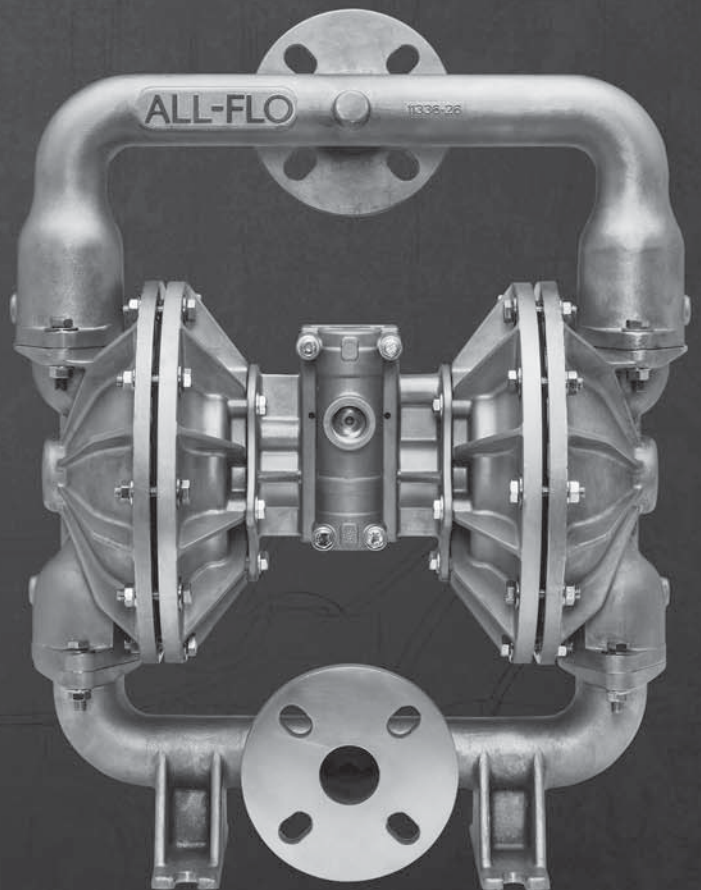
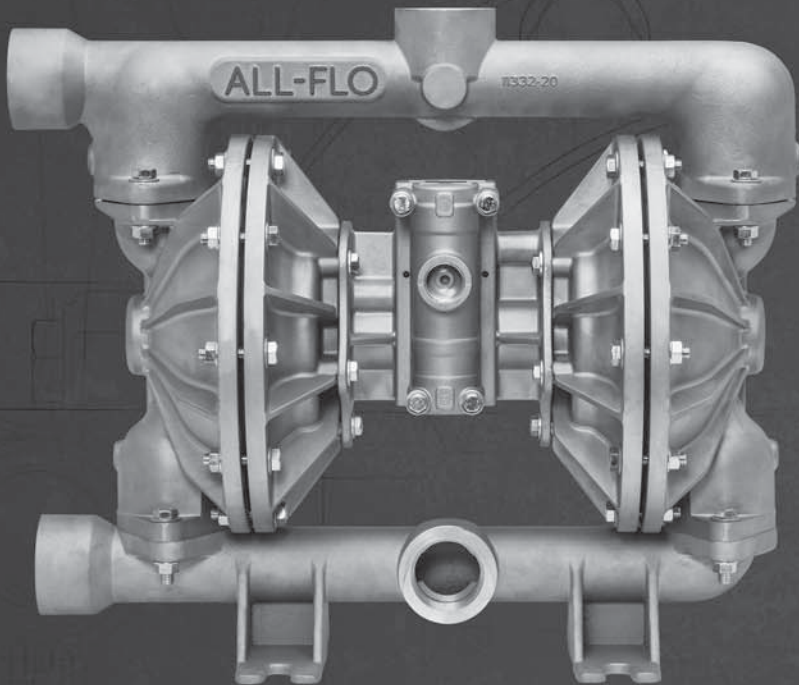


PUMP OPERATIONS & MAINTENANCE MANUAL



A150 - 1-1/2 INCH AIR OPERATED DOUBLE DIAPHRAGM PUMP

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CAUTIONS — READ FIRST!

READ THESE WARNINGS AND SAFETY PRECAUTIONS PRIOR TO INSTALLATION OR OPERATION. FAILURE TO COMPLY WITH THESE INSTRUCTIONS COULD RESULT IN PERSONAL INJURY AND OR PROPERTY DAMAGE. RETAIN THESE INSTRUCTIONS FOR FUTURE REFERENCE.

⚠ WARNING Pump, valves and all containers must be properly grounded prior to handling flammable fluids and/or whenever static electricity is a hazard.

⚠ WARNING Prior to servicing the pump, ensure that the air and fluid lines are closed and disconnected. While wearing personal protective equipment, flush, drain and process liquid from the pump in a safe manner.

⚠ CAUTION Do not connect a compressed air source to the exhaust port of the pump.

⚠ CAUTION Ensure that the muffler is properly installed prior to pump operation.

⚠ CAUTION Do not lubricate air supply.

⚠ CAUTION When selecting pump materials, be aware of the following temperature limitations:

Buna-N (Nitrile):	10°F to 180°F (-12C to 82C)
Geolast®:	10°F to 180°F (-12C to 82C)
EPDM:	-40°F to 280°F (-40C to 138C)
Santoprene®:	-40°F to 225°F (-40C to 107C)
Viton® (FKM):	-40°F to 350°F (-40C to 177C)
PTFE:	40°F to 220°F (4C to 104C)
Polyethylene:	32°F to 158°F (0C to 70C)
Polypropylene:	32°F to 180°F (0C to 82C)
PVDF:	0°F to 250°F (-18C to 181C)
Nylon:	0°F to 200°F (-18C to 93C)

Temperature limits are solely based upon mechanical stress and certain chemicals will reduce the maximum operating temperature. Consult a chemical resistance guide for chemical compatibility and a more precise safe temperature limit. Always use minimum air pressure when pumping at elevated temperatures.

⚠ 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.

⚠ CAUTION Do not exceed 120 psig (8.3 bar) air-inlet pressure.

⚠ CAUTION Ensure all wetted components are chemically compatible with the process fluid and the cleaning fluid.

⚠ CAUTION Ensure pump is thoroughly cleaned and flushed prior to installation into a process line.

⚠ CAUTION Always wear Personal Protective Equipment (PPE) when operating pump.

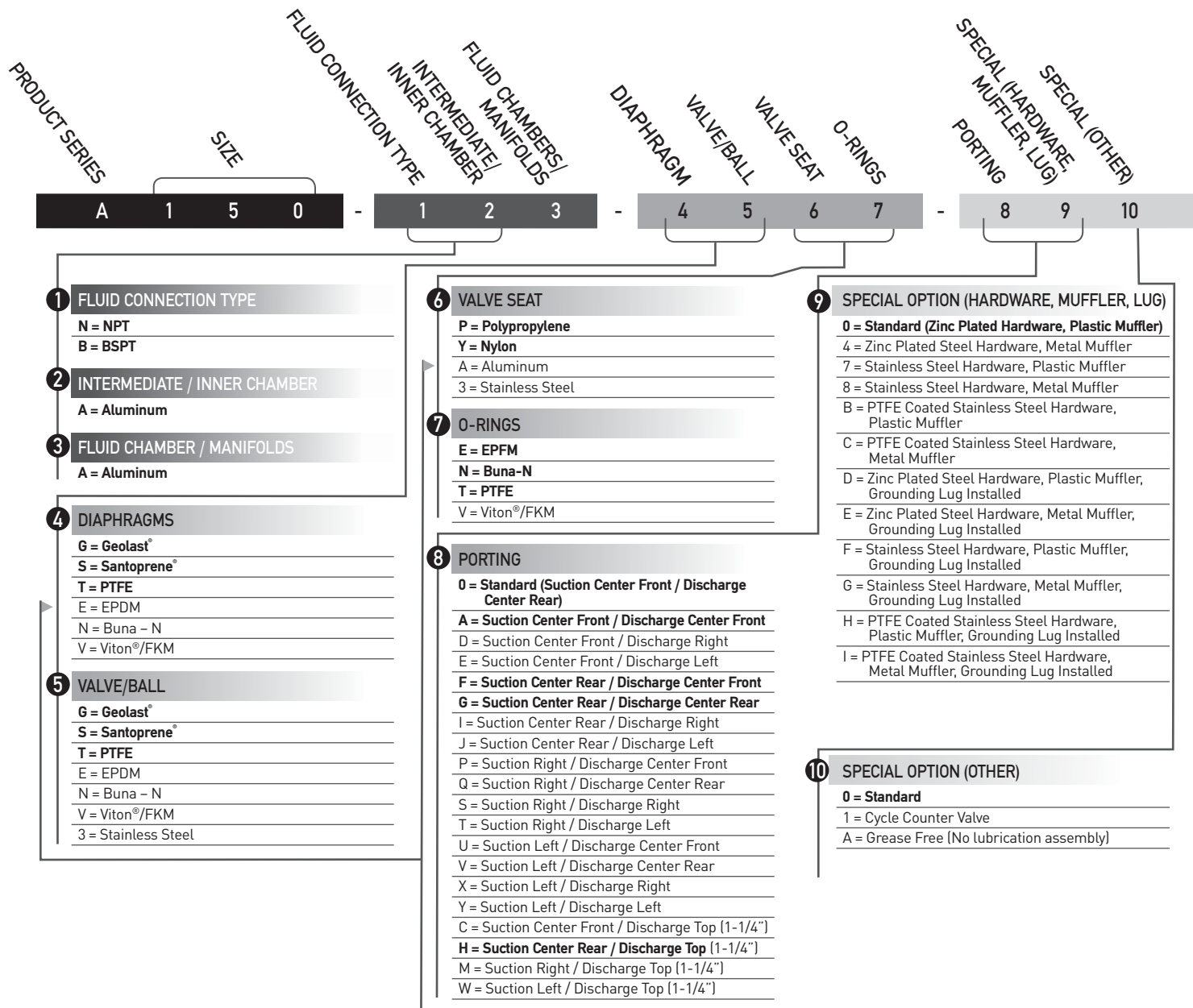
⚠ CAUTION Close and disconnect all compressed air and bleed all air from the pump prior to service. Remove all process fluid in a safe manner prior to service.

