



SERVICE & OPERATING MANUAL

Original Instructions

Certified Quality



Model F66605X-XXX

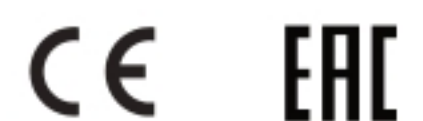
Non Metallic



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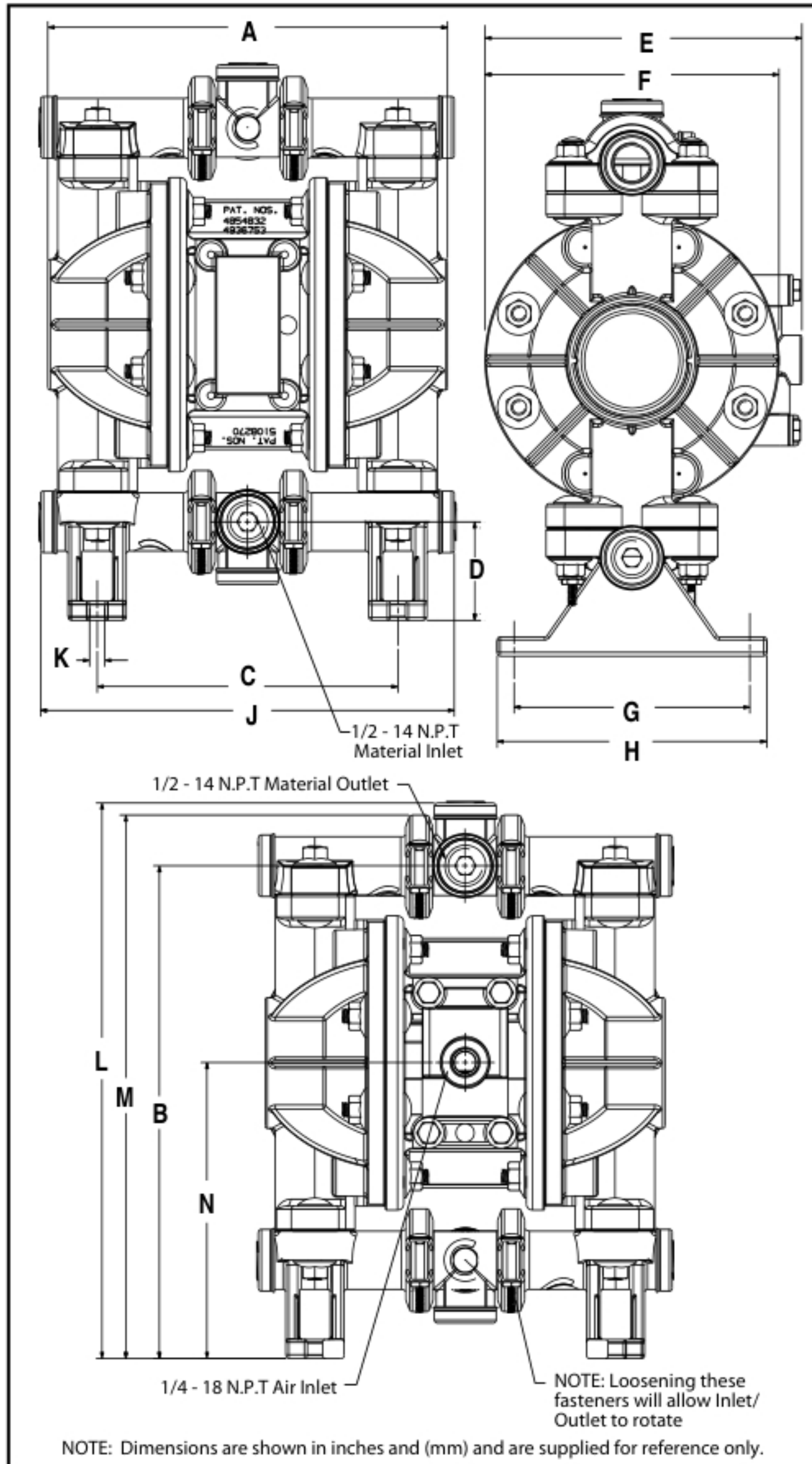
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ENGINEERING DATA

F66605X-XXX 1/2" NON-METALLIC DIAPHRAGM PUMP

DIMENSIONAL DATA



DIMENSIONS

A - 8.155" (207.1 mm)	E - 6.467" (164 mm)	J - 8.44 5" (215 mm)
B - 10.051" (255 mm)	F - 6.000" (152 mm)	K - 0.31 2" (8 mm)
C - 6.135" (155.8 mm)	G - 4.812" (122.2 mm)	L - 11.331" (288 mm)
D - 2.005" (51 mm)	H - 5.500" (140 mm)	M - 11.08 4" (282 mm)
		N - 6.040" (153 mm)

ACCESSORIES:

66073-1 Air Line Connection Kit
93092 Exhaust Cover*
93107 Gasket*
93110 Muffler*

SPECIFICATIONS

CONSTRUCTION

Model Series	66605X-XX
Pump Type	Non-Metallic, Air Operated, Double Diaphragm
Ratio	1:1
Material Inlet / Outlet (female)	1/2 - 14 N.P.T.F. - 1
Air Inlet (female)	1/4 - 18 N.P.T.F. - 1
Air Exhaust standard	internal
optional (female)	3/8 - 18 N.P.T.F. - 1
Weight Polypropylene	7.2 lbs (3.3 kgs)
Groundable Acetal	8.8 lbs (4.0 kgs)
Kynar PVDF	5 lbs (4.3 kgs)
Air Section Service Kit	637141
Fluid Section Service Kit	637140-XX

F66605X - XXXX
637140 - XX

Diaphragm Material

Ball Material

EXAMPLE: Model F66605J-3EB
Fluid Section Service Kit is 637140-EB

PERFORMANCE

Air Inlet Pressure Range	20 - 100 p.s.i. (1.4 - 6.9 bar)
Maximum Material Inlet Pressure	10 p.s.i. (0.69 bar)
Fluid Pressure Range	20 - 100 p.s.i. (1.4 - 6.9 bar)
Maximum Flow Rate (flooded inlet)	
ball check	13 g.p.m. (49.2 l.p.m.)
duckbill	10 g.p.m. (37.9 l.p.m.)
Maximum Particle Size	
ball check	3/32" dia. (2.4 mm)
duckbill	fibers
Maximum Temperature Limits (diaphragm / ball / seal material)	
E.P.R.	-60° to 280° F (-51° to 138° C)
Groundable Acetal	10° to 180° F (-12° to 82° C)
Hytrel	-20° to 180° F (-29° to 82° C)
Kynar PVDF	10° to 200° F (-12° to 93° C)
Neoprene	0° to 200° F (-18° to 93° C)
Nitrile	10° to 180° F (-12° to 82° C)
Polypropylene	35° to 175° F (2° to 79° C)
Polyurethane	10° to 150° F (-12° to 66° 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)

Displacement / Cycle @ 100 p.s.i

ball check	0.040 gal. (0.15 lit.)
duckbill	0.032 gal. (0.12 lit.)

Noise Level @ 100p.s.i. c.p.m.®

1/2" DIAPHRAGM PUMP

1:1 RATIO (NON-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.
637140-XX for fluid section repair (see page 4).
637141 for air section repair (see page 6).

PUMP DATA

Models	see Model Description Chart for "-XXX".
Pump Type	Non-Metallic Air Operated Double Diaphragm
Material	see Model Description Chart.
Weight	Polypropylene 7.2 (3.3 kgs)
	Groundable Acetal 8.8 (4.0 kgs)
	Kynar® PVDF 9.5 (4.3 kgs)
Maximum Air Inlet Pressure	100 p.s.i.g. (6.9 bar)
Maximum Material Inlet Pressure	10 p.s.i.g. (0.69 bar)
Maximum Outlet Pressure	100 p.s.i.g. (6.9 bar)
Air Consumption	1 c.f.m. / gallon (approx.)
Maximum Flow Rate (Ball)	13 g.p.m. (49.2 l.p.m.)
	(Duckbill) 10 g.p.m. (37.9 l.p.m.)
Maximum Particle Size (Ball)	3/32" dia. (2.4 mm)
	(Duckbill) Fibers
Maximum Temperature Limits	
E.P.R.	-60° to 280° F (-51° to 138° C)
Groundable Acetal	10° to 180° F (-12° to 82° C)
Hytrel®	-20° to 150° F (-29° to 66° C)
Neoprene	0° to 200° F (-18° to 93° C)
Nitrile	10° to 180° F (-12° to 82° C)
Polypropylene	35° to 175° F (2° to 79° C)
Polyurethane	10° to 150° F (-12° to 66° 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)
Groundable	666056-X and 66605H-X models only
Dimensional Data	see page 8
Noise Level @ 70 p.s.i., 60 c.p.m.	71.1 db(A)

* The pump sound pressure levels published here have been updated to an Equivalent Continuous Sound Level (L_{Aeq}) to meet the intent of ANSI S1.13-1971, CAGI-PNEU-ROP 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.

