	\$108.00	wide	5–10mm	448.5 lbf (@1½" from pivot point)	175g
6125	JGN-10S-A52	\$108.00	narrow	5–10mm	448.5 lbf (@1½" from pivot point)	190g
7371	JGN-10N	\$248.00	narrow	5–10mm	448.5 lbf (@1½" from pivot point)	137g

¹ at 87 psi. ² can be used with any size 20 body—force may be less.

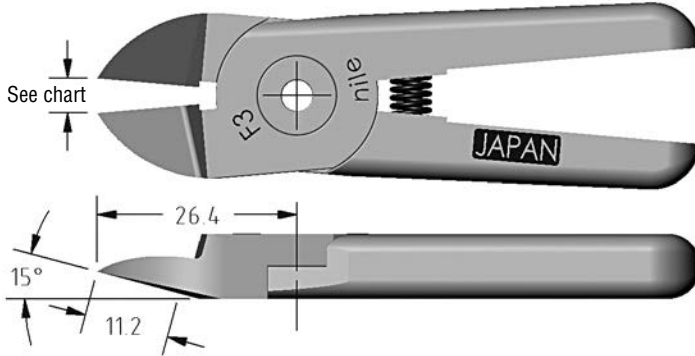
(Order nipper body separately, see page 827)

Size 10 Blades – Nile Bodies Only

(Dimensioned drawings shown full scale)

Blade	Part#	Price	Style	Brand	Page	#2054 Blade Cover Compatibility	Nile 10 Nipper Body		Weight
							Tip to Tip Opening (mm) *		
1568	GSN-F3	\$61.50	Std. Angle	Nile	869	✓	5		62g
1569	GSN-FD3	\$66.50	Deep Angle	Nile	869	✓	5		62g

*Note: Tip-to-tip opening dimensions are approximate and can vary from blade to blade because blades are hand finished.

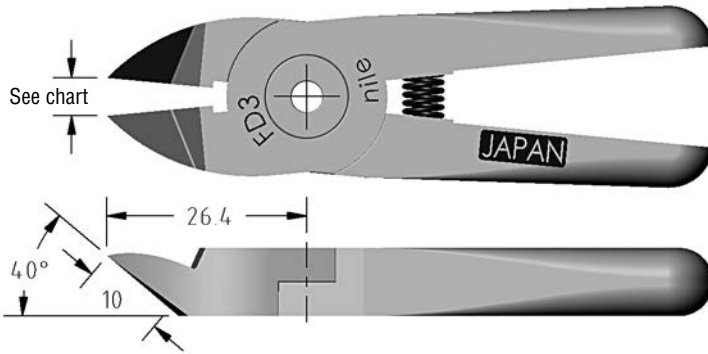


Nile

Quick#	Part#	Price	Ø Sprue	Wt.
1568	GSN-F3	\$61.50	3mm	62g
Replacement Spring				
5176	NILE-SP3	\$2.09		

Size 10 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
No	No	No	5mm	No



Nile

Quick#	Part#	Price	Ø Sprue	Wt.
1569	GSN-FD3	\$66.50	3mm	62g
Replacement Spring				
5176	NILE-SP3	\$2.09		

Size 10 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
No	No	No	5mm	No

Call EMI for All Your Degating Applications



Size 20 Nipper Blades

Blade	Part#	Price	Style	Brand	Page	#2055 Blade Cover Compatibility	Nipper Body					Wt.
							Vessel 20	Gimatic 20	Swanstrom 20	Nile 20	OEM 20	
							Tip to Tip Opening (mm) *					
607	GSN-N20-AP	\$99.00	Std. Angle	Vessel	871	✓	12	11.5	12	12.5	11.5	116g
1007	X-20-ST	\$92.65	Std. Angle	Swanstrom	871	✓	12.5	11.5	12	12	11.5	122g
5030	GN20AP	\$101.00	Std. Angle	Gimatic	872	✓	11.5	11	11.5	11.5	11	120g
1570	GSN-F5	\$72.50	Std. Angle	Nile	872	✓	9.5	9	9	9	9	120g
608	GSN-N20-PF	\$96.00	Deep Angle	Vessel	873	✓	11	10.5	11	11	10.5	126g
1008	X-20-DA	\$117.00	Deep Angle	Swanstrom	873	✓	11.5	11	12	11.5	11	124g
5031	GN20PF	\$100.00	Deep Angle	Gimatic	874	✓	12	11.5	11.5	11.5	11.5	122g
1571	GSN-FD5	\$78.00	Deep Angle	Nile	874	✓	9.5	9	9.5	9.5	9	122g
1096	X-20-RV45	\$390.00	Reverse Deep	Swanstrom	872	✗	17.5	17	17.5	17.5	17	172g
1024	X-20-DA75	\$234.00	Extra Deep	Swanstrom	874	✗	16.5	15.5	16	16.5	15.5	194g
698	GSN-N20-AA	\$366.00	Deep, Long	Vessel	875	✗	15	14.5	15.5	15	14.5	186g
1098	X-20-LA	\$177.00	Deep, Long	Swanstrom	875	✗	17	16.5	17	17.5	16.5	170g
1025	X-20-DA90	\$236.00	Extra Deep	Swanstrom	875	✗	14	13.5	14	14.5	13.5	200g
610	GSN-N20-AE	\$115.00	Perpendicular	Vessel	876	✓	9	8.5	9	9	8.5	122g
1010	X-20-PE	\$117.00	Perpendicular	Swanstrom	876	✓	8.5	8.5	9	8.5	8.5	132g
1028	X-20PELA49	\$145.00	Perpendicular	Swanstrom	876	✓	16.5	15.5	16.5	16.5	15.5	178g
609	GSN-N20-AJL	\$170.00	Inline	Vessel	877	✓	16	15	15.5	16.5	15	220g
1009	X-20-LI	\$158.00	Inline	Swanstrom	877	✓	22	21	22	22	21	198g
1046	X-20-SI	\$96.33	Inline	Swanstrom	877	✓	11.5	11	12	12	11	120g
5029	GN20AJ	\$133.00	Inline	Gimatic	878	✓	12.5	11.5	12.5	12.5	11.5	120g
1039	X-20-OS	\$380.00	Offset	Swanstrom	878	✗	21.5	20.5	21.5	21.5	20.5	220g
1040	X-20-OR	\$463.00	Offset	Swanstrom	878	✗	22	21	22	22	21	220g

**Note: Tip-to-tip opening dimensions are approximate and can vary from blade to blade because blades are hand finished. Carbide and Custom blades are available, call EMI.*

Gimatic Blade Covers:

- Gimatic blades include protective blade covers, if you need additional covers they are listed here.
- Cover snaps into profile for storage, and ring can be used for zip-ties.



Gimatic Size 10 & 20 Blade Covers

Quick#	Part#	Price
6086	COJ12	\$2.34

Universal Blade Covers:

- Provides protection without compressing the nipper blade's spring.
- See reference chart above for compatibility.

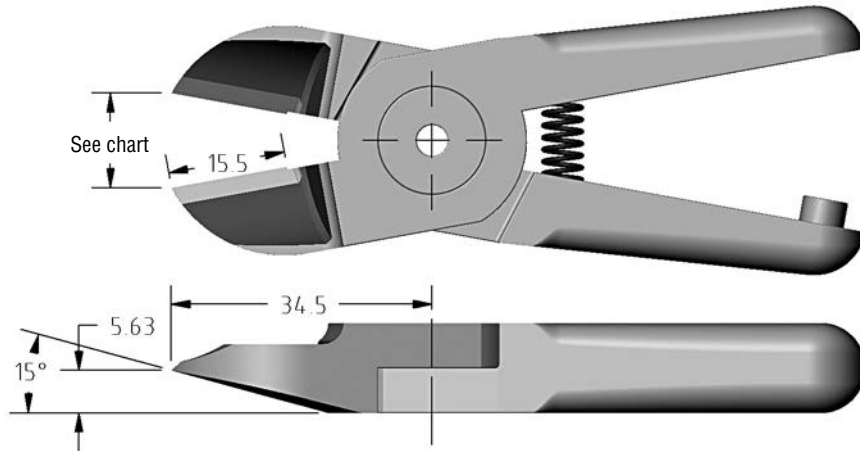


Universal Size 20 Blade Covers

Quick#	Part#	Price
2055	GSN-BC-20	\$9.97

Size 20 Nipper Blades

(Dimensioned drawings shown full scale)

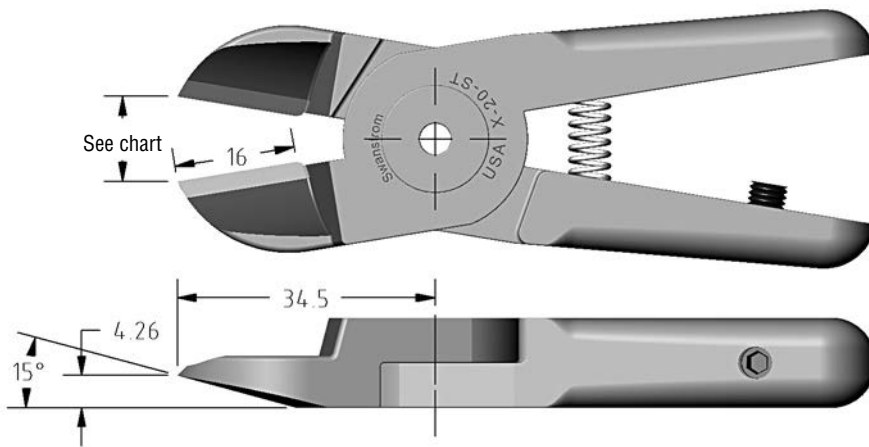


Vessel

Quick#	Part#	Price	Ø Sprue	Wt.
607	GSN-N20-AP	\$99.00	7mm	116g
Replacement Spring				
1283	SPR-03	\$1.90		

Size 20 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
12mm	11.5mm	12mm	12.5mm	11.5mm



Swanstrom

Quick#	Part#	Price	Ø Sprue	Wt.
1007	X-20-ST	\$92.65	6mm	122g
Replacement Spring				
1099	GSN-SPR-029	\$1.10		

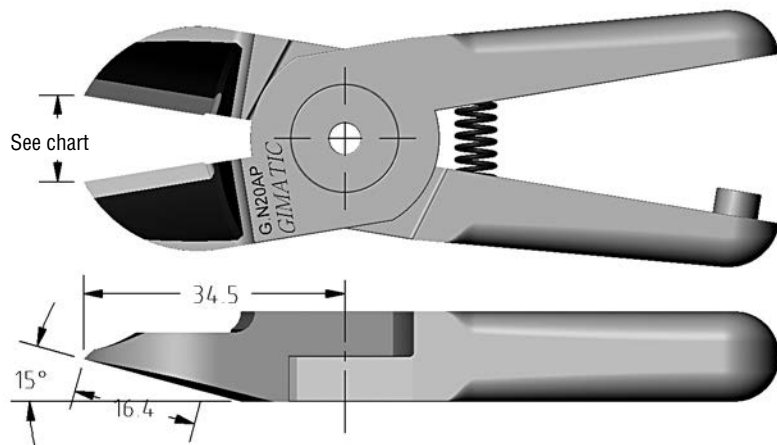
Size 20 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
12.5mm	11.5mm	12mm	12mm	11.5mm

Use Quick#s for easy online ordering.

Size 20 Blades

(Dimensioned drawings shown full scale)

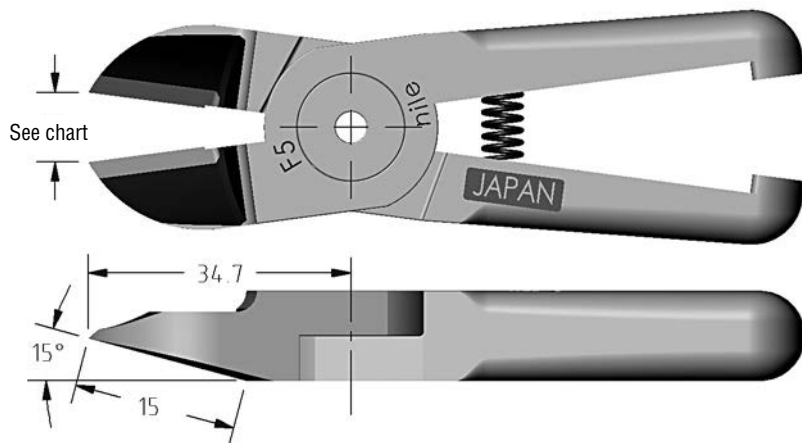


Gimatic

Quick#	Part#	Price	Ø Sprue	Wt.
5030	GN20AP	\$101.00	6mm	120g
Replacement Spring				
1283	SPR-03	\$1.90		

Size 20 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
11.5mm	11mm	11.5mm	11.5mm	11mm

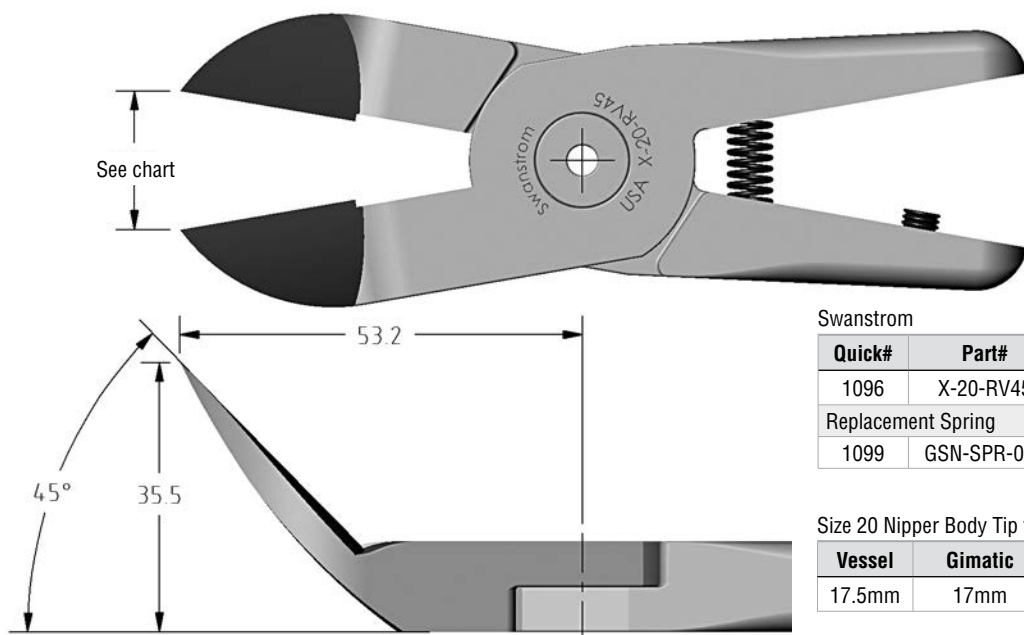


Nile

Quick#	Part#	Price	Ø Sprue	Wt.
1570	GSN-F5	\$72.50	5mm	120g
Replacement Spring				
5177	NILE-SP5	\$2.09		

Size 20 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
9.5mm	9mm	9mm	9mm	9mm



Swanstrom

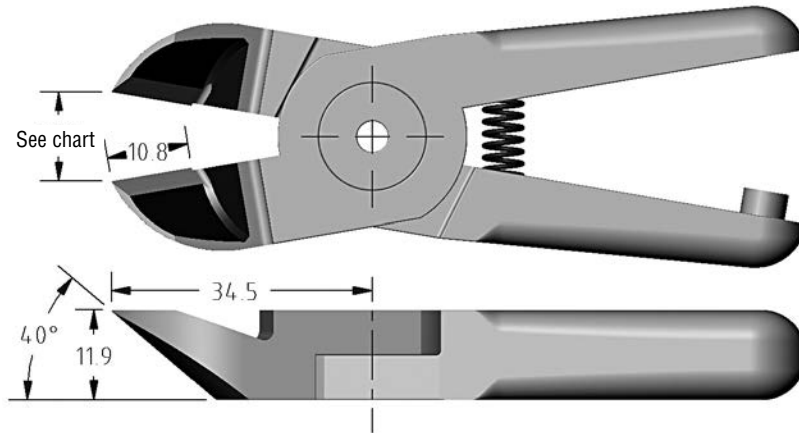
Quick#	Part#	Price	Ø Sprue	Wt.
1096	X-20-RV45	\$390.00	9mm	172g
Replacement Spring				
1099	GSN-SPR-029	\$1.10		

Size 20 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
17.5mm	17mm	17.5mm	17.5mm	17mm

Size 20 Blades

(Dimensioned drawings shown full scale)

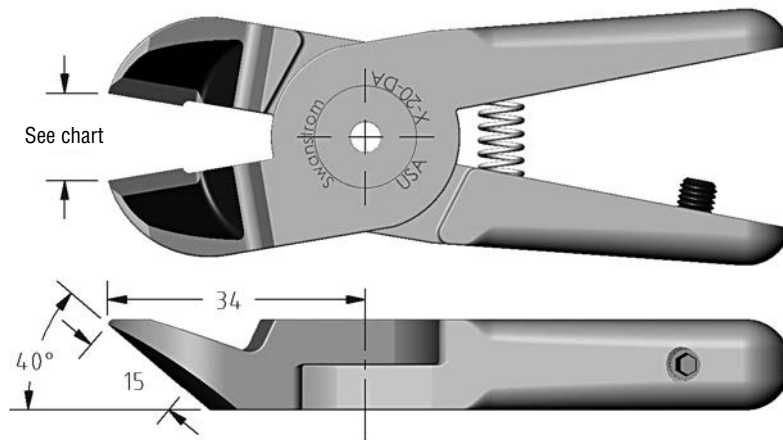


Vessel

Quick#	Part#	Price	Ø Sprue	Wt.
608	GSN-N20-PF	\$96.00	6mm	126g
Replacement Spring				
1283	SPR-03	\$1.90		

Size 20 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
11mm	10.5mm	11mm	11mm	10.5mm



Swanstrom

Quick#	Part#	Price	Ø Sprue	Wt.
1008	X-20-DA	\$117.00	6mm	124g
Replacement Spring				
1099	GSN-SPR-029	\$1.10		

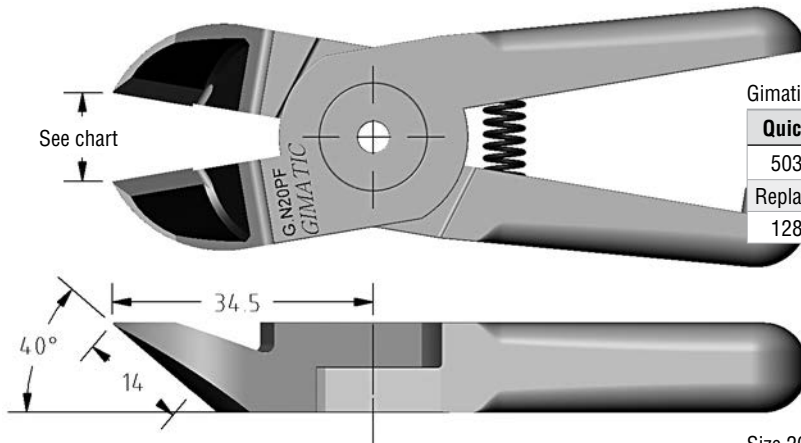
Size 20 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
11.5mm	11mm	12mm	11.5mm	11mm

Use Quick#s for easy online ordering.

Size 20 Blades

(Dimensioned drawings shown full scale)

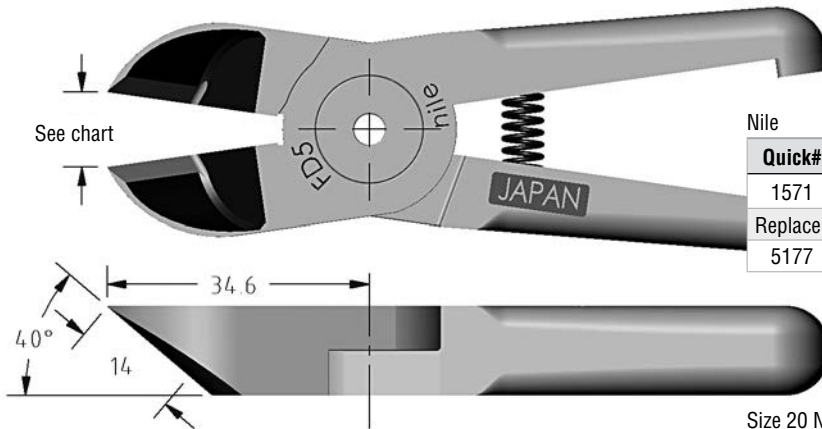


Gimatic

Quick#	Part#	Price	Ø Sprue	Wt.
5031	GN20PF	\$100.00	6mm	122g
Replacement Spring				
1283	SPR-03	\$1.90		

Size 20 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
12mm	11.5mm	11.5mm	11.5mm	11.5mm

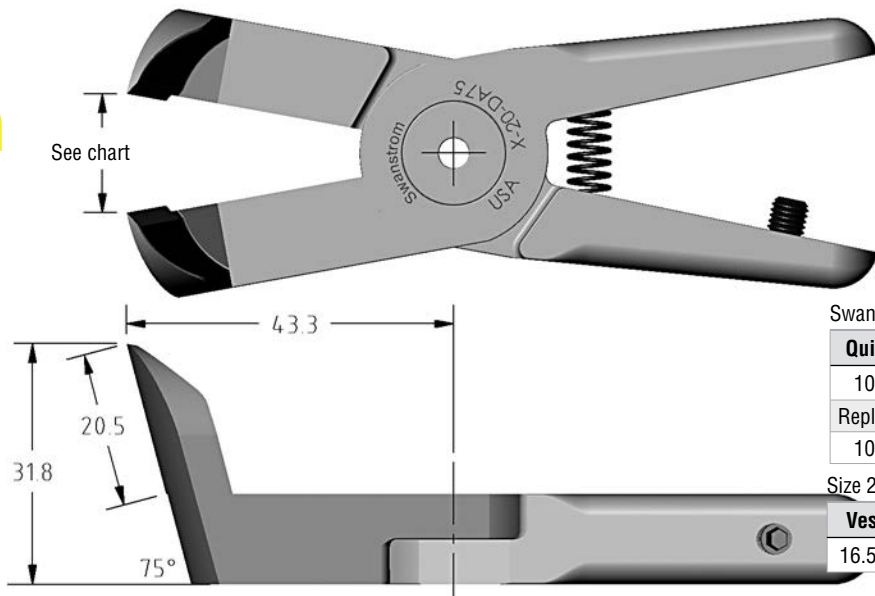


Nile

Quick#	Part#	Price	Ø Sprue	Wt.
1571	GSN-FD5	\$78.00	5mm	122g
Replacement Spring				
5177	NILE-SP5	\$2.09		

Size 20 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
9.5mm	9mm	9.5mm	9.5mm	9mm



Swanstrom

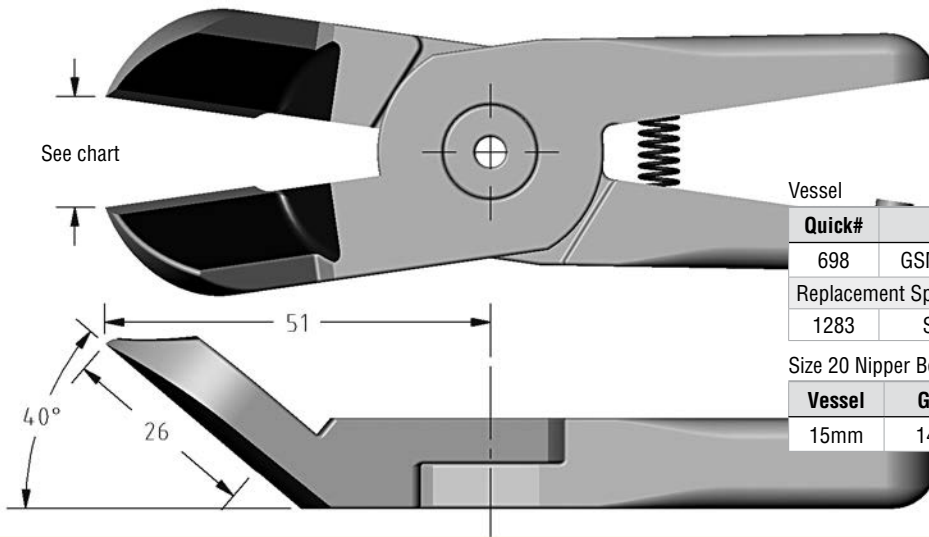
Quick#	Part#	Price	Ø Sprue	Wt.
1024	X-20-DA75	\$234.00	9mm	194g
Replacement Spring				
1099	GSN-SPR-029	\$1.10		

Size 20 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
16.5mm	15.5mm	16mm	16.5mm	15.5mm

Size 20 Blades

(Dimensioned drawings shown full scale)

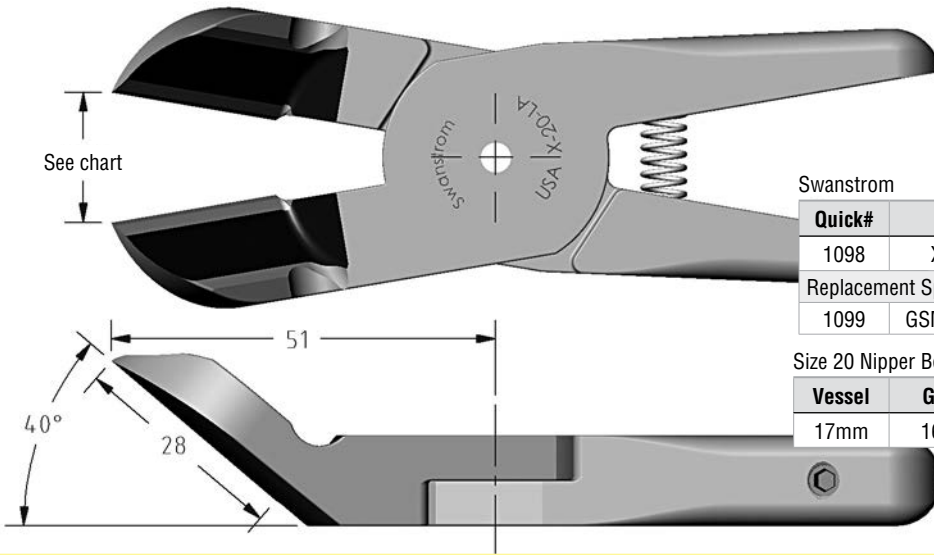


Vessel

Quick#	Part#	Price	Ø Sprue	Wt.
698	GSN-N20-AA	\$366.00	8mm	186g
Replacement Spring				
1283	SPR-03	\$1.90		

Size 20 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
15mm	14.5mm	15.5mm	15mm	14.5mm

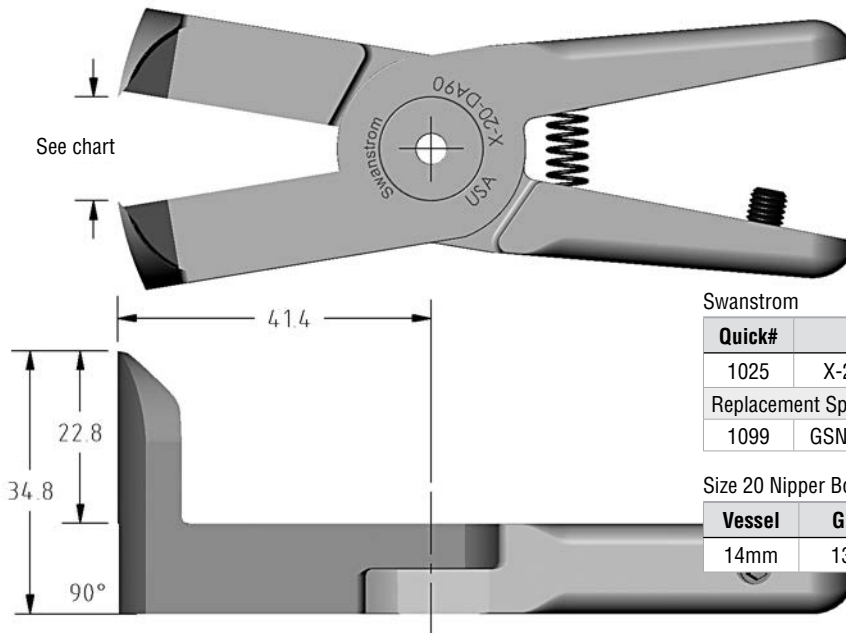


Swanstrom

Quick#	Part#	Price	Ø Sprue	Wt.
1098	X-20-LA	\$177.00	9mm	170g
Replacement Spring				
1099	GSN-SPR-029	\$1.10		

Size 20 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
17mm	16.5mm	17mm	17.5mm	16.5mm



Swanstrom

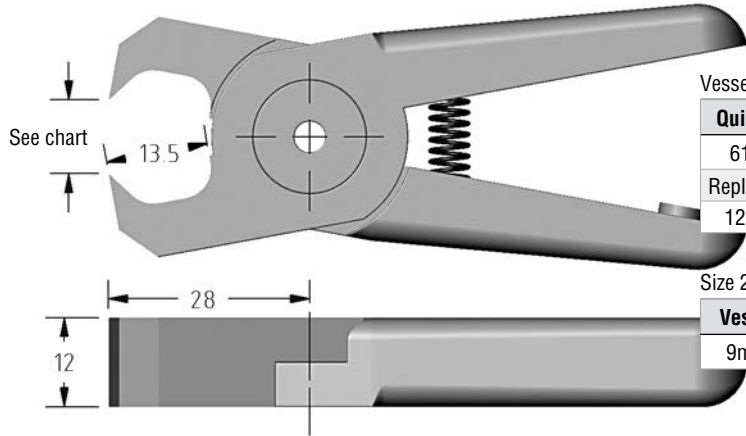
Quick#	Part#	Price	Ø Sprue	Wt.
1025	X-20-DA90	\$236.00	8mm	200g
Replacement Spring				
1099	GSN-SPR-029	\$1.10		

Size 20 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
14mm	13.5mm	14mm	14.5mm	13.5mm

Size 20 Blades

(Dimensioned drawings shown full scale)

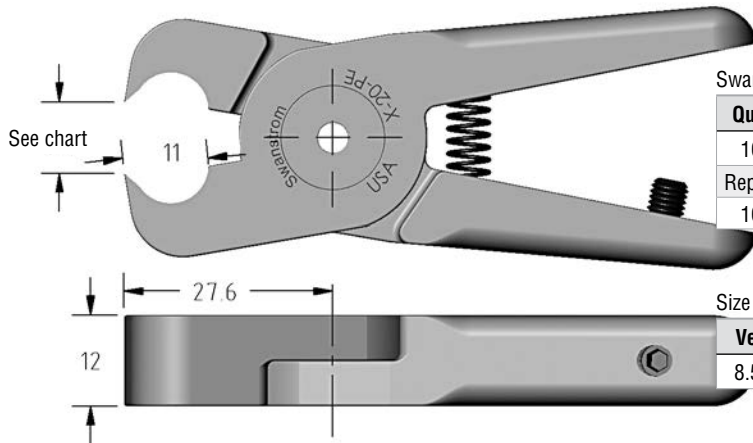


Vessel

Quick#	Part#	Price	Ø Sprue	Wt.
610	GSN-N20-AE	\$115.00	6mm	122g
Replacement Spring				
1283	SPR-03	\$1.90		

Size 20 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
9mm	8.5mm	9mm	9mm	8.5mm

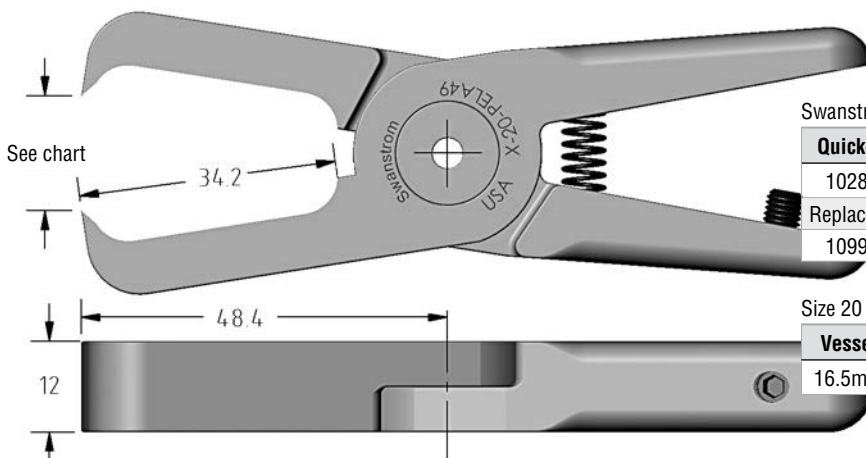


Swanstrom

Quick#	Part#	Price	Ø Sprue	Wt.
1010	X-20-PE	\$117.00	6mm	132g
Replacement Spring				
1099	GSN-SPR-029	\$1.10		

Size 20 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
8.5mm	8.5mm	9mm	8.5mm	8.5mm



Swanstrom

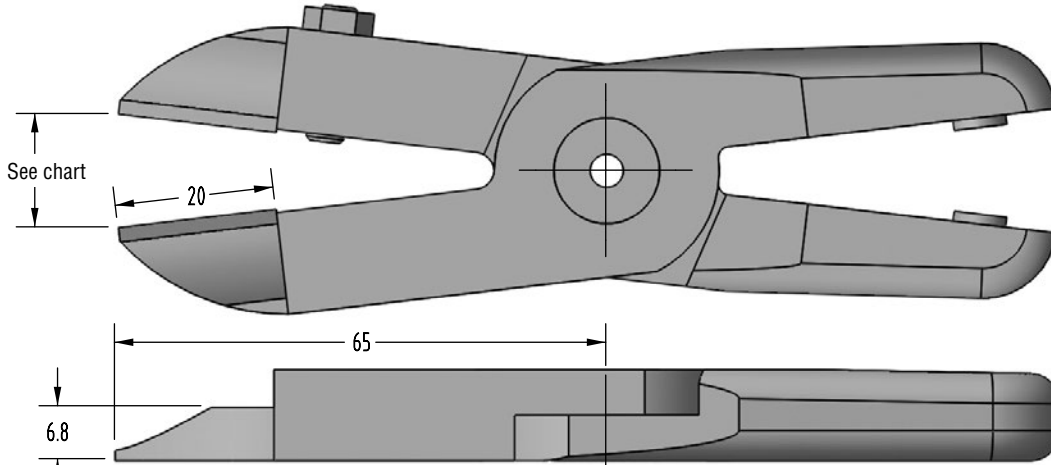
Quick#	Part#	Price	Ø Sprue	Wt.
1028	X-20PELA49	\$145.00	8mm	178g
Replacement Spring				
1099	GSN-SPR-029	\$1.10		

Size 20 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
16.5mm	15.5mm	16.5mm	16.5mm	15.5mm

Size 20 Blades

(Dimensioned drawings shown full scale)

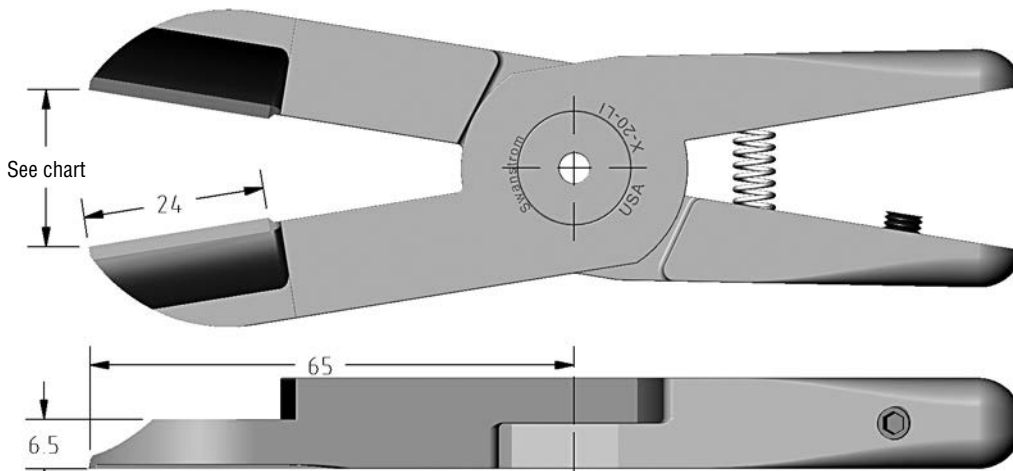


Vessel

Quick#	Part#	Price	Ø Sprue	Wt.
609	GSN-N20-AJL	\$170.00	8mm	220g
Replacement Spring				
1283	SPR-03	\$1.90		

Size 20 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
16mm	15mm	15.5mm	16.5mm	15mm

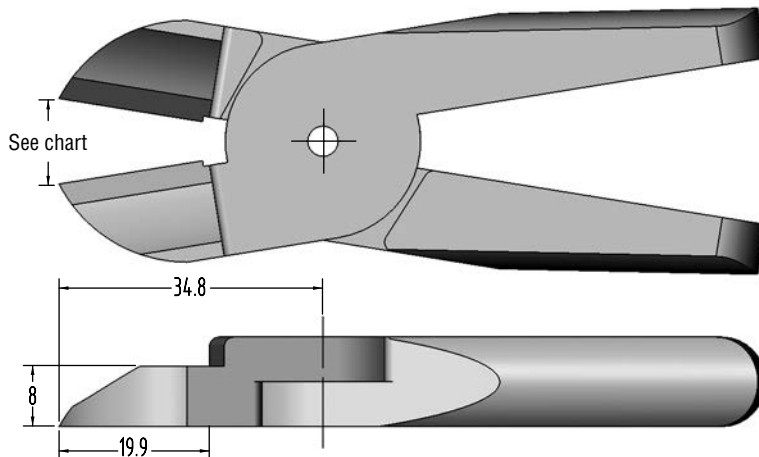


Swanstrom

Quick#	Part#	Price	Ø Sprue	Wt.
1009	X-20-LI	\$158.00	8mm	198g
Replacement Spring				
1099	GSN-SPR-029	\$1.10		

Size 20 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
22mm	21mm	22mm	22mm	21mm



Swanstrom

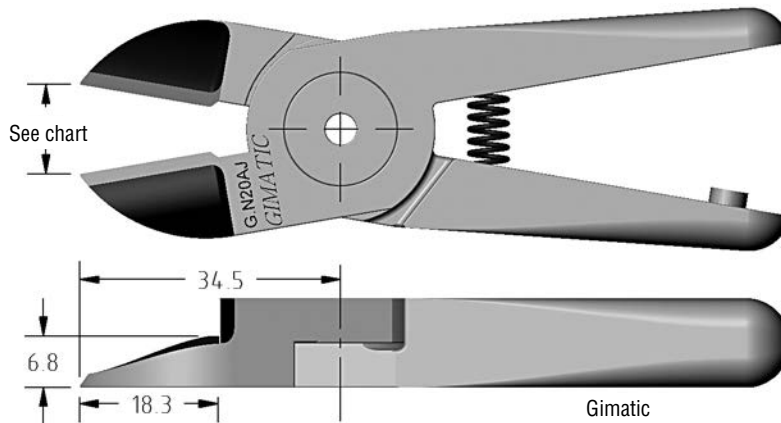
Quick#	Part#	Price	Ø Sprue	Wt.
1046	X-20-SI	\$96.33	6mm	120g
Replacement Spring				
1099	GSN-SPR-029	\$1.10		

Size 20 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
11.5mm	11mm	12mm	12mm	11mm

Size 20 Blades

(Dimensioned drawings shown full scale)

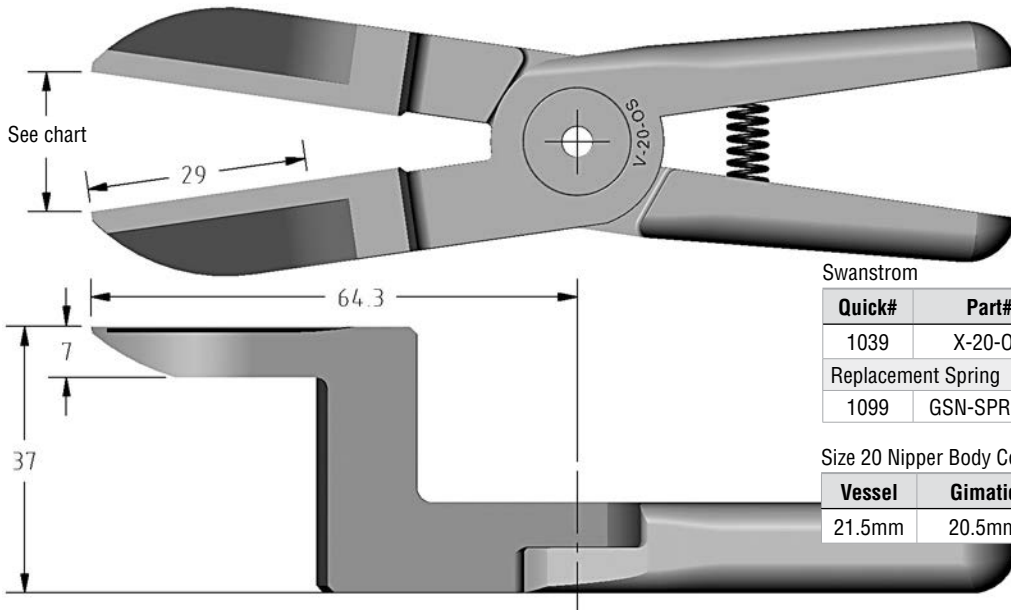


Size 20 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
12.5mm	11.5mm	12.5mm	12.5mm	11.5mm

Gimatic

Quick#	Part#	Price	Ø Sprue	Wt.
5029	GN20AJ	\$133.00	6mm	120g
Replacement Spring				
1283	SPR-03	\$1.90		

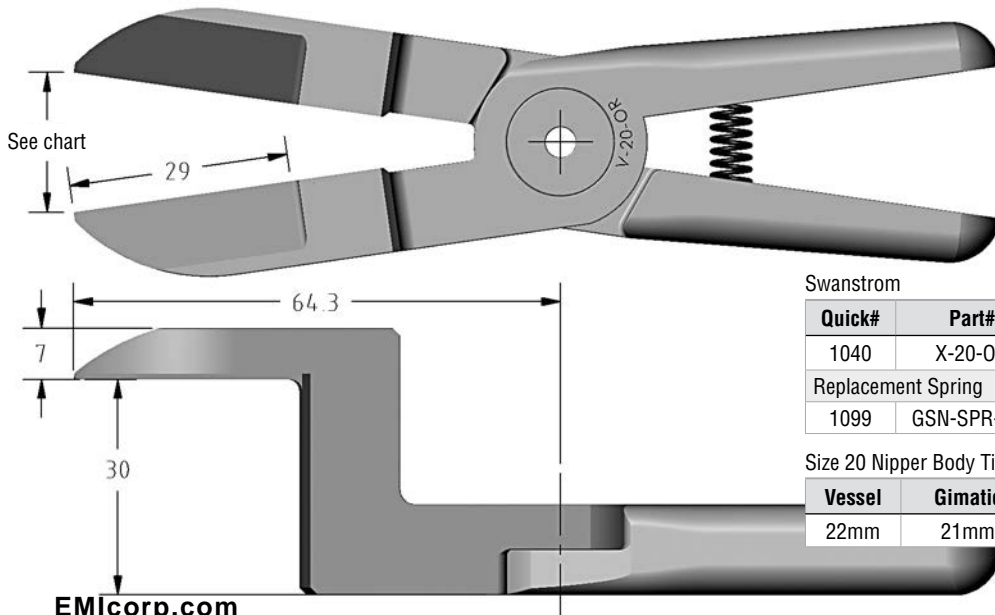


Swanstrom

Quick#	Part#	Price	Ø Sprue	Wt.
1039	X-20-OS	\$380.00	8mm	220g
Replacement Spring				
1099	GSN-SPR-029	\$1.10		

Size 20 Nipper Body Compatibility

Vessel	Gimatic	Swanstrom	Nile	OEM
21.5mm	20.5mm	21.5mm	21.5mm	20.5mm



Swanstrom

Quick#	Part#	Price	Ø Sprue	Wt.
1040	X-20-OR	\$463.00	8mm	220g
Replacement Spring				
1099	GSN-SPR-029	\$1.10		

Size 20 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
22mm	21mm	22mm	22mm	21mm

Size 20 High-Power Sprue Jaws (JGW & JGN) for Vessel, Gimatic & Swanstrom Bodies Only

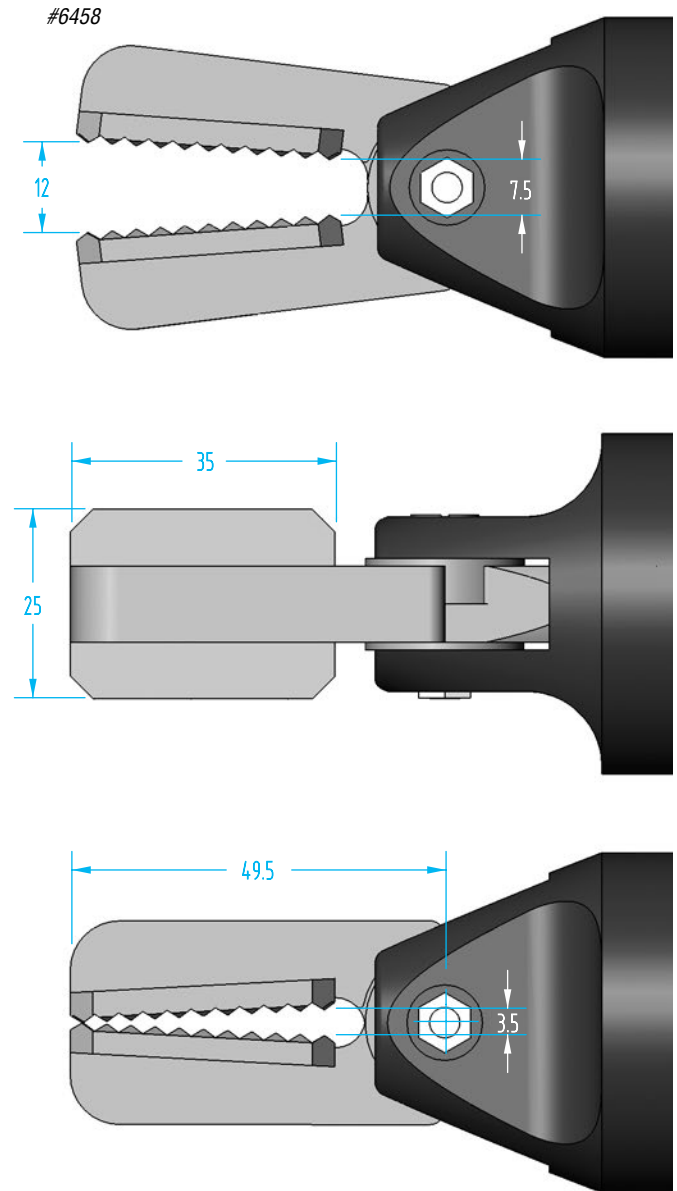
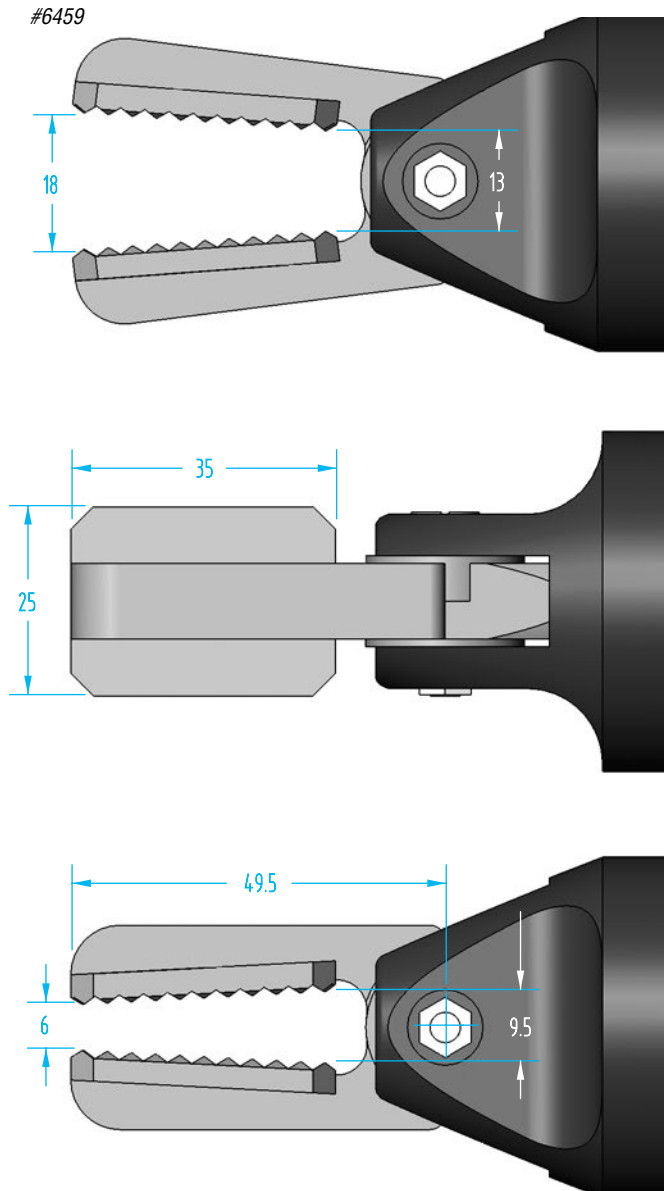
(Dimensioned drawings shown full scale)

Quick#	Part#	Price	Finger Style	Applicable Sprue Ø	Gripping Force ¹ when used with Gimatic nipper body ²	Weight
6459	JGW-20S-A50	\$108.00	wide	10–15mm	790.5 lbf (@1½" from pivot point)	185g
6458	JGN-20S-A52	\$108.00	narrow	10–15mm	790.5 lbf (@1½" from pivot point)	200g

¹ at 87 psi. ² can be used with any size 20 body—force may be less.

Wide Finger Style Sprue Jaws:

Narrow Finger Style Sprue Jaws:



Size 30 Blades

Blade	Part#	Price	Style	Brand	Page	#2056 Blade Cover Compatibility	Nipper Body					Wt.
							Vessel 30	Gimatic 30	Swanstrom 30	Nile 30	OEM 30	
							Tip to Tip Opening (mm) *					
612	GSN-N30-AP	\$128.00	Std. Angle	Vessel	881	✓	20	19	19	18.5	19	358g
1012	X-30ST	\$124.00	Std. Angle	Swanstrom	881	✓	15	12.5	18	15	12.5	374g
5033	GN30AP	\$131.00	Std. Angle	Gimatic	882	✓	19	18	18.5	18	18	382g
1572	GSN-F9P	\$101.50	Std. Angle	Nile	882	✓	17.5	16.5	17	16	16.5	410g
1573	GSN-FD9P	\$106.50	Deep Angle	Nile	884	✓	14	14	15	14	14	410g
613	GSN-N30-PF	\$132.00	Deep Angle	Vessel	883	✓	16	15.5	16	16	15.5	376g
1013	X-30-DA	\$124.00	Deep Angle	Swanstrom	883	✓	12.5	12	17.5	13.5	12	388g
5034	GN30PF	\$137.00	Deep Angle	Gimatic	884	✓	16	16	15	15.5	16	386g
697	GSN-N30-AA	\$423.00	Deep, Long	Vessel	885	✗	22	21.5	23	22	21.5	372g
1097	X-30-LA	\$212.00	Deep, Long	Swanstrom	885	✗	18.5	15.5	23	17.5	15.5	378g
1026	X-30-DA75	\$355.00	Extra Deep	Swanstrom	886	✗	11.5	11.5	15	11	11.5	416g
1027	X-30-DA90	\$356.00	Extra Deep	Swanstrom	886	✗	10	8.5	11	9.5	8.5	432g
614	GSN-N30-AJL	\$188.00	Inline	Vessel	888	✓	21.5	21	21	20.5	21	470g
1014	X-30-LI	\$172.00	Inline	Swanstrom	888	✓	19	18.5	22.5	18	18.5	464g
1047	X-30-SI	\$124.00	Inline	Swanstrom	891	✓	12.5	12.5	15	14.5	12.5	365g
5032	GN30AJ	\$144.00	Inline	Gimatic	889	✓	11	10.5	11	11.5	10.5	368g
1574	GSN-F9PS	\$101.50	Inline	Nile	889	✓	16.5	16	17	16	16	404g
1041	X-30-OS	\$446.00	Offset	Swanstrom	890	✗	17.5	13.5	16.5	17.5	13.5	494g
1042	X-30-OR	\$482.00	Offset	Swanstrom	890	✗	18	14	16.5	18.5	14	494g
615	GSN-N30-AE	\$144.00	Perpendicular	Vessel	887	✓	12.5	12.5	12	12	12.5	386g
1015	X-30-PE	\$135.00	Perpendicular	Swanstrom	887	✓	10	8	13.5	10.5	8	374g

**Note: Tip-to-tip opening dimensions are approximate and can vary from blade to blade because blades are hand finished. Carbide and Custom blades are available, call EMI.*

Gimatic Blade Covers:

- Gimatic blades include protective blade covers, if you need additional covers they are listed here.
- Cover snaps into profile for storage, and ring can be used for zip-ties.



Gimatic Size 30 & 50 Blade Covers

Quick#	Part#	Price
6087	COJ30	\$2.59

Universal Blade Covers:

- Provides protection without compressing the nipper blade's spring.
- See reference chart above for compatibility.

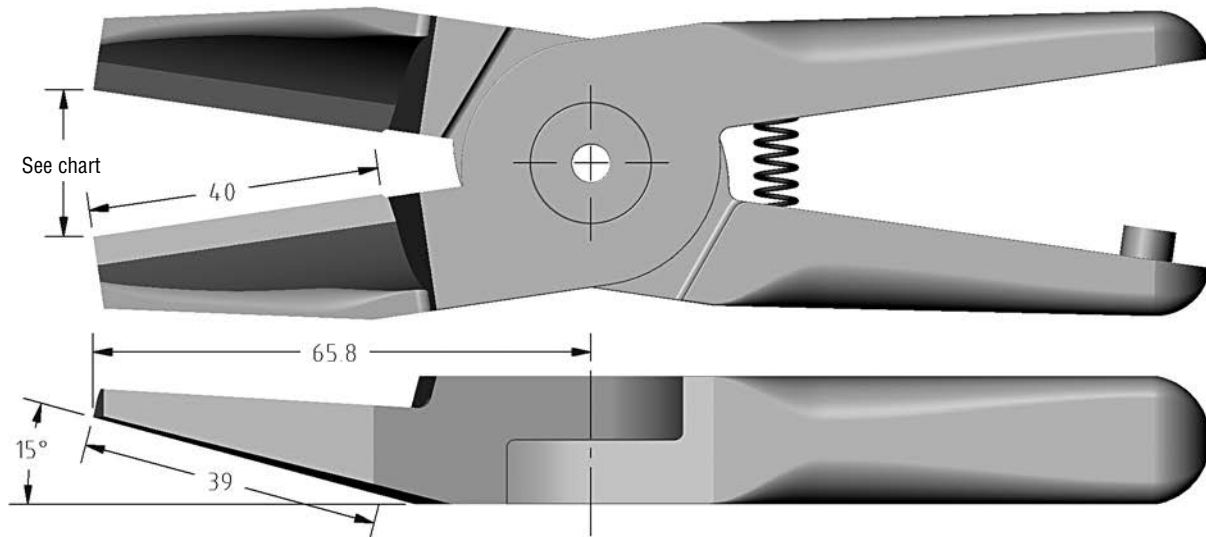


Universal Size 30 Blade Covers

Quick#	Part#	Price
2056	GSN-BC-30	\$14.98

Size 30 Blades

(Dimensioned drawings shown full scale)

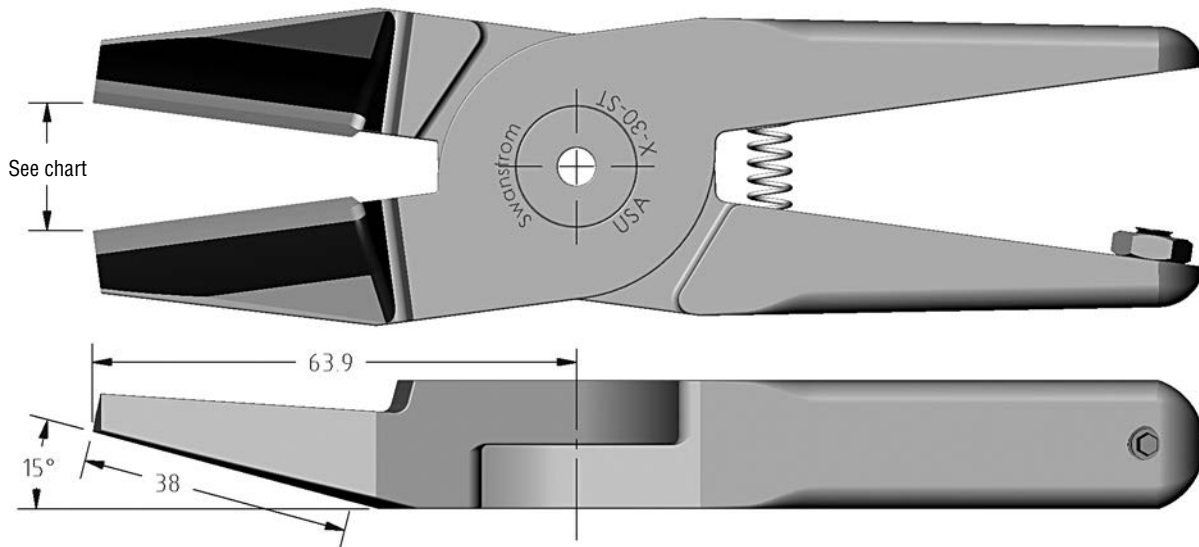


Vessel

Quick#	Part#	Price	Ø Sprue	Wt.
612	GSN-N30-AP	\$128.00	10mm	358g
Replacement Spring				
1285	SPR-05	\$2.20		

Size 30 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
20mm	19mm	19mm	18.5mm	19mm



Swanstrom

Quick#	Part#	Price	Ø Sprue	Wt.
1012	X-30-ST	\$124.00	9mm	374g
Replacement Spring				
1043	GSN-SP-031	\$2.60		

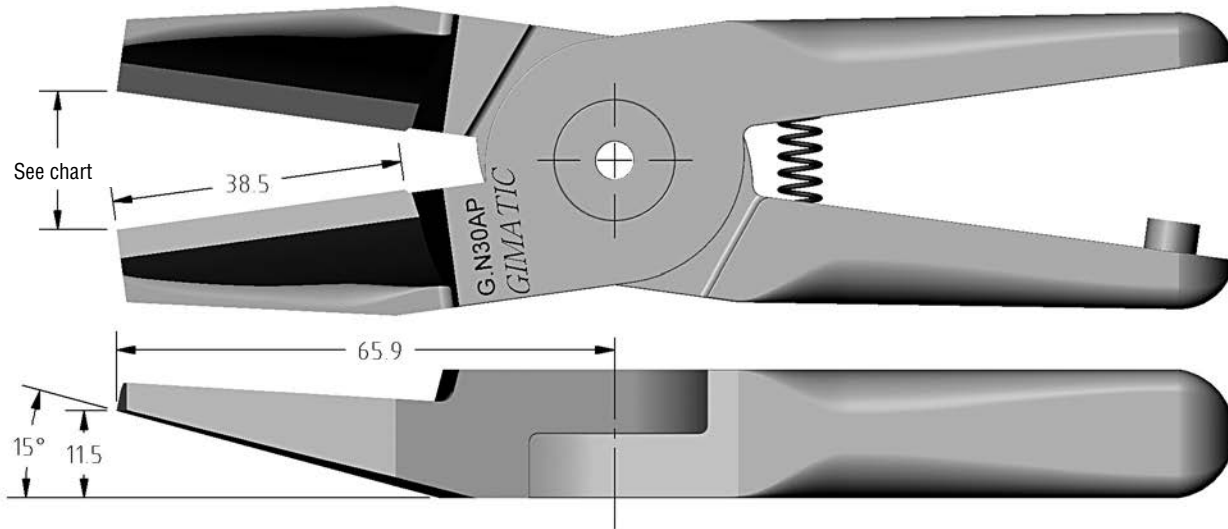
Size 30 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
15mm	12.5mm	18mm	15mm	12.5mm

Use Quick#s for easy online ordering.

Size 30 Blades

(Dimensioned drawings shown full scale)

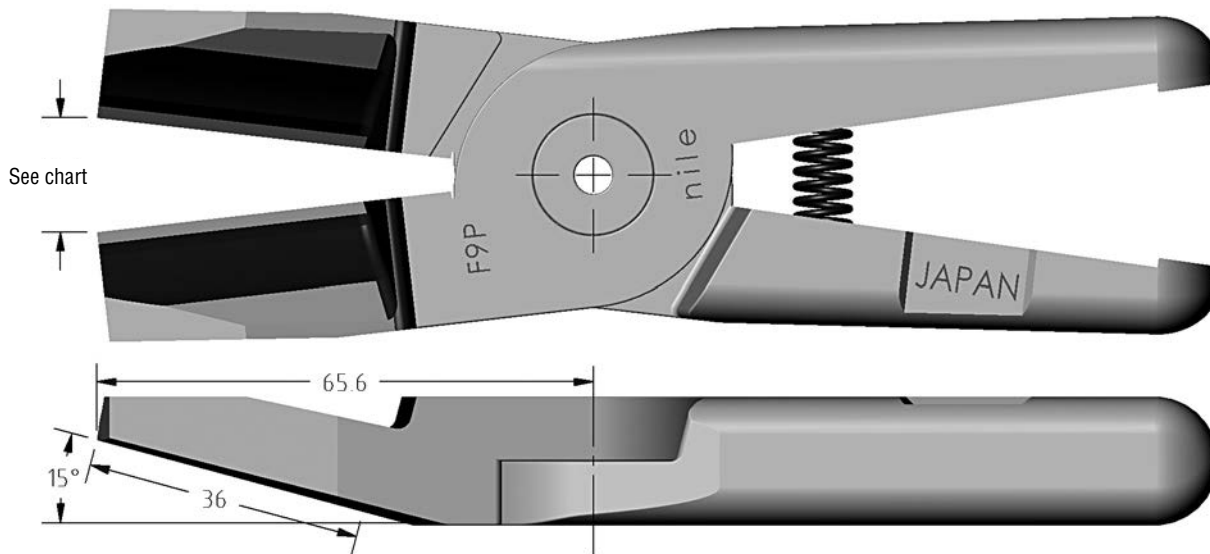


Gimatic

Quick#	Part#	Price	Ø Sprue	Wt.
5033	GN30AP	\$131.00	10mm	382g
Replacement Spring				
1285	SPR-05	\$2.20		

Size 30 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
19mm	18mm	18.5mm	18mm	18mm



Nile

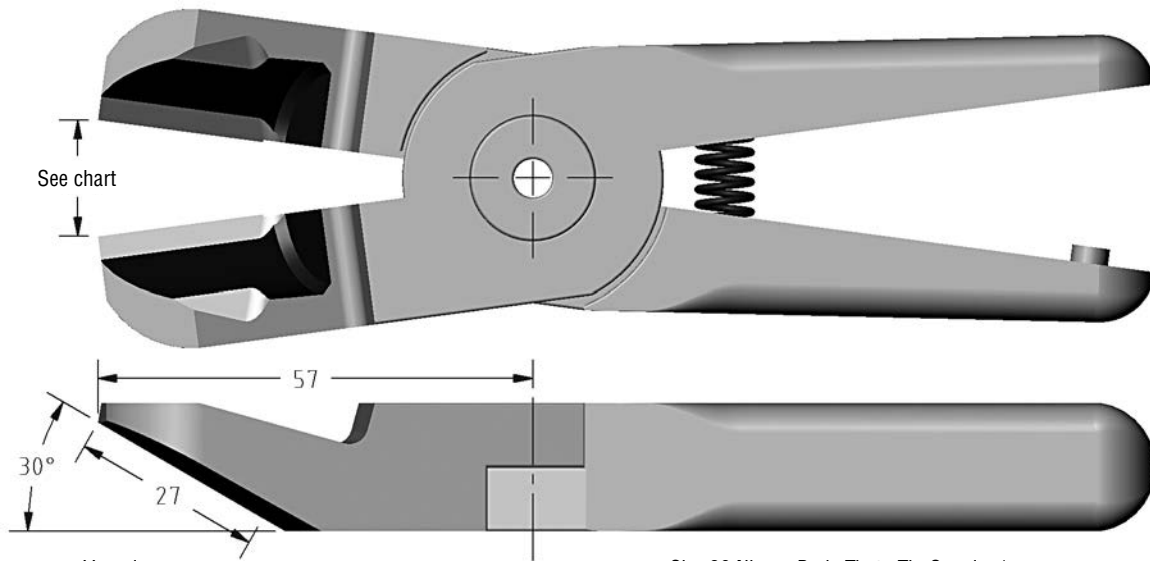
Quick#	Part#	Price	Ø Sprue	Wt.
1572	GSN-F9P	\$101.50	7mm	410g
Replacement Spring				
2301	855-3090	\$2.09		

Size 30 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
17.5mm	16.5mm	17mm	16mm	16.5mm

Size 30 Blades

(Dimensioned drawings shown full scale)

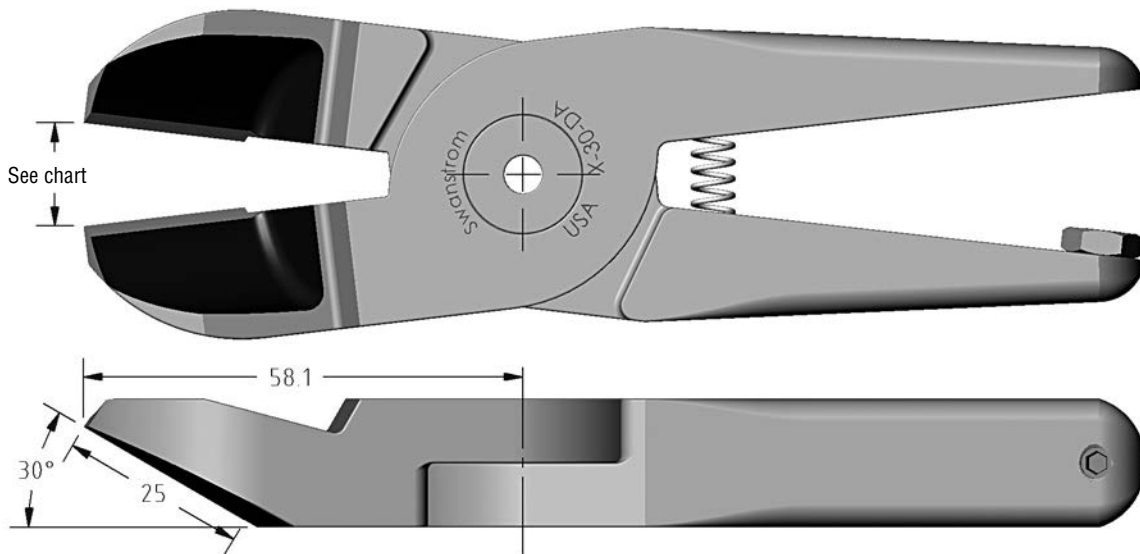


Vessel

Quick#	Part#	Price	Ø Sprue	Wt.
613	GSN-N30-PF	\$132.00	8mm	376g
Replacement Spring				
1285	SPR-05	\$2.20		

Size 30 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
16mm	15.5mm	16mm	16mm	15.5mm



Swanstrom

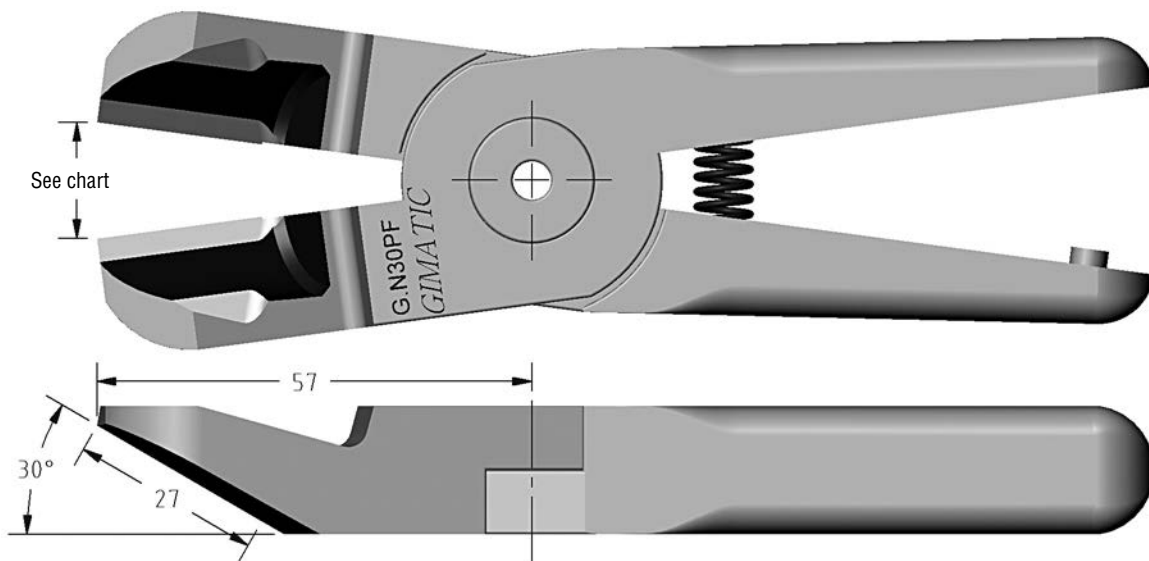
Quick#	Part#	Price	Ø Sprue	Wt.
1013	X-30-DA	\$124.00	8mm	388g
Replacement Spring				
1285	SPR-05	\$2.20		

Size 30 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
12.5mm	12mm	17.5mm	13.5mm	12mm

Size 30 Blades

(Dimensioned drawings shown full scale)

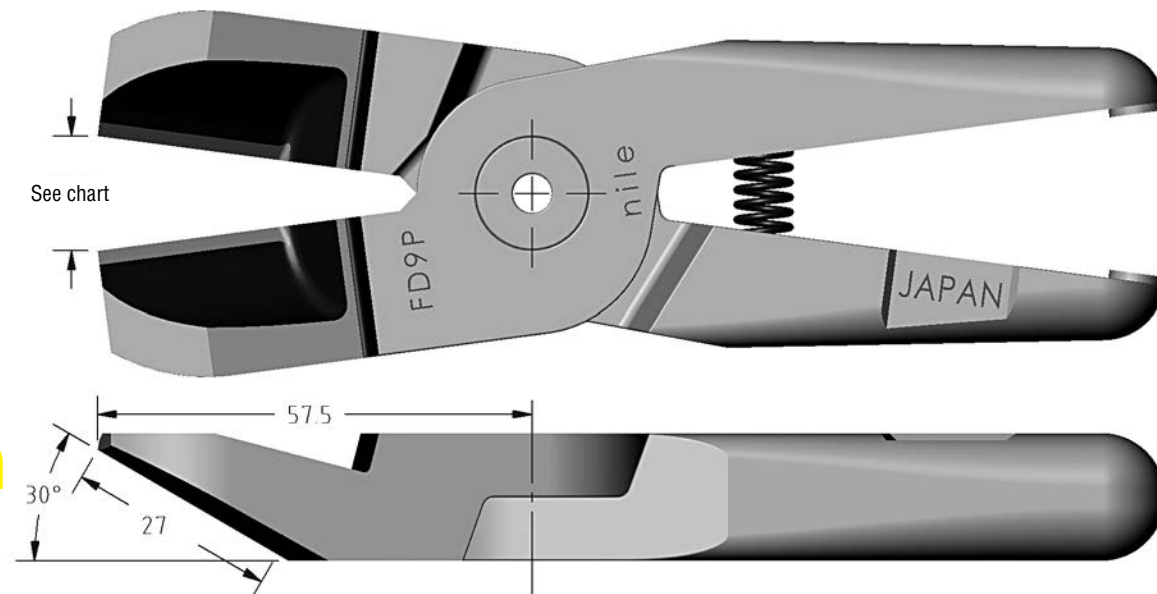


Gimatic

Quick#	Part#	Price	Ø Sprue	Wt.
5034	GN30PF	\$137.00	8mm	386g
Replacement Spring				
1285	SPR-05	\$2.20		

Size 30 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
16mm	16mm	15mm	15.5mm	16mm



Nile

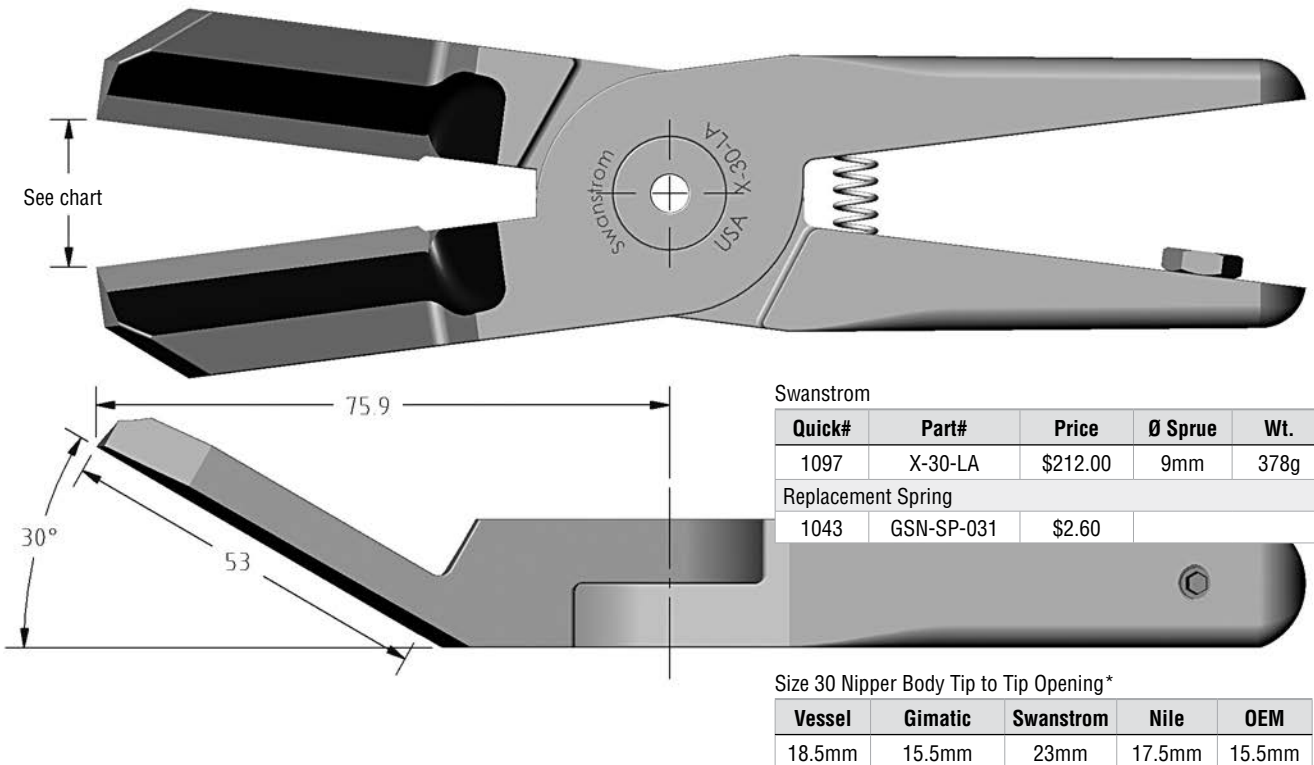
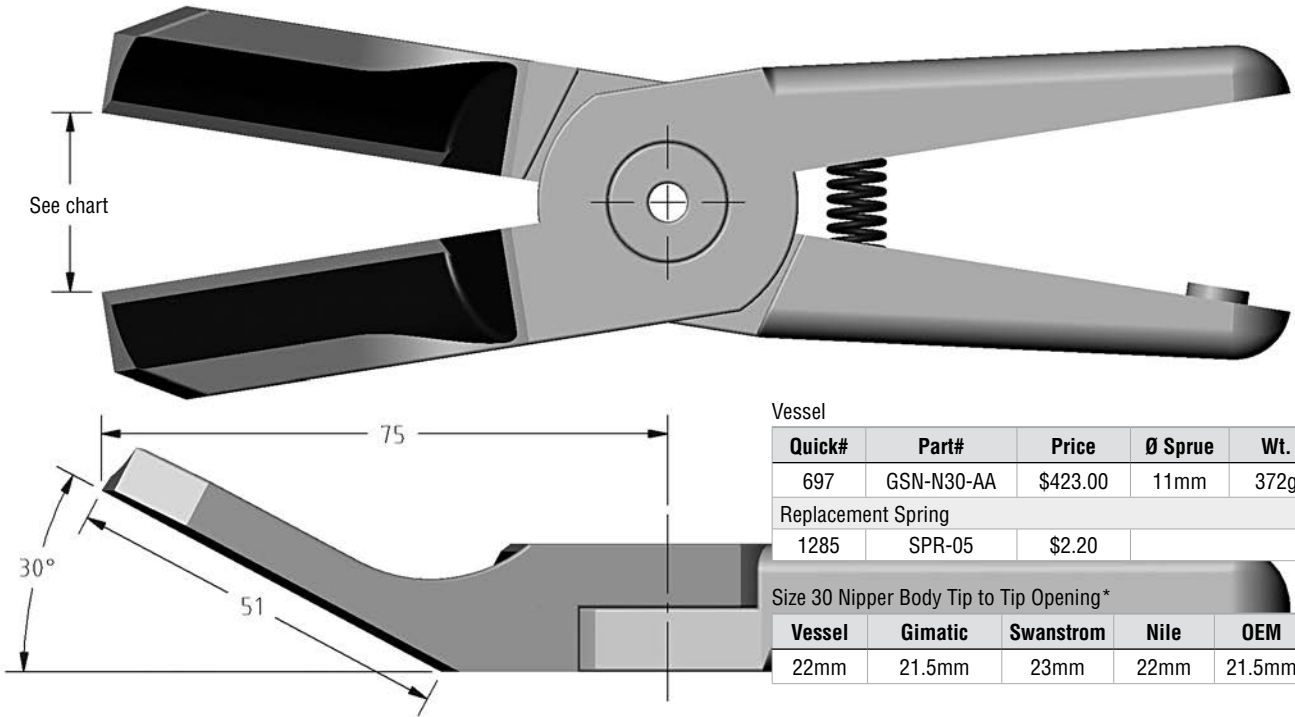
Quick#	Part#	Price	Ø Sprue	Wt.
1573	GSN-FD9P	\$106.50	8mm	410g
Replacement Spring				
2301	855-3090	\$2.09		

Size 30 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
14mm	14mm	15mm	14mm	14mm

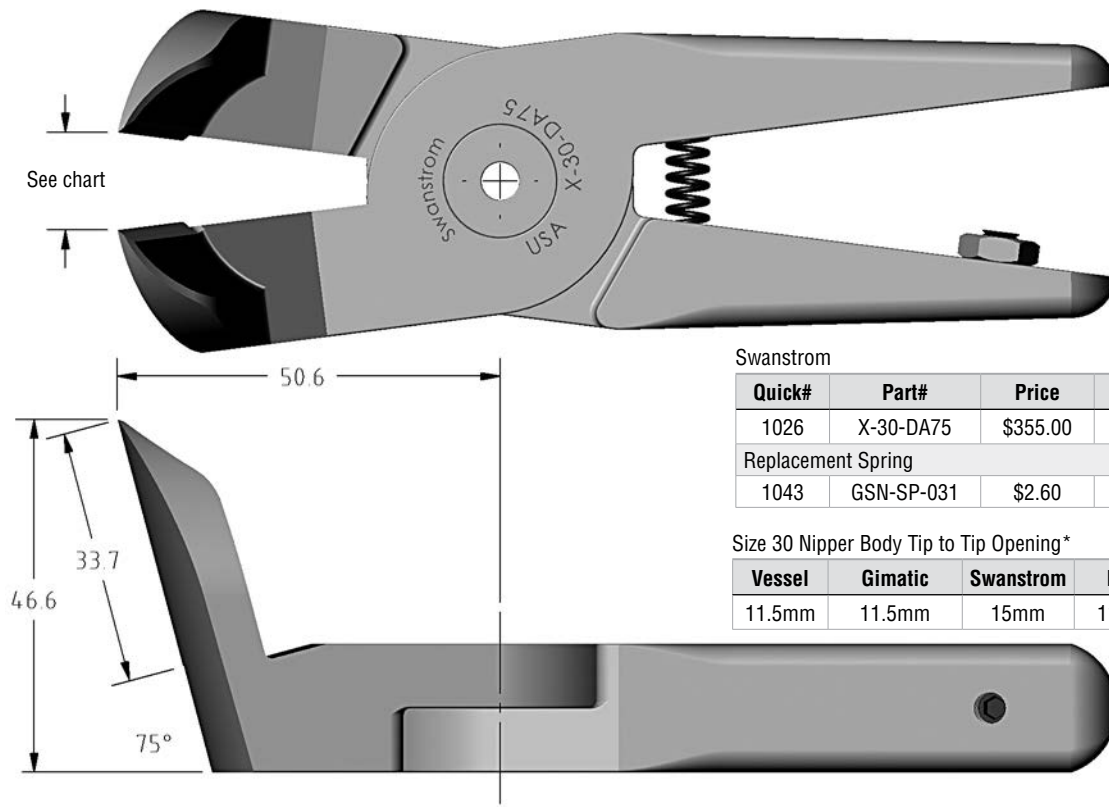
Size 30 Blades

(Dimensioned drawings shown full scale)



Size 30 Blades

(Dimensioned drawings shown full scale)

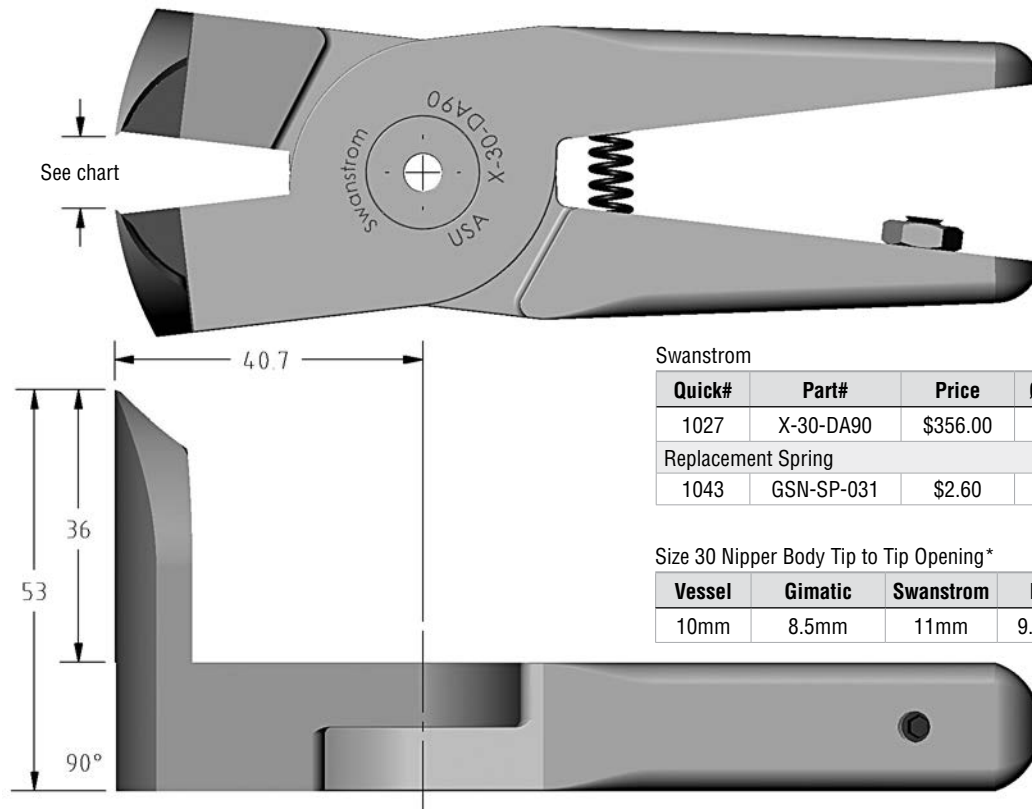


Swanstrom

Quick#	Part#	Price	Ø Sprue	Wt.
1026	X-30-DA75	\$355.00	8mm	416g
Replacement Spring				
1043	GSN-SP-031	\$2.60		

Size 30 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
11.5mm	11.5mm	15mm	11mm	11.5mm



Swanstrom

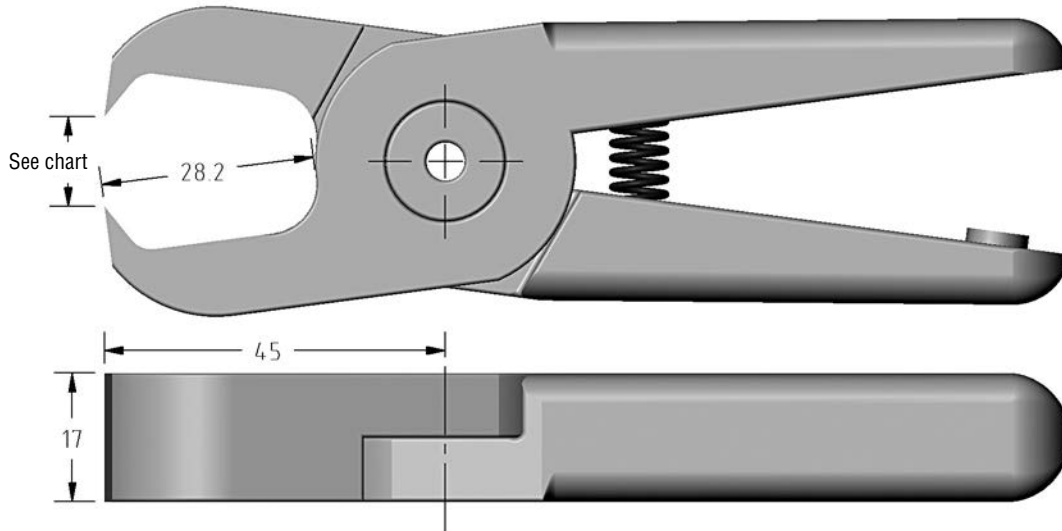
Quick#	Part#	Price	Ø Sprue	Wt.
1027	X-30-DA90	\$356.00	6mm	432g
Replacement Spring				
1043	GSN-SP-031	\$2.60		

Size 30 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
10mm	8.5mm	11mm	9.5mm	8.5mm

Size 30 Blades

(Dimensioned drawings shown full scale)

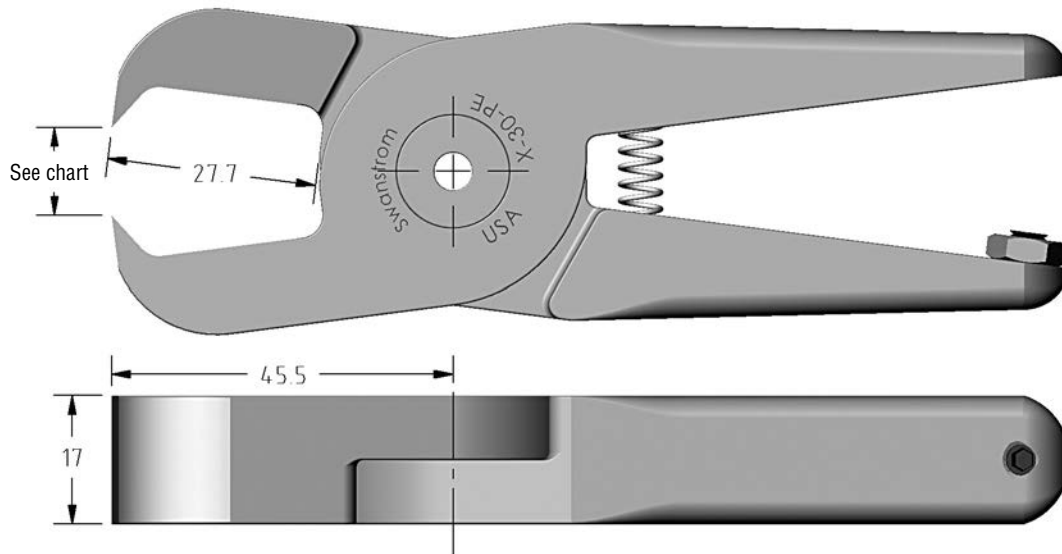


Vessel

Quick#	Part#	Price	Ø Sprue	Wt.
615	GSN-N30-AE	\$144.00	9mm	386g
Replacement Spring				
1285	SPR-05	\$2.20		

Size 30 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
12.5mm	12.5mm	12mm	12mm	12.5mm



Swanstrom

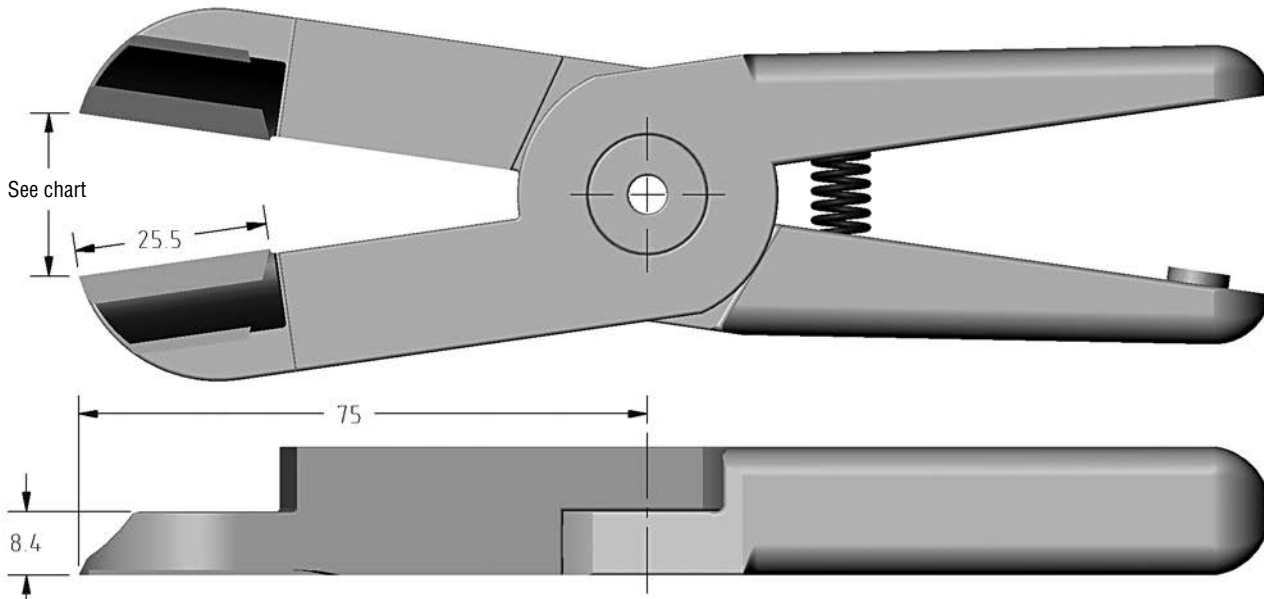
Quick#	Part#	Price	Ø Sprue	Wt.
1015	X-30-PE	\$135.00	9mm	374g
Replacement Spring				
1043	GSN-SP-031	\$2.60		

Size 30 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
10mm	8mm	13.5mm	10.5mm	8mm

Size 30 Blades

(Dimensioned drawings shown full scale)

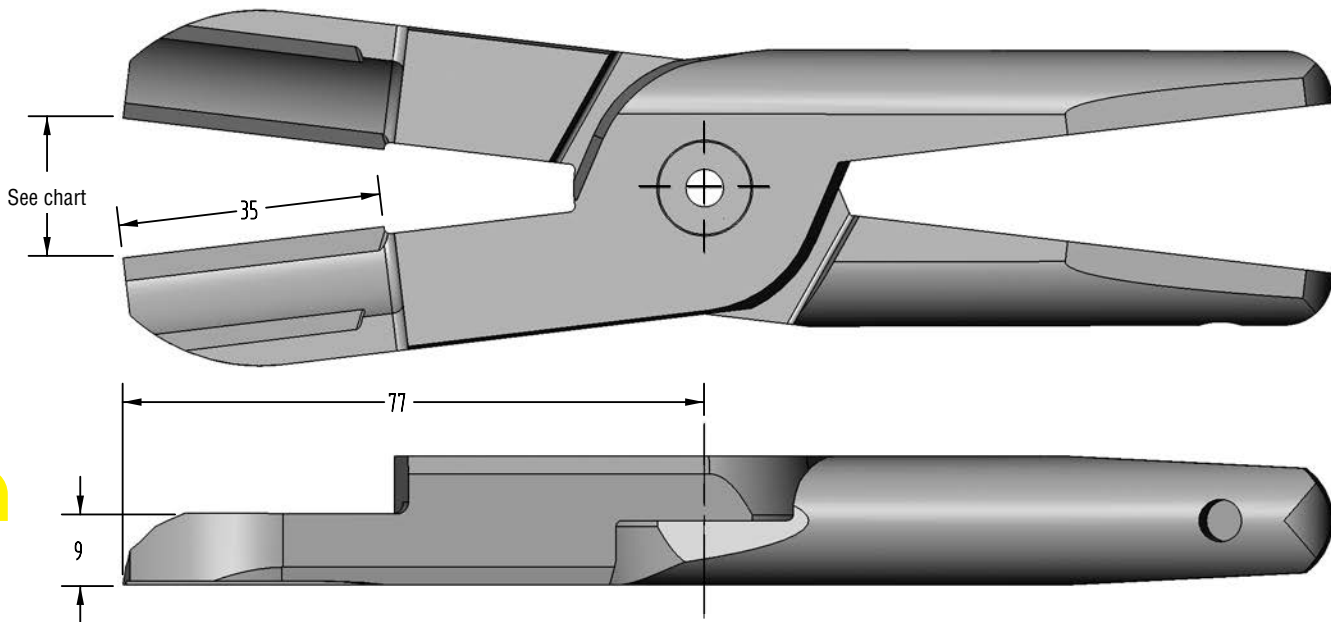


Vessel

Quick#	Part#	Price	Ø Sprue	Wt.
614	GSN-N30-AJL	\$188.00	9mm	470g
Replacement Spring				
1285	SPR-05	\$2.20		

Size 30 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
21.5mm	21mm	21mm	20.5mm	21mm



Swanstrom

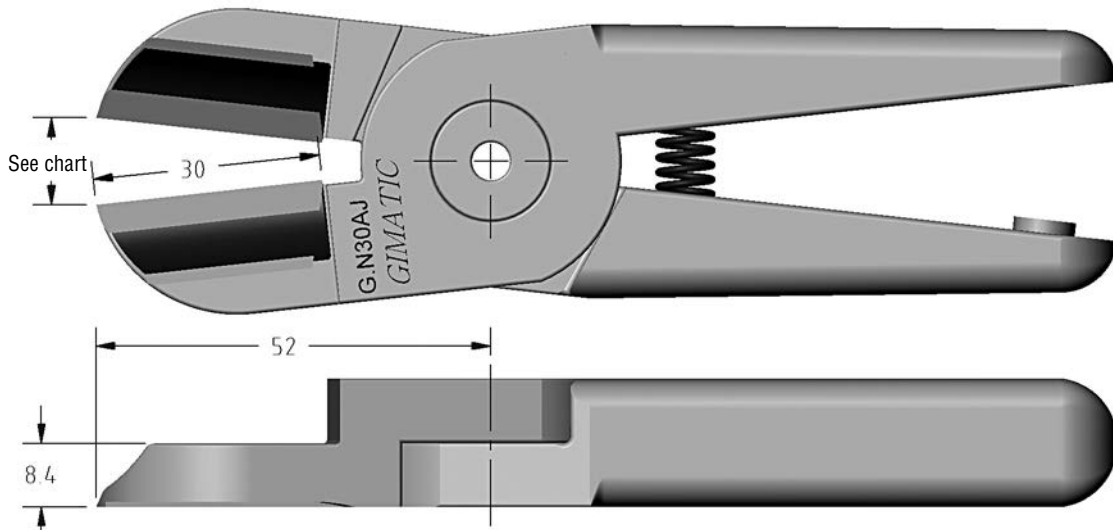
Quick#	Part#	Price	Ø Sprue	Wt.
1014	X-30-LI	\$172.00	9mm	464g
Replacement Spring				
1043	GSN-SP-031	\$2.60		

Size 30 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
19mm	18.5mm	22.5mm	18mm	18.5mm

Size 30 Blades

(Dimensioned drawings shown full scale)

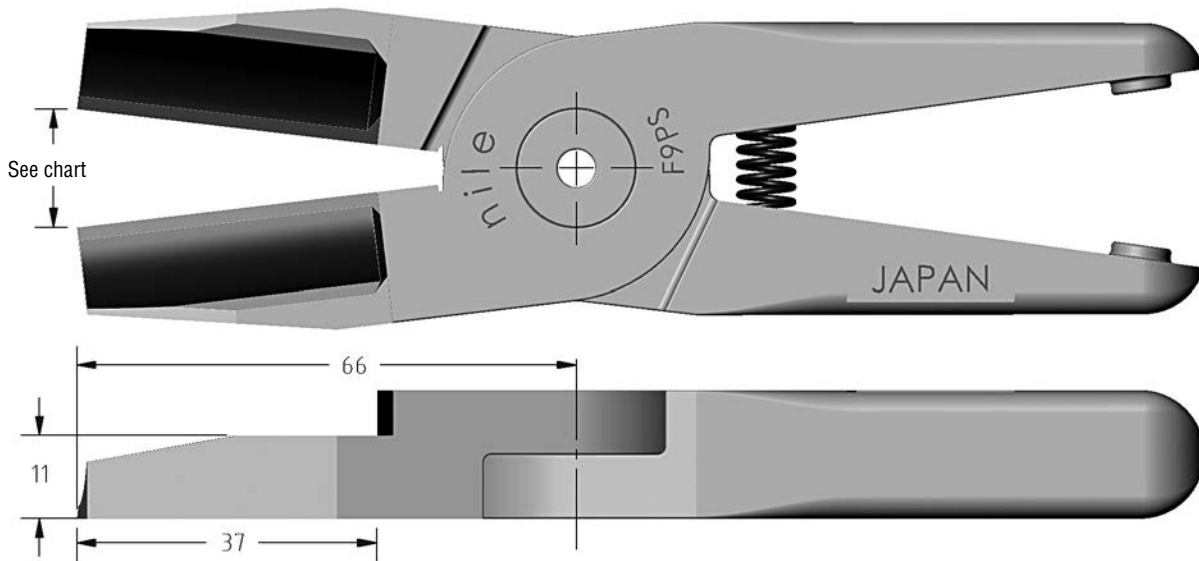


Gimatic

Quick#	Part#	Price	Ø Sprue	Wt.
5032	GN30AJ	\$144.00	6mm	368g
Replacement Spring				
1285	SPR-05	\$2.20		

Size 30 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
11mm	10.5mm	11mm	11.5mm	10.5mm



Nile

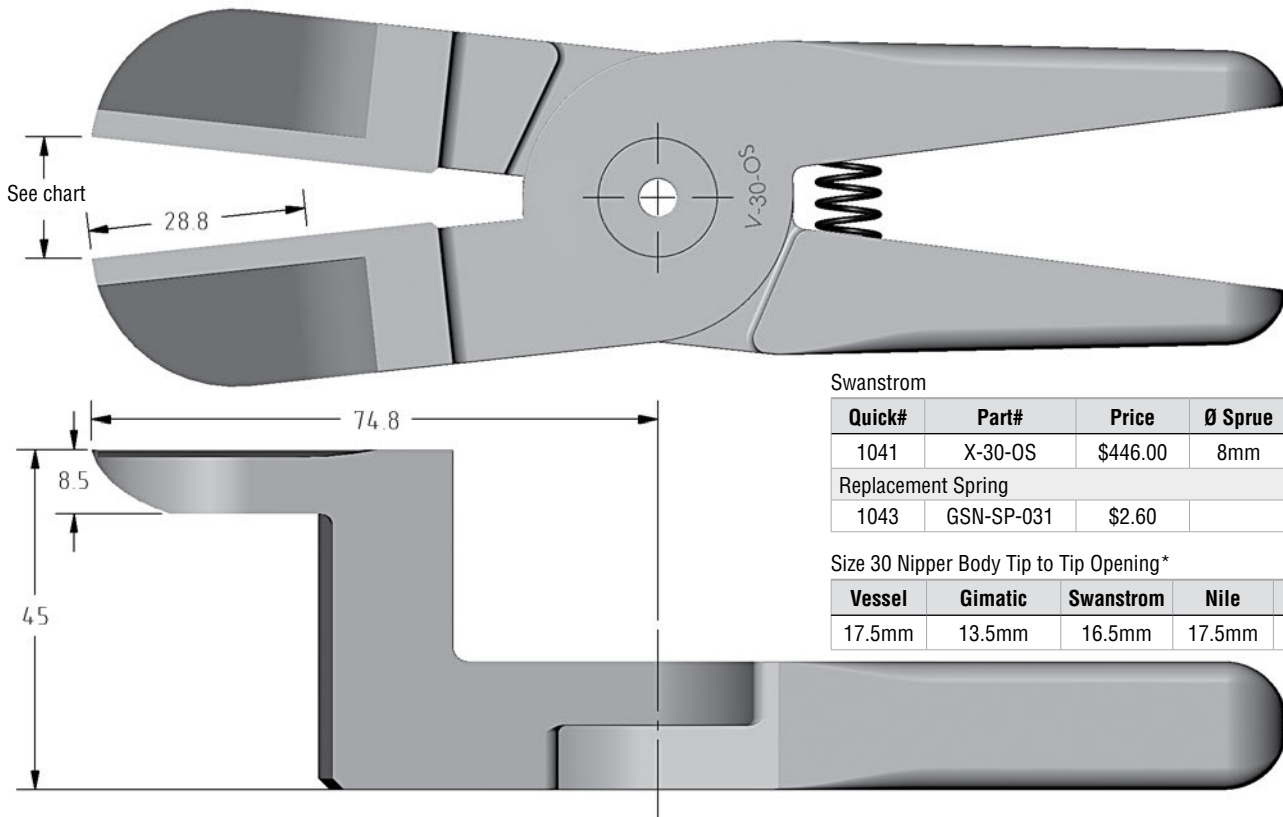
Quick#	Part#	Price	Ø Sprue	Wt.
1574	GSN-F9PS	\$101.50	7mm	404g
Replacement Spring				
2301	855-3090	\$2.09		

Size 30 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
16.5mm	16mm	17mm	16mm	16mm

Size 30 Blades

(Dimensioned drawings shown full scale)

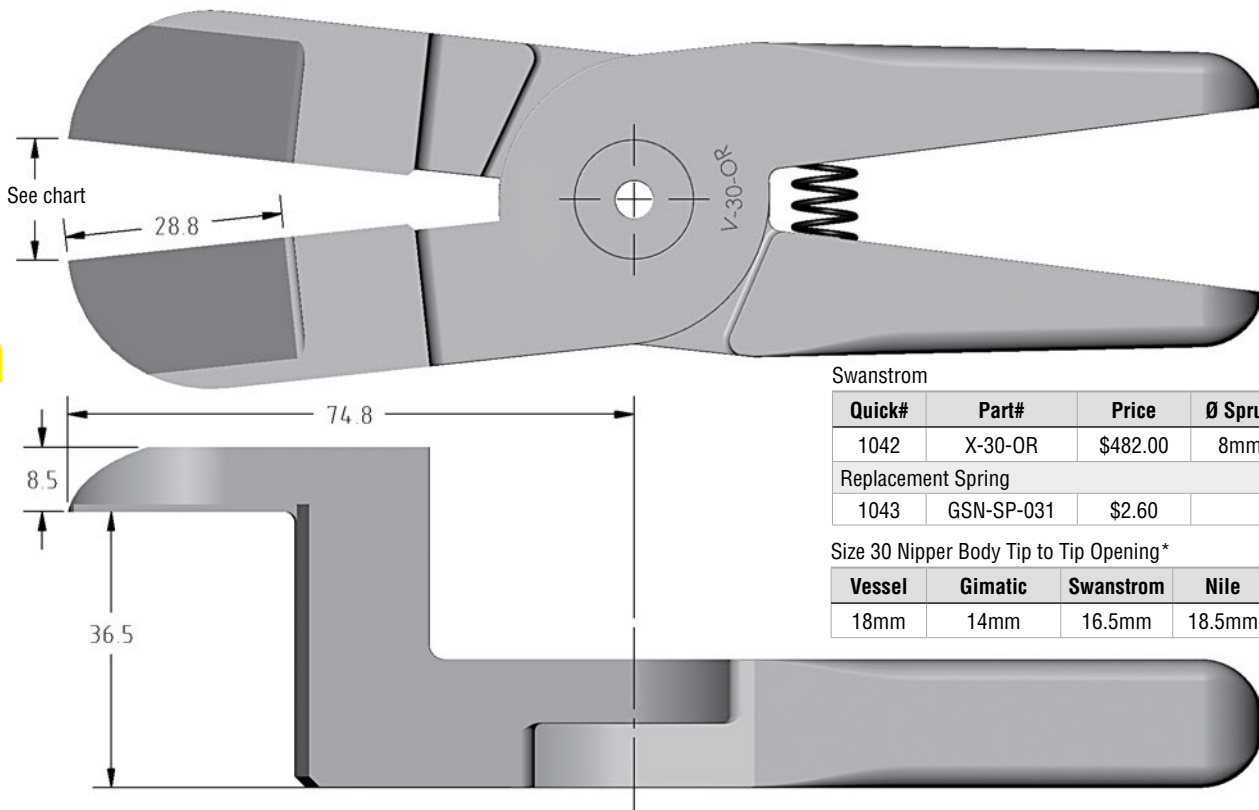


Swanstrom

Quick#	Part#	Price	Ø Sprue	Wt.
1041	X-30-OS	\$446.00	8mm	494g
Replacement Spring				
1043	GSN-SP-031	\$2.60		

Size 30 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
17.5mm	13.5mm	16.5mm	17.5mm	13.5mm



Swanstrom

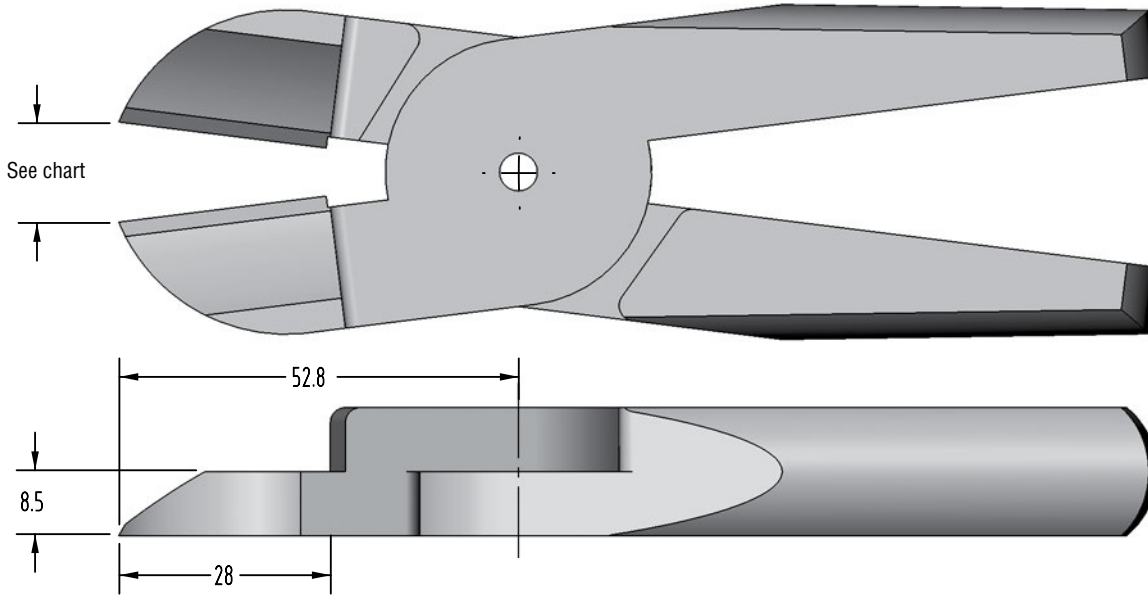
Quick#	Part#	Price	Ø Sprue	Wt.
1042	X-30-OR	\$482.00	8mm	494g
Replacement Spring				
1043	GSN-SP-031	\$2.60		

Size 30 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
18mm	14mm	16.5mm	18.5mm	14mm

Size 30 Blades

(Dimensioned drawings shown full scale)



Swanstrom

Quick#	Part#	Price	Ø Sprue	Wt.
1047	X-30-SI	\$124.00	9mm	365g
Replacement Spring				
1043	GSN-SP-031	\$2.60		

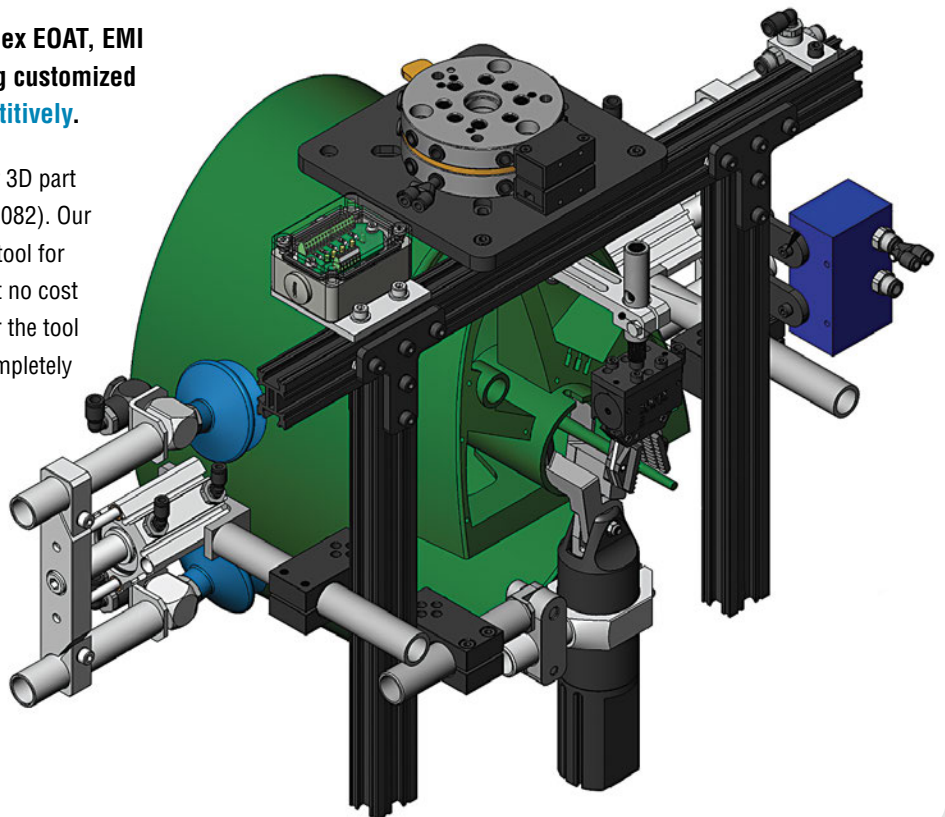
Size 30 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
12.5mm	12.5mm	15mm	14.5mm	12.5mm

EOAT Design and Build Service

From the simplest to the most complex EOAT, EMI specializes in designing and building customized End-of-Arm-Tooling— **Priced Competitively.**

Get started by sending us a sample part or 3D part file and a completed datasheet (see page 1082). Our experienced EOAT engineers will design a tool for you and provide you 3D CAD renderings at no cost or obligation. We'll also provide pricing for the tool should you want to purchase the EOAT completely assembled.



Blades for Size 50 Nipper Bodies

Size 30 blades fit in size 50 bodies

Blade	Part#	Price	Style	Brand	Page	#2057 Blade Cover Compatibility	Nipper Body			Weight
							Gimatic 50	Swanstrom 50	Nile 50	
							Tip to Tip Opening (mm) *			
612	GSN-N30-AP	\$128.00	Std. Angle	Vessel	893	✓	32	35.5	33.5	358g
1012	X-30ST	\$124.00	Std. Angle	Swanstrom	893	✓	27	29.5	27.5	374g
5033	GN30AP	\$131.00	Std. Angle	Gimatic	894	✓	31.5	34.5	33	382g
1572	GSN-F9P	\$101.50	Std. Angle	Nile	894	✓	29.5	32.5	30	410g
1573	GSN-FD9P	\$106.50	Deep Angle	Nile	896	✓	26	29	26	410g
613	GSN-N30-PF	\$132.00	Deep Angle	Vessel	895	✓	26	28.5	26.5	376g
1013	X-30-DA	\$124.00	Deep Angle	Swanstrom	895	✓	25	27	25.5	388g
5034	GN30PF	\$137.00	Deep Angle	Gimatic	896	✓	26	29.5	27	386g
697	GSN-N30-AA	\$423.00	Deep, Long	Vessel	897	✗	36.5	40	37.5	372g
1097	X-30-LA	\$212.00	Deep, Long	Swanstrom	897	✗	32	35	32.5	378g
1026	X-30-DA75	\$355.00	Extra Deep	Swanstrom	898	✗	20.5	22.5	21	416g
1027	X-30-DA90	\$356.00	Extra Deep	Swanstrom	898	✗	17.5	19	17.5	432g
614	GSN-N30-AJL	\$188.00	Inline	Vessel	900	✓	33.5	37	34.5	470g
1014	X-30-LI	\$172.00	Inline	Swanstrom	901	✓	32.5	35.5	33.5	464g
5032	GN30AJ	\$144.00	Inline	Gimatic	900	✓	22	25	23.5	368g
1574	GSN-F9PS	\$101.50	Inline	Nile	901	✓	28	35	29.5	404g
1041	X-30-OS	\$446.00	Offset	Swanstrom	902	✗	32	35.5	33.5	494g
1042	X-30-OR	\$482.00	Offset	Swanstrom	902	✗	34	37	34.5	494g
615	GSN-N30-AE	\$144.00	Perpendicular	Vessel	899	✓	20	22	20.5	386g
1015	X-30-PE	\$135.00	Perpendicular	Swanstrom	899	✓	19	21	19.5	374g

*Note: Tip-to-tip opening dimensions are approximate and can vary from blade to blade because blades are hand finished.

Carbide and Custom blades are available, call EMI.

Gimatic Blade Covers:

- Gimatic blades include protective blade covers, if you need additional covers they are listed here.
- Cover snaps into profile for storage, and ring can be used for zip-ties.



Gimatic Size 30 & 50 Blade Covers

Quick#	Part#	Price
6087	COJ30	\$2.59

Universal Blade Covers:

- Provides protection without compressing the nipper blade's spring.
- See reference chart above for compatibility.

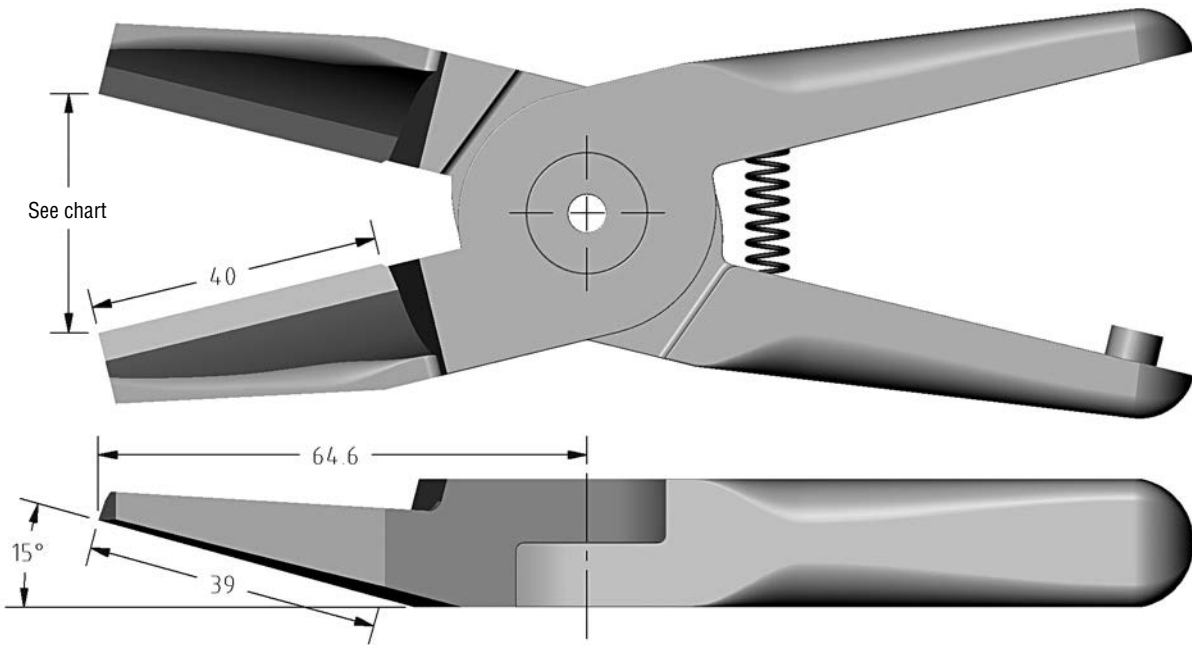


Universal Size 50 Blade Covers

Quick#	Part#	Price
2057	GSN-BC-50	\$21.47

Blades for Size 50 Nippers

(Dimensioned drawings shown full scale)

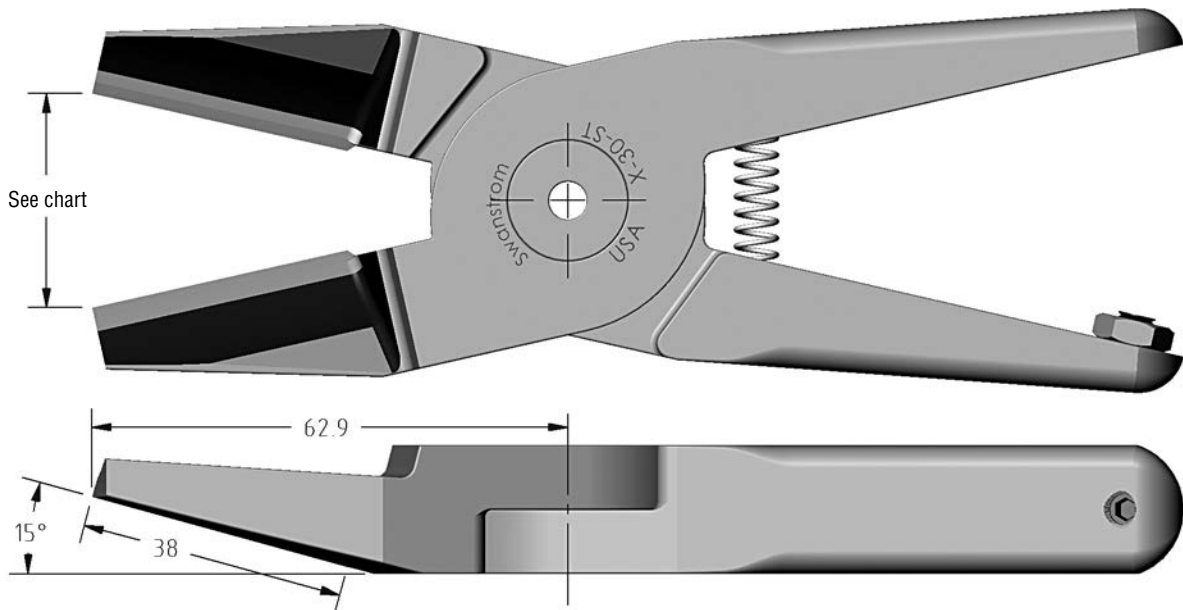


Vessel

Quick#	Part#	Price	Ø Sprue	Wt.
612	GSN-N30-AP	\$128.00	18mm	358g
Replacement Spring				
1285	SPR-05	\$2.20		

Size 50 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
No	32mm	35.5mm	33.5mm	32mm



Swanstrom

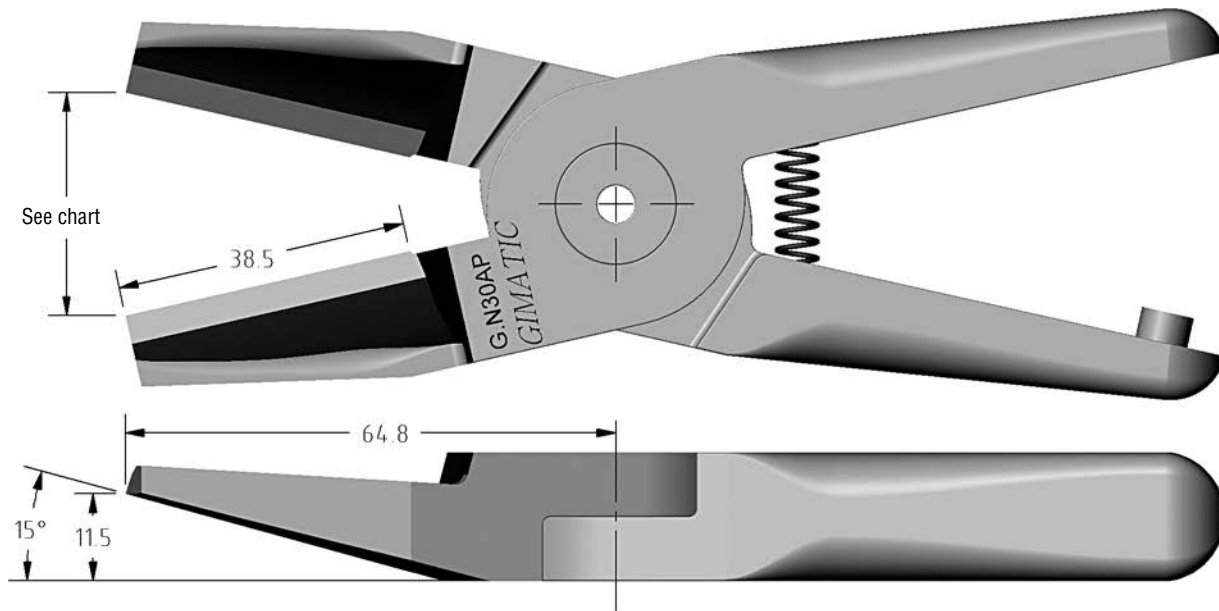
Quick#	Part#	Price	Ø Sprue	Wt.
1012	X-30-ST	\$124.00	18mm	374g
Replacement Spring				
1043	GSN-SP-031	\$2.60		

Size 50 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
No	27mm	29.5mm	27.5mm	27mm

Blades for Size 50 Nippers

(Dimensioned drawings shown full scale)

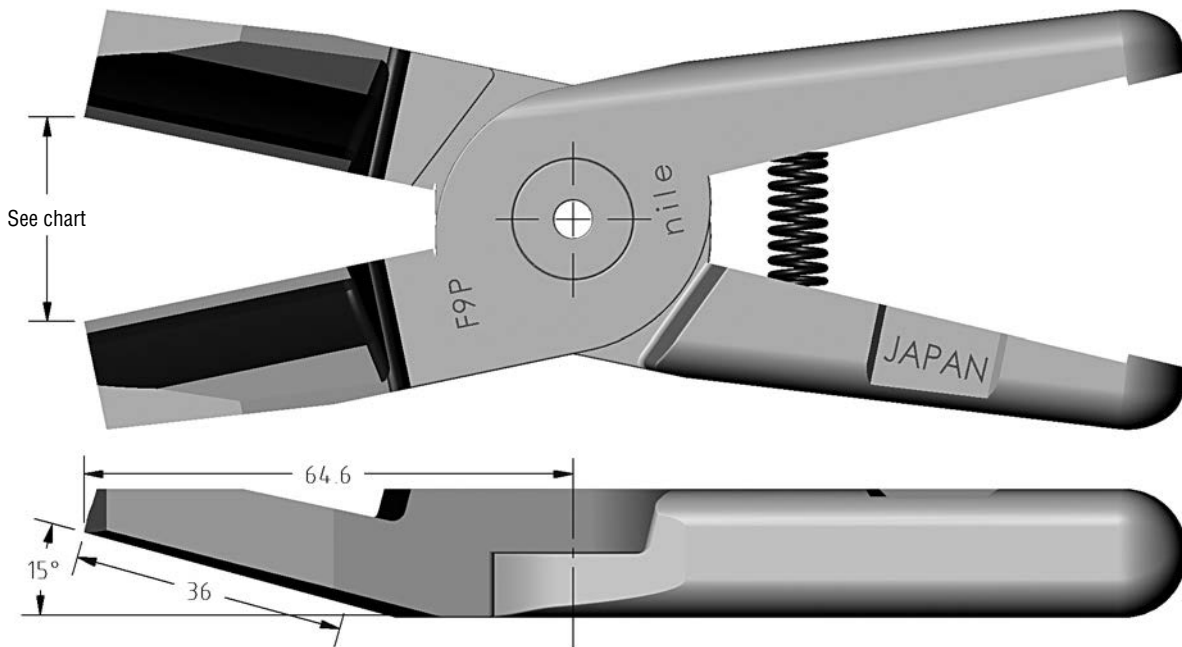


Gimatic

Quick#	Part#	Price	Ø Sprue	Wt.
5033	GN30AP	\$131.00	18mm	383g
Replacement Spring				
1285	SPR-05	\$2.20		

Size 50 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
No	31.5mm	34.5mm	33mm	31.5mm



Nile

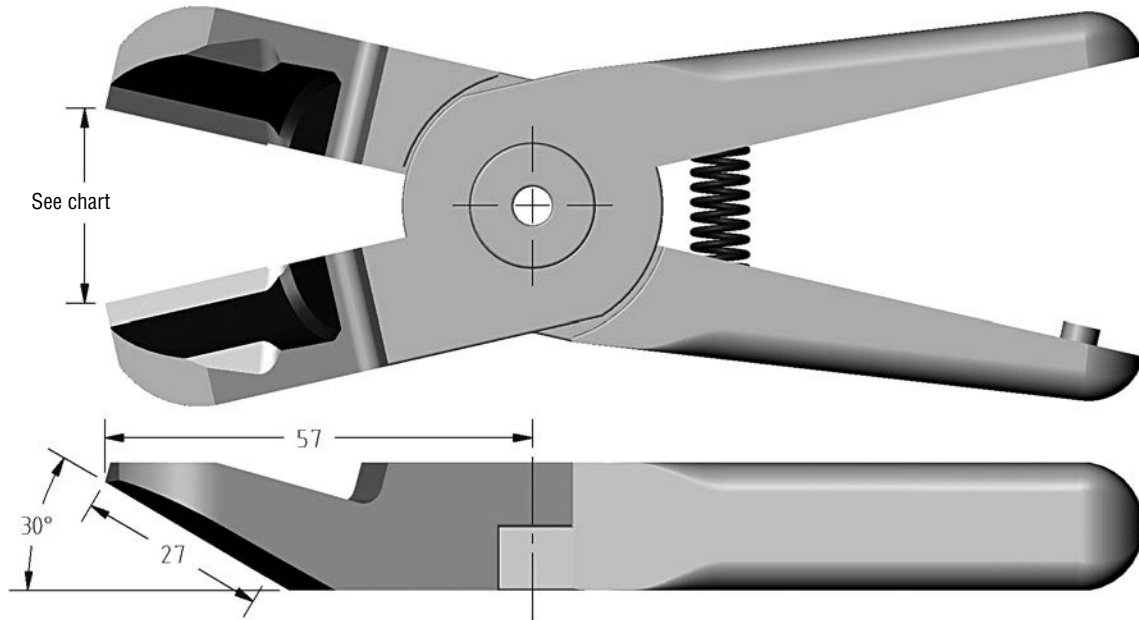
Quick#	Part#	Price	Ø Sprue	Wt.
1572	GSN-F9P	\$101.50	18mm	410g
Replacement Spring				
2301	855-3090	\$2.09		

Size 50 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
No	29.5mm	32.5mm	30mm	29.5mm

Blades for Size 50 Nippers

(Dimensioned drawings shown full scale)

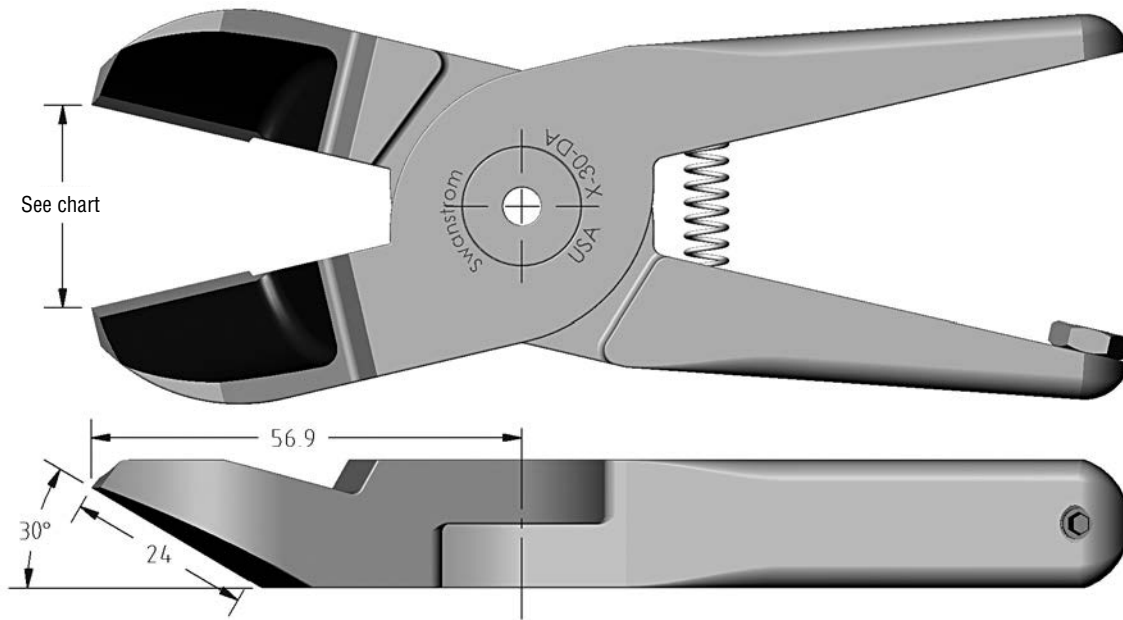


Vessel

Quick#	Part#	Price	Ø Sprue	Wt.
613	GSN-N30-PF	\$132.00	18mm	376g
Replacement Spring				
1285	SPR-05	\$2.20		

Size 50 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
No	26mm	28.5mm	26.5mm	26mm



Swanstrom

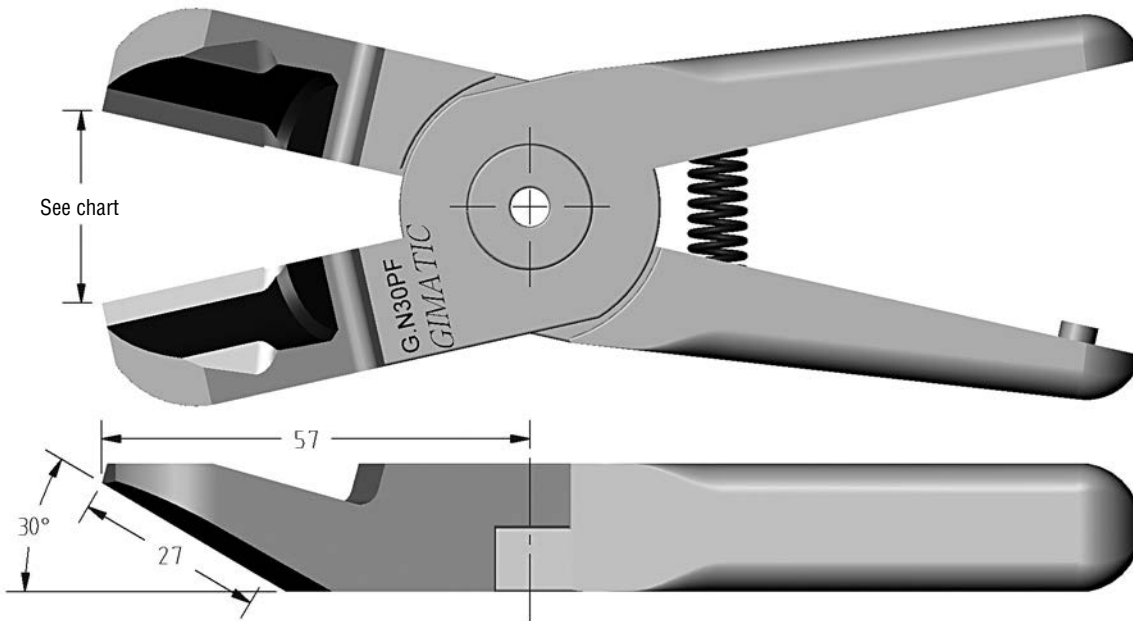
Quick#	Part#	Price	Ø Sprue	Wt.
1013	X-30-DA	\$124.00	18mm	388g
Replacement Spring				
1043	GSN-SP-031	\$2.60		

Size 50 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
No	25mm	27mm	25.5mm	25mm

Blades for Size 50 Nippers

(Dimensioned drawings shown full scale)

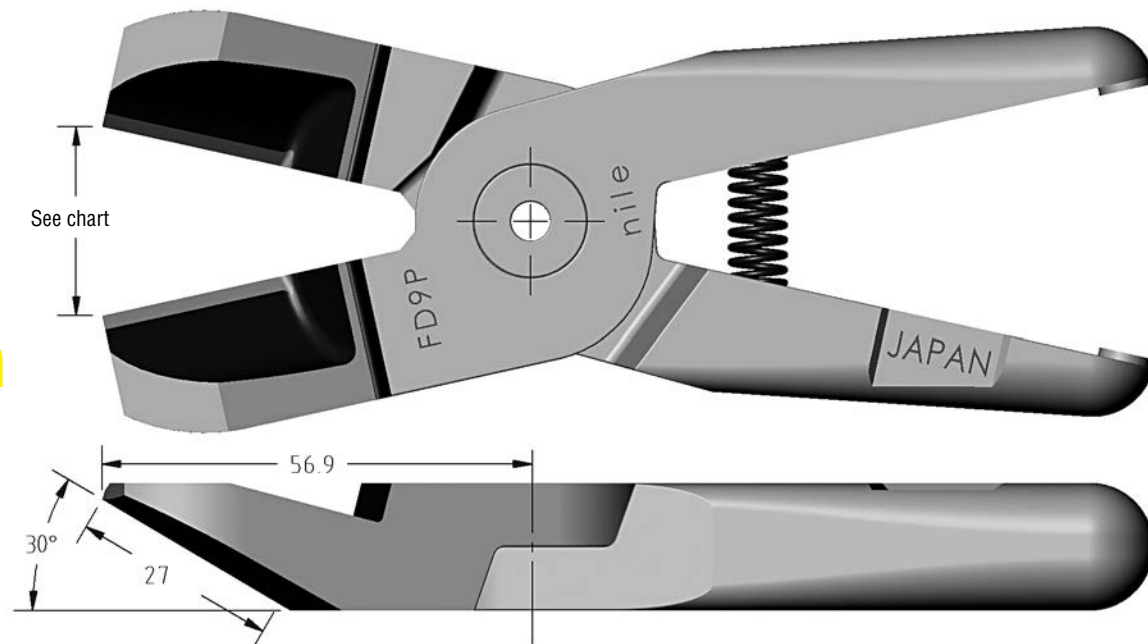


Gimatic

Quick#	Part#	Price	Ø Sprue	Wt.
5034	GN30PF	\$137.00	18mm	386g
Replacement Spring				
1285	SPR-05	\$2.20		

Size 50 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
No	26mm	29.5mm	27mm	26mm



Nile

Quick#	Part#	Price	Ø Sprue	Wt.
1573	GSN-FD9P	\$106.50	18mm	410g
Replacement Spring				
2301	855-3090	\$2.09		

Size 50 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
No	26mm	29mm	26mm	26mm

Blades for Size 50 Nippers

(Dimensioned drawings shown full scale)

See chart

74

50

30°

Vessel				
Quick#	Part#	Price	Ø Sprue	Wt.
697	GSN-N30-AA	\$423.00	18mm	372g
Replacement Spring				
1285	SPR-05	\$2.20		

Size 50 Nipper Body Tip to Tip Opening*				
Vessel	Gimatic	Swanstrom	Nile	OEM
No	36.5mm	40mm	37.5mm	36.5mm

See chart

75

53

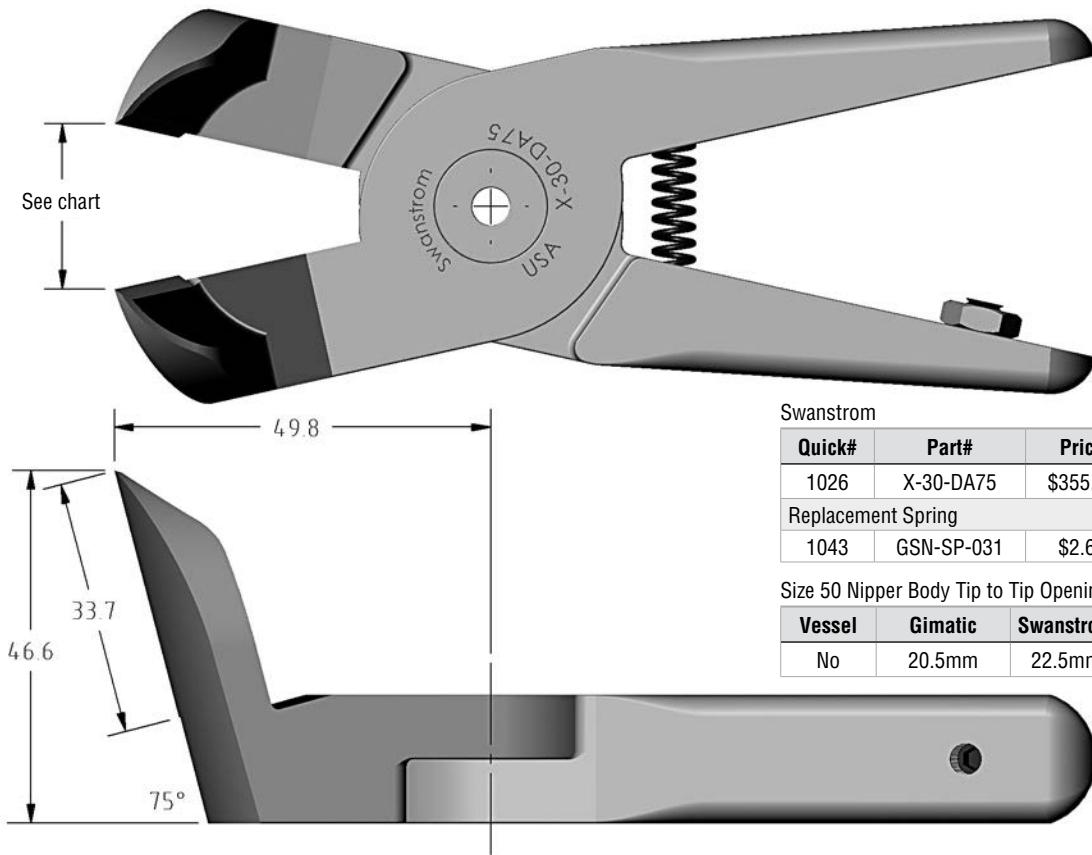
30°

Swanstrom				
Quick#	Part#	Price	Ø Sprue	Wt.
1097	X-30-LA	\$212.00	18mm	378g
Replacement Spring				
1043	GSN-SP-031	\$2.60		

Size 50 Nipper Body Tip to Tip Opening*				
Vessel	Gimatic	Swanstrom	Nile	OEM
No	32mm	35mm	32.5mm	32mm

Blades for Size 50 Nippers

(Dimensioned drawings shown full scale)

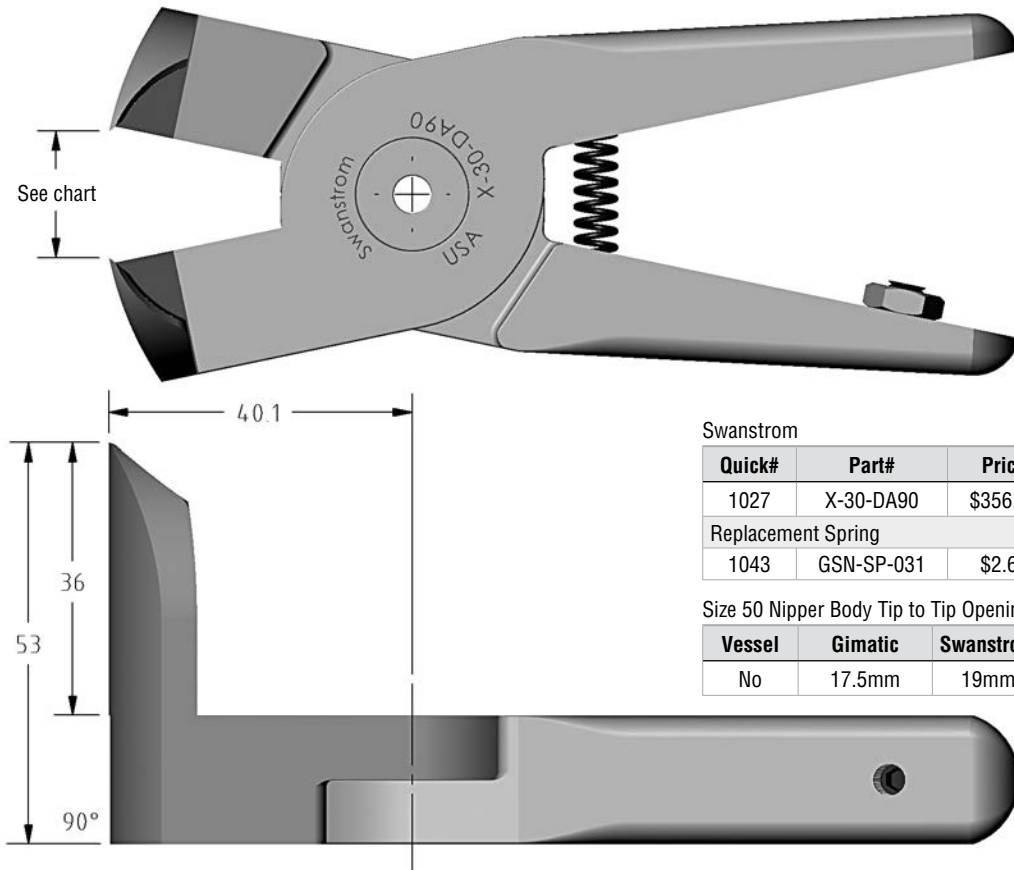


Swanstrom

Quick#	Part#	Price	Ø Sprue	Wt.
1026	X-30-DA75	\$355.00	14mm	416g
Replacement Spring				
1043	GSN-SP-031	\$2.60		

