OPERATOR'S MANUAL PD30X-X-B

INCLUDING: OPERATION, INSTALLATION & MAINTENANCE

RELEASED: 8-14-98
REVISED: 10-28-16
(REV: U)

3" DIAPHRAGM PUMP
1:1 RATIO (METALLIC)

READ THIS MANUAL CAREFULLY BEFORE INSTALLING, OPERATING OR SERVICING THIS EQUIPMENT.

It is the responsibility of the employer to place this information in the hands of the operator. Keep for future reference.

SERVICE KITS

Refer to Model Description Chart to match the pump material options.
637303-XXX for fluid section repair **with** seats (see page 4).
637303-XX for fluid section repair **without** seats (see page 4).
NOTE: This kit also contains several air motor seals which will need to be replaced.
637302 for air section repair (see page 6).
67089-X major air valve assembly (see page 7).

PUMP DATA

Models ..... see Model Description Chart for "-XXX".
Pump Type... Metallic Air Operated Double Diaphragm
Material ..... see Model Description Chart.
Weight
PD30A-XAX-XXX-B () ..... 113 lbs (51.3 kgs)
PD30A-XCX-XXX-B () ..... 197 lbs (89.4 kgs)
PD30A-XHX-XXX-B () ..... 203 lbs (92.1 kgs)
PD30A-XSX-XXX-B () ..... 203 lbs (92.1 kgs)
(add 40 lbs [18.1 kg] for stainless steel air motor section)
Maximum Air Inlet Pressure
Ball check models..... 120 psig (8.3 bar)
Maximum Material Inlet Pressure.. 10 psig (0.69 bar)
Maximum Outlet Pressure
Ball check models..... 120 psig (8.3 bar)
Maximum Flow Rate (flooded inlet)
Ball check models..... 275 gpm (1041 lpm)
Displacement / Cycle @ 100 psig... 2.8 gal. (10.6 lit.)
Maximum Particle Size
Ball check models..... 3/8" dia. (9.5 mm)
Maximum Temperature Limits (diaphragm / ball / seal material)
E.P.R. / EPDM..... -60° to 280° F (-51° to 138° C)
Hytrel® ..... -20° to 180° F (-29° to 82° C)
Nitrile..... 10° to 180° F (-12° to 82° C)
Kynar® PVDF..... 10° to 200° F (-12° to 93° C)
Santoprene®..... -40° to 225° F (-40° to 107° C)
PTFE ..... 40° to 225° F (4° to 107° C)
Viton®..... -40° to 350° F (-40° to 177° C)
Dimensional Data..... see page 8
Mounting Dimension..... 10-5/32" x 12-1/16" (258 mm x 306 mm)
Noise Level @ 70 psig, 50 cpm①..... 83.0 dB(A)②

① Tested with 67263 muffler assembly installed.

② The pump sound pressure levels published here have been updated to an Equivalent Con tinu ous Sound Level (LA_{eq}) to meet the intent of ANSI S1.13-1971, CAGI-PNEUROP S5.1 using four microphone locations.

NOTICE: All possible options are shown in the chart, however, certain combinations may not be recommended, consult a representative or the factory if you have questions concerning availability.

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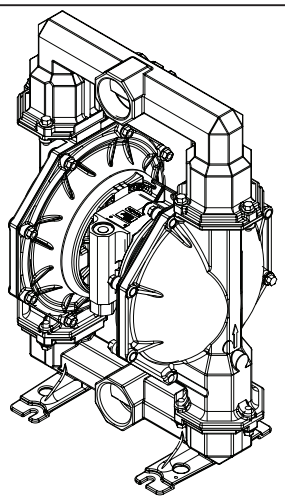


Figure 1

MODEL DESCRIPTION CHART

P D30 X - X X X - X X X - B

AIR MOTOR / AIR CAP MATERIAL
A - Aluminum
S - Stainless Steel

THREAD
A - NPTF B - BSP

FLUID CAPS & MANIFOLD MATERIAL
A - Aluminum H - Hastelloy
C - Cast Iron S - Stainless Steel

HARDWARE MATERIAL
P - Plated Steel S - Stainless Steel

SEAT MATERIAL
A - Santoprene H - Hard 440 Stainless Steel
C - Hytrel K - Kynar PVDF
E - Carbon Steel L - Hastelloy
F - Aluminum S - 316 Stainless Steel
G - Nitrile

BALL MATERIAL
A - Santoprene T - PTFE
C - Hytrel V - Viton
G - Nitrile

DIAPHRAGM MATERIAL
A - Santoprene L - Long Life PTFE
C - Hytrel T - PTFE / Santoprene
G - Nitrile V - Viton

FLUID SECTION SERVICE KIT SELECTION PD30X - XXX - X X X - B
EXAMPLE: MODEL # PD30A-ACS-SAA-B 637303 - X X
FLUID SECTION SERVICE KIT # 637303-AA Ball Diaphragm

ARO Ingersoll Rand

OPERATING AND SAFETY PRECAUTIONS

READ, UNDERSTAND, AND FOLLOW THIS INFORMATION TO AVOID INJURY AND PROPERTY DAMAGE.



EXCESSIVE AIR PRESSURE
STATIC SPARK



HAZARDOUS MATERIALS
HAZARDOUS PRESSURE

⚠ WARNING EXCESSIVE AIR PRESSURE. Can cause personal injury, pump damage or property damage.

- Do not exceed the maximum inlet air pressure as stated on the pump model plate.
- Be sure material hoses and other components are able to withstand fluid pressures developed by this pump. Check all hoses for damage or wear. Be certain dispensing device is clean and in proper working condition.

