



WHERE
PRECISION
DRIVES
PRODUCTION

PCS150 Valve

OWNER'S MANUAL

Revision B

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1. Introduction

Before you operate this system, 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 Customer Service Department for support.

1.1 PVA Contact Information

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1.2 Document History

Revision	Revision Date	Reason for Changes
Revision B	February 2017	Part Number Updated
Revision A	February 2017	Initial Release of New Template

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

1.3 Safety

Certain warning symbols are affixed to the machine and correspond to notations in this manual. Before operating the system, identify these warning labels and read the notices described below. Not all labels may be used on any specific system.



Always wear approved safety glasses when you operate or work near the workcell.



Before you operate the system, read and understand the manuals provided with the unit.



Never put hands or tools in areas with this symbol when the machine is in operation. A dangerous condition may exist.



Read and understand the manuals provided with the unit before any repairs or maintenance is done. Only a qualified individual should do service.



Use caution when there are pressurized vessels. Find and repair any leaks immediately. Always wear appropriate safety equipment when you work with pressurized vessels or vessels that contain chemicals.



Shear hazard from moving parts. Avoid contact.

1.4 Theory of Operation

The PCS150 is a rear closing, two component spray valve. Applications include spraying two component materials. This valve has adjustable snuff back to prevent drips or strings at the end of the static mixer.

Part A and part B materials flow into the valve separately and out of the valve separately into a disposable static mixer. At the exit of the mixer, the material is atomized to create a cone shaped spray pattern. It is not necessary to disassemble and clean the valve at the end of each day.

The PCS150 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 and controls 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 to the forward position past the seals. When the rods retract back into the seals the fluid flow stops and creates a snuff back action on the fluid.