Size 50 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
No	20.5mm	22.5mm	21mm	20.5mm



Swanstrom

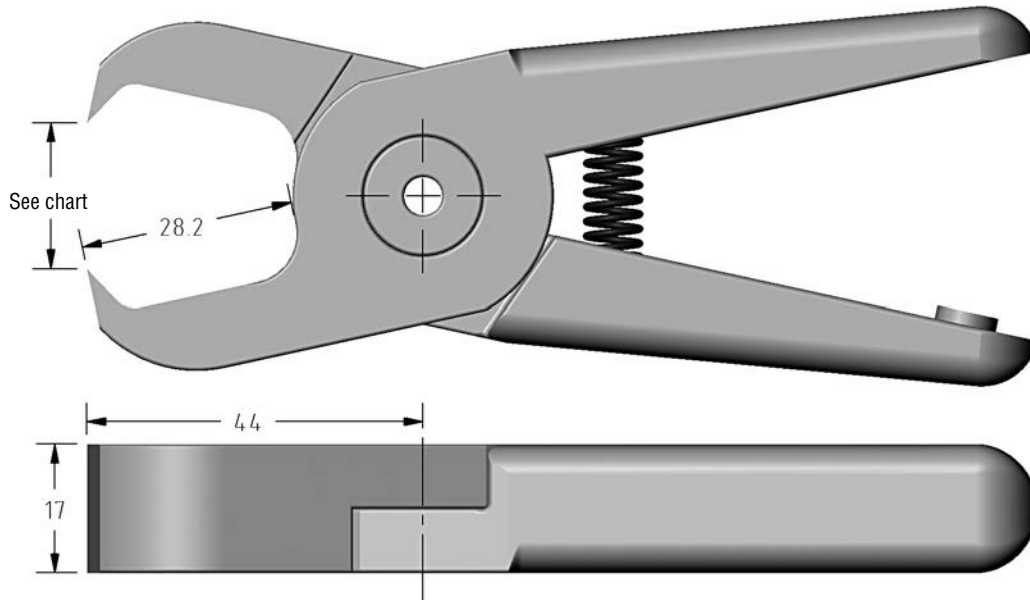
Quick#	Part#	Price	Ø Sprue	Wt.
1027	X-30-DA90	\$356.00	14mm	432g
Replacement Spring				
1043	GSN-SP-031	\$2.60		

Size 50 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
No	17.5mm	19mm	17.5mm	17.5mm

Blades for Size 50 Nippers

(Dimensioned drawings shown full scale)

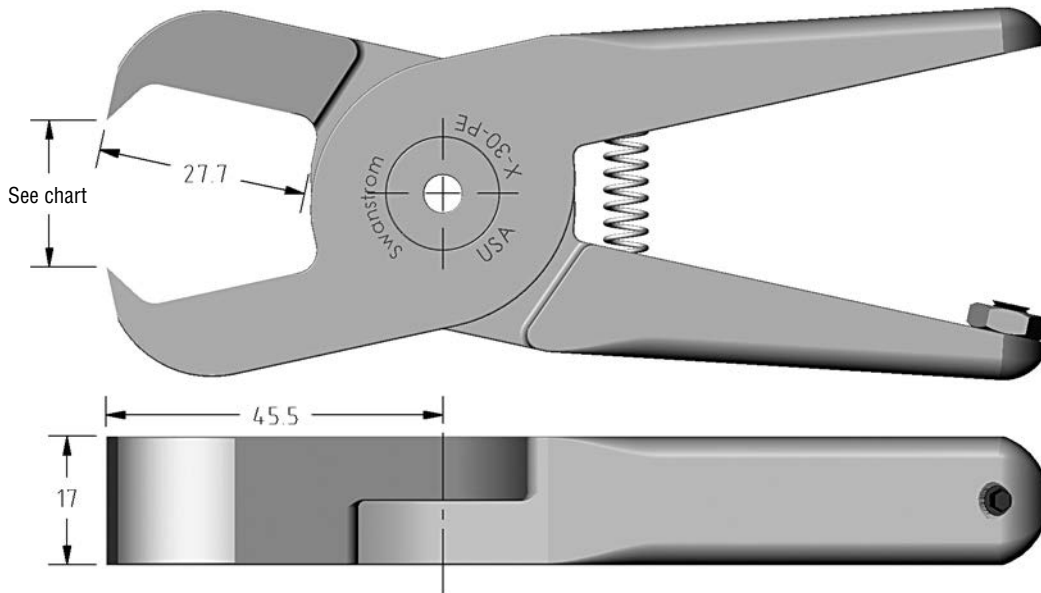


Vessel

Quick#	Part#	Price	Ø Sprue	Wt.
615	GSN-N30-AE	\$144.00	14mm	386g
Replacement Spring				
1285	SPR-05	\$2.20		

Size 50 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
No	20mm	22mm	20.5mm	20mm



Swanstrom

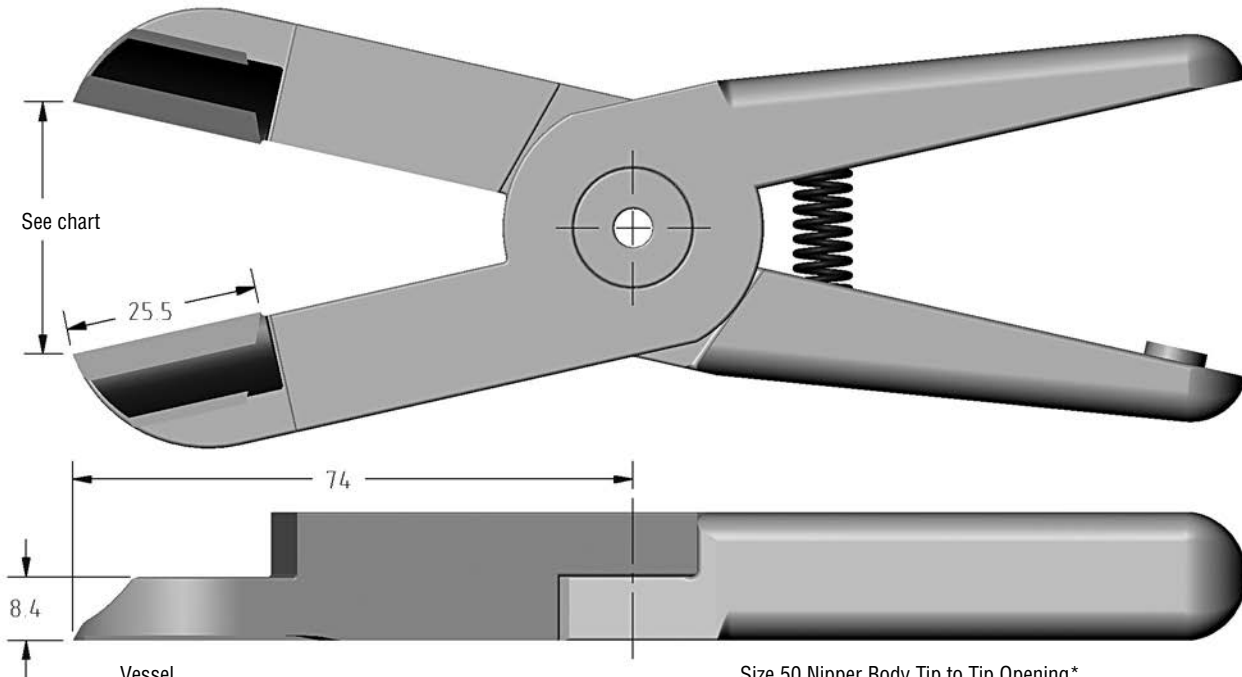
Quick#	Part#	Price	Ø Sprue	Wt.
1015	X-30-PE	\$135.00	14mm	374g
Replacement Spring				
1043	GSN-SP-031	\$2.60		

Size 50 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
No	19mm	21mm	19.5mm	19mm

Blades for Size 50 Nippers

(Dimensioned drawings shown full scale)

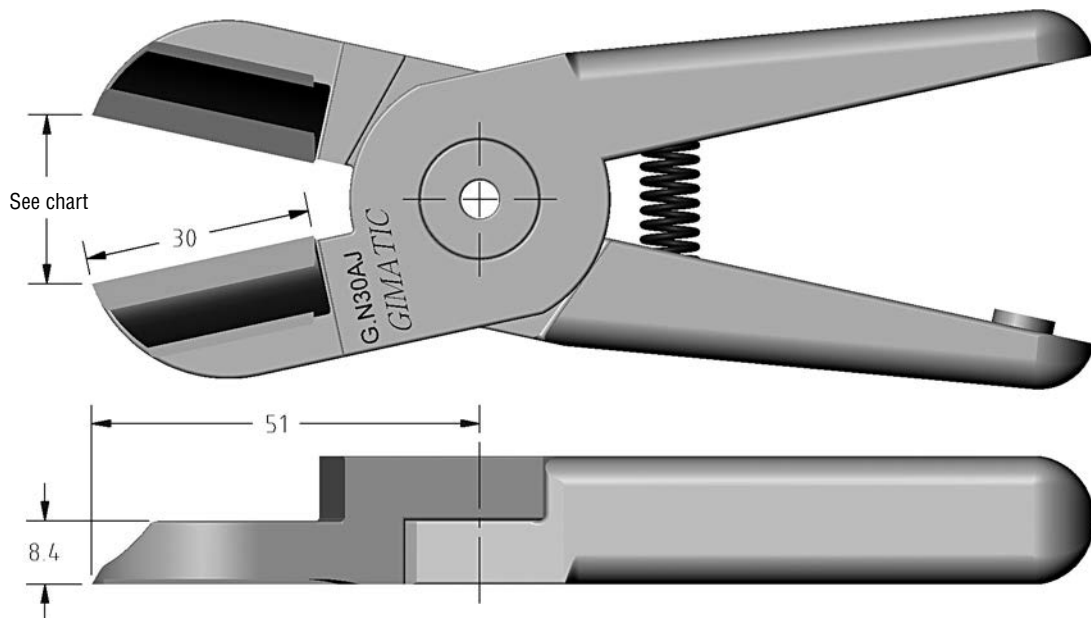


Vessel

Quick#	Part#	Price	Ø Sprue	Wt.
614	GSN-N30-AJL	\$188.00	18mm	470g
Replacement Spring				
1285	SPR-05	\$2.20		

Size 50 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
No	33.5mm	37mm	34.5mm	33.5mm



Gimatic

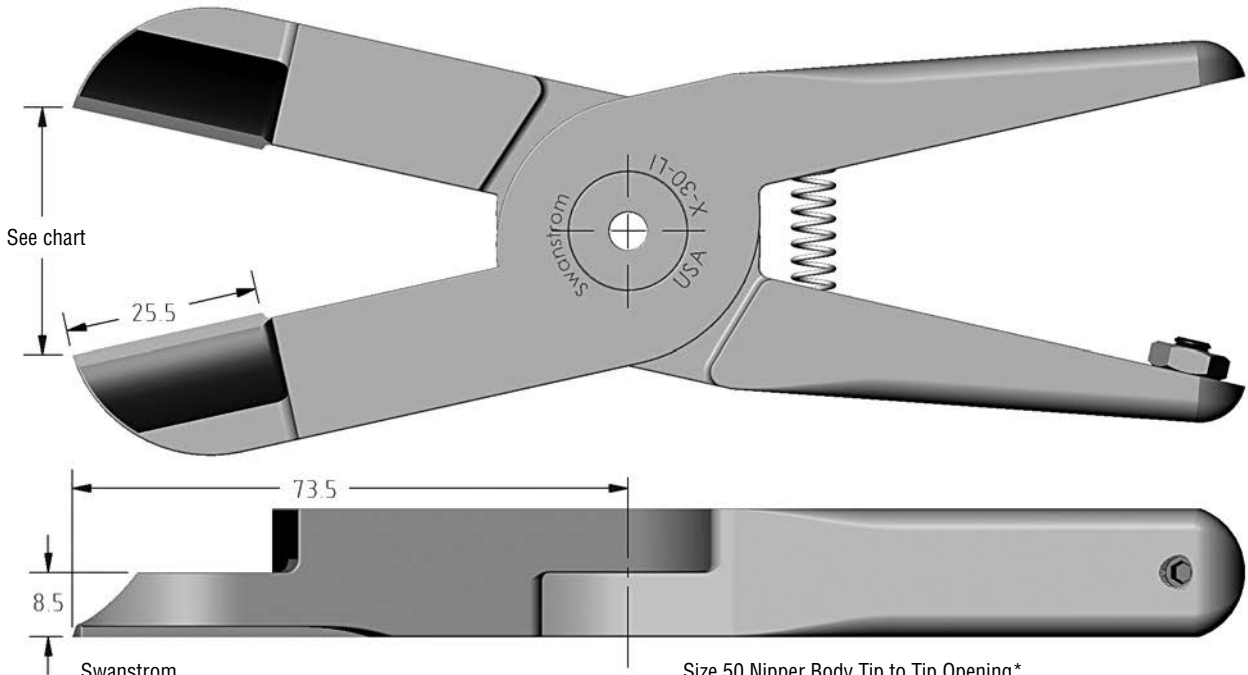
Quick#	Part#	Price	Ø Sprue	Wt.
5032	GN30AJ	\$144.00	18mm	368g
Replacement Spring				
1285	SPR-05	\$2.20		

Size 50 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
No	22mm	25mm	23.5mm	22mm

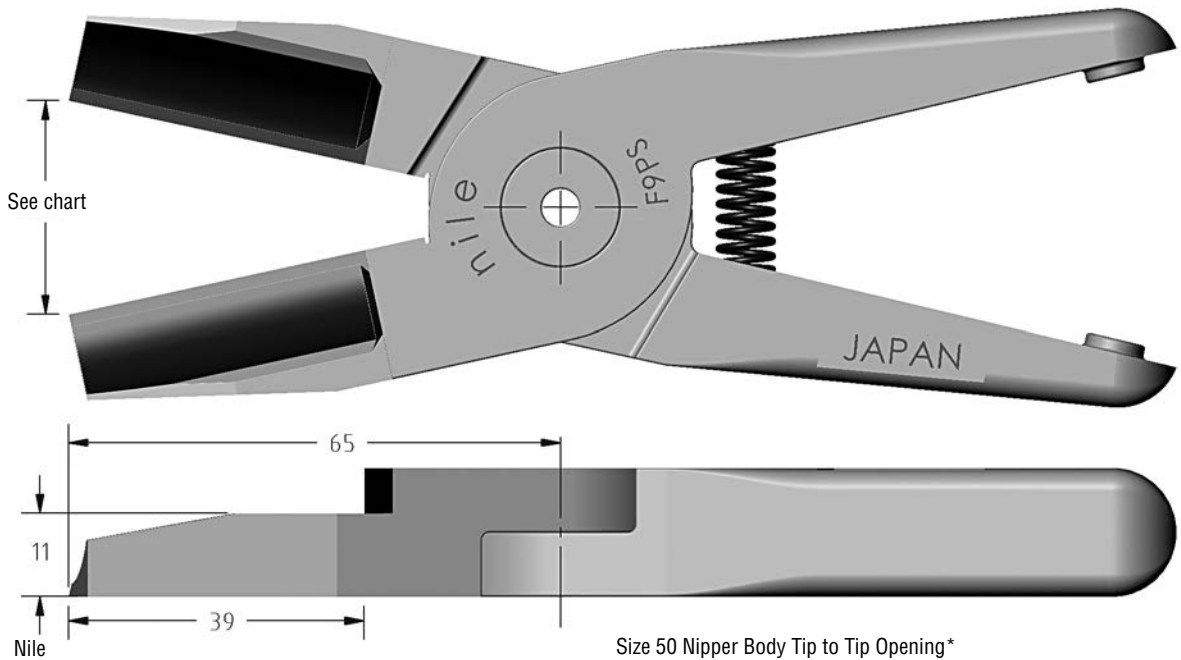
Blades for Size 50 Nippers

(Dimensioned drawings shown full scale)



Quick#	Part#	Price	Ø Sprue	Wt.
1014	X-30-LI	\$172.00	18mm	464g
Replacement Spring				
1043	GSN-SP-031	\$2.60		

Vessel	Gimatic	Swanstrom	Nile	OEM
No	32.5mm	35.5mm	33.5mm	32.5mm

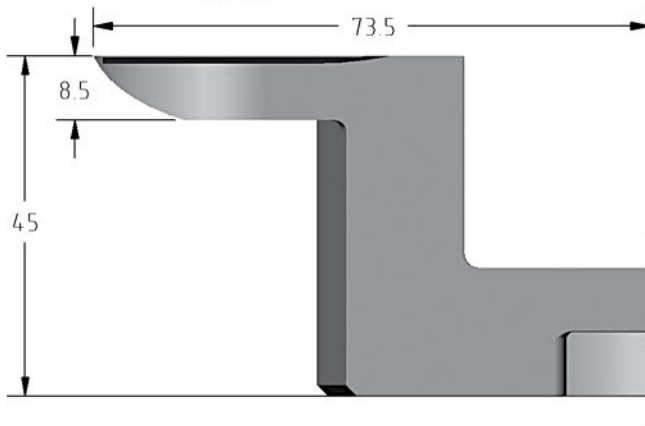
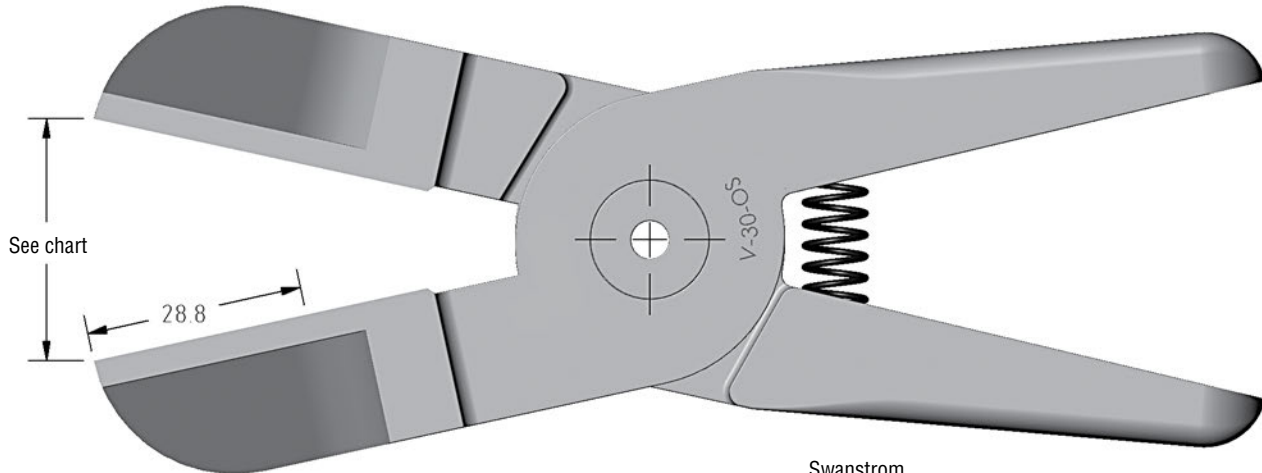


Quick#	Part#	Price	Ø Sprue	Wt.
1574	GSN-F9PS	\$101.50	18mm	404g
Replacement Spring				
2301	855-3090	\$2.09		

Vessel	Gimatic	Swanstrom	Nile	OEM
No	28mm	35mm	29.5mm	28mm

Blades for Size 50 Nippers

(Dimensioned drawings shown full scale)

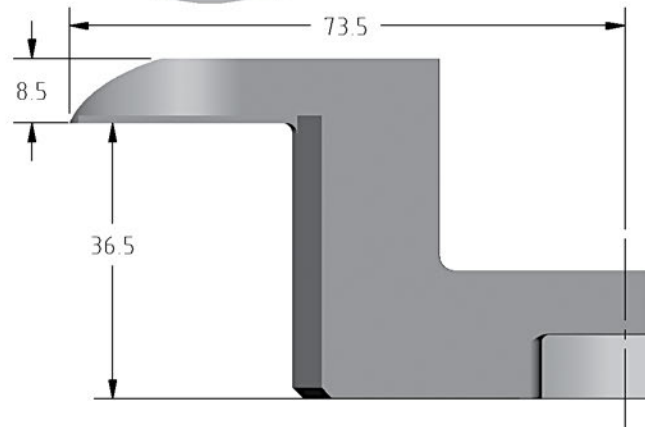
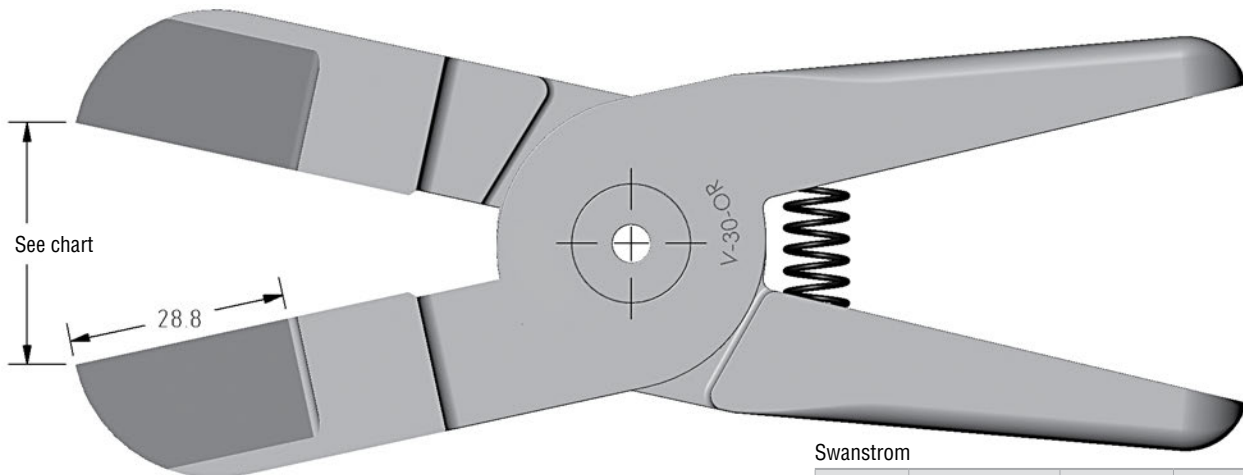


Swanstrom

Quick#	Part#	Price	Ø Sprue	Wt.
1041	X-30-OS	\$446.00	18mm	494g
Replacement Spring				
1043	GSN-SP-031	\$2.60		

Size 50 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
No	32mm	35.5mm	33.5mm	32mm



Swanstrom

Quick#	Part#	Price	Ø Sprue	Wt.
1042	X-30-OR	\$482.00	18mm	494g
Replacement Spring				
1043	GSN-SP-031	\$2.60		

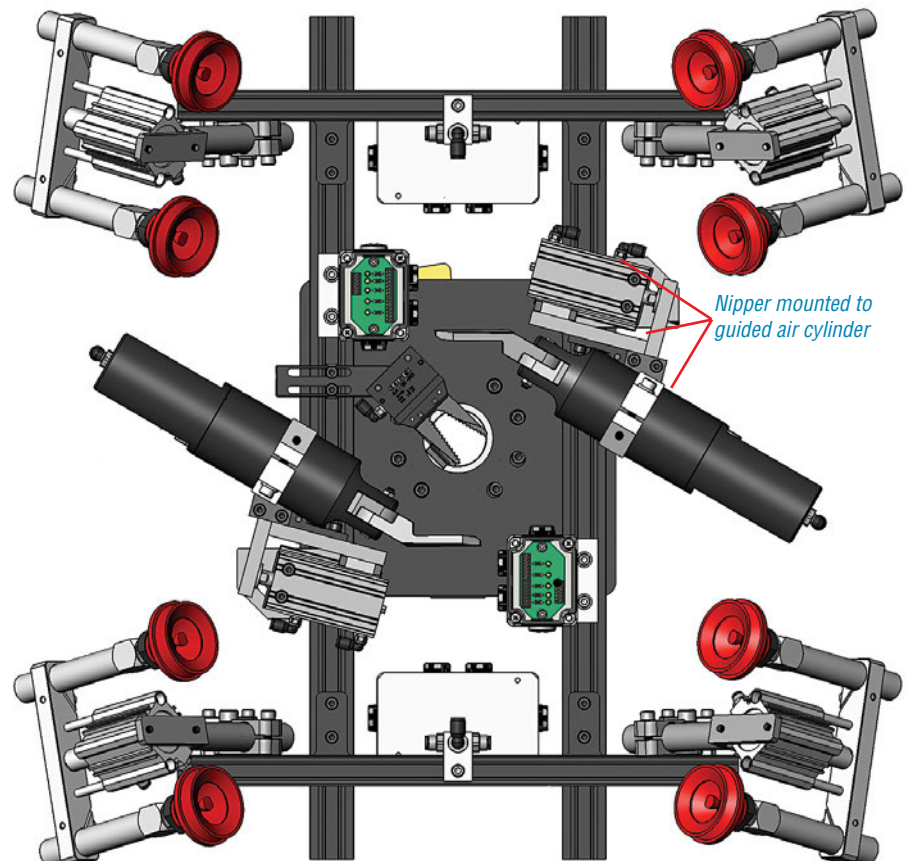
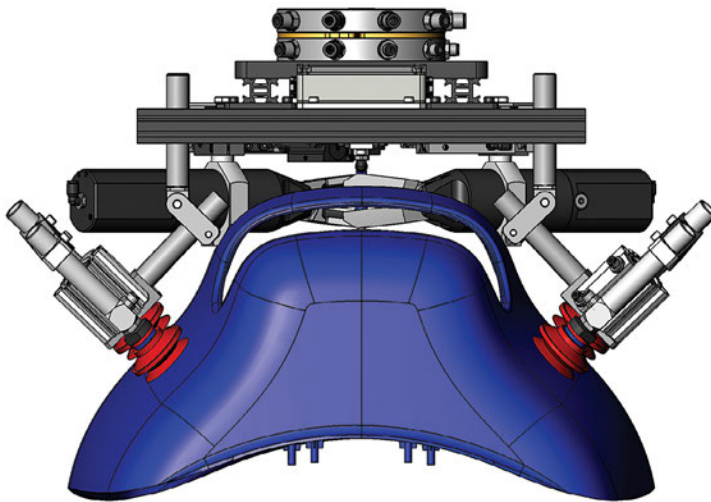
Size 50 Nipper Body Tip to Tip Opening*

Vessel	Gimatic	Swanstrom	Nile	OEM
No	34mm	37mm	34.5mm	34mm

EOAT Design and Build Service

From the simplest to the most complex EOAT, EMI specializes in designing and building customized End-of-Arm-Tooling— **Priced Competitively.**

Get started by sending us a sample part or 3D part file and a completed datasheet (see page 1082). Our experienced EOAT engineers will design a tool for you and provide you 3D CAD renderings at no cost or obligation. We'll also provide pricing for the tool should you want to purchase the EOAT completely assembled.



Thrust-Cut Nippers

- Two sizes available.
- Optional sensors.
- Optional blade heating system.
- The blades are available as spare parts.
- Flow controls included for use with Ø6mm tubing.

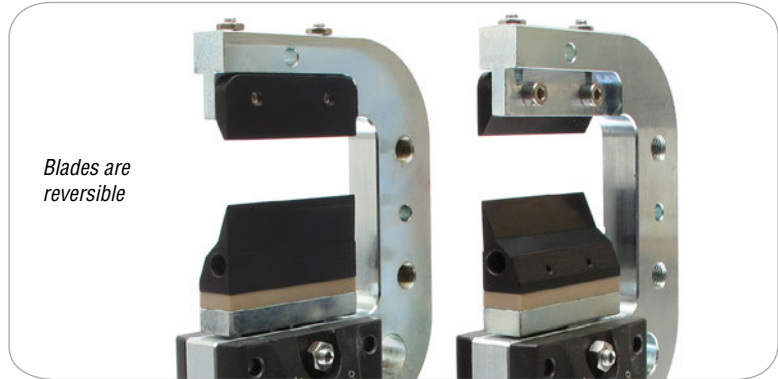
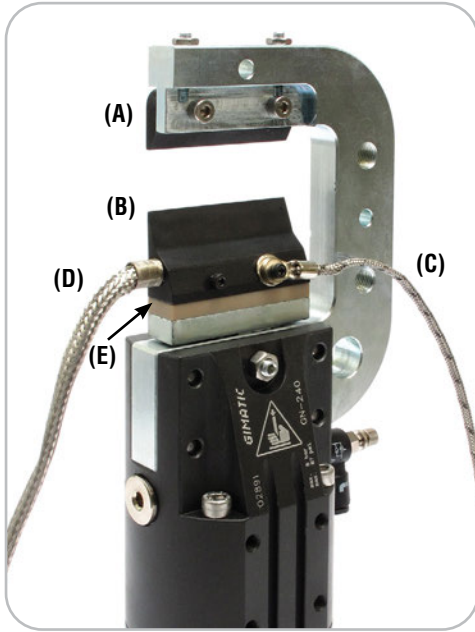
Watch our Thrust-Cut Nipper video!



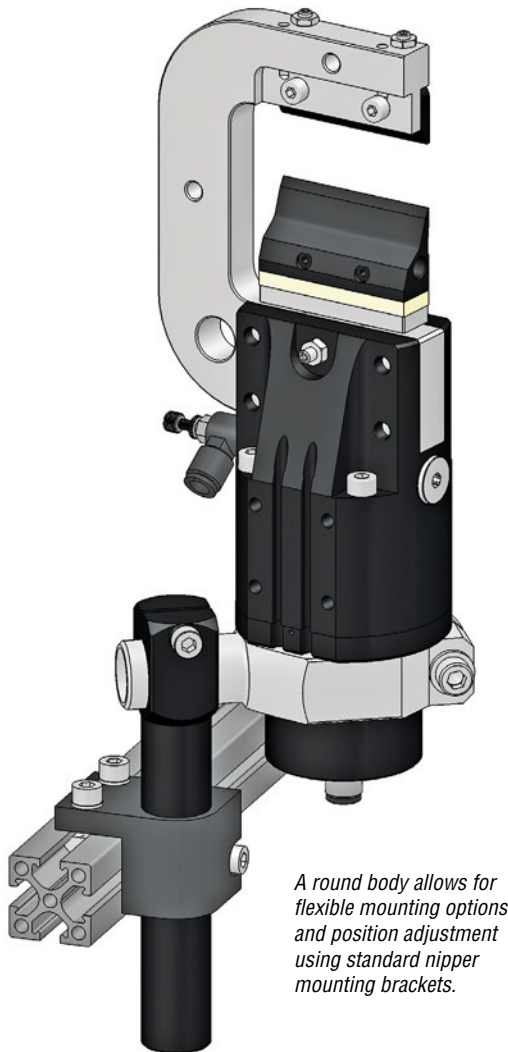
Part#	GN-240	GN-263
Quick#	6693	6691
Price	\$1326.00	\$1643.00
Blade width	50mm	76mm
Stroke	20mm	31.5mm
Piston bore	Ø40mm	Ø63mm
Pressure range	36–87 psi	
Nipper body temperature range	41°–140°F	
Nipper blade max. temperature	482°F*	
Closing force at 87psi	330 lbf	820 lbf
Weight	1330g	2900g

*Call EMI if your application requires blade temperatures higher than 482°

Thrust-Cut Nippers



Accessories	GN-240		GN-263	
	Quick#	Price	Quick#	Price
Spare top blade (A)	5620	\$51.60	5617	\$59.90
Spare bottom blade (B)	5619	\$147.60	5616	\$167.40
Thermocouple (C)	5626	\$27.50	5626	\$27.50
Blade heater (D)	5625	\$68.85	5624	\$72.20
High Temp Mica Insulation (E)	7345	\$44.00	7344	\$44.00



Using more than one thrust cut nipper? We also offer 2-, 3-, & 4-Zone control consoles.
Multi-zone temperature controllers allow the temperature of each blade to be monitored individually.

Temperature Control Boxes

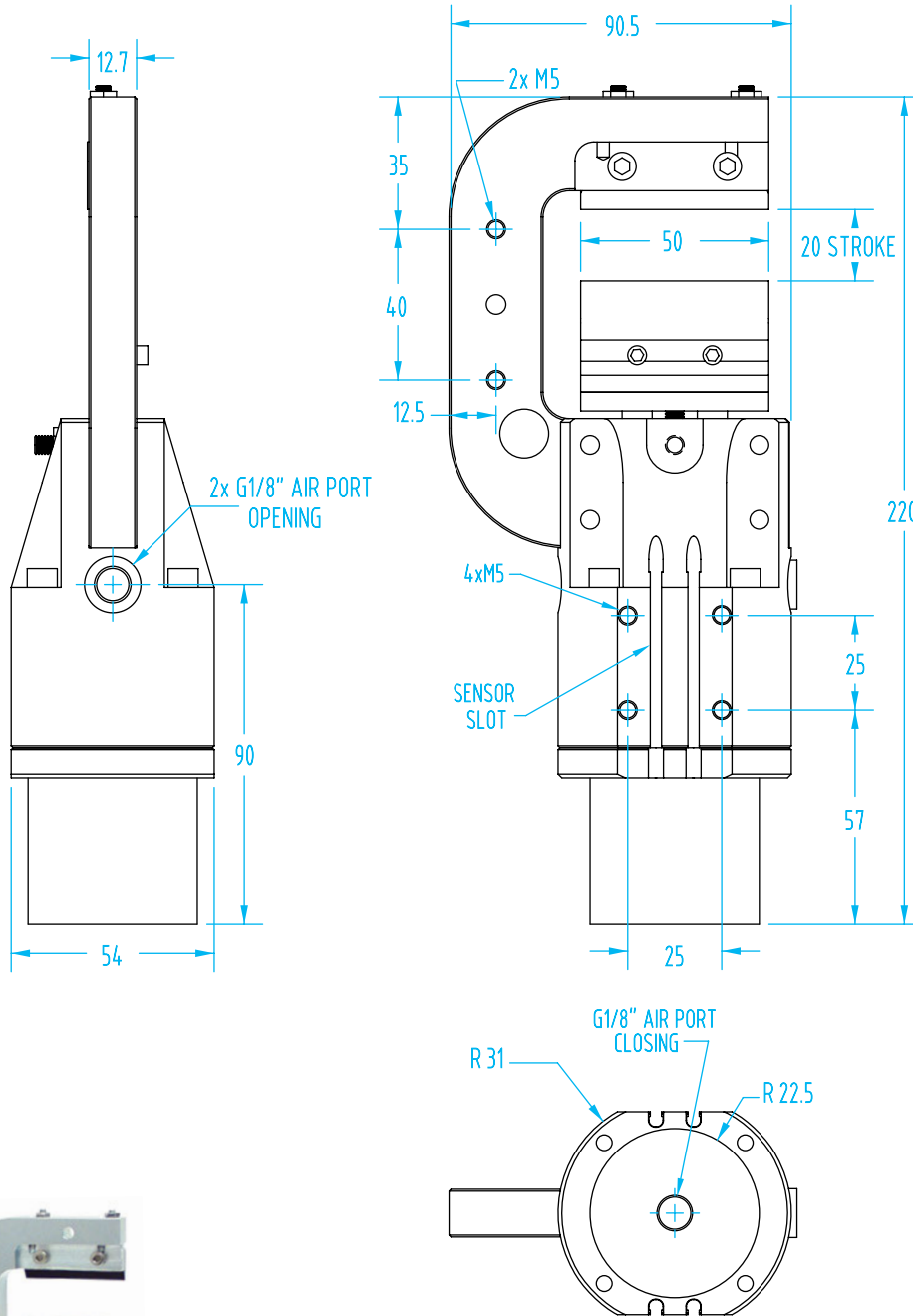
Quick#	Part#	# of Zones	Price
5623	GSE-TCHP-CM	1	\$630.00
2662	GSE-TCHP-CM2	2	\$991.00
2663	GSE-TCHP-CM3	3	\$1,480.00
2664	GSE-TCHP-CM4	4	\$1,954.00

Quick#	Part#	Type	Connection	Price
3-wire, SS type 'C' slot sensor				
1882	SS4N225G	PNP	2.5m lead	\$27.20
1883	SS4M225G	NPN	2.5m lead	\$27.20
6282	SS3N203G	PNP	M8 connector	\$31.16
1884	SS3M203G	NPN	M8 connector	\$31.16

2" Thrust-Cut Nipper

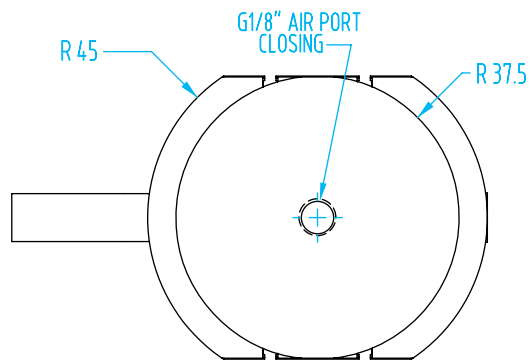
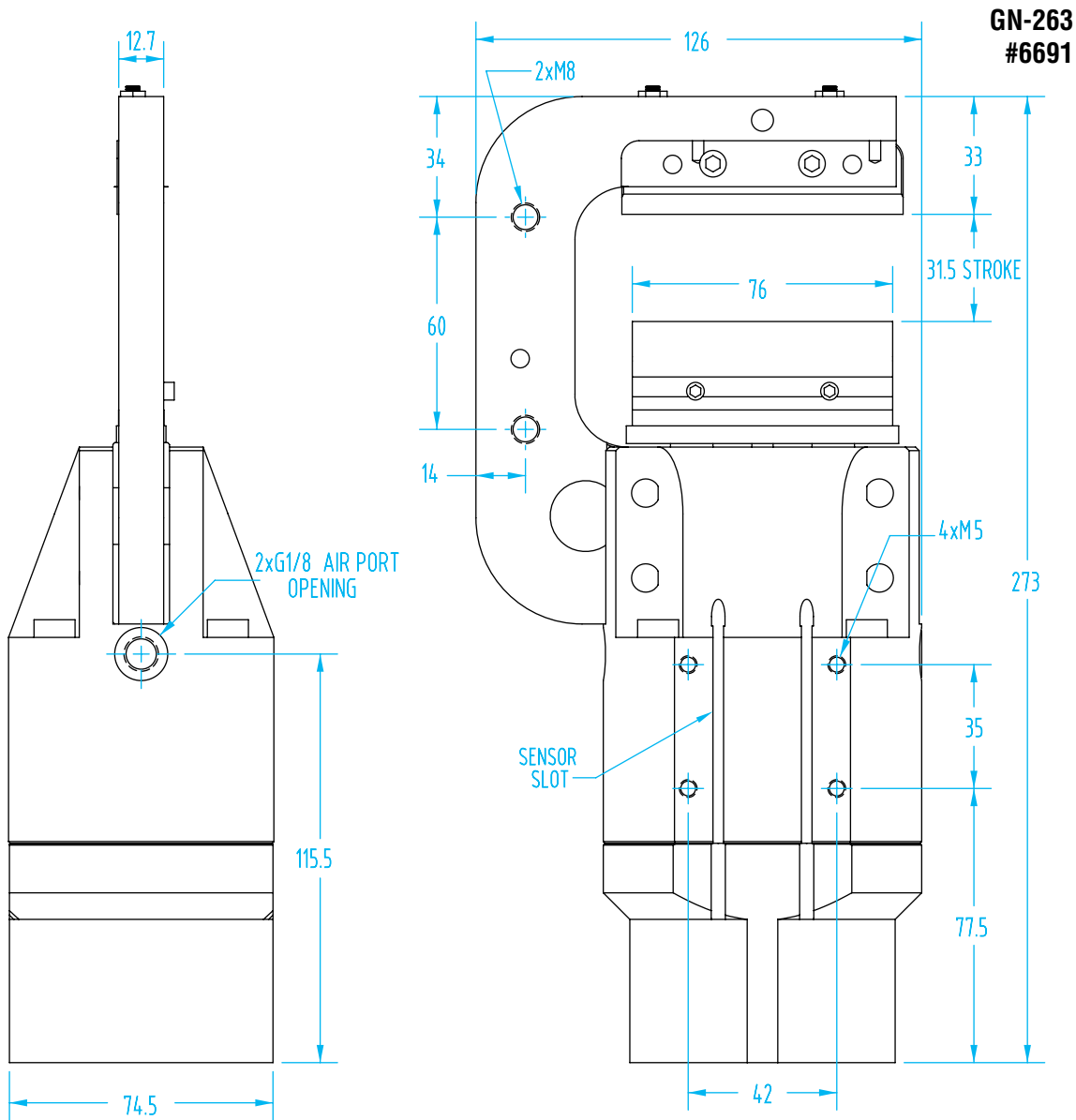
(Dimensioned drawing shown half scale)

GN-240
#6693

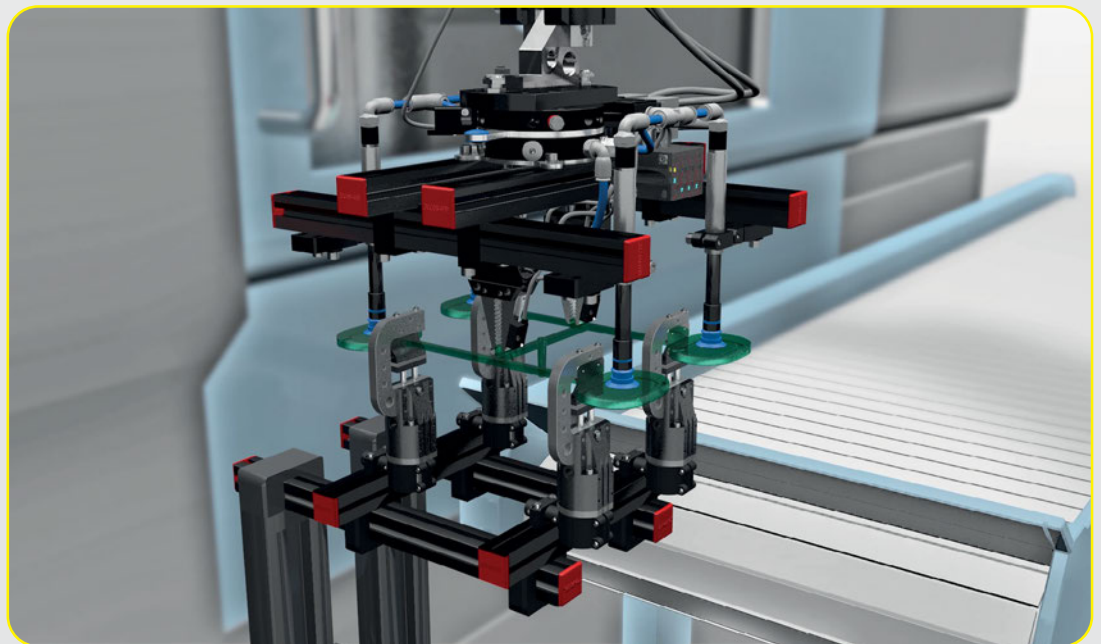
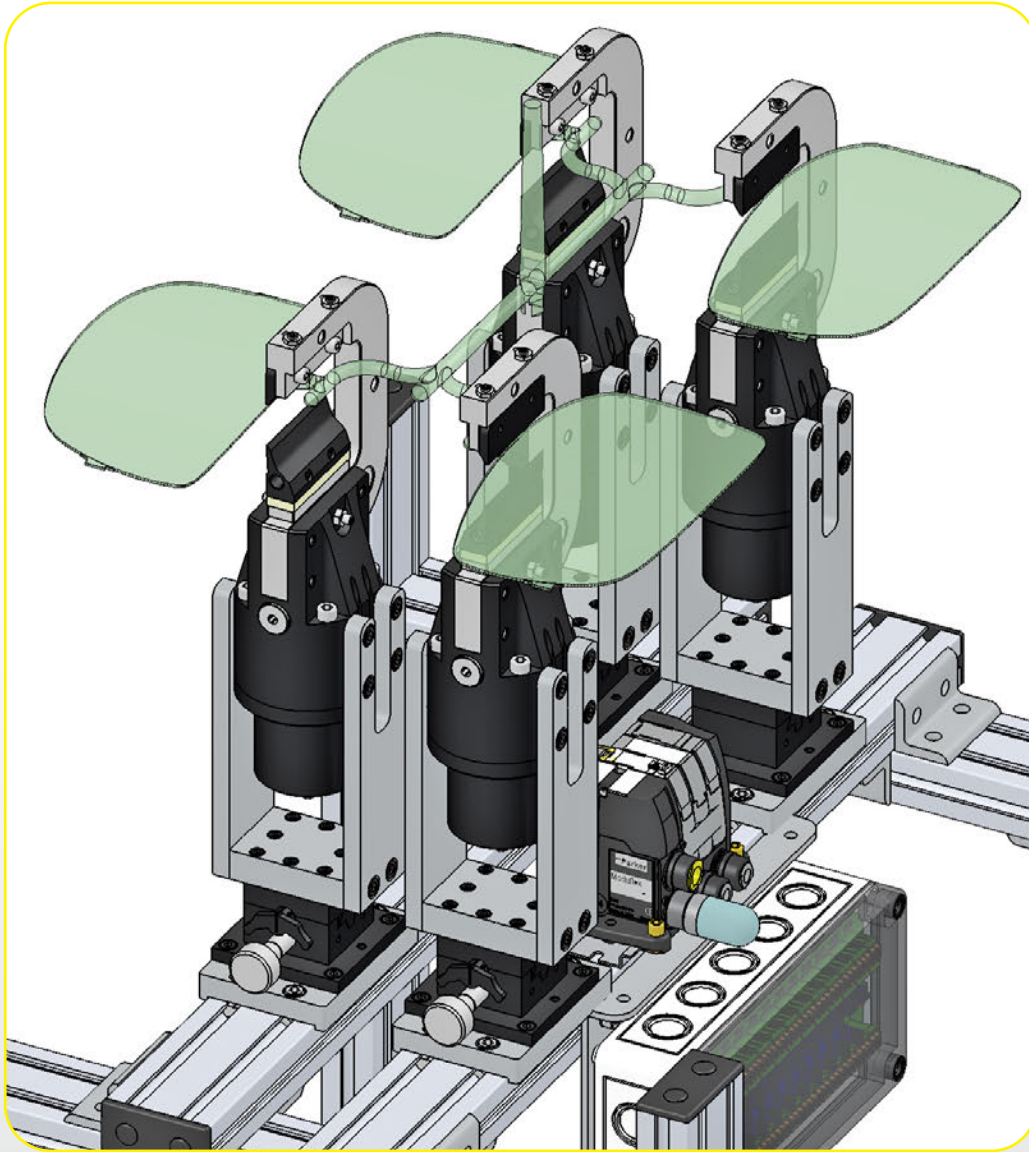


3" Thrust-Cut Nipper

(Dimensioned drawing shown half scale)

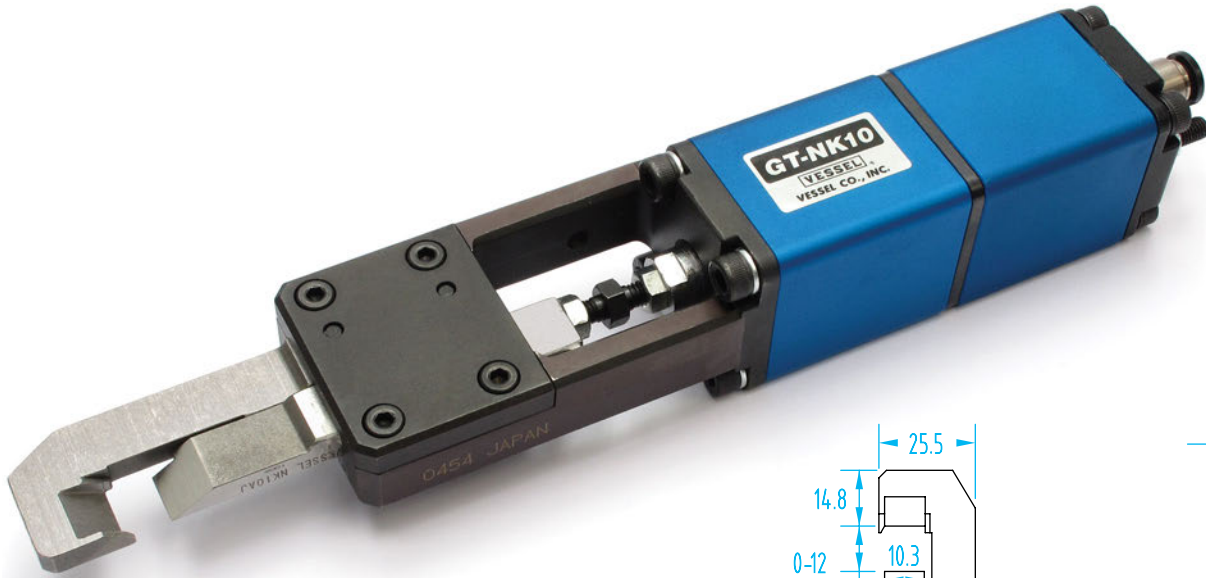


Thrust-Cut Nipper Application Example

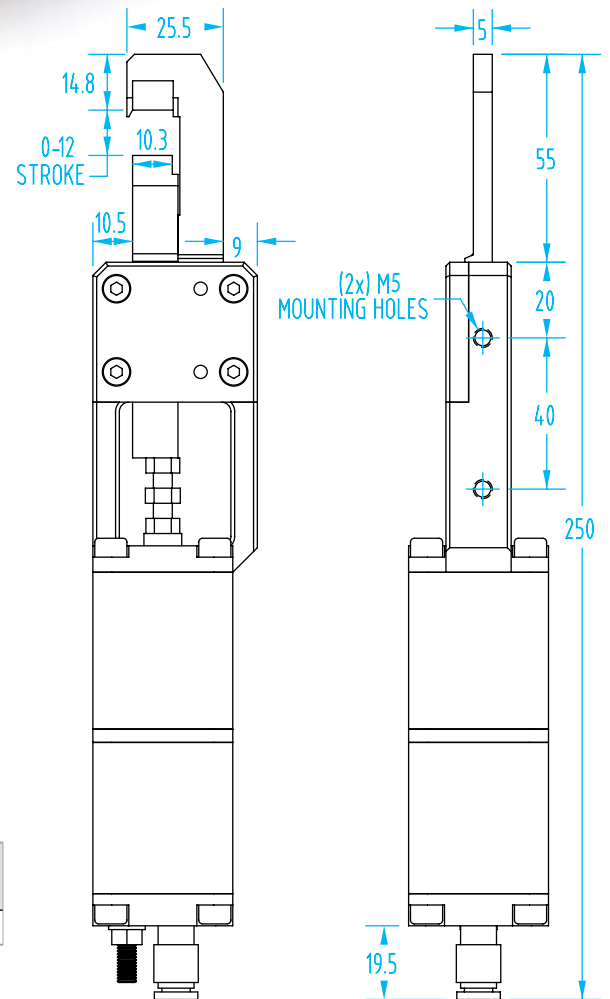


Compact Thrust-Cut Nippers

(Dimensioned drawing shown half scale)



- Small, lightweight, and compact.
- Can cut fan gates as wide as 10mm.
- Adjustable blade stroke 0–12mm.
- Includes 6mm fitting.
- Pre-tapped mounting holes for easy installation.

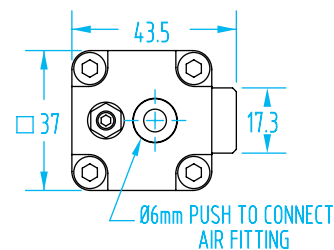


Vessel Thrust-Cut Nippers

Quick#	Part#	Price	Wt	Working Air Pressure	Cutting Cap Ø ABS	Stroke (mm)
2329	GT-NK10	\$1,114.00	800g	57–71 psi	5	12 max

Replacement Thrust-Cut Nipper Blade

Quick#	Part#	Nipper Model	Width (Max. Fan Gate Width)	Price
2330	NK10AJ	GT-NK10	10	\$396.00



Blade Holder

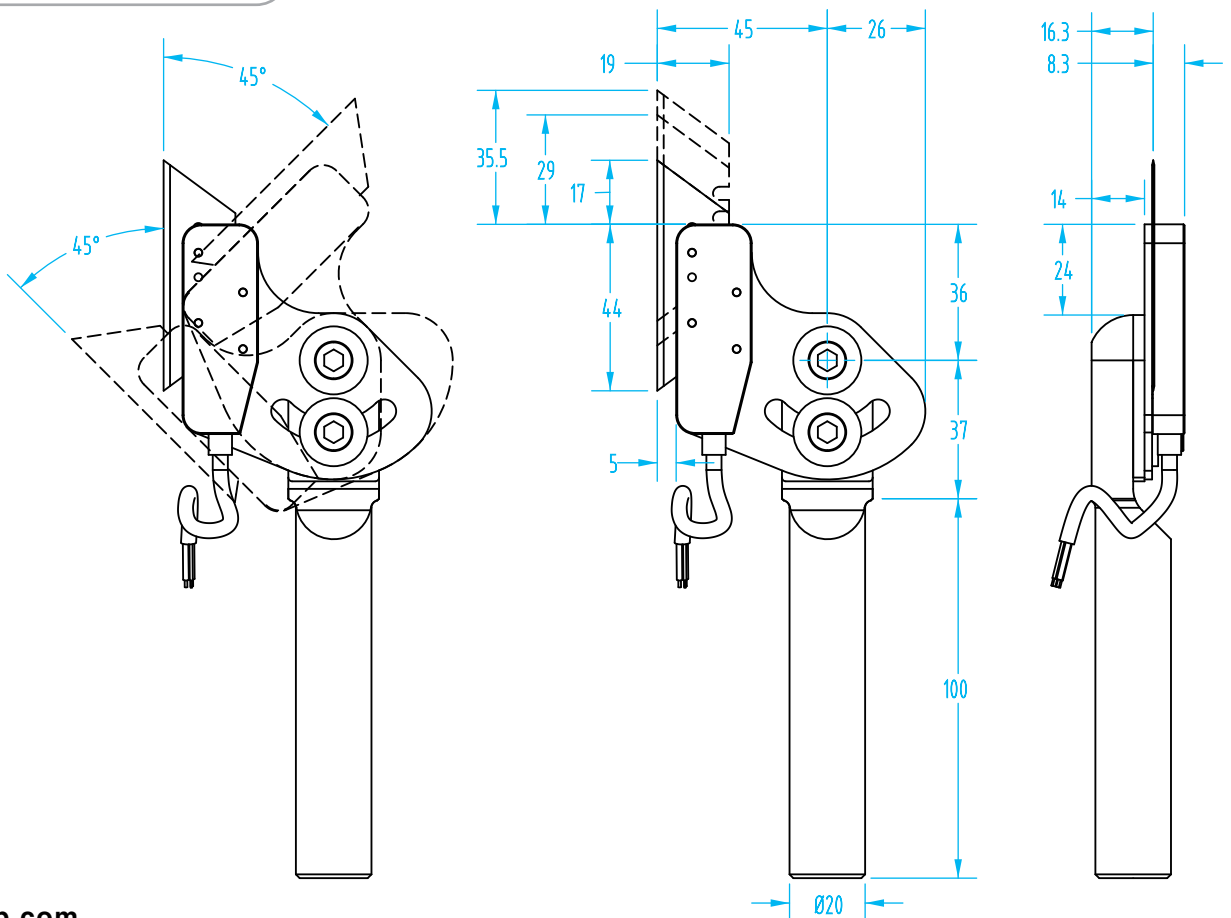
- Suitable for trimming, degating and deburring.
- Continuously adjustable angle from -45° to +45°.
- Cartridge heater can be mounted on either side.
- Optional heating system.
- Uses the same temp. control box as Gimatic Thrust Cut Nippers.
- Thermocouple and blade heater are 1 unit.
- Replacement Stanley® utility knife blades available.
- Can be used with the Heavy-duty Guided Cylinders on page 770.

(Dimensioned drawing shown half scale)



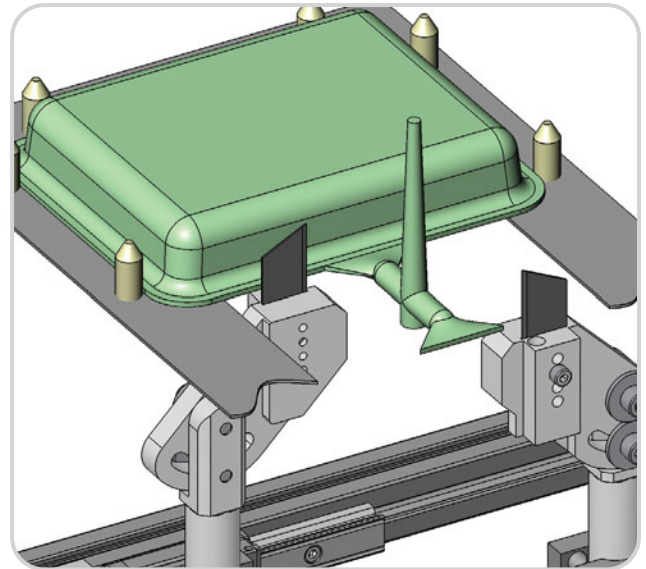
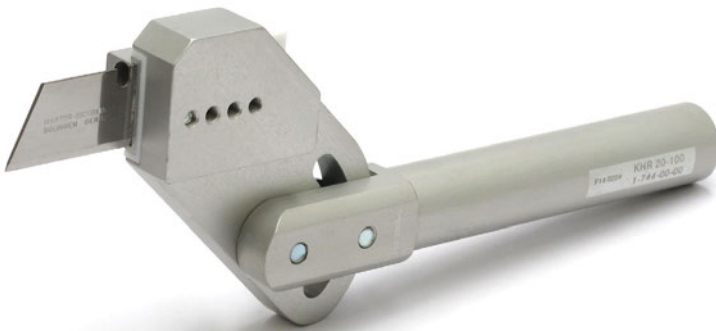
Blade Holder

Quick#	Part#	Description	Price
7286	GNB-2045	Includes 1 blade. Weight: 175g	\$172.00
Accessories			
7301	376Y234-10	Spare Blade (in sets of 10)	\$17.60
5628	GSE-25200-CHTC	Blade Heater & Thermocouple 125w, 120v	\$76.38
5623	GSE-TCHP-CM	Heater Control Box	\$630.00



Blade Holder

(Dimensioned drawing shown half scale)

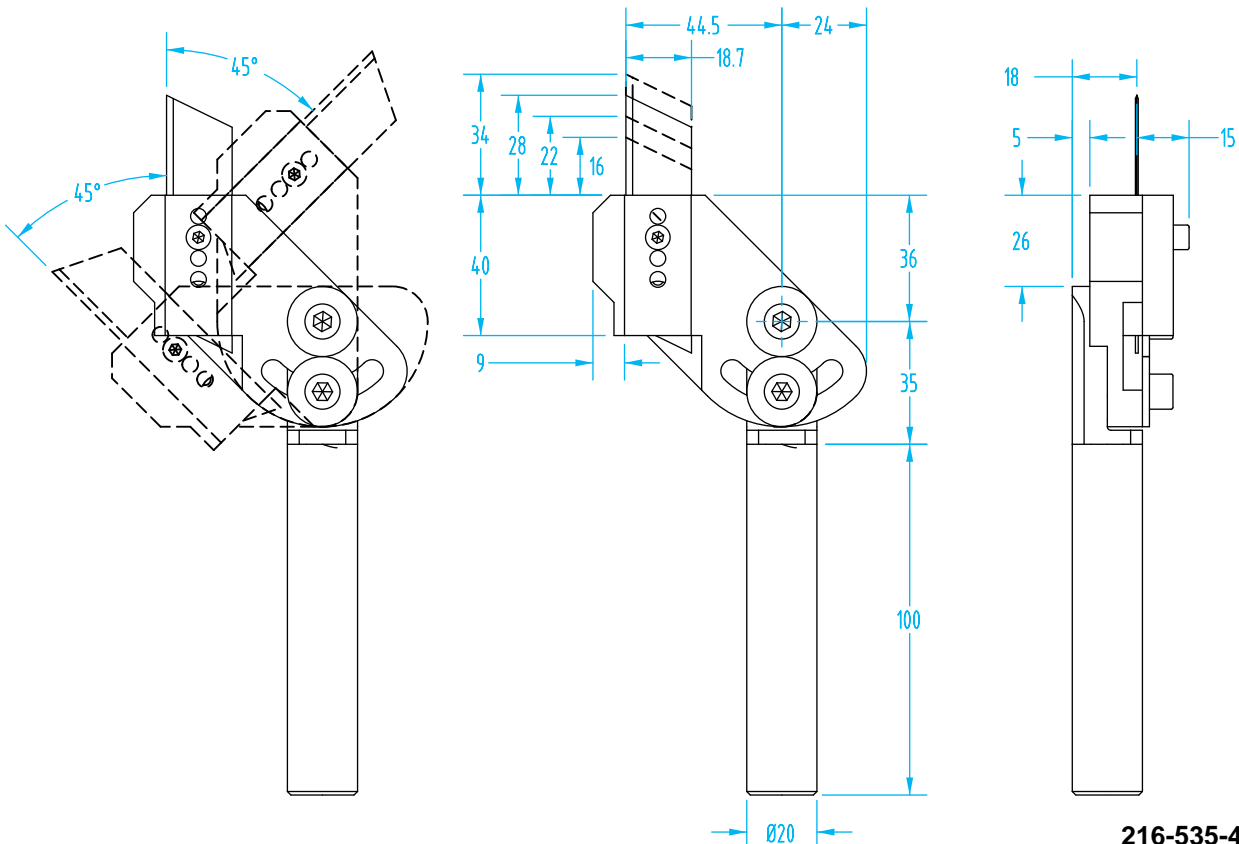


Can be used with the Heavy-duty Guided Cylinders on page 770.

- Suitable for trimming, degating and deburring.
- Continuously adjustable angle from -45° to +45°.
- Includes 5 blades, additional blades available.
- Cartridge heater can be mounted on either side.
- Optional heating system.
- Uses the same temp. control box as Gimatic Thrust Cut Nippers.
- Thermocouple and blade heater are 1 unit.

Blade Holder

Quick#	Part#	>ASS< #	Description	Price
3332	KHR-20-100	1-744-00-00	Includes 5 blades. Weight: 180g	\$288.75
Accessories				
3333	SKL-15	1-744-00-01	Spare Blade	\$5.25
2585	GSN-HC20-CHTC	9-05-100-03	Thermocouple / Blade Heater	\$136.00
5623	GSE-TCHP-CM	-	Heater Control Box	\$630.00



Gimatic Nipper – Size 5

(Dimensioned drawings shown full scale)



These stationary and sliding Gimatic® nippers are ideal for mounting on end-of-arm toolings or automated machinery. Available in three sizes: 05, 10 & 20. The small dimensions create a low profile nipper.

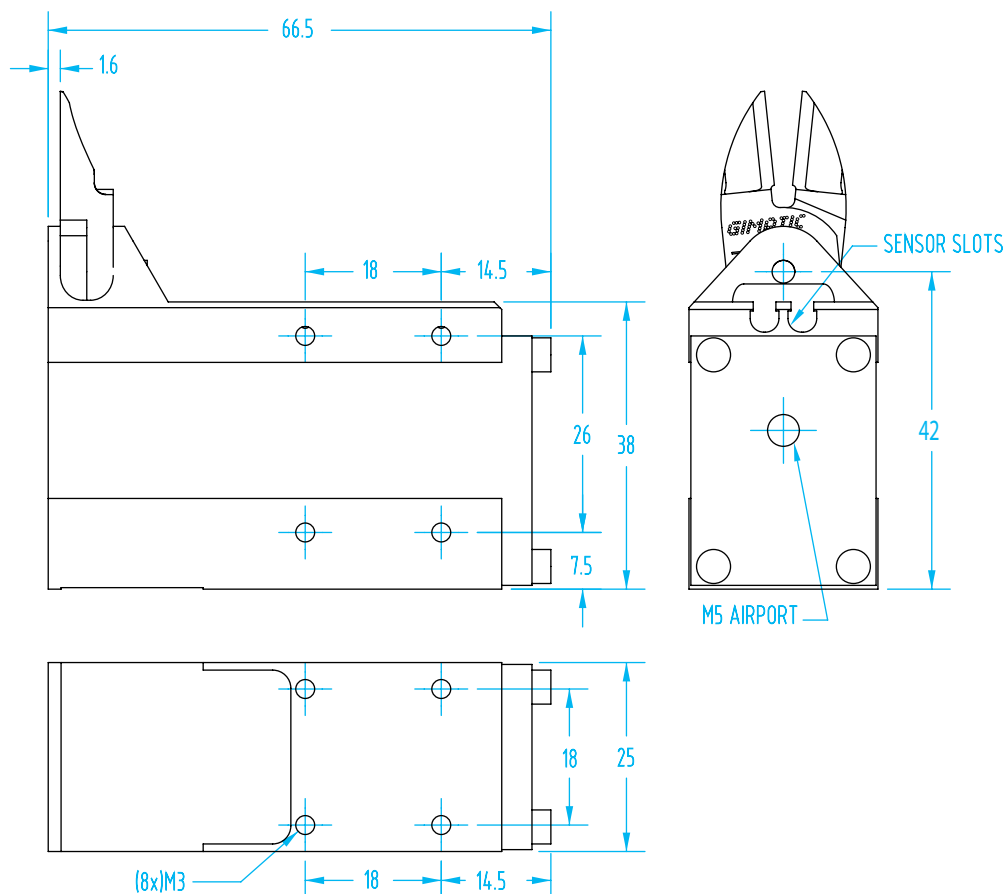
- Uses standard size 5 blades on pages 861–863.
- Blades can be reversed in nipper body
- Normally open and closed sliding models can also be used double acting.
- Sensor ready

GNS-05 Gimatic Nipper (Blades sold separately)

Type	Quick#	Part#	Price	Weight	Pressure Range	Slide Stroke	Cutting Cap. mm
Stationary	6961	GNS-05	\$226.00	112g	30–116 psi	3mm	Ø3mm
Sliding, Normally Closed	6962	GNS-05-NC	\$310.00	180g			
Sliding, Normally Open	6963	GNS-05-NO	\$310.00	175g			

Note: See page 918–919 for optional sensors and mounting brackets.

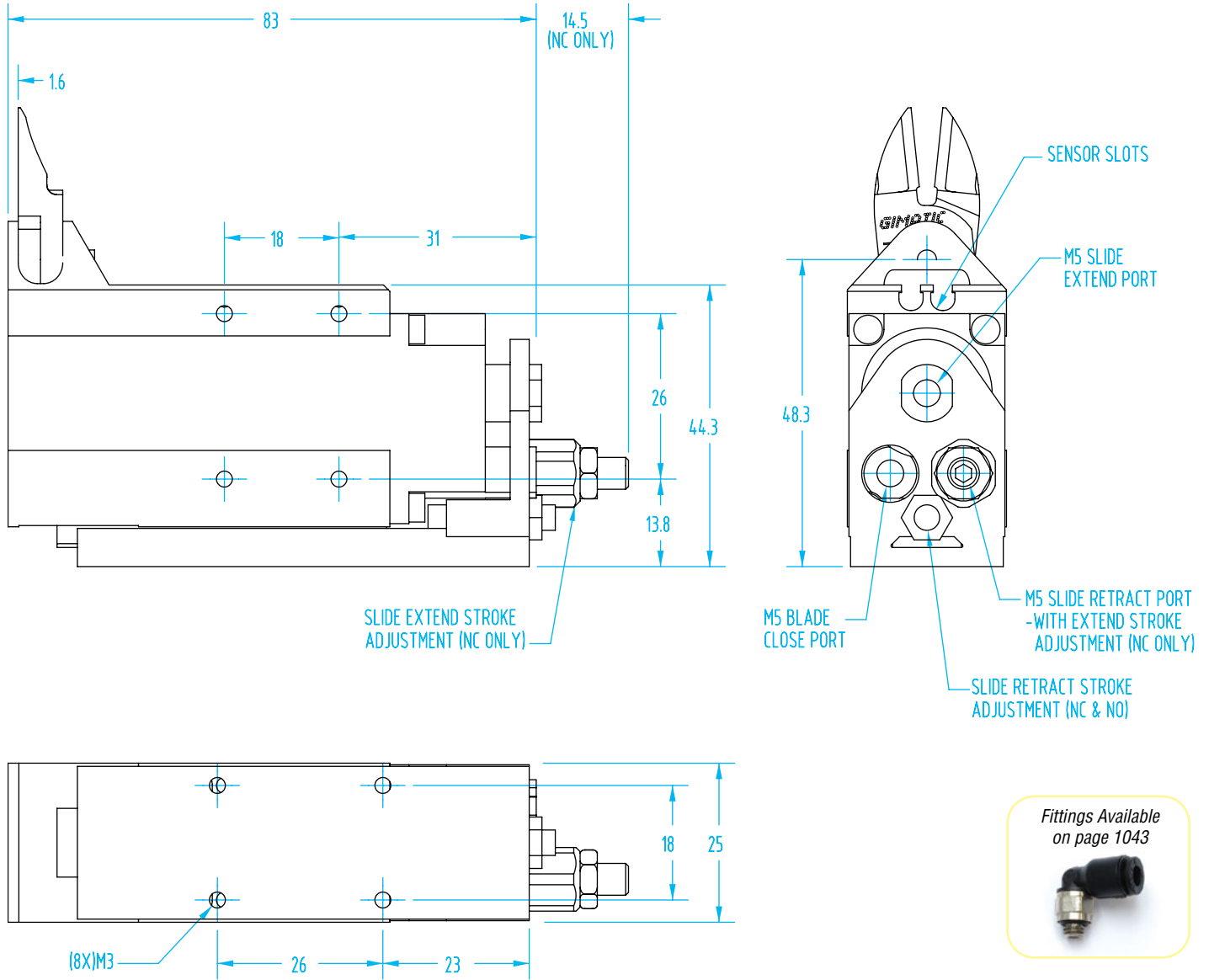
#6961 / GNS-05 - Stationary Nipper



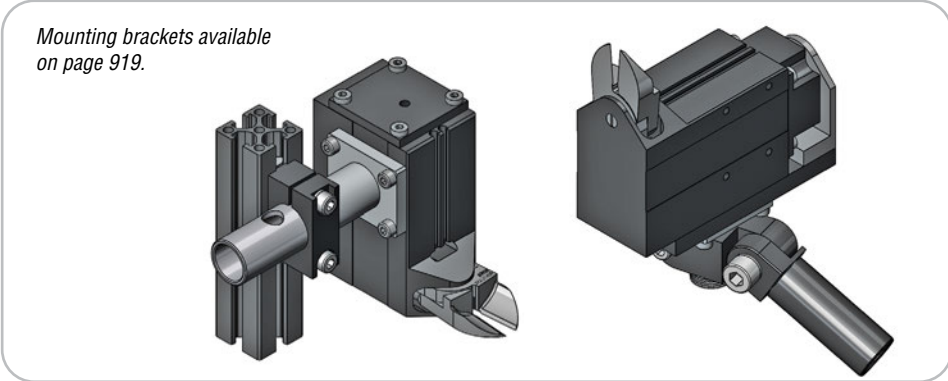
Gimatic Nipper – Size 5

(Dimensioned drawings shown full scale)

#6962 & 6963 / GNS-05-NC & GNS-05-NO - Sliding Nipper



Note: NC version is equipped with a bracket mounted into port "C" which allows extend stroke adjustment. The extend adjustment bracket make the "C" port unusable. (slide retracts under spring tension only)



Gimatic Nipper – Size 10

(Dimensioned drawings shown full scale)



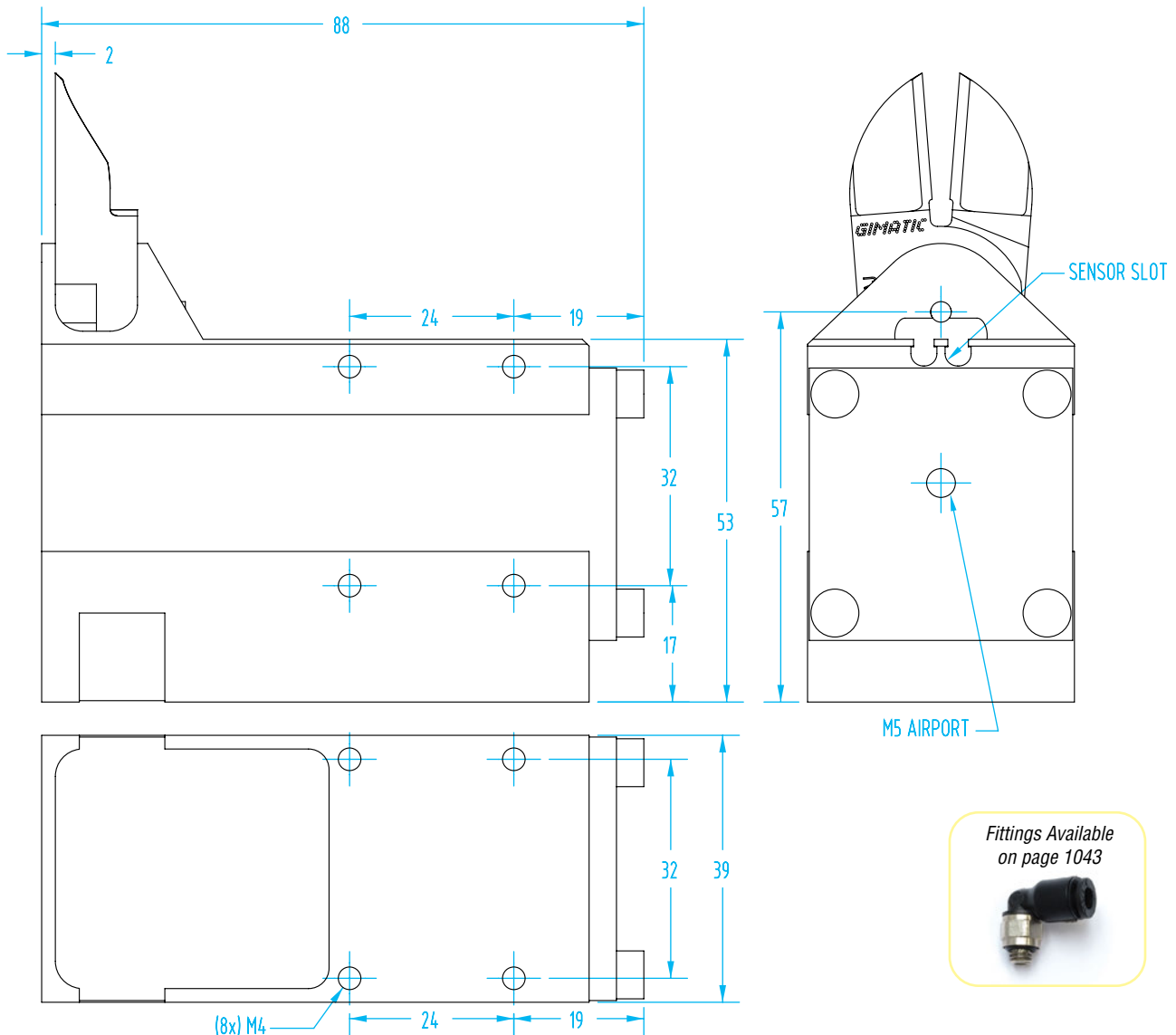
- Uses standard size 10 blades on pages 865–867. (see note on page 915)
- Blades can be reversed in nipper body.
- Normally open and closed sliding models can also be used double acting.
- Sensor ready

GNS-10 Gimatic Nipper (Blades sold separately)

Type	Quick#	Part#	Price	Weight	Pressure Range	Slide Stroke	Cutting Cap. mm
Stationary	6964	GNS-10	\$287.00	355g	30–116 psi	4mm	Ø4.5mm
Sliding, Normally Closed	6965	GNS-10-NC	\$412.00	570g			
Sliding, Normally Open	6966	GNS-10-NO	\$412.00	570g			

Note: See page 918–919 for optional sensors and mounting brackets

#6964 / GNS-10 - Stationary Nipper

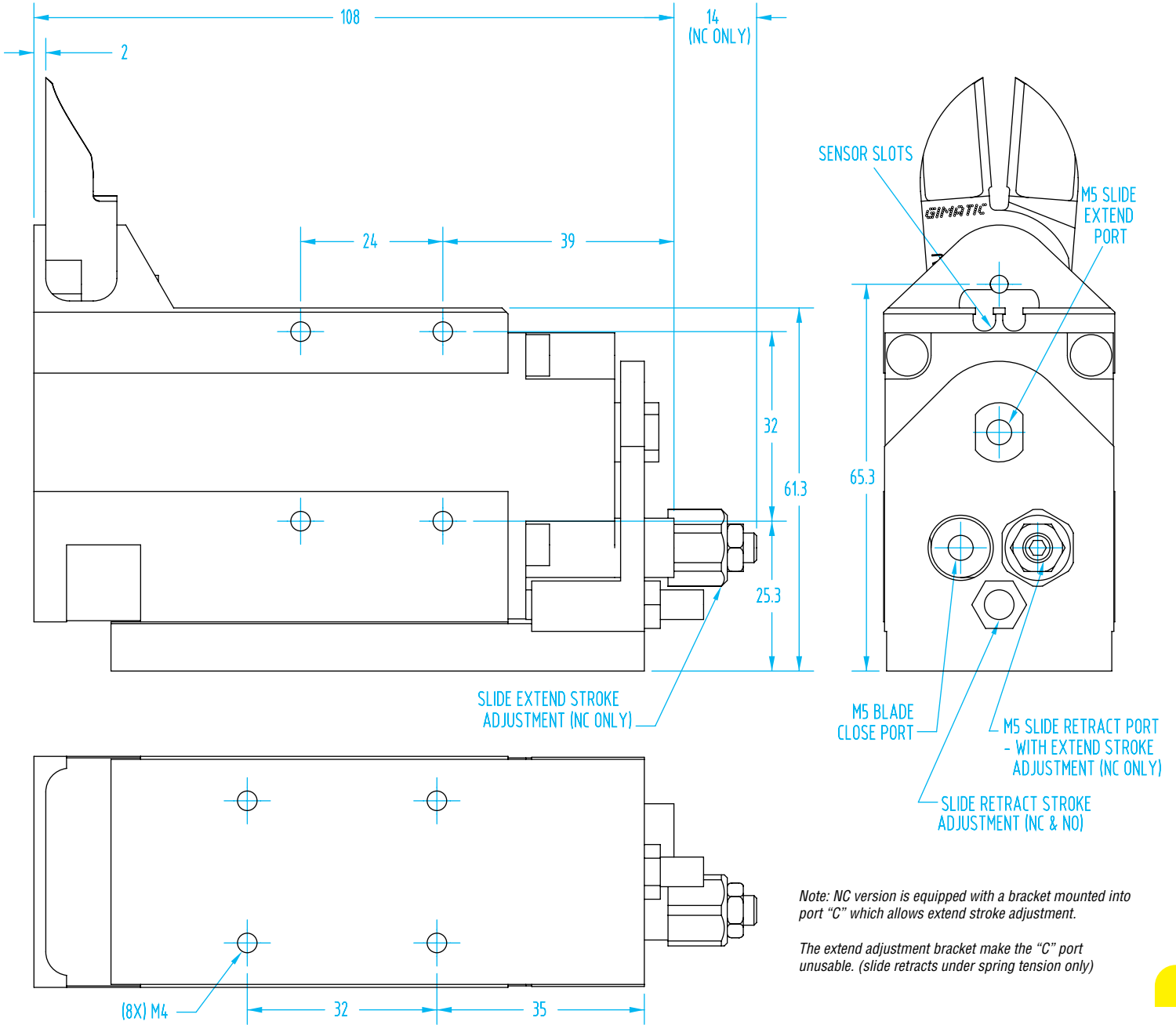


Fittings Available on page 1043

Gimatic Nipper – Size 10

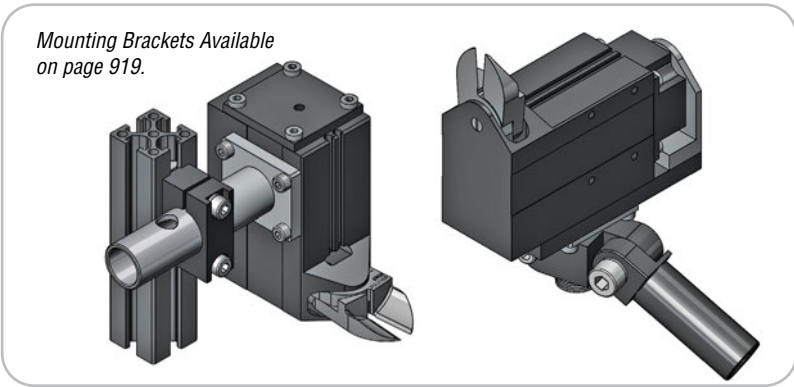
(Dimensioned drawings shown full scale)

#6965 & 6966 / GNS-10-NC & GNS-10-NO - Sliding Nipper



Note: NC version is equipped with a bracket mounted into port "C" which allows extend stroke adjustment.

The extend adjustment bracket make the "C" port unusable. (slide retracts under spring tension only)



Gimatic Nipper – Size 20

(Dimensioned drawings shown half scale)



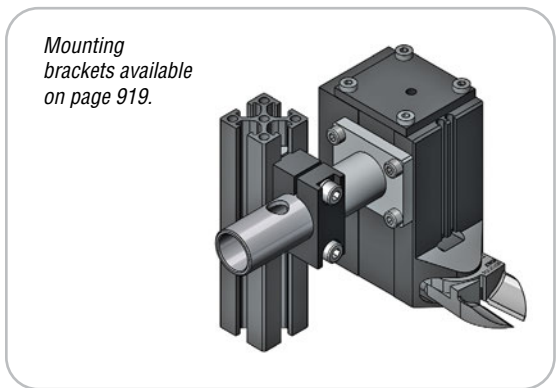
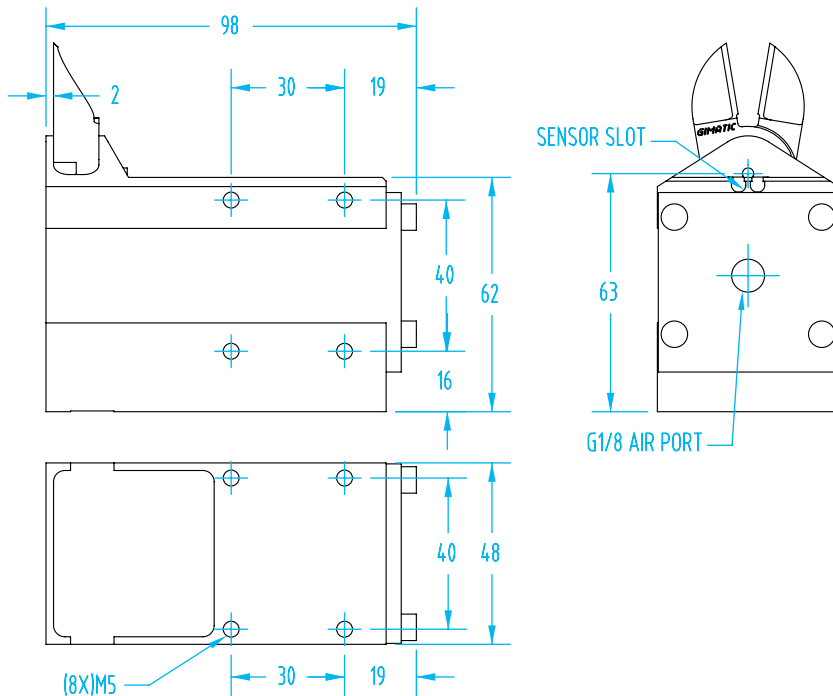
GNS-20 Gimatic Nipper (Blades sold separately)

Type	Quick#	Part#	Price	Weight	Pressure Range	Slide Stroke	Cutting Cap. mm
Stationary	6967	GNS-20	\$352.00	480g	30–116 psi	5mm	Ø6mm
Sliding, Normally Closed	6968	GNS-20-NC	\$493.00	780g			
Sliding, Normally Open	6969	GNS-20-NO	\$493.00	780g			

Note: See page 918–919 for optional sensors and mounting brackets.

- Uses standard size 20 blades on pages 871–878.
- Blades can be reversed in nipper body
- Normally open and closed sliding models can also be used double acting.
- Sensor ready

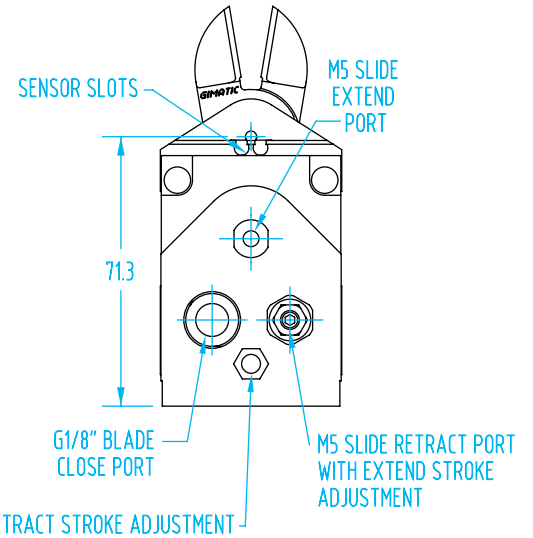
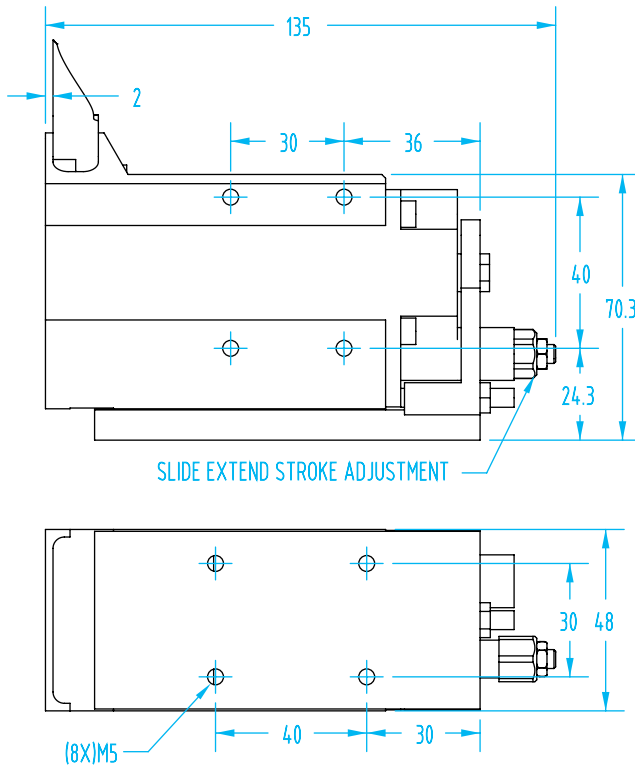
#6967 / GNS-20 - Stationary Nipper



Gimatic Nipper – Size 20

(Dimensioned drawings shown half scale)

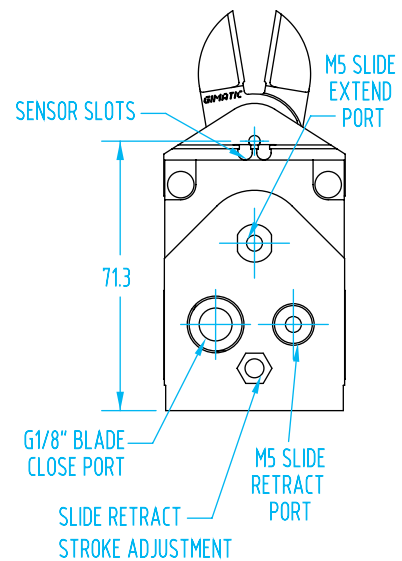
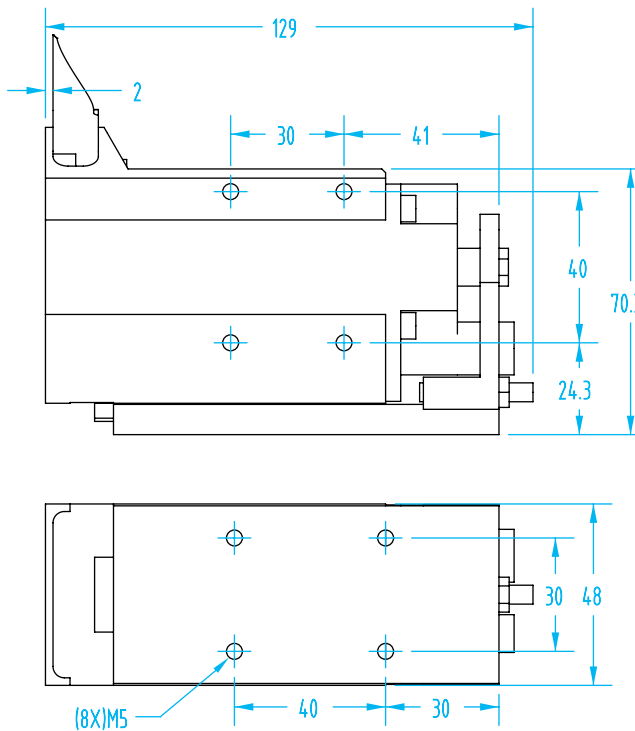
#6968 / GNS-20-NC - Sliding Nipper



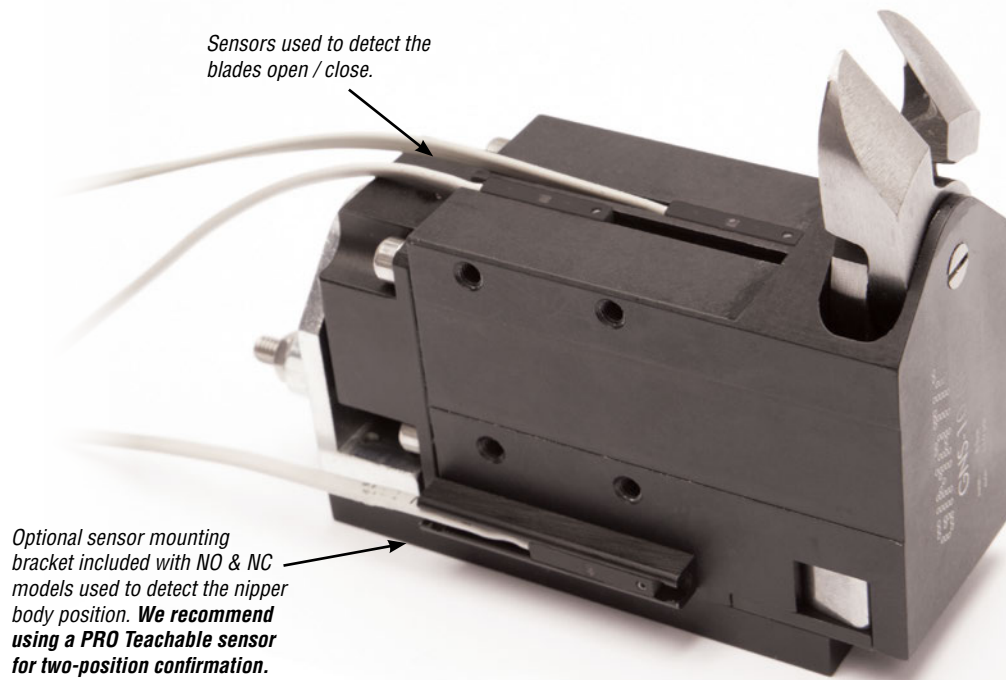
Note: NC version is equipped with a bracket mounted into port "C" which allows extend stroke adjustment.

The extend adjustment bracket make the "C" port unusable. (slide retracts under spring tension only)

#6969 / GNS-20-NO - Sliding Nipper

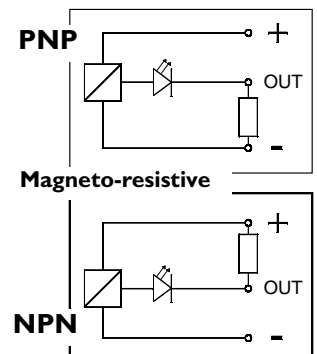


Sensors for Gimatic Nippers



Sensors

The operating position of blade and body can be checked by sensors (optional), that detect the magnet on the piston inside. Proximity near a large mass of ferromagnetic material or intense magnetic fields may cause sensing troubles.

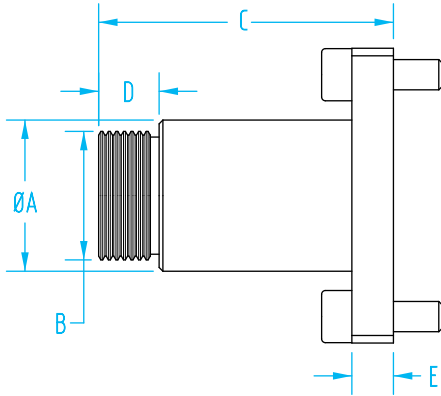


Quick#	Part#	Signal	Connection	Price
3-wire, SS style sensors				
1882	SS4N225G	PNP	2.5m lead	\$27.20
1883	SS4M225G	NPN	2.5m lead	\$27.20
6282	SS3N203G	PNP	0.3m lead & M8 connector*	\$31.16
1884	SS3M203G	NPN	0.3m lead & M8 connector*	\$31.16
90° Lead exit, 3-wire SN style sensors				
6278	SN4N225G	PNP	2.5m lead	\$27.20
6357	SN4M225G	NPN	2.5m lead	\$27.20
6277	SN3N203G	PNP	0.3m lead & M8 connector*	\$31.16
6356	SN3M203G	NPN	0.3m lead & M8 connector*	\$31.16

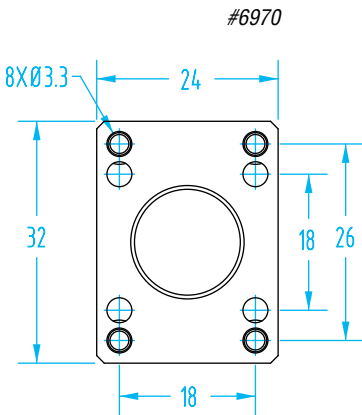
(*) M8 Extension cables Quick#'s 2582 & 2583 available on page 987

See Sensor Reference Guide on page 1009 for full list of compatible sensors.

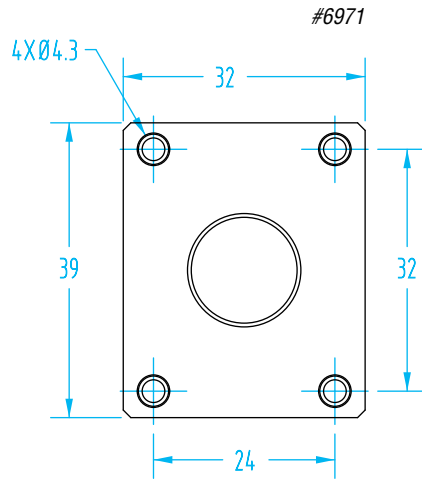
Mounting Brackets for Gimatic Nippers



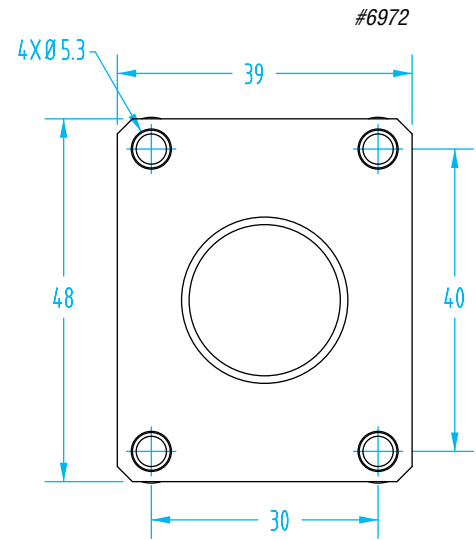
#6971



#6970



#6971

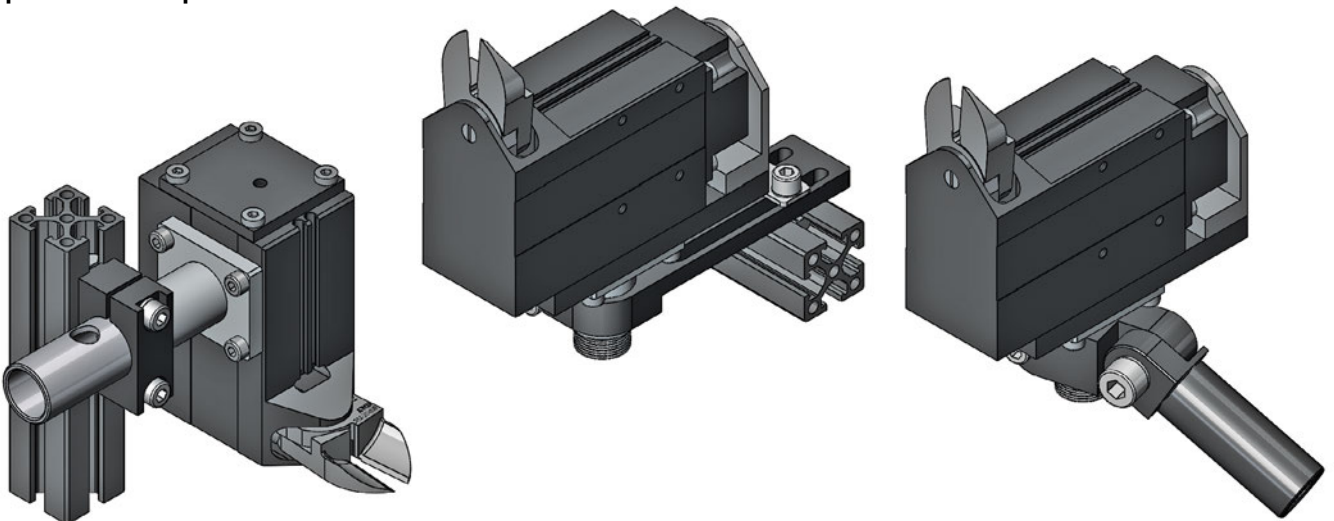


#6972

Quick#	Part#	Price	Nipper Body	ØA	B	C	D	E	Wt.
6970	MFM-A107	\$35.36	size 05	20	M17x1	37	8	4.5	30g
6971	MFM-A108	\$36.40	size 10	20	M17x1	39	8	5.5	35g
6972	MFM-A109	\$37.44	size 20	30	M27x1	55	11	6.5	100g

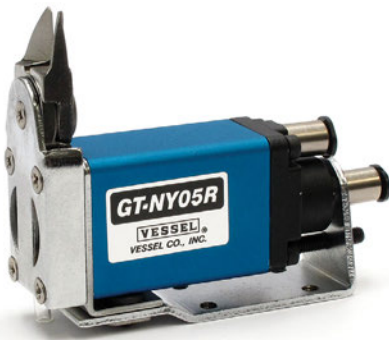
Made of GRP. Includes fasteners.

Application Examples



NY05 – Sliding Nippers

(Dimensioned drawings shown full scale)

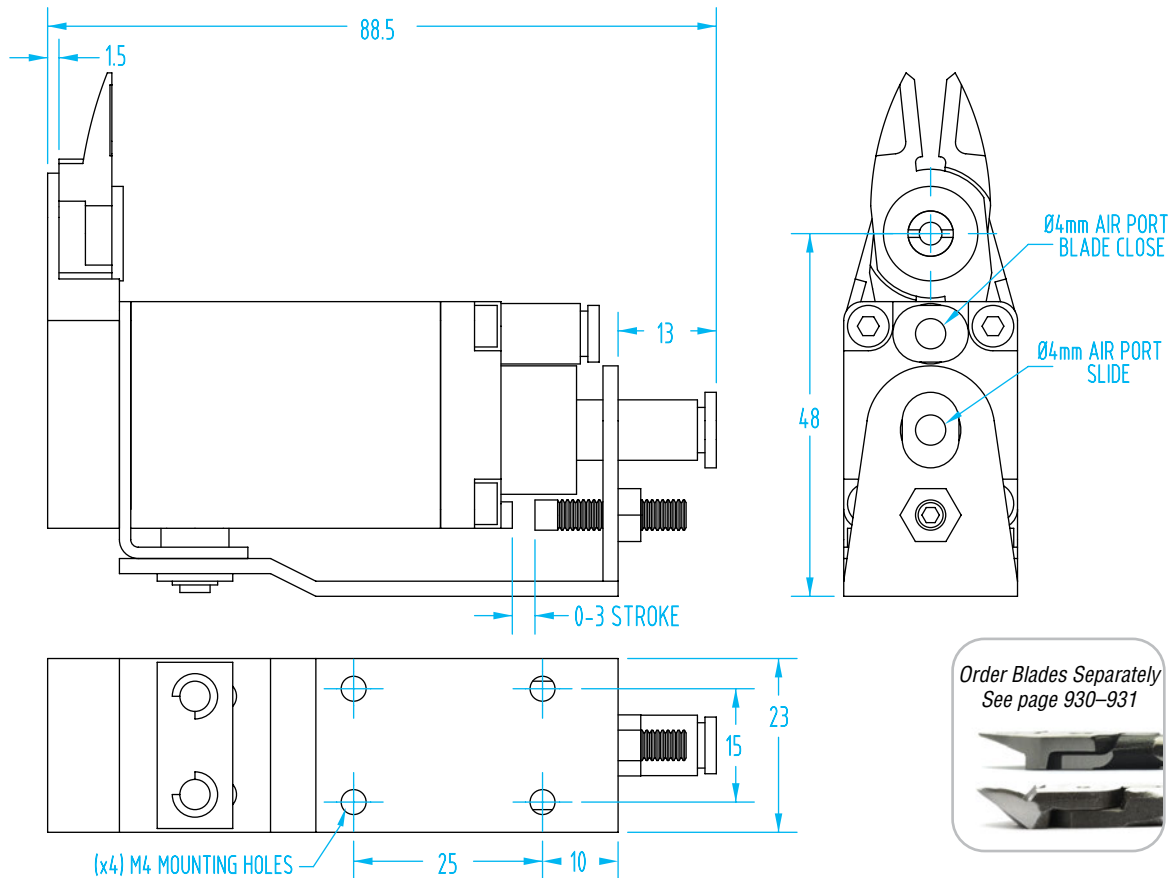


The Vessel® GT-NY series sliding nippers are ideal for mounting on end-of-arm tooling (EOAT) or automated machinery. These nippers provide a low profile and a lightweight design. The GT-NY nippers are available in both a PUSH or PULL style to suit your application needs. The slide stroke can be adjusted from 0mm up to 5mm, depending on the model. A standard feature of GT-NY nippers is one-touch quick connection fittings, which are supplied.

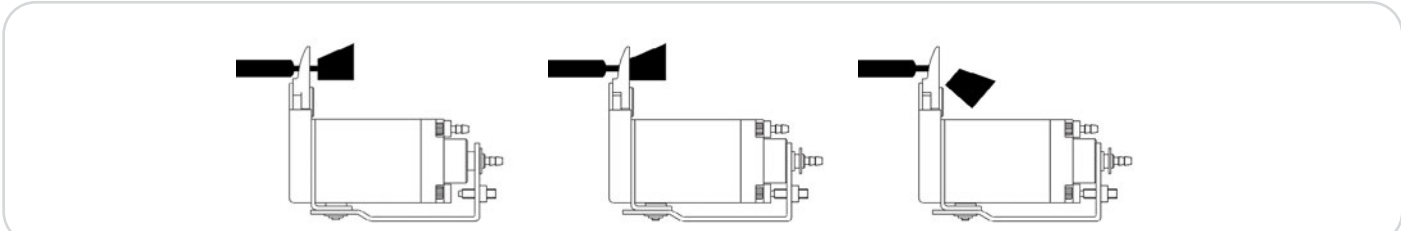
NY05 - Sliding Nipper

Quick#	Part#	Price	Reference Model	Wt.	Air Cons. Cm ³ /stroke	Sup. Air Pres.	Slide Stroke (mm)		Max. Cutting Cap. Ø (mm)	
									Hard Plastic	Soft Plastic
617	GSN-NY05-4	\$342.00	GT-NY05-4	155g	48	58–73psi	Pull	0–3	2.0	3.0
689	GSN-NY05R-4	\$342.00	GT-NY05R-4	155g	48	58–73psi	Push	0–3	2.0	3.0

Note: R=Push



Order Blades Separately
See page 930–931



NF05 – Stationary Nippers

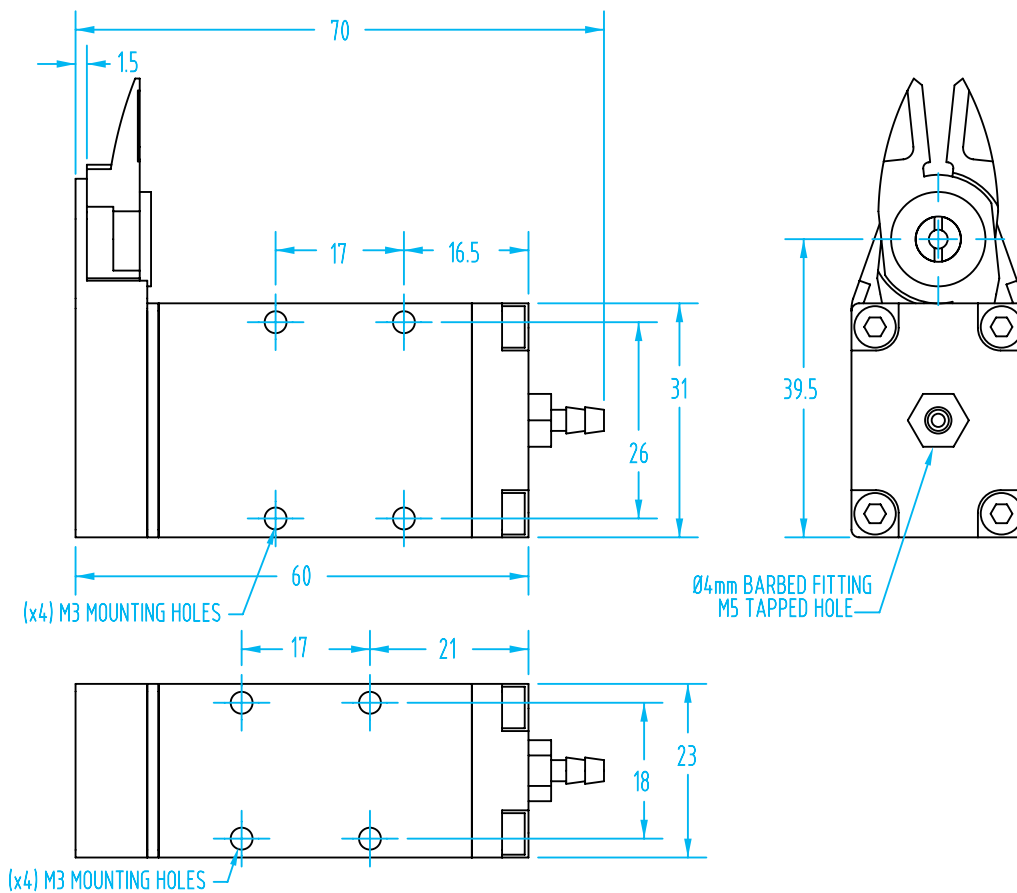
(Dimensioned drawings shown full scale)

The Vessel GT-NF series nippers are very similar to the GT-NY nippers, but do not include the sliding feature. These nippers are lightweight, compact, and have mounting holes on three surfaces. The low profile of these nippers makes the NF series an excellent choice for end-of-arm tooling and robot mounting.



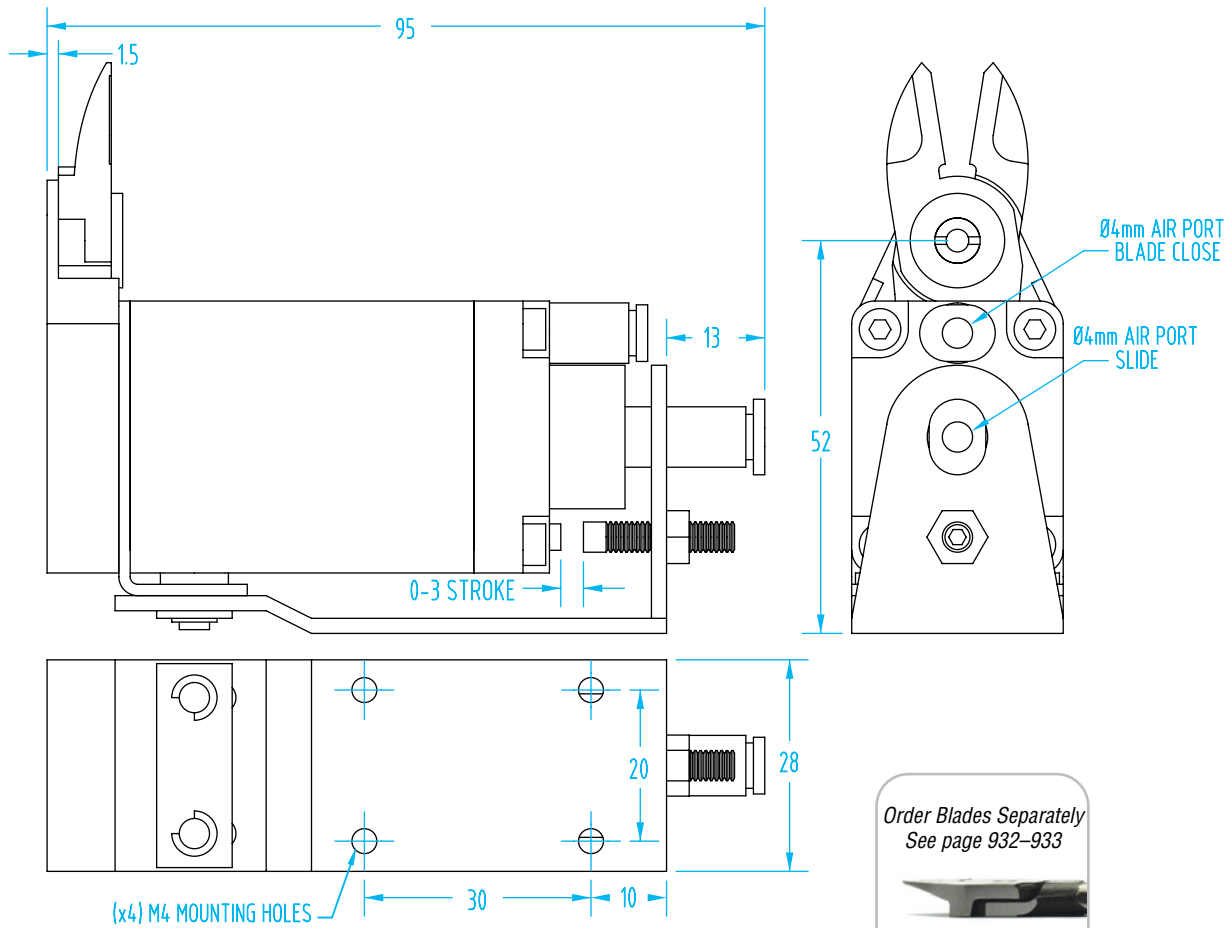
NF05 - Stationary Nipper

Quick#	Part#	Price	Reference Model	Weight	Air Cons. Cm ³ /stke	Supply Press.	Max. Cutting Cap. Ø (mm)	
							Hard Plastic	Soft Plastic
616	GSN-NF05	\$244.00	GT-NF05	101g	43	58–73psi	2.0	3.0



NY10 – Sliding Nippers

(Dimensioned drawings shown full scale)



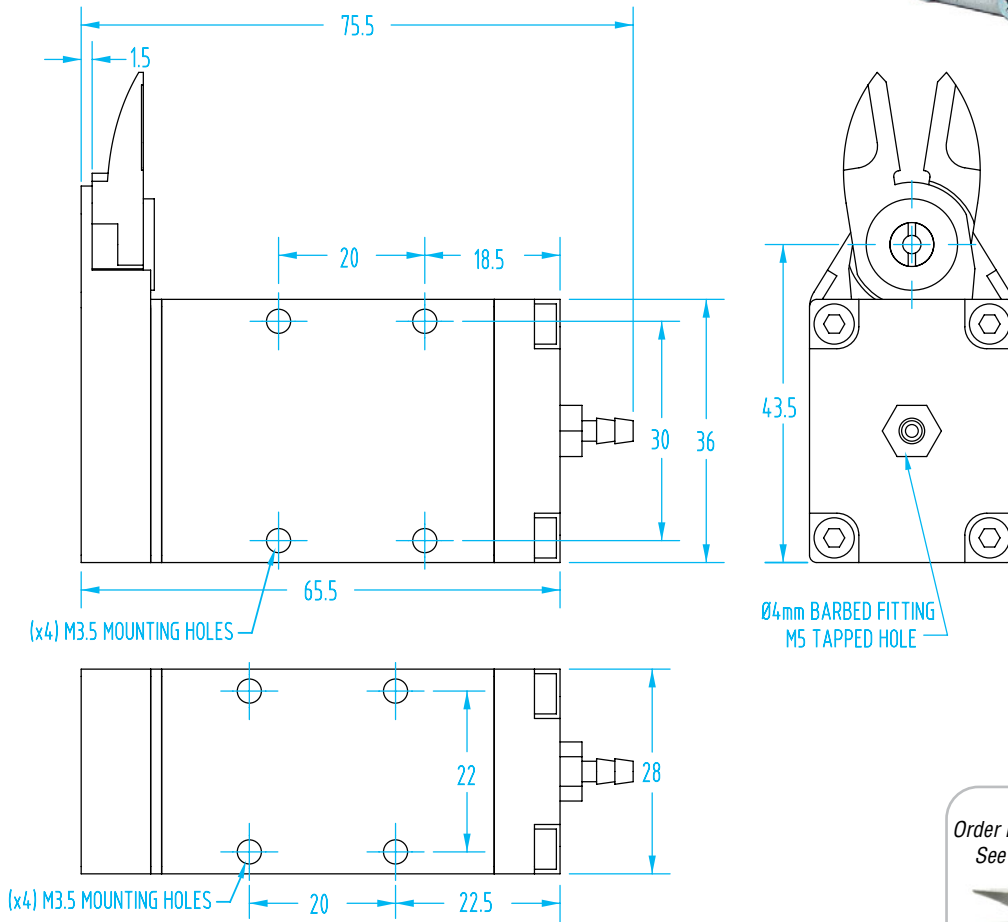
NY10 - Sliding Nipper

Quick#	Part#	Price	Reference Model	Weight	Slide Stroke (mm)		Max. Cutting Cap. Ø (mm)	
							Soft Plastic	Hard Plastic
1862	GSN-NY10-4	\$354.00	GT-NY10-4	210g	Pull	0-3	3.5	2.3
1863	GSN-NY10R-4	\$354.00	GT-NY10R-4	210g	Push	0-3	3.5	2.3

Note: R=Push Fittings are supplied.

NF10 – Stationary Nippers

(Dimensioned drawings shown full scale)



Order Blades Separately
See page 932–933

NF10 - Stationary Nipper

Quick#	Part#	Price	Reference Model	Weight	Air Cons. Cm ³ /stke	Supply Press. (psi)	Max. Cutting Cap. Ø (mm)	
							Soft Plastic	Hard Plastic
1861	GSN-NF10	\$257.00	GT-NF10	143g	63	58–73	3.5	2.3

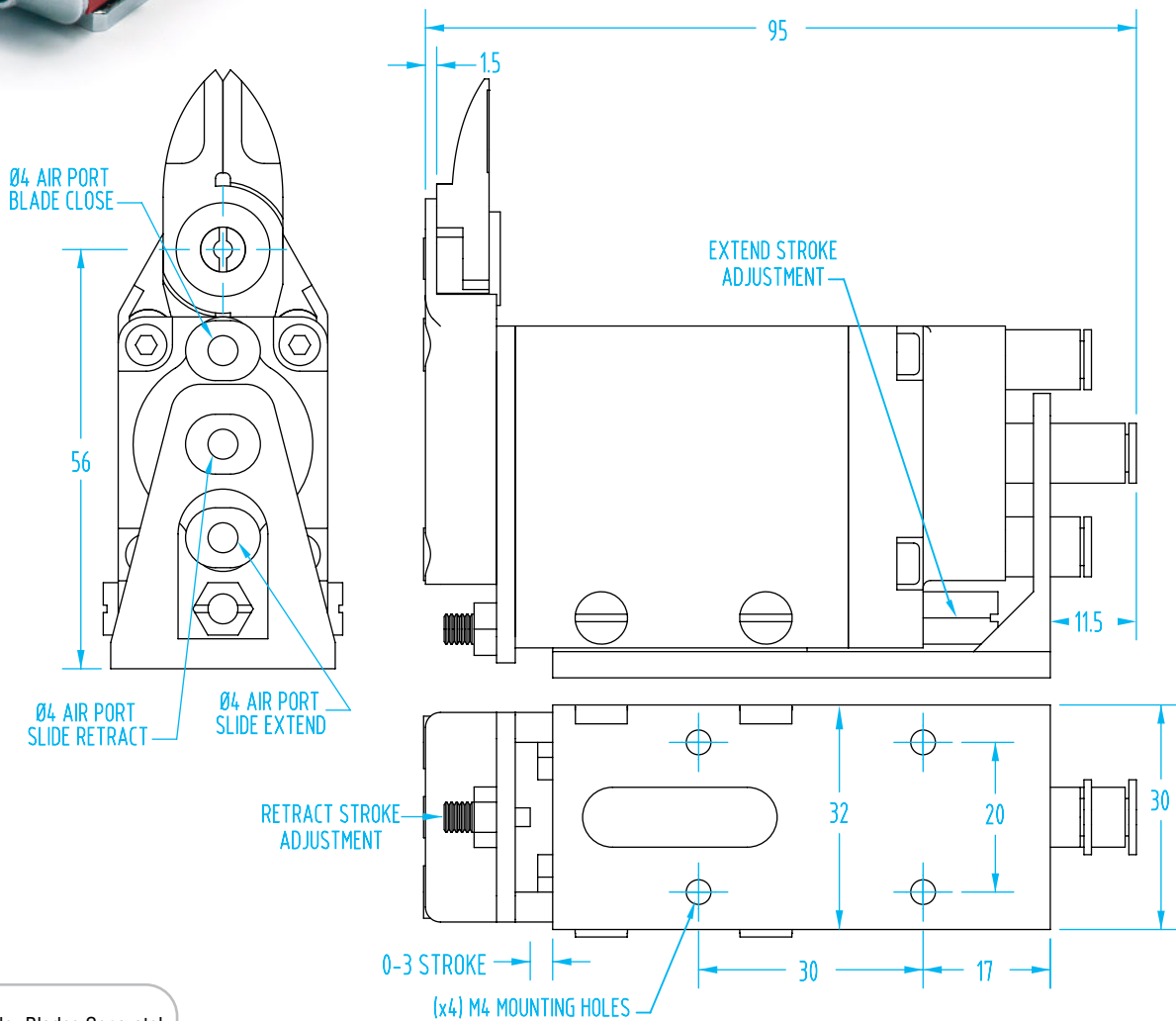
Hard to find M3.5 mounting screws on page 1077.

NY10S – Double-Acting, High-Precision Sliding Nipper

(Dimensioned drawings shown full scale)



- Precision V-groove slide base.
- Double acting nipper body slide.
- 0–3mm independent extend and retract stroke adjustment.



Order Blades Separately
See page 932–933



NY10S - Double-Acting, High-Precision Sliding Nipper

Quick#	Part#	Price	Weight without Blade	Stroke	Max. Cutting Cap. Ø (mm)	
					Soft Plastic	Hard Plastic
695	GSN-NY10-S	\$396.00	300g	0–3	3.5mm	2.3mm

All fittings supplied.

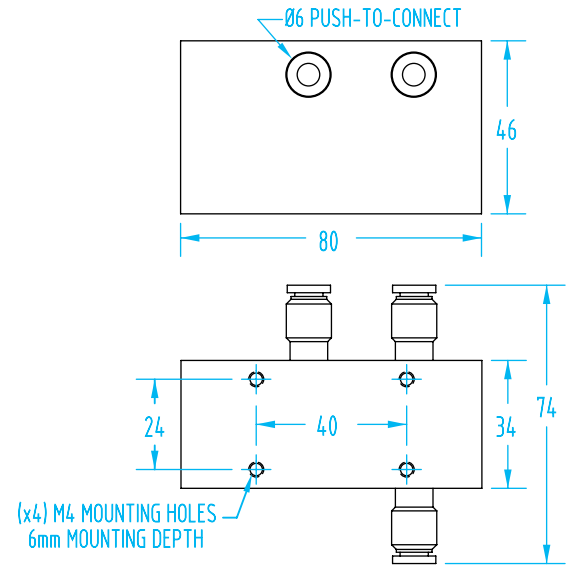
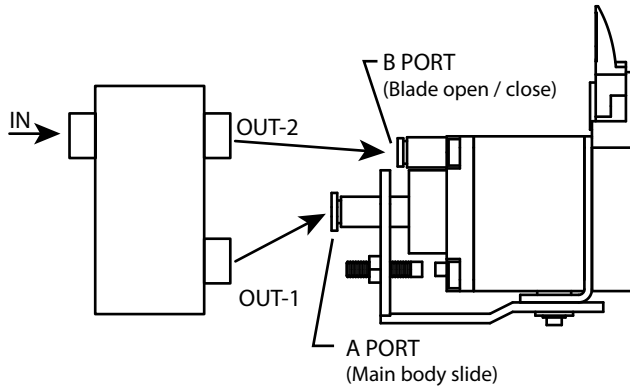
Timing Controller

The timing controller is a three-port solenoid valve having one compressed-air inlet and two outlets. It allows one compressed-air line to first activate the slide mechanism, then activate the blade after a slight delay (or vice-versa). The timing is adjustable between 0.5–1.5 seconds. No electricity is required. Use with exhaust valve on page 1015.

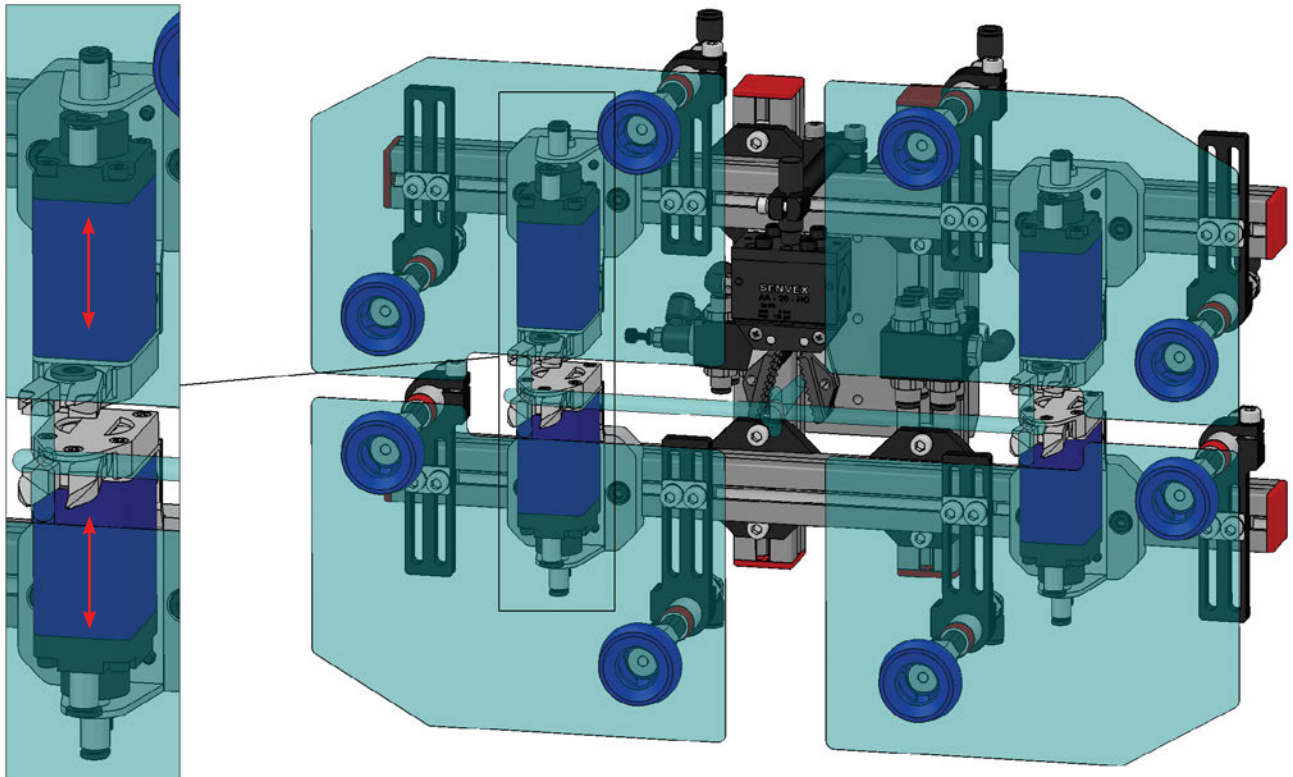


Timing Controller (for sliding nippers)

Quick#	Part#	Weight	Price
636	GSN-TC-02	275g	\$309.00

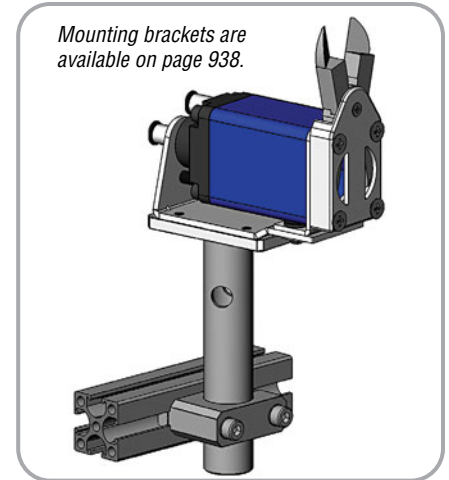


Application Example



NY15 – Sliding Nipper

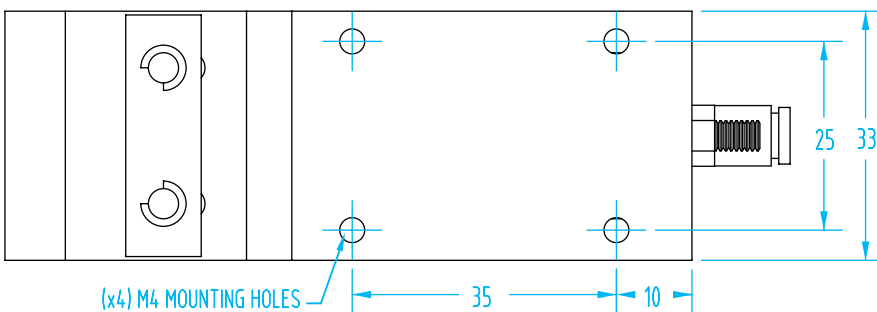
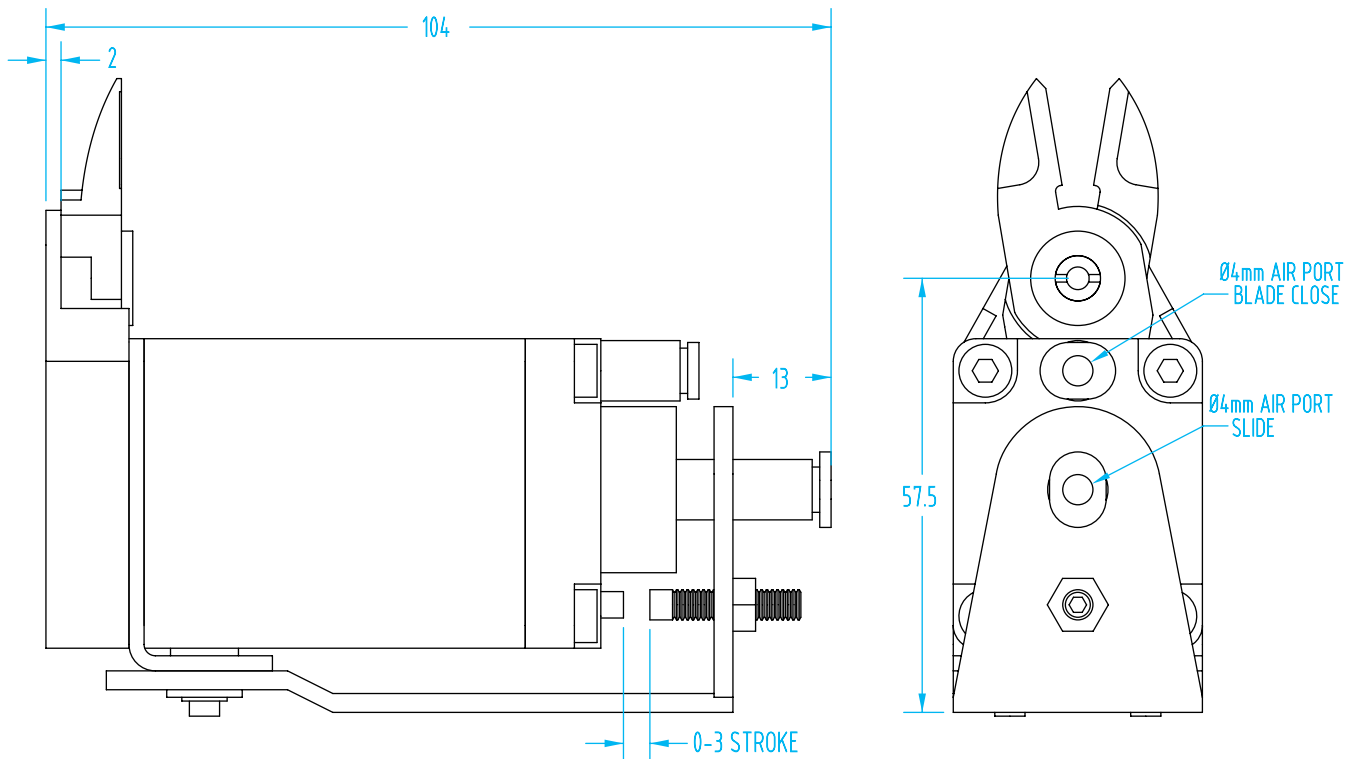
(Dimensioned drawings shown full scale)



NY15 - Sliding Nipper

Quick#	Part#	Price	Reference Model	Weight	Air Cons. Cm ³ /stroke	Sup. Air Pres.	Slide Stroke (mm)	Max. Cutting Cap. Ø (mm)		
								Soft Plastic	Hard Plastic	
624	GSN-NY15-4	\$365.00	GT-NY15-4	319g	136	58-73psi	Pull	0-3	4.0	2.6
690	GSN-NY15R-4	\$365.00	GT-NY15R-4	319g	136	58-73psi	Push	0-3	4.0	2.6

Note: R=Push All fittings supplied.



Order Blades Separately
See page 934-935.

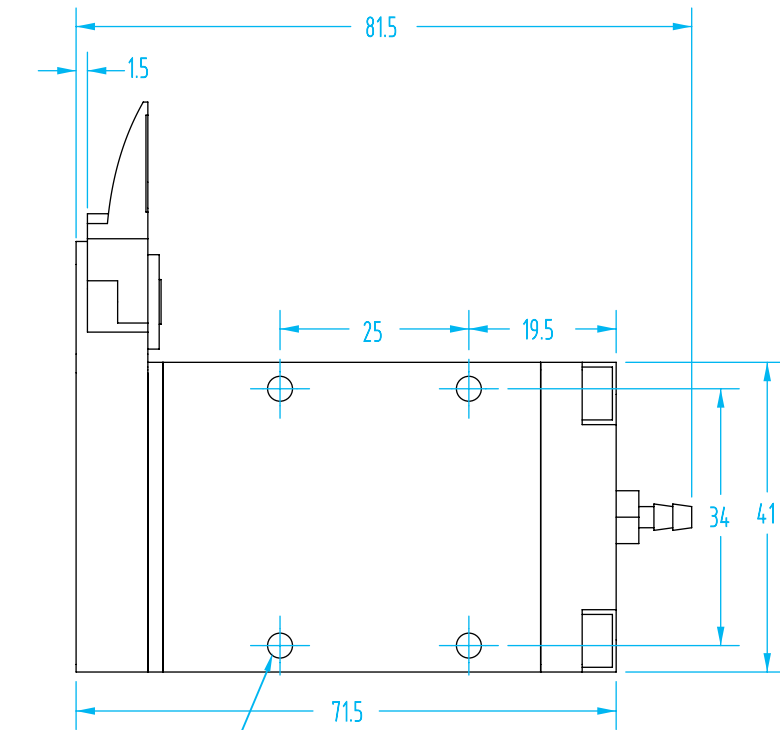
NF15 – Stationary Nipper

(Dimensioned drawings shown full scale)

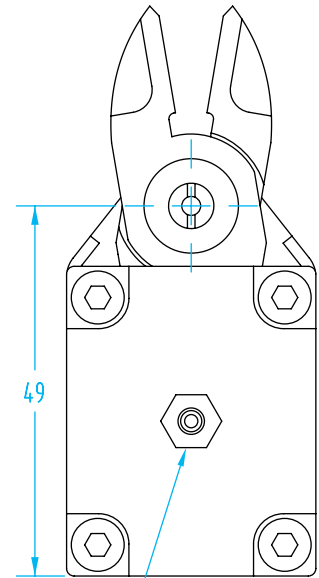


NF15 - Stationary Nipper

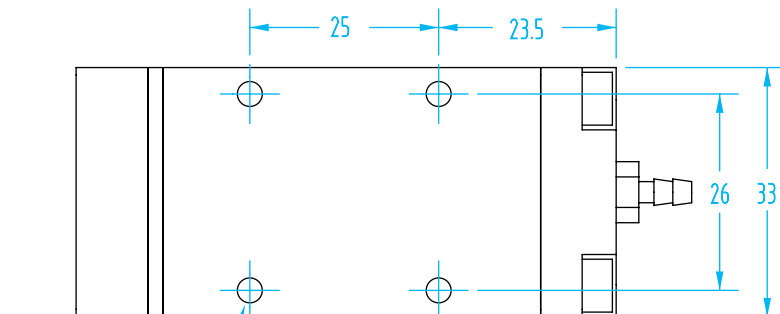
Quick#	Part#	Price	Reference Model	Weight	Air Cons. Cm ³ /stke	Supply Press.	Max. Cutting Cap. Ø (mm)	
							Soft Plastic	Hard Plastic
623	GSN-NF15	\$269.00	GT-NF15	219g	128	58-73psi	4.0	2.6



(x4) M4 MOUNTING HOLES



Ø4mm BARBED FITTING
M5 TAPPED HOLE



(x4) M4 MOUNTING HOLES

Order Blades Separately
See page 934-935.

NY25S – Double-Acting, High-Precision Sliding Nipper

The NYS-style nipper incorporates linear, opposing v-guides in the base to improve accuracy and reduce wear. Consistency is also improved because its sliding action is positive in both directions. No springs are used in its sliding mechanism. The stroke is adjustable up to 5mm. This unit uses NY25 blades as illustrated on page 936–937.

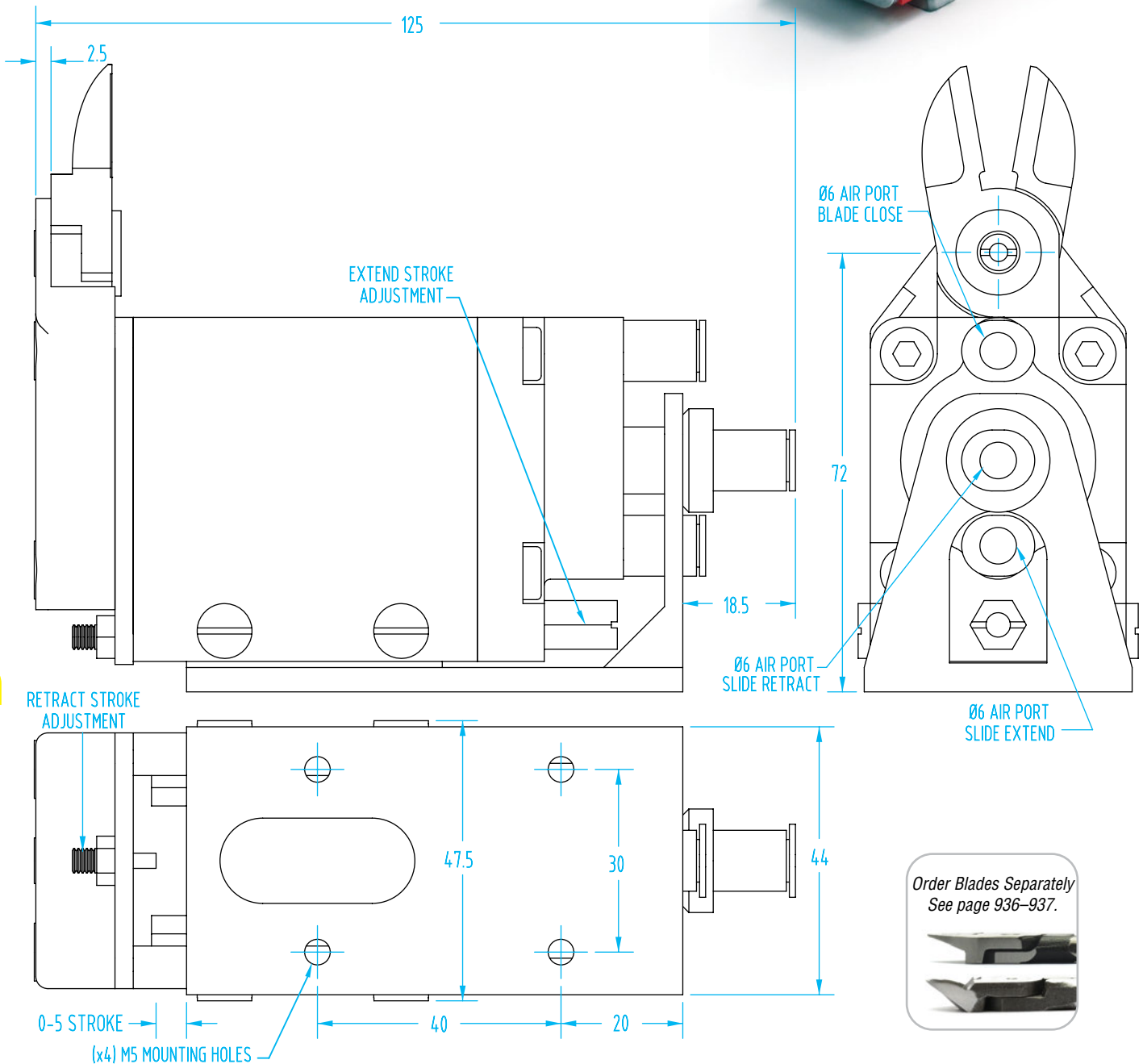
(Dimensioned drawings shown full scale)



NY25S - Double-Acting, High-Precision Sliding Nipper

Quick#	Part#	Price	Weight without Blade	Stroke	Max. Cutting Cap. Ø (mm)	
					Soft Plastic	Hard Plastic
5259	GSN-NY25-S	\$493.00	300g	0–5	5mm	3.4mm

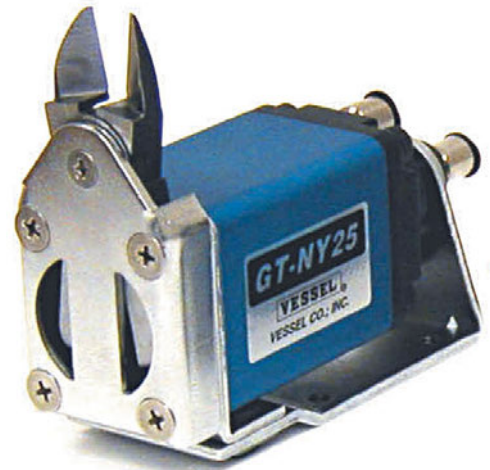
All fittings supplied.



Order Blades Separately
See page 936–937.

NY25 – Sliding Nippers

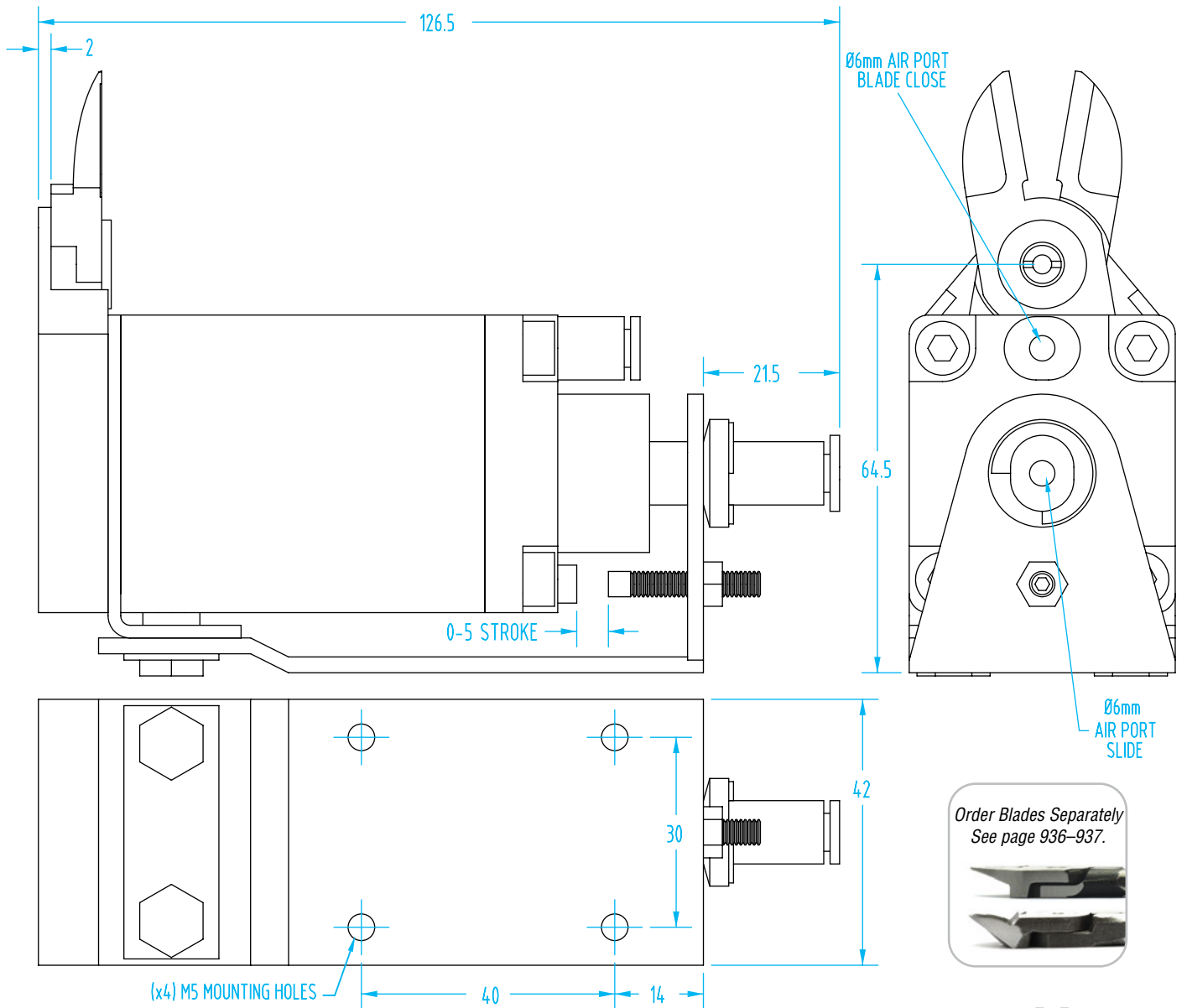
(Dimensioned drawings shown full scale)



NY25 - Sliding Nipper

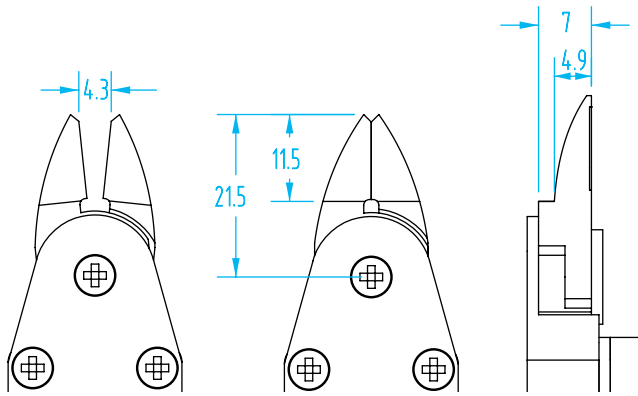
Quick#	Part#	Price	Reference Model	Weight	Air Cons. Cm ³ /stroke	Sup. Air Pressure	Slide Stroke (mm)	Max. Cutting Cap. Ø (mm)	
								Soft Plastic	Hard Plastic
630	GSN-NY25-6	\$403.00	GT-NY25-6	580g	184	73–87psi	Pull	0–5	5.0 3.4
691	GSN-NY25R-6	\$403.00	GT-NY25R-6	580g	184	73–87psi	Push	0–5	5.0 3.4

All fittings supplied.

