



Posipump™ PC1 Series Progressive Cavity Valve Operating Manual

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OVERVIEW



PosiPump™ PC1-050 Progressive Cavity Valve

The PosiPump™ PC1 Progressive Cavity Valve offers true volumetric dispensing in order to achieve exceptional levels of repeatability.

A proven endless piston design principle ensures a constant volume is always dispensed, regardless of any changes in fluid viscosity, thixotropy, or fluid inlet pressure.

Bi-rotational control ensures a drip free dispense cycle thanks to an infinitely adjustable suck back.

Dispense volume as small as 0.005 ml per revolution
Constant volumetric and pressure-stable dispense system
Low pulsation and shear
High dispense accuracy and repeatability
FFKM Stator Material
Long service life
No dripping/drooling after dispense cycle
Suitable for both low and high viscosity fluids
Prevents damage to fillers in filled fluid materials
Compatible with abrasive or filled materials
High level of process control

SPECIFICATION

Item	PC1-005	PC1-010	PC1-050	PC1-150	PC1-300
Dosing Volume/Rev	0.005 ml	0.013 ml	0.059 ml	0.163 ml	0.304 ml
Motor Speed	1 – 150 rpm				
Max. Flow Rate*	0.75 ml/min	1.95 ml/min	8.85 ml/min	24.4 ml/min	45.6 ml/min
Fluid Input Pressure	1 – 100 psi				
Fluid Viscosity Range	1 – 500,000 cPs				
Rotor Material	Ceramic				
Stator Material	FFKM				
Fluid Inlet & Outlet Material	AL6082 (Hard Anodized)				
Seal Material	PTFE				
O-Ring Material	FFKM				
Fluid Inlet Thread	1/4" NPT				
Weight	450 g (0.99 lbs)	450 g (0.99 lbs)	480 g (1.06 lbs)	630 g (1.39 lbs)	660 g (1.46 lbs)

* Max. flow rate based on 63 cPs fluid @ 150 rpm. Higher viscosity fluids must be run at reduced rpm.

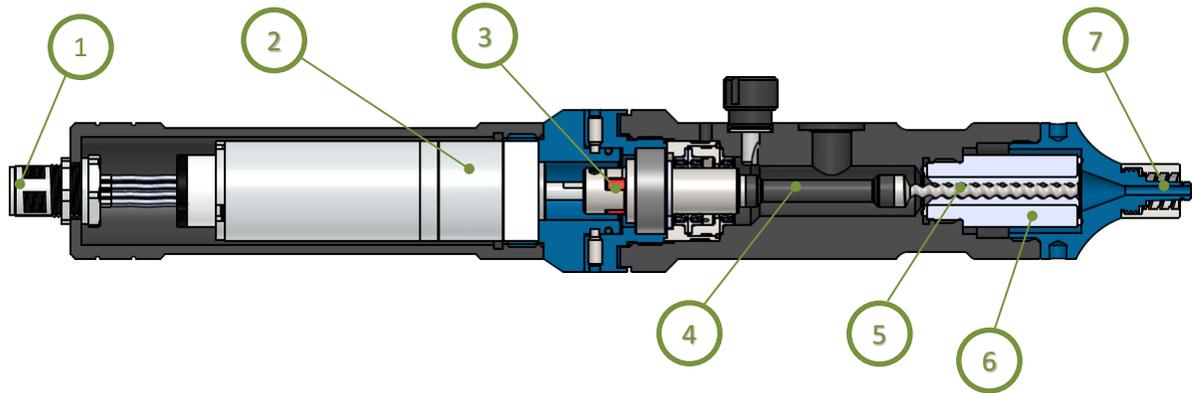
ACCESSORIES

Item	Description	Quantity
871-1124	1/4" NPT Fluid Inlet Fitting	1
232-6017	Fluid Inlet Fitting Seal	1
5801451	Fluid Inlet Fitting – Female Luer Lock x 1/4" NPT Male	1
561105	Street Elbow – 1/4" NPT	1
560714-BLACK	Fluid Inlet Fitting – Elbow 1/4" O.D. Tube x 1/4" NPT Male	1
560715-BLACK	Fluid Inlet Fitting – Elbow 3/8" O.D. Tube x 1/4" NPT Male	1
560743-10FT	PE Tubing 1/4" O.D. x 0.170" I.D. Tubing - Black	1
560744-10FT	PE Tubing 3/8" O.D. x 1/4" I.D. Tubing - Black	1
QK-NSK	Dispense Tip Sample Kit	1
PC1-TOOL-SW	C Spanner	1
PC1-TOOL-PIN	Pin	1
562357	Hex Key – 1.5mm	1

OPTIONAL ACCESSORIES

Item	Description
562361U	<p style="text-align: center;">Valve Stand</p> 
5601807U	<p style="text-align: center;">Robot Valve Mounting Bracket Assembly <i>(fasteners included)</i></p> 
0401-08-002261	<p style="text-align: center;">Valve Mounting Bracket <i>(fasteners included)</i></p> 

VALVE OPERATION



The Posipump™ PC1 is a progressive cavity valve intending for dispensing single component (1K) fluid materials. It is capable of dispensing both low viscosity and high viscosity fluids. Its unique design makes it ideal for dispensing shear sensitive and/or abrasive fluids.

When an electrical signal is applied into the input connector (1), the motor (2) will actuate and rotate. This causes the rotor assembly (4) to rotate inside the stator (6). The rotor (5) seals tightly against the flexible rubber inside the stator (6) as it rotates, forming tightly sealed cavities, which carry the liquid towards and out of the fluid outlet (7). The positive displacement effect of the progressive cavity design allows fluid material to not change in shape or size while it is being dispensed at a very predictable and steady rate.

