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PC150 Valve
Operation Manual
Revision A

Precision Valve & Automation
6 Corporate Drive
Halfmoon, NY 12065





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1. Introduction

Before you operate this valve, read the operation and setup manual. This will help you to become familiar with the product and ensure successful operation.

If any questions or problems arise, contact PVA's Technical Support department.

1.1 PVA Contact Information

Main Office

PVA

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1.2 Document History

	Revision Date	Reason for Changes
REV A	February 2020	Initial Release

Note: All photographs and CAD model representations in this document are a "general representation" of the system and its components. The actual appearance of the system and its components can differ based upon customer specific configuration.

1.3 System Description

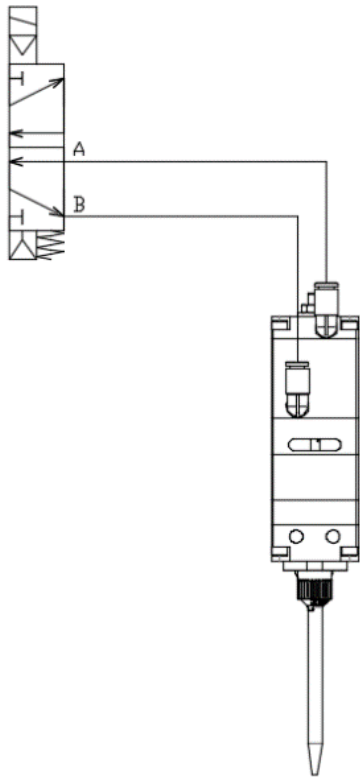
This manual applies to the following Precision Valve & Automation Inc. valve:

PC150

Two-Component Dispensing Valve

1.4 Theory of Operation

The PC150 is a rear-closing, two component valve designed to dispense two component materials. This valve has an adjustable snuff back to prevent drips or strings at the end of the static mixer. Part A and Part B materials separately flow in and out of the valve into a disposable static mixer. It is not necessary to disassemble and clean the valve at the end of each day. The PC150 has a divorced design made of two major sections: the air section and the fluid section.



1.4.1 Air Section

The air section is an aluminum body with a simple piston/cylinder combination used to open and close the valve. The stroke adjustment screw in the upper air body controls how far the piston and rod assembly can retract as well as the snuff back.

1.4.2 Fluid Section

The fluid section is made of stainless steel and all seals are FFKM. The fluid section includes two rods with seals on each side of the valve to control fluid flow of Part A and Part B. Fluid dispenses as the rods move past the seals to the forward position. When the rods retract back into the seals, the fluid flow stops and creates a snuff back action on the fluid.

Figure 1: General PC150 Pneumatic Schematic

2. Safety

2.1 Personal Protective Equipment

Operators must use eye protection because material contents are under pressure. Always wear gloves when handling materials and solvents. Refer to the MSDS sheet on the material being dispensed for other precautions.

2.2 Waste Disposal

Dispose of all used parts and materials in accordance with local laws and regulations.

3. Overview

Before you operate the valve, know the valve components. Examine the valve components shown below for safe and correct operation.