1.5 Pneumatic Schematic

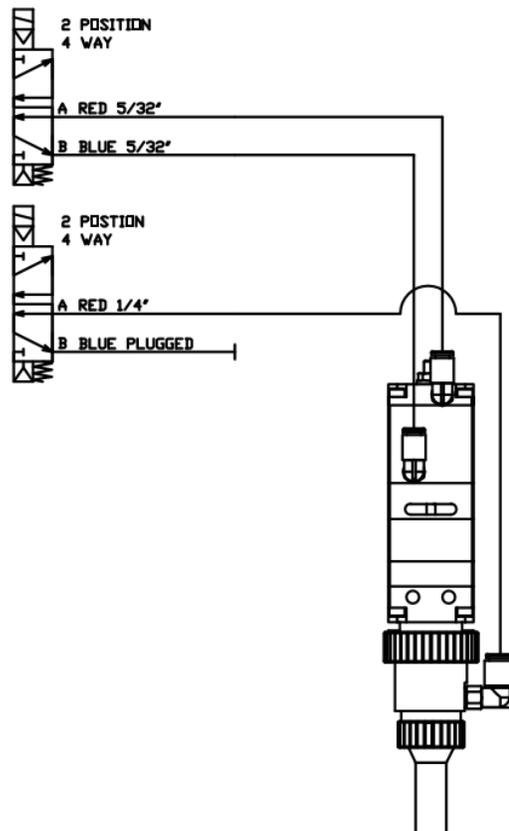


Figure 1: General PCS150 Pneumatic Schematic

1.6 Personal Protective Equipment

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

1.7 Waste Disposal

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

2. Overview

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

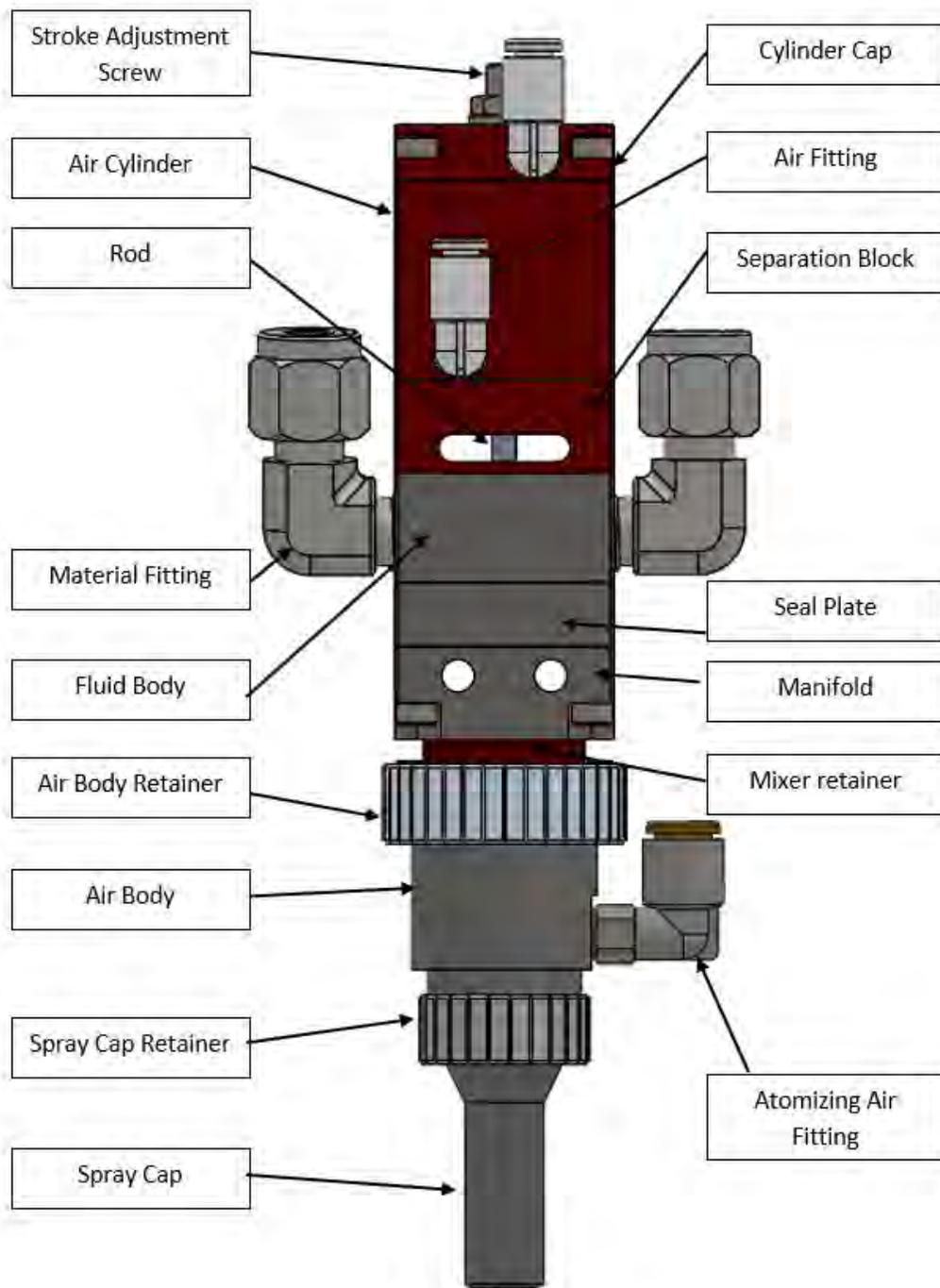


Figure 2: Valve Overview

3. Valve Operation

3.1 Startup

1. Install the valve pneumatically as shown in Section 1.5 and set the air pressure that operates the valve between 80-100 psi.
2. Set atom air pressure to 0 psi.
3. Make sure that the valve is not pointed at anyone and cycle the valve several times. When the valve cycles correctly, you can 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 8.*

4. Connect the material delivery system to the valve. Part A material connects on the on the left side, part B material connects on the right side.
5. Cycle the valve open to bleed. Part A and B materials should start to flow separately out of the fluid manifold.
6. 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 shows 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.*

7. Use a 2.5mm hex wrench to adjust the stroke adjustment screw to get the necessary amount of snuff back.

Turn the stroke adjustment screw clockwise to decrease the amount of snuff back, or counter-clockwise 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: *A good general setting for snuff back is to turn the stroke adjustment screw clockwise until material starts to leak from the valve manifold when under pressure, then turn the stroke adjustment screw a 1/2 turn counter-clockwise or until it does not leak.*