The amount of fluid material dispensed from the valve is based on the below attributes of the dispense system,

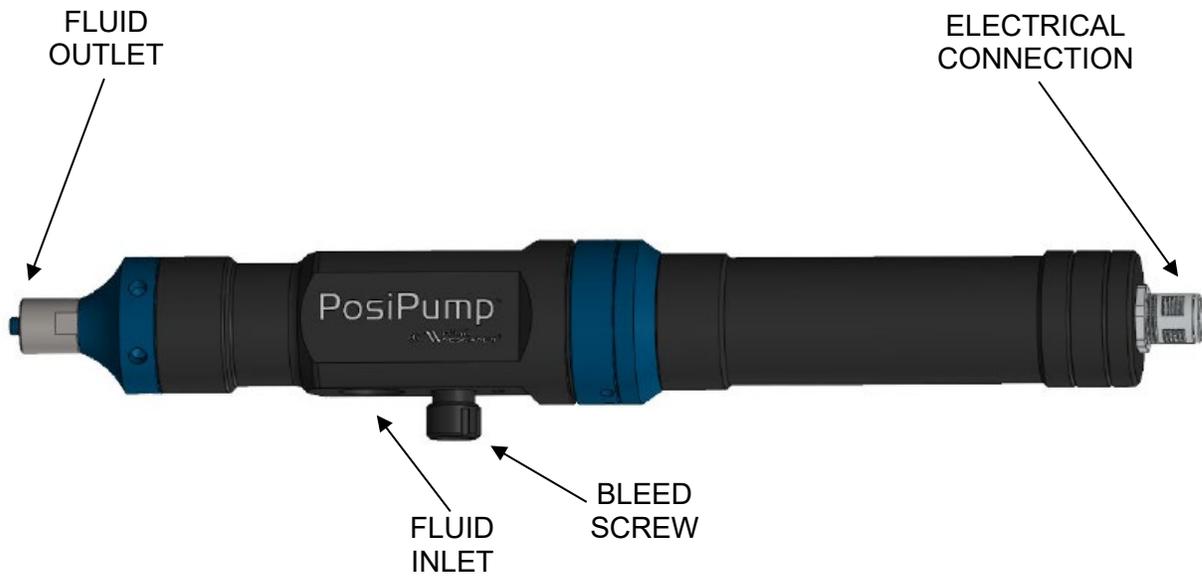
- Valve Dispense Time
- Rotation Speed
- Pump Size
- Tip Size



The valve should never be operated dry! The pump must always be supplied with fluid material, as this acts as the lubricant between the sealing surfaces of the stator and rotor to maintain consistent and long-term performance.

The valve cannot be operated with water.

DISPENSE SETUP



1.	<p>When using a PC200 MAX valve controller, connect the valve connecting cable (#PC1-CABLE or #PC1-CABLE-16 (sold separately)) between the electrical connector port on the top of the valve and the “Pump 1” or “Pump 2” connector port on the back panel of the PC200 MAX controller.</p> <p style="color: red;">When connecting the Posipump™ PC1 series progressive cavity valve to the machine it is recommended to connect valve connecting cable into pump 1 connector.</p>
2.	<p>Connect a length of ¼” OD pneumatic tubing between the “Fluid Pressure 1” port on the back of the machine and the air inlet port of the connected fluid feed system to be pressurized.</p> <p>If a Fisnar QuantX syringe barrel is being used as the fluid feed system to the valve, then a standard Fisnar syringe barrel adapter head assembly can be used as the compressed air connection between the syringe barrel and “Fluid Air Out” port on the back of the controller.</p>
3.	<p>Connect ¼” OD fluid tubing (#560743-10FT) between the fluid outlet of the fluid feed system and the fluid inlet fitting on the valve, using one of the provided compression fittings (#560714-BLACK or #560715-BLACK).</p> <p>If a Fisnar QuantX syringe barrel is being used as the fluid feed system to the dispense valve, then an 1/8” luer lock elbow fitting (#561821-BLACK) can be used to connect the syringe barrel directly to the valve.</p>

4.	Switch on the PC200 MAX controller and set the machine mode to “CONTINUOUS”.
5.	Set the shot speed to a value between 30-60 rpm. Note, the slower the rpm value, the slower the fluid flow rate will be.
6.	Slowly increase the fluid pressure by rotating the pressure regulator clockwise on the front of the PC200 MAX valve controller. (Do not exceed a max pressure of 70psi 4.8 Bar)
7.	<p>Press and hold the shot button on the front panel of the PC200 MAX valve controller until fluid begins to dispense out of the fluid outlet of the valve.</p> <p>When fluid is consistently flowing out of the fluid outlet of the valve release the shot button.</p> <p>If no fluid is dispensed out of the valve after approx. 1 minute, release the shot button. The below steps can then be carried out, and the valve actuated again.</p> <ol style="list-style-type: none"> a) Increase shot speed. b) Increase fluid pressure. <p>If fluid is still not dispensed out of the valve, contact your local sales representative.</p>
8.	<p>To ensure no air bubbles/pockets are inside the fluid body, which may affect the dispensing performance, it is recommended to bleed/vent the valve.</p> <p>Please refer to the “Valve Bleeding” section of the manual and follow the most appropriate option based on your application setup.</p>
9.	<p>Attach a suitable dispense tip to the dispense valve.</p> <p>Note:- A lower gauge number (larger I.D.) dispense tip will dispense a larger diameter dot or bead width. A higher gauge number (smaller I.D.) dispense tip will dispense a smaller diameter dot or bead width.</p>
10.	<p>Use the below parameters to achieve the necessary settings for the dispensing application.</p> <ol style="list-style-type: none"> 1.) Adjust the shot speed on the PC200 MAX valve controller to achieve the required flow rate. 2.) Adjust the fluid pressure of the fluid feed system to ensure the valve is not allowed to cavitate, due to fluid flow rate output being greater than fluid flow rate input. 3.) Adjust the shot time on the PC200 MAX valve controller to set the desired time that fluid material will be dispensed, to achieve the required fluid volume. 4.) Select the correct dispense tip size to optimize the dispense dot or bead size.
	<i>Please refer to the valve controller and fluid feed system operating manuals, to fully understand safety and operation guidelines of the complete dispense system.</i>