⚠ WARNING STATIC SPARK. Can cause explosion resulting in severe injury or death. Ground pump and pumping system.

- Use the pump grounding screw terminal provided. Use ARO part no. 66885-1 ground kit or connect a suitable ground wire (12 ga. min.) to a good earth ground source.
- Secure pump, connections and all contact points to avoid vibration and generation of contact or static spark.
- Consult local building codes and electrical codes for specific grounding requirements.
- After grounding, periodically verify continuity of electrical path to ground. Test with an ohmmeter from each component (e.g., hoses, pump, clamps, container, spray gun, etc.) to ground to ensure continuity. Ohmmeter should show 0.1 ohms or less.
- Submerse the outlet hose end, dispensing valve or device in the material being dispensed if possible. (Avoid free streaming of material being dispensed.)
- Use hoses incorporating a static wire.
- Use proper ventilation.
- Keep inflammables away from heat, open flames and sparks.
- Keep containers closed when not in use.

⚠ WARNING Pump exhaust may contain contaminants. Can cause severe injury. Pipe exhaust away from work area and personnel.

- In the event of a diaphragm rupture, material can be forced out of the air exhaust muffler.
- Pipe the exhaust to a safe remote location when pumping hazardous or inflammable materials.
- Use a grounded 1" minimum i.d. hose between the pump and the muffler.

⚠ WARNING HAZARDOUS PRESSURE. Can result in serious injury or property damage. Do not service or clean pump, hoses or dispensing valve while the system is pressurized.

- Disconnect air supply line and relieve pressure from the system by opening dispensing valve or device and / or carefully and slowly loosening and removing outlet hose or piping from pump.

⚠ WARNING HAZARDOUS MATERIALS. Can cause serious injury or property damage. Do not attempt to return a pump to the factory or service center that contains hazardous material. Safe handling practices must comply with local and national laws and safety code requirements.

- Obtain Material Safety Data Sheets on all materials from the supplier for proper handling instructions.

⚠ WARNING EXPLOSION HAZARD. Models containing aluminum wetted parts cannot be used with 1,1,1-trichloroethane, methylene chloride or other halogenated hydrocarbon solvents which may react and explode.

- Check pump motor section, fluid caps, manifolds and all wetted parts to assure compatibility before using with solvents of this type.

⚠ WARNING MISAPPLICATION HAZARD. Do not use models containing aluminum wetted parts with food products for human consumption. Plated parts can contain trace amounts of lead.

⚠ CAUTION Verify the chemical compatibility of the pump wetted parts and the substance being pumped, flushed or recirculated. Chemical compatibility may change with temperature and concentration of the chemical(s) within the substances being pumped, flushed or circulated. For specific fluid compatibility, consult the chemical manufacturer.

⚠ CAUTION Maximum temperatures are based on mechanical stress only. Certain chemicals will significantly reduce maximum safe operating temperature. Consult the chemical manufacturer for chemical compatibility and temperature limits. Refer to PUMP DATA on page 1 of this manual.

⚠ CAUTION Be certain all operators of this equipment have been trained for safe working practices, understand it's limitations, and wear safety goggles / equipment when required.

⚠ CAUTION Do not use the pump for the structural support of the piping system. Be certain the system components are properly supported to prevent stress on the pump parts.

- Suction and discharge connections should be flexible connections (such as hose), not rigid piped, and should be compatible with the substance being pumped.

⚠ CAUTION Prevent unnecessary damage to the pump. Do not allow pump to operate when out of material for long periods of time.

- Disconnect air line from pump when system sits idle for long periods of time.

⚠ CAUTION Use only genuine ARO replacement parts to assure compatible pressure rating and longest service life.

⚠ WARNING	=	Hazards or unsafe practices which could result in severe personal injury, death osr substantial property damage.
⚠ CAUTION	=	Hazards or unsafe practices which could result in minor personal injury, product or property damage.
NOTICE	=	Important installation, operation or maintenance information.

GENERAL DESCRIPTION

The ARO diaphragm pump offers high volume delivery even at low air pressure and a broad range of material compatibility options available. Refer to the model and option chart. ARO pumps feature stall resistant design, modular air motor / fluid sections.

Air operated double diaphragm pumps utilize a pressure differential in the air chambers to alternately create suction and positive fluid pressure in the fluid chambers, ball checks ensure a positive flow of fluid.

Pump cycling will begin as air pressure is applied and it will continue to pump and keep up with the demand. It will build and maintain line pressure and will stop cycling once maximum line pressure is reached (dispensing device closed) and will resume pumping as needed.

AIR AND LUBE REQUIREMENTS

⚠WARNING EXCESSIVE AIR PRESSURE. Can cause pump damage, personal injury or property damage.

- A filter capable of filtering out particles larger than 50 microns should be used on the air supply. There is no lubrication required other than the "O" ring lubricant which is applied during assembly or repair.
- If lubricated air is present, make sure that it is compatible with the Nitrile "O" rings and seals in the air motor section of the pump.

OPERATING INSTRUCTIONS

- Always flush the pump with a solvent compatible with the material being pumped if thematerial being pumped is subject to "setting up" when not in use for a period of time.
- Disconnect the air supply fromthe pump if it is to be inactive for a few hours.
- The outletmaterial volume is governed not only by the air supply but also by thematerial supply available at the inlet. Thematerial supply tubing should not be too small or restrictive. Be sure not to use hose which might collapse.
- When the diaphragm pump is used in a forced-feed (flooded inlet) situation it is recommended that a "Check Valve" be installed at the air inlet.
- Secure the diaphragm pump legs to a suitable surface to ensure against damage by vibration.