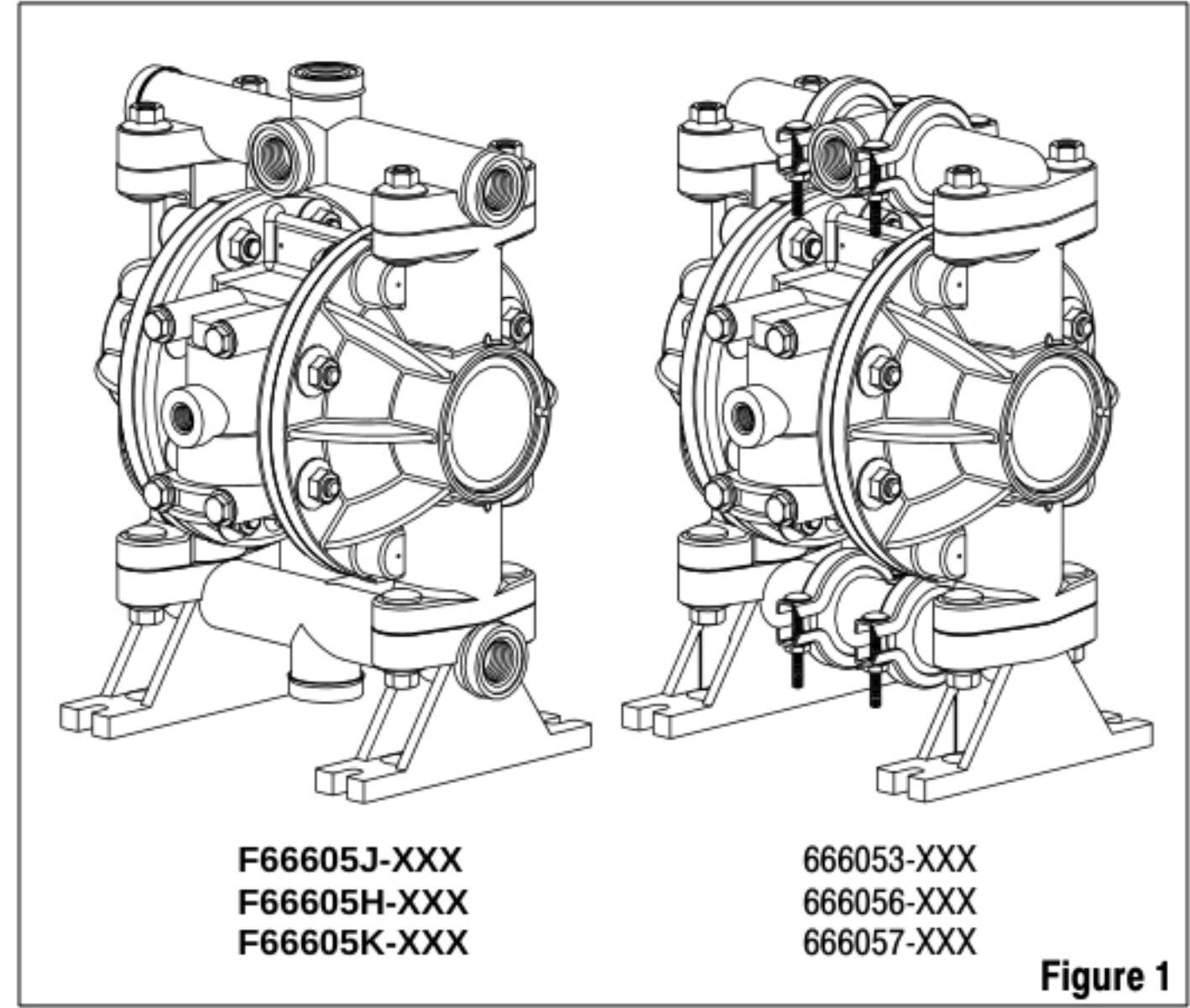


Figure 1

MODEL DESCRIPTION CHART

F66605X - X X X - 04	
Fluid Caps & Manifold Material	
3 - Piece Manifold	Single Piece Manifold
3 - Polypropylene	J - Polypropylene
6 - Groundable Acetal	H - Groundable Acetal
7 - Pure Kynar	K - Pure Kynar
Seat Material	
0 - (Duck Bill)	4 - Kynar PVDF
2 - Stainless Steel	6 - Acetal
3 - Polypropylene	
Ball Material	
	(*) Duckbill models
1 - Neoprene	8 - Polyurethane
2 - Nitrile	A - Stainless Steel
3 - Viton	C - Neoprene (*)
4 - PTFE	D - Nitrile (*)
5 - E.P.R.	E - Santoprene
Diaphragm Material	
1 - Neoprene	5 - E.P.R.
2 - Nitrile	8 - Polyurethane
3 - Viton	9 - Hytrel
4 - PTFE / Santoprene	B - Santoprene
Cone Check Flow	
04 - Top Discharge	
FLUID SECTION SERVICE KIT SELECTION	
F66605X-XX X	
EXAMPLE: MODEL # 666053-321	637140 - <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Fluid Section Service Kit # 637140-21	Ball <input type="checkbox"/> Diaphragm <input type="checkbox"/>

⚠ WARNING	= Hazards or unsafe practices which could result in severe personal injury, death or 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 FTA 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. FTA 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, valve 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 personal injury, pump damage 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 "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 the material being pumped is subject to "setting up" when not in use for a period of time.
- Disconnect the air supply from the pump if it is to be inactive for a few hours.
- The outlet material volume is governed not only by the air supply, but also by the material supply available at the inlet. The material 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 pages 5 through 9 for parts identification and service kit information.

- Certain FTA "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 manifolds (16), (17) and (18).
2. Remove (22) balls, (19) "O" rings 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.

For 6661XX-XX6-C:

4. Remove (7) diaphragm, (5) washers and (30) shims.

For other models:

4. Remove the (14) screws, (6) washers, (7) or (7 / 8) diaphragms and (5) washers.
5. Remove (3) "O" rings.

FLUID SECTION REASSEMBLY

- Reassemble in reverse order.
- Clean and inspect all parts. Replace worn or damaged parts with new parts as required.
- Lubricate (1) diaphragm rod and (2) "O" ring with Lubriplate® FML-2.
- Install (2) "O" ring on (1) diaphragm rod.

For 6661XX-XX6-C:

- Attach a regulated airline to the pump inlet; gradually increasing the air pressure (6-8 psi) to check which side of the pump with air blowing out, and then shut down the air supplier.
- Fasten (7) diaphragm with (5) washer into (1) diaphragm rod, and insert them into (101) Center body from the chamber identified with blowing air in the previous step.
- Install (15) fluid cap.
- Thread the other side of (7) diaphragm with (5) washer into (1) diaphragm rod, but do not tighten it.
- Record the angle for the misalignment between (7) diaphragm hole and (101) center body holes, then unthread the (7) diaphragm and place proper Qty. of (30) shims between (5) washer and (1) diaphragm rod.
- Attach a regulated airline to the pump inlet, gradually increasing the air pressure (6-8 psi) until the diaphragm shift to the other site, shut down the air supply.
- Install the second (15) fluid cap.

NOTE: For details, refer to service kits manual 48495949.

For other models:

- Be certain (7) or (7 / 8) diaphragm(s) align properly with (15) fluid caps before making final torque adjustments on bolt and nuts to avoid twisting the diaphragm.
- 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 with the side marked "FLUID SIDE" towards the fluid cap.
- Re-check torque settings after pump has been re-started and run a while.

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 insure 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.

Models 666056-X and 66605H-X: The Acetal material used in these pumps contains stainless steel fibers. It's conductivity allows it to be connected to a suitable ground. A ground screw and ground wire kit is provided for this.

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 "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 the material being pumped is subject to "setting up" when not in use for a period of time.
- Disconnect the air supply from the pump if it is to be inactive for a few hours.
- The outlet material volume is governed not only by the air supply but also by the material supply available at the inlet. The material 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 insure 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 available to service two separate diaphragm pump functions: 1. AIR SECTION, 2. FLUID SECTION. The Fluid Section is divided further to match typical active 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.

DUCKBILL CHECK VALVES (OPTIONAL)

Pump models with the suffix (-0CX or -0DX) come equipped with duckbill type checks. Standard duckbill pumps are shipped with the material inlet in the top and the material outlet on the bottom manifold. To change the direction of flow, disassemble the pump as instructed in the FLUID SECTION and reassemble as described below. A pump that was factory built with balls and seats can be retro-fitted with duckbill type check valves by purchasing the necessary parts and installing them as shown.

