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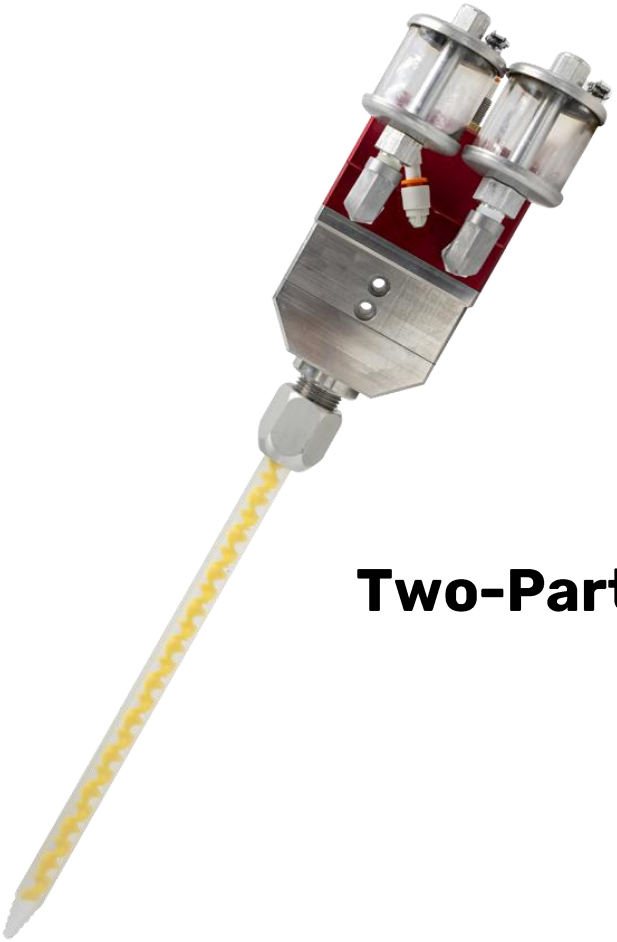

Two-Part Dispense Valve

PCC250

Operation Manual

Revision A

Precision Valve & Automation
6 Corporate Drive
Halfmoon, NY 12065

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Table of Contents

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**

Six Corporate Drive

Halfmoon, NY 12065

Tel +1-518-371-2684

Fax +1-518-371-2688

Website: http://www.pva.net

Email: info@pva.net

Technical Support

Tel +1-518-371-2684

Email: cs@pva.net

1.2 Document History

Revision	Revision Date	Reason for Changes
A		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

The PCC250 is a front closing, two-component dispense valve. Applications include potting, bead placement, and gaskets.

Both Part A and Part B materials flow into the valve in isolated fluid paths into a disposable static mixer. It is not necessary to clean the valve at the end of each day.

1.3.1 Air Section

The air section is an aluminum body with single piston used to open and close the valve. The single piston design reduces the number of moving components within the valve.

1.3.2 Fluid Section

The wetted section of the valve is offered with two types of O-ring seals depending on the application:

- Viton
- Kalrez

The valve is also offered in either a wide ratio or narrow ratio configuration depending on the specific use case.

The fluid section includes two carbide rods with carbide seats on each side of the valve to control fluid flow of Part A and Part B material. Fluid dispenses as the rods retract out of the seat. When the rods move forward, they once again seal against a carbide seat to stop material flow out of the valve. The two halves of the valve are divorced to prevent material mixing until it enters the static mixer at the outlet of the stainless-steel fluid body.

1.4 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.

1.5 Waste Disposal

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

2. 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.

Do not remove protective guarding.

In situations where inattention could cause either personal injury or damage to equipment, a warning notice is used.

Do not smoke near the machine. Always have a fire extinguisher available for emergency use.

Before performing any repairs or maintenance to the system, turn off power and lock out the power disconnect switch.

Warning notices are used to emphasize that hazardous voltages, current, temperatures, or other conditions that could cause personal injury exist in this equipment or may be associated with its use. Only qualified personnel should enter areas designated with this symbol.

Laser light source present. Do not stare directly into the beam. Do not use in the presence of highly reflective surfaces

Pinch hazard from moving parts. Avoid contact.

Hot surface. Avoid contact.

Warning, Ultraviolet (UV) light hazard. Do not look directly at the UV light source.

This product meets EU standards for health, safety, and environmental protection.

Warning, no open flames.

Electrostatic sensitive device warning. Observe precautions for handling.