OPTIONAL TUBING & FITTINGS

Hose

	Item Number	Description	Material / Color
	5801060-10FT	1/4" O.D. x 0.160" I.D. Tubing	Polyurethane / Clear
	561415-IJ-10FT	1/4" O.D. x 0.170" I.D. Tubing	Polyethylene / Natural
	560722-10FT	1/4" O.D. x 0.188" I.D. Tubing	PTFE / Natural
	561416-10FT	3/8" O.D. x 1/4" I.D. Tubing	Polyethylene / Natural
	562385	1/2" O.D. x 0.33" I.D. Tubing	Polyurethane / Blue

Fittings

	560748	1/4" O.D. Tube x 1/4" NPT Elbow Compression Fitting	Nylon / Natural
	560656	1/4" O.D. Tube x 1/4" NPT Straight Compression Fitting	Nylon / Natural
	914	1/4" O.D. Tube x 1/4" NPT Elbow Compression Fitting	Nylon / Natural
	913	3/8" O.D. Tube x 1/4" NPT Straight Compression Fitting	Nylon / Natural
	561821	Female Luer Lock x 1/8" NPT Elbow Fitting	Polypropylene / Natural
	560656-BLACK	1/4" O.D. Tube x 1/4" NPT Straight Compression Fitting	Polypropylene / Black
	913-BLACK	3/8" O.D. Tube x 1/4" NPT Straight Compression Fitting	Polypropylene / Black
	562384	1/2" O.D. Tube x 1/4" NPT Straight Compression Fitting	Polypropylene / Black
	561085N-BLACK	Female Luer Lock x 5/32" I.D. Straight Barb Fitting	Nylon / Black
	561086N-BLACK	Male Luer Lock x 5/32" I.D. Straight Barb Fitting	Nylon / Black

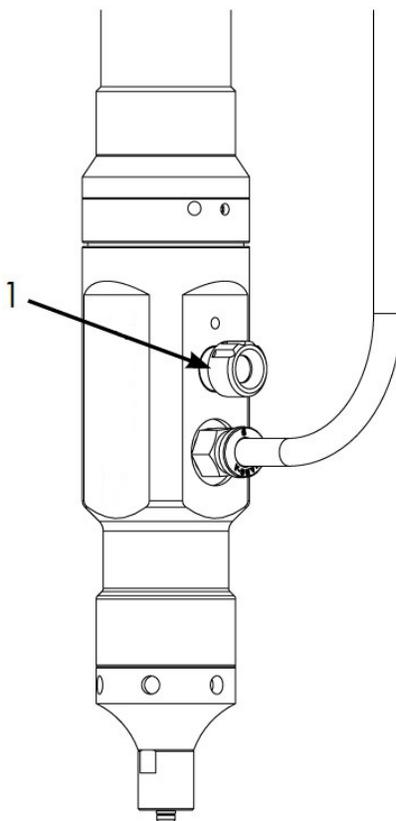
OPTIONAL TUBING & FITTINGS

Fluid Manifolds

	Item Number	Description	Material / Color
	560542-1/4	4 Port Fluid Manifold 1/4" O.D. Tube	Acetal / Black
	560542-3/8	4 Port Fluid Manifold 3/8" O.D. Tube	Acetal / Black
	560542LL	4 Port Fluid Manifold Luer Lock	Acetal / Black

BLEEDING

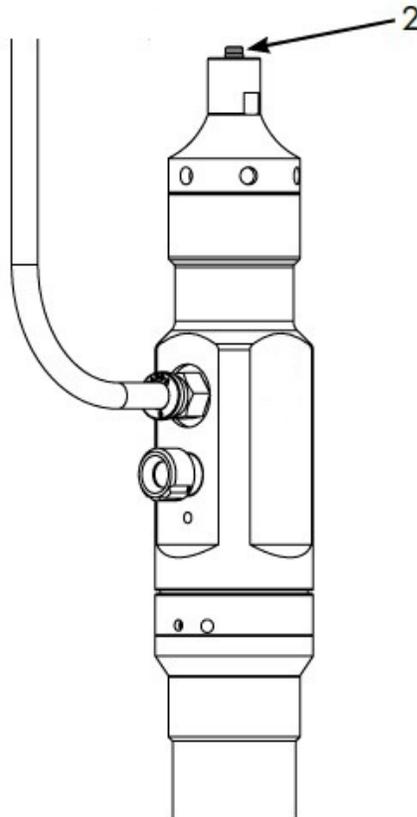
Option 1



1.	Position the valve so that the fluid outlet is pointing downwards.
2.	Ensure the fluid feed system has been correctly pressurized according to the “Dispense Setup” procedure.
3.	Slowly loosen the bleed screw (1) counterclockwise until fluid material exits.
4.	Continue to allow fluid material to exit the venting screw (1) until no air bubbles/pockets are visible.
5.	Tighten the venting screw (1) clockwise to prevent fluid material from exiting.
6.	Safely remove any residual fluid material from around the area of the bleed screw (1).

