

Expansion Grippers

(Dimensioned drawings shown full scale)

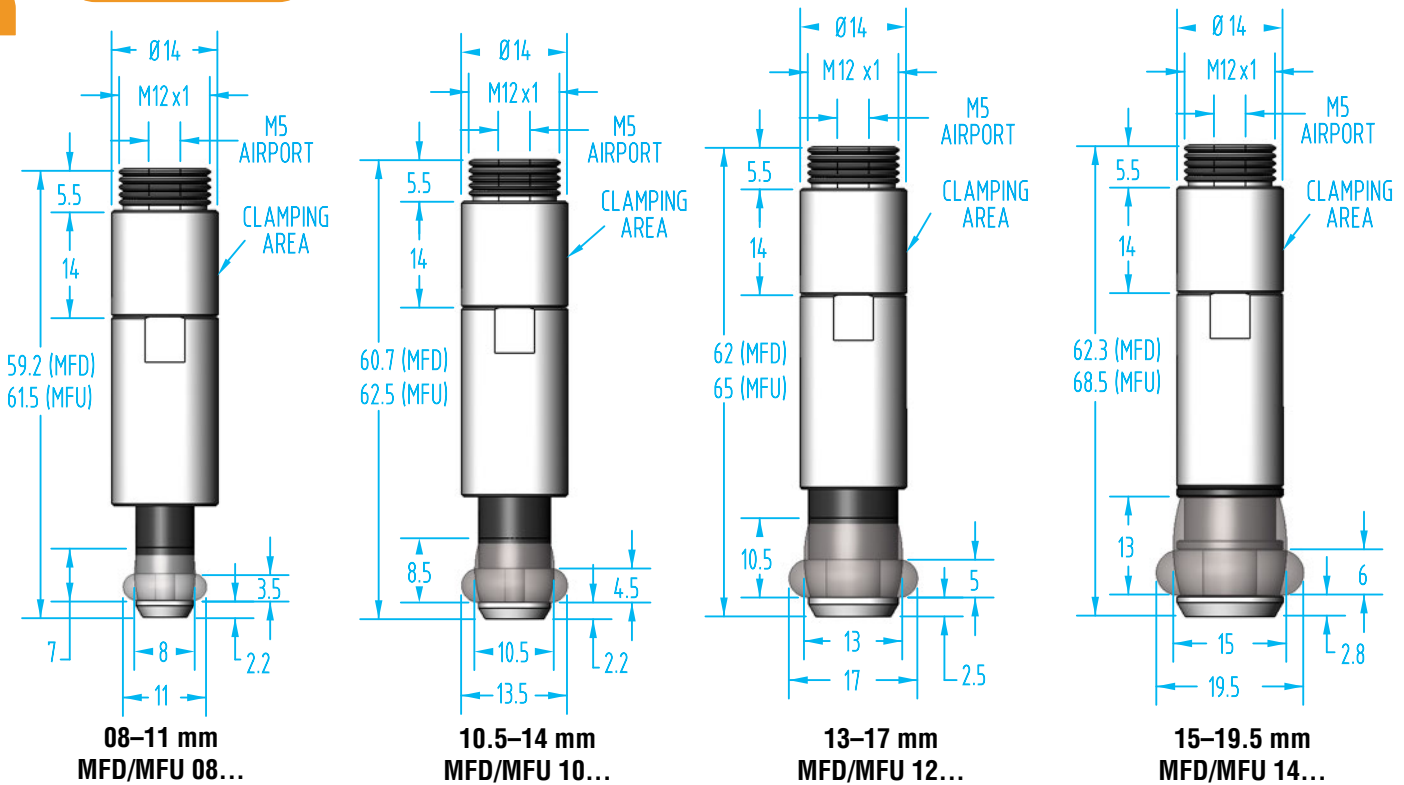
Gimatic's Expansion Grippers rely on compressing an elastic expander rather than inflating a bladder. Gimatic's patented Expansion Grippers have better durability and uptime because leaks and blow outs are eliminated.

- 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.

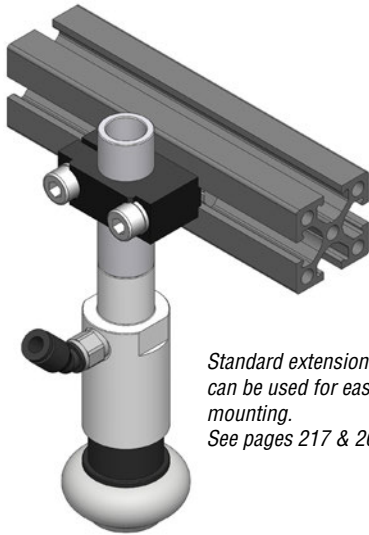
MFU – The MFU has an **upward** motion that compresses the expander. The OAL is reduced.



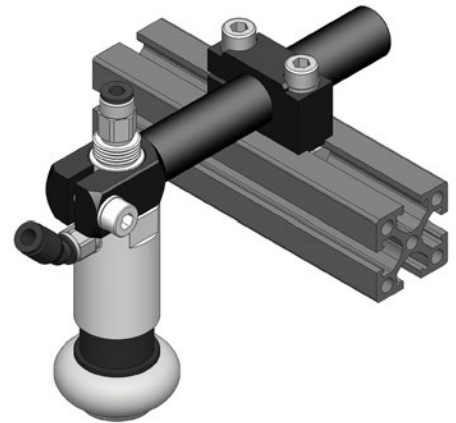
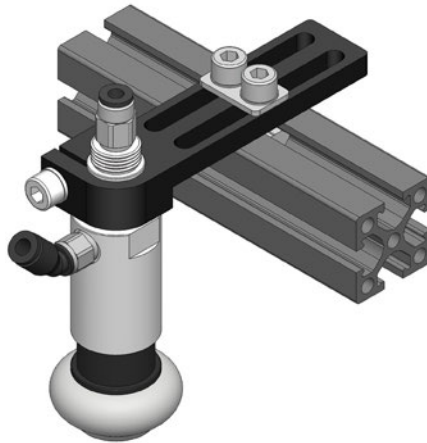
Expansion Grippers

