Instructions - Parts

Python® XL Chemical Injection Pump

3A9514A

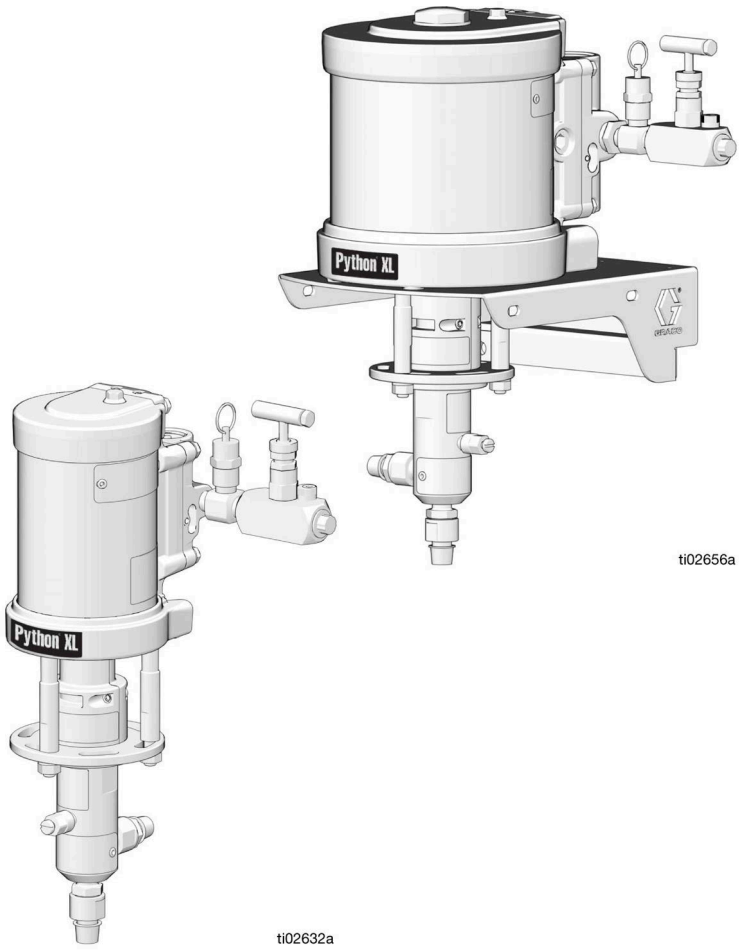
EN

For pneumatic pumps injecting chemicals at well sites. For use with compressed air or compressed natural gas (CNG) only. CNG power source is not allowed for explosive atmospheres. Not for use with sour gas. For professional use only.

See page 3 for model information, including maximum working pressure and approvals.

Important Safety Instructions

Read all warnings and instructions in this manual before using the equipment. Be familiar with the proper control and usage of the equipment. Save these instructions.



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II 2 G Ex h IIC T5 Gb
-40° ≤ Ta ≤ 80° C

PROVEN QUALITY. LEADING TECHNOLOGY.

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Models

Part	Configuration Number	Maximum Working Pressure psi (MPa, bar)	Maximum Pneumatic Inlet Pressure psi (MPa, bar)
2A25406	PCI-450-38-XBS-0	7250 (50, 500)	50 (0.34, 3.4)
2A25411	PCI-450-38-XCS-0		
2A25416	PCI-450-38-XDS-0		
2A25409	PCI-450-75-XBL-0	3600 (25, 248)	100 (0.7, 7)
2A25414	PCI-450-75-XCL-0		
2A25419	PCI-450-75-XDL-0		
2A25205	PCI-250-25-XBS-0	7250 (50, 500)	72 (0.5, 5)
2A25210	PCI-250-25-XCS-0		
2A25215	PCI-250-25-XDS-0		
2A25206	PCI-250-38-XBS-0	4450 (31, 307)	100 (0.7, 7)
2A25211	PCI-250-38-XCS-0		
2A25216	PCI-250-38-XDS-0		
2A25207	PCI-250-50-XBS-0	2500 (17, 172)	100 (0.7, 7)
2A25212	PCI-250-50-XCS-0		
2A25217	PCI-250-50-XDS-0		
2A25209	PCI-250-75-XBL-0	1100 (8, 76)	100 (0.7, 7)
2A25214	PCI-250-75-XCL-0		
2A25219	PCI-250-75-XDL-0		

Configuration Number Matrix

Check the identification plate (ID) for the 12-digit Configuration Number of your pump. Use the following matrix to define the components of your pump.

NOTE: Not all combinations are possible.

Sample Configuration Number: PCI-450-38-XBS-0

PCI	450	38	X	B	S	0
Pneumatic Chemical Injection	Pneumatic Motor Size	Plunger Size	Plunger Material	Seal Material	Small	Qualifier

Pump Configuration

Pneumatic Motor Size		Plunger Size		Plunger Material		Seal Material		Motor Adapter Size		Options	
250	2 1/2 in.	25	1/4 in. diameter	X	Chromex	B	FKMETP	S	Small	0	None
450	4 1/2 in.	38	3/8 in. diameter	S	Non coated SST	C	HNBR	L	Large	T	Tech 12 ceramic coating
		50	1/2 in. diameter	Z	Izory Rod	D	FFKM			S	Non coated SST Plunger
		75	3/4 in. diameter							ND	No drip

Lower Configuration

Check the identification plate (ID) for the 9-digit Configuration Number of your lower. Use the following matrix to define the components of your lower.

NOTE: Not all combinations are possible.

Sample Configuration Number: PCI-25-XBS-0

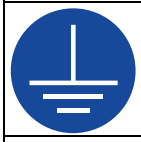
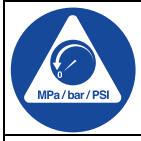
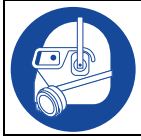
PCI	25	X	B	S	0
Pneumatic Chemical Injection	Plunger Size	Rod Coating Material	Pump Packaging and Material	Small	Qualifier

Plunger Size		Rod Coating Material		Pump Packing and Material Type		Motor Adapter Size		Options	
25	1/4 in. diameter	X	Chromex	B	FKMETP	S	Small	0	None
38	3/8 in. diameter	S	Non coated SST	C	HNBR	L	Large	T	Tech 12 ceramic coating
50	1/2 in. diameter	Z	Izory Rod	D	FFKM			S	Non coated SST Plunger
75	3/4 in. diameter							ND	No drip

Safety Symbols

The following safety symbols appear throughout this manual and on warning labels. Read the table below to understand what each symbol means.

Symbol	Meaning
	Equipment Misuse Hazard
	Fire and Explosion Hazard
	Moving Parts Hazard
	Skin Injection Hazard
	Skin Injection Hazard
	Splash Hazard
	Toxic Fluid or Fumes Hazard

Symbol	Meaning
	Do Not Place Hands or Other Body Parts Near Fluid Outlet
	Do Not Stop Leaks with Hand, Body, Glove or Rag
	Ground Equipment
	Read Manual
	Read Safety Data Sheet
	Follow Pressure Relief Procedure
	Wear Personal Protective Equipment

Safety Alert Symbol
This symbol indicates: Attention! Become Alert! Look for this symbol throughout the manual to indicate important safety messages.

General Warnings

The following warnings apply throughout this manual. Read, understand, and follow the warnings before using this equipment. Failure to follow these warnings can result in serious injury.

⚠WARNING


FIRE AND EXPLOSION HAZARD

When flammable fluids are present in the work area, such as gasoline and windshield wiper fluid, be aware that flammable fumes can ignite or explode. To help prevent fire and explosion:

- Use equipment only in well-ventilated area.
- Eliminate all ignition sources, such as cigarettes and portable electric lamps.
- Ground all equipment in the work area.
- Keep work area free of debris, including rags and spilled or open containers of solvent and gasoline.
- Do not plug or unplug power cords or turn lights on or off when flammable fumes are present.
- Use only grounded hoses.
- **Stop operation immediately** if static sparking occurs or you feel a shock**.** Do not use equipment until you identify and correct the problem.
- Keep a working fire extinguisher in the work area.





SKIN INJECTION HAZARD

High-pressure fluid from dispensing device, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. **Get immediate surgical treatment.**

- Do not point dispensing device at anyone or at any part of the body.
- Do not put your hand over the fluid outlet.
- Do not stop or deflect leaks with your hand, body, glove, or rag.
- Follow the **Pressure Relief Procedure** when you stop dispensing and before cleaning, checking, or servicing equipment.
- Tighten all fluid connections before operating the equipment.
- Check hoses and couplings daily. Replace worn or damaged parts immediately.

TOXIC FLUID OR FUMES HAZARD

Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.

- Read Safety Data Sheets (SDSs) to know the specific hazards of the fluids you are using.
- Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.

⚠WARNING

EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Specifications** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Specifications** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request Safety Data Sheets (SDSs) from distributor or retailer.
- Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.

PERSONAL PROTECTIVE EQUIPMENT

Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. Protective equipment includes but is not limited to:

- Protective eyewear, and hearing protection.
- Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.

Component Identification

The installation shown in FIG. 2 is only a guide for selecting and installing system components and accessories. Contact your Graco distributor for assistance in designing a system to meet your needs.

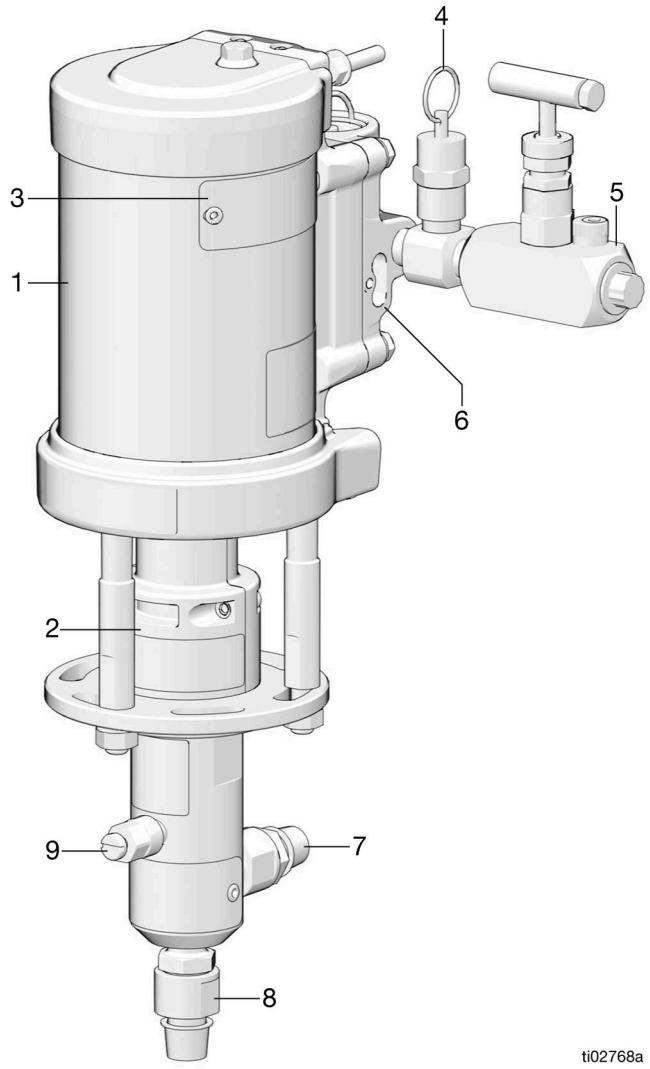


FIG. 1

Key:
1 Pneumatic Motor
2 Dust Shield
3 Pump PN Label
4 Safety Valve
5 Needle Valve
6 Pneumatic Valve
7 Outlet Check Valve
8 Inlet Check Valve
9 Primary Bleed Valve

Typical Installation

The installation shown in FIG. 2 is only a guide for selecting and installing system components and accessories. Contact your Graco distributor for assistance in designing a system to meet your needs.