8. When 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 8 for any other problems.*

3.2 Install the Static Mixer

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

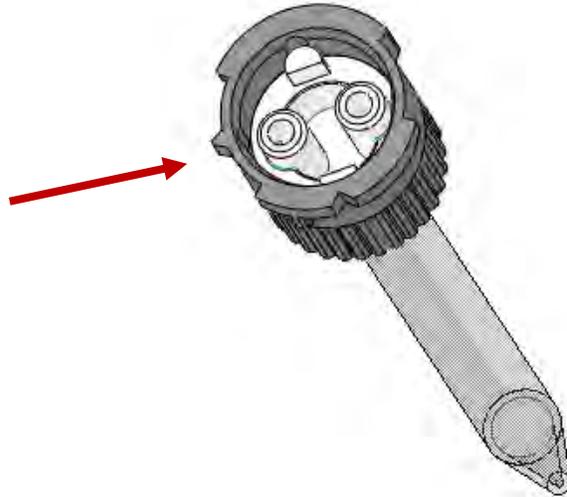


Figure 3: Static Mixer Notch

2. Push and turn the static mixer clockwise 90° 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.

3.3 Install Spray Cap

1. Install the air body over the static mixer.



Figure 5: Install the Air Body

2. Install the air body retainer over the air body and turn it counterclockwise until it is fully installed in the mixer retainer.

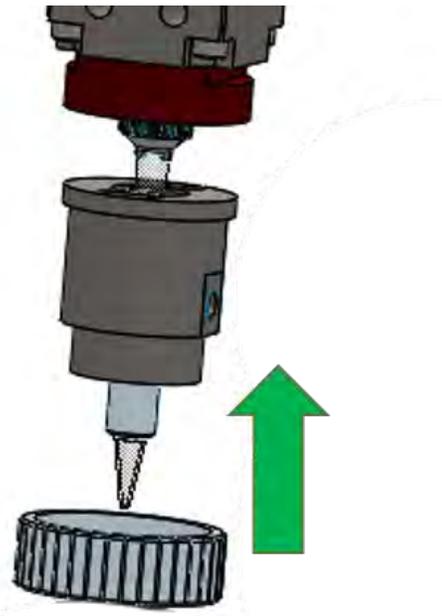


Figure 6: Install the Air Body Retaining Ring

3. Install the spray cap.
4. Install the spray cap retainer over the spray cap and turn it clockwise until it is fully seated.
5. Install the atomizing air fitting and connect the air line.



Figure 7: Valve Assembly

6. Purge the valve and slowly increase the atomizing air pressure until you have the necessary spray pattern.

3.4 Shutdown Procedure

1. Reduce the material pressure to the system to 0 psi.
2. Remove the lower spray assembly, refer to section 4.1.
3. Push and turn the static mixer counterclockwise 90° to remove it. Discard the static mixer.

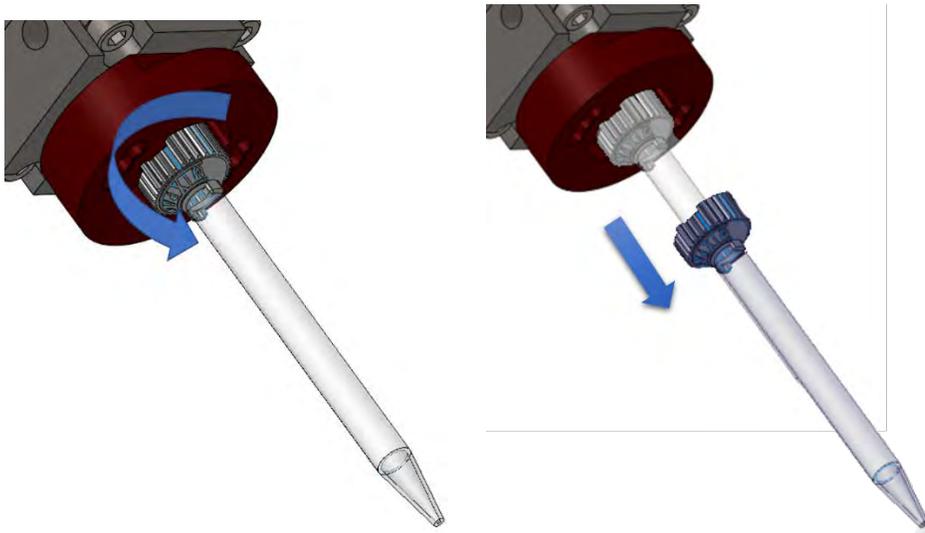


Figure 8: Remove the Static Mixer

4. Purge fresh material through the valve until both material streams are completely clean and have no cross-contamination (20-30) seconds.
5. Clean all material off of the manifold nozzle.
6. Put a new static mixer on the valve, refer to section 3.2.
7. Purge the valve and fill the static mixer roughly half full of material.
8. Reduce the material pressure for materials A and B to 0 psi.