⚠ CAUTION Blow out all compressed air lines in order to remove any debris, prior to pump installation.

⚠ CAUTION Ensure air exhaust is piped to atmosphere prior to a submerged installation.

⚠ CAUTION Ensure all hardware is set to correct torque values prior to operation.

MODEL DESIGNATION MATRIX - THREADED ALUMINUM

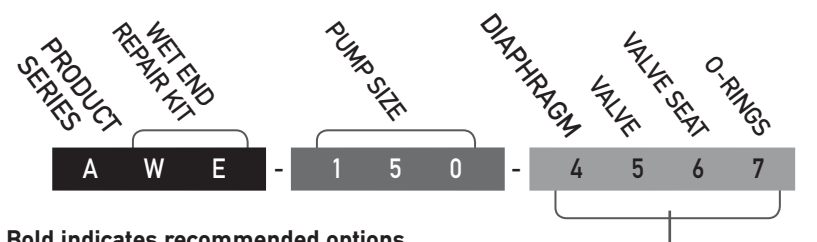


WET END REPAIR KIT

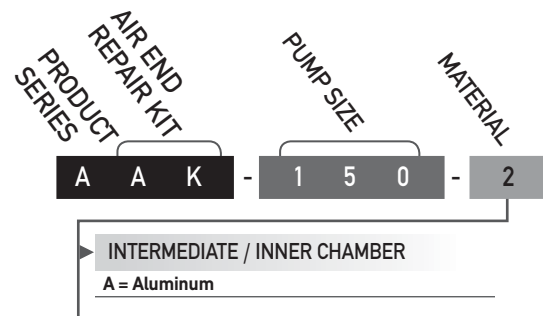
Wet end kits are available and consist of 2 diaphragms, (back-up diaphragms if required), 4 balls, 4 seats, and 4 seat O-rings. See matrix below.

AIR END REPAIR KIT

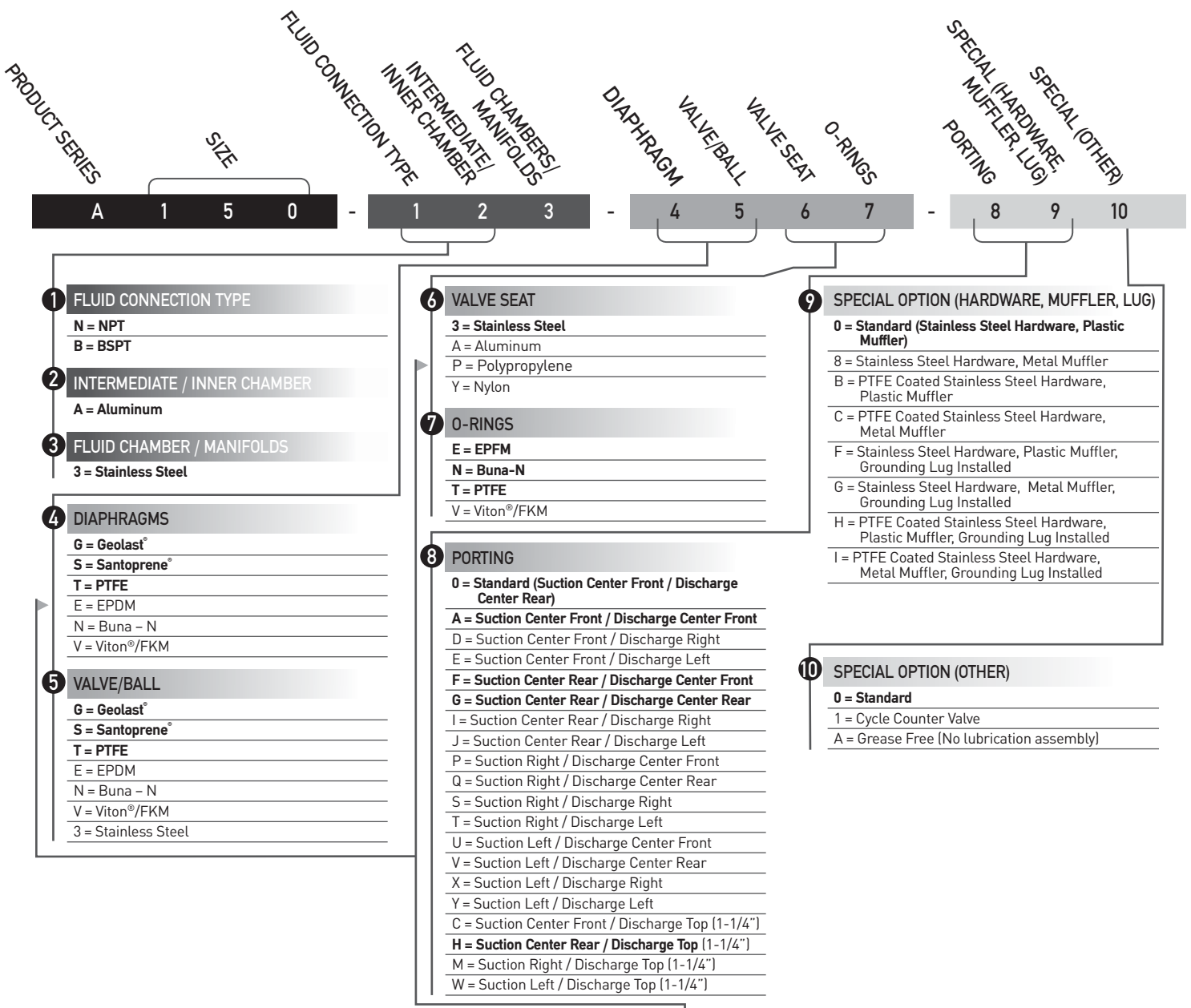
Air end repair kit contains pilot sleeve assembly and main air valve.



Bold indicates recommended options

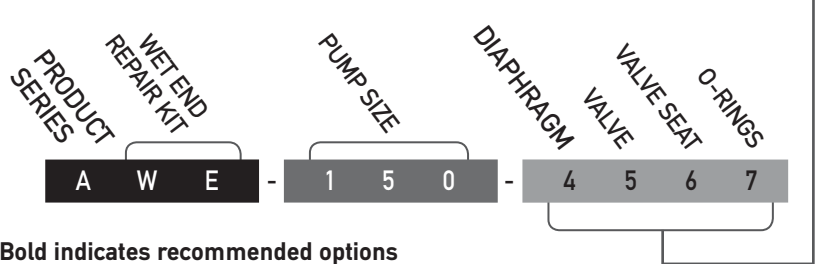


MODEL DESIGNATION MATRIX - THREADED STAINLESS STEEL



WET END REPAIR KIT

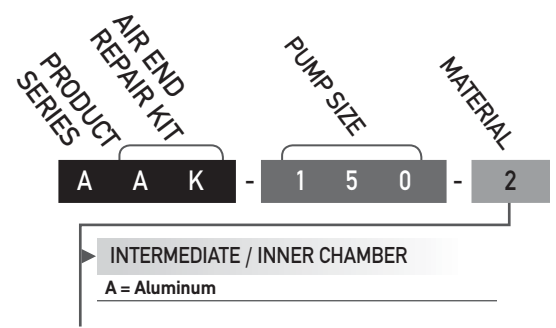
Wet end kits are available and consist of 2 diaphragms, (back-up diaphragms if required), 4 balls, 4 seats, and 4 seat O-rings. See matrix below.