3. Setup

3.1 Valve Overview

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

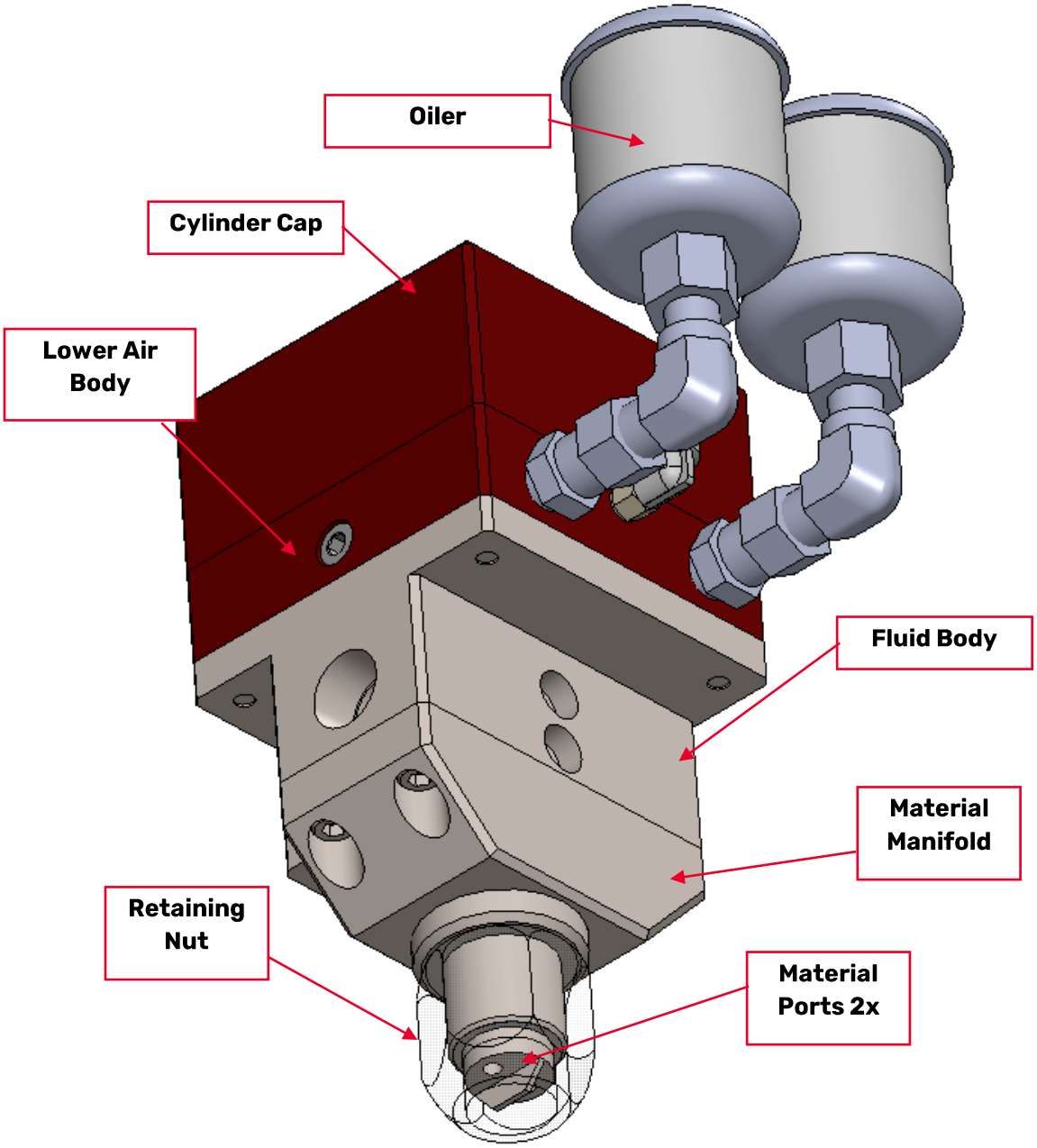

Figure 1: PCC250 Valve Overview

3.2 Tool Kit

PVA offers a tool kit for the PCC250. The tool kit for this valve is part number 612-20084-1. This includes all necessary tools and lubricants to do maintenance on this valve.

QTY	PART NUMBER	DESCRIPTION
1	12796	Balldriver L-wrenches Set, sizes 1.5-10mm
1	266244	8" ADJUSTABLE WRENCH
1	5516A18	TWEEZERS
1	206994	THROAT SEAL LIQUD, 8OZ BOTTLE
1	TT-14	THREAD TAPE, 1/4"
1	91458A24	THREAD SEALANT, 1/2ML
1	266255	PLIERS
1	9570K71	HOOK AND PICK SET
1	B62-2048	SILICONE LUBRICANT FOR O-RINGS, 2.5cc WITH TIPS
1	MM115	THREAD LOCKER 1/2ML PACK
1	53085A61	SOFT PLASTIC COVERS FOR PLIERS

Table 1: 612-20084-1 Tool Kit

3.3 Pneumatic Schematic

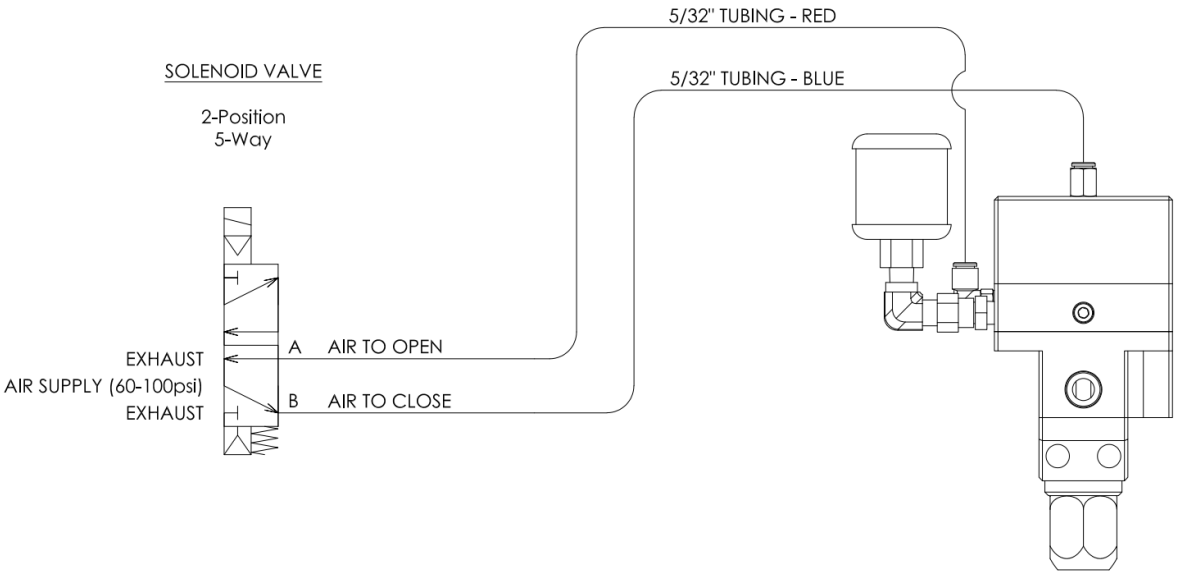

Figure 2: PCC250 Pneumatic Schematic

4. Operation

The sections that follow are in the recommended order to operate the valve. To operate the valve, complete the steps below in the order shown.

4.1 Setup

Refer to assembly drawings for reference numbers for your specific valve model.

1. Install the valve pneumatically as shown in Section 3.3.
2. Set the air pressure that operates the valve between 60-100 psi.
3. Cycle the valve several times. Make sure that the valve is not pointed at anyone.

When the valve cycles correctly, the rods and air piston can be heard actuating inside the valve.

NOTE: If the valve does not cycle correctly, refer to the Troubleshooting section.

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 manifold.
6. Continue to dispense until all the air is removed. Any break in the flow of the material shows there is still air in the system. Bleed the valve until all the air is released, and the material releases smoothly without any breaks in the flow.

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. Attach a static mixer to the manifold and use the retaining nut to lock it in place.

NOTE: Refer to the Troubleshooting section for any other problems.

4.2 Install the Static Mixer

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. Put the static mixer on the valve manifold as shown.

Figure 3: Static Mixer

2. Hold the static mixer on the manifold with your hand.
3. Use the purge function (in Manual mode) on the machine controller to purge material through the static mixer.
4. Continue to purge until the static mixer is fully filled with material.

Figure 4: Fill the Static Mixer

5. Once purged, the trapped air must be released from the top of the static mixer. Pull the static mixer straight down, off the valve manifold, so there is a small space between the static mixer and the manifold.
6. Use the purge function on the machine controller to purge material until it overflows from the top of the static mixer. Let all air release from the top of the static mixer.
7. Push the static mixer firmly back on the manifold.