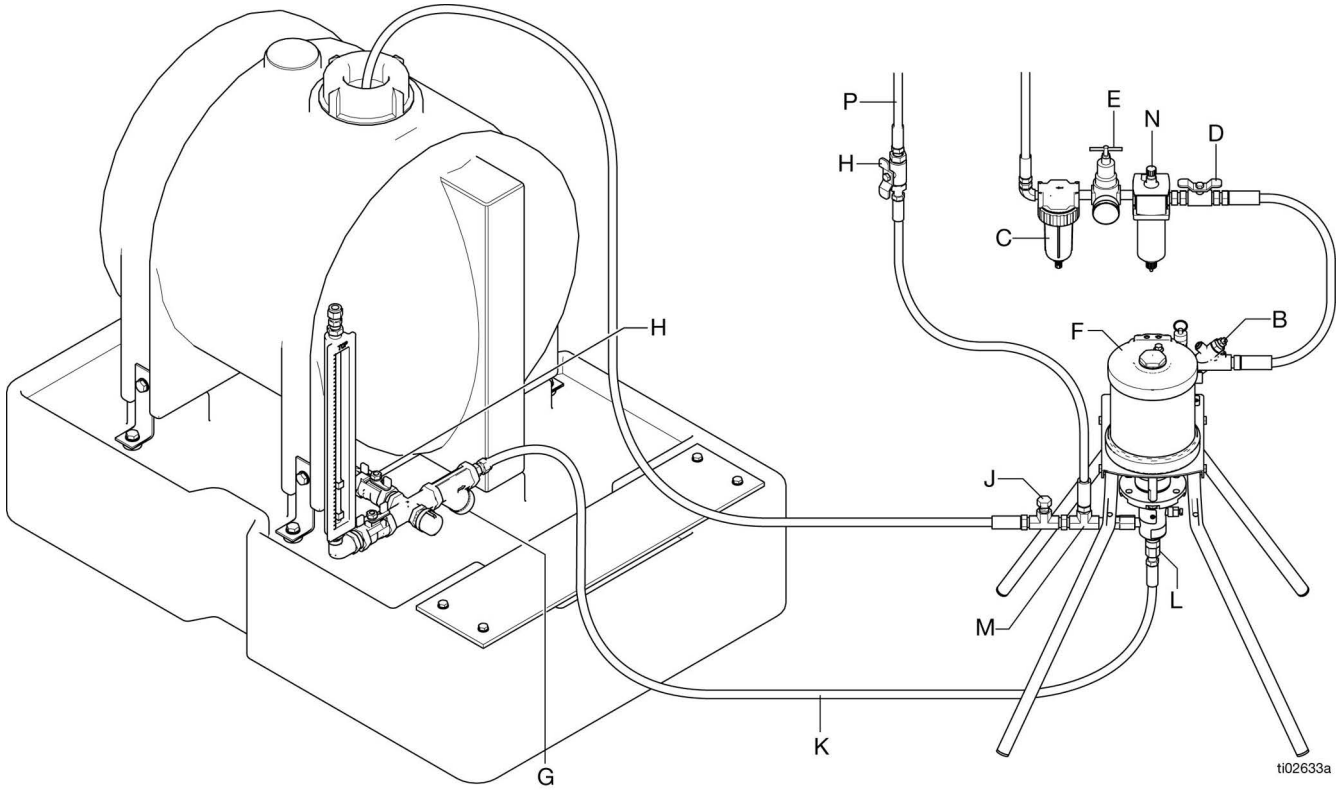
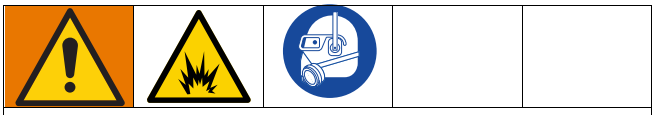


FIG. 2: Typical Installation

Key:

A Main Pneumatic Supply Line
B Pneumatic Needle Valve
C Pneumatic Filter
D Bleed-type Master Pneumatic Valve
E Pneumatic Pressure Regulator
F Pump
G Manifold Assembly - includes y-strainer and fluid shut off valve (H)
H Fluid Shut off Valve (inlet and outlet)
J Fluid Pressure Relief Valve
K Fluid Inlet Line
L Inlet Port
M Outlet Port
N Pneumatic Lubricator
P Fluid Outlet Line

Installation



If using compressed natural gas to drive the motor, to reduce the risk of fire or explosion, route the exhaust away from all sources of ignition. See Route Exhaust to Remote Location on page 11.

NOTE: 3.5% of the exhaust is not recoverable, and will vent to atmosphere at the pump.

To reduce the risk of injury from ejected ice, do not operate the motor without a plumbed exhaust line or muffler installed.

Installation must comply with all local codes and regulations.

Grounding

The equipment must be grounded to reduce the risk of static sparking. Static sparking can cause fumes to ignite or explode. Grounding provides an escape wire for the electric current.

Pump: Ground through electrically conductive pneumatic and fluid lines.

Pneumatic and fluid lines: Use only electrically conductive lines.

Air compressor: Follow manufacturer's recommendations.

Fluid supply container: Follow local code.

Required Accessories

Install the following required accessories in the order shown in FIG. 2, using adapters as necessary. See **Kits and Accessories** starting on page 34.

Pneumatic Line

- **Bleed-type master pneumatic valve (D):** required in your system to relieve air/gas trapped between it and the pneumatic motor when the valve is closed.
  - Be sure the valve is easily accessible from the pump and located downstream from the pneumatic regulator.
- **Pump pneumatic regulator (E):** to control pump speed and outlet pressure. Locate it close to the pump.
- **Pneumatic line filter (C):** removes harmful dirt and moisture from compressed air/gas supply.

Fluid Line

- **Fluid filter (Y-Strainer) (included in G):** with a 60 mesh (250 micron) stainless steel element to filter particles from the fluid before in reaches the pump.
- **Fluid shutoff valve (H):** shuts off fluid flow.
- **Pressure relief valve (J):** overload protection.

Flush Before Using Equipment

The equipment was tested with lightweight oil, which is left in the fluid passages to protect parts. To avoid contaminating your fluid with oil, flush the equipment with a compatible solvent before using the equipment. See **Flush the Equipment**, page 14.

Mount Pump and Connect Chemical Supply

The pump can be used with supplied legs, or the pump stand can be bolted to a wall or skid with the attached bracket.

For an application, or mounting configuration, that requires installation different than shown in FIG. 2, page 9, please contact your Graco distributor for assistance.

NOTE: A y-strainer (G), or chemical filter, is required before to be installed before the pump inlet. This keeps tank debris from reaching the pump seals. Fluid filters are available from Graco. See **Kits and Accessories**, page 34.

1. Mount the pump (F).
2. Connect the fluid inlet line (K).

Connect Pneumatic Supply

1. Install the pneumatic regulator (E) and gauge to control the inlet pressure. For the maximum pneumatic pressure for your model, see **Models**, page 3.

NOTE: If less than 100 psi supply pressure is used, the maximum output pressure of the pump decreases proportionally. See **Minimum Pneumatic Pressures by Fluid Plunger Size and Outlet Pressures**, page 12.

   Find the minimum pneumatic pressure:

   - Go to table that corresponds to the plunger size.
   - Find the column corresponding to the pneumatic motor size
   - Find the row equal to, or slightly greater than, the outlet pressure of the pump.
   - This value is the minimum pneumatic pressure required to achieve the fluid outlet pressure.

2. Install a pneumatic line filter (C) to keep debris from affecting pump performance, and to increase pump life.

NOTE: To stop the pump from operating without fluid, keep the needle valve knob closed at this point to minimize seal wear.

3. Attach a pneumatic line to the 1/4 female NPT port (116) on the needle valve.

NOTE: The air source, in some applications, may contain solvents that are able to break down the factory grease in the air motor, causing the motor to stall, If the air motor stalls, install an in-line pneumatic lubricator. See **Kits and Accessories**, page 34, for the recommended pneumatic lubricator.

Route Exhaust to Remote Location

Replace the 3/8 NPT muffler (215) with a pneumatic line to route exhaust to a remote location.

NOTICE
Due to the operational design of the pneumatic valve, 3.5 percent of the exhaust is not recoverable, and vents to the atmosphere.

Connect Chemical Outlet

1. Connect a 1/4 NPT(F) fluid line from the outlet check valve (M) to the injection point.
2. Install a fluid pressure relief valve (J) on the outlet side of the pump.

NOTE: A user-supplied relief valve can be connected back to the tank or directly to the inlet side of the pump.

In the event of an injection line blockage, to reduce the risk of skin injection and damage to the pump, ensure the pressure relief valve is set at, or below, the maximum working pressure of the pump.

3. Set the pressure relief valve at, or below, the maximum working pressure of the pump.
4. Connect a 10-32 UNF fluid outlet from the prime/bleed valve (21) to the fluid source or waste reservoir.

Minimum Pneumatic Pressures by Fluid Plunger Size and Outlet Pressures

Actual running pressure must be set in field to avoid stalling.

See **Performance Charts**, beginning on page 37. for maximum flows at any given pressure.

250 Pneumatic Motor Minimum Gas Pressure psi (MPa, bar)														
Outlet Pressure			1/4 In. Fluid Plunger			3/8 In. Fluid Plunger			1/2 In. Fluid Plunger			3/4 In. Fluid Plunger		
psi	MPa	bar	psi	MPa	bar	psi	MPa	bar	psi	MPa	bar	psi	MPa	bar
0	0	0	15.0	0.1	1.0	15.0	0.1	1.0	15.0	0.1	1.0	15.0	0.1	1.0
250	1.7	17.2	15.0	0.1	1.0	15.0	0.1	1.0	15.0	0.1	1.0	22.5	0.2	1.6
500	3.4	34.5	15.0	0.1	1.0	15.0	0.1	1.0	20.0	0.1	1.4	45.0	0.3	3.1
750	5.2	51.7	15.0	0.1	1.0	16.9	0.1	1.2	30.0	0.2	2.1	67.5	0.5	4.7
1000	6.9	68.9	15.0	0.1	1.0	22.5	0.2	1.6	40.0	0.3	2.8	90.0	0.6	6.2
1100	8.0	76.0	15.0	0.1	1.0	25.0	0.2	1.7	44.4	0.3	3.1	100.0	10.7	6.9
1500	10.3	103.4	15.0	0.1	1.0	33.8	0.2	2.3	60.0	0.4	4.1			
1600	11.0	110.3	16.0	0.1	1.1	36.0	0.2	2.5	64.0	0.4	4.4			
2000	13.8	137.9	20.0	0.1	1.4	45.0	0.3	3.1	80.0	0.6	5.5			
2250	15.5	155.1	22.5	0.2	1.6	50.6	0.3	3.5	90.0	0.6	6.2			
2500	17.2	172.4	25.0	0.2	1.7	56.3	0.4	3.9	100.0	0.7	6.9			
2750	19.0	189.6	27.5	0.2	1.9	61.9	0.4	4.3						
3000	20.7	206.8	30.0	0.2	2.1	67.5	0.5	4.7						
3250	22.4	224.1	32.5	0.2	2.2	73.1	0.5	5.0						
3500	24.1	241.3	35.0	0.2	2.4	78.8	0.5	5.4						
3750	25.9	258.6	37.5	0.3	2.6	84.4	0.6	5.8						
4000)	27.6	275.8	40.0	0.3	2.8	90.0	0.6	6.2						
4250	29.3	293.0	42.5	0.3	2.9	95.6	0.7	6.6						
4450	31.0	307	44.4	0.3	3.1	100.0	0.7	6.9						
4750	32.8,	327.5	47.5	0.3	3.3									
5000	34.5	344.7	50.0	0.3	3.4									
5250	36.2	362.0	52.5	0.4	3.6									
5500	37.9	379.2	55.0	0.4	3.8									
5750	39.6	396.4	57.5	0.4	4.0									
6000	41.4	413.7	60.0	0.4	4.1									
6250	43.1	430.9	62.5	0.4	4.3									
6500	44.8	448.2	65.0	0.4	4.5									
6750	46.5	465.4	67.5	0.5	4.7									
7000	48.3	482.6	70.0	0.5	4.8									
7250	50.0	499.9	72.5	0.5	5.0									

For applications where the exhaust is ported to a pressurized location, calculate the difference between the inlet and outlet pressures to get the pneumatic pressure to be used in the table. Minimum pressure differential is 15 psi (0.1 MPa, 1.0 bar).

NOTE: Regardless of exhaust pressure, the maximum inlet pressure is 100 psi (0.7 MPA, 6.9 bar) unless otherwise noted in **Models**, page 3

450 Pneumatic Motor Minimum Gas Pressure psi (MPa, bar)								
Outlet Pressure			3/8 In. Fluid Plunger			3/4 In. Fluid Plunger		
psi	MPa	bar	psi	MPa	bar	psi	MPa	bar
0	0	0	15.0	0.1	1.0	15.0	0.1	1.0
250	1.7	17.2	15.0	0.1	1.0	15.0	0.1	1.0
500	3.4	34.5	15.0	0.1	1.0	15.0	0.1	1.0
750	5.2	51.7	15.0	0.1	1.0	20.8	0.1	1.4
1000	6.9	68.9	15.0	0.1	1.0	27.8	0.2	1.9
1250	8.6	86.2	15.0	0.1	1.0	34.7	0.2	2.4
1500	10.3	103.4	15.0	0.1	1.0	41.7	0.3	2.9
1750	12.1	120.7	15.0	0.1	1.0	48.6	0.3	3.4
2000	13.8	137.9	15.0	0.1	1.0	55.6	0.4	3.8
2250	15.5	155.1	15.6	0.1	1.1	62.5	0.4	4.3
2500	17.2	172.4	17.4	0.1	1.2	69.4	0.5	4.8
2750	19.0	189.6	19.1	0.1	1.3	76.4	0.5	5.3
3000	20.7	206.8	20.8	0.1	1.4	83.3	0.6	5.7
3250	22.4	224.1	22.6	0.2	1.6	90.3	0.6	6.2
3600	24.8	248.2	25.0	0.2	1.7	100.0	0.7	6.9
3750	25.9	258.6	26.0	0.2	1.8			
4000	27.6	275.8	27.8	0.2	1.9			
4250	29.3	293.0	29.5	0.2	2.0			
4500	31.0	310.3	31.3	0.2	2.2			
4750	32.8	327.5	33.0	0.2	2.3			
5200	35.9	358.5	36.1	0.2	2.5			
5250	36.2	362.0	36.5	0.3	2.5			
5500	37.9	379.2	38.2	0.3	2.6			
5750	39.6	396.4	39.9	0.3	2.8			
6000	41.4	413.7	41.7	0.3	2.9			
6250	43.1	430.9	43.4	0.3	3.0			
6500	44.8	448.2	45.1	0.3	3.1			
6750	46.5	465.4	46.9	0.3	3.2			
7000	48.3	482.6	48.6	0.3	3.4			
7250	50.0	499.9	50.3	0.3	3.5			

For applications where the exhaust is ported to a pressurized location, calculate the difference between the inlet and outlet pressures to get the pneumatic pressure to be used in the table. Minimum pressure differential is 15 psi (0.1 MPa, 1.0 bar).

NOTE: Regardless of exhaust pressure, the maximum inlet pressure is 100 psi (0.7 MPA, 6.9 bar) unless otherwise noted in **Models**, page 3

Operation

Pressure Relief Procedure

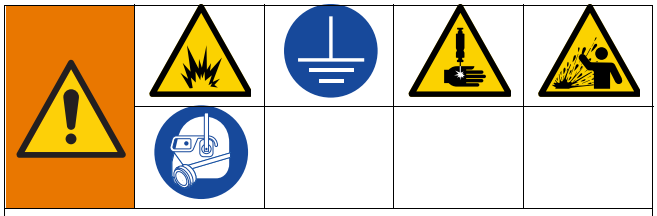
Follow the Pressure Relief Procedure whenever you see this symbol.