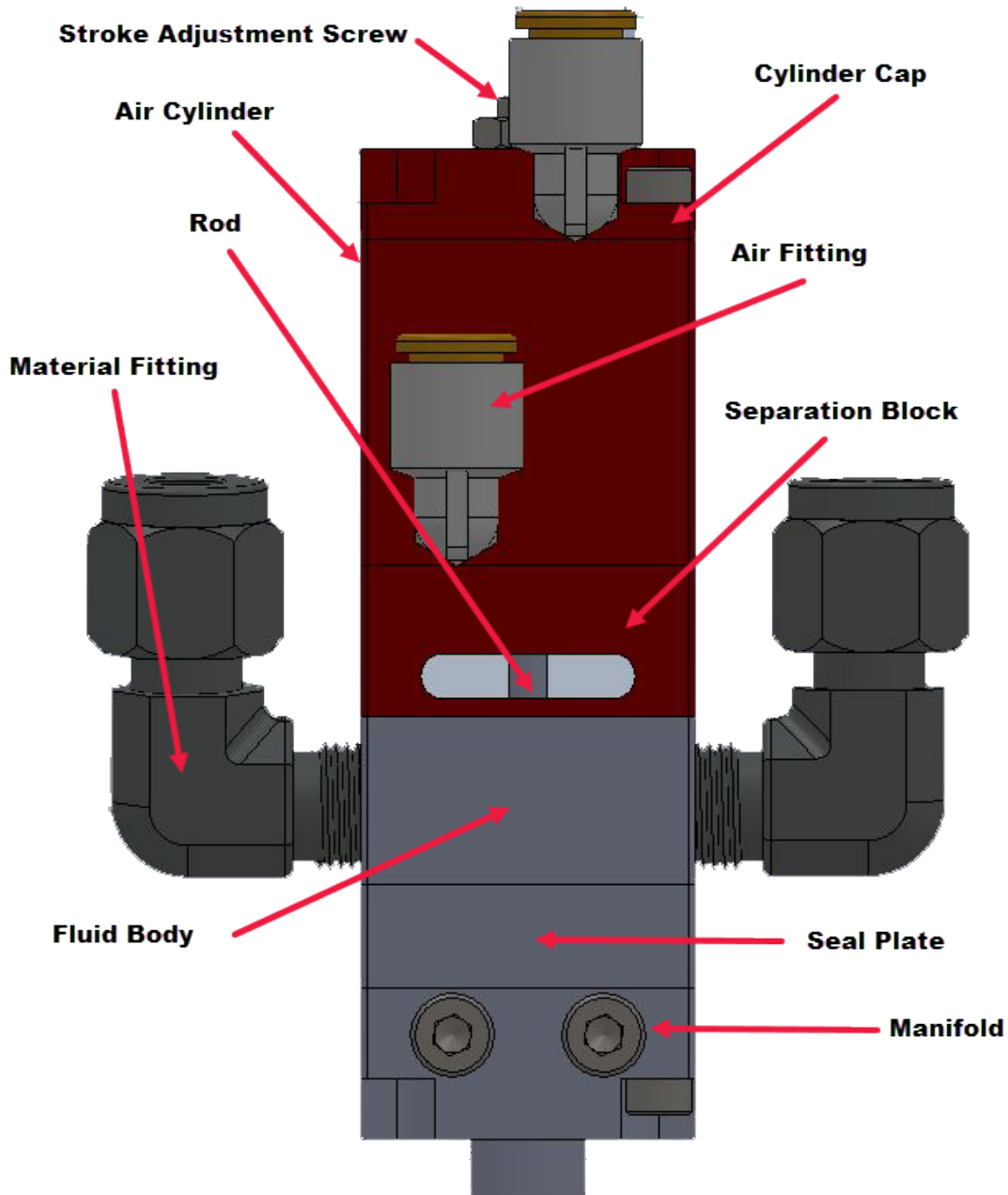


Figure 2: PC150 Overview

4. Valve Operation

4.1 Startup

1. Install the valve pneumatically as shown in Section 1.4 and set the air pressure that operates the valve between 80-100 psi.
2. Make sure that the valve is not pointed at anyone and cycle the valve several times. When the valve cycles correctly, you will hear the piston hit the stroke adjustment screw and the rods can be seen going up and down in the center.

Note: If the valve does not cycle correctly, refer to Section 9.

3. Connect the material delivery system to the valve. The Part A material connects on the left side, the Part B material connects on the right side.
4. Cycle the valve open to bleed. Part A and B materials should start to flow separately out of the fluid manifold.
5. Bleed the valve until all the air is released and the material releases smoothly without any breaks in the flow. Any break in the flow of the material indicates there is still air in the system.

Note: Part A and B materials may not start to dispense from the valve at the same time; flow depends on the necessary mix ratio.

6. To get the necessary amount of snuff back, use a 2.5 mm hex wrench to adjust the stroke adjustment screw. Turn the stroke adjustment screw clockwise to decrease the amount of snuff back or counterclockwise to increase the amount of snuff back. If the stroke adjustment screw is turned down too far, the valve will not close and material will leak from the manifold nozzle.

Note: As a best practice, it is recommended to turn the stroke adjustment screw clockwise until material starts to leak from the valve manifold when under pressure, and then turn the stroke adjustment screw a ½ turn counterclockwise or until it does not leak.

7. When the snuff back is set, use an adjustable wrench to tighten the jam nut against the sealing washer and cylinder cap to lock it in place.

Note: Refer to Section 9 for any other issues.

4.2 Install the Static Mixer

1. Align the notch in the collar with the corresponding notch in the static mixer and insert static mixer into the retaining collar.

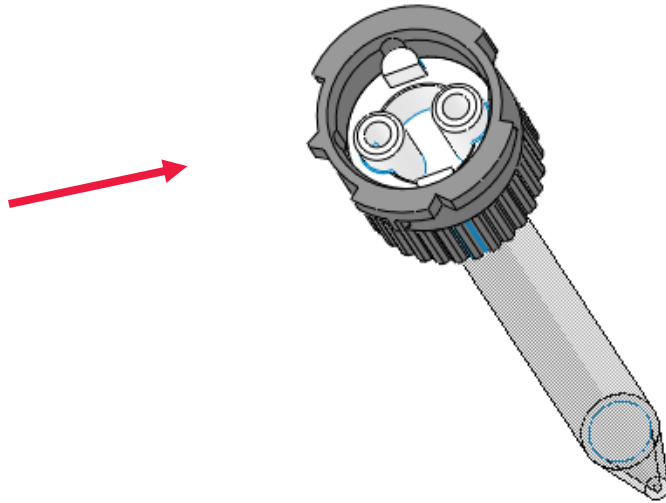


Figure 3: Static Mixer Notch

2. Push and turn the static mixer clockwise 90 degrees to engage it. The static mixer will be hard to turn. Make sure it is fully engaged.