BLEEDING

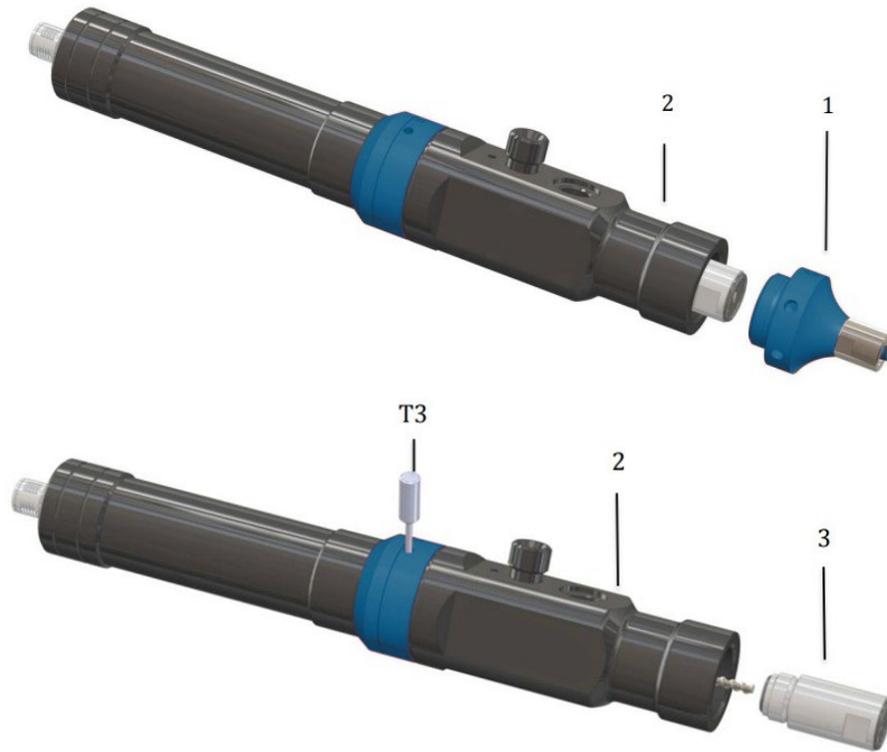
Option 2



1.	Position the valve so that the fluid outlet (2) is pointing upwards.
2.	Ensure the fluid feed system has been correctly pressurized according to the “Dispense Setup” procedure.
3.	Actuate the valve to begin dispensing fluid material out of the fluid outlet (2) of the valve.
4.	Stop the valve when fluid material is seen continuously flowing out of the fluid outlet (2) of the valve without any visible sign of air bubbles/pockets,
5.	Safely remove any residual fluid material from around the area of the fluid outlet (2) of the valve.

MAINTENANCE

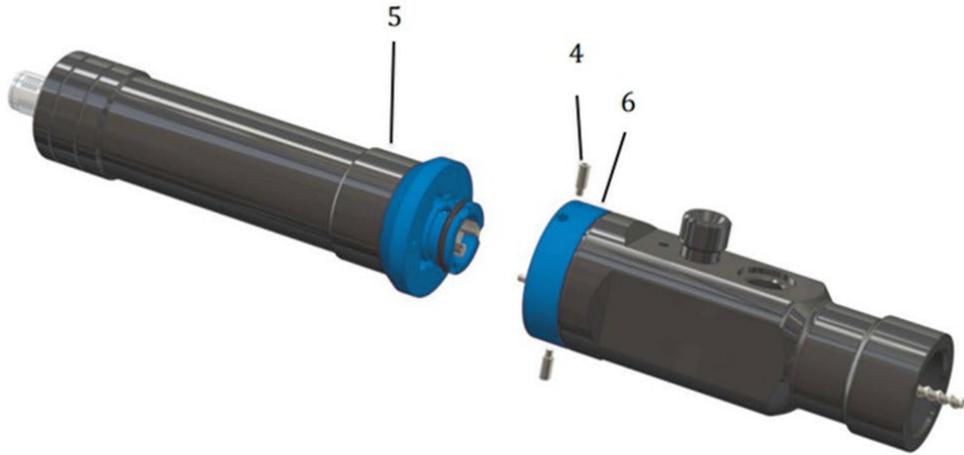
Stator



1.	Disconnect the valve from the electrical cable assembly.
2.	Unscrew the fluid outlet body (1) from the main fluid inlet pump housing (2) using the provided C Spanner.
3.	Remove the stator (3) by rotating it counterclockwise using a 14mm wrench. After the stator has been unscrewed from the thread of the fluid inlet pump housing (2), insert the provided locking pin tool (T3) into the indicated hole to prevent the rotor assembly from rotating.
4.	Continue to rotate the stator (3) in a counterclockwise direction until it has been fully unwound from the rotor assembly.
5.	Lubricate the inside of the new stator with a mineral or silicone based oil, depending on the application fluid material being dispensed.
6.	Install the new stator onto the rotor assembly by rotating it clockwise by hand, until the front face of the stator is in slight contact with the thread of the fluid inlet pump housing (2).
7.	Remove the locking pin tool (T3) and continue to screw the stator into the fluid inlet pump housing (2) in a clockwise direction using a 14mm wrench until it is fully tightened in place.

MAINTENANCE

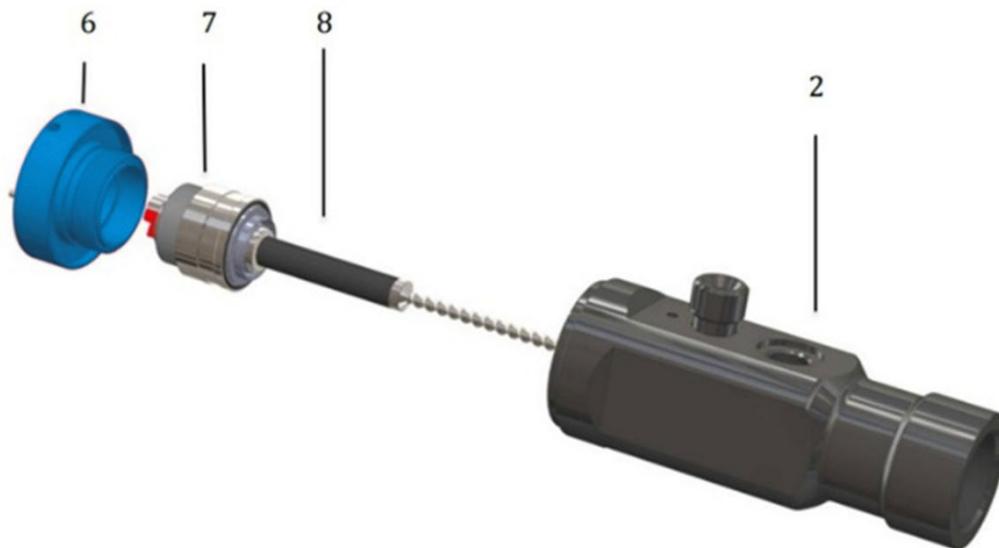
Motor Assembly



- | | |
|----|---|
| 1. | Use a 1.5mm hex key to remove the grub screws (4) from the motor mounting flange (6). |
| 2. | Remove the motor assembly (5) from the motor mounting flange (6) by pulling it backwards by hand. |

