



## ROBOTIQ POWERPICK VACUUM GRIPPER

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Robotiq PowerPick Vacuum Gripper  
for Universal Robots



Instruction Manual

LEAN   
ROBOTICS

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# Revisions

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Robotiq may modify this product without notice, when necessary, due to product improvements, modifications or changes in specifications. If such modification is made, the manual will also be revised, see revision information. See the latest version of this manual online at: [support.robotiq.com](https://support.robotiq.com).

**2023/08/09**

Updated Tool Center Point and Center of Mass section

**2023/01/31**

Initial release



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Information provided by Robotiq in this document is believed to be accurate and reliable. However, no responsibility is assumed by Robotiq for its use. There may be some differences between the manual and the product if the product has been modified after the edition date.

The information contained in this document is subject to change without notice.



# 1 General Presentation

## 11 Disclaimer

The terms *Gripper*, *PowerPick Gripper*, *PowerPick Vacuum Gripper* and *PowerPick* used in the following manual all refer to the Robotiq PowerPick Vacuum Gripper. The Robotiq PowerPick Vacuum Gripper is a robotic peripheral designed for industrial applications. The vacuum is generated with a venturi system that uses compressed air as an energy source. Its design makes it a unique robotic end-of-arm tool to quickly pick, place and handle a large range of parts (typically boxes) of varying sizes and weights.

### Info

The following section presents the key features of the Robotiq PowerPick Vacuum Gripper and must not be considered as appropriate to the operation of the Gripper. Each feature is detailed in the appropriate section.

## 12. Nomenclature

### 12.1 PowerPick Gripper

The PowerPick Gripper is a mechanical assembly equipped with multiple suction cups and interchangeable components. It is the end-effector of the robot. It uses the negative pressure generated by the PowerPick Controller to create a vacuum and, through the multiple suction cups, lifts, holds and moves boxes and other objects weighting up to 13 kg (28 lb). The PowerPick Gripper is directly installed on the wrist of the robot, without a coupling interface.



Fig. 1-1: PowerPick Gripper with 200 mm offset tube



## 122. PowerPick Controller

The PowerPick Controller is an electrical and pneumatic device composed of two solenoid valves, a pressure sensor and a vacuum generator. It is an intermediate controller, connected to the robot controller and the PowerPick Gripper via I/O terminal blocks and air tubes. The PowerPick Controller creates and releases the vacuum for the PowerPick Gripper.



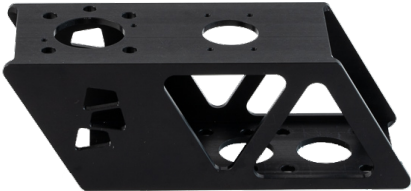
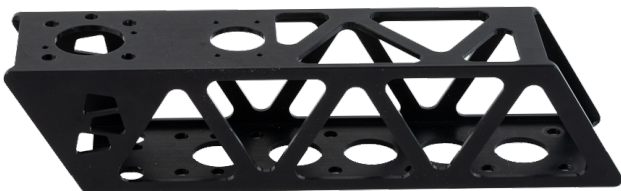
Fig. 1-2: PowerPick Controller

## 123. Interchangeable Components

In order to adapt to almost any application, many components are offered in various formats and dimensions.

### Offset Components

Three (3) offset components are offered: one of them must be installed. All the suction cup brackets can be installed with any of the offset components.

| Component                       |                                                                                     | Typical use<br>(on UR10e robot) | Standard or<br>Optional |
|---------------------------------|-------------------------------------------------------------------------------------|---------------------------------|-------------------------|
| 0 mm offset plate <sup>1</sup>  |  | Items up to 115 kg (25 lb)      | Standard                |
| 100 mm offset tube              |  | Items up to 115 kg (25 lb)      |                         |
| 200 mm offset tube <sup>2</sup> |  | Items up to 8.5 kg (18 lb)      |                         |

<sup>1</sup> Requires the use of the wrist extension.

<sup>2</sup> Installed on the default configuration.

Table 1-1: Offset components



## Suction Cup Brackets and Suction Cups

Three (3) sets of suction cups and two (2) sets of suction cup brackets are offered. All the suction cups can be installed on any of the suction cup brackets.

| Component                  |                                                                                     | Typical use                                   | Standard or Optional |
|----------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------|----------------------|
| Large suction cup brackets |    | Items up to 290 mm x 485 mm<br>(115" x 19")   | Standard             |
| Small suction cup brackets |    | Items up to 220 mm x 345 mm<br>(8.5" x 13.5") |                      |
| 75 mm suction cups         |    | Items between 6 and 11 kg (13 and 24 lb)      |                      |
| 52 mm suction cups         |   | Items less than 6 kg (13 lb)                  | Optional             |
| 78 mm suction cups         |  | Recommended for heavy porous items            |                      |

Table 1-2: Suction cups brackets and suction cups



Wrist Extension

One (1) wrist extension is offered.

| Component              |                                                                                   | Typical use 1                               | Standard or<br>Optional |
|------------------------|-----------------------------------------------------------------------------------|---------------------------------------------|-------------------------|
| 120 mm wrist extension |  | When additional vertical reach is required. | Standard                |

<sup>1</sup> Wrist extension is always necessary with the 0 mm offset plate.

Table 1-3: Wrist extension



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## 2. Safety

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### 2.1 Disclaimer

#### Caution

Any user of the Robotiq PowerPick must have read and understood all of the instructions in the following section before operating it.

It is the installer/operator's responsibility to ensure that all local safety measures and regulations are met.

The intent of this section is to provide general guidelines for safe use of the PowerPick vacuum gripper.

Always follow local regulations.

The installer is responsible for the safe installation and commissioning of the PowerPick vacuum gripper.

Robotiq accepts no liability for damage, injury or any legal responsibility incurred directly or indirectly from the use of this product.

The user (installer and operator) shall observe safe and lawful practices including but not limited to those set forth in this document.

The term *operator* refers to anyone responsible for any of the following operations on the Robotiq Vacuum Gripper:

- Installation
- Control
- Maintenance
- Inspection
- Calibration
- Programming
- Decommissioning

This manual covers the various components of the PowerPick vacuum gripper and the general operations regarding the whole life-cycle of the product, from installation to operation and decommissioning.

The drawings and photos in this manual are representative examples. However, discrepancies may be observed between the visual supports and the actual product.

#### Warning

Any use of the PowerPick vacuum gripper in non-compliance with these instructions is deemed inappropriate and may cause injury or damage.



## 22. Intended Use

The PowerPick vacuum gripper is specifically designed for pick, place and handle objects. The product is intended for installation on a robot or other automated machinery and equipment.

### Caution

The gripper is NOT intended for applying force against objects or surfaces.

- Only use the PowerPick vacuum gripper:
  - in its original condition;
  - without unauthorized modification;
  - in perfect technical condition.
- Always comply with local, state, province and/or federal laws, regulation and directives automation safety and general machine safety.
- The unit should be used exclusively within the range of its technical data. Any other use of the product is deemed improper and unintended. Robotiq will not be liable for any damages resulting from any improper or unintended use.

## 23. Risk Assessment

### 23.1 General Risk Assessment

The robot, the Gripper and any other equipment used in the final application must go through a comprehensive risk assessment process before they can be used.

The following non-exhaustive list presents risks that must be assessed during the integration process:

- Risk of contact between body parts and the gripper and/or suction cups;
- Risk of load ejection resulting from loss of vacuum;
- Risk of load dropping resulting from loss of vacuum;
- Risk of pinching between the gripper and the part(s) or the environment;

Depending on the application, there may be hazards that require additional protection and/or safety measures. For instance, the workpiece handled by the Gripper could be inherently dangerous to the operator.



**Warning**

A collision between a person and the PowerPick Gripper may result in material damage, bodily injury and even death. Make sure anyone working around the working area takes the necessary precautions:

- Make sure no individual or asset are in the vicinity of the robot and/or Gripper prior to initializing the robot.
- Always keep body parts and clothing away from the Gripper while the device is powered on.
- Do not use the Gripper on people or animals.
- Never stand under suspended loads held by the Gripper.
- The Gripper needs to be properly secured before operating the robot.
- Always meet the Gripper payload specifications.

**Warning**

Work on electrical equipment must only be carried by qualified and authorized electrical personnel. Furthermore:

- Never supply the PowerPick Controller with an alternating current source.
- Make sure that the PowerPick Controller I/O cable is always secured at both ends.
- Always meet the recommended keying for electrical connections.

## 232. Noise Level

At the optimal pressure (see the **Specifications** section), the noise level at the workstation is 82 dBa. Hearing protections are recommended. Make sure that all local safety measures and regulations are met.

## 233. Pneumatic Limitations

- The maximum permissible pressure of all pneumatic components must never be exceeded.
- Pneumatic tubing must be checked at regular intervals and, if necessary, replaced.
- Leaky connections must be sealed to avoid breakage, unnecessary or excessive noise, loss of energy, etc.
- Loss of vacuum can also occur due to power failure or air supply interruption.

**Warning**

- Make sure that the air tubes are properly secured before pressurizing the PowerPick Gripper.
- Make sure that the air tubes are not pressurized before removing the air supply tube or any other air tube from the PowerPick Controller and Gripper.
- Never operate the PowerPick Gripper with leaking or worn parts.



## 3. Installation

This section will guide you through the installation and general setup of your Robotiq PowerPick Vacuum Gripper. Before installing:

- Read and understand the safety instructions related to the PowerPick. Refer to the **Safety** section.
- Verify your package according to the scope of delivery and your order.
- Make sure to have the required parts, equipment and tools listed in the scope of delivery.
- Be sure to meet the recommended environmental conditions.

### Info

This manual uses the metric system. Unless specified, **all dimensions are in millimeters**.

### Warning

When installing:

- Do not operate the PowerPick Vacuum Gripper or even turn on the power supply before the device is firmly anchored and the machine area is cleared.
- Make sure the air supply is secured.
- Failure to properly secure and install the equipment can result in material damage and bodily injury. In addition, note that in situations where the installation is not compliant, the warranty is void.

When installing:

- Make sure to follow all the safety rules and regulations of your workplace and wear all recommended personal protective equipment in accordance with your workplace's safety standards, including:
  - Safety glasses
  - Hearing protection
- Always pay attention when handling tools that contain sharp edges, pinching surfaces or generate heat.



## 3.1 Scope of Delivery

### 3.1.1 Robotiq Robotiq Vacuum Gripper Kit

The standard PowerPick kit is composed of:

- 1 x PowerPick Gripper, already assembled with the following:
  - 1 x 200 mm Offset tube
  - 2 x Small suction cup brackets
  - 4 x 75 mm suction cups
  - 1 x Manifold
  - 1 x Positioning plate
  - 2 x Strengthening brackets
  - 2 x 6 mm air tubes (150 mm long)
  - 2 x 6 mm air tubes (240 mm long)
- 1 x POWERPICK-GRP-ACC-KIT
  - 1 x 100 mm Offset tube
  - 1 x 0 mm Offset plate
  - 1 x Manifold bracket
  - 1 x Wrist extension
  - 2 x Large suction cup brackets
  - 4 x additional 6 mm air tubes (300 mm long)
- 1 x POWERPICK-GRP-SCREW-KIT
  - 2 x port plugs
  - Tools and hardware
- 1 x PowerPick Controller, wrapped with the following:
  - 1 x I/O cable (M12, 8 pins, 2 m long)
- 1 x POWERPICK-CTRL-ACC-KIT
  - 1 x 8 mm air tube (5 m long)
  - 1 x 10 mm air tube (4.5 m long)
  - 1 x mounting bracket kit
  - 1 x G1/4 x 1/4 NPTF adapter
  - Tools and hardware



The following components are optional:

- 4 x 78 mm suction cups
- 4 x 52 mm suction cups (coming with 22 mm wrench)

## 32. Environmental and Operating Conditions

| Condition                  | Values                              |              |
|----------------------------|-------------------------------------|--------------|
|                            | Min                                 | Max          |
| Operating temperature      | 0°C (32°F)                          | 50°C (122°F) |
| Storage temperature        | -20°C (-4°F)                        | 70°C (158°F) |
| Humidity (non-condensing)  | 35% RH                              | 85% RH       |
| IP rating                  | IP2X                                |              |
| Dust, soot and water       | Affect the time between maintenance |              |
| Food                       | No                                  |              |
| Clean room                 |                                     |              |
| Intrinsic Safety (IS)      |                                     |              |
| Corrosive liquids or gases |                                     |              |
| Explosive liquids or gases |                                     |              |

Table 3-1: Environmental and operating conditions of the PowerPick



## 33. Air Supply

### Caution

- Use dry and filtered air only. Follow the ISO 8573-1, class 7.4.4 standard.
- The maximum pressure allowed is 8 bar (115 psi). The optimal pressure for compressed air consumption is 5.5 bar (80 psi).
- We recommend using a local pressure regulator with a filter and air dryer. The filter should prevent any dust larger than 5 µm from getting inside the system.