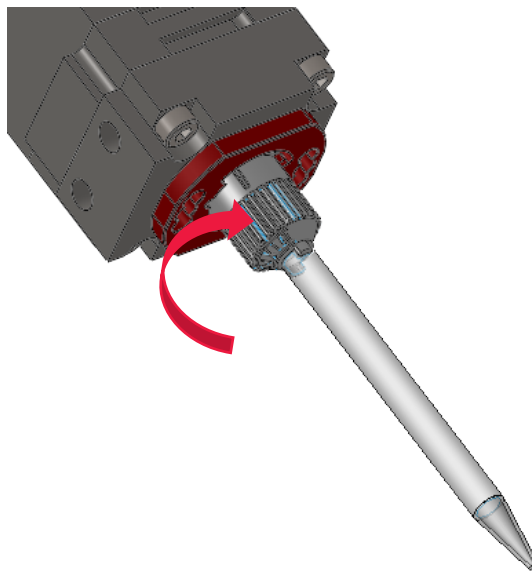


Figure 4: Install the Static Mixer

3. Purge the valve to fill the static mixer with material.

4.3 Shutdown Procedure

1. Reduce the material pressure to the system to 0 psi.
2. Push and turn the static mixer counterclockwise 90 degrees to remove it. Discard the static mixer.

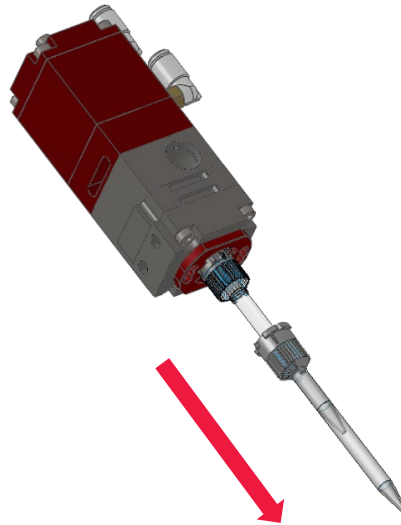


Figure 5: Remove the Static Mixer

3. Purge fresh material through the valve until both material streams are completely clean and have no cross-contamination (20-30 seconds).
4. Clean all material off the manifold nozzle.
5. Install the night cap onto the manifold nozzle.

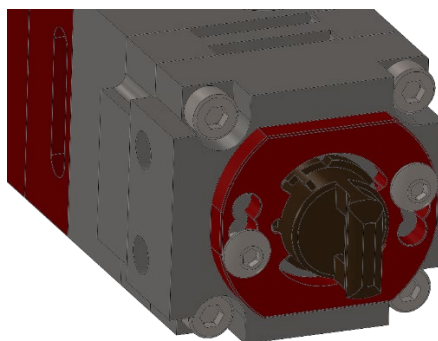


Figure 6: Install Cap

6. Reduce the material pressure for materials A and B to 0 psi.

5. Maintenance

Interval	Action
Daily	<ul style="list-style-type: none"> Examine the material outlets for contamination and cured material.
Weekly	<ul style="list-style-type: none"> Examine Part A and B material containers or cartridges for signs of cured or dried material.

Before you perform any maintenance on this valve, ensure there is a spare parts kit. If any parts have wear or damage, replace them with new parts from the kit.

5.1 Disassemble the Wetted Section of the Valve

This section illustrates how to disassemble the wetted portion of PC150 valves. If you have questions about procedure steps, parts, or content, contact PVA's Customer Service department.

5.1.1 Procedure

Place the valve sections, seals, parts, and screws in a compatible solvent to soak if material can be seen on them. Do not combine materials A and B or they will cure. Examine all parts for wear and damage. Replace parts if necessary.

1. Reduce the system pressure to 0 psi.
2. Disconnect the material and air fittings.
3. Disconnect the valve from the dispense system.
4. Turn the mixer retaining ring counterclockwise until it is free from the mixer retainer.

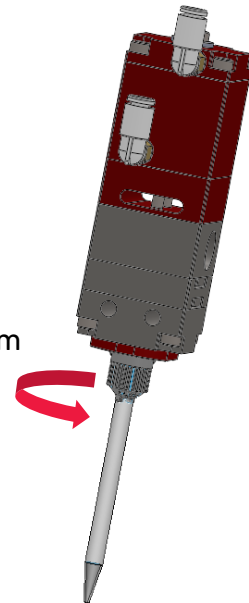


Figure 7: Remove Mixer Retainer

5. Remove the static mixer (refer to Figure 5).

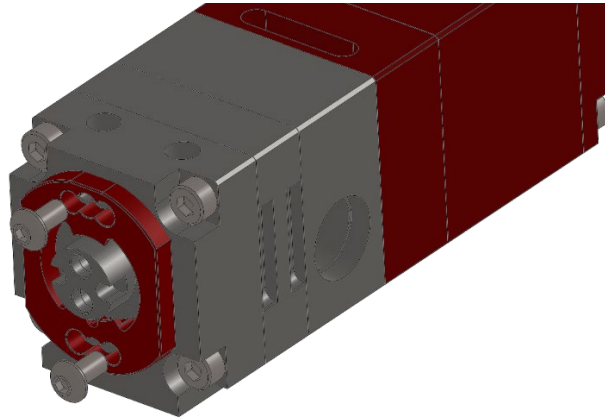


Figure 8: Remove the Mixer Retainer Screws

7. Remove the mixer retainer.
8. Use a crescent wrench to turn the two (2) material fittings counterclockwise to remove them.