Maintenance

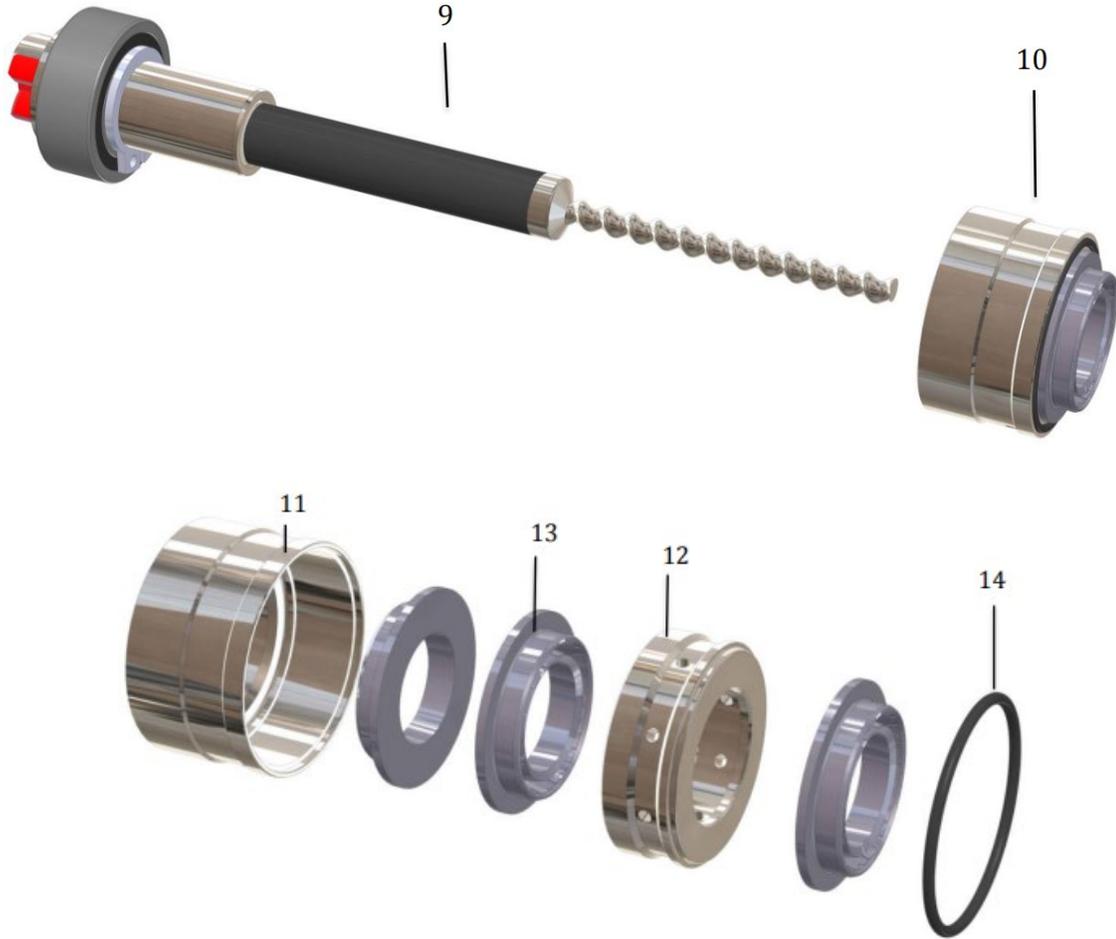
Rotor Assembly



1. Unscrew the motor mounting flange (6) from the fluid inlet pump housing (2).
2. Remove the seal kit (7) with the rotor assembly (8) from the fluid inlet pump housing (2), by pulling it backwards by hand.