4. 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 component A and B material containers or cartridges for signs of cured or dried material.

Before you do maintenance on this valve, make sure you have a spare parts kit. If any parts have wear or damage, replace them with new parts from the kit.

4.1 Disassemble the Wetted Section of the Valve

This section shows how to disassemble the wetted portion of PS150 valves. If you have questions about procedure steps, parts, or content, contact PVA's customer service department.

4.1.1 Procedure

Put 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. Push the fitting collar and remove the atomizing air line.
5. Turn the air body retaining ring counterclockwise till it is free from the mixer retainer.

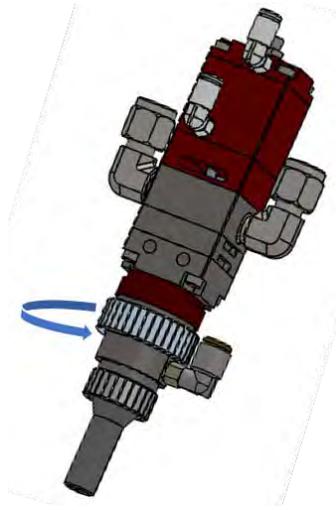


Figure 9: Remove the Valve Spray Section

6. Remove the lower spray portion and set aside.

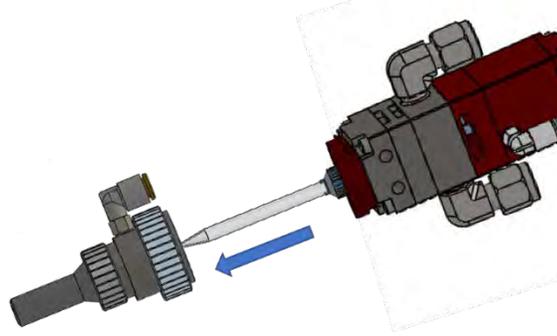


Figure 10: Remove the Spray Section

7. Remove the static mixer (refer to Figure 8).
8. Use a 2mm hex wrench to remove the two (2) button head cap screws on the mixer retainer.

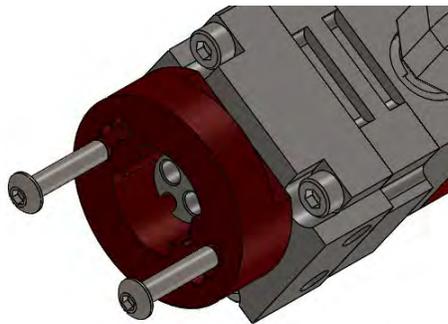


Figure 11: Remove the Mixer Retainer Screws

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

NOTE: The material fitting is material dependent.

