

User Manual

A801D0001 Rev 1.2
28-March-2019



PIglide Air Preparation Kit User Manual

A-80x Product Series



User Manual

A801D0001 Rev 1.2
28-March-2019



Table of Contents

1. Introduction	3
2. Warnings.....	3
3. Air Supply	3
4. Unpacking.....	3
5. Scope of Delivery.....	3
6. Product Configurations	3
7. Product Overview	3
8. Installation, Assembly, and Operation	4
9. Electrical Connection (for models with air pressure switch)	5
10. Multi-Channel Models	5
11. Tank Storage Models.....	6
12. Vacuum Generation Models	6
13. Maintenance	6
14. Spare Filter Elements List	6
15. Customer Service	6
16. Technical Data.....	7
17. Disclaimer	16

Table of Figures

Figure 1 – A-801.xxx Air Prep Kit	4
Figure 2 – Air Connection Schematic Example.....	5
Figure 3 – Air Pressure Switch Electrical Connector.....	5
Figure 4 - A-801.100 Dimensions (mm)	9
Figure 5 - A-801.200 Dimensions (mm)	9
Figure 6 - A-802.100 Dimensions (mm)	10
Figure 7 - A-802.200 Dimensions (mm)	10
Figure 8 - A-804.13200 Dimensions (mm)	11
Figure 9 - A-804.18200 Dimensions (mm)	12
Figure 10 - A-804.23200 Dimensions (mm)	13
Figure 11 - A-804.28200 Dimensions (mm)	13
Figure 12 - A-804.23200T Dimensions (mm)	14
Figure 13 - A-804.28200T Dimensions (mm)	14
Figure 14 - A-805.28200 Dimensions (mm)	15
Figure 15 - A-805.28200T Dimensions (mm)	15

User Manual

A801D0001 Rev 1.2
28-March-2019

1. Introduction

The PIglide Air Bearing is a family of air bearing products that provide frictionless motion. This user guide refers to the air preparation kits sold as accessories with the PIglide products. The air prep kits provide filtration and regulation of the user's compressed air supply to a quality level required by PI's air bearing products.

2. Warnings

	<p>An air bearing should never be moved without the air supply turned on. Sliding or rotating the bearing with no air supply, causing sliding metal-to-metal contact, may damage the bearing surfaces.</p>
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3. Air Supply

In order to guarantee long-term reliability and proper operation of air bearings, the air supply must be clean, dry, and oil-free. Contamination in the air can cause a reduction in stiffness and load capacity as well as an increase in friction. Eventually, the bearing will be damaged and fail due to contamination. To prevent such contamination, PI offers these air preparation kits which give users a simple way to clean any air supply. These kits will filter particulates and remove oil down to ISO 8573-1 Class 1.

These air kits are meant to remove oil and particulates. They do not contain a dryer element. PI recommends that the compressed air supply meet ISO 8573-1 Class 3 (or better) for moisture content (dew point < -15°C).

4. Unpacking

Carefully unpack the components from the shipping packaging. Inspect the contents for signs of damage. If there is any sign of damage or missing parts, contact PI immediately. Keep all packaging materials in case the product needs to be returned.

5. Scope of Delivery

The system will include the following components:

1. A-80x Air Prep Kit (per the item ordered)
2. Various air fittings
3. Flexible Pneumatic Tubing (2m)

6. Product Configurations

The A-80x.xxx series offers various models, defined by the size, the air output, and the fitting sizes. The dimensions of the various models vary.

Models
A-801 = Heavy Duty, 60 SCFM, Single Channel
A-802 = Lite Duty, 10 SCFM, Single Channel
A-804 = Panel Mounted, Multi-channel
A-805 = Lite Duty with Vacuum Control, Panel Mounted, Multi-channel

7. Product Overview

The air prep kits feature:

- Multi-stage filtration - multiple filter elements enable the air preparation assembly to remove the most common air contaminants.
- Pressure regulation - the assembly includes a pressure regulator with integrated pressure gage. Adjustments to the bearing supply pressure are easily made.
- Shut-off valve - a manual shut-off valve is standard with the air preparation kit. The valve is a pressure release type, so that when the valve is turned off, all stored air pressure in the system is vented to atmosphere.
- Tubing and fittings - PI offers a variety of air fittings for the input and the output connections to the air preparation kit. If you do not see the fitting you require, please contact us for customizations. 2 meters of tubing to connect the air preparation kit to the air bearing are included with each kit.

User Manual

A801D0001 Rev 1.2
28-March-2019

PI

- Semi-automatic drains - allow easy removal of captured materials.
- Optional Pressure switch - when used to supply a motorized air bearing stage, the air preparation kit should be purchased with the optional air pressure switch. This switch can be wired into the E-stop/STO input of the motion controller to help prevent damage to the air bearing in the event of supply pressure failure. The set-point of the switch is adjustable.