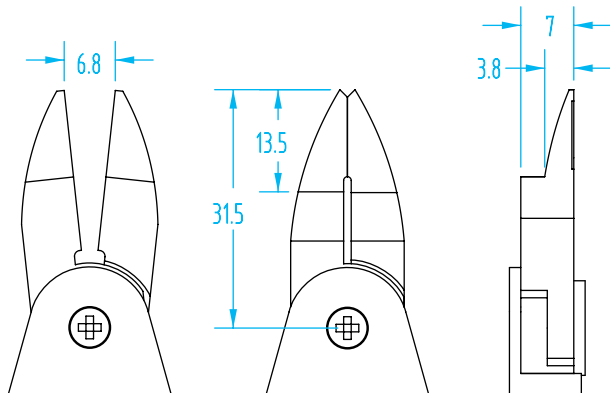
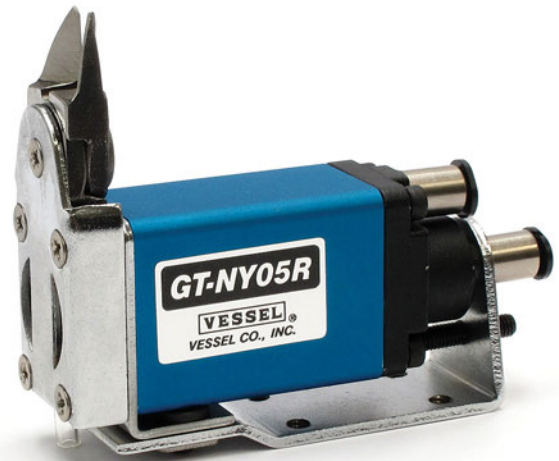


NY & NF Nipper Blades – Size 5

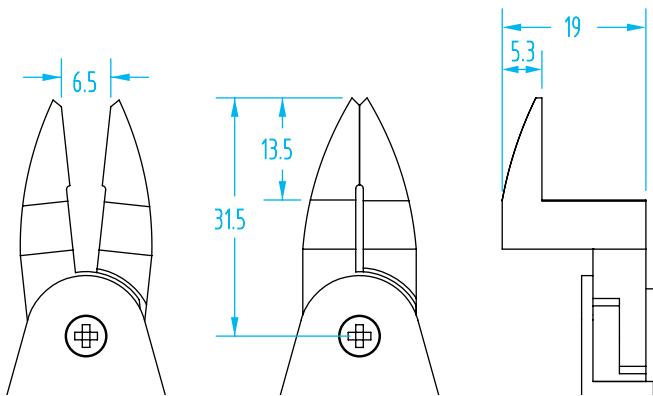
(Dimensioned drawings shown full scale)



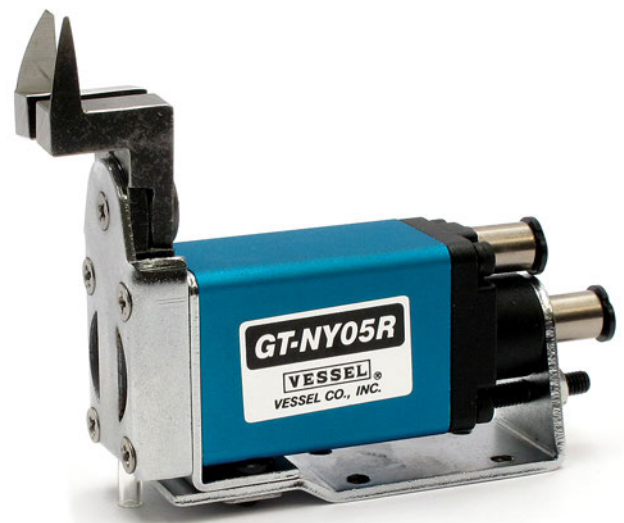
Quick#	Part#	Nipper Body	Blade Style	Price
618	GSN-NY05-AJ	NY, NF 05	Standard	\$125.00



Quick#	Part#	Nipper Body	Blade Style	Price
619	GSN-NY05-AJL	NY, NF 05	Extra Long, Inline	\$174.00

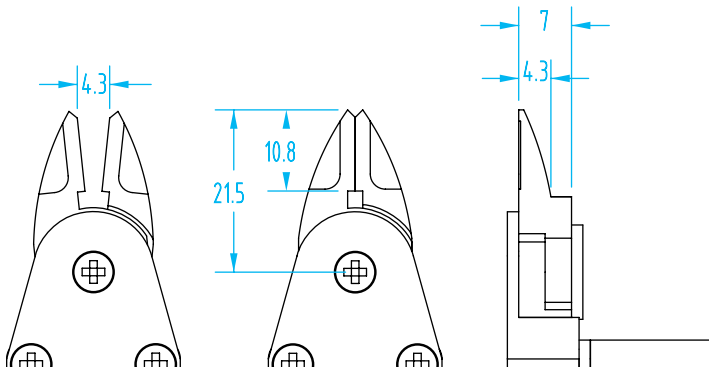


Quick#	Part#	Nipper Body	Blade Style	Price
620	GSN-NY05-AH	NY, NF 05	Offset	\$307.00

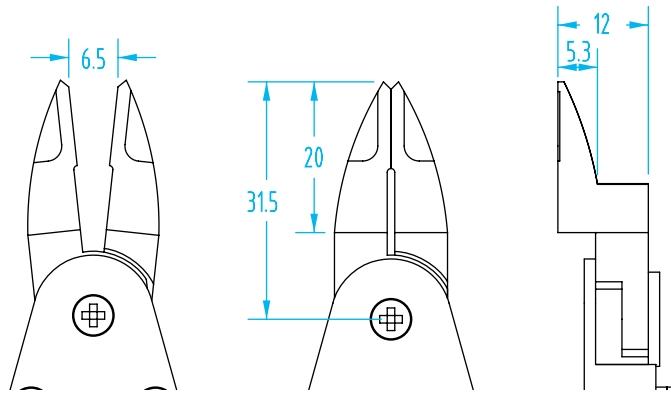


NY & NF Nipper Blades – Size 5

(Dimensioned drawings shown full scale)



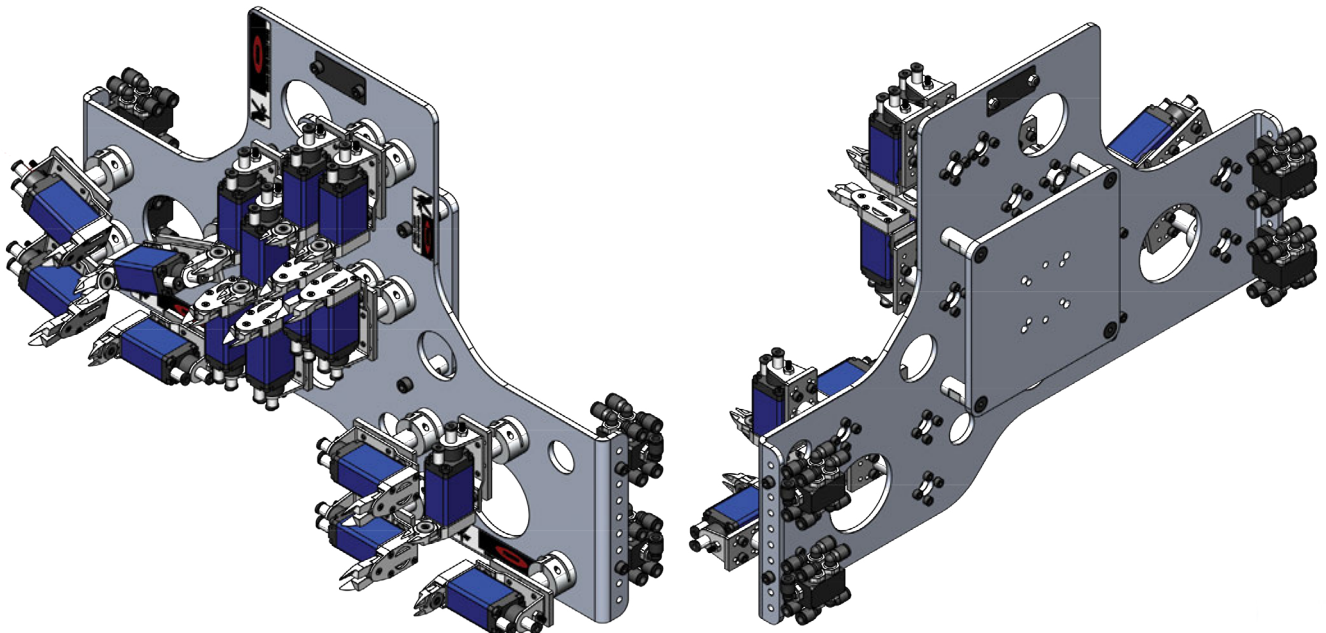
Quick#	Part#	Nipper Body	Blade Style	Price
621	GSN-NY05-RAJ	NY, NF 05	Standard Reversed	\$133.00



Quick#	Part#	Nipper Body	Blade Style	Price
622	GSN-NY05-RAH	NY, NF 05	Offset Reversed	\$308.00

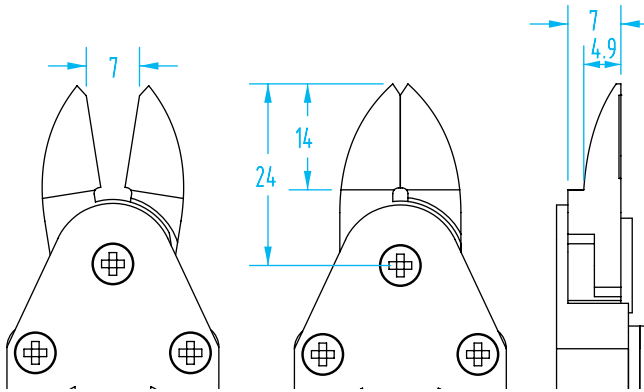


Application Example



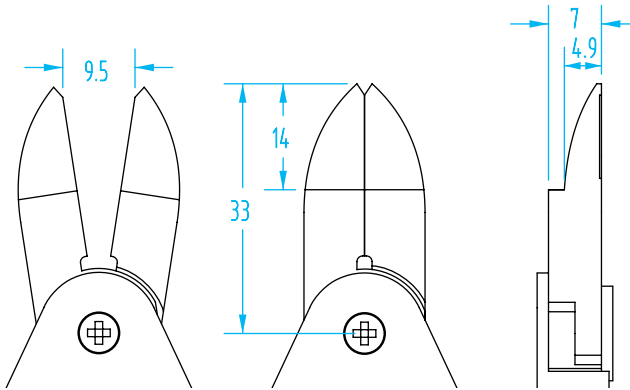
NY & NF Nipper Blades – Size 10

(Dimensioned drawings shown full scale)



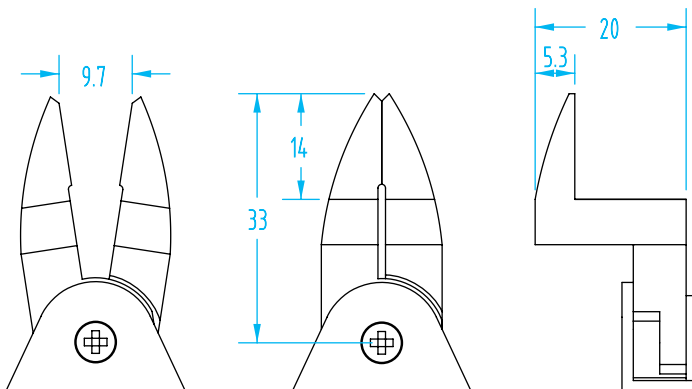
Blades for NY & NF Nippers

Quick#	Part#	Nipper Body	Blade Style	Price
1864	GSN-NY10-AJ	NY, NYS, NF 10	Standard	\$129.00



Blades for NY & NF Nippers

Quick#	Part#	Nipper Body	Blade Style	Price
1865	GSN-NY10-AJL	NY, NYS, NF 10	Extra Long, Inline	\$182.00



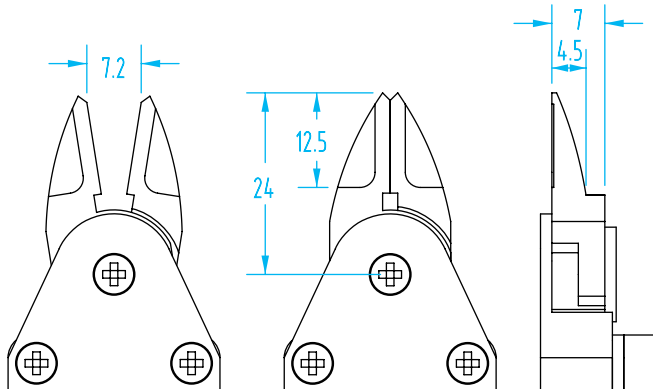
Blades for NY & NF Nippers

Quick#	Part#	Nipper Body	Blade Style	Price
1866	GSN-NY10-AH	NY, NYS, NF 10	Offset	\$314.00



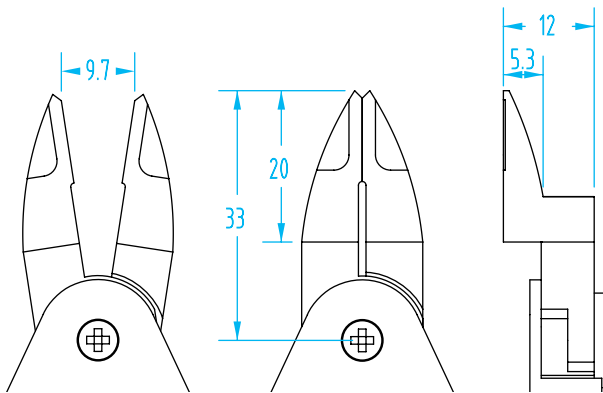
NY & NF Nipper Blades – Size 10

(Dimensioned drawings shown full scale)



Blades for NY & NF Nippers

Quick#	Part#	Nipper Body	Blade Style	Price
1867	GSN-NY10-RAJ	NY, NYS, NF 10	Standard Reversed	\$137.00



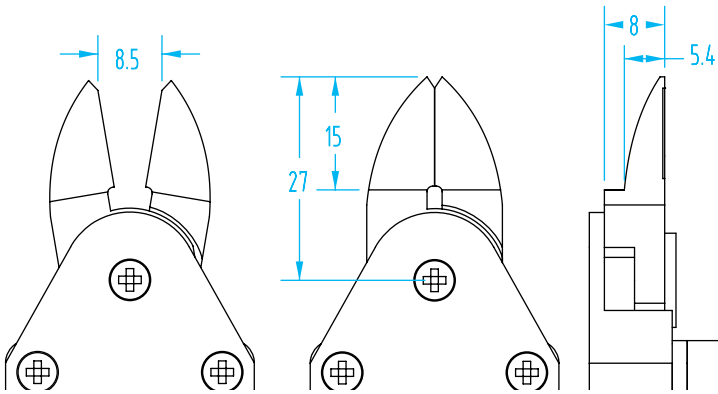
Blades for NY & NF Nippers

Quick#	Part#	Nipper Body	Blade Style	Price
1868	GSN-NY10-RAH	NY, NYS, NF 10	Offset Reversed	\$315.00



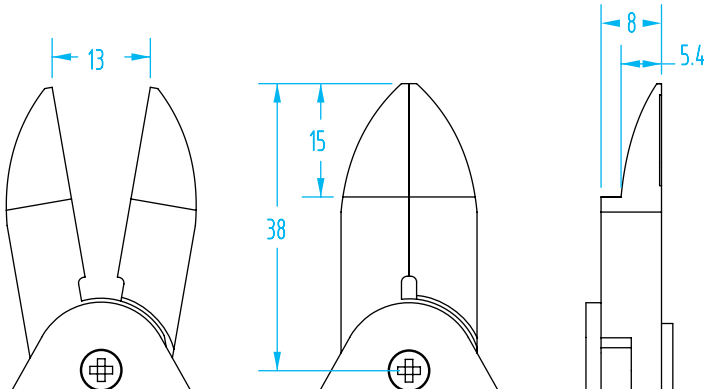
NY & NF Nipper Blades – Size 15

(Dimensioned drawings shown full scale)



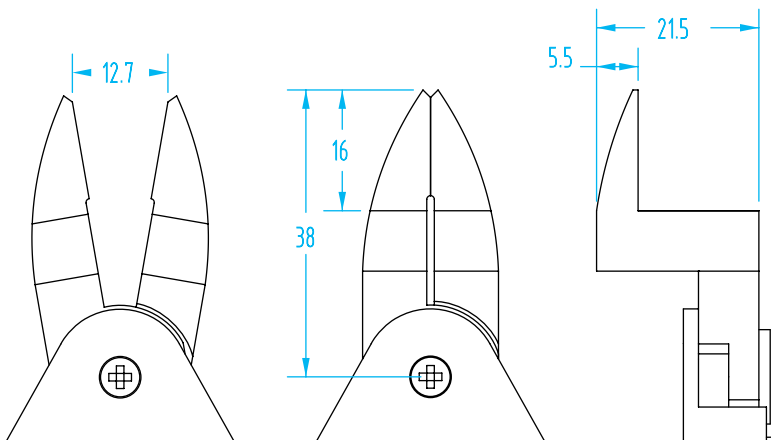
Blades for NY & NF Nippers

Quick#	Part#	Nipper Body	Blade Style	Price
625	GSN-NY15-AJ	NY, NF 15	Standard	\$132.00



Blades for NY & NF Nippers

Quick#	Part#	Nipper Body	Blade Style	Price
626	GSN-NY15-AJL	NY, NF 15	Extra Long, Inline	\$193.00



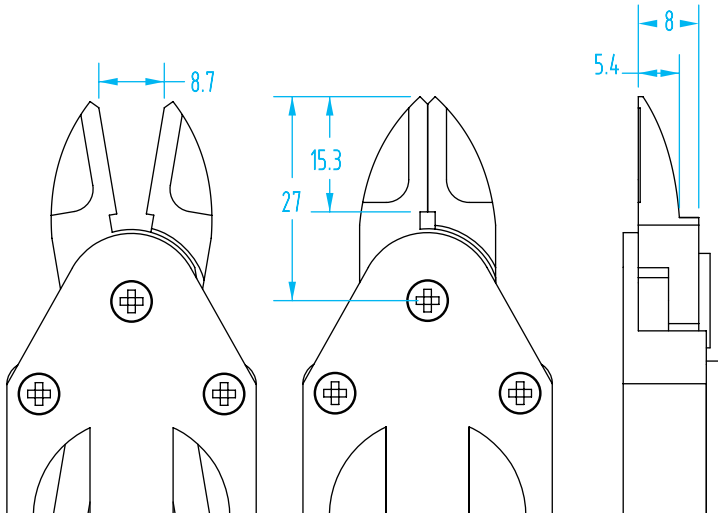
Blades for NY & NF Nippers

Quick#	Part#	Nipper Body	Blade Style	Price
627	GSN-NY15-AH	NY, NF 15	Offset	\$318.00



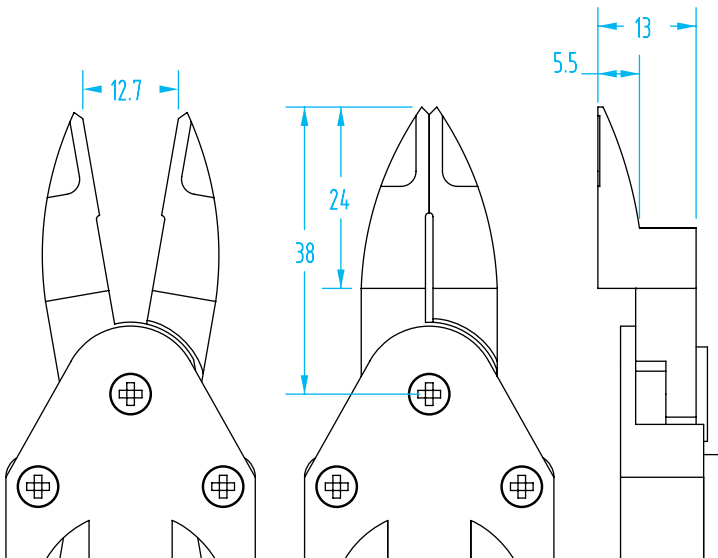
NY & NF Nipper Blades – Size 15

(Dimensioned drawings shown full scale)



Blades for NY & NF Nippers

Quick#	Part#	Nipper Body	Blade Style	Price
628	GSN-NY15-RAJ	NY, NF 15	Standard Reversed	\$140.00



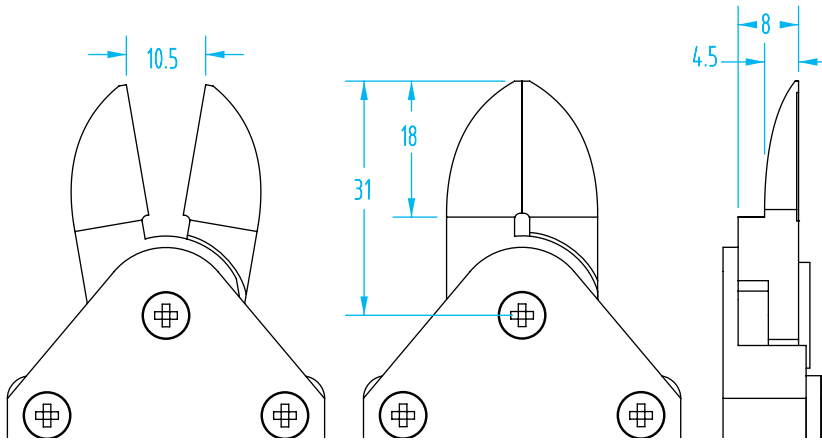
Blades for NY & NF Nippers

Quick#	Part#	Nipper Body	Blade Style	Price
629	GSN-NY15-RAH	NY, NF 15	Offset Reversed	\$320.00



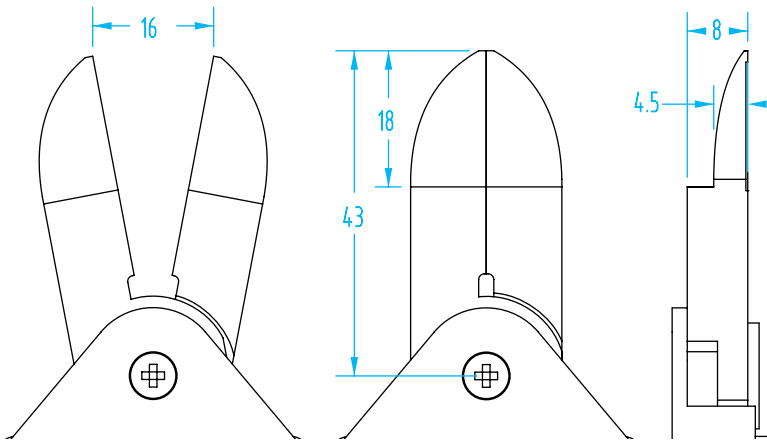
NY & NF Nipper Blades – Size 25

(Dimensioned drawings shown full scale)



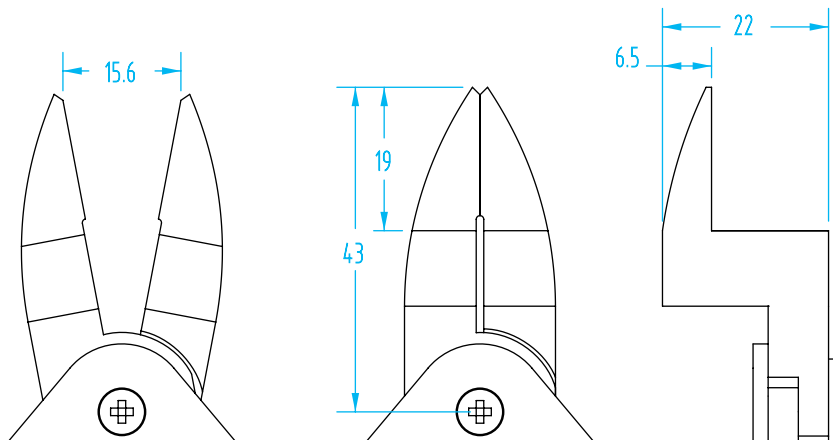
Blades for NY & NF Nippers

Quick#	Part#	Nipper Body	Blade Style	Price
631	GSN-NY25-AJ	NY 25	Standard	\$141.00



Blades for NY & NF Nippers

Quick#	Part#	Nipper Body	Blade Style	Price
632	GSN-NY25-AJL	NY 25	Extra Long, Inline	\$218.00

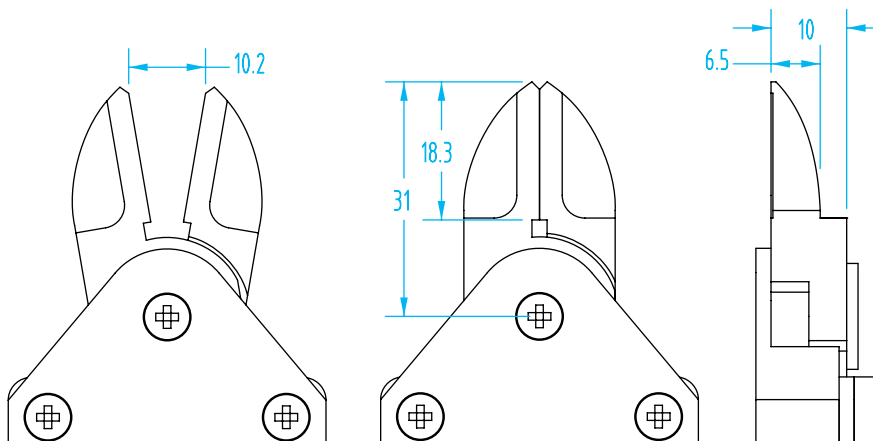


Blades for NY & NF Nippers

Quick#	Part#	Nipper Body	Blade Style	Price
633	GSN-NY25-AH	NY 25	Offset	\$332.00

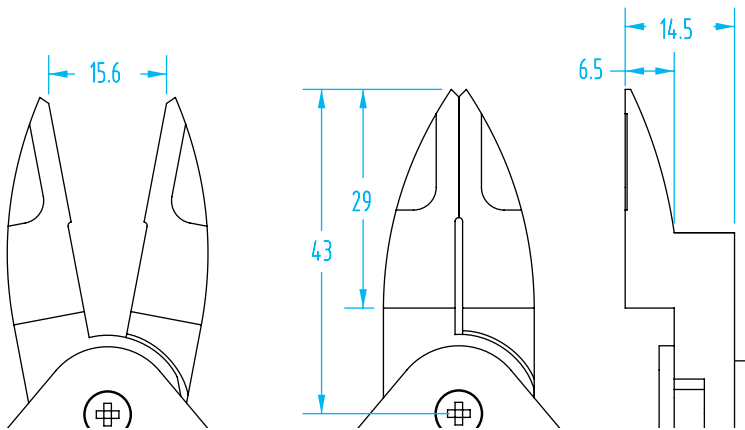
NY & NF Nipper Blades – Size 25

(Dimensioned drawings shown full scale)



Blades for NY & NF Nippers

Quick#	Part#	Nipper Body	Blade Style	Price
634	GSN-NY25-RAJ	NY 25	Standard Reversed	\$162.00

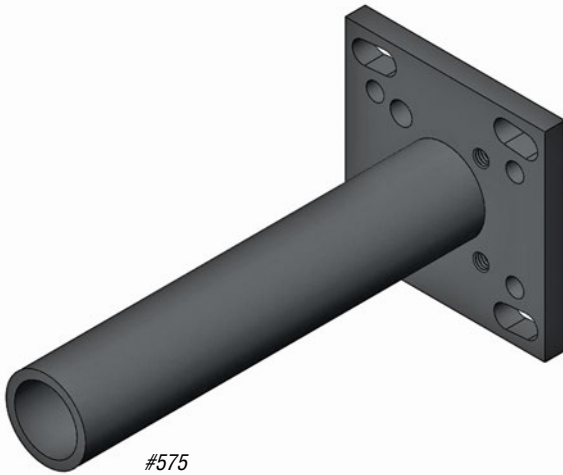


Blades for NY & NF Nippers

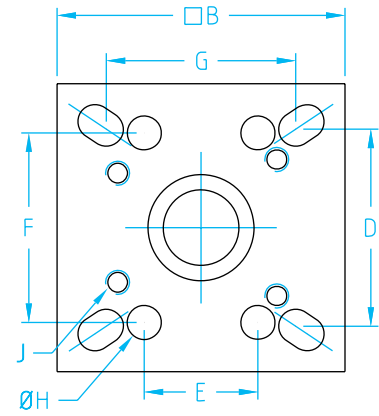
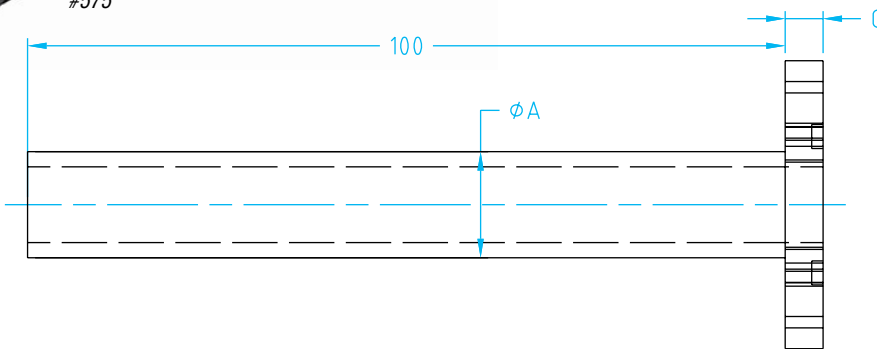
Quick#	Part#	Nipper Body	Blade Style	Price
635	GSN-NY25-RAH	NY 25	Offset Reversed	\$324.00



NF & NY Nipper Mounting Brackets



#575

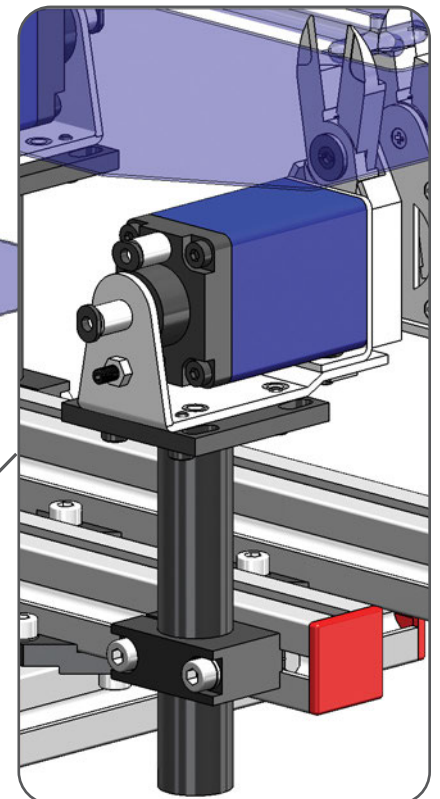
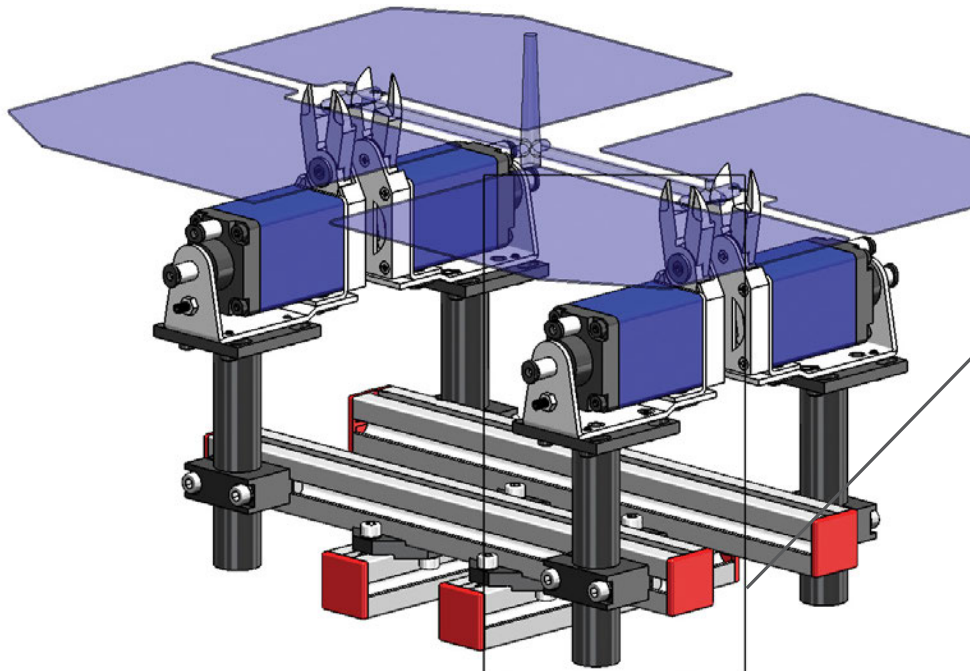


Round Mounting Brackets

Quick#	Part#	Use with	Wt.	Price	ϕA	B	C	D	E	F	G	H	J
573	GSC-RMB-2	NF05	24g	\$22.63	14	26	3	18	17	-	-	3.5	-
574	GSC-RMB-3	NY05, NF15	36g	\$22.69	14	38	5	26	15	25	25	4.5	M3
575	GSC-RMB-4	NY15, NY25	58g	\$23.67	20	50	5	40	30	35	25	5.5	M4

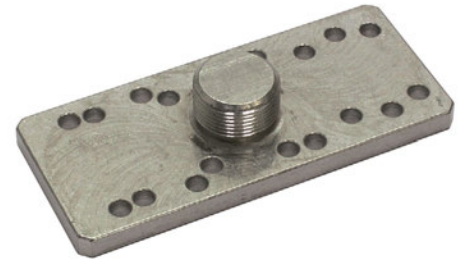
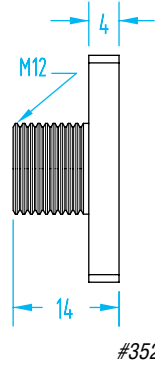
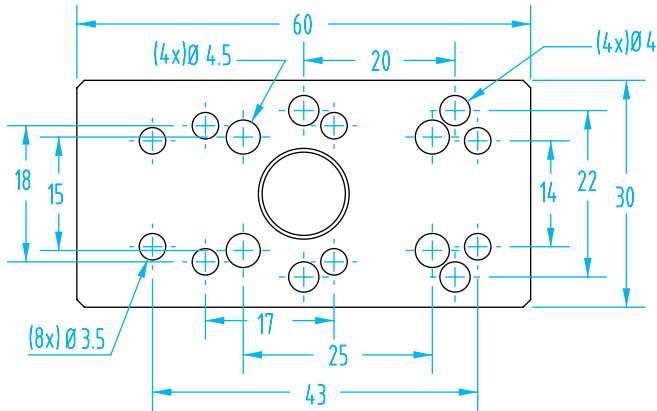
Order mounting screws separately. See page 1077.

Application Example

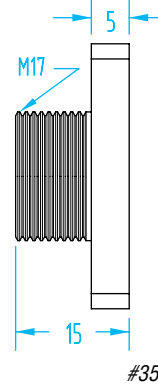
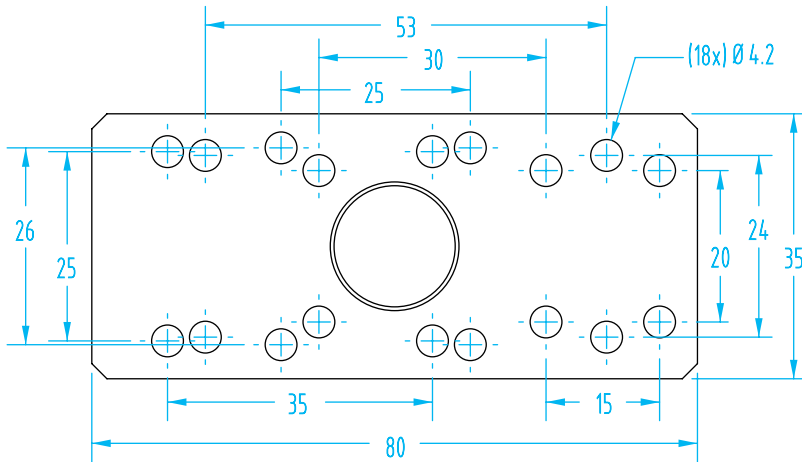


NF, NY, & NT Mounting Brackets

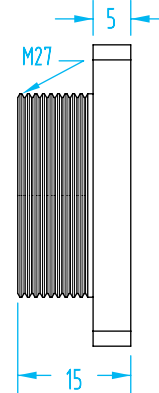
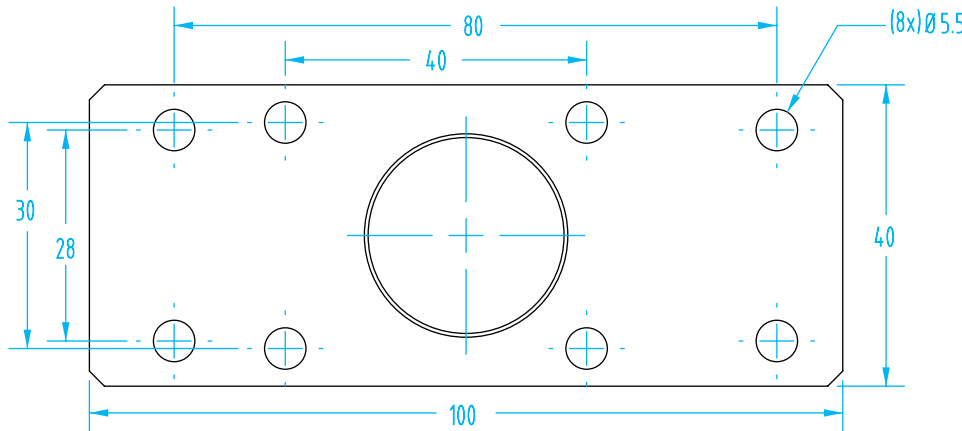
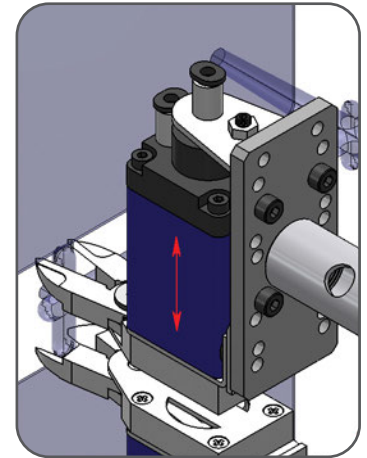
(Dimensioned drawings shown full scale)



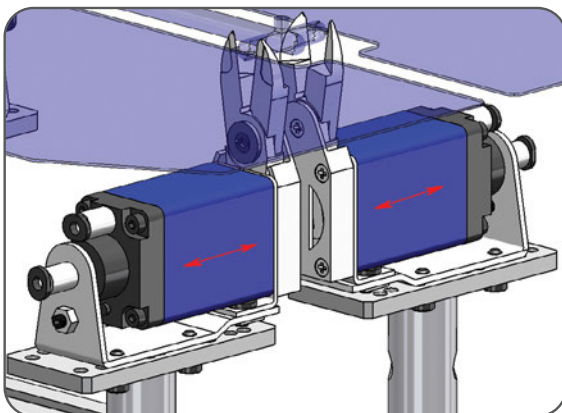
#3525



#3526



#3527



Mounting Plates

Quick#	Part#	Price	Use With
3525	ASZ-HP-10	\$33.60	NY05-4, NT03-4, NF05, NF10
3526	ASZ-HP-20	\$35.70	NT05-4, NT10-6, NY10-4, NY15-4, NY15
3527	ASZ-HP-30	\$37.80	NT20-6, NY25-6

Order mounting screws separately. See page 1077.
Extension Tubes available on page 262 and 217.

NT – Sliding Nippers

The Vessel® GT-NT series sliding nippers boast a small footprint for applications with space restrictions. The GT-NT03-4 is among the smallest nippers in the industry. Unique to this nipper is the built-in blade opening adjustment and lock. The GT-NT nippers are available in both a PUSH or PULL style to suit your application needs. The slide stroke can be adjusted from 0mm up to 8mm, depending on the model. A standard feature of GT-NT nippers is one-touch quick connection fittings.

See page 925 for Timing Controller.

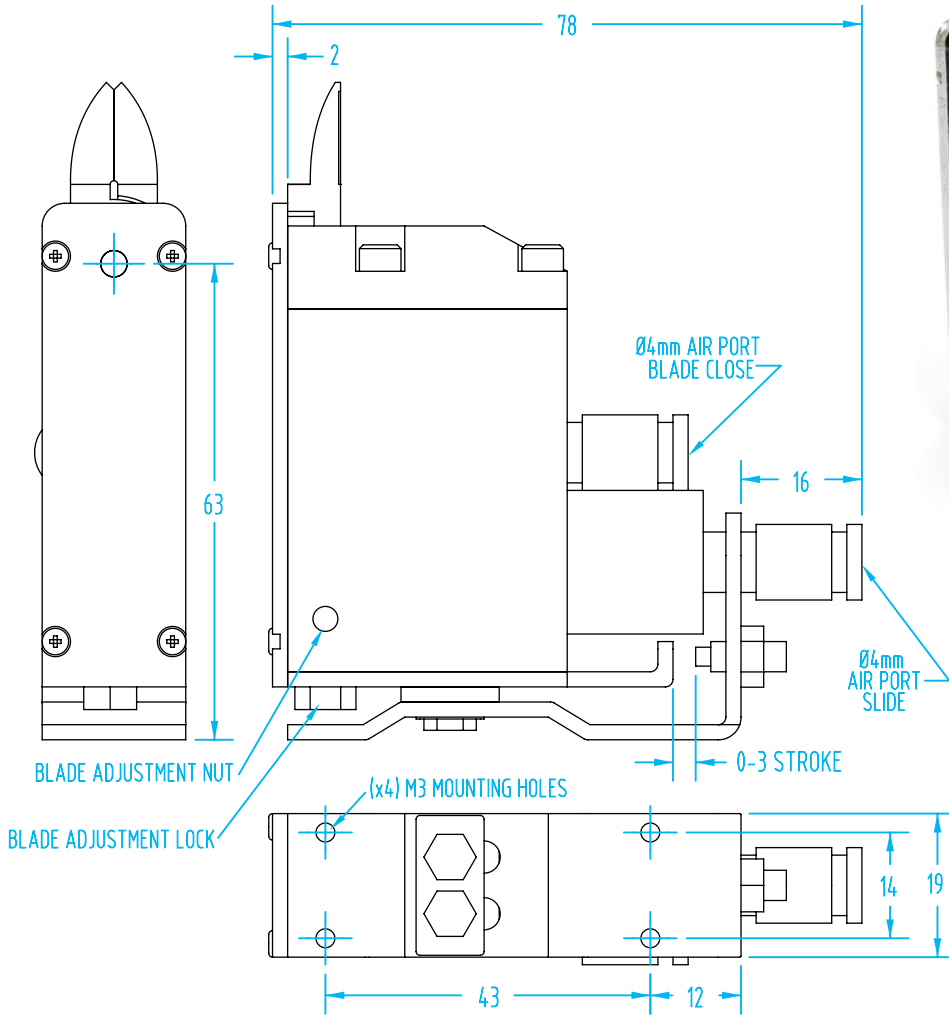


See sliding nipper alternatives on page 842.



NT03 – Sliding Nippers

(Dimensioned drawings shown full scale)



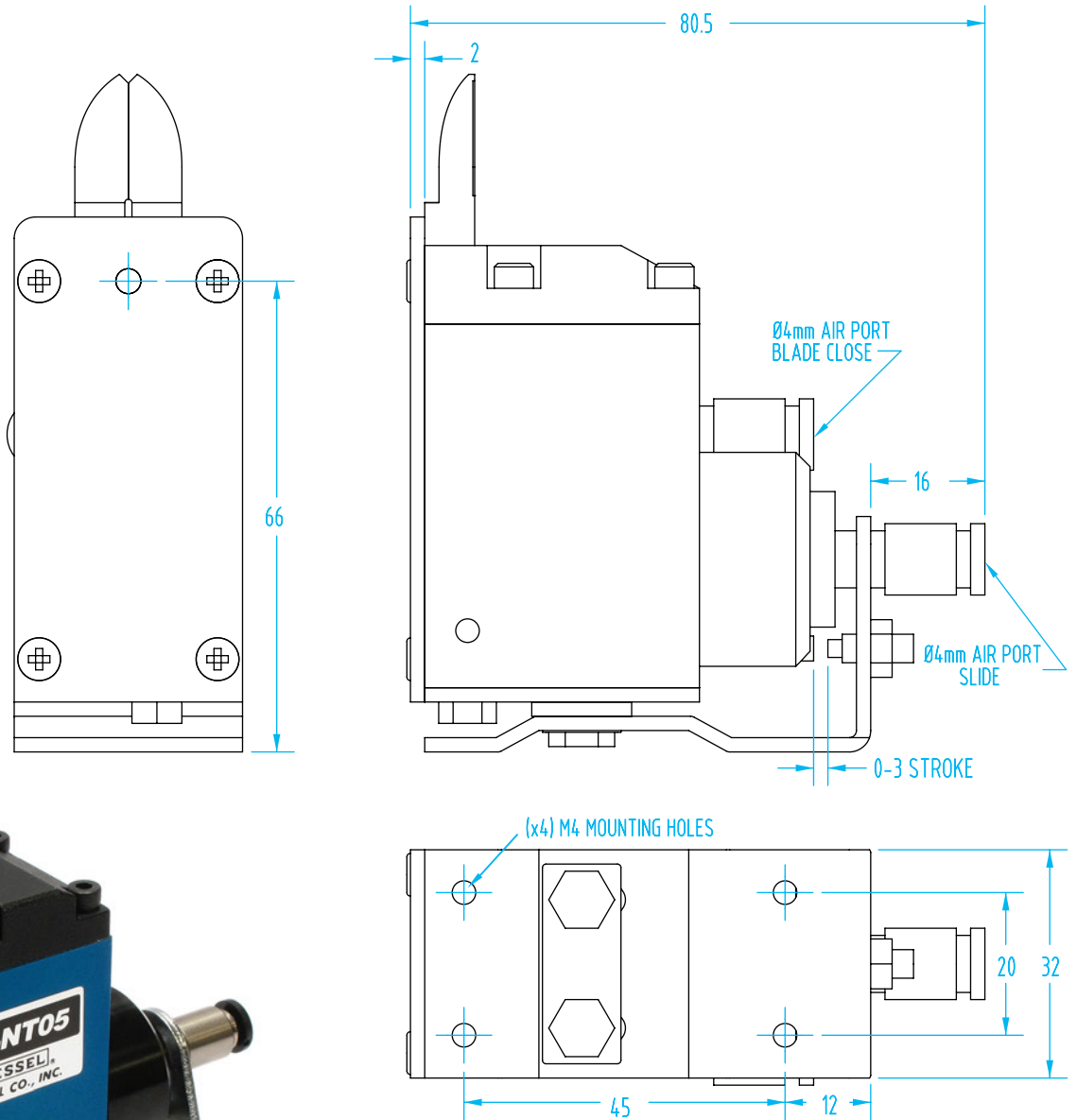
NT03 - Sliding Nipper

Quick#	Part#	Price	Weight	Fitting Specs.	Slide Stroke (mm)		Max. Cutting Cap. Ø (mm)	
							Soft Plastic	Hard Plastic
2256	GSN-NT03-4	\$361.00	178g	Push-in fitting, 4mm OD hose	Pull	0-3	1.5	1.0
2257	GSN-NT03R-4	\$361.00	178g	Push-in fitting, 4mm OD hose	Push	0-3	1.5	1.0

Note: R=Push All fittings supplied.

NT05 – Sliding Nippers

(Dimensioned drawings shown full scale)



Order Blades Separately
See page 945



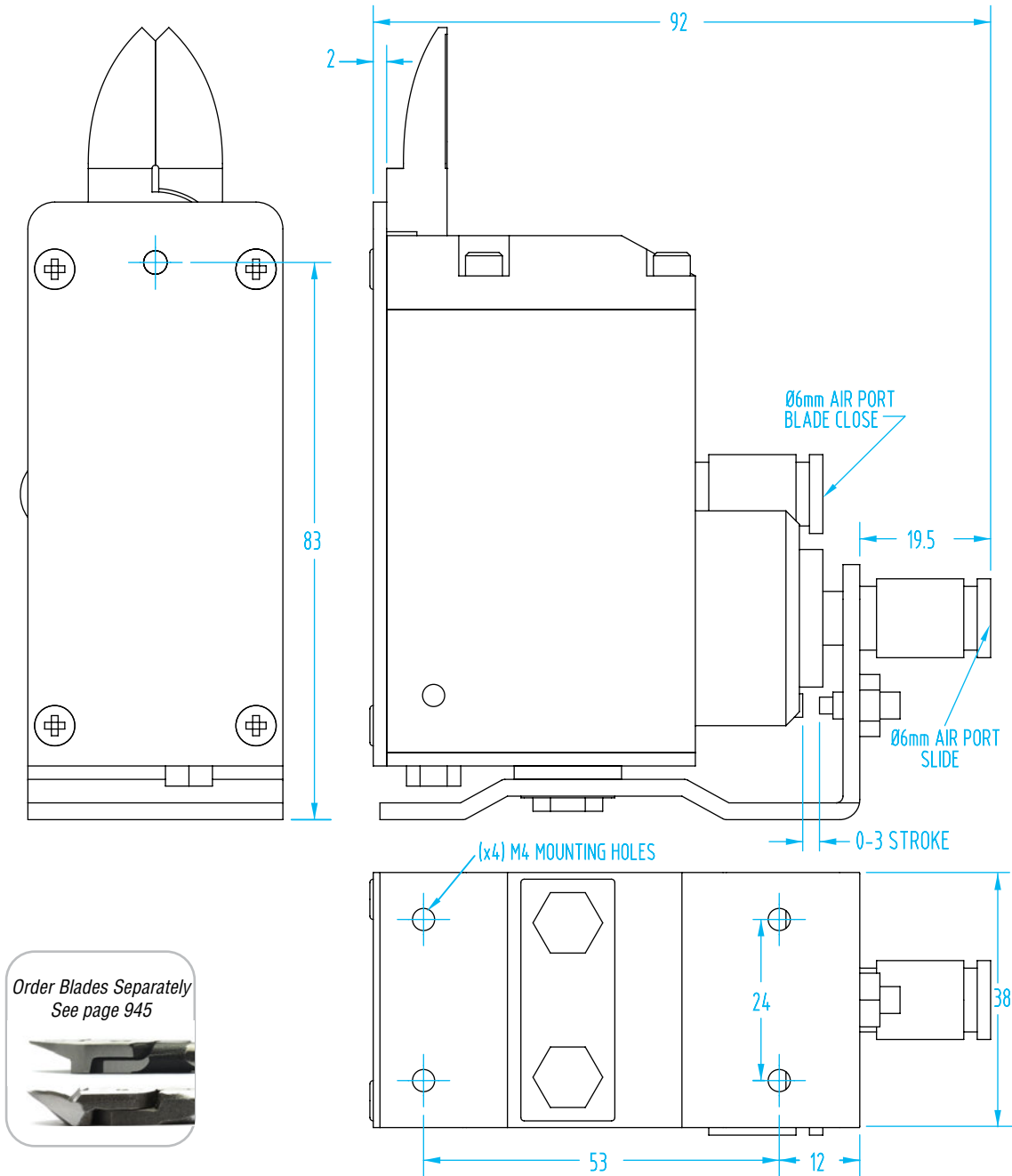
NT05 - Sliding Nipper

Quick#	Part#	Price	Weight	Fitting Specs.	Slide Stroke (mm)		Max. Cutting Cap. Ø (mm)	
							Soft Plastic	Hard Plastic
2070	GSN-NT05	\$387.00	325g	Push-in fitting, 4mm OD hose	Pull	0-3	2.5	1.5
2320	GSN-NT05R-04	\$387.00	325g	Push-in fitting, 4mm OD hose	Push	0-3	2.5	1.5

Note: R=Push All fittings supplied.

NT10 – Sliding Nippers

(Dimensioned drawings shown full scale)



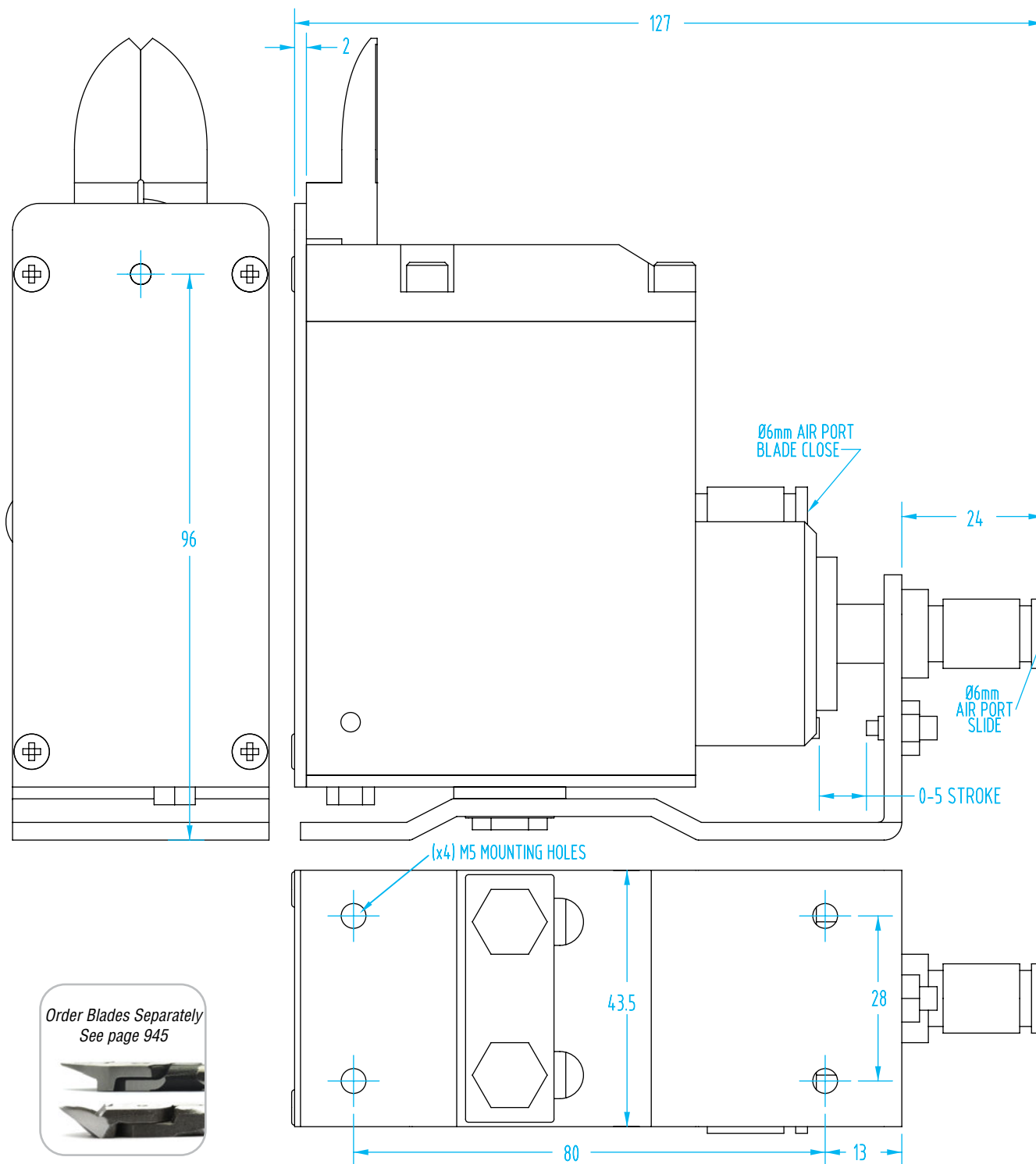
NT10 - Sliding Nipper

Quick#	Part#	Price	Weight	Fitting Specs.	Slide Stroke (mm)		Max. Cutting Cap. Ø (mm)	
							Soft Plastic	Hard Plastic
2321	GSN-NT10-6	\$423.00	515g	Push-in fitting, 6mm OD hose	Pull	0-3	3.5	2.3
2322	GSN-NT10R-6	\$423.00	515g	Push-in fitting, 6mm OD hose	Push	0-3	3.5	2.3

Note: R=Push All fittings supplied.

NT20 – Sliding Nippers

(Dimensioned drawings shown full scale)



Order Blades Separately
See page 945



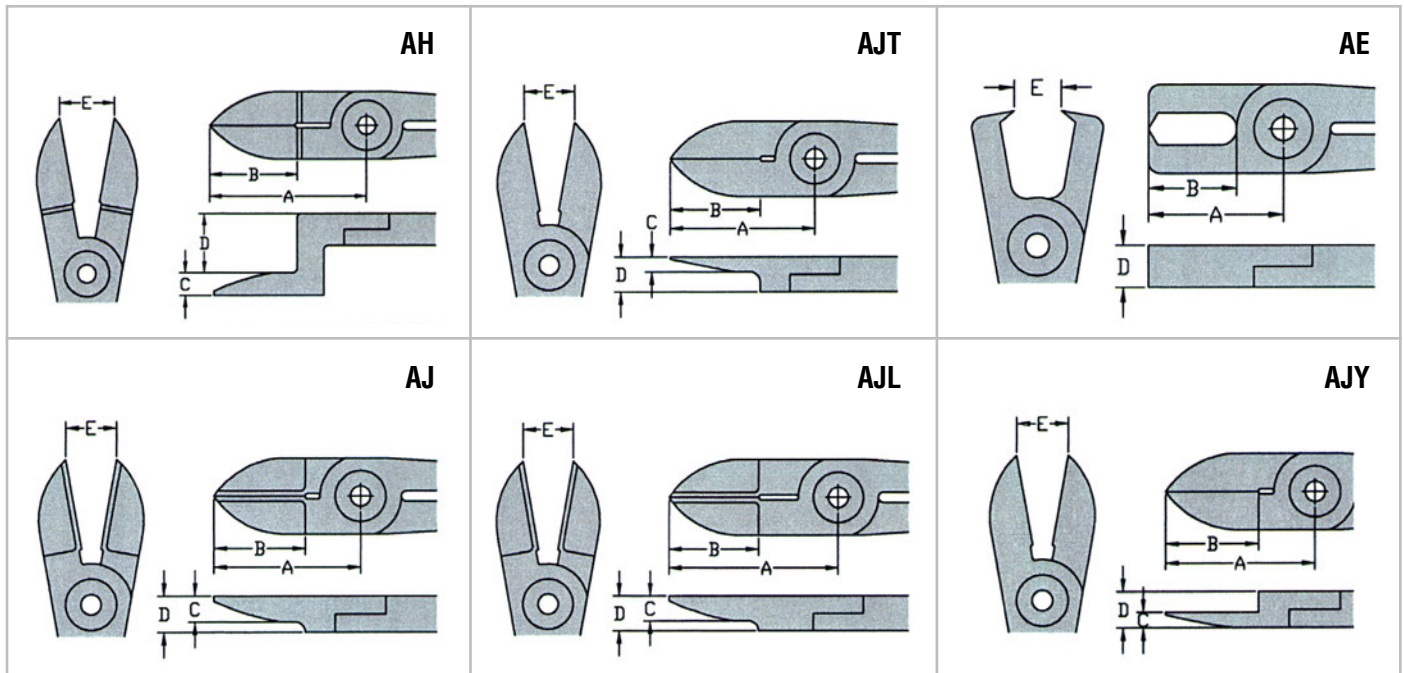
NT20 - Sliding Nipper

Quick#	Part#	Price	Weight	Fitting Specs.	Slide Stroke (mm)	Max. Cutting Cap. Ø (mm)	
						Soft Plastic	Hard Plastic
2266	GSN-NT20	\$476.00	930g	Push-in fitting, 6mm OD hose	Pull 0-5	5.0	3.4
2323	GSN-NT20R-6	\$476.00	930g	Push-in fitting, 6mm OD hose	Push 0-5	5.0	3.4

Note: R=Push All fittings supplied.

NT Blades

Nipper Model	Price	Model#	Quick#	DWG Ref.	Dimensions (mm)					Cutting capacity Ø (mm)		Weight (g)
		Alloy			A	B	C	D	E	Plastic	Hard Plastic	
GT-NT03	\$99.00	GSN NT03 AJ	2421	AJ	24	11	4	7	3	1.5	1.0	20
	\$100.00	GSN NT03 AJT	2258	AJT	24	11	2.3	7	3	1.5	1.0	19
	\$173.00	GSN NT03 AJY		AJY	24	11	2.5	7	3	1.5	1.0	19
GT-NT05	\$117.00	GSN NT05 AE		AE	29	18	-	7	6	2.0	1.3	36
	\$105.00	GSN NT05 AJ	2379	AJ	29	15	5	7	6	2.5	1.2	30
	\$131.00	GSN NT05 AJL	2071	AJL	36	15	5	7	7	2.0	1.3	39
	\$108.00	GSN NT05 AJT	2235	AJT	29	15	3	7	6	2.5	1.2	29
	\$150.00	NT05AJY		AJY	24	11	2.5	7	3	2.5	1.2	29
GT-NT10	\$121.00	GSN NT10 AE	2394	AE	35	22	-	9	7	3.5	2.3	75
	\$105.00	GSN NT10 AJ	5413	AJ	35	17	6	9	7	3.5	2.3	62
	\$143.00	NT10AJL		AJL	47	17	6	9	9	3.0	2.0	62
	\$106.00	NT10AJT		AJT	35	17	4	9	7	3.5	2.3	65
	\$181.00	NT10AJY		AJY	29	15	3	7	6	3.5	2.3	82
GT-NT20	\$101.00	NT20AE		AE	40	25	-	12	9			
	\$110.00	GSN NT20 AJ	2267	AJ	40	20	6	12	9	5.0	3.4	120
	\$152.00	GSN NT20 AJL	2649	AJL	57	20	6	12	12	4.5	3.2	156

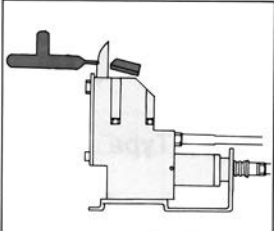
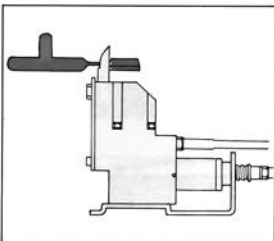
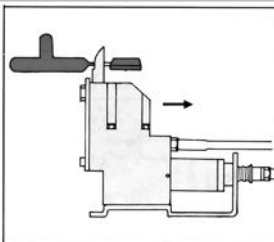
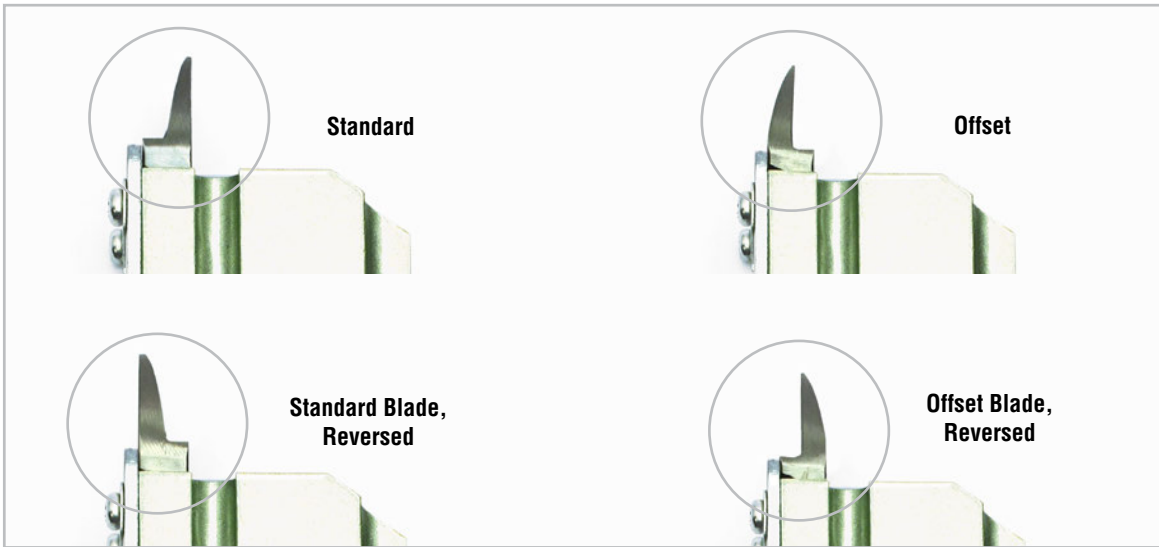


ME – Sliding Stroke Nippers

ME Nippers - Sliding Type (Order blades separately)

Quick#	Part#	Max. Cutting Cap. Ø	Slide Action	Stroke	Weight	Air Pressure	Price
1575	GSN-ME-3	1.0mm	Pull	3mm	170g	57-71 psi	\$214.00
1576	GSN-ME-5	1.2mm	Pull	3mm	290g	57-71 psi	\$209.00
1577	GSN-ME-10	2.5mm	Pull	3mm	540g	57-71 psi	\$255.00
1578	GSN-ME-20	4.5mm	Pull	5mm	810g	71-85 psi	\$305.00
1579	GSN-ME-30	6.0mm	Pull	5mm	1500g	71-85 psi	\$445.00

*Note: Timing controller #636 is recommended for use with ME-pull nippers, see page 925.



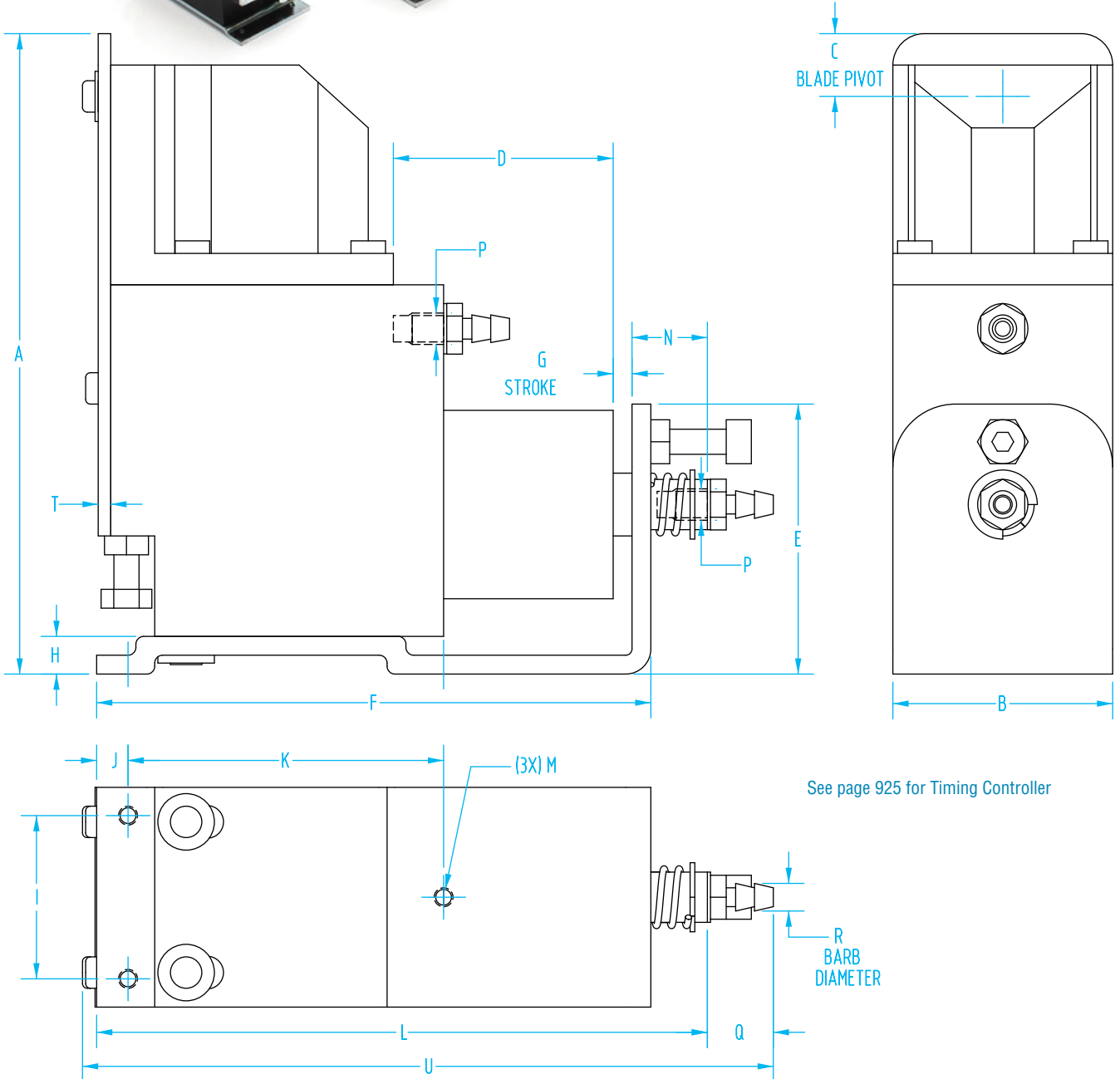
Compressed air is supplied to two ports, allowing for independent control over the sliding stroke and the cutting operations. This allows for multiple cut actions for harder to cut sprues.

Compressed air is applied to activate the pull-sliding stroke. Spring action returns the sliding body to its normal position.

Order Blades Separately
See page 948



ME – Sliding Stroke Nippers



ME Nipper - Dimensions

Quick#	Part#	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	Q	R	T	U
1575	GSN-ME-3	77	20	8	33	34	72.5	3	6	14	2.5	51	81.5	M3x0.5	12	M5x0.8	10.5	4.4	2	92
1576	GSN-ME-5	77	29	9	30	32	76.5	3	6	22	4	49.5	85.5	M3x0.5	12	M5x0.8	10.5	4.4	2	98
1577	GSN-ME-10	102	35	10	35	43	88.3	3	6	26	5	50.3	97.3	M3x0.5	12	M5x0.8	10.5	4.4	2	110
1578	GSN-ME-20	116	44	13	37	48	105	3	6	34	5	88	114	M3x0.5	12	M5x0.8	10.5	4.4	2	126
1579	GSN-ME-30	149	56	15	46	65	128	3	6	44	8	85	137	M3x0.5	12	M5x0.8	10.5	4.4	3	151

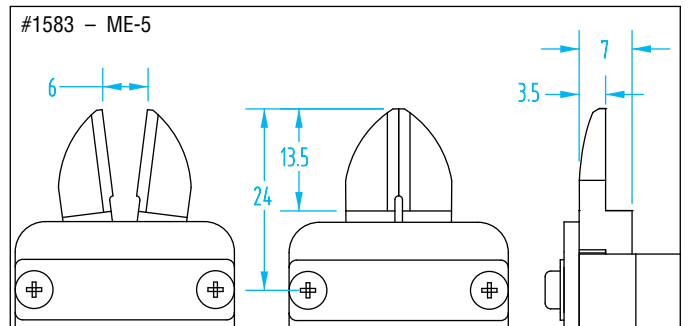
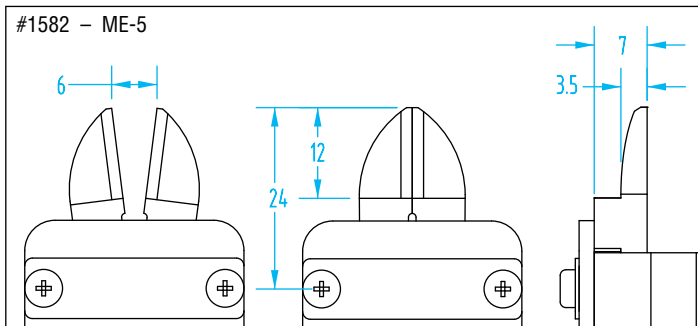
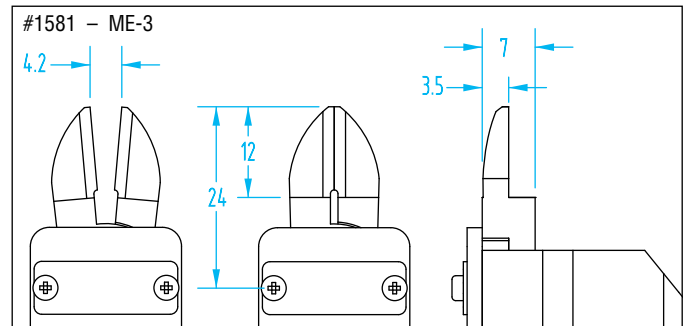
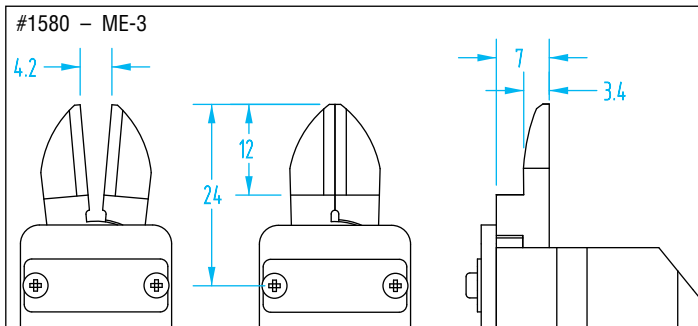
ME – Blades

Standard Blades

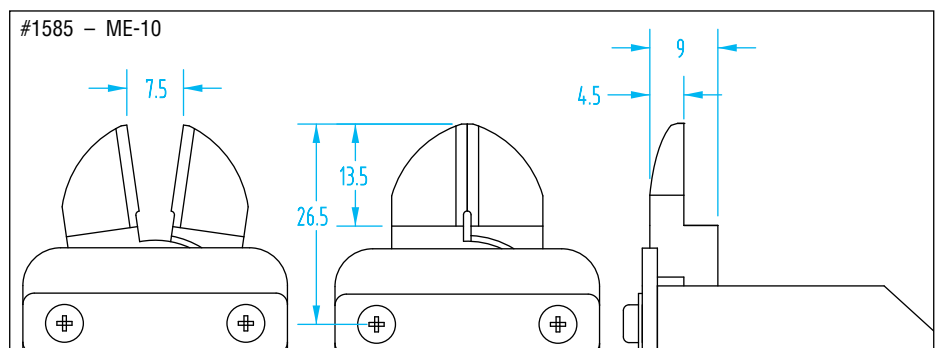
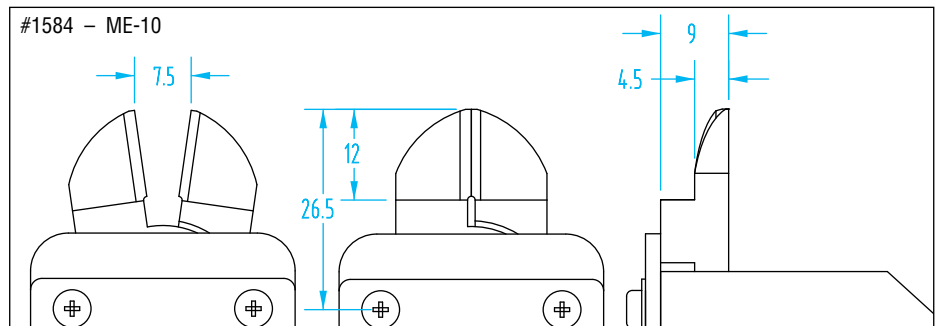


Blades for ME nippers

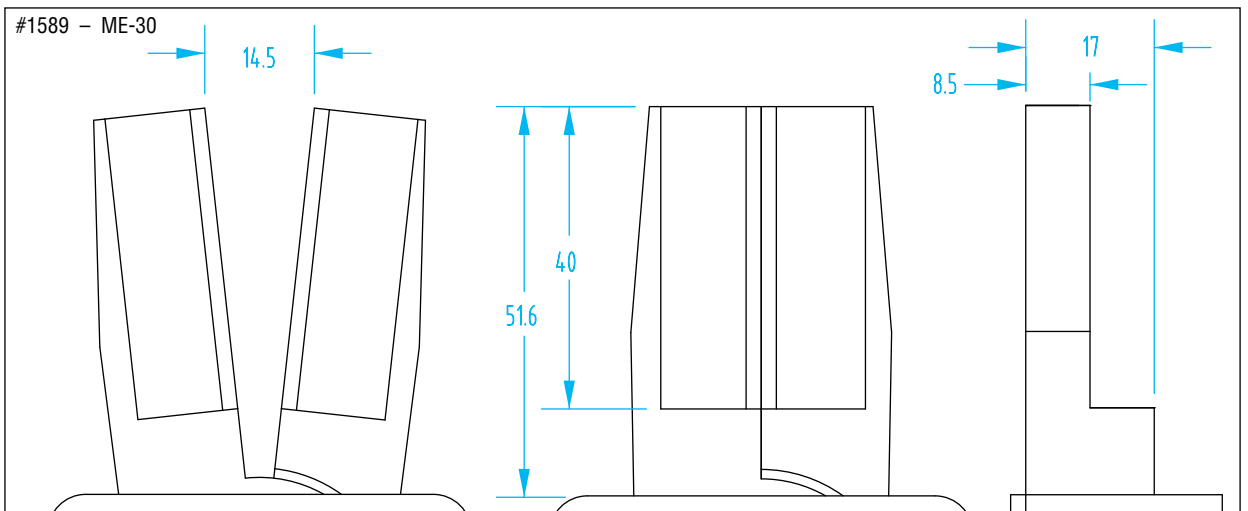
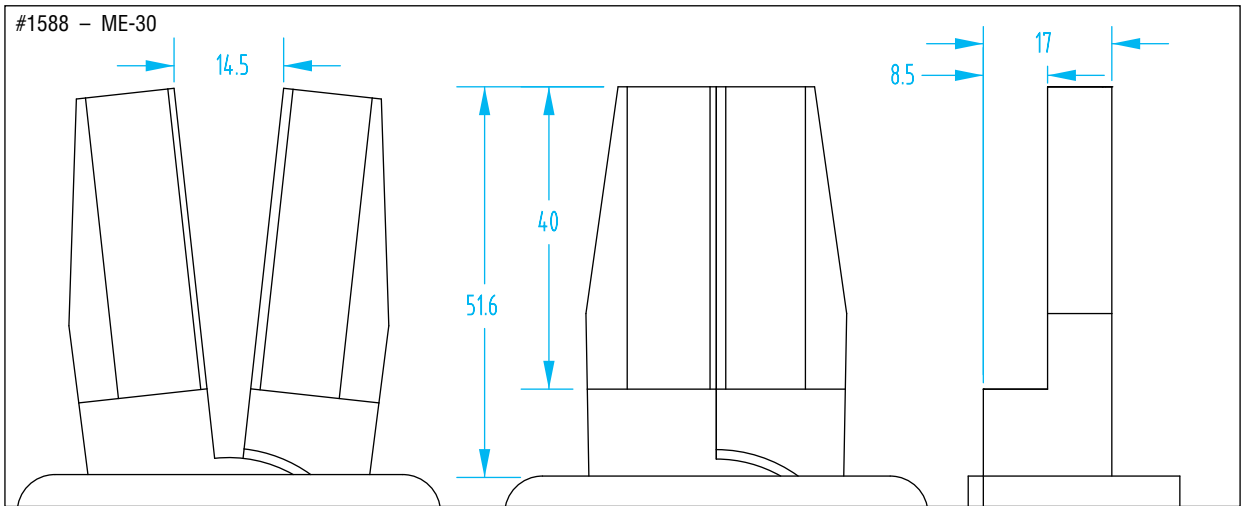
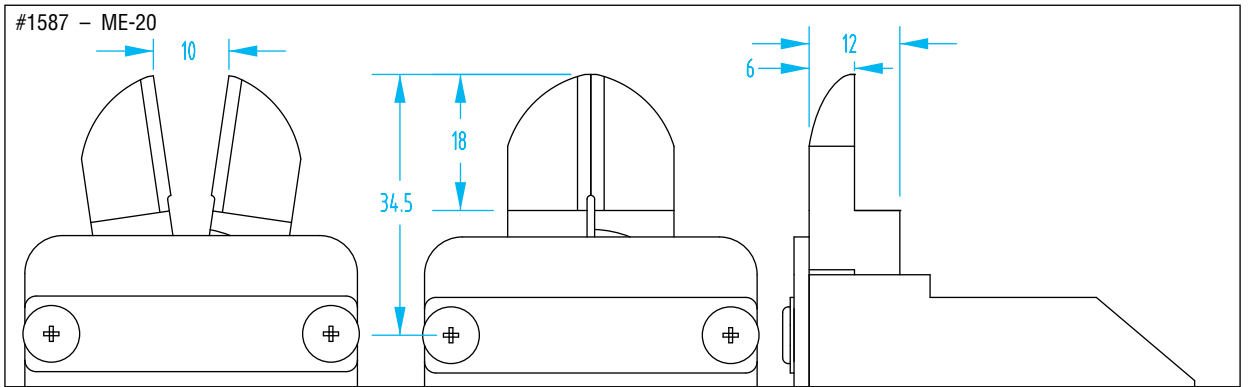
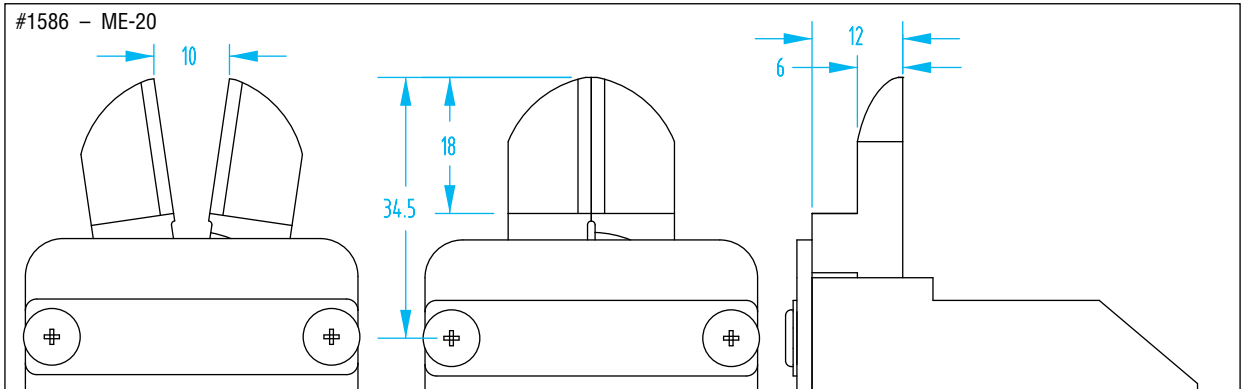
Quick#	Part#	Nipper body	Blade style	Price
1580	GSN-F10E	ME-3	Standard	\$63.50
1581	GSN-F10EK		Offset	\$72.00
1582	GSN-F1E	ME-5	Standard	\$63.50
1583	GSN-F1EK		Offset	\$63.50
1584	GSN-F3E	ME-10	Standard	\$63.50
1585	GSN-F3EK		Offset	\$63.50
1586	GSN-F5E	ME-20	Standard	\$76.00
1587	GSN-F5EK		Offset	\$76.00
1588	GSN-F9E	ME-30	Standard	\$104.00
1589	GSN-F9EK		Offset	\$147.50



Each of these blades may be installed in the nippers either standard or reversed. This gives you four blade configurations from the two styles of blades. Note, the F_E, and F_EK blades are for use only with ME-style nippers.



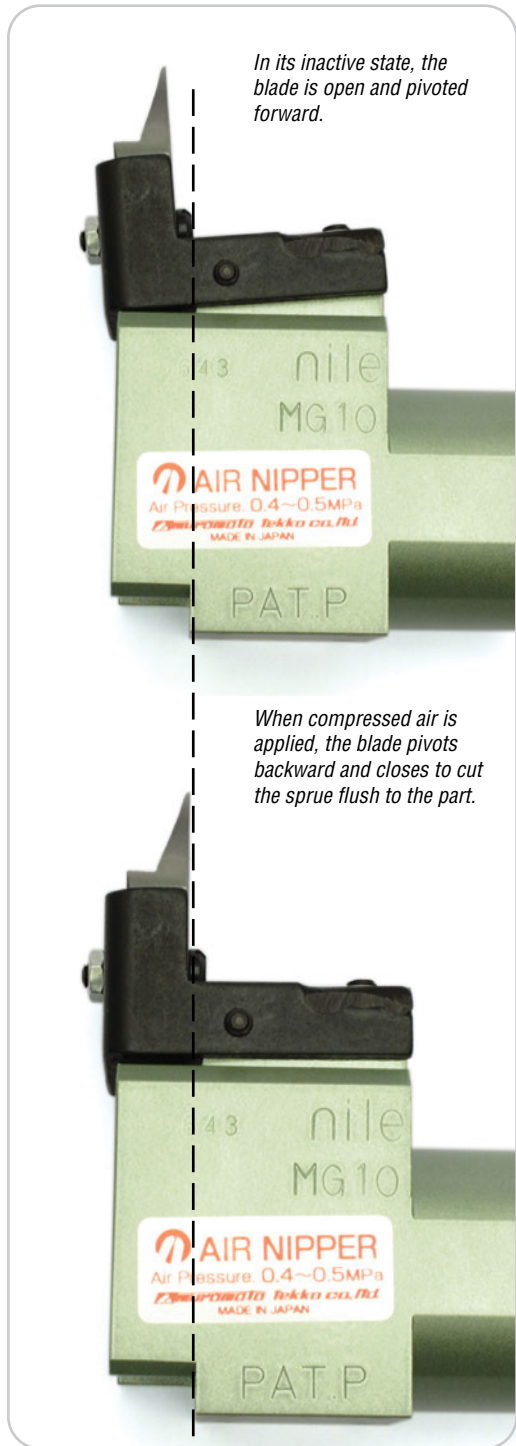
ME – Blades



MG – Nippers



nile air tools



In its inactive state, the blade is open and pivoted forward.

When compressed air is applied, the blade pivots backward and closes to cut the sprue flush to the part.



MG – Nippers

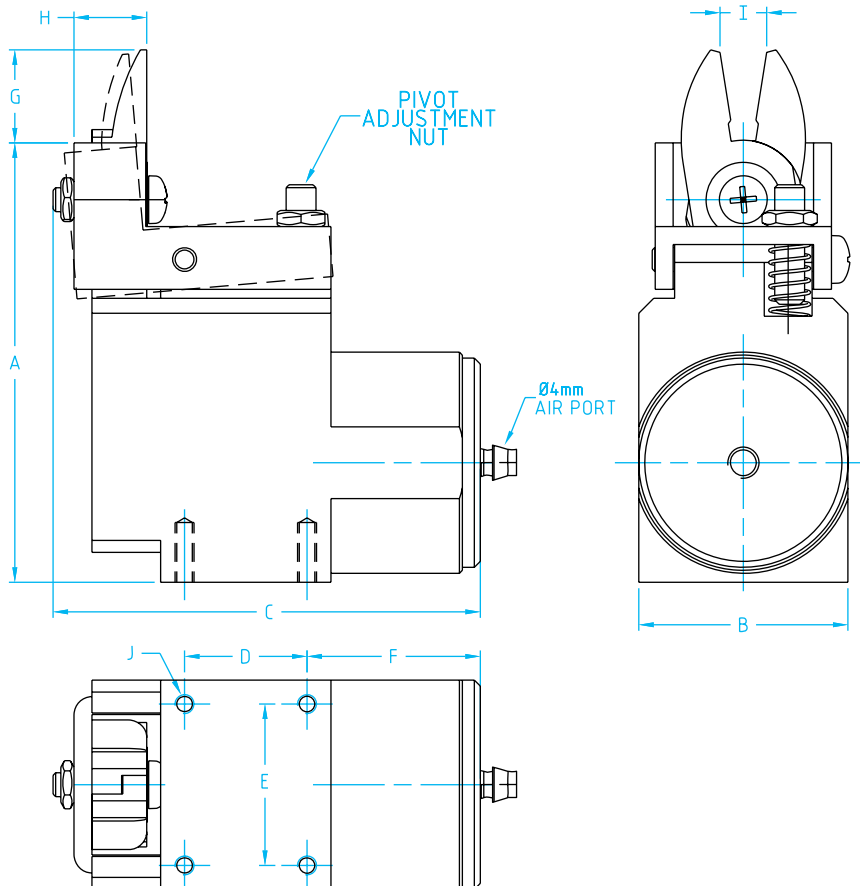
- Pivoting blade cuts flush to part.
- No timing unit required.
- When inactive, the blade is open and pivoted forward. When compressed air is applied, the blade pivots backward and closes to cut the sprue flush to the part.
- Pivoting is adjustable by utilizing lock nut.
- Compressed air is supplied to only one 4mm port, making for simplified installation without the requirement of timing units for multiple ports.
- Smaller and lighter weight than similar type nippers.



nile air tools

MG - Nippers (Order Blades Separately)

Quick#	Part#	Price	Max. Cutting Cap. Ø	Stroke	A	B	C	D	E	F	G	H	I	J	Air Pressure	Wt.
1608	GSN-MG-3	\$202.50	2mm	4	50	20	60	16	14	25	15	7	4	M3	57-71 psi	80g
1609	GSN-MG-10	\$262.00	4mm	5	73	35	73	20	27	29	17.5	9	7	M3	57-71 psi	230g
1610	GSN-MG-20	\$301.00	6mm	4	95	46	69	21	36	39	19	12	8	M4	71-85 psi	420g



MG – Blades



Two blade styles are offered, standard and offset. These blades can only be installed in the nippers one way (these MG-type nippers differ from the ME-type in this manner).

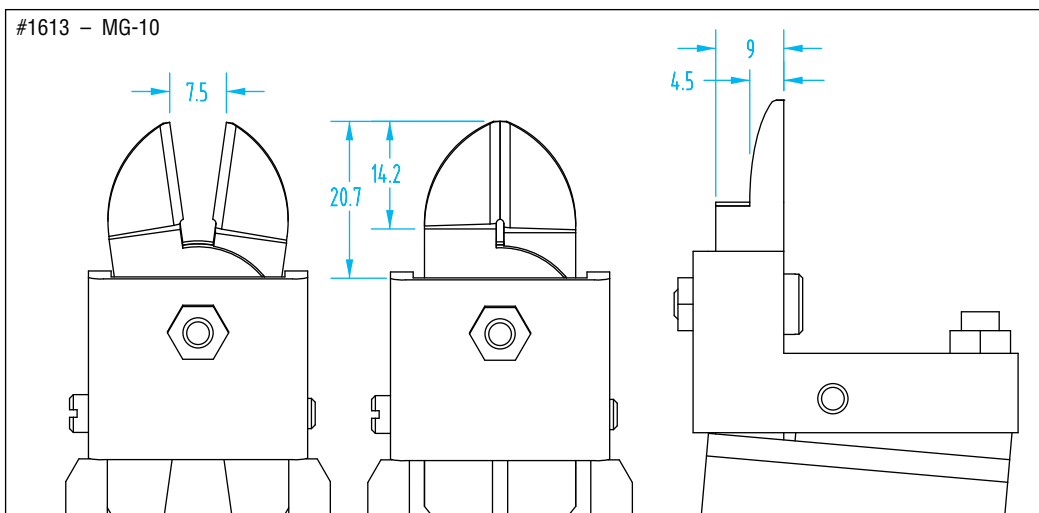
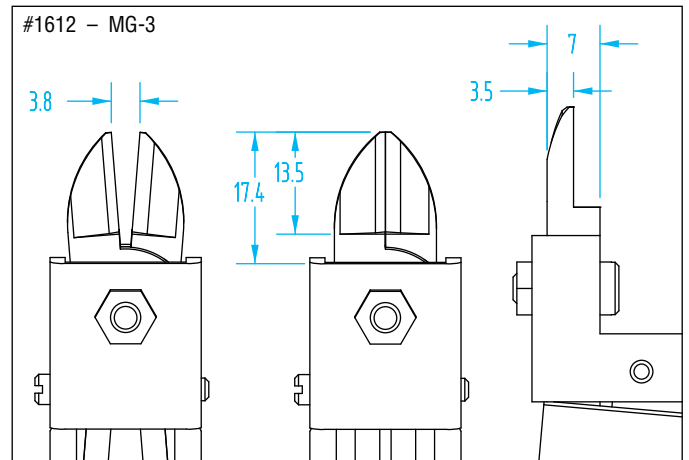
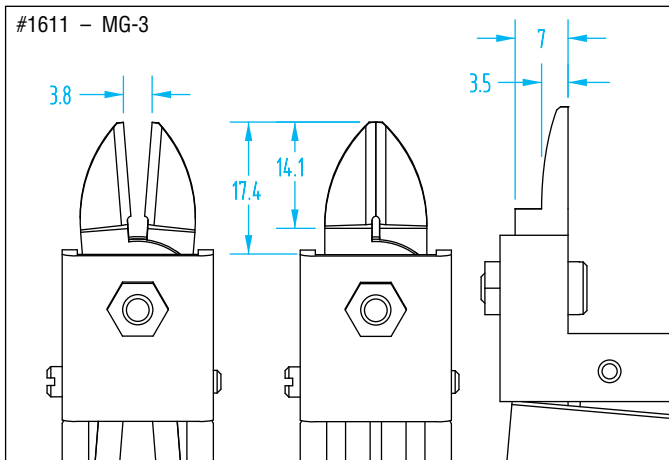
Note, the FG_ and FG_K blades are for use only with MG style nippers.

Standard Blades

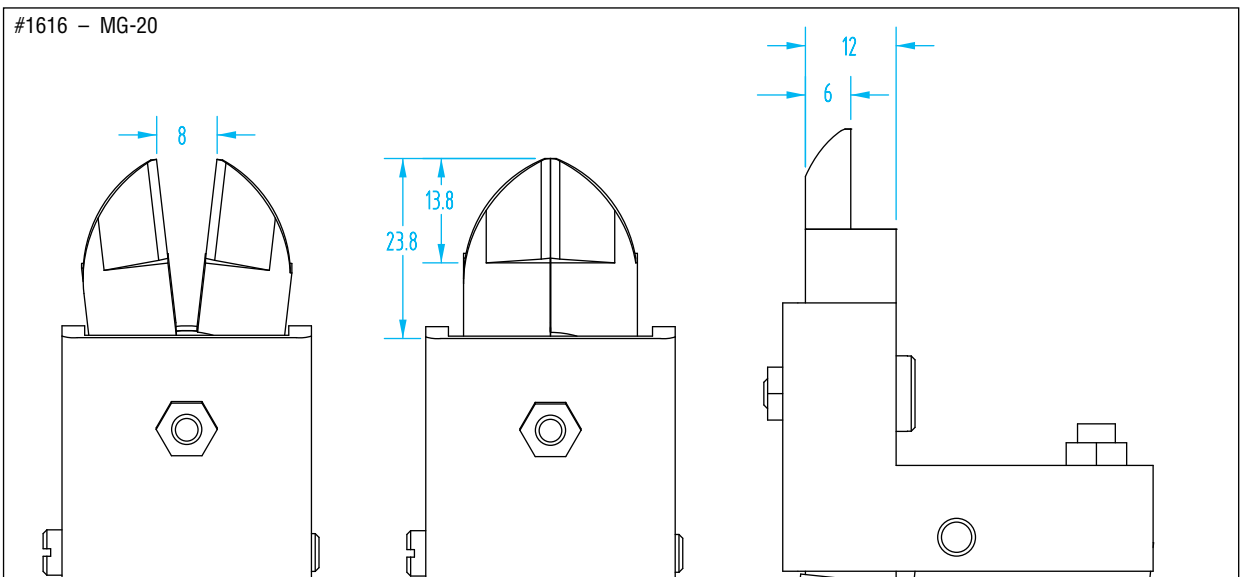
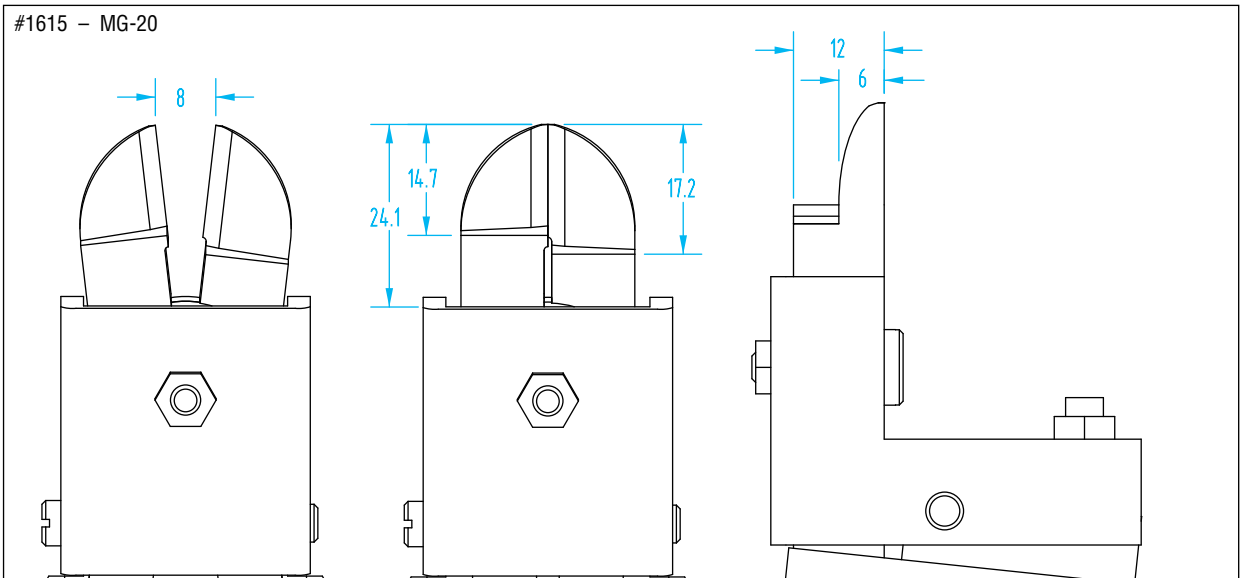
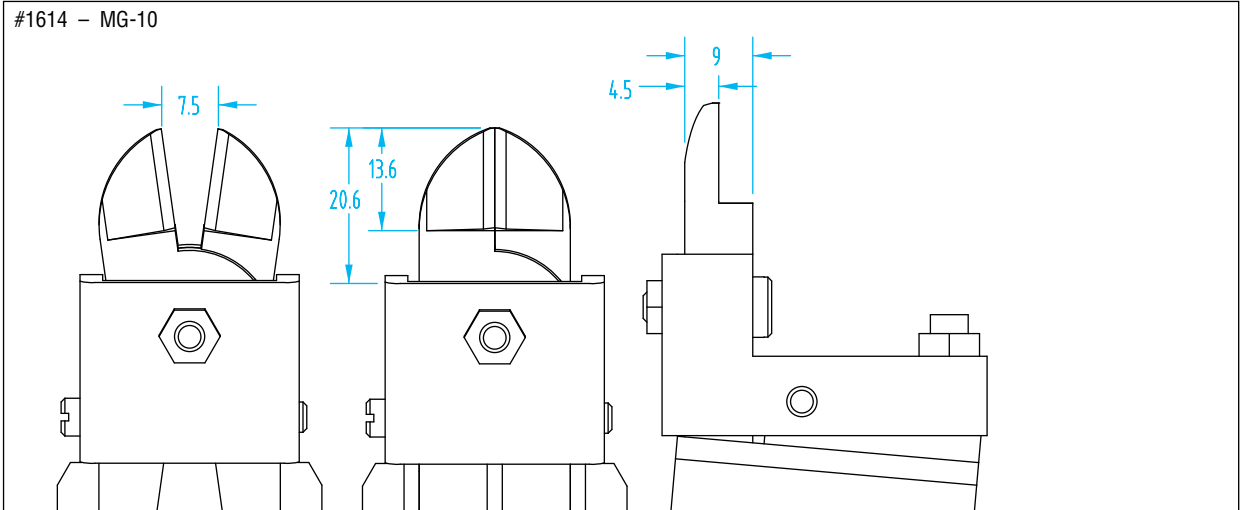


Blades for MG Nippers

Quick#	Part#	Nipper Body	Blade Style	Price
1611	GSN-FG10	MG-3	Standard	\$72.00
1612	GSN-FG10K		Offset	\$72.00
1613	GSN-FG3	MG-10	Standard	\$72.00
1614	GSN-FG3K		Offset	\$74.50
1615	GSN-FG5	MG-20	Standard	\$84.50
1616	GSN-FG5K		Offset	\$84.50



MG – Blades



NY, NF, & NT Blades

See page 930–937 for additional blade information

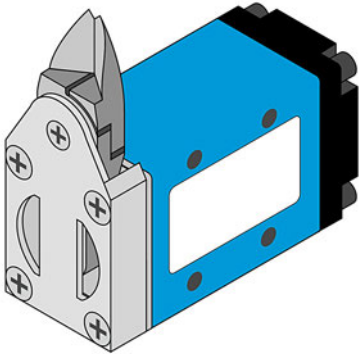
NY & NF Blades

Nipper Model	Quick#	Price	Part#		Additional Versions (Model#)	DWG Ref	Dimensions (mm)					Cutting capacity (mm)		Weight (g)	
			Alloy	Carbide			A	B	C	D	E	Plastic	Hard Plastic		
GT-NY05 GT-NF05	620	\$307.00	GSN NY05 AH			AH	31	11	5	14	5.5	3.0	2.0	37	
	622	\$308.00	GSN NY05 RAH			RAH	30	11	5	7	5	3.0	2.0	31	
	618	\$125.00	GSN NY05 AJ		NY05AJB		AJ	22	11	5	7	4	3.0	2.0	22
	621	\$133.00	GSN NY05 RAJ				RAJ	22	11	5	7	4	3.0	2.0	22
	619	\$174.00	GSN NY05 AJL				AJL	31	11	5	7	5.5	2.8	1.6	29
				NY05AJT			AJT	22	11	5	7	4	3.0	2.0	21
GT-NY10 GT-NY10S GT-NF10	1866	\$314.00	GSN NY10 AH			AH	33	12	5	15	8	3.5	2.3	43	
	1868	\$315.00	GSN NY10 RAH			RAH	32	12	5	7.2	7	3.5	2.3	36	
	1864	\$129.00	GSN NY10 AJ		NY10AJB		AJ	24	15	5	7.2	6	3.5	2.3	28
	1867	\$137.00	GSN NY10 RAJ				RAJ	24	12	5	7.2	6	3.5	2.3	28
	1865	\$182.00	GSN NY10 AJL				AJL	33	12	5	7.2	8	3.2	2.1	37
	2593	\$154.00	GSN NY10 AJT				AJT	24	12	3	7.2	6	3.5	2.3	26
GT-NY15 GT-NF15	627	\$318.00	GSN NY15 AH			AH	38	13	5.5	16	11	4.0	2.6	63	
	629	\$320.00	GSN NY15 RAH			RAH	35	13	5.5	7.7	11	4.0	2.6	52	
	625	\$132.00	GSN NY15 AJ		NY15AJB		AJ	27	13	5.5	8.2	8	4.0	2.6	41
	628	\$140.00	GSN NY15 RAJ				RAJ	27	13	5.5	8.2	8	4.0	2.6	41
	626	\$193.00	GSN NY15 AJL				AJL	38	13	5.5	8.2	11	3.7	2.3	50
	2584	\$166.00	GSN NY15 AJT				AJT	27	13	5.5	8.2	8	4.0	2.6	38
GT-NY25	633	\$332.00	GSN NY25 AH			AH	46	16	6	18	13	5.0	3.4	110	
	635	\$324.00	GSN NY25 RAH			RAH	42	16	6	10	12	5.0	3.4	89	
	631	\$141.00	GSN NY25 AJ		NY25AJB		AJ	31	16	6	10	9	5.0	3.4	65
	634	\$162.00	GSN NY25 RAJ				RAJ	31	16	6	10	9	5.0	3.4	65
	632	\$218.00	GSN NY25 AJL				AJL	46	16	6	10	13	4.7	3.0	88

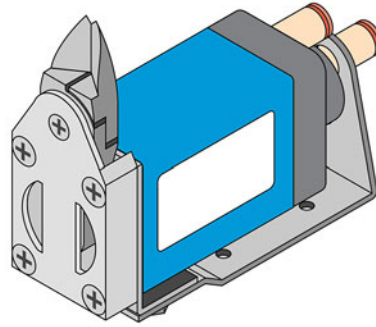
NT Blades

Nipper Model	Price	Model#	Quick#	Additional Versions (Model#)		DWG Ref	Dimensions (mm)					Cutting capacity (mm)		Weight (g)	
				Alloy	Carbide		High Speed Steel	A	B	C	D	E	Plastic		Hard Plastic
GT-NT03	\$99.00	NT03AJ	2421		NT03AJB		AJ	24	11	4	7	3	1.5	1.0	20
	\$100.00	NT03AJT	2258				AJT	24	11	2.3	7	3	1.5	1.0	19
	\$173.00	NT03AJY					AJY	24	11	2.5	7	3	1.5	1.0	19
GT-NT05	\$348.00	NT05AD					AD	29	2.5	2.5	7	6	2.5	1.2	37
	\$117.00	NT05AE					AE	29	18	-	7	6	2.0	1.3	36
	\$105.00	NT05AJ	2379		NT05AJB	NT05AJH	AJ	29	15	5	7	6	2.5	1.2	30
	\$131.00	NT05AJL	2071				AJL	36	15	5	7	7	2.0	1.3	39
	\$108.00	NT05AJT	2235				AJT	29	15	3	7	6	2.5	1.2	29
	\$150.00	NT05AJY					AJY	24	11	2.5	7	3	2.5	1.2	29
GT-NT10	\$359.00	NT10AD					AD	35	4	4	9	7	3.5	2.3	65
	\$121.00	NT10AE	2394				AE	35	22	-	9	7	3.5	2.3	75
	\$105.00	NT10AJ	5413		NT10AJB	NT10AJH	AJ	35	17	6	9	7	3.5	2.3	62
	\$143.00	NT10AJL					AJL	47	17	6	9	9	3.0	2.0	62
	\$106.00	NT10AJT					AJT	35	17	4	9	7	3.5	2.3	65
\$181.00	NT10AJY					AJY	29	15	3	7	6	3.5	2.3	82	
GT-NT20	\$425.00	NT20AD					AD	40	6	5	12	9	2.0	2.0	141
	\$276.00	NT20AE	696				AE	40	25	-	12	9			
	\$110.00	NT20AJ	2267		NT20AJB	NT20AJH	AJ	40	20	6	12	9	5.0	3.4	120
	\$152.00	NT20AJL	2649				AJL	57	20	6	12	12	4.5	3.2	156

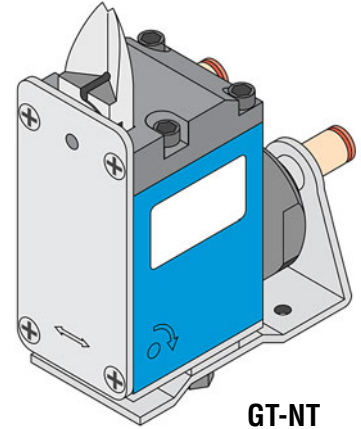
NY, NF, & NT Blades



GT-NF



GT-NY



GT-NT

<p style="text-align: right;">RAH</p>	<p style="text-align: right;">RAJ</p>	<p style="text-align: right;">AE</p>
<p style="text-align: right;">AJ</p>	<p style="text-align: right;">AJL</p>	<p style="text-align: right;">AJY</p>
<p style="text-align: right;">AD</p>	<p style="text-align: right;">AH</p>	<p style="text-align: right;">AJT</p>

NR & NS Blades

Additional blade information is available on pages 858–890.

Nipper Model	Standard Part#		Additional Versions (Part#)		DWG Ref	Dimensions (mm)					Cutting capacity (mm)	
	Alloy	Carbide	High Speed Steel			A	B	C	D	E	Plastic	Hard Plastic
GT-N3 NR3 NS3 NS2	N3AE				AE	20	7	-	7	3.5	2.0	
	N3AJ				AJ	24	12	4	7	5.5	2.0	
	N3AJT				AJT	24	12	2.3	7	5.5	2.0	
	N3AJY				AJY	24	12	2.5	7	5.5	2.0	
	N3AP	N3APB			AP	24	11	15°	7	4	2.0	
GT-N5 NR5 NS5	N5AE	N5AEB315			AE	20	7	-	7	3.5	2.0	
	N5AP	N5ABB380			AP	24	13	15°	7	4	2.0	
	N5AS	N5BBB385			AS	24	13	25°	7	4		
GT-N7 NR7 NS7	N7AE	N7AEB	N7AEH150		AE	26	9	-	9	4	3.0	2.0
	N7AP		N7HS		AP	27	14	30°	9	4	3.0	2.0
	N7PF				PF	27	10	40°	9	4	3.0	2.0
GT-N10	N10AP				AP	27	14	30°	9	5	4.0	2.6
GT-NR10L NS10L	N10LAB2				AJ	61	36	7	12	10	4.0	2.6
	N10LAP				AP	35	16	15°	12	5	4.0	2.6
	N10LPF				PF	35	13	45°	12	5	4.0	2.6
GT-N12 NR12 NS12	N12AA27				AP	45	25	23°	12	7.5		
	N12AP				AP	35	21	30°	12	5		
	N12PF				PF	35	14	40°	12	6.5	4.5	4.0
GT-N20 NR20 NS20	N20AA239	N20AAB825	N20AAH693		AP	-	37	40°	12	14		
	N20AA27				AP	45	25	23°	12	12	7.0	5.0
	N20AB39	N20AJB1118			AJ	61	36	7	12	14	7.0	5.0
	N20AE	N20AEB113	N20AEH727		AE	28	15	-	12	8	7.0	5.0
	N20AEL				AE	48	31	-	12	13	5.0	3.0
	N20AH				AH	60	23	4	24	16	6.0	4.0
	N20AJ	N20AJB875	N20AJH1099		AJ	35	18	8	12	11	7.0	5.0
	N20AJL	N20AJLB1004	N20AJHL		AJL	65	20	4	12	16	6.0	4.0
	N20AJT				AJT	35	18	3	12	11	6.0	4.0
	N20AJY				AJY	40	19	5	12	10	6.0	4.0
	N20AL				AL	45	19	32	12	12		
	N20AML				AM	68	36	-	17	13		
	N20AMR				AM	68	36	-	17	13		
N20AP	N20APB629	N20APH740		AP	35	18	15°	12	9.5	7.0	5.0	
N20PF	N20PFB544	N20ABH1220		PF	35	14	40°	12	9.5	7.0	5.0	
GT-N30 NR30 NS30	N30AA114	N30AAB513			AP	76	50	30°	17	20		
	N30AA165				AP	76	50	40°	17	20		
	N30AE				AE	45	28	-	17	12	10	6.5
	N30AE767				AE	60	43	-	17	16	8.5	4.5
	N30AH				AH	80	32	8	57	22		
	N30AJ	N30AJB712			AJ	52	28	8	17	11	10	6.5
	N30AJL	N30AJB779	N30AJH1015		AJL	75	25	8	17	19	8.0	5.0
	N30AL	N30ALB			AL	50	35	54	17	14		
	N30AP	N30ABB241			AP	66	38	15°	17	16	10	6.5
	N30AML				AM	68	35	-	17	13		
N30AMR				AM	68	35	-	17	13			
N30PF	N30PFB293	N30ABH845		PF	58	25	30°	17	15	10	6.5	
GT-N50 NR50 NS50	N50AB				AJ	90	29	30°	25	21		
	N50ABH41 (High Speed Steel)				AJ	120	35	30°	25	35		
	N50AJL				AJL	110	35	15	25	26		
	N50AL				AL	84	35	64	25	20		

NR & NS Blades



GT-NS



GT-NR

<p>AP</p>	<p>PF</p>	<p>AE</p>
<p>AJ</p>	<p>AJL</p>	<p>AJY</p>
<p>AM</p>	<p>AL</p>	<p>AJT</p> <p>AH</p>

Manually Actuated Nippers



VESSEL AIR NIPPER

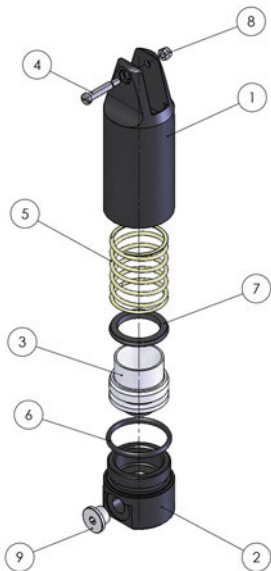
Blades purchased separately. Dimensional Drawings found online at: www.EMlcorp.com, search by Quick#.

Vessel Manually Activated Nippers

Quick#	Part#	Price	Vessel Model	Description
2310	GSN-N5	\$263.00	GT-N5/SL	Manual Nipper - Size 5
2311	GSN-N10	\$287.00	GT-N10/SL	Manual Nipper - Size 10
2312	GSN-N20	\$305.00	GT-N20/SL	Manual Nipper - Size 20
2280	GSN-GTN30	\$376.00	GT-N30/SL	Manual Nipper - Size 30
2325	GSN-N50	\$1,013.00	GT-N50/SL	Manual Nipper - Size 50

Order Blades Separately, See pages 870–890.

(SL=with Shutoff Lever)



Additional Spare Parts can be found online!

We expanded our offering of spare parts. These can be found online by searching for the Quick#. Once on the product page, you will find Exploded Views & Spare Parts listed below the Related Items. Shown here are spare parts for the Gimatic Nipper #1902. Purchase spare parts separately, or together as the Service Rebuild Kit.

Parts for 1902 Gimatic Nipper Round Body Size 10

Enter the quantity for each needed part and click add to cart Add to Cart Print Parts List

No.	Part No.	Item Description	Qty Req.	Price	Qty
3	GN 10 03	Piston for Gimatic Nipper GN-10	0	\$25.69 Each	<input type="text"/>
5	GSN GN 10S MS	6561 Main Spring for Gimatic Nipper GN-10(S)	0	\$2.72 Each	<input type="text"/>
6,7	KIT1 GN10S	Seal Kit for Gimatic Nipper GN-10S, GN-10	0	\$2.86 Each	<input type="text"/>
4	GSN GN10S BMP	2595 Blade Mounting Pin for GN10S	0	\$4.20 Each	<input type="text"/>
8	GSN GN5135 BMN	2598 Blade Mounting Nut for GN 05(S) & GN10(S)	0	\$0.50 Each	<input type="text"/>
9	107 G1 8	Internal Hex Threaded Plug	0	\$2.41 Each	<input type="text"/>
4,5,6,7,8	GSN GN10 RK	2076 Rebuild Kit for Gimatic GN-10 & GN-10S	0	\$7.25 Each	<input type="text"/>

Add to Cart Print Parts List

Replacement Nipper Parts

Gimatic Nipper Parts

Service Kits for Gimatic Nippers

Quick#	Part#	Price	Description
2075	GSN-GN05-RK	\$10.20	Gimatic Rebuild Kit - GN-05 & GN-05S
2076	GSN-GN10-RK	\$7.50	Gimatic Rebuild Kit - GN-10 & GN-10S
2077	GSN-GN20-RK	\$8.60	Gimatic Rebuild Kit - GN-20 & GN-20S
2078	GSN-GN30-RK	\$18.20	Gimatic Rebuild Kit - GN-30 & GN-30S
2079	GSN-GN50-RK	\$22.60	Gimatic Rebuild Kit - GN-50 & GN-50S

Kit includes: Blade mount nut, blade mount screw, o-rings, & main spring.



Blade Mounting Pins for Gimatic Nippers

Quick#	Part#	Price	Description
2594	GSN-GN05S-BMP	\$6.48	Blade Mounting Pin for GN05(S)
2595	GSN-GN10S-BMP	\$4.37	Blade Mounting Pin for GN10(S)
2596	GSN-GN20S-BMP	\$3.72	Blade Mounting Pin for GN20(S)
2597	GSN-GN30S-BMP	\$4.68	Blade Mounting Pin for GN30(S) & GN50(S)



Main Spring for Gimatic Nippers

Quick#	Part#	Price	Description
6560	GSN-GN-05S-MS	\$1.60	Main Spring for GN05(S)
6561	GSN-GN-10S-MS	\$2.83	Main Spring for GN10(S)
6562	GSN-GN-20S-MS	\$4.68	Main Spring for GN20(S)
6563	GSN-GN-30S-MS	\$3.54	Main Spring for GN30(S)
6564	GSN-GN-50S-MS	\$8.39	Main Spring for GN50(S)



Swanstrom Nipper Parts

Service Kits for All Swanstrom Nippers

Quick#	Part#	Price	Description
5077	PTR-05-RK	\$115.00	Swanstrom Rebuild Kit - Size 05
5078	PTR-10-RK	\$118.00	Swanstrom Rebuild Kit - Size 10
5079	PTR-20-RK	\$128.00	Swanstrom Rebuild Kit - Size 20
5080	PTR-30-RK	\$138.00	Swanstrom Rebuild Kit - Size 30
5081	PTR-50-RK	\$156.00	Swanstrom Rebuild Kit - Size 50

Kit includes 1 ea.: Piston, blade mount nut, blade mount screw, o-rings, & main spring.



Vessel Replacement Parts for NR & NS style Nippers



#1631 shown

Rebuild Kits for Vessel NR & NS nipper bodies

Quick#	Part#	Nipper Body	Price
1638	GSN-NR5-RK	NR5, NS5	\$60.00
1631	GSN-NR10L-RK	NR10L, NS10L	\$67.31
1624	GSN-NR20-RK	NR20, NS20	\$70.83
1617	GSN-NR30-RK	NR30, NS30	\$84.41

Includes 1ea: Main piston, main spring, piston o-ring, end cap o-ring, blade mounting screw, and blade mounting nut.

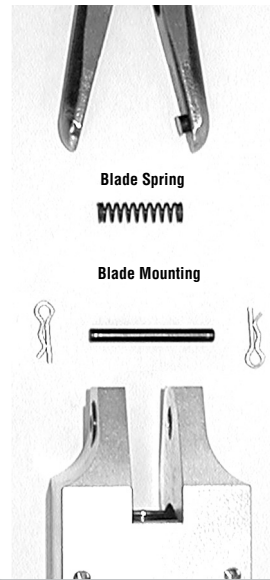


Part#	Quick#	Nipper Serviced
GSN-RA-HRS3		NS3 NR3
GSN-RA-HRS5		NS5 NR5
GSN-RA-HRS7		NS7 NR7
GSN-RA-HRS10		NS10 NR10L
GSN-RA-HRS12		NS12 NR12
GSN-RA-HRS20	5305	NS20 NR20
GSN-RA-HRS30	5348	NS30 NR30
GSN-RA-HRS50	5349	NS50 NR50



Pin & Spring Kit for NR Nippers

Part#	Quick#	Nipper Serviced
GSN-BA-HR3		GT-NR3
GSN-BA-HR5	5306	GT-NR5
GSN-BA-HR7		GT-NR7
GSN-BA-HR10L		GT-NR10L
GSN-BA-HR12		GT-NR12
GSN-BA-HR20	2578	GT-NR20
GSN-BA-HR30	2579	GT-NR30
GSN-BA-HR50	2600	GT-NR50



Pin & Spring Kit for NS Nippers

Part#	Quick#	Nipper Serviced
GSN-BA-S2		GT-NS2
GSN-BA-S3		GT-NS3
GSN-BA-S5		GT-NS5
GSN-BA-S7		GT-NS7
GSN-BA-S10		GT-NS10L
GSN-BA-S12		GT-NS12
GSN-BA-S20	5307	GT-NS20
GSN-BA-S30	5304	GT-NS30
GSN-BA-S50		GT-NS50

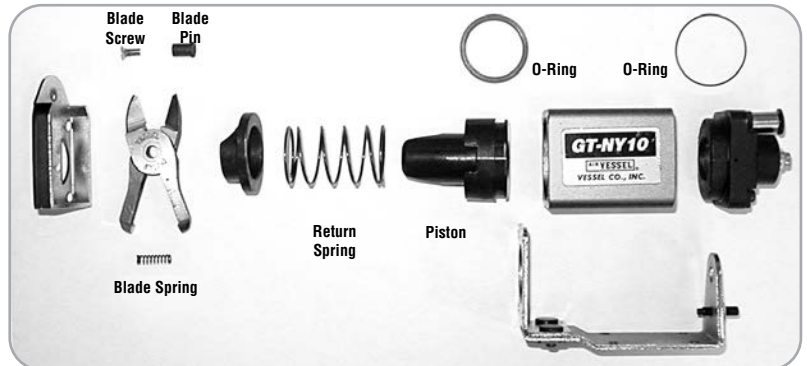
Nipper Replacement Parts

Replacement Springs for Vessel & Gimatic Blades

Quick#	Part#	Price	For Nipper
1281	SPR-01	\$1.90	N3, N5
1282	SPR-02	\$1.90	N7, N10
1283	SPR-03	\$1.90	N10L, N12, N20, F5
1284	SPR-04	\$2.20	N30ACD, AS, BBB
1285	SPR-05	\$2.20	N30AA, AE, AJ, AJL, AP, PF, F9
1286	GSN-SPR-06	\$14.00	N50
1287	SPR-07	\$1.90	NF10,15, NT03,05, NY10,15
1288	SPR-08	\$1.90	NT10
1289	SPR-09	\$1.90	NT20, F5E
1290	SPR-10	\$1.90	NF05, NY05
1291	SPR-11	\$1.90	NY25

Replacement Springs for Nile Blades

Quick#	Part#	Price	For Nipper
2301	855-3090	\$2.09	Size 30 / 50 F9 Blades
2314	NILE-SP1	\$2.09	Size 1 Blades
5175	NILE-SP10	\$2.09	Size 10 Blades
5176	NILE-SP3	\$2.09	Size 3 Blades FD3, F3E
5177	NILE-SP5	\$2.09	Size 5 Blades



Replacement Screws and Pins for NF & NY Nippers

Quick#	Part#	Price	Description
1526	GSN-NF05-BMS	\$1.36	NF/NY 05 Blade Screw
1534	GSN-NF10-BMS	\$1.36	NF/NY 10 Blade Screw
1535	GSN-NF10-BMP	\$7.71	NF/NY 10 Blade Pin
1542	GSN-NF15-BMS	\$1.36	NF/NY 15 Blade Screw
1543	GSN-NF15-BMP	\$8.62	NF/NY 15 Blade Pin
2332	GSN-NY25-BMS	\$1.84	NY 25 Blade Screw
2333	GSN-NY25-BMP	\$9.07	NY 25 Blade Pin

Screws & Pins can also be used on red body nippers "S"

Rebuild Kits for Vessel NF & NY nipper bodies

Quick#	Part#	Nipper Body	Price
1525	GSN-NF05-RK	NF05 & NY05	\$45.00
1533	GSN-NF10-RK	NF10 & NY10	\$50.00
1541	GSN-NF15-RK	NF15 & NY15	\$55.00
1524	GSN-NY25-RK	NY25	\$60.00

Includes 1ea: Main piston, main spring, U-ring, O-ring, screw, blade mounting screw, blade mounting pin

Nipper Blade Reconditioning Service

Reconditioning Service for Vessel, Gimatic, Senvex, Nile, and Swanstrom Blades

Blade Reconditioning Service Includes:

- Thorough cleaning to remove damaging particles, even inside joint.
- Precise joint adjustment to bring cutting edges back in alignment.
- Careful honing to restore cutting edges without loss of temper.
- Adjustment of mechanical stop for proper blade pressure.
- Complete repointing for precision tips.
- New springs for reliable operation.
- Cleaning and lubrication for longer tool life.
- Polishing to inhibit corrosion.
- Demagnetizing to eliminate unwanted material pickup.

Satisfaction is guaranteed up to the full price of the service charged for tool reconditioning.

We will service again or credit account accordingly. Dimensions of points and tips will be as near to new as practical. A modest sacrifice of jaw length is normal and depends on condition of the tool as received. Joints, edges and points will be as good or better than new. Unrepairable tools will be returned no charge.

How it Works:

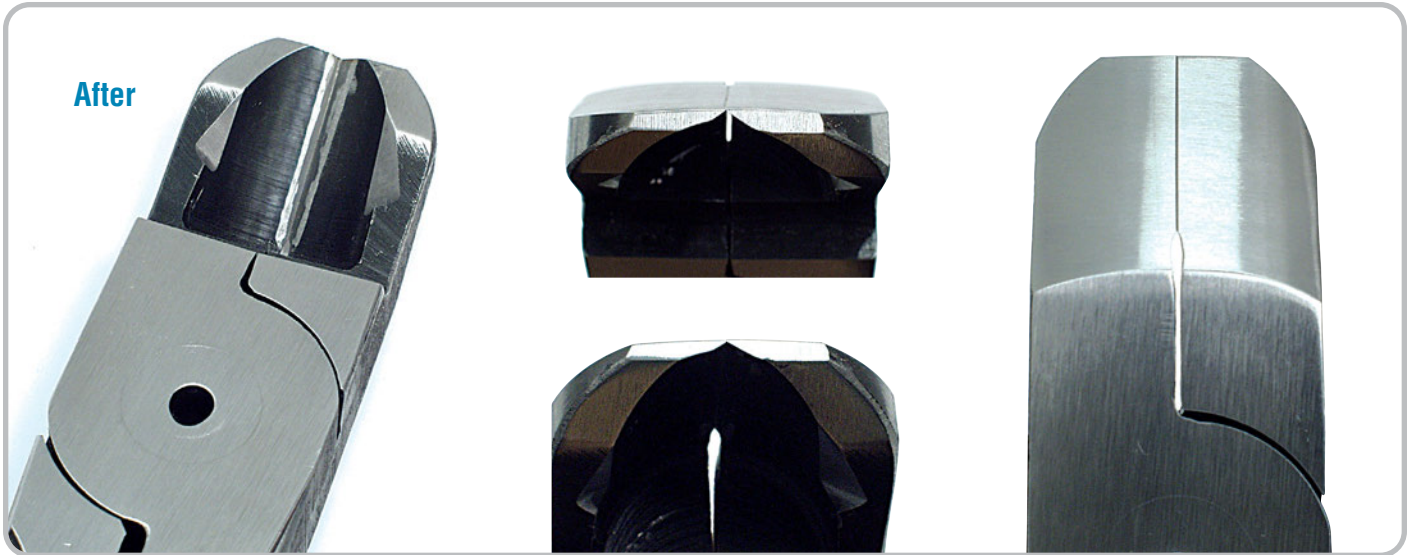
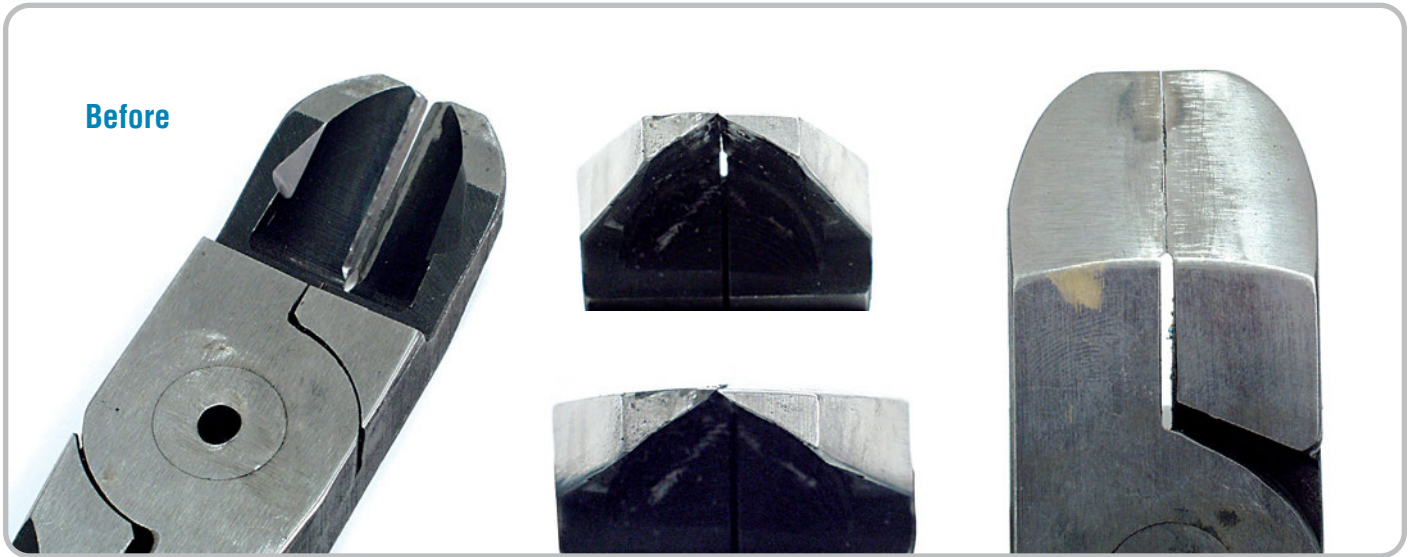
1. You issue a Purchase Order to EMI per the following pricing.

Quick#	Part#	Description	Price
9027	RE-SW-S	Reconditioning - Swanstrom Blade - Standard Steel	\$26.00
9028	RE-VN-S	Reconditioning - Vessel, Gimatic, or Nile Blade - Standard Steel	\$35.00
9029	RE-SW-C	Reconditioning - Swanstrom Blade - Carbide Steel	\$97.00
9030	RE-VN-C	Reconditioning - Vessel, Gimatic, or Nile Blade - Carbide Steel	\$97.00

2. You ship your blades to EMI, freight pre-paid; Attn: Blade Reconditioning Service.
3. We will contact you if any of your blades are unrepairable.
4. Typical turn-around time is about 6 to 8 weeks, depending on work load.
5. Upon completion, we will ship all blades back to you (including unrepairable blades). You will only be charged for reconditioned blades, plus UPS freight from Wickliffe, OH to your plant.



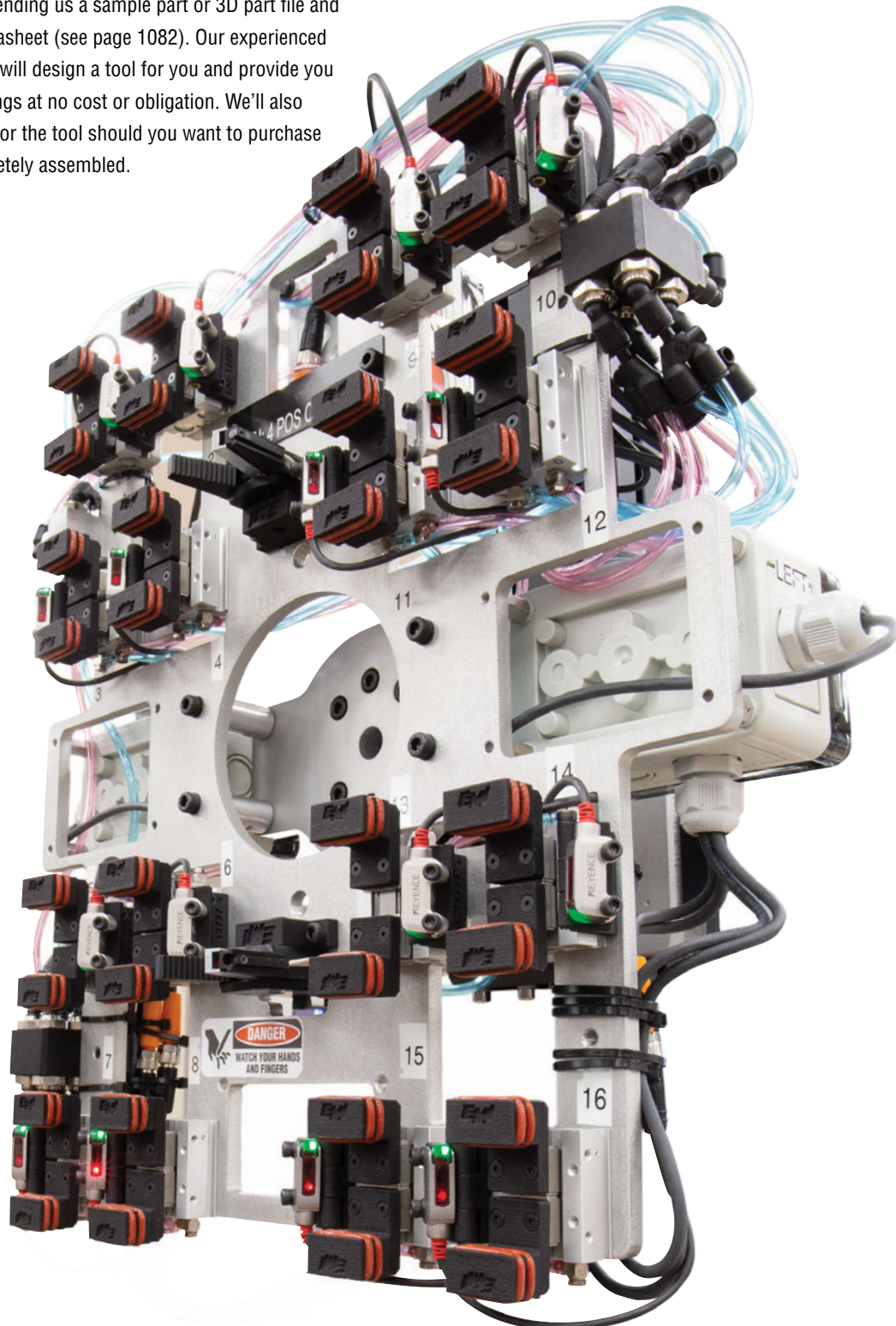
Nipper Blade Reconditioning Service



EOAT Design and Build Service

From the simplest to the most complex EOAT, EMI specializes in designing and building customized End-of-Arm-Tooling— **Priced Competitively.**

Get started by sending us a sample part or 3D part file and a completed datasheet (see page 1082). Our experienced EOAT engineers will design a tool for you and provide you 3D CAD renderings at no cost or obligation. We'll also provide pricing for the tool should you want to purchase the EOAT completely assembled.



Sensor Overview

Photo Eyes

p.976



Mini Photo Eyes

p.974



Fiber Optic Sensors

p.966



Teachable Sensors

p.978



Sensor Boxes

p.988



Modular Sensor Box

p.994



Inductive Sensors

p.1004



Capacitive Sensors

p.983



Simple Contact Sensors

p.987



Vacuum Monitor Switches

p.986



Cables & Connectors

p.984



Sensor Reference Charts

p.1002



Sensor Switch Basics

A sensor switch is an electrical switch that is actuated when it passes through a magnetic field. The magnetic field is created by a magnet typically on the piston of a gripper, cylinder, or slide. In some cases, like many sprue grippers, either a magnet or some other target is embedded in the jaw or in a trigger connected to the jaw that will be picked up by a properly positioned sensor.

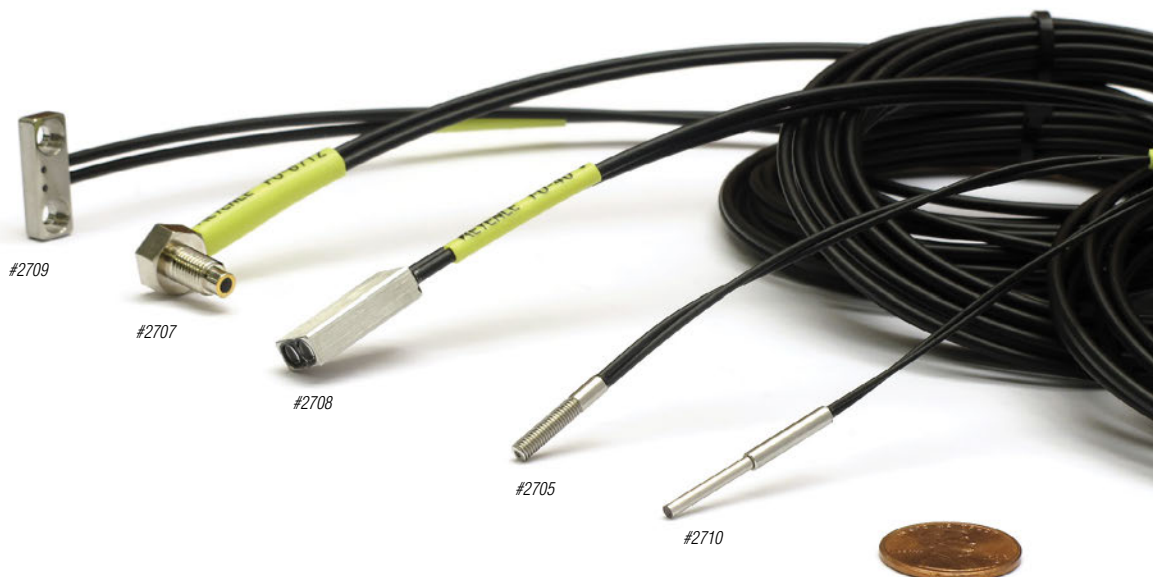
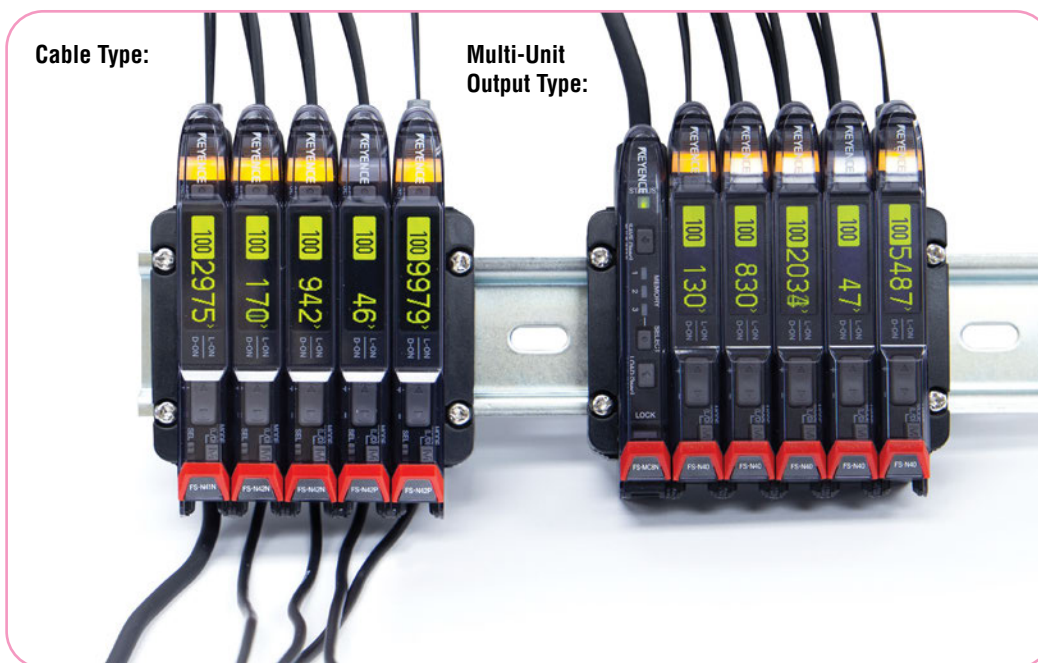
Magneto-resistive sensor switches (also called Solidstate) are electronic switches with no moving parts. They give a very repeatable signal, have long life expectancy, and they operate on low DC supply voltage. They are designated as NPN* "sinking" if the switch is between ground [-] and the load or PNP "sourcing" if the switch is between positive [+] and the load. Unless a relay is used—as they are in the SB series Sensor Box on page 988. Magneto-resistive sensor switches cannot be connected in series with each other.

Reed sensor switches are electromechanical switches which will operate on either AC or DC voltage. They are subject to current 'spikes' which can occur with capacitive, reactive, or inductive loads. Reed switches can be connected in series, but will experience cumulative voltage drops across each unless relays are used like in the SB series Sensor Box. This style of switch is not as commonly used on robot EOAT as magneto-resistive.

* Typically, Japanese and American robots use NPN signaling and European robots use PNP signaling.

Digital Fiber Optic Sensors

- **Easy setup! One click operation!**
- Great for use in applications where a small sensor is needed.
- Multiple configurations of amplifiers and sensors are available to fit a variety of applications.
- Two different types of main power modules that offer either a cleaner layout or allow a larger expansion of sensors: Multi-Output Unit or Conventional Cable Type.
- Ideal for harsh environments – Sensor will automatically adjust if debris causes the light intensity to drop.
- Its high power enables use in a wide range of detection applications including: transparent targets, repeated bending, small targets and variable target positioning.