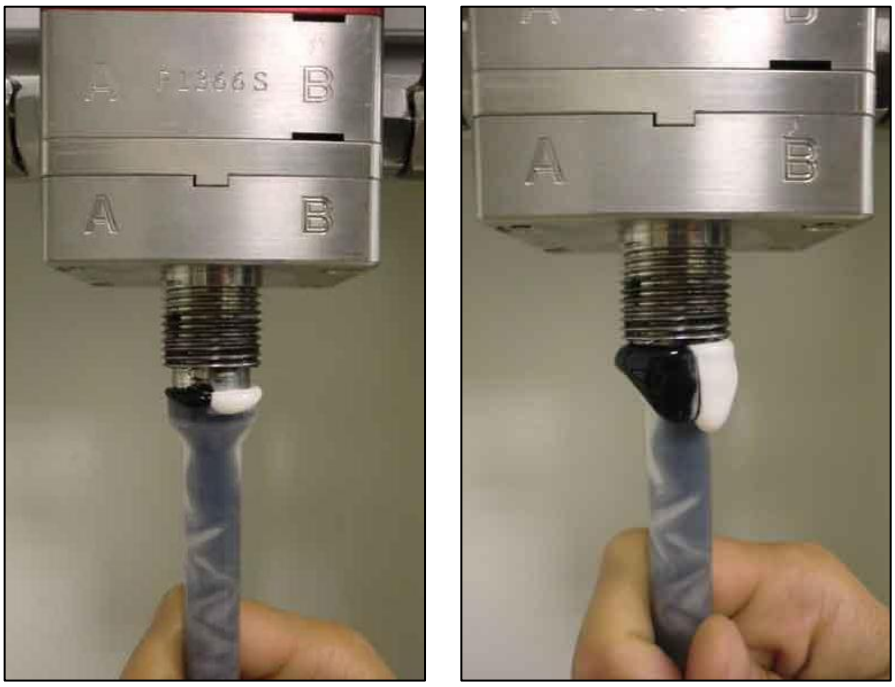

Figure 5: Purge the Static Mixer

8. Clean the material completely off of the static mixer and valve.
9. Put the static mixer retaining nut on and use a wrench to tighten.
10. Install the desired needle on the end of the static mixer if necessary.
11. Use the purge function on the machine controller to purge material through the static mixer. Purge the volume of the static mixer to fill it with fresh material.
12. Push and release the purge button. Examine the static mixer for drips after the material has dispensed.
13. If it continues to drip, do steps 3-12 again. Drips from the tip of the static mixer are caused by air that is trapped inside.
14. If the static mixer does not drip, the valve is ready to dispense.

4.3 Shutdown

To keep the PCC250 valve in good condition do these steps at the end of each day:

1. Remove the static mixer.
2. Purge fresh material through the valve until both material streams are completely clean and have no cross-contamination.
3. Clean all material off the manifold nozzle.
4. Put a night cap (PVA part number 214-3832) on the manifold nozzle.
5. Release the pressure in the system, refer to the workcell manual.

NOTE: Refer to Sections Error! Reference source not found. **for part reference numbers.**

5. Maintenance

Prior to performing maintenance on the valve, ensure you have a spare parts kit. If any parts are worn or damaged, replace them.

5.1 Disassembly

This section shows how to disassemble the PCC250. If you have questions about procedure steps, parts, or content, contact PVA's Technical Support. Refer to the assembly drawings for reference numbers for your specific valve model.

1. Remove all material and pneumatic lines from the valve. The valve should be placed on a suitable work surface for maintenance.
2. Remove the two M5 sealing bolts on the side of the valve. Throat seal will begin to come out. Empty as much throat seal from the oilers as possible. Remove oilers if desired.

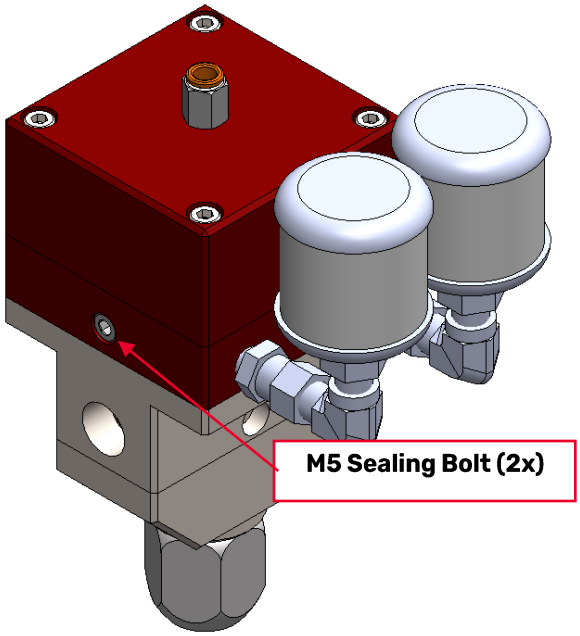

Figure 6: Remove M5 Sealing Bolts

3. Once the throat seal empties, remove the four bolts from the air cylinder. Twist and pull to remove the air cylinder from the valve.
4. Pull the air piston straight up and out of the valve.