(Dimensioned drawings shown full scale)

Mounting Examples

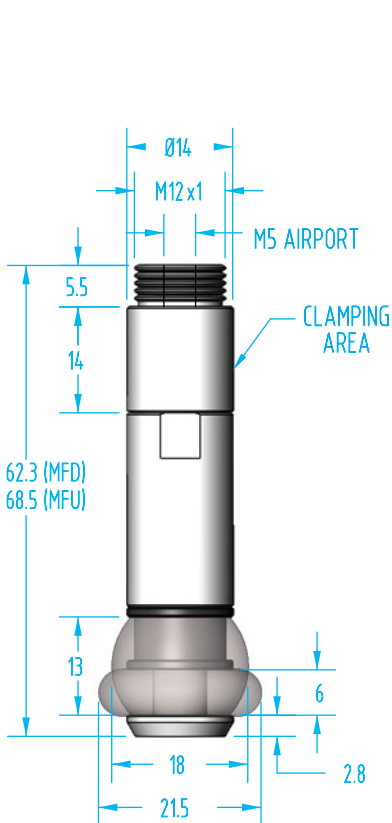


Standard extensions can be used for easy mounting. See pages 217 & 262.

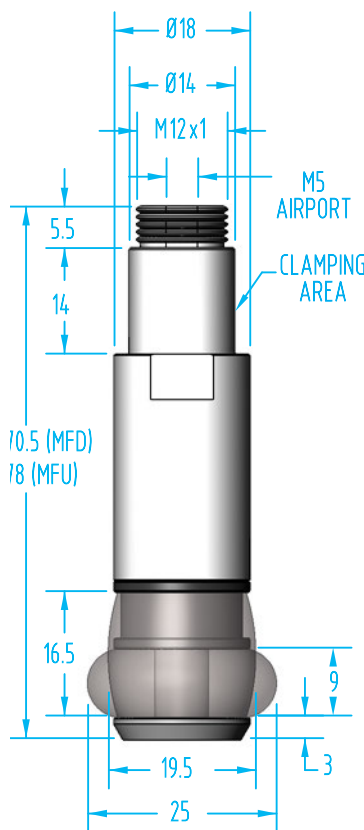


Standard Ø14mm, 20mm, and 30mm clamps can be used for easy mounting. See clamps starting on page 246.

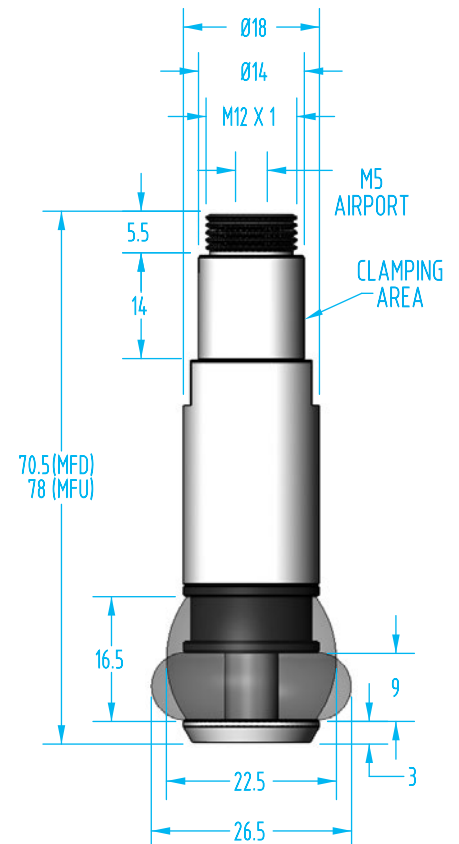
See page 572 for pricing.



