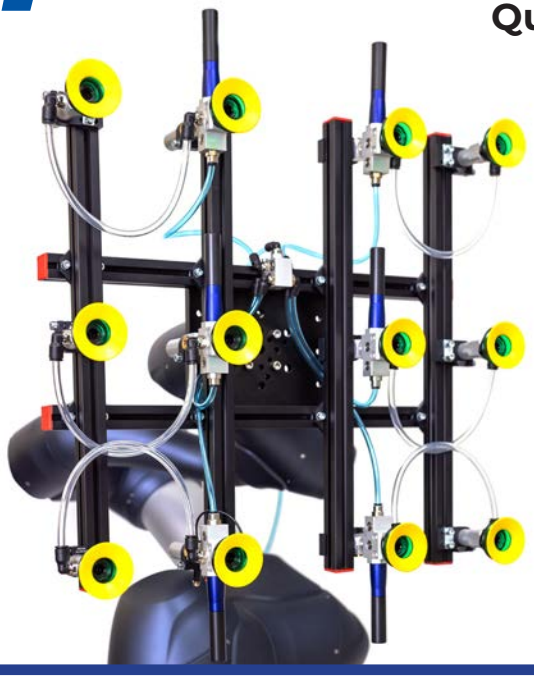
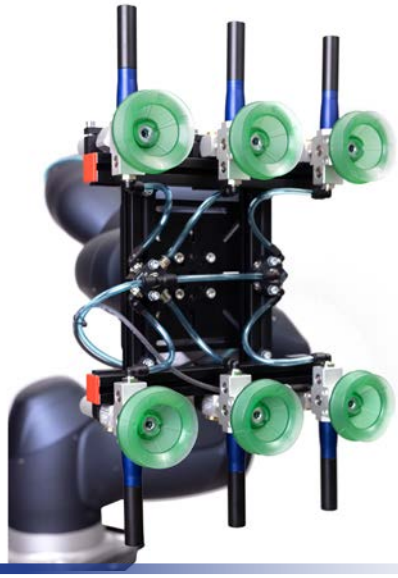
Q#8004 – CRK-MPK2-A
Modular Vacuum Kit for Packaging Applications
Quick Start Guide





KIT CONTENTS

Mounting Plates

- Q#8057 Slotted Small Plate: 150x150mm
  - Mounting Patterns:
    - ISO 9409-1-31.5-4-M5
    - ISO 9409-1-40-4-M6
    - ISO-9409-1-50-4-M6
- Q#8063 Machined Large Plate: 175x175mm
  - Mounting Patterns:
    - ISO 9409-1-31.5-4-M5
    - ISO 9409-1-40-4-M6
    - ISO-9409-1-50-4-M6
    - ISO 9409-1-63-4-M6
    - ISO 9409-1-80-6-M8

Framing

- Q# 6005 Aluminum Extrusion – 25x25mm:
  - 500mm (6x)
  - 250mm (4x)
- Q# 5658 Cross Joint Connectors (8x)
- Q# 5873 Angle Clamp (12x)
- Profile End Caps (20x)

Vacuum & Support

- Q#8747 Ø60mm Elastodur Cup (12x)
  - G1/4" Male Fitting
- Q#5647 Ø52mm Duraflex Cup (12x)
  - G1/4" Male Fitting
- Q#3626 50mm Ø20mm Vacuum Arm (12x)
- Q#8799 SBP-HV-3-07-13 Vacuum Generator (6x)
- Q#1931 Vacuum Monitor Switch

Manifolds, Tubing & Fittings

- Q#194 8mm Plug (6x)
- Q#193 6mm Plug (6x)
- Q#106 8mm Push-In Fitting (6x)
- Q#105 6mm Push-In Fitting (11x)
- Q#122 8mm Elbow Push-In Fitting (12x)
- Q#121 6mm Elbow Push-In Fitting (16x)
- Q#145 6mm G1/8" Push-In T Fitting (1x)
- Q#167 6mm Elbow Plug-In Fitting (1x)
- Q#179 8mm Push-In Y Fitting (4x)
- Q#1388 G1/8" Threaded Plug (12x)
- Q#3414 10-port, G1/8" Manifold (1x)
- Q#5771 5-port, G1/8" Manifold (1x)
- Q#1377 G1/8" to G1/4" Male Adapter (6x)
- Q#244 G1/8" Seal Ring (6x)
- Tubing:
  - Ø6mm Blue
  - Ø8mm Clear

Accessories

- Q#8015 Cable Management Kit (2x)
  - (4x) Clamps
  - (2x) 12" Velcro® Straps
  - (2x) 18" Velcro® Straps
- Q#700 EOAT Handle w/ Hardware (2x)
- USB Drive: Includes manuals, CAD assemblies.

Hardware

- Hardware included, see packing lists.