MAINTENANCE

Refer to the part views and descriptions as provided on page 4 through 7 for parts identification and Service Kit information.

- Certain ARO "Smart Parts" are indicated which should be available for fast repair and reduction of down time.
- Service kits are divided to service two separate diaphragm pump functions: 1. AIR SECTION, 2. FLUID SECTION. The FLUID SECTION is divided further to match typical part MATERIAL OPTIONS.
- Provide a clean work surface to protect sensitive internal moving parts from contamination from dirt and foreign matter during service disassembly and reassembly.
- Keep good records of service activity and include pump in preventive maintenance program.
- Before disassembling, empty captured material in the outlet manifold by turning the pump upside down to drain material from the pump.

FLUID SECTION DISASSEMBLY

1. Remove top manifold(s).
2. Remove (22) balls, (19) "O" rings (if applicable) and (21) seats.
3. Remove (15) fluid caps.

NOTE: Only PTFE diaphragm models use a primary diaPhragm (7) and a backup diaphragm (8). Refer to the auxiliary view in the Fluid Section illustration.

4. Remove the (6) diaphragm washer, (7) or (7 / 8) diaphragms, and (5) backup washer.

NOTE: Do not scratch or mar the surface of (1) diaphragm rod.

FLUID SECTION REASSEMBLY

SERVICE NOTE: ARO pn 204214-T diaphragmassembly tool is recommended for use when reassembling the pump.

- Reassemble in reverse order.
- Clean and inspect all parts. Replace worn or damaged parts with new parts as required.
- Lubricate (1) diaphragm rod and (144) "U" cup with Lubriplate FML-2 grease (94276 grease packet is included in service kit).
- Be certain the diaphragm assembly bottoms out on the (1) rod, back off PTFE diaphragm assembly far enough to align holes.
- For models with PTFE diaphragms: Item (8) Santoprene diaphragm is installed with the side marked "AIR SIDE" towards the pump center body. Install the PTFE diaphragm (7) with the side marked "FLUID SIDE" towards the (15) fluid cap.
- Check torque settings after pump has been re-started and run a while.

• Viton® and Hytrel® are registered trademarks of the DuPont® Kynar® is a registered trademark of Penwalt Corp. •
• Santoprene® is a registered trademark of Monsanto Company, licensed to Advanced Elastomer Systems, L.P. Lubriplate® is a registered trademark of Lubriplate Division (Fiske Brothers Refining Company) •

PARTS LIST / PD30X-X-X-B() FLUID SECTION

FLUID SECTION SERVICE KITS (637303-XXX or 637303-XX)

★ **For Fluid Kits With Seats:**
637303-XXX Fluid Section Service Kits include: Seats (see SEAT Option, refer to -XXX in chart below), Balls (see BALL Option, refer to -XXX in chart below), Diaphragms (see DIAPHRAGM Option, refer to -XXX in chart below), and items: 3, 19, 70, 144, 175, 196 (listed below) plus 174 and 94276 Lubriplate FMK-2 grease (page 6).

★ **For Fluid Kits Without Seats:**
637303-XX Fluid Section Service Kits include: Balls (see BALL Option, refer to -XX in chart below), Diaphragms (see DIAPHRAGM Option, refer to -XX in chart below), and items: 3, 19, 70, 144, 175, 196 (listed below) plus 174 and 94276 Lubriplate FMK-2 grease (page 6).

SEAT OPTIONS PD30X-XXX-XXX-B

★"21"				★"21"			
-XXX	Seat	Qty	[Mtl]	-XXX	Seat	Qty	[Mtl]
-AXX	94104-A	(4)	[SP]	-HXX	94114	(4)	[SH]
-CXX	94104-C	(4)	[H]	-KXX	94621-K	(4)	[K]
-EXX	95678	(4)	[C]	-LXX	94939	(4)	[Ha]
-FXX	95674	(4)	[A]	-SXX	94113	(4)	[SS]
-GXX	94104-G	(4)	[B]				

BALL OPTIONS PD30X-XXX-XXX-B

★"22" (3-1/4" dia.)				★"19"		
-XXX	Ball	Qty	[Mtl]	"O" Ring	Qty	[Mtl]
-XAX	94103-A	(4)	[SP]	94115	(4)	[E]
-XCX	94103-C	(4)	[H]	Y327-350	(4)	[V]
-XGX	94103-G	(4)	[B]	Y325-350	(4)	[B]
-XTX	94103-T	(4)	[T]	Y328-350	(4)	[T]
-XVX	94103-V	(4)	[V]	Y327-350	(4)	[V]

NOTE: Seat options PD30X-XXX-AXX-B, -CXX-B and -GXX-B do not require item 19 "O" ring.

DIAPHRAGM OPTIONS PD30X-XXX-XXX-B

-XXX	★Service Kits With Seats -XXX = (Seat) -XXX = (Ball) -XXX = (Diaphragm)	★Service Kits Without Seats -XXX = (Ball) -XXX = (Diaphragm)	★ "7"			★ "8"			★ "3"		
			Diaphragm	Qty	[Mtl]	Diaphragm	Qty	[Mtl]	"O" Ring	Qty	[Mtl]
-XXA	637303-XXA	637303-XA	94091-A	(2)	[SP]	-----	---	---	Y328-210	(2)	[T]
-XXC	637303-XXC	637303-XC	94091-C	(2)	[H]	-----	---	---	Y327-210	(2)	[V]
-XXG	637303-XXG	637303-XG	96016-2	(2)	[B]	-----	---	---	Y328-210	(2)	[T]
-XXL	637303-XXL	637303-XL	94090-L	(2)	[L]	94110-A	(2)	[SP]	Y328-210	(2)	[T]
-XXT	637303-XXT	637303-XT	94090-T	(2)	[T]	94110-A	(2)	[SP]	Y328-210	(2)	[T]
-XXV	637303-XXV	637303-XV	95345	(2)	[V]	-----	---	---	Y327-210	(2)	[V]