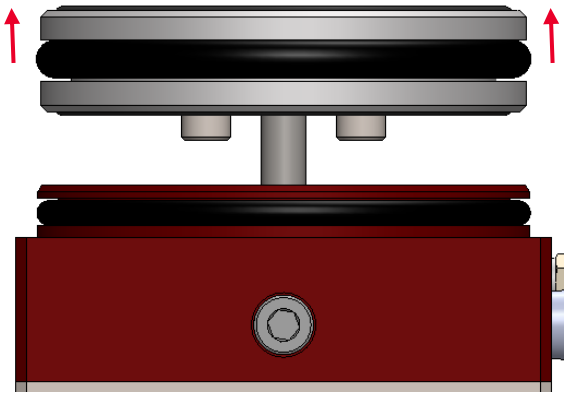

Figure 7: Pull Air Piston from Valve

5. Remove the 4 seal retainer bolts from the lower air body. Remove the sleeves and O-ring seals that are below them.

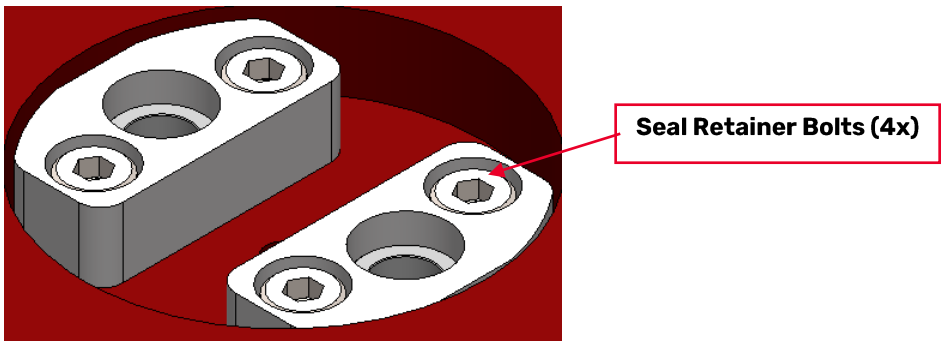

Figure 8: Remove Seal Retainer Bolts

6. The lower air block and oiler assembly can now be lifted from the valve.

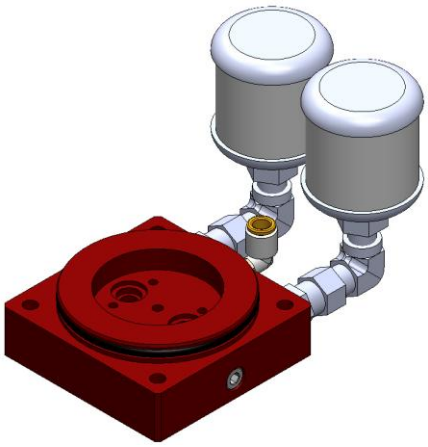

Figure 9: Lower Air Block and Oil Assembly

7. Flip the fluid section (stainless steel) over and remove the large retaining nut, threaded wide ratio insert (if applicable) and the 4 bolts holding the manifold.

The seats may come out with this part. Remove them from the manifold.

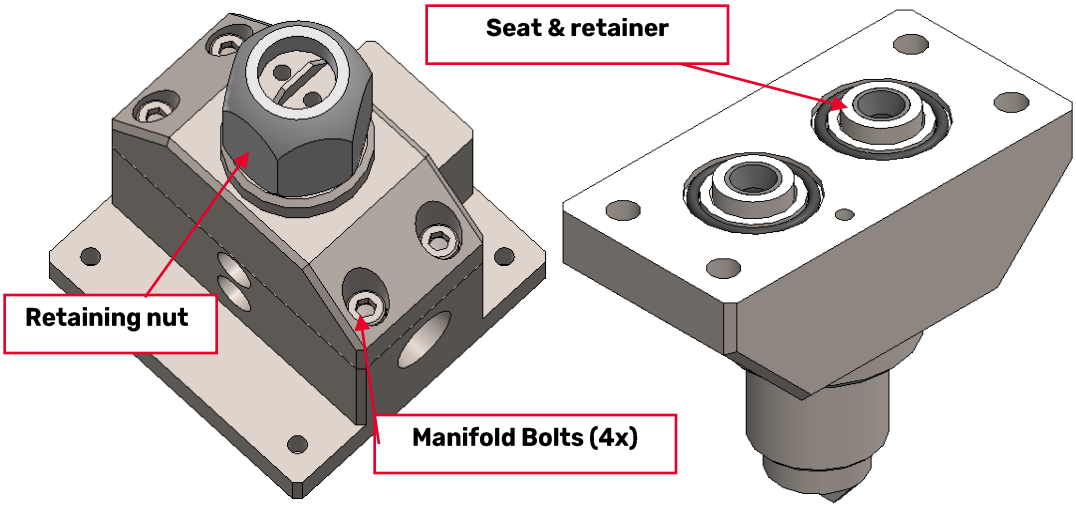

Figure 10: Disassemble Fluid Section

8. Remove the two Teflon bushings from the fluid body. Take caution when removing. Avoid scratching inside bore.

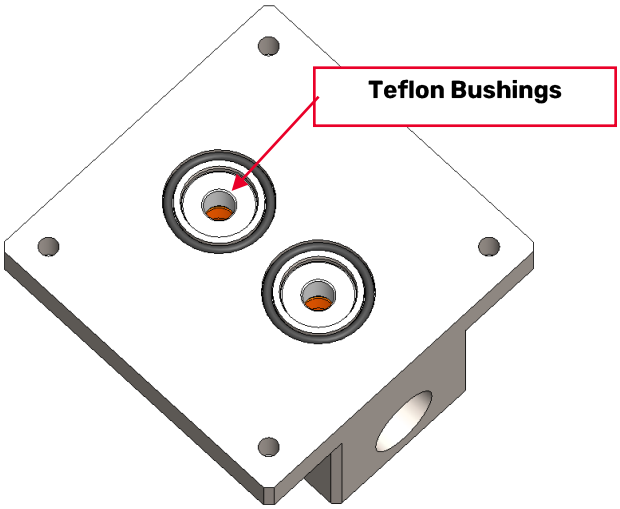

Figure 11: Remove Bushings from Fluid Body

9. If the lip seals are being replaced, remove them with a pick from the fluid body. If the seals are in good condition, they can be left in the fluid body.
10. The valve is fully disassembled and can be cleaned.

5.2 Cleaning

5.2.1 Air section

1. Remove all O-rings from the air piston and lower the air body. Remove any grease from inside the grooves. Replace the O-rings as needed.
2. Wipe down the bore of the air cylinder and air piston itself.

5.2.2 Fluid Section

3. Using a cotton swab or similar item, clean all material from inside the fluid body and manifold.
4. Wipe down the carbide seats and rods.

5.3 Assemble the Valve

This section assumes the valve has been fully cleaned and all seals/O-rings, and wear items have been replaced.

5.3.1 Air Section

1. Install two (2) -142 Buna O-rings into the top and bottom of the air piston and one (1) -332 Buna O-ring into the side of the air piston.
2. Apply O-ring lubricant to the larger -332 O-ring.

Figure 12: Install O-Rings

3. Install carbide rods into the air piston retainer slot.

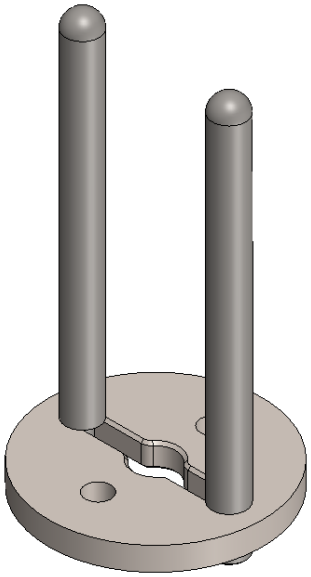

Figure 13: Install Carbide Rods

4. Place the retainer and rod assembly into the underside of the air piston. Apply blue Loctite on the bolts and tighten.