This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection and splashing fluid, follow the **Pressure Relief Procedure** when you stop dispensing and before cleaning, checking, or servicing the equipment.

NOTE: Always discharge fluid into an approved container or location.

1. Shut off all of the fluid and pneumatic lines (A, K, & P) using shutoff valves (H & D).
2. Use a flathead screwdriver to turn the prime/bleed valve (107) slowly counter-clockwise to relieve pressure. (Use a hex wrench to turn the prime/bleed valve housing (106) on PCI-xxx-xxH pumps. See **Configuration Number Matrix**, page 4.)
3. Slowly disconnect fluid lines (K & P) from check valves (L & M).

Flush the Equipment



To avoid fire and explosion, always ground equipment and waste container. To avoid static sparking and injury from splashing, always flush at the lowest possible pressure.

Flush with a fluid compatible with the fluid being dispensed and the equipment wetted parts.

1. Follow the **Pressure Relief Procedure**, page 14.
2. Connect the inlet to the supply source of the flushing fluid.
3. Connect the outlet to a waste reservoir.
4. Run the pump until the dispensed fluid is predominately flushing fluid.
5. Follow the **Pressure Relief Procedure**, page 14.

Prime the Pump

1. Verify that all connections and fluid lines are tight.
2. To prime the pump, turn the prime valve (107) counter-clockwise.

NOTE: The pressure regulator and inlet pneumatic needle valve both effect the pump cycle rate. After the inlet pressure is set, the needle valve can serve as a speed control.

3. Adjust pneumatic regulator to desired pressure. See **Minimum Pneumatic Pressures by Fluid Plunger Size and Outlet Pressures**, page 12.
4. Open the bleed-type pneumatic valve. Slowly turn the pump needle valve counter-clockwise, increasing air and gas flow to the pump.

NOTICE

Pump runaway may occur if the needle valve is opened too far for pressure settings, causing damage to the packing seals (103).

5. Keep the pump cycle rate less than 1 cycle every 3 seconds. The pump is primed when discharge from the prime valve (107) has transitioned from air, to bubbly liquid chemical, to pure liquid chemical.

6. Close the prime valve (107) tightly and verify that fluid has stopped draining from the port.

Calibrate Chemical Dosage

1. Set the pump to an estimated setting of the flow rate. See **Baseline Chemical Dosage Settings**, page 16, for tables of cycles per minute (CPM), and corresponding gallons per day (GPD) and liters per day (LPD).

2. Follow the instructions provided with your calibration gauge in conjunction with the **Baseline Chemical Dosage Settings**, page 16.

3. Adjust the cycle rate with the inlet pneumatic needle valve and the pressure regulator.

4. Repeat the test procedure to verify the changes. Repeat as necessary until the desired flow rate is achieved.

Stroke Adjustment

Before servicing or repairing your pump, verify that pressure is relieved according to the **Pressure Relief Procedure**, page 14, and that all fluid and pneumatic lines are properly shut off, or sealed with compatible valves and disconnected.

This pump has three defined stroke adjustment positions.

1. Expose the pneumatic motor rod (218) by removing the dust cover (10). See **Disconnect Pump** on page 20.

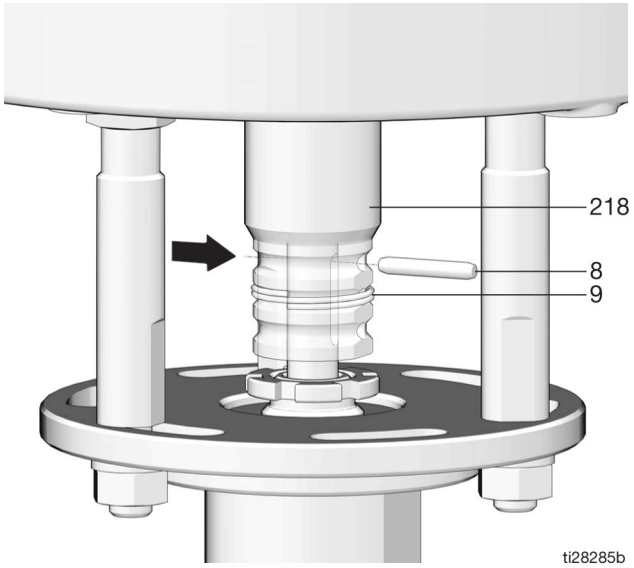


FIG. 3 Retaining spring and connector pin

2. Push the split ring (9) up or down to expose the dowel pin (8).

1. Push the pin out using a screwdriver or punch.

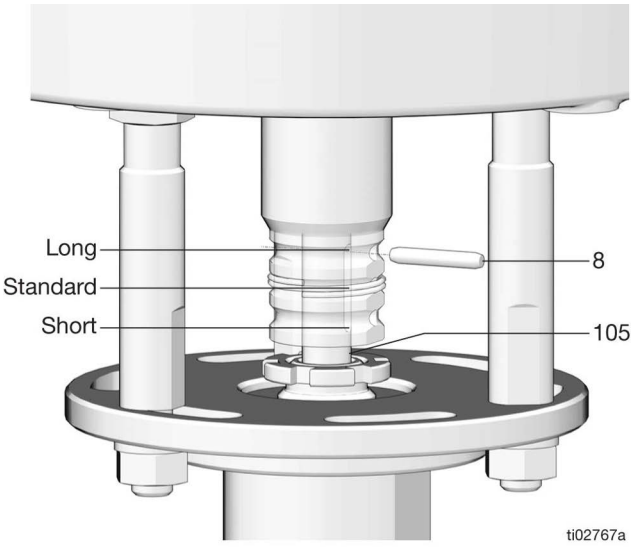


FIG. 4

2.

3. Align the desired stroke hole (Long, Standard, or Short) with the hole in the fluid plunger (105). Use a screwdriver to push in the pin (8).

4. Push the split ring (9) into place to cover the pin (8).

5. Replace the dust cover (10).

Baseline Chemical Dosage Settings

See **Stroke Adjustment**, page 15, for stroke adjust settings. See **Performance Charts**, starting on page 37, for maximum flows at any given pressure.

	1/4 in. Fluid Plunger Pumps			3/8 in. Fluid Plunger Pumps		
	GPD (LPD)			GPD (LPD)		
CPM	Long Stroke	Standard Stroke	Short Stroke	Long Stroke	Standard Stroke	Short Stroke
5		1.5 (5.6)	1.0 (3.7)		3.5 (13.1)	2.3 (8.7)
10		3.0 (11.2)	2.0 (7.5)		6.9 (26.2)	4.6 (17.5)
20	7.9 (29.8)	5.9 (22.4)	3.9 (14.9)	18.5 (69.8)	13.8 (52.4)	9.2 (34.9)
30	11.8 (44.7)	8.9 (33.5)	5.9 (22.4)	27.7 (104.8)	20.8 (78.6)	13.8 (52.4)
40	15.7 (59.6)	11.8 (44.7)	7.9 (29.8)	36.9 (139.7)	27.7 (104.8)	18.5 (69.8)
50	19.7 (74.5)	14.8 (55.9)	9.8 (37.3)	46.1 (174.6)	34.6 (131.0)	23.1 (87.3)
60	23.6 (89.4)	17.7 (67.1)	11.8 (44.7)	55.4 (209.5)	41.5 (157.2)	27.7 (104.8)
70	27.6 (104.3)	20.7 (78.2)	13.8 (52.2)	64.6 (244.5)	48.4 (183.3)	32.3 (122.2)
80	31.5 (119.2)	23.6 (89.4)	15.7 (59.6)	73.8 (279.4)	55.4 (209.5)	36.9 (139.7)
90	35.4 (134.1)	26.6 (100.6)	17.7 (67.1)	83.0 (314.3)	62.3 (235.7)	41.5 (157.2)
100	39.4 (149.0)	29.5 (111.8)	19.7 (74.5)	92.3 (349.2)	69.2 (261.9)	46.1 (174.6)

	1/2 in. Fluid Plunger Pumps			3/4 in. Fluid Plunger Pumps		
	GPD (LPD)			GPD (LPD)		
CPM	Long Stroke	Standard Stroke	Short Stroke	Long Stroke	Standard Stroke	Short Stroke
5		6.2 (23.3)	4.1 (15.5)		13.8 (52.4)	9.2 (34.9)
10		12.3 (46.6)	8.2 (31.0)		27.7 (104.8)	18.5 (69.8)
20	32.8 (124.2)	24.6 (93.1)	16.4 (62.1)	73.8 (279.4)	55.4 (209.5)	36.9 (139.7)
30	49.2 (186.3)	36.9 (139.7)	24.6 (93.1)	110.7 (419.1)	83.0 (314.3)	55.4 (209.5)
40	65.6 (248.3)	49.2 (186.3)	32.8 (124.2)	147.6 (558.8)	110.7 (419.1)	73.8 (279.4)
50	82.0 (310.4)	61.5 (232.8)	41.0 (155.2)	184.5 (698.5)	138.4 (523.9)	92.3 (349.2)
60	98.4 (372.5)	73.8 (279.4)	49.2 (186.3)	221.4 (838.2)	166.1 (628.6)	110.7 (419.1)
70	114.8 (434.6)	86.1 (326.0)	57.4 (217.3)	258.3 (977.9)	193.7 (733.4)	129.2 (488.9)
80	131.2 (496.7)	98.4 (372.5)	65.6 (248.3)	295.2 (1117.6)	221.4 (838.2)	147.6 (558.8)
90	147.6 (558.8)	110.7 (419.1)	73.8 (279.4)	332.1 (1257.3)	249.1 (942.9)	166.1 (628.6)
100	164.0 (620.9)	123.0 (465.6)	82.0 (310.4)	369.0 (1396.9)	276.8 (1047.7)	184.5 (698.5)

NOTE: Standard or short strokes are recommended for cycle rates less than 15 CPM.

Maintenance

Preventive Maintenance Schedule

The operating conditions of the pump determines how often maintenance is required. Establish a preventive maintenance schedule by recording when and what kind of maintenance is needed, and then determine a regular schedule for checking the pump.

Tighten Threaded Connections

Check that all threaded connections are tight at routine intervals.

Tighten Packings

The packings included in the pump have the ability to be adjusted to stop leaks that develop when the seals are worn. If a leak develops in the pump fluid section, tighten the packing nut clockwise by 1/16th of a turn, or lower, until the leak is eliminated. The life of the packing can be affected by over-tightening the packings. If the packing nut needs to be tightened repeatedly after short intervals, replace the packing.

Storage

If the pump is going to be stored for long periods, flush the pump with a light-weight oil or rust prohibiter to protect pump components. Store the pump with protective fluid inside whenever possible.

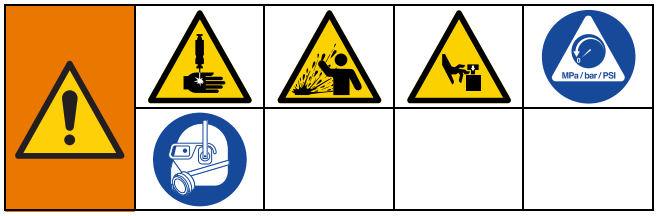
Recycling and Disposal

End of Product Life

At the end of the product's useful life, dismantle and recycle it in a responsible manner.

- Perform the **Pressure Relief Procedure**, page 14.
- Drain and dispose of fluids according to applicable regulations. Refer to the material manufacturer's Safety Data Sheet.
- Deliver remaining product to a recycling facility.

Troubleshooting



Follow **Pressure Relief Procedure**, page 14, before checking or repairing the equipment.

NOTE: Check all possible problems and causes before disassembling the equipment.

Problem	Cause	Solution
Pump runs, but the chemical does not discharge at the correct rate.	Inlet check is clogged with debris.	Remove debris from check valve.
	Inlet check o-ring is damaged.	Evaluate the o-ring chemical compatibility and replace as required.
	Air is in the pump head.	Ensure suction lines are tight, and then prime the pump.
		When injecting into a gas line, inspect the outlet check valve to ensure gas is not back feeding into the pump head.
	Packing leak.	Tighten the packing nut. If leak persists, evaluate packing chemical compatibility and replace, if needed.
	Inadequate chemical supply.	Ensure the chemical tank is filled.
		Inspect and replace the chemical supply filter.
	Incorrect calibration.	Ensure the calibration gauge is functioning properly with adequate venting.

Problem	Cause	Solution
Pump does not stroke.	Inadequate pneumatic supply.	If the pressure is too low, increase the pneumatic supply pressure.
		If the volume is too low, ensure the pneumatic supply volume is adequate to operate the pump.
	Dirty supply gas.	Install a filter
		Replace the filter element
	Inadequate internal lubrication.	Ensure pneumatic supply gas is clean and dry with a working filter. Then lubricate the air motor internals.
		Add an oiler if pneumatic supply gas contains solvents that are washing out the factory grease. Graco oiler 237212.
	Inconsistent pump changeover.	Replace the pilot valves.
	Stalling on one end of the stroke.	Rebuild or replace the pneumatic valve.
		Replace pilot valves.
	Air is continuously exhausting from muffler.	Rebuild or replace pneumatic valve.
	Air is continuously exhausting from motor piston rod.	Replace the piston rod u-cup.
Chemical is leaking from packing.	Worn packing	Tighten the packing nut. If leaking persists, replace packing. **NOTE:** the packing nut is set from the factory and does not require tightening upon initial installation.
		Consult the Chemical Compatibility Guide to ensure the seal in use is compatible with the chemicals being pumped. **NOTE:** Find the Chemical Compatibility Guide at www.graco.com.
		Consult the Chemical Compatibility Guide to ensure the seal in use is designed to operate in the recommended temperature range. **NOTE:** Find the Chemical Compatibility Guide at www.graco.com.
		Inspect the plunger for coating failure due to chemical or abrasive attack. Replace plunger as required.
Icing inside motor.	Pneumatic motor is operating at a high pressure or high cycle rate.	Reduce pressure, cycle rate, or duty cycle of motor.
		Reduce the dew-point of compressed air in the moisture coalescing filter.
Erratic of accelerated pump speed.	Exhausted fluid supply.	Replace and reprime.
	Worn or clogged check valves or packing.	Remove debris from check valve.
		Replace check valve.