Bold indicates recommended options

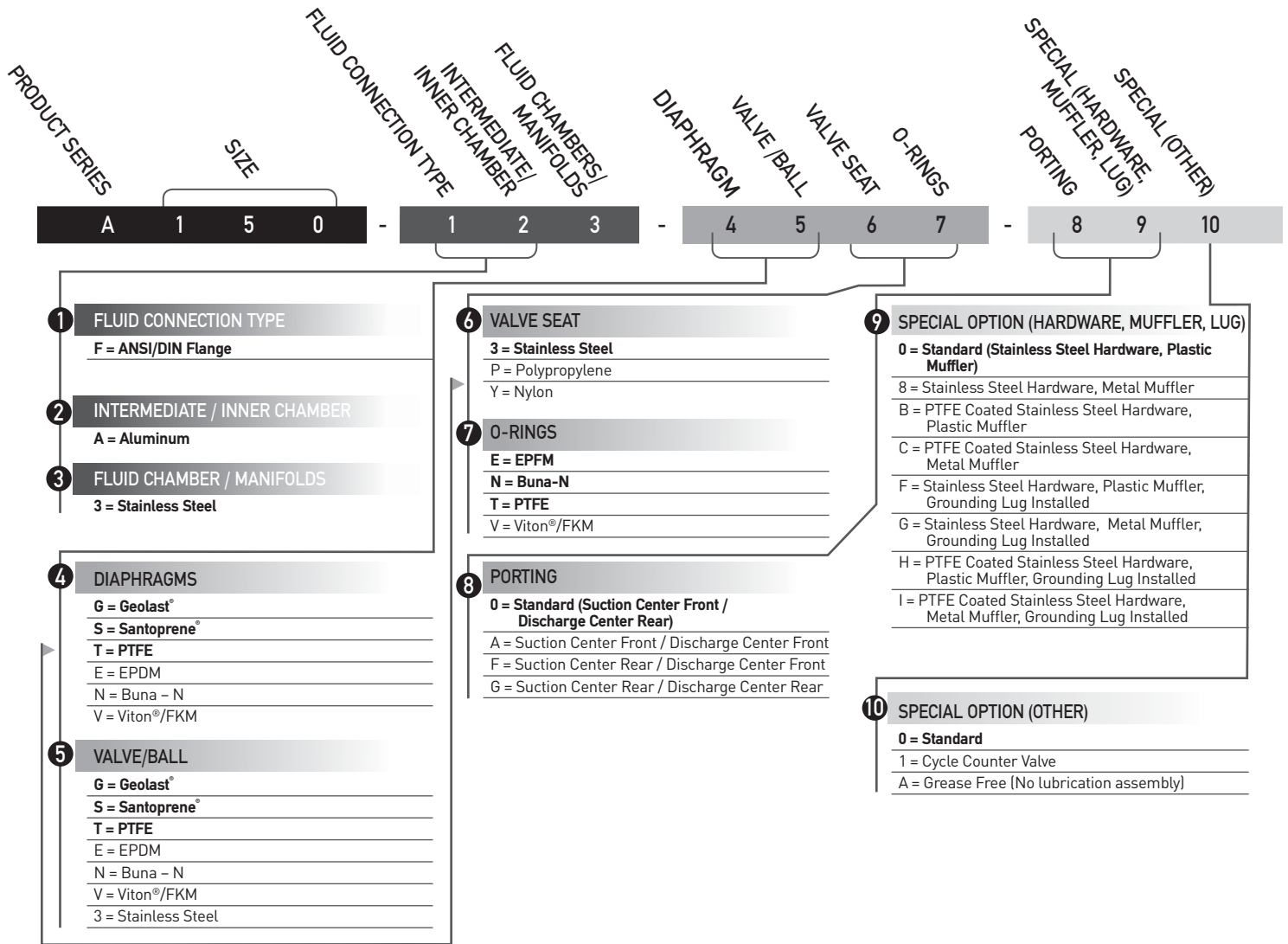
AIR END REPAIR KIT

Air end repair kit contains pilot sleeve assembly and main air valve.



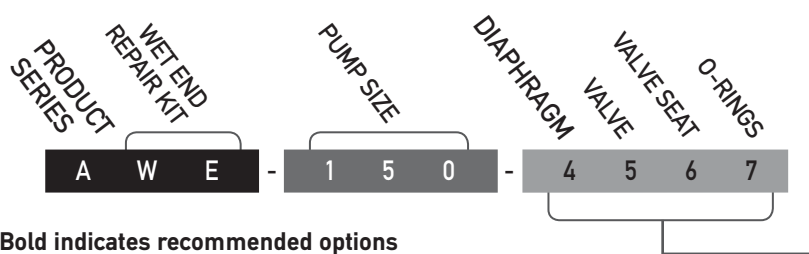
SECTION 2

MODEL DESIGNATION MATRIX - FLANGED STAINLESS STEEL



WET END REPAIR KIT

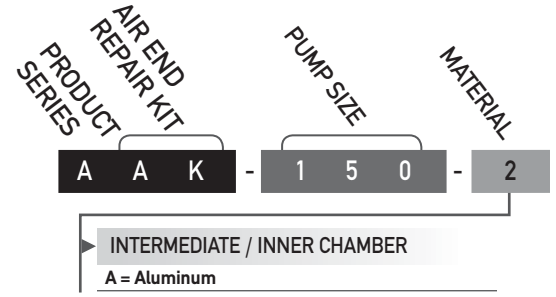
Wet end kits are available and consist of 2 diaphragms, (back-up diaphragms if required), 4 balls, 4 seats, and 4 seat O-rings. See matrix below.



Bold indicates recommended options

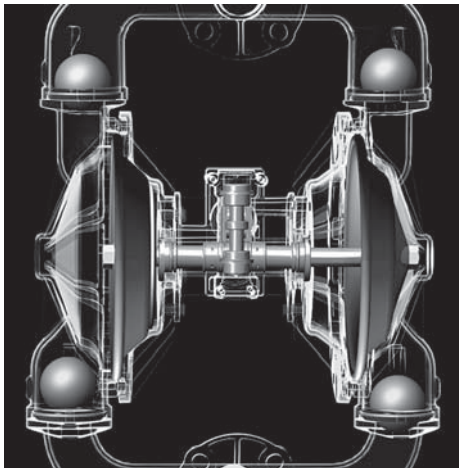
AIR END REPAIR KIT

Air end repair kit contains pilot sleeve assembly and main air valve.



PRINCIPLES OF OPERATION

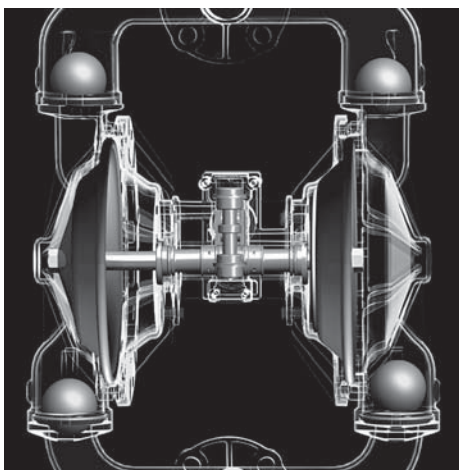
HOW AN AIR OPERATED DOUBLE DIAPHRAGM PUMP WORKS



The air-valve directs pressurized air behind the diaphragm on the right, causing the diaphragm on the right to move outward (to the right).

Since both the right diaphragm and the left diaphragm are connected via a diaphragm rod, when the right diaphragm moves to the right, the left diaphragm (through the action of the diaphragm rod) moves to the right also.

When the diaphragm on the left side is moving to the right, it is referred to as suction stroke. When the left diaphragm is in its suction stroke, the left suction ball moves upward (opens) and the left discharge ball moves downward (closes). This action creates suction and draws liquid into the left side chamber.



The air-valve directs pressurized air behind the left diaphragm, causing the left diaphragm to move outward (to the left).

Since both the left diaphragm and the right diaphragm are connected via a diaphragm rod, when the left diaphragm moves to the left, the right diaphragm (through the action of the diaphragm rod) moves to the left also.