Reassembly:

The duckbills may be installed in either direction to produce flow from top to bottom of the pump or from bottom to top of the pump. In either case, **all of the (42) duckbills must point in the same direction.**

Flow from Top to Bottom: (see page 5)

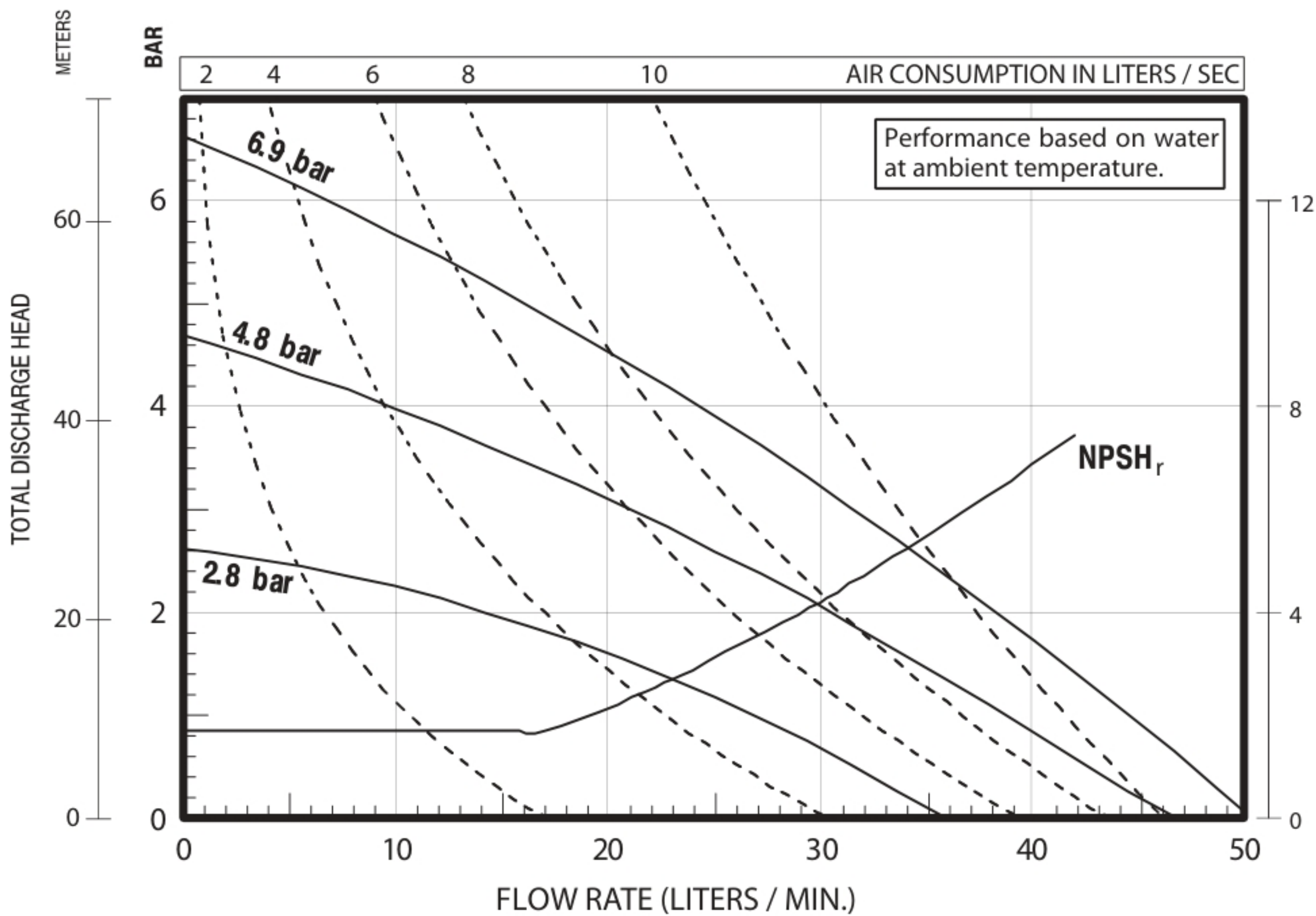
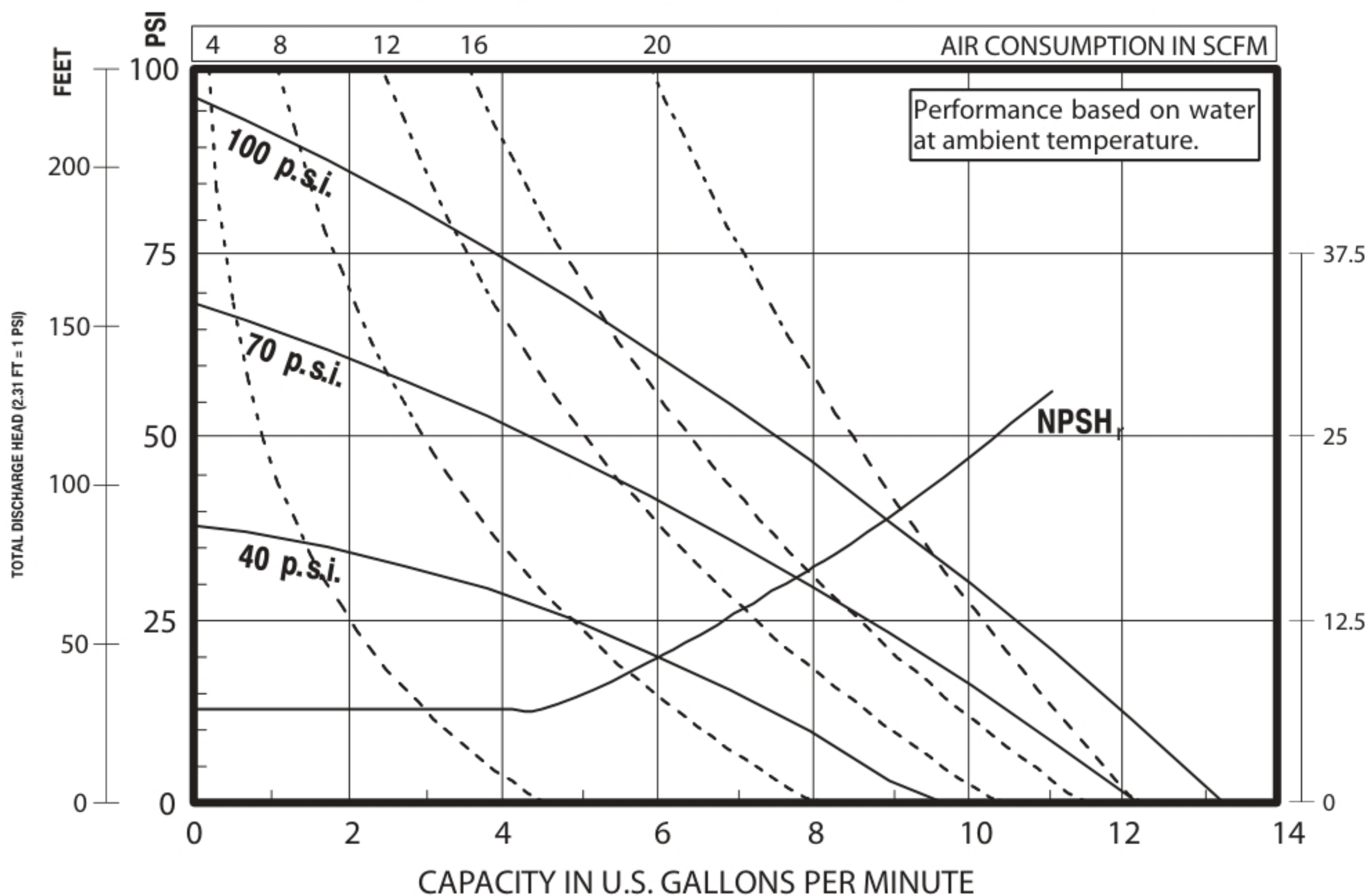
1. With (15) fluid caps installed, stand the pump upside down.
2. Place (21) insert into (42) duckbill and slide (41) sleeve over (42) duckbill.
3. Slide the complete check assembly into the fluid cap bore with the (21) insert end first. [Duckbills (42) point up.]
4. Position (19) "O" ring over (41) sleeve.
5. Attach (35) manifold feet / (36) swivel assembly to the fluid caps.
6. Turn pump over to right side up position.
7. Assemble duckbill check as in step #1.
8. Slide the complete check assembly into the fluid cap bore with the (41) sleeve end first. [Duckbill is pointing down toward fluid cap cavity.]
9. Position (19) "O" ring around (21) insert.
10. Attach (34) manifold / (36) swivel assembly to fluid cap.