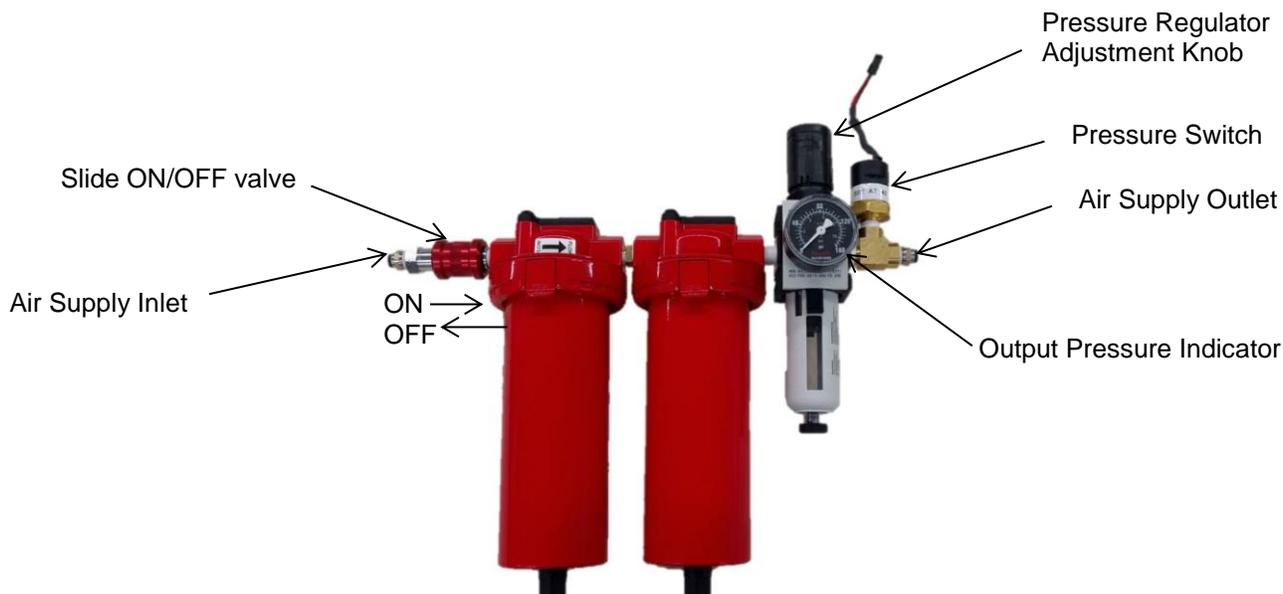


Figure 1 – A-801.xxx Air Prep Kit

8. Installation, Assembly, and Operation

1. Mount the air handling assembly in a vertical orientation as shown.
2. Connect your building air supply to the input of the air prep kit (at the slide valve). Your air supply needs to be at a pressure of at least 30psi for the air handling assembly to operate correctly (because of the coalescing filter); ideally it will supply 90 to 120psi. Absolute maximum supply pressure is 150 psi.
3. You may need an adapter fitting to connect your air supply to the air prep kit inlet. The air prep kit is supplied with metric (typically 6mm or 8mm OD) fittings to accept various tube sizes, depending on the model ordered. The fittings are one-touch type fittings and require flexible tube for proper use.
4. Connect the outlet of the air pep kit to the air bearing inlet. (See below for more details).
5. With the customer air supply turned on and of sufficient pressure, use the slide valve to open the flow of air through the air prep kit. Moving the slide towards the regulator turns air ON.
6. The adjustment knob of the pressure regulator is of the locking type. To adjust the pressure, pull the knob up away from the body to unlock the rotation. Turn to adjust pressure. Once adjusted, push the knob back towards the body to lock. Output pressure should be set to 70-80 psi. If the air bearing happens to vibrate or make a buzzing noise, use the knob to reduce the pressure slightly.
7. To turn the air supply to the bearing OFF, slide the ON/OFF valve away from the regulator. Note that the ON/OFF valve is a pressure relieving type, so when the valve is moved to the OFF position, all the stored air pressure in the system will rapidly vent to atmosphere. This action is usually accompanied by a loud noise, which is normal.

The air handling assembly will take care of most air supply problems (other than lack of air). The one thing it cannot address is an excess of water in the air supplied to this assembly. If you see water condensation your air needs additional water removal. For this task we recommend you install a Water Separator before the air handling assembly. For more details, consult PI.

User Manual

A801D0001 Rev 1.2
28-March-2019

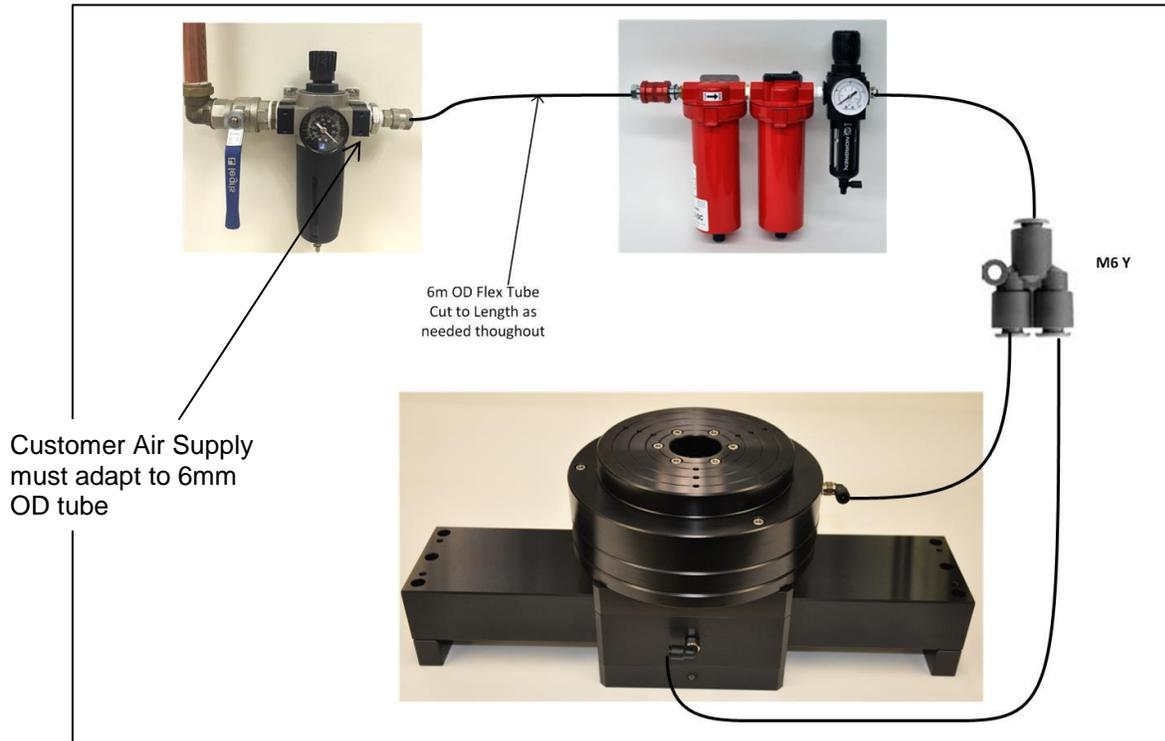


Figure 2 – Air Connection Schematic Example

9. Electrical Connection (for models with air pressure switch)

The air pressure switch (if the option is purchased) is a 2-wire device. The switch is normally open. When the input supply pressure is above the switch's set point, the switch will close. The set point is set by PI at the factory and should not need adjustment.