Repair

Before servicing or repairing the pump, verify that pressure is relieved according to the **Pressure Relief Procedure**, page 14, and that all fluid and pneumatic lines are properly shut off, or sealed with compatible valves and disconnected.

Pump

Disconnect Pump

1. Follow the **Pressure Relief Procedure**, page 14.
2. Loosen the two screws to remove the dust cover (10) (FIG. 5).

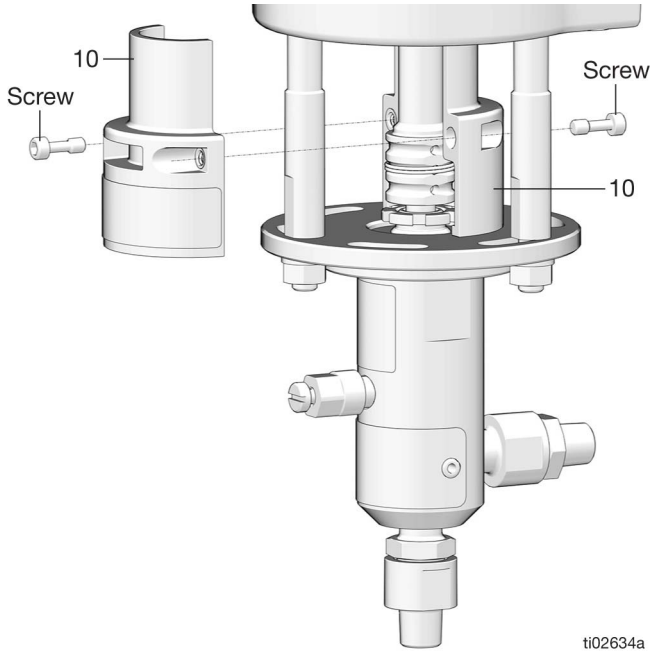


FIG. 5 Remove dust cover

3. Push the retaining spring up and push out the connector pin using a screwdriver or punch (FIG. 6).

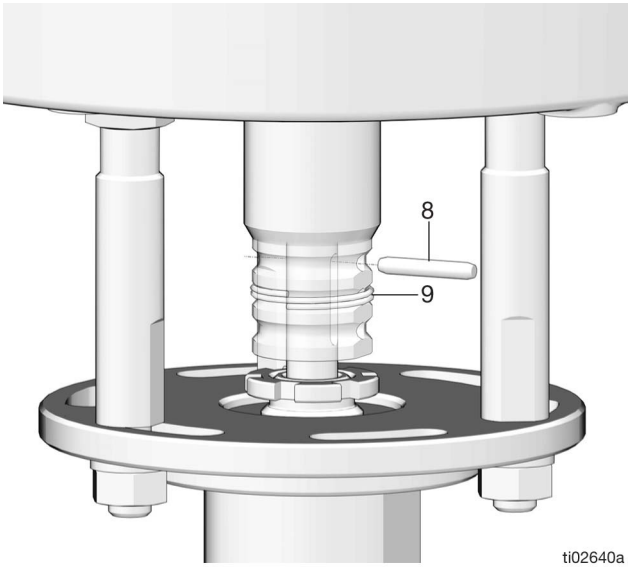


FIG. 6 Retaining spring and connector pin

4. Loosen the fluid cylinder (101) and carefully slide away from the lower pump adapter (5).

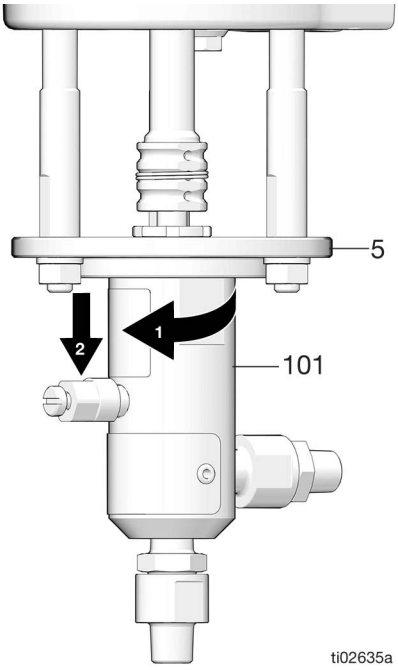


FIG. 7 Remove fluid cylinder

Pump Repair

1. Remove the packing nut (104) from the fluid cylinder (101).

2. Remove the bearings (102) and packing (103) carefully from the fluid cylinder (101).

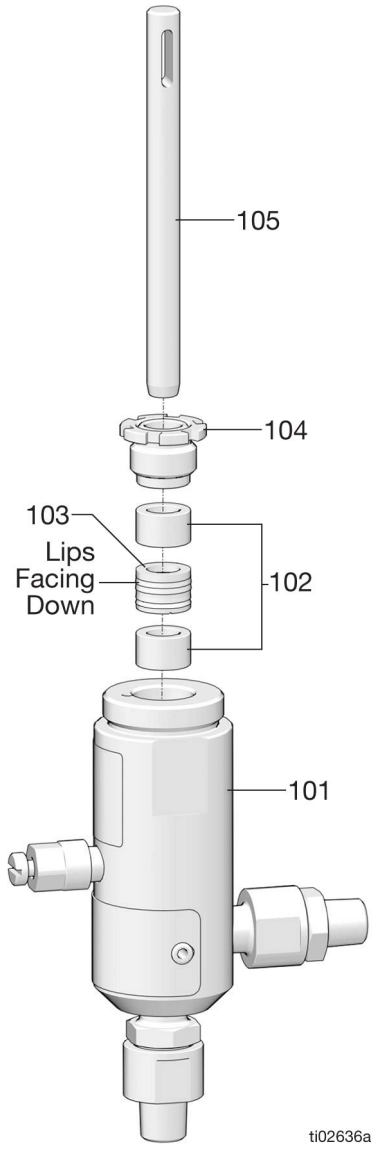


FIG. 8 Remove parts from fluid cylinder

3. Replace the packing (103) and bearings (102), if necessary. Lubricate prior to reassembly.

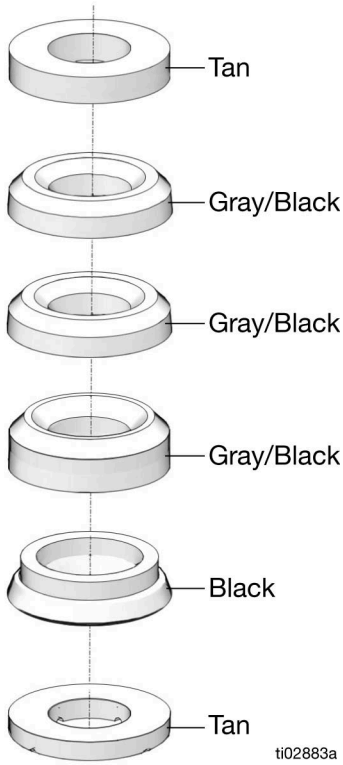


FIG. 9 Packing detailed view

4. Reinsert the packing nut (104), the packing (103), and the bearings (102) into the fluid cylinder (101). Tighten the packing nut (104) to distance, as shown in FIG. 10.

NOTE: If the packing nut (104) is over-tightened, the pump may not complete a full stroke and the seal life may be compromised.

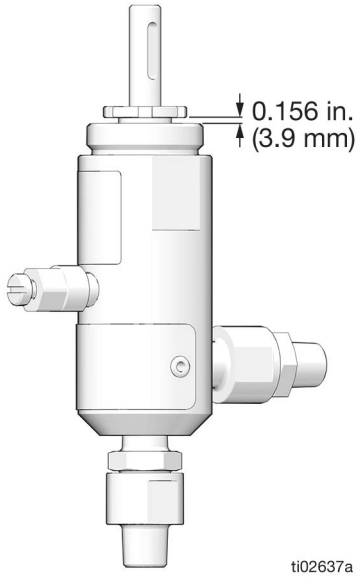


FIG. 10 Tightening the packing nut

Fluid Plunger Repair

1. **Disconnect Pump**, page 20.
2. Remove the fluid plunger (105).
3. Inspect the fluid plunger (105) for wear or damage and replace, if necessary.

Reconnect Pump

NOTICE

The pump can be damaged if the fluid cylinder is not screwed all the way into the adapter plate. Be sure to fully screw the fluid cylinder (101) into the adapter plate (5).

1. Align the hole in the displacement rod with the hole in the pneumatic motor rod. Push the pin in using a screwdriver (8).

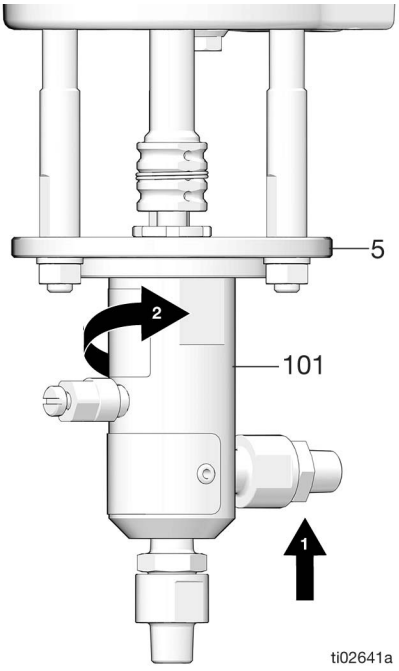


FIG. 11 Reconnect fluid cylinder

2. Insert the fluid cylinder into the adapter plate (nn) and turn until it stops. Tighten the fluid cylinder (101) to 30 ft-lbs (40 N•m).
3. Align the hole in the displacement rod with the hole in the pneumatic motor rod. Push in the pin (8) using a screwdriver.

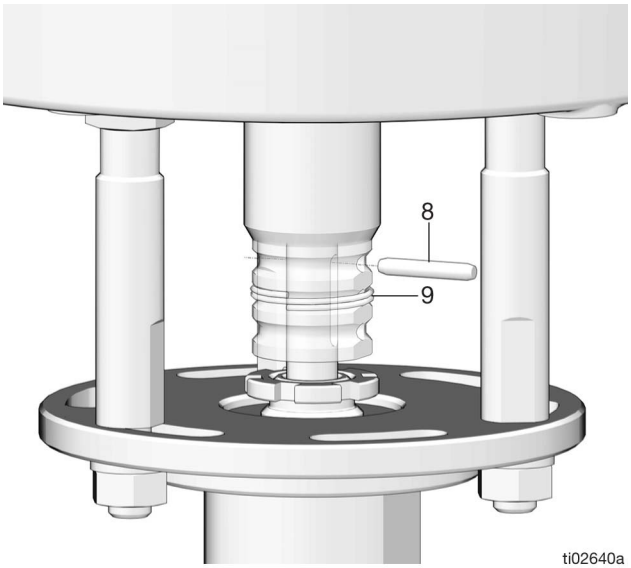


FIG. 12 Retaining spring and connector pin

4. Push the retaining spring (9) into place to cover the pin.
5. Replace the dust cover (10) and secure by tightening the two screws.

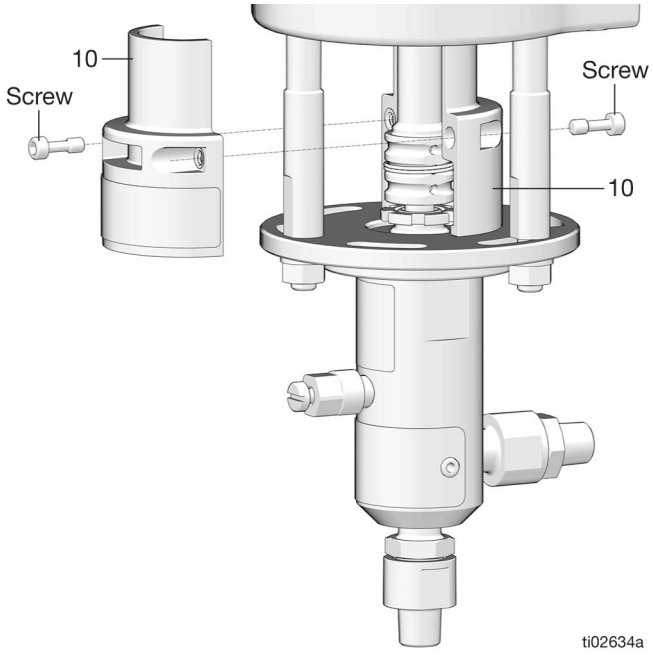


FIG. 13 Replace dust cover

Pneumatic Valve

Replace Complete Pneumatic Valve

1. Stop the pump.
2. Follow **Pressure Relief Procedure**, page 14.
3. Disconnect the pneumatic line to the motor.
4. Remove the four screws (211).
5. Remove the pneumatic valve (214) and the gasket (209*◆). see FIG. 15 on page 25.
6. To repair the pneumatic valve, go to **Disassemble the Pneumatic Valve,** page 23. To install a replacement pneumatic valve, continue with step 7.
7. Align the new pneumatic valve gasket (209*◆) on the manifold, then attach the pneumatic valve (214). Torque screws (211) to 95-105 in-lb (11-12 N•m).
8. Reconnect the pneumatic line to the motor.

Replace Seals or Rebuild Pneumatic Valve

NOTE: Pneumatic Valve Seal Kits are available, see page 33. Parts are marked with an †.

Pneumatic Valve Repair Kits are available, see page 33. Parts are marked with an ◆.

Pneumatic Valve End Cap Kits are available, see page 33. Parts are marked with an ❖.