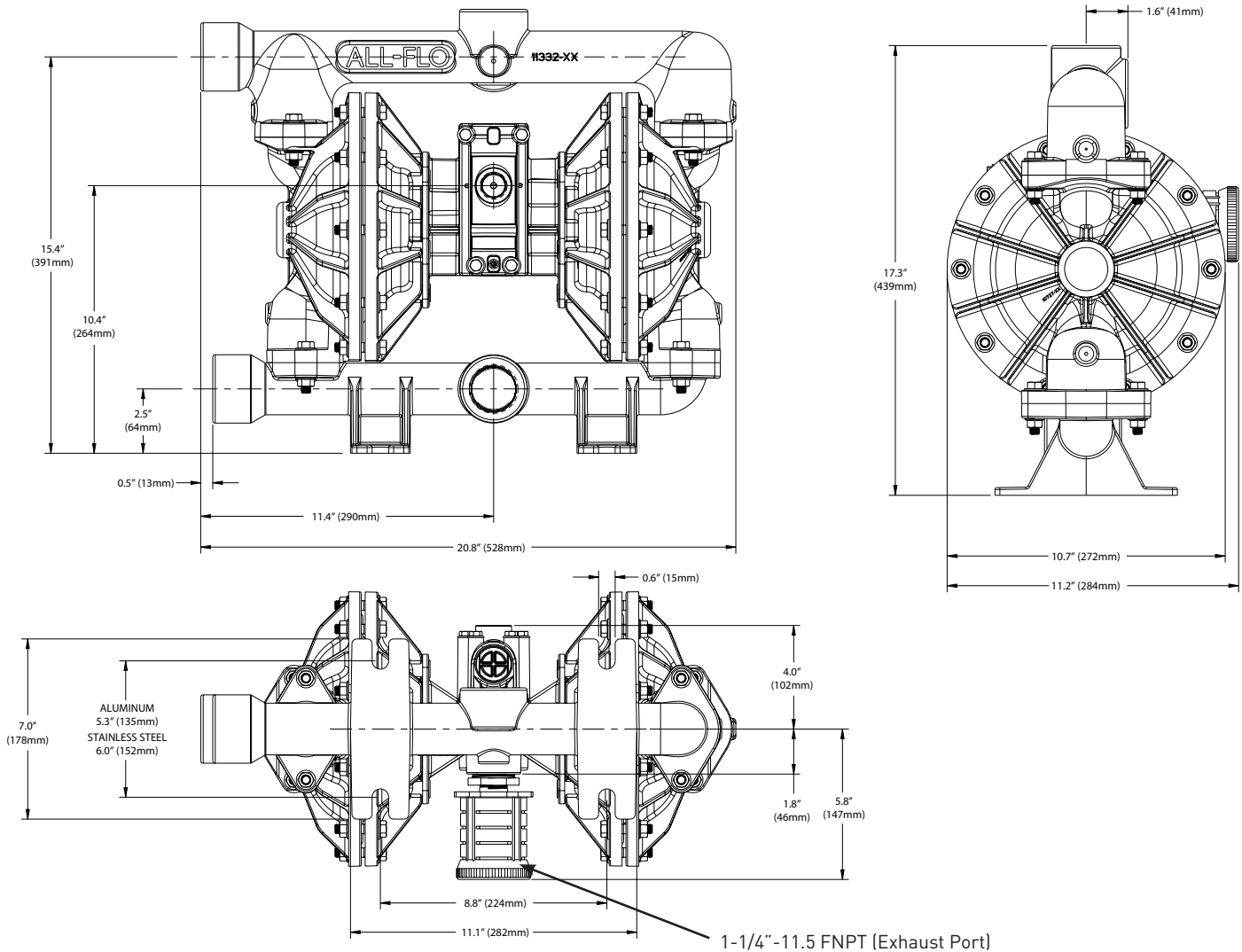
When the diaphragm on the left side moves outward, the left discharge ball moves upward (opens) and the left suction ball moves downward (closes). This causes the liquid to leave the left side liquid outlet of the pump.

Simultaneously, the right diaphragm moves inward (to the left), which causes the right suction ball to open and the right discharge to close, which in turn causes suction, drawing liquid into the right chamber.

The process of alternating right suction / left discharge (and vice-versa) continues as long as compressed air is supplied to the pump.

PUMP DIMENSIONS

THREADED ALUMINUM & STAINLESS STEEL



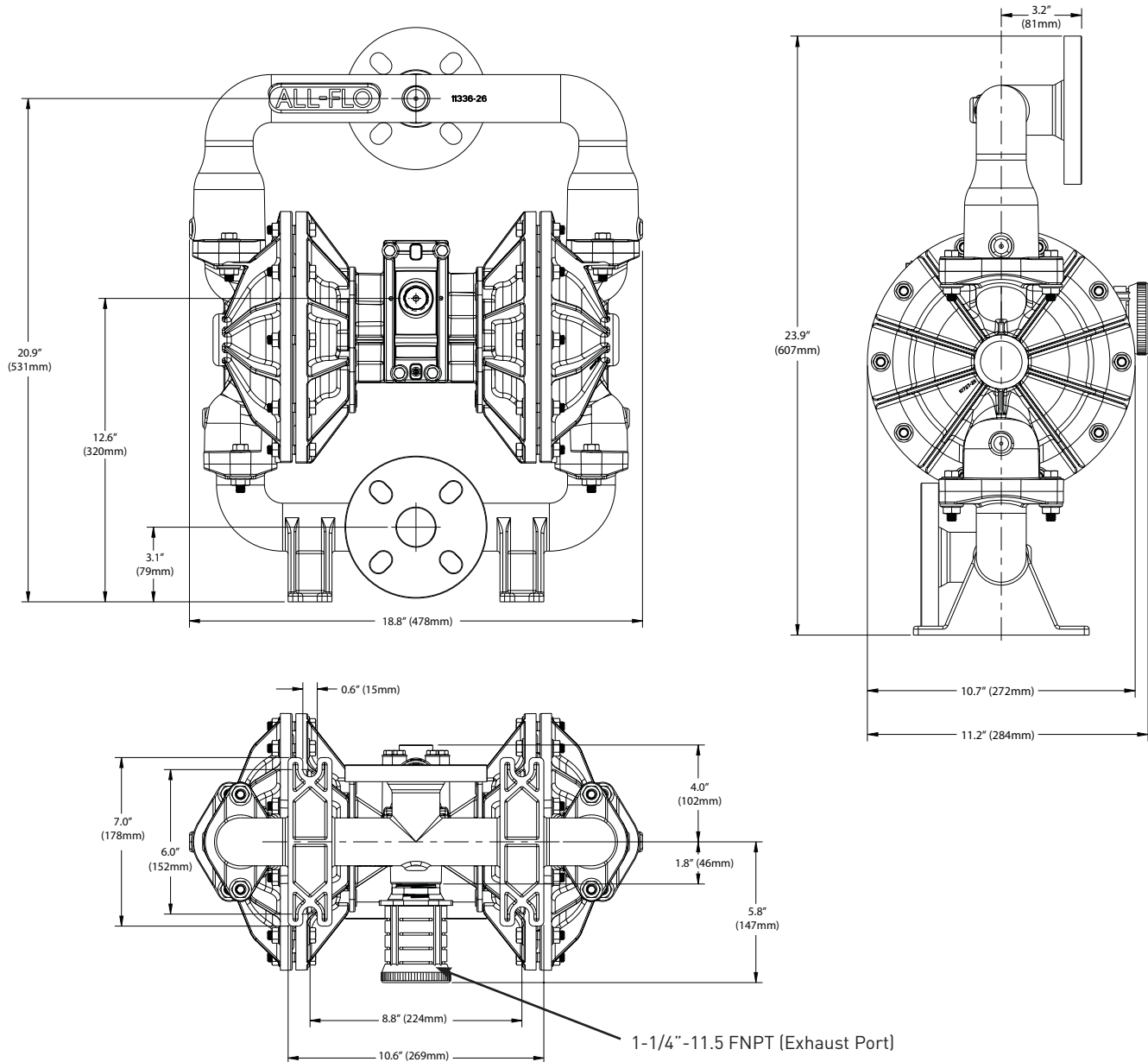
* Note: Standard Muffler shown.

**Note: A reducer bushing is included with the standard muffler which reduces the port to 3/4" -14 FNPT.

*** All liquid ports are 1-1/2 inch FNPT or FBSPT, except top discharge port which is 1-1/4 inch FNPT or FBSPT.

PUMP DIMENSIONS

FLANGED STAINLESS STEEL

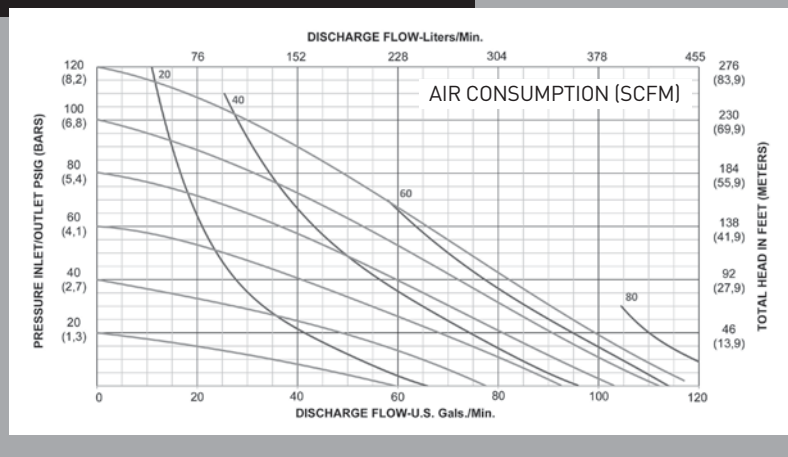


* Note: Standard Muffler shown.