The two wires on the switch are terminated using Molex Part# 43640-0201 (male). Use Molex Part# 43645-0200 (female) for the mate if you need to make a cable to connect to the switch.



Figure 3 – Air Pressure Switch Electrical Connector

The switch on the air prep kit will connect to the Interlock connector on the A-81x Series Motion Controller. If the air prep kit and motion controller are purchased together, the cable that connects the switch on the air prep kit to the motion controller interlock is included.

10. Multi-Channel Models

Various air prep kits are offered with a multi-channel output option. These panels divide a single air input into multiple outputs. Each output has an independent pressure regulator.

User Manual

A801D0001 Rev 1.2
28-March-2019

11. Tank Storage Models

Several models are offered with an air storage tank. An air tank is useful in applications where a sudden loss of air pressure may be dangerous or cause damage to the air bearing system. Air storage is typically used when a rotatory axis or vertical axis is included in the system. The storage tank includes a check valve to prevent stored air from flowing out of the tank towards the main input. Air can only flow out to the air bearings.

12. Vacuum Generation Models

The A-805 series of air prep kits include vacuum regulation and self-generation. Vacuum pressure is generated from the compressed air supply using a Venturi device. These devices increase the total amount of compressed air required by the system. The air kit can be reconfigured to use an external vacuum source if needed.

13. Maintenance

The air filter elements should be replaced after 6 months of continuous operation (i.e. the air supply is on and air is flowing through the kit).

Drain reservoirs should be emptied monthly.

14. Spare Filter Elements List

Item	Description	Where Used
A-801.AFE01	Replacement 0.01um Fine Filter Element	Lite Duty Models A-802.xxx, A-804.2xxxxx, A-805.2xxxxx
A-801.AFE5	Replacement 5um Filter Element	All models
A-801.OF60	Replacement Oil Filter Element, 1st Stage	Heavy Duty Models A-801.xxx, A-804.1xxxxx
A-801.PF60	Replacement Particle Filter Element, 2nd Stage	Heavy Duty Models A-801.xxx, A-804.1xxxxx

15. Customer Service

For inquiries and orders, contact your PI sales engineer or use the following contacts:

Email: air@pi-usa.us

Address: 16 Albert Street, Auburn, MA 01501, USA

Tel: 508-832-3456

Fax: 508-832-0506

If you have questions concerning your system, have the following information ready:

- Product codes and serial numbers of all products in the system
- Firmware version of the controller (if present)
- Version of the driver or the software (if present)
- Operating system on the PC (if present)
- If possible: Take photographs or make videos of your system that can be sent to our customer service department if requested.

User Manual

A801D0001 Rev 1.2
28-March-2019



16. Technical Data Specifications

Model	A-801.x00	A-802.x00	A-804.1x200	A-804.2x200	A-804.2x200T
Description	Heavy Duty, Single Channel	Lite Duty, Single Channel	Heavy Duty, Multi-Channel	Lite Duty, Multi-channel	Lite Duty, Multi-channel With Storage Tank
Air Input					
Maximum air flow	60 SCFM (1680 SLPM)	10 SCFM (300 SLPM)	60 SCFM (1680 SLPM)	10 SCFM (300 SLPM)	10 SCFM (300 SLPM)
Air quality (ISO 8573-1) Oil & Particles	Any	Class 3 or better	Any	Class 3 or better	Class 3 or better
Air quality (ISO 8573-1) Moisture	Class 3 or better (-15°C dew point)				
Max inlet pressure	150 psi (1035 kPa)				
Air Output					
Air quality (ISO 8573-1) Oil & Particles	Class 1				
# Output Channels	1	1	A-804.13200: 4 A-804.18200: 8	A-804.23200: 4 A-804.28200: 8	A-804.23200T: 4 A-804.28200T: 8
Miscellaneous					
Construction materials	Aluminum	Polycarbonate	Aluminum, painted steel panel	Polycarbonate, stainless steel panel	
Mass (kg)	4.2	0.7	A-804.13200: 5.5 A-804.18200: 5.7	A-804.23200: 1.8 A-804.28200: 2.0	A-804.23200T: 3.0 A-804.28200T: 3.4
Pressure switch	A-80x.100: None A-80x.200: N/O contact, adjustable threshold value		All: N/O contact, adjustable threshold value		
Air Storage Tank	N/A				0.75L stainless steel

User Manual

A801D0001 Rev 1.2
28-March-2019



Model	A-805.28200	A-805.28200T
Description	Lite Duty, Multi-channel, With Vacuum Control and Generation	Lite Duty, Multi-channel With Vacuum Control and Generation & Storage Tank
Air Input		
Maximum air flow	10 SCFM (300 SLPM)	
Air quality (ISO 8573-1) Oil & Particles	Class 3 or better	
Air quality (ISO 8573-1) Moisture	Class 3 or better (-15°C dew point)	
Max inlet pressure	150 psi (1035 kPa)	
Air Output		
Air quality (ISO 8573-1) Oil & Particles	Class 1	
# Output Channels	6	
Vacuum Output		
Generation	Self-generated via Venturi device. Generation consumes ~2 SCFM (60 SLPM) input air.	
Max Vacuum	-88 kPa / 25 inches Hg / 660 mm Hg / -13 psi	
# Output Channels	2	
Miscellaneous		
Construction materials	Polycarbonate, stainless steel panel	
Mass (kg)	2.2	3.4
Pressure switch	N/O contact, adjustable threshold value	
Air Storage Tank	N/A	0.75L stainless steel