Disassemble the Pneumatic Valve

1. Perform steps 1-5 under **Replace Complete Pneumatic Valve,** page 23.
2. Remove two screws (309†◆) using a 2 mm or 5/64 in. hex wrench.
3. Remove the valve plate (305◆), the cup (312◆), and the spring (311◆) (FIG. 14).

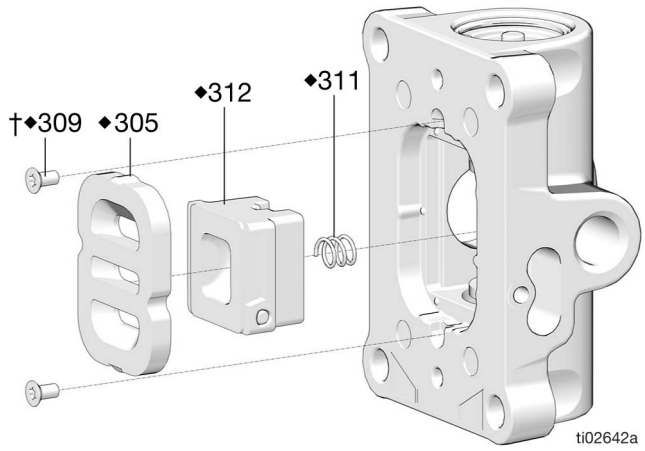


FIG. 14. Pneumatic Plate Removal

4. Remove the snap ring (310 ✚) from each end. Use the piston to push the end caps (307❖) out of the ends.

5. Remove end cap o-rings (306†❖◆). See FIG. 15, page 25.

6. Remove the piston (302◆).

7. Remove the u-cup seals (308†◆) from each end, and the detent assembly (303◆) and detent cam (304◆) from the center.

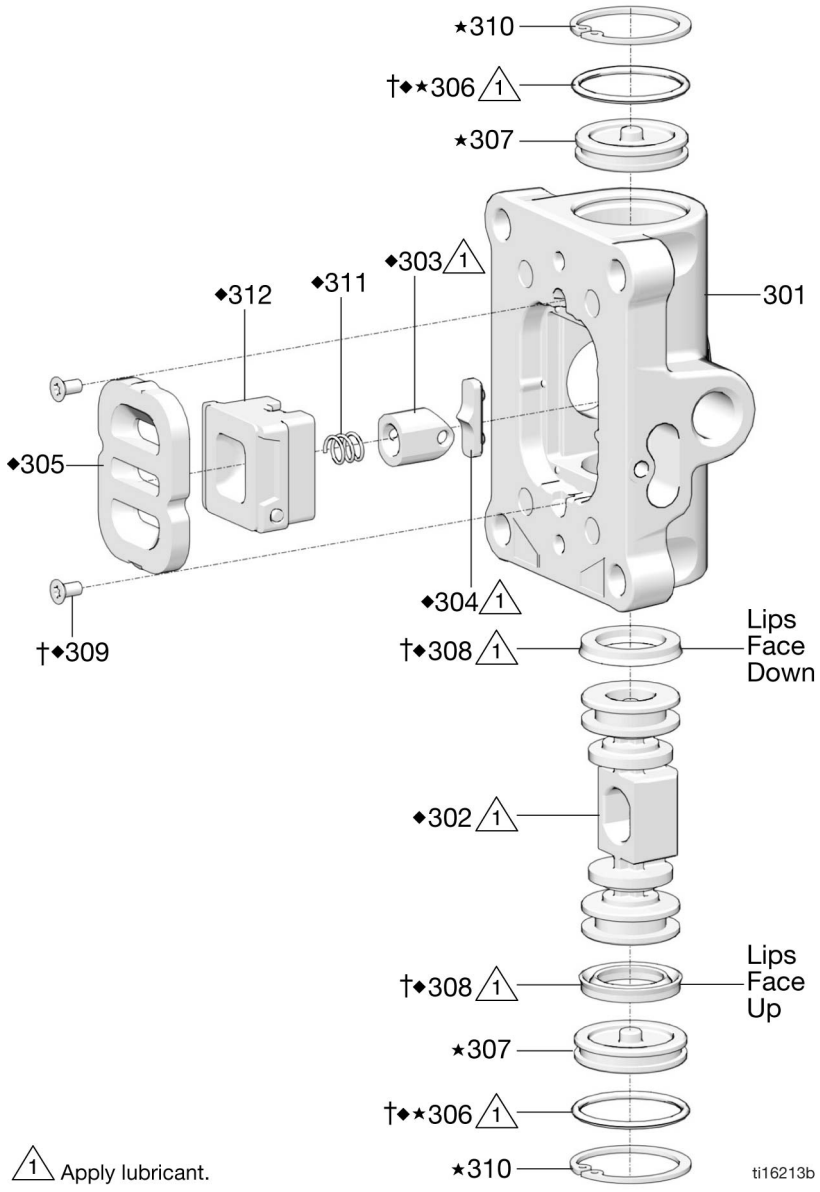


FIG. 15. Pneumatic Valve Assembly

Reassemble the Pneumatic Valve

1. Lubricate detent cam (304◆) and install into housing. See FIG. 15, page 25.
2. Lubricate the u-cups (308†◆) and install on the piston (302◆) with lips facing toward the center of the piston (FIG. 16).

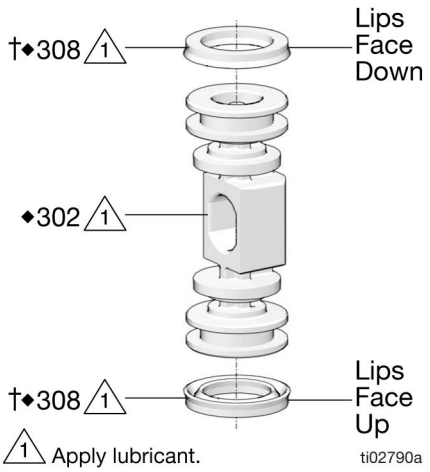


FIG. 16. Pneumatic Valve U-cup Installation

3. See FIG. 15, page 25. Lubricate both ends of the piston (302◆) and install it in the housing.
4. Lubricate and install the detent assembly (303◆) into the piston.
5. Lubricate new o-rings (306†❖◆) and install on the end caps (307❖). Install the end caps into the housing.
6. Install a snap ring (310◆❖) on each end to hold end caps in place.
7. Install the spring (311◆). Lubricate and install the pneumatic valve cup (312◆), see FIG. 17. Align the small round magnet with the pneumatic inlet.
8. Install the valve plate (305◆). Tighten the screws (309†◆) to hold it in place.

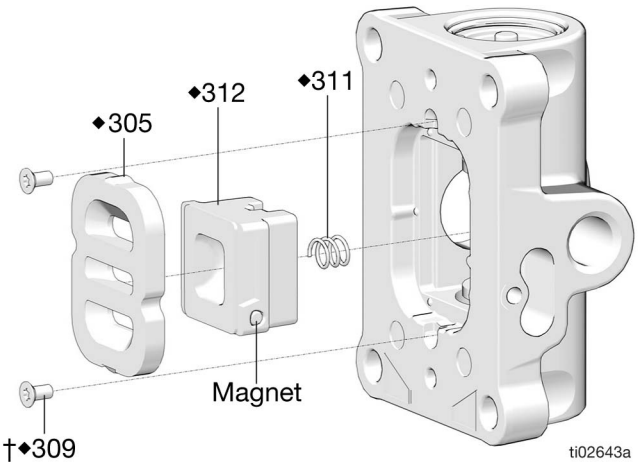
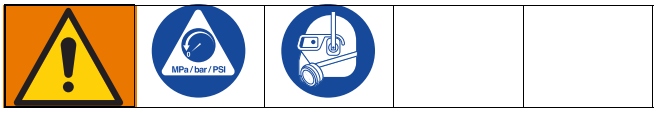


FIG. 17. Pneumatic Valve Cup Installation

Replace Pilot Valves



1. Stop the pump. Follow **Pressure Relief Procedure**, page 14.
2. Disconnect the pneumatic line to the motor.
3. See FIG. 18, page 27. Push the safety spring (9) down and hold to access the pilot valve (213) on the bottom cover (201).
4. See FIG. 20, page 37. Use a 10 mm wrench to remove the old pilot valves (213) from the top and bottom covers.
5. Lubricate and install the new pilot valves (213). Torque to 95-105 in-lb (11-12 N•m).

Disconnect the Pneumatic Motor

1. Stop the pump.
2. Flush the pump, if possible (see page 14). Follow **Pressure Relief Procedure**, page 14.
3. Disconnect the pneumatic line and fluid line and remove the dust guard (10). (See FIG. 5)
4. See FIG. 18. Push the split spring (9) up or down and hold to access the dowel pin (8). Push out the pin, using a screwdriver or punch.
5. Remove the nuts (6) from the bottom of the tie rods (3).
6. Remove the pump lower (7). The adapter plate (5) will remain attached to the pump lower.
7. Remove the split spring (9).
8. Loosen the nuts (4) at the top of the tie rods, then remove the tie rods. The mounting bracket (1) is loosened from the motor as the tie rods are removed.
9. Take the motor to a work bench.

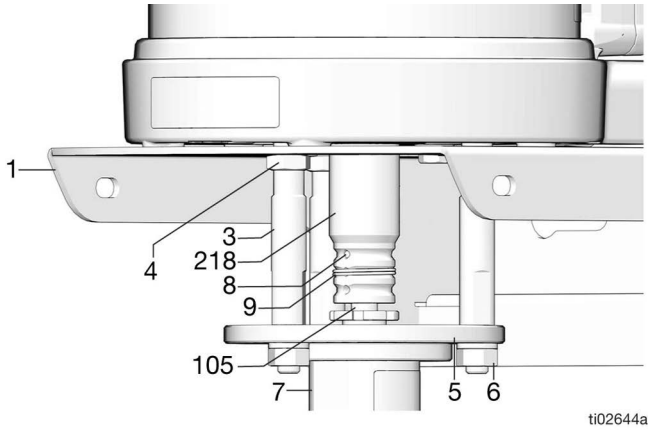


FIG. 18 Retaining spring and connector pin

Reconnect the Pneumatic Motor

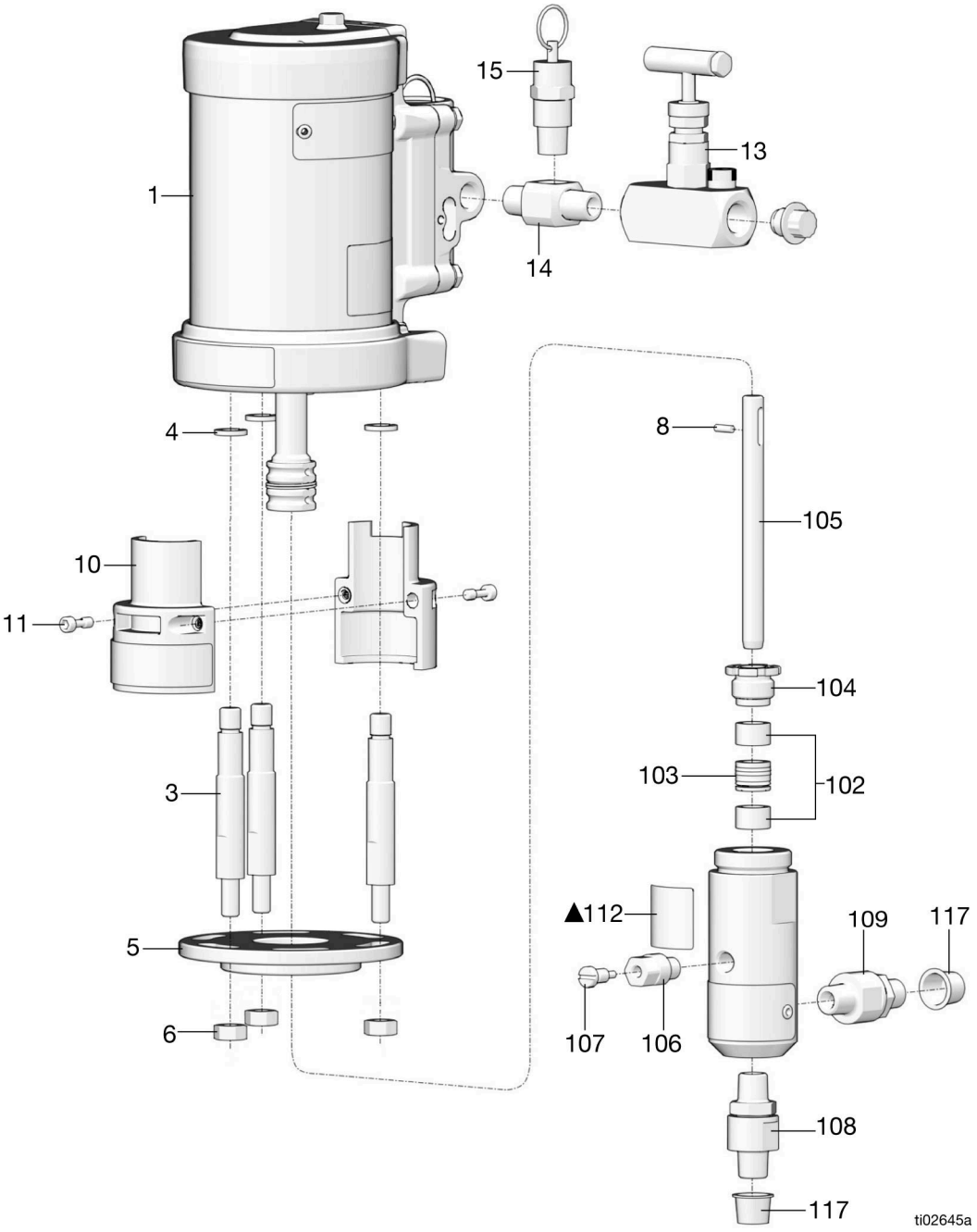
1. Replace the motor on the mounting bracket (2).
2. Screw the tie rods (3) into the motor, with the top hex nuts (4) attached. Torque the tie rods to 5-10 ft-lb (7-13 N•m).