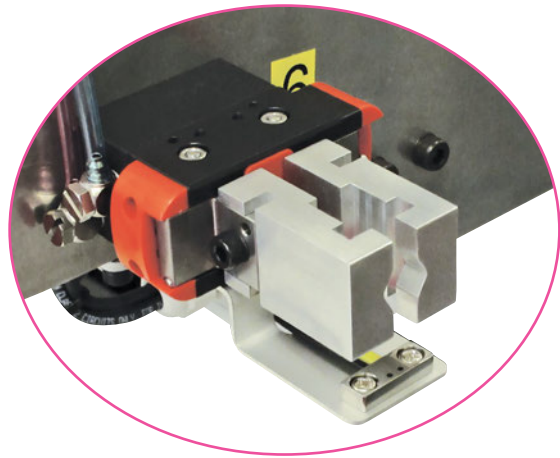
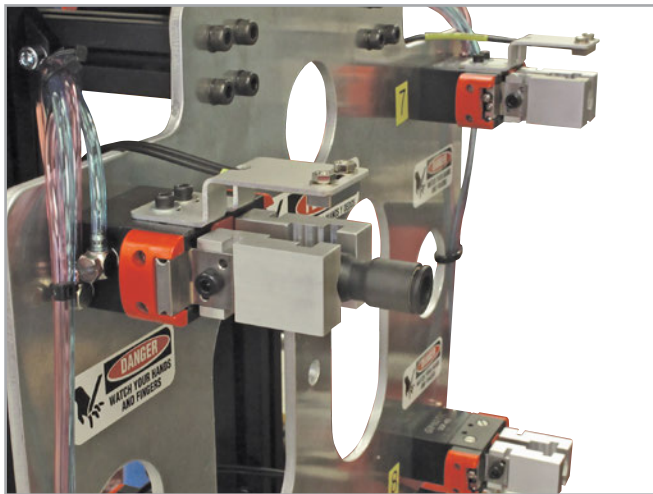
Digital Fiber Optic Sensors

Cable Type: 16 sensors max (1 Main Amplifier + 15 Expansion Units)

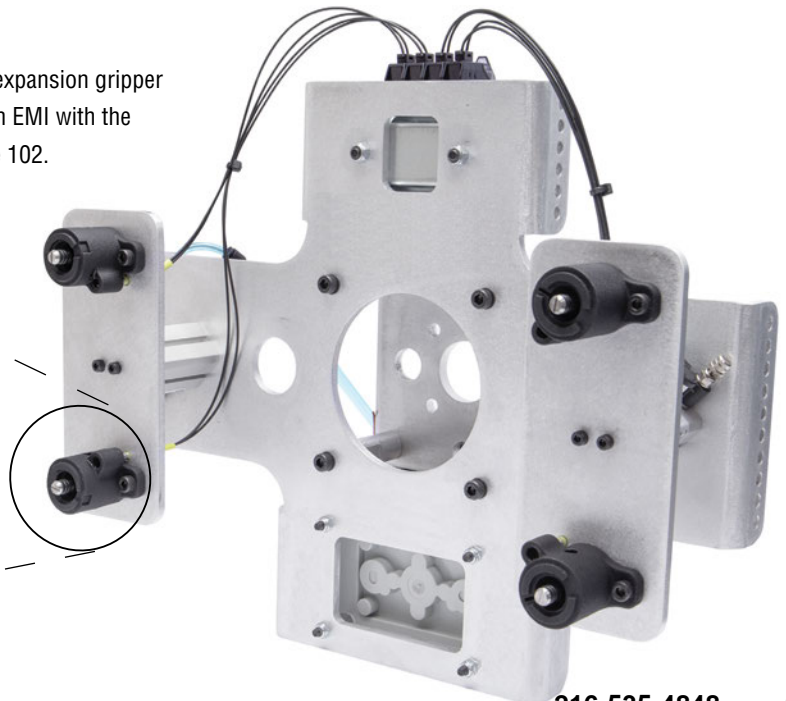
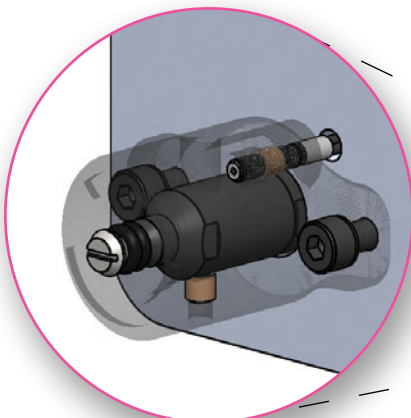
- Configurable with up to 16 sensors (1 Main Amplifier + 15 Expansion Units).
- Main Amplifier DOES control a fiber optic sensor.
- Conventional Amplifier with individual sensor output cables.
- End Units sold separate.

Multi-Unit Output: 8 sensor max (1 Multi-Unit Output Module + 8 Expansion Units)

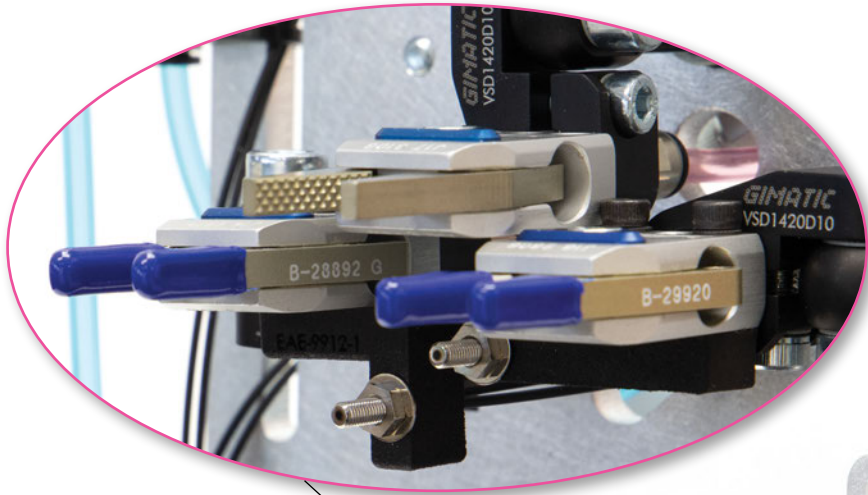
- Configurable with up to 8 sensors (expansion units).
- Multi-Output Unit does NOT control a fiber optic sensor.
- Single cable layout for power supply/outputs for a cleaner set-up.
- Memory Function allows for 3 settings to be saved to eliminate manual calibration. (shown in photo to the right)
- End Units included with Multi-Unit Output module.



This plate-style tooling incorporates fiber optic sensing with an expansion gripper for ID part handling inside of a 3D printed nest. All available from EMI with the help of our EOAT team. Find out more about 3D printing on page 102.

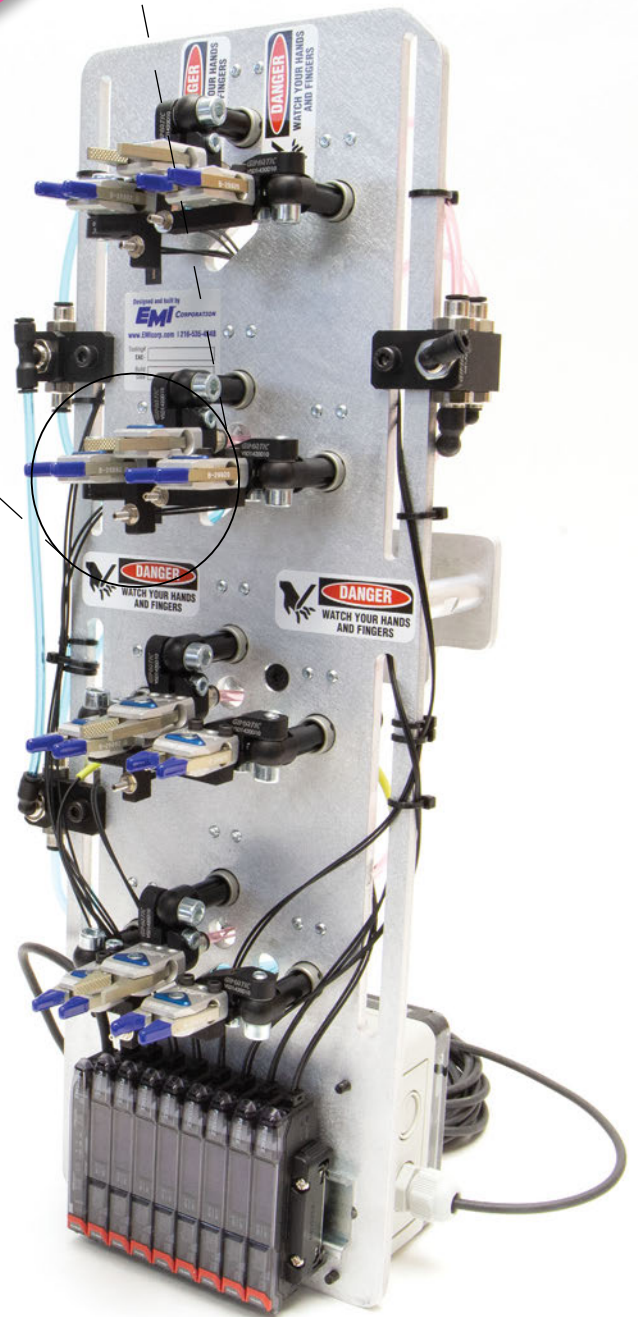


Digital Fiber Optic Sensors



Fiber optics can be used in applications with limited mounting space or as an alternative to photo eye sensors. Because the electronics are contained in a separate housing that can be remotely located, only the miniature fiber must be mounted by the target. This application example uses eight fiber optic sensors. These sensors are able to detect the part without getting interference from the sprue grippers.

Low-profile photo sensors on page 974.



Digital Fiber Optic Sensors

Saturation Cancelling: This function adjusts the optimum power output to prevent excess light intensity in situations where too much light is returned to the fiber optic that may result in the interference with accurate target detection.

1. Excess light intensity causes the display value to go off the scale.



2.



Navigate to the Saturation Cancel setting and select 'Execute'.

3. Light transmission level and light intensity gain are automatically calibrated so stable detection can be achieved.

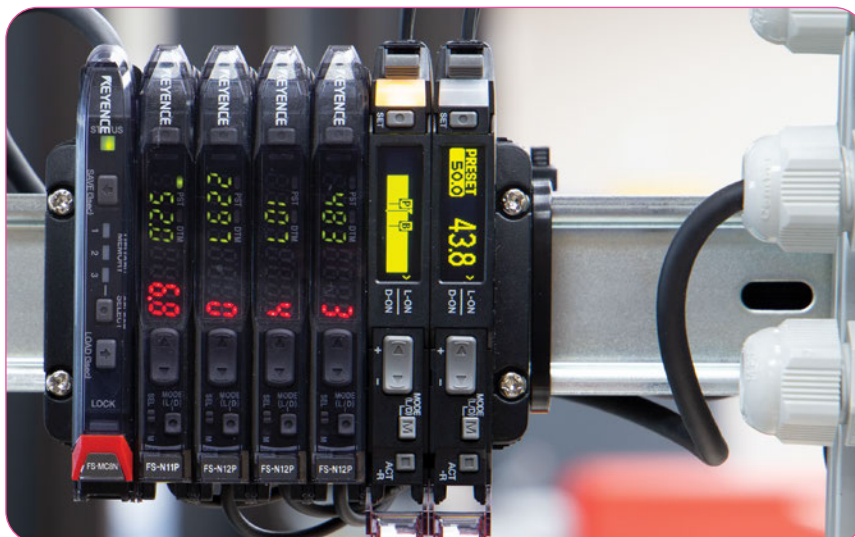


Light Intensity Description: The amplifier and expansion units offer several light transmission modes to accommodate a wide variety of applications and environments. The most powerful of these modes is “TERA Mode” and can be activated with a simple flick of a switch on the Cable-type amplifiers, offering the longest detection range as possible. This is also an option for the Multi-output units, but is found by navigating through the main menu.

Maximum Detection Distance (mm) – TERA Mode

	2705	2707	2708	2709	2710	2720	2723	2724
Fine	1–130	1–380	30–530	1120	1–59	1–170	1–170	1–200
Tera	1–590	1–900	30–2700	1–1000	1–340	1–740	1–800	1–1000

Series Compatibility & Function: These new fiber optic sensors are completely compatible with the main and sub amplifiers from the FS-NEO product series. If a sub-amplifier fails, or if you wish to upgrade to the new cordless expansion units, simply slide it apart, remove the old amplifier, snap in a new unit, and slide back into place. If you are using the Multi-output’s ‘Memory function’ this will automatically program the new unit!



Bar Graph Display: Simplify the display even further by representing the light intensity as a bar graph. This comes complete with a threshold point indicator and peak / bottom value flags.

This is shown to the left where the bar graph and numeric code are displayed on the two units.

Digital Fiber Optic Sensors

- Compatible with the previous version, FS-NEO series amplifiers: #2698, and #2699
- Memory to program up to 3 setups with lock button to lock settings.
- Amplifiers can be mounted to electrical units using DIN rail.



Multi-Unit Output (#2712 & #2713 End Units included)

Quick#	Part#	Description	Control Outputs	External Input	Price
2713	GSE-FS-MC8N	Multi-Output Unit – NPN Output	1	0	\$129.00
2712	GSE-FS-MC8P	Multi-Output Unit – PNP Output			\$129.00
2711	GSE-FS-N40	Expansion Unit			\$184.00
Optional - Mounting					
5073	EL-704W	DIN Rail, 1m			\$18.92

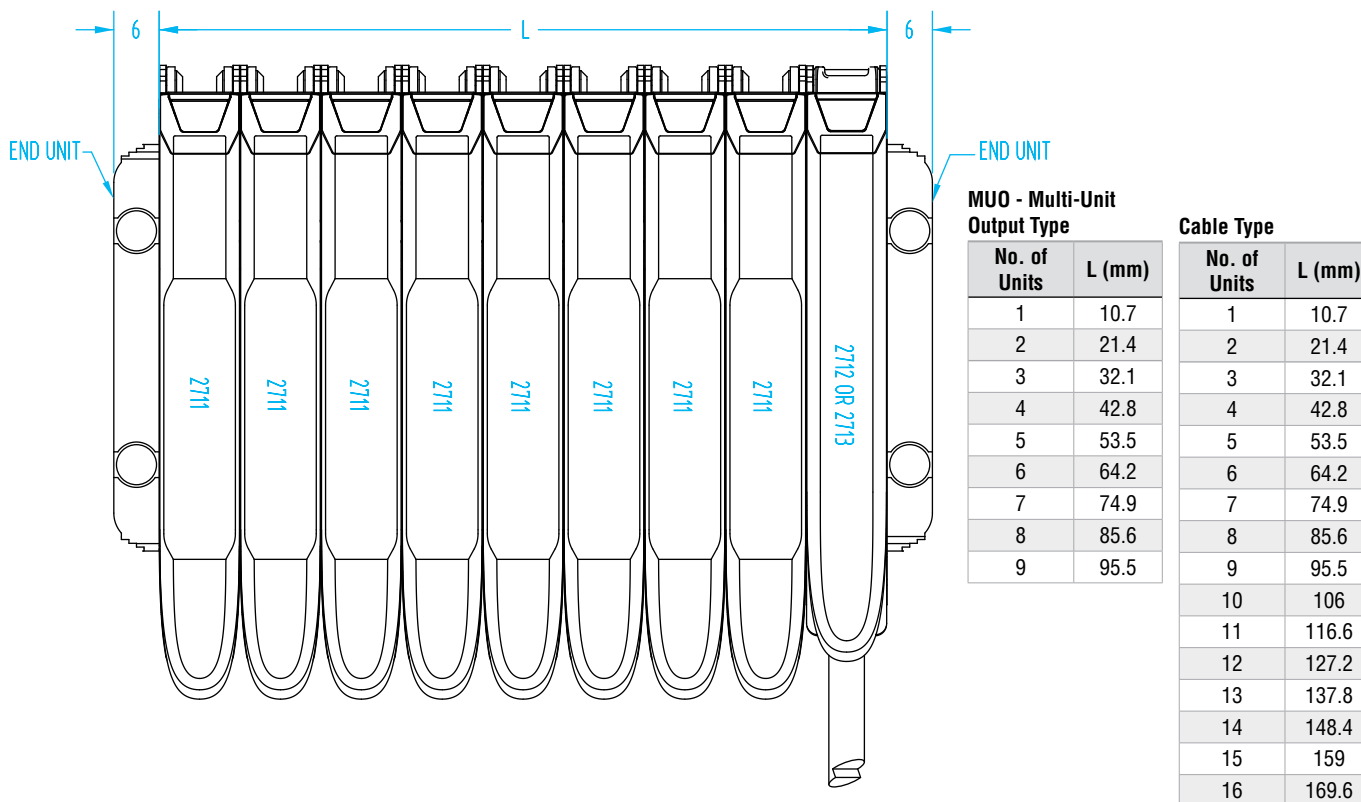


Amplifier - Cable Type

Quick#	Part#	Description	Control Outputs	External Input	Price
2715	GSE-FS-N41N	Main Amplifier - NPN Output	1	0	\$199.00
2716	GSE-FS-N41P	Main Amplifier - PNP Output			\$199.00
2717	GSE-FS-N42N	Expansion Unit - NPN Output			\$199.00
2718	GSE-FS-N42P	Expansion Unit - PNP Output			\$199.00
Optional - Mounting					
2704	OP-26751	End Units, Sold in pairs			\$9.00
2719	GSE-OP-88245	Securing Bracket useful for mounting a single main amplifier to a plate			\$4.50
5073	EL-704W	DIN Rail, 1m			\$18.92

Dimensions when several units are connected (typical configuration shown 100% scale)

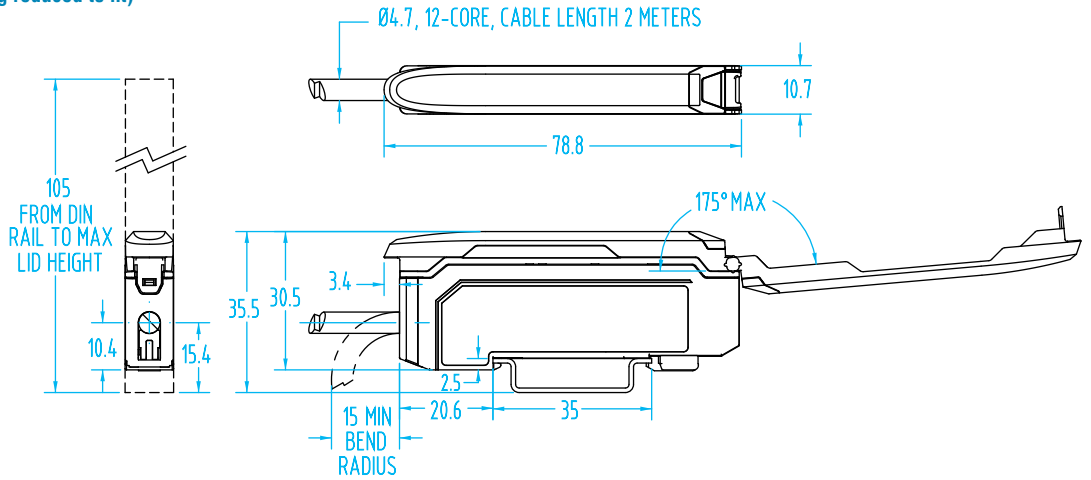
*End units must be used when several units are connected.



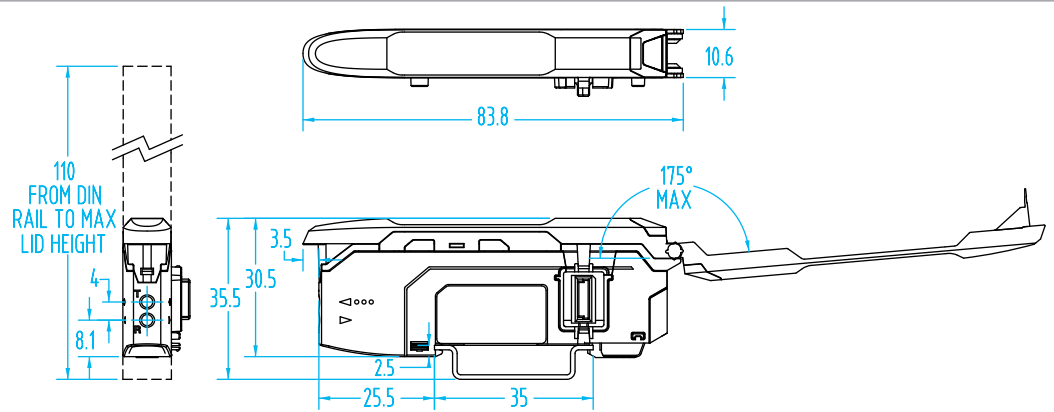
Digital Fiber Optic Sensors

(Dimensioned drawing reduced to fit)

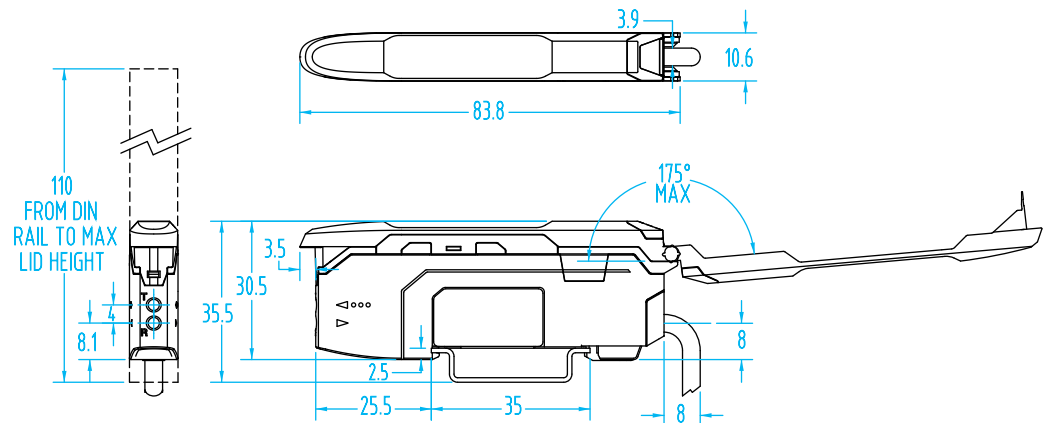
**Multi-Output Unit
#2712 / #2713**



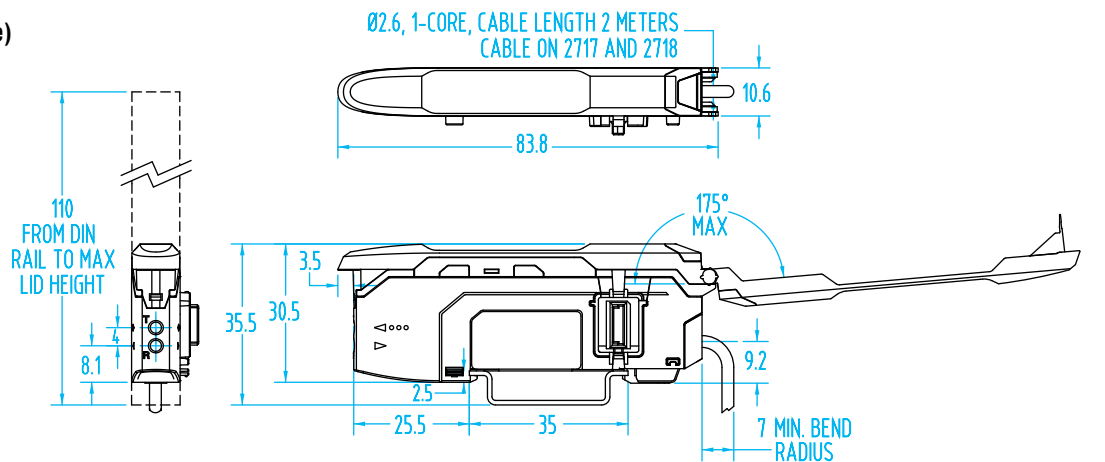
**Expansion Unit
#2711**



**Main Amplifier (cable type)
#2715 / #2716**



**Expansion Unit (cable type)
#2717 / #2718**



Digital Fiber Optic Sensors – Reflective

(Dimensioned drawing shown full size)

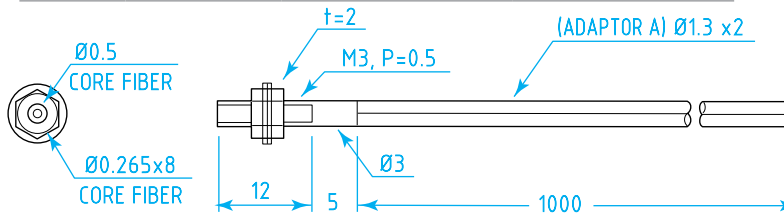
Quick #2705 & #2707 are threaded for easy mounting onto brackets and machine equipment.

Threaded Fiber

Quick#	Part#	Sensing Range*	Weight	Price
2705	FU-35FZ	1-590mm	6g	\$76.00



*Must be mounted onto brackets before use.

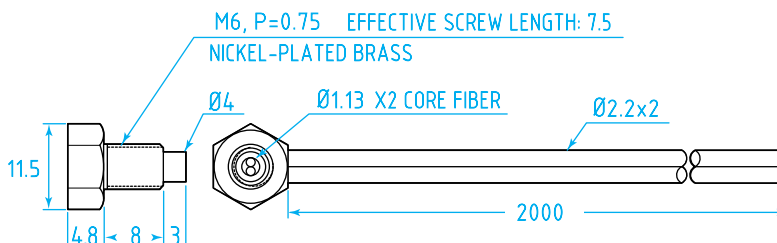


Hex-Shaped Threaded Fiber

Quick#	Part#	Sensing Range*	Weight	Price
2707	FU-67TZ	1-900mm	32g	\$69.00



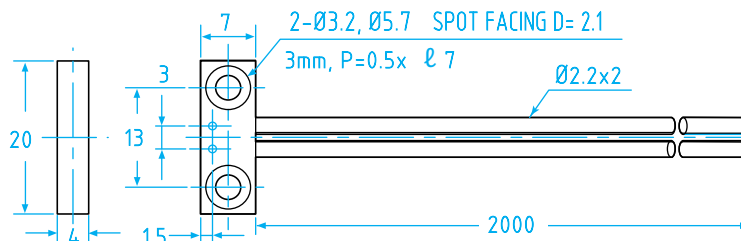
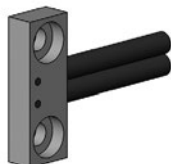
*Must be mounted onto brackets before use.



This thin profile sensor comes with mounting holes for installation where space is limited and has no openings where dust and other foreign matter can enter. Metal housing eliminates concern about damaged sensors. A mounting bracket and hardware are included.

Flat Bracket Fibers - Reflective

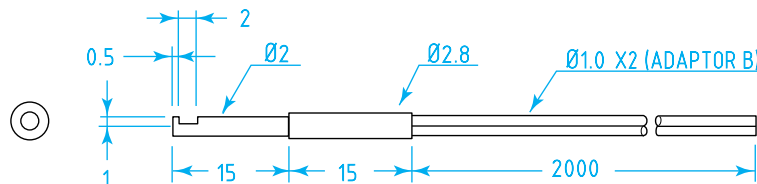
Quick#	Part#	Sensing Range*	Weight	Price
2709	FU-42TZ	1-1000mm	24g	\$129.00



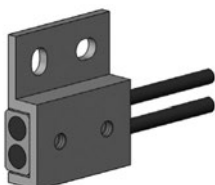
The fiber tip is incorporated into a thin sleeve and installed by drilling a hole and using a set screw. When determining the smallest detectable object, positioning the sensor too closely to the object causes the object to disappear. With the sleeve type, the sensor does'nt become an obstruction and alignment is much easier.

Space Saving Type / Sleeve

Quick#	Part#	Sensing Range*	Weight	Price
2710	FU-31	1-340mm	5g	\$194.00



#2708 & mounting bracket



Quick #2708 has a narrow field of view based on focused aperture angle. This sensor reduces stray light for stable target detection. The high-power reflective type with an 8° aperture angle is suitable for detecting objects at longer distances. A mounting bracket is included. This sensor should not be used when sensing objects less than 30mm away.

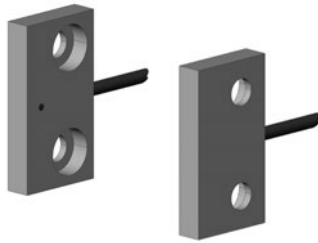
Focused Beam / High Power

Quick#	Part#	Sensing Range*	Weight	Price
2708	FU-40	30-2700mm	23g	\$149.00

Dimensional drawing found online.

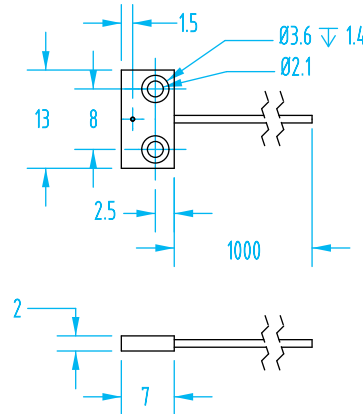
Digital Fiber Optic Sensors – Thru-Beam

(Dimensioned drawing shown full size)



Flat Bracket Fiber - Thru-Beam

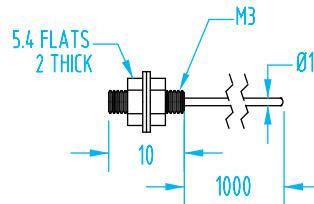
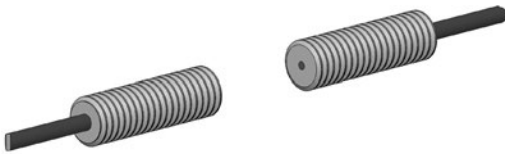
Quick#	Part#	Sensing Range*	Weight	Price
2720	GSE-FU-53FZ	1-740mm	10g	\$128.00



*There are two sides and either side can be used as the fiber or the receiver. They are a mirror image of each other.

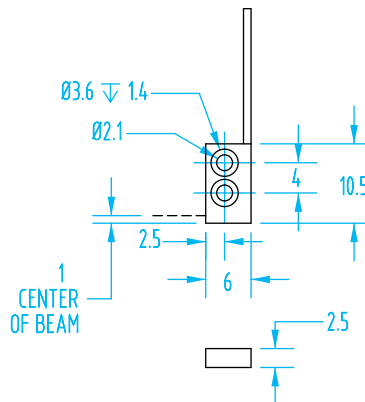
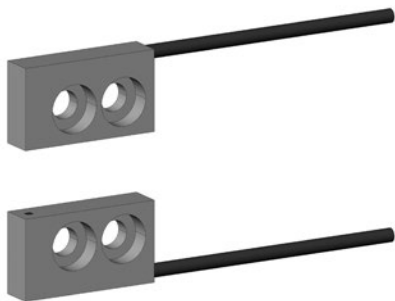
Threaded Fiber - Thru-Beam with High-Flex Cable

Quick#	Part#	Sensing Range*	Weight	Price
2723	GSE-FU-79U	1-800mm	4g	\$129.00



Flat Bracket Fiber- Thru-Beam with High-Flex Cable

Quick#	Part#	Sensing Range*	Weight	Price
2724	GSE-FU-57TE	1-1000mm	5g	\$149.00



*There are two sides and either side can be used as the fiber or the receiver. They are a mirror image of each other.

*Sensing ranges may vary depending on the color and opacity of the workpiece.

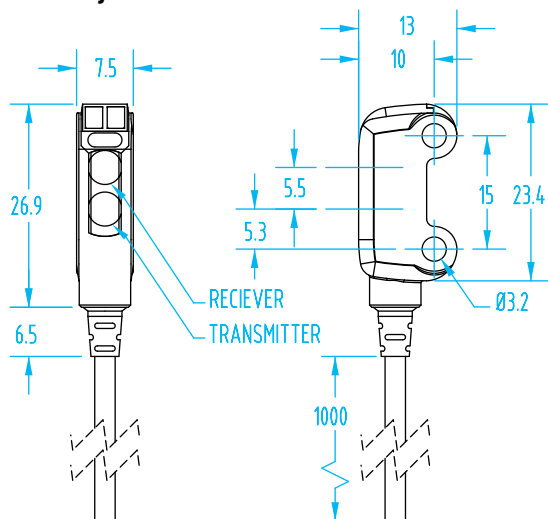
Miniature Photo Sensors

- Single-unit photo sensor, no reflector needed.
- Nonadjustable detecting range of 1mm–30mm and are equipped with background suppression.
- Detects wide range of material and colors but is NOT RECOMMENDED FOR CLEAR OR TRANSPARENT PARTS.
- Light indicators: Output indicator (Orange), Stable operation indicator (Green)
- 120mm M8 Cable length.
- Light Source: 4 element, Red LED
- Smallest stainless steel photoelectric sensor in its class.
- The heavy duty body is highly resistant to oils, acids, and alkaline detergents and can be used in harsh environments due to its NEMA and IP rated enclosure.
- See page 985 for cables.

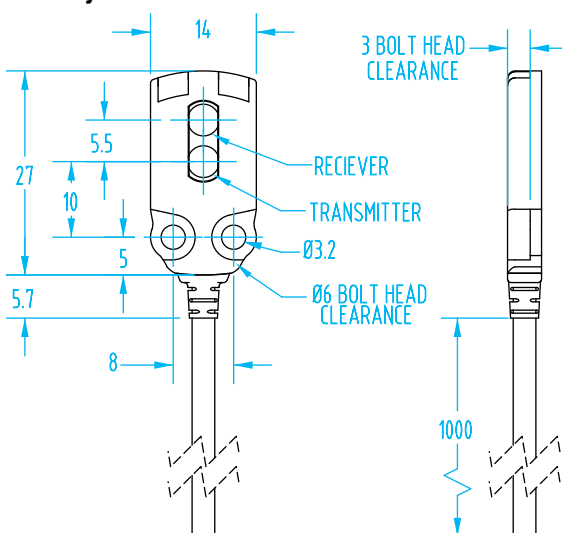


Quick#	Part#	Price	Description	Connection	Weight
2714	GSE-PR-MB30C3PL	\$160.00	Slim PNP, Provides Normally Open Output	3-pin M8	11g
2725	GSE-PR-FB30C3PL	\$160.00	Flat PNP, Provides Normally Open Output		11g
2729	GSE-PR-MB30CN	\$160.00	Slim NPN, Provides Normally Open & Normally Closed Output	4-pin M8	11g
2728	GSE-PR-MB30CP	\$160.00	Slim PNP, Provides Normally Open & Normally Closed Output		11g
2727	GSE-PR-FB30CN	\$160.00	Flat NPN, Provides Normally Open & Normally Closed Output	4-pin M8	11g
2726	GSE-PR-FB30CP	\$160.00	Flat PNP, Provides Normally Open & Normally Closed Output		11g
Mounting Bracket for Sensors - Dimensional Drawings and Application Examples online					
2041	GSC-PEB-2015	\$14.17	Slim Style Mounting Bracket, Hardware included		9g
2042	GSC-PEB-2017	\$18.16	Flat Style Mounting Bracket, Hardware included		11g

Slim Style:



Flat Style:



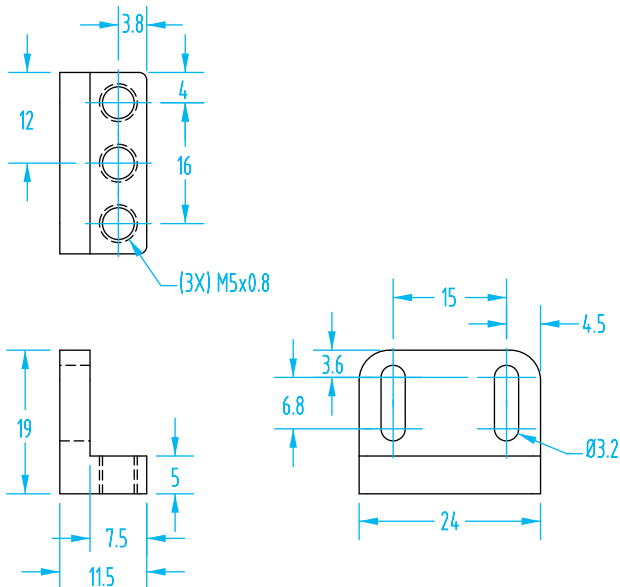
Miniature Photo Sensors

- Diffuse reflection sensor, no reflector needed.
- Nonadjustable detecting range of 1–30mm and is equipped with precise background suppression - independent of surface color and gloss.
- NOT RECOMMENDED FOR CLEAR OR TRANSPARENT PARTS.
- Precise detection of very small, very flat or highly reflective components.
- Compact size ideal for space restrictive areas.
- Light indicators: Power (Green), Switching status (Yellow).
- Protection rating: IP65, IP67.
- Light Source: Red LED
- See page 985 for cables.



Quick#	Part#	Price	Description	Connection	Weight
2037	GSE-08H208	\$99.00	Slim Reflective Photo Sensor PNP	3-pin with 0.3m M8 connector	20.9g
2038	GSE-08H209	\$99.00	Slim Reflective Photo Sensor NPN		20.9g
2039	GSE-08H210	\$99.00	Slim Reflective Photo Sensor PNP	4-pin with 0.3m M8 connector	20.9g
2040	GSE-08H211	\$99.00	Slim Reflective Photo Sensor NPN		20.9g
Mounting Bracket for Sensors					
2041	GSC-PEB-2015	\$14.17	Slim Style Mounting Bracket, Hardware included		9g

#2041:



#2037-#2040:

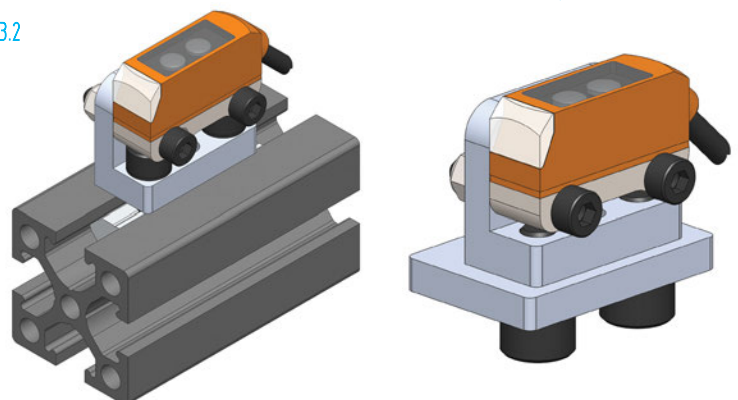
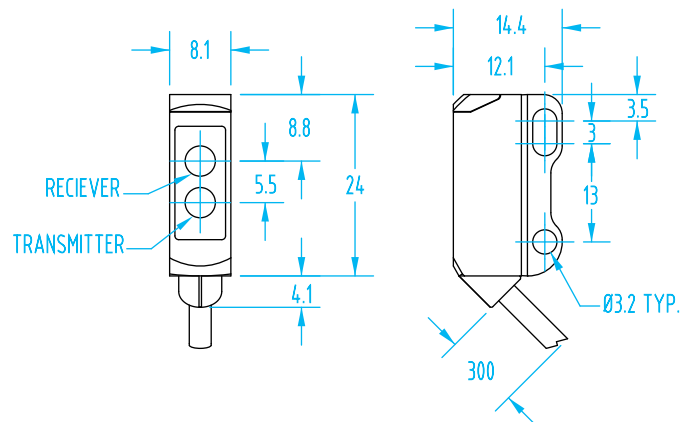
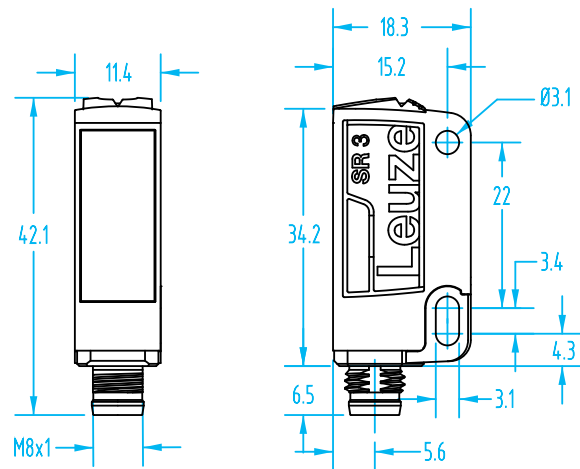


Photo Sensors

- **New, improved design with 4 times faster response time!**
- Diffuse sensor with background suppression
- Single-unit photo sensor, no reflector required.
- Detects wide range of materials and colors, including translucent and transparent materials.
- Good for general purpose non-contact sensing.
- Automatic interference prevention is incorporated into these sensors so they may be mounted next to one another.
- Range adjustable 0–450mm.
- Outputs both normally open and normally closed signals via 4-pin M8 connection. (Normally open via black signal wire, normally closed via white signal wire).
- IP67 (liquids) , IP69K (dust)
- Light source: Red LED

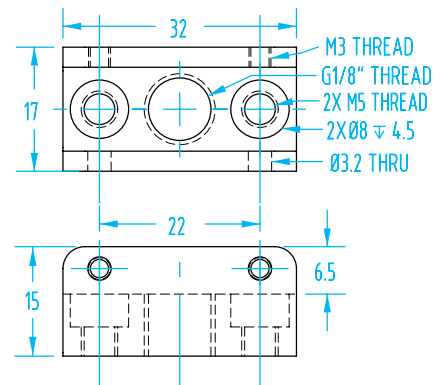
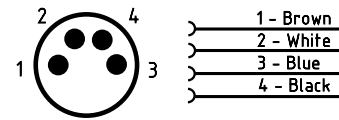
(Shown Actual Size)



Send sample parts for testing

Quick#	Part#	Description	Connection	Price
5476	GSE-HRTR-PNP	Precision Photo Sensor PNP	4-pin M8	\$198.00
5477	GSE-HRTR-NPN	Precision Photo Sensor NPN		\$198.00
Mounting Bracket for Sensors				
5882	GSC-PEB-2011	Fasteners included		\$18.15

See page 985 for cables.



Mounting Examples

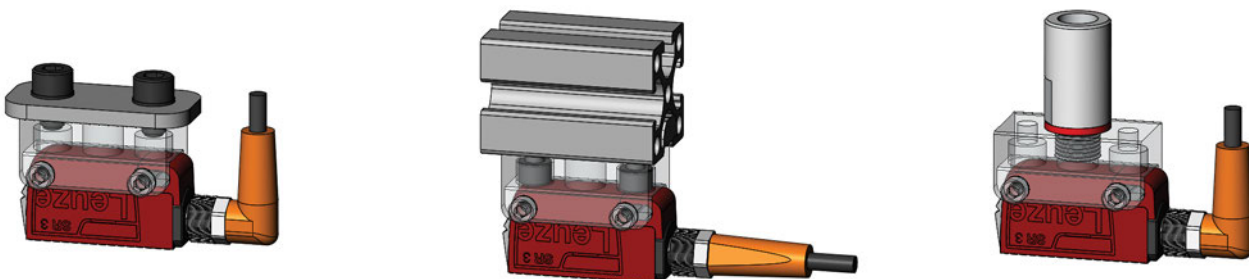
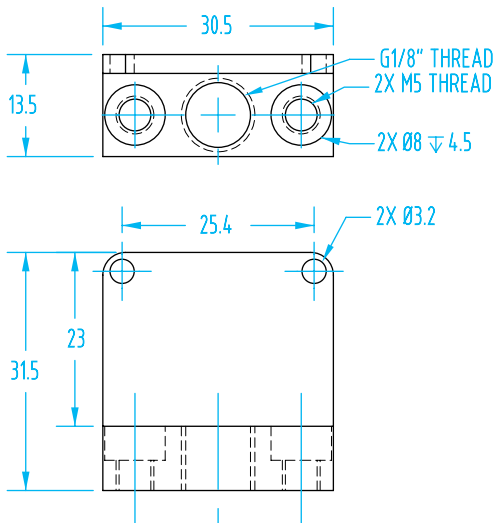
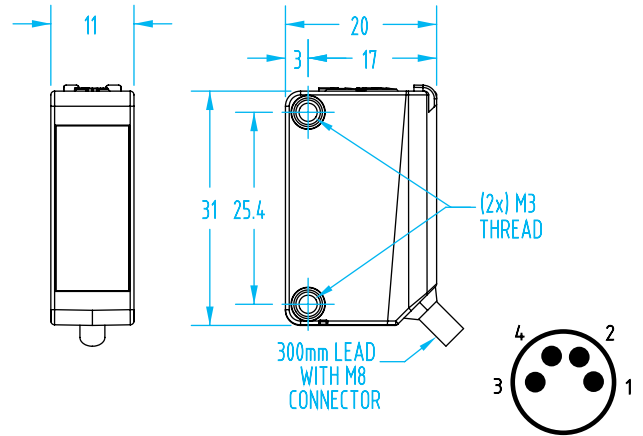


Photo Sensors

(Shown Actual Size)

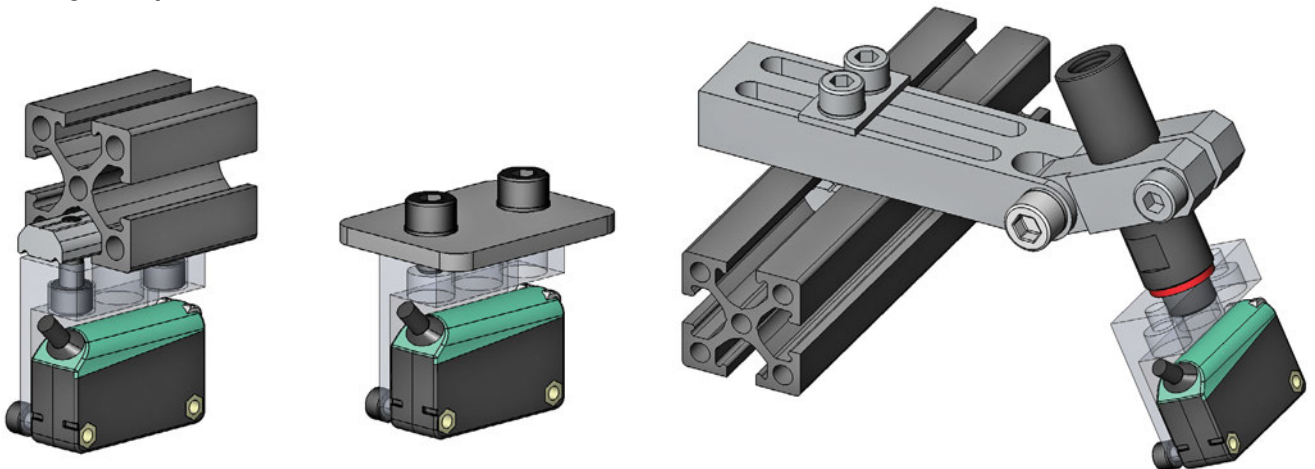
- Easy to set up and use.
- Background suppression feature eliminates detection errors.
- Good for general purpose non-contact sensing.
- Very bright, highly visible target light spot.
- Not sensitive to ambient light.
- Full metal thread mounting.
- Range adjustable 0–350mm.
- NOT RECOMMENDED FOR CLEAR OR TRANSPARENT PARTS.



Quick#	Part#	Description	Connection	Price
5990	GSE-PPE350-PNP	Photo Sensor PNP	4-pin M8	\$123.00
5991	GSE-PPE350-NPN	Photo Sensor NPN		\$123.00
Mounting Bracket for Sensors				
5992	GSC-PEB-2013	Fasteners included		\$15.86

See page 985 for cables.

Mounting Examples



Gimatic Teachable Sensors – PRO

Gimatic PRO-SS and PRO-SN 5-Wire sensors are digital magnetoresistive sensors with up to 3 programmable output signals, for example: gripper fully open, gripper fully closed, and part gripped.

Configuring the outputs is achieved through a simple one-button interface. It includes a TEACH button and various LED lights, one for power and one for each output signal: 1, 2, and 3. For more details on programming, we have a Programming Procedure that can be found online at: www.EMICorp.com.

- Highly accurate, this sensor is ideal for part confirmation/mid-stroke detection for any size gripper.
- Easy single button programming.
- Ideal for applications where space is limited and multiple output signals are needed.
- For Gimatic C shaped sensor slots and fixed in place with set screw.
- Each output can be independently configured to Normally Open or Normally Closed and is clearly identified by LEDs.
- Wide +/- 30mm sensing range (relative to the magnet and the sensor).
- Adaptor cable #7527 is available for splitting the single 8-pin M8 connector into 3x3-pin M8 connectors. Extension cable #2581 is available to assist with wiring.



SS.. Programmable Magnetic Sensors for C-Slots

Quick#	Part#	Signal	Style	Description	Wt.	Price
7521	PRO-SS4N225G	PNP	Straight	with leads, 12/24 Vdc, 0.2 A, PUR cable, 2.5m long	50g	\$70.00
7522	PRO-SS4M225G	NPN			50g	\$70.00
7525	PRO-SS3N215G	PNP		with M8 8-pin Connector, 12/24 Vdc, 0.2 A, PUR cable, 1.5m long	70g	\$92.00
7625	PRO-SS3M215G	NPN			70g	\$92.00

SN.. Programmable Magnetic Sensors for C-Slots

Quick#	Part#	Signal	Style	Description	Wt.	Price
7523	PRO-SN4N225G	PNP	90°	with leads, 12/24 Vdc, 0.2 A, PUR cable, 2.5m long	50g	\$70.00
7524	PRO-SN4M225G	NPN			50g	\$70.00
7526	PRO-SN3N215G	PNP		with M8 8-pin Connector, 12/24 Vdc, 0.2 A, PUR cable, 1.5m long	70g	\$92.00
7626	PRO-SN3M215G	NPN			70g	\$92.00

SN..HSG Programmable Magnetic Sensors for New Style SGP-S Grippers

Quick#	Part#	Signal	Style	Description	Wt.	Price
7635	PRO-SN4N225HSG	PNP	90°	with leads, 12/24 Vdc, 0.2 A, PUR cable, 2.5m long	50g	\$70.00
7636	PRO-SN4M225HSG	NPN			50g	\$70.00
7633	PRO-SN3N215HSG	PNP		with M8 8-pin Connector, 12/24 Vdc, 0.2 A, PUR cable, 1.5m long	70g	\$80.00
7634	PRO-SN3M215HSG	NPN			70g	\$80.00

SSR.. Programmable Magnetic Sensors with 2 Programmable Positions & 1 Driven by NOR logic gate

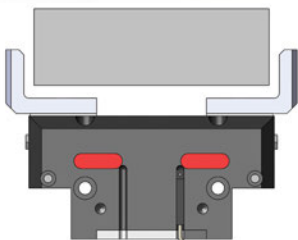
Quick#	Part#	Signal	Style	Description	Wt.	Price
7644	PRO-SSR4N225G	PNP	Straight	with leads, 12/24 Vdc, 0.2 A, PUR cable, 2.5m long	50g	\$70.00
7645	PRO-SSR4M225G	NPN			50g	\$70.00
7646	PRO-SSR3N215G	PNP		with M8 8-pin Connector, 12/24 Vdc, 0.2 A, PUR cable, 1.5m long	70g	\$87.00
7647	PRO-SSR3M215G	NPN			70g	\$87.00

Gimatic Teachable Sensors – PRO

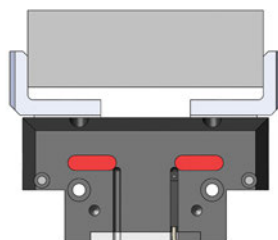
Watch our Teachable PRO SN/SS Sensor YouTube video!
Follow us at: www.youtube.com/EMICorpVideo



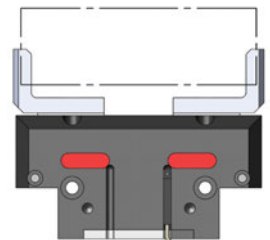
Output - Gripper Open:



Output 2 - Gripper Mid-Stroke: (Part Gripped)



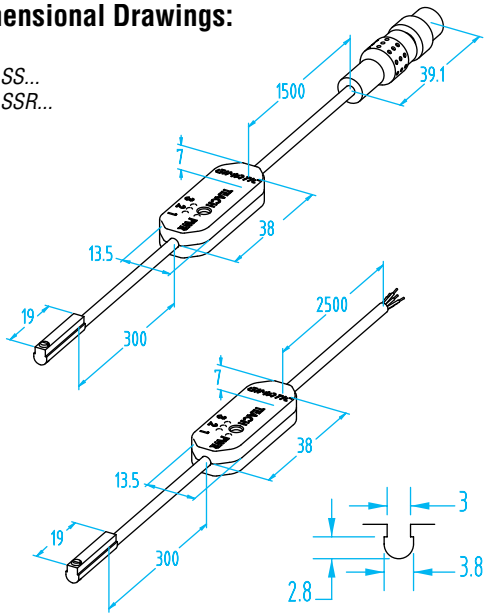
Output 3 - Gripper Closed: (Part Missed)



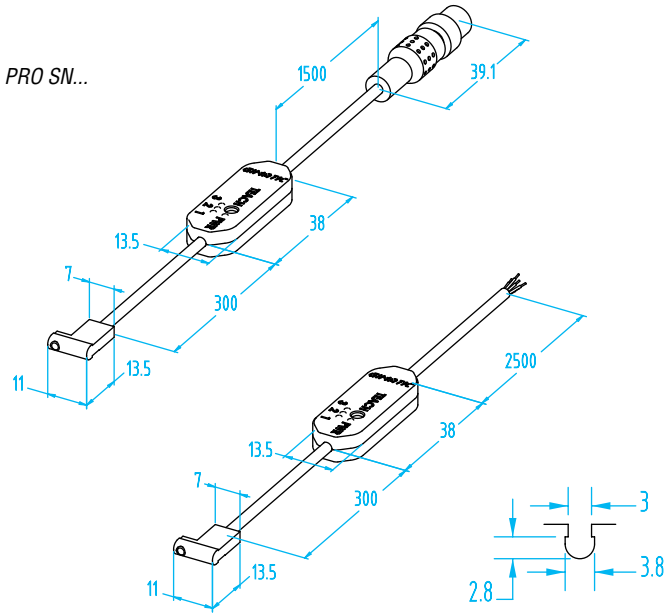
Gimatic Teachable Sensors – PRO

Dimensional Drawings:

PRO SS...
PRO SSR...

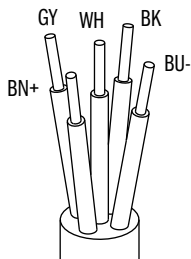


PRO SN...

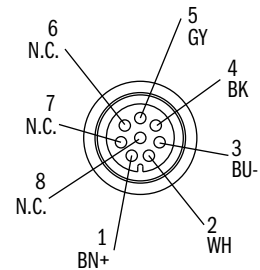
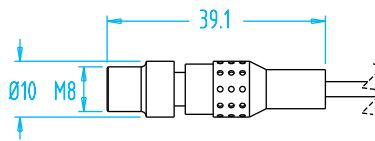


Wiring Diagram:

with Leads:

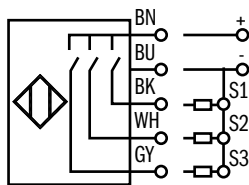


with M8 8-pin Connector:

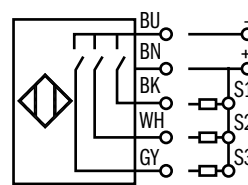


Connections:


PNP:



NPN:



Product Detail



7521 Gimatic 5-Wire Teachable C-Slot PNP Sensor with 2.5m lead

Gimatic PRO-SS sensors are digital magnetoresistive sensors with up to 3 programmable output signals that fit in Gimatic C shaped sensor slots. When the programmed switched position is reached, the corresponding output is activated, and its status is indicated visually with the LEDs.

Item #:PRO SS4N225G
\$70.00 Each

Quantity:

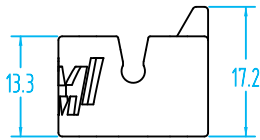
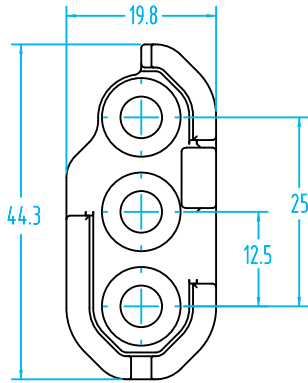
[Add To Cart](#)

Available: In Stock
[CAD File Download](#)
[Technical Specifications](#)
[Additional Specifications](#)
[Programming Procedure](#)
[360 Degree View](#)

In addition to our instructional YouTube video, an Operating Procedure pdf is found on our sensor product pages: www.EMICorp.com & search for the appropriate Quick#.

Gimatic Teachable Sensor Mounting Bracket

(Dimensioned drawings shown actual size)



- Easily mount PRO sensors to profile or plate.

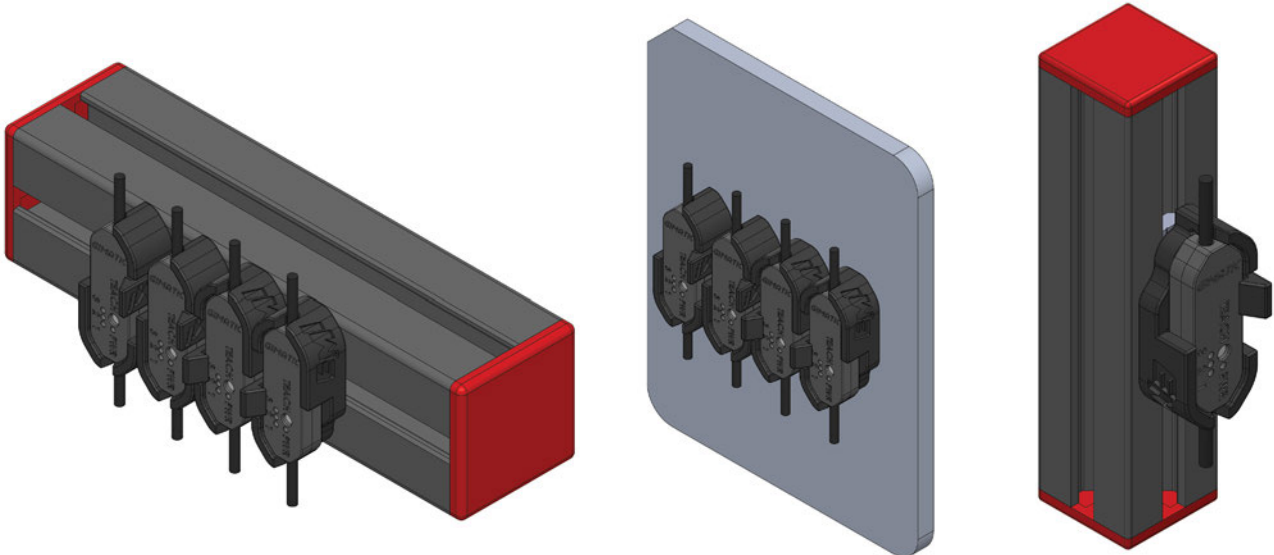
PRO Sensor Mounting Bracket

Quick#	Part#	Price
7650	PRO-SPB	\$4.99

Includes: 2x M5x12 Flat head Socket Head Screws, and 2x Q#7115 Drop-In Channel Nuts



Mounting Examples



Sensors

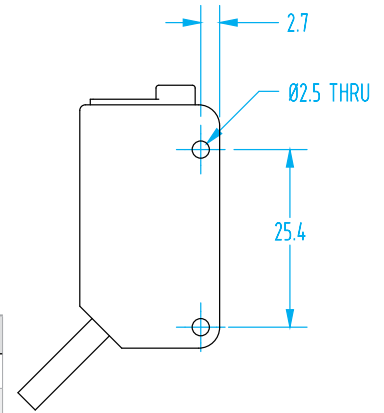
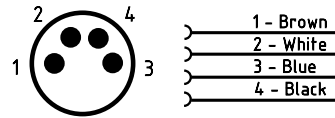
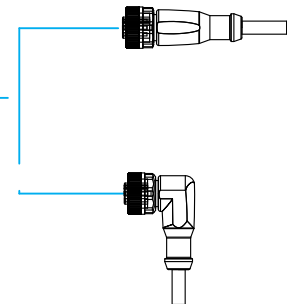
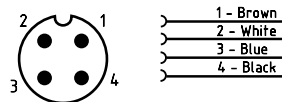
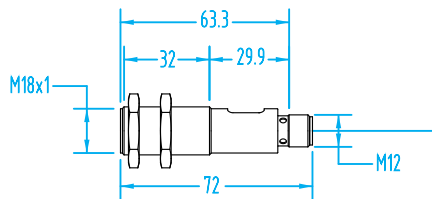
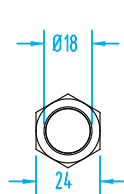
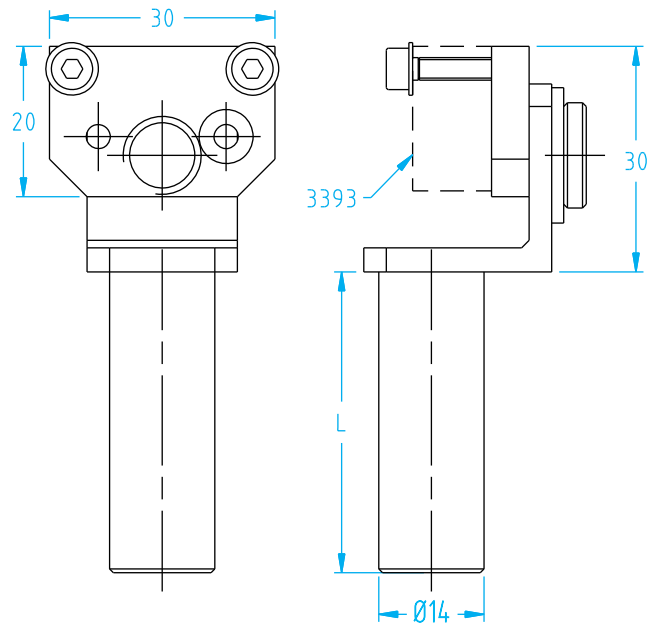


Photo Sensor - 4 pin M8 (no reflector required)

Quick#	Part#	Price	Voltage	Output	Distance	Signal	Cable	Wt.
3393	LES-6-PNP	\$116.00	10-24V DC	100mA	5-300mm	PNP	M8 Connector	15g
3491	LES-6-NPN	\$116.00	10-24V DC	100mA	5-300mm	NPN	M8 Connector	15g

Gripper Arm for LES-6

Quick#	Part#	Price	ØA	Length	Wt.
3394	GGE14-40-F	\$36.23	14	40	32g
3395	GGE14-80-F	\$37.28	14	80	40g
3396	GGE14-120-F	\$38.33	14	120	

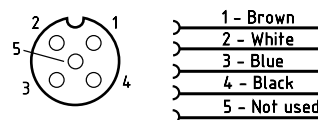


Diffuse Reflection Photoelectric Sensor (no reflector required)

Quick#	Part#	Price	Voltage	Output	Distance	Signal	Sensitivity	Cable	Wt.
3397	LRS-18	\$109.00	10-36V DC	200mA	2-800mm	PNP	Light or Dark	#3398, #3399	59g

M12 Connector Cable for LRS-18

Quick#	Part#	Price	Connection	Cable	Wt.
3398	KG18	\$13.50	Straight	5m	135g
3399	KW18	\$13.50	Elbow 90°	5m	130g

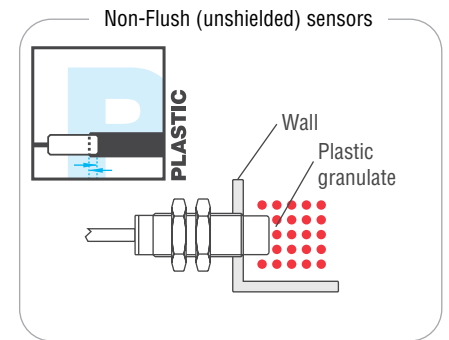
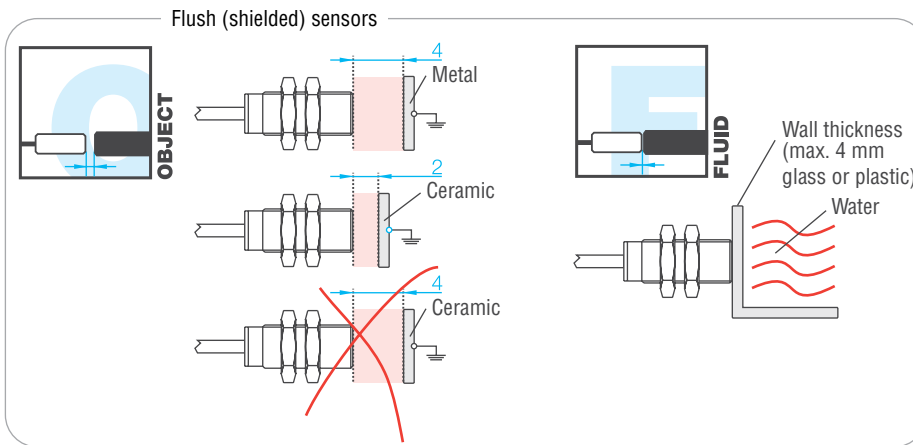


Capacitive Sensors



- Capacitive sensors feature a straight-line electrical field.
- Detects both solid and transparent plastics, glass, and fluids.
- Stainless steel housing with IP65 protection.
- Visit EMI's website for safety information, mounting restrictions, and sensor adjustment instructions.
- New! Adaptor that allows the Ø6mm sensors Q#2965–2966 to mount to Ø10mm brackets, reference Quick# 2964 below.

Quick#	2965	2966	2967	2968
Part#	GSE-BCS001L	GSE-BCS001N	GSE-BCS0026	GSE-BCS0028
Price	\$148.00	\$148.00	\$148.00	\$148.00
Description	Ø6mm, 42mm long		M8x1, 42mm	
Connection	3-Wire, 2m long PUR Cable			
Signal	PNP	NPN	PNP	NPN
Detection Range	0.1–1.5mm – Sensitivity switching distance is adjustable			
Power Supply	11–30V DC			
Operating Temp.	-10 to 70°C / 14 to 158°F			



NEW

#2964 - for mounting #2965-2966

6mm to 10mm Mounting Adaptor

Quick#	Part#	Price
2964	GSC-CSA-10	\$1.00

Cables & Connectors

Extension Cables (connector with free lead wire)



Quick#	Part#	End 1 (plug)		Cord		End 2 (free leads reference)	Notes:	Price
		Pins	Connector	Length	Ø			
461	GSF-VMC-90	4 (Female)	90° M8	5m	3.8mm	4 wire 1 - Brown 2 - White 3 - Blue 4 - Black	Standard cable	\$15.00
7719	GSE-TSCE90-M825-4P		90° M8	2.5m	2.5mm		Thin cable	\$14.75
8082	GSE-RFC-M8-4P		Straight M8	5m	4.3mm		Continuous Flex	\$16.00
462	GSF-VMC-S		Straight M8	5m	3.8mm		Standard cable	\$15.00
7718	GSE-TSCE-M825-4P		Straight M8	2.5m	2.5mm	Thin cable	\$14.75	
7161	CFGM890325P	3 (Female)	90° M8	2.5m	4.3mm	3 wire 1 - Brown 3 - Blue 4 - Black	Continuous Flex	\$13.00
2582	GSE-NAN-3A		90° M8	5m	3.8mm		Standard cable	\$15.00
7720	GSE-TSCE90-M825		90° M8	2.5m	2.2mm		Thin cable	\$12.43
7160	CFGM800325P		Straight M8	2.5m	4.3mm		Continuous Flex	\$13.00
7159	CFGM800325		Straight M8	2.5m	3.8mm		Standard cable	\$13.00
2583	GSE-NAN-3F		Straight M8	5m	3.8mm		Standard cable	\$15.00
7715	GSE-TSCE-M825	Straight M8	2.5m	2.2mm	Thin cable	\$12.43		
2581	GSE-RCS-8FS-5000	8 (Female)	Straight M8	5m	5mm	8 wire 1 - White 2 - Brown 3 - Green 4 - Yellow 5 - Gray 6 - Pink 7 - Blue 8 - Red	Standard cable	\$26.75
7683	CFGM1200850P		Straight M12	5m	5mm		Standard cable	\$40.56
8087	CFGM890802P*		90° M8	200mm	5mm		Standard cable	\$33.88
2580	GSE-RCS-8MS-5000	8 (Male)	Straight M8	5m	5mm		Standard cable	\$40.35
8079	CMGM800803P*		Straight M8	300mm	5mm	Standard cable	\$27.92	

- Continuous flex cables can handle the high cycle requirements of many automation applications. Thin cables can be used when space is tight and multiple cables are required such as sensor boxes.

Interface Cables (connectors on both ends)

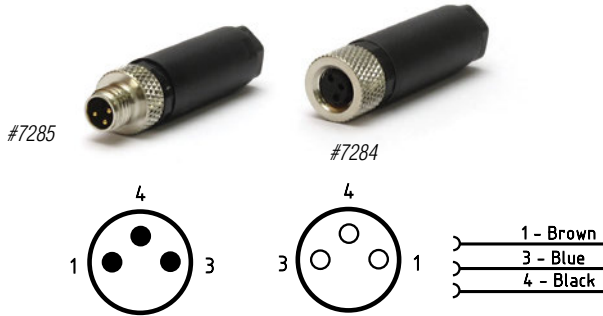


Quick#	Part#	End 1 (to component)		Cord		End 2 (to robot)		Notes:	Price
		Pins	Connector	Length	Ø	Pins	Connector		
7712	GSE-TSC180-M803	3 (F)	Straight M8	0.3m	2.2mm	3 (M)	Straight M8	Thin cable	\$13.94
7713	GSE-TSC180-M805	3 (F)	Straight M8	0.5m	2.2mm	3 (M)	Straight M8	Thin cable	\$15.08
7714	GSE-TSC180-M812	3 (F)	Straight M8	1.2m	2.2mm	3 (M)	Straight M8	Thin cable	\$16.22
7335	GSE-CS180-M81	3 (F)	Straight M8	1m	4mm	3 (M)	Straight M8	Standard cable	\$17.00
7336	GSE-CS180-M82	3 (F)	Straight M8	2m	4mm	3 (M)	Straight M8	Standard cable	\$17.50
7337	GSE-CS90-M81	3 (F)	Straight M8	1m	4mm	3 (M)	90° M8	Standard cable	\$17.00
7338	GSE-CS90-M82	3 (F)	Straight M8	2m	4mm	3 (M)	90° M8	Standard cable	\$18.20
8084	CRC-650-3P	3 (F)	Straight M8	650mm	4mm	3 (M)	Straight M8	Continuous Flex	\$32.00
8085	CRC-750-3P	3 (F)	Straight M8	750mm	4mm	3 (M)	Straight M8	Continuous Flex	\$32.00
8086	CRC-1000-3P	3 (F)	Straight M8	1000mm	4mm	3 (M)	Straight M8	Continuous Flex	\$32.00
8088	CFGM8908CF8903010*	3 (F)	90° M8	100mm	4.3mm	8 (M)	90° M8	Standard cable	\$33.51
8089	CFGM8908CF8904010*	4 (F)	90° M8	100mm	4.3mm	8 (M)	90° M8	Standard cable	\$35.75

- Reference drawings in the chart above for wiring information and refer to our website for additional information.
- Continuous flex cables can handle the high cycle requirements of many automation applications. Thin cables can be used when space is tight and multiple cables are required such as sensor boxes.

Cables & Connectors

Additional cables and connectors for Cobots on page 181. Sensor diagrams and other specifications can be found on our online product pages at : www.EMlcorp.com

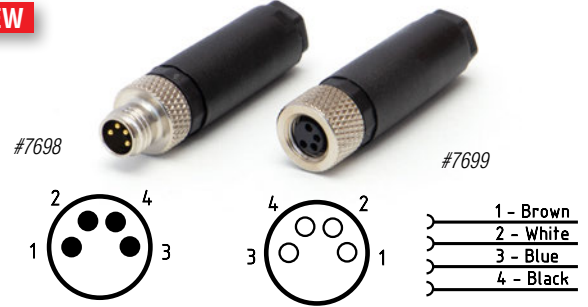


- Use with SB Modular Sensor Boxes.

3-Pin Field Wireable M8 Connectors with Screw Terminals

Quick#	Part#	Description	Price
7285	CMGM800300	3-Pin M8 Male Connector	\$14.00
7284	CFGM800300	3-Pin M8 Female Connector	\$14.00

NEW



- Use with 4-Pin equipped components including sensors, grippers, etc.

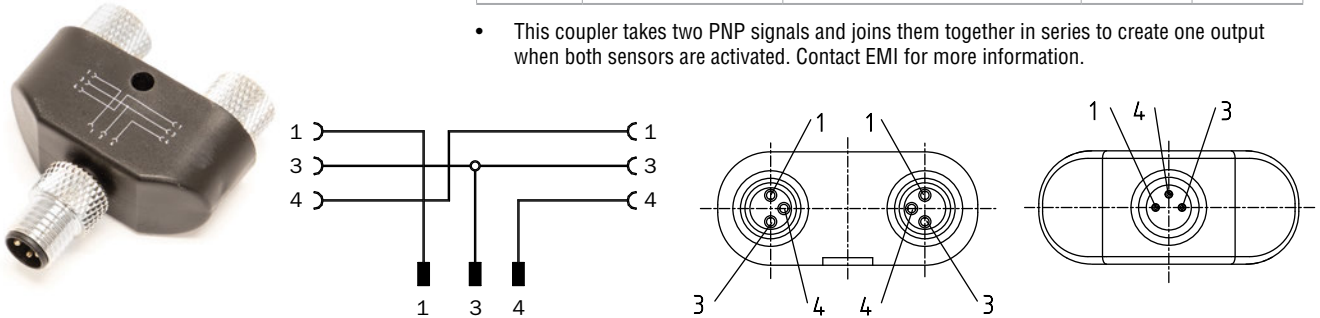
4-Pin Field Wireable M8 Connectors with Screw Terminals

Quick#	Part#	Description	Price
7698	CMGM800400	4-Pin M8 Male Connector	\$14.00
7699	CFGM800400	4-Pin M8 Female Connector	\$14.00

3-wire M8 Coupler - PNP ONLY

Quick#	Part#	Description	Weight	Price
7401	CMGM8CFGM8X2Y	1x 3 -Pin Male 2x 3-Pin Female	14g	\$35.00

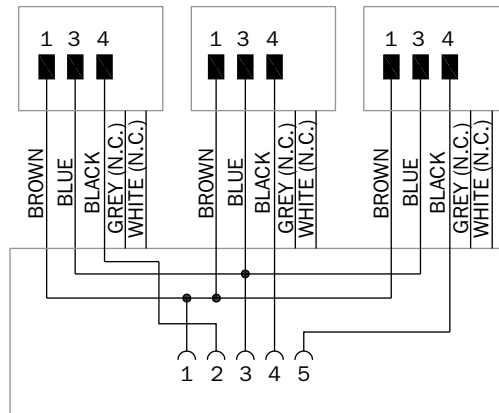
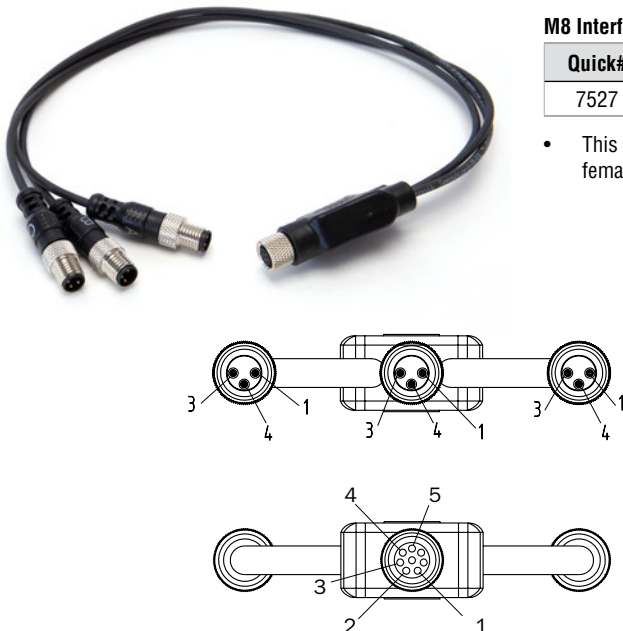
- This coupler takes two PNP signals and joins them together in series to create one output when both sensors are activated. Contact EMI for more information.



M8 Interface Cable

Quick#	Part#	Description	Length	Price
7527	CFGM8CMGM8X3Y	1x 8-Pin Female, 3x 3-Pin Male	0.3m	\$56.00

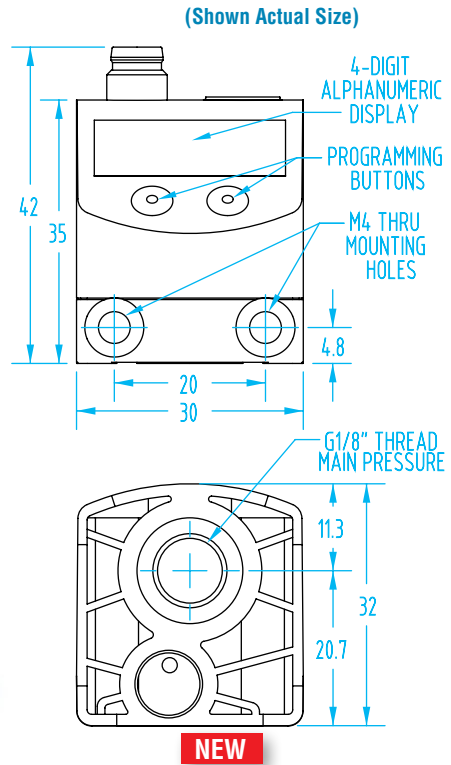
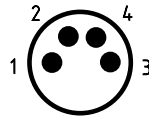
- This cable can be used with Gimatic PRO sensors and modular SBM sensor boxes. M8 8-Pin female connector inlet (only 5 pins connected), outlet with 3x M8 3-Pin male connectors.



Pressure Sensor for Pneumatics

- This pressure sensor for pneumatics precisely measures the full range of vacuum and pressure typical in robotics and material handling applications.
- Compact & lightweight.
- 2-color, 4-digit alpha-numeric display.
- Simple push-button setup.
- Two programmable switching outputs or one switching and one diagnostic output.
- 4-pin M8 male connection.

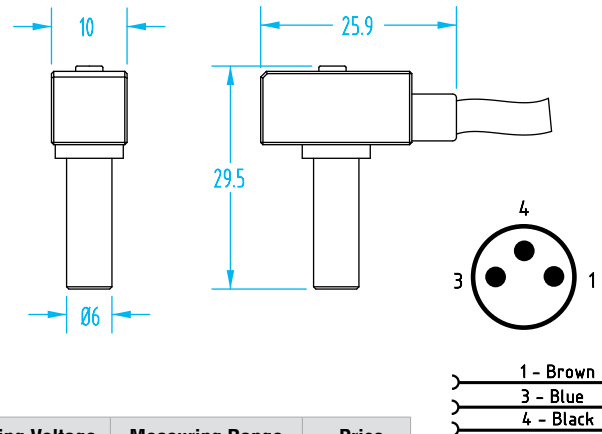
Values can be programmed to change color depending on the switching output status (e.g., red: output 1 switched; green: output 1 not switched).



Quick#	2696	2697	2693	2695
Part#	GSE-PQ-7834	GSE-PQ-0834	GSE-PQ-7809	GSE-PQ-0809
Price	\$174.00	\$174.00	\$174.00	\$174.00
Weight	84.5g	85.5g	85g	85.5g
Signal	PNP	NPN	PNP	NPN
Measuring Range	-1...10 bar, -15...145 psi, -30...296 inHG, -100...1000 kPa		-1...1 bar, -14.6...14.6 psi, -29.6...29.6 inHG, -100...100 kPa	
Set Point SP	-0.9...10 bar, -13...145 psi, -26...294 inHg, -90...1000 kPa		-0.98...1 bar, -14.2...14.6 psi, -28.8...29.7 in Hg, -98...100 kPa	
Reset point RP	-0.95...9.95 bar, -14...144 psi, -28...294 inHg, -95...995 kPa		-0.99...0.99 bar, -14.4...14.4 psi, -29.1...29.4 inHg, -99...99 kPa	
In steps of	0.05 bar, 1 psi, 2 inHg, 5 kPa		0.01 bar, 0.2 psi, 0.3 inHg, 1kPa	

Mini Vacuum Switch

- These are ideal for applications that only need a simple "object gripped" signal, and offer an economical and effective solution for applications with one vacuum generator per vacuum cup.
- Simple plug-in installation.
- Compact & ultra-lightweight.
- 3-pin M8 male connection.
- User may select sensing value.
- Total length of cable: 150mm.



Vacuum Monitor Switch

Quick#	Part#	Signal	Wt.	Vacuum connection	Operating Voltage	Measuring Range	Price
1931	PSK-100-D6P	PNP	8.3g	Ø6mm	10.8-30V DC	0 to -14.69 psi	\$96.60
1932	PSK-100-D6N	NPN	8.3g	Ø6mm	10.8-30V DC	0 to -14.69 psi	\$96.60

See page 985 for cables.

Use Quick#s for easy online ordering.

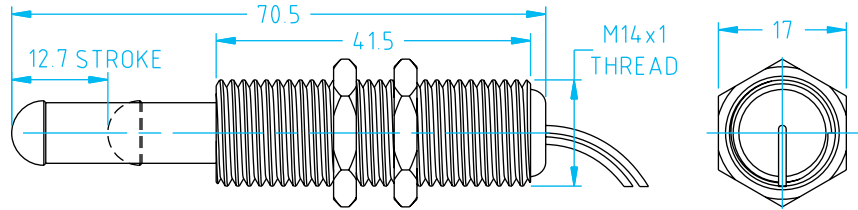
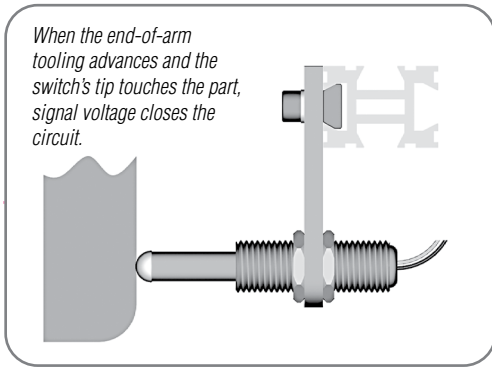
Sensors & Accessories

(Dimensioned drawings shown actual size)

- The detecting ranges from 2.5–15mm.

Sensor Switch

Quick#	Part#	Weight	Price
1735	GSE-SSW-15	14g	\$31.30
Replacement Silicone Tips			
5287	270449	Qty. of 5	\$10.74

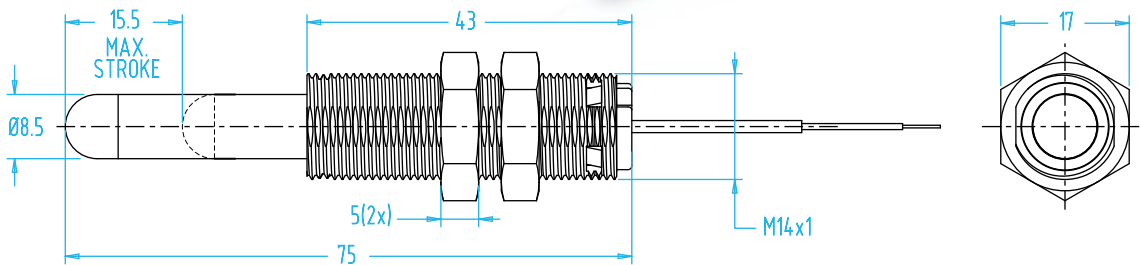


- The detecting ranges from 3–15mm.
- Easy and immediate detection.

Gimatic Sensor Switch

NEW

Quick#	Part#	Weight	Price
7637	SR1C5G	40g	\$23.40
Replacement Silicone Tip			
7638	SR1C-012	Qty. of 1	\$2.08



Trigger Sensor Switch (without cable)

Quick#	Part#	Price	Voltage	Output	Type	Wt.
3405	SEO-5	\$5.45	24V DC	1A	Short	8g
3406	SEO-10	\$27.80	24V DC	1A	Long	37g

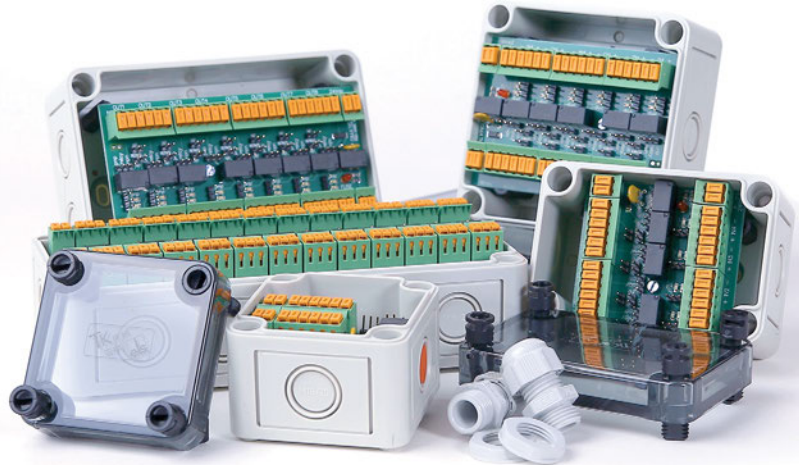
Cover for LONG Trigger Switch (SEO-10)

Quick#	Part#	Price	Wt.
3407	GEO-10	\$10.36	17g



Sensor Junction Box – SB

- Connect different types of sensors individually or in a series.
- Signals can be converted (PNP to NPN & NPN to PNP).
- I/O may be PNP = sourcing, NPN = sinking, or dry contact.
- Self-stripping wire connectors are used for fast & easy wiring.
- Several boxes may be connected in a series to accommodate additional sensors.
- LED indicators allow for easy troubleshooting.
- Regenerates signals & protects contacts.
- Profile mounting kit & four strain reliefs are included.



Watch our How-To Sensor Box Video!

Sensor Junction Box

Quick#	Part#	Max. # of Sensors	Price	Quick#	Part#	Price	Dimensions:
6753	SB2C	2	\$67.00	6737	SB2C-MP	\$11.05	65x84x3
6754	SB4C	4	\$89.00	6738	SB4C-MP	\$12.22	94x84x3
6685	SB6C	6	\$150.00	6687	SB6C-MP	\$13.00	113x94x3
6755	SB8C	8	\$163.00	6739	SB8C-MP	\$14.95	130x113x3
6686	SB12C	12	\$232.00	6688	SB12C-MP	\$16.84	180x113x3

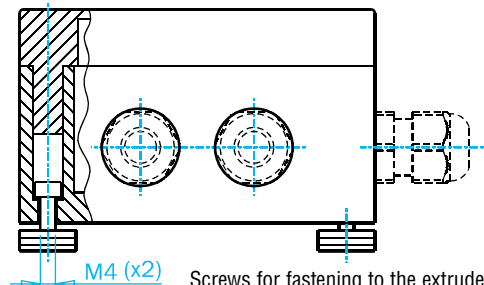
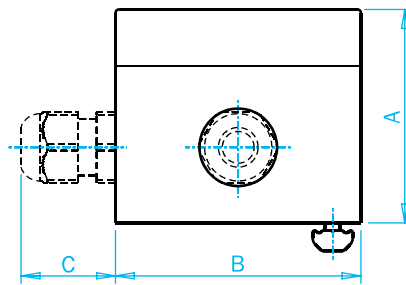
Sensor Junction Box Mounting Brackets (optional)

Note: All brackets have a 20mm tab for optional mounting position.



Replacement Jumpers

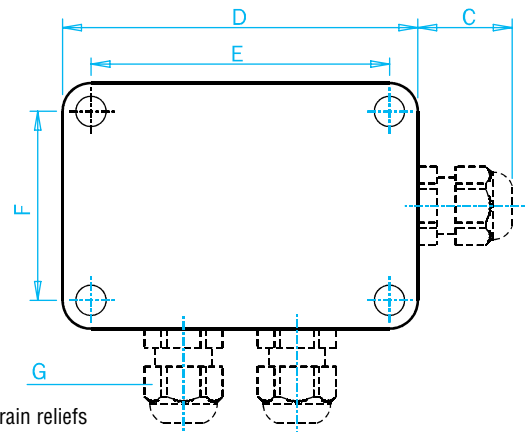
Quick#	Part#	Price	Description
7605	SB-JUMPER-18	\$1.60	Qty: 18 Jumpers, For SB2C, SB4C, SB6C
7606	SB-JUMPER-31	\$2.60	Qty: 31 Jumpers, For SB8C, SB12C



M4 (x2) Screws for fastening to the extruded profile

Use Quick#s for easy online ordering.

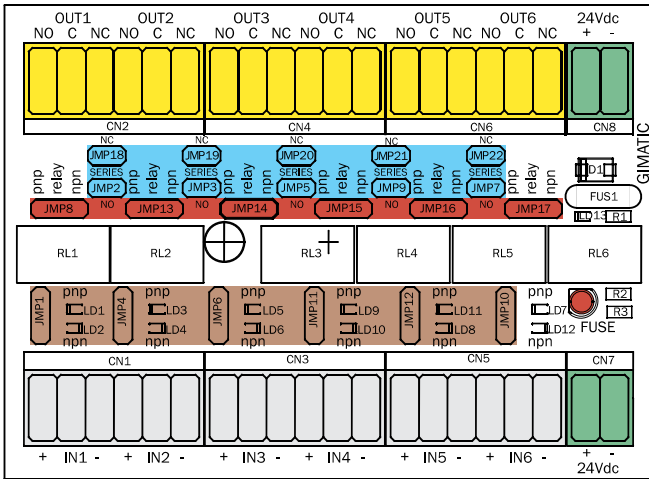
	SB2C	SB4C	SB6C	SB8C	SB12C	SB8F	SB15T
A	57	57	57	57	57	57	57
B	65	65	94	94	94	65	65
C	25	25	25	25	25	25	25
D	65	94	94	130	180	94	94
E	50	79	79	115	165	79	79
F	50	50	79	79	79	50	50
G	n°2	n°3	n°4	n°6	n°8	n°3	n°3
Wt.	120g	160g	190g	235g	325g	165g	150g



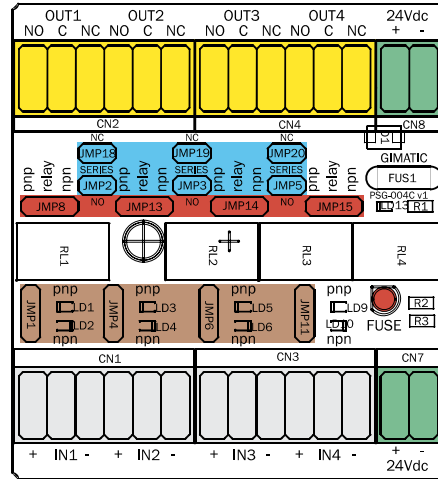
Strain reliefs

Sensor Junction Box – SB

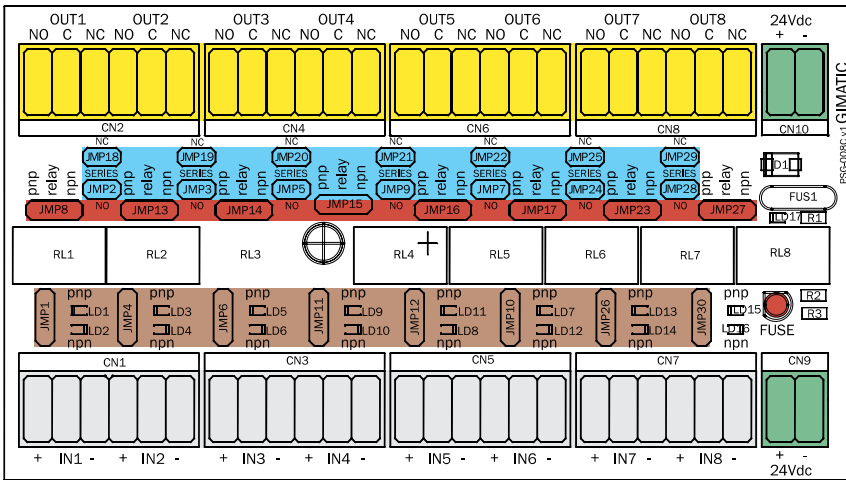
SB6C 6 sensors maximum



SB4C 4 sensors maximum



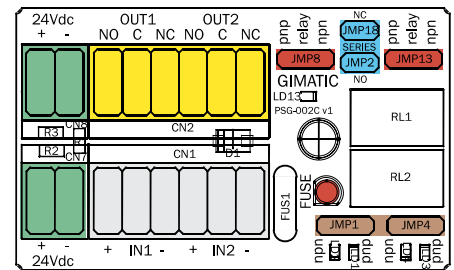
SB8C 8 sensors maximum



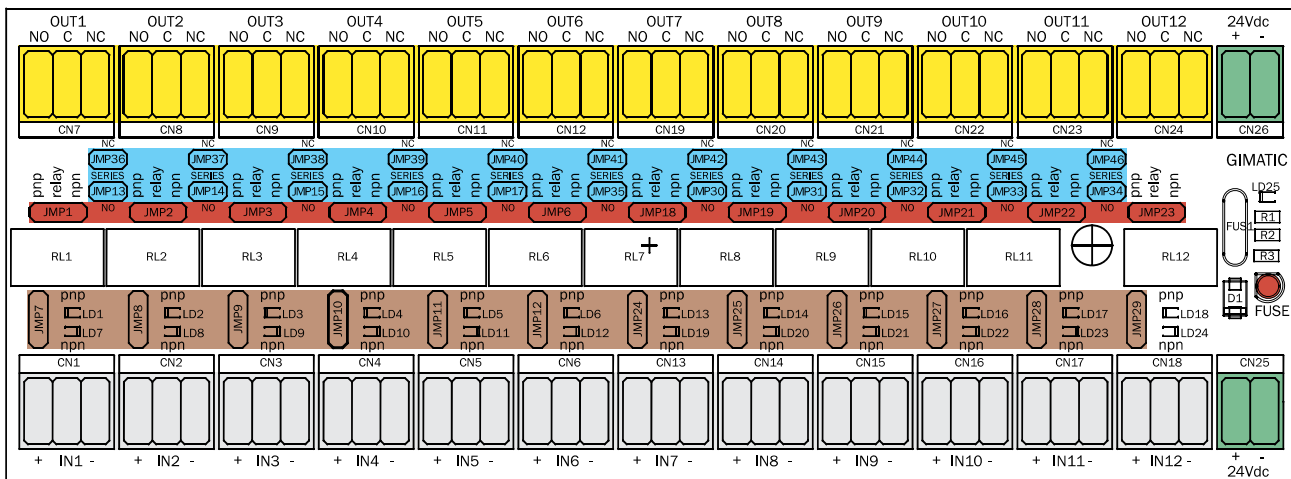
Color legend:

- Green = 24V dc (+/- 10%)
- Gray = Sensor input area
- Brown = Jumper selector for input sensor type
- Red = Jumper selector for desired output
- Blue = Jumper selector for Series connections (NO = Normally Open) or (NC = Normally Closed)
- Yellow = Output area

SB2C 2 sensors maximum



SB12C 12 sensors maximum



Sensor Junction Box – SB

Sensor Box Examples:

It's necessary to connect all sensors in succession when a series connection is desired. Normally open (NO) or Normally closed (NC).

Color legend:

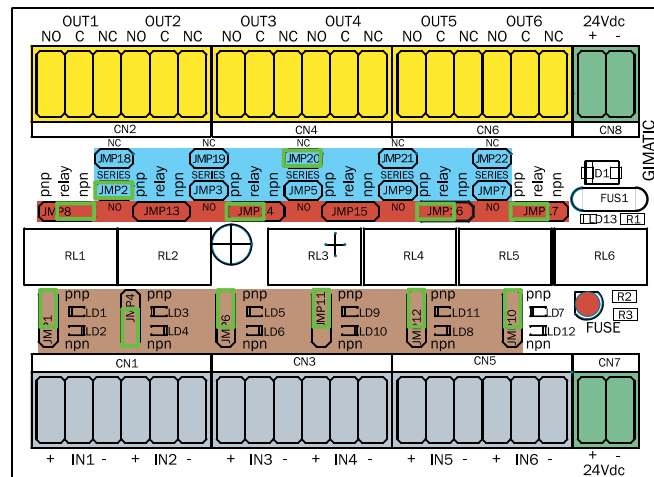
- Green = 24V dc (+/- 10%)
- Gray = Sensor input area
- Brown = Jumper selector for input sensor type
- Red = Jumper selector for desired output
- Blue = Jumper selector for Series connections (NO = Normally Open) or (NC = Normally Closed)
- Yellow = Output area
- Green rectangle= Jumper

Example 1

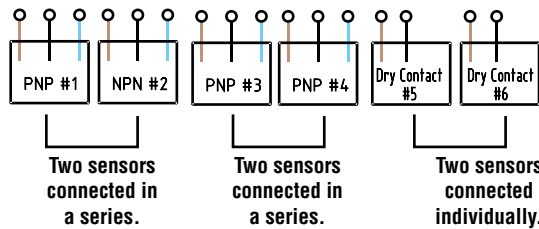
SB6C

2 Sensors in a series + 2 sensors in a series + 2 sensors individually

(NO) NPN output for series connection #1-2 (NC) PNP output for series connection #3-4 (NO) PNP output for individual connection #5 (NO) PNP output for individual connection #6



24Vdc Power may be supplied to either of the green terminals.



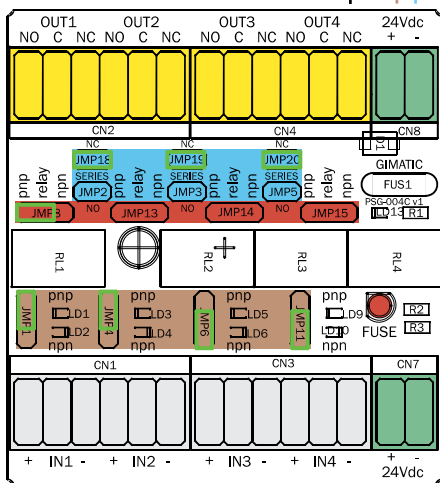
Two sensors connected in a series. Two sensors connected in a series. Two sensors connected individually.

Example 2

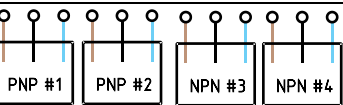
SB4C

4 Sensors in a series (Normally closed output)

(NC) PNP output for series connection of sensors #1-4



24Vdc Power may be supplied to either of the green terminals.



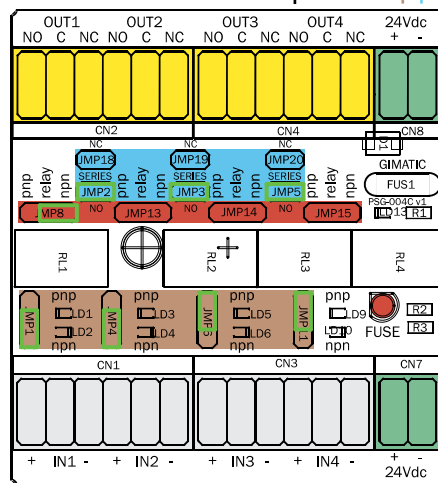
Four sensors connected in a series.

Example 3

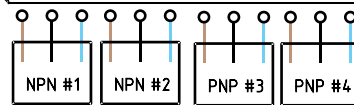
SB4C

4 Sensors in a series (Normally open output)

(NO) NPN output for series connection of sensors #1-4



24Vdc Power may be supplied to either of the green terminals.



Four sensors connected in a series.

Sensor Junction Box – SB

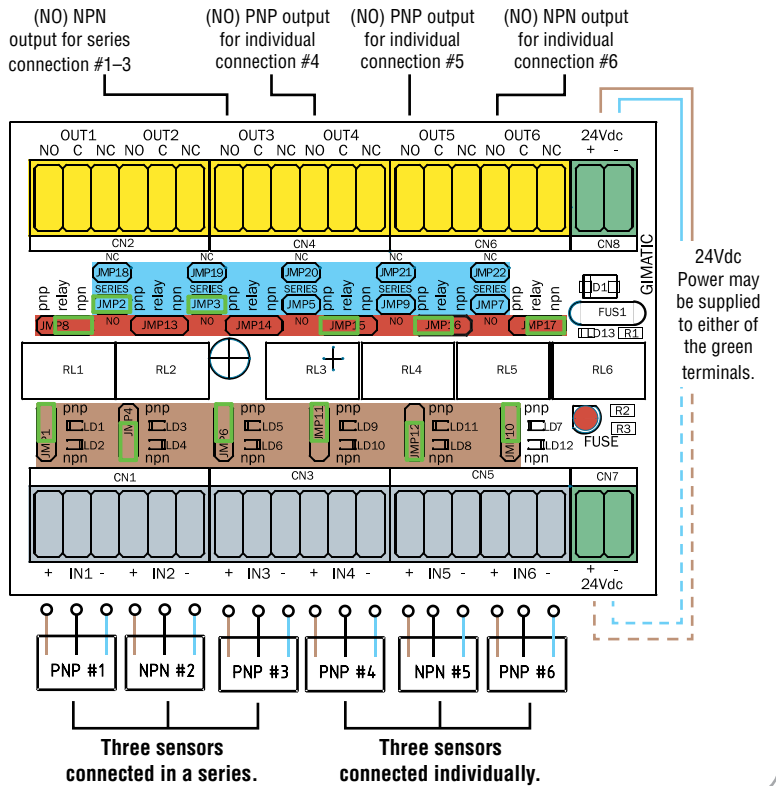
The SB series sensor junction boxes are designed to condition sensor signals and ultimately provide signals suitable for a PLC. The board is equipped with a self-restoring fuse which protects the controls from possible short circuit. The electrical box is equipped with PG9 cable connectors which provide IP65 protection of the board. The push-down wire connectors also strip the wire. A manual included with the sensor box will demonstrate this, and more.

Color legend:

- Green = 24V dc (+/- 10%)
- Gray = Sensor input area
- Brown = Jumper selector for input sensor type
- Red = Jumper selector for desired output
- Blue = Jumper selector for Series connections (NO = Normally Open) or (NC = Normally Closed)
- Yellow = Output area
- Green Rectangle= Jumper

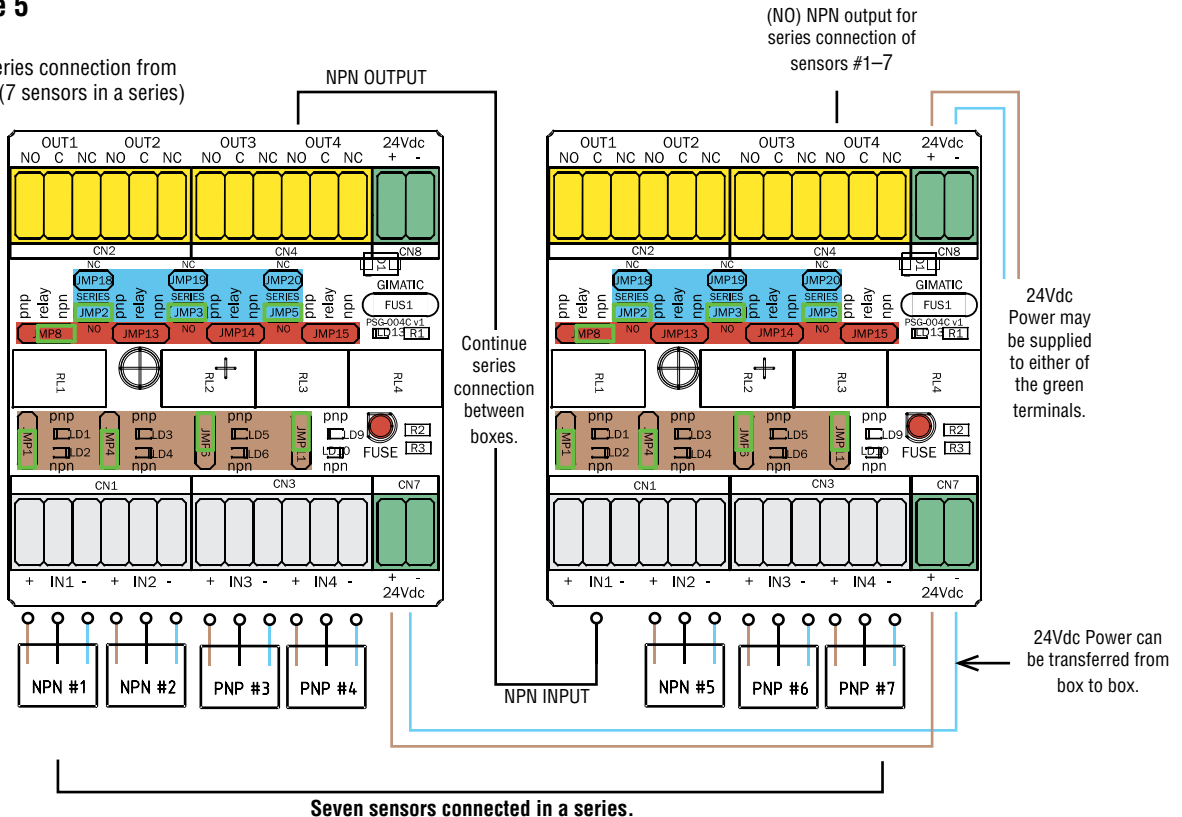
Example 4

SB6C
3 Sensors in a series + 3 sensors individually



Example 5

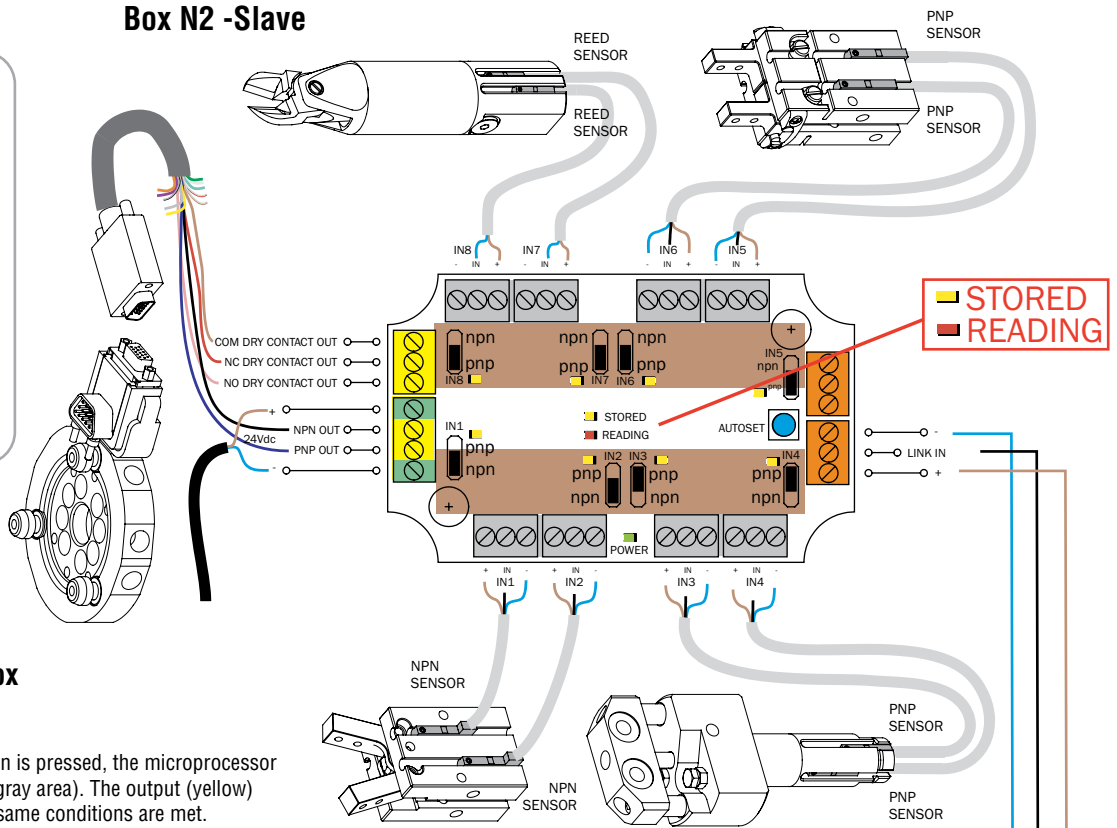
(2x)SB4C
Continue series connection from box to box (7 sensors in a series)



SB – Microprocessor Box

Color legend:

- Green = 24V dc (+/- 10%)
- Gray = Sensor input area
- Brown = Jumper selector for input sensor type
- Orange = For connecting multiple boxes in series
- Blue = Autoset Button
- Yellow = Output area



Microprocessor Sensor Box

(Dimensions shown on page 988)

Functioning: When the autoset button is pressed, the microprocessor memorizes the status of the inputs (gray area). The output (yellow) area will be activated every time the same conditions are met.

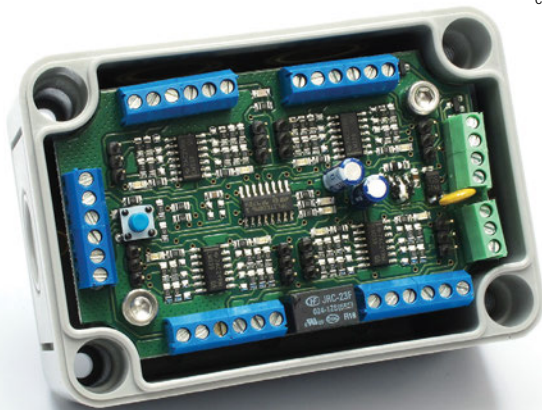
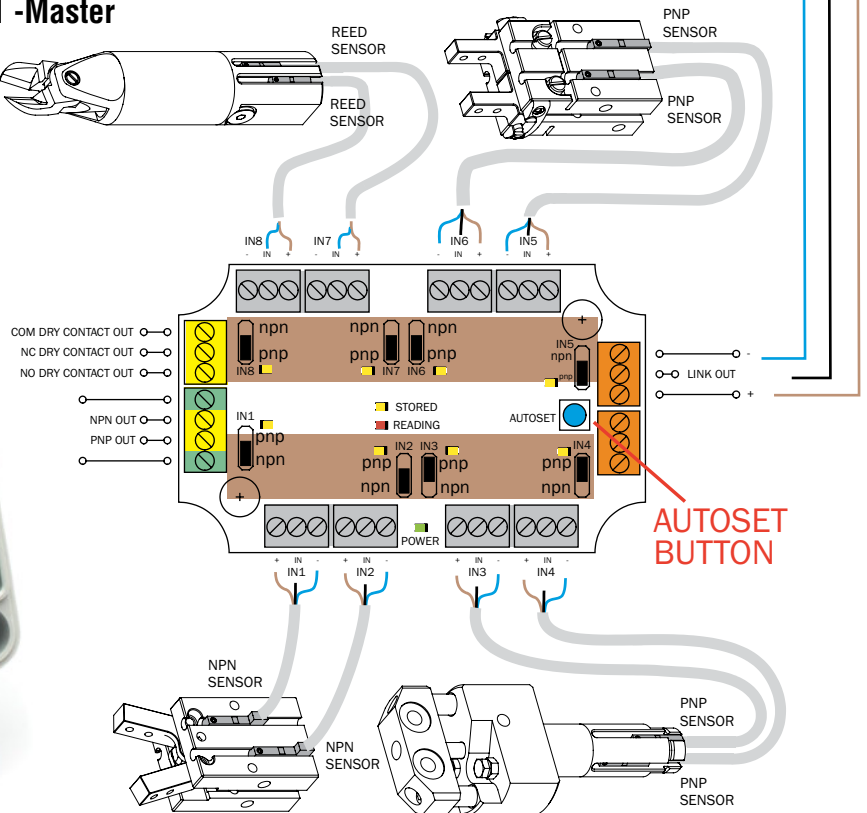
Inputs: Maximum 8 PNP, NPN or dry contact (NO or NC) sensors switched by jumpers (brown area).

Outputs: 1 PNP, NPN or dry contact (NO or NC) (yellow area) output.

Microprocessor Sensor Box

Quick#	Part#	Price
6461	SB8F	\$170.00

Box N1 -Master



Terminal Box – SB

Terminal Cabling Box

(Dimensions shown on page 988)

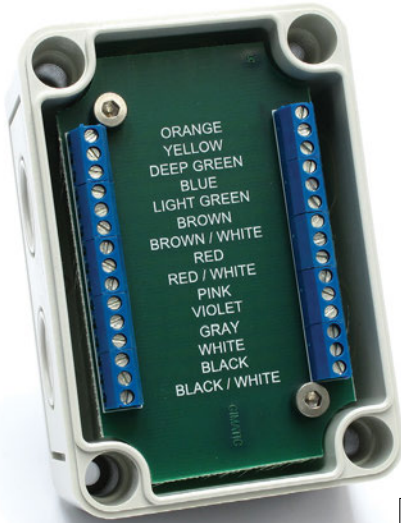
This terminal box is used primarily for EOAT's using multiple electrical boxes. Use this terminal box as a junction area between outputs from multiple electrical boxes and the electrical cable from the quick changer.

Inputs: 15 inputs (to outputs)

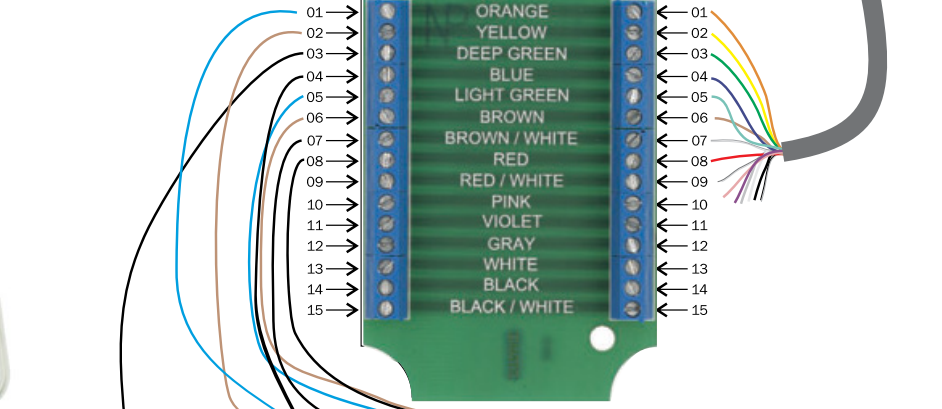
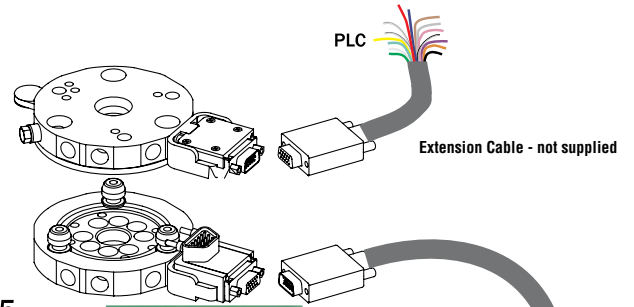
Outputs: 15 outputs (from inputs)

Terminal Cabling Box

Quick#	Part#	Price
5308	SB15T	\$78.20



SB15

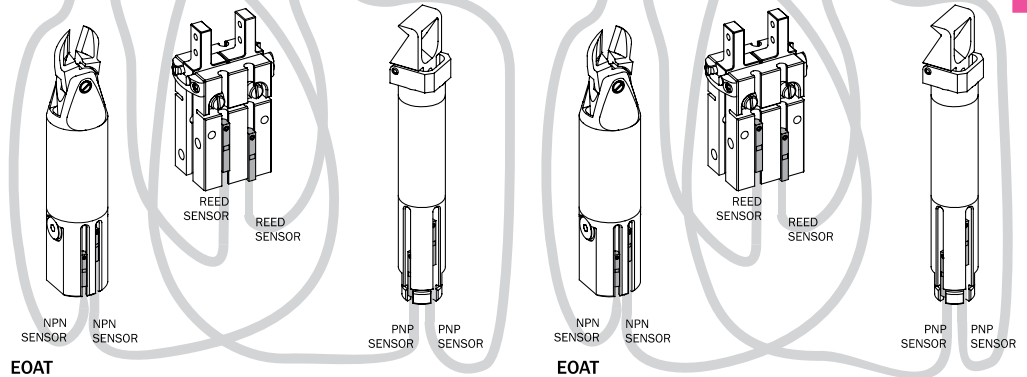
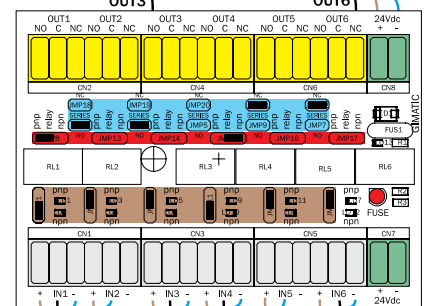
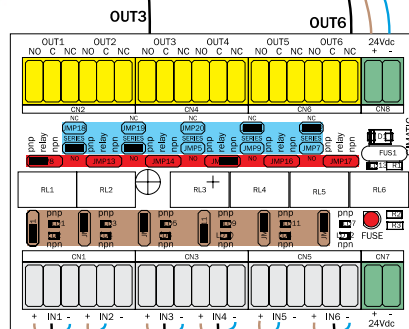


PNP NO signal output for all pneumatic devices "open" by IN1, IN2, IN3 series

NPN NC signal output for all pneumatic devices "closed" by IN4, IN5, IN6 series

PNP NO signal output for all pneumatic devices "open" by IN1, IN2, IN3 series

NPN NC signal output for all pneumatic devices "closed" by IN4, IN5, IN6 series

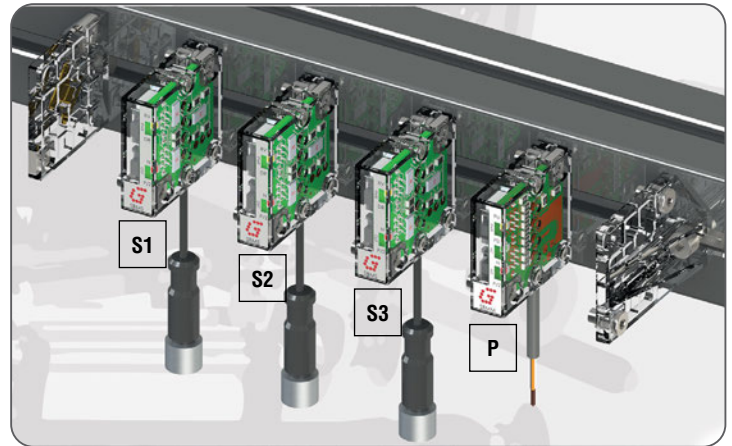


EOAT

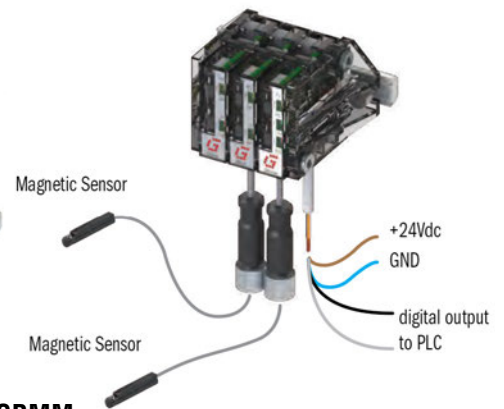
EOAT

SBMS & MBMM Modular Sensor Box – (NO & NC Simultaneous Outputs)

- Connect M8 3-pin sensors (pnp or npn) in series or individually.
- Connect up to 20 secondary modules to one primary module.
- Secondary units can reverse Normally Open (NO) / Normally Closed (NC) sensor logic.
- Primary module has NO & NC signal LED indicators.
- Primary module can send either pnp or npn outputs back to PLC.
- Easy configuration using switches (see below).
- LED sensor status indicators for easy troubleshooting.
- 12-24 Vdc (+/- 10%) power requirement.
- IP40 rating
- End caps allow direct mounting on standard aluminum profile.
- A modular, very compact, scalable solution.
- All modules (primary, secondary, end cap) are 36mm x 34mm x 10mm.
- See page 985 for: M8 3-pin extension cable, Y-splitter for easy connection to PRO teachable sensors, and field wireable 3-Pin M8 connector for easy connection of sensors with leads.



Modules can mount to end caps in either direction.



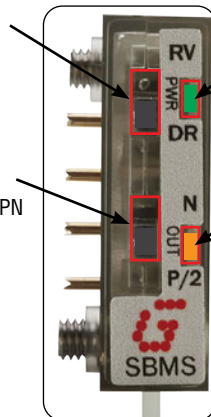
Secondary Module SBMS:

Choose sensor logic:

Select "RV" to set sensor output status to NC
 Select "DR" to set sensor output status to NO.

Choose sensor type:

Select "N" if connecting NPN sensors.
 Select "P/2" if connecting PNP or 2 wire sensors.



Power indicator supplied by primary module.

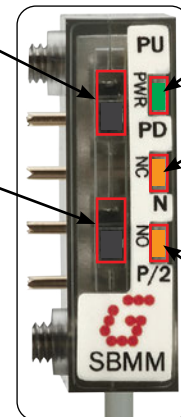
Sensor output indicator:
 Sensor logic status (NO or NC) will effect this output.

Primary Module SBMM:

Choose output type:

Select "PU" for NPN output.
 Select "PD" for PNP output.

Select "N" for NPN output.
 Select "P/2" for PNP output.

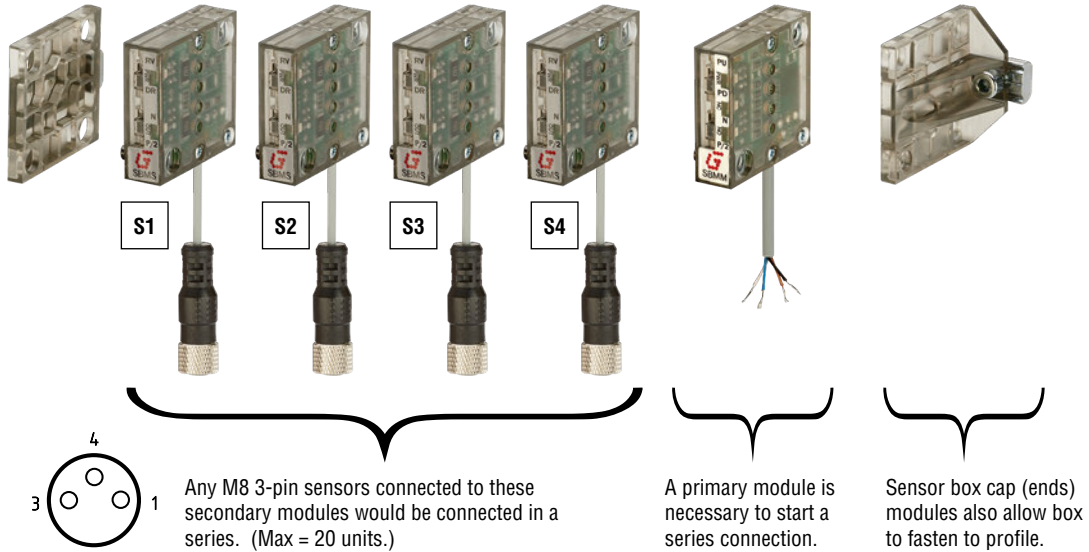


Power indicator.
 Main output indicator showing NC output to PLC. (Depending on sensor logic)
 Main output indicator showing NO output to PLC. (Depending on sensor logic)

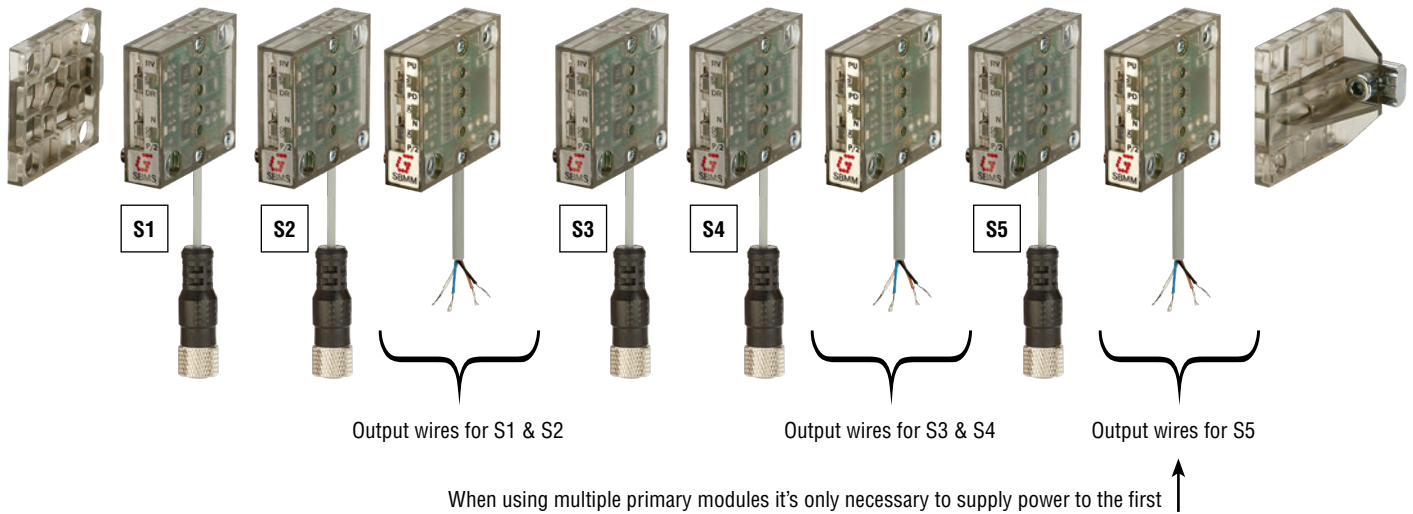
Quick#	7403	7402
Part#	SBMS	SBMM
Price	\$55.00	\$77.00
Electrical Connection	1 female M8 3-pin connector, 150mm long	4 wire unterminated cable, 1m long
Weight	50g	50g
Formation	3x0.096mm ²	4x0.14mm ²
Blue wire	GND	
Brown wire	Vcc from 12-24 Vdc (+/- 10%)	
Black wire	Sensor output signal (input for secondary module)	Series of secondary NO (depending on configuration)
White wire	-	Series of secondary NC (depending on configuration)
Dimensions	36mm x 34mm x 10mm	

SBMS & MBMM Modular Sensor Box – (NO & NC Simultaneous Outputs)

Application Example: (single series connection)



Application Example: (multiple series + parallel connection)



Choose SBMM & SBMS when NO and NC outputs needed to be supplied to PLC SIMULTANEOUSLY



Secondary Module

Quick#	Part#	Price
7403	SBMS	\$55.00

- Max. Supply current to sensor: 200mA
- Module current consumption: 30mA



Primary Module

Quick#	Part#	Price
7402	SBMM	\$77.00

- Max current of NO output: 1A
- Max current of NC output: 150 mA
- Max supply current: 2A
- Module current consumption: 30mA

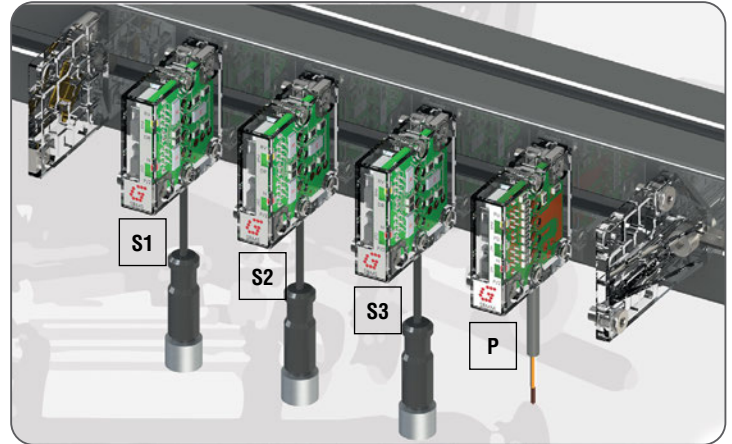


End Caps (both sides included)

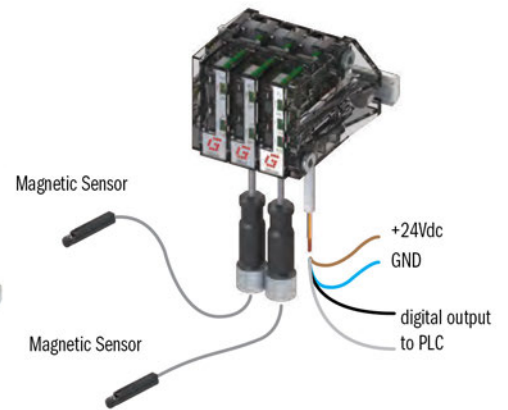
Quick#	Part#	Price
7404	SBMK	\$10.89

SBMS-E & MBMM-E Modular Sensor Box – (NO & NC Outputs, Not Simultaneous)

- Connect M8 3-pin sensors (pnp or npn) in series or individually.
- Connect up to 20 secondary modules to one primary module.
- Secondary units can reverse Normally Open (NO) / Normally Closed (NC) sensor logic.
- Primary module has one NO signal LED indicators, but can be switched to NC by changing sensor logic.
- Primary module can send either pnp or npn outputs back to PLC.
- Easy configuration using switches (see below).
- LED sensor status indicators for easy troubleshooting.
- 12-24 Vdc (+/- 10%) power requirement.
- IP40 rating
- End caps allow direct mounting on standard aluminum profile.
- A modular, very compact, scalable solution.
- All modules (primary, secondary, end cap) are 36mm x 34mm x 10mm.
- See page 985 for: M8 3-pin extension cable, Y-splitter for easy connection to PRO teachable sensors, and field wireable 3-Pin M8 connector for easy connection of sensors with leads.



Modules can mount to end caps in either direction.



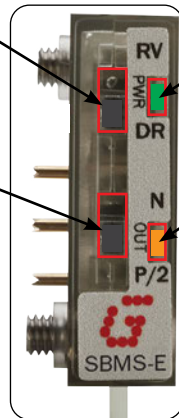
Secondary Module SBMS-E:

Choose sensor logic:

Select "RV" to set sensor output status to NC
 Select "DR" to set sensor output status to NO.

Choose sensor type:

Select "N" if connecting NPN sensors.
 Select "P/2" if connecting PNP or 2 wire sensors.



Power indicator supplied by primary module.

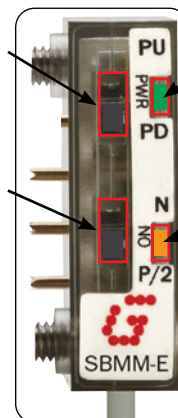
Sensor output indicator:
 Sensor logic status (NO or NC) will effect this output.

Primary Module SBMM-E:

Choose output type:

Select "PU" for NPN output.
 Select "PD" for PNP output.

Select "N" for NPN output.
 Select "P/2" for PNP output.



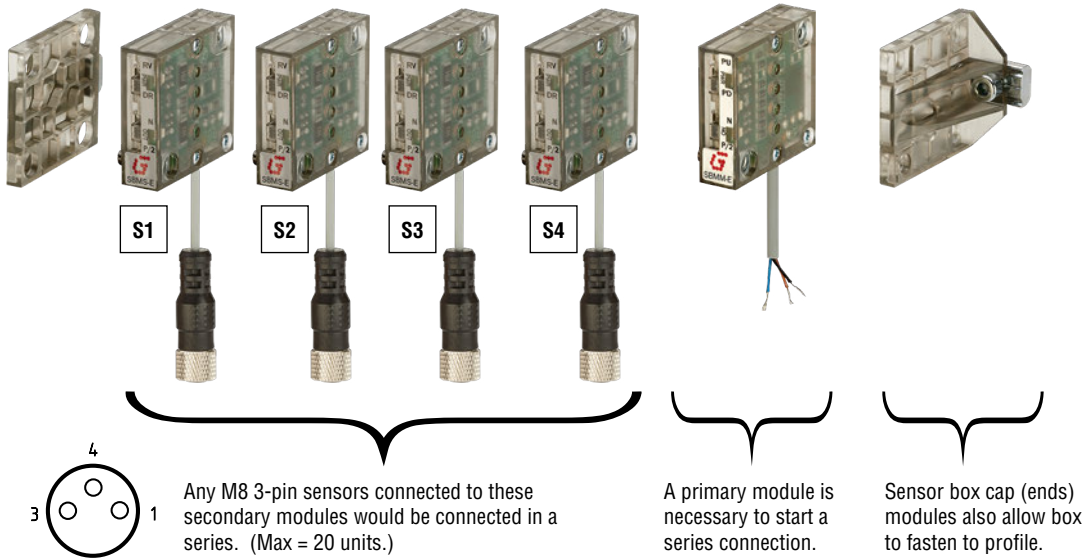
Power indicator.

Main output indicator showing NO or NC output to PLC. (Depending on sensor logic.)

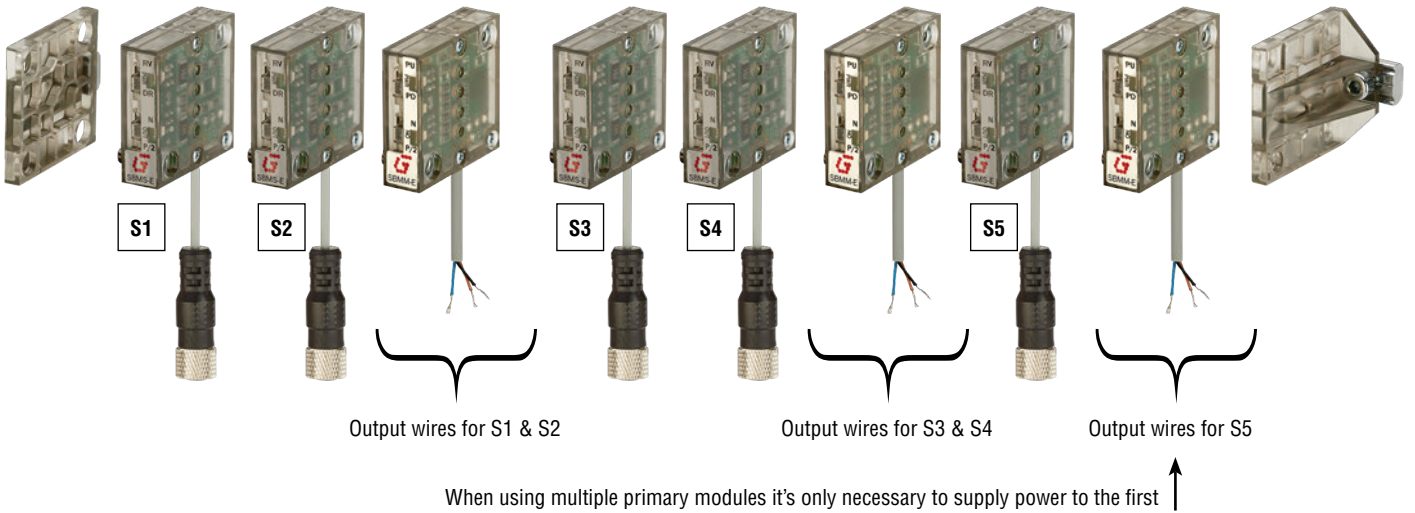
Quick#	7406	7405
Part#	SBMS-E	SBMM-E
Price	\$42.00	\$49.00
Electrical Connection	1 female M8 3-pin connector, 150mm long	3 wire unterminated cable, 1m long
Weight	50g	50g
Formation	3x0.096mm ²	3x0.14mm ²
Blue wire	GND	
Brown wire	Vcc from 12-24 Vdc (+/- 10%)	
Black wire	Sensor output signal (input for secondary module)	Series of secondary NO (depending on configuration)
Dimensions	36mm x 34mm x 10mm	

SBMS-E & MBMM-E Modular Sensor Box – (NO & NC Outputs, Not Simultaneous)

Application Example: (single series connection)



Application Example: (multiple series + parallel connection)



Choose SBMM-E & SBMS-E when either a NO and NC* output is needed to be supplied to PLC. BOTH SIGNALS CANNOT BE SUPPLIED SIMULTANEOUSLY *NC output is possible by changing sensor logic, see page 996



Secondary Module

Quick#	Part#	Price
7406	SBMS-E	\$42.00

- Max. Supply current to sensor: 200mA
- Module current consumption: 30mA



Primary Module

Quick#	Part#	Price
7405	SBMM-E	\$49.00

- Max current of NO output: 1A
- Max supply current: 2A
- Module current consumption: 30mA



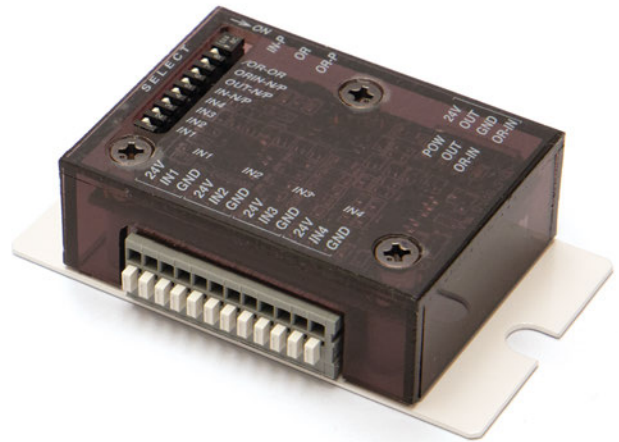
End Caps (both sides included)

Quick#	Part#	Price
7404	SBMK	\$10.89

Star® AND Circuit Sensor Board

(Dimensioned drawing shown actual size)

- AND output (series) for 1 to 4 sensors
- Compact design
- Signals can be converted (PNP to NPN & NPN to PNP)
- All sensors in a box must be NPN or PNP, except in a series of boxes where entire boxes can be different.
- LED indicators allow for easy troubleshooting
- Strip wires before inserting them into the box. (Maximum Exposed Conductor Length: 10mm)
- Ensure copper conductors are tightly twisted together before inserting.
- Minimum wire size: 28 AWG (0.08 mm²)



Multi AND Board

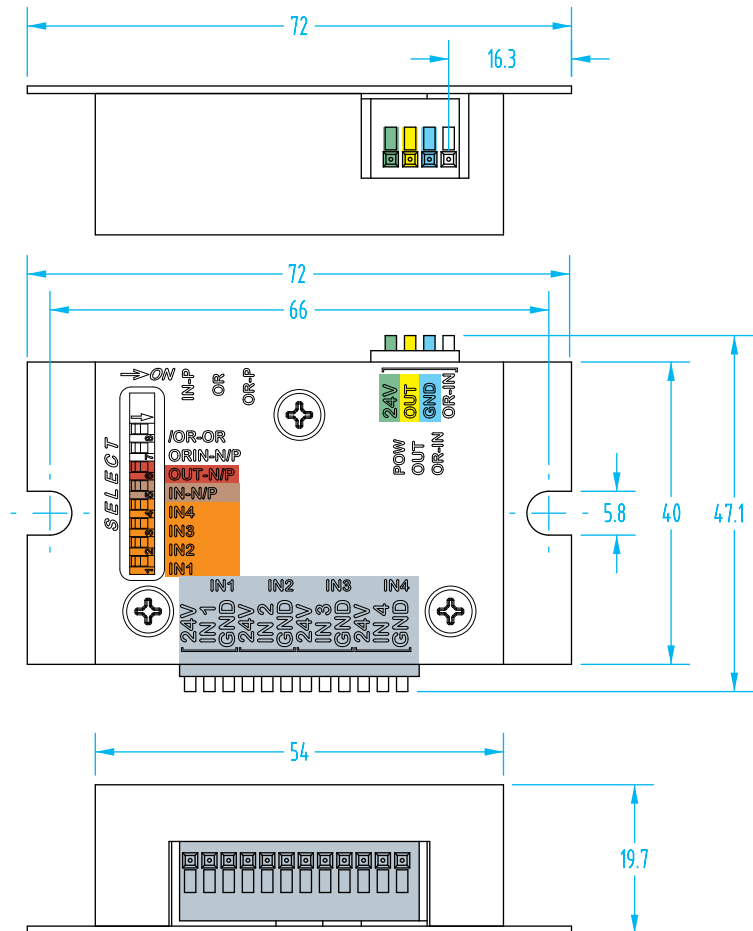
Quick#	Part#	Description	Weight	Price
2689	GSE-AND-EU-4P	4 Inputs, DC24V	57g	\$125.26

Note: M5 mounting hardware is not included.

With these AND boxes, simply push a switch to turn off sensors that you don't want the box to recognize. There is no need to place wire jumpers on unused sensor slots like other sensor boxes.