MANIFOLD / FLUID CAP MATERIAL OPTIONS PD30X-XXX-XXX-B

			PD30X-XAX-X-B		PD30X-XCX-X-B		PD30X-XHX-X-B		PD30X-XSX-X-B	
Item	Description (size)	Qty	Part No.	[Mtl]	Part No.	[Mtl]	Part No.	[Mtl]	Part No.	[Mtl]
6	Fluid Side Washer	(2)	94802	[A]	94803	[SS]	94947	[Ha]	94803	[SS]
9	Washer (3/16" i.d. x 2" o.d. x 5/32")	(2)	Y13-12-T	[SS]	Y13-12-T	[SS]	94949	[Ha]	Y13-12-T	[SS]
14	Cap Screw (3/4" - 16 x 3-1/4")	(2)	Y5-134-T	[SS]	Y5-134-T	[SS]	94948	[Ha]	Y5-134-T	[SS]
15	Fluid Cap	(2)	94024	[A]	94106	[CI]	94693	[Ha]	94107	[SS]
60	Inlet Manifold	(1)	94699-[❖]	[A]	97215-[❖]	[CI]	97216-[❖]	[Ha]	97212-[❖]	[SS]
61	Outlet Manifold	(1)	94700-[❖]	[A]	94702-[❖]	[CI]	94809-[❖]	[Ha]	94704-[❖]	[SS]

❖ For N.P.T.F. thread models (PD30X-AXX-XXX-B), use "-1" For BSP thread models (PD30X-BXX-XXX-B), use "-2".

CENTER SECTION PART OPTIONS PD30X-XXX-XXX-B

			PD30A-X-X-B()		PD20A-X-X-B()	
Item	Description (size)	Qty	Part No.	[Mtl]	Part No.	[Mtl]
5	Backup Washer	(2)	94831-1	[C]	94831-2	[SS]
68	Air Cap	(1)	94030-1	[A]	94031-1	[SS]
69	Air Cap	(1)	94030-2	[A]	94031-2	[SS]
126	Pipe Plug (1/4 - 18 NPT x 7/16")	(2)	----	---	Y17-51-S	[SS]
★✓ 175	"O" Ring (3/32" x 1" o.d.)	(2)	Y325-117	[B]	----	---
	(3/32" x 1-1/16" o.d.)	(2)	----	---	Y325-118	[B]
181	Roll Pin (5/32" o.d. x 3/4" long)	(4)	----	---	Y178-56-S	[SS]

MATERIAL CODE

[A] =	Aluminum	[K] =	KynarPVDF
[B] =	Nitrile	[L] =	Long Life PTFE
[C] =	Carbon Steel	[SH] =	Hard Stainless Steel
[Co] =	Copper	[SP] =	Santoprene
[CI] =	Cast Iron	[SS] =	Stainless Steel
[E] =	E.P.R.	[T] =	PTFE
[H] =	Hytrel	[V] =	Viton
[Ha] =	Hastelloy-C		

EXTERNAL HARDWARE OPTIONS PD30X-XXX-XXX-B

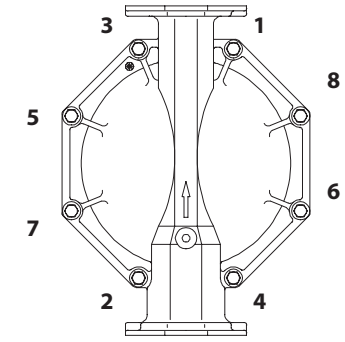
			PD30X-XXP-X-B		PD30X-XXS-X-B	
Item	Description (size)	Qty	Part No.	[Mtl]	Part No.	[Mtl]
26	Screw (M12 x 1.75 - 6g x 45 mm)	(12)	94412-1	[C]	94412-2	[SS]
27	Screw (M12 x 1.75 - 6g x 60 mm)	(16)	94991-1	[C]	94991	[SS]
29	Nut (M12 x 1.75 - 6g)	(16)	95053-1	[C]	95053	[SS]

COMMON PARTS

Item	Description (size)	Qty	Part No.	[Mtl]	Item	Description (size)	Qty	Part No.	[Mtl]
1	Rod	(1)	94984	[C]	★ ✓ 144	"U" Cup (3/16" x 1-3/8" o.d.)	(2)	Y186-51	[B]
43	Ground Lug (see page 7)	(1)	93004	[Co]	✓ 180	Gasket (0.406" i.d. x 0.031" thick)	(4)	94098	[Co]
★ ✓70	Gasket	(2)	94100	[B]	★ 196	Cushion	(2)	94631	[SP]
131	Screw (M10 x 1.5 - 6g x 120 mm)	(4)	94531	[C]					

✓ Smart Parts", keep these items on hand in addition to the service kits for fast repair and reduction of down time.