NOTE: Always tighten the tie rods (3) before tightening the top hex nuts (4).

3. Tighten the top hex nuts (4) to secure the mounting bracket (2).
4. Slide the pump with the adapter plate (5) attached onto the tie rods (3). Ensure that the split spring (9) is in place and the pump outlet is oriented as desired.
5. Install the tie rod nuts (6). Torque to 100 in-lb (11 N•m).
6. Align the hole in the fluid plunger (105) with the hole in the pneumatic motor piston rod (218). Use a screwdriver to push in the dowel pin (8).
7. Push the split spring (9) into place to cover the dowel pin (8).
8. Replace the dust guard(10).

Parts

Python XL Pneumatic Pump



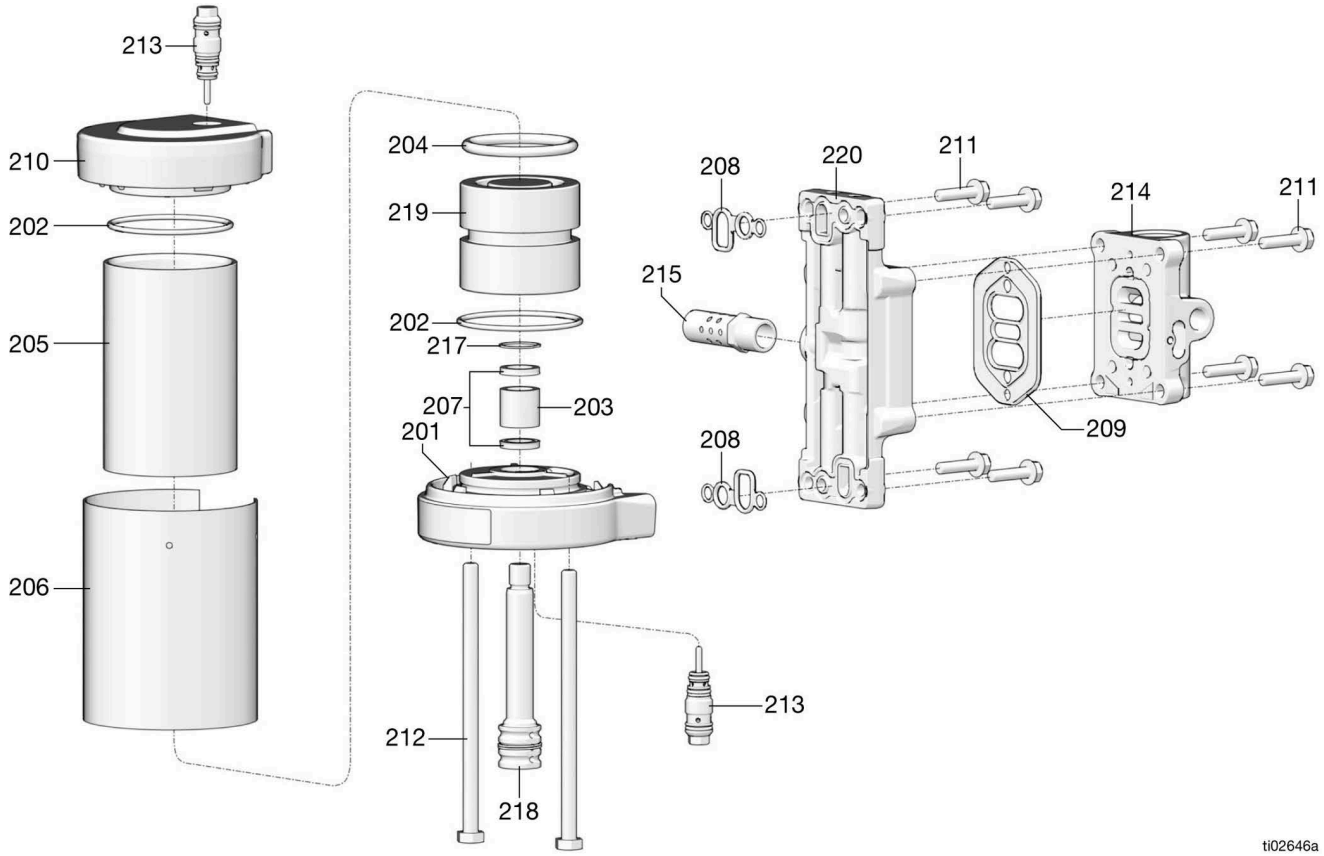
Python XL Pump Lower Parts List

Ref.	Part	Description	Qty.
1		Pneumatic motor, 2.5 in.	1
		Pneumatic motor, 4.5 in.	1
2		Wall bracket, 2.5 in.	1
		Wall Bracket, 4.5 in.	1
3		Motor tie rod	3
4		Jam hex nut	3
5		Lower adapter (1/8 in., 3/16 in., 1/4 in., 3/8 in., and 1/2 in. plungers)	1
		Lower adapter (3/4 in. plungers)	1
6		Nyloc nut, stainless steel	3
7		Pump lower (includes ref. 101-117)	1
8		Dowel pin, stainless steel	1
10		Dust/hand guard, 2.5 in.	1
		Dust/hand guard, 3.5 in.	1
		Dust/hand guard, 4.5 in.	1
11		ES screw	2
13		Needle valve, Viton, stainless steel, NPT, 40 PSI	1
		Needle valve, Viton, stainless steel, NPT, 50 PSI	1
		Needle valve, Viton, stainless steel, NPT, 70 PSI	1
		Needle valve, Viton, stainless steel, NPT, 75 PSI	1
		Needle valve, Viton, stainless steel, NPT, 100 PSI	1
14		Tee, 1/4m x 1/4m x 1/4f	1
15	B32823	Safety valve, 50 PSI	1
	B32824	Safety valve, 75 PSI	1
	113498	Safety valve, 100 PSI	1
101		Fluid cylinder	1
102		Plunger bearings, included with packing (ref. 103)	2
103	See Table 2, pg 34	Packing	1
104		Packing nut	1
105	See Table 1, pg 34	Fluid Plunger	1
106		Priming bleed valve housing, standard pressure (1/4 in., 3/8 in., 1/2 in., and 3/4 in. plungers)	1
107		Priming bleed valve; included with priming bleed valve housing (ref. 106)	1
108	See Table 3, pg 34	Inlet valve check	1
109	See Table 3, pg 34	Outlet valve check	1
112▲	17G320	Warning label, adhesive	1
117		Cap plug	2

▲ *Replacement Danger and Warning labels, tags, and cards are available at no cost.*

Pneumatic Motor Parts

2.5 in. (63.5 mm)



Pneumatic Motor Parts

Ref.	Part	Description	Qty
201	--	Cover, bottom	1
202*❖	--	O-Ring, cover	2
203	--	Bearing	1
204*❖	--	O-Ring, piston	1
205	--	Cylinder, motor	1
206▲	B32830	2.5 in. cover, cylinder (includes English warning label)	1
	B32832	4.5 in. cover, cylinder (includes English warning label)	1
206▲	15W719	Label, warning (French and Spanish) (not shown)	1
207*❖	--	Seal, u-cup	2
208*❖	--	Gasket, manifold	2
209*◆†❖	--	Gasket, pneumatic valve	1
210	--	Cover, top	1
211	--	Screw, M6 x 25	8
212	--	Bolt, tie, hex head	2, 3
213	24A366	Valve, pilot (pack of 2)	1
214	24A351	Valve, pneumatic; includes items 209, 211 (qty 4) and 214	1
215	--	Muffler	1
217*❖	--	Ring, retaining	1
218	--	Rod, pneumatic motor	1
219	--	Piston, motor; air, 2.5 in., Python XL	1
220	24A579	Manifold, assembly, includes 208, 209, and 211 (qty. 4)	1
230❖	--	O-Ring, top plug (not shown), 4.5 in. motor only	1
231❖	--	Plug, top cover (ref. 210),	1

▲*Replacement Danger and Warning labels, tags, and cards are available at no cost.*

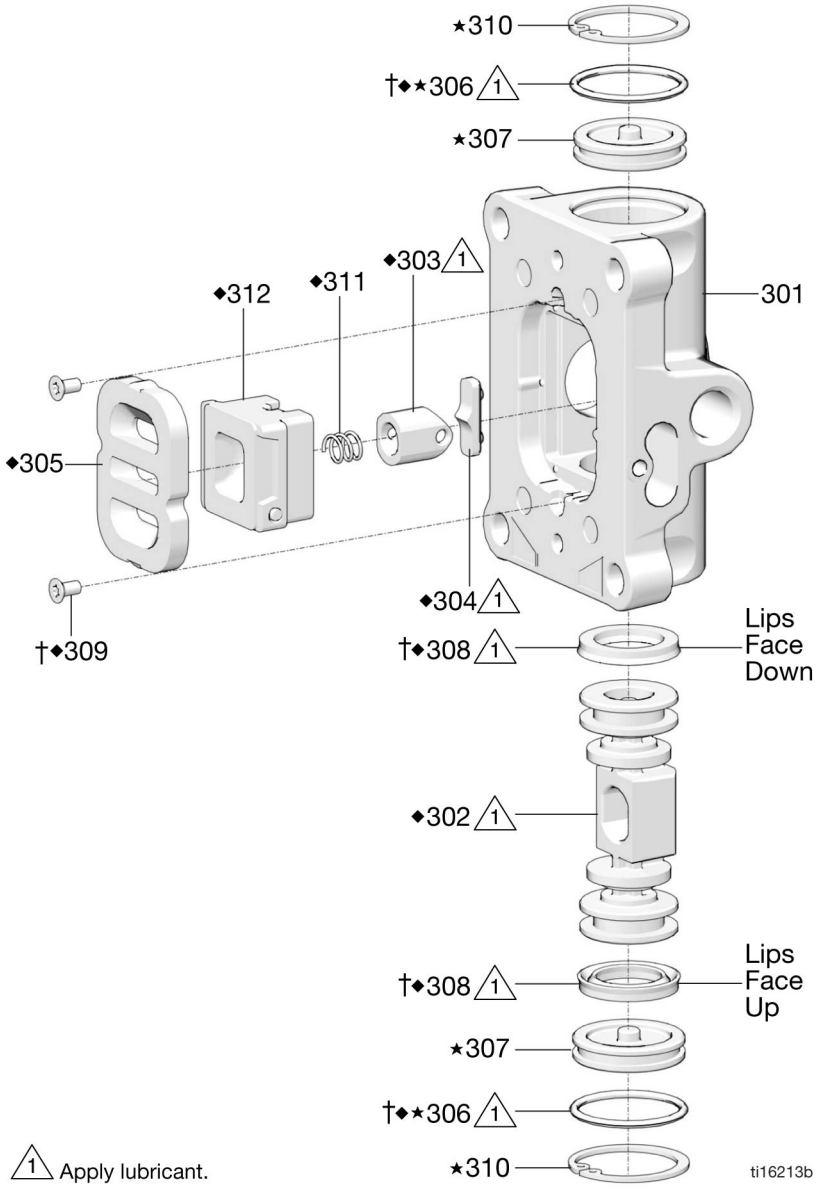
† Included in Pneumatic Valve Seal Kit 24A535. See page 32.

◆ *Included in Pneumatic Valve Repair Kit 24A537. See page 33.*

** Included in Pneumatic Motor Seal Kit 24A539 (2.5 in.)*

❖*Included in Pneumatic Motor Seal Kit 24E986 (4.5 in.)*

Pneumatic Valve Parts



Pneumatic Valve Parts

Complete Pneumatic Valve Replacement Kit 24A351

To replace the complete pneumatic valve, order Pneumatic Valve Replacement Kit 24A351 (2.5 in.) or Kit 24A352 (4.5 in.). The kit includes items 301-312 below, and items 209 and 211 on page 31.

Pneumatic Valve Repair Kits

Pneumatic valve parts are not sold individually. The table below shows possible kit options for each part.

Ref.	Description	Qty.	Pneumatic Valve Repair Kit 24A537 (2.5 in.) 24A538 (4.5 in.)	Pneumatic Valve Seal Kit 24A535 (2.5 in.) 24A536 (4.5in.)	Pneumatic Valve End Cap Kit 24A360 (2.5 in.) 24A361 (4.5 in.)
301	HOUSING	1			
302◆	PNEUMATIC VALVE PISTON	1	✓		
303◆	DETENT PISTON ASSEMBLY	1	✓		
304◆	DETENT CAM	1	✓		
305◆	PLATE, pneumatic valve	1	✓		
306†★◆	O-RING	2	✓	✓	✓
307★	CAP	2			✓
308†◆	U-CUP	2	✓	✓	
309†◆	SCREW	2	✓	✓	
310★	SNAP RING	2			✓
311◆	DETENT SPRING	1	✓		
312◆	CUP	1	✓		

† Included in Pneumatic Valve Seal Kit 24A535 for 2.5 in. and 24A536 for 4.5 in. air motors.

◆ Included in Pneumatic Valve Repair Kit 24A537 for 2.5 in. and 24A538 for 4.5 in. air motors.

★Included in Pneumatic Valve End Cap Kit 24A360 for 2.5 in. and 24A361 for 4.5 in. air motors.

Replacement screws (309) are available in a pack of 10. Order Kit 24A359.