### 33.1 Connecting the Supply Line

- Compressed air must be supplied to the Vacuum Gripper according to the technical specifications.
- The air supply tubing must be connected and disconnected to, or from, the inlet port only when the line is depressurized.
- When the line is pressurized, the safety clip must be at all times installed on the inlet port of the PowerPick Controller.
- It is recommended a lockout valve before connecting to the product.
- To protect against whipping hazard, the air supply tubing (connected to the PowerPick Controller) must be secure. An air fuse can also be installed.

### 33.2. Depressurizing the supply line

In order to safely depressurize the supply line, the air supply must first be shut off. Then, if no lockout valve is present to depressurize the line, the gripper can be activated until the pressure is fully released.

## 34. Reception of the Product

### 34.1 Visual Inspection

Before and after opening the package, inspect it to make sure there is no damage or defect.

Make sure to have all components in hand before discarding the box and packing material.

If damage or defects are discovered, or if anything is missing, contact the Robotiq support team at [support@robotiq.com](mailto:support@robotiq.com).



## 35. Mechanical Installation

### Warning

Failure to properly secure and install the equipment can result in material damage and bodily injury. In addition, note that the warranty will not cover material damage resulting from an installation that did not comply with the instructions found in this manual.

### 35.1 PowerPick Controller Installation

#### Required Tools

Included:

- 1 x 6 mm hex key
- 1 x 8 mm wrench
- 1 x 5.5-17 mm double ended wrench
- 1 x 20-21 mm double ended wrench (provided with the PowerPick Gripper screw kit)

Not included:

- Isopropyl alcohol
- #2 Phillips screwdriver

#### Installation



Fig. 3-1: PowerPick Controller

1. Identify the location where the PowerPick Controller will be installed. Choose a location so that the electrical cable and air tubes will not encumber the working environment.



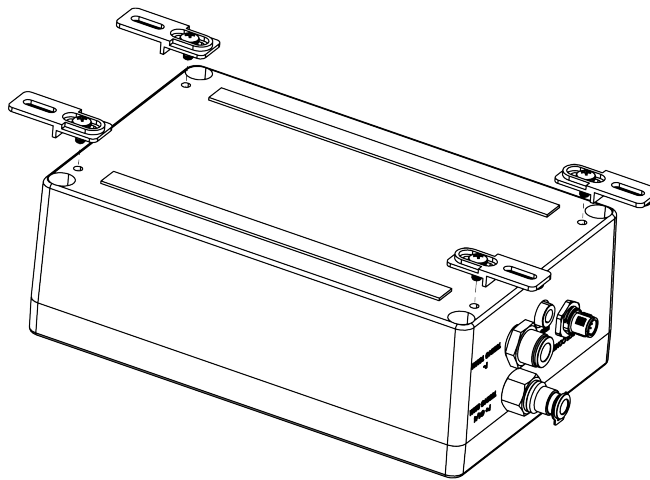
2. There are two hardware options for the installation: with double face tape (already applied under the controller) or with screws and mounting brackets.

- a. **With double face tape:**

- i. With isopropyl alcohol, clean the zone where the double face tape will be applied.
    - ii. Remove the protective film from the double face tape under the Controller. Install the Controller.
    - iii. Hold pressure for 60 seconds. The double face tape is really hard to remove once installed: **be certain of the location before installing the Controller.**

- b. **With screws and mounting brackets:**

- i. Using a #2 Phillips screwdriver (not provided), install the four (4) mounting brackets with the four (4) Phillips screws under the Controller, at the four (4) corners.
    - ii. Install the PowerPick Controller at its final location (tools and hardware not provided).



*Fig. 3-2: Mounting brackets on the PowerPick Controller*

### Caution

If you install the PowerPick Controller on a machine or an equipment, make sure it does not alter any type of warranty or certification.

3. Robotiq provides a 8 mm air tube to connect between your air supply and the PowerPick Controller (a 5/16" air tube can also work). If you wish to use any other connection, follow the instructions below. If not, go next step.
  - a. On the PowerPick Controller, where it is indicated *P+ G1/4 TUBING 8MM*, hold the nut at the base of the fitting with the provided 20 mm wrench. Then insert the 6 mm hex key in the air tube fitting and remove the fitting.
  - b. Install the provided G1/4 x 1/4 NPTF adapter. While still holding the nut with the 20 mm wrench, tighten the adapter with the 17 mm wrench.
  - c. Install your air tube fitting on the adapter.
4. Connect the PowerPick Controller. See the **Electrical Installation** section.



## 3.5.2. PowerPick Gripper Installation

### Required Tools

Included:

- 1 x 2.5 mm hex key
- 1 x 5 mm hex key
- 1 x 6 mm hex key (provided with the PowerPick Controller accessory kit)
- 1 x 20-21 mm double ended wrench

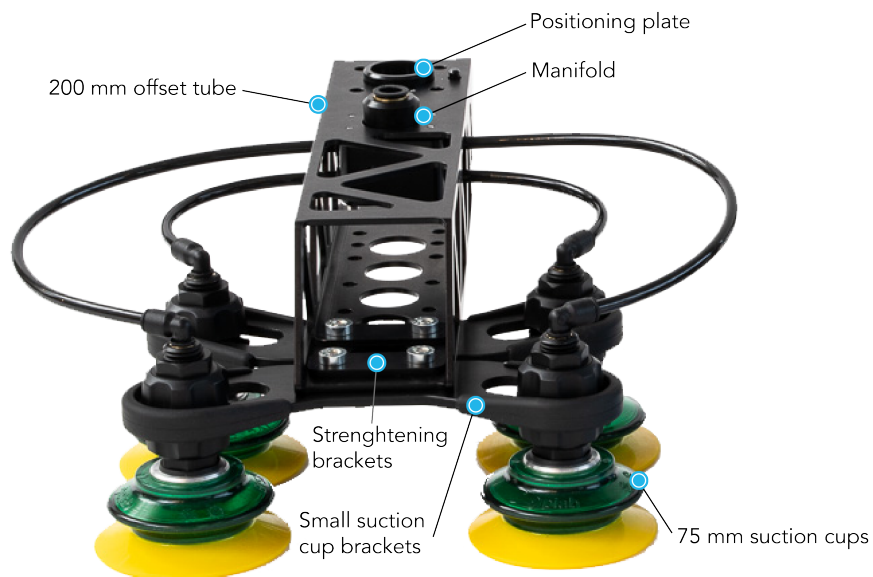
Not included:

- Torque wrench

### Overview

1. Upon receipt, the PowerPick Gripper is already assembled with the following components:

- 200 mm offset tube
- Small suction cup brackets
- 75 mm suction cups
- Positioning plate
- Manifold
- 2 x Strengthening brackets
- 4 x air tubes



*Fig. 3-3: PowerPick Gripper default configuration*

2. The PowerPick Gripper components can be moved and changed, depending on your needs. There are a wide variety of possible configurations: see the **Configurations Steps and Tips** section and the **Specifications** section to identify the right configuration for your application.

### Caution

Any unused manifold port should be covered with a port plug to avoid air leakage.

### Info

When the terms *offset tubes* are used, they refer to both the 100 mm offset tube and the 200 mm offset tube.

## Installation on the Robot with the Offset Tubes

1. **Wrist extension** (optional with the 100 mm or 200 mm Offset Tube, if you do not wish to install it, go to the **Robot wrist** step):
  - a. Install the wrist extension on top of the offset tube, on the opposite side of the positioning plate. Align the little opening at the base of the wrist extension with the pin coming from the positioning plate.
  - b. From underneath the Gripper, screw the wrist extension to the positioning plate and offset tube with the provided 5 mm hex key, four (4) M6 screws and four (4) M6 tooth lock washers. **Required torque is 9.5 Nm (7.0 lb ft).**
2. **Robot wrist:** Install the Gripper directly on the robot wrist (no coupling required). Align the pin coming from the positioning plate or wrist extension with the right hole on the robot wrist. Screw the Gripper to the robot wrist with the provided 5 mm hex key, four (4) M6 screws and four (4) M6 tooth lock washers. **Required torque is 9.5 Nm (7.0 lb ft).**

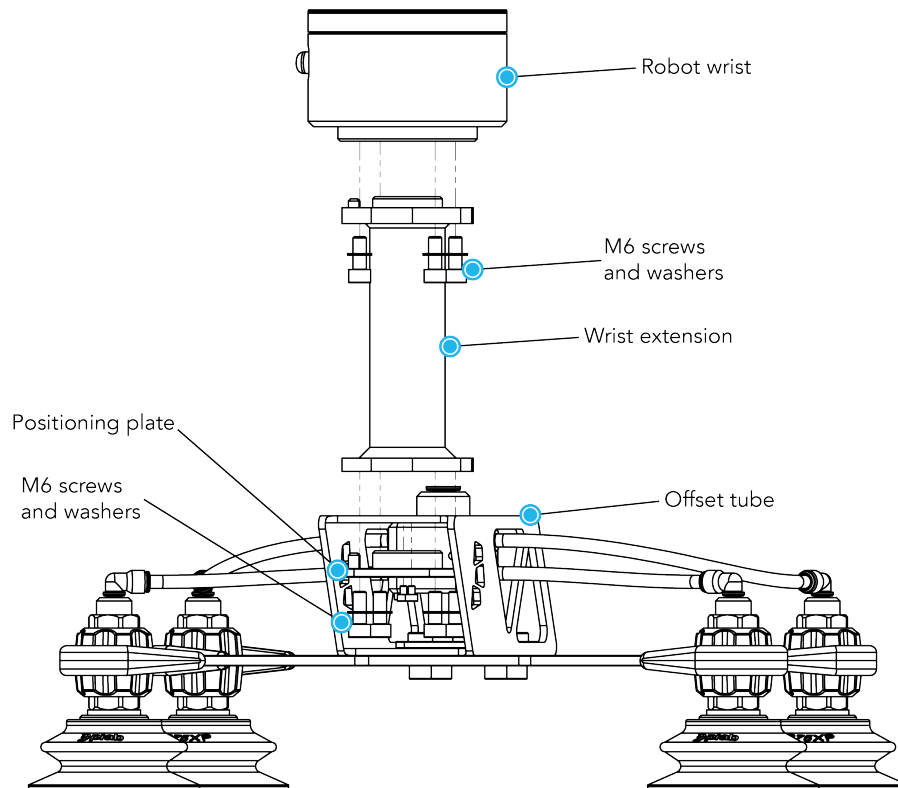


Fig. 3-4: Installation on the robot wrist (image does not show the default configuration)



3. **TCP and center of mass:** In the Polyscope interface, go to **Installation -> General**. Select **TCP** to enter the TCP and **Payload** to enter the center of mass. See the **Tool Center Point and Center of Mass** section to identify the values of your configuration.

## Suction Cups

### Repositioning of suction cups:

1. Unscrew the air bolts by hand just enough to loose the air nodes.
2. Reposition the air nodes as desired in the oblong holes of the suction cup brackets.
3. Screw back the air bolts by hand:
  - a. The part of the air bolts that fit in the oblong holes have two flat edges: line up the flat edges of the air bolts with the flat edges of the oblong holes.
  - b. Tighten the air bolts enough so the air nodes do not move.
  - c. Make sure that the air tubes are securely connected and that the suction cups are tight so there is no air leak. If necessary, tighten the suction cups with the 6 mm hex key (insert the key from the bottom of the suction cups).