COLOR CODE		
MATERIAL	DIAPHRAGM COLOR	BALL COLOR
E.P.R.	N / A	Blue (•)
Hytrel	Cream	Cream
Nitrile	Black	Red (•)
Santoprene	Tan	Tan
Santoprene (Backup)	Green	N/A
PTFE	White	White
Viton	Yellow (-) (-) Dash	Yellow (•) (•) Dot



Torque Sequence

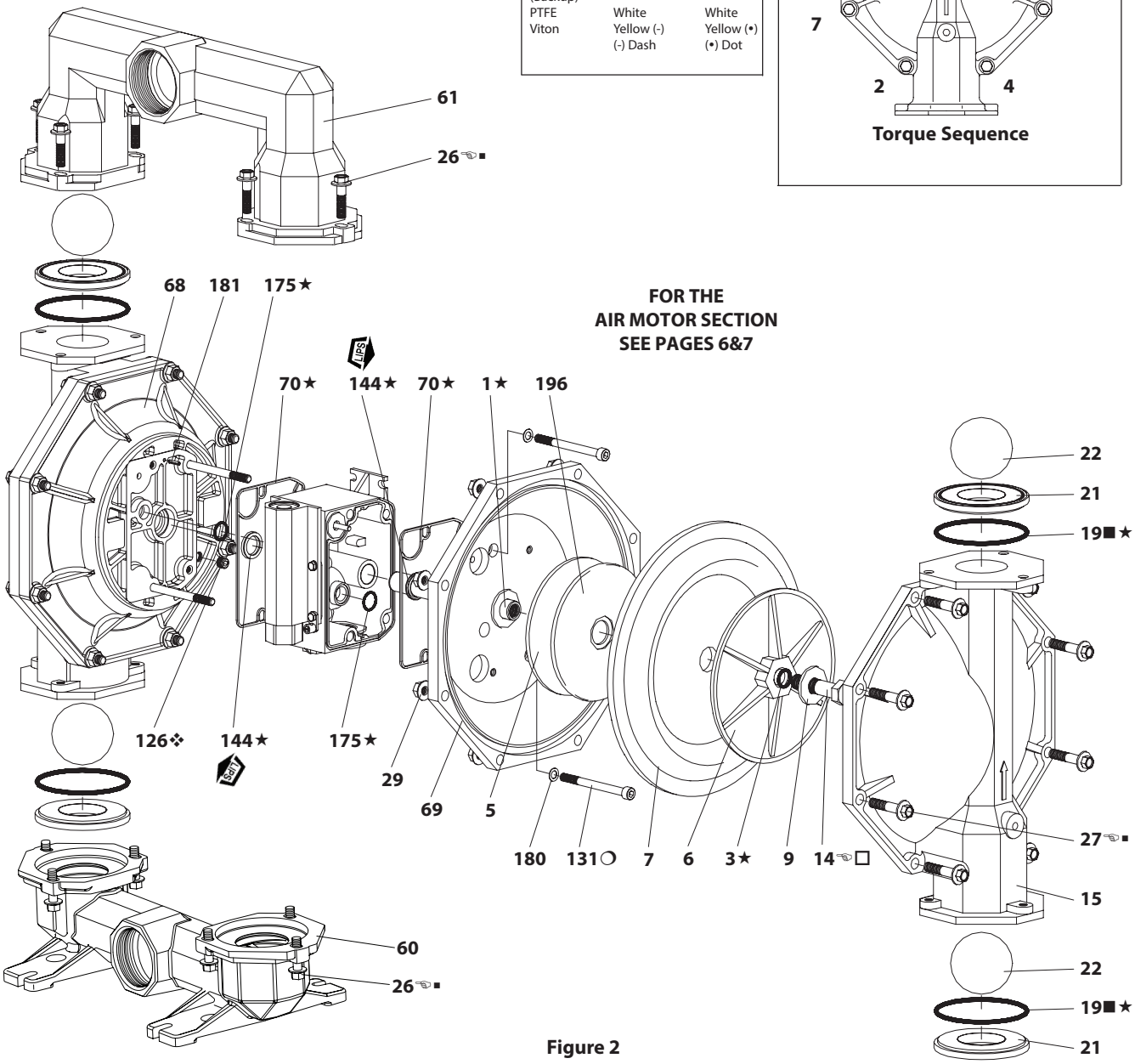
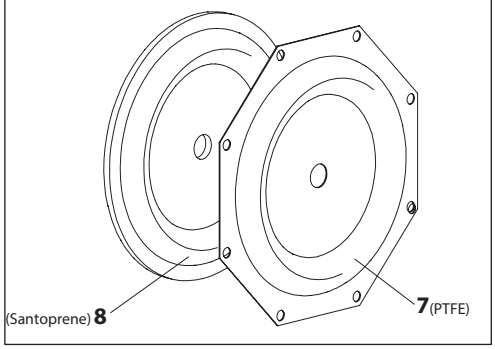


Figure 2

VIEW OF TWO PIECE PTFE DIAPHRAGM



☜TORQUE REQUIREMENTS☜

NOTE: DO NOT OVERTIGHTEN FASTENERS
ALL FASTENERS ARE METRIC.

(14) Cap screw 60 - 70 ft lbs (81.4 - 94.9 Nm).

(26 and 27) Fluid cap / manifold screw 60 - 70 ft lbs (81.4 - 94.9 Nm).

□ Apply Loctite 271 to threads.

▪ Apply anti-seize compound to threads when using stainless steel fasteners and stainless steel wet ends.

LUBRICATION / SEALANTS

★ Apply Lubriplate FML-2 grease to all "O" rings, "U" Cups & mating parts.s.

❍ Apply Loctite 242 to threads at assembly.

❖ Apply PTFE tape to threads at assembly.

■ Not used with PD20X-XXX-AXX, -CXX, -GXX

Lubriplate FML-2 is a white food grade petroleum grease.
MSDS available upon request.

PARTS LIST / PD30X-X-X-B() AIR SECTION

✓ Indicates parts included in 637302 Air Section Service Kit shown below and items (70), (144), (175) and (180) shown on page 4.