**Note: A reducer bushing is included with the standard muffler which reduces the port to 3/4"-14 FNPT.

PERFORMANCE CURVES 1-1/2" DISCHARGE PORTS

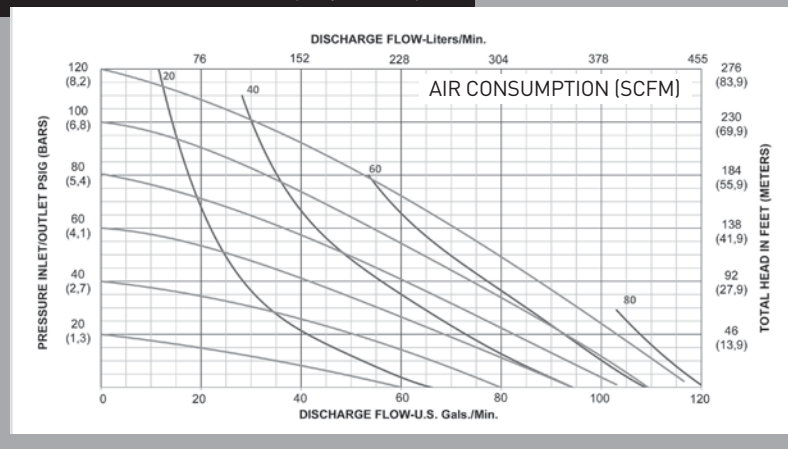
PERFORMANCE CURVE (1-1/2" RUBBER)*



Performance Specifications

Max. Flow:	115 gpm (435 lpm)
Max. Air Pressure:	120 psi (8.3 bar)
Max. Solids:	1/4" (6.4 mm)
Max. Suction Lift Dry:	22 ft-H ₂ O (6.7 m-H ₂ O)
Max. Suction Lift Wet:	31 ft-H ₂ O (9.4 m-H ₂ O)
Weight Threaded:	AL-45 lbs (20 kg) / SS-70 lbs (32 kg)
Weight Flanged:	SS-84 lbs (38 kg)
Air Inlet:	3/4" FNPT
Liquid Inlet:	1-1/2" FNPT, 1-1/2" FBSPT, or ANSI/DIN Flanged
Liquid Outlet:	1-1/2" FNPT, 1-1/2" FBSPT, or ANSI/DIN Flanged
Height:	17.3" (439 mm) Threaded / 23.9" (607 mm) Flanged
Width:	20.8" (528 mm) Threaded / 18.8" (478 mm) Flanged
Depth:	11.2" (284 mm) Threaded & Flanged

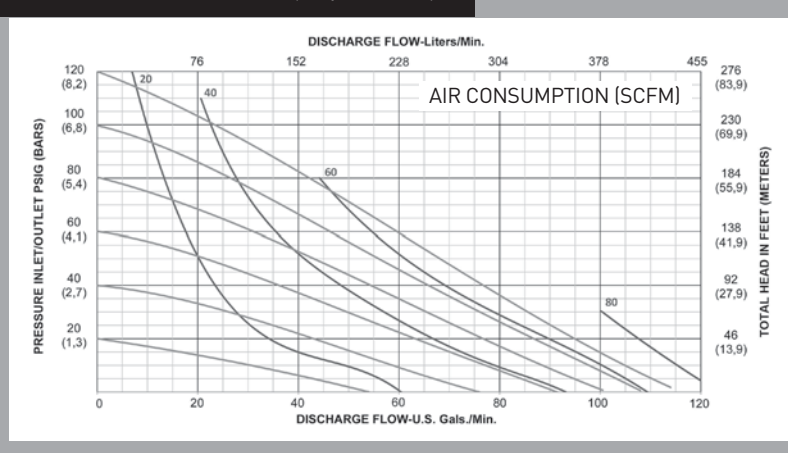
PERFORMANCE CURVE (1-1/2" TPE)*



Performance Specifications

Max. Flow:	115 gpm (435 lpm)
Max. Air Pressure:	120 psi (8.3 bar)
Max. Solids:	1/4" (6.4 mm)
Max. Suction Lift Dry:	22 ft-H ₂ O (6.7 m-H ₂ O)
Max. Suction Lift Wet:	31 ft-H ₂ O (9.4 m-H ₂ O)
Weight Threaded:	AL-45 lbs (20 kg) / SS-70 lbs (32 kg)
Weight Flanged:	SS-84 lbs (38 kg)
Air Inlet:	3/4" FNPT
Liquid Inlet:	1-1/2" FNPT, 1-1/2" FBSPT, or ANSI/DIN Flanged
Liquid Outlet:	1-1/2" FNPT, 1-1/2" FBSPT, or ANSI/DIN Flanged
Height:	17.3" (439 mm) Threaded / 23.9" (607 mm) Flanged
Width:	20.8" (528 mm) Threaded / 18.8" (478 mm) Flanged
Depth:	11.2" (284 mm) Threaded & Flanged

PERFORMANCE CURVE (1-1/2" PTFE)*



Performance Specifications

Max. Flow:	115 gpm (435 lpm)
Max. Air Pressure:	120 psi (8.3 bar)
Max. Solids:	1/4" (6.4 mm)
Max. Suction Lift Dry:	18 ft-H ₂ O (5.5 m-H ₂ O)
Max. Suction Lift Wet:	31 ft-H ₂ O (9.4 m-H ₂ O)
Weight Threaded:	AL-45 lbs (20 kg) / SS-70 lbs (32 kg)
Weight Flanged:	SS-84 lbs (38 kg)
Air Inlet:	3/4" FNPT
Liquid Inlet:	1-1/2" FNPT, 1-1/2" FBSPT, or ANSI/DIN Flanged
Liquid Outlet:	1-1/2" FNPT, 1-1/2" FBSPT, or ANSI/DIN Flanged
Height:	17.3" (439 mm) Threaded / 23.9" (607 mm) Flanged
Width:	20.8" (528 mm) Threaded / 18.8" (478 mm) Flanged
Depth:	11.2" (284 mm) Threaded & Flanged

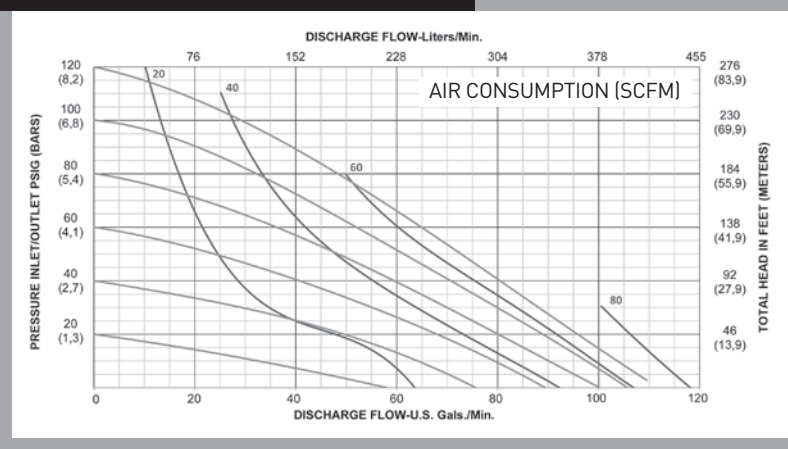
*Flow rates indicated on all three charts shown were determined by pumping water at flooded suction.

For optimum life and performance, pumps should be specified so that daily operation parameters will fall in the center of the pump performance curve.