**18-21.5 mm
MFD/MFU 16...**



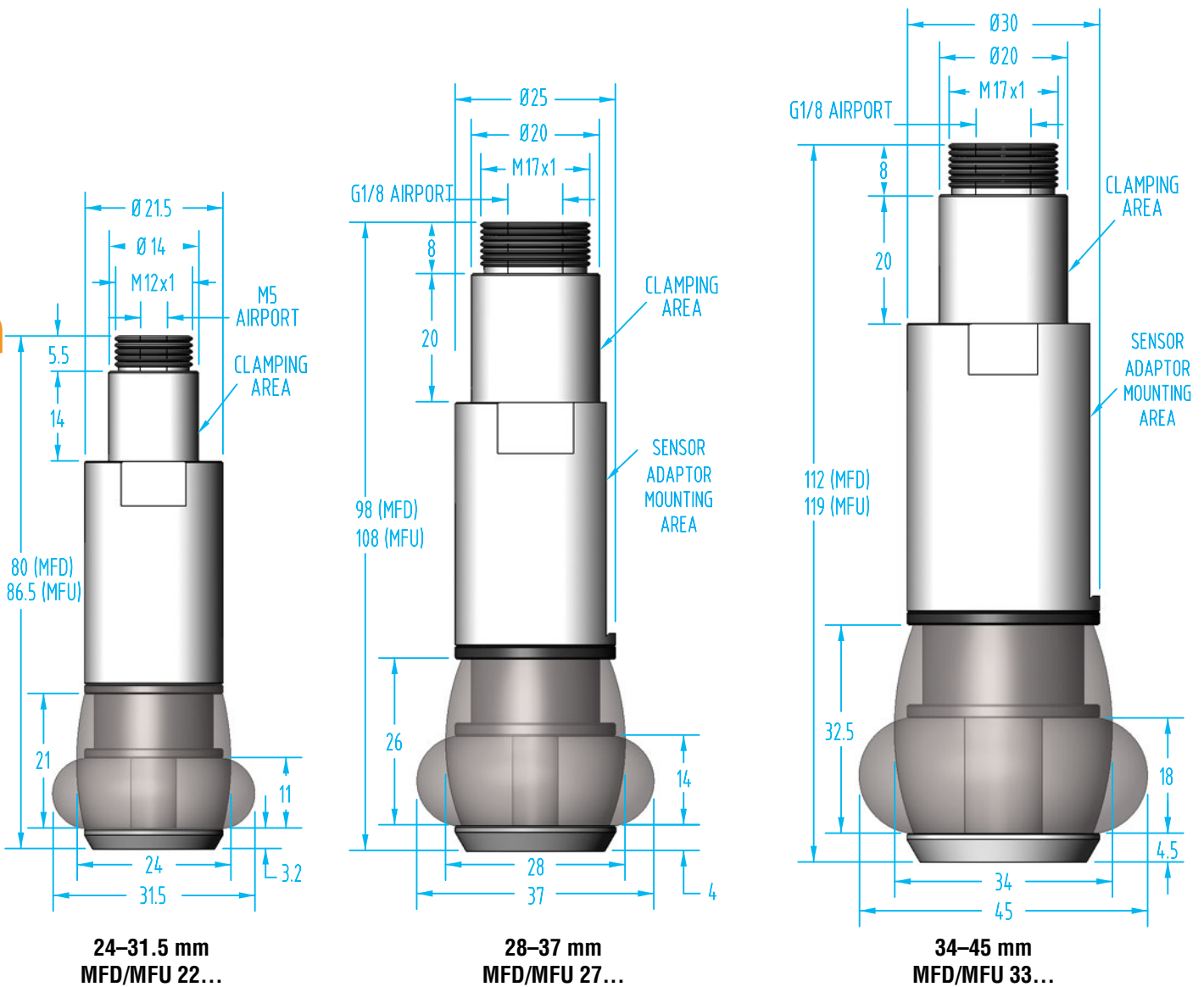
**19.5-24.5 mm
MFD/MFU 18...**



**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?



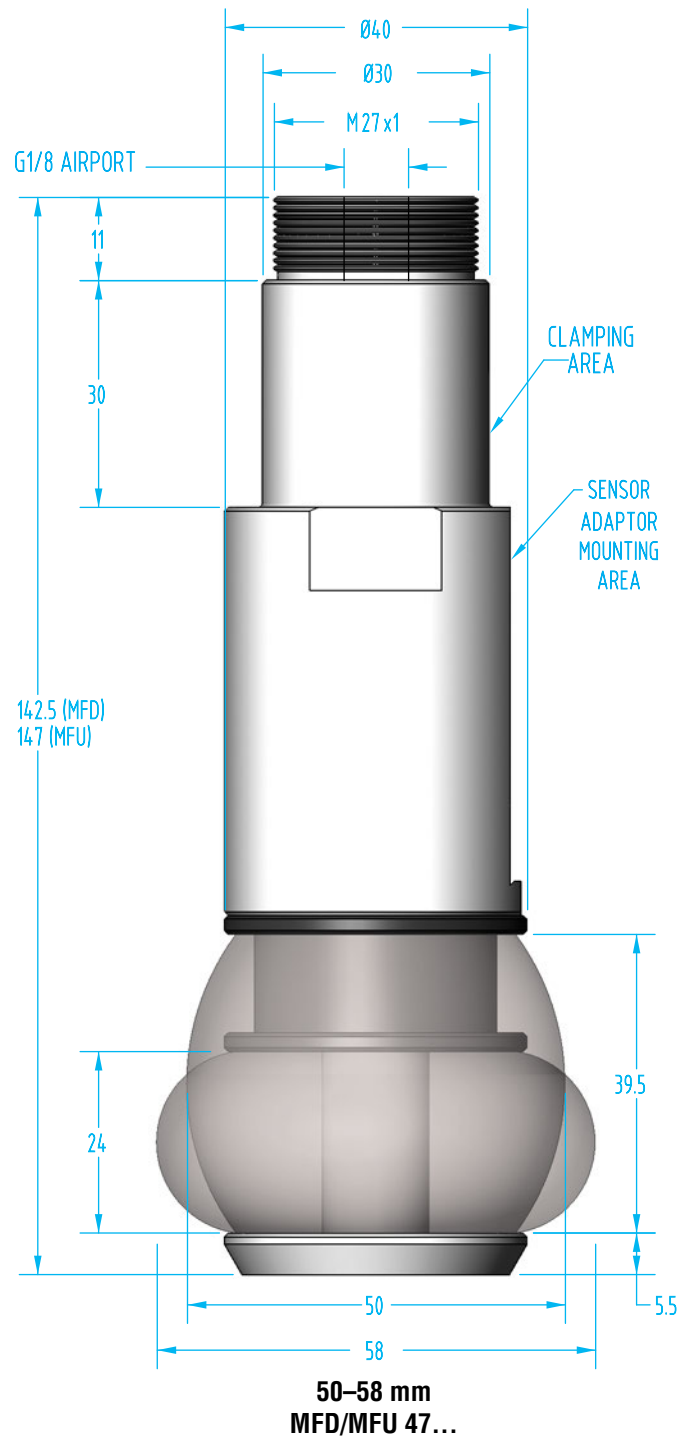
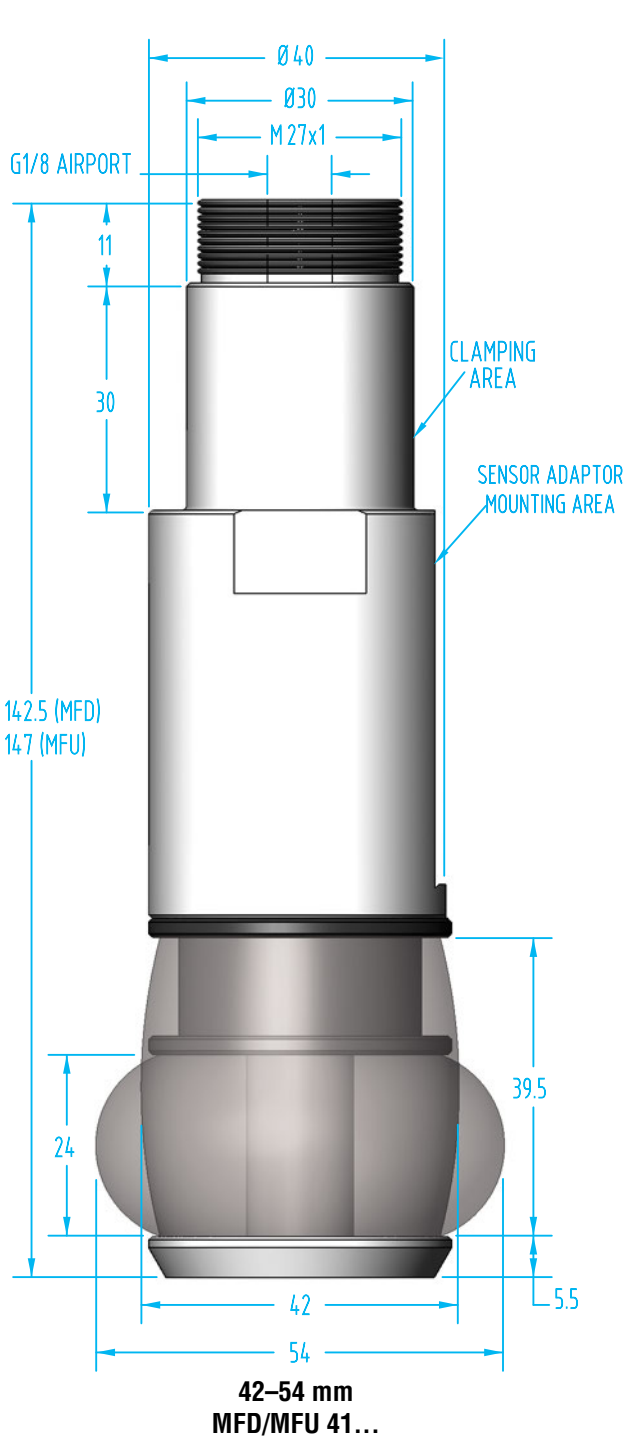
Silicone is non-marking, has a wider temperature range, and longer life span. Max. temperature is 392° F. Silicone is not suitable in some industries, because it makes it difficult to paint or to coat the parts that are touched.