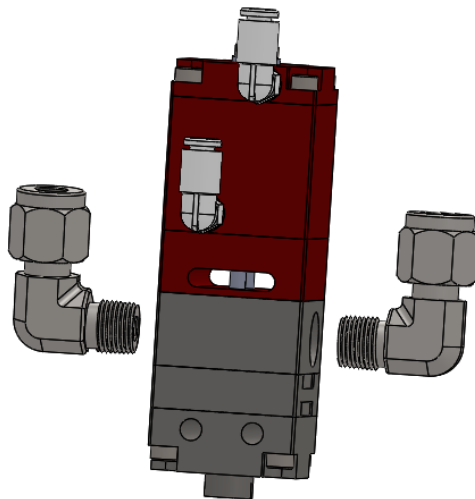


Figure 9: Remove the Material Fittings

9. Use a hex wrench to remove the four (4) socket head cap screws from the fluid section.

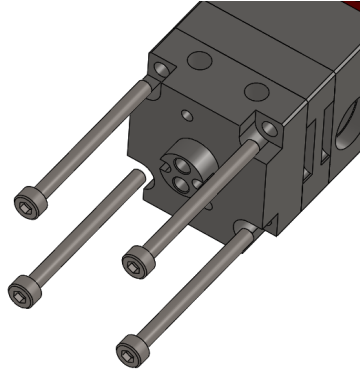


Figure 10: Remove the Fluid Section Screws

10. Pull the wetted section from the upper air cylinder.

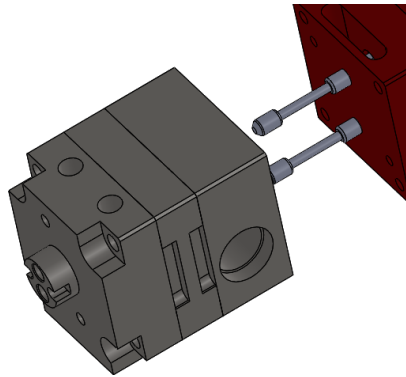


Figure 11: Remove the Wetted Section

11. Separate the lower fluid blocks.

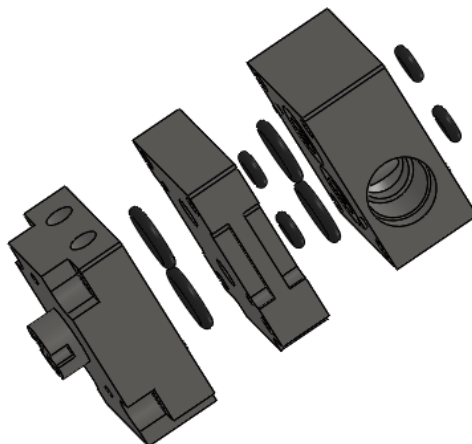


Figure 12: Separate the Lower Fluid Blocks

12. Make sure the fluid section is fully disassembled.

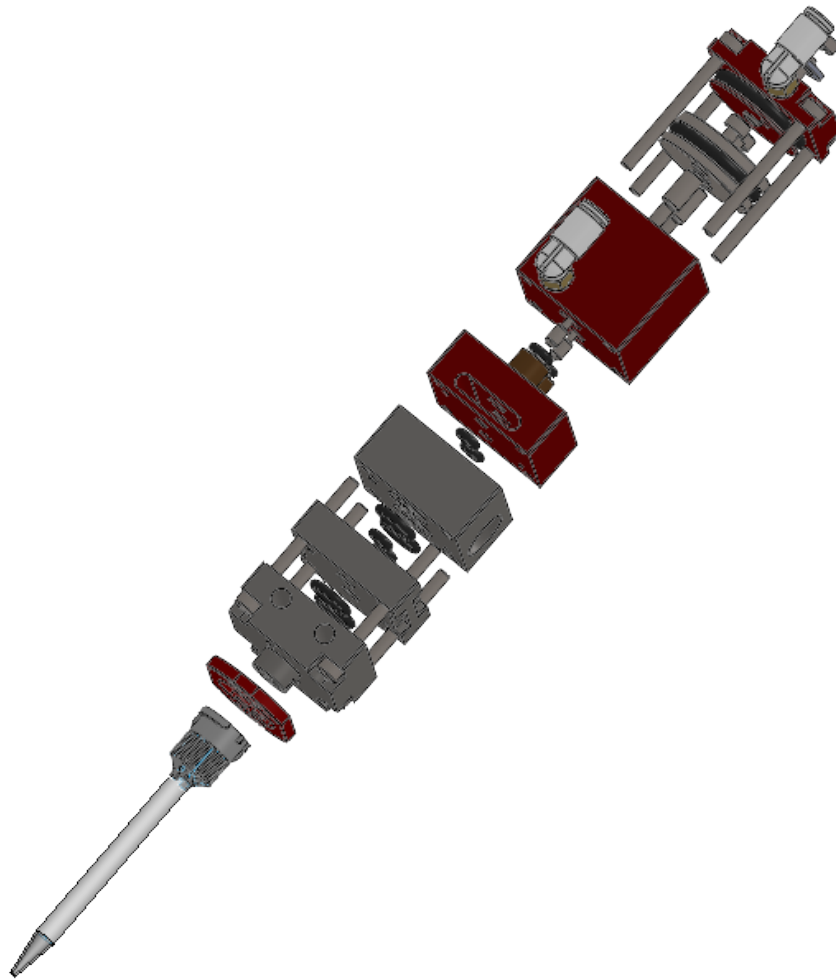


Figure 13: Fully Disassembled Fluid Section

5.2 Clean the Disassembled Valve

Clean every wetted part completely with a compatible solvent, lint-free towels, and cotton tipped applicators to clean the valve wetted section. This includes the ends of the rods. Do not mix material A and B or the material may cure. Wear protective gloves. Do not get material or solvent on your skin.

Make sure all grease and material are removed from the valve components before the valve is assembled again. All O-rings, seals, and screws should be cleaned and replaced if damaged.