PERFORMANCE CURVES 1-1/4" TOP DISCHARGE PORT

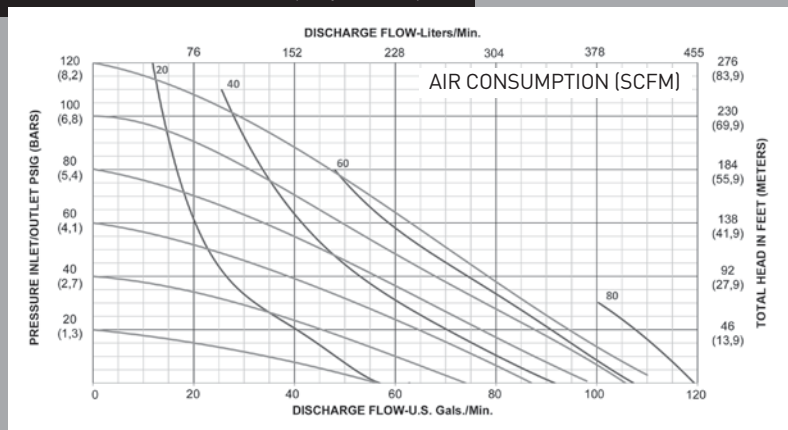
PERFORMANCE CURVE (1-1/4" RUBBER)*



Performance Specifications

Max. Flow:	105 gpm (398 lpm)
Max. Air Pressure:	120 psi (8.3 bar)
Max. Solids:	1/4" (6.4 mm)
Max. Suction Lift Dry:	22 ft-H ₂ O (6.7 m-H ₂ O)
Max. Suction Lift Wet:	31 ft-H ₂ O (9.4 m-H ₂ O)
Weight Threaded:	AL-45 lbs (20 kg) / SS-70 lbs (32 kg)
Air Inlet:	3/4" FNPT
Liquid Inlet:	1-1/2" FNPT, 1-1/2" FBSPT
Liquid Outlet:	1-1/4" FNPT, 1-1/2" FBSPT
Height:	17.3" (439 mm) Threaded
Width:	20.8" (528 mm) Threaded
Depth:	11.2" (284 mm) Threaded

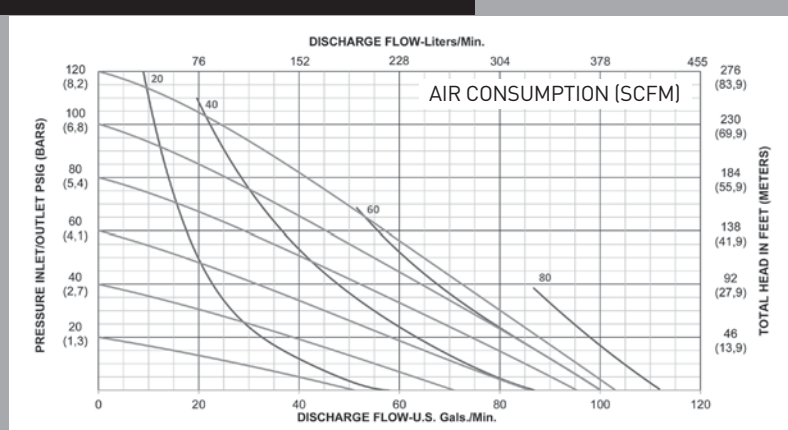
PERFORMANCE CURVE (1-1/4" TPE)*



Performance Specifications

Max. Flow:	105 gpm (398 lpm)
Max. Air Pressure:	120 psi (8.3 bar)
Max. Solids:	1/4" (6.4 mm)
Max. Suction Lift Dry:	22 ft-H ₂ O (6.7 m-H ₂ O)
Max. Suction Lift Wet:	31 ft-H ₂ O (9.4 m-H ₂ O)
Weight Threaded:	AL-45 lbs (20 kg) / SS-70 lbs (32 kg)
Air Inlet:	3/4" FNPT
Liquid Inlet:	1-1/2" FNPT, 1-1/2" FBSPT
Liquid Outlet:	1-1/4" FNPT, 1-1/2" FBSPT
Height:	17.3" (439 mm) Threaded
Width:	20.8" (528 mm) Threaded
Depth:	11.2" (284 mm) Threaded

PERFORMANCE CURVE (1-1/4" PTFE)*



Performance Specifications

Max. Flow:	105 gpm (398 lpm)
Max. Air Pressure:	120 psi (8.3 bar)
Max. Solids:	1/4" (6.4 mm)
Max. Suction Lift Dry:	18 ft-H ₂ O (5.5 m-H ₂ O)
Max. Suction Lift Wet:	31 ft-H ₂ O (9.4 m-H ₂ O)
Weight Threaded:	AL-45 lbs (20 kg) / SS-70 lbs (32 kg)
Air Inlet:	3/4" FNPT
Liquid Inlet:	1-1/2" FNPT, 1-1/2" FBSPT
Liquid Outlet:	1-1/4" FNPT, 1-1/2" FBSPT
Height:	17.3" (439 mm) Threaded
Width:	20.8" (528 mm) Threaded
Depth:	11.2" (284 mm) Threaded

*Flow rates indicated on all three charts shown were determined by pumping water at flooded suction.

For optimum life and performance, pumps should be specified so that daily operation parameters will fall in the center of the pump performance curve.

INSTALLATION, TROUBLE-SHOOTING AND MAINTENANCE

INSTALLATION PIPING

Whenever possible ensure the pump is installed using the shortest possible pipe lengths with the minimum amount of pipe fittings. Ensure all piping is supported independent of the pump.

Suction and discharge piping should not be smaller than the connection size of the pump. When pumping liquids of high viscosity, larger piping may be used, in order to reduce frictional pipe loss.

Employ flexible hoses in order to eliminate the vibration caused by the pump. Mounting feet can also be used to reduce vibration effects.

All hoses should be reinforced, non-collapsible and be capable of high vacuum service. Ensure that all piping and hoses are chemically compatible with the process and cleaning fluid.

For processes where pulsation effects should be reduced, employ a pulsation dampener on the discharge side of the pump.

For self-priming applications, ensure all connections are airtight and the application is within the pumps dry-lift capability. Refer to product specifications for further details.

For flooded suction applications, install a gate valve on the suction piping in order to facilitate service.

For unattended flooded suction operation, it is recommended to pipe the exhaust air above the liquid source. In the event of a diaphragm failure this will reduce or eliminate the possibility of liquid discharging through the exhaust onto the ground.

LOCATION

Ensure that the pump is installed in an accessible location, in order to facilitate future service and maintenance.

AIR

Ensure that the air supply is sufficient for the volume of air required by the pump. Refer to product specifications for further details. For reliable operation, install a 5 micron air filter, air-valve and pressure regulator. Do not exceed the pumps maximum operating pressure of 120 psig.

REMOTE OPERATION

Utilize a three way solenoid valve for remote operation. This ensures that air between the solenoid and the pump is allowed to “bleed off,” ensuring reliable operation. Liquid transfer volume is estimated by multiplying displacement per stroke times the number of strokes per minute

NOISE

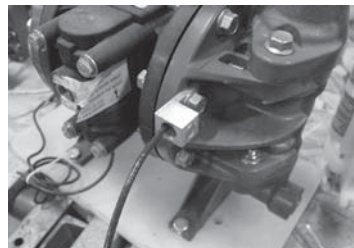
Correct installation of the muffler reduces sound levels. Refer to product specifications for further details.

SUBMERGED OPERATION

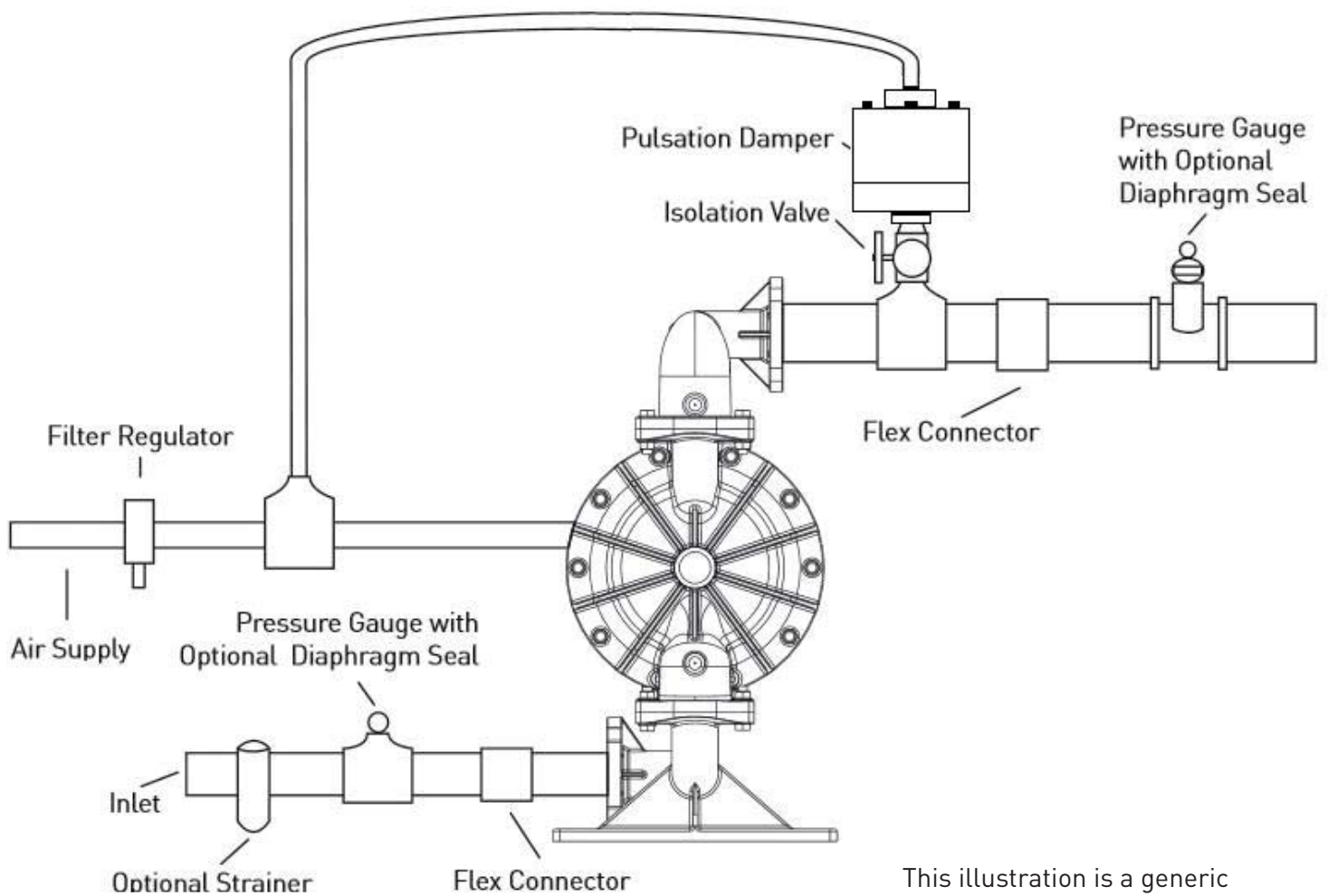
For submersible operation, pipe the air exhaust to atmosphere