User Manual

A801D0001 Rev 1.2
28-March-2019



Dimensions

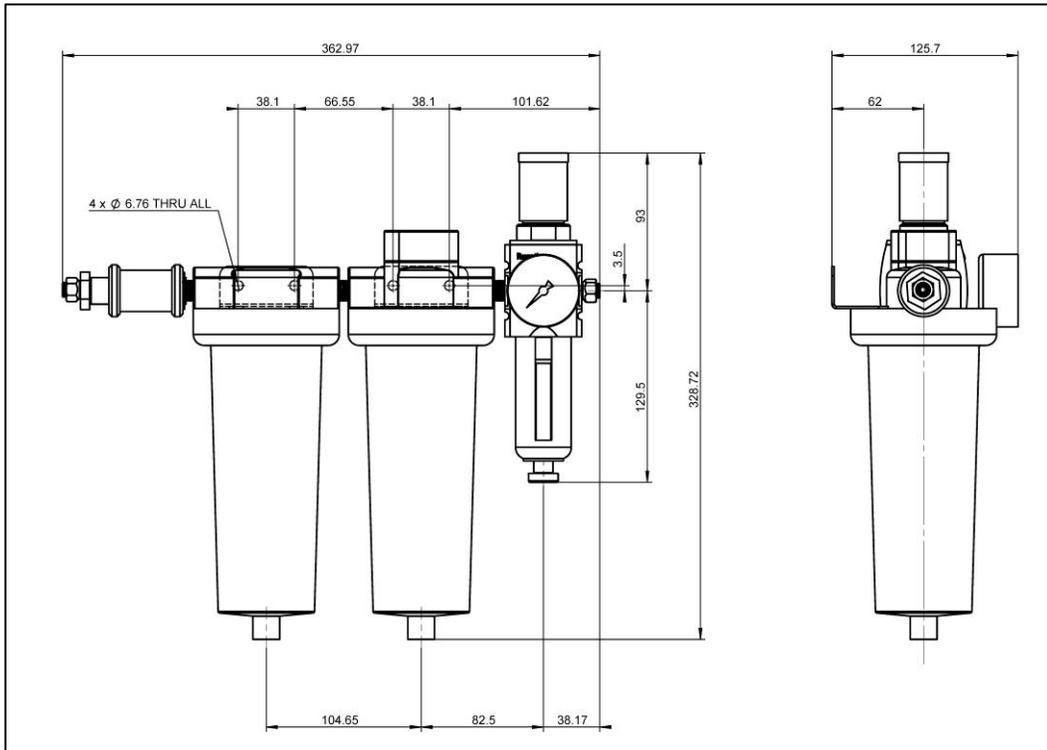


Figure 4 - A-801.100 Dimensions (mm)

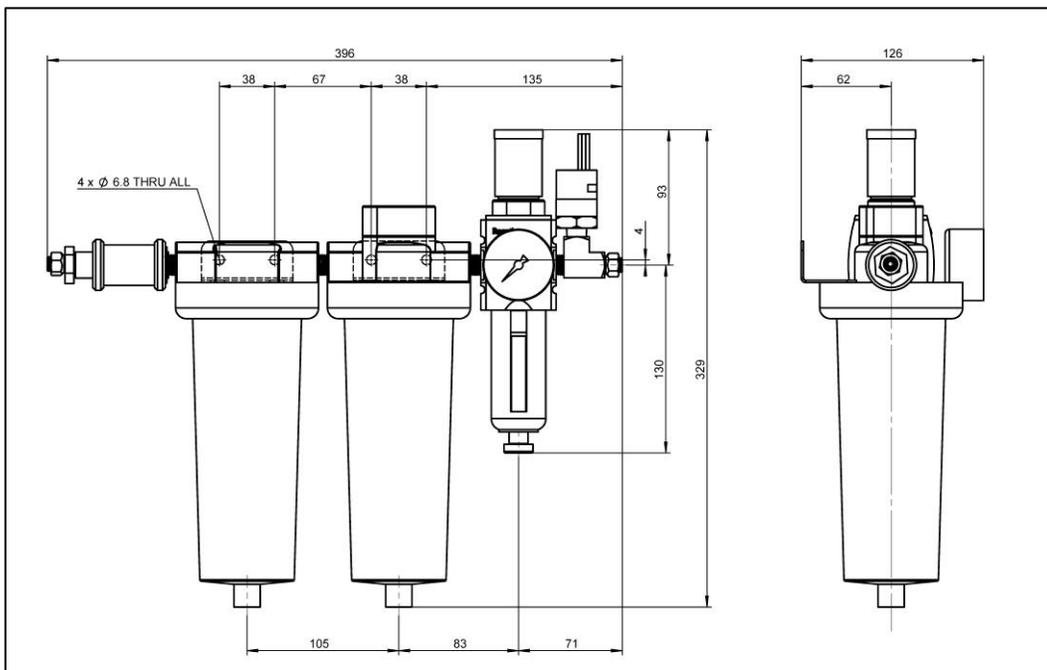


Figure 5 - A-801.200 Dimensions (mm)

User Manual

A801D0001 Rev 1.2

28-March-2019

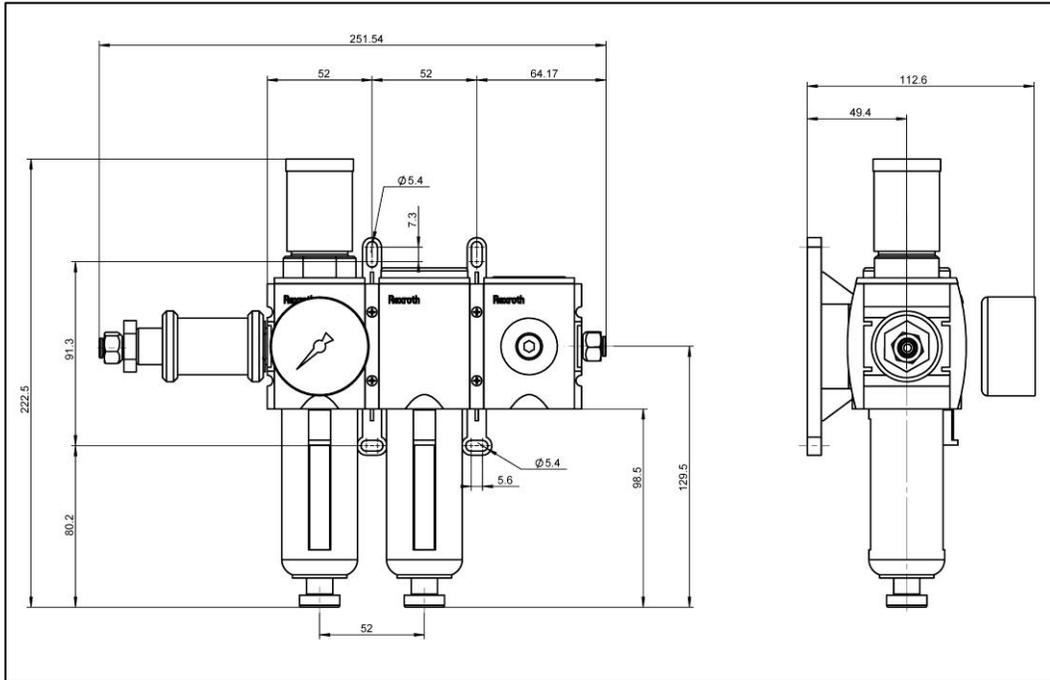


Figure 6 - A-802.100 Dimensions (mm)