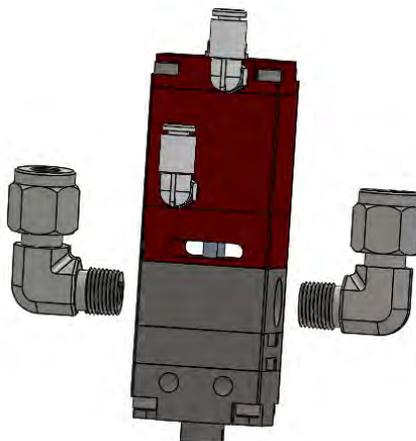


Figure 12: Remove the Material Fittings

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

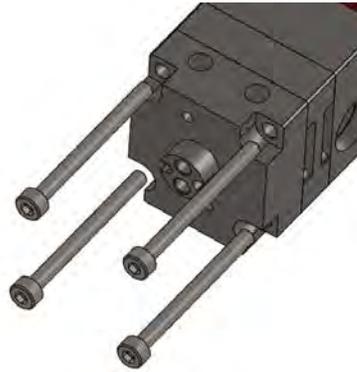


Figure 13: Remove the Fluid Section Screws

12. Pull the wetted section off of the upper air cylinder.

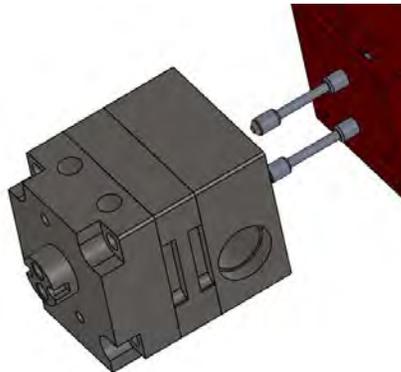


Figure 14: Remove the Wetted Section

13. Separate the lower fluid blocks.

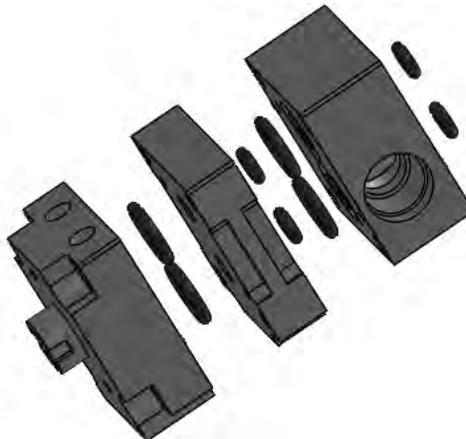


Figure 15: Separate the Lower Fluid Blocks

14. Make sure the fluid section is fully disassembled.

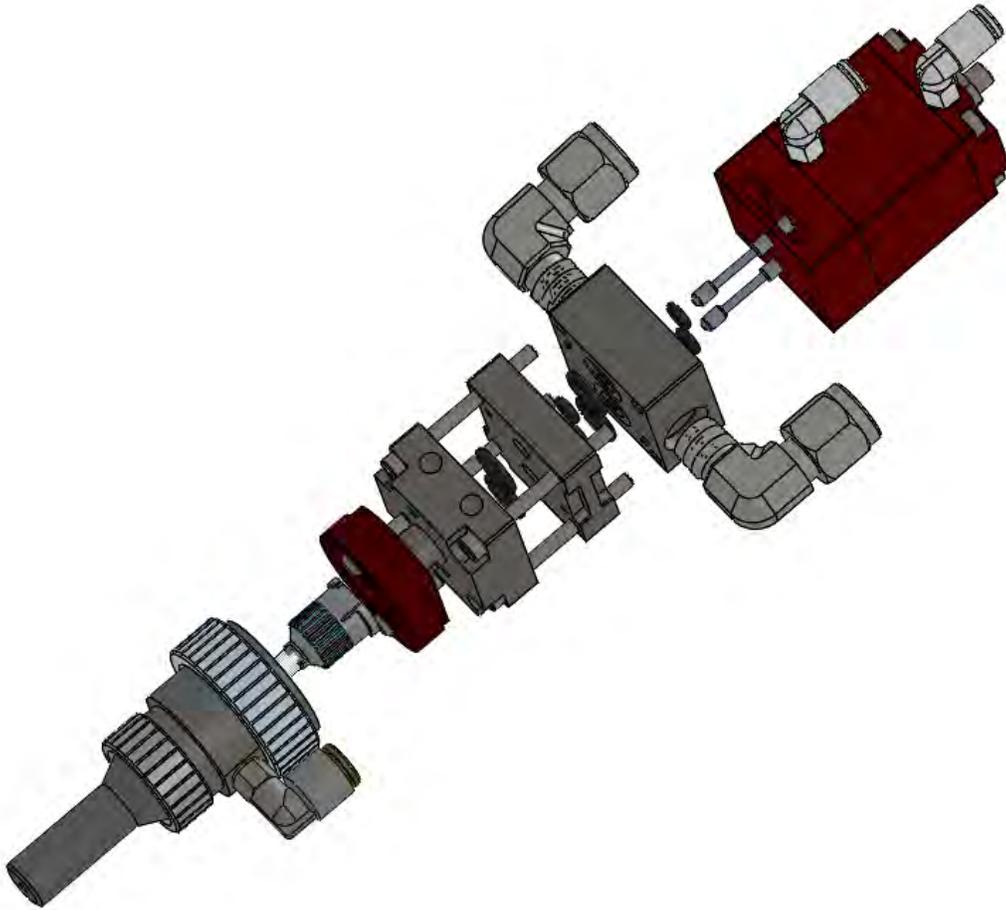


Figure 16: Fully Disassembled Fluid Section

4.2 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 included the ends of the rods. Do not mix material A and B or 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.