GROUNDING THE PUMP

Loosen grounding screw and install a grounding wire. Tighten grounding screw. Wire size should be a 12 gauge wire or larger. Connect the other end of the wire to a true earth ground.



SUGGESTED INSTALLATION



This illustration is a generic representation of an air operated double-diaphragm pump.

TROUBLESHOOTING

PROBLEM

EFFECT/SOLUTION

Pump Will Not Cycle

- Discharge line closed or plugged
- Discharge filter blocked
- Check valve stuck
- Air filter blocked
- Air supply valve closed
- Air supply hooked up to muffler side of pump
- Compressor not producing air or turned off
- Muffler iced or blinded
- Diaphragm ruptured
- Air line in plant air supply lines ruptured
- Air valve wear/debris
- Pilot sleeve wear/debris
- Diaphragm rod broken
- Diaphragm plate loose

Pumped Fluid Coming Out of Muffler

- Diaphragm ruptured
- Diaphragm plate loose
- Inlet liquid pressure excessive (above 10 psig)

Pump Cycles but no Flow

- Inlet strainer clogged
- Suction valve closed
- Suction line plugged
- No liquid in the suction tank
- Suction lift excessive
- Debris stuck in valves
- Excessive wear of check valves
- Air leak on suction side with suction lift

Pump Cycles with Closed Discharge Valve

- Debris stuck in check valve
- Excessive wear of check valves

Pump Running Slowly/Not Steady

- Air compressor undersized
- Leak in air supply
- Air-line, filter regulator or needle valve undersized
- Muffler partially iced or blinded
- Air valve gasket leak or misalignment
- Air valve wear/debris
- Pilot sleeve wear/debris
- Liquid fluid filter blocked
- Pump may be cavitating, reduce speed of operation
- Suction strainer clogged

Pump Will Not Prime

- Air leak in suction pipe
- Air leak in pump manifold connections
- Suction strainer and lines clogged
- Excessive lift conditions
- Check valve wear
- Debris in check valve

OPERATION

The Air-Operated Double Diaphragm Pump requires a minimum of 20 psig of air to operate, with some variation according to diaphragm material. Increasing the air pressure results in a more rapid cycling of the pump and thus a higher liquid flow rate. In order to not exceed 120 psig of inlet air pressure, and for accurate control of the pump, it is suggested to use a pressure regulator on the air inlet.

An alternate means of controlling the flow-rate of the pump is to use an inlet air valve and partially open or close accordingly. When the air valve is completely in the closed position, the pump will cease to operate.

A third method of controlling the flow rate of the pump is to use a liquid discharge valve. Closing the liquid discharge valve will cause a decrease in the flow rate since the pump will operate against a higher discharge pressure.

Solenoid control of the inlet air may also be used in order to facilitate remote operation. A three way solenoid valve is recommended, in order to allow the air to “bleed off” between the solenoid and the pump.

Do not use valves for flow control on the suction side of the pump. (Closing or partially closing a liquid suction valve restrict the suction line and may cause damage to the diaphragms.) Suction strainers may be employed to reduce or eliminate larger solids, but routine maintenance is necessary in order to prevent a restriction on the suction.

MAINTENANCE

Due to the unique nature of each application, periodic inspection of the pump is the best method to determine a proper maintenance schedule. A record should be kept of all repairs made to an installed pump. This will serve as the best predictor of future maintenance.

Typical maintenance involves replacing of “wear-parts” such as the diaphragms, balls, valve seats and O-rings. Proper maintenance can ensure trouble-free operation of the pump. Refer to repair and assembly instructions for further details.

MAINTENANCE SCHEDULE

WEEKLY (OR DAILY)

Make a visual check of the pump. If pumped fluid is leaking out of the pump, pipe fittings or muffler turn off pump and schedule maintenance.

EVERY THREE MONTHS

Inspect fasteners and tighten any loose fasteners to recommended torque settings.

Schedule pump service based on pump’s service history.

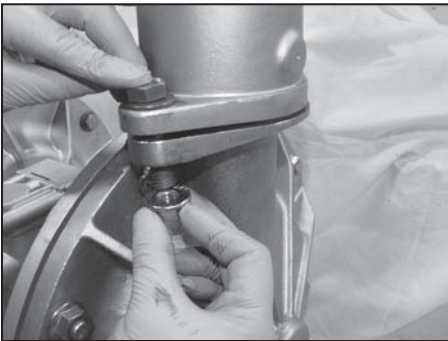
REPAIR AND ASSEMBLY

PUMP WET END REMOVAL

TOOLS NEEDED

- 1) Two Wrenches, 9/16 Inch
- 2) Two Wrenches, 1 Inch
- 3) One Socket Wrench, 1-1/16 Inch
- 4) One Flat (Spanner) Wrench, 3/4 Inch (May Be Required)

⚠ WARNING Prior to servicing the pump, ensure that the air and fluid lines are closed and disconnected. While wearing personal protective equipment, flush, drain and process liquid from the pump in a safe manner.



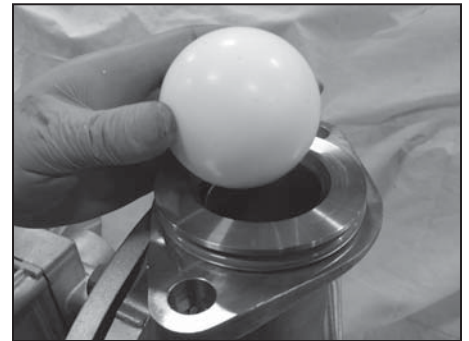
STEP 1

Using the 9/16 inch wrench remove four "Hex-Head Cap Screws (3/8" - 16x1-3/4)", four "Compression Washers (3/8)" and four "Flanged Hex Nut (3/8" - 16)" from the "Discharge Manifold".



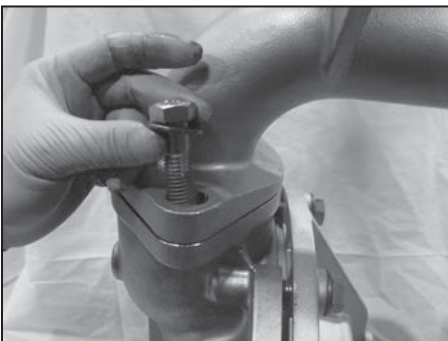
STEP 2

Remove the "Discharge Manifold".



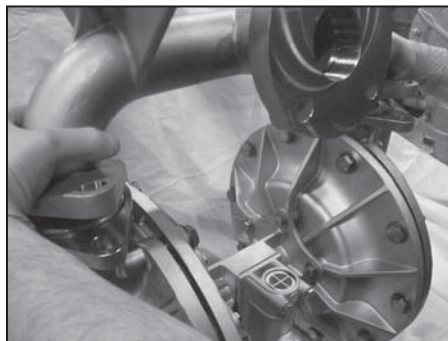
STEP 3

Remove the "O-Ring", "Valve Seat" and "Ball".



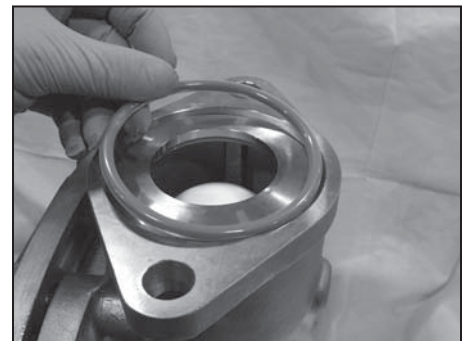
STEP 4

Using the 9/16 inch wrench remove four "Hex-Head Cap Screws (3/8" - 16x1-3/4)", four "Compression Washers (3/8)" and four "Flanged Hex Nut (3/8" - 16)" from the "Suction Manifold".