Kits and Accessories

Python XL Pump Lower

Table 1: Fluid Plungers (ref. 105)

Part Numbers by Fluid Plunger Size Diameter					
Ref	**1/4 in.**	**3/8 in.**	**1/2 in.**	**3/4 in.**	**Qty.**
Chromex-Coated Fluid Plungers					
105	B32254	B32255	B32256	B32258	1

Table 2: Packing Stacks (ref. 103), including Plunger Bearings (ref. 102)

Part Numbers by Fluid Plunger Size Diameter					
Ref	**1/4 in.**	**3/8 in.**	**1/2 in.**	**3/4 in.**	**Qty.**
FKMETP					
103	2B32437	2B32438	2B32439	2B32441	1
HNBR					
103	2B32444	2B32445	2B32446	2B32448	1
FFKM					
103	2B32451	2B32452	2B32453	2B32455	1

Table 3: Check Valve Kit - includes both an inlet and an outlet check

Ref	Part Number	Material
108	B33302	FKMETP
108	B33306	HNBR
108	B33304	FFKM

Additional Kits & Accessories

Part No.	Description
237212	Pneumatic Lubricator

Dimensions

Python XL Pump Dimensions

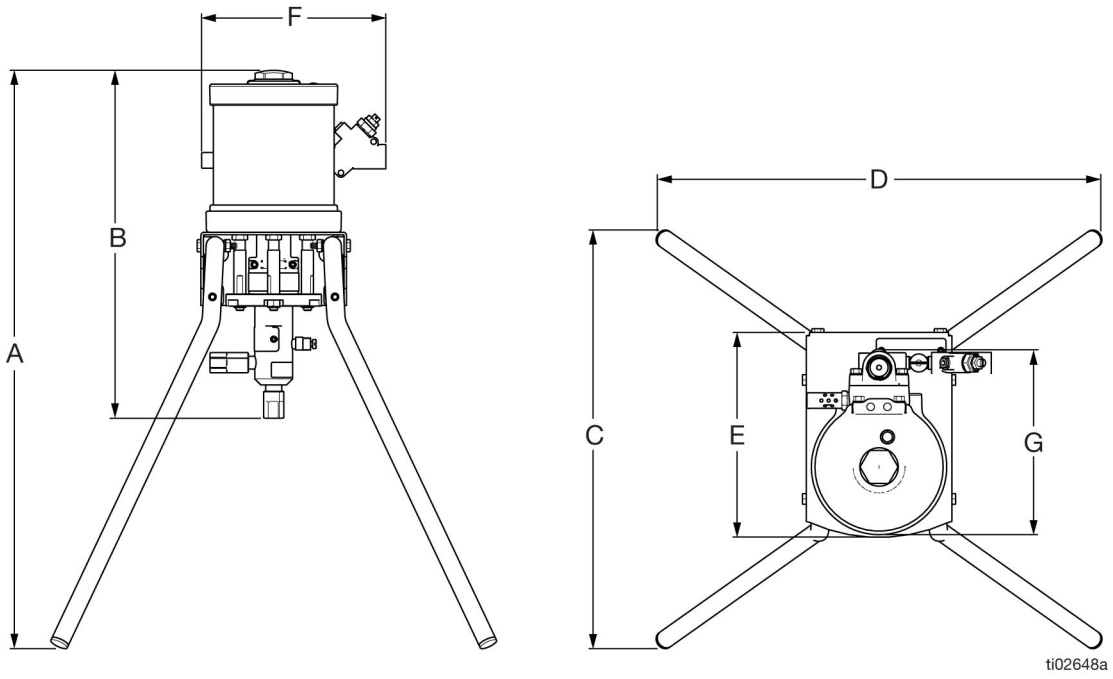
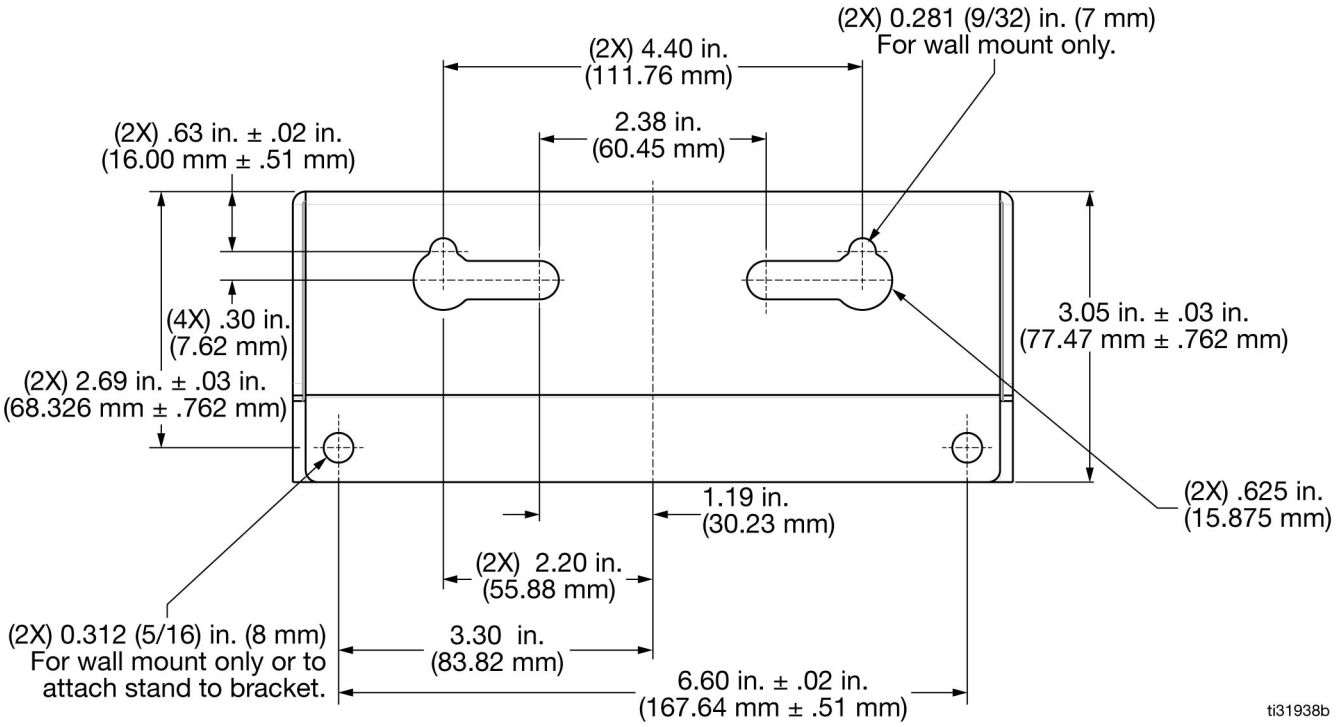


FIG. 19 Python Pump Dimensions

Size	A	B	C	D	E	F	G
450	24.0 in. (61.0 cm)	14.5 in. (36.8 cm)	16.75 in. (42.5 cm)	19.25 in. (48.9 cm)	9.94 in. (25.5 cm)	13.16 in. (33.4 cm)	9.19 in. (23.3 cm)

Wall Bracket Mounting Hole Diagram, 4.5 in.



Performance Charts

2.5 in. Motors

1/4 in. Plunger (PCI-250-25)

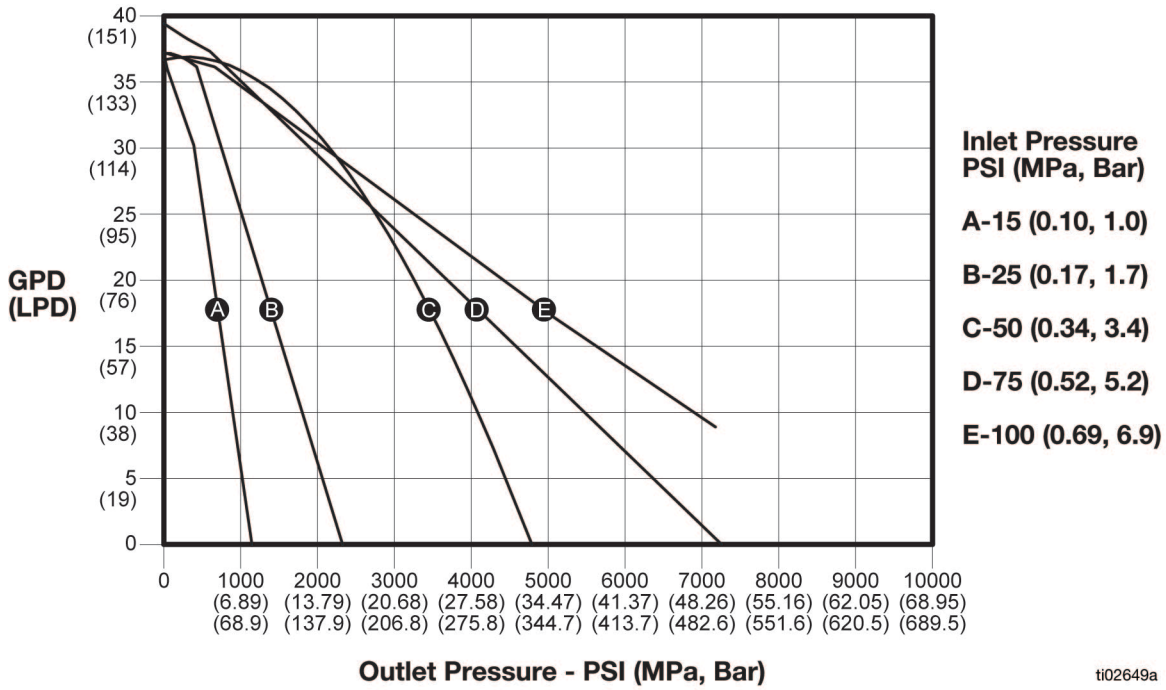


FIG. 20

3/8 in. Plunger (PCI-250-38)

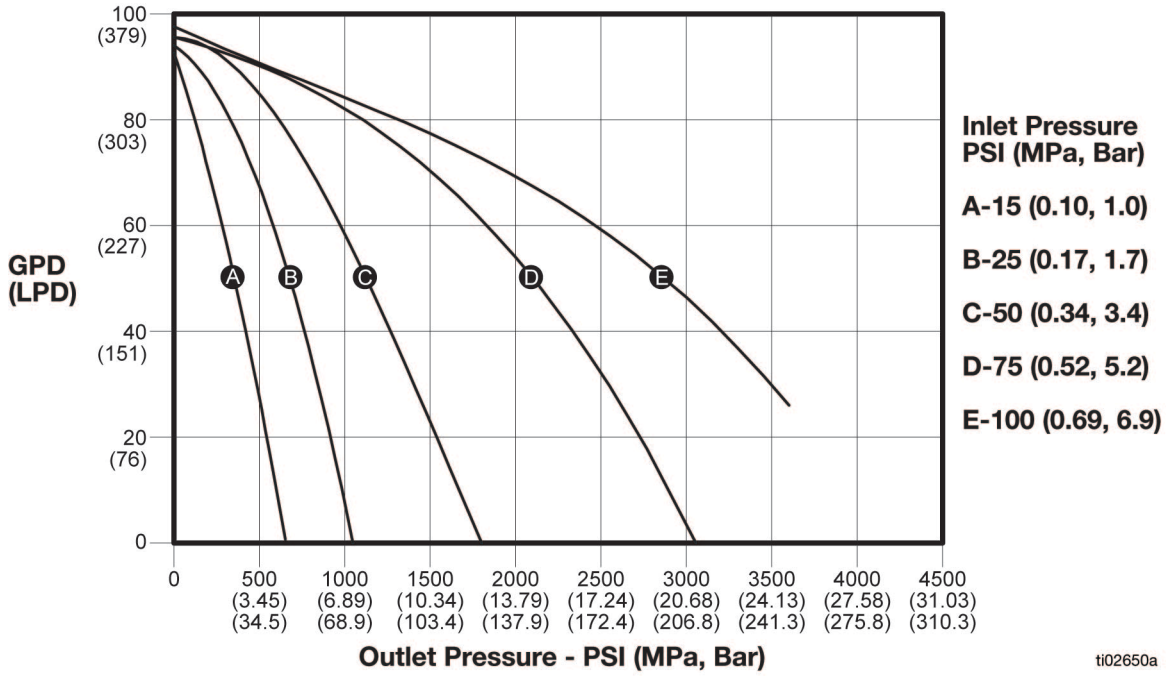


FIG. 21

1/2 in. Plunger (PCI-250-50)

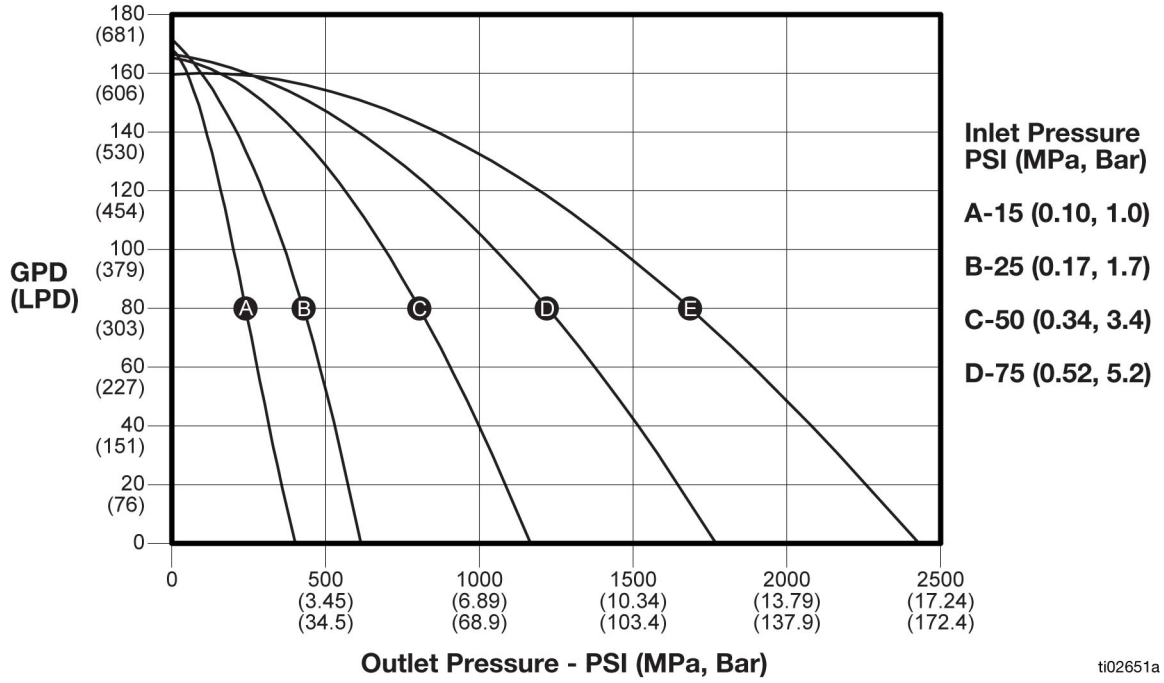


FIG. 22

3/4 in. Plunger (PCI-250-75)