5.3 Assemble the Valve

This section shows how to assemble the PC150 series valve.

1. Install two (2) VLV-011K O-rings in the top of manifold.

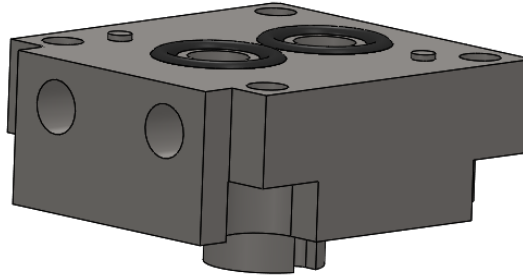


Figure 14: O-rings in the Manifold

2. Install two (2) VLV-006K O-rings in the top side of seal plate.

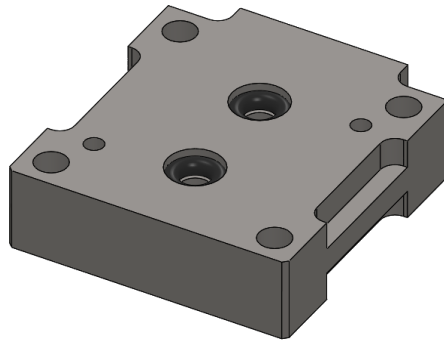


Figure 15: O-rings in the Seal Plate

3. Install two (2) VLV-001K O-rings in the bottom side of the fluid body.

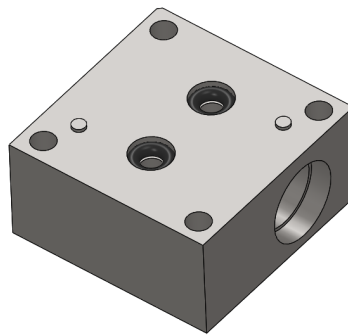


Figure 16: O-rings in the Bottom of the Fluid Body

4. Install two (2) VLV-006K O-rings in the top side of fluid body.

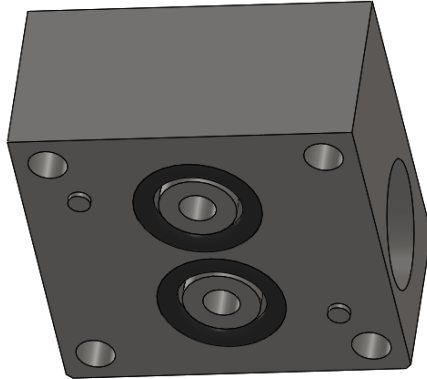


Figure 17: O-rings in the Top of the Fluid Body

5. Align the manifold, seal plate, and fluid body on top of one another.
6. Make sure all O-rings are still seated.

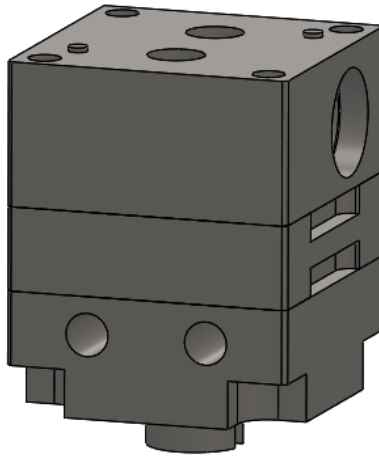


Figure 18: Fluid Assembly

7. Apply Loctite 222 to the ends of four (4) socket head cap screws and two (2) button head cap screws.

- Align the assembled fluid section to the bottom of the air cylinder assembly and install four (4) socket head cap screws with the correct thread locker.