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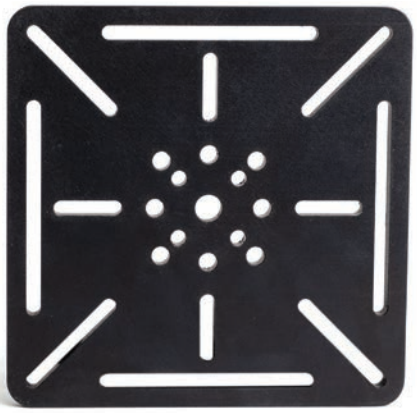
ASSEMBLY

TIP: Determine the footprint needed and number of vacuum cups required to handle your workpiece. Contact our engineering department if you need help: Cobots@EMIcorp.com

Mounting Plate Selection

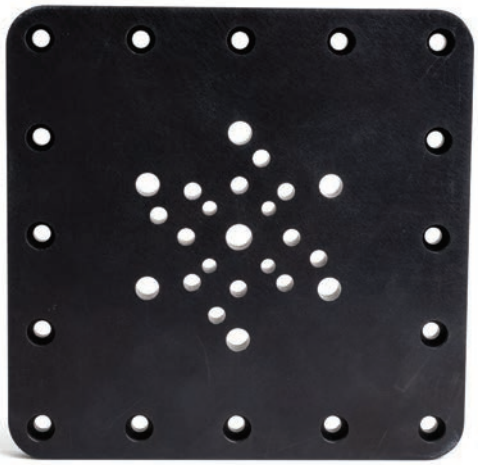
Based on your robot platform and footprint of the EOAT, choose one of the two mounting plates included. Hardware to attach aluminum profile is included with each plate.



Q#8057 Slotted Small Plate: 150x150mm

1A is a thinner, slotted plate offering more adjustability and is intended for lighter duty applications.

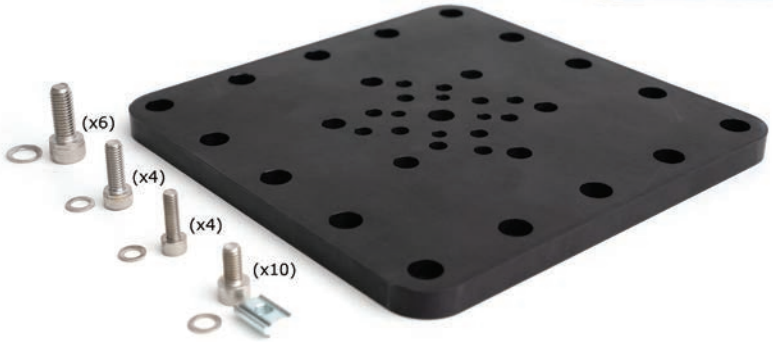
- ISO Patterns:
  - ISO 9409-1-31.5-4-M5
    - M5 x 12
  - ISO 9409-1-40-4-M6
    - M6 x 14
  - ISO-9409-1-50-4-M6
    - M6 x 14



Q#8063 Machined Large Plate: 175x175mm

2A is a thicker, machined plate that is more robust and has set mounting positions for extruded profile.

- ISO Patterns:
  - ISO 9409-1-31.5-4-M5
    - M5 x 16
  - ISO 9409-1-40-4-M6
    - M6 x 18
  - ISO-9409-1-50-4-M6
    - M6 x 18
  - ISO 9409-1-63-4-M6
    - M6 x 18
  - ISO 9409-1-80-6-M8
    - M8 x 20



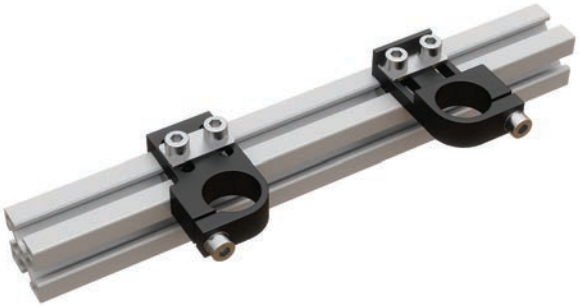
Framing

TIP: Keep in mind all the components that you will need for your build as this will drive the order and way they are attached to profile. (it's easy to forget about manifolds, a clamp in the middle of the profile, etc.)

Combine and align extruded profile as needed using the hardware included with your mounting plate and the **Q#5658** Cross Joint Connectors.

Based on your application and testing, determine the layout and spacing of your vacuum cups. If you need help selecting the right vacuum cup, please contact our engineering department.

Once the vacuum cup array has been determined, slide **Q#5873** Angle Clamps along the profile. These angle clamps are designed to straddle the 25x25mm extrusion, but they can be flipped (including hardware) to allow for some extra adjustment using the slots.



Vacuum Cups & Support

Depending on the application, the number of vacuum cups being used, and the amount of flow required, each generator may feed one or more cups.