The expected medium life time of the elastic part in Silicone is about 1 million cycles.

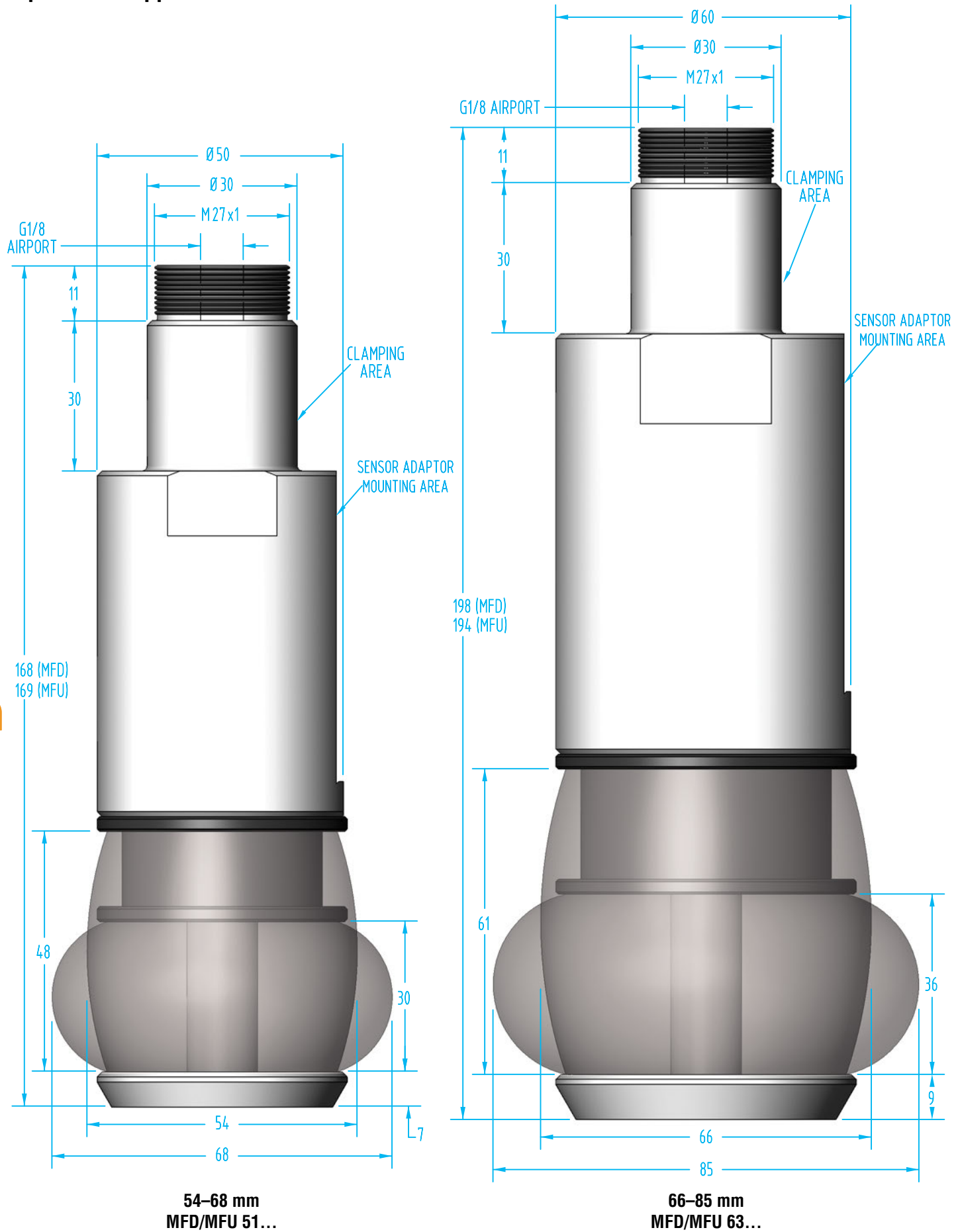


EPDM is non-marking and provides more friction for a stronger grip. Maximum temperature is 284° F.

The expected medium life time of the elastic part in EPDM is about 0.5 million cycles.



Expansion Grippers



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.

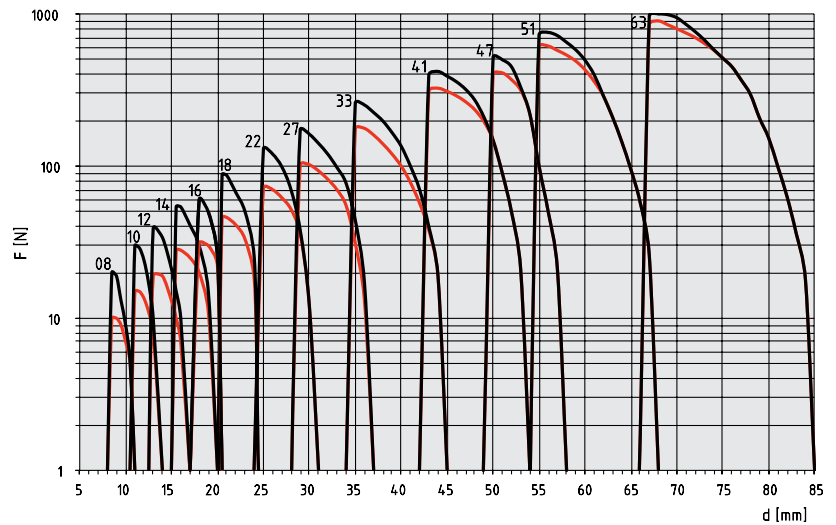
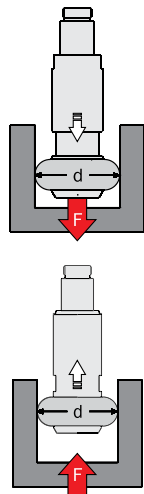
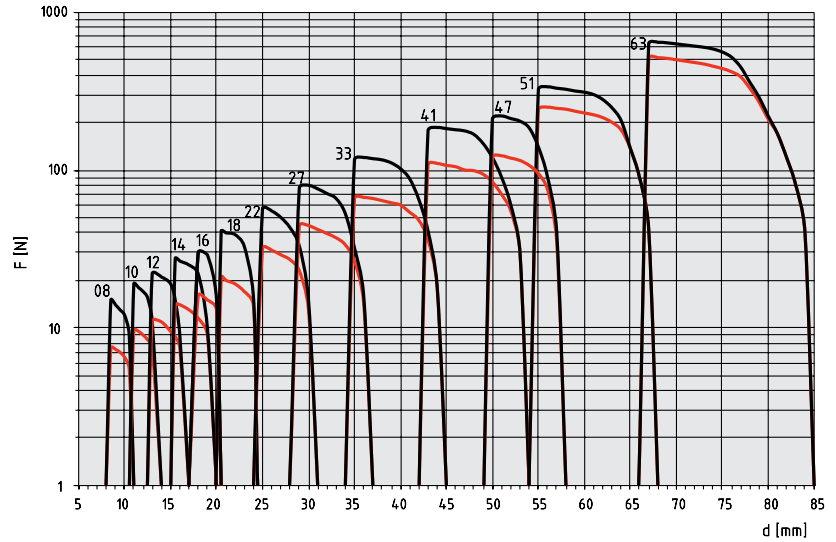
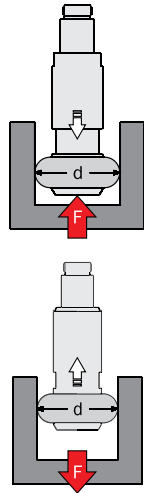
The graphs show the extraction force (F) on the gripped object as a function of its diameter (d).