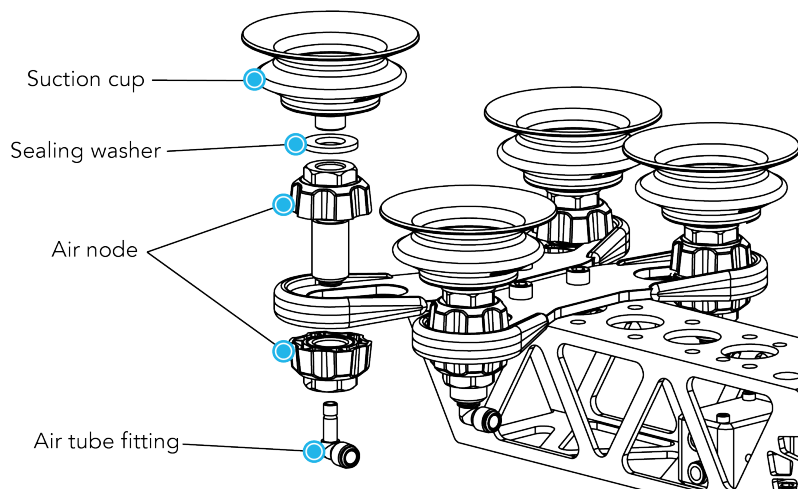


Fig. 3-5: PowerPick Gripper air node

### Change of suction cups:

1. Using the 6 mm hex key, unscrew the suction cups and remove them. If necessary, use the 21 mm wrench to hold the air bolts.
2. Using the 6 mm hex key, install the desired suction cups on the air nodes. Make sure that the suction cups are tight so there is no air leak. If necessary, use the 21 mm wrench to hold the air bolts.

#### Info

If you are using the 52 mm suction cups (optional), use the 22 mm wrench (provided only with the 52 mm suction cups) instead of the 6 mm hex key to screw and unscrew them.

## Suction Cup Brackets with the Offset Tubes

### Repositioning of brackets:

1. From underneath the PowerPick Gripper, using the 5 mm hex key, remove the four (4) M6 screws holding the suction cup brackets and the two (2) strengthening brackets.
2. Reposition the suction cup brackets and strengthening brackets as desired.
3. Using the 5 mm hex key and the four (4) M6 screws, screw back the suction cup brackets and strengthening brackets to the offset tube. The self-clinching nuts of the strengthening brackets must face up. **Required torque is 9.5 Nm (7.0 lb ft).**

### Change of suction cup brackets:

1. Remove the four (4) air tubes and four (4) air tube fittings from all air nodes.
2. Unscrew the four (4) air bolts by hand and remove completely the air nodes.
3. From underneath the PowerPick Gripper, using the 5 mm hex key, remove the four (4) M6 screws holding the suction cup brackets and the two (2) strengthening brackets. Remove the suction cup brackets and strengthening brackets.
4. Install the air nodes on the desired suction cup brackets. If necessary see the **Suction Cups** section.
5. Install the desired suction cup brackets and strengthening brackets in the desired positions on the offset tube.
6. Using the 5 mm hex key and the four (4) M6 screws, screw back the suction cup brackets and strengthening brackets to the offset tube. The self-clinching nuts of the strengthening brackets must face up. **Required torque is 9.5 Nm (7.0 lb ft).**
7. Reinstall the four (4) air tube fittings and reconnect the four (4) air tubes to the air nodes. The two (2) air nodes furthest from the manifold should be connected to the upper manifold fittings.

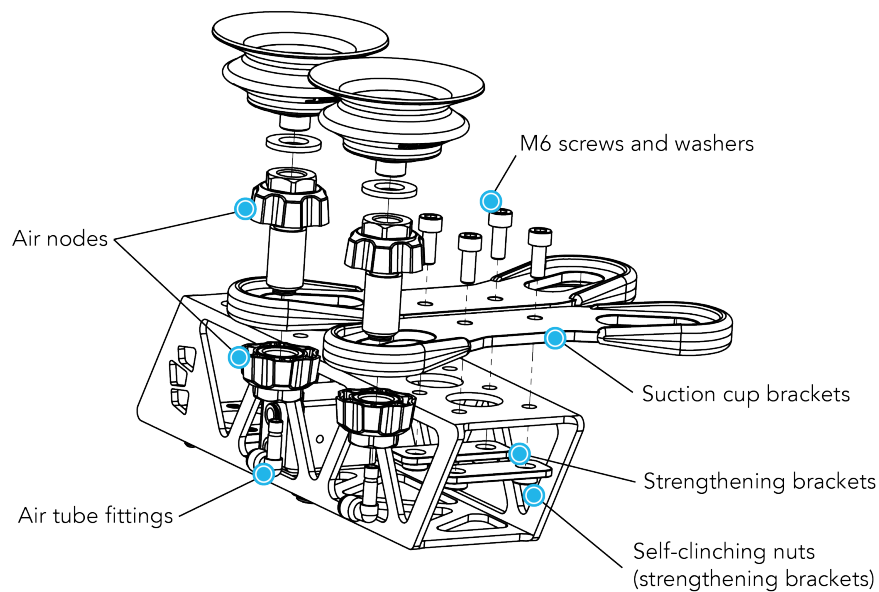


Fig. 3-6: Change of suction cup brackets with offset tube

#### Info

On the image above, two (2) air nodes have been removed for ease of viewing.



## Suction Cup Brackets with the 0 mm Offset Plate

### Change of suction cup brackets:

1. Remove the four (4) air tubes and four (4) air tube fittings from all air nodes.
2. Unscrew the four (4) air bolts by hand and remove completely the air nodes.
3. From underneath the PowerPick Gripper, using the 5 mm hex key, remove the four (4) M6 screws holding the suction cup brackets. Remove the suction cup brackets.
4. Install the air nodes on the desired suction cup brackets. If necessary see the **Suction Cups** section.
5. Install the desired suction cup brackets. Using the 5 mm hex key and the four (4) M6 screws, screw them back to the 0 mm offset plate. **Required torque is 9.5 Nm (7.0 lb ft).**
6. Reinstall the four (4) air tube fittings and reconnect the four (4) air tubes to the air nodes.

## Gripper Disassembly with the Offset Tubes

1. Disconnect the four (4) air tubes from the manifold.
2. From underneath the PowerPick Gripper, using the provided 5 mm hex key, remove the four (4) M6 screws holding the suction cup brackets and the two (2) strengthening brackets. Remove the suction cup brackets and strengthening brackets.
3. Using the provided 2.5 mm hex key, remove the four (4) 35 mm M3 screws holding the manifold in place. Remove the manifold.
4. Using the provided 2.5 mm hex key, remove the two (2) 4 mm M3 screws holding the positioning plate in place. Remove the positioning plate.



## Gripper Assembly With the Offset Tubes

1. Install the positioning plate in the offset tube. Align the pin on the positioning plate with the right hole (only one option) in the offset tube. Screw the positioning plate to the offset tube with the provided 2.5 mm hex key and two (2) 4 mm M3 screws.
2. Install the manifold in the offset tube. From the opposite side of the positioning plate, screw the manifold to the offset tube, using the provided 2.5 mm hex key and four (4) 35 mm M3 screws.
3. Install the air nodes on the desired suction cup brackets. Then install the desired suction cups on the air nodes. If necessary see the **Suction Cups** section.
4. Install the suction cup brackets underneath the offset tube, in the desired positions. Then install the strengthening brackets on the opposite side, inside the offset tube. The self-clinching nuts on the strengthening brackets must face up.
5. From underneath the Gripper, using the 5 mm hex key and the four (4) M6 screws, screw the suction cup brackets and strengthening brackets to the offset tube. **Required torque is 9.5 Nm (7.0 lb ft).**
6. Connect the four (4) air tubes to the manifold and to the air nodes. Connect the two (2) air nodes furthest from the manifold to the upper manifold fittings.
7. See the **Installation on the Robot with the Offset Tubes** section for the installation of the wrist extension (optional) and the installation on the robot wrist.

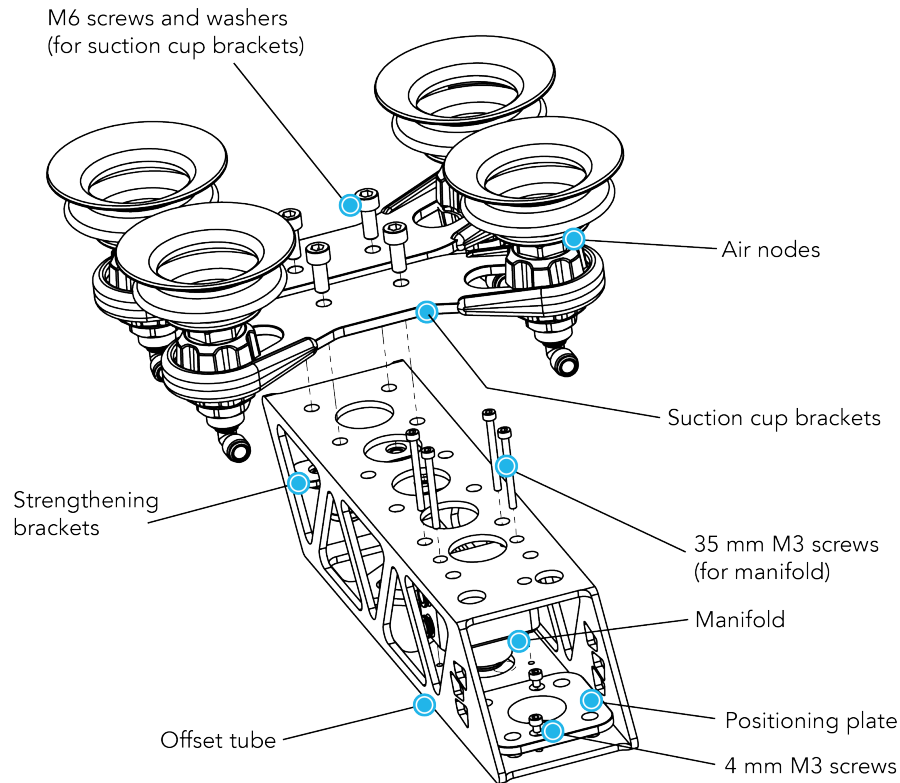


Fig. 3-7: PowerPick Gripper with 200 mm offset tube



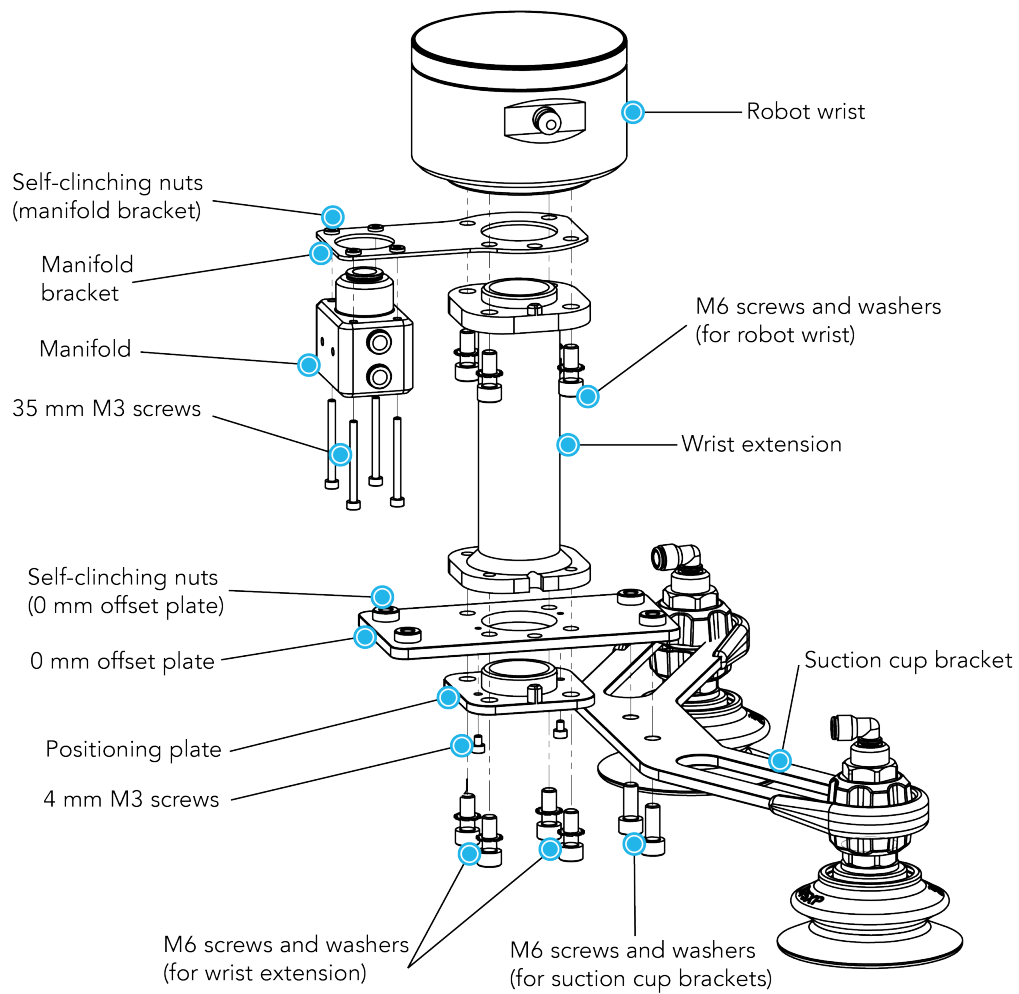
## Gripper Assembly With the 0 mm Offset Plate