4.3 Assemble the Valve

This section shows how to assemble the PCS150 series valve. Procedure

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

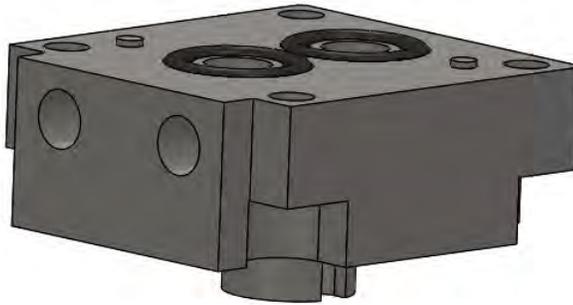


Figure 17: O-rings in the Manifold

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

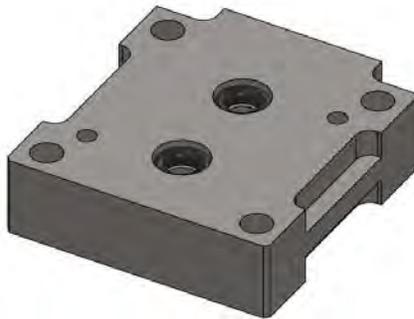


Figure 18: O-rings in the Seal Plate

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



Figure 19: O-rings in the Bottom of the Fluid Body

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

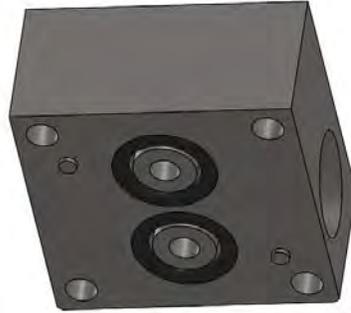


Figure 20: O-rings in the Top of the Fluid Body

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

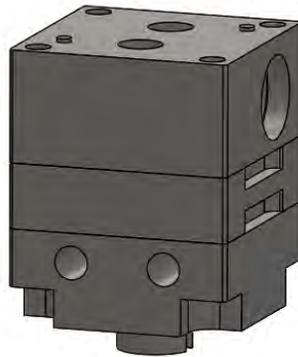


Figure 21: Fluid Assembly

7. Apply Loctite 222 to the ends of four (4) socket head cap screws and two (2) button head cap screws.
8. 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.

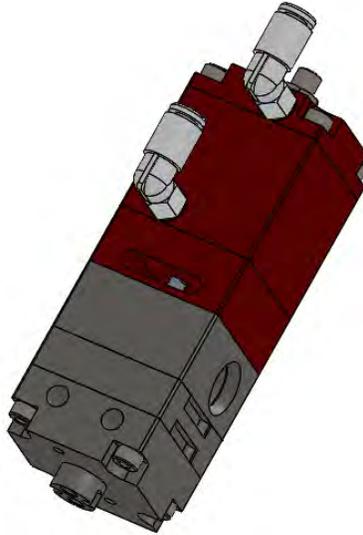


Figure 22: Assemble the Air and Fluid Sections

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

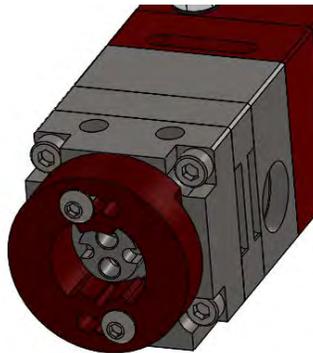


Figure 23: Install the Mixer Retainer

10. Install Teflon tape on the 1/8 NPT fluid fittings.
11. Install the necessary 1/8 NPT fluid fittings
12. Install the static mixer, refer to Section 3.2.
13. Install lower spray section refer to Section 3.3.