Color legend:

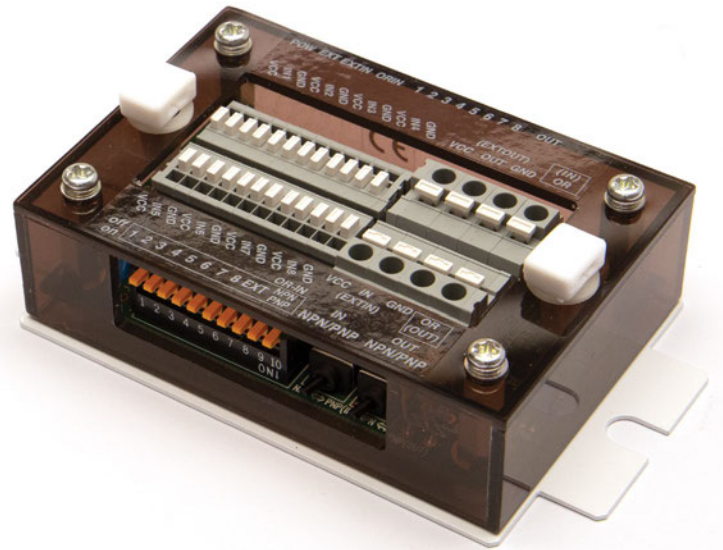
- Green = Input Power (24V dc)
- Blue = Input Power (0V dc)
- Yellow = Output
- Gray = Sensor input area
- Brown = Switch selector for input sensor type
- Red = Switch selector for desired output
- Orange = Sensor On/Off Switches



Star AND Circuit Sensor Board

(Dimensioned drawing shown actual size)

- AND output (series) for 1 to 8 sensors
- Compact design
- Signals can be converted (PNP to NPN & NPN to PNP)
- All sensors in a box must be NPN or PNP, except in a series of boxes where entire boxes can be different.
- LED indicators allow for easy troubleshooting
- Expandable up to 32 inputs with additional boxes (4 boxes total).
- Strip wires before inserting them into the box. (Maximum Exposed Conductor Length: 10mm)
- Ensure copper conductors are tightly twisted together before inserting.
- Minimum wire size: 28 AWG (0.08 mm²)



Multi AND Board

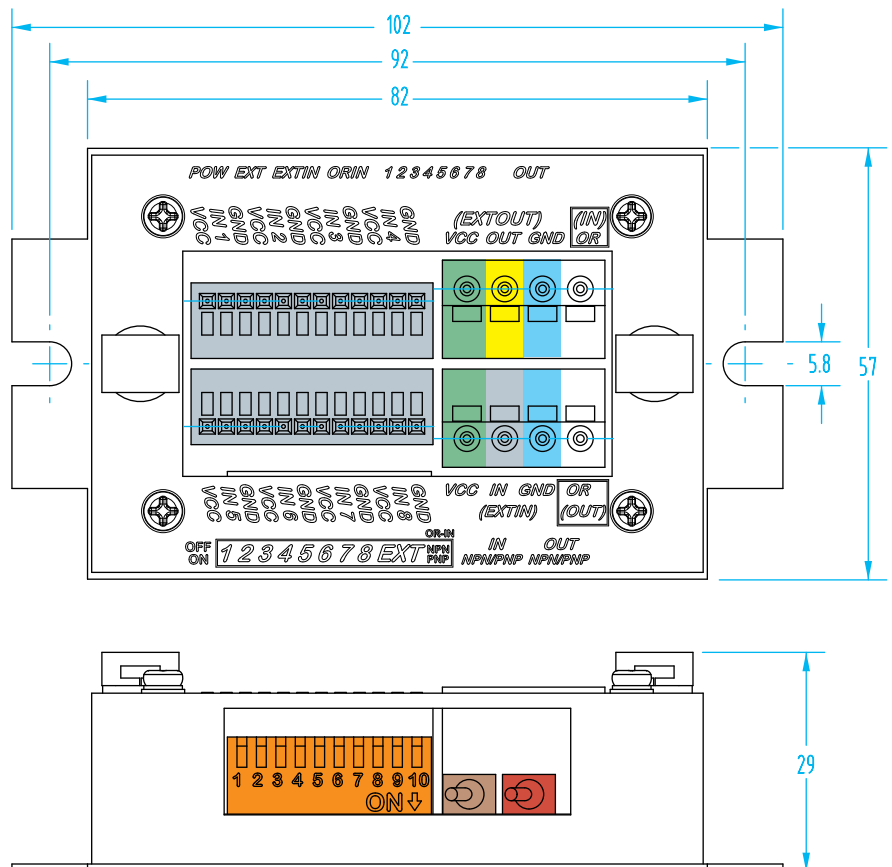
Quick#	Part#	Description	Weight	Price
2690	GSE-AND-EU-8P	8 Inputs, DC24V	115g	\$178.95

Note: M5 mounting hardware is not included.

Color legend:

- Green = Input Power (24V dc)
- Blue = Input Power (0V dc)
- Yellow = Output
- Gray = Sensor input area
- Brown = Switch selector for input sensor type
- Red = Switch selector for desired output
- Orange = Sensor On/Off Switches

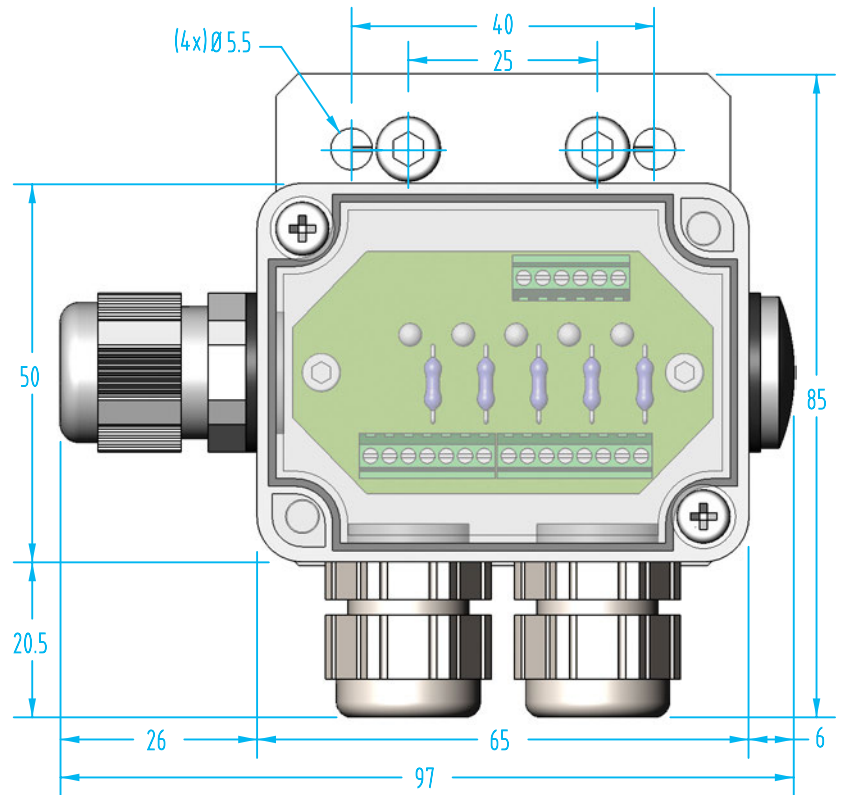
When adding an additional sensor box in a series, the Output Switch on the added sensor boxes must be set to NPN even if sensors are PNP. The first box can either be NPN or PNP, based on your robot.



>S< Style Terminal Box KK



Terminal box is used to connect up to four PNP sensors in series or individually.

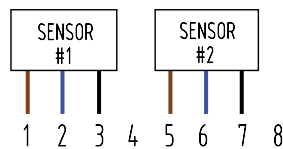


Terminal Box - KK

Quick#	Part#	>ASS< #	Price	Wt.
3404	KK1	1-805-20-00	\$103.55	115g

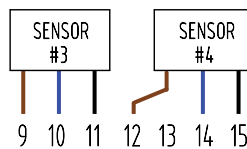
Connection Example: Two Sensors are Independent

Outputs A #3 & #4
(See output area)

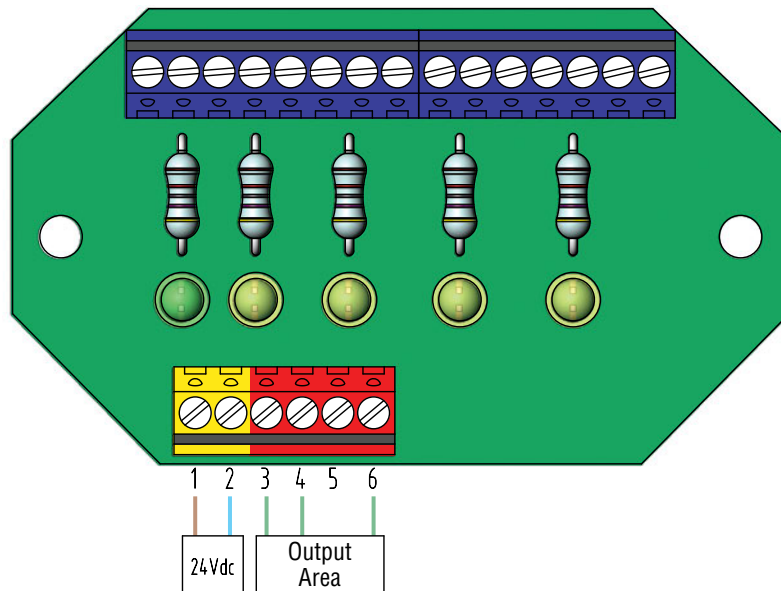


Connection Example: Two Sensors in Series

Output A #6
(See output area)

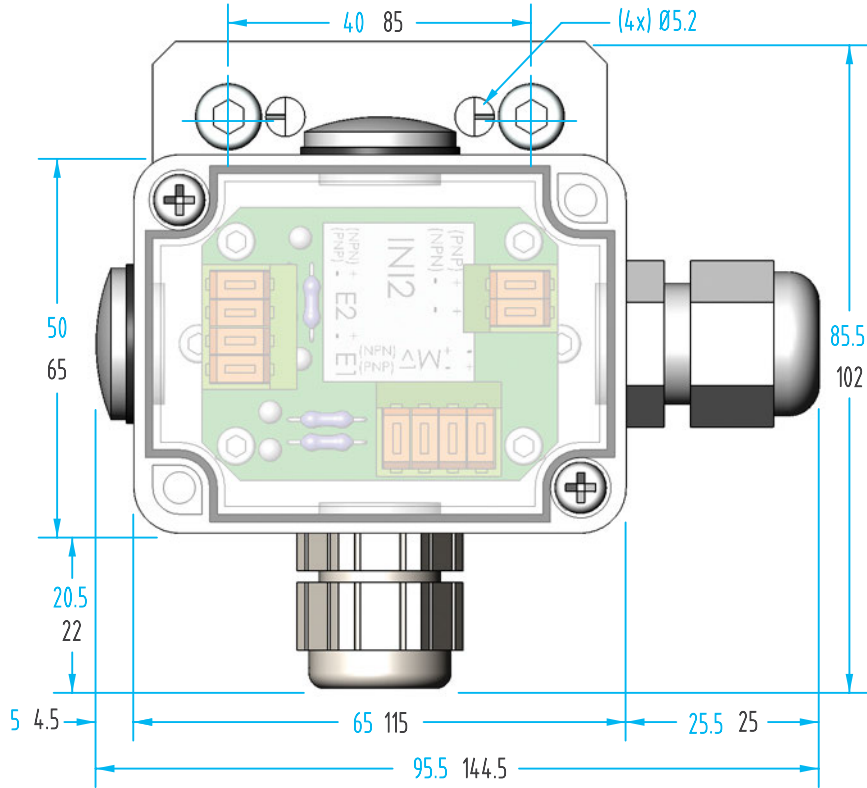
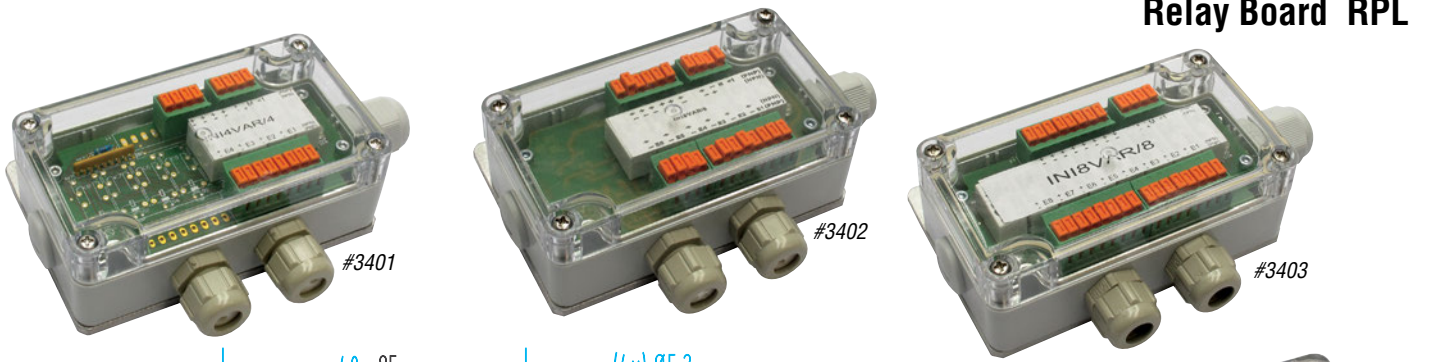


- Positive +
- Negative -
- Signal
- Output
- Input Power
- Sensor Input



Used for PNP sensors only
(Enlarged to show detail)

Relay Board RPL



Relay board is used for series connection of multiple sensor signals (22–26Vdc).

Dimensions for #3400 in Blue,
Dimensions for #3401-#3403 in Black.

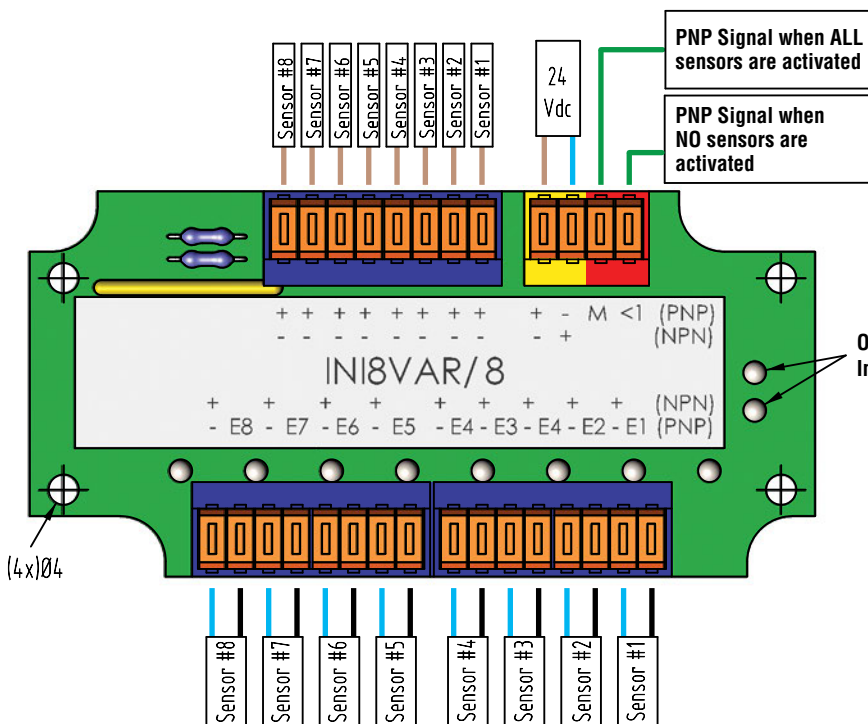
Relay Board

Quick#	Part#	>ASS< #	Price	Inputs	*Wt.
3400	RPL2	1-805-10-00	\$100.83	2	156g
3401	RPL4	1-805-12-00	\$151.51	4	319g
3402	RPL6	1-805-14-00	\$176.04	6	360g
3403	RPL8	1-805-16-00	\$196.20	8	367g

*Weight includes aluminum mounting plate and plastic housing.

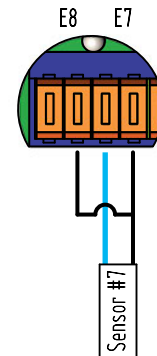
A PNP output wiring example is shown.
(All sensors must be PNP)

If an NPN output is desired all brown and blue wires will need to be reversed.
(All sensors must be NPN)



Output Indicator

- Output
- Input Power
- Sensor Input
- Positive +
- Negative -
- Signal



If using fewer sensors than sensor inputs, all E Terminals must be jumped.

Gimatic® C-Slot Sensors

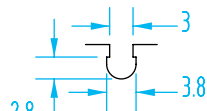
- Power Supply: 6–30V dc
- Max. Switching Frequency: 200 KHz
- Operating Temp.: -10° to 70°C
- Voltage Drop: 1V dc
- IEC Rating: IP 67
- Cable: PUR



New SSY.. Precision Sensors for use with New Style PB S2 Grippers. See Sensor Reference Guide on pages 1006–1011 to determine PB gripper compatibility.

NEW

Due to the high sensitivity of SSQ sensors, EMI does not recommend the use of SSQ sensors in most applications. PRO-SSR sensors are easier to use and are appropriate for most applications. Please confer with engineering for application specific questions.



C-Slot dimensional drawing

C-Slot Magnetoresistive Sensors

Part#	Quick#	Price	Type	Signal	Connection
SS4N225G	1882	\$27.20	Standard 3-Wire	PNP	lead, 2.5m long
SS4M225G	1883	\$27.20	Standard 3-Wire	NPN	
SS3N203G	6282	\$31.16	Standard 3-Wire	PNP	M8 connector, 0.3m long
SS3M203G	1884	\$31.16	Standard 3-Wire	NPN	
SSY4N225G	7591	\$27.20	Precision 3-Wire	PNP	lead, 2.5m long
SSY4M225G	7590	\$27.20	Precision 3-Wire	NPN	
SSY3N203G	7589	\$31.16	Precision 3-Wire	PNP	M8 connector, 0.3m long
SSY3M203G	7588	\$31.16	Precision 3-Wire	NPN	
SSQ4N225G	7707	\$27.20	High Precision 3-Wire	PNP	lead, 2.5m long
SSQ4M225G	7709	\$27.20	High Precision 3-Wire	NPN	
SSQ3N203G	7708	\$31.16	High Precision 3-Wire	PNP	M8 connector, 0.3m long
SSQ3M203G	7710	\$31.16	High Precision 3-Wire	NPN	
SN4N225G	6278	\$27.20	90° Standard 3-Wire	PNP	lead, 2.5m long
SN4M225G	6357	\$27.20	90° Standard 3-Wire	NPN	
SN3N203G	6277	\$31.16	90° Standard 3-Wire	PNP	M8 connector, 0.3m long
SN3M203G	6356	\$31.16	90° Standard 3-Wire	NPN	

Use Quick#s for easy online ordering.

- Reed Sensors are not recommended for grippers (Cylinders only).
- Power Supply: 3–30V ac/dc
- Max. Switching Frequency: 500 Hz
- Operating Temp.: -10° to 70°C
- Voltage Drop: 3V dc
- IEC Rating: IP 67
- Cable: PUR



C-Slot Reed Sensors

Part#	Quick#	Price	Type	Signal	Connection
SS1C225-G	6600	\$18.30	2-wire REED	PNP/ NPN	lead, 2.5m long
SS2C203-G	6601	\$18.93	2-wire REED	PNP/ NPN	M8 connector, 0.3m long



Sensor Slot Adaptors

Part#	Quick#	Price	Description
K-SENS	7440	\$4.82	Adapter allows C slot sensors to work in T slots, D slots, and more.

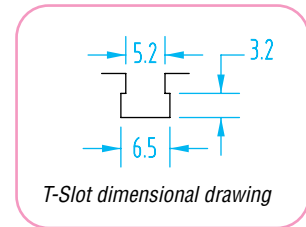
Gimatic T-Slot & Dovetail Sensors

T-Slot Magneto-resistive Sensors

Part#	Quick#	Price	Type	Signal	Connection
SL4N225G	792	\$27.20	Standard 3-wire	PNP	lead, 2.5m long
SL4M225G	793	\$27.20	Standard 3-wire	NPN	
SL3N203G	6274	\$31.16	Standard 3-wire	PNP	M8 connector, 0.3m long
SL3M203G	6456	\$31.16	Standard 3-wire	NPN	
SC4N225G	6273	\$30.30	90° Standard 3-Wire	PNP	lead, 2.5m long
SC4M225-G	1796	\$30.30	90° Standard 3-Wire	NPN	
SC3N203G	6455	\$34.62	90° Standard 3-Wire	PNP	M8 connector, 0.3m long
SC3M203-G	6457	\$34.62	90° Standard 3-Wire	NPN	

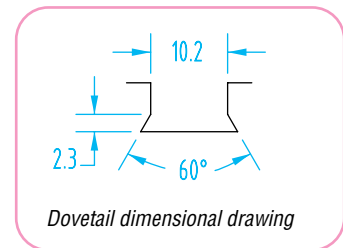


- Power Supply: 6–30V dc
- Max. Switching Frequency: 200 KHz
- Operating Temp.: -10° to 70°C
- Voltage Drop: 1V dc
- IEC Rating: IP 67
- Cable: PUR



Dovetail Magneto-resistive Sensors

Part#	Quick#	Price	Type	Signal	Connection
CB3N2-G	6126	\$22.90	Standard 3-wire	PNP	M8 Connector*
CB3M2-G	1794	\$22.90	Standard 3-wire	NPN	M8 Connector*



(*) Purchase extension cable #6591 separate for these sensors.

Quick#	Part#	Price	Description
6591	CFSM890325	\$7.17	3-Wire 90° For CB Series Sensor, 2.5m long

Replacement Set Screw for Gimatic Sensors

Quick#	Part#	Price	Description
995	GSC-SSS-2.5X4	\$0.25	Set Screw for new style sensors, M2.5x4mm

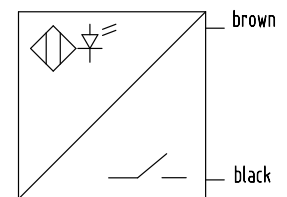


Sensor diagrams and other specifications can be found on our online product pages at : www.EMICorp.com and search by Quick#.

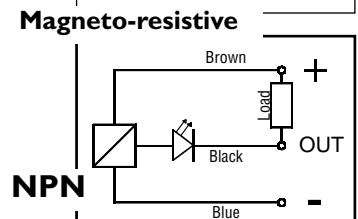
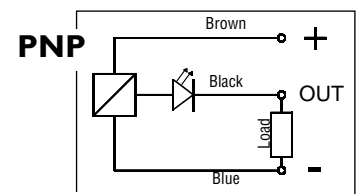
New Gimatic Teachable Sensors for C-Slots are available on page 978.



2-wire configuration:



3-wire configuration:



Sensors

- Power Supply: 4.5–28V dc
- Operating Temp.: -10° to 60°C
- Voltage Drop: 1V dc
- IEC Rating: IP 67
- Cable: PVC



3-Wire Magnetoresistive Sensors

Part #	Quick#	Price	Type	Signal	Connection
D-M9PL	5430	\$33.70	3-Wire for C-Slot with Midstroke detection	PNP	lead, 3m long
D-M9NL	2412	\$33.70	3-Wire for C-Slot with Midstroke detection	NPN	
D-M9P-SAPC	5497	\$42.06	3-Wire for C-Slot with Midstroke detection	PNP	M8 connector, 0.5m long
D-M9N-SAPC	5498	\$42.06	3-Wire for C-Slot with Midstroke detection	NPN	
GSE-D-M9PVL	2403	\$37.20	3-Wire 90° for C slot	PNP	lead, 3m long
GSE-D-M9NVL	2404	\$37.20	3-Wire 90° for C slot	NPN	
Y7PL-PNP	2243	\$44.00	3-Wire for T slot	PNP	lead, 3m long
Y59AL-NPN	2244	\$34.95	3-Wire for T slot	NPN	

- Power Supply: 24V dc
- Operating Temp.: -10° to 60°C
- IEC Rating: IP 67
- Cable: PVC

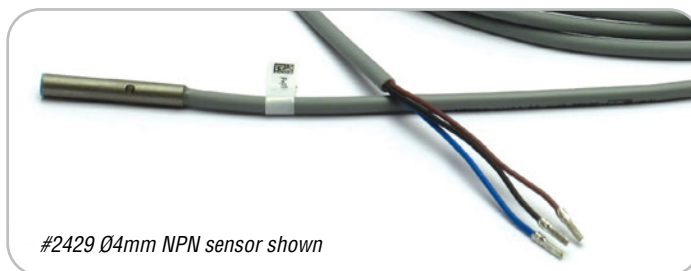


2-Wire REED Sensors

Part #	Quick#	Price	Type	Signal	Connection	Voltage Drop
Y59BL-REED	2245	\$33.90	2-Wire REED for T slot	PNP/ NPN	lead, 3m long	4V
RRK-93	3409	\$20.90	2-Wire REED for C slot	PNP/ NPN	lead, 3m long	2.5V

- This two-wire reed switch can be used to return a signal to a PNP or NPN-type control system.
- PNP robot wiring: connect the Brown wire to a 24Vdc terminal and the Blue wire to one of the robot's Digital Input terminals.
- NPN robot wiring: connect the Blue wire to a 0Vdc terminal and the Brown wire to one of the robot's Digital Input terminals.

- 0.8mm Operating distance.
- Ø3mm or Ø4mm diameter.
- Power Supply: 10–30V dc
- Max. Switching Frequency: 3000 Hz
- Operating Temp.: -25° to 70°C
- IEC Rating: IP 67
- Cable: PVC



#2429 Ø4mm NPN sensor shown

3-Wire Inductive Sensors

Part#	Quick#	Price	Type	Signal	Connection	Voltage Drop
GSG-IS-NPN	2429	\$62.00	Ø4mm N.O. Inductive	NPN	lead, 2m long	3V
GSG-IS-PNP	2430	\$62.00		PNP		
GSG-IS3-NPN	2602	\$98.00	Ø3mm N.O. Inductive	NPN		
GSG-IS3-PNP	2603	\$98.00		PNP		
GSG-IS4-M8-PNP	8083	\$80.00	Ø4mm N.O. Inductive	PNP	with M8 Connector	3V

Sensor diagrams and other specifications can be found on our online product pages at : www.EMICorp.com and search by Quick#.

This sensor has two programmable output signals. Instructions on how to program the sensor are included.

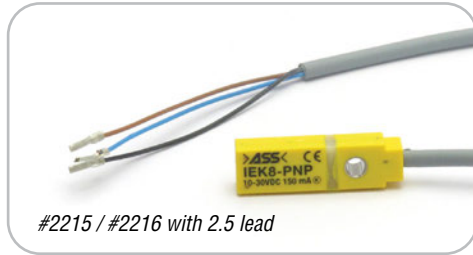


- Power Supply: 12–30V dc
- Max. Switching Frequency: 1000 Hz
- Operating Temp.: -20° to 75°C
- Voltage Drop: 2.2V dc
- IEC Rating: IP 67
- Cable: PUR

4-Wire Magnetoresistive Sensors

Part #	Quick#	>ASS< Part #	Price	Type	Signal	Connection
MFS-T2-3-7	3809	1-808-30-00	\$75.21	4-wire Programable Sensor for C slot	PNP	M8, .5m long

Many >ASS< sprue grippers use >ASS< IES.. or IEK.. sensors.

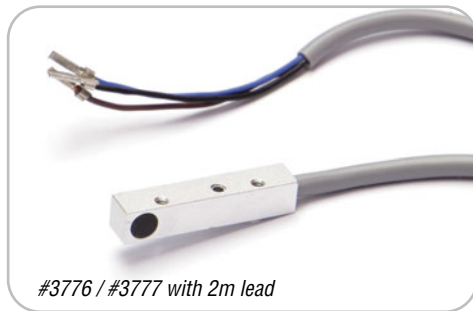


3-Wire Magnetoresistive Sensors

Part #	Quick#	>ASS< Part #	Price	Type	Signal	Connection
UAI-IEK-8-PNP	2215	1-808-12-00	\$49.05	3-wire for GRZ grippers	PNP	lead, 2.5m long
UAI-IEK-8-NPN	2216	1-808-14-00	\$59.95	3-wire for GRZ grippers	NPN	
IES-8-PNP	3805	1-808-16-00	\$49.60	3-wire for GRZ grippers	PNP	M8 connector, 0.16m long
IES-8-NPN	3806	1-808-18-00	\$65.40	3-wire for GRZ grippers	NPN	

- Power Supply: 12–30V dc
- Max. Switching Frequency: 2000 Hz
- Operating Temp.: -30° to 85°C
- Voltage Drop: 1.8V dc
- IEC Rating: IP 67
- Cable: PUR

>ASS< GRZ 10-08 sprue grippers use IE-AL-K.. sensors.



- Power Supply: 10–30V dc
- Max. Switching Frequency: 3000 Hz
- Operating Temp.: 25° to 70°C
- Voltage Drop: 2.5V dc
- IEC Rating: IP 67
- Cable: PUR

3-Wire Inductive Sensors

Part #	Quick#	>ASS< Part #	Price	Type	Signal	Connection
IE-AL-K	3776	1-808-38-00	\$95.92	3-wire Inductive	PNP	lead, 2m long
IE-AL-K-NPN	3777	1-808-39-00	\$95.92	3-wire Inductive	NPN	

Use Quick#s for easy online ordering.

Sensor Quick Reference

Choosing the Right Sensor for Your Application:

Many Gimatic grippers that are in the same family, use the same sensor(s). In this case, in the Quick# column, it will read: 'ALL'. When the family does not use the same sensor(s), you will find them by size, and with its corresponding Quick#.

Notice the slot type. In some cases an application can use more than one, example: GS16 has both the C & T sensor slots.

For more information on these sensors, see page 1002–1005.

For further help, call EMI and we can help find the correct sensor for your application.

Style: A = with extended 3-Pin M8 Snap Connector, B = With lead, 2.5m long, C = With M8 Connector, 0.3m long, D = with 3-Pin M8 Snap Connector

Slot Type: C = C-slot sensor, T = T-slot sensor, D = Dovetail-slot sensor, O = Other

Compatibility Key: ★ = Fully Open, Full Close Only ◆ = Full Open, Full Close, Midstroke ▼ = Presence Confirmation

Sensor Requires Key: □ = Requires K-Sens Kit Q#7440 ○ = Requires Sensor Band

GRIPPER FINGERS / TILT UNITS

Gripper Part#	Slot Type	SS4M225G	SS4N225G	SS3M203G	SS3N203G	SN4M225G	SN4N225G	SN3M203G	SN3N203G	SSQ4M225G	SSQ4N225G	SSQ3M203G	SSQ3N203G
		Quick#	1883	1882	1884	6282	6357	6278	6356	6277	7709	7707	7710
Signal:		NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP
Style		B	B	C	C	B	B	C	C	B	B	C	C
Price:		\$27.20	\$27.20	\$31.16	\$31.16	\$27.20	\$27.20	\$31.16	\$31.16	\$27.20	\$27.20	\$31.16	\$31.16
OFR	<Ø50 BODY	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○
OFR-S	ALL	★	★	★	★	★	★	★	★	★	★	★	★
OFA	<Ø50 BODY	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○
OFA-S	ALL	★	★	★	★	★	★	★	★	★	★	★	★
OFN	ALL	◆○	◆○	◆○	◆○	◆○	◆○	◆○	◆○	◆○	◆○	◆○	◆○
OFN-S	ALL	C	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
OFF	ALL	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○
OFFX	ALL	★○	★○	★○	★○	★○	★○	★○	★○	◆○	◆○	◆○	◆○



GRIPPER FINGERS / TILT UNITS (CONTINUED)

Gripper Part#	Slot Type	PRO-SS4M225G	PRO-SS4N225G	PRO-SS3M215G	PRO-SS3N215G	PRO-SN4M225G	PRO-SN4N225G	PRO-SN3M215G	PRO-SN3N215G	PRO-SSR4M225G	PRO-SSR4N225G	PRO-SSR3M215G	PRO-SSR3N215G
		Quick#	7522	7521	7625	7525	7524	7523	7626	7526	7645	7644	7647
Signal:		NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP
Style		B	B	C	C	B	B	C	C	B	B	C	C
Price:		\$70.00	\$70.00	\$92.00	\$92.00	\$70.00	\$70.00	\$92.00	\$92.00	\$70.00	\$70.00	\$92.00	\$92.00
OFR	<Ø50 BODY	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○
OFR-S	ALL	★	★	★	★	★	★	★	★	★	★	★	★
OFA	<Ø50 BODY	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○
OFA-S	ALL	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○
OFN	ALL	◆○	◆○	◆○	◆○	◆○	◆○	◆○	◆○	◆○	◆○	◆○	◆○
OFN-S	ALL	C	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
OFF	ALL	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○
OFFX	ALL	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○

Sensor Quick Reference

CYLINDERS / SLIDES / ROTARIES / NIPPERS

Gripper Part#	Quick#	Slot Type	SS4M225G	SS4N225G	SS3M203G	SS3N203G	SL4M225G	SL4N225G	SL3M203G	SL3N203G	SN4M225G	SN4N225G	SN3M203G	SN3N203G	SC4M225G	SC4N225G	SC3M203G	SC3N203G	SS04M225G	SS04N225G	SS03M203G	SS03N203G
			1883	1882	1884	6282	793	792	6456	6274	6357	6278	6356	6277	1796	6273	6457	6455	7709	7707	7710	7708
Signal:			NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP
Style			B	B	C	C	B	B	C	C	B	B	C	C	B	B	C	C	B	B	C	C
Price:			\$27.20	\$27.20	\$31.16	\$31.16	\$27.20	\$27.20	\$31.16	\$31.16	\$27.20	\$27.20	\$31.16	\$31.16	\$30.30	\$30.30	\$34.62	\$34.62	\$27.20	\$27.20	\$31.16	\$31.16
OFL	ALL	C	◆	◆	◆	◆					◆	◆	◆	◆					◆	◆	◆	◆
OFB	ALL	C	◆	◆	◆	◆					◆	◆	◆	◆					◆	◆	◆	◆
OFC	ALL	C	◆	◆	◆	◆					◆	◆	◆	◆					◆	◆	◆	◆
ZJ	6384	C	◆	◆	◆	◆					◆	◆	◆	◆					◆	◆	◆	◆
ZL		C	◆	◆	◆	◆					◆	◆	◆	◆					◆	◆	◆	◆
ZE-P	ALL	C	◆	◆	◆	◆					◆	◆	◆	◆					◆	◆	◆	◆
Z	ALL	T	◆□	◆□	◆□	◆□	◆	◆	◆	◆					◆	◆	◆	◆	◆□	◆□	◆□	◆□
RT	ALL	C	◆	◆	◆	◆					◆	◆	◆	◆					◆	◆	◆	◆
R	ALL	T	◆□	◆□	◆□	◆□	◆	◆	◆	◆					◆	◆	◆	◆	◆□	◆□	◆□	◆□
ITSC	ALL	D	◆□	◆□	◆□	◆□													◆□	◆□	◆□	◆□
GN-xxS	ALL	C	★	★	★	★													★	★	★	★
GNS (BLADE)	ALL	C	★	★	★	★													★	★	★	★
GNS (SLIDE)	ALL	C	★	★	★	★													★	★	★	★
ZG		C	★	★	★	★													★	★	★	★

CYLINDERS / SLIDES / ROTARIES / NIPPERS (CONTINUED)

Gripper Part#	Quick#	Slot Type	CB3M2G	CB3M2G	PRO-SS4M225G	PRO-SS4N225G	PRO-SS3M215G	PRO-SS3N215G	PRO-SN4M225G	PRO-SN4N225G	PRO-SN3M215G	PRO-SN3N215G	PRO-SSR4M225G	PRO-SSR4N225G	PRO-SSR3M215G	PRO-SSR3N215G
			6126	1794	7522	7521	7625	7525	7524	7523	7626	7526	7645	7644	7647	7646
Signal:			PNP	NPN	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP
Style			D	D	B	B	C	C	B	B	C	C	B	B	C	C
Price:			\$22.88	\$22.90	\$70.00	\$70.00	\$92.00	\$92.00	\$70.00	\$70.00	\$92.00	\$92.00	\$70.00	\$70.00	\$87.00	\$87.00
OFL	ALL	C			◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
OFB	ALL	C			◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
OFC	ALL	C			◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
ZJ	6384	C			◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
ZE-P	ALL	C			◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
ITSC	ALL	D	◆	◆	★□	★□	★□	★□					★□	★□	★□	★□
GNS (BLADE)	ALL	C			★	★	★	★	★	★	★	★	★	★	★	★
GNS (SLIDE)	ALL	C			★	★	★	★	★	★	★	★	★	★	★	★
ZG		C			★	★	★	★	★	★	★	★	★	★	★	★



Style: A = with extended 3-Pin M8 Snap Connector, B = With lead, 2.5m long, C = With M8 Connector, 0.3m long, D = with 3-Pin M8 Snap Connector

Slot Type: C = C-slot sensor, T = T-slot sensor, D = Dovetail-slot sensor, O = Other

Compatibility Key: ★ = Fully Open, Full Close Only ◆ = Full Open, Full Close, Midstroke ▼ = Presence Confirmation

Sensor Requires Key: □ = Requires K-Sens Kit Q#7440 ○ = Requires Sensor Band

Sensor Quick Reference

SPRUE GRIPPERS

Gripper Part#	Slot Type	SS4M225G	SS4N225G	SS3M203G	SS3N203G	SL4M225G	SL4N225G	SL3M203G	SL3N203G	SN4M225G	SN4N225G	SN3M203G	SN3N203G	SC4M225G	SC4N225G	SC3M203G	SC3N203G	SSY3M203G	SSY3N203G	SSY4M225G	SSY4N225G	
		Quick#	1883	1882	1884	6282	793	792	6456	6274	6357	6278	6356	6277	1796	6273	6457	6455	7588	7589	7590	7591
Signal:		NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	
Style:		B	B	C	C	B	B	C	C	B	B	C	C	B	B	C	C	C	C	B	B	
Price:		\$27.20	\$27.20	\$31.16	\$31.16	\$27.20	\$27.20	\$31.16	\$31.16	\$27.20	\$27.20	\$31.16	\$31.16	\$30.30	\$30.30	\$34.62	\$34.62	\$31.16	\$31.16	\$27.20	\$27.20	
AA20/NO	BOTH	T				◆	◆	◆	◆					◆	◆	◆	◆					
AA22/NO	BOTH	T				◆	◆	◆	◆					◆	◆	◆	◆					
AA21/NO	ALL	T				◆	◆	◆	◆					◆	◆	◆	◆					
AA23/NO	BOTH	T				◆	◆	◆	◆					◆	◆	◆	◆					
AA26/NO	BOTH	C/T	▼	▼	▼	▼	◆	◆	◆	▼	▼	▼	▼	◆	◆	◆	◆					
AA35/NO	BOTH	C/T	▼	▼	▼	▼	◆	◆	◆	▼	▼	▼	▼	◆	◆	◆	◆					
DD20-16M2	7551	C	▼	▼	▼	▼				▼	▼	▼	▼									
DD20-16L2	7552	C	▼	▼	▼	▼				▼	▼	▼	▼									
DD20-16W2	7550	C	▼	▼	▼	▼				▼	▼	▼	▼									
DD20-16B2	7553	C	▼	▼	▼	▼				▼	▼	▼	▼									
PB-0013S	1878	C	▼	▼	▼	▼				▼	▼	▼	▼									
PB-0013-S2	7700	C																	▼	▼	▼	▼
PB-0180-S	6988	C	▼	▼	▼	▼				▼	▼	▼	▼									
PB-0180-S2	7701	C																	▼	▼	▼	▼
PB-0181-S	6999	C	▼	▼	▼	▼				▼	▼	▼	▼									
PB-0182-S	7287	C	▼	▼	▼	▼				▼	▼	▼	▼									
PB-0187-S	7250	C	▼	▼	▼	▼				▼	▼	▼	▼									
PB-0187-S2	7702	C																	▼	▼	▼	▼
PB-0007-S3	7461	C																				
PB-0008-S3	7280	C																				

SPRUE GRIPPERS (CONTINUED)

Gripper Part#	Slot Type	PRO-SS4M225G	PRO-SS4N225G	PRO-SS3M215G	PRO-SS3N215G	PRO-SN4M225G	PRO-SN4N225G	PRO-SN3M215G	PRO-SN3N215G	PRO-SSR4M225G	PRO-SSR4N225G	PRO-SSR3M215G	PRO-SSR3N215G
		Quick#	7522	7521	7625	7525	7524	7523	7626	7526	7645	7644	7647
Signal:		NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP
Style:		B	B	C	C	B	B	C	C	B	B	C	C
Price:		\$70.00	\$70.00	\$92.00	\$92.00	\$70.00	\$70.00	\$92.00	\$92.00	\$70.00	\$70.00	\$87.00	\$87.00
AA26/NO	BOTH	C	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼
AA35/NO	BOTH	C	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼
DD20-16M2	7551	C	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼
DD20-16L2	7552	C	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼
DD20-16W2	7550	C	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼
DD20-16B2	7553	C	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼
PB-0013-S2	7700	C	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼
PB-0180-S	6988	C	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼
PB-0180-S2	7701	C	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼
PB-0181-S	6999	C	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼
PB-0182-S	7287	C	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼
PB-0187-S2	7702	C	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼
PB-0007-S3	7461	C	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼
PB-0008-S3	7280	C	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼

Style: A = with extended 3-Pin M8 Snap Connector, B = With lead, 2.5m long, C = With M8 Connector, 0.3m long, D = with 3-Pin M8 Snap Connector

Slot Type: C = C-slot sensor, T = T-slot sensor, D = Dovetail-slot sensor, O = Other

Compatibility Key: ★ = Fully Open, Full Close Only ◆ = Full Open, Full Close, Midstroke ▼ = Presence Confirmation

Sensor Requires Key:
 = Requires K-Sens Kit Q#7440
 = Requires Sensor Band

Sensor Quick Reference

Style: A = with extended 3-Pin M8 Snap Connector, B = With lead, 2.5m long, C = With M8 Connector, 0.3m long, D = with 3-Pin M8 Snap Connector

Slot Type: C = C-slot sensor, T = T-slot sensor, D = Dovetail-slot sensor, O = Other

Compatibility Key: ★ = Fully Open, Full Close Only ◆ = Full Open, Full Close, Midstroke ▼ = Presence Confirmation

Sensor Requires Key: □ = Requires K-Sens Kit Q#7440 ○ = Requires Sensor Band

SPECIALTY GRIPPERS

Gripper Part#	Quick#	Slot Type	SS4M225G	SS4N225G	SS3M203G	SS3N203G	SN4M225G	SN4N225G	SN3M203G	SN3N203G	SSQ4M225G	SSQ4N225G	SSQ3M203G	SSQ3N203G	GSGISNPN	GSGISPNP
			1883	1882	1884	6282	6357	6278	6356	6277	7709	7707	7710	7708	2429	2430
Signal:			NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP
Style:			B	B	C	C	B	B	C	C	B	B	C	C	B	B
Price:			\$27.20	\$27.20	\$31.16	\$31.16	\$27.20	\$27.20	\$31.16	\$31.16	\$27.20	\$27.20	\$31.16	\$31.16	\$58.50	\$58.50
TFA20-25S	6697	C	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆		
AGG19	7130	C	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○		
AGG21/AGG30	BOTH	C	★	★	★	★	★	★	★	★	★	★	★	★		
MFD27 – MFD63	ALL	C	★	★	★	★	★	★	★	★	★	★	★	★		
MFU27 – MFU63	ALL	C	★	★	★	★	★	★	★	★	★	★	★	★		
PT28/PT23S/PT30S	ALL	C	★	★	★	★	★	★	★	★	★	★	★	★		
MAG20	7383	C	★	★	★	★	★	★	★	★	★	★	★	★		
MPPM	ALL	C	★	★	★	★	★	★	★	★	◆	◆	◆	◆		
MPXM	ALL	C	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆		
MPLM	ALL	C	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆		
MPBM	ALL	C	★	★	★	★	★	★	★	★	★	★	★	★		
MPRM	ALL	O													◆	◆
MPRJ	7408	O													◆	◆
MPBS	ALL	C	★	★	★	★	★	★	★	★	★	★	★	★		
MPBS (JAW TRIGGER)	BOTH	C	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼		
MPTM	ALL	C	★	★	★	★	★	★	★	★	◆	◆	◆	◆		
MRE	ALL	O													★	★

SPECIALTY GRIPPERS (CONTINUED)

Gripper Part#	Quick#	Slot Type	PRO-SS4M225G	PRO-SS4N225G	PRO-SS3M215G	PRO-SS3N215G	PRO-SN4M225G	PRO-SN4N225G	PRO-SN3M215G	PRO-SN3N215G	PRO-SSR4M225G	PRO-SSR4N225G	PRO-SSR3M215G	PRO-SSR3N215G
			7522	7521	7625	7525	7524	7523	7626	7526	7645	7644	7647	7646
Signal:			NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP
Style:			B	B	C	C	B	B	C	C	B	B	C	C
Price:			\$70.00	\$70.00	\$92.00	\$92.00	\$70.00	\$70.00	\$92.00	\$92.00	\$70.00	\$70.00	\$87.00	\$87.00
TFA20-25S	6697	C	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
AGG19	7130	C	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○	★○
AGG21/AGG30	BOTH	C	★	★	★	★	★	★	★	★	★	★	★	★
MFD27 – MFD63	ALL	C	★	★	★	★	★	★	★	★	★	★	★	★
MFU27 – MFU63	ALL	C	★	★	★	★	★	★	★	★	★	★	★	★
PT28/PT23S/PT30S	ALL	C	★	★	★	★	★	★	★	★	★	★	★	★
MAG20	7383	C	★	★	★	★	★	★	★	★	★	★	★	★
MPPM	ALL	C	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
MPXM	ALL	C	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
MPLM	ALL	C	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
MPBM	ALL	C	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
MPBS	ALL	C	★	★	★	★	★	★	★	★	★	★	★	★
MPBS (JAW TRIGGER)	BOTH	C	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼
MPTM	ALL	C	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆



Sensor Quick Reference

GENERAL PURPOSE GRIPPERS

Gripper Part#	Slot Type	SS4M225G	SS4N225G	SS3M203G	SS3N203G	SL4M225G	SL4N225G	SL3M203G	SL3N203G	SN4M225G	SN4N225G	SN3M203G	SN3N203G	SC4M225G	SC4N225G	SC3M203G	SC3N203G	SSQ4M225G	SSQ4N225G	SSQ3M203G	SSQ3N203G
		Quick#	1883	1882	1884	6282	793	792	6456	6274	6357	6278	6356	6277	1796	6273	6457	6455	7709	7707	7710
Signal:		NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP
Style:		B	B	C	C	B	B	C	C	B	B	C	C	B	B	C	C	B	B	C	C
Price:		\$27.20	\$27.20	\$31.16	\$31.16	\$27.20	\$27.20	\$31.16	\$31.16	\$27.20	\$27.20	\$31.16	\$31.16	\$29.13	\$29.13	\$34.62	\$34.62	\$27.20	\$27.20	\$31.16	\$31.16
GS10	ALL	T	★□	★□	★□	★□	★	★	★	★				★	★	★	★	◆□	◆□	◆□	◆□
GS16 – GS25	ALL	C/T	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	◆	◆	◆	◆
GS32/ GS40	ALL	C/T	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
GW10	6337	T	★□	★□	★□	★□	★	★	★	★				★	★	★	★	◆□	◆□	◆□	◆□
GW16 – GW25	ALL	C	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	◆	◆	◆	◆
SZ-08 – SZ-20	7655/6760/6761/7657	C	★	★	★	★				★	★	★	★					◆	◆	◆	◆
SZ-25 – SZ-40	6762 – 6764	C	◆	◆	◆	◆				◆	◆	◆	◆					◆	◆	◆	◆
MGX	ALL	C/O	★	★	★	★				★	★	★	★					◆	◆	◆	◆
PN10/ PN16	ALL	O																			
PN25/ PN40	ALL	D	★□	★□	★□	★□												◆□	◆□	◆□	◆□
GX-S	ALL	C	◆	◆	◆	◆				◆	◆	◆	◆					◆	◆	◆	◆
PE	ALL	D	◆□	◆□	◆□	◆□												◆□	◆□	◆□	◆□
XP/XT/XA	ALL	T	★□	★□	★□	★□	★	★	★	★				★	★	★	★	◆□	◆□	◆□	◆□
XR	ALL	T	◆□	◆□	◆□	◆□	◆	◆	◆	◆				◆	◆	◆	◆	◆□	◆□	◆□	◆□
SX2510	7164	C	★	★	★	★				★	★	★	★					◆	◆	◆	◆
SX2520 – SX6380	ALL	C	◆	◆	◆	◆				◆	◆	◆	◆					◆	◆	◆	◆
SXT2505 / SXT4008	7172/ 7173	C								★	★	★	★								
SXT5012 / SXT6315	7174/ 7175	C								◆	◆	◆	◆								
DH1905	7180	C								★	★	★	★					◆	◆	◆	◆
DH22 / DH27	ALL	C/O	★	★	★	★				★	★	★	★					◆	◆	◆	◆
DH35 – DH87	ALL	C/O	◆	◆	◆	◆				◆	◆	◆	◆					◆	◆	◆	◆
TH27 / TH33	ALL	C																◆	◆	◆	◆
TH45 – TH125	ALL	C/O	★	★	★	★				★	★	★	★					◆	◆	◆	◆
PQ1608 – PQ3015	ALL	C	★	★	★	★				★	★	★	★					◆	◆	◆	◆
PQ3523 – PQ6063	ALL	C	◆	◆	◆	◆				◆	◆	◆	◆					◆	◆	◆	◆
T30	6284	T	★□	★□	★□	★□								★	★	★	★	◆□	◆□	◆□	◆□
T40 / T63	6285/6286	D	★□	★□	★□	★□												◆□	◆□	◆□	◆□
JP	ALL	T	★□	★□	★□	★□	★	★	★	★				★	★	★	★	◆□	◆□	◆□	◆□

Note: SGP-S Gripper Sensor options are listed on product pages 654 –655.

Style: A = with extended 3-Pin M8 Snap Connector, B = With lead, 2.5m long, C = With M8 Connector, 0.3m long, D = with 3-Pin M8 Snap Connector

Slot Type: C = C-slot sensor, T = T-slot sensor, D = Dovetail-slot sensor, O = Other

Compatibility Key: ★= Fully Open, Full Close Only ◆= Full Open, Full Close, Midstroke ▼= Presence Confirmation

Sensor Requires Key: □= Requires K-Sens Kit Q#7440 ○= Requires Sensor Band

Sensor Quick Reference

GENERAL PURPOSE GRIPPERS (CONTINUED)

Gripper Part#	Slot Type	Quick#	CB3N2G	CB3M2G	SM3MR2G	SM3NR2G	GSGISNPN	GSGISPDP	GSGIS3NPN	GSGIS3PNP	PRO-SS4M225G	PRO-SS4N225G	PRO-SS3M215G	PRO-SS3N215G	PRO-SN4M225G	PRO-SN4N225G	PRO-SN3M215G	PRO-SN3N215G	PRO-SSR4M225G	PRO-SSR4N225G	PRO-SSR3M215G	PRO-SSR3N215G
			6126	1794	1792	6276	2429	2430	2602	2603	7522	7521	7625	7525	7524	7523	7626	7526	7645	7644	7647	7646
Signal:			PNP	NPN	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP
Style:			D	D	A	A	B	B	B	B	B	B	C	C	B	B	C	C	B	B	C	C
Price:			\$22.88	\$22.88	\$29.50	\$29.54	\$58.50	\$58.50	\$92.00	\$92.00	\$70.00	\$70.00	\$92.00	\$92.00	\$70.00	\$70.00	\$92.00	\$92.00	\$70.00	\$70.00	\$87.00	\$87.00
GS10	ALL	T									◆	◆	◆	◆					◆	◆	◆	◆
GS16 – GS40	ALL	C / T									◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
GW10	ALL	T									◆	◆	◆	◆					◆	◆	◆	◆
GW16 – GW25	ALL	C / T									◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
SZ-08		C									◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
SZ-12 – SZ-40	ALL	C									◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
MGX	ALL	C / O					◆	◆			◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
PN10/ PN16	ALL	O			★	★																
PN25/ PN40	ALL	D	◆	◆							◆	◆	◆	◆					◆	◆	◆	◆
GX-S	ALL	C									◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
PE	Stroke <= 80	D	◆	◆							◆	◆	◆	◆					◆	◆	◆	◆
XP/XT/ XR/XA	ALL	T									◆	◆	◆	◆					◆	◆	◆	◆
SX	Stroke <80	C									◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
SXT	ALL	C									◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
DH	ALL	C									◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
TH	ALL	C									◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
PQ	ALL	C									◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
T	ALL	T									◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
JP	ALL	T									◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆

Note: SGP-S Gripper Sensor options are listed on product pages 654–655.

Style: A = with extended 3-Pin M8 Snap Connector, B = With lead, 2.5m long, C = With M8 Connector, 0.3m long, D = with 3-Pin M8 Snap Connector

Slot Type: C = C-slot sensor, T = T-slot sensor, D = Dovetail-slot sensor, O = Other

Compatibility Key: ★ = Fully Open, Full Close Only ◆ = Full Open, Full Close, Midstroke ▼ = Presence Confirmation

Sensor Requires Key: □ = Requires K-Sens Kit Q#7440 ○ = Requires Sensor Band

Choosing the Right Sensor for Your Application:

Many Gimatic grippers that are in the same family, use the same sensor(s). In this case, in the Quick# column, it will read: 'ALL'. When the family does not use the same sensor(s), you will find them by size, and with its corresponding Quick#.

Notice the slot type. In some cases an application can use more than one, example: GS16 has both the C & T sensor slots.

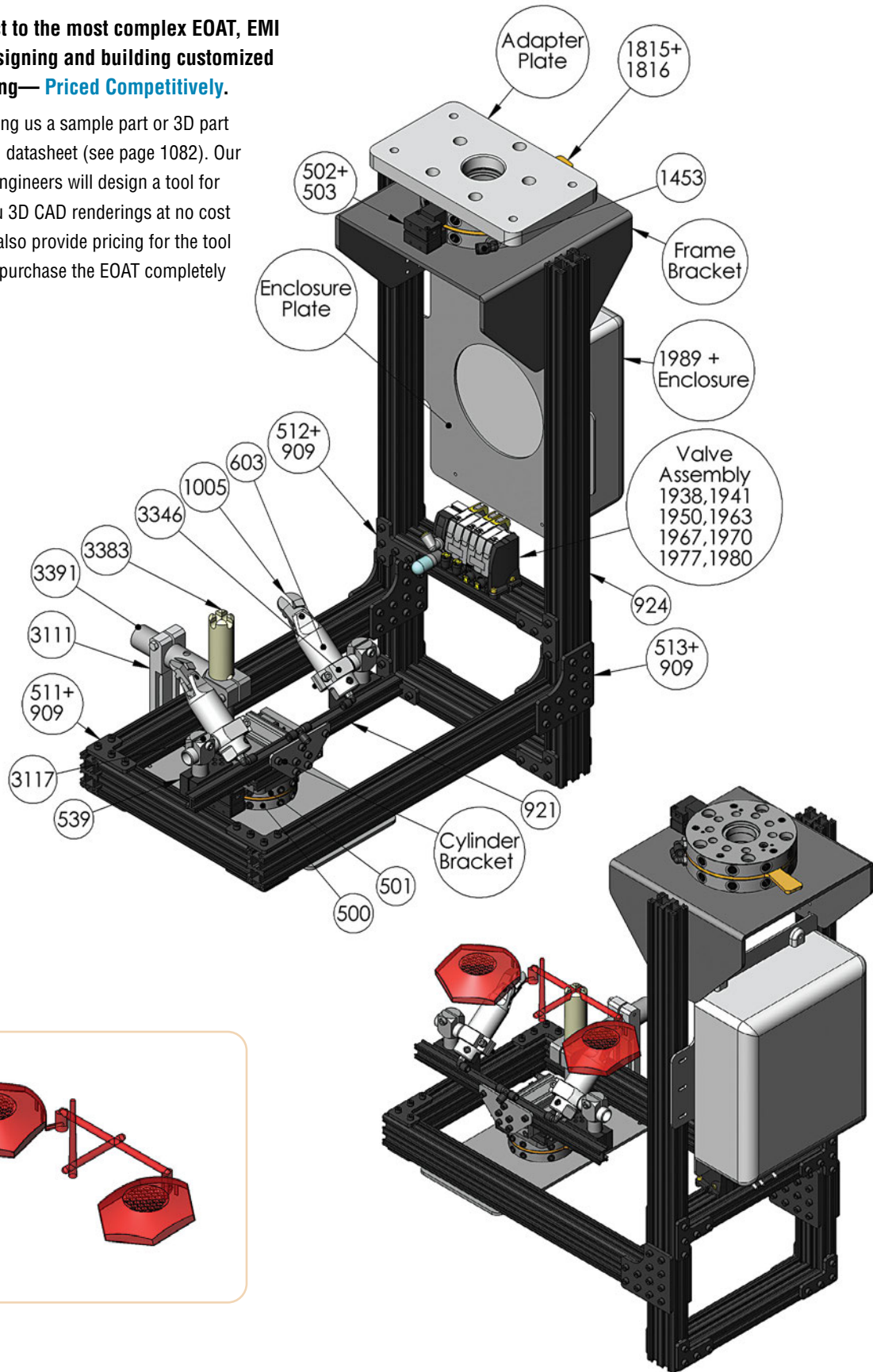
For more information on these sensors, see page 1002–1005.

For further help, call EMI and we can help find the correct sensor for your application.

EOAT Design and Build Service

From the simplest to the most complex EOAT, EMI specializes in designing and building customized End-of-Arm-Tooling— **Priced Competitively.**

Get started by sending us a sample part or 3D part file and a completed datasheet (see page 1082). Our experienced EOAT engineers will design a tool for you and provide you 3D CAD renderings at no cost or obligation. We'll also provide pricing for the tool should you want to purchase the EOAT completely assembled.



Valves & Regulators Overview



Mini Pressure Regulators p.1014

Pressure regulators meter and maintain output pressure to pneumatic devices despite power supply pressure fluctuations and help control pressure for pressure sensitive applications.

Mini Pressure Regulators p.1014



Flow (Speed) Control p.1015



Exhaust Valves p.1015



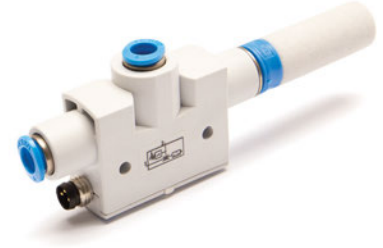
Two-Stage Flow (Speed) Control p.1016



In-line Solenoid Valve p.1017



Vacuum Generator p.1017



Inline Filters p.1015



Vacuum Generators p.1018



Vacuum Generators p.1022



Clampable Vacuum Generators p.1020



Modular Valves p.1024

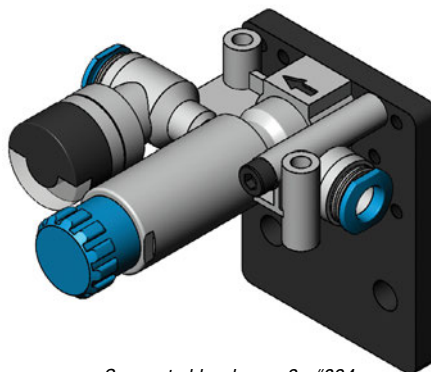
Lightweight and modular, these valves are ideally suited for mounting on robotic EOAT. Use to control grippers, cylinders, and vacuum circuits.



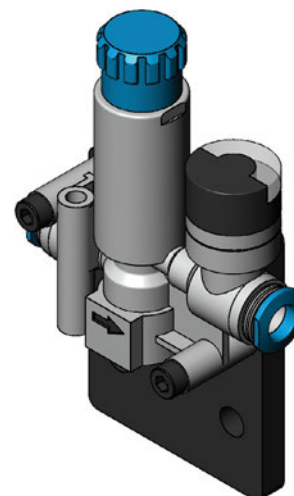
Pressure Regulators



NEW



Suggested hardware: 2x #824

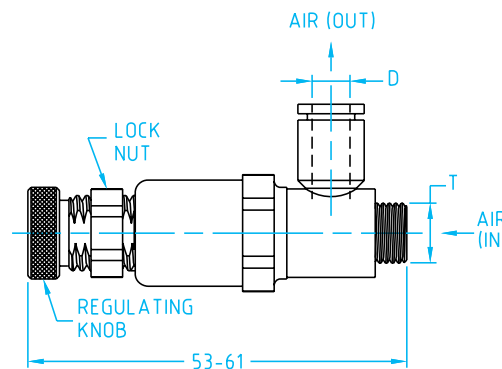


Suggested hardware: 2x #821

Pressure Regulator (with analog pressure indicator)

Quick#	Part#	Pressure Range	Ø Tubing	Wt.	Price
2492	GSF-VRPA-CM-Q4-E	15-116psi	4mm	23g	\$83.50
2493	GSF-VRPA-CM-Q6-E	15-116psi	6mm	23g	\$87.50
Bracket for Pressure Regulator*					
2490	GSC-PRMB-0406				\$13.89

*Suggested hardware for mounting bracket to profile: 2x #854, 2x #856, 1x #6025



Pressure Regulators (with set-point reference marks)

Quick#	Part#	Thread	ØD	Price
1468	GSF-PR-G804	G1/8"	4	\$52.35
1469	GSF-PR-G806	G1/8"	6	\$56.64
1470	GSF-PR-G406	G1/4"	6	\$93.00
1471	GSF-PR-G808	G1/8"	8	\$97.00
1472	GSF-PR-G408	G1/4"	8	\$97.00

Use Quick#s for easy online ordering.



Miniature Pressure Regulators (no pressure gradation marks)

Quick#	Part#	Thread	ØD	Price
1231	GSF-GPR-G806	G1/8"	6	\$37.60
1232	GSF-GPR-G406	G1/4"	6	\$35.42
1233	GSF-GPR-G408	G1/4"	8	\$40.28
1234	GSF-GPR-06	-	6	\$37.02
1235	GSF-GPR-08	-	8	\$38.86

Flow Control

(#306-308 is same body style as #300-305)



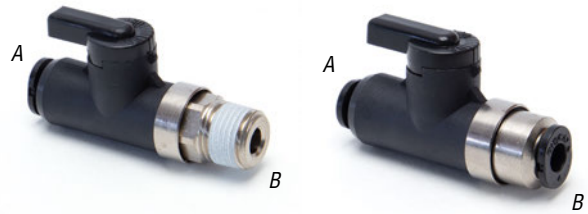
Flow (Speed) Control

Quick#	Part#	Thread	ØD	Control	Price
297	GSF-FCI-04	-	4	In-Line	\$29.69
298	GSF-FCI-06	-	6	In-Line	\$39.30
299	GSF-FCI-08	-	8	In-Line	\$41.77
373	GSF-FCE-M304	M3	4	Exhaust	\$10.96
300	GSF-FCE-M504	M5	4	Exhaust	\$14.72
301	GSF-FCE-M506	M5	6	Exhaust	\$18.75
302	GSF-FCE-G806	G1/8"	6	Exhaust	\$18.75
433	GSF-FCE-G1406	G1/4"	6	Exhaust	\$19.08
374	GSF-FCS-M304	M3	4	Supply	\$10.96
303	GSF-FCS-M504	M5	4	Supply	\$15.15
304	GSF-FCS-M506	M5	6	Supply	\$25.35
305	GSF-FCS-G806	G1/8"	6	Supply	\$17.35
306	GSF-FCB-M504	M5	4	Bi-Directional	\$14.23
307	GSF-FCB-M506	M5	6	Bi-Directional	\$18.60
308	GSF-FCB-G806	G1/8"	6	Bi-Directional	\$17.35



Exhaust Valve & Silencer

Quick#	Part#	Tubing	Dimensions	Price
1852	GSF-EQE-4	Ø4	30mm tall, 34.5mm long, 10mm wide	\$17.30
1853	GSF-EQE-6	Ø6	32.8mm tall, 37mm long, 12mm wide	\$17.80



Shut-off Ball Valve

Quick#	Part#	A	B	Wt.	Price
2657	GSF-BVC01-4	Ø4	R1/8"	15g	\$9.50
2658	GSF-BVC01-6	Ø6	R1/8"	15g	\$9.50
2659	GSF-BVU4-4	Ø4	Ø4	13g	\$10.00
2660	GSF-BVU6-6	Ø6	Ø6	13g	\$10.00

Note: Male R1/8" threads are compatible with female G1/8" threads.



Replacement Elements

Quick#	Part#	ØD	Size	Filter Area	Price
2647	GSF-SFE-2	-	SFU2	1.16 Inch ²	\$3.00
2648	GSF-SFE-3	-	SFU3	1.96 Inch ²	\$3.50

Replacement elements are not compatible with older versions.



Positive & Negative Pressure Filters

Quick#	Part#	ØD	Size	Filter Area	Wt.	Price
2644	GSF-SFU2-0404	4	SFU2	0.72 Inch ²	21g	\$18.60
2645	GSF-SFU2-0606	6	SFU2	1.16 Inch ²	22g	\$18.80
2646	GSF-SFU3-0808	8	SFU3	1.96 Inch ²	34g	\$20.60

Flow Control

(Dimensional Drawing Shown Full Scale)

This flow controller allows for regulating the speed of a pneumatic cylinder as well as simulating the functionality of a shock absorber. Perfect for use on cylinders without built-in shock absorbers or mounting options, including any RBT unit. One regulator per port is suggested to control both cylinder extend and retract.

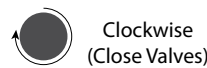
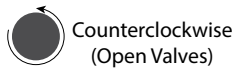
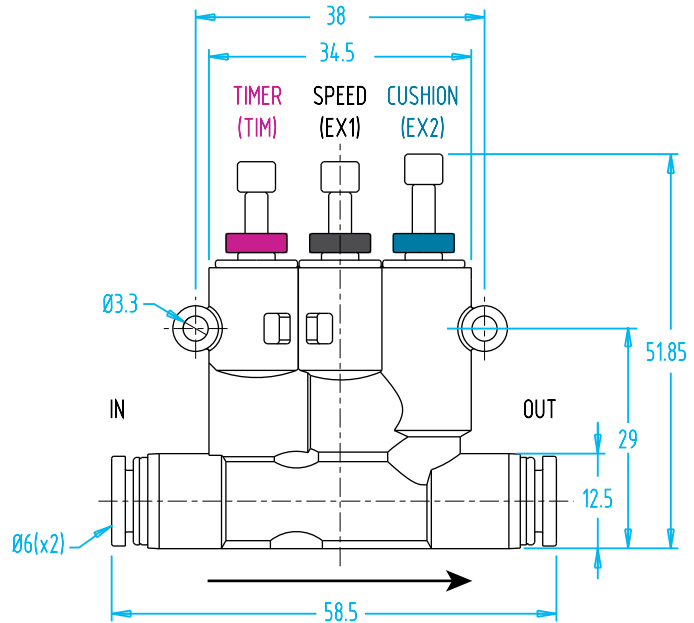


Click for a How-To Video!

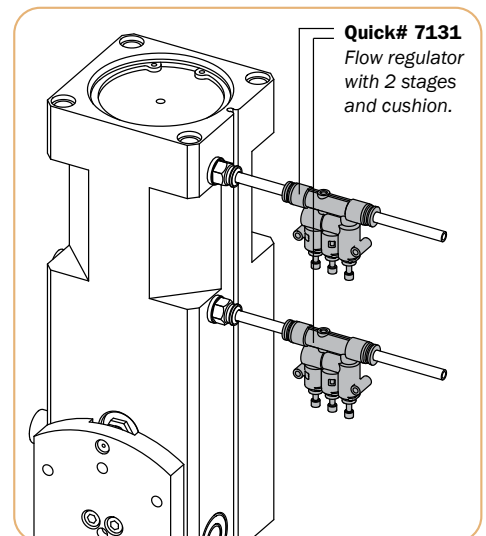
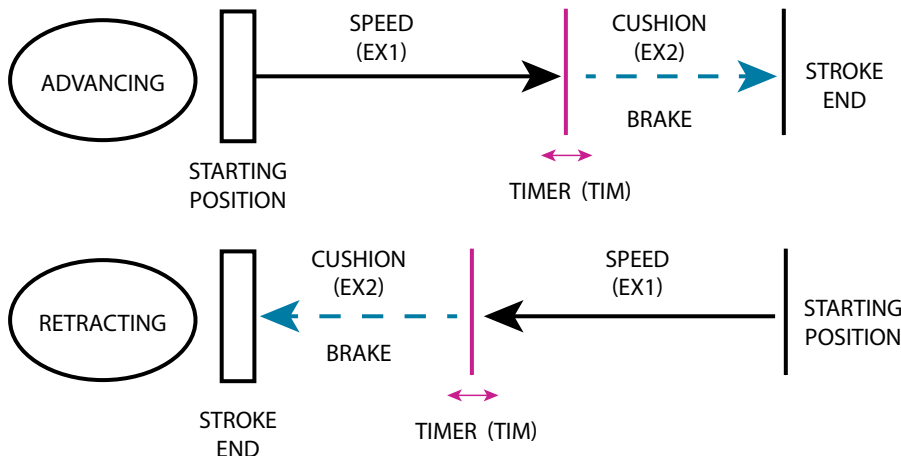


Two Stage Flow (Speed) Control

Quick#	Part#	Price	Wt.
7131	RG-BJSU6	\$51.70	33g



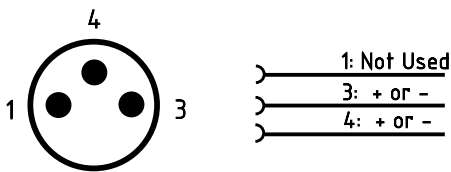
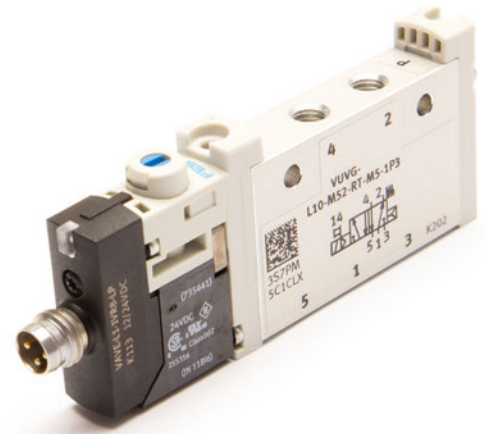
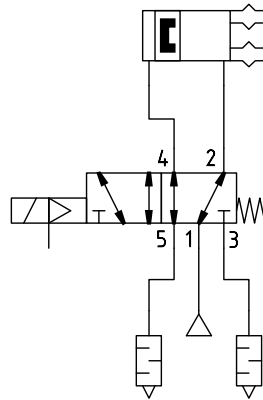
TIM	Shorten the time to the shift (apply brake)	Lengthen the time to shift (apply brake)
EX1	Increase the opening speed of the drive equipment	Decrease the opening speed of the drive equipment
EX2	Decrease the 2nd (braking) speed	Increase the 2nd (braking) speed



In-line Solenoid Valve

In-line valves are designed to be used as stand-alone units, no manifold required! All pneumatic connections are on the valve, open for equipping with your preferred fittings and tubing. The electrical connection to the solenoid is made through an M8 3-pin male plug. The solenoid is controlled by switching a 24Vdc monostable signal.

Optional 3-pin Sensor cables can be found on page 985.



5/2 Size10 Solenoid Inline Valve

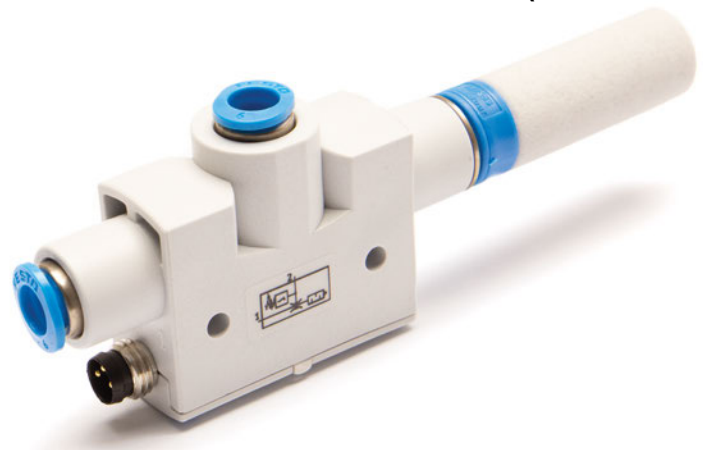
Quick#	Part#	Price	Style	Wt.
8067	VUVGL10M52-RTM5-1R8L	\$64.63	5 Port / 2 Position, Single Solenoid Valve M8, 3-pin Connector & M5 Ports	45g
Accessory				
8068	AMTE-M-H-M5	\$2.30	M5 Short Brass Silencer	

3-pin Sensor cables on page 985. See www.EMICorp.com for additional information.



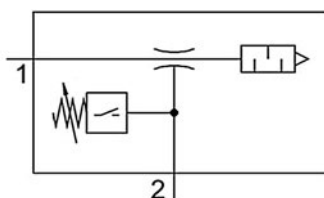
- High vacuum with integrated 3-pin M8 Male monitor switch and R01 silencer included.
- Optional low profile silencer #8069 installed with #244 G1/8 sealing ring.
- Housing made of light, impact-resistant plastic.
- Connection of compressed air and vacuum with push in Ø6mm
- Mounted by 3.4mm clearance holes with 25mm spacing.
- Operating temperature: 32°–122°F.
- Operating pressure: 1-8 bar
- Switching output: PNP

Vacuum Generator (with Silencer)



Quick#	Part#	Price	Max Vacuum Level*	Max Suction Flow*	Air Consumption*	Standard Supply Pressure	Max Operating Pressure	Tubing OD Port	Overall Length**	Wt**
8091	VN10H-T4-PQ2-VQ2-O1P	\$218.00	93%	0.77 SCFM	1.97 SCFM	87 psi	116 psi	Ø6mm	107mm	36g

*Values listed are achieved when supplied the listed standard supply pressure. **Overall Length and weight with standard silencer (shown above). This is reduced when using Quick# 8069. Full dimensional drawing online.



Vacuum Generator Accessories

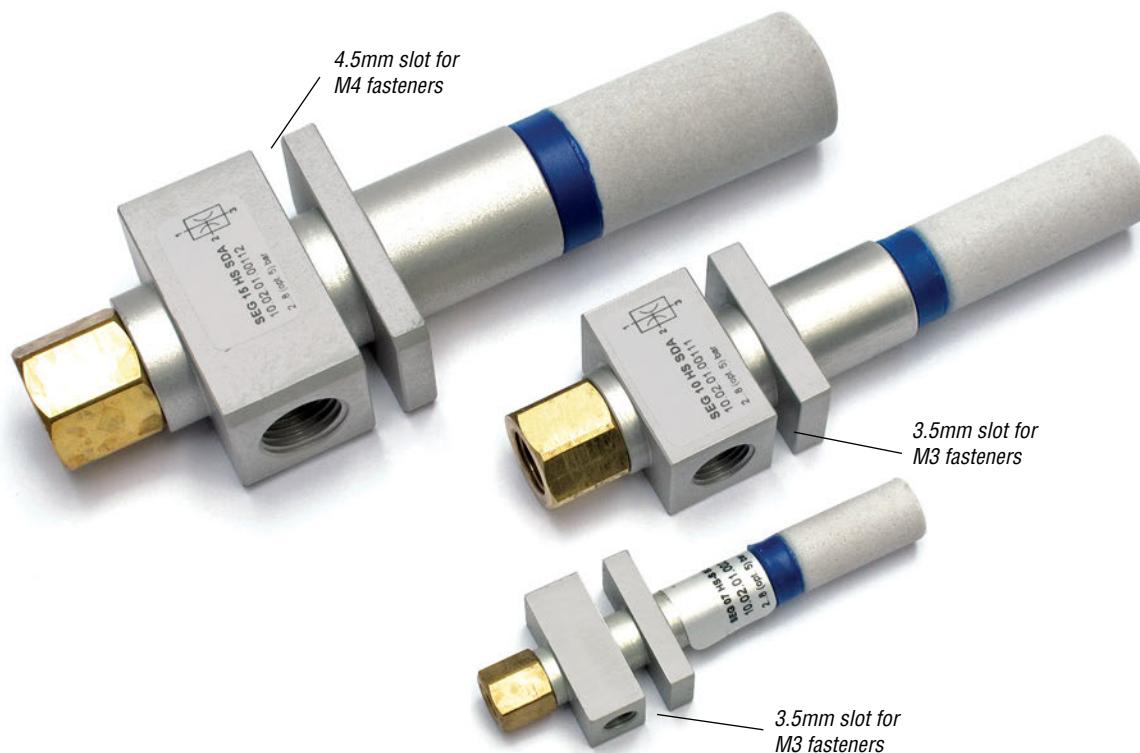
Quick#	Part#	Description	Price
8069	AMTE-M-H-G18	G1/8" Short Brass Silencer	\$2.63
244	GSF-G-G8	G1/8" Sealing Ring (use with #8069)	\$0.25

3-pin Sensor cables on page 985. Dimensional drawings online.

Vacuum Generators (with Silencer)

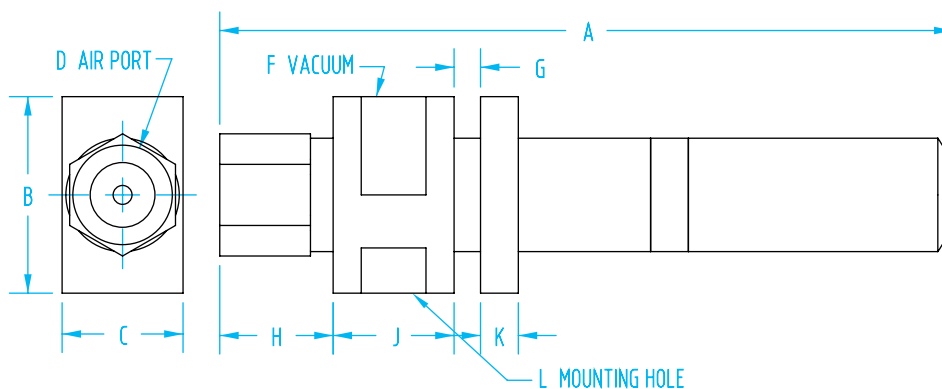
(Shown Actual Size)

These vacuum generators are made of aluminum, making them lightweight and suitable for mounting directly on your end-of-arm tooling. Use these when you need to add a simple vacuum circuit. The vacuum on/off function is controlled by switching the compressed air on/off. They have no moving parts, are maintenance free, and have silencers built in. Operating temperature range is from 14°–176°F. Operating pressure range is: 43.5–94.3 psi.



Quick#	Part#	Price	Max Vacuum Level*	Max Suction Flow*	Air Consumption*	Standard Supply Pressure	Max Operating Pressure	Thread	Overall Length	Wt
361	GSV-VG-056	\$94.53	82%	0.57 SCFM	0.74 SCFM	72.5 psi	87 psi	M5	64.5mm	11g
362	GSV-VG-119	\$94.87	85%	1.20 SCFM	1.73 SCFM			G1/8"	97mm	50g
363	GSV-VG-242	\$110.68	85%	2.44 SCFM	3.60 SCFM			G1/4"	121mm	110g

*Values listed are achieved when supplied the listed standard supply pressure.



	A	B	C	D	F	G	H	J	K	L
361	51	20	10	M5	M5	3.5	10	8	3.5	M5x6
362	97	26	16	G1/8"	G1/8"	3.5	15	16	5	-
363	121	38	22	G1/4"	G1/4"	4.5	21	20	5	-

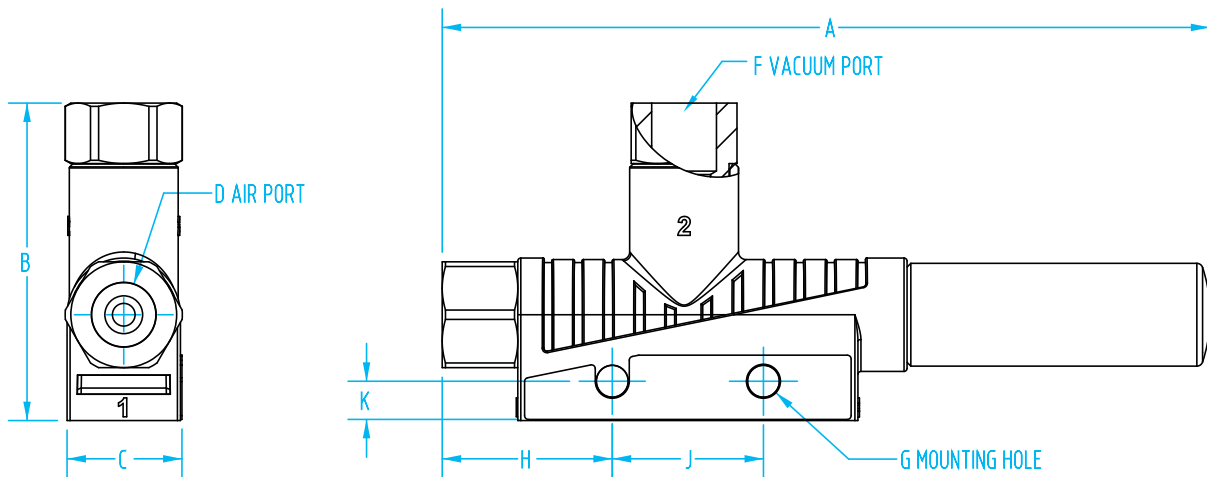
Vacuum Generators (with Silencer)

- One-piece housing made of light, impact-resistant plastic.
- Connection of compressed air and vacuum with threaded ports.
- Vacuum generator with single nozzle, available in three power ratings, from 0.7 to 1.5mm.
- Can be fixed horizontal with mounting holes or vertical with the base on a mounting plate.
- Operating temperature: 32°–140°F.
- Operating pressure: 43.5–87psi (Optimal pressure: 65psi)



Quick#	Part#	Price	Max Vacuum Level*	Max Suction Flow*	Air Consumption*	Standard Supply Pressure	Max Operating Pressure	Thread	Overall Length	Wt
2033	SBP-07-G01-SDA	\$50.19	85%	0.57 SCFM	0.78 SCFM	65 psi	87 psi	M5	74mm	7.5g
2034	SBP-10-G02-SDA	\$52.08		1.33 SCFM	1.70 SCFM			G1/8"	102mm	22g
2035	SBP-15-G02-SDA	\$56.31		2.51 SCFM	3.71 SCFM			G1/8"	102mm	22g

*Values listed are achieved when supplied the listed standard supply pressure.



	A	B	C	D	F	G	H	J	K
2033	74	31	10	M5	M5	4.2	17.5	20	5.2
2034	102	42	15	G1/8"	G1/8"	4.2	22.5	20	5.2
2035	102	42	15	G1/8"	G1/8"	4.2	22.5	20	5.2

Clampable Vacuum Generators (without Silencer)

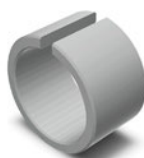
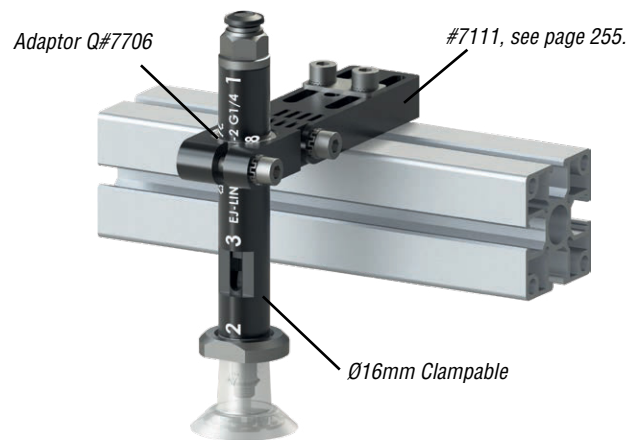
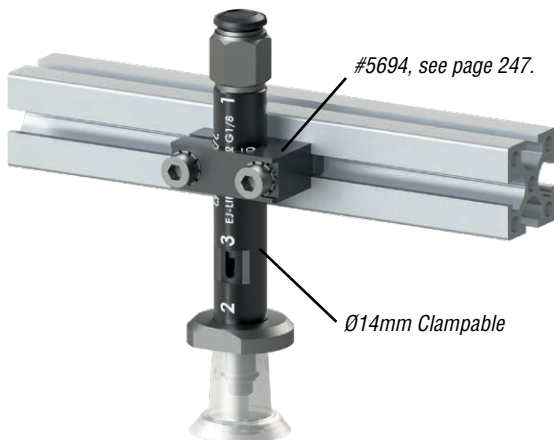
- Two size options available.
- Can be integrated near the gripping point, lightweight.
- No reduction of vacuum flow rate.
- Flexible, the clampable design enables the use of in-line or elbow fittings.
- Two vacuum port options G1/8" & G1/4".



NEW

Quick#	Part#	Price	Max Vacuum Level*	Max Suction Flow*	Air Consumption*	Standard Supply Pressure	Max Operating Pressure	Tubing Port	Overall Length	Wt
7687	S-LP-2-G1/8	\$23.50	82%	0.53 SCFM	0.36 SCFM	31.91 psi	101.53 psi	G1/8"	62.2mm	17g
7688	S-HF-2-G1/8	\$23.50	78%	0.61 SCFM	0.32 SCFM	87.02 psi	101.53 psi	G1/8"	62.2mm	17g
7689	S-HV-2-G1/8	\$23.50	92%	0.47 SCFM	0.28 SCFM	72.52 psi	101.53 psi	G1/8"	62.2mm	17g
7690	M-LP-2-G1/4	\$29.50	89%	1.42 SCFM	1.17 SCFM	58.02 psi	101.53 psi	G1/4"	85.9mm	27g
7691	M-HF-2-G1/4	\$29.50	73%	1.65 SCFM	0.91 SCFM	87.02 psi	101.53 psi	G1/4"	85.9mm	27g
7692	M-HV-2-G1/4	\$29.50	94%	1.61 SCFM	1.00 SCFM	72.52 psi	101.53 psi	G1/4"	85.9mm	27g

*Values listed are achieved when supplied the listed standard supply pressure.



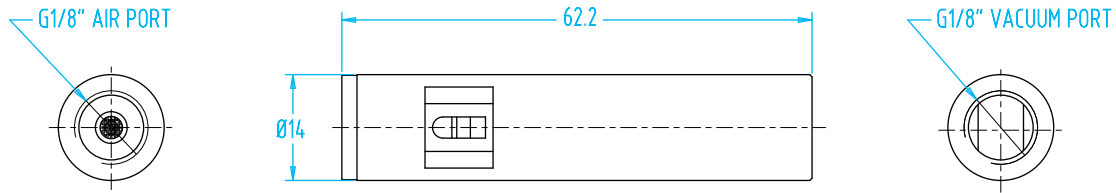
Mounting Adaptor

Quick#	Part#	Price	Wt
7706	MFM-A106	\$10.14	5g

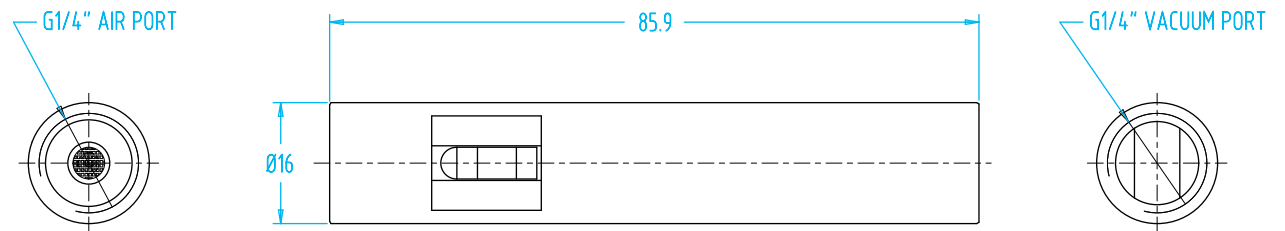
Use this Ø20mm mounting adaptor with Ø16mm vacuum generators.

Clampable Vacuum Generators (without Silencer)

Q# 7687-7689



Q# 7690-7692



Quick#	Part#	Compressed Air Input	Vacuum Level	Suction Flow Rate	General Usage Notes & Typical Applications
7687	S-LP-2-G1/8	Low Feed Pressure, Low Consumption	High	Medium	<ul style="list-style-type: none"> • Cost effective in use because of their high efficiency design (due to only requiring low feed pressure). • High vacuum holding force optimal for picking small to medium parts. • Applications where leakage is minimal, such as picking smooth mostly flat parts.
7690	M-LP-2-G1/4				
7688	S-HF-2-G1/8	High Feed Pressure, High Consumption	Low	High	<ul style="list-style-type: none"> • Applications where a low cycle time is required. • Recommended for pick/place of smaller lightweight parts. • When there is leakage, incomplete vacuum seal, uneven surfaces, texture, porous parts, cardboard, textile/fabric, and when sealing over raised/sunken logos or text. • Often used in combination with polyurethane or foam lip vacuum cups. • When large volumes of air needs to be evacuated, like when using large or multi-bellow vacuum cups.
7691	M-HF-2-G1/4				
7689	S-HV-2-G1/8	Medium Feed Pressure, Medium Consumption	High	Low	<ul style="list-style-type: none"> • Applications that require higher vacuum levels (i.e. larger holding forces), ideal for picking larger/heavier parts. • To improve cycle time it is recommended to use vacuum cups with low internal air volume (i.e. smaller diameter cups and ideally flat or 1.5 bellow vacuum cups). • Applications where holding force more important than cycle time (i.e. higher vacuum level).
7692	M-HV-2-G1/4				

Vacuum Generators (without Silencer)

- High vacuum flow capacity in relation to energy consumption.
- Lightweight, inline design with push-in fittings for vacuum or compressed air.
- Quick and easy installation directly on the tubing.
- See website for dimensional drawings.
- Patented COAX® cartridge technology.
- Without silencer.



Quick#	Part#	Price	Max Vacuum Level*	Max Suction Flow*	Air Consumption*	Standard Supply Pressure	Max Operating Pressure	Tubing OD Port	Overall Length	Wt
2050	PIVG-MICRO-SI6	\$38.86	74%	0.59 SCFM	0.25 SCFM	87 psi	102 psi	Ø6mm	70mm	10g
2051	PIVG-MINI-SI6	\$46.91		1.46 SCFM	0.93 SCFM			Ø6mm	96mm	23g
2052	PIVG-MINI-SI8	\$46.91		1.46 SCFM	0.93 SCFM			Ø8mm	96mm	22g

*Values listed are achieved when supplied the listed standard supply pressure.

These vacuum generators are made of plastic so they are very lightweight and low cost. They are great for in-line use to individual vacuum cups or vacuum cup clusters. Use these when you need to add a simple vacuum circuit. The vacuum on/off function is controlled by switching the compressed air on/off. They have no moving parts and are maintenance free.

The new slim generators are more compact than the previous version.



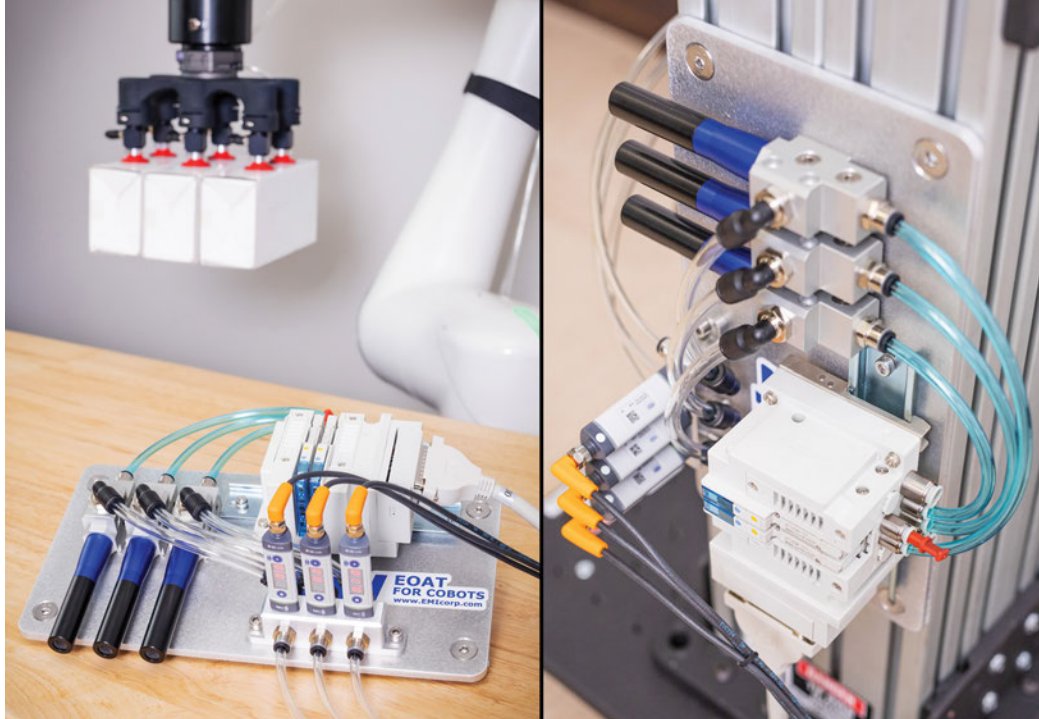
NEW

Quick#	Part#	Price	Max Vacuum Level*	Max Suction Flow*	Air Consumption*	Standard Supply Pressure	Max Operating Pressure	Tubing OD Port	Overall Length	Wt
5235	GSV-VG-ZU05LA	\$16.50	48%	0.46 SCFM	0.49 SCFM	65 psi	87 psi	Ø6mm	52mm	3.9g
5236	GSV-VG-ZU05SA	\$16.50	90%	0.25 SCFM	0.49 SCFM					3.9g
5237	GSV-VG-ZU07LA	\$17.50	48%	0.56 SCFM	0.98 SCFM					4.3g
5238	GSV-VG-ZU07SA	\$17.50	90%	0.39 SCFM	0.98 SCFM					4.3g

*Values listed are achieved when supplied the listed standard supply pressure.

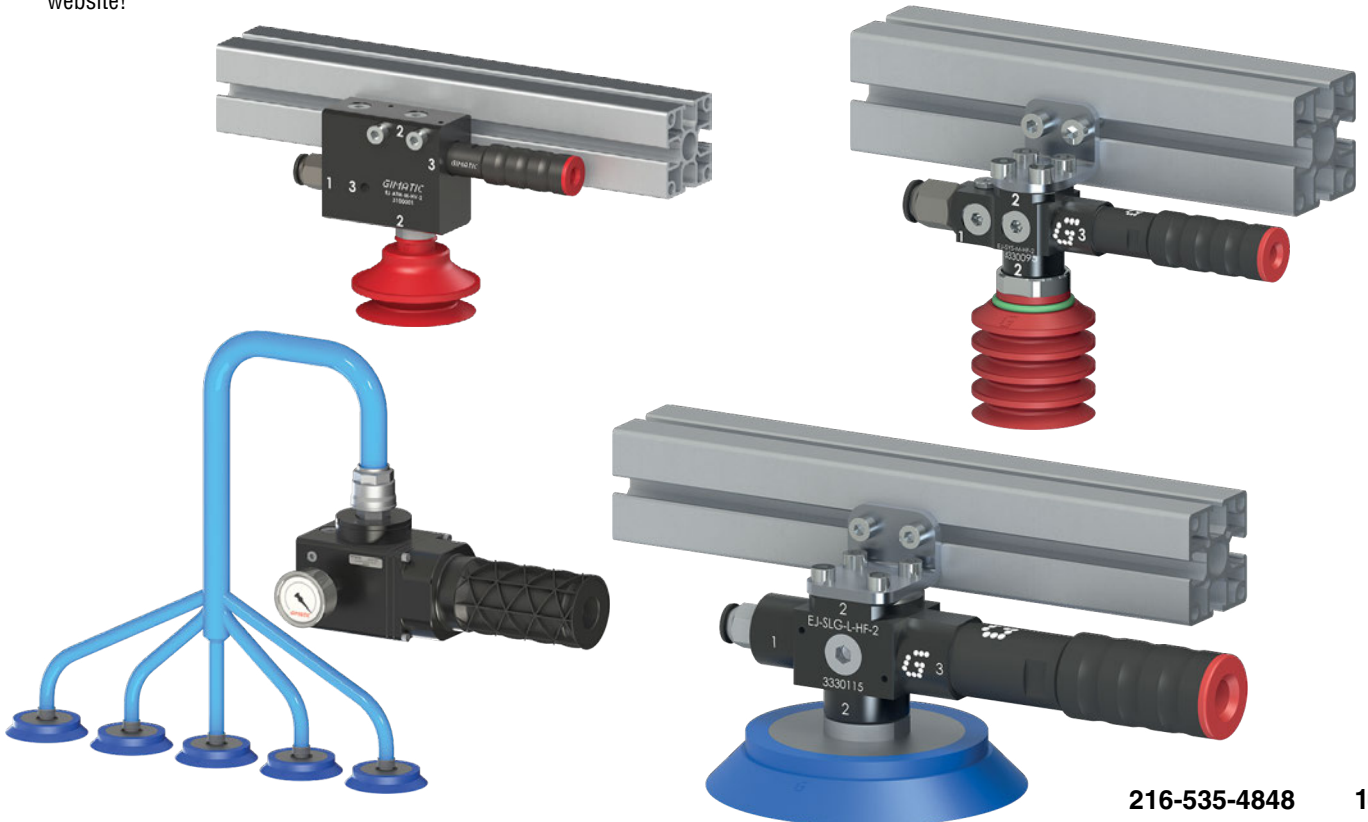
Need the supporting pneumatic equipment to regulate and control your cobot gripper kits?

Our supply filter-regulator kit provides simple mechanical on-off control and preps your compressed air before delivery to our pneumatic valve kit, which includes a 3-zone valve stack to operate both grippers and blow-off independently.



Find Gimatic's new line of Vacuum Products online!

Lightweight and modular vacuum pumps for decentralized and centralized applications. Find these and more on our website!



Mix-and-Match Modularity



Short-Build Island Example

Short-build valve assemblies typically require only one pressure supply and one exhaust connection incorporated in the island “head” module on the left.



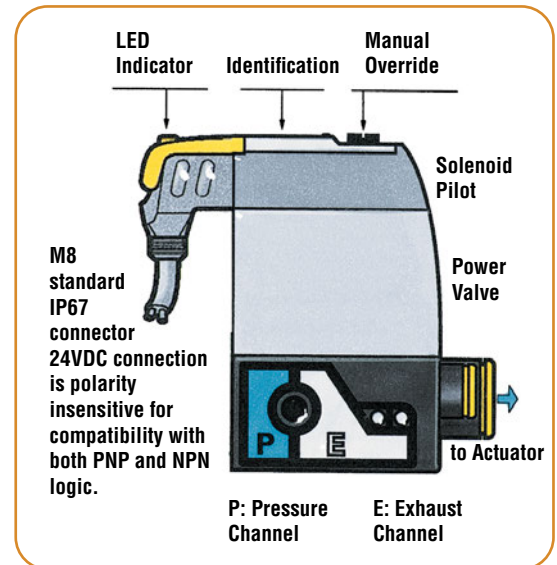
Modular Island Assembly

Size 1 and Size 2 Modules can be combined in one assembly. Use a T9 screwdriver.



High-Flow Island Example

Longer, high-flow island assemblies typically require two exhaust connections. An “intermediate” module on the far right is used in addition to the island “head” module.



The Right Valve Module for Each Cylinder

Valve Flow Passage

One island may control both large and small cylinders. This is why valve modules of different flow capabilities can be combined into the same island.



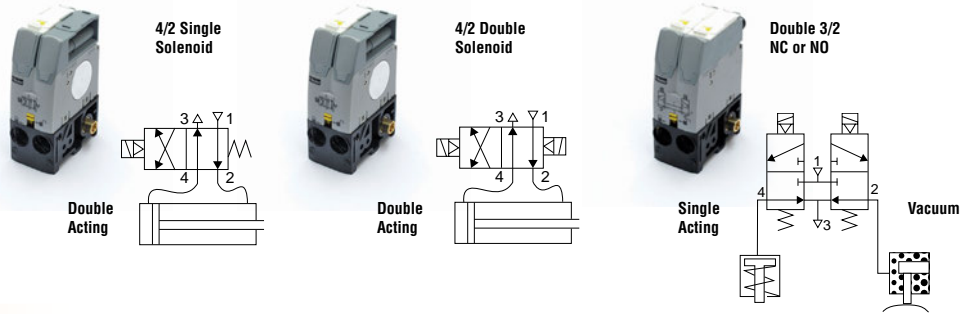
Valve Module Size	Size 1		Size 2	
Tube Size to Cylinder	Ø4mm OD	Ø6mm OD	Ø8mm OD	Ø10mm OD
Cylinder Bore Size	Ø6 to Ø25mm	Ø25 to Ø40mm	Ø40 to Ø63mm	Ø63 to Ø100mm

Parker
Moduflex system
Registered trademark of Parker Hannifin Corporation. Used with permission.

How to Order

STEP 1 DETERMINE VALVE FUNCTIONS

One island may contain multiple and differing valve control functions. See 1026 for a complete list of valves. Control may require single or double solenoid pilot valves, or both.



STEP 2 DETERMINE VALVE SIZES

Valve modules of different flow capabilities can be combined into the same island. Make sure the module is correctly sized for the cylinder bore. Contact our EOAT engineering department for assistance sizing multiple cylinders to one valve module.

Valve Module Size	Size 1		Size 2	
Tube Size to Cylinder	Ø4mm OD	Ø6mm OD	Ø8mm OD	Ø10mm OD
Cylinder Bore Size	Ø6 to Ø25mm	Ø25 to Ø40mm	Ø40 to Ø63mm	Ø63 to Ø100mm

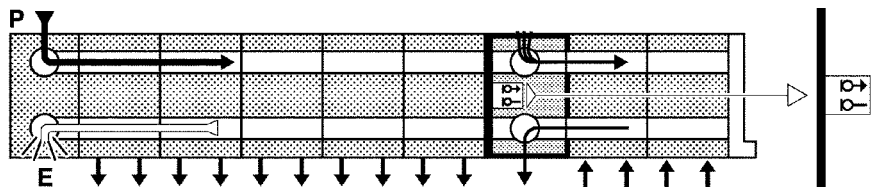
STEP 3 DETERMINE PRESSURE SECTIONS

Each Valve Island requires a "Head" module for primary supply of pressure and exhaust. An "Intermediate" module (supplied with universal configuration plates) provides additional functionality for valve island applications.



Head modules come with tail end piece.

Intermediate modules come with configuration plates. (Order push in fittings separately).



STEP 4 DETERMINE PERIPHERAL COMPONENTS

Order peripheral components separately. Push-in pneumatic connectors for tubing, mufflers, M8 electrical connectors for solenoid pilots, flow controls, pressure regulators, and check valves are all sold separately. Note: electrical connectors are compatible with both NPN and PNP logic, see 1038.



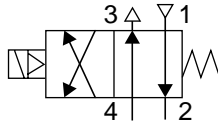
Pricing and Components

Order Fittings Separately

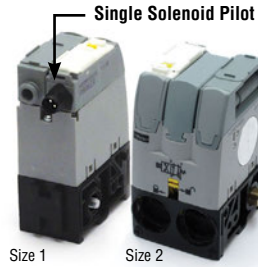
Use Quick#s when ordering

Valve Functions

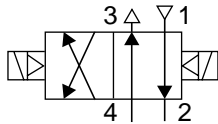
4/2
4 Port
2-Position
Valves



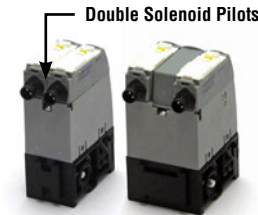
Single Solenoid
(Monostable)
Control Signal has to be Maintained.
(Order fittings separately)



	Size 1	Size 2
Quick#	1936	1943
Part#	P2M1T4ES2C	P2M2T4ES2C
Price	\$ HERE	\$ HERE
Wt.	68g	74g
Cv	.32	.80

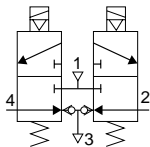


Double Solenoid
(Bistable)
Control Signals may be Momentary.
(Order fittings separately)



Quick#	1937	1944
Part#	P2M1T4EE2C	P2M2T4EE2C
Price	\$ HERE	\$ HERE
Wt.	77g	83g
Cv	.32	.80

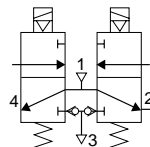
3/2
3 Port
2-Position
Valves



Double Solenoid (NC + NC)
(Normally Closed + Normally Closed)
Single Solenoid, Outputs when Energized



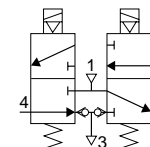
Quick#	1938	1945
Part#	P2M1TDEE2C	P2M2TDEE2C
Price	\$ HERE	\$ HERE
Wt.	80g	94g
Cv	.22	.44



Double Solenoid (NO + NO)
(Normally Open + Normally Open)
Single Solenoid, Outputs when De-energized



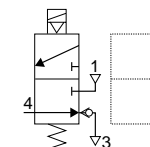
Quick#	1939	1946
Part#	P2M1TCEE2C	P2M2TCEE2C
Price	\$ HERE	\$ HERE
Wt.	80g	94g
Cv	.22	.44



Double Solenoid (NC + NO)
NC: Output when Energized
NO: Output when De-energized



Quick#	1940	1947
Part#	P2M1TEEE2C	P2M2TEEE2C
Price	\$ HERE	\$ HERE
Wt.	80g	94g
Cv	.22	.44

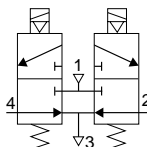


Single Solenoid (NC)
(Order fittings separately)



Quick#	1941	1948
Part#	P2M1T3ES2C	P2M2T3ES2C
Price	\$ HERE	\$ HERE
Wt.	76g	90g
Cv	.22	.44

4/3
4 Port
3-Position
Valves

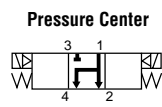
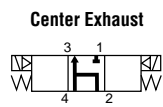
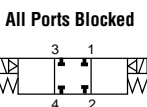


Center Exhaust Dual 3/2 (NC + NC)
Without Exhaust Check Valve
(Dual Pilot Check Valve can be ordered separately)






Quick#	1942	1949
Part#	P2M1TGEE2C	P2M2TGEE2C
Price	\$ HERE	\$ HERE
Wt.	80g	94g
Cv	.22	.44

Dual 3/2 valve modules achieve these 3-position valve functions (5/3 or 4/3) as explained on page 1035 (bottom).

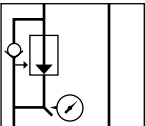

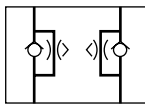

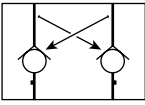



Supply

These components fit Size 1 & Size 2

		Size 1	Size 2
Head / Tail Module	Pneumatic Head & Tail Set Requires size 2 fittings. (Order fittings Separately)		Quick# 1950 Part# P2M2HXT01 Price \$ HERE Wt. 64g
Intermediate Module	Intermediate Set With four Configuration Plates (Order fittings Separately)		Quick# 1951 Part# P2M2BXT0A Price \$ HERE Wt. 42g
	M8 Connector for Solenoid Pilots (with 5m Cable) Use this connector with new valve island installations. Integrated LED indicator and voltage surge suppression.		Quick# 1980 Part# P8LS08L526C Price \$ HERE Wt. 148g
	M8 Connector for Solenoid Pilots (no Cable) Use this connector when you have pre-existing cables, (typically when replacing an old valve island). Threads into the solenoid pilots on the back of the valves.		Quick# 1981 Part# P8CS0803J Price \$ HERE Wt. 12g

Peripheral

	Pressure Regulator Order Gauge Separately (see below) (Can be located remotely, or directly on valve island by using two double male unions. Order separately, see below.)		0-60 psi	Quick# 1954 Part# P2M1PXSL Price \$ HERE Wt. 115g	1958 P2M2PXSL \$ HERE 140g
			0-120 psi	Quick# 1955 Part# P2M1PXSN Price \$ HERE Wt. 115g	1959 P2M2PXSN \$ HERE 140g
	Dual Flow Control Module (Can be located remotely, or directly on valve island by using two double male unions. Order separately, below.)			Quick# 1952 Part# P2M1PXFA Price \$ HERE Wt. 30g	1956 P2M2PXFA \$ HERE 45g
	Dual Pilot Operated Check Valve (Can be located remotely, or directly on valve island by using two double male unions. Order separately, below.)			Quick# 1953 Part# P2M1PXCA Price \$ HERE Wt. 25g	1957 P2M2PXCA \$ HERE 40g

Accessories

Description	Size 1			Size 2		
	Quick#	Part#	Price	Quick#	Part#	Price
DIN Rail - for mounting	5073	EL-704W	\$ HERE	5073	EL-704W	\$ HERE
0-60psi Regulator Gauge	1960	P2M1K0GL	\$ HERE	1960	P2M1K0GL	\$ HERE
0-120psi Regulator Gauge	1961	P2M1K0GN	\$ HERE	1961	P2M1K0GN	\$ HERE
Muffler (for Exhaust Port)	1966	MMDVA1	\$ HERE	1977	MMDVA2	\$ HERE
Plug	1967	PMDYY1	\$ HERE	1978	PMDYY2	\$ HERE
Double Male Union:	1968	HMDXX1	\$ HERE	1979	HMDXX2	\$ HERE
Elbow: 4mm OD tube	1962	CMD04-1	\$ HERE			
Elbow: 6mm OD tube	1963	CMD06-1	\$ HERE	1969	CMD06-2	\$ HERE
Elbow: 8mm OD tube				1970	CMD08-2	\$ HERE
Elbow: 10mm OD tube				1971	CMD10-2	\$ HERE
Elbow: 12mm OD tube				1972	CMD12-2	\$ HERE
Straight: 4mm OD tube	1964	FMD04-1	\$ HERE			
Straight: 6mm OD tube	1965	FMD06-1	\$ HERE	1973	FMD06-2	\$ HERE
Straight: 8mm OD tube				1974	FMD08-2	\$ HERE
Straight: 10mm OD tube				1975	FMD10-2	\$ HERE
Straight: 12mm OD tube				1976	FMD12-2	\$ HERE

Island Head Module Port Sizing

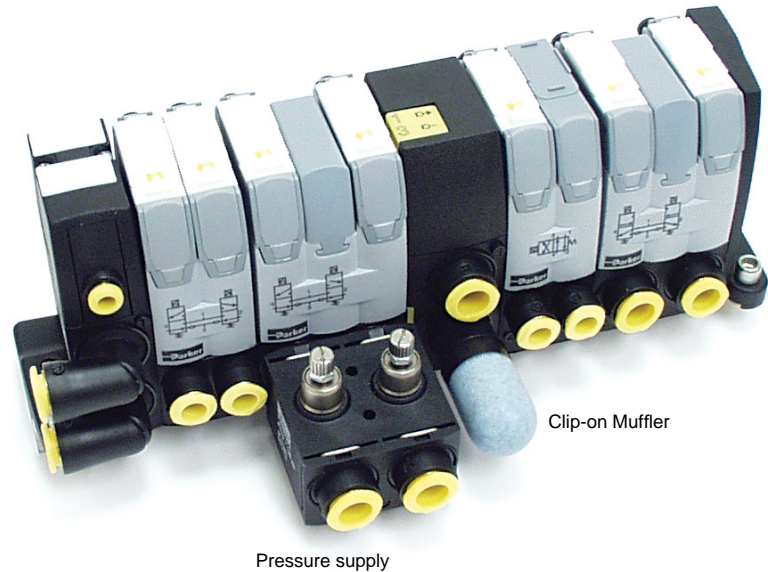
Choice of Connections to Island 'P' and 'E' Ports

Moduflex is totally flexible – islands may have from 2–19 valves, with a choice of two valve sizes, depending on the required flow. Valve island pressure supply and exhaust collection are connected onto the head module and, if flows require it, onto intermediate supply modules added into the island.

Push-in tube connectors are simply clipped into the head module and are available in various sizes as either straight or elbow connections to suit a particular application.

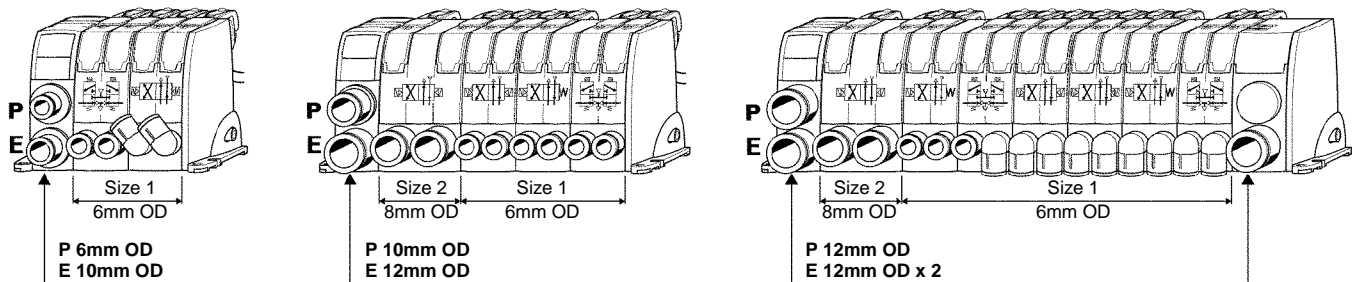
For typical EOAT applications, the exhaust may not need to be piped away. Therefore, in such cases, a clip-on muffler will provide the best options for flow and noise reduction.

Depending on the island size (short or long) and on the size of its valves, the flow requirements can be very different. Each island is easily configured to conform to the flow requirements, and can be easily modified if the cylinder speeds are insufficient.



Choice of Elbow Connectors: 6mm, 8mm, 10mm, 12mm OD Tube

Sizing Recommendations



The three (3) valve islands above present typical situations for sizing island pressure supply and exhaust collection.

In a given island, valves do not deliver their flow at the same moment; therefore, the number of valves in an island is not the major factor to consider. More important is the size of the largest valve and the largest output tubes to the cylinders.

Short Islands

With only size 1 valves, a short island requires limited flow supply (the tail module is a simple plate). When a size 2 valve is integrated into the island, its flow requirements dictate the island supply and exhaust choices. In all cases, the exhaust section area must be bigger than the supply section area.

Long Islands

The double exhaust connector 'E' (Ø 12mm) with maximum flow is generally required, while only one pressure supply connector 'P' is necessary.

Recommendations:

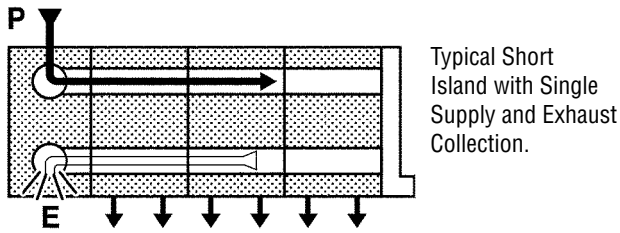
- Air supply connection at least equivalent to largest output tube to cylinders
- Exhaust collection at least twice the section area of the largest output tube to cylinders

For islands with high flows, the following options are possible:

- Use tubes up to 12mm OD or mufflers providing exhaust collection is not necessary
- Provide additional 'P' and/or 'E' connection ports by inclusion of intermediate supply modules, keeping the tube size small

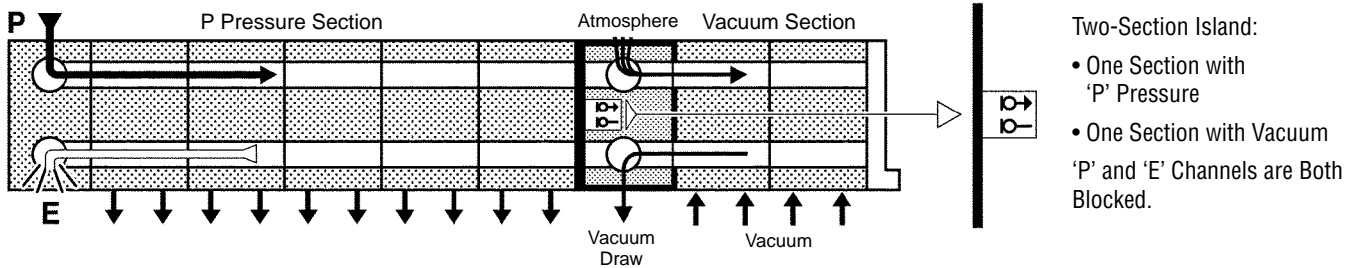
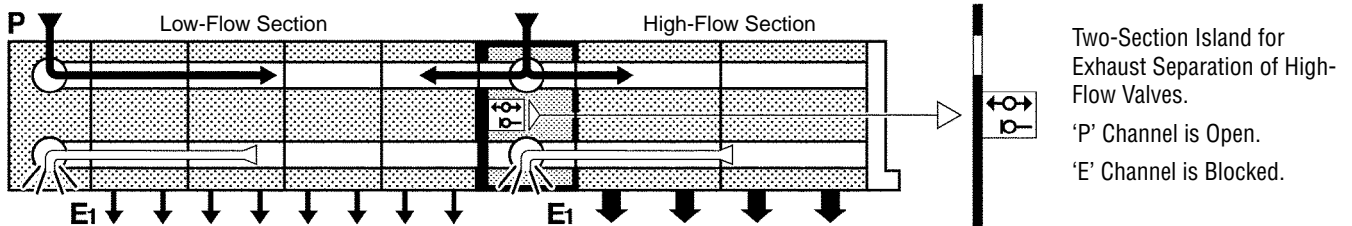
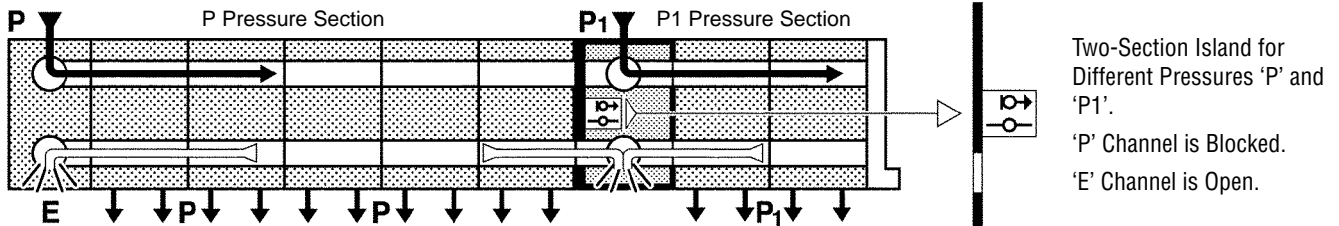
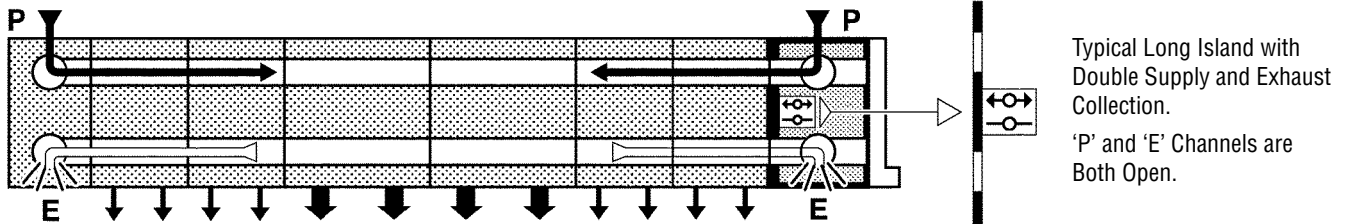
At the machine commissioning stage, the supply and exhaust connections can be easily modified until the required performance is achieved.

Island Division into Different Pressure Sections



Valve islands may require two (2) or more different pressure sections. The universal intermediate supply module is available to provide any required combination, as shown by the following examples.

Order Quick# 1951 (Part# P2M2BXT0A)

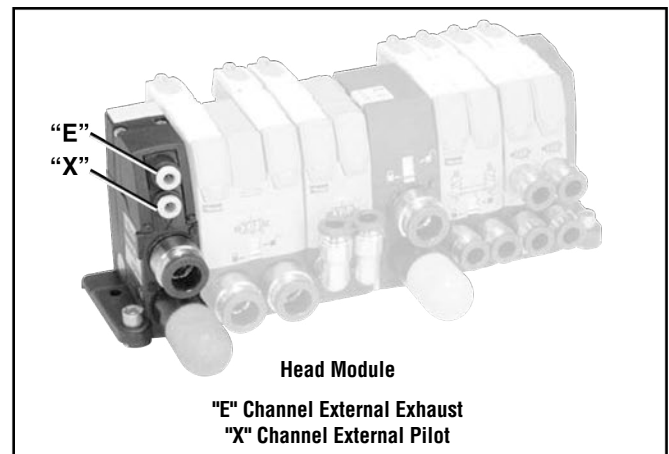
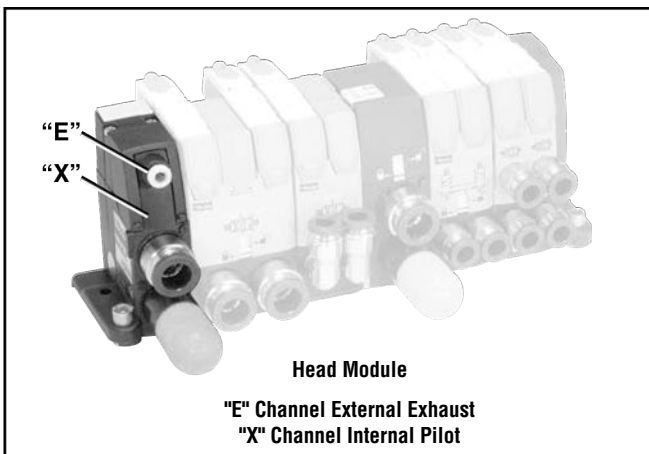
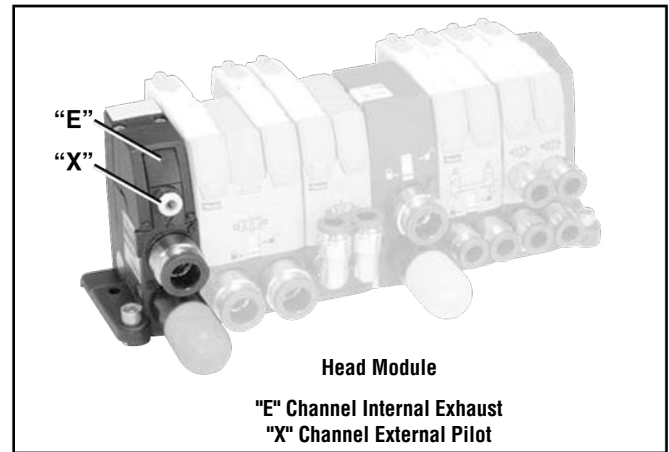
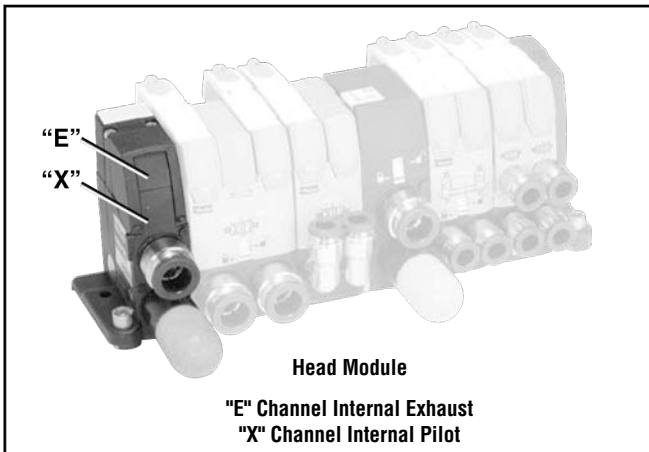


The universal intermediate supply module is supplied with four (4) configuration plates that achieve two (2) functions:

1. Block 'P' or 'E' channel, or none, or both;
2. Present a simple diagram on the island front to indicate the internal configuration.



Internal / External Pilot Supply



In all valve islands, subbases incorporate an auxiliary channel **x** to supply pressure to the solenoid pilots. Depending on the application, this channel:

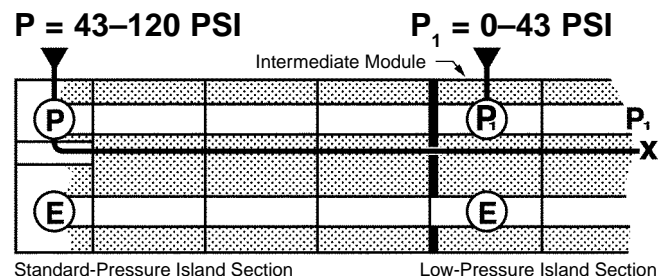
- May be fed by the main pressure **P** if it is between 43–120 PSI; this is the “internal pilot supply” of the valve island,
- May be fed separately, when pressure **P** is lower than 43psi (43psi being the minimum pressure to pilot the valves); this is the “external pilot supply” of the valve island.

The valve islands have a universal pneumatic head module that allows these two types of pilot supplies. This head module incorporates a 2 position **x** selector:

- The internal pilot supply position is the normal position; no connection port is visible since no external supply is necessary.
- If required, the external pilot supply position can be obtained manually by rotating the selector; it then presents a push-in connection port for a $\varnothing 4\text{mm}$ tubing that will feed the pilot pressure (43–120psi) to the **x** channel.

Special Case: Multi-section Valve Island

The intermediate module that separates two island sections is crossed by the auxiliary channel **x**. When an island includes several sections working at different pressures, an internal pilot supply pressure is satisfactory, if the first section operates at 43–120psi pressure.

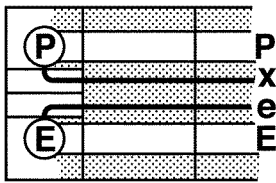


External / Internal Pilot Exhaust

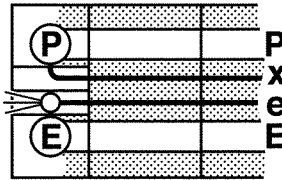
In all valve islands, subbases also incorporate an auxiliary channel **e** to collect the solenoid pilot exhausts. Depending on the application, this channel:

- May exhaust directly into the main exhaust channel **E** if no important exhaust back pressure is to be feared.
- May be collected separately when a persistent back pressure will possibly delay the depiloting of some of the valves into the island, or for vacuum applications.

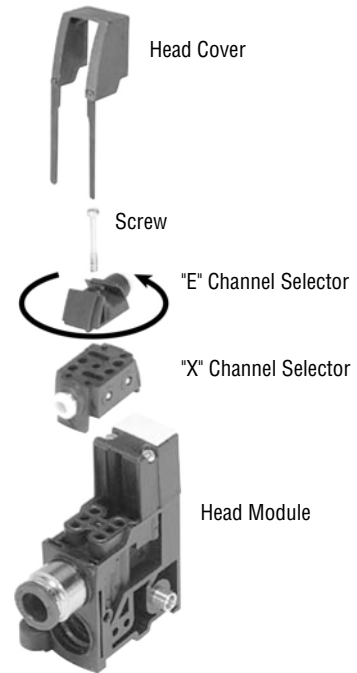
In order to choose between the internal or the external collection of the island pilot exhaust, a second 2-position selector is integrated into the pneumatic island head module, as shown here.



Configuration for Internal Collection of Pilot Exhaust **e**

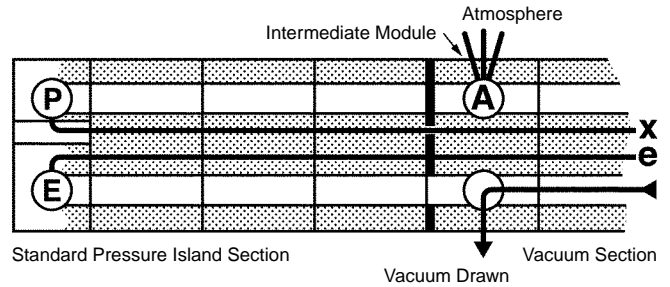


Configuration for External Collection of Pilot Exhaust **e**



Special Case: Multi-section Valve Island

The intermediate module that separates two island sections is crossed by both auxiliary channels **x** and **e**. When an island includes several sections, including a section working with vacuum where no exhaust should pollute the vacuum drawn, an internal collection of pilot exhaust is satisfactory if the first section is the one that works at a typical pressure.



Vacuum Generator



Note: Fittings not included

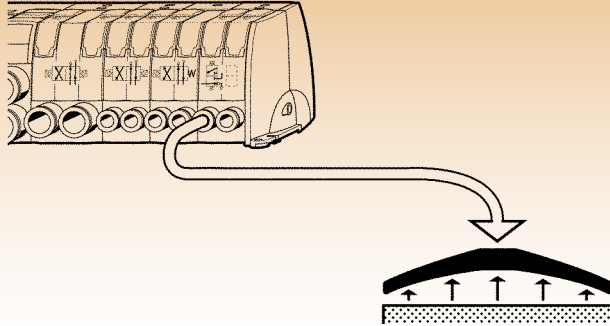
Vacuum Generator

Quick#	Part#	Wt.	Price
2722	P2M1PXVA	25g	\$ HERE

Add this peripheral to your Moduflex system to create vacuum with blow-off from your compressed air circuit. Optional plug-in vacuum monitors are available for delivering a vacuum feedback signal.

The vacuum generator can be located remotely or directly on the valve island by using two double-male unions with Size 1. To use with Size 2, use tubing and push to connect fittings. For more information, see page 986.

Valve Islands for Vacuum Applications

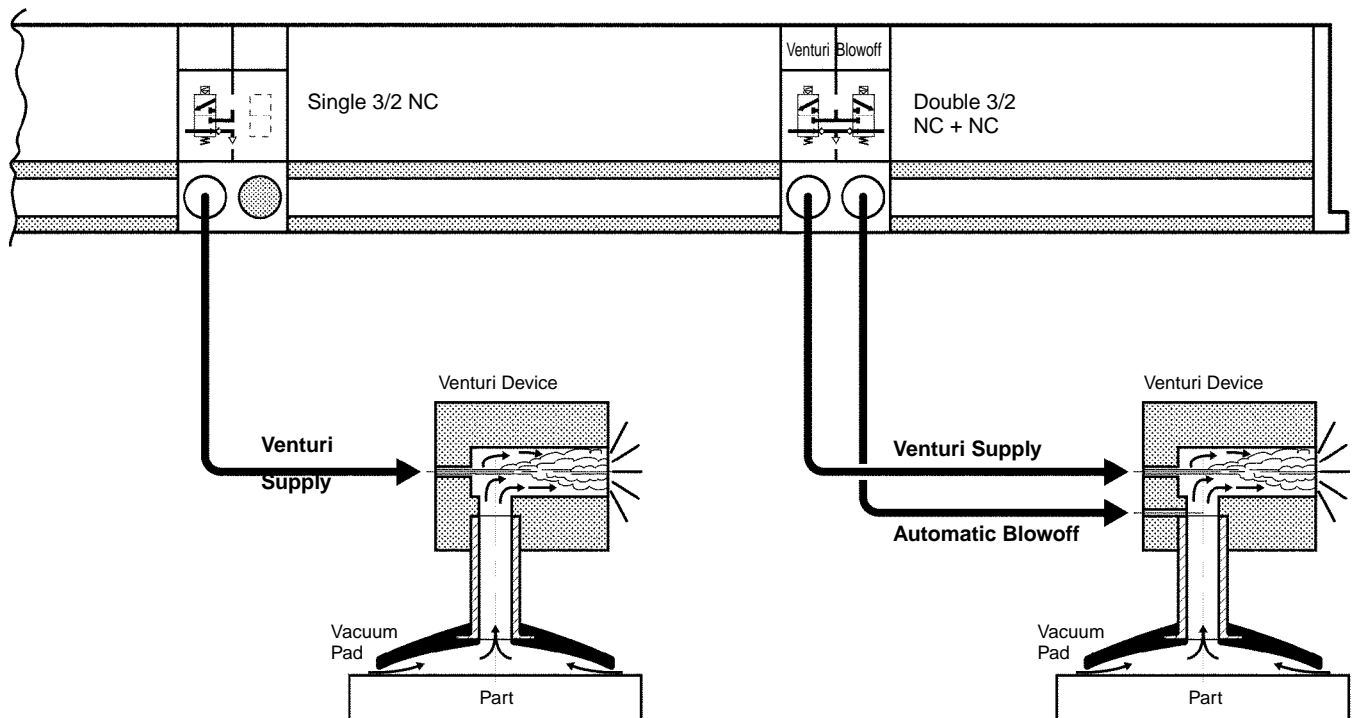


Pneumatic automation is often combined with vacuum applications:

- To pick up parts and to move them;
- To vacuum pack or to process under vacuum.

Within electro-pneumatic circuits and machines, these pneumatic valve islands can simplify circuit design and installation of combined pneumatic and vacuum systems.

Providing Controls for Vacuum Venturi Devices



The Venturi device is also called an “ejector” or a vacuum generator and is well known to pneumatic engineers. It produces vacuum from an air pressure supply. The air jet generates a fast moving flow stream that draws the surrounding atmospheric air. The resulting air movement creates a vacuum when the entry of atmospheric air is blocked by a part.

This simple and compact system replaces costly and cumbersome vacuum pumps and their piping. It is mostly used to pick up and move parts.

The vacuum pad that picks up the part is ideally combined with the Venturi device.

In order to supply the Venturi, a single 3/2 NC valve is integrated into the closest valve island. To limit air consumption, it is advised to adjust the pressure that reaches the Venturi. This is easily done by adding a pressure regulation module to the valve island.

If an automatic blowoff is required, (in addition to the Venturi supply), a double 3/2 NC + NC will control the complete system:

- One 3/2 for the Venturi supply;
- One 3/2 for the automatic blowoff. The integrated exhaust non-return valve in all 3/2 modules size 1 will prevent external air from polluting the venturi vacuum.

Valve Islands for Vacuum Applications

Valve Island in a Vacuum Distribution Network

3/2 pneumatic valves are often used to control the different vacuum circuits or 4/2 pneumatic valves can be used when a double solenoid function is necessary. 3/2 pneumatic valves should be Normally Open in order to obtain vacuum outputs when electrical signals are on.

Vacuum controls generally require large flows; most of the time, size 2 valves are necessary.

In the valve island, vacuum is drawn through the channel normally used for the common exhaust while the other channel may be used differently, depending on the application.

No Blowoff or Permanent Blowoff

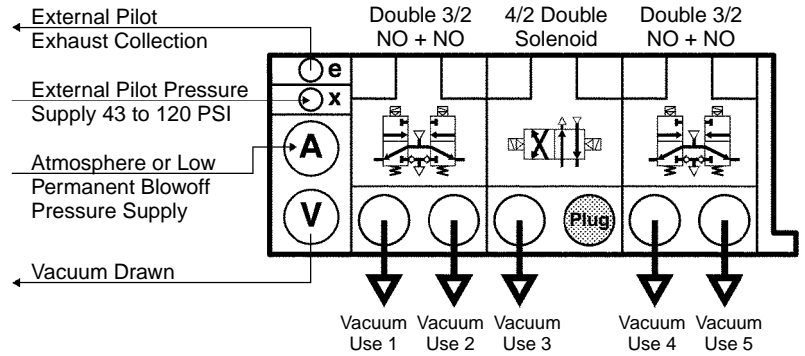
The top illustration presents a typical vacuum valve island whose channel is normally used for the main pressure supply either connected to atmosphere (no blowoff) or to a low-pressure supply that will act as permanent blowoff toward the vacuum pads when they are not connected to vacuum.

Intermittent Blowoff

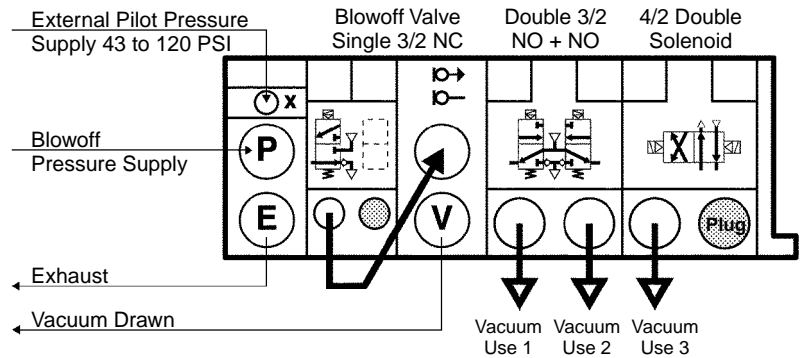
The second illustration presents a vacuum valve island equipped with a head blowoff valve that will send a pressure for blowoff only when required. A size 1 single 3/2 is sufficient for this purpose.

In both cases, the auxiliary channel **x** will be supplied with a 43 to 120 PSI pressure for solenoid pilots. In the first case, the auxiliary channel **e** is collected externally in order to avoid pressurizing the vacuum channel with the pilot exhausts.

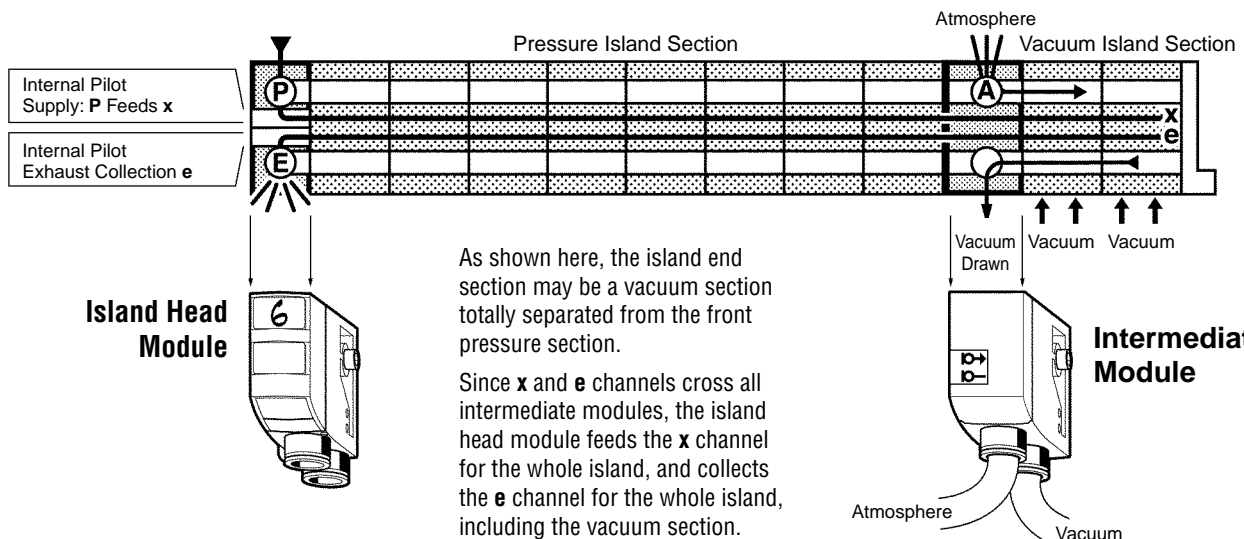
Vacuum Valve Island with No Blowoff or with Permanent Blowoff



Vacuum Valve Island Equipped for Intermittent Blowoff



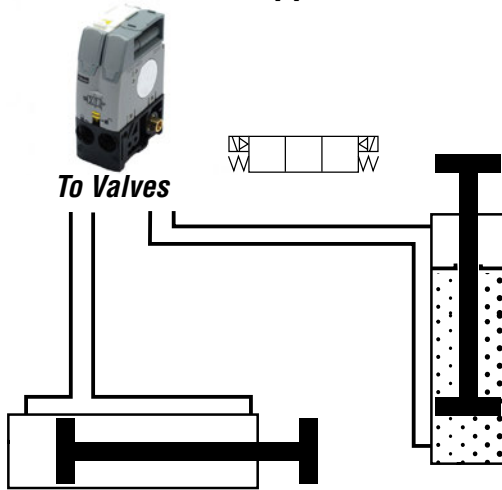
Pressure and Vacuum Combined in the Same Island



As shown here, the island end section may be a vacuum section totally separated from the front pressure section.

Since **x** and **e** channels cross all intermediate modules, the island head module feeds the **x** channel for the whole island, and collects the **e** channel for the whole island, including the vacuum section.

Typical 3-Position Valve Applications



3-position valves are traditional for positioning, blocking or venting pneumatic cylinders.

Because pneumatic valves are now commonly assembled into islands, 3-position valve functions have to be adapted in order to meet all applications allowing for exhaust back pressures and long distances between valves and cylinders.

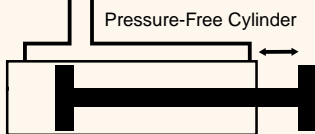
3-Position Center Exhaust – Pressure-Free Cylinder

Traditional Configuration

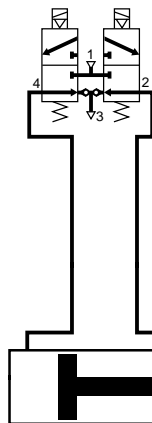
5/3 Valve
Center Exhaust



Problem:
island exhaust
back pressures
reach the cylinder
and move it
unexpectedly.

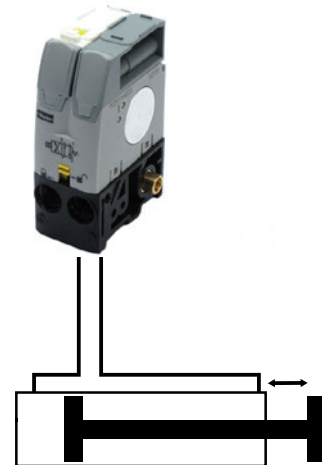
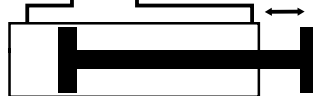


Using Moduflex Valves – Double 3/2 NC + NC



**Double 3/2
NC + NC**
(version with no
exhaust check valves)

Solution:
common exhaust
balances back
pressure effect
on the cylinder.



3-Position Pressure Center – Cylinder Fitted with Locking Device

Traditional Configuration

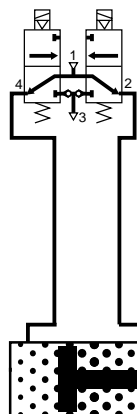


**3-Position
Pressure Center**

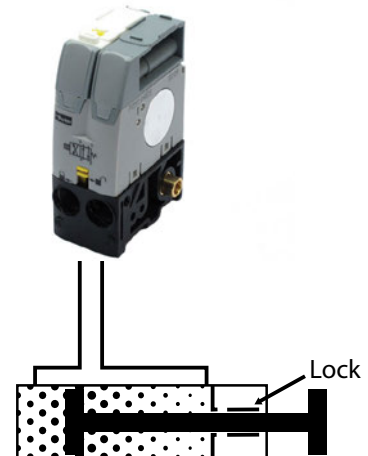
Cylinder positioning
is achieved with
both chambers
under pressure.



Using Moduflex Valves – Double 3/2 NO + NO

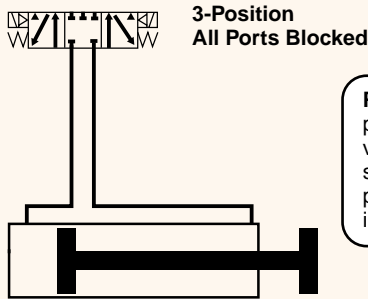


**Double 3/2
NO + NO**



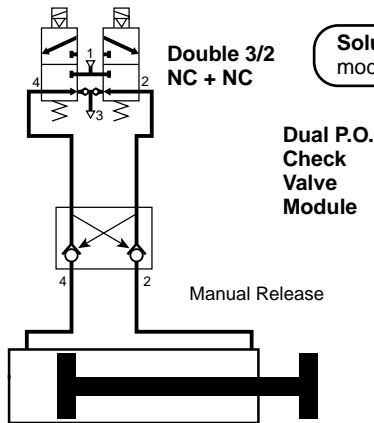
Typical 3-Position Valve Applications

Traditional Configuration



Problem: in center position, compact valves are not perfectly sealed – cylinder position cannot be held indefinitely.