Flow from Bottom to Top: (Inlet Bottom - Outlet Top)

To reverse flow direction, slide check valve assemblies into the (15) fluid caps backwards from what is indicated in steps #2 and #7. In step #2, the (42) duckbills will be pointing down and in step #7, they will be pointing up.

PERFORMANCE CURVES

F66605X-XXX 1/2" NON-METALLIC DIAPHRAGM PUMP



TROUBLE SHOOTING

Product discharged from air exhaust.

- Check for diaphragm rupture.
- Check tightness of (6) diaphragm nut.

Air Bubbles in Product Discharge.

- Check connections of suction plumbing.
- Check band clamps on intake manifold.
- Check "O" rings between intake manifold and fluid caps.
- Check tightness of (6) diaphragm nut.

Pump blows air out main exhaust when stalled on either stroke.

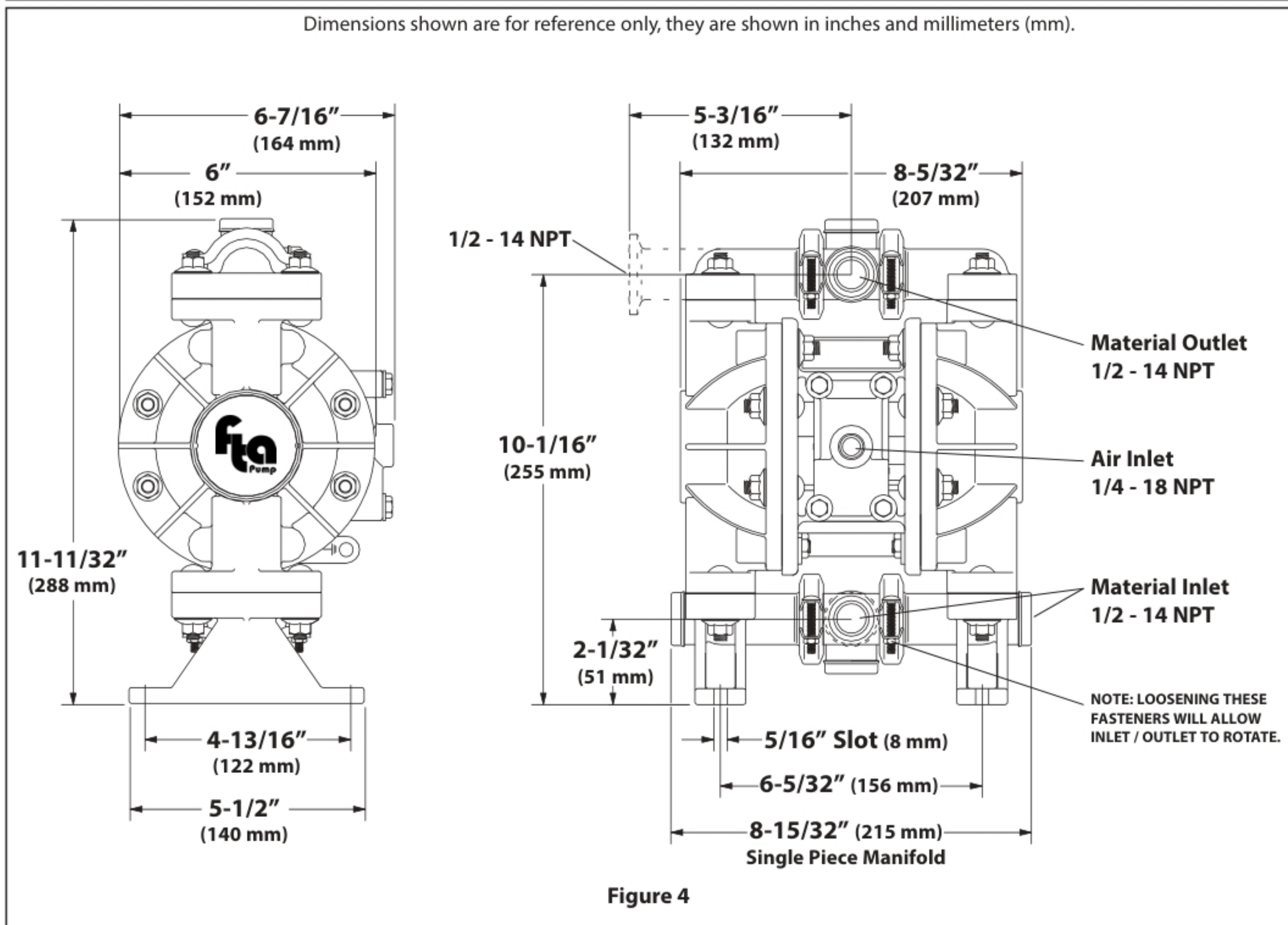
- Check "U" cups on (111) spool in major valve.
- Check (141) valve plate and (140) insert for wear.
- Check (103) sleeve and (2) "O" ring on diaphragm connecting rod.
- Check (119) "O" rings on (118) piston for wear.

Low output volume.

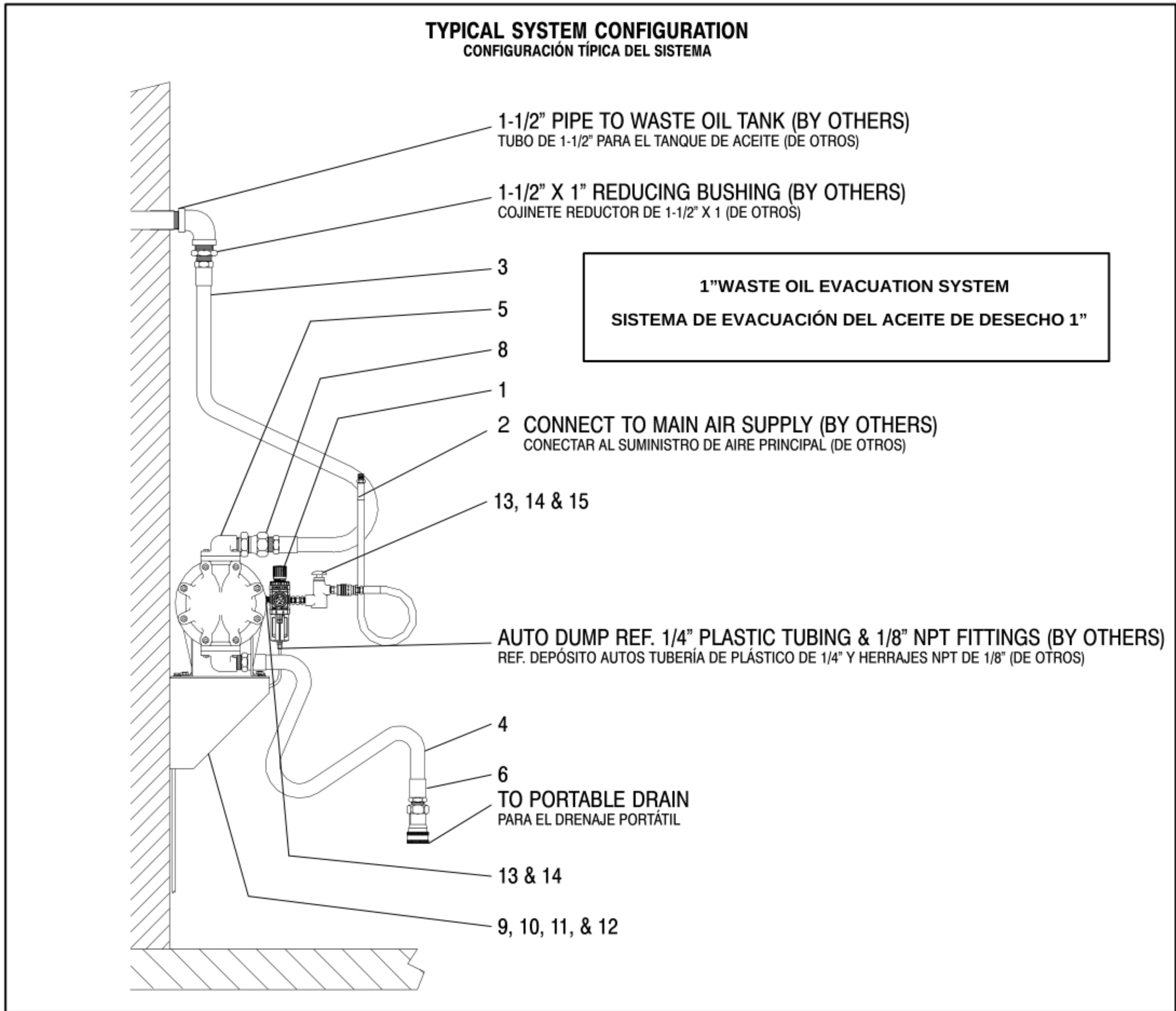
- Check air supply.
- Check for plugged outlet hose.
- For the pump to prime itself, it must be mounted in the vertical position so that the balls will check by gravity.
- Check for pump cavitation - suction pipe should be 1/2" min. or larger if high viscosity fluids are being pumped. Suction hose must be non-collapsible type, capable of pulling a high vacuum.
- Check all joints on intake manifolds and suction connections. These must be airtight.
- Check for sticking or improperly seating check valves.
- If pump cycles at a high rate or runs erratically, check (119) piston "O" rings for wear.