### Caution

The wrist extension must be installed with the 0 mm offset plate

1. Install the positioning plate on the 0 mm offset plate, on the opposite side of the self-clinching nuts. Align the pin on the positioning plate with the right hole (only one option) in the 0 mm offset plate. Screw the positioning plate to the 0 mm offset plate with the provided 2.5 mm hex key and two (2) 4 mm M3 screws.
2. Install the wrist extension on the 0 mm offset plate, on the opposite side of the positioning plate (align the little opening at the base of the wrist extension with the pin coming from the positioning plate). Screw the wrist extension to the positioning plate and 0 mm offset plate with the provided 5 mm hex key, four (4) M6 screws and four (4) M6 tooth lock washers. **Required torque is 9.5 Nm (7.0 lb ft).**
3. Install the air nodes on the desired suction cup brackets. Then install the desired suction cups on the air nodes. If necessary see the **Suction Cups** section.
4. Install the suction cup brackets on the same side than the positioning plate. Using the 5 mm hex key and four (4) M6 screws, screw the suction cup brackets to the 0 mm offset plate. **Required torque is 9.5 Nm (7.0 lb ft).**
5. Insert the manifold in the smallest hole of the manifold bracket: insert it from the side without the self-clinching nuts. Then screw the manifold to the manifold bracket, using the provided 2.5 mm hex key and four (4) 35 mm M3 screws.
6. Position the manifold bracket (with the manifold) on top of the wrist extension. Align the pin on the wrist extension with the right hole (only one option) in the manifold bracket.
7. Install the Gripper and manifold bracket directly on the robot wrist (no coupling required). Align the pin coming from the wrist extension with the right hole on the robot wrist. Screw the Gripper to the robot wrist with the provided 5 mm hex key, four (4) M6 screws and four (4) M6 tooth lock washers. **Required torque is 9.5 Nm (7.0 lb ft).**
8. Connect the four (4) additional air tubes (300 mm long) to the manifold and to the air nodes.





*Fig. 3-8: PowerPick Gripper with 0 mm offset plate*

#### Info

On the image above, one suction cup bracket has been removed for ease of viewing.

## 3.5.3. Air Tubes Routing

### Required Tools

Not included:

- Tube cutter

### Routing

#### Tip

Follow cable management good practices: position and secure the air tubes so they do not clutter the working environment. Cut the air tubes to the right length if necessary.

#### Air Supply to PowerPick Controller:

1. Connect one end of the provided 8 mm air tube to your air filter or air supply (see the **Air Supply** section for more information). Push the air tube until it cannot go further.
2. On the PowerPick Controller, remove the safety clip from the fitting where it is indicated *P+ G1/4 TUBING 8MM*. Then connect the other end of the 8 mm air tube. Push the air tube until it cannot go further and put back the safety clip.

#### From PowerPick Controller to PowerPick Gripper:

1. Connect one end of the provided 10 mm air tube to the PowerPick Controller, where it is indicated *P- TUBING 10MM*. Push the air tube until it cannot go further.
2. Connect the other end of the 10 mm air tube to the PowerPick Gripper, in the manifold air inlet. Push the air tube until it cannot go further.
3. Make sure that the air tube is neither too tight nor too loose so the robot can move freely without the air tube getting stuck.



Fig. 3-9: PowerPick Controller - air tubes routing

## 3.6. Electrical Installation

### 3.6.1 PowerPick Controller

1. Connect the M12 end of the I/O cable to the PowerPick Controller, where it is indicated *DEVICE CONTROL*.
2. Connect the eight (8) wires at the other end of the cable in the robot controller, as described below.

| Wire color | Connection          | Function        |
|------------|---------------------|-----------------|
| Blue       | AG (Analog Ground)  | Pressure sensor |
| Yellow     | AI (Analog Input)   |                 |
| Gray       | 0V (Digital Output) | Blow off        |
| Pink       | DO (Digital Output) |                 |
| White      | 0V (Digital Output) | Suction         |
| Brown      | DO (Digital Output) |                 |
| Red        | 24V (Digital Input) | 24V DC          |
| Green      | GND (Ground)        | Ground          |

Table 3-2: I/O cable connections

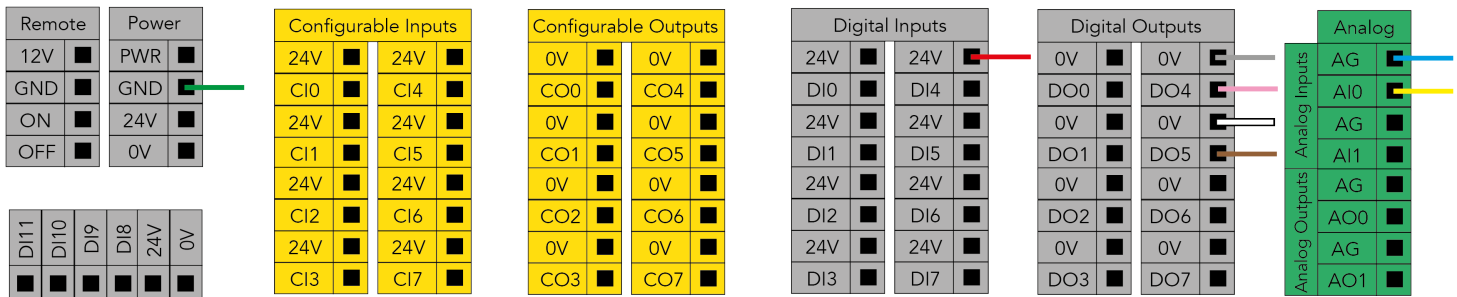


Fig. 3-10: PowerPick Controller connections in robot controller

### 3.6.2. Electrostatic Discharge Safety

The PowerPick Gripper and Controller are NOT ESD safe.



## 3.7. Configurations Steps and Tips

### 3.7.1 TCP and center of mass

In the Polyscope interface, go to **Installation -> General**. Select **TCP** to enter the TCP and **Payload** to enter the center of mass. See the **Tool Center Point and Center of Mass** section to identify the values of your configuration.

### 3.7.2. Choice of Suction Cups

Choose your suction cups according to:

- the weight of the items to be moved.
- the surface condition of the items to be moved:

| Component                       |                                                                                     | Typical use                              |
|---------------------------------|-------------------------------------------------------------------------------------|------------------------------------------|
| 75 mm suction cups              |    | Items between 6 and 11 kg (13 and 24 lb) |
| 52 mm suction cups <sup>1</sup> |   | Items less than 6 kg (13 lb)             |
| 78 mm suction cups <sup>1</sup> |  | Recommended for heavy porous items       |

<sup>1</sup> Optional components

Table 3-3: Suction cups

### 3.7.3. Choice of Suction Cup Brackets

Choose the small or large suction cup brackets. The smallest and largest items that the Gripper can pick with either suction cup brackets depends on the choice of suction cups.

Tip

Always try the small suction cup brackets first, as the brackets should never extend beyond the items to be picked.

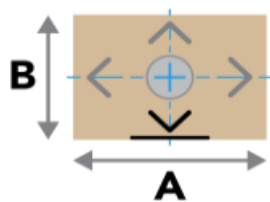


Fig. 3-11: A and B dimensions on box

| Component combinations                                                                                           |                                                                                                           | Item dimensions                        |                                             |
|------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------------------------|
|                                                                                                                  |                                                                                                           | Metric                                 | Imperial                                    |
| Small suction cup brackets<br>  | 75 mm suction cups<br>   | A: 230 mm and +<br><br>B: 165 mm and + | A: 9 in and +<br><br>B: 6 1/2 in and +      |
|                                                                                                                  | 52 mm suction cups<br>   | A: 200 mm and +<br><br>B: 140 mm and + | A: 7 7/8 in and +<br><br>B: 5 1/2 in and +  |
|                                                                                                                  | 78 mm suction cups<br> | A: 235 mm and +<br><br>B: 170 mm and + | A: 9 1/4 in and +<br><br>B: 6 5/8 in and +  |
| Large suction cup brackets<br> | 75 mm suction cups<br> | A: 345 mm and +<br><br>B: 220 mm and + | A: 13 1/2 in and +<br><br>B: 8 5/8 in and + |
|                                                                                                                  | 52 mm suction cups<br> | A: 340 mm and +<br><br>B: 210 mm and + | A: 13 3/8 in and +<br><br>B: 8 1/4 in and + |
|                                                                                                                  | 78 mm suction cups<br> | A: 375 mm and +<br><br>B: 240 mm and + | A: 14 3/4 in and +<br><br>B: 9 3/8 in and + |

Table 3-4: Combinations of suction cups and suction cup brackets



### 3.7.4. Wrist Extension

Install the wrist extension if additional vertical reach is required.

| Component                    |                                                                                   | Additional vertical reach                 |
|------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------|
| Wrist extension <sup>1</sup> |  | 120 mm (4 <sup>3</sup> / <sub>4</sub> in) |

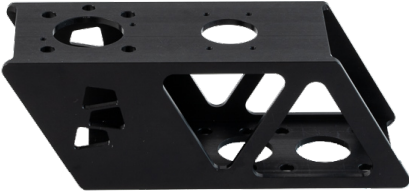
<sup>1</sup> Wrist extension is always necessary with the 0 mm offset plate.

Table 3-5: Wrist extension

### 3.7.5. Choice of Horizontal Offset Component

Choose your offset component according to:

- the necessary horizontal reach.
- the weight of the items to be moved.

| Component                       |                                                                                      | Payload<br>(on UR10e robot) |
|---------------------------------|--------------------------------------------------------------------------------------|-----------------------------|
| 0 mm offset plate <sup>1</sup>  |   | Items up to 115 kg (25 lb)  |
| 100 mm offset tube              |  | Items up to 115 kg (25 lb)  |
| 200 mm offset tube <sup>2</sup> |  | Items up to 8.5 kg (18 lb)  |

<sup>1</sup> Requires the use of the wrist extension.

<sup>2</sup> Installed on the default configuration.

Table 3-6: Offset components

#### Caution

The payload may vary depending on the robot. See the **Mechanical Specifications** section.



## 100 mm and 200 mm Offset Tubes

The suction cup brackets can be installed on any holes along the tubes.

The 200 mm offset tube has six (6) pairs of holes, resulting in fifteen (15) possible positions for the suction cup brackets.

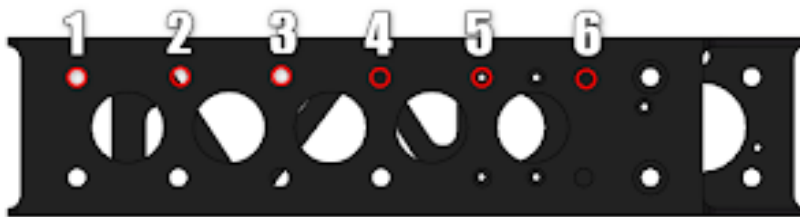


Fig. 3-12: Holes for suction cup brackets on 200 mm offset tube

The 100 mm offset tube has five (5) pairs of holes, resulting in ten (10) possible positions for the suction cup brackets.