Aluminum rings, with roughness Ra=0.8, have been used

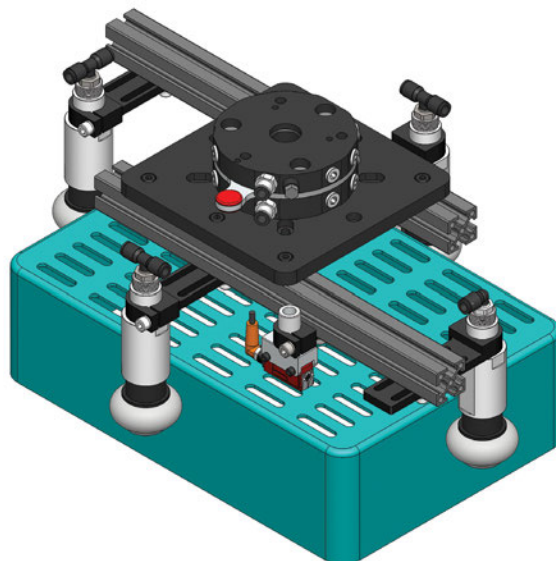
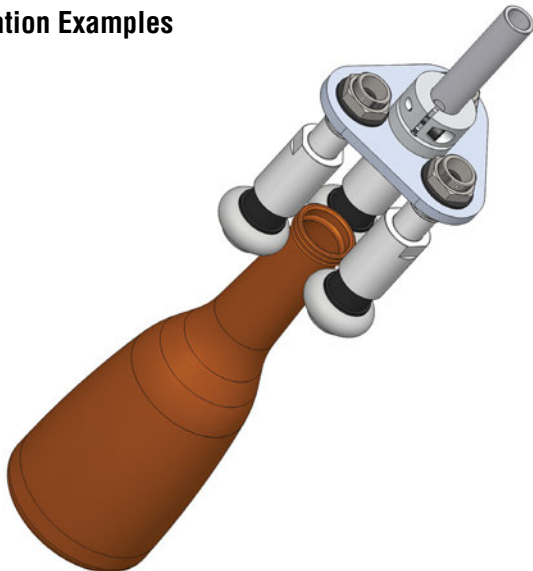
for the measurements and the grippers supplied with 87 psi compressed air.

EPDM —————
Silicone —————

Reference:
Force: N x 0.225 = lbf
Pressure: bar x 14.5 = psi



Application Examples



MFD / MFU Standard Models

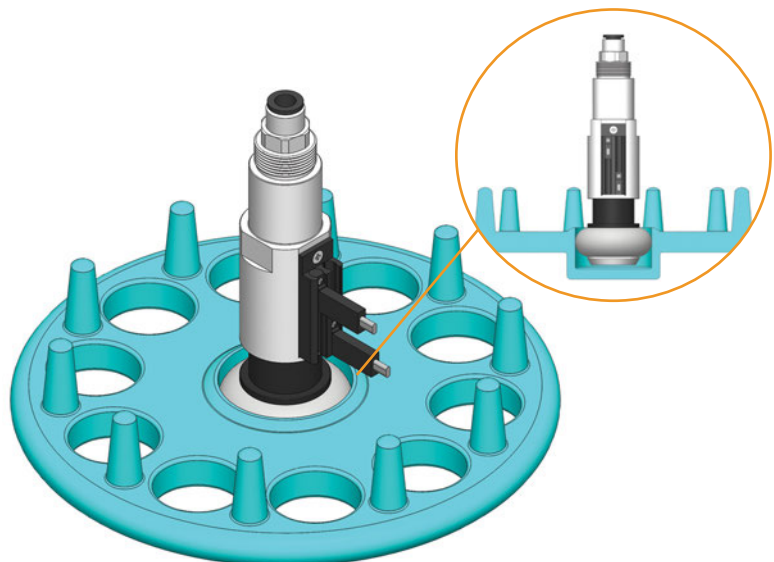
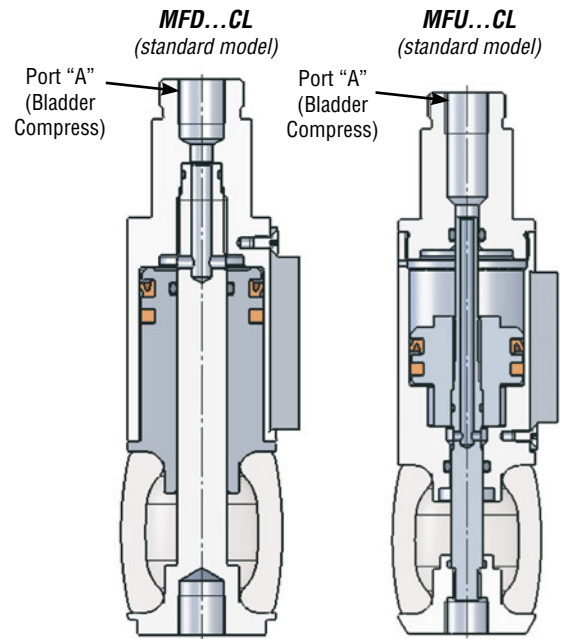
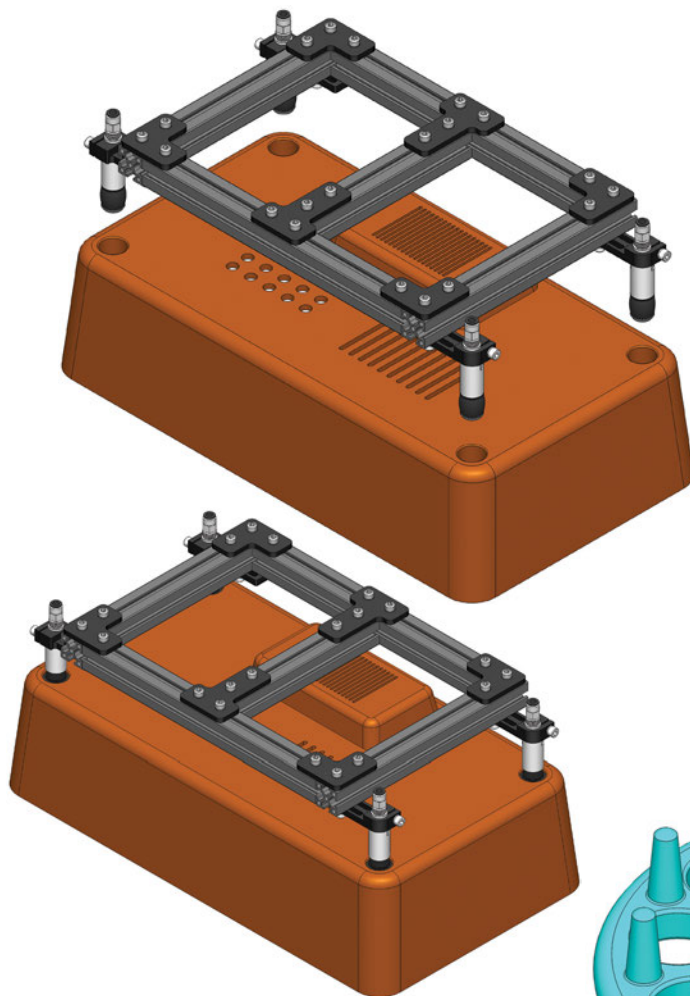
Part#	Quick#	Price	Material	Max Temp	Port "A"	Action	Min. Ø	Max. Ø	Weight	PSI Range
MFD08E02CL	6875	\$105.00	EPDM	284°F	M5	Down	8mm	11mm	15g	58-116psi
MFD08S01CL	6876	\$107.00	Silicone	392°F		Up			16g	
MFU08E02CL	6831	\$174.00	EPDM	284°F						
MFU08S01CL	6832	\$175.00	Silicone	392°F						
MFD10E02CL	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						
MFU10S01CL	6836	\$175.00	Silicone	392°F						
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						
MFU12S01CL	6840	\$171.00	Silicone	392°F						
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						
MFU14S01CL	6844	\$172.00	Silicone	392°F						
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						
MFU16S01CL	7230	\$178.00	Silicone	392°F						
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						
MFU18S01CL	6848	\$182.00	Silicone	392°F						
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						
MFU20S01CL	7414	\$176.00	Silicone	392°F						
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						
MFU22S01CL	6852	\$198.00	Silicone	392°F						
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						
MFU27S01CL	6856	\$219.00	Silicone	392°F						
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						
MFU33S01CL	6860	\$231.00	Silicone	392°F						
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						
MFU41S01CL	6864	\$256.00	Silicone	392°F						