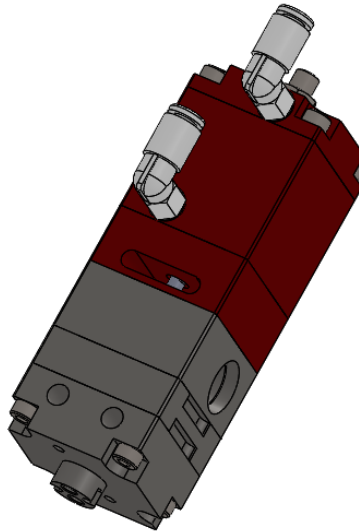


Figure 19: Assemble the Air and Fluid Sections

- Install the mixer retainer with two (2) button head cap screws with the correct thread locker applied.

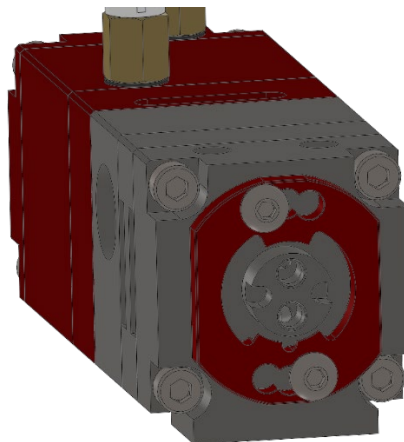


Figure 20: Install the Mixer Retainer

- Install Teflon tape on the 1/8 NPT fluid fittings.
- Install the necessary 1/8 NPT fluid fittings.
- Install the static mixer, refer to Section 4.2.

6. PC150 Series Reference

6.1 PC150 Bill of Materials

Item	Part Number	Description	Qty
1	SHCS M3x0.5 X 8	SOCKET HEAD CAP SCREW	2
2	SHCS M3x0.5 X 35	SOCKET HEAD CAP SCREW	8
3	B18.3.6M - M5 x 0.8 x 20 Hex Socket Flat Pt. SS	SET SCREW	1
4	B18.2.4.5M - Hex jam nut, M5 x 0.8 --D-N		1
5	65075822	SEALING WASHER, #10/M5	1
6	KQ2L04-M5A	FITTING, ELBOW, 4MM HOSE X M5 THREAD	2
7	VLV-006K	O-RING, -006, KALREZ	4
8	VLV-011K	O-RING, -011, KALREZ	4
9	VLV-006B	O-RING, -006, BUNA-N	2
10	VLV-117B	O-RING, -117, BUNA-N	2
11	614-8574-1	PCS150 FLUID BODY, LOWER SECTION	1
12	614-8576-1	PCS150 FLUID BODY, CENTER SECTION	1
13	614-8578-1	PCS150 FLUID BODY, UPPER SECTION	1
14	614-8580-1	PCS150 AIR BODY	1
15	614-8581-1	PCS150 PISTON	1
16	614-8584-1	PC150 AIR CAP	1
18	214-5448	BUSHING, 0.126 ID, 0.245 LG	2
17	614-8592-1	PCS150 ROD	2
18	214-5448	BUSHING, 0.126 ID, 0.245 LG	2
19	614-8601-1	PCS100 ROD GUIDE	1
20	214-7976	MIXER RETAINER	1
21	101515	NIGHT CAP	1