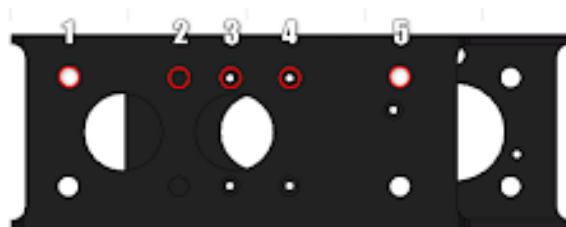


Fig. 3-13: Holes for suction cup brackets on 100 mm offset tube

The horizontal offset is represented by the midpoint between the two (2) suction cup brackets. The table below contains some examples of use:

| Suction cup bracket positions              | Example       |               | Typical use |         |
|--------------------------------------------|---------------|---------------|-------------|---------|
|                                            | 200 mm tube   | 100 mm tube   | Boxes       | Payload |
| Next to each other -<br>Far end of tube    | Holes 1 and 2 |               | Small       | Minimal |
| Next to each other -<br>Near end of tube   | Holes 5 and 6 | Holes 4 and 5 | Small       | Maximal |
| One bracket at near end, one<br>at far end | Holes 1 and 6 | Holes 1 and 5 | Big         | Medium  |

Table 3-7: Examples of configurations

### Tip

- For a maximum payload, choose the configuration with the smallest possible horizontal offset.
- The closer to the robot wrist the suction cup brackets are installed, the more weight the PowerPick Gripper can lift.





*Fig. 3-14: 200 mm tube with small and large suction cup brackets*



*Fig. 3-15: 100 mm tube with small and large suction cup brackets*

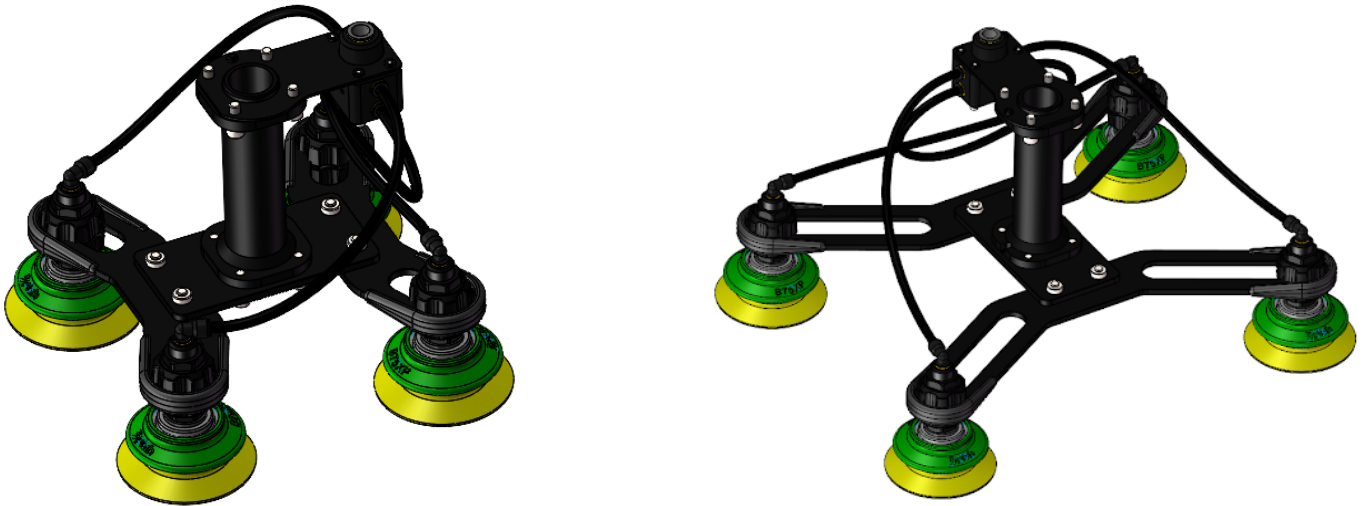
#### Info

The wrist extension is optional with the 100 mm and 200 mm offset tubes. The images above are for illustrative purposes only.

## 0 mm Offset Plate

With the 0 mm offset plate:

- there is only one positioning option for the suction cup brackets.
- the wrist extension must be installed.



*Fig. 3-16: 0 mm plate with small and large suction cup brackets*

## 4. Software

### 4.1 Grip Check

A grip check may be necessary depending on the application. The next steps explain a way to check if an object is held by the Gripper or not. See the **Electrical Installation** section for the wire connections.

1. In the **I/O** menu, identify the **analog input** linked to the **yellow wire**. This analog input will display the **Voltage** value of the Gripper vacuum sensor with and without an object held: **note the average of the values with and without an object held**. This average value will be the threshold used to determine if an object is being held by the Gripper or not.

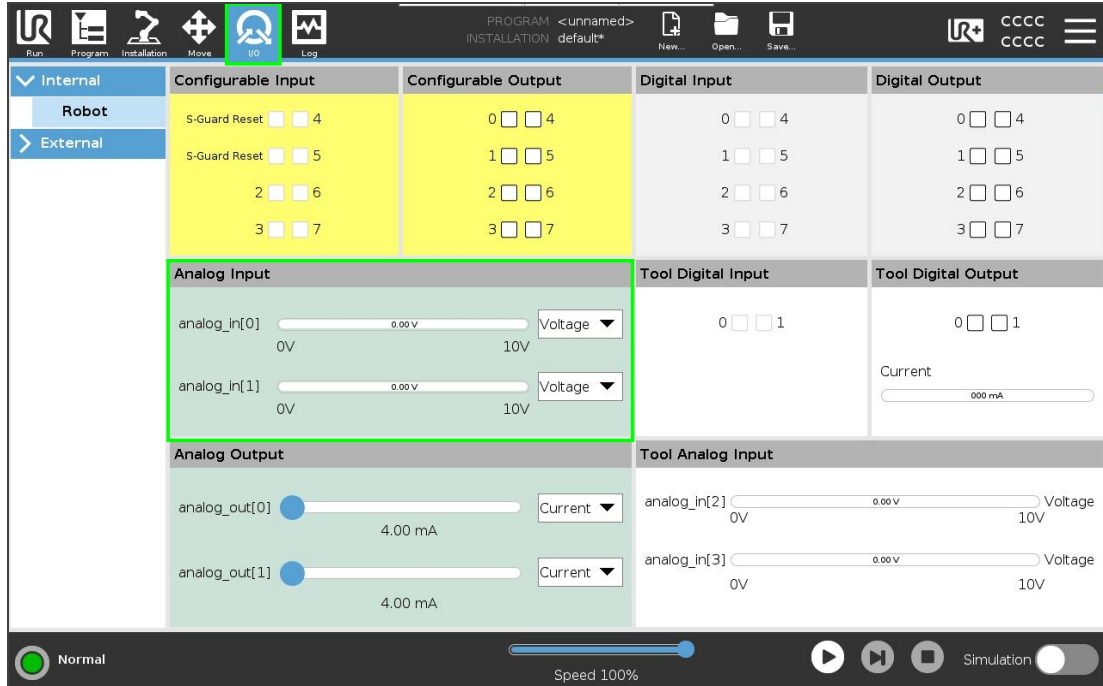


Fig. 4-1: Analog inputs

2. In the program tree, where you want to activate the PowerPick Gripper:
  - a. Insert a **Set** node (**Program** → **Basic**). In the second option, set the **Digital Output** linked to the **brown wire** to **High**. This creates a vacuum.
  - b. Insert a **Wait** node (**Program** → **Basic**) of **x** seconds (example: 0.2 seconds) to ensure that the signal has time to activate.
  - c. Insert an **If** node (**Program** → **Advanced**) to verify if the part was successfully picked (or not) using the value noted in the previous step.
    - i. In the **If** node, tap the **f(x)** box (leave the box **Check expression continuously** unticked).
    - ii. In the window appearing, open the **Input** scrolling menu and select the **analog input** linked to the **yellow wire**. Then complete the following expression using the keyboard: **If analog\_in(x)<value noted step 1**.
    - iii. Tap **<empty>** in the **If** node and insert a **Popup** node (**Program** → **Basic**). Select **Message** for the **Popup type** and in the yellow box, tap the message you want to appear when the Gripper does not hold an object (example: no\_grip).

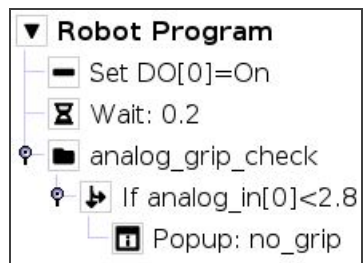


Fig. 4-2: Program tree

#### Info

In the image above, the **analog\_grip\_check** line is only a folder to identify the verification steps of the grip check. It is optional.



## 5. Specifications

### Info

This manual uses the metric system. Unless specified, **all dimensions are in millimeters.**