DIMENSIONAL DATA

Dimensions shown are for reference only, they are shown in inches and millimeters (mm).



Recommended Installation Guide



Installation And Start-Up

Locate the pump as close to the product being pumped as possible. Keep the suction line length and number of fittings to a minimum. Do not reduce the suction line diameter.

Air Supply

Connect the pump air inlet to an air supply with sufficient capacity and pressure to achieve desired performance. A pressure regulating valve should be installed to insure air supply pressure does not exceed recommended limits.

Air Valve Lubrication

The air distribution system is designed to operate WITHOUT lubrication. This is the standard mode of operation. If lubrication is desired, install an air line lubricator set to deliver one drop of SAE 10 non-detergent oil for every 20 SCFM (9.4 liters/sec.) of air the pump consumes. Consult the Performance Curve to determine air consumption.

Air Line Moisture

Water in the compressed air supply may cause icing or freezing of the exhaust air, causing the pump to cycle erratically or stop operating. Water in the air supply can be reduced by using a point-of-use air dryer.

Air Inlet And Priming

To start the pump, slightly open the air shut-off valve. After the pump primes, the air valve can be opened to increase air flow as desired. If opening the valve increases cycling rate, but does not increase the rate of flow, cavitation has occurred. The valve should be closed slightly to obtain the most efficient air flow to pump flow ratio.

**OPTIONAL ITEMS AVAILABLE SEPARATELY
USED TO ADAPT PORTABLE DRAINS TO SYSTEM**

**ARTÍCULOS OPTATIVOS QUE SE CONSIGUEN POR SEPARADO
UTILIZADO PARA ADAPTAR LOS DRENAJES PORTÁTILES AL SISTEMA**

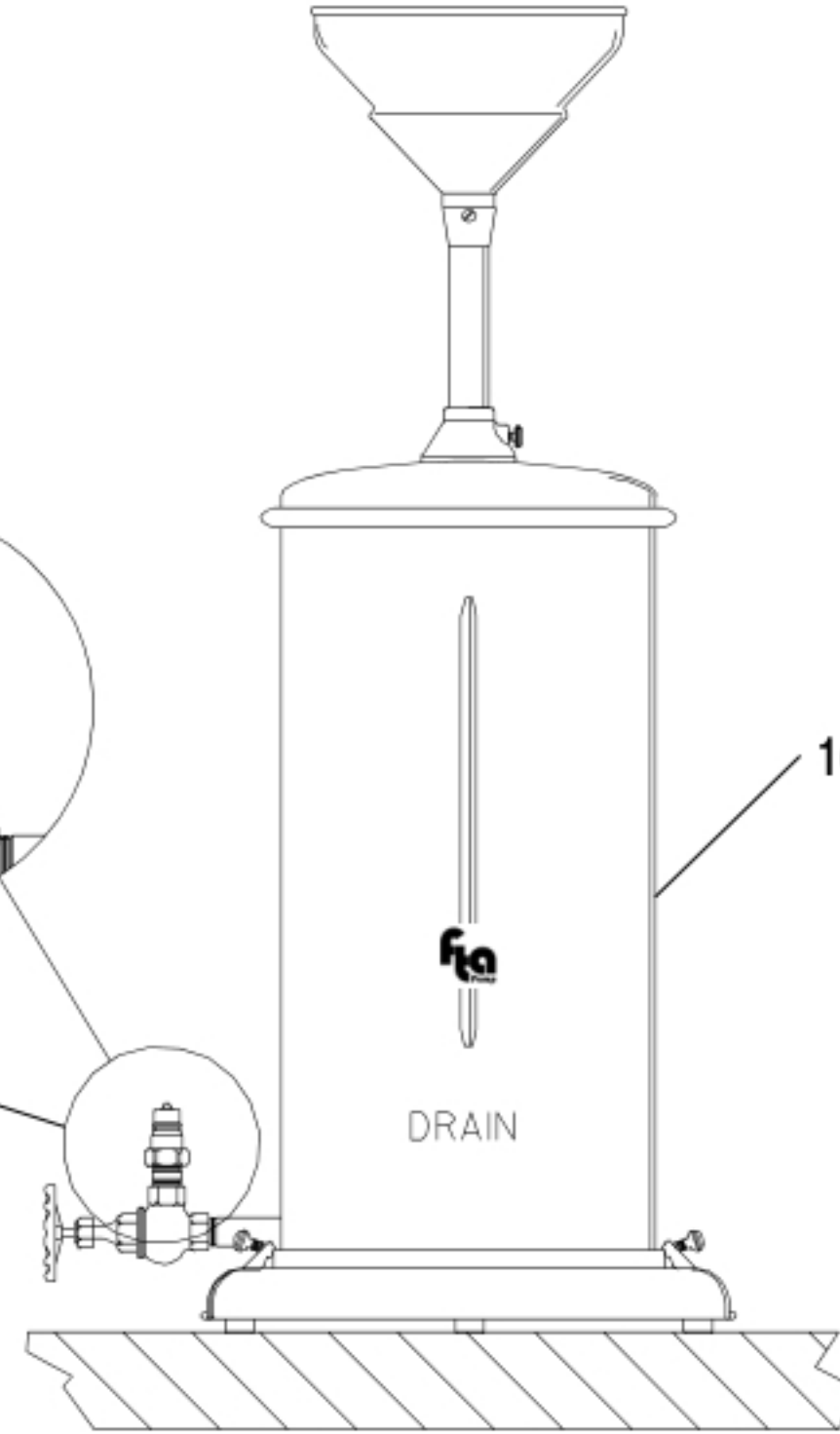
Item	Description	Part No.
Elemento	Descripción	Número De Pieza
16	PORTABLE DRAIN	615007-C
17	ADAPTER KIT ASM.	61431-1
18	ADAPTER KIT ASM.	61431-2

FLUID CONNECTOR REF.
REF. CONECTOR DEL LÍQUIDO

3/4" PIPE NIPPLE REF.
REF. DE NIPLE DE TUBO DE 3/4"

17

16



FLUID CONNECTOR REF.
REF. CONECTOR DEL LÍQUIDO

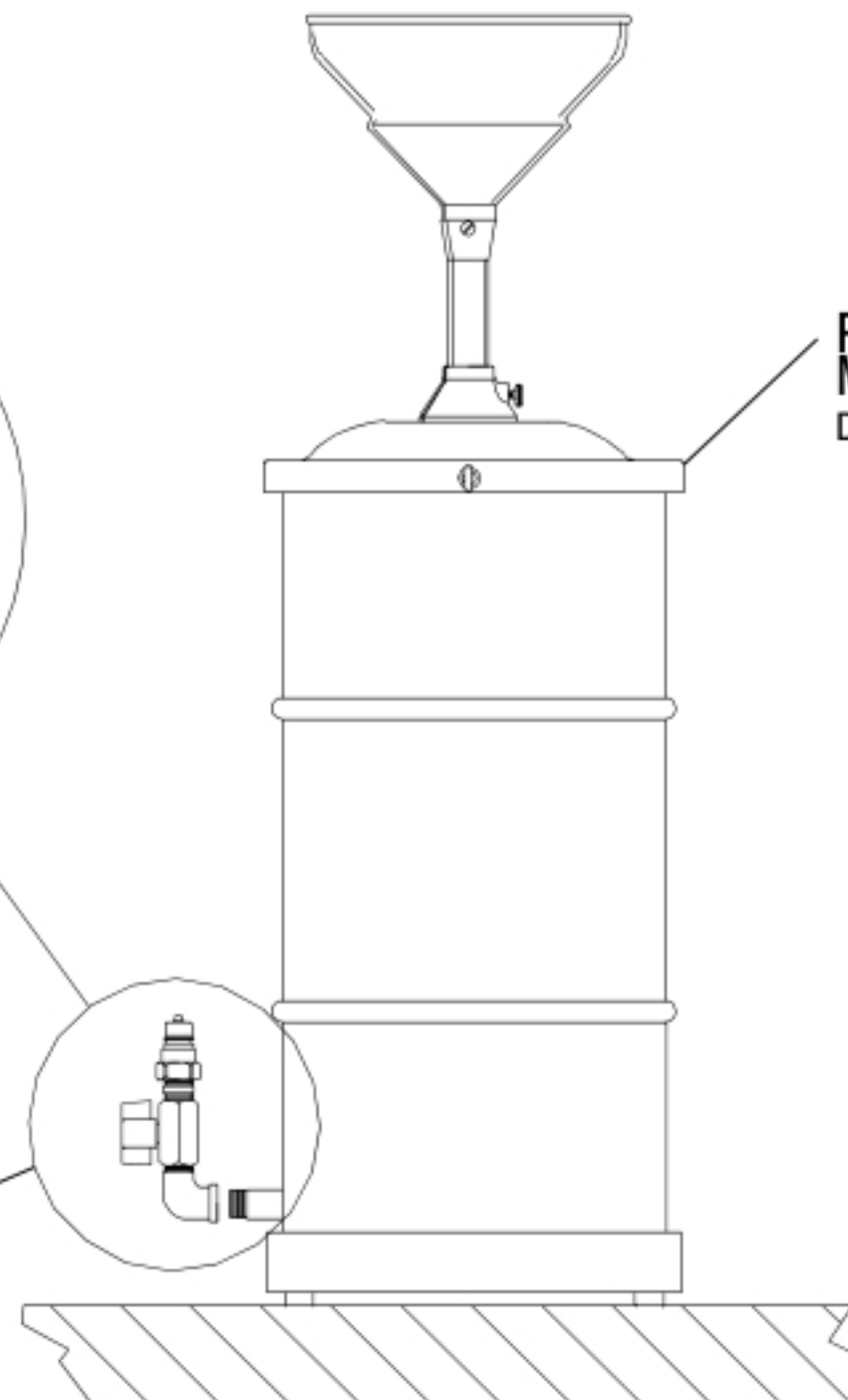
3/4" PIPE NIPPLE REF.
REF. DE NIPLE DE TUBO DE 3/4"