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

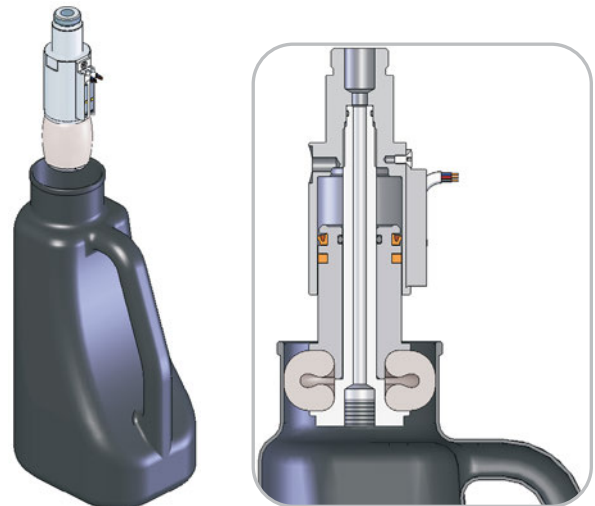
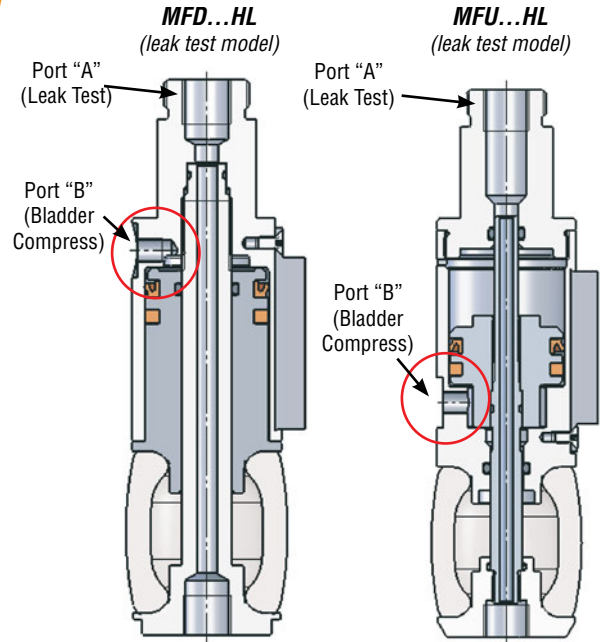
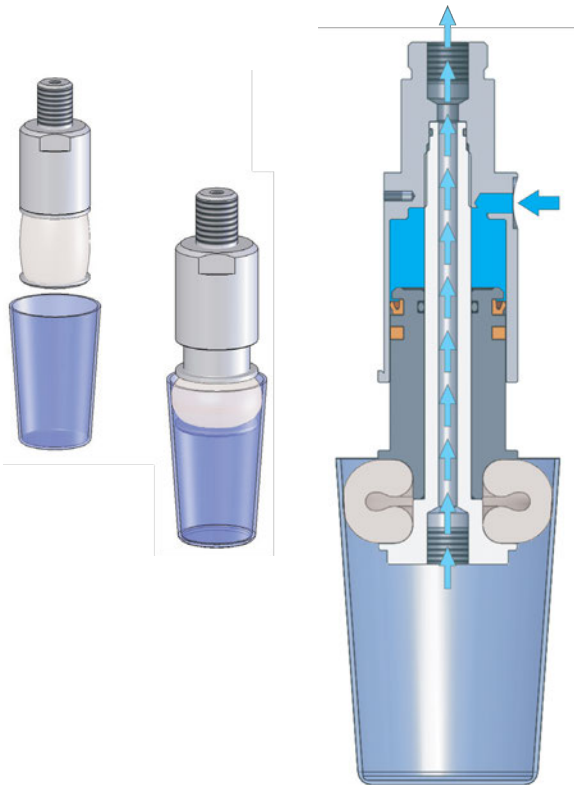
Part#	Quick#	Price	Material	Max. Temp.	Port "A"	Port "B"	Action	Min. Ø	Max. Ø	Wt	PSI Range				
MFD08E02HL	6877	\$119.00	EPDM	284°F	M5	M3	Down	8mm	11mm	15g	58-116psi				
MFD08S01HL	6878	\$125.00	Silicone	392°F			Up			16g					
MFU08E02HL	6833	\$180.00	EPDM	284°F			M5			M3		Down	10.5mm	13.5mm	16g
MFU08S01HL	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	17g
MFU12S01HL	6842	\$174.00	Silicone	392°F								Up			20g
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	24mm	31.5mm	28g	58-116psi				
MFD18S01HL	6894	\$133.00	Silicone	392°F			Up			35g					
MFU18E02HL	6849	\$185.00	EPDM	284°F			M5			M5		Down	28mm	37mm	28g
MFU18S01HL	6850	\$186.00	Silicone	392°F								Up			35g
MFD20E02HL	7411	\$128.00	EPDM	284°F	M5	M5	Down	34mm	45mm	28g	58-116psi				
MFD20S01HL	7412	\$130.00	Silicone	392°F			Up			35g					
MFU20E02HL	7415	\$179.00	EPDM	284°F			M5			M5		Down	42mm	54mm	28g
MFU20S01HL	7416	\$180.00	Silicone	392°F								Up			300g
MFD22E02HL	6897	\$134.00	EPDM	284°F	M5	M5	Down	42mm	54mm	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	42mm	54mm	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			Up			300g	
MFU47E02HL	7235	\$268.00	EPDM	284°F							
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			Up			500g	
MFU51E02HL	6869	\$282.00	EPDM	284°F							
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			Up			785g	
MFU63E02HL	6873	\$318.00	EPDM	284°F							
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.