Item	Description (size)	Qty	Part No.	[Mtl]
101	Center Body (PD30A-X-X-B)	(1)	94028	[A]
	(PD30S-X-X-B)	(1)	94109	[SS]
103	Bushing	(1)	94092	[D]
107	Inlet Plug	(1)	94034	[C]
109	Piston	(1)	92011	[D]
✓110	"U" Cup (1-3/8" o.d.)	(1)	Y186-51	[B]
111	Spool (PD30A-X-X-B)	(1)	92005	[A]
	(PD30S-X-X-B)	(1)	93407	[C]
112	Washer (1.556" o.d.)	(5)	92877	[Z]
✓113	"O" Ring (small) (1/8" x 1-1/4" o.d.)	(5)	Y325-214	[B]
✓114	"O" Ring (large) (3/32" x 1-9/16" o.d.)	(7)	Y325-126	[B]
□115	Spacer	(4)	92876	[Z]
116	Spacer	(1)	94027	[A]
118	Actuator Pin (0.250" x 2.276" long)	(2)	94083	[SS]
121	Sleeve	(2)	94084	[D]
❍127	90° St. Elbow (1-1/2 - 11-1/2 NPT)	(1)	94860	[C/I]
✓132	Gasket (valve body)	(1)	94099	[B]
133	Lockwasher (1/4") (PD30A-X-X-B)	(3)	Y117-416-C	[C]
	(PD30S-X-X-B)	(3)	Y14-416-T	[SS]
134	Screw (M6 x 1.0 x 16 mm) (PD30A-X-B)	(4)	96721030	[C]
	(PD30S-X-X-B)	(4)	96720081	[SS]
135	Valve Block (PD30A-X-X-B)	(1)	94032	[A]
	(PD30S-X-X-B)	(1)	94318	[SS]
136	Piston Plug	(1)	94033	[D]
✓146	"O" Ring ◆ (3/32" x 1-1/16" o.d.)	(1)	Y325-118	[B]
✓147	"O" Ring ◆ (1/8" x 1/2" o.d.)	(2)	Y325-202	[B]
✓166	Track Gasket ●	(1)	94026	[B]
✓167	Pilot Piston (includes 168 and 169)	(1)	67164	[D]
168	"O" Ring (3/32" x 5/8" o.d.)	(2)	94433	[U]
169	"U" Cup (1/8" x 7/8" o.d.)	(1)	Y240-9	[B]
170	Piston Sleeve	(1)	94081	[D]
✓171	"O" Ring (3/32" x 1-1/8" o.d.)	(1)	Y325-119	[B]
✓172	"O" Ring (1/16" x 1-1/8" o.d.)	(1)	Y325-22	[B]
✓173	"O" Ring (1/16" x 1-3/8" o.d.)	(2)	Y325-26	[B]
★✓174	"O" Ring (1/8" x 1/2" o.d.)	(2)	Y325-202	[B]
✓176	Diaphragm (check valve)	(2)	94102	[SP]
✓177	Retaining Ring (PD30X-XXP-X-B)	(1)	Y147-16-C	[C]
	(PD30X-XXS-X-B)	(1)	Y147-16-S	[SS]
❍201	Muffler	(1)	94810	
★✓	Lubriplate FML-2 Grease	(1)	94276	
	Lubriplate Grease Packets (10)		637308	

◆ Used on Stainless Steel models (PD30S-XXX-XXX-B) only.

● Used on Aluminum models (PD30A-XXX-XXX-B) only.

❍Items not shown

MATERIAL CODE

[A] = Aluminum	[I] = Iron
[B] = Nitrile	[SP] = Santoprene
[Br] = Brass	[SS] = Stainless Steel
[C] = Carbon Steel	[U] = Polyurethane
[D] = Acetal	[Z] = Zinc

AIR MOTOR SECTION SERVICE

Service is divided into two parts – 1. Pilot Valve, 2. Major Valve. GENERAL REASSEMBLY NOTES:

- Air Motor Section Service is continued from Fluid Section repair.
- Inspect and replace old parts with new parts as necessary. Look for deep scratches on surfaces, and nicks or cuts in "O" rings.
- Take precautions to prevent cutting "O" rings upon installation.
- Lubricate "O" rings with Lubriplate FML-2 grease.
- Do not over-tighten fasteners, refer to torque specification block on view.
- Torque fasteners following restart.
- SERVICE TOOLS – To aid in the installation of (168) "O" rings onto the (167) pilot piston, use tool # 204130-T, available from ARO.

PILOT VALVE DISASSEMBLY

1. A light tap on (118) should expose the opposite (121) sleeve, (167) pilot piston and other parts.
2. Remove (170) sleeve, inspect inner bore of sleeve for damage.

PILOT VALVE REASSEMBLY

1. Clean and lubricate parts not being replaced from service kit.
2. Install new (171 and 172) "O" rings, replace (170) sleeve.
3. Install new (168) "O" rings and (169) "U" cup. Note the lip direction. Lubricate and replace (167) pilot piston.
4. Reassemble remaining parts, replace (173 and 174) "O" rings.

MAJOR VALVE DISASSEMBLY

1. Remove (135) valve block, exposing gaskets (166 and 132) and (176) checks.
2. Remove (177) snap ring and (107) inlet plug.
3. On the side opposite the air inlet, push on the inner diameter of (111) spool. This will force the (136) piston plug and (109) piston out. Continue pushing the (111) spool and remove. Check for scratches or gouges.
4. Remove the Major Valve parts (112 - 116).