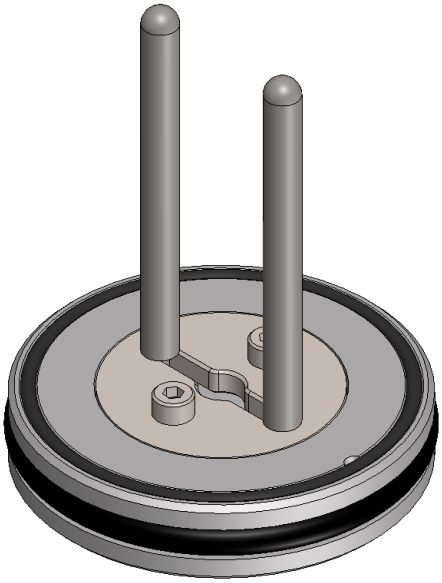

Figure 14: Air Piston Underside

5. Install both sealing bolts. Place the -010 O-rings into the bore of the lower air body. Apply O-ring lubricant. Place sleeve bushing above the o-ring

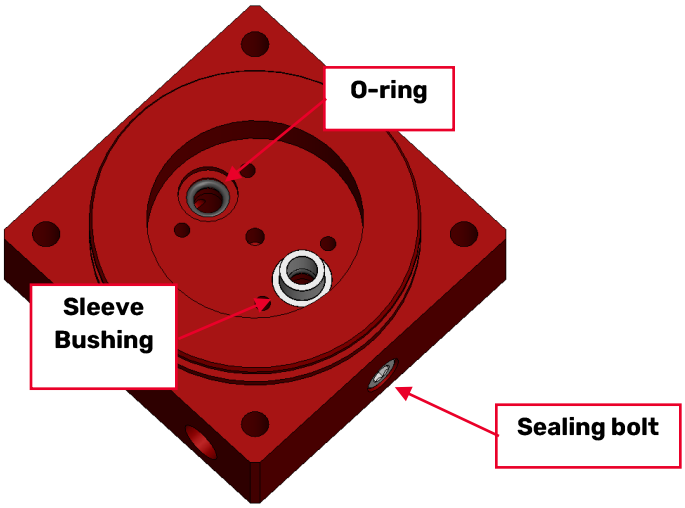

Figure 15: Install Sealing Bolts

6. Place both seal retainers into the air body. Apply Loctite to all 4 bolts and tighten.

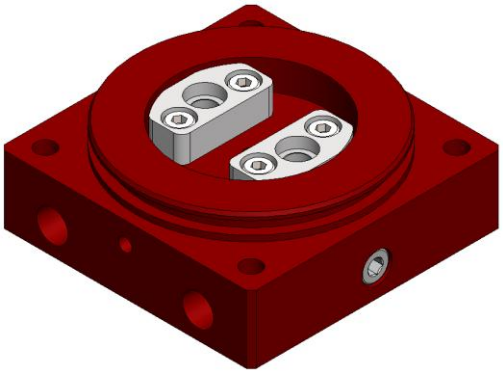

Figure 16: Install Seal Retainers

7. Install the -230 Buna O-ring into the groove. Apply O-ring lubricant.

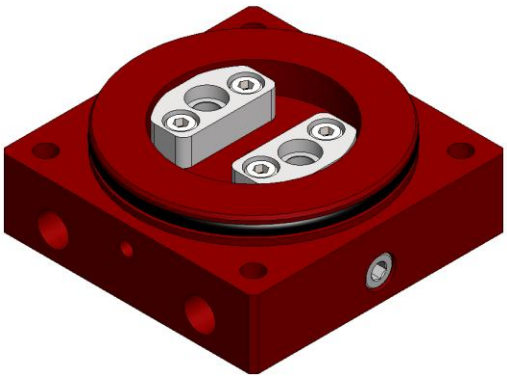

Figure 17: Install O-Rings

8. Insert the rod assembly into the lower air body. Push the piston down until it bottoms out.

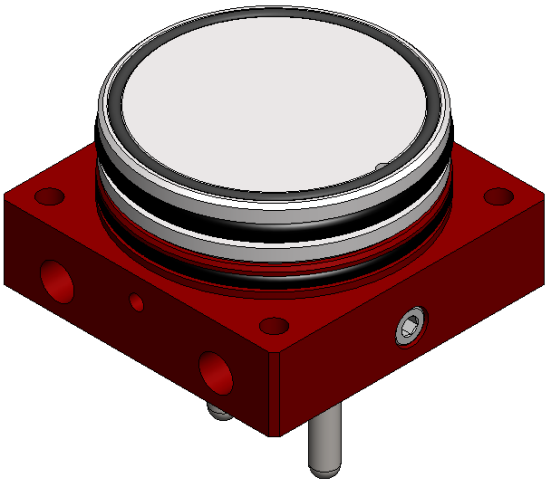

Figure 18: Install Rod Assembly

9. Install the air cylinder onto the air piston. Slide down until it bottoms out.

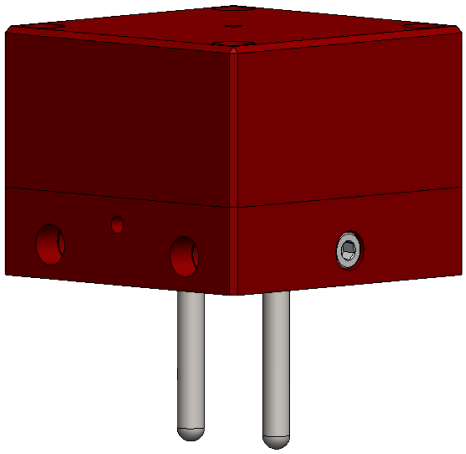

Figure 19: Install Air Cylinder to Air Piston

5.3.2 Fluid Section

1. Apply O-ring lubricant to the chamfer inside the bore of the fluid body.
2. Place lip seal into bore and press in until it bottoms out. The O-ring faces down.

NOTE: If you have a Kalrez valve, the O-ring inside the lip seal must be replaced with a Kalrez version.