Using Moduflex Valves – Double 3/2 NC + NC and Dual P.O. Check Valve



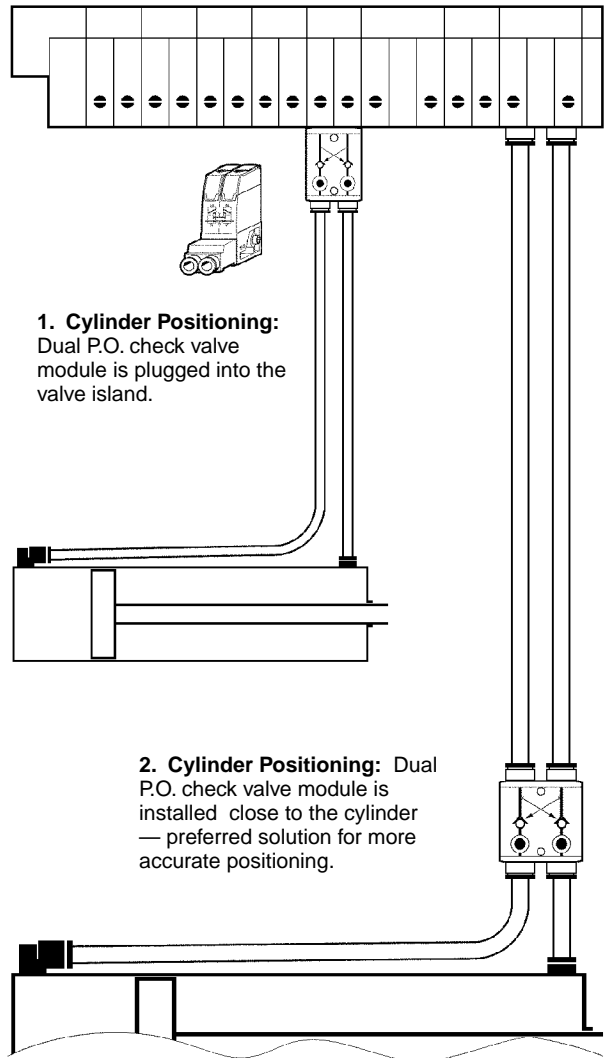
Solution: a dual P.O. check module is totally sealed.



At the outputs of a double 3/2 NC + NC valve, the dual P.O. check valve module achieves efficient and stable cylinder positioning. As soon as both lines are exhausted by the main control valve, the two internally piloted check valves close tight. The cylinder is then stabilized.

The manual pressure releases may then eventually be used for an adequate machine positioning.

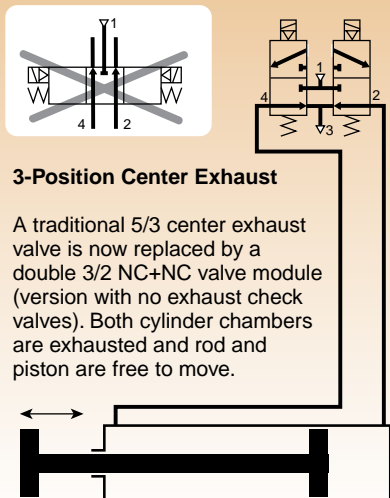
3-Position, All Ports Blocked – Cylinder Positioning



1. Cylinder Positioning: Dual P.O. check valve module is plugged into the valve island.

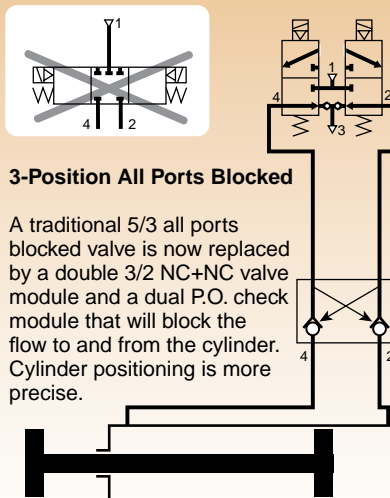
2. Cylinder Positioning: Dual P.O. check valve module is installed close to the cylinder — preferred solution for more accurate positioning.

Dual 3/2 Valves Replace All 3-Position Valves for a Better Performance



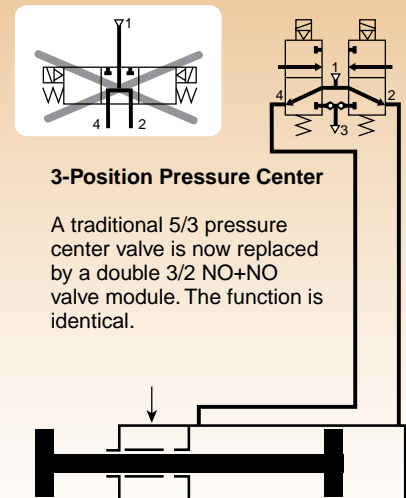
3-Position Center Exhaust

A traditional 5/3 center exhaust valve is now replaced by a double 3/2 NC+NC valve module (version with no exhaust check valves). Both cylinder chambers are exhausted and rod and piston are free to move.



3-Position All Ports Blocked

A traditional 5/3 all ports blocked valve is now replaced by a double 3/2 NC+NC valve module and a dual P.O. check module that will block the flow to and from the cylinder. Cylinder positioning is more precise.

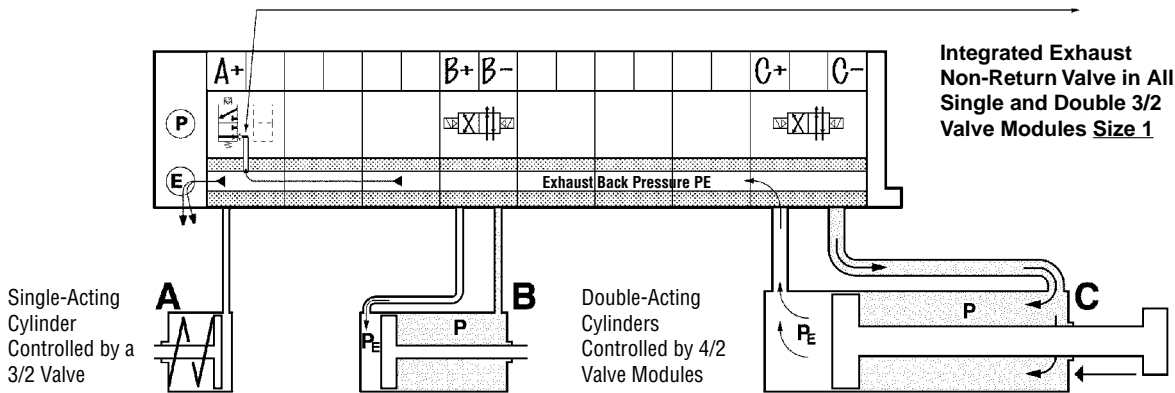


3-Position Pressure Center

A traditional 5/3 pressure center valve is now replaced by a double 3/2 NO+NO valve module. The function is identical.

Exhaust Back Pressure Control

Blocking Exhaust Back Pressures with 3/2 Modules



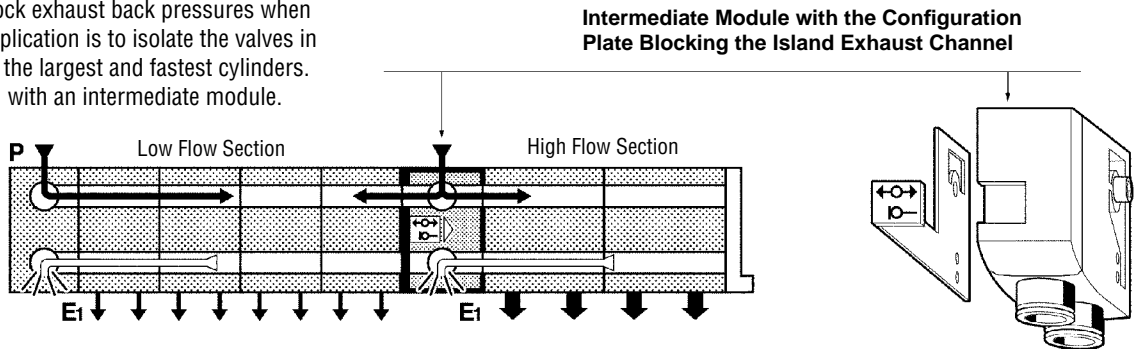
- **C** cylinder, large and fast moving, may feed the island exhaust channel with an exhaust back pressure PE.
- Such a back pressure is normally under 14 PSI. Since the opposite pressure, P, is high, it will not affect double-acting cylinders, such as **B**.
- However, such a back pressure may affect a single-acting cylinder **A** if its pressure threshold is low.

Consequently, small single-acting cylinders may pop out unexpectedly whenever an exhaust back pressure rises into the island.

To avoid such malfunctions, Size 1 3/2 valve modules feature integrated exhaust non-return valves that will block any exhaust back pressure from reaching the acting cylinders they control.

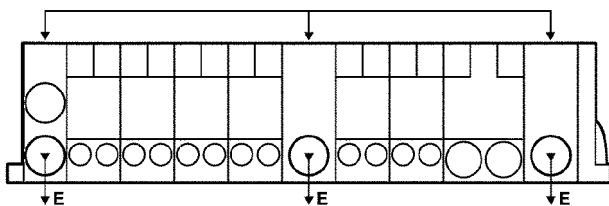
Blocking Exhaust Back Pressures Inside the Island

Another method to block exhaust back pressures when they may affect the application is to isolate the valves in the island that control the largest and fastest cylinders. This is easily achieved with an intermediate module.



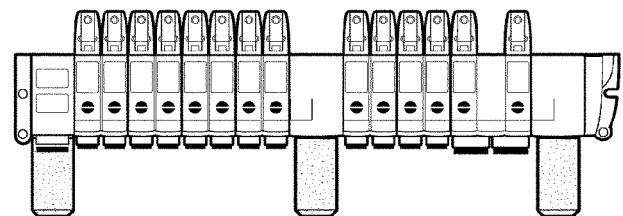
Limiting Exhaust Back Pressures in a Valve Island

In a valve island, it is important to limit exhaust back pressures to about 14 PSI maximum so that all double-acting cylinders efficiently achieve their function at 87 PSI.



Collected Exhaust using Intermediate Modules

Depending on the sizes of the cylinders and the speed required by the application, back pressures in the island may be efficiently evacuated through multiple exhaust collections using Intermediate Modules.



Exhaust Through Muffers

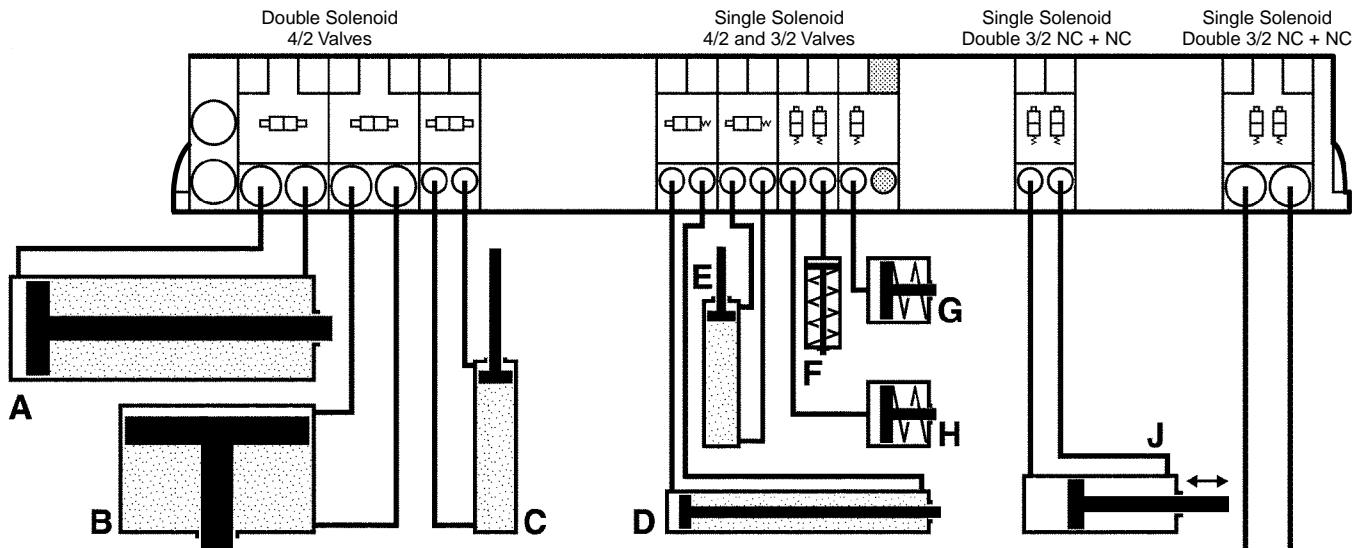
For applications that do not require the exhausts to be collected, a plug-in muffler into each exhaust port of the island will evacuate exhaust back pressures.

Valve Islands and Emergency Machine Positioning

Single / Double Solenoid Valve Choice for Adequate Emergency Positioning

Pneumatic cylinder / valve circuit design must take into account the machine positioning in case of electrical supply cutoff or other emergency events.

Valve islands now offer many means to do so with single and double solenoid valves, peripheral modules, integrated dump valves, etc.



These cylinders maintain their last position and action in case of electrical cutoff.

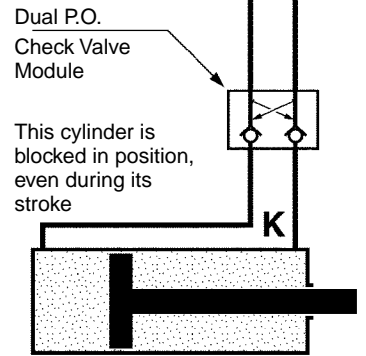
These cylinders retract in a chosen position.

This cylinder becomes totally pressure free.

Designers of electro-pneumatic machines have to define the cylinder positioning when electrical supply gets cut off; for example, for an emergency requirement. A clamping cylinder will maintain its action so that the part it is holding does not take off under the action of a cutting tool. On the contrary, a stamping cylinder will retract in its initial position, and a transfer cylinder may be blocked along its stroke. Pneumatic valve islands provide all means to obtain emergency machine positioning. The different solutions are presented on the valve island above.

- **A, B and C** double-acting cylinders are controlled with double solenoid valves. These will keep their position in case of electrical cutoff. The cylinders will maintain their positions and actions.

- **D and E** double-acting cylinders are controlled with single solenoid valves. Their spring return will bring them back in the initial position corresponding to the required initial position of the cylinder.
- **F, G, and H** single-acting cylinders will retract as well with the help of their spring.
- Controlled with a single solenoid double 3/2 NC+NC valve, the double-acting **J** cylinder will be exhausted on both chambers when an electrical cutoff happens.
- Due to the Double P.O. check valve module, the double-acting **K** cylinder will be blocked along its stroke.



This cylinder is blocked in position, even during its stroke

Individual Electrical Connectors

Plug-in Dust and Waterproof Connector

This electric connector plugs onto the solenoid pilot standard M8 male thread. It features a LED indicator and a voltage surge suppressor with a cable for a polarity insensitive connection.

Positive Logic (PNP) and Negative (NPN) Compatibility

The increasing use of global automation components and machines can raise problems of compatibility between “PNP” and “NPN” circuit design. The **Moduflex** valves and islands overcome this problem as the solenoid pilots are polarity insensitive and can accept 24VDC in any orientation.

Protection of Controls from Voltage Surges

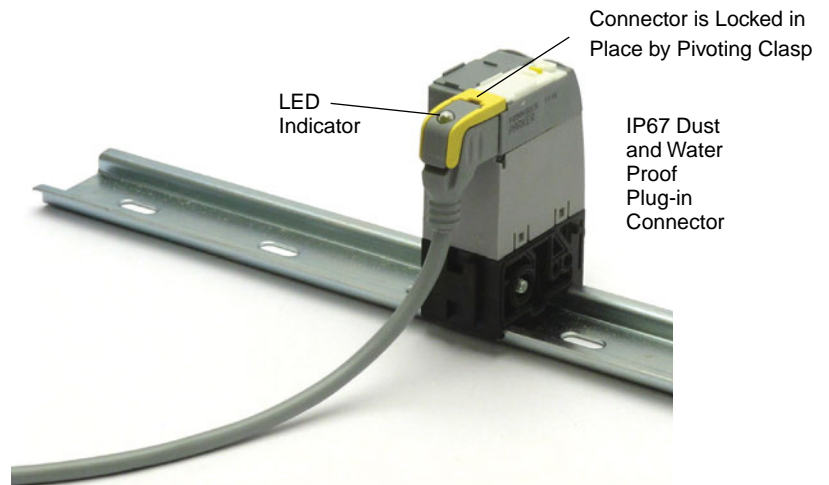
The voltage surge generated when a coil is de-energized is a common problem and can disrupt control circuits upstream of the valve island. To overcome this problem, the latest generations of valve islands incorporate a voltage surge suppressor with each solenoid pilot.

Dependability even with Voltage Drop

Electro-pneumatic automation is often integrated to machines that are subjected to voltage drop; for example, when an electrical motor is started. In order to overcome such working conditions, standard requirements state that the solenoid pilot should still operate 15% under the voltage rating; i.e., 20.4V for a 24V rating. To fulfill such a specification, the solenoid pilot power has to be sufficiently high; for example, 1W is better than 0.5W.

Individual Electrical Connector with

- Connections to Solenoid Pilot
- LED Indicator
- Voltage Surge Suppressor

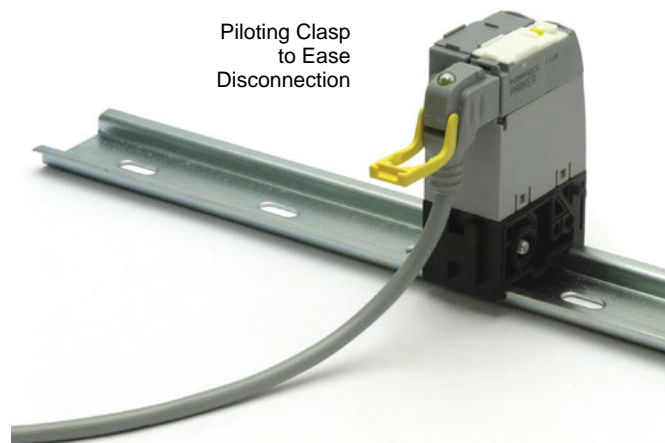


LED Indicator

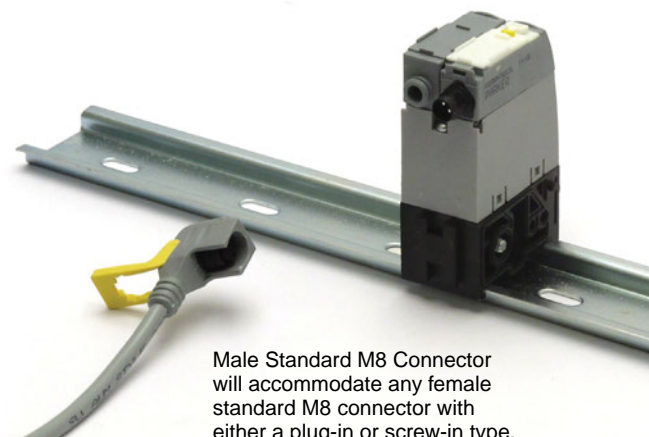
Connector is Locked in Place by Pivoting Clasp

IP67 Dust and Water Proof Plug-in Connector

24VDC Polarity Insensitive



Pivoting Clasp to Ease Disconnection

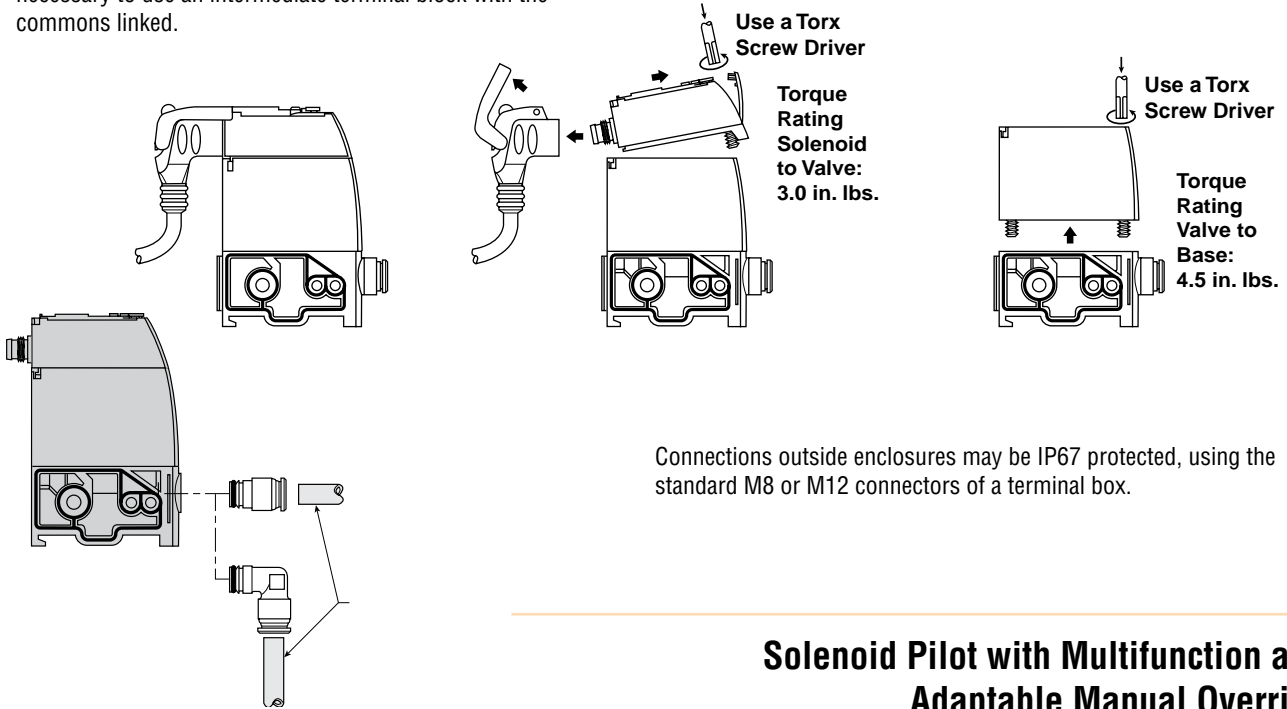


Male Standard M8 Connector will accommodate any female standard M8 connector with either a plug-in or screw-in type.

Connections to PLCs and Other Controls

The two (2) wires of each connector cable can be taken directly to the output terminals of a PLC or field bus module.

If all outputs have a single common terminal, it will be necessary to use an intermediate terminal block with the commons linked.



Connections outside enclosures may be IP67 protected, using the standard M8 or M12 connectors of a terminal box.

Solenoid Pilot with Multifunction and Adaptable Manual Override

For safety and standardization reasons, most machine builders now use 24VDC. This convergence towards only one voltage leads to a simpler system with a unique solenoid pilot. In order to cater to the man-machine dialog requirements, this solenoid pilot manual override is both multifunctional and adaptable to each stage, from the machine installation to its maintenance.

The standard modules have solenoid pilots with multifunction manual overrides:

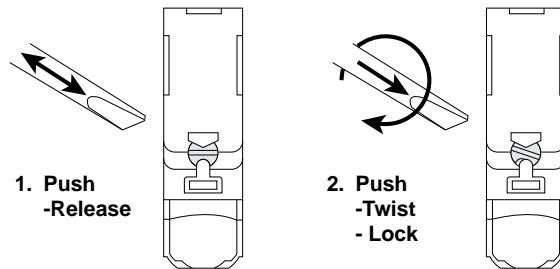
- Push-release function;
- Push-twist-lock function.

Man-machine dialog is then complete, facilitating the commissioning of each machine subassembly. Later, when electrical controls are connected, the manual override may be adapted.

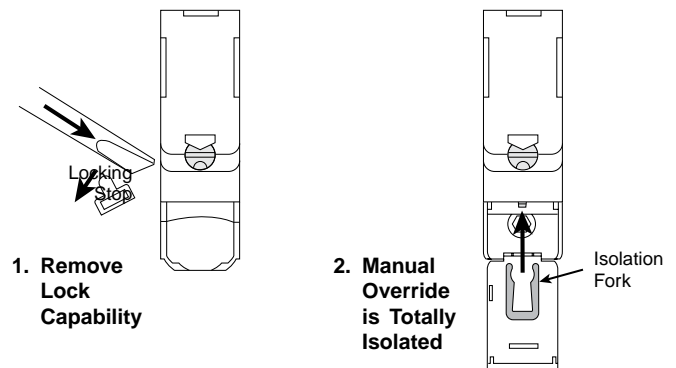
Depending on the machine and its conditions of use, one may either:

- Keep complete multifunction manual overrides;
- Delete the lock capability by removing the locking stop; this will prevent the manual override from being left in the locked position; or
- Make the manual override completely inoperative when automatic controls take care of access for maintenance. An isolation fork is available for this operation.

Multifunction Manual Override



Manual Override Adaptations



Specifications

Pneumatic Specification General

Fluid	Air, inert gas, filtered 40 μ ①, dry② or lubricated③		
Operating Pressures	Vacuum to 120 PSI		
Piloting Pressure	43 to 120 PSI for operating pressures below, use external pilot supply available on all head modules⑤		
Pilot Supply	Mixed internal / external		
Exhaust Collection	All exhausts are collectable, including solenoid pilot exhaust		
Life Cycle	100 million operations④ (with dry air, 3 Hz, 20°C, 6 bar)		
Operating Temperatures	5°F to 140°F (32°F to 130°F for field bus systems)		
Stocking Temperatures	-40°F to 155°F		
Vibration Resistance	According to IEC 68 - 2 - 6	2G	2-150Hz
Impact Resistance	According to IEC 68 - 2 - 27	15G	11 ms

① Class 5 according to ISO 8573-1

② Class 4 according to ISO 8573-1

③ With main air supply lubricated, must use external pilot supply with non-lubricated air

④ 4/2 valve

⑤ Double 3/2 minimum 50 PSI

Flow Specification

	Size 1	Size 2
Flow Channel	12 mm ²	40 mm ²
Flow Rating (Cv)	.32 Cv (400 NI/min)	.80 Cv (1200 NI/min)

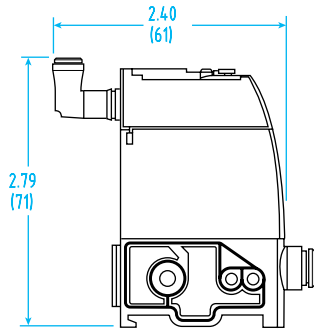
Electrical Specification Solenoid Pilot



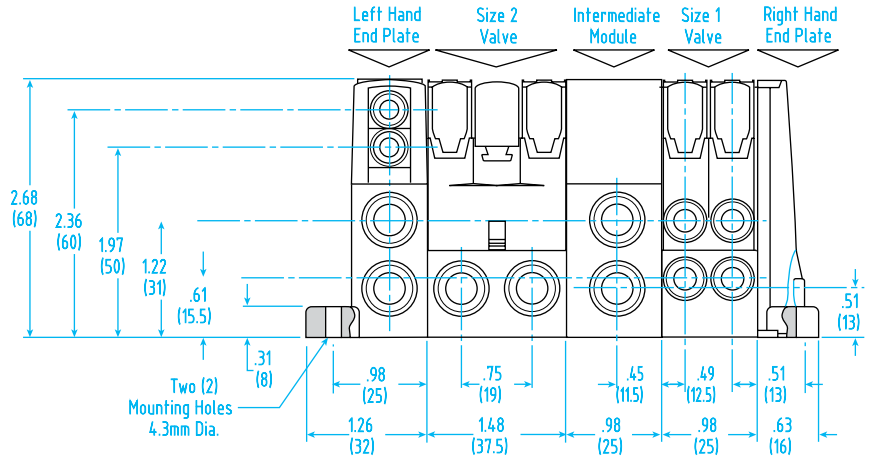
One size 24VDC Solenoid Pilot Common to all the Moduflex System

Rated Coil Voltage	24VDC	
Allowable Voltage Fluctuation	-15% to +10 % of nominal voltage	
Electrical Connection	Polarity insensitive: PNP and NPN compatible	
Coil insulation Type	Class B	
Power Consumption	1W (42 mA)	
Manual Override	Locking or non-locking, isolated if required	
Response Time of the Complete Valve	9.6 ms \pm 1.2 on 4/2 double solenoid valve size 1 12.0 ms \pm 1.2 on 4/2 single solenoid valve size 1 14.8 ms \pm 2 on 4/2 double solenoid valve size 2 17.0 ms \pm 2 on 4/2 single solenoid valve size 2 According to ISO 12238	
Type of Use	Continuous-duty solenoid	
Dust and Water Protection	According to EN 60 529	IP67

Dimensions & Mounting

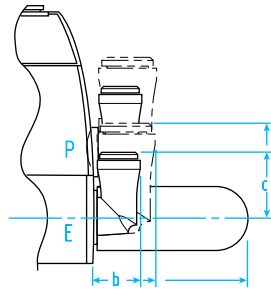


Air Pilot



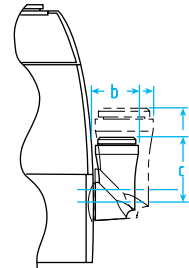
Island Head and Intermediate Modules

	a	b	c
6 mm Tube OD	8	13	16
8 mm Tube OD	9	16	19
10 mm Tube OD	13	18	25
12 mm Tube OD	13	19	25
Muffler		40	



Island Valve Modules

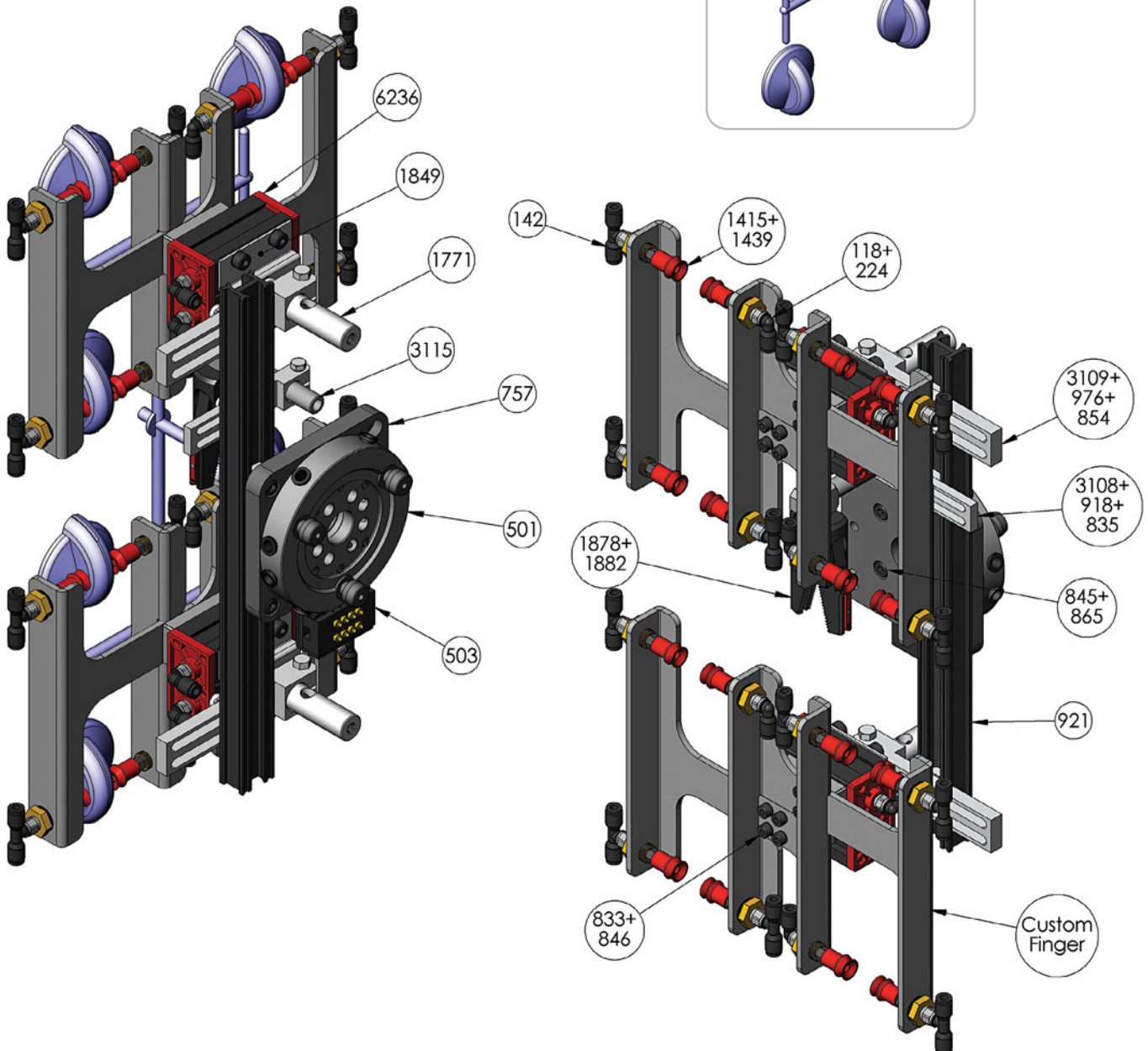
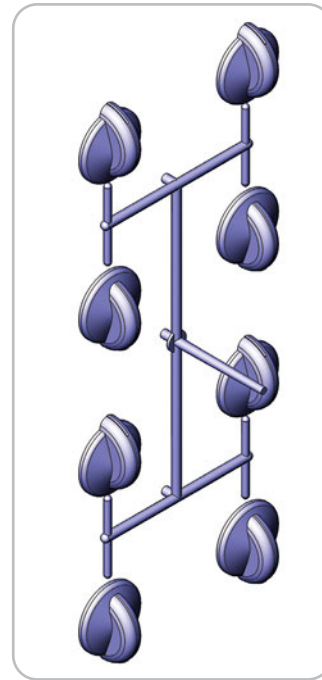
OD Tube Ext.	a	b	c
Size 1 4mm	8	10	12
Modules 6mm	8	13	16
Size 2 8mm	9	16	19
Modules 10mm	13	18	22



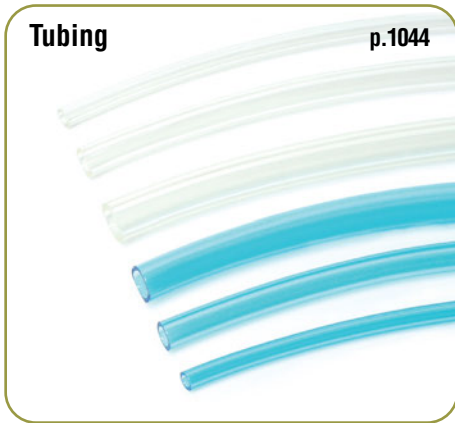
EOAT Design and Build Service

From the simplest to the most complex EOAT, EMI specializes in designing and building customized End-of-Arm-Tooling— **Priced Competitively.**

Get started by sending us a sample part or 3D part file and a completed datasheet (see page 1082). Our experienced EOAT engineers will design a tool for you and provide you 3D CAD renderings at no cost or obligation. We'll also provide pricing for the tool should you want to purchase the EOAT completely assembled.



Tubing & Fittings Overview



Soft Polyurethane Tubing

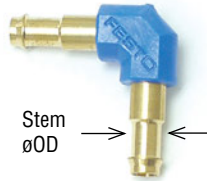
(Shown Actual Size)

Soft Polyurethane Tubing for use with Barbed Fittings



Application Guide

Use Soft Polyurethane tubing with barbed fittings. Soft PU tubing's extra elasticity provides a snug fit against the barb stem.



Application for Soft Polyurethane Tubing

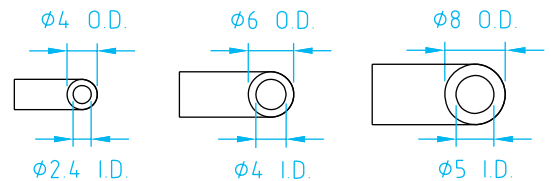
Stem øOD range	Soft PU øID	Soft PU øOD
2.5-3.0	2.4	4
3.8-4.6	4	6
5.5-6.4	5	8

Note: Using soft polyurethane tubing with push-in fittings gives unacceptable results.

Soft Polyurethane Tube for Barbed Fittings - Sold in 25' Coils

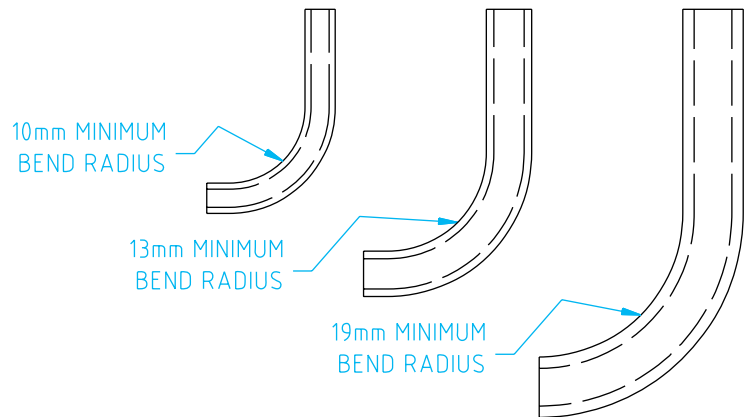
Quick#	Part#	øOD	øID	Color	Min. Radius	Price
951	GSU-SC-0424	4	2.4	Clear	10mm	\$36.00
952	GSU-SC-0604	6	4	Clear	13mm	\$42.50
953	GSU-SC-0805	8	5	Clear	19mm	\$70.00
954	GSU-SB-0424	4	2.4	Blue	10mm	\$39.25
955	GSU-SB-0604	6	4	Blue	13mm	\$42.50
956	GSU-SB-0805	8	5	Blue	19mm	\$70.00

Blue tubing is translucent with blue tint.



Suggestion

To help reduce the likelihood of misconnecting vacuum lines with compressed air lines, consider standardizing your tubing color scheme. Use clear tubing for vacuum circuits, and blue tubing for compressed air circuits.

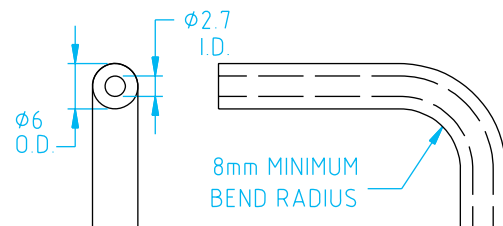


Super Flexible Silicone Tube for Barbed Fittings - Sold in 25' Coils

Quick#	Part#	øOD	øID	Color	Min. Radius	Price
950	GSU-SI-627	6	2.7	Clear	8mm	\$17.54

Note: Using super flexible silicone tubing with push-in fittings gives unacceptable results.

Note: When using the Super Flexible Tube, although the OD is 6mm, the ID is only 2.7mm and so you must choose a barbed fitting which will fit appropriately (this is the barbed fitting size used with 4mm soft tubing).



(Shown Actual Size)

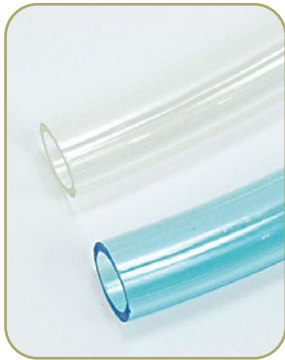
Polyurethane Tubing



Polyurethane Tubing for use with Push-In Fittings

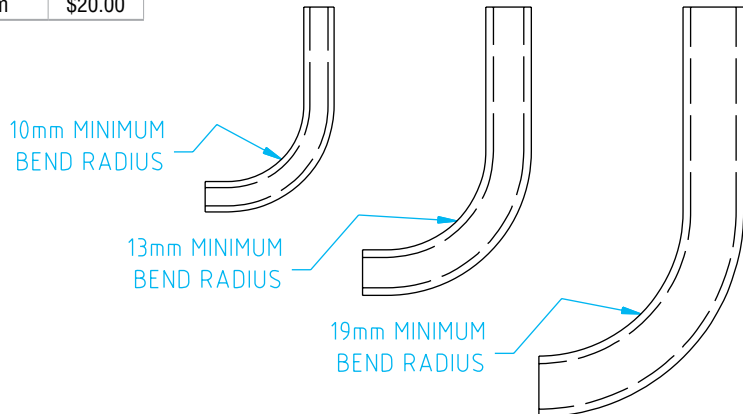
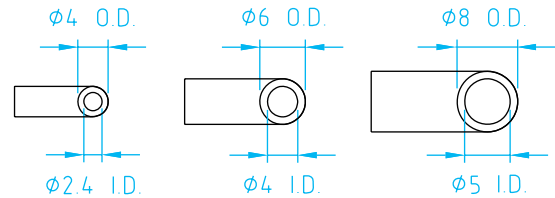
Polyurethane Tube for Push-In Fittings - Sold in 25' Coils

Quick#	Part#	øOD	øID	Color	Min. Radius	Price
957	GSU-PC-0424	4	2.4	Clear	10mm	\$6.80
958	GSU-PC-0604	6	4	Clear	13mm	\$11.50
959	GSU-PC-0806	8	5	Clear	19mm	\$20.00
960	GSU-PB-0424	4	2.4	Blue	10mm	\$6.80
961	GSU-PB-0604	6	4	Blue	13mm	\$11.50
962	GSU-PB-0806	8	5	Blue	19mm	\$20.00
966	GSU-PR-0424	4	2.4	Red	10mm	\$6.80
967	GSU-PR-0604	6	4	Red	13mm	\$11.50
968	GSU-PR-0806	8	5	Red	19mm	\$20.00



Suggestion

To help reduce the likelihood of mis-connecting vacuum lines with compressed air lines, consider standardizing your tubing color scheme. Use clear tubing for vacuum circuits. Use blue tubing for compressed-air circuits when approaching the part—such as gripper close or cylinder extend. Use red tubing for compressed-air circuits when retracting from the part—such as gripper open or cylinder retract.



NEW

Spiral Polyurethane Tubing

Quick#	Part#	Description	Price
987	GSU-PCR-0424	Ø4mm Transparent Red, 2.6m long	\$21.35
988	GSU-PCB-0424	Ø4mm Transparent Blue, 2.6m long	\$21.35
996	GSU-PCC-0604	Ø6mm Transparent Clear, 2.6m long	\$23.33
997	GSU-PCR-0604	Ø6mm Transparent Red, 2.6m long	\$23.33
998	GSU-PCB-0604	Ø6mm Transparent Blue, 2.6m long	\$23.33

- Ø4mm spiral tubing has a maximum suggested working length of 2.6m, with a retracted length of 135mm.
- Ø6mm spiral tubing has a maximum suggested working length of 2.6m, with a retracted length of 150mm.

Compatibility Guide

Polyurethane Tubing Compatibility

Application		Recommended Tubing Choice		
Fitting	Input	Hard Tubing	Soft Tubing	Super Flex Tubing
Barbed	Compressed Air	Good	No	No
		Good	No	No
Barbed	Vacuum	No	Good	Good
		Good	No	No

Polyurethane Tubing Dimensions with Barbed Fittings

Barb Stem øOD	PU Tube øOD	PU Tube øID
2.7	4	2.4
2.9	4	2.4
3.0	4	2.4
3.8	6	4
3.9	6	4
4.0	6	4
4.2	6	4
6.4	8	5

Push-In Fittings

(Shown Actual Size)

Features of Our Best Push-In Fittings

Material is glass filled Nylon.

Full-flow fittings have no internal ϕ ID restrictions, even in T's and Elbows.

ϕ D in mm matches Tubing ϕ OD.

Integrated O-ring assures long-lasting leak-free seals in vacuum and compressed-air applications.

Metric thread sizes M3, M5, and G1/8".

Body can be swiveled independently from threaded fitting for alignment purposes.

Our Best full-flow fittings have no internal ϕ ID restrictions, even in T's and Elbows.

Best

- Compact, lightweight design
- Parallel thread with soft seal O-ring for the best vacuum seal



Better

- Medium weight
- Medium size
- Soft seal O-ring for a better vacuum seal



Good

- Compact, lightweight design
- Improved tube insertion & removal
- Tapered thread and seal tape for a good vacuum seal

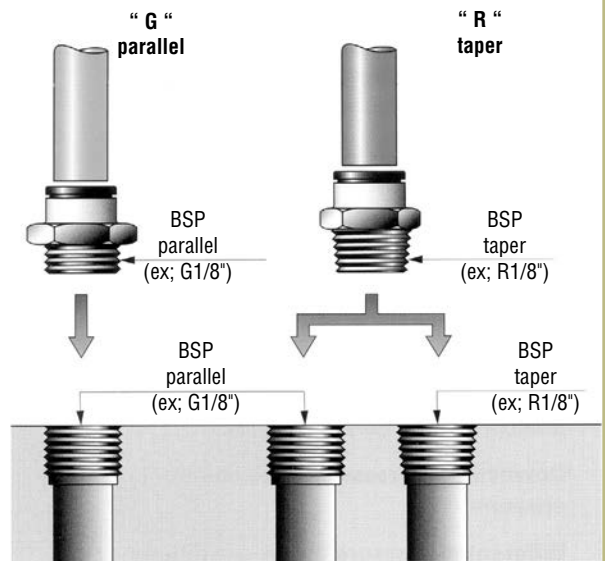


What is G1/8" thread?

G1/8" thread is a British Standard Pipe (BSP) specification. It is used throughout Europe and is frequently used in conjunction with metric M threads. It comes to North American robot end-of-arm tooling via the presence of European robot suppliers.

Specifically, G1/8" is a parallel thread having 28 threads per inch. Sealing is ensured by an O-ring or washer ring. (1/8" NPT is a tapered thread with 27 threads per inch.) See adaptor fittings on page 1068. G1/8" taps are available on page 1076.

BSP thread (British Standard Pipe)



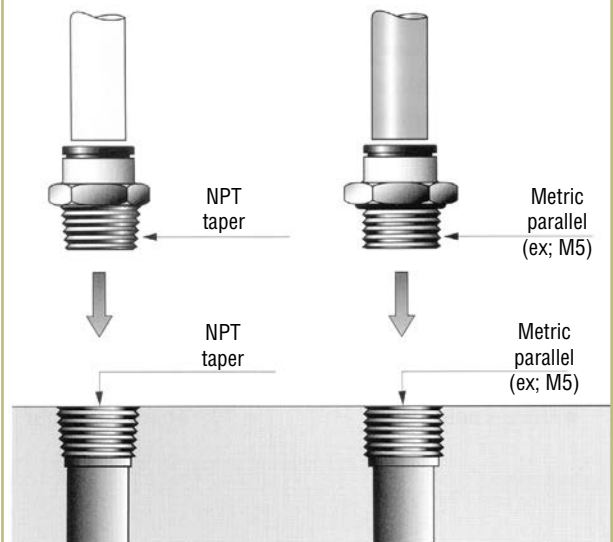
Note: Older usage can be as follows: Rp = parallel, Rc = taper

Special Note: M5 fits with 10-32 UNF.

NPT thread

Metric thread

NPT thread is not compatible with G, M or R type threads



(Shown Actual Size)

Push-In Fittings

Male Threaded Push-In Fitting

	Quick#	Part#	C	øD	Price	E	F1	F2	H	K	Wt.
Best	101	GSF-QMC-M304	M3	4	\$4.77	2.5	8	-	14.5	8.5	3g
	102	GSF-QMC-M504	M5	4	\$4.16	3.5	9	2.5	14	8.5	3g
	103	GSF-QMC-G804	G1/8"	4	\$3.51	4.5	13	3	11.5	14	7g
	104	GSF-QMC-M506	M5	6	\$5.95	3.5	10	2.5	16	11	5g
	105	GSF-QMC-G806	G1/8"	6	\$3.90	4.5	13	4	13	14	7g
	106	GSF-QMC-G808	G1/8"	8	\$5.60	4.5	13	5	20.5	14	11g
	1448	GSF-QMC-G406	G1/4"	6	\$4.50	5.5	16	4	12.5	17.5	11g
	1449	GSF-QMC-G408	G1/4"	8	\$5.63	5.5	16	6	19.5	17.5	16g
	5607	GSF-QMC-G410	G1/4"	10	\$9.54	5.5	16	7	23	17.5	18g
	2001	GSF-QMC-R804	R1/8"	4	\$4.80	-	10	3	9.5	11	6g
2002	GSF-QMC-R806	R1/8"	6	\$3.58	-	11	4	11.5	11	5g	



#102

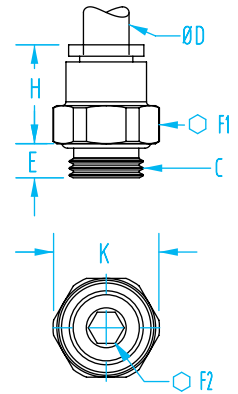


#105



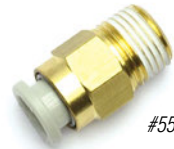
#5509

Note: soft seal O-ring



	Quick#	Part#	C	øD	Price	E	F1	F2	H	K	Wt.
Better	5506	GSF-SMC-M504	M5	4	\$1.15	3	8	-	14.7	9	3.3g
	5507	GSF-SMC-G804	G1/8"	4	\$1.07	5.5	12	-	11.6	13	7.7g
	5508	GSF-SMC-M506	M5	6	\$2.31	3	10	-	14.7	11	4.1g
	5509	GSF-SMC-G806	G1/8"	6	\$1.84	5.5	12	-	11.8	13	6.6g
	5510	GSF-SMC-G406	G1/4"	6	\$2.04	6.5	17	-	8.9	18.2	14.8g
	5511	GSF-SMC-G808	G1/8"	8	\$1.37	5.5	14	-	15.9	16	7.5g
	5512	GSF-SMC-G408	G1/4"	8	\$1.65	6.5	17	-	13.4	18.2	15.5g
	5513	GSF-SMC-G810	G1/8"	10	\$2.44	5.5	17	-	17.7	18.2	15.7g
	5514	GSF-SMC-G410	G1/4"	10	\$1.86	6.5	17	-	16.3	18.2	16.8g

	Quick#	Part#	C	øD	Price	E	F1	F2	H	K	Wt.
Good	5568	GSF-RMC-R804	R1/8"	4	\$1.16	6.5	10	-	7.3	11.5	5.6g
	5569	GSF-RMC-R806	R1/8"	6	\$1.56	6.5	10	-	11.9	11.5	5.8g
	5570	GSF-RMC-R406	R1/4"	6	\$1.56	10	14	-	6.7	16	12.5g
	5571	GSF-RMC-R808	R1/8"	8	\$1.56	6.5	14	-	16	16	11.9g
	5572	GSF-RMC-R408	R1/4"	8	\$1.55	10	14	-	12	16	13.9g
	5573	GSF-RMC-R810	R1/8"	10	\$2.73	6.5	17	-	17.3	19.5	16.9g
	5574	GSF-RMC-R410	R1/4"	10	\$2.53	10	17	-	17.3	19.5	22.1g



#5569

Use Quick#s for easy online ordering.

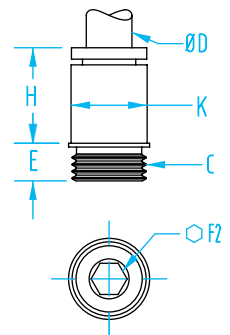
Male Threaded Socket Head Push-In Fitting

	Quick#	Part#	C	øD	Price	E	F1	F2	H	K	Wt.
Better	5501	GSF-SMS-M504	M5	4	\$1.74	3	-	2	14.6	8	3g
	5502	GSF-SMS-M506	M5	6	\$1.83	4	-	3	16.6	10	4.1g
	5503	GSF-SMS-G806	G1/8"	6	\$2.21	5.5	-	4	14.3	13	9.7g
	5504	GSF-SMS-G808	G1/8"	8	\$2.36	5.5	-	5	16.2	13	9.5g
	5505	GSF-SMS-G410	G1/4"	10	\$3.29	6.5	-	8	17.6	18	19.2g



#5503

Note: soft seal O-ring



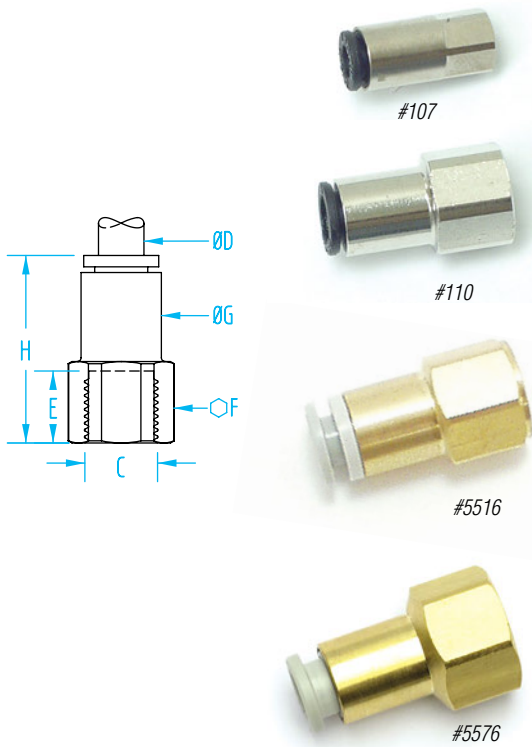
	Quick#	Part#	C	øD	Price	E	F1	F2	H	K	Wt.
Good	5561	GSF-RMS-R804	R1/8"	4	\$1.74	7.3	-	3	13.3	10	8.1g
	5562	GSF-RMS-R806	R1/8"	6	\$1.85	7	-	4	13.3	10	6.5g
	5563	GSF-RMS-R406	R1/4"	6	\$1.91	6.5	-	4	13.3	14	13.4g
	5564	GSF-RMS-R808	R1/8"	8	\$2.10	8.7	-	5	14.2	13	10.2g
	5565	GSF-RMS-R408	R1/4"	8	\$2.03	9	-	6	14.2	14	14.3g
	5566	GSF-RMS-R810	R1/8"	10	\$2.69	8.7	-	5	15.6	15	12g
	5567	GSF-RMS-R410	R1/4"	10	\$2.66	9	-	8	15.6	15	12.4g



#5562

Push-In Fittings

(Shown Actual Size)

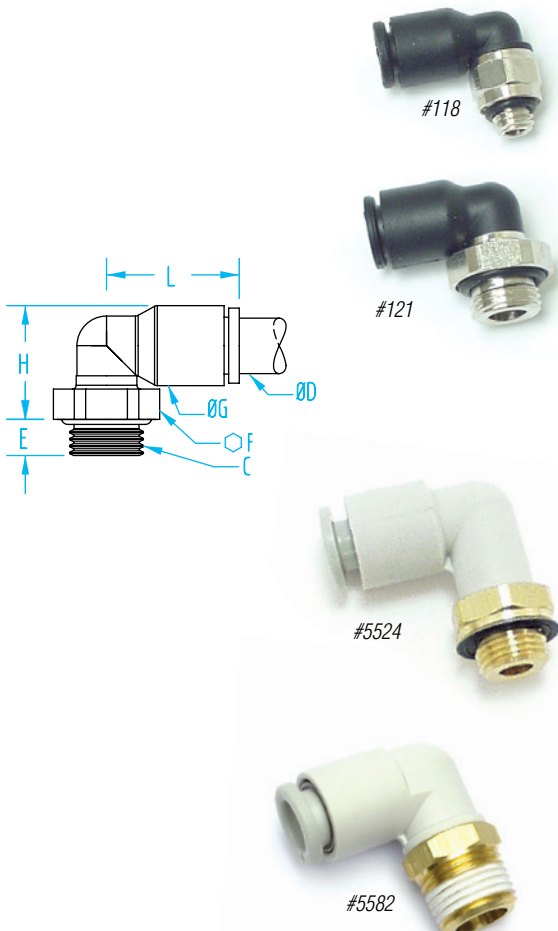


Female Threaded Push-In Fitting

Best	Quick#	Part#	C	øD	Price	E	F	G	H	Wt.
	107	GSF-QFC-M504	M5	4	\$9.66	6.5	8	8.7	19.5	5g
	108	GSF-QFC-M506	M5	6	\$3.23	3.5	8	9.9	14	3g
	109	GSF-QFC-G804	G1/8"	4	\$8.66	9.5	13	8.6	22.5	10g
	110	GSF-QFC-G806	G1/8"	6	\$8.15	9.5	13	10.6	24.5	11g
	111	GSF-QFC-G808	G1/8"	8	\$10.41	9.5	13	13.5	29	20g
	1450	GSF-QFC-G406	G1/4"	6	\$8.80	13.5	16	10.6	28.5	16g
	1451	GSF-QFC-G408	G1/4"	8	\$10.41	13.5	16	13.5	33	27g

Better	Quick#	Part#	C	øD	Price	E	F	G	H	Wt.
	5515	GSF-SFC-G804	G1/8"	4	\$2.76	7.5	14	7.9	24.7	12.4g
	5516	GSF-SFC-G806	G1/8"	6	\$2.76	7.5	14	9.9	24.3	12.6g
	5517	GSF-SFC-G406	G1/4"	6	\$3.16	12	17	9.9	29.6	21.4g
	5518	GSF-SFC-G808	G1/8"	8	\$2.84	7.5	14	12.4	24.7	15.1g
	5519	GSF-SFC-G408	G1/4"	8	\$3.23	12	17	12.4	30.1	24g
	5520	GSF-SFC-G410	G1/4"	10	\$3.38	12	17	14.8	31.1	24.1g

Good	Quick#	Part#	C	øD	Price	E	F	G	H	Wt.
	5575	GSF-RFC-R804	R1/8"	4	\$2.76	8.5	14	7.9	24.1	12g
	5576	GSF-RFC-R806	R1/8"	6	\$2.76	8.5	14	9.9	23.6	12.2g
	5577	GSF-RFC-R406	R1/4"	6	\$3.16	12	17	9.9	28.5	21.6g
	5578	GSF-RFC-R808	R1/8"	8	\$2.84	8.5	14	12.4	24.1	12.9g
	5579	GSF-RFC-R408	R1/4"	8	\$3.23	12	17	12.4	29	22.1g
	5580	GSF-RFC-R410	R1/4"	10	\$3.37	12	17	14.8	30	24.2g



Male Threaded Push-In Elbow Fitting

Best	Quick#	Part#	C	øD	Price	E	F	G	H	L	Wt.
	117	GSF-QME-M304	M3	4	\$6.18	2.5	8	8.5	15	14.5	3g
	118	GSF-QME-M504	M5	4	\$4.19	3.5	8	8.5	13.5	14	3g
	119	GSF-QME-G804	G1/8"	4	\$4.47	5	13	8.5	13	14	7g
	120	GSF-QME-M506	M5	6	\$4.47	3.5	8	10.5	15.5	16	3g
	121	GSF-QME-G806	G1/8"	6	\$4.74	5	13	10.5	15	16	8g
	122	GSF-QME-G808	G1/8"	8	\$9.82	4.5	13	13.5	20.5	23	14g
	1452	GSF-QME-G406	G1/4"	6	\$6.41	5.5	16	10.5	15	16	13g
	1453	GSF-QME-G408	G1/4"	8	\$6.99	5.5	16	13.5	18.5	23	17g
	5608	GSF-QME-G410	G1/4"	10	\$17.18	5.5	16	16	23.5	26.5	30g
	2004	GSF-QME-R804	R1/8"	4	\$5.67	-	10	8.5	13.5	14	6g
	2005	GSF-QME-R806	R1/8"	6	\$4.22	-	10	10.5	15.5	16	6g

Better	Quick#	Part#	C	øD	Price	E	F	G	H	L	Wt.
	5521	GSF-SME-M504	M5	4	\$1.94	3.5	7	8.2	15.9	15.4	3.1g
	5522	GSF-SME-G804	G1/8"	4	\$1.45	5.5	12	8.2	15.4	14.8	6.3g
	5523	GSF-SME-M506	M5	6	\$2.36	3.5	7	10.4	18.7	14.5	3.2g
	5524	GSF-SME-G806	G1/8"	6	\$1.55	5.5	12	10.4	17.6	15.5	6.7g
	5525	GSF-SME-G406	G1/4"	6	\$1.74	6.5	17	10.4	20.1	15.5	17.2g
	5526	GSF-SME-G808	G1/8"	8	\$2.32	5.5	12	13.2	20.4	16.4	7.6g
	5527	GSF-SME-G408	G1/4"	8	\$2.46	6.5	17	13.2	22.9	17.2	15.9g
	5528	GSF-SME-G810	G1/8"	10	\$3.06	5.5	12	15.9	24.9	18.6	10.3g
	5529	GSF-SME-G410	G1/4"	10	\$2.63	6.5	17	15.9	26	19.3	17.5g

Good	Quick#	Part#	C	øD	Price	E	F	G	H	L	Wt.
	5581	GSF-RME-R804	R1/8"	4	\$1.65	6.5	10	8.2	20.3	14.8	4.8g
	5582	GSF-RME-R806	R1/8"	6	\$1.83	6.5	10	10.4	22.5	15.5	5.2g
	5583	GSF-RME-R406	R1/4"	6	\$2.02	10	14	10.4	28	15.5	14.7g
	5584	GSF-RME-R808	R1/8"	8	\$2.60	6.5	10	13.2	25.3	16.4	6.1g
	5585	GSF-RME-R408	R1/4"	8	\$2.74	10	14	13.2	32	17.2	17.7g
	5586	GSF-RME-R810	R1/8"	10	\$3.35	6.5	12	15.9	31.6	18.6	11.1g
	5587	GSF-RME-R410	R1/4"	10	\$2.91	10	17	15.9	36.7	19.3	21.7g

Push-In Fittings

(Shown Actual Size)

Male Threaded Push-In Extended Elbow Fitting

Best	Quick#	Part#	C	øD	Price	E	F	G	H	L	Wt.
	123	GSF-QMX-M504	M5	4	\$5.29	3.5	8	8.5	23	19	7g
	124	GSF-QMX-G804	G1/8"	4	\$6.17	5	13	8.5	22.5	19	9g
	125	GSF-QMX-M506	M5	6	\$6.85	3.5	10	10.5	27.5	23	9g
	126	GSF-QMX-G806	G1/8"	6	\$5.55	5	13	10.5	27	23	12g
	127	GSF-QMX-G808	G1/8"	8	\$8.16	5	13	13.5	36	29.5	25g

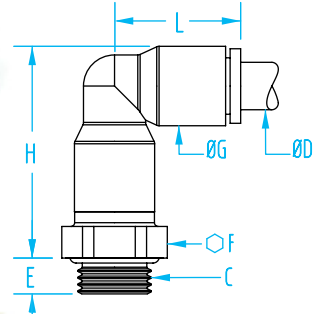


#123

Better	Quick#	Part#	C	øD	Price	E	F	G	H	L	Wt.
	5530	GSF-SMX-M504	M5	4	\$3.56	3	7	8.2	29.8	15.4	5.8g
	5531	GSF-SMX-G804	G1/8"	4	\$3.62	5.5	12	8.2	34.6	14.8	16.5g
	5532	GSF-SMX-M506	M5	6	\$3.67	3	7	10.4	32.6	14.5	5.9g
	5533	GSF-SMX-G806	G1/8"	6	\$2.74	5.5	12	10.4	36.8	15.5	17g
	5534	GSF-SMX-G406	G1/4"	6	\$3.00	6.5	17	10.4	37.5	15.5	36.2g
	5535	GSF-SMX-G808	G1/8"	8	\$3.76	5.5	12	13.2	39.6	16.4	17.8g
	5536	GSF-SMX-G408	G1/4"	8	\$3.48	6.5	17	13.2	43.1	17.2	37.5g
	5537	GSF-SMX-G410	G1/4"	10	\$5.26	6.5	17	15.9	56.8	19.3	45.1g



#126



Good	Quick#	Part#	C	øD	Price	E	F	G	H	L	Wt.
	5588	GSF-RMX-R804	R1/8"	4	\$3.90	6.5	10	8.2	34	14.8	11g
	5589	GSF-RMX-R806	R1/8"	6	\$3.94	6.5	10	10.4	36.2	15.5	11.4g
	5590	GSF-RMX-R406	R1/4"	6	\$4.05	10	14	10.4	39.6	15.5	28g
	5591	GSF-RMX-R808	R1/8"	8	\$4.05	6.5	10	13.2	39	16.4	12.2g
	5592	GSF-RMX-R408	R1/4"	8	\$4.27	10	14	13.2	45.7	17.2	40g
5593	GSF-RMX-R410	R1/4"	10	\$5.55	10	17	15.9	60.9	19.3	59g	



#5533



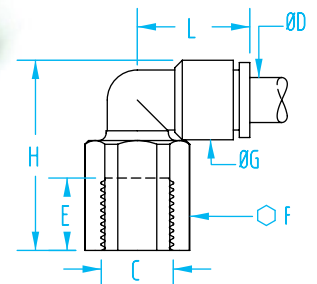
#5589

Female Threaded Push-In Elbow Fitting

Best	Quick#	Part#	C	øD	Price	E	F	G	H	L	Wt.
	133	GSF-QFE-M504	M5	4	\$3.80	11.5	9	8	19.5	15.5	5g
	134	GSF-QFE-M506	M5	6	\$3.80	11.5	9	10.5	22	14.5	5g
	135	GSF-QFE-G804	G1/8"	4	\$5.82	8.5	13	8.5	23	14	9g
	136	GSF-QFE-G806	G1/8"	6	\$4.14	8.5	13	10.5	25	16	11g
	137	GSF-QFE-G808	G1/8"	8	\$4.89	8.5	13	13.5	28	23	14g
	1454	GSF-QFE-G406	G1/4"	6	\$6.33	11.5	16	10.5	29	16	11g
	1455	GSF-QFE-G408	G1/4"	8	\$5.86	11.5	16	13.5	32	23	17g



#136



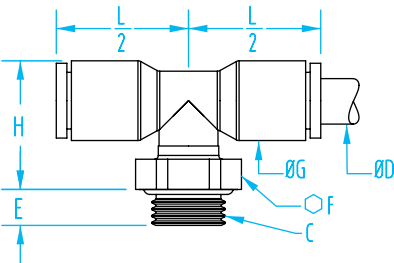
Good	Quick#	Part#	C	øD	Price	E	F	G	H	L	Wt.
	5538	GSF-SFE-M504	M5	4	\$2.70	4.5	8	8.2	19.4	15.4	4.7g
	5539	GSF-SFE-M506	M5	6	\$2.70	4.5	8	10.4	22.2	14.5	4.8g
	5594	GSF-RFE-R804	R1/8"	4	\$4.00	6.5	14	8.2	26.5	14.8	17.6g
	5595	GSF-RFE-R806	R1/8"	6	\$2.31	6.5	14	10.4	28.7	15.5	18g
	5596	GSF-RFE-R406	R1/4"	6	\$2.54	9.5	17	10.4	33.2	15.5	30.1g
	5597	GSF-RFE-R808	R1/8"	8	\$2.51	6.5	14	13.2	31.5	16.4	18.8g
	5598	GSF-RFE-R408	R1/4"	8	\$2.92	9.5	17	13.2	35.4	17.2	28.7g
	5599	GSF-RFE-R410	R1/4"	10	\$3.74	9.5	17	15.9	35.4	19.3	26.4g



#5595

Push-In Fittings

(Shown Actual Size)



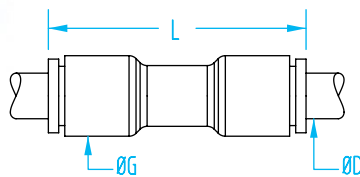
Male Threaded Push-In T Fitting

Best	Quick#	Part#	C	øD	Price	E	F	G	H	L	Wt.
	141	GSF-QBT-M304	M3	4	\$6.27	2.5	8	8.5	15	29	3g
	142	GSF-QBT-M504	M5	4	\$8.34	3.5	8	8.5	17.5	28	4g
	143	GSF-QBT-G804	G1/8"	4	\$6.11	5	13	8.5	15	28	8g
	144	GSF-QBT-M506	M5	6	\$7.98	3.5	8	10.5	19.5	32	6g
	145	GSF-QBT-G806	G1/8"	6	\$6.67	5	13	10.5	17	32	8g
	146	GSF-QBT-G808	G1/8"	8	\$11.15	4.5	13	13.5	23.5	46	17g
	1456	GSF-QBT-G406	G1/4"	6	\$7.93	5.5	16	10.5	17	32	15g
	1457	GSF-QBT-G408	G1/4"	8	\$11.61	5.5	16	13.5	21.5	46	20g
	5609	GSF-QBT-G410	G1/4"	10	\$21.00	5.5	16	16	26	53	21g
2013	GSF-QBT-R804	R1/8"	4	\$7.81	-	10	8.5	15.5	28	7g	
2014	GSF-QBT-R806	R1/8"	6	\$8.63	-	10	10.5	17.5	32	9g	

Better	Quick#	Part#	C	øD	Price	E	F	G	H	L	Wt.
	5540	GSF-SBT-M504	M5	4	\$2.95	3	7	8.2	15.9	30.8	3.9g
	5541	GSF-SBT-G804	G1/8"	4	\$2.28	5.5	12	8.2	15.4	29.6	7g
	5542	GSF-SBT-M506	M5	6	\$2.82	3	7	10.4	18.7	29	4.4g
	5543	GSF-SBT-G806	G1/8"	6	\$2.54	5.5	12	10.4	17.6	31	7.6g
	5544	GSF-SBT-G406	G1/4"	6	\$2.54	6.5	17	10.4	20.1	31	18.1g
	5545	GSF-SBT-G808	G1/8"	8	\$3.21	5.5	12	13.2	20.4	32.8	9.4g
	5546	GSF-SBT-G408	G1/4"	8	\$3.57	6.5	17	13.2	22.9	34.4	17.6g
	5547	GSF-SBT-G810	G1/8"	10	\$4.31	5.5	12	15.9	24.9	37.2	13.1g
	5548	GSF-SBT-G410	G1/4"	10	\$3.99	6.5	17	15.9	26	53	20.1g

Good	Quick#	Part#	C	øD	Price	E	F	G	H	L	Wt.
	5600	GSF-RBT-R804	R1/8"	4	\$2.56	6	10	8.2	14.3	29.6	5.5g
	5601	GSF-RBT-R806	R1/8"	6	\$2.82	6	10	10.4	16.5	31	6.1g
	5602	GSF-RBT-R406	R1/4"	6	\$2.82	10	14	10.4	18	31	15.6g
	5603	GSF-RBT-R808	R1/8"	8	\$3.49	6	10	13.2	19.3	32.8	7.9g
	5604	GSF-RBT-R408	R1/4"	8	\$3.84	10	14	13.2	22	34.4	19.4g
	5605	GSF-RBT-R810	R1/8"	10	\$4.60	6	12	15.9	25.5	37.2	13.9g
	5606	GSF-RBT-R410	R1/4"	10	\$4.27	10	17	15.9	26.5	38.6	24.3g

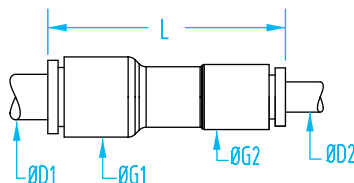
Use Quick#s for easy online ordering.



Straight Push-In Union

Quick#	Part#	øD	Price	G	L	Wt.
112	GSF-QSU-04	4	\$2.81	8.5	25	2g
113	GSF-QSU-06	6	\$3.43	10.5	28.5	4g
114	GSF-QSU-08	8	\$4.02	13.5	38	7g
5611	GSF-QSU-10	10	\$8.85	16	42	9g

Quick#	Part#	øD	Price	G	L	Wt.
5549	GSF-SSU-04	4	\$1.84	11	32.5	3g
5550	GSF-SSU-06	6	\$1.85	13	35	4g
5551	GSF-SSU-08	8	\$2.23	15.5	39	6g
5552	GSF-SSU-10	10	\$2.91	19	43	11g



Reducer Push-In Union

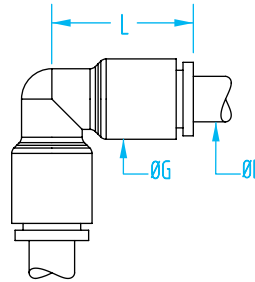
Quick#	Part#	øD1	øD2	Price	G1	G2	L	Wt.
115	GSF-QRU-0604	6	4	\$6.36	11	8.5	28	8g
116	GSF-QRU-0806	8	6	\$6.52	13.5	13.5	38	12g
5469	GSF-QRU-1008	10	8	\$8.51	16	16	42	20g

(Shown Actual Size)

Push-In Fittings

Elbow Push-In Union

Quick#	Part#	øD	Price	G	L	Wt.
138	GSF-QEU-04	4	\$4.50	8.5	19	2g
139	GSF-QEU-06	6	\$3.71	10.5	22.5	4g
140	GSF-QEU-08	8	\$5.82	13.5	29.5	7g
5610	GSF-QEU-10	10	\$11.76	16	34.5	15g

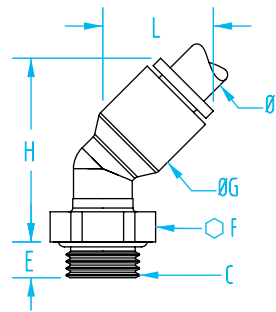


#5553

Quick#	Part#	øD	Price	G	L	Wt.
5553	GSF-SEU-04	4	\$1.95	10.5	18	6g
5554	GSF-SEU-06	6	\$2.13	13	20	6g
5555	GSF-SEU-08	8	\$2.53	15.5	23	10g
5556	GSF-SEU-10	10	\$3.82	19	36.5	17g

Male Threaded Push-In 45° Elbow Fitting

Quick#	Part#	C	øD	Price	E	F	G	H	L	Wt.
128	GSF-QMA-M504	M5	4	\$3.89	3.5	8	9	23	13	5g
129	GSF-QMA-G804	G1/8"	4	\$5.28	4.5	13	9	25	13	8g
130	GSF-QMA-M506	M5	6	\$4.21	3.5	8	11	30	14.5	5g
131	GSF-QMA-G806	G1/8"	6	\$4.62	4.5	13	11	28.5	14.5	8g
132	GSF-QMA-G808	G1/8"	8	\$7.00	4.5	13	13.5	36	19.5	16g

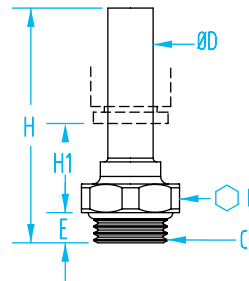


#128

#131

Male Threaded Push-In Standpipe Fitting

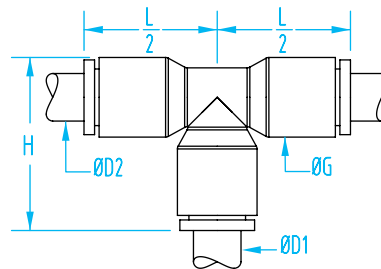
Quick#	Part#	C	øD	Price	E	F	H	H1	Wt.
184	GSF-QSC-M504	M5	4	\$10.41	3.5	8	31	16	2g
185	GSF-QSC-G804	G1/8"	4	\$14.17	5	13	30	13.5	6g
186	GSF-QSC-G806	G1/8"	6	\$12.63	5	13	32	13.5	6g
187	GSF-QSC-G808	G1/8"	8	\$12.10	5	13	35.5	12.5	6g
1458	GSF-QSC-G406	G1/4"	6	\$14.13	5.5	16	33	13.5	11g
1459	GSF-QSC-G408	G1/4"	8	\$15.32	5.5	16	34.5	10.5	12g



#186

Push-In T

Quick#	Part#	øD1	øD2	Price	G	H	L	Wt.
147	GSF-QTU-04	4	4	\$4.12	8.5	19	29	4g
148	GSF-QTU-06	6	6	\$4.99	10.5	22.5	25	6g
149	GSF-QTU-08	8	8	\$5.93	13.5	29.5	46	9g
5613	GSF-QTU-10	10	10	\$19.34	16	34.5	53	14g



#148

Reducer Push-In T

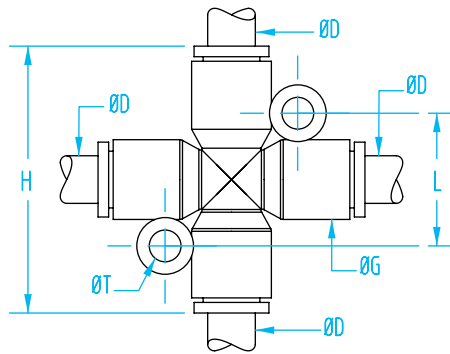
Quick#	Part#	øD	Price	G	H	L	Wt.
150	GSF-QTU-0604	6	\$5.21	10.5	22.5	35	6g
151	GSF-QTU-0406	4	\$4.98	10.5	22.5	35	6g
152	GSF-QTU-0806	8	\$9.68	13.5	29.5	46	9g
153	GSF-QTU-0608	6	\$6.58	13.5	29.5	46	9g
5612	GSF-QTU-1008	10	\$18.28	16	34.5	53	19g

Quick#	Part#	øD	Price	G	H	L	Wt.
5557	GSF-STU-04	4	\$2.30	10.5	27	36	7g
5558	GSF-STU-06	6	\$2.80	13	29.5	42	10g
5559	GSF-STU-08	8	\$3.32	15.5	33	47	15g
5560	GSF-STU-10	10	\$4.18	19	37.5	53	25g



#5558

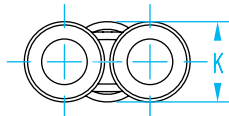
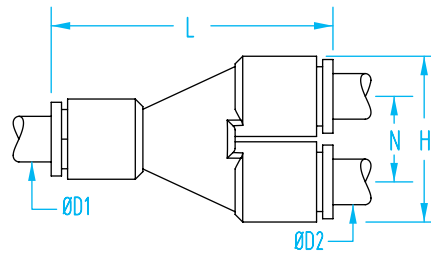
Push-In Fittings



(Shown Actual Size)

Push-In X

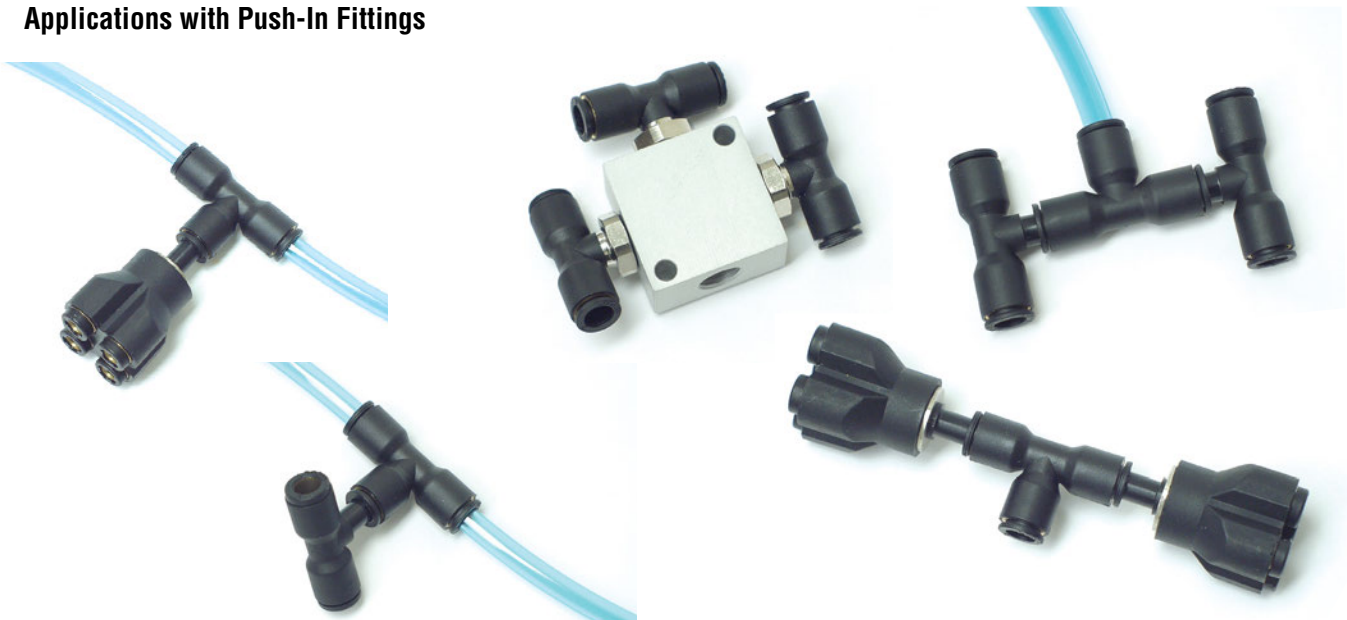
Quick#	Part#	ØD	Price	G	H	L	T	Wt.
159	GSF-QXU-04	4	\$11.19	11	36	20	4.2	10g
160	GSF-QXU-06	6	\$7.80	11	36	20	4.2	10g
161	GSF-QXU-08	8	\$9.63	13.5	46	22.5	4.2	20g



Push-In Y

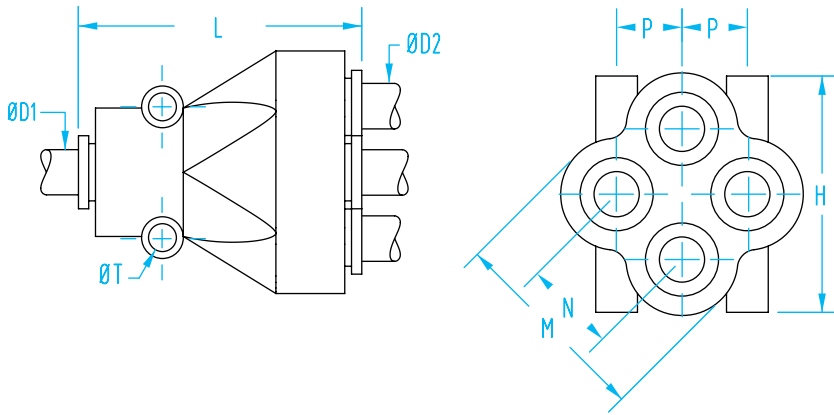
Quick#	Part#	ØD1	ØD2	Price	H	K	L	N	Wt.
154	GSF-QYU-04	4	4	\$4.14	17.5	8.5	28.5	9	4g
155	GSF-QYU-06	6	6	\$4.91	21.5	10.5	35	11	7g
156	GSF-QYU-08	8	8	\$5.75	28	13.5	45	14.5	13g
Reducer Push-In Y									
157	GSF-QYU-0604	6	4	\$4.62	17.5	10.5	34.5	9	3g
158	GSF-QYU-0806	8	6	\$6.59	21.5	13.5	41	11	5g

Applications with Push-In Fittings



Push-In Fittings

(Shown Actual Size)

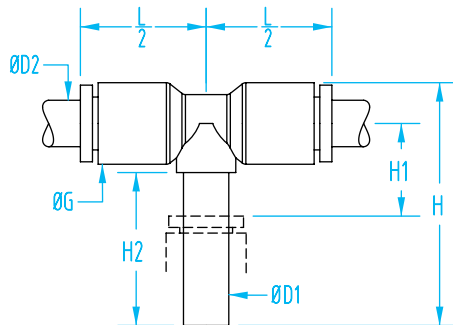
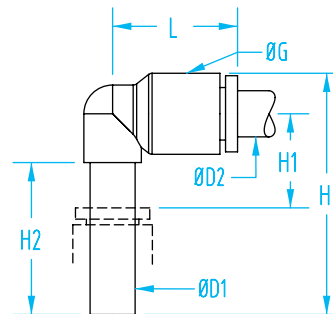


Push-In Double Y

Quick#	Part#	ØD1	ØD2	Price	H	L	M	N	P	T	Wt.
162	GSF-QDY-04	4	4	\$14.98	25.5	30.5	21	10	8.5	3.7	27g
163	GSF-QDY-06	6	6	\$12.37	31.5	37.5	26.5	12	10	3.7	43g
Reducer Push-In Double Y											
164	GSF-QDY-0604	6	4	\$13.84	25.5	30.5	21	10	8.5	3.7	27g
165	GSF-QDY-0806	8	6	\$11.70	31.5	38	36.5	12	10	3.7	45g

Plug-In Elbow

Quick#	Part#	ØD1	ØD2	Price	G	H	H1	H2	L	Wt.
166	GSF-QPE-04	4	4	\$2.27	8.5	23	6	15.5	14	3g
167	GSF-QPE-06	6	6	\$1.86	10.5	26.5	7	17	16	3g
168	GSF-QPE-08	8	8	\$2.69	13.5	33.5	8	21.5	23	4g
Reducer Plug-In Elbow										
169	GSF-QPE-0604	6	4	\$3.77	10.5	26.5	7	17	16	3g
170	GSF-QPE-0406	4	6	\$2.82	10.5	24.5	7	15.5	16	3g
171	GSF-QPE-0806	8	6	\$4.51	13.5	33.5	8	21.5	22	4g



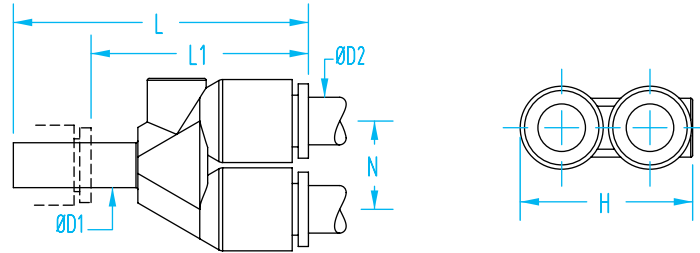
Plug-In T

Quick#	Part#	ØD1	ØD2	Price	G	H	H1	H2	L	Wt.
172	GSF-QPT-04	4	4	\$4.78	8.5	23	6	15.5	14.5	5g
173	GSF-QPT-06	6	6	\$4.53	10.5	26.5	7	17	16	6g
174	GSF-QPT-08	8	8	\$5.35	13.5	33.5	8	21.5	23	8g
Reducer Plug-In T										
175	GSF-QPT-0604	6	4	\$5.59	10.5	26.5	7	17	16	6g
176	GSF-QPT-0806	8	6	\$6.33	13.5	33.5	8	21.5	23	7g



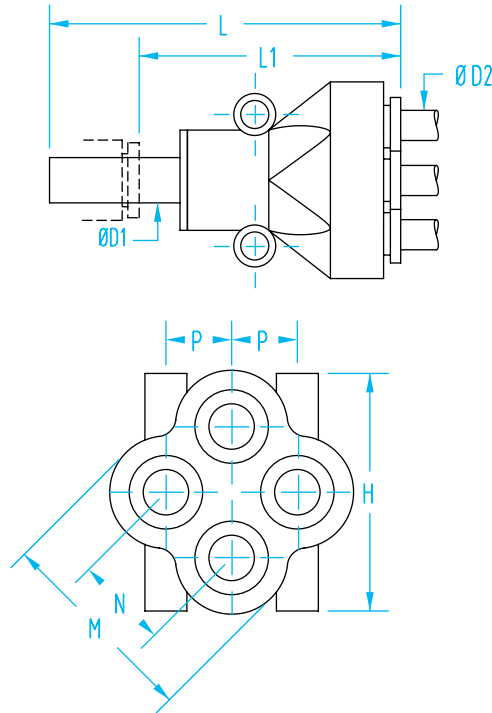
Push-In Fittings

(Shown Actual Size)



Plug-In Y

Quick#	Part#	ØD1	ØD2	Price	H	L	L1	N	Wt.
177	GSF-QPY-04	4	4	\$6.24	17.5	34	21.5	9	5g
178	GSF-QPY-06	6	6	\$3.70	21.5	39.5	25.5	11	8g
179	GSF-QPY-08	8	8	\$7.60	28	50.5	32	14.5	14g
Reducer Plug-In Y									
180	GSF-QPY-0604	6	4	\$6.73	17.5	35.5	21.5	9	5g
181	GSF-QPY-0806	8	6	\$8.38	21.5	44	25.5	11	8g

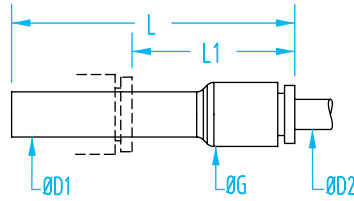


Double Plug-In Y

Quick#	Part#	ØD1	ØD2	Price	H	L	L1	M	N	P	Wt.
182	GSF-QDPY-0604	6	4	\$14.88	25.5	45	31	21	10	8.5	27g
183	GSF-QDPY-0806	8	6	\$23.60	31.5	59.5	41	26.5	12	10	40g

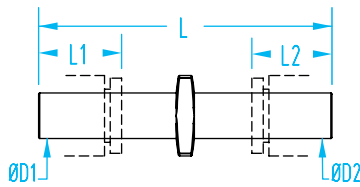
(Shown Actual Size)

Push-In Fittings



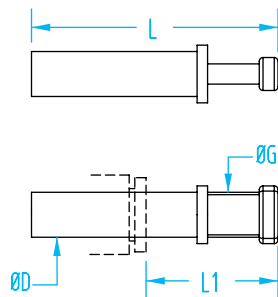
Plug-In Reducer

Quick#	Part#	ØD1	ØD2	Price	G	L	L1	Wt.
188	GSF-QPR-0604	6	4	\$2.72	8.5	37.5	23.5	4g
189	GSF-QPR-0806	8	6	\$2.88	10.5	37.5	20	4g
190	GSF-QPI-0406	4	6	\$3.96	10.5	35	23	3g
191	GSF-QPI-0608	6	8	\$3.74	13.5	45	31.5	5g



Plug-In Nipple

Quick#	Part#	ØD1	ØD2	Price	L	L1	L2	Wt.
195	GSF-QN-04	4	4	\$1.94	34.5	12	12	1g
196	GSF-QN-06	6	6	\$2.16	38.5	14	14	1g
197	GSF-QN-08	8	8	\$2.63	41	18.5	18.5	2g
Reducer Plug-In Nipple								
198	GSF-QRN-0604	6	4	\$2.10	38	13	13	2g
199	GSF-QRN-0806	8	6	\$2.18	42	14	13	2g
5467	GSF-QPR-1008	10	8	\$2.33	47	21	18.5	13.2g



Plug

Quick#	Part#	ØD	Price	G	L	L1	Wt.
192	GSF-QP-04	4	\$0.48	4	30	15.5	1g
193	GSF-QP-06	6	\$1.20	8	33	16.5	1g
194	GSF-QP-08	8	\$1.39	10	33	17.5	2g
5468	GSF-QP-10	10	\$3.85	12	42	21	3g

Use Quick#s for easy online ordering.

Gimatic Side Manifold Blocks

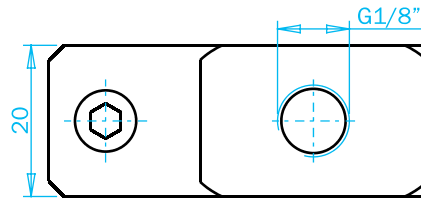
(Dimensioned drawings shown full scale)



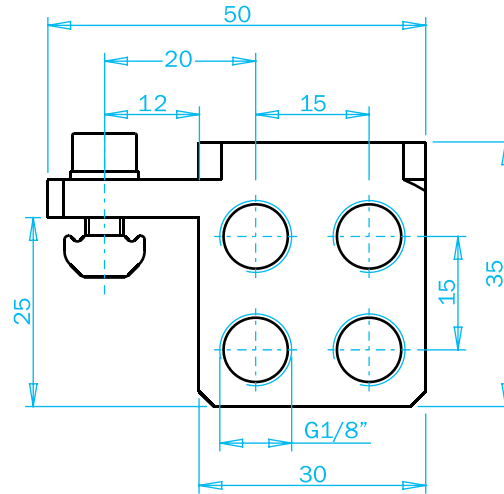
#5769
G1/8" (x9)

COMMON
9 common ports

#5769



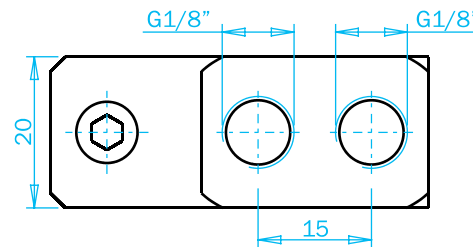
#5769 & #5770



#5770
G1/8" (x10)

DIVIDED
5 inlet ports, 5 outlet ports

#5770



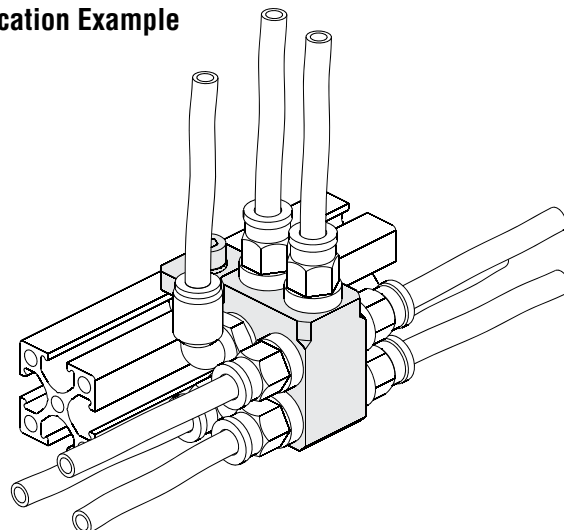
Double Manifold Blocks

Quick#	Part#	Price	Ports	Wt.
5769	MFI-A69	\$12.40	G1/8" (x9)	50g
5770	MFI-A70	\$14.37	G1/8" (x10)	48g



Drop in channel nuts on all Gimatic manifold blocks allow the manifolds to be easily installed on an already assembled EOAT.

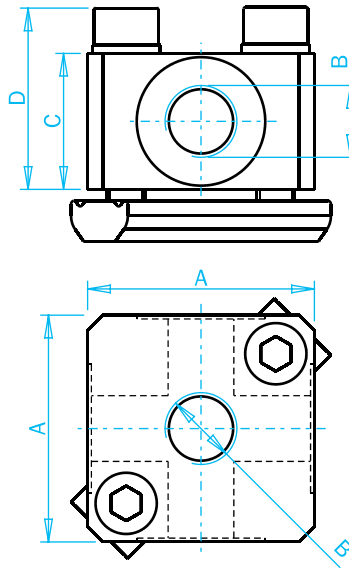
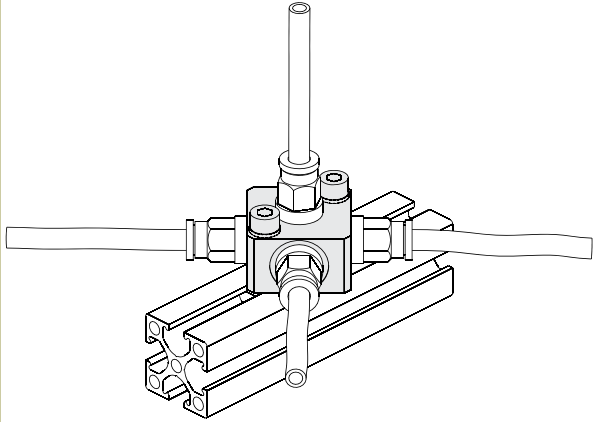
Application Example



Gimatic Side Manifold Blocks

(Dimensioned drawings shown full scale)

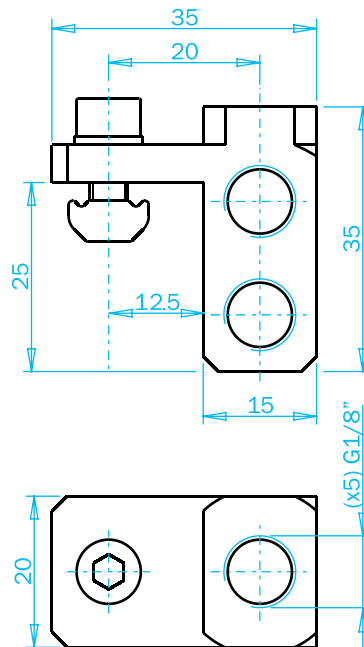
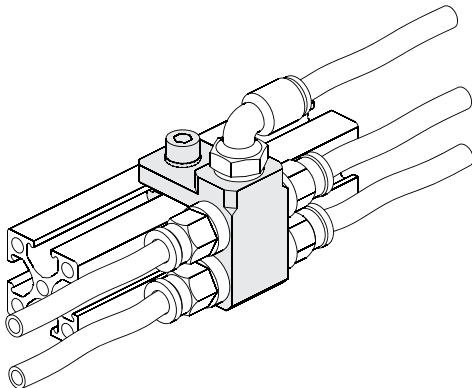
Application Example



Manifold Block

Quick #	Part#	Price	A	B	C	D	Wt.
5771	MFI-A66	\$9.26	30	G1/8" (x5)	18	24	50g
5831	MFI-A67	\$9.63	40	G1/4" (x5)	20	23	80g

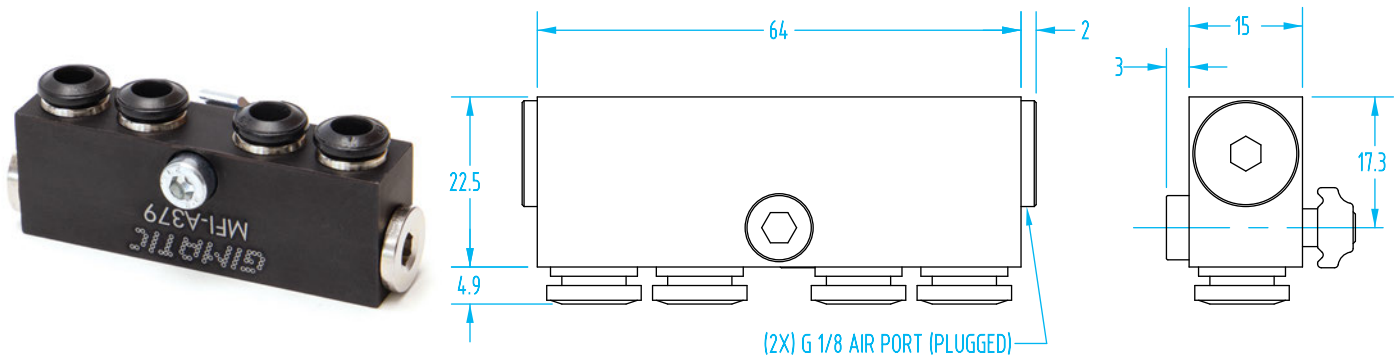
Application Example



Manifold Block

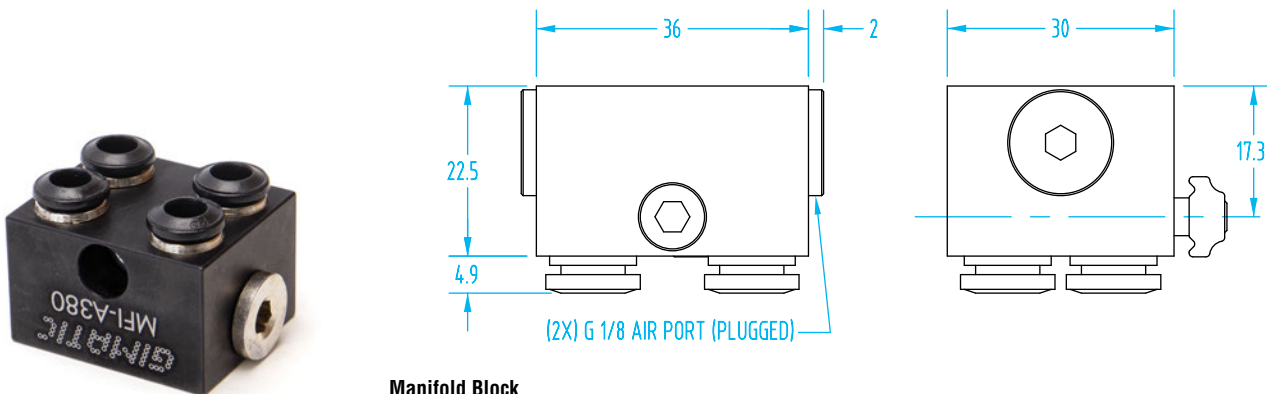
Quick#	Part#	Price	Ports	Wt.
5768	MFI-A68	\$11.68	G 1/8" (x5)	30g

Gimatic Manifold Blocks with Integrated Fittings



Manifold Block

Quick#	Part#	Price	Ports	Wt.
7480	MFI-A379	\$48.10	Ø6mm (x4), G1/8" (x2)	61g

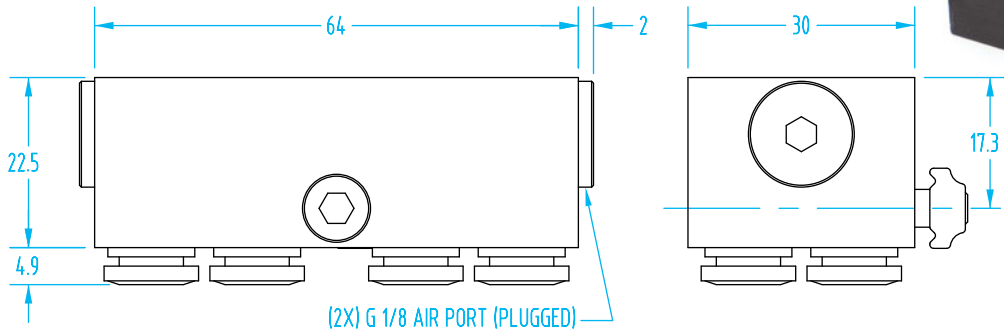


Manifold Block

Quick#	Part#	Price	Ports	Wt.
7481	MFI-A380	\$48.10	Ø6mm (x4), G1/8" (x2)	65g

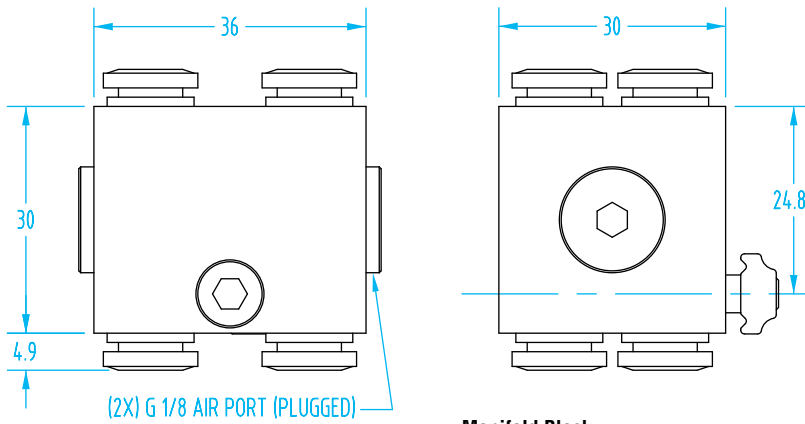


Gimatic Manifold Blocks with Integrated Fittings



Manifold Block

Quick#	Part#	Price	Ports	Wt.
7482	MFI-A381	\$62.37	Ø6mm (x8), G1/8" (x2)	106g



Manifold Block

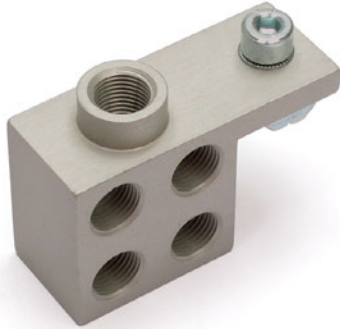
Quick#	Part#	Price	Ports	Wt.
7483	MFI-A384	\$62.37	Ø6mm (x8), G1/8" (x2)	87g

New drop in channel nuts on all Gimatic manifold blocks allow the manifolds to be easily installed on an already assembled EOAT.



>ASS< Side Manifold Blocks

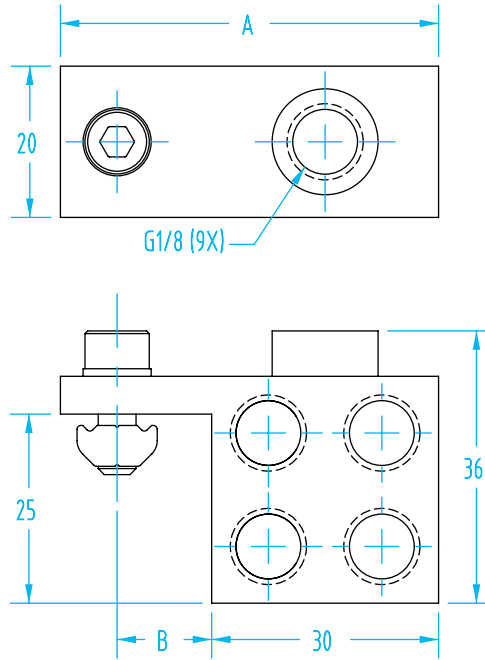
(Dimensioned drawings shown full scale)



#3413

COMMON

9 common ports



Double Manifold Block

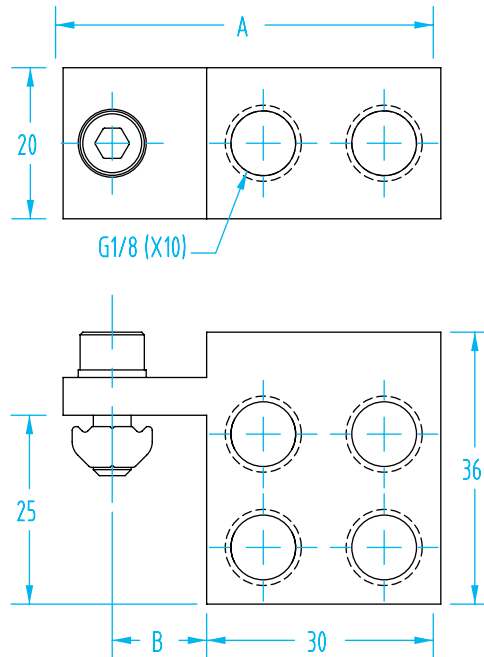
Quick#	Part#	>ASS< #	Price	Ports	A	B	Wt.
3413	VTB2-1-1/8X	1-230-15-00	\$13.65	G1/8" (x9)	50	12.5	88g
3415	VTB2-1-1/8J	1-230-22-00	\$13.65	G1/8" (x9)	60	20	97g



#3414

DIVIDED

5 inlet ports, 5 outlet ports

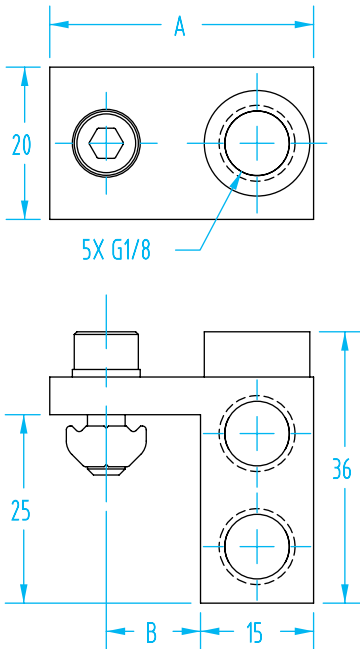


Double Manifold Block

Quick#	Part#	>ASS< #	Price	Ports	A	B	Wt.
3414	VTB2-2-1/8X	1-230-25-00	\$15.23	G1/8" (x10)	50	12.5	86g
3416	VTB2-2-1/8J	1-230-32-00	\$15.23	G1/8" (x10)	60	20	96g

Side Manifold Blocks

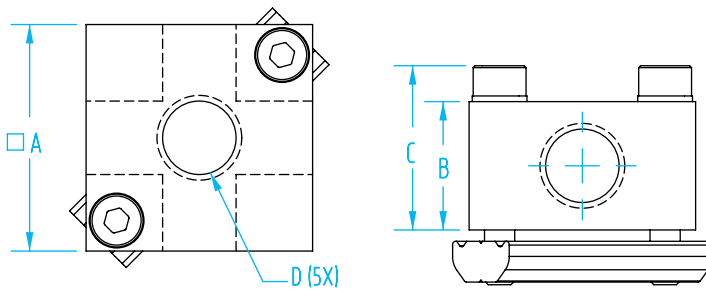
(Dimensioned drawings shown full scale)



#3411

Manifold Block

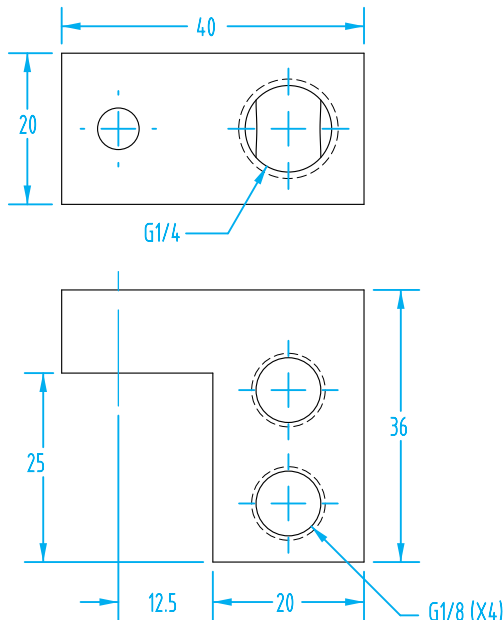
Quick#	Part#	>ASS< #	Price	Ports	A	B	Wt.
3411	VTB1/8X	1-230-05-00	\$12.08	G1/8" (x5)	34	12.5	48g
3412	VTB1/8J	1-230-12-00	\$12.60	G1/8" (x5)	44	20	67g



#3419

Manifold Block

Quick#	Part#	>ASS< #	Price	Ports	A	B	C	D	Wt.
3418	LVTM5X	1-230-40-00	\$12.60	M5 (x5)	14	8	13	M5	8g
3419	LVT1/8X	1-230-45-00	\$13.65	G1/8" (x5)	30	17	22	G1/8"	52g
3420	LVT1/4X	1-230-50-00	\$16.80	G1/4" (x5)	40	22	28	G1/4"	100g

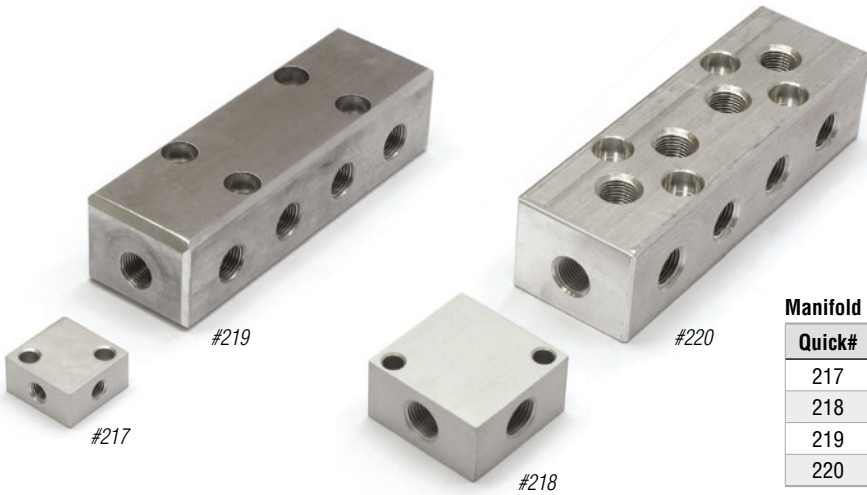


Manifold Block

Quick#	Part#	Price	Ports	Wt.
216	GSF-MAN-G41G84	\$11.25	G1/4" (x1) / G1/8" (x4)	43g

Manifold Blocks

(Dimensioned drawings shown full scale)

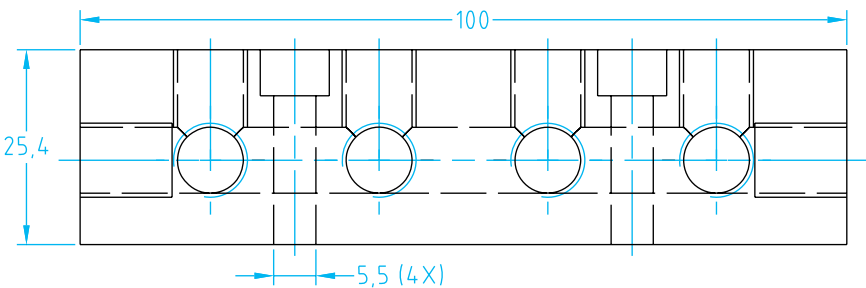
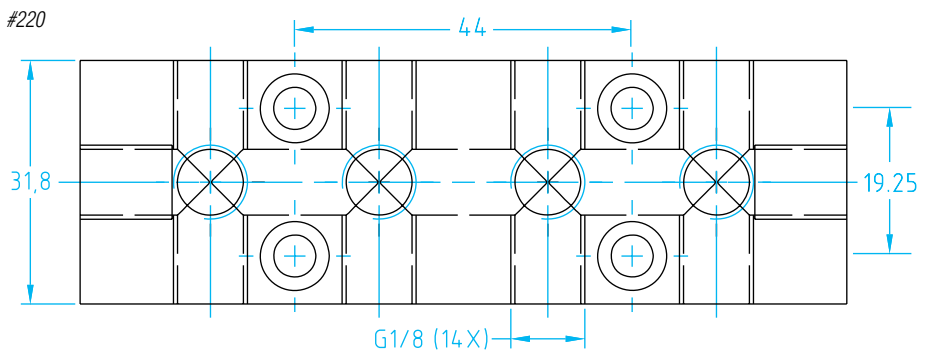
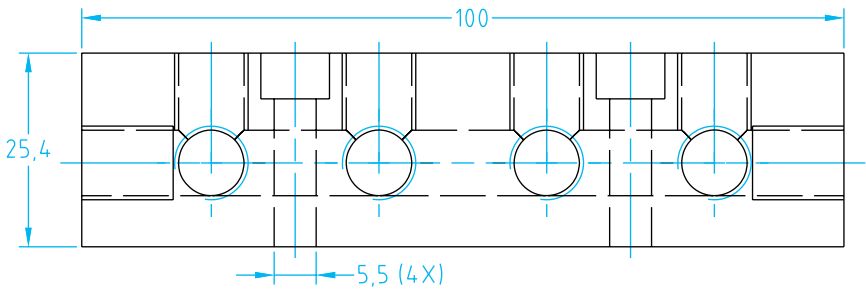
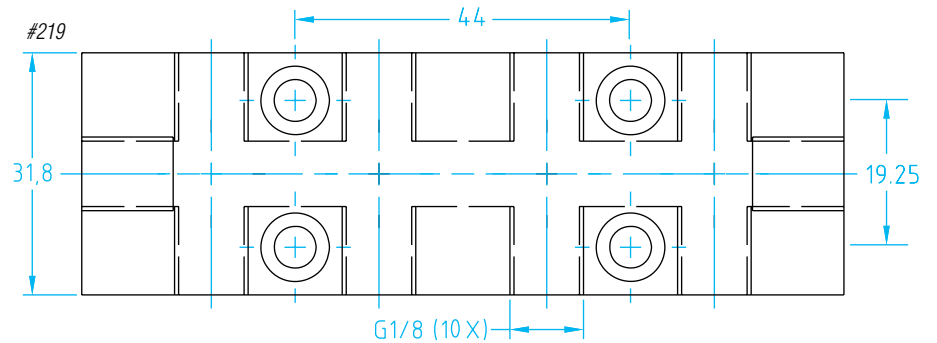
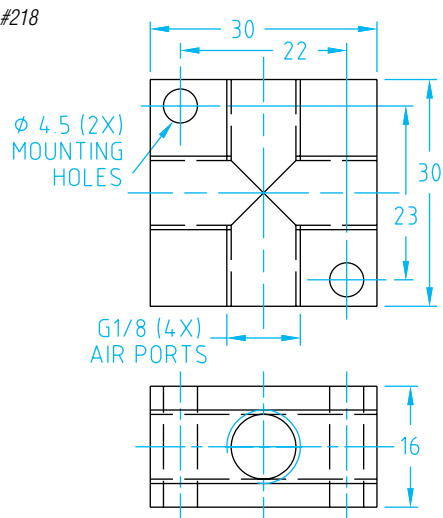
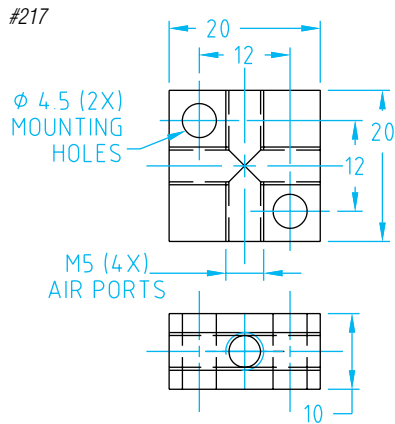


Manifold Blocks

Quick#	Part#	Ports	# Ports	Wt.	Price
217	GSF-MAN-M5X4	M5	4	9g	\$15.18
218	GSF-MAN-G8X4	G1/8"	4	29g	\$9.40
219	GSF-MAN-G8x08	G1/8"	10	170g	\$27.00
220	GSF-MAN-G8x12	G1/8"	14	163g	\$29.00

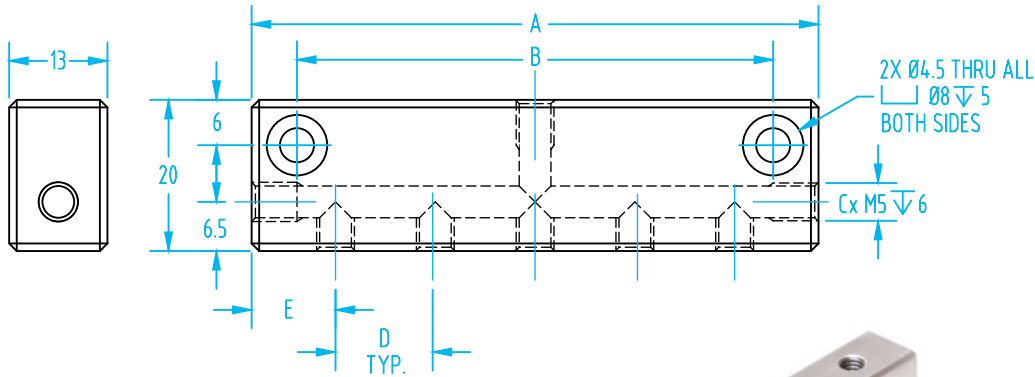
Fasteners are available on page 1076.

Compact female cross manifolds for the distribution of compressed air through one circuit.



Manifold Blocks

(Dimensioned drawings shown full scale)



Manifold Blocks

Quick#	A	B	C	D	E
388	50	38	6	13.6	11.5
389	75	63	8	12.9	11.1
390	100	88	10	13	10.9

NEW

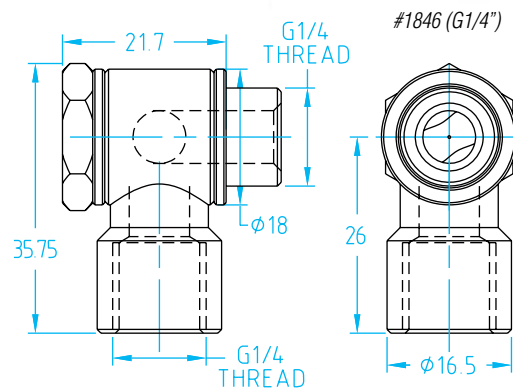
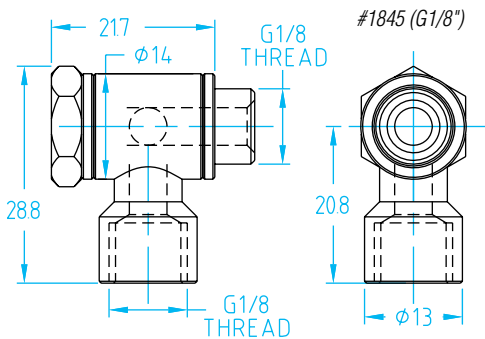
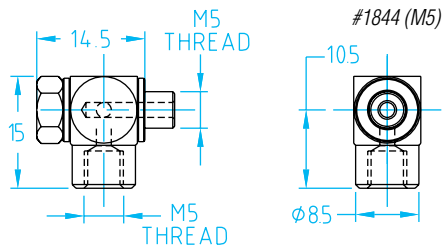


Manifold Blocks

Quick#	Part#	Ports	# Ports	Wt.	Price
388	GSF-MAN-M5X6	M5	6	24g	\$11.15
389	GSF-MAN-M5X8	M5	8	24g	\$12.65
390	GSF-MAN-M5X10	M5	10	61g	\$13.60

Fasteners are available on page 1076.

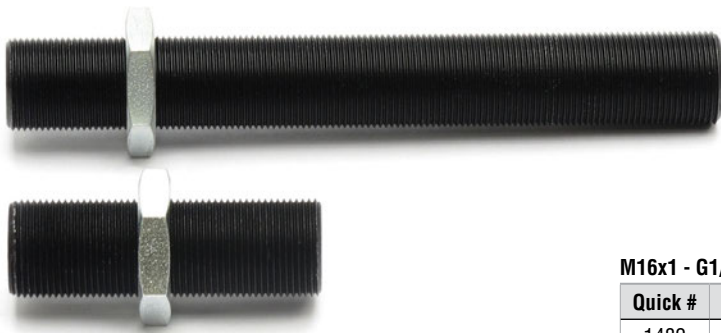
Banjo Fittings



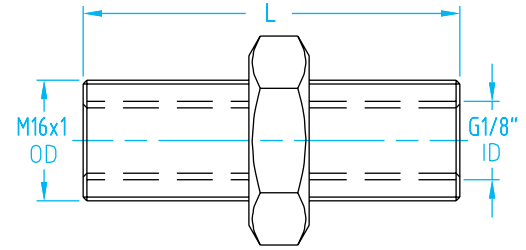
Nickel-Plated Brass Banjo Fittings

Quick#	Part#	Style	Wt.	Price
1844	GSF-HSE-M5	Swivel "L" M5	8g	\$4.33
1845	GSF-HSE-G8	Swivel "L" G1/8"	30g	\$4.73
1846	GSF-HSE-G4	Swivel "L" G1/4"	48g	\$6.38

Extensions



(Dimensioned drawings shown full scale)



M16x1 - G1/8" Threaded Extensions (Good for vacuum)

Quick #	Part #	Length	OD	ID	Weight	Price
1482	GSS-M16G8-50	50mm	M16x1	G1/8"	24g	\$14.60
1483	GSS-M16G8-120	120mm	M16x1	G1/8"	50g	\$23.00

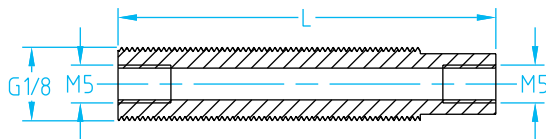
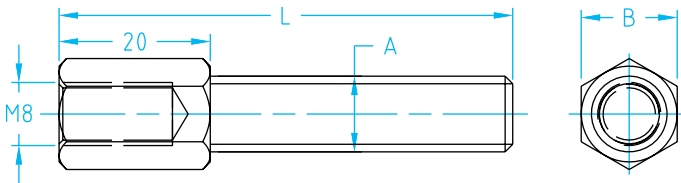
Includes (1) M16x1 lock nut. See page 1076 for additional nuts.



M16x1 - G1/8" Threaded Gripper Extensions (Not for vacuum)

Quick #	Part #	Length	A (Thread)	B	Weight	Price
1774	GSS-G8M8-60	60mm	G1/8"	12.7	14g	\$9.50
1773	GSS-G8M8-120	120mm	G1/8"	12.7	24g	\$9.50
1776	GSS-M16M8-75	75mm	M16X1	19	43g	\$8.94
1775	GSS-M16M8-170	170mm	M16X1	19	92g	\$9.92

Includes (1) G1/8" or M16x1 lock nut. See page 1076 for additional nuts.



G1/8" Threaded Extensions (Good for vacuum)

Quick #	Part #	Length	Weight	Price
558	GSS-G8M5-50	50mm	6g	\$9.51
559	GSS-G8M5-75	75mm	9g	\$11.03
560	GSS-G8M5-100	100mm	12g	\$12.39

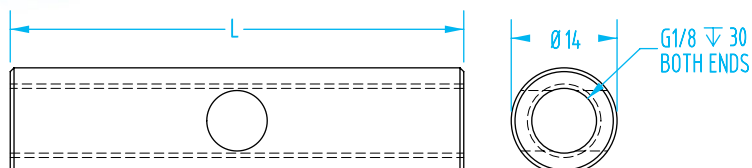


G1/8" - 14mm Extensions (Not for vacuum)

Quick #	Part #	Length	Weight	Price
1847	GSS-14G8-60	60mm	15g	\$7.85
1830	GSS-14G8-150	150mm	38g	\$8.45

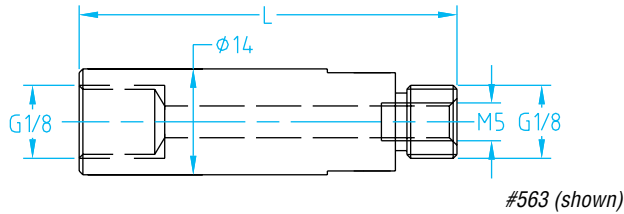


Our most popular clampable extensions are available in the Framing Sections; on pages 217 & 262.



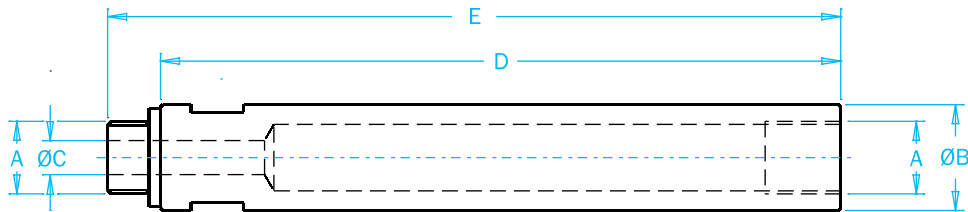
Extensions

(Dimensioned drawings shown full scale)



14mm Extensions (Good for vacuum)

Quick #	Part #	Length	Weight	Price
561	GSS-14G8-30	30mm	7g	\$8.18
562	GSS-14G8-40	40mm	11g	\$8.37
563	GSS-14G8-50	50mm	14g	\$8.87
564	GSS-14G8-110	110mm	37g	\$11.13



Vacuum Extensions (Good for vacuum)

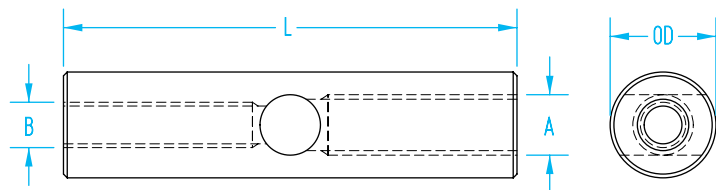
Quick#	Part#	Price	A	B	C	D	E	Wt.
5748	MFI-A154	\$9.48	M5	Ø10	Ø2	45	50	10g
5749	MFI-A155	\$9.98	M5	Ø10	Ø2	90	95	15g
5750	MFI-A150	\$10.93	G1/8"	Ø14	Ø4.5	45	52	15g
5751	MFI-A151	\$12.20	G1/8"	Ø14	Ø4.5	90	97	25g
5752	MFI-A152	\$12.44	G1/4"	Ø20	Ø6.5	45	53	30g
5753	MFI-A153	\$13.33	G1/4"	Ø20	Ø6.5	90	98	55g



#1772



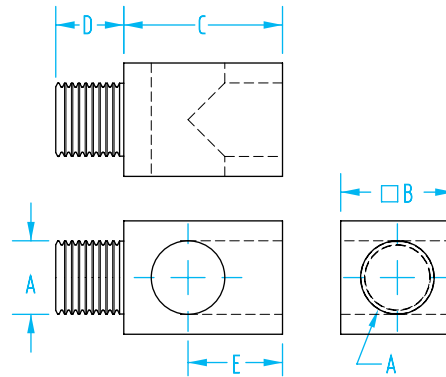
#1771



Gripper Extensions (Not for vacuum)

Quick #	Part #	Length	OD	A	B	Wt.	Price
1771	GSS-14M8-60	60	14	M8x1.25	M6x1	21g	\$9.50
1510	GSS-14M8-120	120	14	M8x1.25	M6x1	44g	\$12.48
1772	GSS-20M8-75	75	20	M8x1.25	M15x1	44g	\$10.00
1511	GSS-20M8-200	200	20	M8x1.25	M15x1	137g	\$12.68

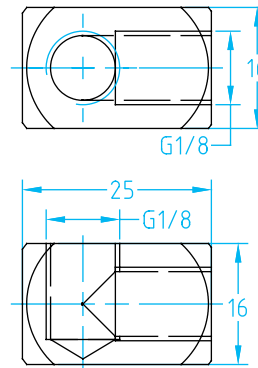
Special Fittings



Special Fittings

Quick#	Part#	Style	A	B	C	D	E	Wt.	Price
751	GSC-MPB-M5	3-way Female M5	M5	7	13	6	8.5	8g	\$8.70
752	GSC-MPB-G8	3-way Female G1/8"	G1/8"	15	21	9	12.5	10g	\$8.90

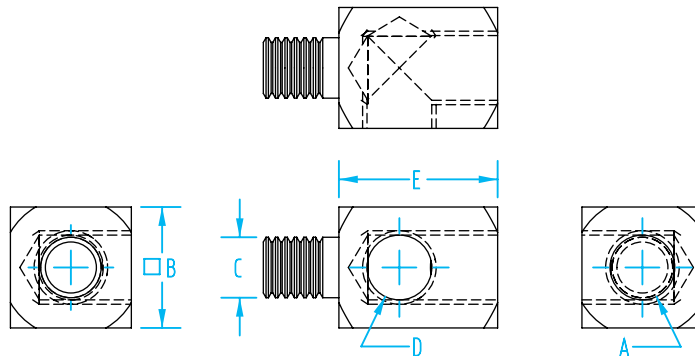
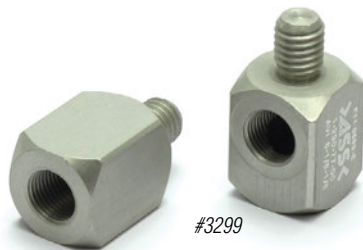
See page 1068 for port plugs.



Special Fittings

Quick#	Part#	Style	Wt.	Price
201	GSF-SEA-G8	Female Elbow G1/8"	11g	\$6.85

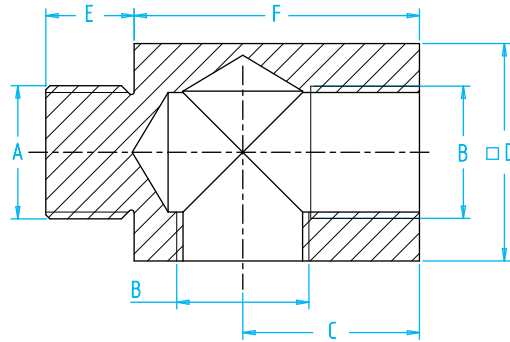
See page 1068 for sealing rings.



Female Adaptor

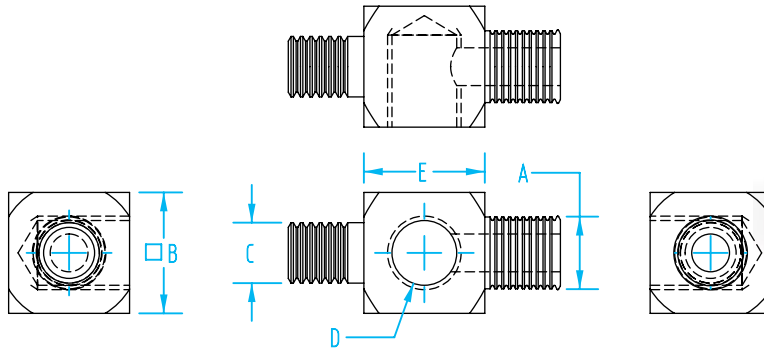
Quick#	Part#	>ASS< #	Price	A	B	C	D	E	Wt.
3299	AVI5i-8-3	1-290-75-00	\$7.35	M5	8	M3	M5	12	4g
3689	AVI5i-8-5	1-290-73-00	\$7.35	M5	8	M5	M5	12	5g
3530	AVI1/8i-16-5	1-290-76-00	\$10.50	G1/8"	16	M5	G1/8"	21	32g
3300	AVI1/8i-16-8	1-290-77-00	\$10.50	G1/8"	16	M8	G1/8"	21	39g
3301	AVI1/4i-16-8	1-290-79-00	\$10.50	G1/4"	16	M8	G1/8"	26	35g

Mounting Adaptors



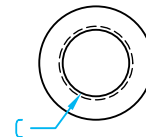
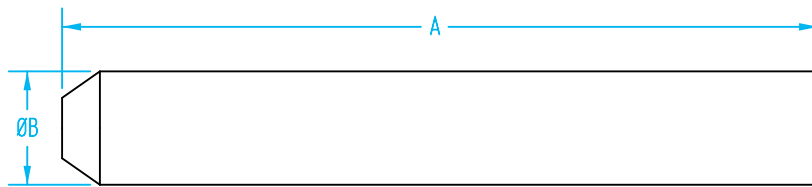
Mounting Adaptor

Quick#	Part#	Price	A	B	C	D	E	F	Wt.
7390	MFI-A365	\$6.14	M3	M5	8	8	4	12	1.6g
7389	MFI-A364	\$6.14	M4	M5	8	8	5	12	1.8g
7387	MFI-A361	\$6.14	M5	M5	8	8	5	14	2.2g
7388	MFI-A362	\$11.79	G1/8"	G1/8"	13	16	6.5	21	11.6g



Male Adaptor (Aluminum)

Quick#	Part#	>ASS< #	Price	A	B	C	D	E	Wt.
3302	AVA1/8a-16-6	1-290-81-00	\$10.50	G1/8"	16	M6	G1/8"	16	10g
3303	AVA1/8a-16-8	1-290-83-00	\$10.50	G1/8"	16	M8	G1/8"	16	10g
3304	AVA1/4a-16-6	1-290-85-00	\$10.50	G1/4"	16	M6	G1/8"	16	32g
3305	AVA1/4a-16-8	1-290-87-00	\$10.50	G1/4"	16	M8	G1/8"	16	11g



Other guide pins are available in the Framing Sections; on pages 217 & 262.

Delrin Guide Pins

Quick #	Part #	Price	A	ØB	C	D	Wt.
5213	CP-100-G8	\$15.85	100mm	15	G1/8" ↓ 20	12	21g
5214	CP-100-M16	\$19.35	100mm	25	M16x1 ↓ 32	22	32g

Adaptor Fittings

(Shown Actual Size)



Threaded Plug Fittings (with sealing rings)

Quick#	Part#	Thread	Price
239	GSF-TPP-M3	M3	\$1.52
238	GSF-TPP-M5	M5	\$0.46
319	107-M5*	M5	\$1.30
240	GSF-TPP-G8	G1/8"	\$2.87
1388	GSF-TPP-U8*	G1/8"	\$1.43
1389	GSF-TPP-U4*	G1/4"	\$1.70

*Has integrated sealing ring on threads.



Sealing Rings

Quick#	Part#	Thread	Notes	Price
241	GSF-G-M3	M3		\$0.25
242	GSF-G-M5	M5		\$0.11
243	GSF-G-M5W	M5	Wide	\$0.17
244	GSF-G-G8	G1/8"		\$0.24
2450	GSF-G-G4	G1/4"		\$0.45



Female to Female

Quick#	Part#	Female	Female	Price
230	GSF-FC-M5	M5	M5	\$1.74
232	GSF-RFC-G8M5	G1/8"	M5	\$2.22
229	GSF-FC-G8	G1/8"	G1/8"	\$3.06
221	GSF-FC-G8M8	G1/8"	M8	\$4.84
1386	GSF-FC-G4	G1/4"	G1/4"	\$1.76
1387	GSF-RFC-G8G4	G1/8"	G1/4"	\$1.70



NPT Adaptors

Quick#	Part#	Female	Male	Price
233	GSF-NPT-N8G8	G1/8"	1/8"NPT	\$3.28
234	GSF-NPT-R8N8	1/8"NPT	R1/8"	\$4.02
494	GSF-NPT-N4G4	G1/4"	1/4"NPT	\$6.83
498	GSF-NPT-R4N4	1/4"NPT	R1/4"	\$10.32

Note: Male R1/8" fits Female G1/8".
Male R1/4" fits Female G1/4".



Female to Male

Quick#	Part#	Female	Male	Price
249	GSF-NX-M5	M5	M5	\$0.67
375	GSF-AF-M8R8	M8x1	R1/8"	\$2.18

Note: Male R1/8" fits Female G1/8".

See page 1064 for G1/8" extensions.



Bulkhead Fittings

Quick#	Part#	Fitting	Bulkhead	Price
236	GSF-BF-M5	M5	M10x1	\$11.03
237	GSF-BF-G8	G1/8"	M16x1.5	\$12.02
208	GSF-BF-G4	G1/4"	M20x1.5	\$13.74

Note: #236 & #208 have threads that CAN be used with slotted brackets. #237 CANNOT be used with slotted brackets

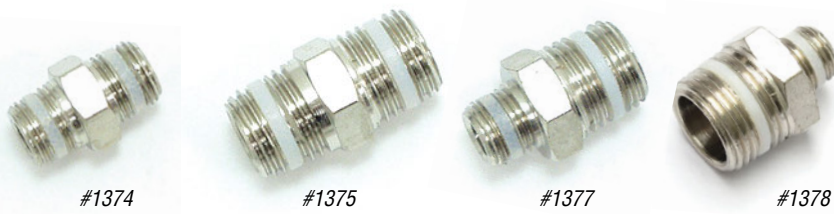
(Shown Actual Size)

Adaptor Fittings



Male to Male

Quick#	Part#	Male	Male	Price
245	GSF-N-M3	M3	M3	\$3.33
246	GSF-N-M5	M5	M5	\$1.25
5782	AF05M05M	M5	M5	\$3.23
247	GSF-N-M5G8	M5	G1/8"	\$5.85
248	GSF-N-G8	G1/8"	G1/8"	\$2.43
5783	AF18M18M	G1/8"	G1/8"	\$2.33
637	GSF-N-G8G4	G1/8"	G1/4"	\$4.44
235	GSF-NPT-R8M5	R1/8"	R1/8"	\$2.59
3681	GRZ-AD-20-16	G1/8"	M17x1	\$8.40
5784	AF14M14M	G1/4"	G1/4"	\$4.27



Male to Male with Integrated Sealing Rings

Quick#	Part#	Male	Male	Price
1374	GSF-UN-U8U8	G1/8"	R1/8"	\$1.73
1375	GSF-UN-U4U4	G1/4"	R1/4"	\$2.33
1376	GSF-UN-U3U3	G3/8"	R3/8"	\$3.05
1377	GSF-UN-U8U4	G1/8"	R1/4"	\$2.32
1378	GSF-UN-U8U3	G1/8"	R3/8"	\$2.92
1379	GSF-UN-U4U3	G1/4"	R3/8"	\$2.87

Note: The Male R threads fit Female G threads.



Reducing Bushings

Quick#	Part#	Female	Male	Price
227	GSF-RB-M5M3	M3	M5	\$5.71
224	GSF-RB-G8M5	M5	G1/8"	\$2.87
223	GSF-RB-R8M5	M5	R1/8"	\$0.58
225	GSF-RB-G4M5	M5	G1/4"	\$3.58
415	GSF-NF4-G8	M6	G1/8"	\$8.32
222	GSF-FMC-G8M5	G1/8"	M5	\$3.70
226	GSF-RB-G4G8	G1/8"	G1/4"	\$2.55
228	GSF-IB-G8G4	G1/4"	G1/8"	\$4.13
1497	GSF-RB-M16G8	G1/8"	M16x1	\$4.20

Note: Male R1/8 fits Female G1/8.



Reducing Bushings with Integrated Male Seal Ring

Quick#	Part#	Female	Male	Price
1380	GSF-URB-U8G8	G1/8"	R1/8"	\$1.54
1381	GSF-URB-U8G4	G1/4"	R1/8"	\$1.88
1382	GSF-URB-U4G3	G3/8"	R1/4"	\$3.28
1383	GSF-URB-U4G8	G1/8"	R1/4"	\$1.45
1384	GSF-URB-U3G8	G1/8"	R3/8"	\$2.05
1385	GSF-URB-U3G4	G1/4"	R3/8"	\$2.05

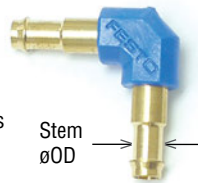
Note: The Male R threads fit Female G threads.

Barbed Fittings

(Shown Actual Size)

Barb Fitting Reference

Use Soft Polyurethane tubing with barbed fittings. Soft PU tubing's extra elasticity provides a snug fit against the barb stem.



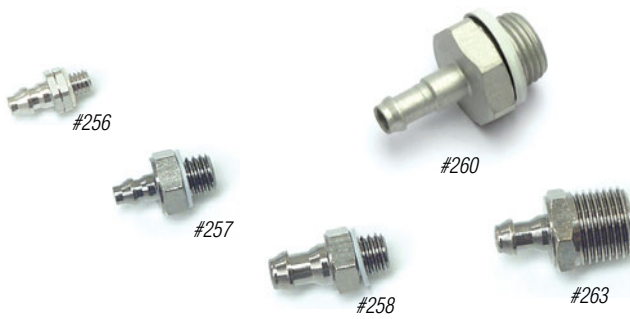
Throughout your system, it is recommended to be consistent in using soft polyurethane tubing with barb fittings **OR** polyurethane tubing with push-in fittings. However, integrating some barbed fittings in a primarily push-in system can provide acceptable results.

Note: Using soft polyurethane tubing with push-in fittings gives unacceptable results.

Application for Soft Polyurethane Tubing

Stem øOD range	Soft PU øID	Soft PU øOD
2.5-3.0	2.4	4
3.8-4.6	4	6
5.5-6.4	5	8

[Reference Compatibility Chart on page 1045 for more information.](#)



Barb Straight Fitting

Quick#	Part#	Thread	Stem øOD	Tube øID	Price
256	GSF-BS-M304	M3	2.7	2.4	\$1.29
257	GSF-BS-M504	M5	2.7	2.4	\$0.67
258	GSF-BS-M506	M5	3.8	4	\$0.77
259	GSF-BS-G804	G1/8"	3.0	2.4	\$3.32
260	GSF-BS-G806	G1/8"	4.0	4	\$3.49
261	GSF-BS-G808	G1/8"	6.4	5	\$3.46
262	GSF-BS-R804	R1/8"	2.7	2.4	\$1.16
263	GSF-BS-R806	R1/8"	3.8	4	\$1.16

Note: Male R1/8 fits Female G1/8.