3/4" BALL VALVE REF.
REF. VÁLVULA DE BOLA DE 3/4"

3/4" ST. ELBOW REF.
REF. CODO ST. 3/4"

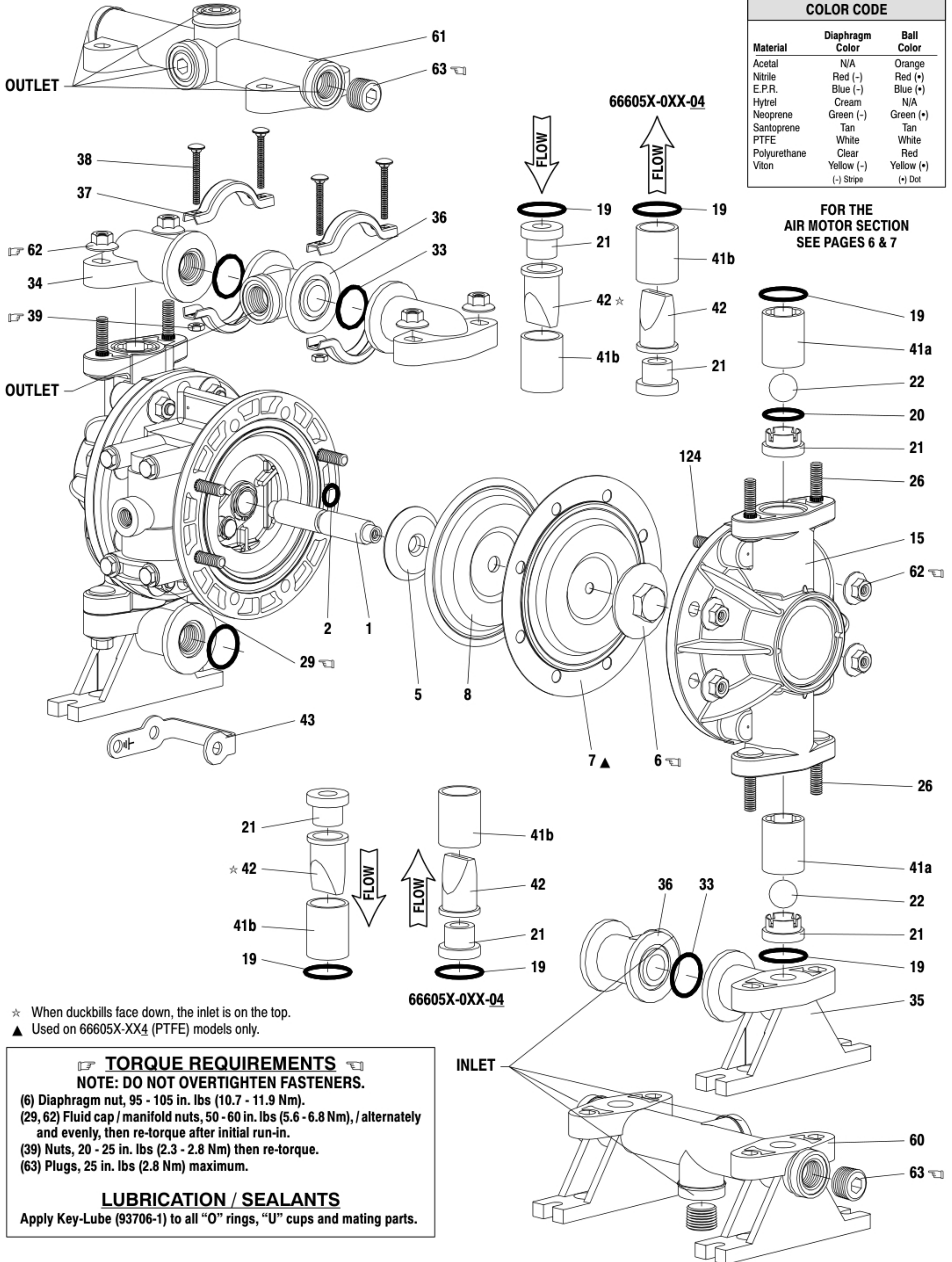
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PORTABLE DRAIN BY OTHER
MANUFACTURERS
DRENAJE PORTÁTIL DE OTROS FABRICANTES



PARTS LIST / F66605X-X FLUID SECTION

COLOR CODE		
Material	Diaphragm Color	Ball Color
Acetal	N/A	Orange
Nitrile	Red (-)	Red (•)
E.P.R.	Blue (-)	Blue (•)
Hytre	Cream	N/A
Neoprene	Green (-)	Green (•)
Santoprene	Tan	Tan
PTFE	White	White
Polyurethane	Clear	Red
Viton	Yellow (-)	Yellow (•)
	(-) Stripe	(•) Dot



☆ When duckbills face down, the inlet is on the top.
 ▲ Used on 66605X-XX4 (PTFE) models only.

TORQUE REQUIREMENTS

NOTE: DO NOT OVERTIGHTEN FASTENERS.

- (6) Diaphragm nut, 95 - 105 in. lbs (10.7 - 11.9 Nm).
- (29, 62) Fluid cap / manifold nuts, 50 - 60 in. lbs (5.6 - 6.8 Nm), / alternately and evenly, then re-torque after initial run-in.
- (39) Nuts, 20 - 25 in. lbs (2.3 - 2.8 Nm) then re-torque.
- (63) Plugs, 25 in. lbs (2.8 Nm) maximum.

LUBRICATION / SEALANTS

Apply Key-Lube (93706-1) to all "O" rings, "U" cups and mating parts.

PARTS LIST / F66605X-X FLUID SECTION

☆ 637140-XX Fluid Section Service Kits include: Balls (see "BALL OPTIONS", refer to -XX in chart below), Diaphragms (see "DIAPHRAGM OPTIONS", refer to -XX in chart below), plus "O" ring items: 2, 19, 20, 33 and 93706-1 Key-Lube grease (page 6).

SEAT OPTIONS				BALL OPTIONS							
ITEM "21"				ITEM "22" (3/4" dia.) (Service Kit -XX)							
-XXX	Seat	Qty	[Mtl]	-XXX	Ball	Qty	[Mtl]	-XXX	Ball	Qty	[Mtl]
-2XX	93409-1	(4)	[SS]	-X1X	93100-1	(4)	[N]	-XAX	93410-1	(4)	[SS]
-3XX	93098-1	(4)	[P]	-X2X	93100-2	(4)	[B]	-XEX	93100-E	(4)	[Sp]
-34X / -3AX	93098-10	(4)	[P]	-X3X	93100-3	(4)	[V]				
-4XX	93098-4	(4)	[PK]	-X4X	93100-4	(4)	[T]				
-6XX	93098-3	(4)	[D]	-X5X	93100-5	(4)	[E]				
-0XX	93115-1	(4)	[P]	-X8X	93100-8	(4)	[U]				

MATERIAL CODE	
[B] =	Nitrile
[D] =	Acetal
[E] =	E.P.R.
[F] =	Fluoraz
[GA] =	Groundable Acetal
[GFN] =	Glass Filled Nylon
[H] =	Hytrel
[N] =	Neoprene
[P] =	Polypropylene
[PK] =	Pure Kynar
[Sp] =	Santoprene
[SS] =	Stainless Steel
[T] =	PTFE
[U] =	Polyurethane
[V] =	Viton