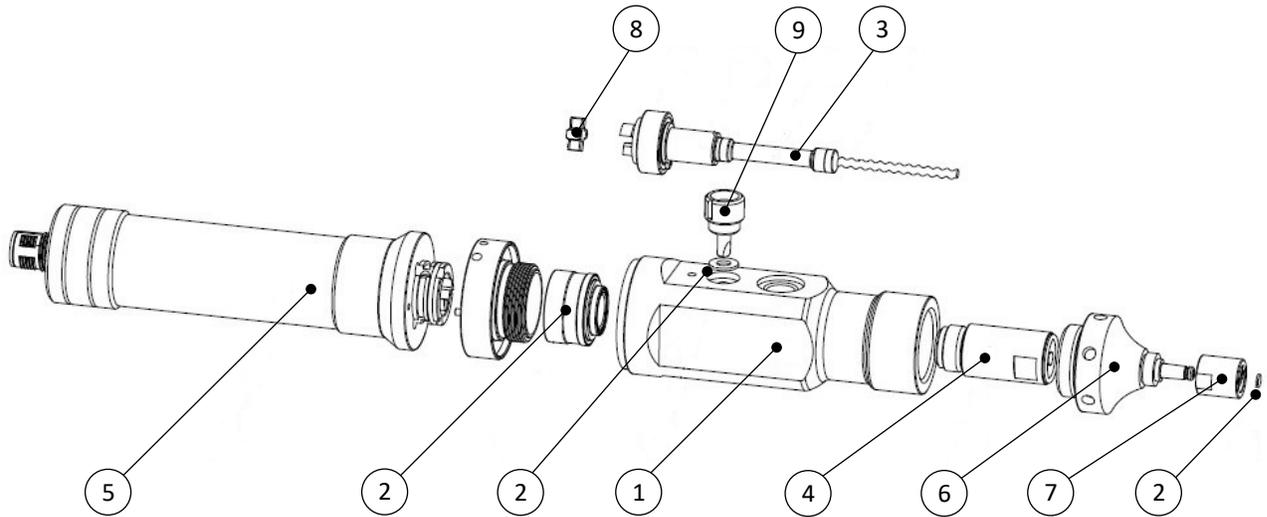
Maintenance

Seal Kit



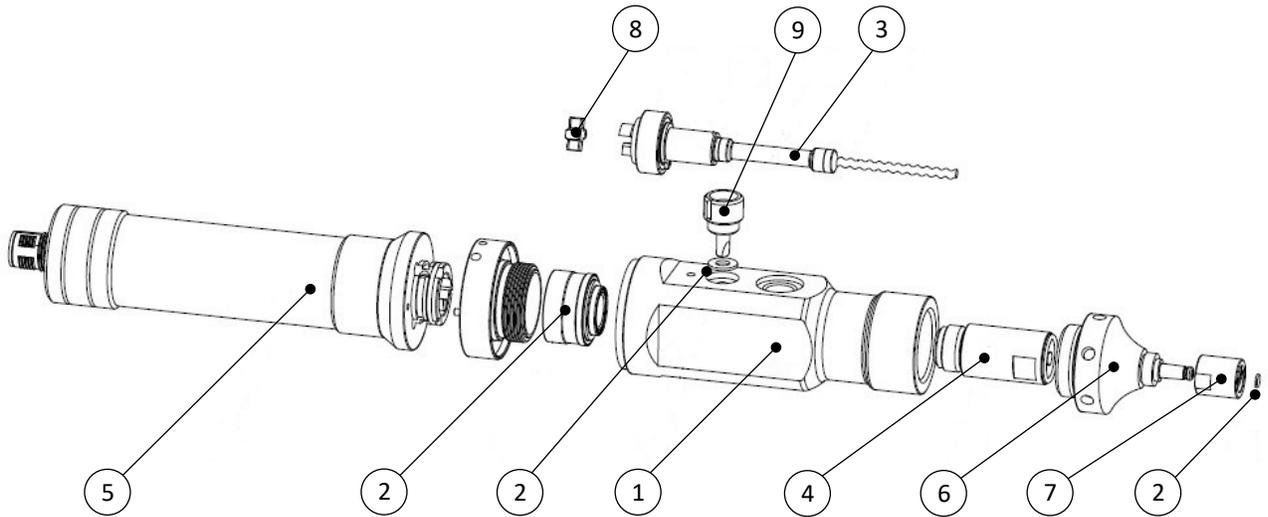
1. Remove the seal kit (10) from the rotor assembly (9), by pulling it forwards over the auger screw by hand.
2. The replacement seal kit consists of, sealing seat (11), sealing support (12), radial shaft seal (13) and O-Ring (14).

SPARE PARTS LIST – PC1-005



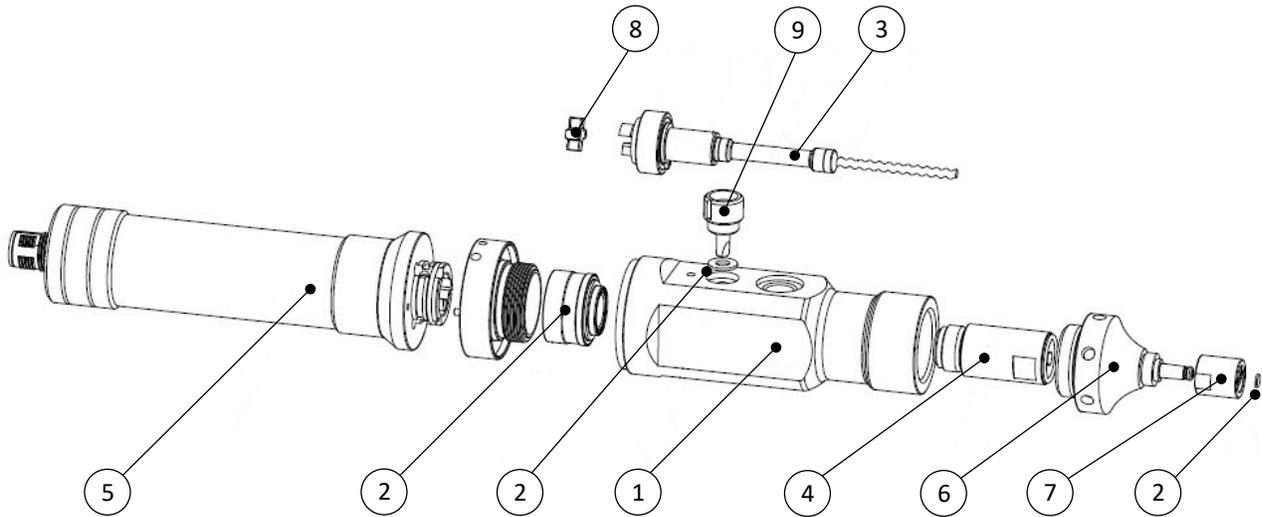
Ref.	Item Number	Description
1	PC1-SPARE-1	Pump Housing
2	PCSB-KIT	Seal Kit
3	PCR-005	Rotor Assembly
4	PCS-005	Stator
5	PC1-SPARE-MOTORASSY	Motor Assembly
6	PC1-SPARE-7	Luer Connector
7	PC1-SPARE-8	Luer Fitting
8	PC1-SPARE-9	Sprocket
9	PC1-SPARE-12	BleedScrew