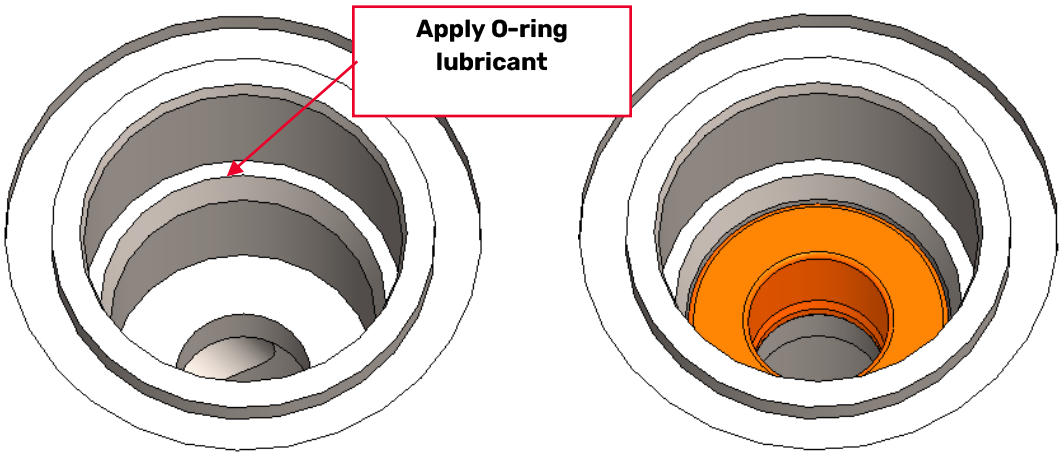

Figure 20: Install Lip Seal

3. Place Teflon bushing on top of lip seal. Ensure the side with the step faces down, toward the seal.

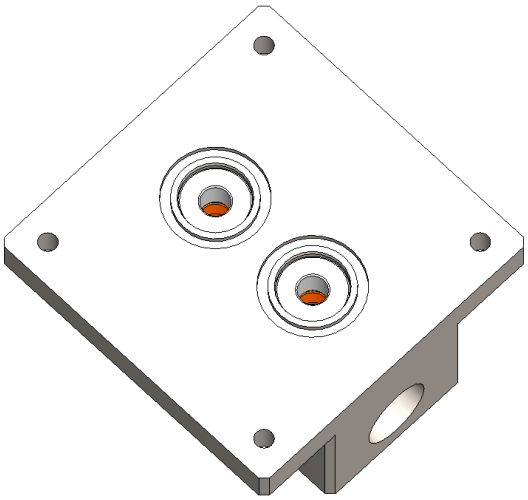

Figure 21: Install Teflon Bushing

4. Install the -012 O-ring into the seat retainers. Apply O-ring lubricant for the next step.

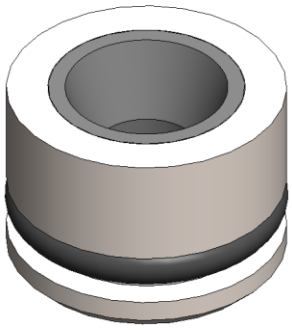

Figure 22: Install O-Ring into Seat Retainers

5. Install both seat retainers into the manifold. Install -017 O-rings in the groove around the seats. Apply O-ring lubricant.

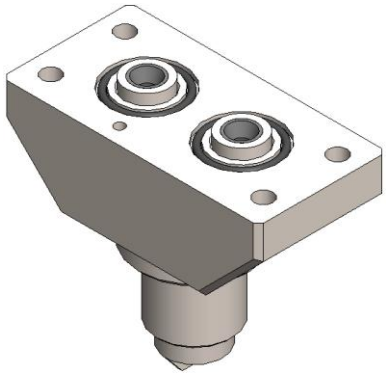

Figure 23: Install Seat Retainers into Manifold

6. Join the manifold assembly and fluid body. Tighten all 4 bolts.
7. If applicable to your application, install the wide ratio insert.

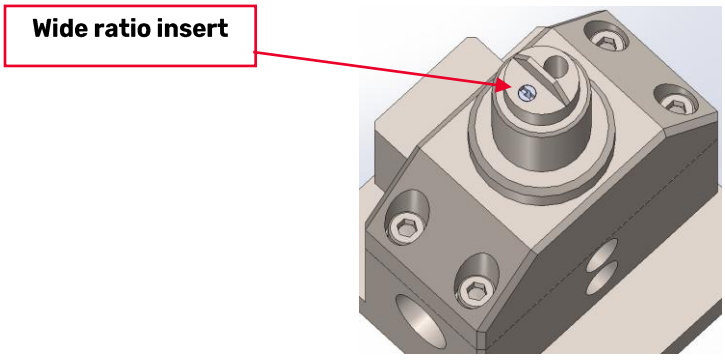

Figure 24: Install Wide Ratio Insert

5.3.3 Assembly

1. Join both the air and fluid subassemblies together. Ensure there are no gaps between machined surfaces.

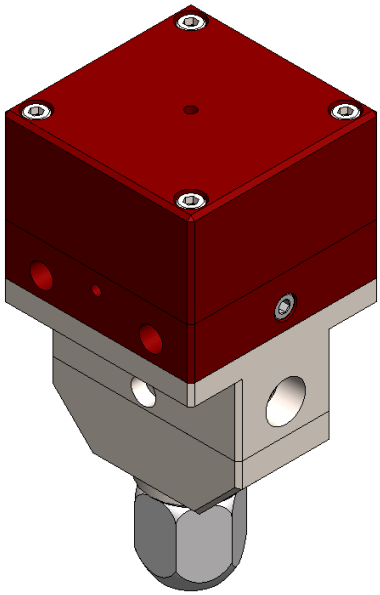

Figure 25: Connect Air and Fluid Assemblies

2. Prior to using the valve, make sure to refill the oilers with throat seal.

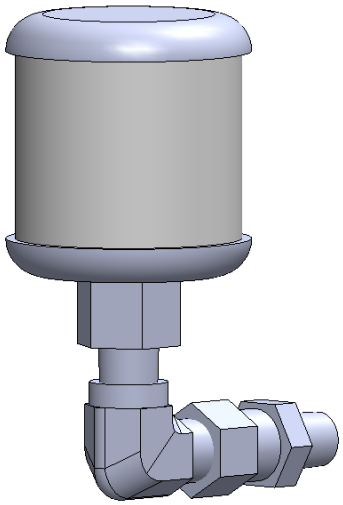

Figure 26: Refill Oilers with Throat Seal

6. Periodic Maintenance

NOTE: Before you do maintenance on the valve, make sure you have a spare parts kit. If any parts are worn or damaged, replace them.

6.1 Daily

1. Remove the static mixer at the end of each shift and/or day.
    a. Purge the valve until clean, unmixed material flows through both sides of the manifold.
    b. Clean the manifold nozzle completely. Install a static mixer or night cap at the end of the day.
2. Examine outlets for cured material.
3. Examine the valve for fluid and air pressure leaks.
4. Examine the valve for proper cycling (open and close). Repair as necessary.
5. Examine throat seal level and cleanliness, refill/replace as needed.

6.2 Weekly

Examine the valve for signs of excessive wear and leaks. Have spare lip seals & O-ring kits on hand for a partial valve rebuild if necessary.

6.3 Yearly

Completely disassemble the valve and examine for wear on the carbide rod and seat components. Ensure to have spare part kits available for full valve rebuild (PVA PN 612-20077). See spare parts kits section for more information.