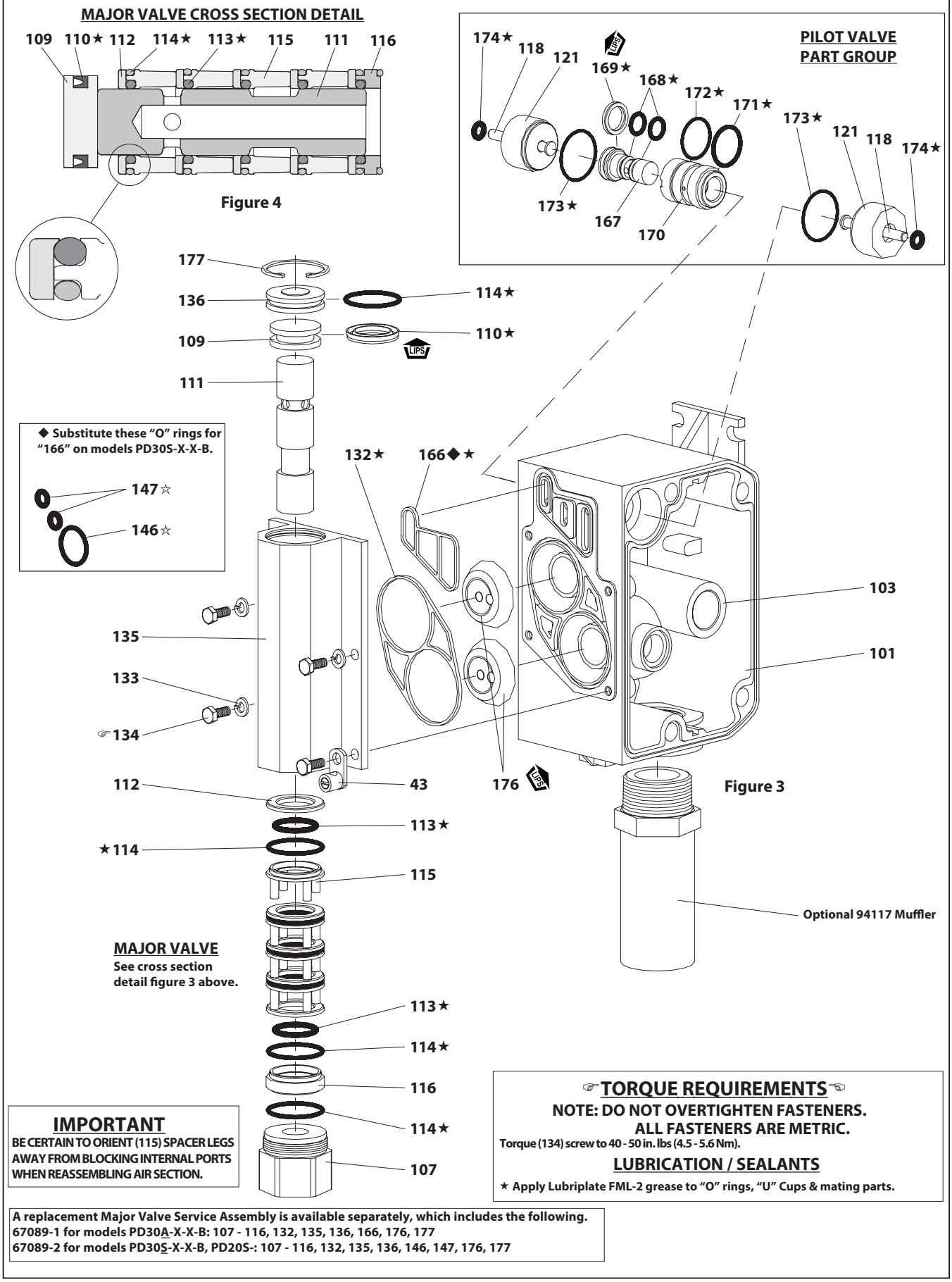
MAJOR VALVE REASSEMBLY

1. Replace (112) washer, (114) "O" ring and (113) "O" ring onto (115) spacer and insert etc. Continue this routine to build the major valve stack.

NOTE: Be careful to orient spacer legs away from-blocking internal

2. Replace (111) spool on (136) plug, (110) seal on (109) piston and replace (109), (136) plug and (177) snap ring.

□ "Smart Parts", keep these items on hand in addition to the service kits for fast repair and reduction of down time.


MAJOR VALVE CROSS SECTION DETAIL
109 110★ 112 114★ 113★ 115 111 116
Figure 4
PILOT VALVE PART GROUP
174★ 118 121 169★ 168★ 172★ 171★ 173★ 121 118 174★
173★ 167 170
177 136 109 111 114★ 110★
◆ Substitute these "O" rings for "166" on models PD30S-X-X-B.
147☆ 146☆
132★ 166◆★ 103 101
135 133 ☞134 112 43 176
113★ ★114 115 113★ 114★ 116 114★ 107
MAJOR VALVE
See cross section detail figure 3 above.
Figure 3
Optional 94117 Muffler
IMPORTANT
BE CERTAIN TO ORIENT (115) SPACER LEGS AWAY FROM BLOCKING INTERNAL PORTS WHEN REASSEMBLING AIR SECTION.
☞TORQUE REQUIREMENTS☜
NOTE: DO NOT OVERTIGHTEN FASTENERS.
ALL FASTENERS ARE METRIC.
Torque (134) screw to 40 - 50 in. lbs (4.5 - 5.6 Nm).
LUBRICATION / SEALANTS
★ Apply Lubriplate FML-2 grease to "O" rings, "U" Cups & mating parts.
A replacement Major Valve Service Assembly is available separately, which includes the following.
67089-1 for models PD30A-X-X-B: 107 - 116, 132, 135, 136, 166, 176, 177
67089-2 for models PD30S-X-X-B, PD20S-: 107 - 116, 132, 135, 136, 146, 147, 176, 177