5.PCS150 Series Reference

5.1 PCS150 Bill of Materials

ITEM	PART NUMBER	DESCRIPTION	QTY
1.	614-8574-1	PCS150 FLUID BODY, LOWER SECTION	1
2.	614-8576-1	PCS150 FLUID BODY, CENTER SECTION	1
3.	614-8578-1	PCS150 FLUID BODY, UPPER SECTION	1
4.	614-8580-1	PCS150 AIR BODY	1
5.	614-8581-1	PCS150 PISTON	1
6.	SHCS M3x0.5 X 8 (8NHX)	SOCKET HEAD CAP SCREW	2
7.	SHCS M3x0.5 X 35 (18NHX)	SOCKET HEAD CAP SCREW	8
8.	614-8584-1	PCS150 AIR CAP	1
9.	M5 x 0.8 x 20	SET SCREW	1
10.	614-8592-1	PCS150 ROD	2
11.	214-14916	COLLAR, MIXER	1
12.	214-14917	SPRAY BODY, VPX-2K	1
13.	214-14918	RETAINING RING, M30X1.5 THREAD	1
14.	214-14922	SPACER, STATIC MIXER MKH03-16S	1
15.	V344	AIR CAP, FCS300-ES	1
16.	V316	COLLAR RING	1
17.	214-5448	BUSHING, 0.126 ID, 0.245 LG	2
18.	KQ2L04-M5A	FITTING, ELBOW, 4MM HOSE X M5 THREAD	2
19.	KQ2L07-32A	FITTING, ELBOW, 1/4" TUBE x #10-32	1
20.	VLV-011K	O-RING, -011, KALREZ	4
21.	VLV-006K	O-RING, -006, KALREZ	4
22.	VLV-006B	O-RING, -006, BUNA-N	2
23.	VLV-117B	O-RING, -117, BUNA-N	2
24.	614-8601-1	PCS100 ROD GUIDE	1
25.	Hex jam nut,	JAM NUT, M5X0.8	1
26.	MKH03-16S	MICRO STATIC MIXER, 16 ELEMENT X 0.125", TAPER TIP	1
27.	65075822	SEALING WASHER, M5	1
28.	ZM-10-M3-4-SS	ORIFICE, 0.01", M3, SS	2
29.	3MSEL2N-316	TUBE FITTING, ELBOW, 1/4" x 1/8" MNPT	2
30.	BHCS M3x0.5 X 14	BUTTON HEAD CAP SCREW	2