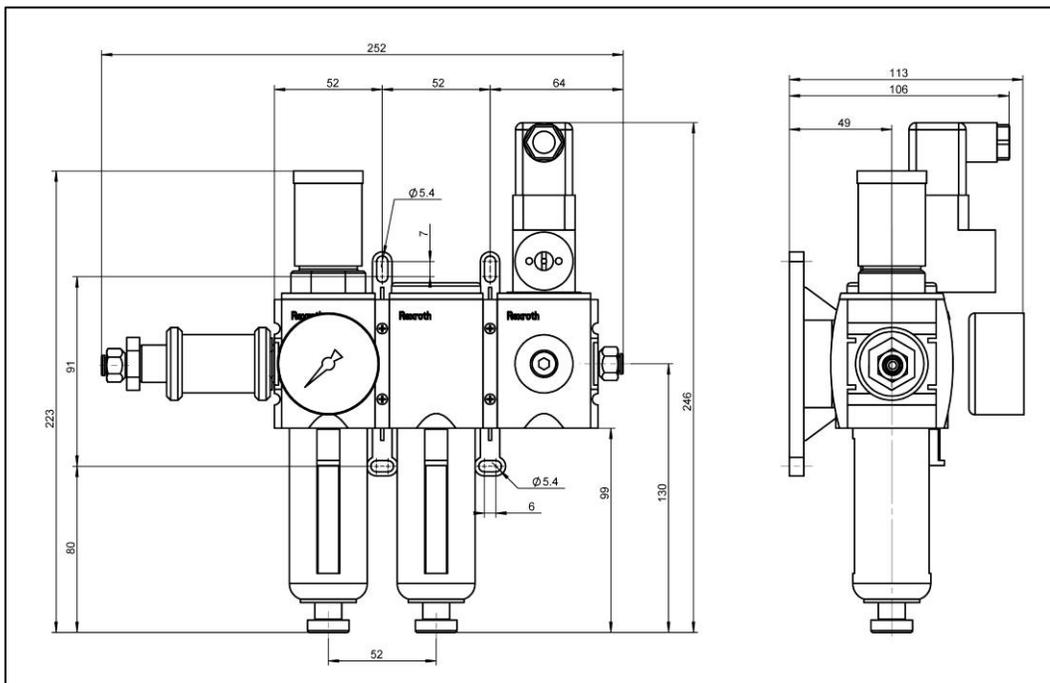


Figure 7 - A-802.200 Dimensions (mm)

User Manual

A801D0001 Rev 1.2
28-March-2019

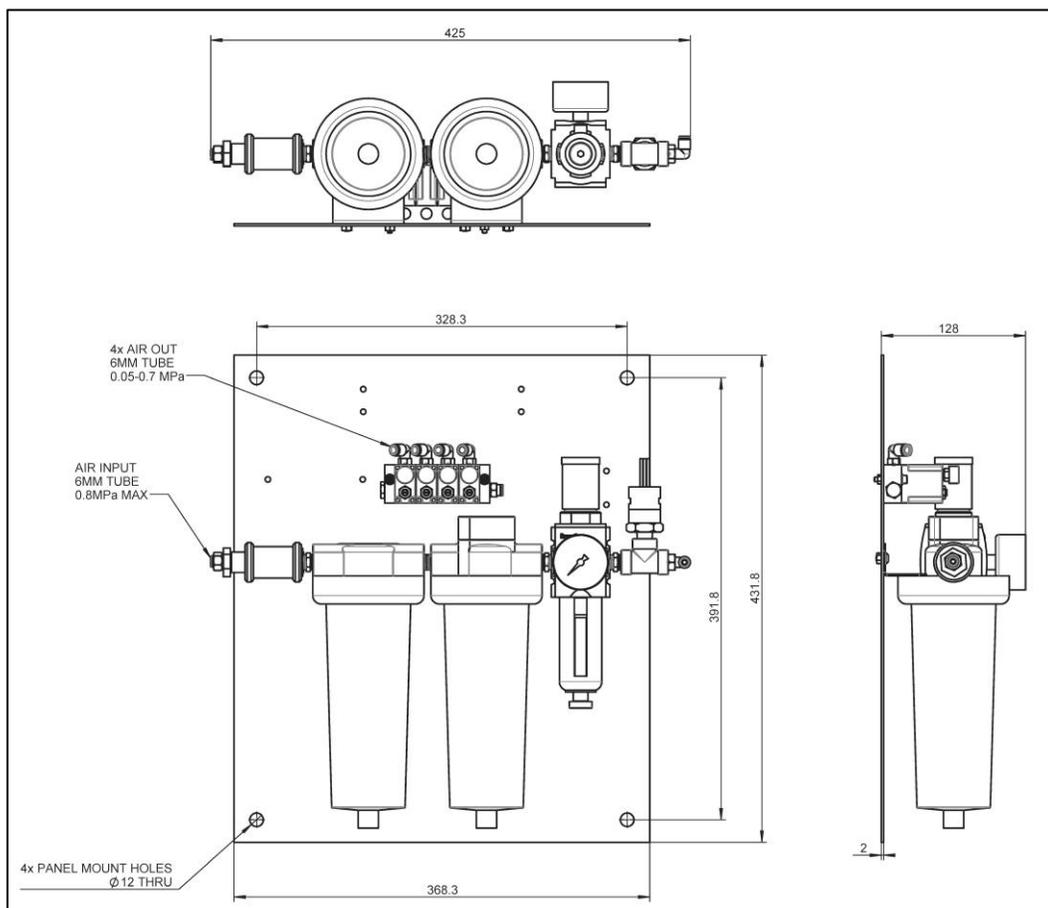


Figure 8 - A-804.13200 Dimensions (mm)