## 5.1 Technical dimensions

### 5.1.1 PowerPick Controller

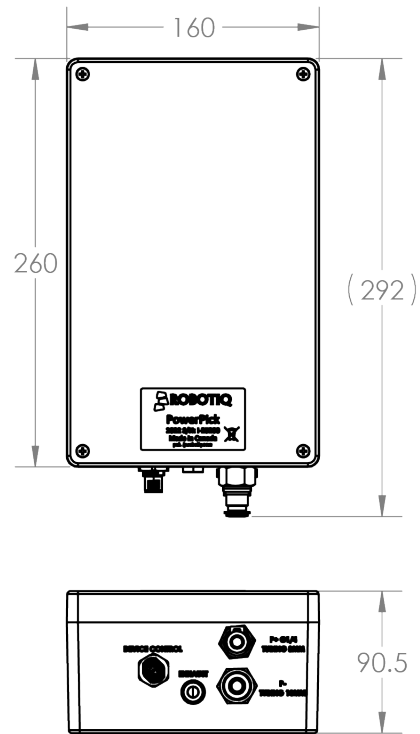


Fig. 5-1: PowerPick Controller technical dimensions

## 5.12. 0 mm Offset Plate

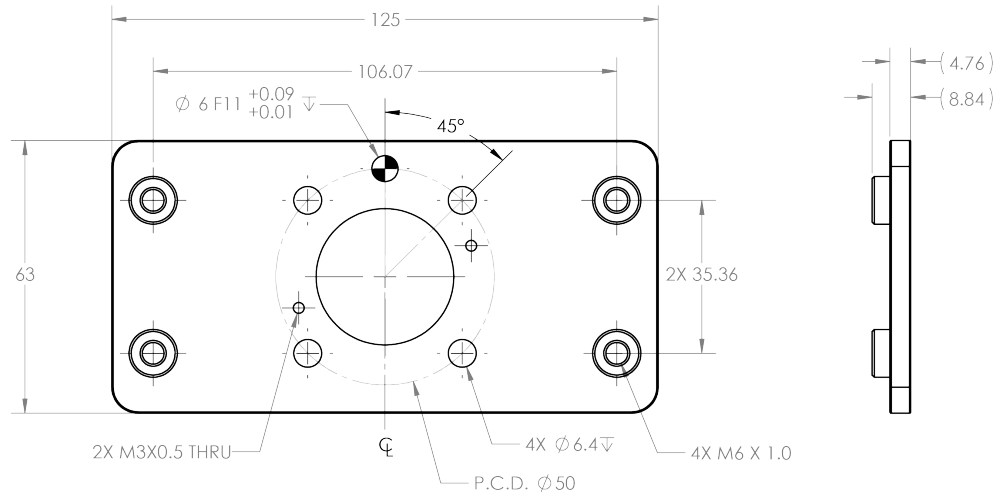


Fig. 5-2: 0 mm offset plate technical dimensions

## 5.13. 100 mm Offset Tube

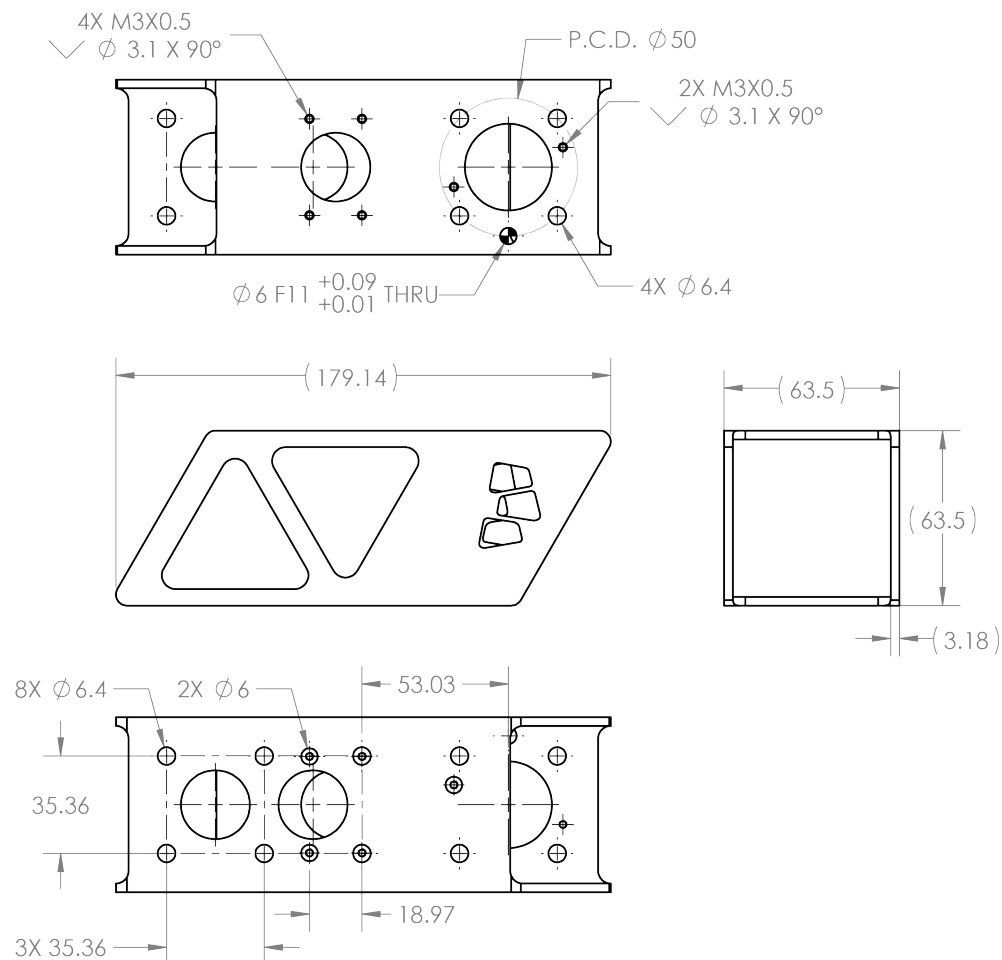


Fig. 5-3: 100 mm offset tube technical dimensions



## 5.14. 200 mm Offset Tube

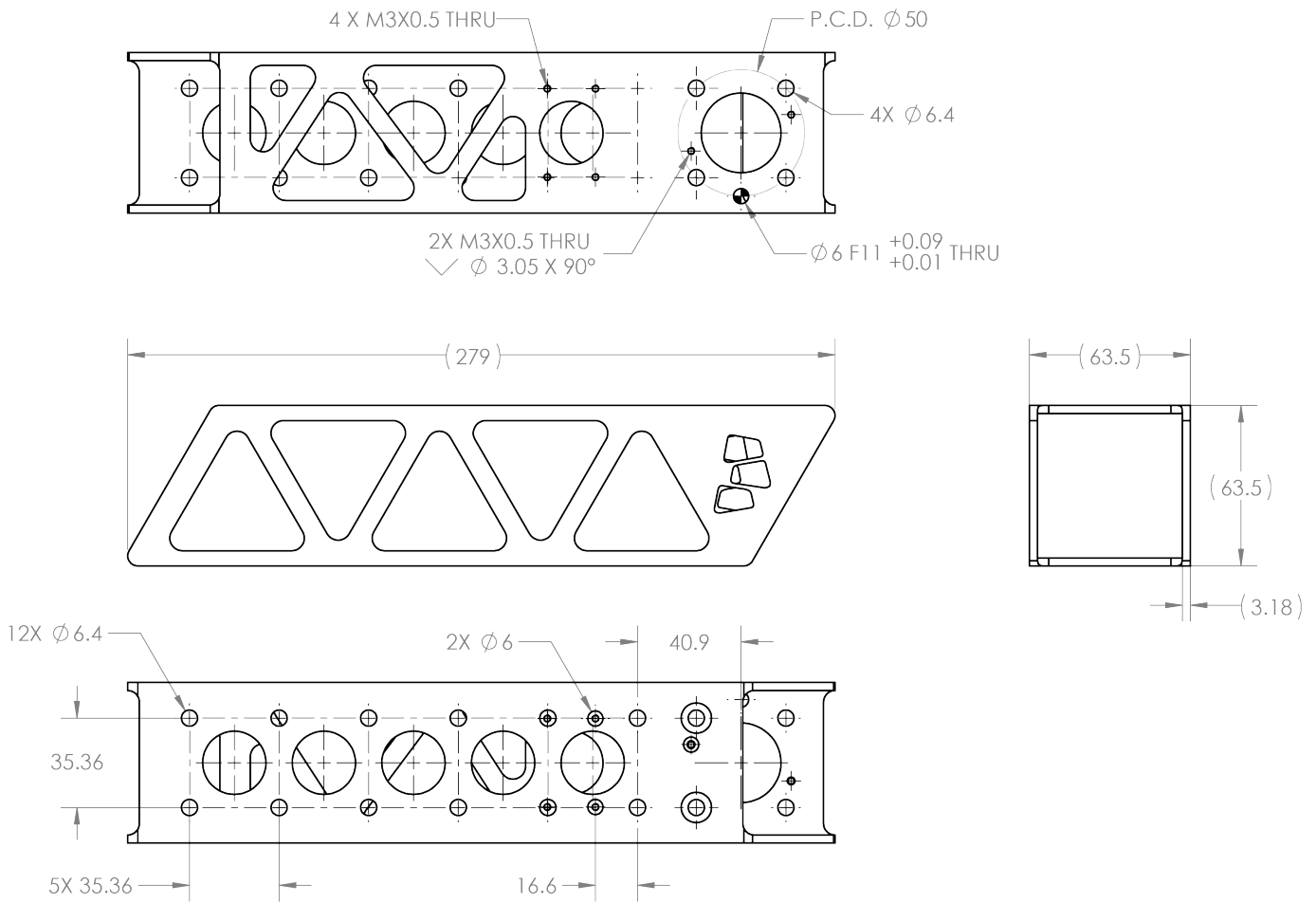


Fig. 5-4: 200 mm offset tube technical dimensions

## 5.15. Small Suction Cup Bracket

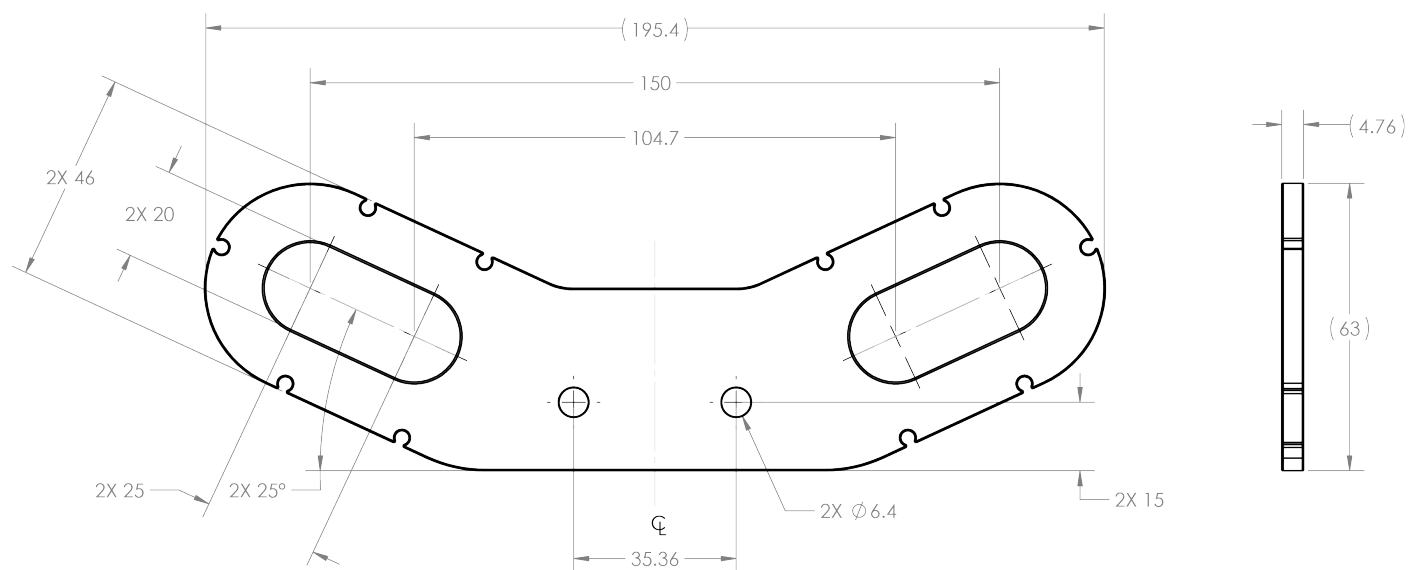


Fig. 5-5: Small suction cup bracket technical dimensions

## 5.16. Large Suction Cup Bracket

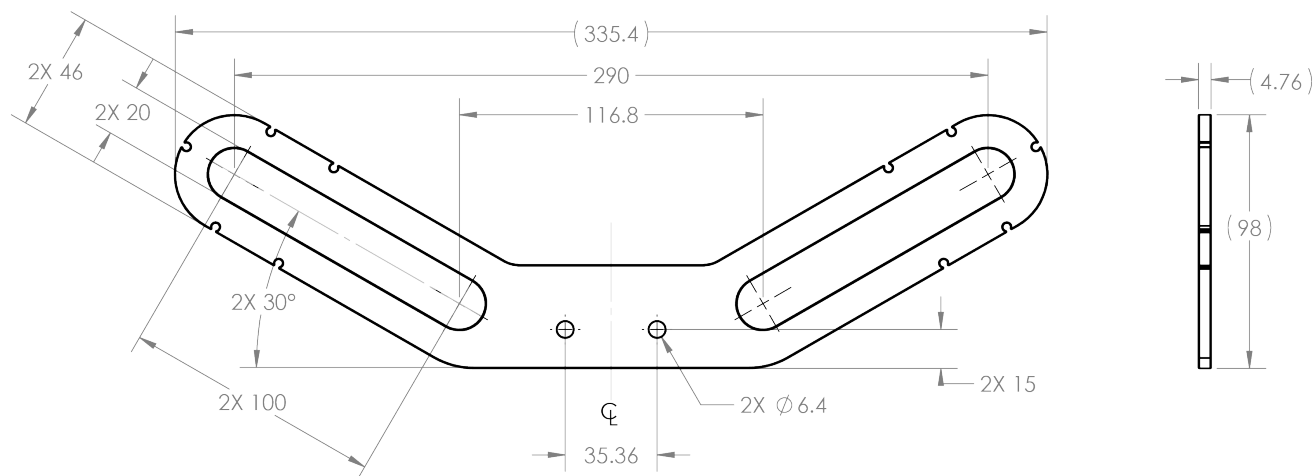


Fig. 5-6: Large suction cup bracket technical dimensions



5.17. Air Nodes

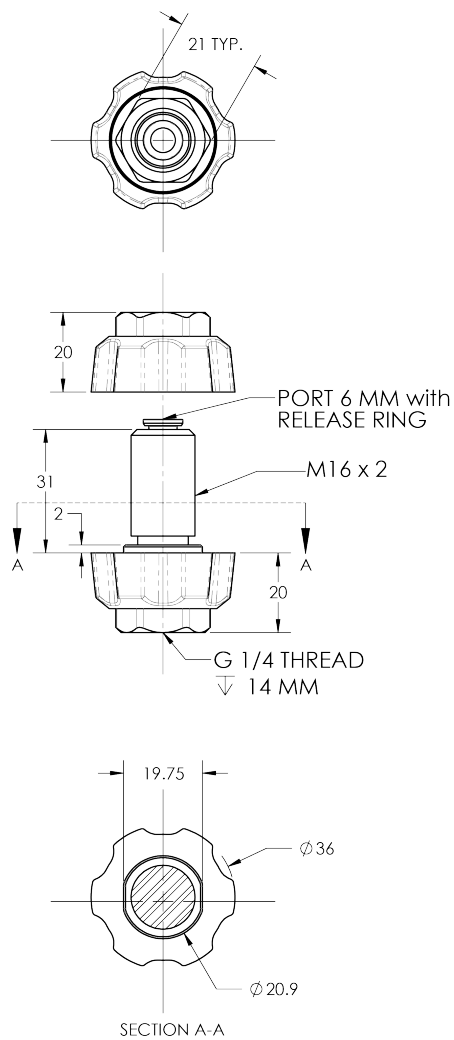


Fig. 5-7: Air nodes technical dimensions

5.18. Wrist Extension

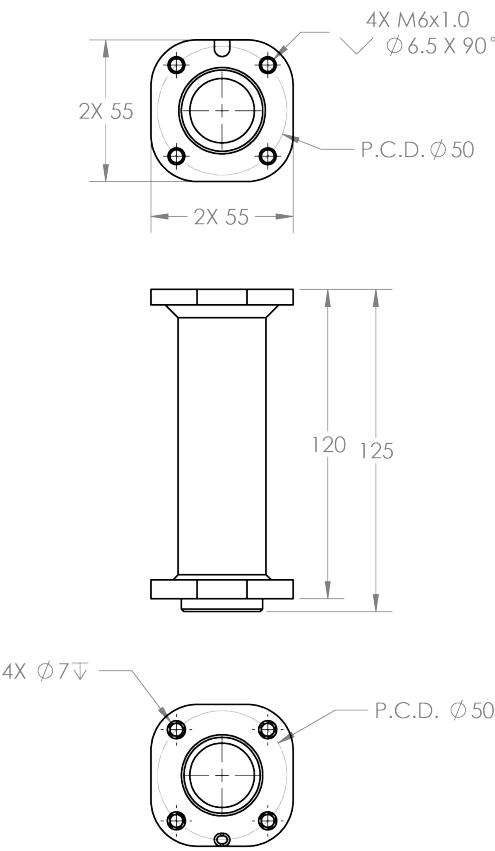


Fig. 5-8: Wrist extension technical dimensions

## 52. Mechanical Specifications

### 52.1 PowerPick Vacuum Gripper

| Specification                                        | Value                                                        |             |
|------------------------------------------------------|--------------------------------------------------------------|-------------|
|                                                      | Metric                                                       | Imperial    |
| Energy source                                        | Compressed air and electricity                               |             |
| Gripper mass                                         | See the <b>Tool Center Point and Center of Mass</b> section. |             |
| Controller mass                                      | 246 kg                                                       | 540 lb      |
| Air tube - to Controller                             | 8 mm OD                                                      | 5/16 OD     |
| Air tube - to Gripper                                | 10 mm OD                                                     | N/A         |
| Air supply connection type (cup thread)              | G 1/4 mm                                                     | 1/4-19 BSPP |
| Gripping time                                        | 310 ms                                                       |             |
| Release time (with blow off)                         | 20 ms                                                        |             |
| Minimal feed pressure                                | 3 bar                                                        | 45 psi      |
| Feed pressure for low noise (< 80 dBa)               | 4 bar                                                        | 60 psi      |
| Optimal feed pressure for compressed air consumption | 5.5 bar                                                      | 80 psi      |
| Feed pressure for maximum payload                    | 7 bar                                                        | 100 psi     |
| Maximal feed pressure                                | 8 bar                                                        | 115 psi     |
| Maximal vacuum at optimal feed pressure              | 67%                                                          |             |
| Air consumption at low noise pressure (< 80 dBa)     | 1614 SLPM                                                    | 42.64 GPM   |
| Air consumption at optimal pressure                  | 2216 SLPM                                                    | 58.55 GPM   |
| Air consumption at maximum payload pressure          | 2817 SLPM                                                    | 74.43 GPM   |
| Maximal vacuum flow at optimal feed pressure         | 257.7 SLPM                                                   | 68.08 GPM   |
| Maximal acceleration in operating conditions         | 15 G <sup>1</sup>                                            |             |
| Maximal acceleration in emergency stop situations    | 35 G <sup>1</sup>                                            |             |



|                                 |                                     |         |
|---------------------------------|-------------------------------------|---------|
| Maximal payload <sup>2</sup>    | 13 kg                               | 28.6 lb |
| Noise level at optimal pressure | 82 dBa                              |         |
| Required media                  | ISO 8573-1 class 7.4.4 <sup>3</sup> |         |

<sup>1</sup> Includes gravitational acceleration.

<sup>2</sup> This value is for the PowerPick Gripper only. The payload can be limited by the robot. See user manual of your robot if necessary.

<sup>3</sup> Dry and filtered air that complies with standard ISO 8573-1 class 7.4.4.

Table 5-1: PowerPick Vacuum Gripper mechanical specifications

## 5.3. Tool Center Point and Center of Mass

### 5.3.1 With 200 mm Offset Tube

| Offset component   | Config. #  | Holes on tube   | Suction cup brackets | Wrist extension | TCP (mm) |   |     | Center of mass (mm) |   |     | Mass (g) |
|--------------------|------------|-----------------|----------------------|-----------------|----------|---|-----|---------------------|---|-----|----------|
|                    |            |                 |                      |                 | X        | Y | Z   | X                   | Y | Z   |          |
| 200 mm offset tube | 1(default) | 1-2             | Small                | No              | 200      | 0 | 122 | 151                 | 0 | 57  | 1020     |
|                    | 2          | 1-3             | Small                | No              | 182      | 0 | 122 | 140                 | 0 | 57  |          |
|                    | 3          | 1-4 / 2-3       | Small                | No              | 165      | 0 | 122 | 130                 | 0 | 57  |          |
|                    | 4          | 1-5 / 2-4       | Small                | No              | 147      | 0 | 122 | 119                 | 0 | 57  |          |
|                    | 5          | 1-6 / 2-5 / 3-4 | Small                | No              | 129      | 0 | 122 | 109                 | 0 | 57  |          |
|                    | 6          | 1-2             | Small                | Yes             | 200      | 0 | 242 | 151                 | 0 | 154 | 1244     |
|                    | 7          | 1-3             | Small                | Yes             | 182      | 0 | 242 | 140                 | 0 | 154 |          |
|                    | 8          | 1-4 / 2-3       | Small                | Yes             | 165      | 0 | 242 | 130                 | 0 | 154 |          |
|                    | 9          | 1-5 / 2-4       | Small                | Yes             | 147      | 0 | 242 | 119                 | 0 | 154 |          |
|                    | 10         | 1-6 / 2-5 / 3-4 | Small                | Yes             | 129      | 0 | 242 | 109                 | 0 | 154 |          |
|                    | 11         | 1-2             | Large                | No              | 200      | 0 | 122 | 156                 | 0 | 57  | 1142     |
|                    | 12         | 1-3             | Large                | No              | 182      | 0 | 122 | 145                 | 0 | 57  |          |