DIAPHRAGM OPTIONS									
66605X-XXX	☆ Service Kits -XX = (Ball or Duckbill) -XX = (Diaphragm)	"7" / "8"		"19"		"20"		"33" *	
		Diaphragm (2)	[Mtl]	"O" Ring (4) 1-5/16" o.d.	"O" Ring (2) 1-1/8" o.d.	"O" Ring (4) 1-3/16" o.d.	[Mtl]		
-XX1	637140-X1	93113	[N]	Y325-122	Y325-119	Y325-120	[B]		
-XX2	637140-X2	93465-G	[B]	Y325-122	Y325-119	Y325-120	[B]		
-XX3	637140-X3	93581-3	[V]	Y327-122	Y327-119	Y327-120	[V]		
666053-, 66605J-XX4	637140-X4	93111 / 93465	[T/Sp]	93265	Y328-119	94749	[T]		
666056-, 66605H-XX4	637140-X4	93111 / 93465	[T/Sp]	93764	93933	95129	[F]		
666057-, 66605K-XX4	637140-X4	93111 / 93465	[T/Sp]	93265	Y328-119	94749	[T]		
-XX5	637140-X5	93760	[E]	93763	93761	93762	[E]		
-XX8	637140-X8	93112	[U]	93119	93117	93118	[U]		
-XX9	637140-X9	93465-9	[H]	Y325-122	Y325-119	Y325-120	[B]		
-XXB	637140-XB	93465	[Sp]	93763	93761	93762	[E]		
-0X1	637140-C1, D1	93113	[N]	Y325-122	Not Req'd	Y325-120	[B]		
-0X2	637140-C2, D2	93465-G	[B]	Y325-122	Not Req'd	Y325-120	[B]		
-0X4	637140-C4, D4	93111 / 93465	[T/Sp]	Y325-122	Not Req'd	94749	[T]		
-0X8	637140-C8, D8	93112	[U]	93119	Not Req'd	93118	[U]		
-0XB	637140-CB, DB	93465	[Sp]	Y325-122	Not Req'd	Y325-120	[B]		

- Not shown
- ❖ Quantity = 22

☆ Item "33" "O" rings are not used on models 66605H-XXX, 66605J-XXX and 66605K-XXX.

WETTED COMMON PARTS														
Item	Description (size)	Qty	Polypropylene				Groundable Acetal				Pure Kynar			
			666053-XXX		66605J-XXX		666056-XXX		66605H-XXX		666057-XXX		66605K-XXX	
			Part No.	Mtl	Part No.	Mtl	Part No.	Mtl	Part No.	Mtl	Part No.	Mtl	Part No.	Mtl
□ 1	Rod	(1)	93084	[SS]	93084	[SS]	93084	[SS]	93084	[SS]	93084	[SS]	93084	[SS]
2	"O" Ring (3/32" x 5/8" o.d.)	(1)	Y325-111	[B]	Y325-111	[B]	Y325-111	[B]	Y325-111	[B]	Y325-111	[B]	Y325-111	[B]
5	Washer (2" o.d.)	(2)	94645	[GFN]	94645	[GFN]	94645	[GFN]	94645	[GFN]	94645	[GFN]	94645	[GFN]
□ 6	Diaphragm Nut (5/16" - 18)	(2)	93103-1	[P]	93103-1	[P]	93103-3	[D]	93103-3	[D]	93103-4	[PK]	93103-4	[PK]
15	Fluid Cap (includes 26 & 124)	(2)	93105-1	[P]	93105-1	[P]	93105-11	[GA]	93105-11	[GA]	93105-9	[PK]	93105-9	[PK]
26	Bolt (5/16" - 18 x 1-1/2")	(8)	93109	[SS]	93109	[SS]	93109	[SS]	93109	[SS]	93109	[SS]	93109	[SS]
29	Nut (5/16" - 18)	(2)	-----	---	-----	---	Y12-5-S	[SS]	Y12-5-S	[SS]	-----	---	-----	---
34	Manifold, Outlet (top)	(2)	93102-1	[P]	-----	---	93102-6	[GA]	-----	---	93102-4	[PK]	-----	---
□ 35	Manifold, Foot (bottom)	(2)	93106-1	[P]	-----	---	93106-6	[GA]	-----	---	93106-4	[PK]	-----	---
□ 36	Swivel	(2)	93101-1	[P]	-----	---	93101-6	[GA]	-----	---	93101-4	[PK]	-----	---
□ 37	Clamp	(8)	93099	[SS]	-----	---	93099	[SS]	-----	---	93099	[SS]	-----	---
38	Bolt (#10 - 24 x 1-1/2")	(8)	Y84-303-T	[SS]	-----	---	Y84-303-T	[SS]	-----	---	Y84-303-T	[SS]	-----	---
39	Nut (#10 - 24)	(8)	Y22-10-S	[SS]	-----	---	Y22-10-S	[SS]	-----	---	Y22-10-S	[SS]	-----	---
41a	Ball Cage	(4)	93097-1	[P]	93097-1	[P]	93097-3	[D]	93097-3	[D]	93097-4	[PK]	93097-4	[PK]
41b	Sleeve (models 66605X-0XX)	(4)	93120-1	[P]	93120-1	[P]	-----	---	-----	---	-----	---	-----	---
43	Ground Strap	(1)	-----	---	-----	---	92956-1	[SS]	92956-1	[SS]	-----	---	-----	---
■ 57	Ground Kit Assembly	(1)	-----	---	-----	---	66885-1	---	66885-1	---	-----	---	-----	---
60	Manifold, Inlet (bottom)	(1)	-----	---	93802-1	[P]	-----	---	93802-2	[GA]	-----	---	93802-3	[PK]
61	Manifold, Outlet (top)	(1)	-----	---	93801-1	[P]	-----	---	93801-2	[GA]	-----	---	93801-3	[PK]
62	Flange Nut (5/16" - 18)	(24)	93886	[SS]	93886	[SS]	93886 (❖)	[SS]	93886 (❖)	[SS]	93886	[SS]	93886	[SS]
63	Plug (1/2 - 14 N.P.T.)	(6)	-----	---	93897-1	[P]	-----	---	93897-2	[D]	-----	---	93897-3	[PK]

PARTS LIST / F66605X-X AIR MOTOR SECTION

TORQUE REQUIREMENTS

NOTE: DO NOT OVERTIGHTEN FASTENERS.

(134) Torque to 15 - 20 in. lbs (1.7 - 2.3 Nm), wait 10 minutes, then re-torque to 15 - 20 in. lbs (1.7 - 2.3 Nm).

LUBRICATION / SEALANTS

Apply Key-Lube (93706-1) to all "O" rings, "U" cups and mating parts.