User Manual

A801D0001 Rev 1.2

28-March-2019

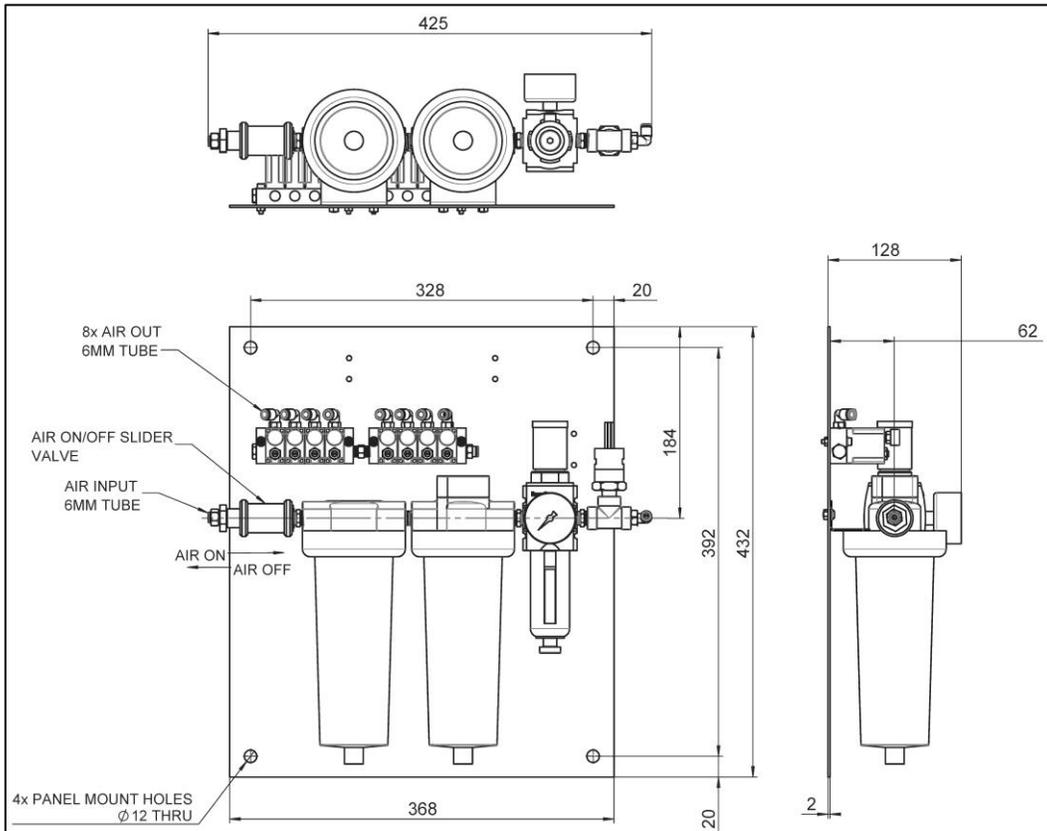


Figure 9 - A-804.18200 Dimensions (mm)

User Manual

A801D0001 Rev 1.2

28-March-2019

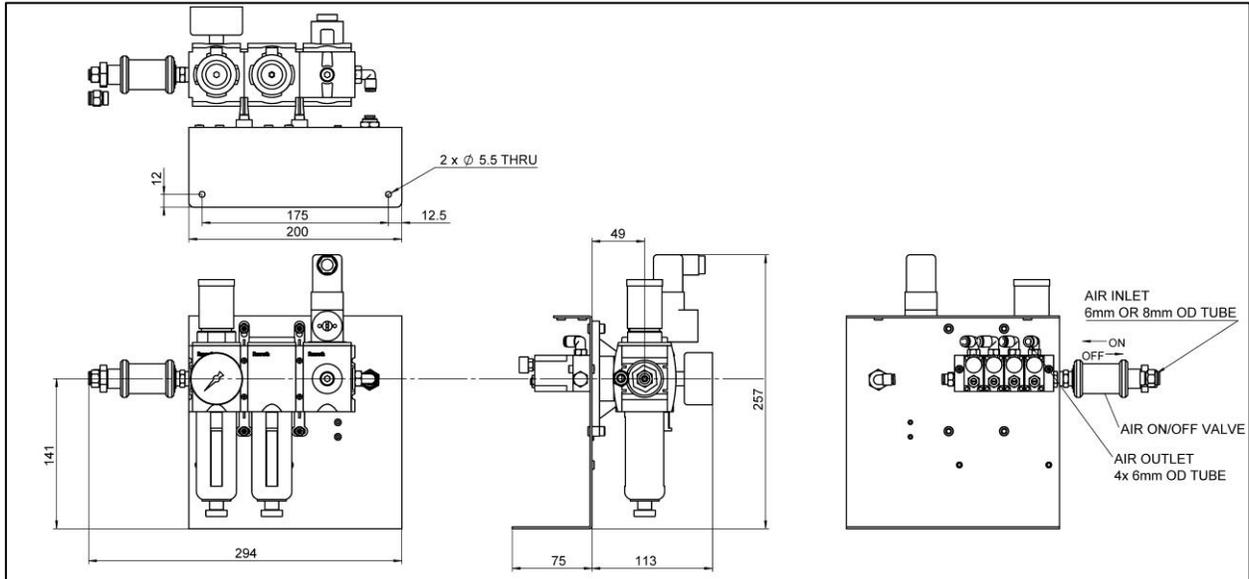


Figure 10 - A-804.23200 Dimensions (mm)