|                    | 13         | 1-4 / 2-3       | Large                | No              | 165      | 0 | 122 | 133                 | 0 | 57  |          |
|                    | 14         | 1-5 / 2-4       | Large                | No              | 147      | 0 | 122 | 122                 | 0 | 57  |          |
|                    | 15         | 1-6 / 2-5 / 3-4 | Large                | No              | 129      | 0 | 122 | 111                 | 0 | 57  |          |
|                    | 16         | 1-2             | Large                | Yes             | 200      | 0 | 242 | 134                 | 0 | 159 | 1366     |
|                    | 17         | 1-3             | Large                | Yes             | 182      | 0 | 242 | 125                 | 0 | 159 |          |
|                    | 18         | 1-4 / 2-3       | Large                | Yes             | 165      | 0 | 242 | 115                 | 0 | 159 |          |
|                    | 19         | 1-5 / 2-4       | Large                | Yes             | 147      | 0 | 242 | 106                 | 0 | 159 |          |
|                    | 20         | 1-6 / 2-5 / 3-4 | Large                | Yes             | 129      | 0 | 242 | 96                  | 0 | 159 |          |

Table 5-2: TCP and center of mass - with 200 mm offset tube

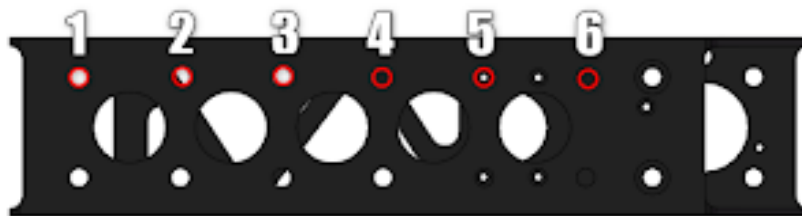


Fig. 5-9: Holes on 200 mm offset tube

## 5.3.2. With 100 mm Offset Tube

| Offset component   | Config.# | Holes on tube | Suction cup brackets | Wrist extension | TCP (mm) |   |     | Center of mass (mm) |   |     | Mass (g) |
|--------------------|----------|---------------|----------------------|-----------------|----------|---|-----|---------------------|---|-----|----------|
|                    |          |               |                      |                 | X        | Y | Z   | X                   | Y | Z   |          |
| 100 mm offset tube | 21       | 1-2           | Small                | No              | 106      | 0 | 122 | 85                  | 0 | 57  | 954      |
|                    | 22       | 1-3           | Small                | No              | 100      | 0 | 122 | 80                  | 0 | 57  |          |
|                    | 23       | 1-4           | Small                | No              | 90       | 0 | 122 | 66                  | 0 | 57  |          |
|                    | 24       | 2-4 / 1-5     | Small                | No              | 71       | 0 | 122 | 53                  | 0 | 57  |          |
|                    | 25       | 2-5           | Small                | No              | 52       | 0 | 122 | 35                  | 0 | 57  |          |
|                    | 26       | 4-5           | Small                | No              | 35       | 0 | 122 | 26                  | 0 | 57  |          |
|                    | 27       | 1-2           | Small                | Yes             | 106      | 0 | 242 | 68                  | 0 | 154 | 1178     |
|                    | 28       | 1-3           | Small                | Yes             | 100      | 0 | 242 | 65                  | 0 | 154 |          |
|                    | 29       | 1-4           | Small                | Yes             | 90       | 0 | 242 | 56                  | 0 | 154 |          |
|                    | 30       | 2-4 / 1-5     | Small                | Yes             | 71       | 0 | 242 | 46                  | 0 | 154 |          |
|                    | 31       | 2-5           | Small                | Yes             | 52       | 0 | 242 | 34                  | 0 | 154 |          |
|                    | 32       | 4-5           | Small                | Yes             | 35       | 0 | 242 | 28                  | 0 | 154 |          |
|                    | 33       | 1-2           | Large                | No              | 106      | 0 | 122 | 86                  | 0 | 57  | 1065     |
|                    | 34       | 1-3           | Large                | No              | 100      | 0 | 122 | 82                  | 0 | 57  |          |
|                    | 35       | 1-4           | Large                | No              | 90       | 0 | 122 | 74                  | 0 | 57  |          |
|                    | 36       | 2-4 / 1-5     | Large                | No              | 71       | 0 | 122 | 62                  | 0 | 57  |          |
|                    | 37       | 2-5           | Large                | No              | 52       | 0 | 122 | 46                  | 0 | 57  |          |
|                    | 38       | 4-5           | Large                | No              | 35       | 0 | 122 | 38                  | 0 | 57  |          |
|                    | 39       | 1-2           | Large                | Yes             | 106      | 0 | 242 | 71                  | 0 | 155 | 1289     |
|                    | 40       | 1-3           | Large                | Yes             | 100      | 0 | 242 | 68                  | 0 | 155 |          |
|                    | 41       | 1-4           | Large                | Yes             | 90       | 0 | 242 | 60                  | 0 | 155 |          |
|                    | 42       | 2-4 / 1-5     | Large                | Yes             | 71       | 0 | 242 | 51                  | 0 | 155 |          |
|                    | 43       | 2-5           | Large                | Yes             | 52       | 0 | 242 | 40                  | 0 | 155 |          |
|                    | 44       | 4-5           | Large                | Yes             | 35       | 0 | 242 | 34                  | 0 | 155 |          |

Table 5-3: TCP and center of mass - with 100 mm offset tube

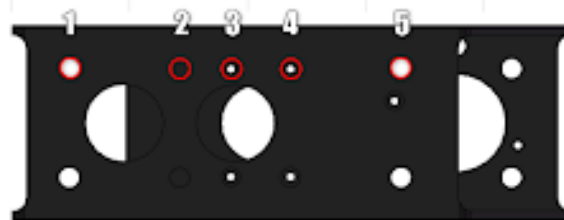


Fig. 5-10: Holes on 100 mm offset tube

## 5.3.3. With 0 mm Offset Plate

| Offset component  | Config.# | Suction cup brackets | Wrist extension | TCP (mm) |   |     | Center of mass (mm) |   |     | Mass (g) |
|-------------------|----------|----------------------|-----------------|----------|---|-----|---------------------|---|-----|----------|
|                   |          |                      |                 | X        | Y | Z   | X                   | Y | Z   |          |
| 0 mm offset plate | 45       | Small                | Yes             | 0        | 0 | 183 | 5                   | 0 | 108 | 1066     |
|                   | 46       | Large                | Yes             | 0        | 0 | 183 | 5                   | 0 | 110 | 1174     |

Table 5-4: TCP and center of mass - with 0 mm offset plate



## 5.4. Electrical specifications

### 5.4.1 PowerPick Controller

| Specification                               | Value                        |
|---------------------------------------------|------------------------------|
| Nominal supply voltage                      | 24 VDC $\pm$ 10%             |
| Quiescent power (minimum power consumption) | 124 W                        |
| Peak current                                | 122 mA                       |
| Hot swappable                               | Yes                          |
| ESD safe                                    | No                           |
| Electrical connection                       | Connector M12, 8 pole female |

Table 5-5: PowerPick Controller electrical specifications

### 5.4.2. Electrostatic Discharge Safety

The PowerPick Gripper and Controller are NOT ESD safe.