SPARE PARTS LIST – PC1-010



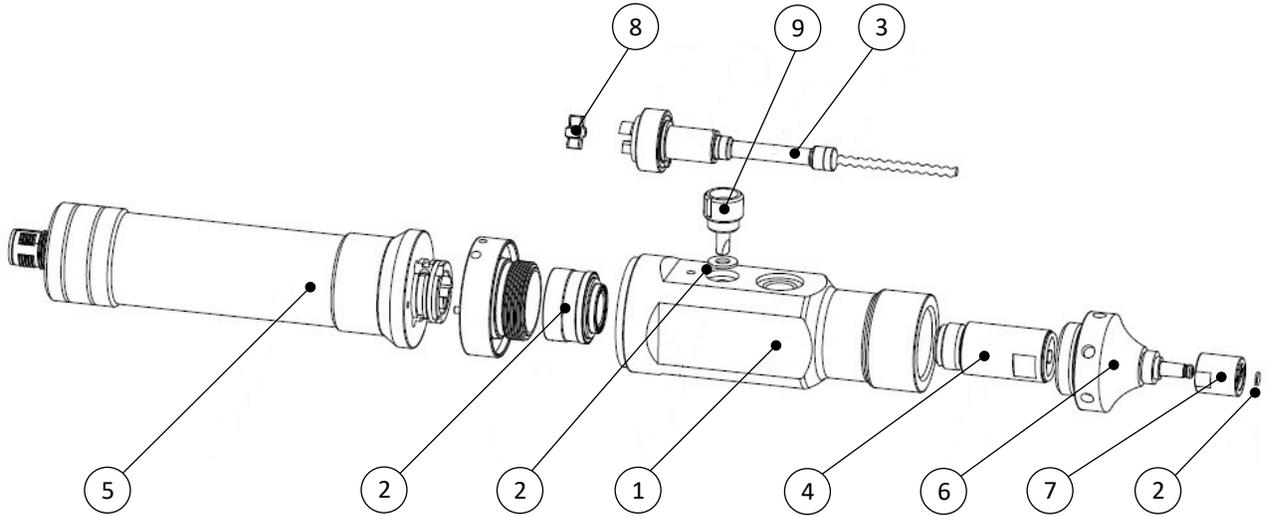
Ref.	Item Number	Description
1	PC1-SPARE-1	Pump Housing
2	PCSB-KIT	Seal Kit
3	PCR-010	Rotor Assembly
4	PCS-010	Stator
5	PC1-SPARE-MOTORASSY	Motor Assembly
6	PC1-SPARE-7	Luer Connector
7	PC1-SPARE-8	Luer Fitting
8	PC1-SPARE-9	Sprocket
9	PC1-SPARE-12	BleedScrew

SPARE PARTS LIST – PC1-050



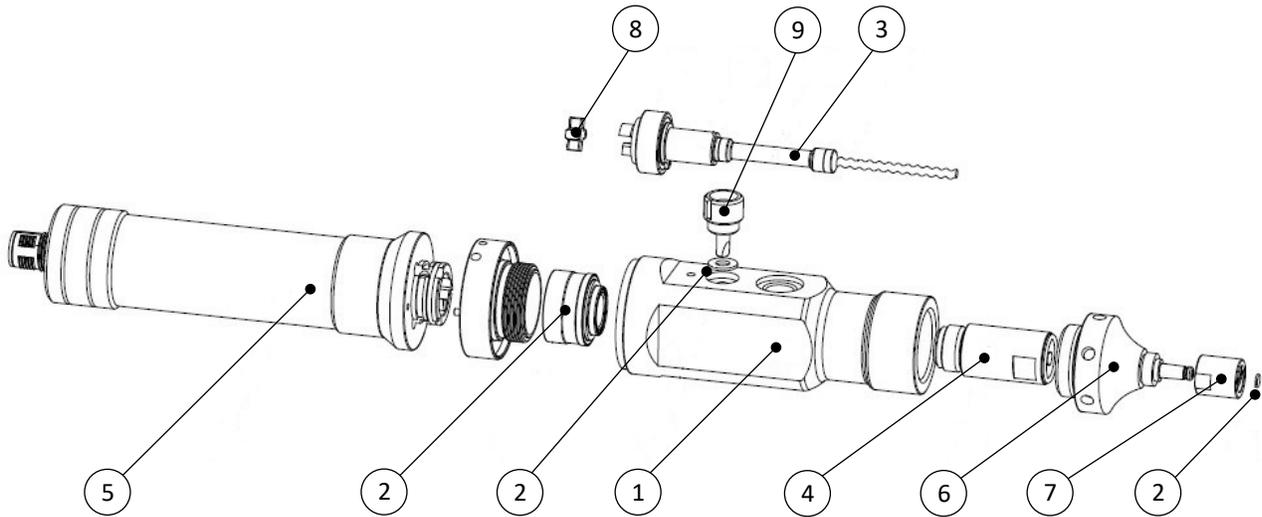
Ref.	Item Number	Description
1	PC1-SPARE-1	Pump Housing
2	PCSB-KIT	Seal Kit
3	PCR-050	Rotor Assembly
4	PCS-050	Stator
5	PC1-SPARE-MOTORASSY	Motor Assembly
6	PC1-SPARE-7	Luer Connector
7	PC1-SPARE-8	Luer Fitting
8	PC1-SPARE-9	Sprocket
9	PC1-SPARE-12	BleedScrew

SPARE PARTS LIST – PC1-150



Ref.	Item Number	Description
1	PC1-SPARE-1	Pump Housing
2	PCSB-KIT	Seal Kit
3	PCR-150	Rotor Assembly
4	PCS-150	Stator
5	PC1-SPARE-MOTORASSY	Motor Assembly
6	PC1-SPARE-7	Luer Connector
7	PC1-SPARE-8	Luer Fitting
8	PC1-SPARE-9	Sprocket
9	PC1-SPARE-12	BleedScrew