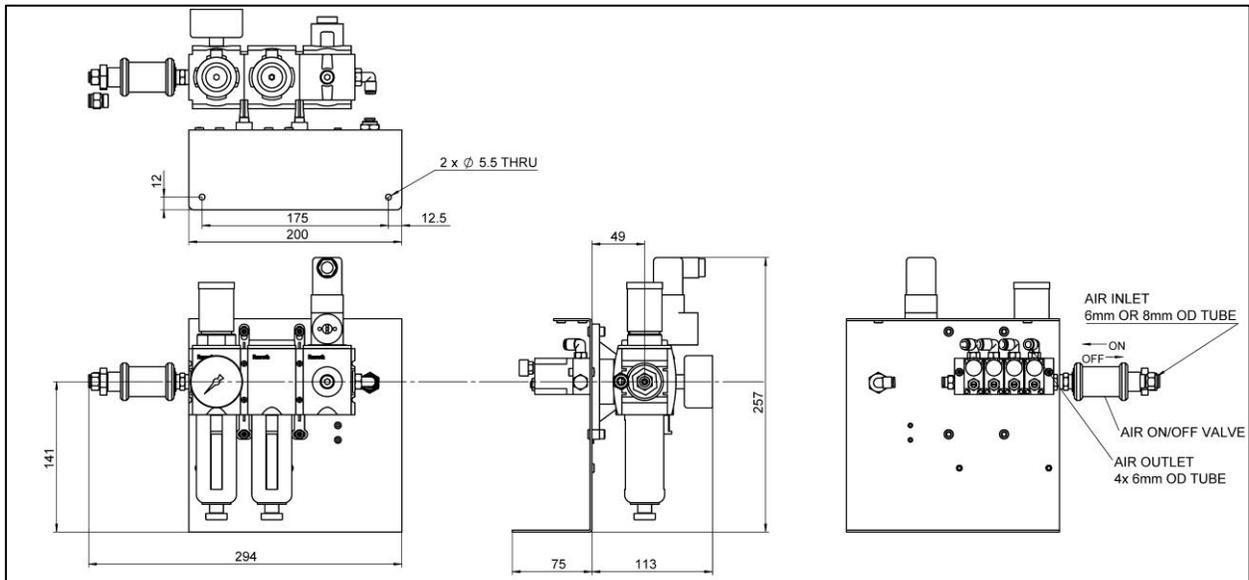


Figure 11 - A-804.28200 Dimensions (mm)

User Manual

A801D0001 Rev 1.2

28-March-2019

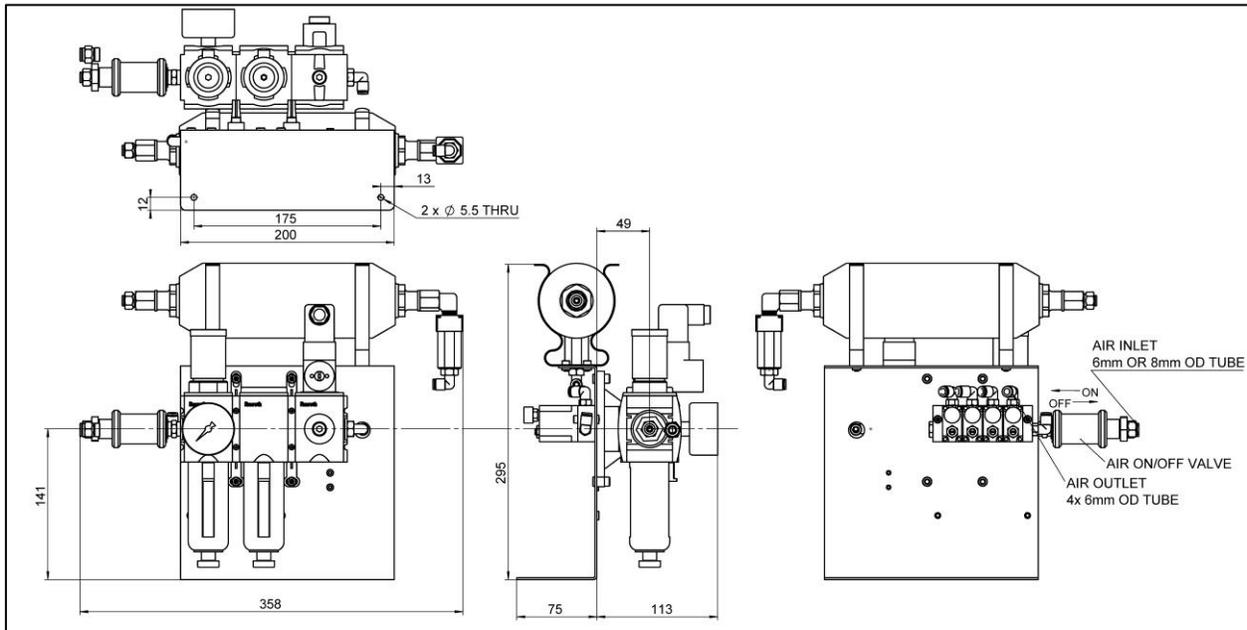


Figure 12 - A-804.23200T Dimensions (mm)

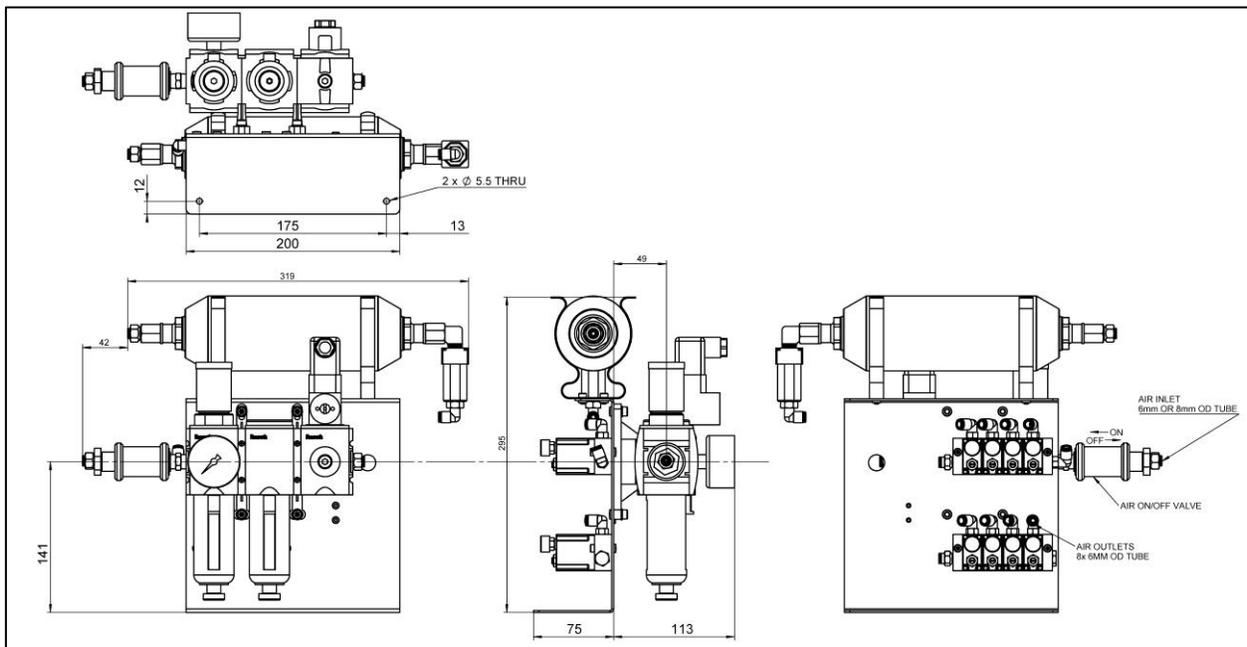


Figure 13 - A-804.28200T Dimensions (mm)