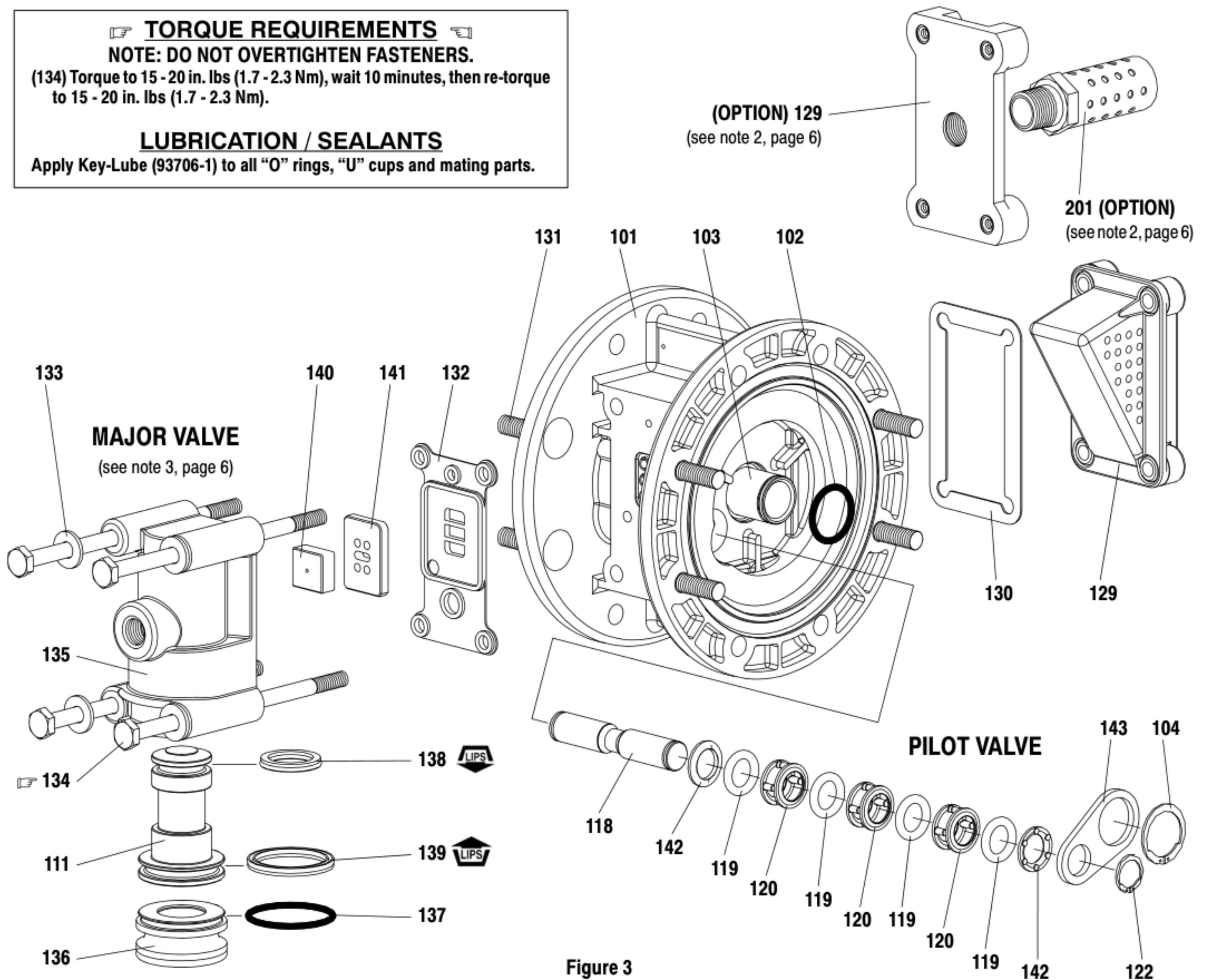


Figure 3

AIR MOTOR SECTION SERVICE

Service is divided into two parts - 1. Pilot Valve, 2. Major Valve.

- Air Motor Section Service is continued from Fluid Section repair.

PILOT VALVE DISASSEMBLY

- Remove (122) and (104) snap rings.
- Remove (143) plates.
- Remove (103) sleeve and (102) "O" rings.
- Remove (118) piston, (142) washers, (119) "O" rings and (120) spacers from (101) center body.

PILOT VALVE REASSEMBLY

- Assemble (119) "O" rings, (120) spacers and (142) washers on (118) pilot rod.
- Insert the stack into the (101) body. Sleeve (103) may be used to assist pressing stack into body.
- Install (103) sleeve and (102) "O" rings into (101) body.
- Install (143) plates and (122) and (104) snap rings.

MAJOR VALVE DISASSEMBLY

- Remove (129) exhaust cover and (130) gasket.
- Pull (135) valve block assembly from (101) body.
- Remove (134) bolts, (133) washers and (132) gasket from (135) valve block.
- Remove (141) valve plate and (140) valve insert.
- Remove (136) plug and (111) spool.

MAJOR VALVE REASSEMBLY

- Install new (139) and (138) "U" cups on (111) spool - **LIPS MUST FACE EACH OTHER.**
- Insert (111) spool into (135) valve block.
- Install (137) "O" ring on (136) plug, insert plug into (135) valve block.
- Install (140) valve insert and (141) valve plate into (135) valve block. Note: After 9/92, parts (140, 141) are white (ceramic), the dished side of the (140) valve insert should be against the shiny face of (141) valve plate for best performance.
- Replace (132) gasket and install valve block assembly on (101) body.

PARTS LIST / F66605X-X AIR MOTOR SECTION

✓ Indicates parts included in 637141 Air Section Repair Kit.

AIR SECTION PARTS

Item	Description (size)	Qty	Part No.	[Mtl]
101	Motor Body	(1)	93091	[P]
✓ 102	"O" Ring (3/32" x 1" o.d.)	(2)	Y325-117	[B]
□ 103	Sleeve	(1)	93087	[Bz]
□ 104	Snap Ring (13/16")	(2)	37285	[C]
111	Spool	(1)	93085	[D]
118	Pilot Rod	(1)	93088	[C]
✓ 119	"O" Ring (1/8" x 3/4" o.d.)	(4)	93075	[U]
□ 120	Spacer	(3)	115959	[Z]
✓ 122	Snap Ring (1/2")	(2)	77802	[C]
124	Stud (5/16" - 18 x 1-17/32") (see page 5)	(8)	93249	[SS]
129	Muffler Assembly	(1)	66972	[P]
129☆	Exhaust Cover (see note 2)		93092	[PS]
✓ 130	Gasket	(1)	93107	[SY]
131	Bolt (5/16" - 18 x 1-1/4")	(8)	93095	[SS]
✓ 132	Gasket (see note 1)	(1)	93339-1	[B]

Item	Description (size)	Qty	Part No.	[Mtl]
133	Washer (9/32" i.d.)	(4)	93096	[SS]
134	Bolt (1/4" - 20 x 5")	(4)	Y6-419-T	[SS]
135	Valve Block	(1)	93090	[P]
136	Plug	(1)	93086	[D]
✓ 137	"O" Ring (3/32" x 1-1/2" o.d.)	(1)	Y325-125	[B]
✓ 138	Packing, "U" Cup (1/8" x 1" o.d.)	(1)	94395	[U]
✓ 139	Packing, "U" Cup (1/8" x 1.427" o.d.)	(1)	96383	[U]
✓ 140	Valve Insert	(1)	93276	[CK]
✓ 141	Valve Plate	(1)	93275	[CK]
142	Washer	(2)	116038	[Z]
143	Plate	(2)	93089	[SS]
201	Muffler (see note 2)		93110	[C]
✓	Key-Lube "O" Ring Lubricant		93706-1	
	10 Pack of Key-Lube		637175	

DIAPHRAGM PUMP SERVICE

GENERAL SERVICE NOTES:

- Inspect and replace old parts with new parts as necessary. Look for deep scratches on metallic surfaces, and nicks or cuts in "O" rings.
 - 7/16" wrench, 1/2" wrench, 7/16" socket, 1/2" socket, torque wrench (measuring inch pounds), "O" ring pick.

FLUID SECTION DISASSEMBLY

- Remove (34) top manifold / (36) swivel assembly.
Note: Manifold options involve single piece manifolds (60 / 61) or three piece swivel type manifolds with clamps.
- Remove (41) ball cages, (22) balls, (19 and 20) "O" rings and (21) seats. Note: If cages are difficult to remove at this step, it may be helpful to proceed through step 5 and remove them once they are accessible from the inside of the fluid cap.
- Remove (35) bottom manifolds / (36) swivel assembly.
- Remove (19) "O" rings, (21) seats and (22) balls.
- Remove (15) fluid caps.
- Remove (6) diaphragm nut, (8) [(7) PTFE models only] diaphragm(s) and (5) diaphragm washer from (1) diaphragm connecting rod.
- Remove (1) connecting rod from air motor.
- Carefully remove remaining (6) diaphragm nut, (8) [(7) PTFE models] diaphragm and (5) diaphragm washer from (1) connecting rod. Do not mar surface of connecting rod.
- Remove (2) "O" ring from connecting rod.
- Remove (37) clamps from top and bottom manifold / swivel assemblies.
- Remove (33) "O" rings from (36) swivels.

Note 1: Part no.93339-1 one-piece gasket replaces the following parts (not shown) in models manufactured prior to October 1988, Y325-10 (4), Y325-12, 93093, 93094, Y325-8.

Note 2: The (129☆) exhaust cover and (201) muffler were standard until 9/92. They are available separately for service or piped exhaust applications.

Note 3: A major valve service assembly is available separately which includes items: 111, 132, 135 - 141. Order part no. 66362.

MATERIAL CODE

[B] = Nitrile	[D] = Acetal	[SY] = Syn-Seal
[Bz] = Bronze	[P] = Polypropylene	[U] = Polyurethane
[C] = Carbon Steel	[PS] = Polyester	[Z] = Zinc
[CK] = Ceramic	[SS] = Stainless Steel	

FLUID SECTION REASSEMBLY

- Reassemble in reverse order.
- Lubricate (1) connecting rod and (2) "O" ring with Key-Lube or equivalent "O" ring lubricant.
- Install (5) diaphragm washers with i.d. chamfer toward diaphragm.
- When replacing PTFE diaphragms, install the 93465 Santoprene diaphragm behind the PTFE diaphragm.
- When installing (41) cage, ball guides must line up with notches in (21) seat to prevent damage.
- Before installing (35), (34) manifolds, (19) "O" ring should be properly seated on the o.d. of (41) ball cage.
- Before tightening (39) nut and (38) carriage bolts on (36) swivels, attach the manifold / swivel assembly to the fluid caps. Rotate (36) swivel to desired position and tighten each of the nuts approximately 8 - 9 turns, then finish tightening (29) nuts.