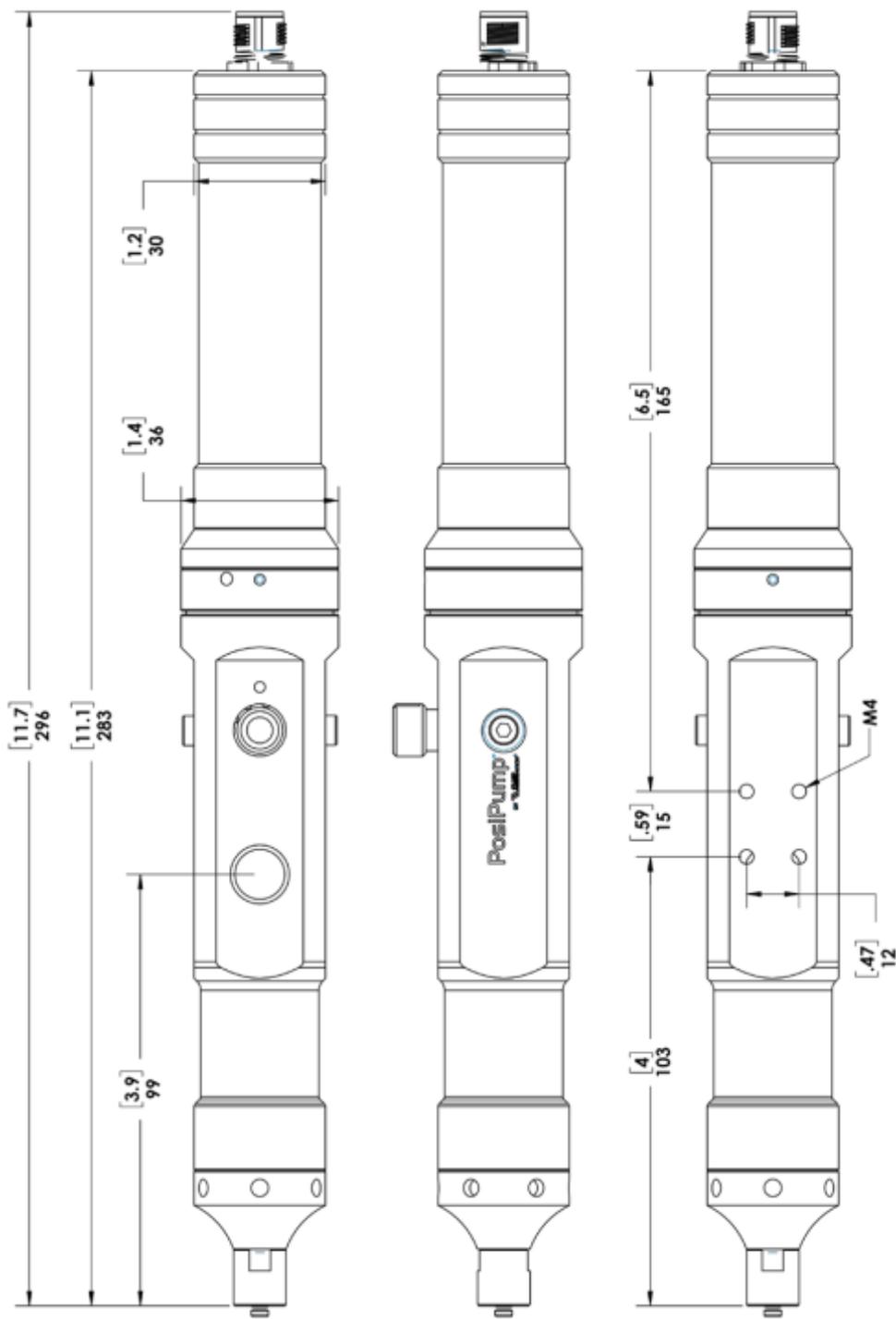
SPARE PARTS LIST – PC1-300



Ref.	Item Number	Description
1	PC1-SPARE-1	Pump Housing
2	PCSB-KIT	Seal Kit
3	PCR-300	Rotor Assembly
4	PCS-300	Stator
5	PC1-SPARE-MOTORASSY	Motor Assembly
6	PC1-SPARE-7	Luer Connector
7	PC1-SPARE-8	Luer Fitting
8	PC1-SPARE-9	Sprocket
9	PC1-SPARE-12	BleedScrew

TECHNICAL DRAWING

PC1-150 / PC1-300



TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
No Fluid Flow	<ul style="list-style-type: none"> - Fluid pressure too low - Motor rpm too slow - Dispense tip blocked - Fluid cured inside stator 	<ul style="list-style-type: none"> - Increase fluid pressure - Increase motor speed (rpm) - Replace dispense tip - Replace stator
Fluid Drools after valve closes but then stops	<ul style="list-style-type: none"> - Air trapped inside dispense tip or fluid body 	<ul style="list-style-type: none"> - Bleed valve
Fluid Drips Continuously	<ul style="list-style-type: none"> - Worn Stator - Worn Rotor - Valve reassembled incorrectly. 	<ul style="list-style-type: none"> - Replace Stator - Replace Rotor - Check and follow the maintenance procedure correctly.
Fluid Leaking between fluid body and motor coupling	<ul style="list-style-type: none"> - Worn seals 	<ul style="list-style-type: none"> - Install new seal kit

Notes

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LIMITED WARRANTY

Manufacturer warrants this product to the original purchaser for a period of one (1) year from the date of purchase to be free from defects in material and workmanship, but not against damages caused by misuse, negligence, accident, faulty installation, abrasion, corrosion or by not operating in accordance with factory recommendations and instructions. Manufacturer will repair or replace (at factory's option), free of charge, any component of the equipment thus found to be defective, upon prepaid return of the equipment to the factory during the warranty period of the equipment. In no event shall any liability or obligation of Manufacturer arising from this warranty exceed the purchase price of the equipment. **This warranty is valid only when 5 micron filtered air is used.** The manufacturer's written liability, as stated herein, cannot be altered or enlarged except by a written statement signed by an officer of the company. In no event shall manufacturer be liable for consequential or incidental damages. A return authorization is required prior to shipping a defective machine to the factory.

Manufacturer reserves the right to make engineering or product modifications without notice.



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