6.4 Drawings

6.4.1 Mechanical View

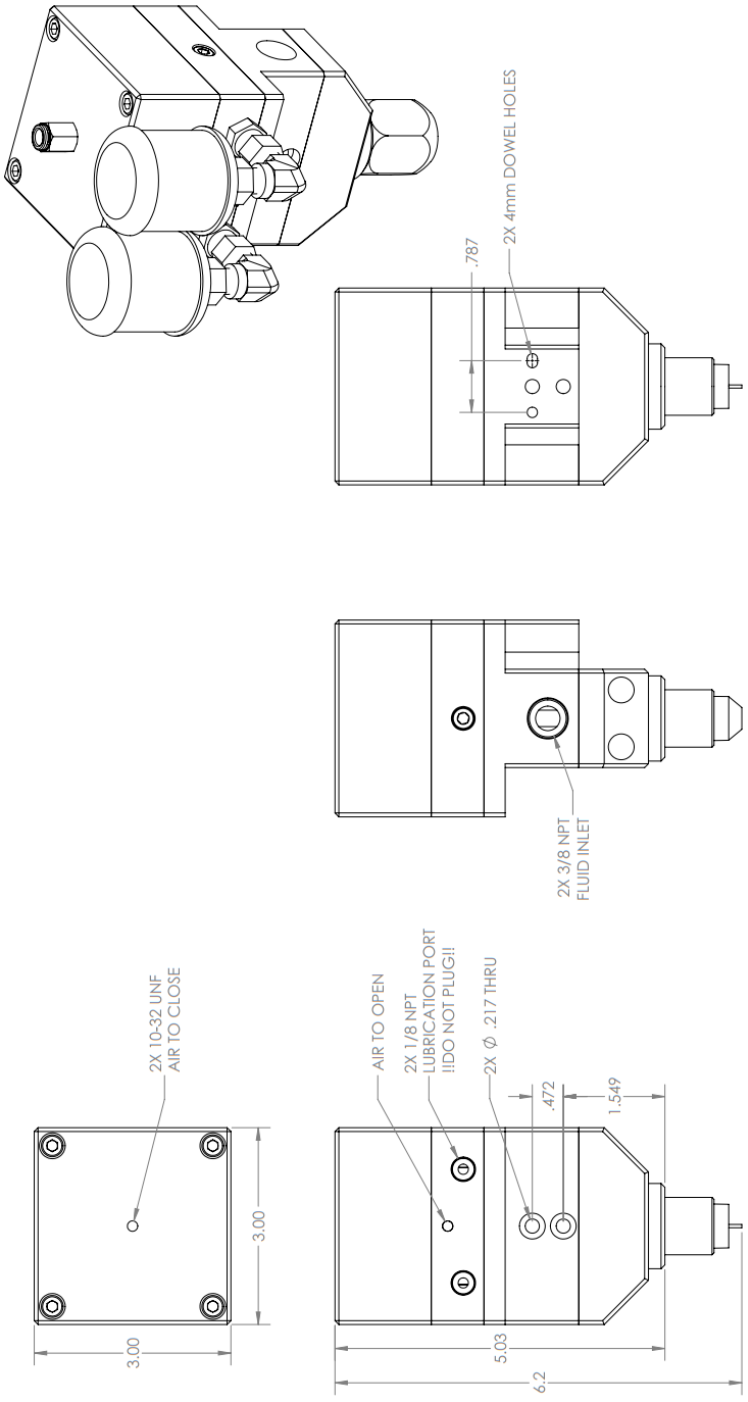

Figure 27: PCC250 Mechanical View

6.4.2 Exploded View

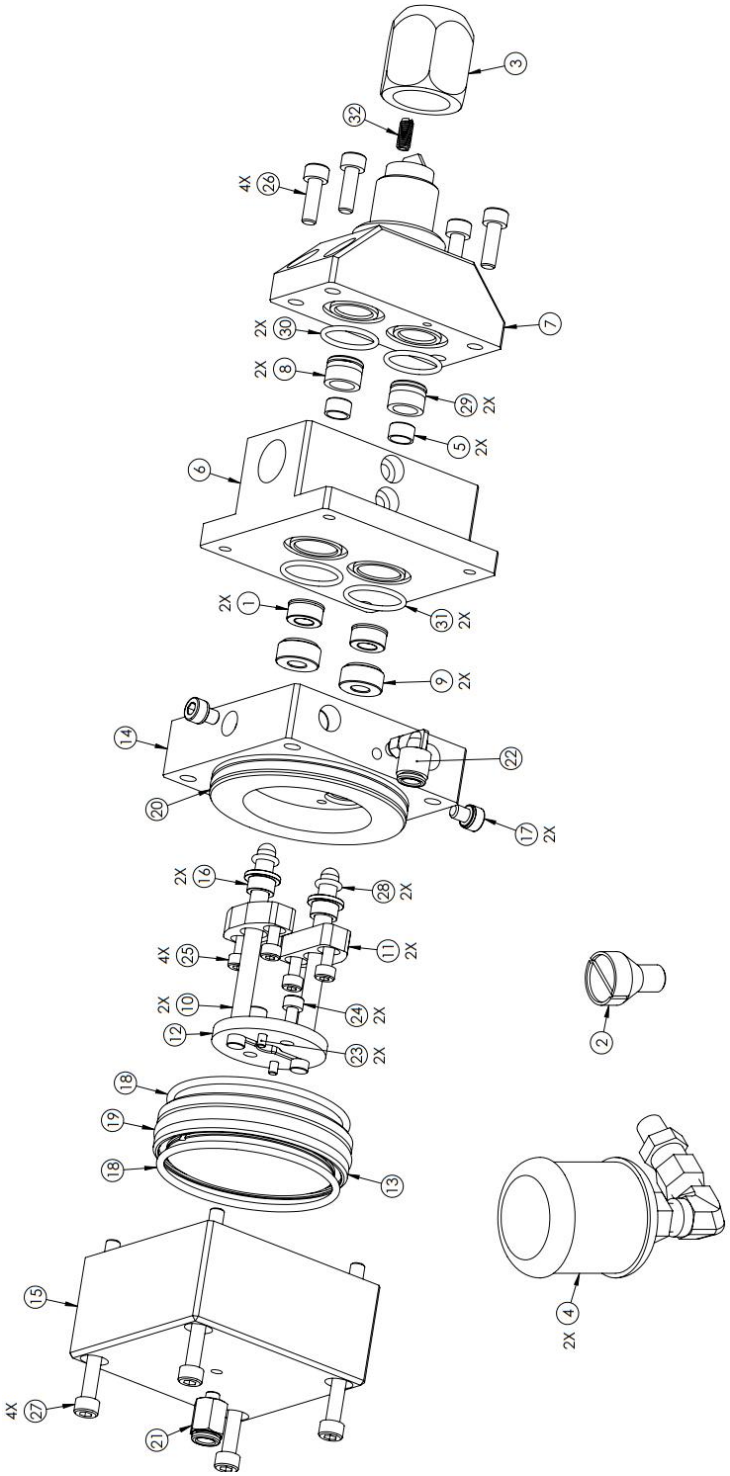

Figure 28: PCC250 Exploded View

6.5 PCC250 Bill of Materials

ITEM	PART NUMBER	DESCRIPTION
1	12806	POLYMYTE SEAL, VITON O-RING
2	214-3832	PC200/100 NIGHT CAP
3	214-3833	RETAINING NUT
4	612-4160-1	SB300 OILER ASSEMBLY
5	614-13825-1	CARBIDE SEAT, FCC150
6	614-31863-1	FLUID BODY, PCC250
7	614-31872-2	MANIFOLD, PCC250, WIDE RATIO
8	614-31873-1	REPLACEABLE SEAT INSERT, PCC250
9	614-31876-1	LIP SEAL BUSHING, PCC250
10	614-32342-1	PCC250 ROD, CARBIDE
11	614-32870-1	SEAL RETAINER, LOWER AIR BODY, PCC250
12	614-32936-1	AIR PISTON RETAINER, PCC250
13	614-32937-1	AIR PISTON, PCC250
14	614-33173-1	LOWER AIR BODY, PCC250
15	614-33175-1	UPPER AIR BODY, PCC250
16	6338K411	FLANGED SLEEVE BEARING, FOR 1/4" SHAFT, OIL-EMBEDDED BRONZE
17	90042A464	SEALING BOLT, M5x0.8 X 6mm LENGTH
18	9452K148	O-RING, -142, BUNA-N
19	9452K52	O-RING, -332, BUNA-N
20	9452K69	O-RING, -230, BUNA-N
21	KQ2H07-32N	AIR FITTING, MALE CONNECTOR, 1/4" TUBE X #10-32
22	KQ2L07-32A	AIR FITTING, MALE ELBOW, 1/4" TUBE X #10-32
23	PIN 3 x 8mm	DOWEL PIN, 3 x 8mm
24	SHCS M4x0.7 X 10	SOCKET HEAD CAP SCREW
25	SHCS M4x0.7 X 12	SOCKET HEAD CAP SCREW
26	SHCS M5x0.8 X 16	SOCKET HEAD CAP SCREW
27	SHCS M5x0.8 X 60	SOCKET HEAD CAP SCREW
28	VLV-010V	O-RING, -010, VITON
29	VLV-012V	O-RING, -012, VITON
30	VLV-017V	O-RING, -017, VITON
31	VLV-018V	O-RING, -018, VITON
32	ZLC-2-10/32-SS	CHECK VALVE, #10/32 THREAD, 2PSI CRACKING PRESSURE, SS

Table 2: PCC250 Bill of Materials

6.6 Accessories and Options

Item	Part Number	Description
1.	114-0557-W	Ratio Cap, UHMW
2.	214-3832	Night Cap
3.	XMLRL-1	Fitting, #10-32 x Male Luer
4.	214-3833	Retaining Nut, Standard Mixer
5.	KJL07-32	Fitting, One Touch, 1/4" Tube
6.	AS1201F-U10/32-	Fitting, One Touch, Speed Control, 1/4" Tube
7.	B62-2048	2.5cc Syringe - Silicone Lubricant for Seals

Table 3: PCC250 Accessories & Options

6.7 Spare Parts Kit

Spare parts kit 612-20077-x contains the parts shown below.

Note: Depending on valve configuration, spare parts kit can differ slightly.

612-20077-1: NARROW RATIO, VITON

612-20077-2: NARROW RATIO, KALREZ

612-20077-3: WIDE RATIO, VITON

612-20077-4: WIDE RATIO, KALREZ

QTY	PART NUMBER	DESCRIPTION
2	614-13825-1	CARBIDE SEAT, FCC150
2	614-31873-1	REPLACEABLE SEAT INSERT, PCC250
2	VLV-012V	O-RING, -012, VITON
2	VLV-017V	O-RING, -017, VITON
2	VLV-018V	O-RING, -018, VITON
2	VLV-010V	O-RING, -010, VITON
2	12806	POLYMYTE SEAL, VITON O-RING