Figure 21: PC150 Bill of Materials

6.2 PC150 Series Mechanical Drawings

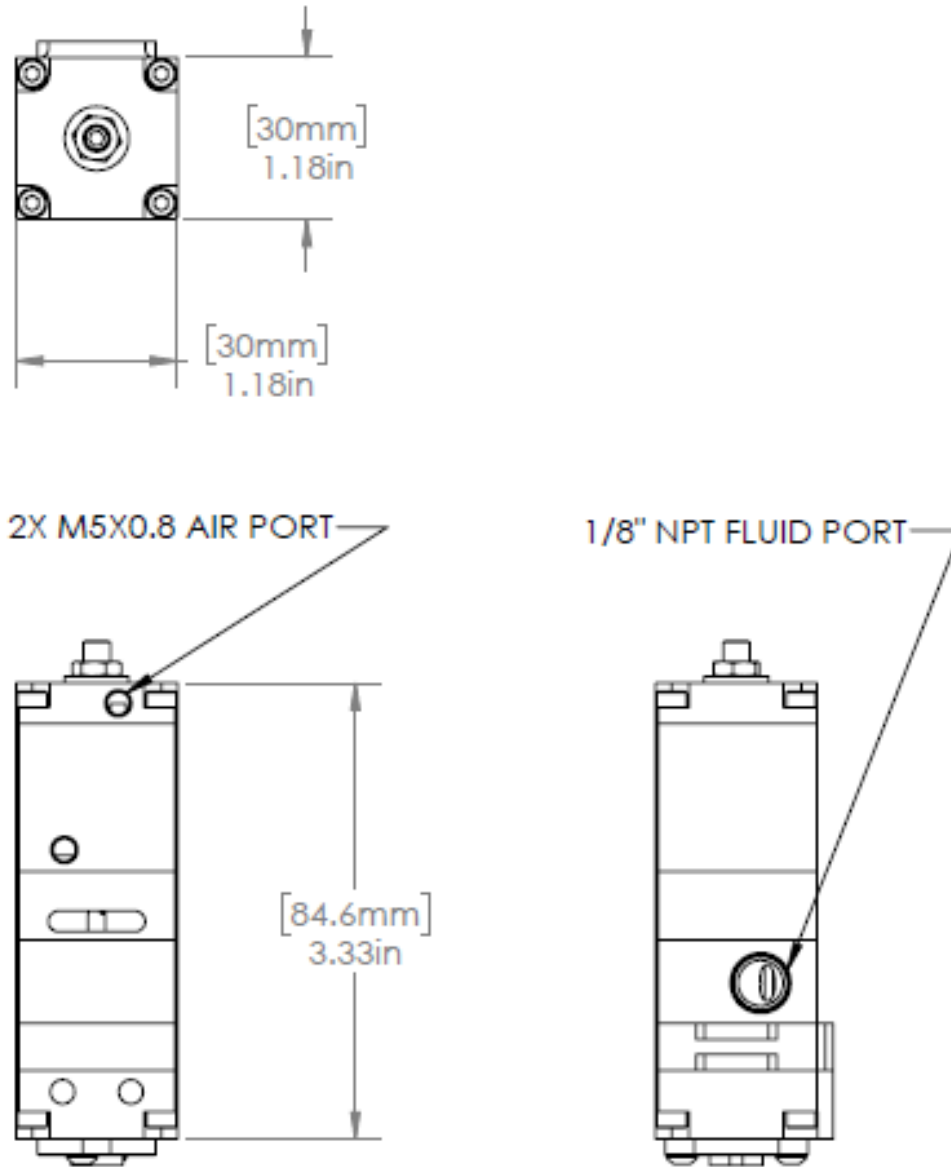


Figure 22: Mechanical Drawing

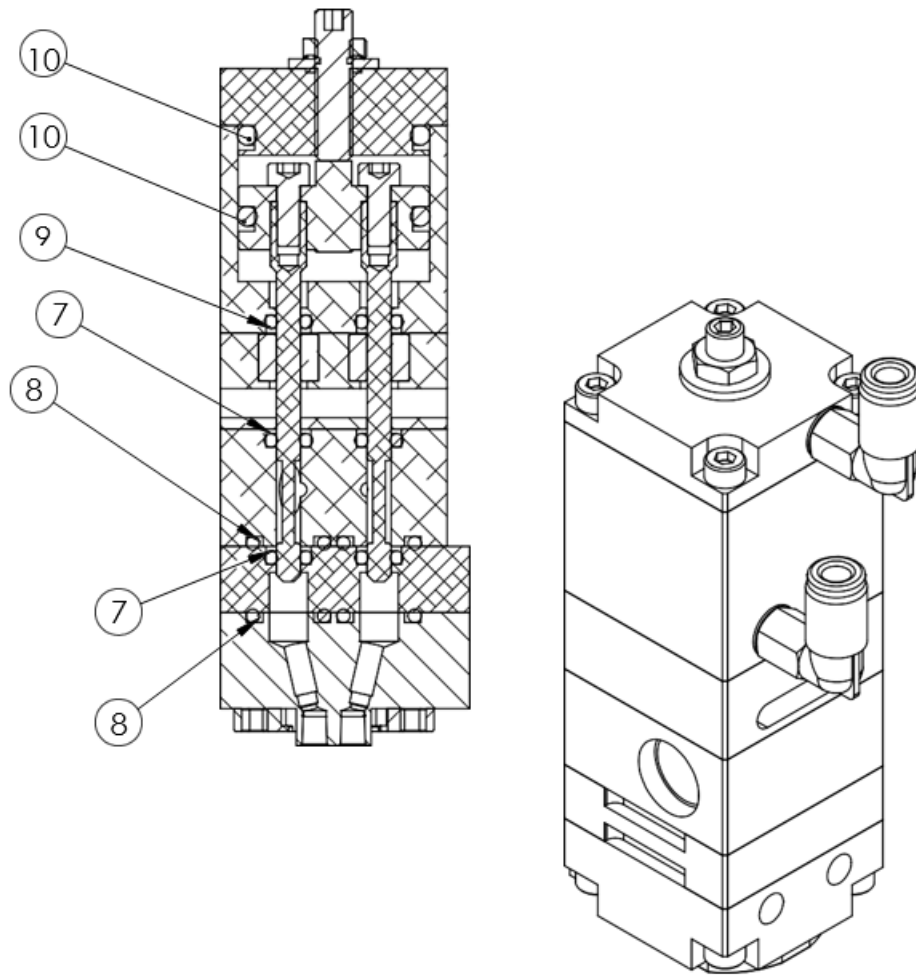


Figure 23: Valve Side View

7. Spare Parts

7.1 Spare Parts

Item	Description	Part Number	Qty
1	O-Ring, 011, Kalrez	VLV-011K	4
2	O-Ring, 006, Kalrez	VLV-006K	4
3	O-Ring, 006, Buna	VLV-006B	2
4	O-Ring, 117, Buna	VLV-117B	2
5	Sealing Washer, M5	93786A100	1

Contact PVA for additional information or to order replacement parts.