Barb Elbow Fitting

Quick#	Part#	Thread	Stem øOD	Tube øID	Price
264	GSF-BE-M304	M3	2.7	2.4	\$3.33
265	GSF-BE-M504	M5	2.7	2.4	\$2.09
266	GSF-BE-M506	M5	3.9	4	\$2.09



Barb Elbow Swivel Fitting

Quick#	Part#	Thread	Stem øOD	Tube øID	Price
267	GSF-BES-G803	G1/8"	2.9	2.4	\$9.37
268	GSF-BES-G804	G1/8"	3.9	4	\$9.37
269	GSF-BES-G806	G1/8"	6.4	5	\$9.37



Barb T Swivel Fitting

Quick#	Part#	Thread	Stem øOD	Tube øID	Price
272	GSF-BTS-M303	M3	2.9	2.4	\$11.84
276	GSF-BTS-M504	M5	2.9	2.4	\$12.63
277	GSF-BTS-M506	M5	3.9	4	\$12.63
280	GSF-BTS-G803	G1/8"	2.9	2.4	\$13.06
281	GSF-BTS-G804	G1/8"	3.9	4	\$12.24
282	GSF-BTS-G806	G1/8"	6.4	5	\$13.06

(Shown Actual Size)

Barbed Fittings

Barb Union

Quick#	Part#	øOD1	øOD2	Tube øID	Price
283	GSF-BUS-03	3.0	3.0	2.4	\$3.46
285	GSF-BUS-04	4.0	4.0	4	\$3.24
287	GSF-BUS-06	6.4	6.4	5	\$3.59
Reducer Barb Union					
284	GSF-BUS-0304	3.0	4.0	2.4 / 4	\$3.46
286	GSF-BUS-0406	4.0	6.4	4 / 5	\$3.90



#285



#286

Barb L

Quick#	Part#	Stem øOD	Tube øID	Price
291	GSF-BUL-03	3.0	2.4	\$3.37
292	GSF-BUL-04	4.0	4	\$3.37
293	GSF-BUL-06	6.4	5	\$4.29



#292

Barb T

Quick#	Part#	Stem øOD	Tube øID	Price
288	GSF-BUT-03	3.0	2.4	\$3.37
289	GSF-BUT-04	4.0	4	\$3.37
290	GSF-BUT-06	6.4	5	\$4.29



#289

Barb Y

Quick#	Part#	Stem øOD	Tube øID	Price
294	GSF-BUY-03	3.0	2.4	\$3.37
295	GSF-BUY-04	4.0	4	\$3.37
296	GSF-BUY-06	6.4	5	\$4.66



#295

Universal with Barb Fittings

Quick #	Part#	Thread	Stem øOD	Tube øID	Price
278	GSF-BTU-M504	M5	4.2	4	\$1.55
279	GSF-BTU-M506	M5	3.8	4	\$12.66
463	GSF-BTU-M525	M5	2.5	2.4	\$12.35



#278



#279



#463

Universal Threaded Fittings

Quick#	Part#	Male Thread	Female Thread	Price
270	GSF-EF-M5	-	M5 (2x)	\$1.07
275	GSF-T-M5	-	M5 (3x)	\$1.11
271	GSF-EU-M5	M5	M5 (1x)	\$1.47
273	GSF-TU-M3	M3	M3 (2x)	\$2.84
274	GSF-TU-M5	M5	M5 (2x)	\$1.52



#270



#275



#271



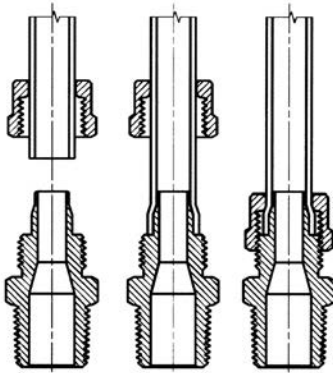
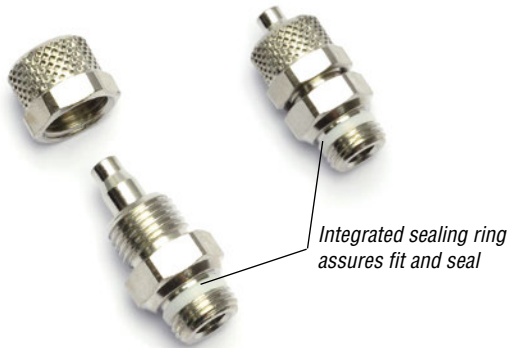
#273



#274

European-Style Barb Fittings with Retaining Rings

(Shown Actual Size)



Male Threaded - Barbed Straight

Quick#	Part#	Male Thread	øOD/ID Tubing	Price
1356	GSF-RMC-M506	M5	6/4mm	\$1.10
1357	GSF-RMC-M606	M6	6/4mm	\$1.43
1358	GSF-RMC-U806	G1/8"	6/4mm	\$4.11
1359	GSF-RMC-U406	G1/4"	6/4mm	\$4.99
1360	GSF-RMC-U808	G1/8"	8/5mm	\$1.87
1361	GSF-RMC-U408	G1/4"	8/5mm	\$2.52



Male Threaded - Barbed Elbow

Quick#	Part#	Male Thread	øOD/ID Tubing	Price
1362	GSF-RME-U806	G1/8"	6/4mm	\$4.11
1363	GSF-RME-U406	G1/4"	6/4mm	\$4.99
1364	GSF-RME-U808	G1/8"	8/5mm	\$4.65
1365	GSF-RME-U408	G1/4"	8/5mm	\$5.19

Male Threaded - Barbed T

Quick#	Part#	Male Thread	øOD/ID Tubing	Price
1366	GSF-RMT-U806	G1/8"	6/4mm	\$5.35
1367	GSF-RMT-U406	G1/4"	6/4mm	\$5.94
1368	GSF-RMT-U808	G1/8"	8/5mm	\$4.88
1369	GSF-RMT-U408	G1/4"	8/5mm	\$6.32



Use regular Polyurethane Tubing (as used with Push-In fittings)

For those who like European-style barbed fittings which use retaining rings coupled with standard polyurethane tubing, we offer these fittings with their integrated sealing rings. Use these fittings with 6mmOD/4mmID and 8mmOD/5mmID polyurethane tubing.

Female Threaded - Barbed Straight

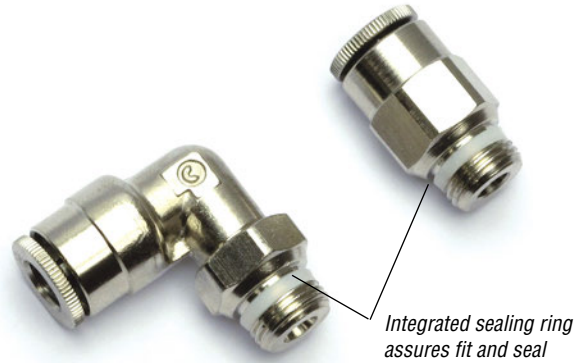
Quick#	Part#	Female Thread	øOD/ID Tubing	Price
1370	GSF-RFC-U806	G1/8"	6/4mm	\$1.98
1371	GSF-RFC-U406	G1/4"	6/4mm	\$1.98
1372	GSF-RFC-U808	G1/8"	8/5mm	\$2.09
1373	GSF-RFC-U408	G1/4"	8/5mm	\$2.68

(Shown Actual Size)

Push-In Fittings – Nickel Plated Brass

Male Threaded - Push-In Straight

Quick#	Part#	Thread	øD Tubing	Price
1328	GSF-UMC-M504	M5	4mm	\$2.56
1329	GSF-UMC-U804	G1/8"	4mm	\$2.27
1330	GSF-UMC-M506	M5	6mm	\$2.56
1331	GSF-UMC-U806	G1/8"	6mm	\$2.21
1332	GSF-UMC-U406	G1/4"	6mm	\$2.62
1333	GSF-UMC-U808	G1/8"	8mm	\$2.76
1334	GSF-UMC-U408	G1/4"	8mm	\$2.89
1335	GSF-UMC-U308	G3/8"	8mm	\$3.51
1336	GSF-UMC-U310	G3/8"	10mm	\$3.97



Male Threaded - Push-In Elbow

Quick#	Part#	Thread	øD Tubing	Price
1337	GSF-UME-U804	G1/8"	4mm	\$2.27
1338	GSF-UME-U806	G1/8"	6mm	\$4.66
1339	GSF-UME-U406	G1/4"	6mm	\$5.14
1340	GSF-UME-U808	G1/8"	8mm	\$5.44
1341	GSF-UME-U408	G1/4"	8mm	\$5.72
1342	GSF-UME-U308	G3/8"	8mm	\$7.31
1343	GSF-UME-U310	G3/8"	10mm	\$7.99

High Quality, Low Cost

The unique design of the integrated sealing ring assures leak-free threaded connections. The construction is high-quality nickel-plated brass and yet the cost is very competitive.

Note: These are heavier than the plastic push-in fittings on previous pages. Use these push-in fittings with Ø4, 6, 8, and 10mm OD polyurethane tubing.

Male Threaded - Push-In T

Quick#	Part#	Thread	øD Tubing	Price
1344	GSF-UMT-M504	M5	4mm	\$6.56
1345	GSF-UMT-U804	G1/8"	4mm	\$6.96
1346	GSF-UMT-U806	G1/8"	6mm	\$6.96
1347	GSF-UMT-U406	G1/4"	6mm	\$7.31
1348	GSF-UMT-U808	G1/8"	8mm	\$8.54
1349	GSF-UMT-U408	G1/4"	8mm	\$8.77
1350	GSF-UMT-U308	G3/8"	8mm	\$9.89
1351	GSF-UMT-U310	G3/8"	10mm	\$12.15



Female Threaded - Push-In Straight

Quick#	Part#	Thread	øD Tubing	Price
1352	GSF-UFC-M504	M5	4mm	\$3.63
1353	GSF-UFC-G804	G1/8"	4mm	\$3.36
1354	GSF-UFC-G806	G1/8"	6mm	\$3.36
1355	GSF-UFC-G808	G1/8"	8mm	\$3.93

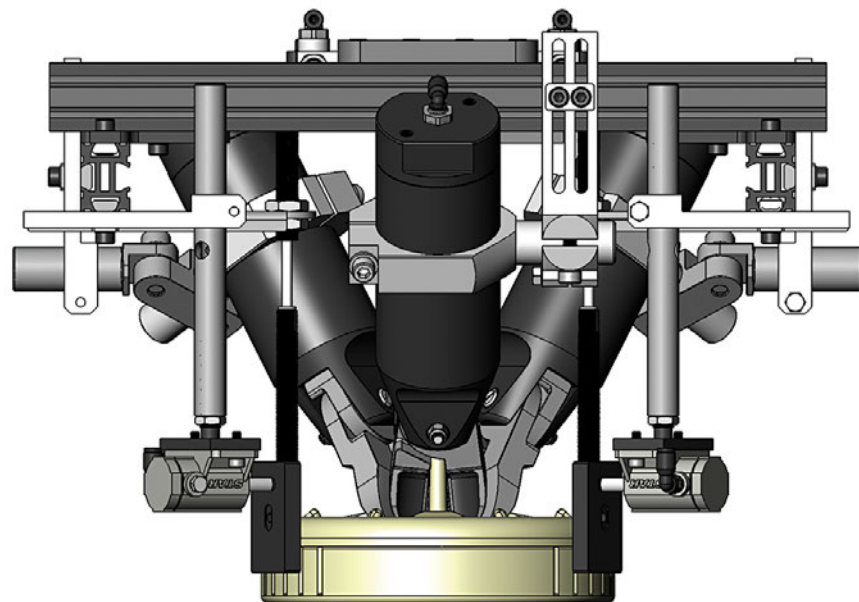
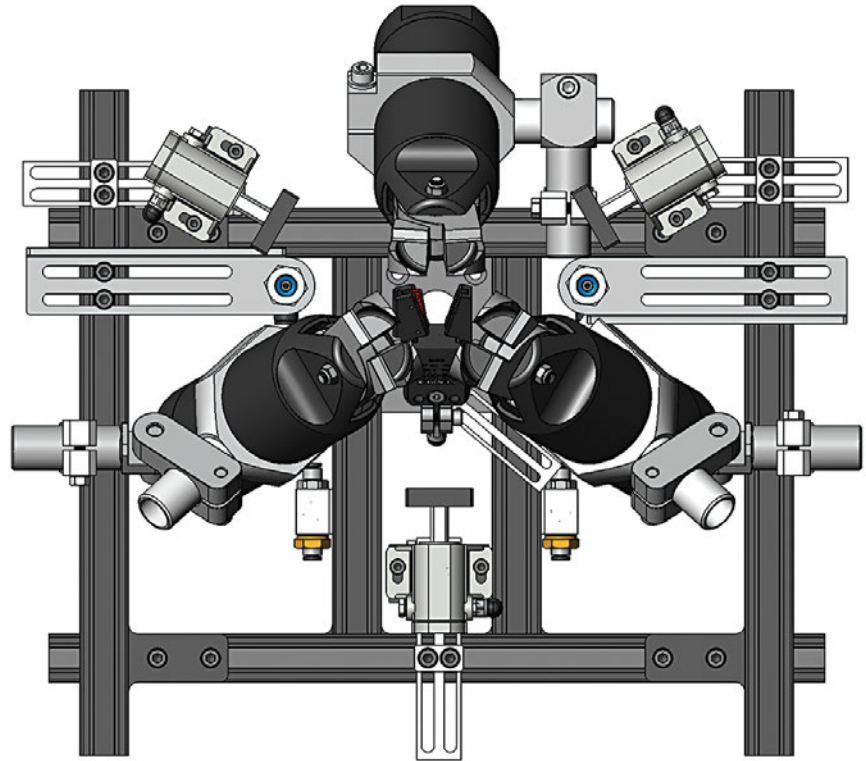
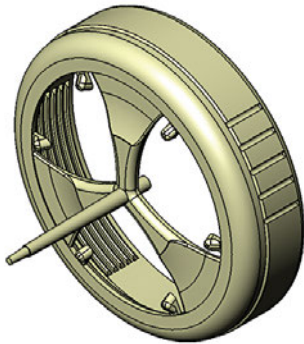
**G1/8", R1/8" & 1/8" NPT
Special note:**

The G1/8" fittings on these pages can be used with 1/8" NPT and R1/8" female threaded ports.

EOAT Design and Build Service

From the simplest to the most complex EOAT, EMI specializes in designing and building customized End-of-Arm-Tooling— **Priced Competitively.**

Get started by sending us a sample part or 3D part file and a completed datasheet (see page 1082). Our experienced EOAT engineers will design a tool for you and provide you 3D CAD renderings at no cost or obligation. We'll also provide pricing for the tool should you want to purchase the EOAT completely assembled.



Screw Length / Bracket Thickness Chart

>ASS< 25mm L & X profile
(18/10, 18/18, 25/10, 25/18, 25/25, 25/50)

Screw Length	Lock Washer	Min Bracket	Max Bracket
10	0.6		4.4
	1.6		3.4
12	0.6	4.2	6.4
	1.6	3.2	5.4
14	0.6	6.2	8.4
	1.6	5.2	7.4
16	0.6	8.2	10.4
	1.6	7.2	9.4
18	0.6	10.2	12.4
	1.6	9.2	11.4
20	0.6	12.2	14.4
	1.6	11.2	13.4
22	0.6	14.2	16.4
	1.6	13.2	15.4
25	0.6	17.2	19.4
	1.6	16.2	18.4
30	0.6	22.2	24.4
	1.6	21.2	23.4
35	0.6	27.2	29.4
	1.6	26.2	28.4
40	0.6	32.2	34.4
	1.6	31.2	33.4
45	0.6	37.2	39.4
	1.6	36.2	38.4

>ASS< 40mm J profile
(40/40, 80/40)

Screw Length	Lock Washer	Min Bracket	Max Bracket
12	0.6		4.7
	1.6		3.7
14	0.6	1.7	6.7
	1.6	0.7	5.7
16	0.6	3.7	8.7
	1.6	2.7	7.7
18	0.6	5.7	10.7
	1.6	4.7	9.7
20	0.6	7.7	12.7
	1.6	6.7	11.7
22	0.6	9.7	14.7
	1.6	8.7	13.7
25	0.6	12.7	17.7
	1.6	11.7	16.7
30	0.6	17.7	22.7
	1.6	16.7	21.7
35	0.6	22.7	27.7
	1.6	21.7	26.7
40	0.6	27.7	32.7
	1.6	26.7	31.7
45	0.6	32.7	37.7
	1.6	31.7	36.7
50	0.6	37.7	42.7
	1.6	36.7	41.7

These charts indicate the screw length required to fasten a given bracket thickness to the various profiles.

See Next Page for General Fasteners.

How to use these charts

1. What profile are you using?
Go to that chart.
2. What is the thickness of the bracket you want to use?
Find it within the range between Min and Max.
3. Will you be using a 0.6mm lock washer only, or a lock washer and flat washer combination (1.6mm)?
Make sure you are reading the Min/Max range for the washer thickness line.
4. The required screw length is found in the left column.

① Profile Type

Screw Length	Lock Washer	Min Bracket	Max Bracket
④ 10	③ 0.6	3.3	5.4
	1.6	2.3	② 4.4

Gimatic 25mm L & X profile
(18/10, 18/18, 25/10, 25/18, 25/25, 25/50)

Screw Length	Lock Washer	Min Bracket	Max Bracket
10	0.6		4.4
	1.6		3.4
12	0.6	4.2	6.4
	1.6	3.2	5.4
14	0.6	6.2	8.4
	1.6	5.2	7.4
16	0.6	8.2	10.4
	1.6	7.2	9.4
18	0.6	10.2	12.4
	1.6	9.2	11.4
20	0.6	12.2	14.4
	1.6	11.2	13.4
22	0.6	14.2	16.4
	1.6	13.2	15.4
25	0.6	17.2	19.4
	1.6	16.2	18.4
30	0.6	22.2	24.4
	1.6	21.2	23.4
35	0.6	27.2	29.4
	1.6	26.2	28.4
40	0.6	32.2	34.4
	1.6	31.2	33.4
45	0.6	37.2	39.4
	1.6	36.2	38.4

Gimatic 40mm J profile
(40/40, 80/40)

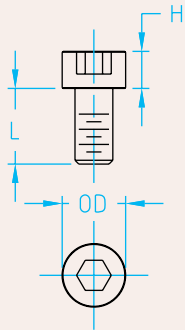
Screw Length	Lock Washer	Min Bracket	Max Bracket
12	0.6		4.7
	1.6		3.7
14	0.6	1.7	6.7
	1.6	0.7	5.7
16	0.6	3.7	8.7
	1.6	2.7	7.7
18	0.6	5.7	10.7
	1.6	4.7	9.7
20	0.6	7.7	12.7
	1.6	6.7	11.7
22	0.6	9.7	14.7
	1.6	8.7	13.7
25	0.6	12.7	17.7
	1.6	11.7	16.7
30	0.6	17.7	22.7
	1.6	16.7	21.7
35	0.6	22.7	27.7
	1.6	21.7	26.7
40	0.6	27.7	32.7
	1.6	26.7	31.7
45	0.6	32.7	37.7
	1.6	31.7	36.7
50	0.6	37.7	42.7
	1.6	36.7	41.7

80/20 1" Profile
(1010, 1020, 1030)

Screw Length	Lock Washer	Min Bracket	Max Bracket
10	0.6		5.1
	1.6		4.1
12	0.6	3.6	7.1
	1.6	2.6	6.1
14	0.6	5.6	9.1
	1.6	4.6	8.1
16	0.6	7.6	11.1
	1.6	6.6	10.1
18	0.6	9.6	13.1
	1.6	8.6	12.1
20	0.6	11.6	15.1
	1.6	10.6	14.1
22	0.6	13.6	17.1
	1.6	12.6	16.1
25	0.6	16.6	20.1
	1.6	15.6	19.1
30	0.6	21.6	25.1
	1.6	20.6	24.1
35	0.6	26.6	30.1
	1.6	25.6	29.1
40	0.6	31.6	35.1
	1.6	30.6	34.1
45	0.6	36.6	40.1
	1.6	35.6	39.1

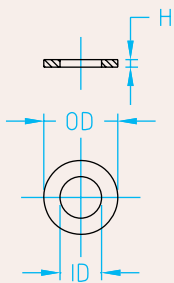
General Fasteners

Dimensional Information



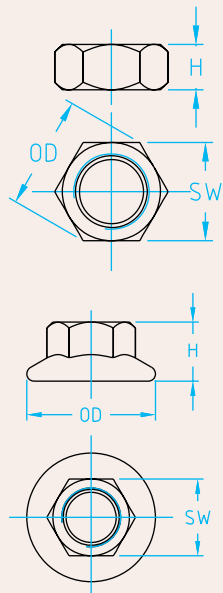
Socket Head Cap Screws

	OD	H
M2.5 x 0.45	4.5	2.5
M3 x 0.5	5.5	3
M3.5 x 0.6	5.7	3.5
M4 x 0.7	7	4
M5 x 0.8	8.5	5
M5 x 0.8 Low head	8.5	3.5
M6 x 1	10	6
M8 x 1.25	13	8
M10 x 1.5	16.5	10



Washers

	ID	OD	H
M2.5 Washer	2.7	5	0.5
M2.5 Fender washer	2.7	8	0.8
M2.5 Lock washer	2.7	4.8	0.45
M3 Washer	3.2	6	0.5
M3 Fender washer	3.2	9	0.8
M3 Lock washer	3.2	5.5	0.45
M4 Washer	4.3	8	0.5
M4 Fender washer	4.3	12	1.0
M4 Lock washer	4.3	7	0.5
M5 Washer	5.3	9.5	1.0
M5 Fender washer	5.3	15	1.2
M5 Thin lock washer	5.3	9	0.6
M5 Thick lock washer	5.3	9	1.0
M6 Washer	6.4	11	1.6
M6 Fender washer	6.4	18	1.6
M6 Lock washer	6.4	10	0.7
M6 Thick lock washer	6.4	10	1.0
M8 Washer	8.4	15	1.6
M8 Fender washer	8.4	24	2.0
M8 Lock washer	8.4	13	0.8
M8 Thick lock washer	8.4	13	1.2



Nuts

	OD	H	SW
M2.5x0.45 Nut	5.8	2	5
M3x0.5 Nut	6.4	2.4	5.5
M4x0.7 Nut	8.1	3.2	7
M5x0.8 Nut	9.3	4	8
M5x0.8 Lock nut	11.2	4.3	8
M6x1 Nut	11.6	5	10
M6x1 Lock nut	14.2	5.5	10
M8x1.25 Nut	15.0	6.5	13
M8x1.25 Lock nut	18.2	7	13
G1/8" Nut thin	13.7	3.6	12
M10x1 Nut thin	14.5	5	17
M16x1 Nut thin	25.2	5.2	22

Additional Hardware can be found online, Search here!

M2

Quick #	Part #	Description	Price
4800	GSC-M2-N	M2 Nut	\$0.10
4801	GSC-M2-LN-SS-NI	M2 Nylon Lock Nut	\$1.50
4802	GSC-FSH-2X6	M2 x 6mm FHCS	\$0.25
4803	GSC-FSH-2X10	M2 x 10mm FHCS	\$0.25
4804	GSC-FSH-2X12	M2 x 12mm FHCS	\$0.35
4805	GSC-M2-10	M2 x 10mm SHCS	\$0.25
4806	GSC-M2-12	M2 x 12mm SHCS	\$0.35

M2.5

Quick #	Part #	Description	Price
801	GSC-M2.5-4	M2.5 x 4mm	\$0.40
802	GSC-M2.5-5	M2.5 x 5mm	\$0.40
803	GSC-M2.5-6	M2.5 x 6mm	\$0.20
804	GSC-M2.5-8	M2.5 x 8mm	\$0.30
805	GSC-M2.5-10	M2.5 x 10mm	\$0.20
806	GSC-M2.5-12	M2.5 x 12mm	\$0.20
807	GSC-M2.5-14	M2.5 x 14mm	\$0.40
808	GSC-M2.5-16	M2.5 x 16mm	\$0.45
809	GSC-M2.5-LW	Lock washer	\$0.10
810	GSC-M2.5-W	M2.5 Washer	\$0.10
811	GSC-M2.5-FW	Fender washer	\$0.10
812	GSC-M2.5-N	M2.5 Nut	\$0.10

M3

Quick #	Part #	Description	Price
813	GSC-M3-5	M3 x 5mm	\$0.10
814	GSC-M3-6	M3 x 6mm	\$0.10
815	GSC-M3-8	M3 x 8mm	\$0.10
816	GSC-M3-10	M3 x 10mm	\$0.10
817	GSC-M3-12	M3 x 12mm	\$0.10
818	GSC-M3-14	M3 x 14mm	\$0.10
819	GSC-M3-16	M3 x 16mm	\$0.10
820	GSC-M3-18	M3 x 18mm	\$0.20
821	GSC-M3-20	M3 x 20mm	\$0.10
822	GSC-M3-22	M3 x 22mm	\$0.25
823	GSC-M3-25	M3 x 25mm	\$0.25
824	GSC-M3-30	M3 x 30mm	\$0.25
825	GSC-M3-35	M3 x 35mm	\$0.40
826	GSC-M3-40	M3 x 40mm	\$0.40
827	GSC-M3-LW	Lock washer	\$0.10
828	GSC-M3-W	Washer	\$0.10
829	GSC-M3-FW	Fender washer	\$0.10
830	GSC-M3-N	Nut	\$0.10
901	GSC-M3-LN-ZP-NI	Zinc plated Lock-Nut	\$0.15

Tap Plugs

Quick #	Part #	Description	Price
910	GSC-TAP-G8P	G1/8" Tap plug	\$26.55
911	GSC-TAP-G8B	G1/8" Tap bottoming	\$23.75
963	GSC-TAP-G4P	G1/4" Tap plug	\$32.00
964	GSC-TAP-G4B	G1/4" Tap bottoming	\$32.00

#910 G1/8" Plug Tap



#911 G1/8" Bottoming Tap



The Tapping Drill Size for G-1/8 is 11/32", and the Drill Size for G-1/4 is 29/64".

General Fasteners

M3.5

Quick #	Part #	Description	Price
912	GSC-M3.5-6	M3.5 x 6mm	\$0.75
942	GSC-M3.5-10	M3.5 x 10mm	\$1.20
943	GSC-M3.5-16	M3.5 x 16mm	\$1.20
965	GSC-M3.5-20	M3.5 x 20mm	\$0.80
796	GSC-M3.5-LW	M3.5 Lock washer	\$0.20

M4

Quick #	Part #	Description	Price
831	GSC-M4-5	M4 x 5mm	\$0.20
832	GSC-M4-6	M4 x 6mm	\$0.20
833	GSC-M4-8	M4 x 8mm	\$0.20
834	GSC-M4-10	M4 x 10mm	\$0.20
835	GSC-M4-12	M4 x 12mm	\$0.20
836	GSC-M4-14	M4 x 14mm	\$0.20
837	GSC-M4-16	M4 x 16mm	\$0.20
838	GSC-M4-18	M4 x 18mm	\$0.20
839	GSC-M4-20	M4 x 20mm	\$0.20
840	GSC-M4-22	M4 x 22mm	\$0.25
841	GSC-M4-25	M4 x 25mm	\$0.25
842	GSC-M4-30	M4 x 30mm	\$0.25
843	GSC-M4-35	M4 x 35mm	\$0.25
844	GSC-M4-40	M4 x 40mm	\$0.25
845	GSC-M4-50	M4 x 50mm	\$0.50
846	GSC-M4-LW	Lock washer	\$0.15
847	GSC-M4-W	Washer	\$0.10
848	GSC-M4-FW	Fender washer	\$0.10
849	GSC-M4-N	Nut	\$0.10
902	GSC-M4-LN-ZP-NI	Zinc plated Lock-Nut	\$0.15

M5

Quick #	Part #	Description	Price
850	GSC-M5-6	M5 x 6mm	\$0.20
851	GSC-M5-8	M5 x 8mm	\$0.20
852	GSC-M5-10	M5 x 10mm	\$0.20
971	GSC-M5-10LH	M5 x 10 Low head	\$0.25
853	GSC-M5-12	M5 x 12mm	\$0.20
972	GSC-M5-12LH	M5 x 12 Low head	\$0.25
854	GSC-M5-14	M5 x 14mm	\$0.20
855	GSC-M5-16	M5 x 16mm	\$0.20
973	GSC-M5-16LH	M5 x 16 Low head	\$0.25
856	GSC-M5-18	M5 x 18mm	\$0.20
857	GSC-M5-20	M5 x 20mm	\$0.20
974	GSC-M5-20LH	M5 x 20 Low head	\$0.25
858	GSC-M5-22	M5 x 22mm	\$0.25
859	GSC-M5-25	M5 x 25mm	\$0.25
860	GSC-M5-30	M5 x 30mm	\$0.25
861	GSC-M5-35	M5 x 35mm	\$0.25
862	GSC-M5-40	M5 x 40mm	\$0.30
863	GSC-M5-45	M5 x 45mm	\$0.30
864	GSC-M5-50	M5 x 50mm	\$0.35
904	GSC-M5-60	M5 x 60mm	\$0.40
865	GSC-M5-LW	Lock washer 0.6	\$0.15
866	GSC-M5-LWT	Lock washer 1.0	\$0.20
867	GSC-M5-W	Washer	\$0.10
868	GSC-M5-FW	Fender washer	\$0.10
869	GSC-M5-N	Nut	\$0.10
870	GSC-M5-LN	Lock nut	\$1.00
903	GSC-M5-LN-ZP-NI	Zinc plated Lock-Nut	\$0.15

M6

Quick #	Part #	Description	Price
871	GSC-M6-10	M6 x 10mm	\$0.20
872	GSC-M6-12	M6 x 12mm	\$0.20
873	GSC-M6-14	M6 x 14mm	\$0.20
874	GSC-M6-16	M6 x 16mm	\$0.20
875	GSC-M6-18	M6 x 18mm	\$0.20
876	GSC-M6-20	M6 x 20mm	\$0.25
877	GSC-M6-22	M6 x 22mm	\$0.25
878	GSC-M6-25	M6 x 25mm	\$0.30
879	GSC-M6-30	M6 x 30mm	\$0.35
880	GSC-M6-LW	Lock washer	\$0.15
881	GSC-M6-LWT	Thick lock washer	\$0.20
882	GSC-M6-W	Washer	\$0.15
883	GSC-M6-FW	Fender washer	\$0.15
884	GSC-M6-N	Nut	\$0.15
885	GSC-M6-LN	Lock nut	\$1.00

M8

Quick #	Part #	Description	Price
886	GSC-M8-10	M8 x 10mm	\$0.70
887	GSC-M8-12	M8 x 12mm	\$0.55
888	GSC-M8-16	M8 x 16mm	\$0.55
889	GSC-M8-18	M8 x 18mm	\$0.65
890	GSC-M8-20	M8 x 20mm	\$0.65
891	GSC-M8-22	M8 x 22mm	\$0.65
892	GSC-M8-25	M8 x 25mm	\$0.65
893	GSC-M8-30	M8 x 30mm	\$0.70
894	GSC-M8-LW	Lock Washer	\$0.20
895	GSC-M8-LWT	Thick lock washer	\$0.25
896	GSC-M8-W	Washer	\$0.20
897	GSC-M8-FW	Fender washer	\$0.20
898	GSC-M8-N	Nut	\$0.15
899	GSC-M8-LN	Lock nut	\$1.25

M10

Quick #	Part #	Description	Price
945	GSC-M10-20	M10 x 20mm SHCS	\$1.20
946	GSC-M10-25	M10 x 25mm SHCS	\$1.20
947	GSC-M10-30	M10 x 30mm SHCS	\$1.20

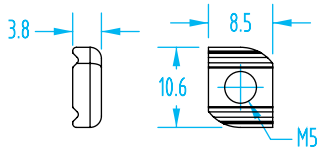
Specialty Fasteners

Quick #	Part #	Description	Price
905	GSC-N-G8	G1/8" Jam nut	\$1.00
914	GSC-M6-TN	M6x1 Jam nut	\$0.15
915	GSC-M8-TN	M8x1.25 Jam nut	\$0.15
948	GSC-M10-LW	G1/8" & M10 Thin lock washer	\$0.25
949	GSC-M10-LWT	G1/8" & M10 Thick lock washer	\$0.40
908	GSC-M10-TN	M10x1 Jam nut	\$0.35
1703	GSV-M12NUT	M12x1 Nut	\$0.37
975	GSC-M12-LW	M12 Thin lock washer	\$0.40
2347	GSC-M14-LW	M14 Thin lock washer	\$0.40
917	GSC-M15x1-TN	M15x1 Jam nut	\$1.30
906	GSC-N-M16	M16x1 Jam nut	\$1.50
939	GSC-M16-LW	M16 Thin lock washer	\$0.60
944	GSC-M16-LWT	M16 Thick lock washer	\$0.75
940	VITE-455	M17x1 Mounting nut	\$1.00
928	GSC-M20-LW	M20 Thin lock washer	\$1.25
985	GSC-M25-LW	M25 Thin lock washer	\$2.25
941	VITE-456	M27x1 Mounting Nut	\$2.35

Special Fasteners

Gimatic Fasteners

GIMATIC

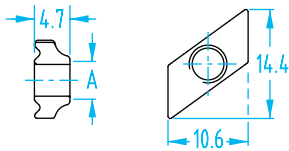


Drop-In Channel Nut

Quick#	Part#	Price	Wt.
7115	MFI-243	\$1.20	2g

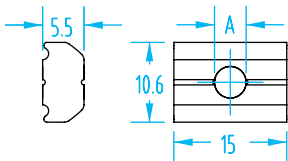
Note: for more info see page 234.

Drop-in & rotate 90° when you need to add to an already assembled EOAT.



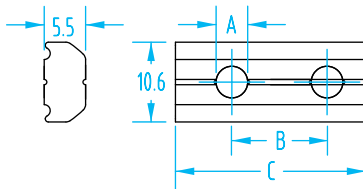
Quick#	Part#	Price	A	Wt.
6090	MFI-490	\$2.25	M3	2g
6089	MFI-489	\$2.25	M4	2g
6088	MFI-477	\$2.25	M5	2g

Drop-in & rotate 90° when you need to add to an already assembled EOAT.



Slotted Nuts

Quick #	Part #	Price	A	Wt.
6058	MFI-177	\$1.00	M4	5g
6019	MFI-025	\$1.00	M5	5g
6059	MFI-178	\$1.00	M6	5g



Slotted Nuts

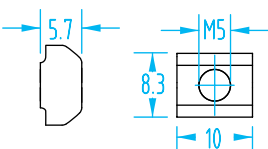
Quick #	Part #	Price	A	B	C	Wt.
6020	MFI-003	\$1.50	M4	8	16	5g
6021	MFI-006	\$1.50	M5	10	20	7g
6022	MFI-009	\$1.50	M5	15	25	9g
6023	MFI-148	\$1.50	M5	17	25	9g
6024	MFI-016	\$1.50	M5	22	32	11g
6025	MFI-027	\$1.50	M5	25	35	13g
6026	MFI-055	\$1.50	M5	28	38	14g
6027	MFI-050	\$1.72	M5	30	40	15g
6028	MFI-029	\$1.72	M5	35	45	16g
6029	MFI-020	\$1.72	M5	40	50	18g
6030	MFI-043	\$1.72	M5	50	60	22g
6031	MFI-022	\$1.72	M5	60	70	26g
6032	MFI-045	\$1.72	M5	90	100	38g



Gimatic Replacement Washers Slotted Nuts

Quick#	Part#	Price	Description	Corresponding Channel Nut
7659	MFI-002	\$0.70	M4 Flat Washer, Ø8mm centers, Ø16mm OAL	MFI-003; Quick# 6020
7660	MFI-005	\$1.00	M5 Flat Washer, Ø10mm centers, Ø20mm OAL	MFI-006; Quick# 6021
7661	MFI-008	\$0.77	M5 Flat Washer, Ø15mm centers, Ø25mm OAL	MFI-009; Quick# 6022

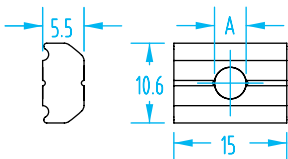
>ASS< Fasteners



Drop-In Channel Nuts (Steel chromated)

Quick#	Part#	>ASS< #	Price	ØA	Wt.	Use with:
3853	GWP-EX3-U	1-056-32-01	\$2.10	M3	2g	L, X, J profile
3854	GWP-EX4-U	1-056-42-01	\$2.10	M4	2g	L, X, J profile
3032	GWP-EX5-U	1-056-52-01	\$3.68	M5	2g	L, X, J profile

Drop-in & rotate 90° when you need to add to an already assembled EOAT.



Slotted Nuts (Steel / zinc coated)

Quick#	Part#	>ASS< #	Price	ØA	Wt.	Use with:
3846	GWP-3-U	1-058-31-15	\$2.10	M3	5g	L, X, J profile
3029	GWP4L/X	1-058-41-15	\$2.10	M4	5.3g	L, X, J profile
3030	GWP5X	1-058-51-15	\$2.10	M5	5g	L, X, J profile
3031	GWP6U	1-058-61-18	\$2.10	M6	4.7g	L, X, J profile

See page 266 for more information about 80/20 nuts and bolts

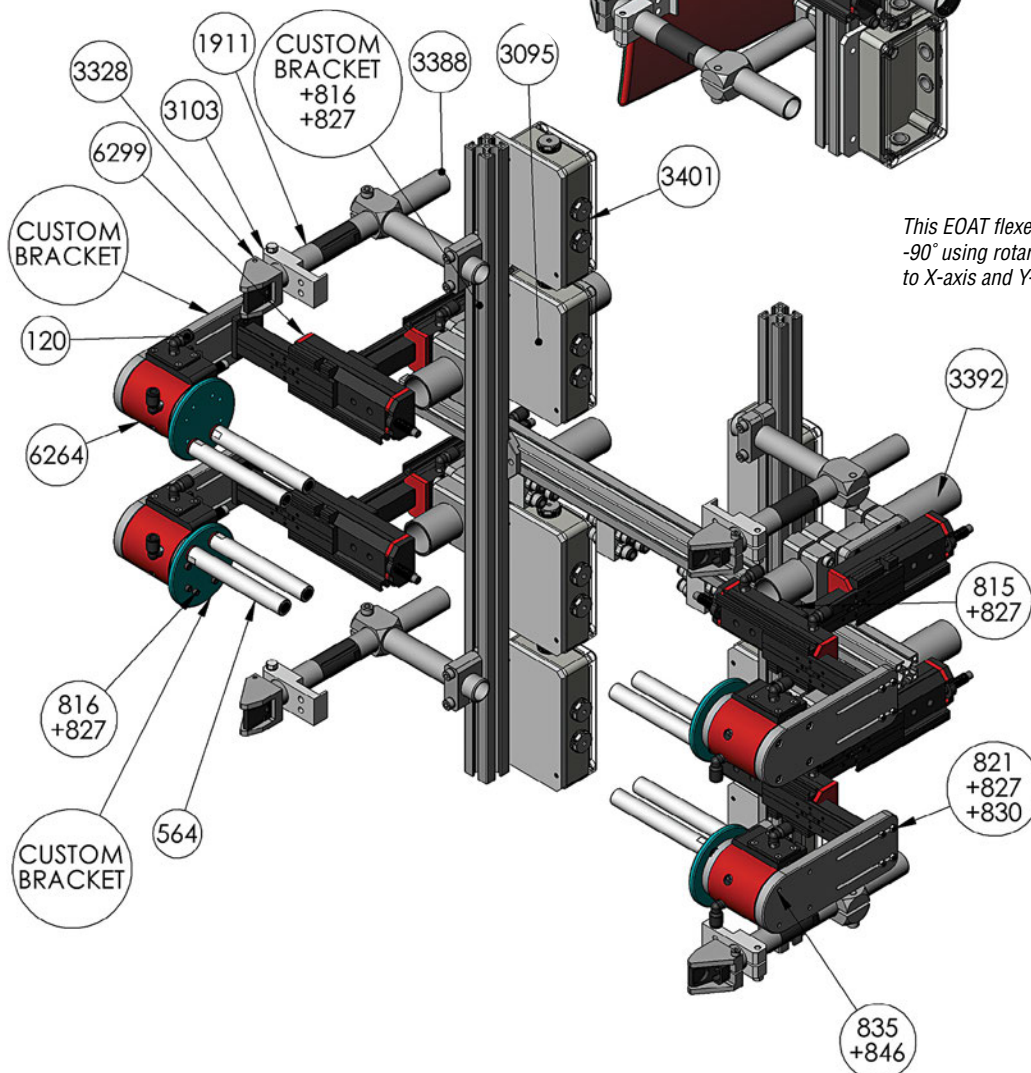
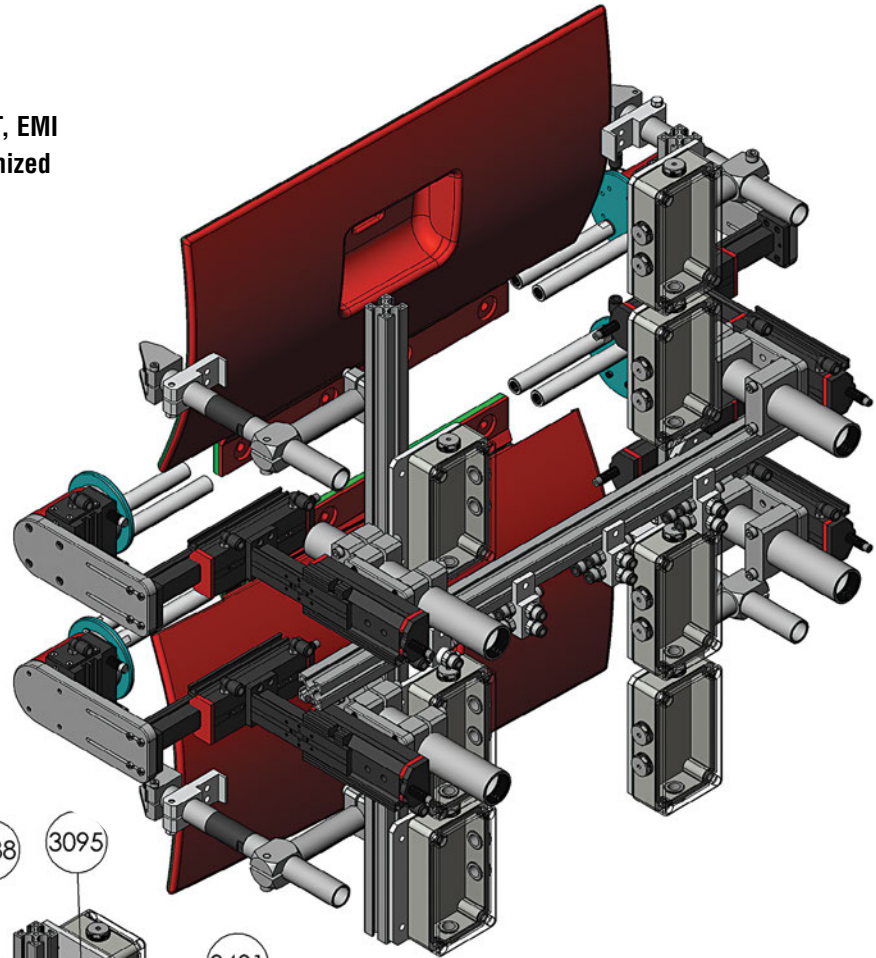


Quick#	Part#	Description	Price
Nut and Screw Assemblies			(25 per pack)
4934	GSC-8020-4934	1/4"-20 x 1/2" BHSCS & Economy T-Nut (1" long)	\$16.50
4935	GSC-8020-4935	1/4"-20 x 1/2" BHSCS & Standard T-Nut (1/2" long)	\$37.50
4936	GSC-8020-4936	M6 x 12mm BHSCS & Economy T-Nut (1" long)	\$21.75
4937	GSC-8020-4937	M6 x 12mm BHSCS & Economy T-Nut (15mm long)	\$24.25
4938	GSC-8020-4938	M6 x 12mm BHSCS & Standard T-Nut (1/2" long)	\$49.50
Screws			(25 per pack)
4949	GSC-8020-4949	1/4"-20 x 1/2" BHSCS	\$8.50
4939	GSC-8020-4939	M5 x 10mm BHSCS	\$12.50
4940	GSC-8020-4940	M5 x 12mm BHSCS	\$13.00
4941	GSC-8020-6310	M6 x 10mm BHSCS	\$10.00
4942	GSC-8020-6312	M6 x 12mm BHSCS	\$13.50
4943	GSC-8020-6314	M6 x 14mm BHSCS	\$14.75
4944	GSC-8020-6316	M6 x 16mm BHSCS	\$14.00
4945	GSC-8020-6318	M6 x 18mm BHSCS	\$15.00
4946	GSC-8020-6320	M6 x 20mm BHSCS	\$14.75
Economy T-Nuts			(25 per pack)
4947	GSC-8020-4947	1/4"-20 Economy T-Nut (1" long)	\$8.00
4948	GSC-8020-4948	M6 Economy T-Nut (1" long)	\$10.50
4928	GSC-8020-4124	M6 Economy T-Nut (15mm long)	\$12.00
Double / Triple Economy T-Nuts			
4911	GSC-8020-3280	1/4"-20 Economy T-Nut – Double (1" hole spacing)	\$1.00 (each)
4912	GSC-8020-3800	M6 Economy T-Nut – Double (1" hole spacing)	\$0.78 (each)
4913	GSC-8020-3287	1/4"-20 Economy T-Nut – Triple (1" hole spacing)	\$1.16 (each)
4914	GSC-8020-3900	M6 Economy T-Nut – Triple (1" hole spacing)	\$1.21 (each)
Standard T-Nuts			(25 per pack)
4950	GSC-8020-4950	1/4"-20	\$29.00
4951	GSC-8020-4951	M5	\$36.00
4952	GSC-8020-4952	M6	\$36.00
T-Nuts for EOAT Brackets			
4929	GSC-8020-4929	M6 Standard T-Nut (25mm long) (15mm hole spacing)	Click HERE
4930	GSC-8020-4930	M6 Standard T-Nut (30mm long) (20mm hole spacing)	Click HERE
4931	GSC-8020-4931	M6 Standard T-Nut (35mm long) (25mm hole spacing)	Click HERE
4932	GSC-8020-4932	M6 Standard T-Nut (40mm long) (30mm hole spacing)	Click HERE
4933	GSC-8020-4933	M6 Standard T-Nut (50mm long) (40mm hole spacing)	Click HERE
Roll-In T-Nuts			
4918	GSC-8020-3376	1/4"-20	\$2.44 (each)
4919	GSC-8020-3875	M5	\$2.51 (each)
4920	GSC-8020-3876	M6	\$2.51 (each)

EOAT Design and Build Service

From the simplest to the most complex EOAT, EMI specializes in designing and building customized End-of-Arm-Tooling— **Priced Competitively.**

Get started by sending us a sample part or 3D part file and a completed datasheet (see page 1082). Our experienced EOAT engineers will design a tool for you and provide you 3D CAD renderings at no cost or obligation. We'll also provide pricing for the tool should you want to purchase the EOAT completely assembled.



This EOAT flexes a live hinge +90° / -90° using rotary actuators mounted to X-axis and Y-axis linear slides.

Section Overview

Design Assistance p.1082

Design Assistance Datasheets p.1084

Metric Conversions p.1086

Quick # Index p.1088

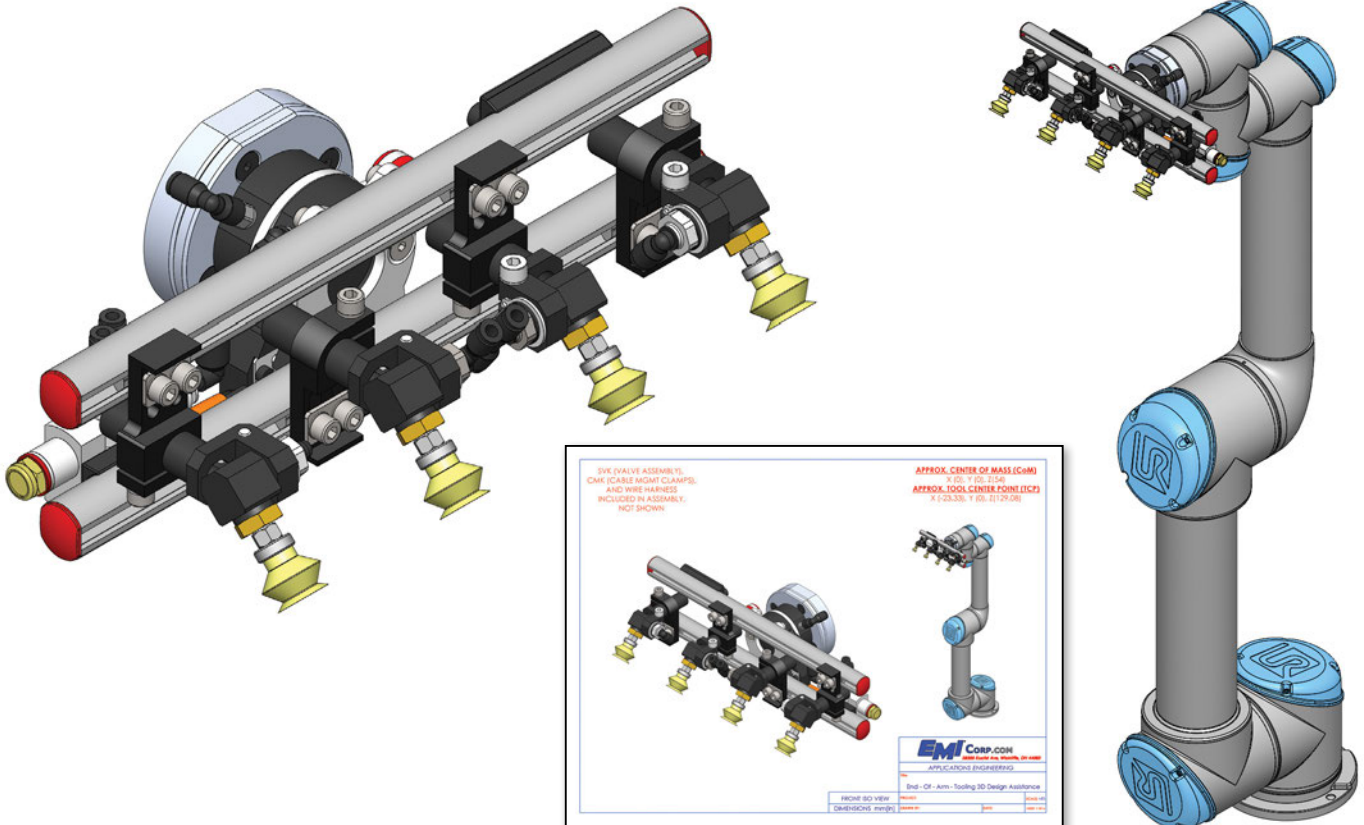
Part # Index p.1100

Credit Application p.1116

Terms & Conditions p.1118

Custom EOAT from EMI

Our extensive stock of framing components engineered for use by injection molders along with the broadest offering of cups, grippers, and everything needed in between, make EMI a one stop destination for robotic end effector / end-of-arm tooling builders.



EOAT Design and Build Service

From the simplest to the most complex tooling, our EOAT engineers can design a tooling to suit your specific application.

Save time and money. Have EMI's experienced EOAT engineers design your end-of-arm-tooling. You'll get 3D CAD renderings of the design at no cost or obligation. We'll also provide pricing for the tool should you want to purchase the EOAT from EMI completely assembled.

1

Send us a sample part, 3D CAD models, and the Datasheet on page 1084.

Click here to download our interactive form,
Submitto.Sales@EMlcorp.com



21: ENGINEERING DESIGN ASSISTANCE EMI

Design Assistance Datasheet
**All fields are required*

Customer Information	Check One:
Company Name: _____	<input type="checkbox"/> I'm interested in receiving EMI's Complete EOAT Design Service and quote.
Contact: _____	<input type="checkbox"/> The quote includes detailed 3D CAD renderings and a free quoted price. Lead time for this service is dependent on complexity and workload.
Address: _____	<input type="checkbox"/> In a hurry? Ask about EMI's new Quick Quote service and whether it is appropriate for your EOAT project. (Check Quotes don't include 3D renderings.)
City: _____ State: _____ Zip Code: _____	<input type="checkbox"/> This includes a general description of the EOAT including main components and load capacity. Define whether the final design stage for this project, more detail and information (3D and 2D files, technical drawings, etc.) are normally required. If new data results in significant deviation from the design outlined in the application quote we will require a re-estimate of the design and budget estimate will be necessary.
Telephone: _____	
Email: _____	
In this address: <input type="checkbox"/> Bill to <input type="checkbox"/> Ship to <input type="checkbox"/> Both	
Required Items:	Optional Maintenance Kit
Send this completed Datasheet to: EOAEngineering@EMlcorp.com	<input type="checkbox"/> I would like a Maintenance Kit for this EOAT.
Send a 3D solid model of your part in STEP (.stp) or Parasolid (.x_t) file format to: EOAEngineering@EMlcorp.com	<input type="checkbox"/> A maintenance kit includes separate items such as vacuum tank seals, air-pressed components, O-rings, etc.
For larger file sizes we can provide an upload link to our secure FTP site. (If a 3D part file is not available, then a 2D file will be helpful with some dimensions)	
If available, send sample parts and inserts. (If applicable to: EMI EOAT Engineering, 28000 Euclid Ave., Wickliffe, Ohio 44090 (for certain applications samples may be mandatory))	
Part Information	Application Type
Part Name / I.D.#: _____	<input type="checkbox"/> Pick/Picking
Material: _____	<input type="checkbox"/> Spray / Runner Picking
Temperature During Ejection (°C / °F): _____	<input type="checkbox"/> Depilating
Weight (g / kg / lbs): _____	<input type="checkbox"/> Maximum Allowable Voltage (volts): _____
_____	<input type="checkbox"/> Insert Loading
_____	<input type="checkbox"/> Other* (Please Specify): _____
<input type="checkbox"/> Finished <input type="checkbox"/> To be Plated	

*Additional information may be required

If submitted along with the 3D/2D data and/or samples, we will place your project in our engineering queue. If contact you if any additional information is required. We will not place an application in our design queue until when it is possible to start a design. The lead time is dependent on complexity and workload.

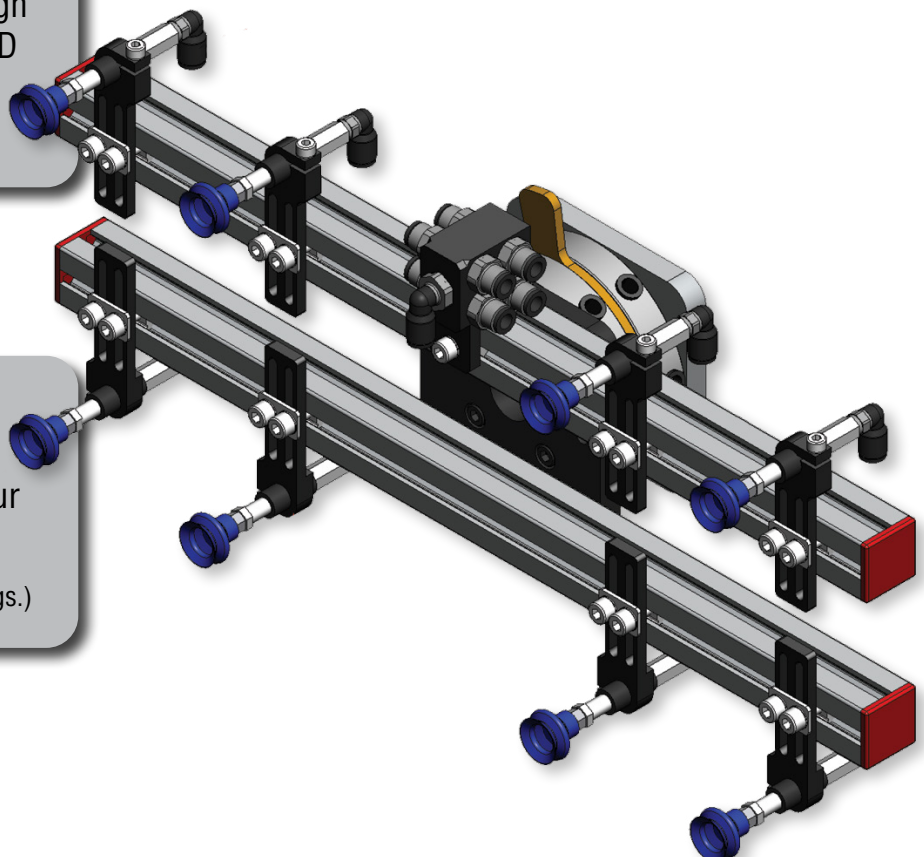
2a

As part of EMI's Complete Design service we will send you 3D CAD renderings of the tool design and pricing.

2b

In a hurry? Ask about EMI's new Quick Quote service and whether it is appropriate for your EOAT project.

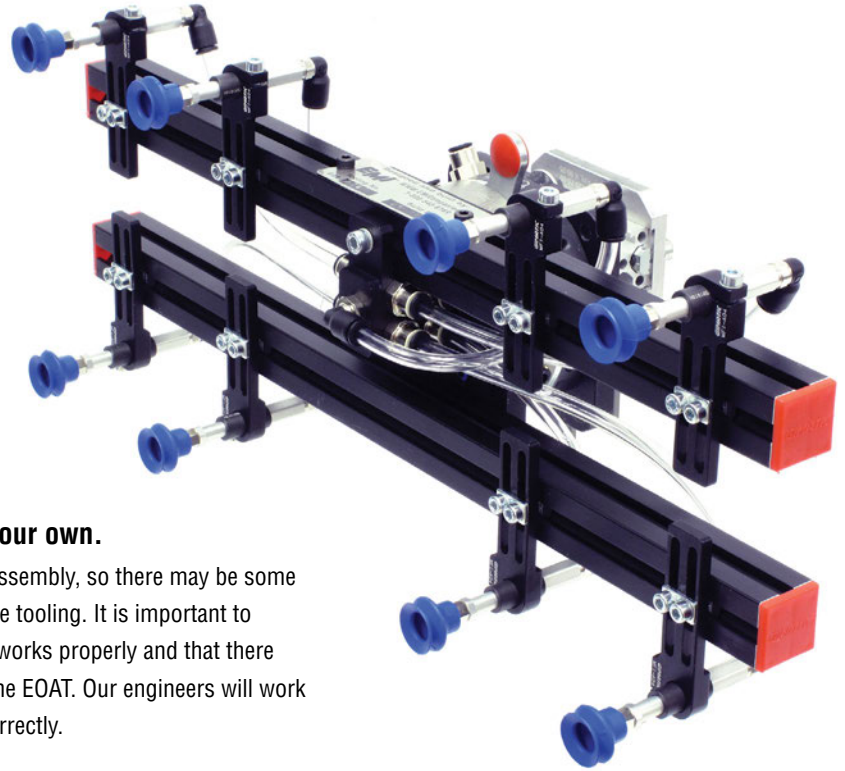
(Quick Quotes don't include 3D renderings.)



EOAT Design and Build Service

3

Have EMI provide you with the complete tool, fully assembled and ready to mount on your robot. Or purchase the components and assemble the tool yourself.



Building it yourself doesn't mean you are on your own.

Design assistance is meant to suggest a possible design assembly, so there may be some tweaks or modifications to be made once you have built the tooling. It is important to carefully test the EOAT at the machine to be certain that it works properly and that there are no interferences that may damage either the mold or the EOAT. Our engineers will work with you to make sure your tooling is built and working correctly.

EOAT Build Service

Get expert assembly by EMI and save time!

Get the benefit of a reliable, professionally built EOAT when you have EMI's experienced technicians assemble your tool. Many customers find EMI's complete design and build service is the most economical solution. Take the complete EOAT out of the box and install it on your robot.

Note: The assembled EOAT is tested before it leaves our facility; however, final adjustments may still need to be made once it has been installed on the robot.

Request a Maintenance Kit for your EOAT Build!

Check the Optional Maintenance Kit box on our EOAT Design Assistance Datasheet and common replacement items will be included with your EOAT.

Commonly requested spare parts include: Vacuum cups, gripper fingers, finger pads, 3D printed components, sensors, fittings, suspensions, and tubing.



Design Assistance Datasheet

***All fields are required**

Customer Information

Company Name: _____

Contact: _____

Address: _____

City: _____ State: _____ Zip Code: _____

Telephone: _____

Email: _____

Is this address: Bill to Ship to Both

Required Items:

- Send this completed Datasheet to: EOATengineering@EMlcorp.com
- Send a 3D solid model of your part in STEP (.step) or Parasolid (.x_t) file format to: EOATengineering@EMlcorp.com
For larger file sizes we can provide an upload link to our secure FTP site.
(If a 3D part file is not available, then a 2D file will be helpful with some dimensions)
- If available, send sample parts and inserts (if applicable) to: EMI EOAT Engineering, 28300 Euclid Ave. Wickliffe, Ohio 44092
(For certain applications samples may be mandatory)

Check One:

- I'm interested in receiving EMI's Complete EOAT Design Service and quote.
This typically includes detailed 3D CAD renderings and a firm quoted price. Lead time for this service is dependent on complexity and workload.
- In a hurry? Ask about EMI's new Quick Quote service and whether it is appropriate for your EOAT project. (Quick Quotes don't include 3D renderings.)
This includes a general description of the EOAT outlining main components and budgetary pricing. Before we enter the formal design stage for this project, more details and information (3D part files, sample parts, etc.) are normally required. If new info results in significant deviation from the design outlined in the budgetary quote will require a reconsideration of the design and budgetary estimate will be necessary.

Optional Maintenance Kit

- I would like a Maintenance Kit for this EOAT.
A maintenance kit includes wearable items such as vacuum cups, pads, 3D printed components, fingers, etc.

Part Information

Part Name / I.D.#: _____

Material: _____

Part Temperature During Ejection (°C / °F): _____

Total Shot Weight (g / kg / lbs): _____

Number of Cavities: _____

Part Finish:



Smooth



Textured



To be Painted

Application Type

Check all that apply:

- Part(s) Picking
- Sprue / Runner Picking
- Degating*

Maximum Allowable Vestige (mm/in): _____

- Insert Loading*
- Other* (Please Specify):

**Additional information may be requested*

What to Expect from EMI:

Once we receive this completed datasheet along with the 3D/2D data and/or samples, we will place your project in our engineering queue. Our engineering department will contact you if any additional information is required. We will not place an application in our design queue until we determine sufficient information is available to start a design. The lead time is dependent on complexity and workload.

Design Assistance Datasheet

Mold Information

Cycle Time: _____

Sprue / Runner Present? Yes No

Is the Sprue/Runner Attached to Parts After Ejection?

Yes No

Upon Ejection, do Parts & Runners?

Stick on Ejector Pins Sag Fall

Will EOAT Drop Parts & Runners? Together Separately

Any Force, Twisting, Bending, Lifting Required to Remove Parts?

Yes* No

**Engineer will contact you to discuss. Any pictures or video you can provide would be appreciated*

Robot Information

Robot Manufacturer: _____

Robot Type: 3-axis 3-axis Servo 6-axis Sprue Picker

Robot Entry: Top Side

Robot Maximum Payload Capacity (kg/lbs): _____

Do you Require Sensors for Part Verification: Yes No

Do you Require Sensors for Sprue/Runner Verification:

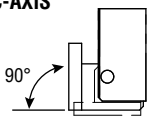
Yes No

Signal Type: PNP NPN

Number of Vacuum Circuits Available: _____

Number of Compressed Air Circuits Available: _____

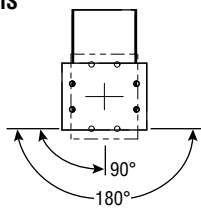
C-AXIS



Robot Wrist Flip:

90° 180° None

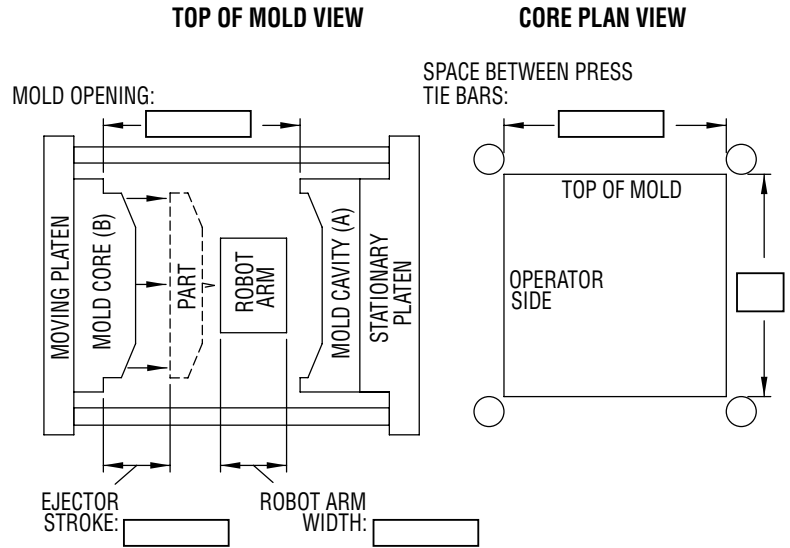
A-AXIS



Robot Wrist Rotation:

90° 180° None

Mold Clearance



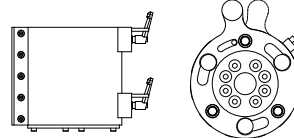
Robot Mounting

Do you Require a Quick Changer?

Check all that apply:

EOAT Side Robot Side None

Style:



Dovetail Gimatic/Senvex Other:

Quick Changer Model No. / Size: _____

Robot Mounting Plate

Please Specify:

EMI to supply finished plate with holes drilled to fit my robot (2D Drawing Required)

EMI to supply blank plate, I will drill holes.

Notes:

Metric Conversions

METRIC CONVERSIONS					
Length					
inches	x	25.4	=	mm	÷ 25.4 = inches
ft	x	304.8	=	mm	÷ 304.8 = ft
ft	x	0.3048	=	meter	÷ 0.3048 = ft
Pressure					
psi	x	0.06895	=	bar	÷ 0.06895 = psi
psi	x	68.947	=	mbar	÷ 68.947 = psi
psi	x	6.895	=	kPa	÷ 6.895 = psi
psi	x	0.0069	=	MPa	÷ 0.0069 = psi
psi	x	0.6895	=	N/cm ²	÷ 0.6895 = psi
psi	x	6894.76	=	Pa, N/m ²	÷ 6894.76 = psi
psi	x	2.036	=	in Hg	÷ 2.036 = psi
psi	x	51.715	=	mm Hg	÷ 51.715 = psi
psi	x	51.715	=	Torr	÷ 51.715 = psi
psi	x	0.0703	=	Kgf/cm ²	÷ 0.0703 = psi
psi	x	0.06805	=	atm	÷ 0.06805 = psi
bar	x	14.5038	=	psi	÷ 14.5038 = bar
bar	x	1000	=	mbar	÷ 1000 = bar
bar	x	100	=	kPa	÷ 100 = bar
bar	x	0.1	=	MPa	÷ 0.1 = bar
bar	x	10	=	N/cm ²	÷ 10 = bar
bar	x	100000	=	Pa, N/m ²	÷ 100000 = bar
bar	x	29.53	=	in Hg	÷ 29.53 = bar
bar	x	750.062	=	mm Hg	÷ 750.062 = bar
bar	x	750.062	=	Torr	÷ 750.062 = bar
bar	x	1.0197	=	Kgf/cm ²	÷ 1.0197 = bar
bar	x	0.9869	=	atm	÷ 0.9869 = bar
Vacuum					
% Vacuum	x	-0.01	=	bar	÷ -0.01 = % Vacuum
% Vacuum	x	-0.147	=	psi	÷ -0.147 = % Vacuum
% Vacuum	x	-0.2992	=	in Hg	÷ -0.2992 = % Vacuum
% Vacuum	x	-7.6923	=	mm Hg	÷ -7.6923 = % Vacuum
Force					
lbf	x	453.6	=	gf	÷ 453.6 = lbf
lbf	x	0.4536	=	kgf	÷ 0.4536 = lbf
lbf	x	4.4482	=	N	÷ 4.4482 = lbf
N	x	0.10197	=	kgf	÷ 0.10197 = N
Torque					
ft-lb	x	1.3559	=	Nm	÷ 1.3559 = ft-lb
ft-lb	x	135.59	=	Ncm	÷ 135.59 = ft-lb
ft-lb	x	0.1383	=	kgf-m	÷ 0.1383 = ft-lb
ft-lb	x	13825	=	gf-cm	÷ 13825 = ft-lb
ft-lb	x	12	=	in lb	÷ 12 = ft-lb
Nm	x	0.10197	=	kgf-m	÷ 0.10197 = Nm
Nm	x	100	=	Ncm	÷ 100 = Nm
Flow Rate					
SCFM (ft ³ /min)	x	28.57	=	L/min	÷ 28.57 = SCFM (ft ³ /min)
SCFM	x	1.699	=	m ³ /h	÷ 1.699 = SCFM
Weight					
oz	x	28.329	=	g	÷ 28.329 = oz
lb	x	0.4536	=	kg	÷ 0.4536 = lb
Temperature					
(°F - 32)	x	0.555	=	°C	
		(°C x 1.8)	+	32	= °F
Volume					
gallons	x	0.134	=	cubic ft	÷ 0.134 = gallons
in ³	x	16387.1	=	mm ³	÷ 16387.1 = in ³
in ³	x	16.3871	=	cm ³ (cc)	÷ 16.3871 = in ³
ft ³	x	0.0283	=	m ³	÷ 0.0283 = ft ³
ft ³	x	28.329	=	liter	÷ 28.329 = ft ³

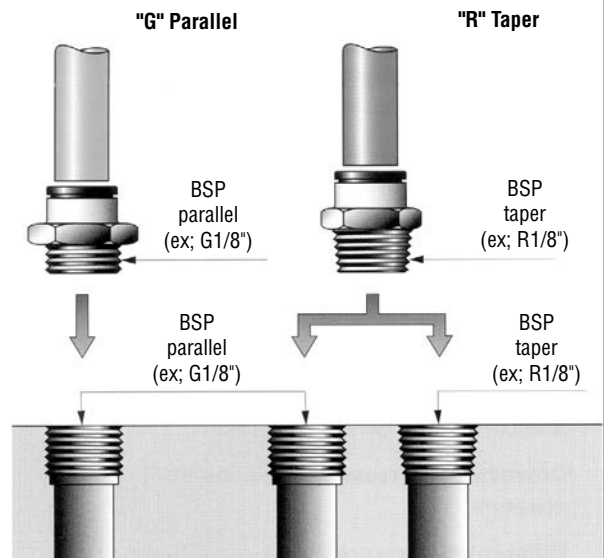
Thread Compatibility

What is G1/8" thread?

G1/8" thread is a British Standard Pipe (BSP) specification. It is used throughout Europe and is frequently used in conjunction with metric M threads. It comes to North American robot end-of-arm tooling via the presence of European robot suppliers.

Specifically, G1/8" is a parallel thread having 28 threads per inch. Sealing is ensured by an O-ring or washer ring. (1/8" NPT is a tapered thread with 27 threads per inch.) See adaptor fittings on page 1068. G1/8" taps are available on page 1076.

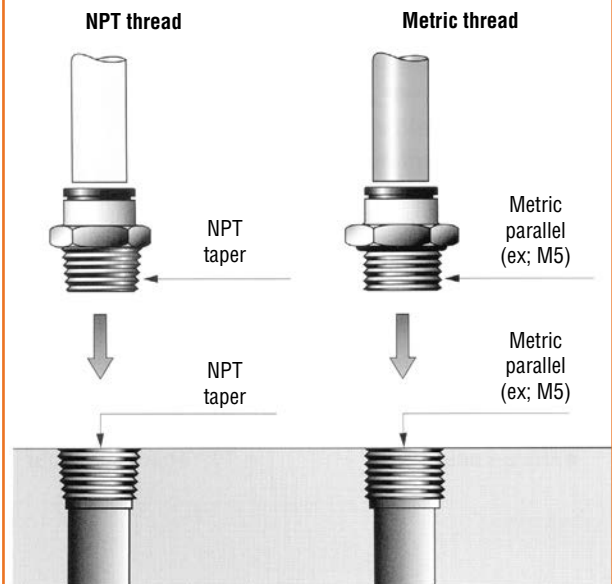
BSP thread (British Standard Pipe)



Note: Older usage can be as follows: Rp = parallel, Rc = taper

Special Note: M5 fits with 10-32 UNF.

NPT thread is not compatible with G, M or R type threads



More Conversion Charts

Pressure conversion table

	<i>psi</i>	<i>Atm</i>	<i>bar</i>	<i>kg/cm²</i>	<i>m H₂O</i>	<i>cm Hg</i>	<i>kPa</i>
1 <i>psi</i>	1	0.07	0.069	0.07	0.7	5.145	6.9
1 <i>Atm</i>	14.2	1	0.981	1	10	73.6	98
1 <i>bar</i>	14.5	1.02	1	1.02	10.2	74.9	100
1 <i>kg/cm²</i>	14.2	1	0.981	1	10	73.6	98
1 <i>m H₂O</i>	1.42	0.1	0.098	0.1	1	7.36	9.8
73.6 <i>cm Hg</i>	14.2	1	0.981	1	10	73.6	98
1 <i>kPa</i>	0.145	0.0102	0.01	0.0102	0.102	0.759	1

Temperature conversion table

CELSIUS °C	KELVIN K	FAHRENHEIT °F
(Fahrenheit - 32) x 5/9	Celsius + 273.15	(Celsius x 1.8) +32
Kelvin - 273.15	(Fahrenheit x 5/9) +255.37	(Kelvin - 255.37) x 1.8
(Rankine x 5/9) - 273.15	Rankine x 5/9	Rankine - 459.67

Unit of measurement conversion table

Unit	Symbol	Unit SI	Conversion ratio [*]
Length			
1 inch	<i>in</i>	2.54 <i>cm</i>	0.393
1 foot = 12 in	<i>ft</i>	30.48 <i>cm</i>	0.032
1 yard = 3 feet	<i>yd</i>	0.9144 <i>m</i>	1.093
1 mile	<i>mi</i>	1.609 <i>km</i>	0.621
Surface			
1 square inch	<i>sq in</i>	6.451 <i>cm²</i>	0.155
1 square foot=144 sq in	<i>sq ft</i>	929.03 <i>cm²</i>	1.076x10 ⁻³
1 square mile	<i>sq mi</i>	2.590 <i>km²</i>	0.386
Volume			
1 cubic inch	<i>cu in</i>	16.387 <i>cm³</i>	0.061
1 cubic foot=1728 cu in	<i>cu ft</i>	28.317 <i>dm³</i>	0.035
1 fluid ounce (GBr)	<i>fl oz</i>	0.028 <i>dm³</i>	35.195
1 fluid ounce (USA)	<i>fl oz</i>	0.029 <i>dm³</i>	33.813
1 quart	<i>liq qt</i>	0.946 <i>dm³</i>	1.056
1 gallon (GBr)	<i>gal</i>	4.546 <i>dm³</i>	0.219
1 gallon (USA)	<i>gal</i>	3.785 <i>dm³</i>	0.264
Mass			
1 grain	<i>gr</i>	64.798 <i>mg</i>	0.015
1 ounce	<i>oz</i>	28.349 <i>g</i>	0.035
1 pound = 16 oz	<i>lb</i>	0.453 <i>kg</i>	2.204
1 long ton = 2240 lb	<i>tn</i>	1.016 <i>kg</i>	9.84x10 ⁻⁴

Unit	Symbol	Unit SI	Conversion ratio [*]
Force			
1 pound - weight	<i>lb wt</i>	4.448 <i>N</i>	0.224
1 pound - force	<i>LB, lbf</i>	4.448 <i>N</i>	0.224
1 kg force	<i>kgf, kgp</i>	9.806 <i>N</i>	0.101
1 ton - force	<i>Ton, tonf</i>	9.964 <i>kN</i>	0.100
Pressure			
1 pound - weight per square inch	<i>lb wt/sq in ppsi, psi</i>	6.894 <i>kN/m²</i>	0.145
1 pound weight per square foot	<i>lb wt/sq ft ppsf, psf</i>	68.948 <i>mbar</i>	0.014
1 kg-force/sq in	<i>kgf/sq in</i>	47.880 <i>N/m²</i>	0.020
1 foot of water	<i>ft H₂O</i>	0.478 <i>mbar</i>	2.088
1 inch of Hg	<i>in Hg</i>	1.520 <i>N/m²</i>	0.657
1 foot of water	<i>ft H₂O</i>	0.029 <i>bar</i>	33.455
1 inch of Hg	<i>in Hg</i>	0.033 <i>bar</i>	29.530
Energy			
1 foot pound-weight	<i>ft lb wt</i>	1.355 <i>J</i>	0.737
1foot pound-force	<i>ft Lb, ft lbf</i>	1.355 <i>J</i>	0.737
1 British Thermal Unit	<i>Btu, BTU</i>	1.055 <i>kJ</i>	0.947
	<i>B. th. u.</i>	0.293 <i>Wh</i>	3.412
1 horse-power hour	<i>hph, H Phr</i>	2.684 <i>MJ</i>	0.372
	<i>h. p. hr.</i>	0.745 <i>kWh</i>	1.341

* Multiply by SI unit to obtain the USA or english unit.

Quick Number Index

Quick # Page

101.....	1047	171.....	1053	256.....	1070	343.....	393	562.....	1065
102.....	1047	172.....	1053	257.....	1070	344.....	393	563.....	1065
103.....	1047	173.....	1053	258.....	383	345.....	392	564.....	1065
104.....	1047	174.....	1053	258.....	1070	346.....	392	573.....	938
105.....	1047	175.....	1053	259.....	1070	347.....	392	574.....	938
106.....	1047	176.....	1053	260.....	1070	348.....	392	575.....	938
107.....	1048	177.....	1054	261.....	1070	349.....	392	582.....	90
108.....	1048	178.....	1054	262.....	1070	350.....	393	584.....	755
109.....	1048	179.....	1054	263.....	1070	353.....	394	585.....	755
110.....	1048	180.....	1054	264.....	1070	354.....	394	589.....	90
111.....	1048	181.....	1054	265.....	1070	355.....	394	590.....	90
112.....	1050	182.....	1054	266.....	1070	356.....	394	591.....	90
113.....	1050	183.....	1054	267.....	1070	357.....	394	600.....	454
114.....	1050	184.....	1051	268.....	1070	358.....	395	601.....	828
115.....	1050	185.....	1051	269.....	1070	361.....	1018	602.....	861
116.....	1050	186.....	1051	270.....	1071	362.....	1018	603.....	828
117.....	1048	187.....	1051	271.....	1071	363.....	1018	604.....	865
118.....	1048	188.....	1055	272.....	1070	365.....	1063	605.....	865
119.....	1048	189.....	1055	273.....	1071	373.....	1015	606.....	828
120.....	1048	190.....	1055	274.....	1071	374.....	1015	607.....	871
121.....	1048	191.....	1055	275.....	1071	375.....	1068	608.....	873
122.....	1048	192.....	1055	276.....	1070	376.....	408	609.....	877
123.....	1049	193.....	1055	277.....	1070	377.....	408	610.....	876
124.....	1049	194.....	1055	278.....	1071	378.....	332	611.....	828
125.....	1049	195.....	1055	279.....	1071	379.....	332	612.....	881
126.....	1049	196.....	1055	280.....	1070	380.....	408	613.....	883
127.....	1049	197.....	1055	281.....	1070	381.....	409	614.....	888
128.....	1051	198.....	1055	282.....	1070	383.....	408	615.....	887
129.....	1051	199.....	1055	283.....	1071	384.....	409	616.....	921
130.....	1051	200.....	1063	284.....	1071	385.....	409	617.....	920
131.....	1051	201.....	1066	285.....	1071	408.....	333	618.....	930
132.....	1051	216.....	1061	286.....	1071	411.....	357	619.....	930
133.....	1049	217.....	1062	287.....	1071	412.....	357	620.....	930
134.....	1049	218.....	1062	288.....	1071	413.....	357	621.....	931
135.....	1049	219.....	1062	289.....	1071	415.....	1069	622.....	931
136.....	1049	220.....	1062	290.....	1071	433.....	1015	623.....	927
137.....	1049	221.....	1068	291.....	1071	443.....	283	624.....	926
138.....	1051	222.....	1069	292.....	1071	444.....	391	625.....	934
139.....	1051	223.....	1069	293.....	1071	445.....	391	626.....	934
140.....	1051	224.....	1069	294.....	1071	446.....	391	627.....	934
141.....	1050	225.....	1069	295.....	1071	447.....	391	628.....	935
142.....	1050	226.....	1069	296.....	1071	448.....	391	629.....	935
143.....	1050	227.....	1069	297.....	1015	449.....	391	630.....	929
144.....	1050	228.....	1069	298.....	1015	450.....	391	631.....	936
145.....	1050	229.....	1068	299.....	1015	451.....	391	632.....	936
146.....	1050	230.....	1068	300.....	1015	454.....	284	633.....	936
147.....	1051	232.....	1068	301.....	1015	455.....	307	634.....	937
148.....	1051	233.....	1068	302.....	1015	457.....	306	635.....	937
149.....	1051	234.....	1068	303.....	1015	458.....	306	636.....	925
150.....	1051	235.....	1069	304.....	1015	459.....	306	637.....	1069
151.....	1051	236.....	1068	305.....	1015	460.....	306	640.....	336
152.....	1051	237.....	1068	306.....	1015	461.....	985	641.....	336
153.....	1051	238.....	1068	307.....	1015	462.....	985	642.....	336
154.....	1052	239.....	1068	308.....	1015	463.....	1071	643.....	337
155.....	1052	240.....	1068	311.....	831	494.....	1068	644.....	337
156.....	1052	241.....	1068	312.....	831	498.....	1068	645.....	337
157.....	1052	242.....	1068	313.....	831	500.....	13	646.....	357
158.....	1052	243.....	1068	314.....	831	501.....	13	651.....	408
159.....	1052	244.....	1068	319.....	1068	502.....	33	651.....	409
160.....	1052	245.....	1069	325.....	393	503.....	33	655.....	409
161.....	1052	246.....	1069	326.....	393	504.....	33	673.....	334
162.....	1053	247.....	1069	333.....	284	544.....	43	674.....	334
163.....	1053	248.....	1069	334.....	307	546.....	502	675.....	334
164.....	1053	249.....	1068	335.....	307	547.....	502	676.....	334
165.....	1053	250.....	424	336.....	283	548.....	502	682.....	334
166.....	1053	251.....	424	337.....	283	549.....	503	683.....	334
167.....	1053	252.....	424	338.....	307	558.....	1064	684.....	335
168.....	1053	253.....	424	339.....	305	559.....	1064	685.....	335
169.....	1053	254.....	425	340.....	305	560.....	1064	686.....	335
170.....	1053	255.....	425	342.....	306	561.....	1065	687.....	335

Quick Number Index

Quick # Page #

688.....	357	813.....	1076	883.....	1077	996.....	179	1097.....	885
689.....	920	814.....	1076	884.....	1077	997.....	179	1098.....	875
690.....	926	815.....	1076	885.....	1077	998.....	179	1099.....	865
691.....	929	816.....	1076	886.....	1077	1002.....	861	1105.....	820
692.....	853	817.....	1076	887.....	1077	1003.....	862	1106.....	820
693.....	853	818.....	1076	888.....	1077	1004.....	865	1109.....	821
694.....	853	819.....	1076	889.....	1077	1005.....	866	1113.....	334
695.....	924	820.....	1076	890.....	1077	1006.....	866	1114.....	334
697.....	885	821.....	1076	891.....	1077	1007.....	871	1115.....	334
698.....	875	822.....	1076	892.....	1077	1008.....	873	1116.....	334
699.....	828	823.....	1076	893.....	1077	1009.....	877	1121.....	334
700.....	82	824.....	1076	894.....	1077	1010.....	876	1122.....	334
704.....	502	825.....	1076	895.....	1077	1012.....	881	1123.....	334
705.....	502	826.....	1076	896.....	1077	1013.....	883	1124.....	334
706.....	503	827.....	1076	897.....	1077	1014.....	888	1125.....	335
707.....	503	828.....	1076	898.....	1077	1015.....	887	1126.....	335
708.....	503	829.....	1076	899.....	1077	1024.....	874	1127.....	335
709.....	502	830.....	1076	901.....	1076	1025.....	875	1128.....	335
710.....	503	831.....	1077	902.....	1077	1026.....	886	1129.....	335
711.....	503	832.....	1077	903.....	1077	1027.....	886	1130.....	335
712.....	503	833.....	1077	904.....	1077	1028.....	876	1131.....	335
713.....	502	834.....	1077	905.....	1077	1035.....	863	1132.....	335
720.....	503	835.....	1077	906.....	1077	1036.....	863	1133.....	336
721.....	503	836.....	1077	908.....	1077	1037.....	867	1134.....	336
722.....	820	837.....	1077	910.....	1076	1038.....	867	1135.....	336
723.....	821	838.....	1077	911.....	1076	1039.....	878	1136.....	336
724.....	821	839.....	1077	912.....	1076	1040.....	878	1137.....	336
725.....	820	840.....	1077	914.....	1077	1041.....	890	1138.....	337
726.....	820	841.....	1077	915.....	1077	1042.....	890	1139.....	337
727.....	558	842.....	1077	917.....	1077	1043.....	881	1140.....	337
728.....	559	843.....	1077	928.....	1077	1044.....	862	1141.....	46
729.....	559	844.....	1077	939.....	1077	1045.....	867	1142.....	336
730.....	559	845.....	1077	940.....	1077	1046.....	877	1143.....	336
731.....	559	846.....	1077	941.....	1077	1047.....	891	1144.....	336
732.....	559	847.....	1077	942.....	1076	1049.....	368	1145.....	336
738.....	502	848.....	1077	943.....	1076	1050.....	368	1146.....	336
742.....	769	849.....	1077	944.....	1077	1051.....	368	1147.....	336
751.....	1066	850.....	1077	945.....	1077	1052.....	368	1148.....	336
752.....	1066	851.....	1077	946.....	1077	1053.....	369	1149.....	337
753.....	41	852.....	1077	947.....	1077	1054.....	369	1151.....	337
757.....	40	853.....	1077	948.....	1077	1055.....	369	1152.....	337
760.....	45	854.....	1077	949.....	1077	1056.....	369	1153.....	334
764.....	503	855.....	1077	950.....	1044	1057.....	369	1154.....	334
765.....	503	856.....	1077	951.....	1044	1058.....	369	1155.....	334
766.....	503	857.....	1077	952.....	1044	1059.....	370	1156.....	334
767.....	502	858.....	1077	953.....	1044	1060.....	370	1161.....	360
770.....	332	859.....	1077	954.....	1044	1061.....	370	1162.....	360
771.....	332	860.....	1077	955.....	1044	1062.....	370	1163.....	360
772.....	332	861.....	1077	956.....	1044	1063.....	371	1164.....	360
773.....	332	862.....	1077	957.....	1045	1064.....	371	1165.....	360
790.....	454	863.....	1077	958.....	1045	1065.....	371	1166.....	360
791.....	454	864.....	1077	959.....	1045	1066.....	371	1167.....	360
792.....	1003	865.....	1077	960.....	1045	1067.....	383	1168.....	361
793.....	1003	866.....	1077	961.....	1045	1068.....	383	1169.....	361
794.....	454	867.....	1077	962.....	1045	1069.....	383	1170.....	361
795.....	454	868.....	1077	963.....	1076	1070.....	383	1171.....	362
796.....	1076	869.....	1077	964.....	1076	1071.....	383	1172.....	362
798.....	459	870.....	1077	965.....	1076	1072.....	383	1173.....	363
801.....	1076	871.....	1077	966.....	1045	1073.....	383	1174.....	363
802.....	1076	872.....	1077	967.....	1045	1074.....	383	1175.....	364
803.....	1076	873.....	1077	968.....	1045	1075.....	383	1176.....	364
804.....	1076	874.....	1077	971.....	1077	1076.....	383	1177.....	364
805.....	1076	875.....	1077	972.....	1077	1077.....	383	1178.....	364
806.....	1076	876.....	1077	973.....	1077	1078.....	383	1179.....	365
807.....	1076	877.....	1077	974.....	1077	1079.....	383	1180.....	365
808.....	1076	878.....	1077	975.....	1077	1088.....	383	1181.....	365
809.....	1076	879.....	1077	985.....	1077	1089.....	383	1182.....	366
810.....	1076	880.....	1077	987.....	179	1090.....	383	1183.....	366
811.....	1076	881.....	1077	988.....	179	1095.....	861	1184.....	329
812.....	1076	882.....	1077	995.....	1003	1096.....	872	1185.....	329

Quick Number Index

Quick # Page

1186.....	329	1339.....	1073	1418.....	342	1559.....	394	1649.....	325
1231.....	1014	1340.....	1073	1419.....	343	1560.....	394	1650.....	325
1232.....	1014	1341.....	1073	1420.....	343	1561.....	394	1651.....	326
1233.....	1014	1342.....	1073	1421.....	342	1562.....	394	1652.....	326
1234.....	1014	1343.....	1073	1422.....	342	1563.....	395	1653.....	326
1235.....	1014	1344.....	1073	1423.....	343	1564.....	830	1654.....	327
1236.....	435	1345.....	1073	1424.....	343	1565.....	830	1655.....	327
1237.....	435	1346.....	1073	1425.....	343	1566.....	830	1656.....	327
1240.....	452	1347.....	1073	1426.....	340	1567.....	830	1657.....	328
1241.....	412	1348.....	1073	1427.....	340	1568.....	869	1658.....	328
1244.....	413	1349.....	1073	1428.....	340	1569.....	869	1659.....	328
1247.....	413	1350.....	1073	1429.....	340	1570.....	872	1660.....	329
1249.....	414	1351.....	1073	1430.....	341	1571.....	874	1661.....	329
1250.....	414	1352.....	1073	1431.....	341	1572.....	882	1662.....	411
1253.....	415	1353.....	1073	1432.....	340	1572.....	894	1663.....	411
1258.....	418	1354.....	1073	1433.....	340	1573.....	884	1664.....	42
1267.....	412	1355.....	1073	1434.....	340	1574.....	889	1670.....	851
1275.....	502	1356.....	1072	1435.....	340	1575.....	946	1671.....	851
1281.....	861	1357.....	1072	1436.....	341	1576.....	946	1672.....	851
1281.....	861	1358.....	1072	1437.....	341	1577.....	946	1673.....	851
1282.....	961	1359.....	1072	1438.....	357	1578.....	946	1674.....	402
1283.....	865	1360.....	1072	1439.....	357	1579.....	946	1675.....	402
1284.....	961	1361.....	1072	1440.....	357	1580.....	948	1676.....	402
1285.....	881	1362.....	1072	1441.....	357	1581.....	948	1677.....	402
1286.....	961	1363.....	1072	1442.....	357	1582.....	948	1678.....	402
1287.....	961	1364.....	1072	1448.....	1047	1583.....	948	1679.....	403
1288.....	961	1365.....	1072	1449.....	1047	1584.....	948	1680.....	403
1289.....	961	1366.....	1072	1450.....	1048	1585.....	948	1681.....	403
1290.....	961	1367.....	1072	1451.....	1048	1586.....	948	1682.....	403
1291.....	961	1368.....	1072	1452.....	1048	1587.....	948	1683.....	403
1293.....	410	1369.....	1072	1453.....	1048	1588.....	948	1684.....	403
1294.....	410	1370.....	1072	1454.....	1049	1589.....	948	1685.....	404
1295.....	410	1371.....	1072	1455.....	1049	1590.....	422	1686.....	404
1300.....	578	1372.....	1072	1456.....	1050	1591.....	422	1687.....	404
1301.....	578	1373.....	1072	1457.....	1050	1592.....	422	1688.....	404
1302.....	578	1374.....	1069	1458.....	1051	1593.....	422	1691.....	400
1303.....	578	1375.....	1069	1459.....	1051	1594.....	422	1692.....	400
1304.....	578	1376.....	1069	1468.....	1014	1595.....	422	1693.....	401
1305.....	578	1377.....	1069	1469.....	1014	1596.....	422	1694.....	401
1306.....	578	1378.....	1069	1470.....	1014	1597.....	422	1695.....	401
1307.....	578	1379.....	1069	1471.....	1014	1598.....	422	1696.....	401
1308.....	578	1380.....	1069	1472.....	1014	1599.....	422	1697.....	401
1309.....	578	1381.....	1069	1473.....	456	1601.....	422	1698.....	401
1310.....	578	1382.....	1069	1474.....	456	1602.....	422	1699.....	401
1311.....	578	1383.....	1069	1475.....	456	1603.....	333	1700.....	401
1312.....	578	1384.....	1069	1482.....	1064	1603.....	373	1701.....	401
1313.....	578	1385.....	1069	1483.....	1064	1604.....	333	1702.....	401
1314.....	578	1386.....	1068	1484.....	850	1604.....	373	1703.....	401
1315.....	578	1387.....	1068	1485.....	850	1605.....	424	1703.....	1077
1316.....	578	1388.....	1068	1486.....	850	1606.....	425	1704.....	401
1318.....	578	1389.....	1068	1487.....	850	1607.....	373	1705.....	752
1319.....	579	1390.....	426	1497.....	1069	1607.....	425	1706.....	752
1320.....	579	1391.....	426	1510.....	1065	1608.....	951	1711.....	539
1321.....	579	1392.....	426	1511.....	1065	1609.....	951	1712.....	539
1322.....	579	1393.....	427	1524.....	961	1610.....	951	1725.....	755
1323.....	579	1401.....	282	1525.....	961	1611.....	952	1726.....	755
1324.....	579	1402.....	282	1526.....	961	1612.....	952	1727.....	755
1325.....	579	1403.....	282	1533.....	961	1613.....	952	1728.....	755
1326.....	579	1404.....	282	1534.....	961	1614.....	952	1729.....	755
1328.....	1073	1405.....	282	1535.....	961	1615.....	952	1730.....	754
1329.....	1073	1406.....	282	1541.....	961	1616.....	952	1731.....	754
1330.....	1073	1407.....	308	1542.....	961	1617.....	960	1732.....	755
1331.....	1073	1408.....	308	1543.....	961	1624.....	960	1733.....	754
1332.....	1073	1409.....	308	1550.....	392	1631.....	960	1734.....	755
1333.....	1073	1410.....	308	1551.....	392	1638.....	960	1735.....	987
1334.....	1073	1413.....	342	1552.....	392	1645.....	324	1739.....	579
1335.....	1073	1414.....	342	1553.....	392	1645.....	415	1740.....	579
1336.....	1073	1415.....	342	1554.....	392	1646.....	324	1741.....	579
1337.....	1073	1416.....	342	1555.....	393	1647.....	324	1742.....	579
1338.....	1073	1417.....	342	1558.....	394	1648.....	325	1743.....	333

Quick Number Index

Quick # Page #

1744.....	333	1886.....	396	1960.....	1027	2056.....	880	2314.....	861
1771.....	1065	1887.....	396	1961.....	1027	2057.....	892	2314.....	961
1772.....	1065	1888.....	396	1962.....	1027	2058.....	834	2315.....	840
1773.....	1064	1889.....	396	1963.....	1027	2059.....	834	2316.....	840
1774.....	1064	1890.....	396	1964.....	1027	2060.....	834	2317.....	840
1775.....	1064	1891.....	397	1965.....	1027	2061.....	834	2318.....	840
1776.....	1064	1892.....	398	1966.....	1027	2063.....	840	2319.....	840
1791.....	37	1893.....	398	1967.....	1027	2066.....	350	2320.....	942
1793.....	37	1894.....	398	1968.....	1027	2067.....	350	2321.....	943
1794.....	818	1895.....	398	1969.....	1027	2068.....	351	2322.....	943
1794.....	1003	1896.....	398	1970.....	1027	2069.....	351	2323.....	944
1796.....	1003	1897.....	398	1971.....	1027	2070.....	942	2328.....	853
1810.....	853	1898.....	399	1972.....	1027	2071.....	945	2329.....	909
1811.....	853	1899.....	56	1973.....	1027	2071.....	954	2330.....	909
1812.....	853	1900.....	827	1974.....	1027	2072.....	84	2332.....	961
1813.....	861	1901.....	826	1975.....	1027	2073.....	85	2333.....	961
1814.....	863	1902.....	827	1976.....	1027	2074.....	85	2347.....	1077
1815.....	15	1903.....	826	1977.....	1027	2075.....	959	2358.....	423
1816.....	15	1904.....	827	1978.....	1027	2076.....	959	2359.....	423
1817.....	44	1905.....	826	1979.....	1027	2077.....	959	2360.....	423
1818.....	852	1906.....	827	1980.....	1027	2078.....	959	2361.....	423
1819.....	852	1907.....	826	1981.....	1027	2079.....	959	2379.....	945
1820.....	852	1908.....	827	1984.....	402	2080.....	355	2394.....	945
1821.....	852	1909.....	826	1989.....	594	2081.....	353	2403.....	1004
1822.....	284	1910.....	511	1990.....	594	2101.....	626	2404.....	1004
1823.....	284	1911.....	510	1991.....	594	2102.....	626	2412.....	1004
1824.....	284	1912.....	511	1992.....	594	2103.....	626	2421.....	945
1825.....	458	1913.....	510	1993.....	592	2104.....	626	2429.....	1004
1825.....	753	1914.....	517	1994.....	592	2105.....	626	2430.....	1004
1826.....	347	1915.....	516	1995.....	592	2106.....	626	2450.....	1068
1827.....	347	1916.....	517	1996.....	592	2107.....	626	2451.....	80
1828.....	753	1917.....	516	1997.....	592	2108.....	626	2452.....	80
1829.....	539	1918.....	629	1998.....	592	2109.....	624	2453.....	80
1830.....	1064	1919.....	629	2001.....	1047	2110.....	624	2454.....	80
1831.....	557	1920.....	629	2002.....	1047	2111.....	624	2455.....	81
1832.....	556	1921.....	629	2004.....	1048	2112.....	624	2456.....	81
1833.....	558	1923.....	578	2005.....	1048	2117.....	624	2457.....	81
1834.....	556	1924.....	578	2013.....	1050	2118.....	624	2458.....	81
1835.....	558	1925.....	578	2014.....	1050	2119.....	624	2491.....	1014
1836.....	557	1926.....	578	2019.....	386	2120.....	624	2501.....	376
1837.....	557	1927.....	578	2020.....	386	2121.....	624	2502.....	376
1838.....	557	1928.....	578	2021.....	386	2122.....	624	2503.....	376
1839.....	557	1929.....	578	2022.....	387	2123.....	624	2504.....	376
1844.....	1063	1930.....	578	2023.....	387	2124.....	624	2505.....	376
1845.....	1063	1931.....	986	2024.....	387	2129.....	668	2506.....	376
1846.....	1063	1932.....	986	2025.....	388	2130.....	668	2507.....	376
1847.....	1064	1936.....	1026	2026.....	388	2131.....	668	2508.....	377
1850.....	502	1937.....	1026	2027.....	388	2132.....	668	2509.....	377
1851.....	502	1938.....	1026	2028.....	388	2155.....	669	2510.....	377
1852.....	1015	1939.....	1026	2029.....	389	2156.....	669	2511.....	377
1853.....	1015	1940.....	1026	2030.....	389	2172.....	357	2512.....	377
1861.....	923	1941.....	1026	2033.....	1019	2215.....	1005	2513.....	378
1862.....	922	1942.....	1026	2034.....	1019	2216.....	1005	2514.....	378
1863.....	922	1943.....	1026	2035.....	1019	2228.....	343	2515.....	378
1864.....	932	1944.....	1026	2037.....	975	2235.....	945	2516.....	378
1865.....	932	1945.....	1026	2038.....	975	2235.....	954	2517.....	378
1866.....	932	1946.....	1026	2039.....	975	2243.....	1004	2518.....	379
1867.....	933	1947.....	1026	2040.....	975	2244.....	1004	2519.....	379
1868.....	933	1948.....	1026	2041.....	974	2245.....	1004	2520.....	379
1870.....	283	1949.....	1026	2042.....	974	2256.....	941	2521.....	382
1871.....	56	1950.....	1027	2043.....	835	2257.....	941	2522.....	382
1877.....	754	1951.....	1027	2044.....	835	2258.....	945	2523.....	382
1878.....	430	1952.....	1027	2045.....	835	2266.....	944	2524.....	382
1879.....	434	1953.....	1027	2046.....	835	2267.....	945	2525.....	380
1880.....	457	1954.....	1027	2050.....	1022	2267.....	954	2526.....	380
1881.....	457	1955.....	1027	2051.....	1022	2280.....	958	2527.....	380
1882.....	1002	1956.....	1027	2052.....	1022	2301.....	882	2528.....	380
1883.....	1002	1957.....	1027	2053.....	860	2310.....	958	2529.....	380
1884.....	1002	1958.....	1027	2054.....	864	2311.....	958	2530.....	380
1885.....	396	1959.....	1027	2055.....	870	2312.....	958	2531.....	380

Quick Number Index

Quick # Page

2532.....	381	2621.....	379	2741.....	776	3001.....	63	3081.....	221
2533.....	381	2622.....	379	2742.....	776	3002.....	63	3082.....	221
2534.....	381	2623.....	380	2743.....	776	3003.....	63	3083.....	221
2535.....	376	2624.....	380	2744.....	776	3004.....	63	3084.....	221
2536.....	376	2625.....	380	2745.....	776	3005.....	63	3085.....	220
2537.....	376	2626.....	380	2746.....	776	3006.....	69	3086.....	220
2538.....	376	2627.....	380	2747.....	776	3007.....	69	3087.....	220
2539.....	376	2628.....	380	2748.....	776	3008.....	69	3088.....	220
2540.....	376	2629.....	381	2749.....	776	3009.....	68	3089.....	221
2541.....	376	2630.....	381	2750.....	776	3010.....	68	3090.....	221
2542.....	377	2631.....	381	2751.....	776	3011.....	68	3091.....	221
2543.....	377	2632.....	382	2752.....	776	3012.....	68	3092.....	205
2544.....	377	2633.....	382	2753.....	776	3014.....	68	3093.....	205
2545.....	377	2634.....	382	2754.....	776	3015.....	68	3094.....	205
2546.....	377	2635.....	382	2755.....	776	3016.....	68	3096.....	205
2547.....	378	2637.....	379	2756.....	776	3017.....	68	3097.....	205
2548.....	378	2644.....	1015	2757.....	776	3018.....	68	3100.....	208
2549.....	378	2645.....	1015	2758.....	777	3019.....	68	3101.....	208
2550.....	378	2646.....	1015	2759.....	777	3020.....	68	3102.....	208
2551.....	378	2647.....	1015	2760.....	777	3024.....	69	3103.....	208
2552.....	379	2648.....	1015	2761.....	777	3025.....	69	3104.....	208
2553.....	379	2649.....	945	2762.....	777	3026.....	69	3105.....	208
2554.....	379	2649.....	954	2763.....	777	3027.....	69	3106.....	208
2555.....	382	2654.....	380	2764.....	777	3028.....	69	3107.....	209
2556.....	382	2657.....	1015	2765.....	777	3029.....	193	3108.....	209
2557.....	382	2658.....	1015	2766.....	777	3030.....	193	3109.....	209
2558.....	382	2659.....	1015	2767.....	777	3031.....	193	3110.....	209
2559.....	380	2660.....	1015	2768.....	777	3032.....	193	3111.....	209
2560.....	380	2662.....	905	2769.....	777	3033.....	194	3112.....	209
2561.....	380	2663.....	905	2770.....	777	3034.....	194	3113.....	209
2562.....	380	2664.....	905	2771.....	777	3035.....	194	3114.....	212
2563.....	380	2678.....	380	2800.....	163	3036.....	194	3115.....	212
2564.....	380	2679.....	380	2801.....	163	3037.....	194	3116.....	212
2565.....	380	2680.....	380	2802.....	163	3038.....	194	3117.....	212
2566.....	381	2681.....	380	2964.....	983	3039.....	191	3118.....	212
2567.....	381	2682.....	380	2965.....	983	3040.....	191	3119.....	212
2568.....	381	2683.....	376	2966.....	983	3041.....	191	3120.....	212
2569.....	283	2684.....	376	2967.....	983	3042.....	191	3121.....	212
2570.....	1014	2685.....	376	2968.....	983	3043.....	198	3122.....	212
2571.....	283	2686.....	376	2969.....	855	3044.....	198	3123.....	213
2576.....	283	2687.....	376	2970.....	854	3045.....	198	3124.....	213
2578.....	960	2688.....	376	2971.....	854	3046.....	198	3125.....	213
2579.....	960	2689.....	998	2972.....	854	3047.....	198	3126.....	213
2581.....	181	2690.....	999	2973.....	526	3048.....	198	3127.....	213
2581.....	984	2696.....	986	2974.....	526	3049.....	198	3128.....	213
2582.....	985	2697.....	986	2975.....	526	3050.....	198	3129.....	213
2583.....	985	2704.....	970	2976.....	526	3052.....	199	3130.....	213
2584.....	954	2705.....	972	2977.....	526	3053.....	199	3131.....	213
2585.....	911	2707.....	972	2978.....	526	3054.....	199	3147.....	219
2593.....	954	2708.....	972	2979.....	527	3055.....	199	3148.....	219
2600.....	960	2709.....	972	2980.....	527	3056.....	199	3149.....	219
2602.....	1004	2710.....	972	2981.....	527	3057.....	199	3150.....	219
2603.....	1004	2711.....	970	2982.....	527	3058.....	199	3151.....	219
2604.....	376	2712.....	970	2983.....	527	3059.....	202	3152.....	219
2605.....	376	2713.....	970	2984.....	527	3060.....	202	3153.....	219
2606.....	376	2714.....	974	2985.....	526	3061.....	202	3154.....	219
2607.....	376	2715.....	970	2986.....	526	3062.....	195	3155.....	219
2608.....	376	2716.....	970	2987.....	526	3063.....	195	3156.....	770
2609.....	376	2717.....	970	2988.....	526	3064.....	195	3157.....	770
2610.....	376	2718.....	970	2989.....	526	3065.....	195	3158.....	770
2611.....	377	2720.....	973	2990.....	526	3066.....	192	3159.....	770
2612.....	377	2722.....	1031	2991.....	526	3067.....	192	3160.....	220
2613.....	377	2723.....	973	2992.....	526	3068.....	192	3161.....	770
2614.....	377	2724.....	973	2993.....	526	3069.....	192	3162.....	489
2615.....	377	2725.....	974	2994.....	526	3070.....	192	3164.....	489
2616.....	378	2726.....	974	2995.....	526	3071.....	192	3165.....	285
2617.....	378	2727.....	974	2996.....	526	3077.....	192	3166.....	285
2618.....	378	2728.....	974	2997.....	528	3078.....	192	3167.....	304
2619.....	378	2729.....	974	2998.....	528	3079.....	220	3168.....	304
2620.....	378	2740.....	776	2999.....	528	3080.....	220	3169.....	304

Quick Number Index

Quick # Page #

3170.....	304	3290.....	373	3402.....	1001	3481.....	212	3606.....	305
3171.....	311	3291.....	373	3403.....	1001	3482.....	212	3607.....	285
3172.....	310	3292.....	373	3404.....	1000	3483.....	212	3608.....	305
3173.....	311	3294.....	373	3405.....	987	3484.....	589	3609.....	309
3174.....	310	3296.....	373	3406.....	987	3486.....	196	3610.....	309
3186.....	360	3297.....	373	3407.....	987	3487.....	196	3611.....	477
3187.....	360	3299.....	769	3408.....	589	3488.....	197	3612.....	477
3189.....	360	3300.....	769	3409.....	1004	3489.....	197	3613.....	493
3190.....	360	3301.....	769	3411.....	1061	3491.....	982	3614.....	493
3192.....	360	3302.....	769	3412.....	1061	3511.....	208	3615.....	494
3193.....	360	3303.....	769	3413.....	1060	3512.....	204	3616.....	209
3195.....	360	3304.....	769	3414.....	1060	3513.....	204	3617.....	494
3196.....	360	3305.....	769	3415.....	1060	3514.....	204	3618.....	500
3199.....	360	3306.....	476	3416.....	1060	3515.....	204	3619.....	218
3200.....	360	3308.....	485	3418.....	1061	3516.....	204	3620.....	218
3203.....	360	3310.....	493	3419.....	1061	3525.....	939	3621.....	218
3204.....	360	3311.....	496	3420.....	1061	3526.....	939	3622.....	218
3206.....	360	3313.....	500	3421.....	766	3527.....	939	3623.....	218
3207.....	360	3317.....	489	3422.....	766	3528.....	492	3624.....	218
3210.....	361	3318.....	489	3423.....	766	3530.....	769	3625.....	218
3211.....	361	3319.....	476	3424.....	766	3531.....	217	3626.....	218
3214.....	361	3320.....	522	3425.....	766	3532.....	217	3627.....	218
3215.....	361	3321.....	522	3426.....	766	3533.....	65	3628.....	218
3218.....	361	3322.....	523	3427.....	766	3535.....	589	3629.....	588
3219.....	361	3323.....	523	3428.....	766	3537.....	65	3630.....	580
3222.....	362	3324.....	524	3429.....	766	3538.....	191	3631.....	580
3223.....	362	3325.....	524	3430.....	766	3539.....	191	3632.....	580
3226.....	362	3332.....	911	3431.....	766	3540.....	588	3633.....	580
3227.....	362	3333.....	911	3432.....	766	3541.....	495	3634.....	580
3229.....	363	3334.....	206	3433.....	766	3542.....	588	3635.....	580
3230.....	363	3335.....	206	3434.....	766	3543.....	191	3636.....	522
3232.....	363	3336.....	206	3435.....	766	3545.....	65	3637.....	523
3233.....	363	3337.....	206	3436.....	766	3546.....	65	3638.....	524
3235.....	364	3338.....	206	3437.....	769	3561.....	217	3639.....	525
3236.....	364	3346.....	832	3438.....	769	3562.....	217	3640.....	525
3238.....	364	3347.....	832	3439.....	769	3563.....	217	3641.....	464
3239.....	364	3348.....	832	3440.....	769	3564.....	209	3642.....	465
3241.....	364	3349.....	832	3441.....	562	3566.....	488	3643.....	467
3242.....	364	3355.....	767	3442.....	562	3567.....	488	3644.....	467
3244.....	364	3356.....	767	3443.....	562	3569.....	209	3645.....	207
3245.....	364	3357.....	767	3444.....	562	3570.....	209	3646.....	207
3247.....	365	3358.....	767	3445.....	588	3571.....	209	3647.....	207
3248.....	365	3359.....	767	3446.....	200	3576.....	211	3648.....	314
3250.....	365	3360.....	767	3447.....	200	3577.....	211	3649.....	314
3251.....	365	3361.....	767	3448.....	200	3578.....	211	3650.....	314
3253.....	365	3362.....	767	3449.....	200	3579.....	210	3651.....	314
3254.....	365	3363.....	767	3450.....	201	3580.....	210	3652.....	191
3256.....	366	3364.....	767	3451.....	201	3581.....	210	3653.....	191
3257.....	366	3365.....	767	3452.....	201	3582.....	210	3654.....	486
3259.....	366	3366.....	767	3453.....	200	3583.....	191	3655.....	478
3260.....	366	3382.....	217	3454.....	200	3584.....	214	3656.....	478
3262.....	366	3383.....	217	3455.....	200	3585.....	214	3657.....	478
3263.....	366	3384.....	217	3456.....	201	3586.....	214	3658.....	479
3265.....	366	3385.....	217	3457.....	203	3587.....	214	3659.....	476
3266.....	366	3386.....	217	3458.....	215	3588.....	214	3660.....	483
3268.....	366	3387.....	217	3459.....	215	3589.....	214	3661.....	483
3269.....	366	3388.....	217	3460.....	215	3590.....	214	3662.....	485
3271.....	366	3389.....	217	3461.....	215	3591.....	214	3663.....	497
3272.....	366	3390.....	217	3462.....	215	3592.....	214	3664.....	497
3274.....	367	3391.....	217	3463.....	215	3593.....	214	3665.....	495
3275.....	367	3392.....	217	3464.....	215	3594.....	214	3666.....	495
3277.....	367	3393.....	982	3465.....	215	3595.....	214	3667.....	497
3278.....	367	3394.....	982	3466.....	215	3596.....	588	3668.....	498
3280.....	367	3395.....	982	3469.....	838	3598.....	218	3669.....	494
3281.....	367	3396.....	982	3470.....	838	3600.....	309	3671.....	462
3283.....	367	3397.....	982	3471.....	838	3601.....	305	3672.....	466
3284.....	367	3398.....	982	3472.....	201	3602.....	305	3673.....	466
3285.....	332	3399.....	982	3478.....	213	3603.....	285	3674.....	465
3286.....	373	3400.....	1001	3479.....	213	3604.....	309	3675.....	467
3289.....	373	3401.....	1001	3480.....	213	3605.....	218	3676.....	467

Quick Number Index

Quick # Page

3677.....	500	3754.....	582	3857.....	416	4115.....	268	4943.....	266
3679.....	487	3755.....	582	3858.....	416	4117.....	270	4944.....	266
3680.....	499	3756.....	582	3859.....	416	4118.....	270	4945.....	266
3681.....	499	3757.....	582	3860.....	416	4119.....	268	4946.....	266
3682.....	215	3758.....	501	3864.....	418	4128.....	271	4947.....	267
3684.....	215	3759.....	501	3865.....	418	4129.....	271	4948.....	267
3685.....	198	3760.....	501	3866.....	418	4132.....	269	4949.....	266
3686.....	198	3764.....	761	3867.....	419	4134.....	269	4950.....	267
3687.....	194	3765.....	761	3868.....	419	4136.....	269	4951.....	266
3688.....	194	3766.....	761	3869.....	419	4138.....	269	4952.....	267
3689.....	769	3767.....	588	3870.....	416	4140.....	270	4990.....	266
3690.....	314	3768.....	589	3871.....	416	4150.....	271	4991.....	266
3691.....	314	3769.....	501	3872.....	419	4151.....	271	4992.....	266
3692.....	199	3770.....	501	3873.....	418	4152.....	271	4993.....	266
3693.....	199	3771.....	501	3874.....	226	4166.....	270	4994.....	266
3694.....	199	3776.....	1005	3875.....	226	4730.....	272	5001.....	764
3695.....	199	3777.....	1005	3876.....	226	4731.....	272	5002.....	764
3696.....	199	3778.....	223	3877.....	227	4732.....	272	5003.....	764
3697.....	216	3779.....	222	3878.....	227	4733.....	272	5004.....	764
3698.....	191	3780.....	222	3879.....	227	4734.....	272	5005.....	764
3699.....	191	3781.....	223	3880.....	225	4735.....	272	5006.....	764
3700.....	213	3782.....	223	3881.....	225	4736.....	272	5007.....	764
3701.....	213	3783.....	223	3882.....	225	4737.....	272	5008.....	764
3702.....	213	3784.....	223	3883.....	224	4738.....	272	5009.....	764
3703.....	582	3785.....	223	3886.....	37	4739.....	272	5010.....	764
3704.....	582	3786.....	223	3887.....	37	4740.....	272	5011.....	764
3705.....	582	3787.....	222	3888.....	467	4741.....	272	5012.....	764
3706.....	582	3788.....	222	3889.....	467	4742.....	272	5013.....	34
3707.....	582	3789.....	222	3890.....	469	4743.....	272	5014.....	32
3708.....	582	3790.....	281	3891.....	468	4744.....	272	5015.....	32
3709.....	582	3791.....	281	3892.....	744	4745.....	272	5023.....	862
3710.....	471	3792.....	490	3893.....	484	4750.....	273	5024.....	861
3711.....	475	3793.....	491	3894.....	482	4751.....	273	5025.....	862
3712.....	475	3794.....	490	3895.....	529	4752.....	273	5026.....	866
3713.....	471	3795.....	222	3896.....	529	4753.....	273	5027.....	865
3714.....	474	3796.....	222	3897.....	199	4760.....	274	5028.....	866
3715.....	474	3797.....	222	3898.....	200	4761.....	274	5029.....	878
3716.....	473	3798.....	223	3899.....	200	4762.....	274	5030.....	872
3717.....	464	3799.....	491	3900.....	745	4763.....	274	5031.....	874
3718.....	463	3800.....	491	3903.....	190	4770.....	275	5032.....	889
3719.....	479	3804.....	760	3904.....	190	4771.....	275	5033.....	882
3720.....	479	3805.....	1005	3905.....	190	4772.....	275	5034.....	884
3721.....	481	3806.....	1005	3906.....	190	4773.....	275	5035.....	25
3722.....	481	3809.....	1005	3907.....	190	4780.....	276	5036.....	25
3723.....	470	3814.....	760	3908.....	190	4781.....	276	5037.....	27
3724.....	471	3815.....	17	3911.....	191	4782.....	276	5038.....	27
3725.....	463	3816.....	17	3912.....	191	4911.....	267	5039.....	30
3726.....	486	3817.....	19	3915.....	190	4912.....	267	5040.....	30
3727.....	497	3818.....	19	3916.....	190	4913.....	267	5041.....	829
3728.....	522	3819.....	490	3918.....	480	4914.....	267	5042.....	829
3731.....	522	3824.....	760	3919.....	480	4918.....	267	5043.....	829
3732.....	522	3825.....	588	3920.....	482	4919.....	266	5045.....	829
3735.....	216	3826.....	580	3921.....	523	4920.....	467	5046.....	829
3736.....	216	3827.....	582	3922.....	525	4925.....	266	5059.....	30
3737.....	216	3831.....	21	3923.....	525	4926.....	266	5060.....	30
3738.....	216	3832.....	21	3924.....	527	4927.....	266	5073.....	1027
3739.....	466	3833.....	52	3925.....	527	4929.....	266	5074.....	958
3740.....	466	3834.....	52	3926.....	527	4930.....	266	5075.....	958
3741.....	472	3835.....	52	3927.....	527	4931.....	266	5076.....	958
3742.....	475	3836.....	33	3928.....	772	4931.....	267	5077.....	959
3743.....	475	3837.....	33	3929.....	772	4932.....	266	5078.....	959
3745.....	580	3843.....	35	3930.....	772	4933.....	266	5079.....	959
3746.....	580	3844.....	35	3931.....	772	4934.....	267	5080.....	959
3747.....	580	3845.....	66	3932.....	772	4935.....	267	5081.....	959
3748.....	580	3846.....	193	3935.....	487	4937.....	267	5089.....	958
3749.....	580	3852.....	529	4015.....	268	4938.....	267	5090.....	755
3750.....	580	3853.....	193	4016.....	268	4939.....	266	5091.....	338
3751.....	582	3854.....	193	4112.....	270	4940.....	266	5092.....	338
3752.....	582	3855.....	416	4113.....	268	4941.....	266	5093.....	338
3753.....	582	3856.....	416	4114.....	268	4942.....	266	5094.....	338

Quick Number Index

Quick # Page #

5095.....	338	5170.....	404	5346.....	32	5476.....	976	5554.....	1051
5096.....	338	5171.....	404	5347.....	312	5477.....	976	5555.....	1051
5097.....	339	5172.....	404	5347.....	529	5479.....	282	5556.....	1051
5098.....	339	5173.....	347	5348.....	960	5480.....	282	5557.....	1051
5099.....	339	5176.....	869	5349.....	960	5481.....	282	5558.....	1051
5100.....	339	5176.....	961	5350.....	847	5482.....	282	5559.....	1051
5101.....	339	5177.....	872	5377.....	577	5483.....	282	5560.....	1051
5102.....	338	5178.....	373	5378.....	577	5484.....	282	5561.....	1047
5103.....	338	5179.....	373	5379.....	577	5485.....	282	5562.....	1047
5104.....	338	5180.....	373	5380.....	577	5486.....	282	5563.....	1047
5105.....	338	5181.....	407	5381.....	577	5488.....	416	5564.....	1047
5106.....	339	5182.....	373	5382.....	577	5490.....	417	5565.....	1047
5107.....	339	5183.....	373	5383.....	577	5491.....	418	5566.....	1047
5108.....	339	5203.....	407	5384.....	577	5492.....	418	5567.....	1047
5109.....	339	5204.....	407	5385.....	577	5497.....	1004	5568.....	1047
5110.....	339	5205.....	407	5386.....	577	5498.....	1004	5569.....	1047
5111.....	344	5206.....	407	5387.....	577	5500.....	401	5570.....	1047
5112.....	344	5213.....	1067	5388.....	577	5501.....	1047	5571.....	1047
5113.....	344	5214.....	1067	5389.....	577	5502.....	1047	5572.....	1047
5114.....	344	5215.....	853	5390.....	577	5503.....	1047	5573.....	1047
5115.....	342	5216.....	853	5391.....	577	5504.....	1047	5574.....	1047
5116.....	342	5217.....	853	5392.....	577	5505.....	1047	5575.....	1048
5117.....	342	5228.....	402	5393.....	577	5506.....	1047	5576.....	1048
5118.....	342	5229.....	402	5394.....	577	5507.....	1047	5577.....	1048
5119.....	342	5230.....	402	5395.....	577	5508.....	1047	5578.....	1048
5120.....	342	5231.....	402	5396.....	577	5509.....	1047	5579.....	1048
5121.....	343	5232.....	403	5397.....	577	5510.....	1047	5580.....	1048
5122.....	343	5233.....	403	5398.....	577	5511.....	1047	5581.....	1048
5123.....	343	5234.....	403	5399.....	401	5512.....	1047	5582.....	1048
5124.....	340	5235.....	1022	5413.....	945	5513.....	1047	5583.....	1048
5125.....	340	5236.....	1022	5413.....	954	5514.....	1047	5584.....	1048
5126.....	340	5237.....	1022	5414.....	517	5515.....	1048	5585.....	1048
5127.....	340	5238.....	1022	5415.....	511	5516.....	1048	5586.....	1048
5128.....	341	5239.....	244	5416.....	330	5517.....	1048	5587.....	1048
5129.....	341	5240.....	244	5417.....	330	5518.....	1048	5588.....	1049
5130.....	341	5259.....	928	5418.....	330	5519.....	1048	5589.....	1049
5131.....	341	5261.....	578	5419.....	330	5520.....	1048	5590.....	1049
5135.....	347	5262.....	578	5420.....	330	5521.....	1048	5591.....	1049
5138.....	344	5263.....	578	5421.....	331	5522.....	1048	5592.....	1049
5139.....	344	5264.....	578	5422.....	331	5523.....	1048	5593.....	1049
5140.....	344	5265.....	578	5423.....	331	5524.....	1048	5594.....	1049
5141.....	344	5266.....	578	5424.....	331	5525.....	1048	5595.....	1049
5142.....	762	5267.....	578	5430.....	1004	5526.....	1048	5596.....	1049
5143.....	762	5268.....	578	5431.....	333	5527.....	1048	5597.....	1049
5144.....	762	5269.....	578	5432.....	333	5528.....	1048	5598.....	1049
5145.....	762	5270.....	401	5432.....	373	5529.....	1048	5599.....	1049
5146.....	762	5271.....	401	5433.....	333	5530.....	1049	5600.....	1050
5147.....	762	5272.....	755	5434.....	332	5531.....	1049	5601.....	1050
5148.....	762	5273.....	754	5435.....	332	5532.....	1049	5602.....	1050
5149.....	762	5274.....	755	5438.....	332	5533.....	1049	5603.....	1050
5150.....	762	5275.....	401	5439.....	332	5534.....	1049	5604.....	1050
5151.....	762	5276.....	401	5440.....	332	5535.....	1049	5605.....	1050
5152.....	762	5287.....	987	5441.....	332	5536.....	1049	5606.....	1050
5153.....	762	5304.....	960	5442.....	328	5537.....	1049	5607.....	1047
5154.....	762	5305.....	960	5443.....	328	5538.....	1049	5608.....	1048
5155.....	762	5306.....	960	5444.....	283	5539.....	1049	5609.....	1050
5156.....	762	5307.....	960	5448.....	423	5540.....	1050	5610.....	1051
5157.....	357	5308.....	993	5452.....	412	5541.....	1050	5611.....	1050
5158.....	405	5309.....	534	5453.....	412	5542.....	1050	5612.....	1051
5159.....	405	5310.....	534	5454.....	412	5543.....	1050	5613.....	1051
5160.....	405	5311.....	534	5455.....	412	5544.....	1050	5616.....	905
5161.....	405	5315.....	357	5457.....	413	5545.....	1050	5617.....	905
5162.....	406	5316.....	357	5459.....	414	5546.....	1050	5619.....	905
5163.....	406	5317.....	530	5463.....	412	5547.....	1050	5620.....	905
5164.....	406	5318.....	530	5464.....	357	5548.....	1050	5623.....	905
5165.....	406	5319.....	530	5465.....	458	5549.....	1050	5624.....	905
5166.....	406	5320.....	540	5466.....	459	5550.....	1050	5625.....	905
5167.....	406	5343.....	32	5467.....	1055	5551.....	1050	5626.....	905
5168.....	406	5344.....	32	5468.....	1055	5552.....	1050	5627.....	84
5169.....	404	5345.....	32	5469.....	1050	5553.....	1051	5628.....	910

Quick Number Index

Quick # Page

5639.....	346	5710.....	254	5789.....	386	5877.....	250	6020.....	234
5640.....	346	5711.....	254	5791.....	386	5878.....	88	6021.....	234
5641.....	346	5712.....	254	5792.....	386	5879.....	88	6022.....	234
5642.....	348	5713.....	254	5794.....	387	5880.....	88	6023.....	234
5643.....	348	5714.....	254	5795.....	387	5881.....	88	6024.....	234
5644.....	348	5715.....	254	5797.....	387	5882.....	976	6025.....	234
5645.....	349	5716.....	254	5798.....	387	5883.....	406	6026.....	234
5646.....	349	5717.....	254	5800.....	387	5884.....	637	6027.....	234
5647.....	349	5718.....	254	5801.....	387	5886.....	637	6028.....	234
5648.....	349	5719.....	254	5803.....	388	5888.....	637	6029.....	234
5650.....	538	5720.....	254	5804.....	388	5890.....	637	6030.....	234
5651.....	235	5721.....	252	5806.....	388	5892.....	649	6031.....	234
5652.....	235	5722.....	252	5807.....	388	5894.....	649	6032.....	234
5653.....	235	5723.....	252	5809.....	388	5896.....	649	6033.....	231
5654.....	235	5724.....	252	5810.....	388	5898.....	649	6034.....	231
5655.....	238	5725.....	252	5812.....	388	5948.....	354	6035.....	231
5656.....	238	5726.....	252	5813.....	388	5949.....	354	6036.....	231
5657.....	238	5727.....	252	5815.....	389	5966.....	352	6037.....	231
5658.....	239	5728.....	252	5816.....	389	5967.....	352	6038.....	231
5659.....	239	5729.....	252	5818.....	389	5968.....	90	6039.....	231
5660.....	239	5730.....	252	5819.....	389	5969.....	90	6040.....	231
5661.....	239	5731.....	256	5821.....	390	5970.....	90	6054.....	231
5662.....	239	5732.....	256	5822.....	390	5971.....	352	6055.....	231
5663.....	239	5733.....	256	5823.....	390	5972.....	352	6058.....	234
5664.....	239	5734.....	256	5824.....	390	5973.....	353	6059.....	234
5665.....	239	5735.....	256	5825.....	390	5974.....	353	6066.....	233
5666.....	244	5736.....	256	5826.....	390	5975.....	353	6067.....	233
5667.....	244	5737.....	256	5827.....	390	5976.....	354	6069.....	58
5668.....	244	5738.....	256	5828.....	390	5977.....	354	6070.....	32
5669.....	244	5739.....	256	5829.....	390	5978.....	355	6071.....	32
5670.....	244	5748.....	258	5830.....	390	5979.....	355	6072.....	231
5671.....	244	5749.....	258	5831.....	1057	5980.....	355	6073.....	231
5672.....	244	5750.....	258	5832.....	233	5981.....	355	6074.....	231
5673.....	244	5751.....	258	5833.....	233	5982.....	357	6075.....	90
5674.....	244	5752.....	258	5834.....	233	5983.....	357	6076.....	61
5675.....	244	5753.....	258	5835.....	233	5984.....	357	6078.....	74
5676.....	244	5754.....	259	5836.....	48	5985.....	357	6079.....	75
5677.....	244	5755.....	259	5837.....	48	5986.....	357	6080.....	83
5678.....	245	5756.....	259	5840.....	506	5987.....	357	6081.....	83
5679.....	245	5757.....	260	5841.....	506	5988.....	326	6082.....	83
5680.....	245	5758.....	260	5842.....	262	5989.....	326	6083.....	241
5681.....	245	5759.....	260	5843.....	262	5990.....	977	6084.....	231
5682.....	245	5760.....	261	5844.....	262	5991.....	977	6085.....	860
5683.....	245	5761.....	261	5850.....	247	5992.....	977	6086.....	864
5684.....	245	5762.....	261	5851.....	239	5993.....	262	6087.....	880
5685.....	245	5763.....	261	5852.....	242	5994.....	262	6088.....	234
5686.....	245	5764.....	261	5853.....	242	5995.....	262	6089.....	234
5687.....	245	5765.....	260	5854.....	242	5996.....	58	6090.....	234
5688.....	246	5766.....	260	5855.....	240	5997.....	59	6100.....	461
5689.....	246	5767.....	260	5856.....	240	5998.....	60	6125.....	461
5690.....	246	5768.....	1057	5857.....	240	5999.....	61	6126.....	818
5691.....	246	5769.....	1056	5858.....	241	6001.....	230	6126.....	1003
5692.....	246	5770.....	1056	5859.....	241	6002.....	230	6155.....	818
5693.....	247	5771.....	1057	5860.....	241	6003.....	230	6156.....	818
5694.....	247	5772.....	70	5861.....	240	6004.....	230	6157.....	818
5695.....	247	5773.....	70	5862.....	240	6005.....	230	6158.....	818
5696.....	247	5774.....	70	5863.....	240	6006.....	230	6159.....	818
5697.....	248	5775.....	70	5864.....	241	6007.....	230	6160.....	818
5698.....	248	5776.....	71	5865.....	243	6008.....	230	6161.....	818
5699.....	248	5777.....	72	5866.....	253	6009.....	230	6162.....	818
5700.....	249	5778.....	72	5867.....	253	6010.....	230	6163.....	818
5701.....	249	5779.....	72	5868.....	253	6011.....	230	6164.....	818
5702.....	249	5780.....	72	5869.....	253	6012.....	230	6165.....	818
5703.....	249	5781.....	73	5870.....	253	6013.....	230	6166.....	818
5704.....	249	5782.....	1069	5871.....	253	6014.....	230	6167.....	818
5705.....	254	5783.....	1069	5872.....	254	6015.....	230	6168.....	818
5706.....	254	5784.....	1069	5873.....	248	6016.....	230	6169.....	818
5707.....	254	5785.....	386	5874.....	250	6017.....	230	6170.....	818
5708.....	254	5786.....	386	5875.....	250	6018.....	230	6171.....	734
5709.....	254	5788.....	386	5876.....	250	6019.....	234	6172.....	734

Quick Number Index

Quick # Page #

6173.....	734	6329.....	630	6572.....	798	6686.....	988	6802.....	555
6233.....	709	6330.....	630	6573.....	798	6687.....	988	6805.....	555
6234.....	709	6331.....	630	6574.....	798	6688.....	988	6806.....	555
6235.....	709	6332.....	630	6575.....	798	6689.....	560	6811.....	298
6236.....	709	6333.....	630	6576.....	798	6690.....	560	6812.....	298
6237.....	709	6334.....	630	6577.....	798	6691.....	904	6813.....	298
6238.....	709	6335.....	630	6578.....	441	6692.....	711	6814.....	298
6239.....	710	6336.....	630	6579.....	780	6693.....	904	6815.....	298
6240.....	710	6337.....	644	6580.....	781	6694.....	550	6816.....	298
6241.....	710	6338.....	644	6581.....	779	6695.....	550	6817.....	298
6242.....	710	6339.....	644	6582.....	779	6696.....	550	6818.....	298
6243.....	710	6340.....	644	6583.....	779	6697.....	550	6819.....	292
6244.....	711	6341.....	644	6584.....	780	6698.....	550	6820.....	292
6245.....	711	6342.....	644	6585.....	780	6699.....	550	6825.....	288
6246.....	711	6343.....	644	6586.....	781	6700.....	550	6826.....	288
6247.....	711	6344.....	644	6587.....	781	6705.....	799	6827.....	288
6250.....	692	6345.....	644	6591.....	1003	6727.....	296	6828.....	288
6251.....	692	6346.....	644	6594.....	511	6729.....	296	6829.....	288
6252.....	692	6347.....	644	6595.....	510	6731.....	296	6830.....	288
6253.....	692	6348.....	644	6596.....	517	6732.....	296	6831.....	572
6254.....	692	6356.....	1002	6597.....	516	6734.....	296	6832.....	572
6255.....	692	6357.....	1002	6598.....	506	6735.....	296	6833.....	574
6256.....	692	6359.....	799	6599.....	506	6736.....	459	6834.....	574
6257.....	692	6362.....	844	6600.....	1002	6737.....	988	6835.....	572
6264.....	806	6363.....	844	6601.....	1002	6738.....	988	6836.....	572
6265.....	806	6364.....	844	6602.....	286	6739.....	988	6837.....	574
6266.....	808	6365.....	844	6603.....	286	6740.....	554	6838.....	574
6267.....	806	6366.....	844	6604.....	286	6741.....	554	6839.....	572
6268.....	808	6367.....	844	6605.....	286	6742.....	554	6840.....	572
6273.....	1003	6368.....	844	6606.....	286	6743.....	33	6841.....	574
6274.....	1003	6369.....	844	6607.....	286	6744.....	296	6842.....	574
6277.....	1002	6370.....	836	6616.....	529	6745.....	296	6843.....	572
6278.....	1002	6371.....	836	6619.....	799	6746.....	239	6844.....	572
6282.....	1002	6372.....	836	6620.....	799	6747.....	238	6845.....	574
6284.....	732	6373.....	836	6621.....	799	6753.....	988	6846.....	574
6285.....	732	6375.....	459	6622.....	799	6754.....	988	6847.....	572
6286.....	732	6378.....	661	6623.....	799	6755.....	988	6848.....	572
6287.....	719	6379.....	833	6624.....	799	6756.....	530	6849.....	574
6288.....	719	6380.....	833	6625.....	457	6757.....	530	6850.....	574
6289.....	719	6381.....	833	6626.....	457	6758.....	530	6851.....	572
6290.....	719	6382.....	833	6627.....	799	6759.....	584	6852.....	572
6291.....	719	6396.....	832	6628.....	799	6760.....	676	6853.....	574
6292.....	719	6398.....	542	6636.....	564	6761.....	676	6854.....	574
6293.....	719	6400.....	837	6637.....	564	6762.....	676	6855.....	572
6294.....	719	6401.....	837	6638.....	564	6763.....	676	6856.....	572
6295.....	794	6407.....	542	6639.....	564	6764.....	676	6857.....	574
6296.....	794	6408.....	542	6640.....	564	6765.....	690	6858.....	574
6297.....	794	6409.....	542	6641.....	564	6766.....	690	6859.....	572
6298.....	794	6410.....	542	6642.....	564	6767.....	690	6860.....	572
6299.....	794	6421.....	839	6643.....	564	6768.....	690	6861.....	574
6300.....	794	6422.....	23	6645.....	799	6769.....	690	6862.....	574
6301.....	794	6423.....	23	6647.....	534	6770.....	690	6863.....	572
6302.....	794	6455.....	1003	6648.....	530	6771.....	738	6864.....	572
6303.....	794	6456.....	1003	6652.....	436	6772.....	738	6865.....	574
6304.....	794	6457.....	1003	6653.....	437	6780.....	654	6866.....	574
6305.....	794	6458.....	461	6654.....	519	6781.....	654	6867.....	573
6306.....	794	6459.....	461	6655.....	518	6782.....	654	6868.....	573
6307.....	794	6461.....	992	6656.....	519	6783.....	654	6869.....	575
6308.....	794	6473.....	434	6657.....	518	6784.....	630	6870.....	575
6309.....	794	6475.....	774	6658.....	455	6785.....	630	6871.....	573
6310.....	794	6476.....	794	6659.....	455	6790.....	804	6872.....	573
6311.....	794	6509.....	799	6660.....	455	6791.....	804	6873.....	575
6312.....	794	6545.....	59	6661.....	455	6792.....	804	6874.....	575
6313.....	794	6546.....	60	6662.....	290	6793.....	804	6875.....	572
6314.....	794	6553.....	441	6665.....	290	6794.....	804	6876.....	572
6315.....	794	6554.....	441	6668.....	290	6795.....	804	6877.....	574
6325.....	630	6555.....	441	6671.....	290	6796.....	804	6878.....	574
6326.....	630	6558.....	808	6674.....	290	6797.....	555	6879.....	572
6327.....	630	6565.....	794	6677.....	290	6798.....	555	6880.....	572
6328.....	630	6571.....	798	6685.....	988	6801.....	555	6881.....	574

Quick Number Index

Quick # Page

6882.....	574	6953.....	294	7135.....	312	7209.....	756	7294.....	257
6883.....	572	6954.....	294	7136.....	312	7210.....	756	7295.....	257
6884.....	572	6955.....	294	7137.....	312	7211.....	748	7296.....	257
6885.....	574	6956.....	294	7138.....	728	7212.....	748	7297.....	257
6886.....	574	6957.....	245	7139.....	728	7213.....	748	7298.....	257
6887.....	572	6958.....	245	7140.....	728	7214.....	748	7299.....	257
6888.....	572	6959.....	245	7141.....	728	7215.....	748	7301.....	910
6889.....	574	6960.....	245	7142.....	728	7216.....	519	7303.....	48
6890.....	574	6961.....	912	7143.....	728	7217.....	529	7304.....	577
6891.....	572	6962.....	912	7144.....	728	7218.....	529	7305.....	577
6892.....	572	6963.....	912	7145.....	728	7219.....	529	7306.....	690
6893.....	574	6964.....	914	7146.....	726	7220.....	248	7307.....	529
6894.....	574	6965.....	914	7147.....	726	7221.....	572	7308.....	529
6895.....	572	6966.....	914	7148.....	726	7222.....	572	7309.....	529
6896.....	572	6967.....	916	7149.....	726	7223.....	574	7310.....	529
6897.....	574	6968.....	916	7150.....	726	7224.....	574	7311.....	39
6898.....	574	6969.....	916	7151.....	726	7225.....	573	7312.....	39
6899.....	572	6970.....	919	7152.....	726	7226.....	573	7315.....	244
6900.....	572	6971.....	919	7153.....	727	7227.....	575	7316.....	244
6901.....	574	6972.....	919	7154.....	727	7228.....	575	7317.....	628
6902.....	574	6973.....	316	7155.....	727	7229.....	572	7318.....	628
6903.....	572	6974.....	316	7156.....	727	7230.....	572	7319.....	628
6904.....	572	6975.....	316	7157.....	727	7231.....	574	7320.....	628
6905.....	574	6976.....	316	7158.....	727	7232.....	574	7321.....	685
6906.....	574	6983.....	577	7160.....	984	7233.....	573	7322.....	685
6907.....	572	6984.....	577	7161.....	984	7234.....	573	7323.....	685
6908.....	572	6985.....	577	7164.....	720	7235.....	575	7324.....	660
6909.....	574	6986.....	54	7165.....	720	7236.....	575	7325.....	660
6910.....	574	6987.....	55	7166.....	720	7249.....	436	7326.....	660
6911.....	573	6988.....	431	7167.....	720	7250.....	439	7327.....	660
6912.....	573	6989.....	600	7168.....	720	7251.....	563	7328.....	731
6913.....	575	6990.....	600	7169.....	720	7252.....	290	7329.....	731
6914.....	575	6991.....	600	7170.....	720	7253.....	290	7330.....	731
6915.....	573	6992.....	614	7171.....	720	7254.....	292	7331.....	618
6916.....	573	6993.....	614	7172.....	722	7255.....	292	7332.....	618
6917.....	575	6994.....	614	7173.....	722	7256.....	292	7333.....	618
6918.....	575	6995.....	616	7174.....	722	7257.....	292	7334.....	618
6919.....	576	6996.....	616	7175.....	722	7258.....	29	7335.....	984
6920.....	576	6997.....	616	7176.....	720	7259.....	29	7336.....	984
6921.....	576	6999.....	431	7177.....	720	7260.....	606	7337.....	984
6922.....	576	7100.....	515	7178.....	720	7261.....	606	7338.....	984
6923.....	576	7101.....	515	7179.....	720	7262.....	606	7339.....	420
6924.....	576	7102.....	514	7180.....	724	7263.....	608	7340.....	420
6925.....	576	7103.....	514	7181.....	724	7264.....	608	7341.....	421
6926.....	576	7104.....	530	7182.....	724	7265.....	608	7342.....	421
6927.....	576	7105.....	236	7183.....	724	7266.....	602	7343.....	421
6928.....	576	7106.....	236	7184.....	724	7267.....	602	7344.....	905
6929.....	576	7107.....	237	7185.....	724	7268.....	602	7345.....	905
6930.....	576	7108.....	237	7186.....	724	7269.....	604	7346.....	252
6931.....	576	7109.....	255	7187.....	725	7270.....	604	7347.....	577
6932.....	576	7110.....	255	7188.....	725	7271.....	604	7348.....	577
6933.....	576	7111.....	255	7189.....	725	7272.....	662	7349.....	612
6934.....	576	7112.....	255	7190.....	725	7273.....	662	7350.....	612
6935.....	576	7113.....	38	7191.....	725	7274.....	662	7355.....	612
6936.....	576	7114.....	39	7192.....	725	7275.....	662	7356.....	612
6937.....	576	7116.....	435	7193.....	725	7276.....	662	7357.....	451
6938.....	576	7117.....	515	7194.....	725	7277.....	662	7359.....	529
6939.....	696	7118.....	440	7195.....	747	7278.....	662	7360.....	529
6940.....	696	7119.....	438	7196.....	756	7279.....	662	7361.....	529
6941.....	696	7120.....	528	7197.....	756	7280.....	442	7362.....	506
6942.....	696	7121.....	528	7198.....	756	7281.....	756	7363.....	506
6943.....	565	7122.....	528	7199.....	584	7284.....	984	7364.....	506
6944.....	565	7126.....	738	7200.....	756	7285.....	984	7365.....	506
6945.....	565	7127.....	453	7201.....	756	7286.....	910	7366.....	563
6946.....	565	7128.....	560	7202.....	292	7287.....	431	7367.....	251
6947.....	565	7129.....	560	7203.....	292	7288.....	257	7368.....	251
6948.....	565	7130.....	560	7204.....	292	7289.....	257	7369.....	251
6949.....	565	7131.....	1016	7205.....	292	7290.....	257	7370.....	584
6950.....	565	7132.....	746	7206.....	292	7291.....	257	7371.....	868
6951.....	294	7133.....	746	7207.....	292	7292.....	257	7372.....	612
6952.....	294	7134.....	746	7208.....	756	7293.....	257	7373.....	442