User Manual

A801D0001 Rev 1.2

28-March-2019

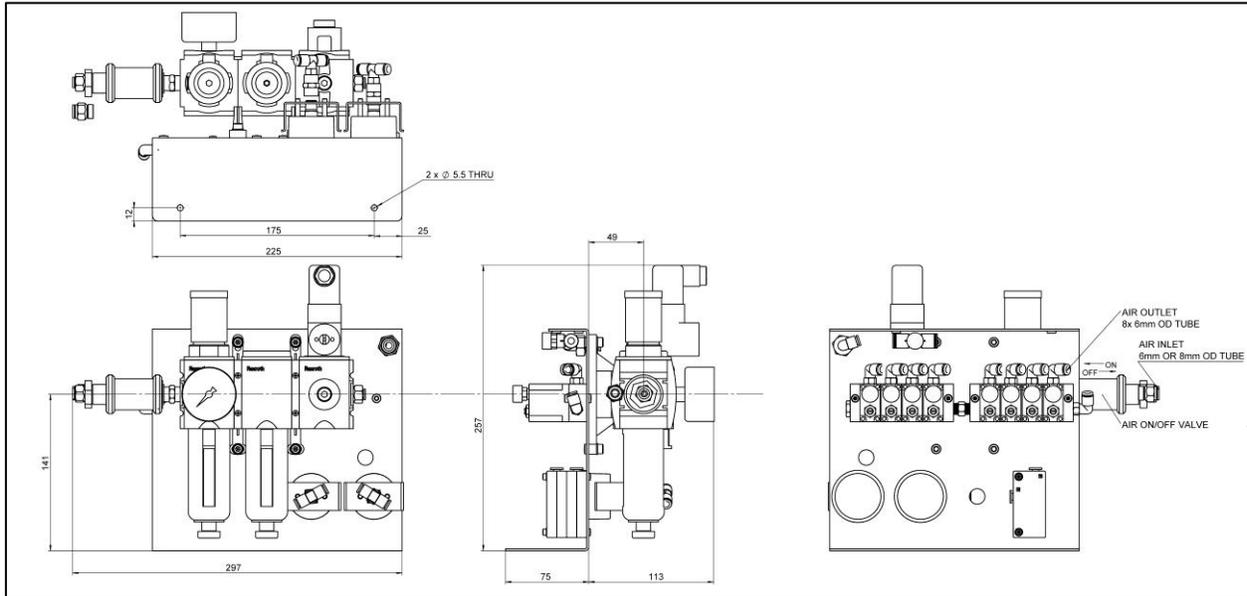


Figure 14 - A-805.28200 Dimensions (mm)

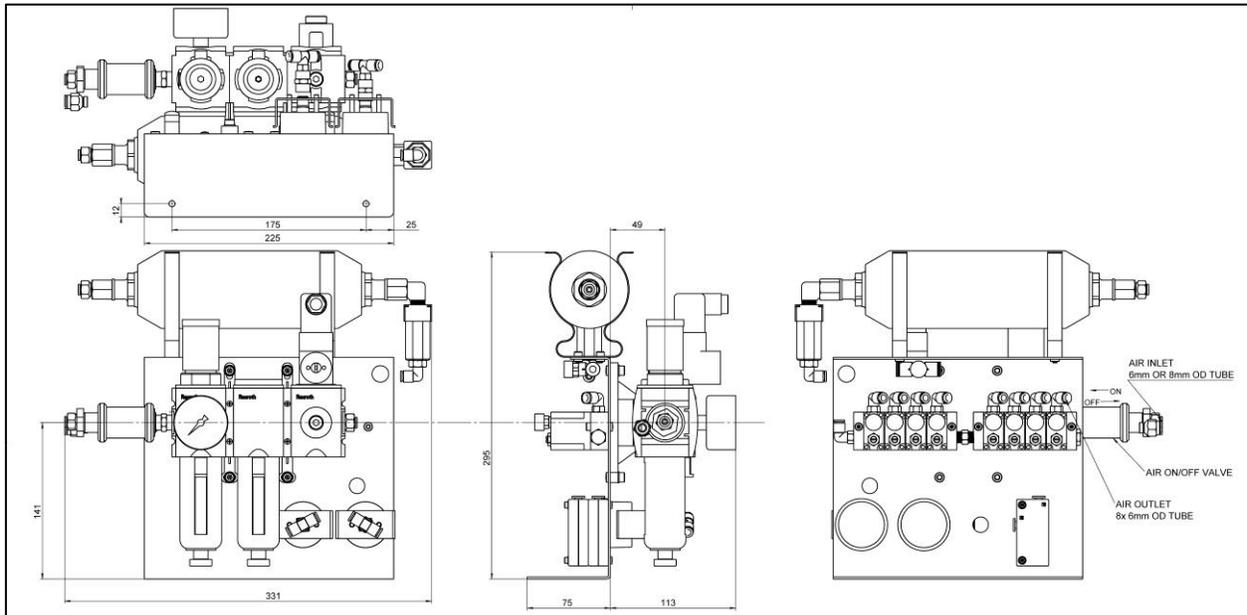


Figure 15 - A-805.28200T Dimensions (mm)

User Manual

A801D0001 Rev 1.2
28-March-2019



17. Disclaimer

PI continually improves its product offerings, and listed options and specifications may be superseded at any time. Refer to the most recent edition of the product datasheet at:

http://www.pi-usa.us/products/Air_Bearing_Stages/