8. Technical Specifications

Weight	Approximately 550mg (1.2 lbs)
Material inlets	1/8" NPT
Air Ports	M5 X 0.8-6H
Operating Air Pressure	60 - 100 psi
Maximum Fluid Pressure	1500 psi
Viscosity Range	1 cps - Paste (unfilled)

Figure 24: PC150 Technical Specifications

9. Troubleshooting

Troubleshooting Problem	Possible Cause	Corrective Action
Valve Does Not Cycle	<ul style="list-style-type: none"> • Air pressure to air section is too low • Stroke adjustment screw is fully engaged • Material is cured in the valve 	<ul style="list-style-type: none"> • Increase the air pressure to 60-100 psi • Turn stroke adjustment screw counter-clockwise to increase snuff back • Disassemble and clean valve
Material Leaks From Static Mixer	<ul style="list-style-type: none"> • Snuff back is set too low • Fluid seals are worn • Air trapped in the valve or static mixer 	<ul style="list-style-type: none"> • Turn stroke adjustment screw counter-clockwise to increase snuff back • Replace o-rings • Bleed valve until air is removed
Air Bubbles In Fluid	<ul style="list-style-type: none"> • Valve is not correctly bled • Problem with fluid delivery system 	<ul style="list-style-type: none"> • Bleed the valve until the air is removed • Diagnose and repair
No Flow From Valve	<ul style="list-style-type: none"> • Manifold is blocked • Air cylinder does not operate • Static mixer is plugged • Problem with material supply 	<ul style="list-style-type: none"> • Examine and clean manifold • Increase operating air pressure to 80 psi. Inspect valve for cured material • Replace static mixer • Examine material supply to the valve
Valve Drips Continuously After Shutoff	<ul style="list-style-type: none"> • Snuff back is set too low • Fluids seals are damaged or worn • Valve rods are defective or worn 	<ul style="list-style-type: none"> • Turn stroke adjustment screw counterclockwise to increase snuff back. • Examine and replace O-ring seals • Examine and replace valve rods

<p>Valve Drips For a Short Time After Shutoff</p>	<ul style="list-style-type: none"> • Air is trapped in the manifold • Air is trapped in the static mixer 	<ul style="list-style-type: none"> • Bleed the valve until the air is removed • Bleed the valve until the air is removed
<p>Cross-Contamination In Manifold Nozzle</p>	<ul style="list-style-type: none"> • Snuff back is set too high • System material supply not correctly bled of air 	<ul style="list-style-type: none"> • Turn stroke adjustment screw clockwise to decrease snuff back • Bleed material supply system until the air is removed
<p>Seals Fail Rapidly</p>	<ul style="list-style-type: none"> • Seals are not compatible with material • Material has abrasive fillers 	<ul style="list-style-type: none"> • Contact PVA for seal options • Contact PVA for seal options
<p>Valve Has Air Leak</p>	<ul style="list-style-type: none"> • Jam nut is loose 	<ul style="list-style-type: none"> • Tighten jam nut against stroke adjustment sealing washer
<p>Material Does Not Cure</p>	<ul style="list-style-type: none"> • Mix ratio is incorrect • Material not sufficiently mixed 	<ul style="list-style-type: none"> • Do ratio checks at manifold and adjust metering system as necessary • Use a static mixer with sufficient mixing elements – consult material manufacturer or PVA

Figure 25: Troubleshooting Guide



10. PVA Warranty Policy

PVA warrants the enclosed product against defects in material or workmanship on all components for one year from the date of shipment.

The warranty does not extend to components damaged due to misuse, negligence, or installation and operation that are not in accordance with the recommended factory instructions. Unauthorized repair or modification of the enclosed product, and/or the use of spare parts not directly obtained from PVA (or from factory authorized dealers) will void all warranties.

All PVA warranties extend only to the original purchaser. Third party warranty claims will not be honored at any time.

Prior to returning a product for a warranty claim, a return authorization must be obtained from PVA's Technical Support department. Authorization will be issued either via the telephone, facsimile, or in writing upon your request.

To qualify as a valid warranty claim, the defective product must be returned to the factory during the warranty period. Upon return, PVA will repair (or replace) all components found to be defective in material or workmanship.

(Retain this for your records)

Product Information:

PRODUCT: _____

SERIAL NUMBER: _____

DATE OF PURCHASE: _____

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