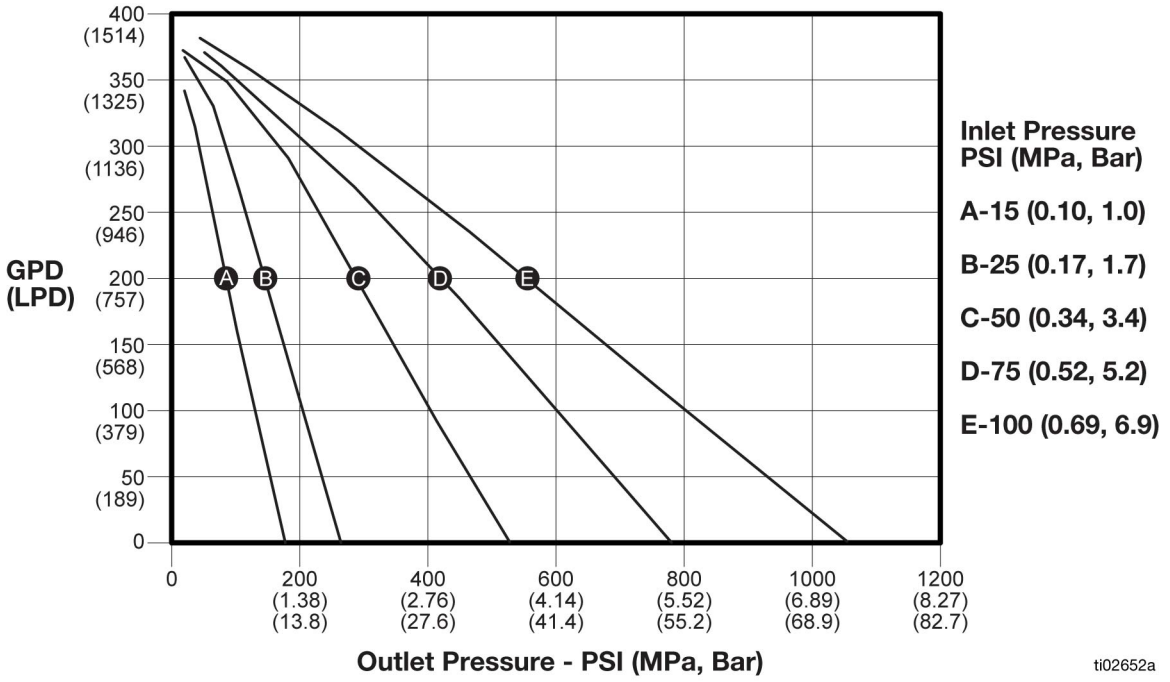


FIG. 23

4.5 in. Motors

3/8 in. Plunger (PCI-450-38)

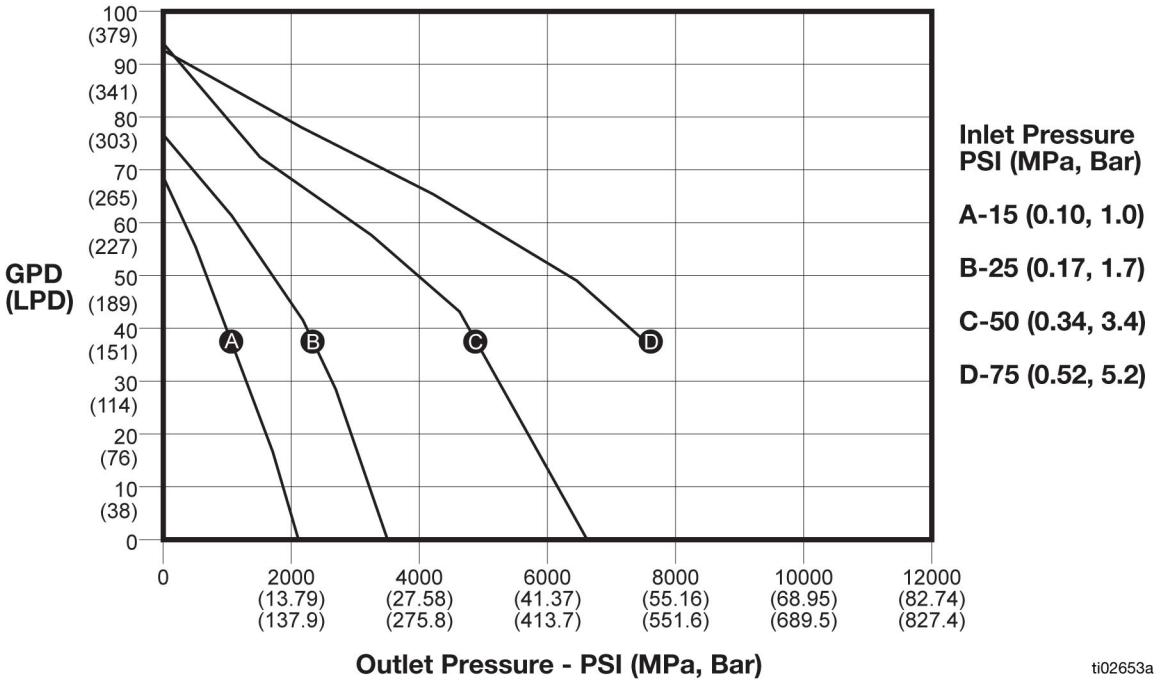


FIG. 24

3/4 in. Plunger (PCI-450-75)

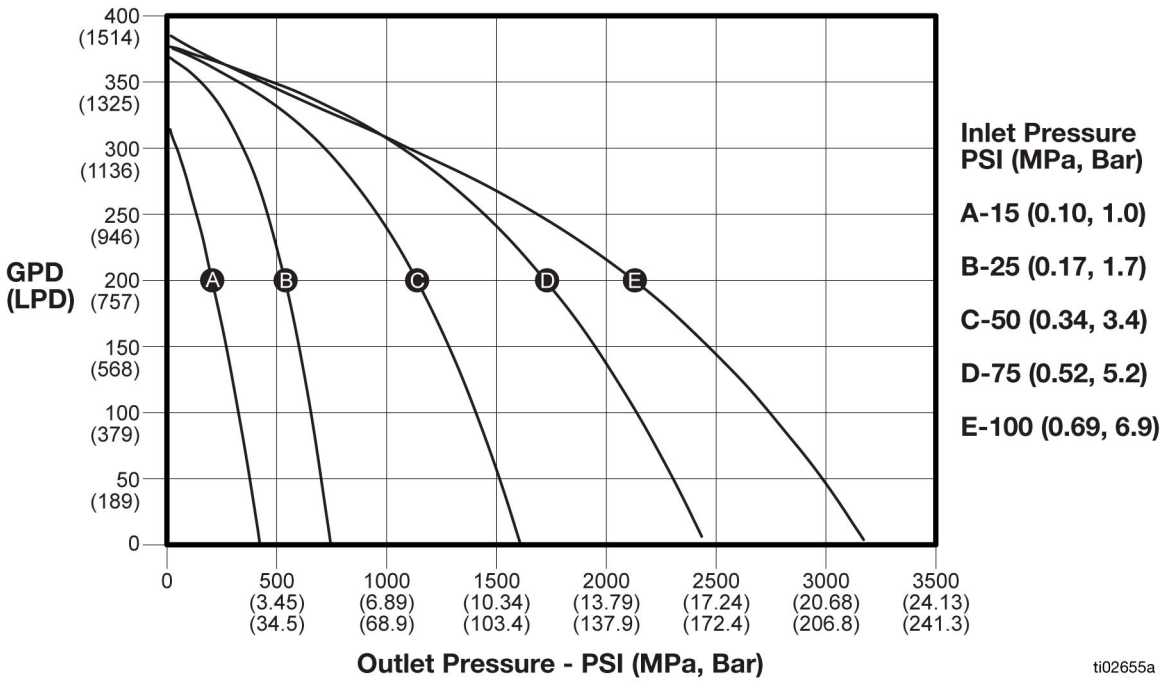


FIG. 25

Air/Gas Consumption

The air/gas consumption rate depends on the cycle rate of the pump. To estimate your cycle rate, see the **Baseline Chemical Dosage Settings**, page 16, and the **Performance Charts**, starting on page 37.

	2.5 in. Motor				
	Air or Gas Consumption				
	SCFM (SM^3/hr)				
CPM	**15 PSI**	**25 PSI**	**50 PSI**	**75 PSI**	**100 PSI**
10	0.3 (0.5)	0.4 (0.4)	0.6 (1.0)	0.8 (1.4)	1.1 (1.8)
20	0.6 (0.9)	0.7 (1.2)	1.2 (2.3)	1.7 (2.8)	2.1 (3.6)
30	0.8 (1.1)	1.1 (1.9)	1.8 (3.0)	2.5 (4.2)	3.2 (5.4)
40	1.1 (1.9)	1.5 (2.5)	2.4 (4.1)	3.3 (5.6)	4.3 (7.2)
50	1.4 (2.4)	1.8 (3.1)	3.0 (5.1)	4.2 (7.1)	5.3 (9.0)
60	1.7 (2.8)	2.2 (3.7)	3.6 (6.1)	5.0 (8.5)	6.4 (10.9)
70	1.9 (3.3)	2.6 (4.3)	4.2 (7.1)	5.8 (9.9)	7.5 (12.7)
80	2.2 (3.8)	2.9 (4.9)	4.8 (8.1)	6.7 (11.3)	8.5 (14.5)
90	2.5 (4.2)	3.3 (5.7)	5.4 (9.1)	7.5 (12.7)	9.6 (16.3)
100	2.8 (4.7)	3.6 (6.2)	6.0 (10.2)	8.3 (14.1)	10.7 (18.1)

	4.5 in. Motor				
	Air or Gas Consumption				
	SCFM (SM^3/hr)				
CPM	**15 PSI**	**25 PSI**	**50 PSI**	**75 PSI**	**100 PSI**
10	0.5 (0.9)	0.7 (1.2)	1.1 (1.9)	1.6 (2.7)	2.0 (3.5)
20	1.1 (1.8)	1.4 (2.4)	2.3 (3.9)	3.2 (5.4)	4.1 (6.9)
30	1.6 (2.7)	2.1 (3.5)	3.4 (5.8)	4.8 (8.1)	6.1 (10.4)
40	2.1 (3.6)	2.8 (4.7)	4.6 (7.8)	6.3 (10.8)	8.1 (13.8)
50	2.6 (4.5)	3.5 (5.9)	5.7 (9.7)	7.9 (13.5)	10.2 (17.3)
60	3.2 (5.4)	4.2 (7.1)	6.8 (11.6)	9.5 (16.2)	12.2 (20.7)
70	3.7 (6.3)	4.9 (8.3)	8.0 (13.6)	11.1 (18.9)	14.2 (24.2)
80	4.2 (7.2)	5.6 (9.4)	9.1 (15.5)	12.7 (21.6)	16.3 (27.6)
90	4.8 (8.1)	6.2 (10.6)	10.3 (17.4)	14.3 (24.3)	18.3 (31.1)
100	5.3 (9.0)	6.9 (11.8)	11.4 (19.4)	15.9 (27.0)	20.3 (34.5)

Technical Specifications

Python XL Chemical Injection Pump		
	US	**Metric**
Maximum pneumatic inlet pressure	See **Models** on page 3.	
Maximum fluid working pressure	See **Models** on page 3.	
Maximum cycle rate	100 cpm	
Environmental temperature range	-40°–176°F	-40°–80°C
Noise (dBa)		
2.5 in. Air Motor Sound Power*	83.2 dBA	
2.5 in. Air Motor Sound Pressure**	76.5 dBA	
4.5 in. Air Motor Sound Power*	80.1 dBA	
4.5 in. Air Motor Sound Pressure**	70.2 dBA	
Inlet/Outlet Sizes		
Fluid inlet size	1/4 in. NPT(F)	
Fluid outlet size	1/4 in. NPT(F)	
Prime/bleed size	10-32 UNF	
Pneumatic inlet size	1/4 in. NPT(F)	
Exhaust fitting size	3/8 in. NPT(F)	
Materials of Construction		
Pump/Check Valve Seal Material	See **Configuration Number Matrix** on page 4 for seal material. All other packing materials are PEEK and PTFE unless otherwise noted.	
Wetted Parts	See **Configuration Number Matrix** on page 4 for plunger material. All other materials are 316 stainless steel unless otherwise noted.	
Weight		
2.5 in. (ALL MODELS)	14.5 lbs.	6.6 kg
4.5 in. (ALL MODELS)	24.5 lbs.	11.1 kg

* Sound Power at 70 psi (0.48 MPa, 4.8 bar), 80 cpm. Sound power measured per ISO-9614-2.

** Sound Pressure was test 3.28 feet (1 m) from equipment.

California Proposition 65

CALIFORNIA RESIDENTS

⚠ **WARNING:** Cancer and reproductive harm – www.P65warnings.ca.gov.

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Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

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Original instructions. This manual contains English. MM 3A9514
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Revision A, August 2024