1	9452K69	O-RING, -230, BUNA-N
2	614-32342-1	PCC250 ROD, CARBIDE
1	9452K52	O-RING, -332, BUNA-N
2	9452K148	-142 BUNA O RING

Table 4: 612-20077-1 Spare Parts Kit

Contact PVA for information on replacement parts or to order.

6.8 Technical Specifications

Weight	Approximately 96oz (6lb)
Material inlets	3/8 NPT
Air ports	#10-32 UNRF
Operating Air Pressure	60 – 100 psi
Maximum Fluid Pressure	4000 psi
Viscosity Range	Viscous Liquid to Paste

Table 5: Technical Specifications

7. Troubleshooting

Troubleshooting Problem	Possible Cause	Corrective Action
Valve Does Not Cycle	• Air pressure to air section is too low • Material is cured in the valve, or the material fill is packed up • Valve was assembled without lubricating the O-rings	• Increase the air pressure to 60-100 psi • Disassemble and clean valve • Disassemble valve, lubricate O-rings and assemble again
Material Drips From Static Mixer Tip	• Air trapped in the valve or static mixer	• Bleed valve until air is removed, refer to the procedure in Section 4.2
Air Bubbles In Fluid	• Valve not correctly bled • Problem with fluid delivery system	• Bleed the valve until the air is removed • Diagnose and repair
No Flow From Valve	• Manifold is blocked • The valve does not cycle • Static mixer is plugged • Problem with material supply	• Remove 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	• The seats are worn • Valve is not cycling completely	• Examine seats for wear, replace as necessary • Disassemble and clean the valve
Cross-Contamination in Manifold Nozzle	• Valve was bled with the static mixer installed	• Bleed the valve without a static mixer, install a static mixer when material flows from both ports
Seals Fail Rapidly	• Seals are not compatible with material or solvent	• Contact PVA for alternative seal options

Valve Has Air Leak	• O-rings in air cylinder section are worn or incorrectly installed	• Replace air cylinder section O-rings
Valve Leaks at Separation Block	• Lip seals are defective or worn • Valve rods are defective or worn • Sleeve bearings are worn	• Examine and replace lip seals • Examine and replace valve rods • Examine and replace sleeve bearings
Material Does Not Cure	• Mix ratio is incorrect • Material not sufficiently mixed	• Do ratio checks at manifold and adjust metering system as necessary • Use a static mixer with sufficient mixing elements – consult material manufacturer or PVA

Table 6: Troubleshooting

8. Table of Figures

8.1 Tables

8.2 Figures

9. 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: _____

10. Notes