## 5.5. Control specifications

| Specification                  | Value                      |
|--------------------------------|----------------------------|
| Communication protocol options | Digital I/O                |
| Feedback                       | Vacuum level (1-5V analog) |
| Object detection (grip check)  | Yes, via vacuum level      |

Table 5-6: PowerPick control specifications



## 6. Maintenance

The maintenance operations presented in this section are for the average normal usage of the Robotiq PowerPick Vacuum Gripper. The maintenance intervals must be adjusted according to the environmental conditions such as:

- Operating temperature
- Humidity
- Presence of chemical(s)
- Presence of physical objects (debris, scraps, dust, grease etc.)
- Interaction with operated parts (sharp or rough)
- Dynamics of the operation (accelerations).

The Vacuum Gripper only requires external maintenance with limited downtime. Following the maintenance interval will ensure :

- Correct functioning of the Vacuum Gripper.
- Validity of the warranty.
- Proper lifetime of the Vacuum Gripper.

### Caution

- Unless specified, any repairs on the PowerPick Vacuum Gripper must be done by Robotiq.
- The warranty will be void if the Controller is opened by anyone other than a Robotiq employee.

## 6.1 Safety Measures

### 6.1.1 General Guidelines

#### Warning

Before any maintenance, ensure that the system is turned off, de-energized and cannot be accidentally turned on again.

#### Caution

- Maintenance must only be carried by qualified and authorized service personnel.
- Refer to the **Safety** section for more safety instructions.

- All pneumatic tools and devices must be emptied before work.
- For maintenance on pneumatic components, it is recommended to install a lockout valve before connecting to the product.
- Always inform the operator(s) before starting maintenance and attach a note saying not to turn on the system.



- If necessary, secure the maintenance area with temporary barriers.
- Clean the affected parts, especially the connections and fittings.
- If the dismantling of safety equipment is necessary, it must be reinstalled and checked immediately after completion of the work.
- After maintenance, make sure to remove all tools and equipment to avoid ejecting or falling parts, material damage or bodily injury.
- After maintenance, always check the tightness of the screws. If necessary, tighten them to the required torque.
- Use only original spare parts.

## 6.2. Maintenance

The Vacuum Gripper only requires external maintenance with limited downtime.

Maintenance is required after specified usage, measured in cycles (workpiece pick-up and release) or use time (hours).

### 6.2.1 Cleaning of Suction Cups

| Workspace conditions | Frequency |
|----------------------|-----------|
| Dirty                | Daily     |
| Normal               | Monthly   |

Table 6-1: Suction cups cleaning frequency

- Clean the suction cups with a dry towel. Remove all debris, dirt and dust from their surfaces.
- If wear is visible, replace the suction cups. See the **Spare Parts, Kits and Accessories** section.

### 6.2.2. Periodic Inspection

| Operation           | Frequency               |
|---------------------|-------------------------|
| Periodic inspection | 1M cycles or 1000 hours |

Table 6-2: Periodic inspection frequency

- Visually inspect the PowerPick Vacuum Gripper and pay attention to any visible damage or wear. If necessary, contact [support@robotiq.com](mailto:support@robotiq.com).
- If wear is visible on the suction cups, replace them. See the **Spare Parts, Kits and Accessories** section.
- If an air tube is crushed or kinked, replace it.



## 6.2.3. Fasteners

Periodically ensure that all the bolts are tightened. If necessary, tight again according to the torques specified in the table below.

| Designation                        | Location             | Torque |           |
|------------------------------------|----------------------|--------|-----------|
|                                    |                      | Metric | Imperial  |
| M6 zinc plated screws, A2-72 grade | Suction cup brackets | 9.5 Nm | 7.0 lb ft |
|                                    | Wrist extension      | 9.5 Nm | 7.0 lb ft |
|                                    | Robot wrist          | 9.5 Nm | 7.0 lb ft |

Table 6-3: PowerPick Gripper torque settings



## 7. Spare Parts, Kits and Accessories

| Item                                  | Description                                                                                                                                                                                                                                                                                                                                                                    | Ordering number          |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| PowerPick Vacuum Gripper standard kit | PowerPick Vacuum Gripper kit that includes: <ul style="list-style-type: none"> <li>- 1 x PowerPick Gripper</li> <li>- 1 x PowerPick Controller (vacuum generator)</li> <li>- 3 x offset components</li> <li>- 2 x kits of suction cup brackets</li> <li>- 1 x kit of 75 mm suction cups</li> <li>- 1 x wrist extension</li> <li>- 1 x manifold</li> <li>- air tubes</li> </ul> | VAC-POWERPICK-KIT        |
| PowerPick Controller unit             | PowerPick Controller kit that includes: 1 <ul style="list-style-type: none"> <li>- 1 x PowerPick Controller (vacuum generator)</li> <li>- air tubes</li> </ul>                                                                                                                                                                                                                 | VAC-POWERPICK-CTRL-UNIT  |
| PowerPick Vacuum Gripper unit         | PowerPick Vacuum Gripper kit that includes: 2 <ul style="list-style-type: none"> <li>- 1 x PowerPick Gripper</li> <li>- 3 x offset components</li> <li>- 2 x kits of suction cup brackets</li> <li>- 1 x kit of 75 mm suction cups</li> <li>- 1 x wrist extension</li> <li>- 1 x manifold</li> <li>- air tubes</li> </ul>                                                      | VAC-POWERPICK-GRP-UNIT   |
| 75 mm suction cups                    | Kit of 4 suction cups - Piab 75 mm (15 Bellows)                                                                                                                                                                                                                                                                                                                                | VAC-CUP-PIAB-75MM-KIT-4  |
| 52 mm suction cups                    | Kit of 4 suction cups - Piab 52 mm (15 Bellows)                                                                                                                                                                                                                                                                                                                                | VAC-CUP-PIAB-52MM-KIT-4  |
| 78 mm suction cups                    | Kit of 4 suction cups - Coval 78 mm (15 Bellows)                                                                                                                                                                                                                                                                                                                               | VAC-CUP-COVAL-78MM-KIT-4 |

1 Does not contain the PowerPick Vacuum Gripper

2 Does not contain the PowerPick Controller (vacuum generator)

Table 7-1: PowerPick spare parts, kits and accessories



## 8. Troubleshooting

| Symptom / Issue                               | Cause                                                           | Solution                                                                                                                                                                                                     |
|-----------------------------------------------|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The items are not picked or dropped reliably. | The vacuum level at the suction cups is not at the right level. | Validate that the PowerPick Controller input pressure is at the right level. If needed, increase it to 7 bar (100 psi).                                                                                      |
|                                               |                                                                 | Verify that the suction cups are in good condition. If needed, clean them (see the <b>Maintenance</b> section). If wear is visible, replace them (see the <b>Spare Parts, Kits and Accessories</b> section). |
|                                               |                                                                 | Verify that there is no air leak in the circuit between the PowerPick Controller and the suction cups.                                                                                                       |
|                                               |                                                                 | Verify that the air path and manifold are clean and not obstructed.                                                                                                                                          |

Table 8-1: PowerPick troubleshooting



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## 9. Warranty

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### 9.1 Conditions

Robotiq warrants the PowerPick and all its components against defects in material and workmanship for a period of one (1) year from the date of reception when utilized as intended. Robotiq also warrants that this equipment will meet applicable specifications under normal use.

The warranty applies under the following conditions:

- Compliance with the operating and storage conditions specified in the **Environmental and Operating Conditions** section.
- Compliance with the installation specified in the **Installation** section and the following subsections.
- Compliance with the maintenance specified in the **Maintenance** section.
- Compliance with the recommended values specified in the **Specifications** section and in the **Electrical specifications** section.

### 9.2. Warranty

Warranty applies until one of these condition is reached:

- one (1) year
- 2 000 000 opening and closing cycle count for each valve. Once one of the valves reaches the count, the warranty is not applicable anymore.

#### Info

**Cycle count definition:** One cycle count is defined as the activation of the component, which in this is case is creating and releasing the vacuum.

During the warranty period, Robotiq will repair or replace any defective PowerPick and any of its components, as well as verify and adjust the equipment free of charge if it needs to be repaired or if the original adjustment is erroneous. If the equipment is sent back for verification during the warranty period and found to meet all pertaining specifications, Robotiq will charge standard verification fees. If the PowerPick feedback necessary for the robot program is not accessible, the unit is considered defective.

### 9.3. Warranty Void and Exclusions

The warranty will become void if:

- The unit has been tampered with, repaired or worked on by unauthorized individuals.
- The screws and hardware, other than as explained in this guide, have been removed.
- The unit has been opened other than as explained in this guide.
- The unit serial number has been altered, erased, or removed.



- The unit has been misused, neglected, or damaged.
- The Controller has been opened by anyone other than a Robotiq employee.

This warranty is in lieu of all other expressed, implied, or statutory warranties, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

Robotiq shall not be liable for damages resulting from the use of the PowerPick, nor from special, incidental, or consequential damages. Robotiq shall also not be responsible for any failure in the performance of other items to which the PowerPick and any of its component is connected or the operation of any system of which it may be a part.

This warranty excludes failure resulting from: improper use or installation, normal wear and tear, accident, abuse, neglect, fire, water, lightning or other acts of nature, causes external to the PowerPick and any of its components or other factors beyond Robotiq's control. It also excludes all consumable parts, such as suction cups, and their normal wear.

Robotiq reserves the right to make changes in the design or construction of any of its products at any time without incurring any obligation to make any changes whatsoever on units already purchased.



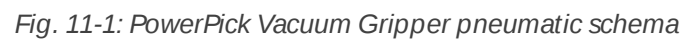
## 10. Harmonized Standards

The standards listed in the table below were followed, as far as applicable, for the design and production of the Robotiq PowerPick Vacuum Gripper.

| Standard      | Year | Description                                                                                    |
|---------------|------|------------------------------------------------------------------------------------------------|
| ISO 12100     | 2010 | Safety of machinery — General principles for design — Risk assessment and risk reduction       |
| ISO 9409-1    | 2004 | Manipulating industrial robots – Mechanical interfaces – Part 1: Plates                        |
| ISO 4414      | 2010 | Pneumatic fluid power – General rules and safety requirements for systems and their components |
| IEC 61000-6-2 | 2016 | Generic standards – Immunity standard for industrial environments                              |
| IEC 61000-6-4 | 2018 | Generic standards – Emission standard for industrial environments                              |

*Table 10-1: PowerPick applicable standards*





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## 12. Contact

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[www.robotiq.com](http://www.robotiq.com)

### Contact Us

#### Phone

1-888-ROBOTIQ (762-6847)  
(01) 418-380-2788 Outside US and Canada

#### Technical support and engineering

option 3

#### Sales

option 2

#### Head office

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