Quick Number Index

Quick # Page #

7380.....	36	7463.....	637	7598.....	654	7698.....	984	8152.....	116
7381.....	36	7464.....	637	7599.....	654	7699.....	984	8153.....	116
7382.....	36	7465.....	637	7600.....	116	7700.....	433	8154.....	116
7383.....	590	7466.....	649	7601.....	116	7701.....	433	8155.....	116
7384.....	586	7467.....	649	7602.....	116	7702.....	433	8156.....	116
7385.....	586	7468.....	649	7603.....	116	7707.....	1002	8201.....	156
7386.....	586	7469.....	649	7604.....	116	7708.....	1002	8202.....	158
7392.....	663	7472.....	555	7605.....	988	7709.....	1002	8203.....	160
7393.....	663	7473.....	555	7606.....	988	7710.....	1002	8204.....	154
7395.....	663	7474.....	555	7607.....	30	7712.....	984	8210.....	140
7396.....	663	7475.....	555	7608.....	30	7713.....	984	8211.....	138
7397.....	663	7476.....	555	7611.....	239	7714.....	984	8213.....	141
7398.....	663	7477.....	555	7613.....	246	7715.....	985	8220.....	120
7399.....	663	7478.....	586	7614.....	246	8001.....	150	8221.....	120
7400.....	663	7479.....	586	7615.....	244	8002.....	146	8222.....	122
7401.....	985	7480.....	1058	7616.....	244	8003.....	177	8223.....	123
7402.....	995	7481.....	1058	7617.....	254	8005.....	128	8224.....	120
7403.....	995	7482.....	1059	7618.....	231	8006.....	148	8225.....	120
7404.....	995	7483.....	1059	7622.....	443	8010.....	152	8230.....	120
7405.....	997	7484.....	439	7623.....	751	8011.....	134	8231.....	182
7406.....	997	7485.....	451	7625.....	978	8015.....	179	8233.....	182
7407.....	540	7486.....	590	7626.....	978	8016.....	178	8234.....	182
7408.....	610	7518.....	451	7627.....	439	8017.....	127	8235.....	182
7409.....	572	7519.....	439	7628.....	529	8018.....	127	8236.....	182
7410.....	572	7520.....	586	7629.....	529	8021.....	178	8237.....	120
7411.....	574	7521.....	978	7630.....	529	8057.....	125	8240.....	157
7412.....	574	7522.....	978	7637.....	987	8058.....	124	8241.....	159
7413.....	572	7523.....	978	7638.....	987	8067.....	1017	8243.....	140
7414.....	572	7524.....	978	7639.....	451	8068.....	1017	8251.....	176
7415.....	574	7525.....	978	7640.....	451	8069.....	1017	8252.....	176
7416.....	574	7526.....	978	7641.....	451	8070.....	172	8253.....	176
7417.....	300	7527.....	985	7642.....	451	8071.....	174	8270.....	139
7418.....	300	7528.....	540	7648.....	77	8079.....	181	8271.....	139
7419.....	300	7550.....	449	7649.....	77	8080.....	172	8278.....	161
7420.....	300	7551.....	448	7650.....	981	8081.....	181	8280.....	168
7421.....	302	7552.....	447	7651.....	676	8082.....	181	8281.....	168
7422.....	302	7553.....	450	7652.....	676	8082.....	984	8282.....	168
7423.....	302	7555.....	445	7653.....	676	8084.....	181	8283.....	168
7424.....	302	7556.....	446	7654.....	676	8085.....	181	8290.....	161
7425.....	300	7563.....	51	7655.....	676	8086.....	181	8291.....	161
7426.....	300	7564.....	51	7656.....	676	8087.....	181	8292.....	161
7427.....	300	7565.....	51	7657.....	676	8088.....	181	8293.....	161
7428.....	300	7566.....	51	7658.....	676	8089.....	181	8294.....	161
7429.....	302	7567.....	51	7662.....	452	8090.....	142	8295.....	155
7430.....	302	7568.....	76	7663.....	529	8091.....	1017	8296.....	155
7431.....	302	7569.....	76	7664.....	241	8093.....	114	8297.....	155
7432.....	302	7570.....	76	7665.....	242	8094.....	114	8301.....	170
7433.....	532	7571.....	528	7666.....	242	8095.....	114	8302.....	170
7434.....	532	7572.....	528	7667.....	242	8096.....	114	8901.....	184
7435.....	126	7573.....	528	7668.....	243	8097.....	114	8902.....	184
7436.....	288	7574.....	513	7669.....	240	8098.....	116	8910.....	185
7437.....	288	7575.....	513	7670.....	240	8101.....	180	8911.....	185
7438.....	577	7576.....	512	7671.....	240	8102.....	180	8912.....	185
7439.....	577	7577.....	513	7672.....	240	8103.....	180	8913.....	185
7440.....	1002	7578.....	512	7673.....	240	8104.....	180	8920.....	184
7445.....	774	7579.....	750	7674.....	240	8105.....	180	8921.....	184
7446.....	749	7580.....	786	7675.....	241	8111.....	164	8930.....	185
7447.....	262	7581.....	786	7676.....	241	8112.....	164	8931.....	185
7448.....	262	7582.....	786	7677.....	241	8113.....	164	8932.....	185
7449.....	262	7583.....	786	7678.....	247	8114.....	164	8933.....	185
7450.....	262	7588.....	1002	7679.....	247	8115.....	164	8940.....	184
7451.....	540	7589.....	1002	7680.....	247	8116.....	164	8941.....	184
7452.....	590	7590.....	1002	7681.....	246	8117.....	165	8942.....	184
7453.....	315	7591.....	1002	7682.....	246	8118.....	165	9027.....	962
7454.....	315	7592.....	451	7683.....	181	8119.....	165	9028.....	962
7455.....	315	7593.....	254	7684.....	181	8120.....	165	9029.....	962
7456.....	30	7594.....	787	7685.....	181	8121.....	165	9030.....	962
7457.....	30	7595.....	787	7686.....	181	8122.....	165	9054.....	263
7461.....	442	7596.....	654	7693.....	654	8150.....	116		
7462.....	637	7597.....	654	7694.....	654	8151.....	116		

Part Number Index

Part #	Page #		Page #		Page #
1-450-23-08	529	ANFE14N	526	CFGM8908CF8903010	181
15B-DD-10	354	ANFE14N-P	527	CFGM8908CF8904010	181
15B-DD-15	354	ANFE20N	526	CFGM800300	984
15B-DD-20	354	ANFE20N-P	527	CFGM800325P	984
15B-DD-25	354	ANFE30N	526	CFGM800400	984
15B-DD-30	355	ANFE30N-P	527	CFGM890325P	984
15B-DD-35	355	ANS14N	526	CFGM890802P	181
15B-DD-40	355	ANS14N-P	526	CFGM1200800	181
15B-DD-50	355	ANS-14-PA-K	527	CFGM1200850P	181
15B-DD-70	355	ANS-14-PA-K-EP	527	CFGM1200850P	984
25B-DD-10	352	ANS20N	526	CFSM890325	693
25B-DD-15	352	ANS20N-P	526	CFSM890325	717
25B-DD-20	352	ANS-20-PA-K	527	CFSM890325	1003
25B-DD-30	352	ANS-20-PA-K-EP	527	CMAQC	114
25B-DD-35	353	ANS30N	526	CMBQC	114
25B-DD-40	353	ANS30N-P	526	CMD04-1	1027
25B-DD-50	353	ANSE14N	526	CMD06-1	1027
25B-DD-70	353	ANSE14N-P	526	CMD06-2	1027
25B-DDBL-25	350	ANSE20N	526	CMD08-2	1027
25B-DDBL-35	350	ANSE20N-P	526	CMD10-2	1027
25B-DDBL-45	351	ANSE30N	526	CMD12-2	1027
25B-DDBL-55	351	ANSE30N-P	526	CMGM8CFGM8X2Y	985
107-M5	1068	ASZ-HP-10	939	CMGM800300	984
376Y234-10	910	ASZ-HP-20	939	CMGM800400	984
3D-V	132	ASZ-HP-30	939	CMGM800803P	181
270449	987	ASZ-KA20	838	CMGM1200800	181
AA-21-DR	455	ASZ-KA30	838	CMGM1290800	181
AA-21-DR-NO	455	ASZ-KA50	838	COJ05	860
AA-21-LD	455	ASZ-KS10	832	COJ12	864
AA-21-LD-NO	455	ASZ-KS20	832	COJ30	880
AA-35	457	ASZ-KS30	832	CP-100-G8	1067
AA-35-NO	457	ASZ-KS50	832	CP-100-M16	1067
AAE-14	469	AV01M5F08	390	CRA-CMK-1	179
AAE-20	468	AV01M5M08	390	CRA-FR-R14-1	163
ADK25/25X	191	AV0114F16	390	CRA-JSY1-P3Z-1	163
ADK40/40J	191	AV0114M16	390	CRA-JSY1-P3Z-2	163
ADK50/25X	191	AV0118F12	390	CRA-MCRT-B	180
ADK80/40J	191	AV0118F13	390	CRA-SVK-1	178
ADK-L-18-10	191	AV0118F16	390	CRA-VGK-1	178
ADK-L-18-18	191	AV0118M12	390	CRC-650-3P	181
ADK-X-25-10	191	AV0118M13	390	CRC-750-3P	181
ADK-X-25-18	191	AV0118M16	390	CRC-1000-3P	181
ADP-1000	191	AVA1/4a-16-6	769	CRG-PSG-3S-G18M	172
ADZ14-12	766	AVA1/4a-16-8	769	CRG-PSG30-3S-G18M	172
ADZ20-30	766	AVA1/8a-16-6	769	CRG-PSG50-2S-G18M	174
ADZ20-32	766	AVA1/8a-16-8	769	CRK-DH4410-D90-A	164
ADZ30-32	766	AVI1/4i-16-8	769	CRK-DH4410-D180-A	164
AF05M05M	258	AVI1/8i-16-5	769	CRK-DH4410-S180-A	164
AF05M05M	1069	AVI1/8i-16-8	769	CRK-DH4420-D90-A	164
AF10G18M	436	AVI5i-8-3	769	CRK-DH4420-D180-A	164
AF12F16M	577	AVI5i-8-5	769	CRK-DH4420-S180-A	164
AF14M14M	258	BB-12-NO	441	CRK-MAG40-A	177
AF14M14M	1069	BB-13-NO	441	CRK-MPK1-A	128
AF17F25M	577	BB-13-OO	441	CRK-SGP32S-A	150
AF18M18M	258	BB-14-NO	441	CRK-SX2520-A	146
AF18M18M	1069	CAQC	30	CRK-SXT2505-A	148
AF27F33M	577	CAQC-Double	32	CRK-TH5404-D90-A	165
AGG19-B	560	CAQC-Strong	32	CRK-TH5404-D180-A	165
AGG21-B	560	CB3M2-G	818	CRK-TH5404-S180-A	165
AGG21-C	560	CB3M2-G	1003	CRK-TH5408-D90-A	165
AGG30-B	560	CB3N2-G	818	CRK-TH5408-D180-A	165
AGG30-C	560	CB3N2-G	1003	CRK-TH5408-S180-A	165
AMTE-M-H-G18	1017	CBQC	30	CRM-0138-1A	125
AMTE-M-H-M5	1017	CBQC-Double	32	CRM-0138-2A	124
ANF14N	526	CBQC-Strong	32	CRM-0241-VGC10-1	139
ANF14N-P	527	CEQC-A	32	CRM-0241-VGC10-4	139
ANF20N	526	CEQC-AC	32	CRM-MC10-A	180
ANF20N-P	527	CEQC-B	32	CRM-MC14-A	180
ANF30N	526	CEQC-BC	32	CRM-MC20-A	180
ANF30N-P	527	CFGM8CMGM8X3Y	985	CRM-MC30-A	180

Part Number Index

Part #	Page #						
ECDDQ-20-20	764	F03-G4F	357	GGE14-40-F	982	GN5AJ	862
ECDDQ-20-30	764	F03-G4M	357	GGE14-80	219	GN5AP	861
ECDDQ-32-10	764	F04-G3F	357	GGE14-80-F	982	GN5PF	862
ECDDQ-32-20	764	F04-G3M	357	GGE14-120	219	GN10LAJ	866
ECDDQ-32-30	764	FGD0830	799	GGE14-120-F	982	GN10LAP	865
ECDDQ-32-50	764	FGD1030	799	GGE20-50	219	GN10LPF	866
ECDDQ-32-75	764	FGD1235	799	GGE20-100	219	GN20AJ	878
ECDDQ-32-100	764	FMD04-1	1027	GGE20-150	219	GN20AP	872
ECDDQ-GR-12-10	762	FMD06-1	1027	GGG-14-10-15	314	GN20PF	874
ECDDQ-GR-12-20	762	FMD06-2	1027	GGG-20-20-20	314	GN30AJ	889
ECDDQ-GR-12-30	762	FMD08-2	1027	GGG-90-14-10-15	314	GN30AP	882
ECDDQ-GR-20-10	762	FMD10-2	1027	GGG-90-M14-10-15	314	GN30PF	884
ECDDQ-GR-20-20	762	FMD12-2	1027	GGG-M14-10-15	314	GN-240	904
ECDDQ-GR-20-30	762	FPA-001	958	GGG-M20-20-20	314	GN-263	904
ECDDQ-GR-20-40	762	FU-31	972	GGG-S10-C-10	285	GNB-2045	910
ECDDQ-GR-20-50	762	FU-35FZ	972	GGG-S10-M-10	285	GNG-05	831
ECDDQ-GR-32-10	762	FU-40	972	GGG-S14-C-15	304	GNG-10	831
ECDDQ-GR-32-20	762	FU-42TZ	972	GGG-S14-C-40	304	GNG-20	831
ECDDQ-GR-32-30	762	FU-67TZ	972	GGG-S14-M-15	304	GNG-30	831
ECDDQ-GR-32-40	762	GAF6-M-10	281	GGG-S14-M-40	304	GNS-05	912
ECDDQ-GR-32-50	762	GAF6-U-10	281	GGG-S20-C-20	311	GNS-05-NC	912
ECDDQ-GR-32-75	762	GAF10-M-10	285	GGG-S20-C-50	311	GNS-05-NO	912
ECDDQ-GR-32-100	762	GAF10-U-10	285	GGG-S20-M-20	310	GNS-10	914
ECO-15MF-4	799	GAF14-M-15	305	GGG-S20-M-50	310	GNS-10-NC	914
ECO-25-MC-4	799	GAF14-M-40	305	GGG-W-10-10-10	216	GNS-10-NO	914
ECO-50-MC-3	799	GAF14-U-15	305	GGG-W-14-14-15	216	GNS-20	916
ECO-100-MF-4	799	GAF14-U-40	305	GGG-W-14-14-40	216	GNS-20-NC	916
EL-704W	970	GAF20-M-20	309	GGG-W-20-20-20	216	GNS-20-NO	916
EL-704W	1027	GAF20-M-50	309	GGG-W-20-20-50	216	GNT-DUO-2F-0	170
EMB-2017-1000	231	GAF20-U-20	309	GHVGR-0	69	GNT-DUO-2F-T	170
EMB-2017-2000	231	GAF20-U-50	309	GHVGR-01	69	GPMGR-0	68
EMB-3026-1000	231	GAZ12-10-30	766	GHVGR-1	69	GPMGR-0M	68
EMB-3026-2000	231	GAZ12-10-60	766	GHVGR-2	69	GPMGR-01	68
EMB-5045-1000	231	GAZ12-10-90	766	GHVGR-3	69	GPMGR-1	68
EMB-5045-2000	231	GAZ12-14-40	766	GLA10-30	213	GPMGR-1X	68
EMF-1018-1000	231	GAZ12-14-80	766	GLA10-60	213	GPMGR-2	68
EMF-1818-1000	231	GAZ12-14-120	766	GLA10-90	213	GPMGR-2J	68
EMF-2510-1000	230	GAZ20-20-50	766	GLA14-40	213	GPMGR-2X	68
EMF-2510-2000	230	GAZ20-20-100	766	GLA14-80	213	GPMGR-3	68
EMF-2518-1000	230	GAZ20-20-150	766	GLA14-120	213	GPMGR-3J	68
EMF-2518-2000	230	GAZ32-20-50	766	GLA20/30-50	213	GPMGR-3X	68
EMF-2525-1000	230	GAZ32-20-100	766	GLA20/30-100	213	GP-SWH-G-50	52
EMF-2525-2000	230	GAZ32-20-150	766	GLA20/30-150	213	GP-SWH-G-90	52
EMF-4040-1000	230	GAZ-S-12-10-30	767	GLA20-50	213	GP-SWH-G-150	52
EMF-4040-2000	230	GAZ-S-12-10-60	767	GLA20-50-BS	226	GRF-14-35-VA	523
EMF-5025-1000	230	GAZ-S-12-10-90	767	GLA20-100	213	GRF-14-90-VA	524
EMF-5025-2000	230	GAZ-S-12-14-40	767	GLA20-100-BS	226	GRF-14-95-VA	522
EMF-8040-1000	230	GAZ-S-12-14-80	767	GLA20-150	213	GRF-14-95-VA-EP	522
EMF-8040-2000	230	GAZ-S-12-14-120	767	GLA20-150-BS	226	GRF20-35V	523
EOAT-HANDLE	82	GAZ-S-20-20-50	767	GLA30/30-80	213	GRF-20-35-VA-EP	523
EPL1-25X	194	GAZ-S-20-20-100	767	GLA30/30-140	213	GRF20-90V	524
EPL1-50-25X	194	GAZ-S-20-20-150	767	GLA30/30-200	213	GRF20-95EP	522
EPL2-25X	194	GAZ-S-32-20-50	767	GLA-V-10-10-30	214	GRF20-95V	522
EPL2-50X	194	GAZ-S-32-20-100	767	GLA-V-10-10-60	214	GRF30-35V	523
EPL3-25X	194	GAZ-S-32-20-150	767	GLA-V-10-10-90	214	GRF30-90V	524
EPL3-40J	194	GCP-8020-1010-1M	266	GLA-V-14-14-40	214	GRF30-95V	522
EPL3-50X	194	GCP-8020-1010-2M	266	GLA-V-14-14-80	214	GRF-30-95-VA-EP	522
EPL3-80J	194	GCP-8020-1020-1M	266	GLA-V-14-14-120	214	GRZ-06-06	490
EQC20-A	116	GCP-8020-1020-2M	266	GLA-V-20-20-50	214	GRZ-06-06-EP	490
EQC20-B	116	GEO-10	987	GLA-V-20-20-50-BS	227	GRZ-06-08	491
EQC20-K1	116	GFD20-90	525	GLA-V-20-20-100	214	GRZ-10-06	490
EQC20-K50	116	GFD-20-90-EP90	525	GLA-V-20-20-100-BS	227	GRZ-10-08-AH	487
EQC20-K63	116	GFD30-90	525	GLA-V-20-20-150	214	GRZ-10-08-CF-NPN	489
EQC20N-A	116	GFD-30-90-EP90	525	GLA-V-20-20-150-BS	227	GRZ-10-08-CF-PNP	489
EQC20TM-A	116	GGE6-20	222	GLA-V-30-30-80	214	GRZ-10-08-CM	486
EQC20U-A	116	GGE6-40	222	GLA-V-30-30-140	214	GRZ-10-08-CMG-EP	486
EVB25X	202	GGE6-60	222	GLA-V-30-30-200	214	GRZ-10-08-C-NPN	488
EVB40J	202	GGE10-30	219	GMB-GSGW-10	629	GRZ-10-08-C-PNP	488
EVB50X	202	GGE10-60	219	GMB-GSGW-16	629	GRZ-10-08-C-WK-NPN	489
F02-G8F	357	GGE10-90	219	GMB-GSGW-20	629	GRZ-10-08-C-WK-PNP	489
F02-G8M	357	GGE14-40	219	GMB-GSGW-25	629	GRZ10-12	476

Part Number Index

Part #	Page #						
GRZ-10-12-A	485	GRZ-AD-20-16	1069	GSC-8020-4770	275	GSC-M3-N	1076
GRZ-10-12-A1	485	GS-10	630	GSC-8020-4771	275	GSC-M3-W	1076
GRZ-10-12-AH	483	GS-10-FBA	637	GSC-8020-4772	275	GSC-M4-5	1077
GRZ-10-12-AH-EP	481	GS-10-FBN	637	GSC-8020-4773	275	GSC-M4-6	1077
GRZ-10-12-BG	476	GS-10-NC	630	GSC-8020-4780	276	GSC-M4-8	1077
GRZ-10-12-CFS-EP-PNP	480	GS-10-NO	630	GSC-8020-4781	276	GSC-M4-10	1077
GRZ-10-12-CRS-EP-NPN	480	GS-16	630	GSC-8020-4782	276	GSC-M4-12	1077
GRZ-10-12-CS-NPN	477	GS-16-FBA	637	GSC-8020-4929	266	GSC-M4-14	1077
GRZ-10-12-CS-PNP	477	GS-16-FBN	637	GSC-8020-4930	266	GSC-M4-16	1077
GRZ-10-12-DB	483	GS-16-NC	630	GSC-8020-4931	266	GSC-M4-18	1077
GRZ-10-12-EP	481	GS-16-NO	630	GSC-8020-4932	266	GSC-M4-20	1077
GRZ-10-12-G	478	GS-20	630	GSC-8020-4933	266	GSC-M4-22	1077
GRZ-10-12-KK	478	GS-20-FBA	637	GSC-8020-4939	266	GSC-M4-25	1077
GRZ-10-12-PK	478	GS-20-FBN	637	GSC-8020-4940	266	GSC-M4-30	1077
GRZ-10-12-RB-CS-NPN	482	GS-20-NC	630	GSC-8020-4941	266	GSC-M4-35	1077
GRZ-10-12-RB-CS-PNP	482	GS-20-NO	630	GSC-8020-4942	266	GSC-M4-40	1077
GRZ-10-12-R-HT	476	GS-25	630	GSC-8020-4943	266	GSC-M4-50	1077
GRZ-10-12-S	479	GS-25-FBA	637	GSC-8020-4944	266	GSC-M4-FW	1077
GRZ-10-12-SCS-NPN	479	GS-25-FBN	637	GSC-8020-4945	266	GSC-M4-LN-ZP-NI	1077
GRZ-10-12-SCS-PNP	479	GS-25-NC	630	GSC-8020-4946	266	GSC-M4-LW	1077
GRZ-10-12-Z	484	GS-25-NO	630	GSC-8020-4949	266	GSC-M4-N	1077
GRZ-14-A	473	GS-32	630	GSC-20100-A	854	GSC-M4-W	1077
GRZ-14-D-A	472	GS-40	630	GSC-20200-A	854	GSC-M5-6	1077
GRZ-14-EP	471	GSC-20ABB-B	855	GSC-20300-A	854	GSC-M5-8	1077
GRZ-14-PS-CS-NPN	475	GSC-8020-2015	266	GSC-CCPP-1	769	GSC-M5-10	1077
GRZ-14-PS-CS-PNP	475	GSC-8020-2025	266	GSC-CSA-10	983	GSC-M5-10LH	1077
GRZ-14-PU	471	GSC-8020-2026	266	GSC-DCP-0	80	GSC-M5-12	1077
GRZ-14-R	470	GSC-8020-4015	268	GSC-DCP-1	80	GSC-M5-12LH	1077
GRZ-14-RCS-NPN	475	GSC-8020-4016	268	GSC-DCP-2	80	GSC-M5-14	1077
GRZ-14-RCS-PNP	475	GSC-8020-4112	270	GSC-DCP-3	80	GSC-M5-16	1077
GRZ-14-S	471	GSC-8020-4113	268	GSC-DQCAP-0	81	GSC-M5-16LH	1077
GRZ-14-SCS-NPN	474	GSC-8020-4114	268	GSC-DQCAP-1	81	GSC-M5-18	1077
GRZ-14-SCS-PNP	474	GSC-8020-4115	268	GSC-DQCAP-2	81	GSC-M5-20	1077
GRZ20-16	493	GSC-8020-4117	270	GSC-DQCAP-3	81	GSC-M5-20LH	1077
GRZ20-16A	496	GSC-8020-4118	270	GSC-FGB-1	503	GSC-M5-22	1077
GRZ-20-16-CS-NPN	493	GSC-8020-4119	268	GSC-GMB-150	43	GSC-M5-25	1077
GRZ-20-16-CS-PNP	493	GSC-8020-4128	271	GSC-GMB-225	46	GSC-M5-30	1077
GRZ-20-16-DB	498	GSC-8020-4129	271	GSC-M2.5-4	1076	GSC-M5-35	1077
GRZ-20-16-EP	497	GSC-8020-4132	269	GSC-M2.5-5	1076	GSC-M5-40	1077
GRZ-20-16-G	497	GSC-8020-4134	269	GSC-M2.5-6	1076	GSC-M5-45	1077
GRZ-20-16-HW	499	GSC-8020-4136	269	GSC-M2.5-8	1076	GSC-M5-50	1077
GRZ-20-16-K	494	GSC-8020-4138	269	GSC-M2.5-10	1076	GSC-M5-60	1077
GRZ-20-16-PK	497	GSC-8020-4140	270	GSC-M2.5-12	1076	GSC-M5-FW	1077
GRZ-20-16-PU	497	GSC-8020-4150	271	GSC-M2.5-14	1076	GSC-M5-LN	1077
GRZ20-16R	492	GSC-8020-4151	271	GSC-M2.5-16	1076	GSC-M5-LN-ZP-NI	1077
GRZ-20-16-RCS-NPN	494	GSC-8020-4152	271	GSC-M2.5-FW	1076	GSC-M5-LW	1077
GRZ-20-16-RCS-PNP	494	GSC-8020-4166	270	GSC-M2.5-LW	1076	GSC-M5-LWT	1077
GRZ20-16S	495	GSC-8020-4730	272	GSC-M2.5-N	1076	GSC-M5-N	1077
GRZ-20-16-SCS-NPN	495	GSC-8020-4731	272	GSC-M2.5-W	1076	GSC-M5-W	1077
GRZ-20-16-SCS-PNP	495	GSC-8020-4732	272	GSC-M3-5	1076	GSC-M6-10	1077
GRZ-20-20	462	GSC-8020-4733	272	GSC-M3.5-6	1076	GSC-M6-12	1077
GRZ-20-20-A	464	GSC-8020-4734	272	GSC-M3.5-10	1076	GSC-M6-14	1077
GRZ-20-20-CS-NPN	466	GSC-8020-4735	272	GSC-M3.5-16	1076	GSC-M6-16	1077
GRZ-20-20-CS-PNP	466	GSC-8020-4736	272	GSC-M3.5-20	1076	GSC-M6-18	1077
GRZ-20-20-EP	463	GSC-8020-4737	272	GSC-M3.5-LW	1076	GSC-M6-20	1077
GRZ-20-20-PU	463	GSC-8020-4738	272	GSC-M3-6	1076	GSC-M6-22	1077
GRZ-20-20-RCS-NPN-EP	466	GSC-8020-4739	272	GSC-M3-8	1076	GSC-M6-25	1077
GRZ-20-20-RCS-PNP-EP	466	GSC-8020-4740	272	GSC-M3-10	1076	GSC-M6-30	1077
GRZ-20-20-S	465	GSC-8020-4741	272	GSC-M3-12	1076	GSC-M6-FW	1077
GRZ-20-20-SCS-NPN	467	GSC-8020-4742	272	GSC-M3-14	1076	GSC-M6-LN	1077
GRZ-20-20-SCS-PNP	467	GSC-8020-4743	272	GSC-M3-16	1076	GSC-M6-LW	1077
GRZ-20-20-SL	464	GSC-8020-4744	272	GSC-M3-18	1076	GSC-M6-LWT	1077
GRZ-20-20-Z	465	GSC-8020-4745	272	GSC-M3-20	1076	GSC-M6-N	1077
GRZ-20-20-ZC-NPN	467	GSC-8020-4750	273	GSC-M3-22	1076	GSC-M6-TN	1077
GRZ-20-20-ZC-PNP	467	GSC-8020-4751	273	GSC-M3-25	1076	GSC-M6-W	1077
GRZ-20-PS-CS-NPN	467	GSC-8020-4752	273	GSC-M3-30	1076	GSC-M8-10	1077
GRZ-20-PS-CS-PNP	467	GSC-8020-4753	273	GSC-M3-35	1076	GSC-M8-12	1077
GRZ-32	500	GSC-8020-4760	274	GSC-M3-40	1076	GSC-M8-16	1077
GRZ-32-CS-NPN	500	GSC-8020-4761	274	GSC-M3-FW	1076	GSC-M8-18	1077
GRZ-32-CS-PNP	500	GSC-8020-4762	274	GSC-M3-LN-ZP-NI	1076	GSC-M8-20	1077
GRZ-AD-20-16	499	GSC-8020-4763	274	GSC-M3-LW	1076	GSC-M8-22	1077

Part Number Index

Part #	Page #						
GSC-M8-25	1077	GSE-8020-4937	267	GSE-U-10-1/8-M5-60	218	GSF-FCE-M304	1015
GSC-M8-30	1077	GSE-8020-4938	267	GSE-U-10-1/8-M5-90	218	GSF-FCE-M504	1015
GSC-M8-FW	1077	GSE-8020-4942	267	GSE-U-10-M5-M5-30	218	GSF-FCE-M506	1015
GSC-M8-LN	1077	GSE-8020-4947	267	GSE-U-10-M5-M5-60	218	GSF-FC-G4	1068
GSC-M8-LW	1077	GSE-8020-4948	267	GSE-U-10-M5-M5-90	218	GSF-FC-G8	1068
GSC-M8-LWT	1077	GSE-8020-4949	267	GSE-U-14-1/8-1/8-40	218	GSF-FC-G8M8	1068
GSC-M8-N	1077	GSE-8020-4950	267	GSE-U-14-1/8-1/8-80	218	GSF-FCI-04	1015
GSC-M8-TN	1077	GSE-8020-4951	266	GSE-U-14-1/8-1/8-120	218	GSF-FCI-06	1015
GSC-M8-W	1077	GSE-8020-4952	267	GSE-U-20-1/4-1/8-50	218	GSF-FCI-08	1015
GSC-M10-20	1077	GSE-25200-CHTC	910	GSE-U-20-1/4-1/8-100	218	GSF-FC-M5	1068
GSC-M10-25	1077	GSE-AND-EU-4P	998	GSE-U-20-1/4-1/8-150	218	GSF-FCS-G806	1015
GSC-M10-30	1077	GSE-AND-EU-8P	999	GSF-04AJ	423	GSF-FCS-M304	1015
GSC-M10-LW	1077	GSE-BCS001L	983	GSF-04AL	423	GSF-FCS-M504	1015
GSC-M10-LWT	1077	GSE-BCS001N	983	GSF-2575-CR	332	GSF-FCS-M506	1015
GSC-M10-TN	1077	GSE-BCS0026	983	GSF-515618-CR	332	GSF-FMC-G8M5	1069
GSC-M12-LW	1077	GSE-BCS0028	983	GSF-8241030-CR	332	GSF-G-G4	1068
GSC-M14-LW	1077	GSE-CS90-M81	984	GSF-15452060-CR	332	GSF-G-G8	1068
GSC-M15x1-TN	1077	GSE-CS90-M82	984	GSF-AF-M8R8	1068	GSF-G-M3	1068
GSC-M16-LW	1077	GSE-CS180-M81	984	GSF-BE-M304	1070	GSF-G-M5	1068
GSC-M16-LWT	1077	GSE-CS180-M82	984	GSF-BE-M504	1070	GSF-G-M5W	1068
GSC-M20-LW	1077	GSE-D-M9NVL	1004	GSF-BE-M506	1070	GSF-GPR-06	1014
GSC-M25-LW	1077	GSE-D-M9PVL	1004	GSF-BES-G803	1070	GSF-GPR-08	1014
GSC-MB-ZG1625	847	GSE-E12269	181	GSF-BES-G804	1070	GSF-GPR-G406	1014
GSC-MPB-G8	1066	GSE-FS-MC8N	970	GSF-BES-G806	1070	GSF-GPR-G408	1014
GSC-MPB-M5	1066	GSE-FS-MC8P	970	GSF-BF-G8	1068	GSF-GPR-G806	1014
GSC-N-G8	1077	GSE-FS-N40	970	GSF-BF-M5	1068	GSF-HSE-G4	1063
GSC-N-M16	1077	GSE-FS-N41N	970	GSF-BS-G804	1070	GSF-HSE-G8	1063
GSC-OAH-15MB	579	GSE-FS-N41P	970	GSF-BS-G806	1070	GSF-HSE-M5	1063
GSC-OAH-25MB	579	GSE-FS-N42N	970	GSF-BS-G808	1070	GSF-HSN-G8F	422
GSC-OAH-35MB	579	GSE-FS-N42P	970	GSF-BS-M304	1070	GSF-HSN-G8M	422
GSC-OAH-45MB	579	GSE-FU-53FZ	973	GSF-BS-M504	1070	GSF-HSN-M5F	422
GSC-PEB-2011	976	GSE-FU-57TE	973	GSF-BS-M506	383	GSF-HSN-M5M	422
GSC-PEB-2013	977	GSE-FU-79U	973	GSF-BS-M506	1070	GSF-HTN1-G8F	333
GSC-PEB-2015	974	GSE-HRTR-NPN	976	GSF-BS-R804	1070	GSF-HTN1-G8F	367
GSC-PEB-2017	974	GSE-HRTR-PNP	976	GSF-BS-R806	1070	GSF-HTN1-G8F	367
GSC-PRMB-3850	1014	GSE-NAN-3A	985	GSF-BTS-G803	1070	GSF-HTN1-G8F	367
GSC-QCAP-1	40	GSE-NAN-3F	985	GSF-BTS-G804	1070	GSF-HTN1-G8F	373
GSC-QCAP-1B	41	GSE-O8H208	975	GSF-BTS-G806	1070	GSF-HTN1-G8M	333
GSC-QCAP-2	42	GSE-O8H209	975	GSF-BTS-M303	1070	GSF-HTN1-M5F	333
GSC-QCAP-L	44	GSE-O8H210	975	GSF-BTS-M504	1070	GSF-HTN2-G8FL	332
GSC-QCAP-L90	56	GSE-O8H211	975	GSF-BTS-M506	1070	GSF-HTN2-G8ML	332
GSC-QCAP-L90SM	56	GSE-PPE350-NPN	977	GSF-BTU-M504	1071	GSF-HTN2-M5FM	332
GSC-QCAP-LB	45	GSE-PPE350-PNP	977	GSF-BTU-M506	1071	GSF-HTN2-M5FX5	332
GSC-RMB-2	938	GSE-PQ-0834	986	GSF-BTU-M525	1071	GSF-HTN2-M5MM	332
GSC-RMB-3	938	GSE-PQ-7834	986	GSF-BUL-03	1071	GSF-HTN2-M5MX5	332
GSC-RMB-4	938	GSE-PR-FB30C3PL	974	GSF-BUL-04	1071	GSF-HTN4-G4F	333
GSC-RMB-HC15	502	GSE-PR-FB30CN	974	GSF-BUL-06	1071	GSF-HTN4-G4M	333
GSC-RMB-HC20	502	GSE-PR-FB30CP	974	GSF-BUS-03	1071	GSF-IB-G8G4	1069
GSC-RMB-HC30	502	GSE-PR-MB30C3PL	974	GSF-BUS-04	1071	GSF-LRMA-QS-6	1014
GSC-SSS-2.5X4	1003	GSE-PR-MB30CN	974	GSF-BUS-06	1071	GSF-MAN-G8X4	1062
GSC-TAP-G4B	1076	GSE-PR-MB30CP	974	GSF-BUS-0304	1071	GSF-MAN-G8x08	1062
GSC-TAP-G4P	1076	GSE-RCS-8FS-5000	181	GSF-BUS-0406	1071	GSF-MAN-G8x12	1062
GSC-TAP-G8B	1076	GSE-RCS-8FS-5000	984	GSF-BUT-03	1071	GSF-MAN-G41G84	1061
GSC-TAP-G8P	1076	GSE-RFC-M8-4P	181	GSF-BUT-04	1071	GSF-MAN-M5X4	1062
GSC-TMB-45	458	GSE-RFC-M8-4P	984	GSF-BUT-06	1071	GSF-MN1-M3	412
GSC-TMB-45	753	GSE-SSW-15	987	GSF-BUY-03	1071	GSF-MN15-M3	357
GSC-VMB-MCHS	539	GSE-TCHP-CM	905	GSF-BUY-04	1071	GSF-MN15-M3	412
GSC-VMB-MCY	753	GSE-TCHP-CM2	905	GSF-BUY-06	1071	GSF-N16-M5M	333
GSC-VSB-HC15	502	GSE-TCHP-CM3	905	GSF-BVC01-4	1015	GSF-N17-M3M	412
GSC-VSB-HC20	502	GSE-TCHP-CM4	905	GSF-BVC01-6	1015	GSF-N21-M5F	332
GSE-8020-4911	267	GSE-TSC180-M803	984	GSF-BVU4-4	1015	GSF-N21-M5M	332
GSE-8020-4912	267	GSE-TSC180-M805	984	GSF-BVU6-6	1015	GSF-N22-G8F	408
GSE-8020-4913	267	GSE-TSC180-M812	984	GSF-EF-M5	1071	GSF-N24-M5M	391
GSE-8020-4914	267	GSE-TSCE-M825	985	GSF-EQE-4	1015	GSF-N25-M5M	391
GSE-8020-4918	267	GSE-U-6-M3-M3-20	223	GSF-EQE-6	1015	GSF-N26-M5M	391
GSE-8020-4919	266	GSE-U-6-M3-M3-40	223	GSF-EU-M5	1071	GSF-N27-G8M	391
GSE-8020-4920	267	GSE-U-6-M3-M3-60	223	GSF-FCB-G806	1015	GSF-NF0-G4F	409
GSE-8020-4928	267	GSE-U-6-M6-M3-20	223	GSF-FCB-M504	1015	GSF-NF1-M5	357
GSE-8020-4931	267	GSE-U-6-M6-M3-40	223	GSF-FCB-M506	1015	GSF-NF2-G8M5	357
GSE-8020-4934	267	GSE-U-6-M6-M3-60	223	GSF-FCE-G806	1015	GSF-NF3-G8	357
GSE-8020-4935	267	GSE-U-10-1/8-M5-30	218	GSF-FCE-G1406	1015	GSF-NF4-G8	1069

Part Number Index

Part #	Page #						
GSF-NF5-G8F	357	GSF-QMA-G804	1051	GSF-QSU-04	1050	GSF-RME-R810	1048
GSF-NF8-G4F	423	GSF-QMA-G806	1051	GSF-QSU-06	1050	GSF-RME-U406	1072
GSF-NF9-G8M	408	GSF-QMA-G808	1051	GSF-QSU-08	1050	GSF-RME-U408	1072
GSF-NF9-G8M	409	GSF-QMA-M504	1051	GSF-QSU-10	1050	GSF-RME-U806	1072
GSF-NF11-M5	357	GSF-QMA-M506	1051	GSF-QTU-04	1051	GSF-RME-U808	1072
GSF-N-G8	1069	GSF-QMC-G406	1047	GSF-QTU-06	1051	GSF-RMS-R406	1047
GSF-N-G8G4	1069	GSF-QMC-G408	1047	GSF-QTU-08	1051	GSF-RMS-R408	1047
GSF-N-M3	1069	GSF-QMC-G410	1047	GSF-QTU-10	1051	GSF-RMS-R410	1047
GSF-N-M5	1069	GSF-QMC-G804	1047	GSF-QTU-0406	1051	GSF-RMS-R804	1047
GSF-N-M5G8	1069	GSF-QMC-G806	1047	GSF-QTU-0604	1051	GSF-RMS-R806	1047
GSF-NPT-N4G4	1068	GSF-QMC-G808	1047	GSF-QTU-0608	1051	GSF-RMS-R808	1047
GSF-NPT-N8G8	1068	GSF-QMC-M304	1047	GSF-QTU-0806	1051	GSF-RMS-R810	1047
GSF-NPT-R4N4	1068	GSF-QMC-M504	1047	GSF-QTU-1008	1051	GSF-RMT-U406	1072
GSF-NPT-R8M5	1069	GSF-QMC-M506	1047	GSF-QXU-04	1052	GSF-RMT-U408	1072
GSF-NPT-R8N8	1068	GSF-QMC-R804	1047	GSF-QXU-06	1052	GSF-RMT-U806	1072
GSF-NX-M5	1068	GSF-QMC-R806	1047	GSF-QXU-08	1052	GSF-RMT-U808	1072
GSF-PFN2-G4F	424	GSF-QME-G406	1048	GSF-QYU-04	1052	GSF-RMX-R406	1049
GSF-PFN3-G4F	425	GSF-QME-G408	1048	GSF-QYU-06	1052	GSF-RMX-R408	1049
GSF-PFN4-G4F	367	GSF-QME-G410	1048	GSF-QYU-08	1052	GSF-RMX-R410	1049
GSF-PFN4-G4F	373	GSF-QME-G804	1048	GSF-QYU-0604	1052	GSF-RMX-R804	1049
GSF-PFN4-G4F	425	GSF-QME-G806	1048	GSF-QYU-0806	1052	GSF-RMX-R806	1049
GSF-PFN-G8F	333	GSF-QME-G808	1048	GSF-RB-G4G8	1069	GSF-RMX-R808	1049
GSF-PFN-G8F	366	GSF-QME-M304	1048	GSF-RB-G4M5	1069	GSF-SBT-G406	1050
GSF-PFN-G8F	366	GSF-QME-M504	1048	GSF-RB-G8M5	1069	GSF-SBT-G408	1050
GSF-PFN-G8F	366	GSF-QME-M506	1048	GSF-RB-M5M3	1069	GSF-SBT-G410	1050
GSF-PFN-G8F	366	GSF-QME-R804	1048	GSF-RB-M16G8	1069	GSF-SBT-G804	1050
GSF-PFN-G8F	373	GSF-QME-R806	1048	GSF-RB-R8M5	1069	GSF-SBT-G806	1050
GSF-PFN-G8M	333	GSF-QMX-G804	1049	GSF-RBT-R406	1050	GSF-SBT-G808	1050
GSF-PFN-G8M	366	GSF-QMX-G806	1049	GSF-RBT-R408	1050	GSF-SBT-G810	1050
GSF-PFN-G8M	366	GSF-QMX-G808	1049	GSF-RBT-R410	1050	GSF-SBT-M504	1050
GSF-PFN-G8M	373	GSF-QMX-M504	1049	GSF-RBT-R804	1050	GSF-SBT-M506	1050
GSF-PR-G406	1014	GSF-QMX-M506	1049	GSF-RBT-R806	1050	GSF-SEA-G8	1066
GSF-PR-G408	1014	GSF-QN-04	1055	GSF-RBT-R808	1050	GSF-SE-G8	1063
GSF-PR-G804	1014	GSF-QN-06	1055	GSF-RBT-R810	1050	GSF-SEU-04	1051
GSF-PR-G806	1014	GSF-QN-08	1055	GSF-RFC-G8G4	1068	GSF-SEU-06	1051
GSF-PR-G808	1014	GSF-QP-04	1055	GSF-RFC-G8M5	1068	GSF-SEU-08	1051
GSF-QBT-G406	1050	GSF-QP-06	1055	GSF-RFC-R406	1048	GSF-SEU-10	1051
GSF-QBT-G408	1050	GSF-QP-08	1055	GSF-RFC-R408	1048	GSF-SFC-G406	1048
GSF-QBT-G410	1050	GSF-QP-10	1055	GSF-RFC-R410	1048	GSF-SFC-G408	1048
GSF-QBT-G804	1050	GSF-QPE-04	1053	GSF-RFC-R804	1048	GSF-SFC-G410	1048
GSF-QBT-G806	1050	GSF-QPE-06	1053	GSF-RFC-R806	1048	GSF-SFC-G804	1048
GSF-QBT-G808	1050	GSF-QPE-08	1053	GSF-RFC-R808	1048	GSF-SFC-G806	1048
GSF-QBT-M304	1050	GSF-QPE-0406	1053	GSF-RFC-U406	1072	GSF-SFC-G808	1048
GSF-QBT-M504	1050	GSF-QPE-0604	1053	GSF-RFC-U408	1072	GSF-SFE-2	1015
GSF-QBT-M506	1050	GSF-QPE-0806	1053	GSF-RFC-U806	1072	GSF-SFE-3	1015
GSF-QBT-R804	1050	GSF-QPI-0406	1055	GSF-RFC-U808	1072	GSF-SFE-M504	1049
GSF-QBT-R806	1050	GSF-QPI-0608	1055	GSF-RFE-R406	1049	GSF-SFE-M506	1049
GSF-QDPY-0604	1054	GSF-QPR-0604	1055	GSF-RFE-R408	1049	GSF-SFU2-0404	1015
GSF-QDPY-0806	1054	GSF-QPR-0806	1055	GSF-RFE-R410	1049	GSF-SFU2-0606	1015
GSF-QDY-04	1053	GSF-QPT-04	1053	GSF-RFE-R804	1049	GSF-SFU3-0808	1015
GSF-QDY-06	1053	GSF-QPT-06	1053	GSF-RFE-R806	1049	GSF-SMC-G406	1047
GSF-QDY-0604	1053	GSF-QPT-08	1053	GSF-RFE-R808	1049	GSF-SMC-G408	1047
GSF-QDY-0806	1053	GSF-QPT-0604	1053	GSF-RMC-M506	1072	GSF-SMC-G410	1047
GSF-QEU-04	1051	GSF-QPT-0806	1053	GSF-RMC-M606	1072	GSF-SMC-G804	1047
GSF-QEU-06	1051	GSF-QPY-04	1054	GSF-RMC-R406	1047	GSF-SMC-G806	1047
GSF-QEU-08	1051	GSF-QPY-06	1054	GSF-RMC-R408	1047	GSF-SMC-G808	1047
GSF-QEU-10	1051	GSF-QPY-08	1054	GSF-RMC-R410	1047	GSF-SMC-G810	1047
GSF-QFC-G406	1048	GSF-QPY-0604	1054	GSF-RMC-R804	1047	GSF-SMC-M504	1047
GSF-QFC-G408	1048	GSF-QPY-0806	1054	GSF-RMC-R806	1047	GSF-SMC-M506	1047
GSF-QFC-G804	1048	GSF-QRN-0604	1055	GSF-RMC-R808	1047	GSF-SMC-G406	1048
GSF-QFC-G806	1048	GSF-QRN-0806	1055	GSF-RMC-R810	1047	GSF-SME-G408	1048
GSF-QFC-G808	1048	GSF-QRN-1008	1055	GSF-RMC-U406	1072	GSF-SME-G410	1048
GSF-QFC-M504	1048	GSF-QRU-0604	1050	GSF-RMC-U408	1072	GSF-SME-G804	1048
GSF-QFC-M506	1048	GSF-QRU-0806	1050	GSF-RMC-U806	1072	GSF-SME-G806	1048
GSF-QFE-G406	1049	GSF-QRU-1008	1050	GSF-RMC-U808	1072	GSF-SME-G808	1048
GSF-QFE-G408	1049	GSF-QSC-G406	1051	GSF-RME-R406	1048	GSF-SME-G810	1048
GSF-QFE-G804	1049	GSF-QSC-G408	1051	GSF-RME-R408	1048	GSF-SME-M504	1048
GSF-QFE-G806	1049	GSF-QSC-G804	1051	GSF-RME-R410	1048	GSF-SME-M506	1048
GSF-QFE-G808	1049	GSF-QSC-G806	1051	GSF-RME-R804	1048	GSF-SMS-G410	1047
GSF-QFE-M504	1049	GSF-QSC-G808	1051	GSF-RME-R806	1048	GSF-SMS-G806	1047
GSF-QFE-M506	1049	GSF-QSC-M504	1051	GSF-RME-R808	1048	GSF-SMS-G808	1047

Part Number Index

Part #	Page #						
GSF-SMS-M504	1047	GSF-VPN-M5	393	GSG-HR400-90	820	GSN-BA-HR20	960
GSF-SMS-M506	1047	GSF-VPN-M8F	393	GSG-HR400-90D	821	GSN-BA-HR30	960
GSF-SMX-G406	1049	GSF-VSA-4	416	GSG-HR400-180	820	GSN-BA-HR50	960
GSF-SMX-G408	1049	GSF-VSA-5	416	GSG-HR400-180D	821	GSN-BA-S2	960
GSF-SMX-G410	1049	GSF-VSA-16	419	GSG-HR400-MH	820	GSN-BA-S3	960
GSF-SMX-G804	1049	GSF-VSA-17	418	GSG-IAH-10N	578	GSN-BA-S5	960
GSF-SMX-G806	1049	GSF-ZPT2-M5S	383	GSG-IAH-12N	578	GSN-BA-S7	960
GSF-SMX-G808	1049	GSF-ZPT3-G8	383	GSG-IAH-17N	578	GSN-BA-S10	960
GSF-SMX-M504	1049	GSF-ZPT4-G8	383	GSG-IAH-21N	578	GSN-BA-S12	960
GSF-SMX-M506	1049	GSG-08A-FB06	557	GSG-IAH-25S	578	GSN-BA-S20	960
GSF-SSU-04	1050	GSG-08A-FB16	557	GSG-IAH-27N	578	GSN-BA-S30	960
GSF-SSU-06	1050	GSG-08A-FS06	557	GSG-IAH-27NS	578	GSN-BA-S50	960
GSF-SSU-08	1050	GSG-08A-FS16	557	GSG-IAH-30S	578	GSN-BC-05	860
GSF-SSU-10	1050	GSG-08A-S	557	GSG-IAH-32N	578	GSN-BC-10	864
GSF-ST-G8	1063	GSG-08A-SPM	556	GSG-IAH-32NS	578	GSN-BC-20	870
GSF-STU-04	1051	GSG-08A-SPMF	556	GSG-IAH-35S	578	GSN-BC-30	880
GSF-STU-06	1051	GSG-11A-FB08	559	GSG-IAH-36N	578	GSN-BC-50	892
GSF-STU-08	1051	GSG-11A-FB20	559	GSG-IAH-36NS	578	GSN-F1	861
GSF-STU-10	1051	GSG-11A-FS08	559	GSG-IAH-40S	578	GSN-F1E	948
GSF-T-M5	1071	GSG-11A-FS20	559	GSG-IAH-42S	578	GSN-F1EK	948
GSF-TPP-G8	1068	GSG-11A-S	558	GSG-IAH-44N	578	GSN-F3	869
GSF-TPP-M3	1068	GSG-11A-SF	559	GSG-IAH-44NS	578	GSN-F3E	948
GSF-TPP-M5	1068	GSG-11A-SPM	558	GSG-IAH-52N	578	GSN-F3EK	948
GSF-TPP-U4	1068	GSG-11A-SPMF	558	GSG-IAH-52NS	578	GSN-F5	872
GSF-TPP-U8	1068	GSG-AA-20	454	GSG-IAH-58S	578	GSN-F5E	948
GSF-TU-M3	1071	GSG-AA-20-NO	454	GSG-IAH-65N	578	GSN-F5EK	948
GSF-TU-M5	1071	GSG-AA-22	456	GSG-IAH-65NS	578	GSN-F9E	948
GSF-UFC-G804	1073	GSG-AA-22-NO	456	GSG-IAH-85N	578	GSN-F9EK	948
GSF-UFC-G806	1073	GSG-AA-22-RF	456	GSG-IAH-85NS	578	GSN-F9P	882
GSF-UFC-G808	1073	GSG-AA-26S	457	GSG-IAH-105N	578	GSN-F9P	894
GSF-UFC-M504	1073	GSG-AA-26S-NO	457	GSG-IAH-105NS	578	GSN-F9PS	889
GSF-UMC-M504	1073	GSG-AGAF-45	454	GSG-IAH-P010NC	578	GSN-F10E	948
GSF-UMC-M506	1073	GSG-AGSF-45	454	GSG-IAH-P014NC	578	GSN-F10EK	948
GSF-UMC-U308	1073	GSG-ASG-STP	454	GSG-IAH-P017NC	578	GSN-FD1	863
GSF-UMC-U310	1073	GSG-CP-013	754	GSG-IAH-P019NC	578	GSN-FD3	869
GSF-UMC-U406	1073	GSG-CP-014	754	GSG-IAH-P022NC	578	GSN-FD5	874
GSF-UMC-U408	1073	GSG-CP-015	755	GSG-IAH-P025NC	578	GSN-FD9P	884
GSF-UMC-U804	1073	GSG-CP-016	755	GSG-IAH-P035NC	578	GSN-FG3	952
GSF-UMC-U806	1073	GSG-CP-018	755	GSG-IAH-P045NC	578	GSN-FG3K	952
GSF-UMC-U808	1073	GSG-CP-060	755	GSG-IAH-P055NC	578	GSN-FG5	952
GSF-UME-U308	1073	GSG-CP-061	755	GSG-IS3-NPN	1004	GSN-FG5K	952
GSF-UME-U310	1073	GSG-CP-071	755	GSG-IS3-PNP	1004	GSN-FG10	952
GSF-UME-U406	1073	GSG-CP-072	755	GSG-IS-NPN	1004	GSN-FG10K	952
GSF-UME-U408	1073	GSG-CP-074	755	GSG-IS-PNP	1004	GSN-GN-05	827
GSF-UME-U804	1073	GSG-CP-R	755	GSG-KRC-5	754	GSN-GN05-RK	959
GSF-UME-U806	1073	GSG-CP-SI	755	GSG-KRC-5-SW	754	GSN-GN-05S	826
GSF-UME-U808	1073	GSG-GP-300	755	GSG-KRCW-5000	754	GSN-GN-10	827
GSF-UMT-M504	1073	GSG-GP-300B	755	GSG-LPG8-MB	669	GSN-GN10-RK	959
GSF-UMT-U308	1073	GSG-GRF14-PSP	529	GSG-LPG12-MB	669	GSN-GN-10S	826
GSF-UMT-U310	1073	GSG-GRF20-PSP	529	GSG-MCD-10	752	GSN-GN-20	827
GSF-UMT-U406	1073	GSG-HC15-AP	503	GSG-MCD-20	752	GSN-GN20-RK	959
GSF-UMT-U408	1073	GSG-HC15-BP	503	GSG-MCY-HS	539	GSN-GN-20S	826
GSF-UMT-U804	1073	GSG-HC15-CP	503	GSG-MCY-RP	539	GSN-GN-30	827
GSF-UMT-U806	1073	GSG-HC15-HBK	503	GSG-OAH-15N	579	GSN-GN30-RK	959
GSF-UMT-U808	1073	GSG-HC20-AD	503	GSG-OAH-15S	579	GSN-GN-30S	826
GSF-UN-U3U3	1069	GSG-HC20-AP	503	GSG-OAH-25N	579	GSN-GN-50	827
GSF-UN-U4U3	1069	GSG-HC20-BD	503	GSG-OAH-25S	579	GSN-GN50-RK	959
GSF-UN-U4U4	1069	GSG-HC20-BDX	502	GSG-OAH-35N	579	GSN-GN-50S	826
GSF-UN-U8U3	1069	GSG-HC20-BP	503	GSG-OAH-35S	579	GSN-GTN30	958
GSF-UN-U8U4	1069	GSG-HC20-BPX	502	GSG-OAH-45N	579	GSN-HC20-CHTC	911
GSF-UN-U8U8	1069	GSG-HC20-CD	503	GSG-OAH-45S	579	GSN-ME-3	946
GSF-URB-U3G4	1069	GSG-HC20-CP	503	GSG-PB-0013S	430	GSN-ME-5	946
GSF-URB-U3G8	1069	GSG-HC20-HBK	503	GSGRMB-M12	459	GSN-ME-10	946
GSF-URB-U4G3	1069	GSG-HC30-AD	502	GSG-SMB-45	459	GSN-ME-20	946
GSF-URB-U4G8	1069	GSG-HC30-BD	502	GSG-SMMB-45	458	GSN-ME-30	946
GSF-URB-U8G4	1069	GSG-HC30-CD	502	GSG-SMMB-45	753	GSN-MG-3	951
GSF-URB-U8G8	1069	GSG-HC30-F	502	GSN-BA-HR3	960	GSN-MG-10	951
GSF-VMC-90	985	GSG-HC30-STF	502	GSN-BA-HR5	960	GSN-MG-20	951
GSF-VMC-S	985	GSG-HR200-90	820	GSN-BA-HR7	960	GSN-MR-10M	830
GSF-VPN-G8	393	GSG-HR200-90D	821	GSN-BA-HR10L	960	GSN-MR-20M	830
GSF-VPN-G8F	393	GSG-HR200-MH	820	GSN-BA-HR12	960	GSN-MR-30AM	830

Part Number Index

Part #	Page #				
GSN-MR-50FM	830	GSN-NT20R-6	944	GSS-14-90	90
GSN-MS-5	851	GSN-NW10-AJ	853	GSS-14G8-30	1065
GSN-MS-5V	852	GSN-NW20-AJ	853	GSS-14G8-40	1065
GSN-MS-10	851	GSN-NW30-AJ	853	GSS-14G8-50	1065
GSN-MS-10V	852	GSN-NWR10	853	GSS-14G8-60	1064
GSN-MS-20	851	GSN-NWR20	853	GSS-14G8-110	1065
GSN-MS-20V	852	GSN-NWR30	853	GSS-14G8-150	1064
GSN-MS-30	851	GSN-NY05-4	920	GSS-14M8-60	1065
GSN-MS-30V	852	GSN-NY05-AH	930	GSS-14M8-120	1065
GSN-N5	958	GSN-NY05-AJ	930	GSS-14P-30	90
GSN-N5-AP	861	GSN-NY05-AJL	930	GSS-14P-45	90
GSN-N10	958	GSN-NY05R-4	920	GSS-14P-60	90
GSN-N10L-AP	865	GSN-NY05-RAH	931	GSS-14P-75	90
GSN-N10L-PF	865	GSN-NY05-RAJ	931	GSS-20M8-75	1065
GSN-N20	958	GSN-NY10-4	922	GSS-20M8-200	1065
GSN-N20-AA	875	GSN-NY10-AH	932	GSS-40-G8M5	282
GSN-N20-AE	876	GSN-NY10-AJ	932	GSS-40R-G8M5	282
GSN-N20-AJL	877	GSN-NY10-AJL	932	GSS-47-G8M5	282
GSN-N20-AP	871	GSN-NY10R-4	922	GSS-47R-G8M5	282
GSN-N20-PF	873	GSN-NY10-RAH	933	GSS-53-M10M5	283
GSN-N30-AA	885	GSN-NY10-RAJ	933	GSS-53R-M10M5	283
GSN-N30-AE	887	GSN-NY10-S	924	GSS-59-G8M5	282
GSN-N30-AJL	888	GSN-NY15-4	926	GSS-59R-G8M5	282
GSN-N30-AP	881	GSN-NY15-AH	934	GSS-60-G8M5	284
GSN-N30-PF	883	GSN-NY15-AJ	934	GSS-60R-G8M5	284
GSN-NB10LLW-10SM	840	GSN-NY15-AJL	934	GSS-60R-M10M5	283
GSN-NB10LLW-10TM	840	GSN-NY15-RAH	926	GSS-75L-M16G8	284
GSN-NB20LW-10SM	840	GSN-NY15-RAJ	935	GSS-75L-M16M5	284
GSN-NB20LW-10TM	840	GSN-NY25-6	929	GSS-75L-M16N	284
GSN-NB30LW-10SM	840	GSN-NY25-AH	936	GSS-80-M10M5	283
GSN-NB30LW-10TM	840	GSN-NY25-AJ	936	GSS-80-M16G8	306
GSN-NF05	921	GSN-NY25-AJL	936	GSS-80R-M10M5	283
GSN-NF05-BMS	961	GSN-NY25-BMP	961	GSS-80R-M16G8	307
GSN-NF05-RK	961	GSN-NY25-BMS	961	GSS-85-M16G8	307
GSN-NF10	923	GSN-NY25R-6	929	GSS-85-M20G4	308
GSN-NF10-BMP	961	GSN-NY25-RAH	937	GSS-85R-M16G8F	306
GSN-NF10-BMS	961	GSN-NY25-RAJ	937	GSS-85R-M20G4	308
GSN-NF10-RK	961	GSN-NY25-RK	961	GSS-88-M14M5	305
GSN-NF15	927	GSN-NY25-S	928	GSS-88R-M14M5	305
GSN-NF15-BMP	961	GSN-P10L	853	GSS-99-M10M5	283
GSN-NF15-BMS	961	GSN-P20	853	GSS-99R-M10M5	283
GSN-NF15-RK	961	GSN-P30	853	GSS-115-M16G8	307
GSN-NMC-05	835	GSN-P50	853	GSS-115-M16G8F	306
GSN-NMC-10	835	GSN-RA-HRS3	960	GSS-115R-M16G8	307
GSN-NMC-20	835	GSN-RA-HRS5	960	GSS-115R-M16G8F	306
GSN-NMC-30	835	GSN-RA-HRS7	960	GSS-119-M10M5	283
GSN-NMCP-05	834	GSN-RA-HRS10	960	GSS-119R-M10M5	283
GSN-NMCP-10	834	GSN-RA-HRS12	960	GSS-145-M20G4	308
GSN-NMCP-30	834	GSN-RA-HRS20	960	GSS-145R-M20G4	308
GSN-NR5	828	GSN-RA-HRS30	960	GSS-C7-G8M5	282
GSN-NR5-RK	960	GSN-RA-HRS50	960	GSS-C7R-G8M5	282
GSN-NR10L	828	GSN-SP-002	861	GSS-C10-G8M5	282
GSN-NR10L-RK	960	GSN-SP-031	881	GSS-C10R-G8M5	282
GSN-NR20	828	GSN-SPR-06	961	GSS-C20-G8M5	282
GSN-NR20-RK	960	GSN-SPR-029	865	GSS-C20R-G8M5	282
GSN-NR30	828	GSN-TC-02	925	GSS-C40-G8M5	282
GSN-NR30-RK	960	GSP-8020-1030-2M	266	GSS-C40R-G8M5	282
GSN-NR50	828	GSQ-CP-QC90	37	GSS-G8M5-50	1064
GSN-NS5	850	GSQ-CP-QC150	37	GSS-G8M5-75	1064
GSN-NS10L	850	GSQ-G	13	GSS-G8M5-100	1064
GSN-NS20	850	GSQ-LG	15	GSS-G8M8-60	1064
GSN-NS30	850	GSQ-LR	15	GSS-G8M8-120	1064
GSN-NT03-4	941	GSQ-OAI-SAI	84	GSS-M16G8-50	1064
GSN-NT03R-4	941	GSQ-OA-LAI	85	GSS-M16G8-120	1064
GSN-NT05	942	GSQ-OA-LAI	85	GSS-M16M8-75	1064
GSN-NT05R-04	942	GSQ-OA-SSI	84	GSS-M16M8-170	1064
GSN-NT10-6	943	GSQ-OC-LAI	85	GSU-PB-0424	1045
GSN-NT10R-6	943	GSQ-R	13	GSU-PB-0604	1045
GSN-NT20	944	GSS-14-30	90	GSU-PB-0806	1045
		GSS-14-60	90	GSU-PC-0424	1045
				GSU-PC-0604	1045
				GSU-PC-0806	1045
				GSU-PCB-0424	179
				GSU-PCB-0604	179
				GSU-PCC-0604	179
				GSU-PCR-0424	179
				GSU-PCR-0604	179
				GSU-PCR-0604	1045
				GSU-PR-0424	1045
				GSU-PR-0604	1045
				GSU-PR-0806	1045
				GSU-SB-0424	1044
				GSU-SB-0604	1044
				GSU-SB-0805	1044
				GSU-SC-0424	1044
				GSU-SC-0604	1044
				GSU-SC-0805	1044
				GSU-SI-627	1044
				GSV-01AB	357
				GSV-01AC	357
				GSV-1BDD-10	348
				GSV-1BDD-15	348
				GSV-1BDD-20	348
				GSV-1BDD-25	349
				GSV-1BDD-35	349
				GSV-1BDD-52	349
				GSV-1BDD-75	349
				GSV-02AB	342
				GSV-02AB	357
				GSV-02AF	357
				GSV-2BHT-7	328
				GSV-2BHT-7	419
				GSV-2BHT-9	328
				GSV-2BHT-12	328
				GSV-2BHT-14	328
				GSV-2BHT-18	328
				GSV-2BHT-20	329
				GSV-2BHT-25	329
				GSV-2BHT-32	329
				GSV-2BHT-42	329
				GSV-2BHT-62	329
				GSV-04AB	357
				GSV-04AG	357
				GSV-4BS-20	426
				GSV-4BS-30	426
				GSV-4BS-40	426
				GSV-4BS-50	427
				GSV-05AB	357
				GSV-05AG	357
				GSV-07UA	357
				GSV-B5-10	342
				GSV-B5-20	342
				GSV-B8-10	342
				GSV-B8-20	342
				GSV-B10-2-10	342
				GSV-B10-2-20	342
				GSV-B15-2-10	342
				GSV-B15-2-20	342
				GSV-B15MF-40	342
				GSV-B20-10	342
				GSV-B20-20	342
				GSV-B20MF-40	342
				GSV-B30-2-10	343
				GSV-B30-2-20	343
				GSV-B30-10	342
				GSV-B30-20	342
				GSV-B30MF-40	343
				GSV-B40-10	343
				GSV-B40-20	343
				GSV-B40MF-40	343

Part Number Index

Part #	Page #						
GSV-B50-20	343	GSV-CP-023AL	401	GSV-FOS-50R	335	GSV-PFP-15NR	424
GSV-B50-30	343	GSV-CP-024AL	401	GSV-FP-10	392	GSV-PFP-20NR	424
GSV-B50MF-40	343	GSV-CP-063	401	GSV-FP-15	392	GSV-PFP-25NR	424
GSV-BDD-10	346	GSV-CP-063-M5	401	GSV-FP-20	392	GSV-PFP-30NR	424
GSV-BDD-15	346	GSV-CP-064	401	GSV-FP-25	392	GSV-PFP-35NR	425
GSV-BDD-20	346	GSV-CP-064-G8	401	GSV-FP-30	392	GSV-PFP-40NR	425
GSV-BDD-25	347	GSV-D15-2-10	344	GSV-FP-40	393	GSV-PIVG-025	1022
GSV-BDD-35	347	GSV-D15-2-20	344	GSV-FS-10	392	GSV-PIVG-882	1022
GSV-BDD-52	347	GSV-D20-2-10	344	GSV-FS-15	392	GSV-PIVG-896	1022
GSV-BHT-5	326	GSV-D20-2-20	344	GSV-FS-20	392	GSV-SVC-18NR	411
GSV-BHT-11	326	GSV-D30-2-10	344	GSV-FS-25	392	GSV-SVC-18SI	411
GSV-BHT-14	326	GSV-D30-2-20	344	GSV-FS-30	392	GSV-U2-25	338
GSV-BHT-20	326	GSV-D50-10	344	GSV-FS-40	393	GSV-U3-25	338
GSV-BHT-25	326	GSV-D50-20	344	GSV-FSAX-10	396	GSV-U4-10	338
GSV-BHT-33	327	GSV-F15-10	340	GSV-FSAX-15	396	GSV-U4-20	338
GSV-BHT-43	327	GSV-F15-20	340	GSV-FSAX-20	396	GSV-U6-10	338
GSV-BHT-53	327	GSV-F15MF-40	340	GSV-FSAX-25	396	GSV-U6-20	338
GSV-BL30-3P-4L	423	GSV-F20-10	340	GSV-FSAX-30	396	GSV-U8-10	338
GSV-BL40-3	423	GSV-F20-20	340	GSV-FSAX-40	396	GSV-U8-20	338
GSV-BOH-5	336	GSV-F20MF-40	340	GSV-FSAX-50	397	GSV-U10-10	338
GSV-BOH-8	336	GSV-F25-10	340	GSV-HSP-07P	422	GSV-U10-20	338
GSV-BOH-11	336	GSV-F25-20	340	GSV-HSP-07S	422	GSV-U15-10	339
GSV-BOH-16	336	GSV-F25MF-40	340	GSV-HSP-09P	422	GSV-U15-20	339
GSV-BOH-20	336	GSV-F30-10	340	GSV-HSP-09S	422	GSV-U20-10	339
GSV-BOH-30	337	GSV-F30-20	340	GSV-HSP-13P	422	GSV-U20-20	339
GSV-BOH-40	337	GSV-F30MF-40	340	GSV-HSP-13S	422	GSV-U30-20	339
GSV-BOH-50	337	GSV-F40-20	341	GSV-HSP-16P	422	GSV-U30-30	339
GSV-BON-5	336	GSV-F40-30	341	GSV-HSP-16S	422	GSV-U40-2-20	339
GSV-BON-8	336	GSV-F40MF-40	341	GSV-LES-6	391	GSV-U40-2-30	339
GSV-BON-11	336	GSV-F50-20	341	GSV-LES-10	391	GSV-U50-2-20	339
GSV-BON-16	336	GSV-F50-30	341	GSV-LES-16	391	GSV-U50-2-30	339
GSV-BON-20	336	GSV-F50MF-40	341	GSV-LES-25	391	GSV-VAPF-6C	402
GSV-BON-30	337	GSV-F75-20	341	GSV-LES-25	391	GSV-VAPF-8C	402
GSV-BON-40	337	GSV-F75-30	341	GSV-M2BH-5	418	GSV-VAPF-12C	402
GSV-BON-50	337	GSV-FHT-8	324	GSV-M2BH-7	419	GSV-VAPF-12C2	404
GSV-BOS-5	336	GSV-FHT-8	415	GSV-M2BN-5	418	GSV-VAPF-15C	402
GSV-BOS-8	336	GSV-FHT-15	324	GSV-M2BN-7	419	GSV-VAPF-20C	403
GSV-BOS-11	336	GSV-FHT-20	324	GSV-M2BS-4	418	GSV-VAPF-20C2	404
GSV-BOS-16	336	GSV-FHT-30	325	GSV-M2BS-5	418	GSV-VAPF-20C2	404
GSV-BOS-20	336	GSV-FHT-30	325	GSV-M2BS-5S	418	GSV-VAPF-30C	403
GSV-BOS-30	337	GSV-FHT-40	325	GSV-M2BS-7	419	GSV-VAPF-40C	403
GSV-BOS-40	337	GSV-FHT-50	325	GSV-M2BS-65S	418	GSV-VAPF-40C	403
GSV-BOS-50	337	GSV-FHT-50	325	GSV-M2BS-65S	418	GSV-VAPH-6C	402
GSV-BP-10	394	GSV-FOH-5	334	GSV-M10nut	401	GSV-VAPH-8C	402
GSV-BP-15	394	GSV-FOH-7	334	GSV-M12nut	401	GSV-VAPH-10C	402
GSV-BP-20	394	GSV-FOH-11	334	GSV-M12NUT	1077	GSV-VAPH-12C	402
GSV-BP-25	394	GSV-FOH-16	334	GSV-MBS-10S	417	GSV-VAPH-12C2	404
GSV-BP-30	394	GSV-FOH-16R	334	GSV-MBS-65S	416	GSV-VAPH-14C	402
GSV-BP-40	395	GSV-FOH-20R	334	GSV-MFA-2	412	GSV-VAPH-15C	402
GSV-BS-10	394	GSV-FOH-25R	335	GSV-MFA-5	413	GSV-VAPH-15C1	400
GSV-BS-15	394	GSV-FOH-30R	335	GSV-MFA-6	414	GSV-VAPH-20C	403
GSV-BS-20	394	GSV-FOH-40R	335	GSV-MFA-8	415	GSV-VAPH-20C1	400
GSV-BS-25	394	GSV-FOH-50R	335	GSV-MFA-35	413	GSV-VAPH-20C2	404
GSV-BS-30	394	GSV-FON-5	334	GSV-MFS-6	414	GSV-VAPH-25C	403
GSV-BS-40	395	GSV-FON-7	334	GSV-OBS-8x25	410	GSV-VAPH-30C	403
GSV-BSAX-05	398	GSV-FON-11	334	GSV-OBS-15x45	410	GSV-VAPH-35C	403
GSV-BSAX-10	398	GSV-FON-16	334	GSV-OBS-25x75	410	GSV-VAPH-40C	403
GSV-BSAX-15	398	GSV-FON-16R	334	GSV-OHT-24	330	GSV-VAPH-45C	403
GSV-BSAX-20	398	GSV-FON-20R	334	GSV-OHT-357	330	GSV-VFIL-S	401
GSV-BSAX-25	398	GSV-FON-25R	335	GSV-OHT-515	330	GSV-VFIL-S10	401
GSV-BSAX-30	398	GSV-FON-30R	335	GSV-OHT-618	330	GSV-VFIL-S20	401
GSV-BSAX-40	399	GSV-FON-40R	335	GSV-OHT-824	330	GSV-VFIL-S30	401
GSV-BSF-15	407	GSV-FON-50R	335	GSV-OHT-1030	331	GSV-VFIL-SS-5	401
GSV-BSF-20	407	GSV-FOS-5	334	GSV-OHT-1545	331	GSV-VFIL-SS10	401
GSV-BSF-25	407	GSV-FOS-7	334	GSV-OHT-2060	331	GSV-VFIL-SS20	401
GSV-BSF-30	407	GSV-FOS-11	334	GSV-OHT-2575	331	GSV-VFIL-SS30	401
GSV-BSF-40	407	GSV-FOS-16	334	GSV-OS-5x15	408	GSV-VG-056	1018
GSV-BX75P-4K-07UFF	347	GSV-FOS-16R	334	GSV-OS-6x18	408	GSV-VG-119	1018
GSV-CP-021AL	401	GSV-FOS-20R	334	GSV-OS-8x24	408	GSV-VG-242	1018
GSV-CP-022AL	401	GSV-FOS-25R	335	GSV-OS-10x30	409	GSV-VG-ZU05LA	1022
		GSV-FOS-30R	335	GSV-OS-15x45	409	GSV-VG-ZU05SA	1022
		GSV-FOS-40R	335	GSV-OS-20x60	409	GSV-VG-ZU07LA	1022

Part Number Index

Part #	Page #		
GSV-VG-ZU07SA	1022	IF12E02	577
GT-NK10	909	IF12S01	577
GT-NK10	909	IF14E02	577
GW-10	644	IF14S01	577
GW-10-FBA	649	IF16E02	577
GW-10-FBN	649	IF16S01	577
GW-10-NC	644	IF18E02	577
GW-10-NO	644	IF18S01	577
GW-16	644	IF20E02	577
GW-16-FBA	649	IF20S01	577
GW-16-FBN	649	IF22E02	577
GW-16-NC	644	IF22S01	577
GW-16-NO	644	IF27E02	577
GW-20	644	IF27S01	577
GW-20-FBA	649	IF33E02	577
GW-20-FBN	649	IF33S01	577
GW-20-NC	644	IF41E02	577
GW-20-NO	644	IF41S01	577
GW-25	644	IF47E02	577
GW-25-FBA	649	IF47S01	577
GW-25-FBN	649	IF51E02	577
GW-25-NC	644	IF51S01	577
GW-25-NO	644	IF63E02	577
GWP-3-U	193	IF63S01	577
GWP4L/X	193	IFU04N03RT	564
GWP5X	193	IFU04S01RT	564
GWP6U	193	IFU05N03RT	564
GWP-EX3-U	193	IFU05S01RT	564
GWP-EX4-U	193	IFU06N03RT	564
GWP-EX5-U	193	IFU06S01RT	564
GX-10S	696	IFU07N03RT	564
GX-16S	696	IFU07S01RT	564
GX-20S	696	IGP-14-8-12	580
GX-25S	696	IGP-14-10-14-EP	580
HKS5-15X	192	IGP-14-11-15	580
HKS5-62X	192	IGP-14-13-17-EP	580
HMDXX1	1027	IGP-14-14-18	580
HMDXX2	1027	IGP-14-16-20-EP	580
HUE-20-30-20	770	IGP-14-17-21	580
HUE-20-50-20	770	IGP-14-19-23-EP	580
HUE-20-75-20	770	IGP-14-20-24	580
HUE-20-100-20	770	IGP-14-22-26-EP	580
HUE-20-125-20	770	IGP-14-23-27	580
HUE-X-25-30-20	772	IGP-14-25-29-EP	580
HUE-X-25-50-20	772	IGP-20-26-30	582
HUE-X-25-75-20	772	IGP-20-28-32-EP	582
HUE-X-25-100-20	772	IGP-20-29-33	582
HUE-X-25-125-20	772	IGP-20-31-35-EP	582
HUZ-P-32-50-CS	501	IGP-20-32-36	582
HUZ-P-32-50-EP	501	IGP-20-34-38-EP	582
HUZ-P-32-50-LG	501	IGP-20-35-39	582
I34K	459	IGP-20-37-41-EP	582
IE-AL-K	1005	IGP-20-38-42	582
IE-AL-K-NPN	1005	IGP-20-40-44-EP	582
IES-8-NPN	499	IGP-20-41-45	582
IES-8-NPN	1005	IGP-20-43-47-EP	582
IES-8-PNP	499	IGP-20-44-49	582
IES-8-PNP	1005	IGP-20-46-50-EP	582
IF04N03	565	IR01	563
IF04S01	565	ITSC-45-DE	818
IF05N03	565	ITSC-45-S4	818
IF05S01	565	ITSC-45-S6	818
IF06N03	565	ITSC-45-S8	818
IF06S01	565	ITSC-164	818
IF07N03	565	ITSC-164A	818
IF07S01	565	ITSC-166	818
IF08E02	577	ITSC-166A	818
IF08S01	577	ITSC-168	818
IF10E02	577	ITSC-168A	818
IF10S01	577	ITSC-454	818
		ITSC-454A	818
		ITSC-456	818
		ITSC-456A	818
		ITSC-458	818
		ITSC-458A	818
		J-40/40-2M	190
		J-80/40-2M	190
		JGN-10N	461
		JGN-10N	868
		JGN-10S-A52	461
		JGN-20S-A52	461
		JGW-10S-A50	461
		JGW-20S-A50	461
		JP-25	734
		JP-32	734
		JP-45	734
		KBV10/18L	198
		KBV18/18L	198
		KBV25-25X	198
		KBV25-50X	198
		KBV40-40J	198
		KBV40-80J	198
		KBV50-25X	198
		KBV80-40J	198
		KBV-X-10-25	198
		KBV-X-18-25	198
		KG18	982
		KHR-20-100	911
		KIT3-DD2016P	451
		KIT3-OFR14	529
		KIT3-OFR20	529
		KIT3-OFR30	529
		KIT3-PB0170	439
		KIT-UR-G	152
		KIT-UR-J	153
		KIT-UR-V	134
		KK1	1000
		KKB-X-JU	191
		KKP-25-20	191
		KKP-25-35	191
		KKS6L	222
		KKS10L	215
		KKS14X	215
		KKS20X	215
		KPL18-18L	199
		KPL25-25X	199
		KPL25-50X	199
		KPL25X-L18	199
		KPL40-40J	199
		KPL40J-X25	199
		KPL50-40J	199
		KPL50-50X	199
		KPL80-40J	199
		KPL80-80J	199
		KPL80J-50X	199
		KPL80J-X25	199
		KPL-D-JU-40	199
		K-SENS	1002
		KVB6L	222
		KVB10L/X	205
		KVB14X	205
		KVB20J	205
		KVB20X	205
		KVB30J	205
		KVB-G-10	206
		KVB-G-14	206
		KVB-G-14-JU	206
		KVB-G-20	206
		KVB-G-20-JU	206
		KW18	982
		L-18/10-1M	191
		L-18/18-1M	191
		LES-6-NPN	982
		LES-6-PNP	982
		LOQC	34
		LRS-18	982
		LVT1/4X	1061
		LVT1/8X	1061
		LVTM5X	1061
		MAG20	590
		MAG20-BA	590
		MAG20-IF	590
		MAQC	30
		MBQC	30
		MC10MH	799
		MC225MH2	799
		MC600MH2	799
		MFC10	576
		MFC12	576
		MFC14	576
		MFC18	576
		MFC22	576
		MFC27	576
		MFC33	576
		MFC41	576
		MFC51	576
		MFC63	576
		MFD08E02CL	572
		MFD08E02HL	574
		MFD08S01CL	572
		MFD08S01HL	574
		MFD10E02CL	572
		MFD10E02HL	574
		MFD10S01CL	572
		MFD10S01HL	574
		MFD12E02CL	572
		MFD12E02HL	574
		MFD12S01CL	572
		MFD12S01HL	574
		MFD14E02CL	572
		MFD14E02HL	574
		MFD14S01CL	572
		MFD14S01HL	574
		MFD16E02CL	572
		MFD16E02HL	574
		MFD16S01CL	572
		MFD16S01HL	574
		MFD18E02CL	572
		MFD18E02HL	574
		MFD18S01CL	572
		MFD18S01HL	574
		MFD20E02CL	572
		MFD20E02HL	574
		MFD20S01CL	572
		MFD20S01HL	574
		MFD22E02CL	572
		MFD22E02HL	574
		MFD22S01CL	572
		MFD22S01HL	574
		MFD27E02CL	572
		MFD27E02HL	574
		MFD27K	576
		MFD27S01CL	572
		MFD27S01HL	574
		MFD33E02CL	572
		MFD33E02HL	574
		MFD33K	576
		MFD33S01CL	572
		MFD33S01HL	574
		MFD41E02CL	572

Part Number Index

Part #	Page #						
MFD41E02HL	574	MFI-A32	239	MFI-A119	245	MFI-A219	237
MFD41K	576	MFI-A33	239	MFI-A120	245	MFI-A220	237
MFD41S01CL	572	MFI-A34	246	MFI-A121	245	MFI-A221	241
MFD41S01HL	574	MFI-A35	246	MFI-A122	245	MFI-A222	242
MFD47E02CL	573	MFI-A35-H	246	MFI-A123	245	MFI-A223	242
MFD47E02HL	575	MFI-A36	246	MFI-A124	245	MFI-A224	242
MFD47S01CL	573	MFI-A36-H	246	MFI-A125	245	MFI-A225	243
MFD47S01HL	575	MFI-A37	247	MFI-A130	72	MFI-A226	240
MFD51E02CL	573	MFI-A38	247	MFI-A131	70	MFI-A227	240
MFD51E02HL	575	MFI-A39	247	MFI-A132	70	MFI-A228	240
MFD51K	576	MFI-A40	72	MFI-A133	72	MFI-A229	240
MFD51S01CL	573	MFI-A41	73	MFI-A134	70	MFI-A230	240
MFD51S01HL	575	MFI-A41-H	83	MFI-A135	72	MFI-A231	240
MFD63E02CL	573	MFI-A42	70	MFI-A140	235	MFI-A232	241
MFD63E02HL	575	MFI-A43	71	MFI-A141	235	MFI-A233	241
MFD63K	576	MFI-A43-H	83	MFI-A150	258	MFI-A234	241
MFD63S01CL	573	MFI-A46	261	MFI-A151	258	MFI-A235	262
MFD63S01HL	575	MFI-A47	261	MFI-A152	258	MFI-A236	262
MFI-002	1078	MFI-A48	260	MFI-A153	258	MFI-A237	262
MFI-003	234	MFI-A49	260	MFI-A154	258	MFI-A238	262
MFI-006	234	MFI-A50	260	MFI-A155	258	MFI-A239	231
MFI-009	234	MFI-A51	260	MFI-A156	247	MFI-A244	238
MFI-016	234	MFI-A52	260	MFI-A157	254	MFI-A250	255
MFI-020	234	MFI-A53	260	MFI-A158	254	MFI-A251	255
MFI-022	234	MFI-A54	261	MFI-A159	254	MFI-A252	255
MFI-025	234	MFI-A55	261	MFI-A160	254	MFI-A253	255
MFI-027	234	MFI-A56	261	MFI-A161	254	MFI-A254	54
MFI-029	234	MFI-A59	252	MFI-A162	254	MFI-A255	55
MFI-043	234	MFI-A60	252	MFI-A163	254	MFI-A256	257
MFI-045	234	MFI-A61	252	MFI-A164	254	MFI-A257	257
MFI-050	234	MFI-A62	252	MFI-A165	254	MFI-A258	257
MFI-055	234	MFI-A63	252	MFI-A165-H	254	MFI-A259	257
MFI-148	234	MFI-A64	252	MFI-A166	254	MFI-A260	257
MFI-177	234	MFI-A65	252	MFI-A166-H	254	MFI-A261	257
MFI-178	234	MFI-A66	1057	MFI-A167	252	MFI-A262	257
MFI-477	234	MFI-A67	1057	MFI-A168	252	MFI-A263	257
MFI-489	234	MFI-A68	1057	MFI-A169	252	MFI-A264	257
MFI-490	234	MFI-A69	1056	MFI-A170	256	MFI-A265	239
MFI-A01	248	MFI-A70	1056	MFI-A171	256	MFI-A266	244
MFI-A02	248	MFI-A71	256	MFI-A172	256	MFI-A267	244
MFI-A03	248	MFI-A72	256	MFI-A175	239	MFI-A268	244
MFI-A04	249	MFI-A73	256	MFI-A176	538	MFI-A269	244
MFI-A05	249	MFI-A74	256	MFI-A178	247	MFI-A270	248
MFI-A06	249	MFI-A75	256	MFI-A181	245	MFI-A277	48
MFI-A07	249	MFI-A76	256	MFI-A182	245	MFI-A277	232
MFI-A08	249	MFI-A77	254	MFI-A183	245	MFI-A290	257
MFI-A09	246	MFI-A78	254	MFI-A184	245	MFI-A291	257
MFI-A10	246	MFI-A79	254	MFI-A195	253	MFI-A292	257
MFI-A11	239	MFI-A93	254	MFI-A196	253	MFI-A314	660
MFI-A12	239	MFI-A94	254	MFI-A197	253	MFI-A315	660
MFI-A13	239	MFI A95	254	MFI-A198	253	MFI-A316	660
MFI-A14	235	MFI-A100	233	MFI-A199	253	MFI-A317	660
MFI-A15	235	MFI-A101	233	MFI-A200	253	MFI-A318	731
MFI-A16	238	MFI-A102	48	MFI-A201	233	MFI-A319	731
MFI-A17	238	MFI-A103	48	MFI-A202	233	MFI-A320	731
MFI-A18	238	MFI-A104	244	MFI-A203	254	MFI-A321	628
MFI-A19	233	MFI-A105	244	MFI-A204	248	MFI-A322	628
MFI-A20	233	MFI-A106	244	MFI-A205	250	MFI-A323	628
MFI-A21	230	MFI-A107	244	MFI-A206	250	MFI-A324	628
MFI-A22	230	MFI-A108	244	MFI-A207	250	MFI-A325	685
MFI-A23	231	MFI-A109	244	MFI-A209	250	MFI-A326	685
MFI-A24	231	MFI-A110	244	MFI-A210	244	MFI-A327	685
MFI-A25	230	MFI-A111	244	MFI-A211	244	MFI-A332	252
MFI-A26	230	MFI-A112	244	MFI-A212	246	MFI-A343E	74
MFI-A27	230	MFI-A113	244	MFI-A213	246	MFI-A344	75
MFI-A28	230	MFI-A114	244	MFI-A214	247	MFI-A344-H	83
MFI-A29	239	MFI-A115	244	MFI-A215	247	MFI-A348	251
MFI-A29-H	239	MFI-A116	245	MFI-A216	247	MFI-A349	251
MFI-A30	239	MFI-A117	245	MFI-A217	236	MFI-A350	251
MFI-A31	239	MFI-A118	245	MFI-A218	236	MFI-A354	612

Part Number Index

Part #	Page #		
MFI-A360	774	MFU16S01HL	574
MFI-A372	126	MFU18E02CL	572
MFI-A374A	127	MFU18E02HL	574
MFI-A374B	127	MFU18S01CL	572
MFI-A379	1058	MFU18S01HL	574
MFI-A380	1058	MFU20E02CL	572
MFI-A381	1059	MFU20E02HL	574
MFI-A384	1059	MFU20S01CL	572
MFM-A11	832	MFU20S01HL	574
MFM-A17	837	MFU22E02CL	572
MFM-A18	837	MFU22E02HL	574
MFM-A30	836	MFU22S01CL	572
MFM-A36	836	MFU22S01HL	574
MFM-A45	836	MFU27E02CL	572
MFM-A56	836	MFU27E02HL	574
MFM-A57	839	MFU27K	576
MFM-A107	919	MFU27S01CL	572
MFM-A108	919	MFU27S01HL	574
MFM-A109	756	MFU33E02CL	572
MFM-A109	774	MFU33E02HL	574
MFM-A109	919	MFU33K	576
MFM-A117	756	MFU33S01CL	572
MFM-A118	756	MFU33S01HL	574
MFM-A119	756	MFU41E02CL	572
MFM-A501	242	MFU41E02HL	574
MFM-A502	242	MFU41K	576
MFM-A503	242	MFU41S01CL	572
MFM-A504	240	MFU41S01HL	574
MFM-A505	240	MFU47E02CL	573
MFM-A506	240	MFU47E02HL	575
MFM-A507	241	MFU47S01CL	573
MFM-A508	241	MFU47S01HL	575
MFM-A509	241	MFU51E02CL	573
MFM-A510	240	MFU51E02HL	575
MFM-A511	240	MFU51K	576
MFM-A512	240	MFU51S01CL	573
MFM-A513	241	MFU51S01HL	575
MFM-A514	243	MFU63E02CL	573
MFM-A515	241	MFU63E02HL	575
MFP-A01	459	MFU63K	576
MFP-A01	629	MFU63S01CL	573
MFP-A01	661	MFU63S01HL	575
MFP-A04	661	MFZ-RZ-024BI	580
MFP-A05	833	MFZ-RZ-042LI	582
MFP-A06	833	MGX2005	690
MFP-A07	833	MGX2508	690
MFP-A08	833	MGX3210	690
MFP-K28	231	MGX3214	690
MFP-K29	231	MGX4015	690
MFP-K50	231	MGX5020	690
MFS-T2-3-7	1005	MGX6030	690
MFU08E02CL	572	MHC2-10D	626
MFU08E02HL	574	MHC2-10S	626
MFU08S01CL	572	MHC2-16D	626
MFU08S01HL	574	MHC2-16S	626
MFU10E02CL	572	MHC2-20D	626
MFU10E02HL	574	MHC2-20S	626
MFU10S01CL	572	MHC2-25D	626
MFU10S01HL	574	MHC2-25S	626
MFU12E02CL	572	MHF2-8D	668
MFU12E02HL	574	MHF2-8D1	668
MFU12S01CL	572	MHF2-12D	668
MFU12S01HL	574	MHF2-12D1	668
MFU14E02CL	572	MHZ2-10C	624
MFU14E02HL	574	MHZ2-10D	624
MFU14S01CL	572	MHZ2-10S	624
MFU14S01HL	574	MHZ2-16C	624
MFU16E02CL	572	MHZ2-16D	624
MFU16E02HL	574	MHZ2-16S	624
MFU16S01CL	572	MHZ2-20C	624
		MHZ2-20D	624
		MHZ2-25C	624
		MHZ2-25D	624
		MHZ2-25S	624
		MMDVA1	1027
		MMDVA2	1027
		MPBM1640	606
		MPBM2540	606
		MPBM3240	606
		MPBS1630	612
		MPBS1630N	612
		MPBS1630NS	612
		MPBS1630S	612
		MPLM1630	604
		MPLM2535	604
		MPLM3240	604
		MPPM1606	600
		MPPM2508	600
		MPPM3210	600
		MPR2553	610
		MPRM1690	608
		MPRM2590	608
		MPRM3290	608
		MPTM1606	614
		MPTM2508	614
		MPTM3210	614
		MPXM1612	602
		MPXM2516	602
		MPXM3220	602
		MRE16180	616
		MRE25180	616
		MRE32180	616
		MTRE3204C	618
		MTRE3206C	618
		MTRE3208C	618
		MTRE3212C	618
		MXS6-10	776
		MXS6-20	776
		MXS6-30	776
		MXS6-40	776
		MXS6-50	776
		MXS8-10	776
		MXS8-20	776
		MXS8-30	776
		MXS8-40	776
		MXS8-50	776
		MXS8-75	776
		MXS12-10	776
		MXS12-20	776
		MXS12-30	776
		MXS12-40	776
		MXS12-50	776
		MXS12-75	776
		MXS12-100	776
		MXS-AS6-X11	777
		MXS-AS8-X11	777
		MXS-AS8-X12	777
		MXS-AT6-X11	777
		MXS-AT8-X11	777
		MXS-AT8-X12	777
		MXS-AT12-X11	777
		MXS-AT12-X12	777
		MXS-BS8	777
		MXS-BS12	777
		MXS-BT8	777
		MXS-BT12	777
		NEEDLE-37	589
		NEEDLE-50	588
		NEEDLE-NGR-16	588
		NGR-12-6	589
		NGR-12-6-DS-A	589
		NGR-12-D	588
		NGR-12-DL	588
		NGR-16-18E	588
		NGR-16-18EZ	588
		NGR-16-24E	588
		NGR-X-16-10	589
		NILE-SP1	861
		NILE-SP1	961
		NILE-SP3	869
		NILE-SP3	961
		NILE-SP5	872
		NILE-SP5	961
		NILE-SP10	961
		OF10L60	262
		OF14G	528
		OF14H	528
		OF14L80	262
		OF20G	528
		OF20H	528
		OF20L100	262
		OF20L250	262
		OF30G	528
		OF30H	528
		OF30L120	262
		OF30L250	262
		OFA14-35	517
		OFA-20-35	517
		OFA-20-35S	516
		OFA-30-35	517
		OFA-30-35S	516
		OFA50-35	517
		OFA50-35S	516
		OFB40-A30	756
		OFB40-A50	756
		OFB40-B30	756
		OFB40-B50	756
		OFB40-C30	756
		OFB40-C50	756
		OFC5-S	747
		OFC14-10	746
		OFC20-20	746
		OFC30-30	746
		OFC-A001	748
		OFC-A002	748
		OFC-A003	748
		OFC-A004	748
		OFC-A005	748
		OFC-A006	749
		OFC-A007	750
		OFC-A008	751
		OFD20	563
		OFL2010	738
		OFL3015	738
		OFL3030	738
		OFN20-90	540
		OFN20-90SD	540
		OFN30-90	540
		OFN30-90SD	540
		OFF14A-25	532
		OFF14P-25	530
		OFF20N-20	534
		OFF20N-20R	530
		OFF20P-20	534
		OFF20S-20	534
		OFF20-S-20R	530
		OFF20V-20	534

Part Number Index

Part #	Page #						
OFP20-V-20R	530	OR-103860	168	PB-0181-S	431	PRO-SSR4N225G	978
OFP21A-20	532	OR-104086	176	PB-0182-S	431	PSK-100-D6N	986
OFP21N-20	530	OR-104087	176	PB-0187-S	439	PSK-100-D6P	986
OFP21P-20	530	OR-104160	161	PB-0187-S2	433	PT23-K4	586
OFP21S-20	530	OR-104161	161	PBQC	30	PT23N	586
OFP21V-20	530	OR-104162	161	PCB-10	88	PT23S	586
OFR14-95	511	OR-104240	161	PCB-14	88	PT25	584
OFR14-95-14	529	OR-104241	161	PCB-20	88	PT-25-05	584
OFR14-95G	515	OR-104277	120	PCB-30	88	PT28	584
OFR14-95M	513	OR-105877	161	PCC-1000	231	PT30-K4	586
OFR-20-95	511	OR-106376	154	PE-1610	709	PT30N	586
OFR20-95-09	529	OR-106553	155	PE-1625	709	PT30S	586
OFR20-95-14	529	OR-106559	155	PE-1640	709	PTR-05-RK	959
OFR20-95G	515	OR-106576	155	PE-1680	709	PTR-10-RK	959
OFR20-95M	513	OR-107242	141	PE-2520	710	PTR-20-RK	959
OFR-20-95S	510	OR-107456	120	PE-2540	710	PTR-30-RK	959
OFR20-95SG	514	OR-108088	176	PE-2560	710	PTR-50-RK	959
OFR20-95SM	512	P2M1K0GL	1027	PE-4520	711	QC50-A	23
OFR-30-95	511	P2M1K0GN	1027	PE-4540	711	QC50-B	23
OFR-30-95-07	529	P2M1PXCA	1027	PE-4560	711	QC50-H	58
OFR30-95-15	529	P2M1PXFA	1027	PE-4580	711	QC50-K	33
OFR30-95G	515	P2M1PXSL	1027	PE-16150	709	QC50-V	58
OFR30-95M	513	P2M1PXSN	1027	PE-16200	709	QC75-A	114
OFR-30-95S	510	P2M1PXVA	1031	PE-25100	710	QC75-B	114
OFR30-95SG	514	P2M1T3ES2C	1026	PE-25200	710	QC90-A	25
OFR30-95SM	512	P2M1T4EE2C	1026	PE-45200	711	QC90-B	25
OFR50-95	511	P2M1T4ES2C	1026	PKS10	215	QC90-H	59
OFR50-95S	510	P2M1TCEE2C	1026	PKS14	215	QC90-V	59
OFR1495-07	529	P2M1TDDEE2C	1026	PKS20	215	QC150-A	27
OFR1495-16	529	P2M1TEEE2C	1026	PKS30	215	QC150-B	27
OFR2095-16	529	P2M1TGEE2C	1026	PMAQC	30	QC150-H	60
OFR2095-16	530	P2M2BXT0A	1027	PMBQC	30	QC150-V	60
OFR3095-16	529	P2M2HXT01	1027	PMDYY1	1027	QC200-A	29
OFR3095-16	530	P2M2PXCA	1027	PMDYY2	1027	QC200-B	29
OFS14-90	519	P2M2PXFA	1027	PN-010-2	692	QC200-H	61
OFS20-90	519	P2M2PXSL	1027	PN-010-3	692	QC200-V	61
OFS20-90S	518	P2M2PXSN	1027	PN-016-2	692	QC9065	36
OFS30-90	519	P2M2T3ES2C	1026	PN-016-3	692	QC150100	36
OFS30-90S	518	P2M2T4EE2C	1026	PN-025-2	692	QC200120	36
OFX14-06	506	P2M2T4ES2C	1026	PN-025-3	692	QCP50-B	51
OFX14-06-07	506	P2M2TCEE2C	1026	PN-040-2	692	QCP90-B	51
OFX20-10	506	P2M2TDEE2C	1026	PN-040-3	692	QCP150-B	51
OFX20-10-09	506	P2M2TEEE2C	1026	PQ1608	728	QCP160-B	51
OFX30-15	506	P2M2TGEE2C	1026	PQ2012	728	QCP200-B	51
OFX30-15-09	506	P8CS0803J	1027	PQ2516	728	QCX90-A	38
OFX50-20	506	P8LS08L526C	1027	PQ3015	728	QCX150-A	39
OFX50-20-08	506	PAAT16R	420	PQ3523	728	QCX160-A	39
OP-26751	970	PAAT20R	420	PQ4533	728	QCX200-A	39
OR-100064	140	PAAT30R	421	PQ5047	728	QGR-20	744
OR-100669	157	PAAT40R	421	PQ6063	728	R20	806
OR-100670	159	PAAT50R	421	PRO-SN3M215G	978	R21	808
OR-101661	140	PAQC	30	PRO-SN3M215HSG	655	R32	806
OR-101788	122	PB-0002	443	PRO-SN3M215HSG	978	R33	808
OR-102012	156	PB-0007-1	442	PRO-SN3N215G	978	R63	806
OR-102014	120	PB-0007-S3	442	PRO-SN3N215HSG	655	R64	808
OR-102021	158	PB-0008-S3	442	PRO-SN3N215HSG	978	RBT30	542
OR-102037	120	PB-0013-S2	433	PRO-SN4M225G	978	RBT40	542
OR-102111	123	PB-0014	434	PRO-SN4M225HSG	655	RBT50	542
OR-102113	120	PB-0015	434	PRO-SN4M225HSG	978	RBT63	542
OR-102326	120	PB-0017	435	PRO-SN4N225G	978	RBT80	542
OR-102344	182	PB-0017-FBA	435	PRO-SN4N225HSG	655	RE-SW-C	962
OR-102359	182	PB-0017-FBP	435	PRO-SN4N225HSG	978	RE-SW-S	962
OR-102360	182	PB-0140	436	PRO-SPB	981	RE-VN-C	962
OR-102361	182	PB-0150	437	PRO-SS3M215G	978	RE-VN-S	962
OR-102362	182	PB-0160	440	PRO-SS3N215G	978	RG-BJSU6	1016
OR-102844	138	PB-0170	438	PRO-SS4M225G	978	RHZ-SWH-R-90	37
OR-103456	168	PB-0170-05	439	PRO-SS4N225G	978	RHZ-SWH-R-150	37
OR-103666	160	PB-0170-05F	439	PRO-SSR3M215G	978	RMAQC	116
OR-103689	168	PB-0180-S	431	PRO-SSR3N215G	978	RMB-0610-10	491
OR-103691	168	PB-0180-S2	433	PRO-SSR4M225G	978	RMBQC	116

Part Number Index

Part #	Page #				
ROB -0610-10.....	491	SGP-20-FBP2.....	663	SSY4N225G.....	1002
RPL2.....	1001	SGP-20S.....	654	STBM4L.....	192
RPL4.....	1001	SGP-20S-KU.....	654	STBM5X.....	192
RPL6.....	1001	SGP-25-FBA.....	662	STN1/4.....	69
RPL8.....	1001	SGP-25-FBA2.....	663	STN1/8.....	69
RRAQC.....	116	SGP-25-FBP.....	662	STNM5.....	69
RRAQCN.....	116	SGP-25-FBP2.....	663	SVB25-25X.....	196
RRBQC.....	116	SGP-25S.....	654	SVB25-50/25X.....	196
RRK-93.....	1004	SGP-25S-KU.....	654	SVB50/25-50/25X.....	197
RT-10.....	798	SGP-32-FBA.....	662	SVB50/25X.....	197
RT-12.....	798	SGP-32-FBA2.....	663	SWH-DS-50.....	33
RT-20.....	798	SGP-32-FBP.....	662	SWH-DS-150.....	33
RT-25.....	798	SGP-32-FBP2.....	663	SWH-G-50.....	17
RT-35.....	798	SGP-32S.....	654	SWH-G-90.....	19
RT-45.....	798	SGP-32S-KU.....	654	SWH-G-150.....	21
RT-63.....	798	SGP-40-FBA.....	662	SWH-R-50.....	17
RTD-10.....	804	SGP-40-FBA2.....	663	SWH-R-90.....	19
RTD-12.....	804	SGP-40-FBP.....	662	SWH-R-150.....	21
RTD-20.....	804	SGP-40-FBP2.....	663	SWH-SH-G-50.....	35
RTD-25.....	804	SGP-40S.....	654	SWH-SH-G-90150.....	35
RTD-35.....	804	SGP-40S-KU.....	654	SWM-0-OSK.....	65
RTD-45.....	804	SGP-50S.....	654	SWM-1-OSK.....	65
RTD-63.....	804	SH-GRZ-10-08.....	487	SWM-2-KH-OSK.....	66
SAFETY 1.....	263	SKL-15.....	911	SWM-2-OSK.....	65
SAS1/4X.....	220	SL3M203G.....	1003	SWM-3-OSK.....	65
SAS1/8X.....	220	SL3N203G.....	1003	SWMGR-0.....	63
SB2C.....	988	SL4M225G.....	1003	SWMGR-01.....	63
SB2C-MP.....	988	SL4N225G.....	1003	SWMGR-1.....	63
SB4C.....	988	SN3M203G.....	1002	SWMGR-2.....	63
SB4C-MP.....	988	SN3N203G.....	1002	SWMGR-3.....	63
SB6C.....	988	SN4M225G.....	1002	SWP-014.....	529
SB6C-MP.....	988	SN4N225G.....	1002	SWP-020.....	529
SB8C.....	988	SPR-01.....	861	SWP-020.....	744
SB8C-MP.....	988	SPR-02.....	961	SWP-020.....	745
SB8F.....	992	SPR-03.....	865	SWP-030.....	529
SB12C.....	988	SPR-04.....	961	SWP-050.....	529
SB12C-MP.....	988	SPR-05.....	881	SX25S01.....	720
SB15T.....	993	SPR-07.....	961	SX40S01.....	720
SB-JUMPER-18.....	988	SPR-08.....	961	SX50S01.....	720
SB-JUMPER-31.....	988	SPR-09.....	961	SX63S01.....	720
SBMK.....	995	SPR-10.....	961	SX2510.....	720
SBMK.....	997	SPR-11.....	961	SX2520.....	720
SBMM.....	995	SPT-05R.....	829	SX4020.....	720
SBMM-E.....	997	SPT-10M.....	958	SX4040.....	720
SBMS.....	995	SPT-10R.....	829	SX5030.....	720
SBMS-E.....	997	SPT-20M.....	958	SX5060.....	720
SBP-07-G01-SDA.....	1019	SPT-20R.....	829	SX6340.....	720
SBP-10-G02-SDA.....	1019	SPT-30M.....	958	SX6380.....	720
SBP-15-G02-SDA.....	1019	SPT-30R.....	829	SXT2505.....	722
SC3M203-G.....	1003	SPT-50R.....	829	SXT4008.....	722
SC3N203G.....	1003	SQC100-A.....	76	SXT5012.....	722
SC4M225-G.....	1003	SQC160-A.....	76	SXT6315.....	722
SC4N225G.....	1003	SQC250-A.....	76	SZ08.....	676
SC190-HD-M4.....	799	SQM160-B.....	77	SZ08-NO.....	676
SEO-5.....	987	SQP160-B.....	77	SZ12.....	676
SEO-10.....	987	SR1C5G.....	987	SZ12-NO.....	676
SGM-30-G18-IG.....	592	SR1C-012.....	987	SZ16.....	676
SGM-30-RR.....	592	SS1C225-G.....	1002	SZ16-NO.....	676
SGM-40-G14-IG.....	592	SS2C203-G.....	1002	SZ20.....	676
SGM-40-RR.....	592	SS3M203G.....	1002	SZ20-NO.....	676
SGM-50-G14-IG.....	592	SS3N203G.....	1002	SZ25.....	676
SGM-50-RR.....	592	SS4M225G.....	1002	SZ25-NO.....	676
SGM-HP-20-G18-IG.....	594	SS4N225G.....	1002	SZ32.....	676
SGM-HP20-RR.....	594	SSQ3M203G.....	1002	SZ32-NO.....	676
SGM-HP-30-G18-IG.....	594	SSQ3N203G.....	1002	SZ40.....	676
SGM-HP30-RR.....	594	SSQ4M225G.....	1002	SZD12-20A.....	760
SGP-16S.....	654	SSQ4N225G.....	1002	SZD20-50A.....	760
SGP-20-FBA.....	662	SSY3M203G.....	1002	SZD32-50A.....	760
SGP-20-FBA2.....	663	SSY3N203G.....	1002	T30.....	732
SGP-20-FBP.....	662	SSY4M225G.....	1002	T40.....	732
				T63.....	732
				TFA10-1A.....	555
				TFA10-1N.....	555
				TFA10-2A.....	555
				TFA10-2N.....	555
				TFA10-25.....	550
				TFA10-SF.....	554
				TFA10-SP05.....	550
				TFA14-1A.....	555
				TFA14-1N.....	555
				TFA14-2A.....	555
				TFA14-2N.....	555
				TFA14-25.....	550
				TFA14-SF.....	554
				TFA14-SP05.....	550
				TFA20-1A.....	555
				TFA20-1N.....	555
				TFA20-2A.....	555
				TFA20-2N.....	555
				TFA20-25.....	550
				TFA20-25S.....	550
				TFA20-SF.....	554
				TFA20-SP10.....	453
				TFA20-SP10.....	550
				TH2725.....	726
				TH3302.....	726
				TH3304.....	726
				TH4503.....	726
				TH4506.....	726
				TH5404.....	726
				TH5408.....	726
				TH7605.....	727
				TH7610.....	727
				TH9606.....	727
				TH9613.....	727
				TH12508.....	727
				TH12516.....	727
				TK10M-1-SP18482.....	799
				TR-1062-1.....	404
				TR-1062-2.....	404
				TR-1062-3.....	404
				TR-1062-4.....	404
				UAI-IEK-8-NPN.....	1005
				UAI-IEK-8-PNP.....	1005
				UVF25X.....	192
				UVF50X.....	192
				UVV25X.....	192
				UVV50X.....	192
				V0111E02.....	386
				V0111H04.....	386
				V0111S01.....	386
				V0116E02.....	386
				V0116H04.....	386
				V0116S01.....	386
				V0122E02.....	386
				V0122H04.....	386
				V0122S01.....	386
				V0133E02.....	387
				V0133H04.....	387
				V0133S01.....	387
				V0142E02.....	387
				V0142H04.....	387
				V0142S01.....	387
				V0153E02.....	387
				V0153H04.....	387
				V0153S01.....	387
				V0211E02.....	388
				V0211H04.....	388
				V0211S01.....	388
				V0216E02.....	388

Part Number Index

Part #	Page #						
V0216H04	388	VN1-2-S	360	VN3-5-N	366	VSET2025F18	298
V0216S01	388	VN1-3.5-H	360	VN3-5-S	366	VSET2050F14	298
V0222E02	388	VN1-3.5-N	360	VN3-7-H	366	VSET2050F18	298
V0222H04	388	VN1-3.5-S	360	VN3-8-N	366	VSINF2050-NC	300
V0222S01	388	VN1-3.5-V	413	VN3-8-S	366	VSINF2050-NO	300
V0233E02	388	VN1-5-H	360	VN3-10-N	366	VSINF30100-NC	300
V0233H04	388	VN1-5-N	360	VN3-10-S	366	VSINF30100-NO	300
V0233S01	388	VN1-5-S	360	VN3-15-N	366	VSNG-1010	290
V0242E02	389	VN1-6-N	414	VN3-15-S	366	VSNG-1025	290
V0242H04	389	VN1-8-H	360	VN3-18-N	366	VSNG-1420	290
V0242S01	389	VN1-8-N	360	VN3-18-S	366	VSNG-1435	290
V0253E02	389	VN1-8-S	360	VN3-20-N	366	VSNG-2025-F14	290
V0253H04	389	VN1-10-H	360	VN3-20-S	366	VSNG-2025-F18	290
V0253S01	389	VN1-10-N	360	VN3-30-N	367	VSNG-2050-F14	290
VAC05F05F	259	VN1-10-S	360	VN3-30-S	367	VSNG-2050-F18	290
VAC14F14F	259	VN1-15-H	360	VN3-40-N	367	VSNTF2050-NC	302
VAC18F18F	259	VN1-15-N	360	VN3-40-S	367	VSNTF2050-NO	302
VAPH-8C-SP	406	VN1-15-S	360	VN3-60-N	367	VSNTF30100-NC	302
VAPH-12C-SP	406	VN1 20 H	360	VN3-60-S	367	VSNTF30100-NO	302
VAPH-15C-3	405	VN1-20-N	360	VN3-90-N	367	VSNTG-1010	292
VAPH-15C-SP	406	VN1-20-S	360	VN3-90-S	367	VSNTG-1025	292
VAPH-20C-3	405	VN1-25-H	361	VN10H-T4-PQ2-VQ2-O1P	1017	VSNTG-1420	292
VAPH-20C-SP	406	VN1-25-N	361	VPG-15-NBR-BM	368	VSNTG-1435	292
VAPH-30C-3	405	VN1-25-S	361	VPG-15-SI-BM	368	VSNTG-1620	292
VAPH-30C-SP	406	VN1-30-H	361	VPG-20-NBR-BM	368	VSNTG-1635	292
VAPH-40C-3	405	VN1-30-N	361	VPG-20-SI-BM	368	VSNTG-2025-F14	292
VAPH-40C-SP	406	VN1-30-S	361	VPG-30-NBR-BM	369	VSNTG-2025-F18	292
VAPH-60C-SP	406	VN1-40-H	361	VPG-30-SI-BM	369	VSNTG-2050-F14	292
VAQ1820	316	VN1-40-N	361	VPG-40-NBR-BM	369	VSNTG-2050-F18	292
VAQ1840	316	VN1-40-S	361	VPG-40-SI-BM	369	VSNTG-2540	292
VAQN1820	316	VN1-50-H	362	VPG-50-NBR-BM	369	VSNTG-2580	292
VAQN1840	316	VN1-50-N	362	VPG-50-SI-BM	369	VSRT-1010	286
VBG25-50X	200	VN1-50-S	362	VSA5	332	VSRT-1025	286
VBG25-75X	200	VN1-60-H	362	VSA10	373	VSRT-1420	286
VBG25-100X	200	VN1-60-N	362	VSA30	373	VSRT-1435	286
VBG40-160J	200	VN1-60-S	362	VSA30F	373	VSRT-2025	286
VBL50-50X	201	VN1-80-H	363	VSA40	373	VSRT-2050	286
VBL50-75X	201	VN1-80-N	363	VSA50	373	VSRTF2050-NC	300
VBL80-120J	201	VN1-80-S	363	VSA50F	373	VSRTF2050-NO	300
VBT50-75X	200	VN1-95-H	363	VSA60	373	VSRTF30100-NC	300
VBT100-75X	200	VN1-95-N	363	VSA60F	373	VSRTF30100-NO	300
VBT120-120J	200	VN1-95-S	363	VSA80	373	VSRT1010	288
VBW0-90X	203	VN2-4-H	416	VSA80F	373	VSRT1025	288
VBW45JU	201	VN2-4-N	416	VSA100	373	VSRT1420	288
VBW45X	201	VN2-4-S	416	VSA110	373	VSRT1435	288
VBW-JU-120	200	VN2-6-H	416	VSA110F	373	VSRT1620	288
VBW-X-120	200	VN2-6-N	416	VSAG-20-BNBR-BM	370	VSRT1635	288
VITE-455	1077	VN2-6-S	416	VSAG-20-BSI-BM	370	VSRT2025	288
VITE-456	1077	VN2-10-H	364	VSAG-30-NBR-BM	370	VSRT2050	288
VLR10-30	217	VN2-10-N	364	VSAG-30-SI-BM	370	VSRTF2050-NC	302
VLR10-60	217	VN2-10-S	364	VSAG-40-NBR-BM	371	VSRTF2050-NO	302
VLR10-90	217	VN2-15-H	364	VSAG-40-SI-BM	371	VSRTF30100-NC	302
VLR14-40	217	VN2-15-N	364	VSAG-50-NBR-BM	371	VSRTF30100-NO	302
VLR14-80	217	VN2-15-S	364	VSAG-50-SI-BM	371	VTB1/8J	1061
VLR14-120	217	VN2-20-H	364	VSD1420D10	315	VTB1/8X	1061
VLR20-50	217	VN2-20-N	364	VSD2025D10	315	VTB2-1-1/8J	1060
VLR20-100	217	VN2-20-S	364	VSD2025D20	315	VTB2-1-1/8X	1060
VLR20-150	217	VN2-30-H	364	VSE1010F05	296	VTB2-2-1/8J	1060
VLR30-80	217	VN2-30-N	364	VSE1025F05	296	VTB2-2-1/8X	1060
VLR30-140	217	VN2-30-S	364	VSE1420F18	296	VUVGL10M52-RTM5-1R8L	1017
VLR30-200	217	VN2-40-H	365	VSE1435F18	296	VVX1010F	294
VMK14	312	VN2-40-N	365	VSE2025F14	296	VVX1025F	294
VMK20	312	VN2-40-S	365	VSE2025F18	296	VVX1420F	294
VMK30	312	VN2-50-H	365	VSE2050F14	296	VVX1435F	294
VN1-1.5-N	412	VN2-50-N	365	VSE2050F18	296	VVX2025F	294
VN1-1.5-S	412	VN2-50-S	365	VSET1010F05	298	VVX2050F	294
VN1-1-N	412	VN2-75-H	365	VSET1025F05	298	WGS-QLEKD	33
VN1-1-S	412	VN2-75-N	365	VSET1620F18	298	WGS-QLEKGD	33
VN1-2-H	360	VN2-75-S	365	VSET1635F18	298	WGS-QLEKRD	33
VN1-2-N	360	VN3-5-H	366	VSET2025F14	298	WIV25X	195

Part Number Index

Part #	Page #				
WIV40J	195	WSL30X	209	X-10-SI	867
WIV50X	195	WSL-GA-JU30	210	X-10-ST	865
WIV80J	195	WSL-GA-X10	210	X-20-DA	873
WKA6-20	222	WSL-GA-X14	210	X-20-DA75	874
WKA6-40	222	WSL-GA-X20	210	X-20-DA90	875
WKA6-60	222	WSL-G-X-10-40-U	211	X-20-LA	875
WKA10-30	212	WSL-G-X-14-60-U	211	X-20-LI	877
WKA10-60	212	WSL-G-X-20-60-U	211	X-20-OR	878
WKA10-90	212	WSL-KG-JU20	207	X-20-OS	878
WKA14-40	212	WSL-KG-X10	207	X-20-PE	876
WKA14-80	212	WSL-KG-X14	207	X-20PELA49	876
WKA14-120	212	WSS1/4J	221	X-20-RV45	872
WKA20-50	212	WSS1/4X	221	X-20-SI	877
WKA20-50-BS	225	WSS1/8X	221	X-20-ST	871
WKA20-100	212	WSSM5L	221	X-25/10-1M	190
WKA20-100-BS	225	WST6L	223	X-25/18-1M	190
WKA20-150	212	WST10L	208	X-25/25-1M	190
WKA20-150-BS	225	WST10X	208	X-25/25-2M	190
WKA30-80	212	WST14L	208	X-30-DA	883
WKA30-140	212	WST14X	208	X-30-DA75	886
WKA30-200	212	WST20J	208	X-30-DA90	886
WLS1/4J	220	WST20J-BS	224	X-30-LA	885
WLS1/4X	220	WST20X	208	X-30-LI	888
WLS1/8X	220	WST20X-BS	224	X-30-OR	890
WLS-GA-X-1/4-1/8-50	220	WST30J	208	X-30-OS	890
WLSM5L/X	220	WST30X	208	X-30-PE	887
WSD1/4X	221	WSWJU20	204	X-30-SI	891
WSD1/8X	221	WSWJU30	204	X-30-ST	881
WSDM5L/X	221	WSWX10	204	X-50/25-1M	190
WSL6L	223	WSWX14	204	X-50/25-2M	190
WSL10L/X	209	WSWX20	204	XA-20	719
WSL10VX	209	X-5-LI	862	XA-26	719
WSL14VX	209	X-05-OR	863	XP-20	719
WSL14X	209	X-05-OS	863	XP-26	719
WSL20J	209	X-05-SI	860	XR-20	719
WSL20VJ	209	X-05-SI	862	XR-26	719
WSL20VX	209	X-5-ST	861	XT-20	719
WSL20X	209	X-10-DA	866	XT-26	719
WSL30J	209	X-10-LI	866	Y7PL-PNP	1004
WSL30VJ	209	X-10-OR	867	Y59AL-NPN	1004
WSL30VX	209	X-10-OS	867	Y59BL-REED	1004
				Z-0825	794
				Z-0825-D	794
				Z-0825-DS	794
				Z-0850	794
				Z-0850-D	794
				Z-0850-DS	794
				Z-1650	794
				Z-1650-D	794
				Z-1650-DS	794
				Z-2050-D	794
				Z-2050-DS	794
				Z-16100	794
				Z-16100-D	794
				Z-16100-DS	794
				Z-16150	794
				Z-16150-D	794
				Z-16150-DS	794
				Z-20100	794
				Z-20100-D	794
				Z-20100-DS	794
				Z-20150-D	794
				Z-20150-DS	794
				Z-20200-D	794
				Z-20200-DS	794
				ZBH-7	90
				ZBU-20-V	562
				ZBU-30-V	562
				ZE-0610P	779
				ZE-0620P	779
				ZE-0630P	779
				ZE-1010P	780
				ZE-1020P	780
				ZE-1030P	780
				ZE-1610P	781
				ZE-1620P	781
				ZE-1630P	781
				ZG-16-NC	844
				ZG-16-NO	844
				ZG-16S-NC	844
				ZG-16S-NO	844
				ZG-25-NC	844
				ZG-25-NO	844



Extensive EOAT Inventory!

Easy Online Ordering!

- Create Supply Lists
- Order from History
- Export Purchase Orders
- Track Orders

Product Pages Include:

- CAD file downloads
- 360° 3D Views
- Dimensional drawings
- Related items



Part Number Index

Part #	Page #						
ZG-25S-NC	844	ZP10CN	378	ZP20BU	380	ZP40UN	377
ZG-25S-NO	844	ZP10CS	378	ZP20CN	378	ZP40US	377
ZHS-20-30	745	ZP10CU	378	ZP20CS	378	ZP40UU	377
ZJ-3235	774	ZP10DN	382	ZP20CU	378	ZP50BN	381
ZL1650	786	ZP10DS	382	ZP20UN	377	ZP50BS	381
ZL2550	786	ZP10DU	382	ZP20US	377	ZP50BU	381
ZL16100	786	ZP10UGS	376	ZP20UU	377	ZP50CN	379
ZL25100	786	ZP10UN	376	ZP25BN	380	ZP50CS	379
ZL-K20	787	ZP10US	376	ZP25BS	380	ZP50CU	379
ZL-K30	787	ZP10UU	376	ZP25BU	380	ZP50UN	377
ZP02UGS	376	ZP13BGS	380	ZP25CN	378	ZP50US	377
ZP02UN	376	ZP13BN	380	ZP25CS	378	ZP50UU	377
ZP02US	376	ZP13BS	380	ZP25CU	378	ZPRL06B5	383
ZP02UU	376	ZP13BU	380	ZP25DN	382	ZPRL06B8	383
ZP04UGS	376	ZP13CN	378	ZP25DS	382	ZPRL08B8	383
ZP04UN	376	ZP13CS	378	ZP25DU	382	ZPRS04B5	383
ZP04US	376	ZP13CU	378	ZP25UN	377	ZPRS06B5	383
ZP04UU	376	ZP13UGS	376	ZP25US	377	ZPT1B5	383
ZP06BGS	380	ZP13UN	376	ZP25UU	377	ZPT2A5	383
ZP06BN	380	ZP13US	376	ZP32BN	381	ZPT2B5	383
ZP06BS	380	ZP13UU	376	ZP32BS	381	ZPT3A8	383
ZP06BU	380	ZP16BGS	380	ZP32BU	381	ZPT3B5	383
ZP06UN	376	ZP16BN	380	ZP32CN	379	ZPT3B8	383
ZP06US	376	ZP16BS	380	ZP32CS	379	ZPT4A8	383
ZP06UU	376	ZP16BU	380	ZP32CU	379	ZPT4B8	383
ZP08BGS	380	ZP16CN	378	ZP32UN	377	ZTB10	217
ZP08BN	380	ZP16CS	378	ZP32US	377	ZTB14	217
ZP08BS	380	ZP16CU	378	ZP32UU	377	ZTB20	217
ZP08BU	380	ZP16DN	382	ZP40BN	381	ZTB30	217
ZP08UGS	376	ZP16DS	382	ZP40BS	381	ZTE-20-V	562
ZP08UN	376	ZP16DU	382	ZP40BU	381	ZTE-30-V	562
ZP08US	376	ZP16UGS	376	ZP40CN	379	ZTS14N	528
ZP08UU	376	ZP16UN	376	ZP40CS	379	ZTS20N	528
ZP10BGS	380	ZP16US	376	ZP40CU	379	ZTS30N	528
ZP10BN	380	ZP16UU	376	ZP40DN	382		
ZP10BS	380	ZP20BN	380	ZP40DS	382		
ZP10BU	380	ZP20BS	380	ZP40DU	382		

Visit and subscribe to EMI's YouTube channel to watch the latest videos on our EOAT products!

Find us at www.youtube.com/EMICorpVideo



Credit Application

Return signed Credit Application to: AR@EMlcorp.com
 EMI Corp. PO Box 590, Jackson Center, Ohio 45334
 937-596-5511, Fax: 216-535-4876

Company Name: _____

Trade Name: _____

Address: _____

City: _____ St: _____ Zip: _____

Telephone: _____

e-mail: _____

Is this address: Bill to Ship to Both

Billing Address (If different than above):

Address: _____

City: _____ St: _____ Zip: _____

Owner/Officer: _____

Address: _____

Owner/Officer: _____

Address: _____

Telephone: _____

Fax: _____

Year Started Business: _____

Number of Employees: _____

Business Ownership:

Corporation Partnership Sole Partnership

Title: _____

Telephone: _____

Title: _____

Telephone: _____

Business Emphasis: _____

Primary Market: _____

What is your primary geographical marketing area?: _____

What major manufacturers do you purchase from directly? Under what payment terms?: _____

Please list names of your purchasing people:

Tel: _____ Ext. _____ Email: _____

Tel: _____ Ext. _____ Email: _____

Tel: _____ Ext. _____ Email: _____

Tel: _____ Ext. _____ Email: _____

Comments or other information about your company:

Credit Application

Billing Information:Purchase Order or I.D. required for purchase?: Yes No If Yes, explain: _____State Sales Tax applicable?: Yes No If No, attach a signed Sales Tax Exemption Form _____

Anticipated monthly purchases: _____

Bank Reference:

Bank: _____ Account #: _____

City: _____ St: _____ Zip: _____

Trade References:

Name: _____

Address: _____

City: _____ St: _____ Zip: _____

Telephone: _____

Account#: _____

Name: _____

Address: _____

City: _____ St: _____ Zip: _____

Telephone: _____

Account#: _____

Name: _____

Address: _____

City: _____ St: _____ Zip: _____

Telephone: _____

Account#: _____

Name: _____

Address: _____

City: _____ St: _____ Zip: _____

Telephone: _____

Account#: _____

Trade References should be small businesses you are currently on NET terms with. Large corporations will not share trade information. Providing references that will not share information will only delay your application.

Credit Terms: Please Read Carefully and Sign

THE ABOVE INFORMATION IS FOR THE PURPOSE OF OBTAINING CREDIT AND IS WARRANTED TO BE TRUE. FALSE OR MISLEADING INFORMATION WILL CAUSE REVOCATION OF ANY EXTENSION OF CREDIT.

I/WE/BUSINESS/ORGANIZATION ("APPLICANT") HEREBY AUTHORIZES EMI CORP. OR ANY CREDIT BUREAU EMPLOYED BY THEM TO INVESTIGATE THE REFERENCES HEREIN LISTED OR STATEMENTS OR OTHER DATA OBTAINED FROM ANY OTHER PERSON PERTAINING TO OUR CREDIT RESPONSIBILITY AND TO SUPPLY FURTHER INFORMATION IF REQUESTED. THE "APPLICANT" UNDERSTANDS AND AGREES TO PAY ALL CHARGES BY THE 30TH DAY FOLLOWING THE DATE OF INVOICE AND THAT PAYMENT TERMS ARE NOT BASED ON RECEIVING A STATEMENT. THE "APPLICANT" WILLINGLY AGREES TO PAY ALL COSTS OF COLLECTION, LEGAL AND OTHERWISE, ON ANY INVOICES AFTER 30 DAYS FROM INVOICE DATE. THE "APPLICANT" FURTHER AGREES, THAT ANY DISPUTES WILL BE PUT IN WRITING WITHIN 10 DAYS OF RECEIPT OF GOODS. THE "APPLICANT" ALSO AGREES THAT ANY DISPUTES OR LITIGATION THAT MAY ARISE SHALL BE INTERPRETED BY THE LAWS OF THE STATE OF OHIO WITHOUT REFERENCE TO CHOICE OF LAW PROVISIONS.

Business Name_____
Trade Name

THE "APPLICANT" DOES HEREBY ASSUME RESPONSIBILITY FOR THE DEBTS OF THE APPLICATION HEREIN. I CONFIRM THAT I AM AN AUTHORIZED SIGNATORY ON BEHALF OF THE "APPLICANT".

Authorized Signature_____
Title

EMI Terms and Conditions

Acceptance: Sales by EMI Corp and its subsidiaries and divisions ("EMI") are expressly limited to these Terms and Conditions. All orders are subject to approval by EMI. Any purchase order, acknowledgement or other communication submitted by the Buyer which contains additional or contrary terms and conditions of sale are rejected.

Prices: Quoted prices are effective for 30 days from date of quotation; thereafter, prices are subject to change without notice. Prices listed in EMI's catalogs are current at time of publication and are subject to change without notice. Unless otherwise indicated, quantity discounts are offered only for like units ordered at the same time, on a single purchase order, for shipment per our standard delivery schedule. Any local, state or federal tax levied on the sale will be added to the purchase price and paid by the Buyer. Any portion of the price not paid when due will bear interest from the due date at the rate of 12% per annum or at the next lowest annual percentage rate as is permissible under any applicable usury law.

Terms: All orders are subject to credit approval by EMI. For orders [and multiple purchase orders constituting a project] less than \$20,000: Net 30 Days. For orders [and multiple purchase orders constituting a project] over \$20,000: 30% down with order, 70% net 30 days.

Cancellation: Orders may not be cancelled without EMI's prior written consent.

Shipment Schedule: All shipping dates are approximate. Shipment shown is based on available inventory, and engineering and production schedules at time of quotation. A better estimate of lead-times will be given at time of order placement. EMI will not be liable for any damage, loss of profit, or expenses arising out of delays in shipment or other nonperformance of this transaction caused by or imposed by (a) strikes, fires, disasters, riots, acts of God, (b) acts of Buyer, (c) shortages of labor, fuel, power, materials, supplies, transportation or manufacturing facilities, (d) government action, (e) subcontractor delay or (f) any other cause or condition beyond EMI's reasonable control. Additionally, EMI assumes NO responsibility for delivery performance, cost surcharges, or other fees imposed by a carrier, whether selected by Buyer or EMI.

Shipment: Shipment of products is ExW (ex-works), EMI facility, Jackson Center OH, or EMI facility, Wickliffe, OH. Packages weighing less than 75lbs. are shipped via small parcel service, pre-paid via EMI carrier of choice and added to the invoice unless otherwise specified. Shipments weighing over 75lbs., or oversized, are shipped Freight Collect via truck (common carrier) unless otherwise specified and agreed to by EMI. All shipments will be insured at the buyer's cost for the full value of the shipment unless buyer expressly waives insurance coverage in writing prior to shipment. All claims of shortages, defects or rejections must be made by the Buyer in writing within 15 days after receipt of the shipment. Claims of damage must be made to the carrier in accordance with its procedures.

Notes:

- (1) Shipments more than 75lbs. or shipments that are oversized are generally fully crated and/or skid mounted - dependent upon size and quantity.
- (2) In cases of skid or crate shipments, Buyer should specify a freight carrier with whom Buyer has an established account. Failure to specify a carrier can result in shipment delays or require payment to freight company before equipment can be unloaded at Buyer's dock.
- (3) EMI assumes no responsibility for shipments delayed or those received "Driver Collect" due to a trucking company not being specified by Buyer.
- (4) Truck shipments shipped Freight Prepaid and charged back will be invoiced to Buyer on a separate Freight Invoice plus a 10% handling fee with terms of net 15 days.

Delivery Loss and Damage Claims:

All claims must be made within 10 days of delivery. Claims must be filed with the freight carrier and must be initiated by the party who is responsible for payment of freight – EMI for Prepaid terms, the Buyer for Collect or Receiver terms. EMI will attempt to assist in the resolution of freight claims but shall not assume responsibility for Collect/Receiver initiated claims. Freight carriers may require shipping charges to be paid before issuing a credit on a claim and does not relieve the responsible party for payment of freight charges.

Proof of delivery requests must be received within 90 calendar days of shipment. After 90 days of shipment, the Buyer waives its right to dispute delivery of goods and agrees not to withhold payment against alleged non-delivery.

Export Control: Buyer acknowledges that EMI's products are subject to U.S. export controls and economic sanctions laws and regulations. Buyer agrees not to export, re-export, or retransfer EMI's products to any entity subject to US sanctions, embargoes, or trade restrictions, and to comply with all applicable U.S. export controls and economic sanctions laws and regulations regarding EMI products.

Export Shipment:

Buyer is responsible for the payment of all international shipping costs and taxes and duties including but not limited to: VAT, tariff, duty, taxes, customs clearance charges, freight forwarder fees and warehousing charges, and other charges related to international shipments. EMI is not responsible for delays due to freight transport, customs clearance, import/export holds, freight forwarder delays, or the Buyer not providing EMI necessary information for export documentation.

An Automated Export System (AES) filing is required for most exports exceeding \$2,500. An AES filing is often submitted by the U.S. Principal Party in Interest (USPPI), which is typically EMI. It can also be submitted by an authorized agent of the USPPI, such as a freight forwarder. If EMI authorizes the Buyer's freight forwarder or agent to file on behalf of EMI, EMI must receive a full copy of the AES filing submitted by the freight forwarder within three business days of receipt by the freight forwarder. If EMI does not receive a copy of the filing within three business days of shipment, EMI reserves the right to not authorize future power of attorney documentation to file the AES on behalf of EMI and to withhold further shipments pending EMI being provided all information necessary for AES filing.

Installation: Unless otherwise indicated, Buyer is solely responsible for safe installation of the equipment. In all cases, Buyer remains responsible for proper maintenance and guarding in accordance with applicable OSHA, federal, state, local, and other applicable regulations. **SERIOUS BODILY INJURY OR PROPERTY DAMAGE MAY RESULT FROM IMPROPER USE, GUARDING, OR MAINTENANCE OF EMI PRODUCTS OR PRODUCTS RESOLD BY EMI.**

Limited Warranty:

Conveyor Products: Conveyors (other than belting), motors, gear reducers and other drive components are guaranteed for three years from the date of shipment to be free from defects in material and workmanship when maintained in accordance with EMI manuals and operated under the conditions for which they were designed. Belting is guaranteed for 90 days under the same conditions.

EOAT Products: EMI, Gimatic, and Senvex EOAT products are guaranteed for 1 year from the date of shipment to be free from defects in material and workmanship when maintained in accordance with their respective product manuals and operated under the conditions for which they were designed. Wear items such as, but not limited to; vacuum cups, nipper blades, air hand expanders and inflators are not warranted.

EMI Terms and Conditions

Injection Molding Supplies: EMI manufactured accessory products for injection machines are guaranteed for 1 year from the date of shipment to be free from defects in material and workmanship when maintained in accordance with their respective product manuals and operated under the conditions for which they were designed. Wear and consumable items such as, but not limited to; non-return valves, nozzles, gate cutters, mold spray, oil sorbent, oil filters, etc. are not warranted.

Third party equipment or components are not warranted except where specified, but any third party warranties are, to the extent permitted, passed through to the Buyer. Damage, due to abuse, accident, misuse, modification, improper installation or maintenance, or improper electrical or mechanical applications are not covered by the Limited Warranty.

Furthermore, this Limited Warranty shall be void and of no effect whatsoever in the event the equipment is not used in accordance with and/or for the purpose provided, or if damages by reason of abnormal weather conditions, acts of God, falling objects, explosions, fire, riots, civil commotion, external forces, faulty or inadequate installation, acts of war, radiation, harmful fumes or foreign substances in the atmosphere, floods or use in structures not in accordance with accepted engineering standards.

Any claim for breach of the Limited Warranty must be made and presented to EMI in writing within a period of thirty (30) days following the discovery of the alleged defect, failing which the foregoing Limited Warranty shall be void and of no effect whatsoever. Alleged defective products shall be returned to EMI for inspection. Buyer must receive written authorization from EMI before returning any products and Buyer shall ship the products to EMI freight pre-paid at Buyer's expense. Authorization to return products is for purposes of inspection and shall not constitute acceptance of a product defect. Returned products must be suitably crated or packaged by the Buyer to prevent damage. EMI will inspect the returned products for defect. If inspection reveals a defect, Buyer's sole recourse for breach of warranty is the repair or replacement of defective products or the return of purchase price, at EMI's sole discretion. Repaired or replaced products are returned to the Buyer at no charge. If inspection reveals no defect, EMI will return the product to the Buyer at the Buyer's expense.

EMI MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, WITH RESPECT TO THE EQUIPMENT OR THE USE OF THE EQUIPMENT OR THE PERFORMANCE OF THE EQUIPMENT. EMI SPECIFICALLY MAKES NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. EMI NEITHER ASSUMES, NOR AUTHORIZES ANY PERSON TO ASSUME FOR IT, ANY WARRANTY NOT SPECIFICALLY PROVIDED HEREIN.

Limitation of Liability: EMI's liability under this transaction will not exceed the purchase price. **EMI IS NOT LIABLE FOR ANY CONSEQUENTIAL, SPECIAL OR INCIDENTAL DAMAGES ARISING OUT OF OR RELATING DIRECTLY OR INDIRECTLY TO THIS TRANSACTION OR AS A RESULT OF THE SALE OF PRODUCTS OR EQUIPMENT, A BREACH OF THE WARRANTY PROVIDED HEREIN OR ANY USE OR MISUSE OF THE PRODUCTS OR EQUIPMENT.**

Indemnification: Buyer agrees to indemnify and hold EMI harmless and defend EMI from and against all liability and expense based upon bodily injury, property damage or economic loss, arising, directly or indirectly, from the production, sale, re-sale, transportation, storage or the use of products sold by the Buyer, except as caused by the sole negligence of EMI.

Returns: Buyers may request a product be returned to EMI for credit of purchase price. A material return number (RMA#) must be obtained before any products may be sent back to EMI. Buyer understands that obtaining an RMA number does not constitute EMI's acceptance of the return. Buyer may return the products via freight carrier of their choice, and shipping must be at Buyers cost (pre-paid). Buyer must package the products suitably to prevent damage to

the products being returned. An inspection of the returned products will be conducted to determine if full or partial credit will be issued against the original purchase price. If the item is returned in the same condition as it was originally sent, and sealed in the original packaging that it was shipped from EMI a re-stocking fee or other credit adjustment is typically waived. Built to order, customized, and non-standard or other non-stock parts including but not limited to alterations to the product that Buyer make are subject to a re-stocking fee and may not qualify for return credit.

Law: This transaction is governed and construed in accordance with the laws of the State of Ohio (exclusive of any conflict of laws provision) and the Buyer consents and submits to the jurisdiction of any state court located in Shelby County, Ohio. If any provision of these Terms and Conditions is deemed to be held invalid, illegal, unenforceable, or inoperative, the balance of these Terms and Conditions will remain in full force and effect as if such revision had not been included.

Click here to download
our Credit Application,
Submit to: AR@EMInc.com

Online Interactive Catalog

Using EMI's interactive EOAT catalog is just like paging through our paper catalog – but with added benefits. Hotlinks in the table of contents and product sections make navigation easy and fast. Try EMI's interactive online catalogs today!


- Download pages or the whole catalog.
- Bookmark & send individual pages by email.
- Search by product name or Quick number.
- Shop online: Click any Quick number and be directed to that product in e-com!



Online Product Pages

Quick# 1879 PB Gripper Product Page:

Product Detail



1879 Gimatic Mini Sprue Gripper - Normally Open

- Higher grip force than other similarly sized sprue grippers.
- Serrated fingers hold small and medium sprues firmly.
- 810mm diameter mounting post with M5 air port allows this gripper to be used with standard mounting and air connection components. Alternate M5 air port on front of gripper can be used.

Item #: PB 0014
\$103.00 Each

Quantity:





[Add To Cart](#)

Available: In Stock
CAD File Download
Technical Specifications
360 Degree View

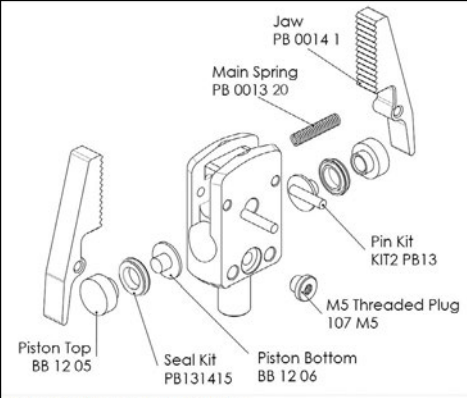
Overview | **Technical Specifications** | Dimensional Drawing

- 48g
- Normally Open
- 3-9mm Applicable Sprue
- 14.58F Lbs. Force at tooling length (Measured at jaw pivot point).

Related Items

 102 Threaded Male M5 Push-In Fitting for 4mm Tube Item #: QSF QMC M504 \$3.19 Each Qty: <input type="text"/> Add to Cart	 104 Threaded Male M5 Push-In Fitting for 6mm Tube Item #: QSF QMC M506 \$4.40 Each Qty: <input type="text"/> Add to Cart	 118 Threaded Male M5 Push-In Elbow Fitting for 4mm Tube Item #: QSF QME M504 \$3.30 Each Qty: <input type="text"/> Add to Cart	 120 Threaded Male M5 Push-In Elbow Fitting for 6mm Tube Item #: QSF QME M506 \$3.30 Each Qty: <input type="text"/> Add to Cart
---	---	---	---

Replacement Parts in e-com:



Parts for 1879 Gimatic Mini Sprue Gripper - Normally Open

Enter the quantity for each needed part and click add to cart

No.	Part No.	Item Description	Qty Req.	Price	Qty
n/a	BB 12 05	Replacement Piston Top	0	\$2.58 Each	<input type="text"/>
n/a	BB 12 06	Replacement Piston Bottom	0	\$2.58 Each	<input type="text"/>
n/a	KIT1	Seal Kit	0	\$3.14 Each	<input type="text"/>
n/a	KIT2 PB13	Pin Kit	0	\$3.33 Each	<input type="text"/>
n/a	107 PB	3.59 M5 Internal Hex Threaded Plug	0	\$1.25 Each	<input type="text"/>
n/a	PB 0014 1	Replacement Serrated Jaw for Normally Open PB	0	\$24.67 Each	<input type="text"/>

Autodesk A360 Views:



- Exploded views with Replacement parts
- Application examples
- 360° Views with CAD file downloads
- Dimensional & technical drawings
- Quickly find related items



Decades of constant improvement and custom conveying applications make EMI Conveyor systems the standard in the plastics industry.

Manufactured in our Ohio facility, EMI conveyors are designed to your specifications, crafted by experienced assemblers and are made to last in industrial environments while offering advanced features to injection molders.

Exclusive Advantages:

- EMI's Extruded Aluminum line conveyor minimizes maintenance and maximizes productivity.
- Utilizes floor space more effectively than other conveyor designs.
- Internal drive (option) - motor and drive are contained within the frame making it an ideal conveyor for robot indexing, assembly, and applications where floor space utilization is important.
- Available in: Flat, Incline, Flat to Incline, Flat to Decline, Z-Belt, and Space Saver models.

Everything but the cobot!

Your Cobot – Our Conveyor – Our Cobot Stand – Our EOAT

EMI's Cobot Ready Conveyors are designed to be integrated with your Collaborative Robot to provide continuous part transfer and are ideal for pick and place, machine tending, and packaging applications. Quick deployment with robot software plugin and MODBUS communication via Ethernet Cable.





216-535-4848 / Sales@EMlcorp.com



EMlcorp.com



216.535.4848



Live Chat



Sales@EMlcorp.com



Manufacturing & Administrative Offices

Phone: 937-596-5511

801 West Pike Street,
Jackson Center, Ohio 45334



Sales & Design Engineering

Sales@EMlcorp.com

EOATEngineering@EMlcorp.com

Cobots@EMlcorp.com

Phone: 216-535-4848

28300 Euclid Ave. Wickliffe, Ohio 44092



EMI Mexico

Ventas@EMlcorp.com

Teléfono: +52 (442) 349-7646

Avenida Industria de la Construcción #511 Int. 5,6,7
Parque Industrial Querétaro
Santa Rosa de Jáuregui, Querétaro 76220

© 2022 EMI Corporation. All Rights Reserved.

No parts of this publication may be reproduced or transmitted in any form or by any means, electronic, mechanical, photocopying or otherwise, without the prior written permission of EMI Corp.

We reserve the right to make alterations.