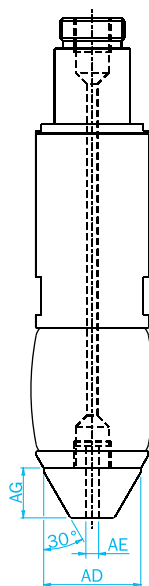
Expansion Gripper Nose Cones & Sensors

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

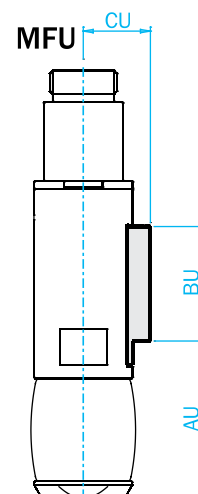
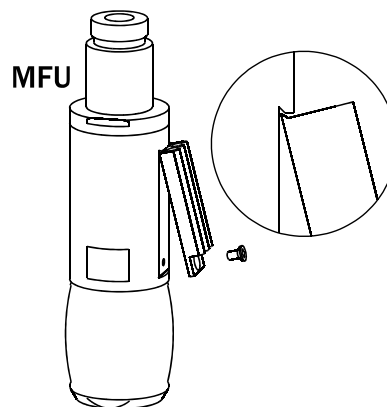
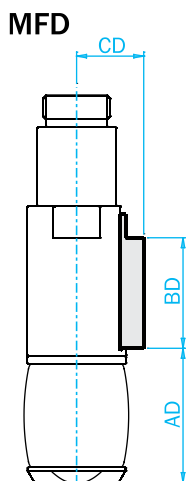
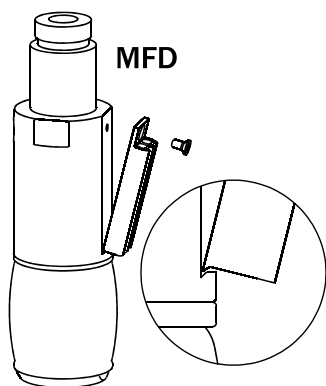
Expansion Grippers size 27 and larger may be equipped with sensors in order to detect position of magnet which is integrated into the piston. Expansion Grippers size 22 and smaller may not be equipped with sensors because the pistons do not have integrated magnets. An optional housing for SN series sensors 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

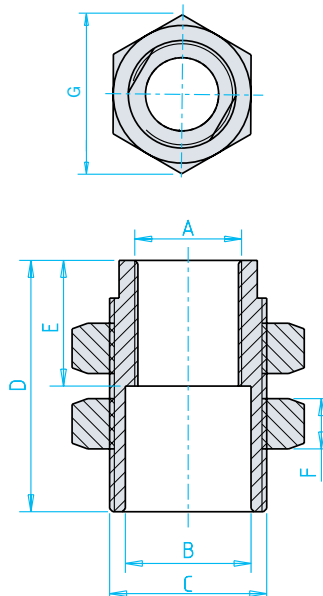
Quick#	Part#	Wt.	AU	BU	CU	MFU	Price
6924	MFU27K	4g	39.5	29	17	Ø27	\$15.64
6925	MFU33K	5g	46.5	33	19.7	Ø33	\$15.64
6926	MFU41K	5g	55.5	36.5	23.8	Ø41 / Ø47	\$15.64
6927	MFU51K	6g	71.5	39	28.5	Ø51	\$15.64
6928	MFU63K	7g	87.5	45	33.5	Ø63	\$15.64

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.



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...

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