TROUBLE SHOOTING

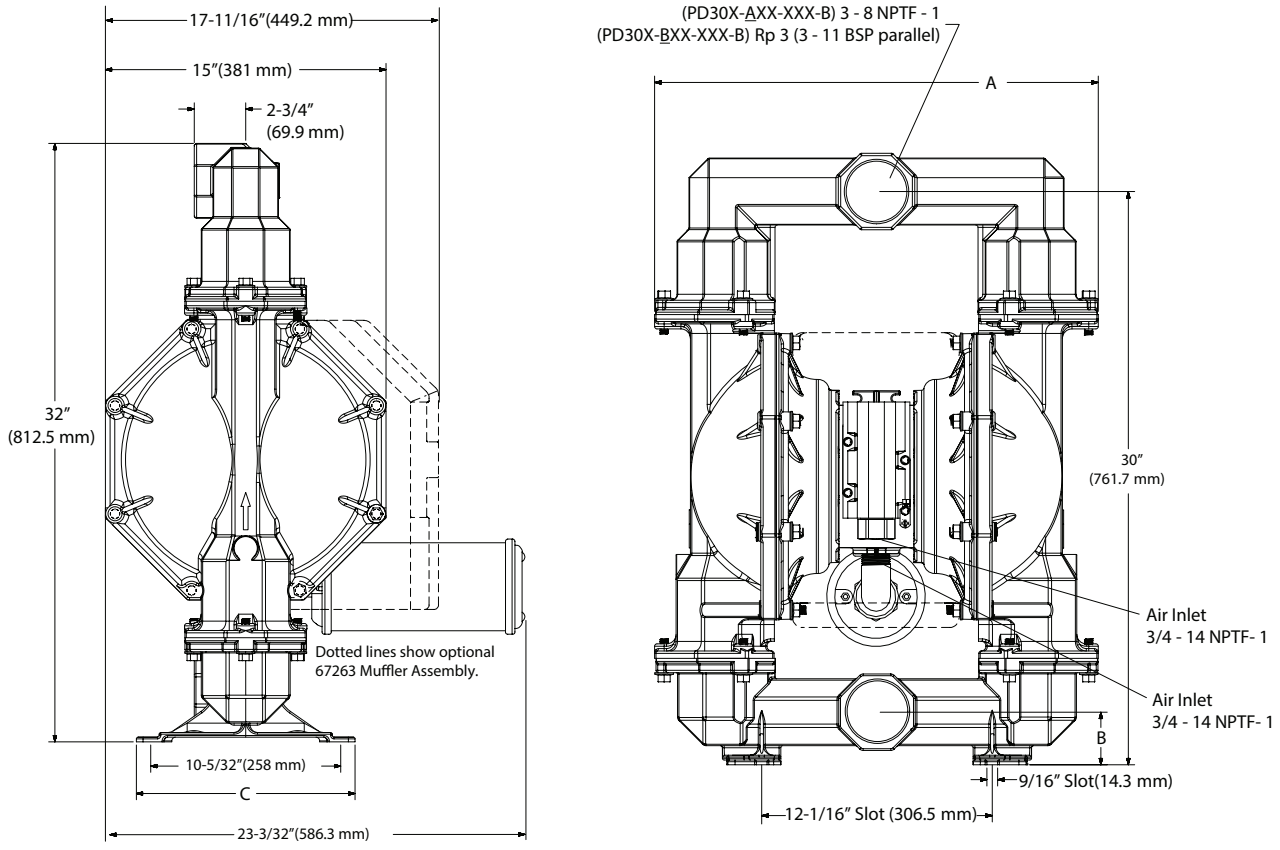
Product discharged from exhaust outlet.
- Check for diaphragm rupture.
- Check tightness of (14) cap screw.

Air bubbles in product discharge.
- Check connections of suction plumbing.
- Check O" rings between intake manifold and inlet side fluid caps.
- Check tightness of (14) cap screw.

Motor blows air or stalls.
- Check (176) check valve for damage or wear.
- Check for restrictions in valve / exhaust.

Low output volume, erratic flow, or no flow.
- Check air supply.
- Check for plugged outlet hose.
- Check for kinked (restrictive) outlet material hose.
- Check for kinked (restrictive) or collapsed inlet material hose.
- Check for pump cavitation – suction pipe should be sized at least as large as the inlet thread diameter of the pump for proper flow if high viscosity fluids are being pumped. Suction hose must be a non-collapsing type, capable of pulling a high vacuum.
- Check all joints on the inlet manifolds and suction connections. These must be air tight.
- Inspect the pump for solid objects lodged in the diaphragm chamber or the seat area.

DIMENSIONAL DATA



	"A"	"B"	"C"
PD30X-XAX-XXX-B( )	23-5/8" (598.7 mm)	2-3/8" (60.3 mm)	11" (279.4 mm)
PD30X-XCX-XXX-B( )	23-5/8" (598.7 mm)	2-7/16" (61.1 mm)	11-11/16" (296.1 mm)
PD30X-XHX-XXX-B( )	23-1/8" (587.3 mm)	2-3/4" (69.9 mm)	11-11/16" (296.1 mm)
PD30X-XSX-XXX-B( )	23-1/8" (587.3 mm)	2-3/4" (69.9 mm)	11-11/16" (296.1 mm)

Figure 4