5.2 PCS150 Series Mechanical Drawings

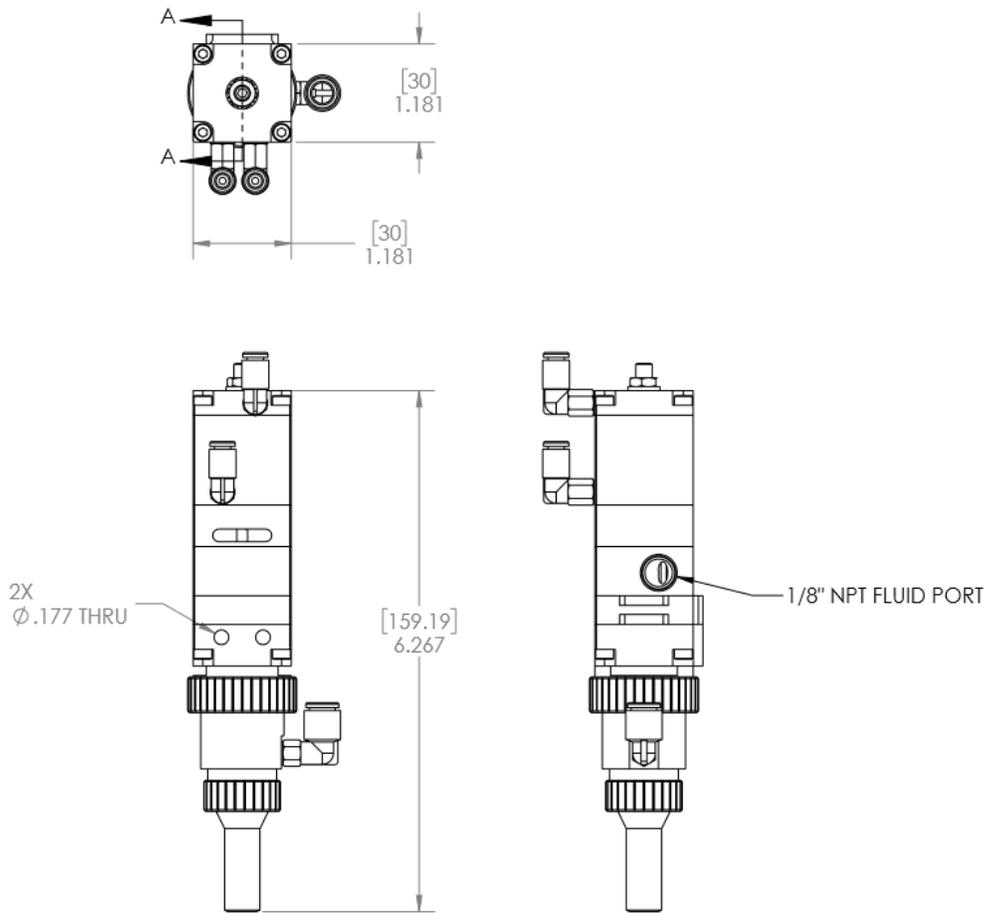


Figure 24: Mechanical Drawing

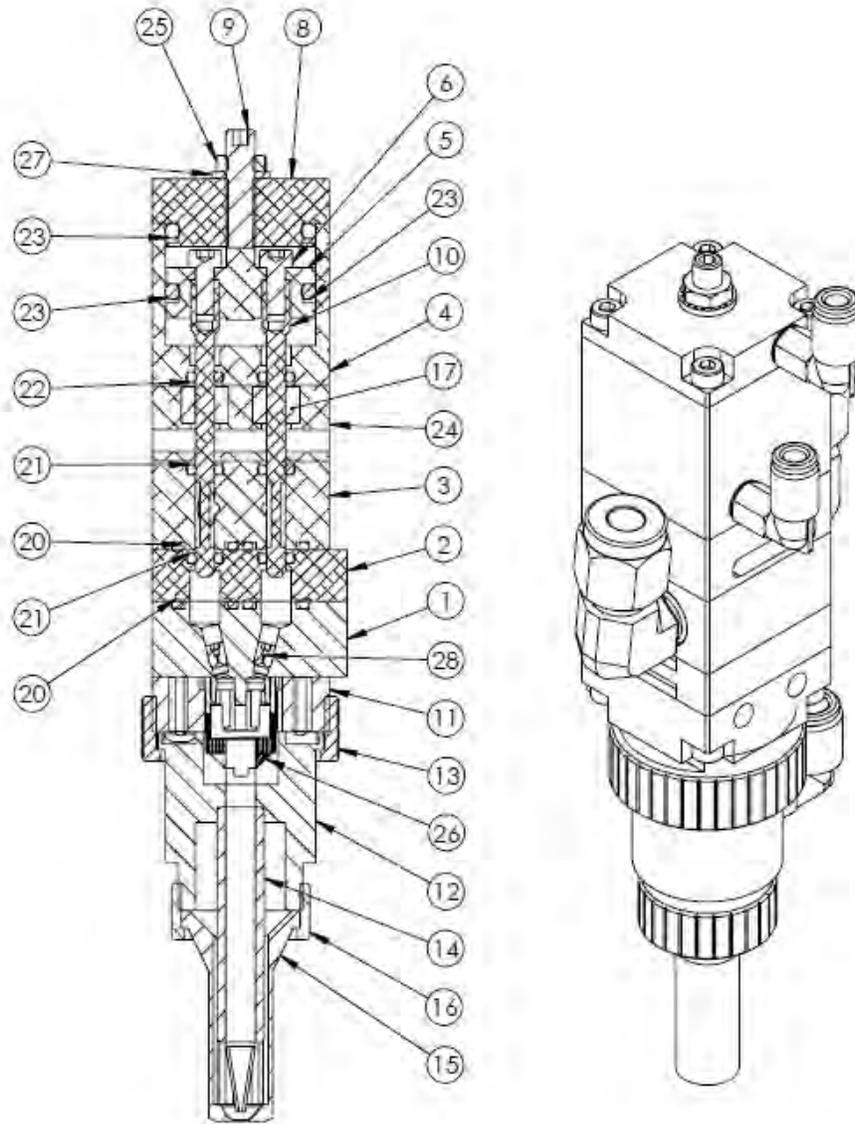


Figure 25: Valve Side View

6. Spare Parts

6.1 Spare Parts

ITEM #	DESCRIPTION	P/N	QTY
20.	O-RING, -011, KALREZ	VLV-011K	4
21.	O-RING, -006, KALREZ	VLV-006K	4
26.	MICRO STATIC MIXER, 16 ELEMENT X 0.125", TAPER TIP	MKH03-16S	5
27.	SEALING WASHER M5	65075822	1
28.	ORIFICE, 0.01", M3, SS	ZM-10-M3-4-SS	1

Contact PVA for information on replacement parts or to order.

7. Technical Specifications

Table 1: PCS150 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 – 1,000 cps (UN-FILLED)

8. 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 counterclockwise 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 counterclockwise 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

Valve Drips For a Short Time After Shutoff	<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
Cross-Contamination In Manifold Nozzle	<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
Seals Fail Rapidly	<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
Valve Has Air Leak	<ul style="list-style-type: none"> • Jam nut is loose 	<ul style="list-style-type: none"> • Tighten jam nut against stroke adjustment sealing washer
Material Does Not Cure	<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

9. Notes

10. Warranty

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 customer service 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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