Attach the **Q#8799** vacuum generator to the **Q#3626** vacuum arm using the **Q#1377** G1/8" to G1/4" adapter. For primary vacuum cups (attached to generator) both ports of the vacuum arm must be plugged. Add a **Q#1388** G1/8" plug to the rear port of the vacuum arm. For secondary cups (attached to vacuum arms) use a G1/8" port of the vacuum arm to plumb using a **Q#122** 90° fitting.

Once each vacuum cup sub-assembly is ready, you can insert the **Q#3626** vacuum arm into the **Q#5873** angle clamp. This can be done with the angle clamp secured to the extrusion or before. Keep in mind the angle of the vacuum generator exhaust and fittings as this can cause interferences and may affect plumbing.

TIP: Take one final measurement before securing all fasteners. While doing this, it is good to start thinking about where you will attach your manifold(s) as this may require removal of already-fastened components.

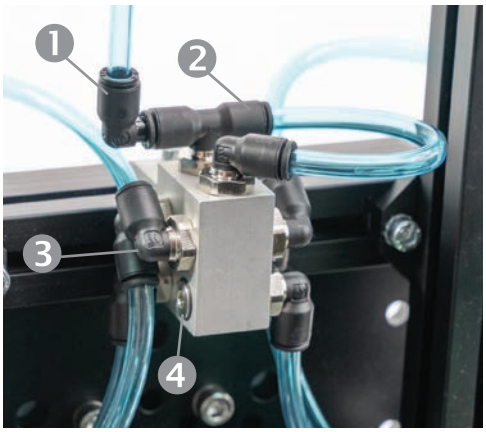
Manifolds & Plumbing

This system requires at least one Ø6mm compressed air circuit, with a supply pressure of 4 – 6 bar [58 – 87 psi] and enough flow to feed the total consumption of each generator combined. Each generator consumes 23.5 l/min [0.83 cfm] @ 4 bar [58 psi].

Compressed air is fed to manifolds, which are used to branch 1 or 2 compressed air circuits to selected vacuum generators.

Option A – Single Circuit

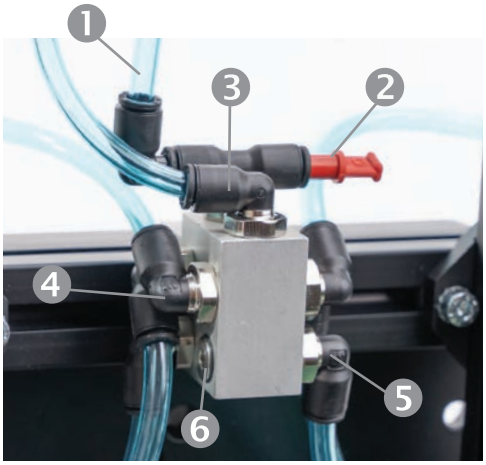
1. Feed compressed air line 1 to **Q#145** T-Fitting with Ø6mm tubing on **Q#3414** manifold.
2. Connect other end of T-Fitting to **Q#121** Elbow fitting with Ø6mm tube, effectively joining 2 separate circuits into 1. These are the inlet ports and the remaining ports are outlet ports.
3. Feed compressed air from ports to all required generators using your choice of **Q#105** and **Q#121** Ø6mm G1/8" fittings.
4. Plug unused ports with **Q#1388** G1/8" plugs.



TIP: A single circuit system is recommended when handling a single workpiece or when only one compressed air circuit is available.

Option B – Double Circuit

1. Feed compressed air line 1 to **Q#145** T-Fitting with Ø6mm tubing on **Q#3414** manifold.
2. Plug the other end of T-Fitting with **Q#193** Push-In Plug.
3. Feed compressed air line 2 to **Q#121** Elbow fitting with Ø6mm tubing on **Q#3414** manifold, effectively creating 2 separate circuits. These are the inlet ports and remaining ports are outlet ports.
4. Feed compressed air from circuit 1 outlet ports to all required generators using a combination of **Q#105** and **Q#121** Ø6mm G1/8 fittings.
5. Repeat the same steps for circuit 2 outlet ports.
6. Plug unused ports with **Q#1388** G1/8 plugs.



TIP: A double circuit system is recommended when handling multiple workpieces enabling independent control and zoning of a tooling. Double circuits are also useful when pressure and vacuum requirements cannot be met with a single line alone.

Sensing

This kit includes a **Q#1931** Vacuum Monitor Switch along with a **Q#2583** cable. One of the vacuum generators comes with a **Q#105** push-in fitting pre-installed. Securely install the vacuum monitor switch. Using the M8 pigtail connector, install the 3-pin cable and route it along the extruded aluminum profile groove and down the robot arm using the included **Q#8015** Cable Management Kits.

If part sensing is not required, remove the **Q#105** fitting and plug the G1/8 port using a **Q#1388** threaded plug.

Mounting to Robot

This kit includes two different mounting plates, each with mounting patterns and hardware for various robots. Appropriate hardware is included in the corresponding plates package.