STEP 5

Remove the "Suction Manifold".

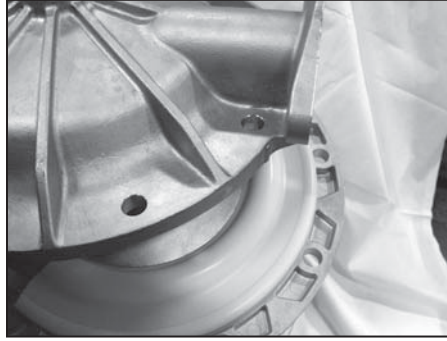


STEP 6

Remove the "O-Ring", "Valve Seat" and "Ball".

**STEP 7**

In order to remove both "Outer Chambers" use two 9/16 Inch wrenches. Remove ten "Hex-Head Cap Screws (3/8"-16x1-3/4")", ten "Compression Washers (3/8")" and ten "Flanged Hex Nut (3/8"-16)" from each "Outer Chamber". (Air ratchet may also be used as shown in image)

**STEP 8**

Remove both "Outer Chambers" from the "Intermediate."

**STEP 9**

Using two 1 Inch wrenches, remove "Outer Diaphragm Plate", "Diaphragm", "Inner Diaphragm Plate" and "Nut" from one side of the pump.

Flat 3/4" wrench may be used on flat of diaphragm rod to assist in diaphragm removal.

**STEP 10**

Placing the 1 inch wrench on the "Outer Diaphragm Plate", and the 1 1/16 inch socket on the "Nut", remove the "Inner Diaphragm Plate".

**STEP 11**

Remove "inner diaphragm plate" and "outer diaphragm plate" from "diaphragm."

PUMP WET END ASSEMBLY

To assemble the wet end of the pump, reverse the order of disassembly. Ensure all hardware is fastened in accordance with torque specifications (see page 18). Inverting one of the diaphragms during reassembly will facilitate ease of assembly.

REPAIR AND ASSEMBLY

AIR VALVE REMOVAL

TOOLS NEEDED

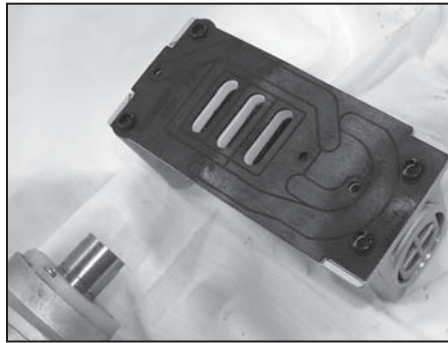
- 1) One Wrench, 7/16 Inch
- 2) One Pick, General Purpose
- 3) One Pair of Pliers

⚠ WARNING Prior to servicing the pump, ensure that the air and fluid lines are closed and disconnected. While wearing personal protective equipment, flush, drain and process liquid from the pump in a safe manner.



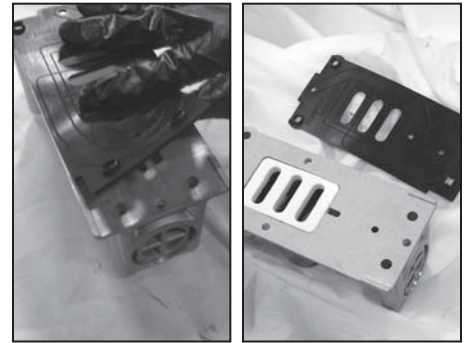
STEP 1

Using the 7/16 inch wrench, remove four "Hex Head Cap Screws (1/4"-20 x 3")", four "lock washers (1/4)" and four "flat washers (1/4)".



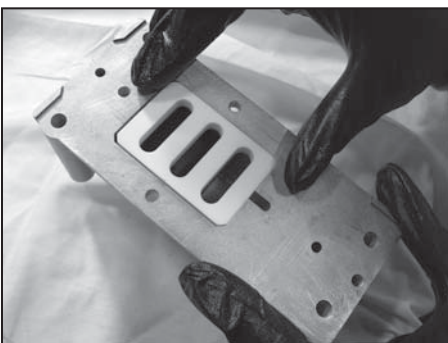
STEP 2

Remove the main "Air-Valve Assembly" from the pump.



STEP 3

Remove the "Air-Valve Gasket" from the main "Air-Valve Assembly".



STEP 4

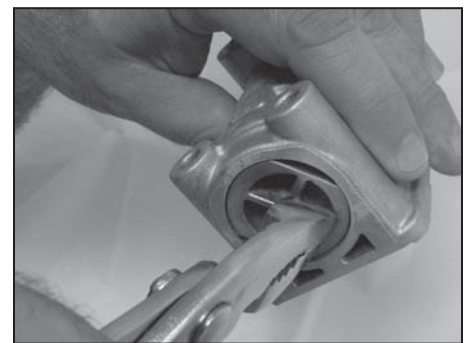
Remove the "Shuttle Plate" from the main "Air-Valve Assembly".

Note: The smooth shiny side of the shuttle plate should be toward the shuttle car.



STEP 5

Remove the "Shuttle" from the main "Air-Valve Assembly".



STEP 6

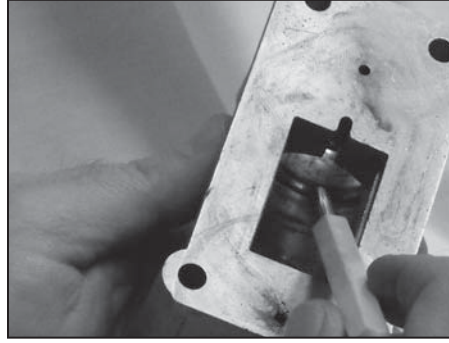
Using the pair of pliers, remove the "Air Valve End Plug" from the main "Air-Valve Assembly".

Ensure the "O-Ring" is installed when reassembling.

**STEP 7**

Remove the "Air Valve Spool" from the main "Air-Valve Assembly".

Note: The longer piston is to be on the plug side.

**STEP 8**

Using the pick, remove the "Lip Seal (Air Valve)" from the main "Air-Valve Assembly".

**STEP 9**

Using the pick, remove the second "Lip Seal (Air Valve)" from the main "Air-Valve Assembly".

AIR VALVE ASSEMBLY

To assemble the air valve, reverse the order of disassembly. During assembly, ensure that the open side of the lip-seals are both facing each other inward. Install the shuttle plate with the smooth/shiny side toward the shuttle car. Lubrication of the air valve assembly, with a non-synthetic lubricant, is recommended. Magna-Lube or Magna-Plate are recommended for assembly lubrication (see detailed parts list for ordering information).

Note that if the lip-seals are installed incorrectly, they will be unable to rotate. Insert the spool, the spool's longer piston is to be on the plug side, ensure O-ring is installed, and then the air-valve end plug into position.

REPAIR AND ASSEMBLY

PILOT VALVE REMOVAL

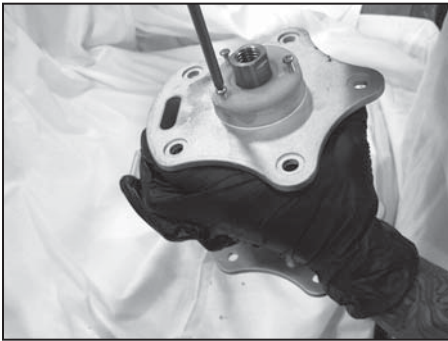
TOOLS NEEDED

- 1) One Screwdriver, Phillips #2
- 2) Two Wrenches, 3/4 Inch

The chambers do not need to be removed for this procedure.

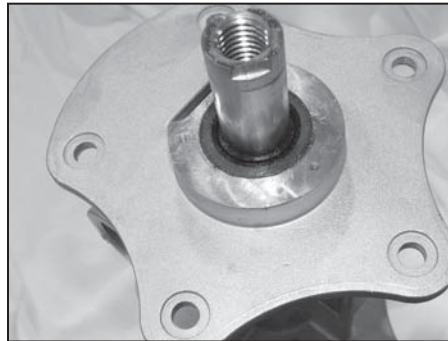
The graphics show the inner chambers removed for clarity.

⚠ WARNING Prior to servicing the pump, ensure that the air and fluid lines are closed and disconnected. While wearing personal protective equipment, flush, drain and process liquid from the pump in a safe manner.



STEP 1

Using the screwdriver, remove three “Phillips Pan Head Mach Screw (#6-32-x 3/8”)” in order to remove the “Retaining Plate”. Repeat for both sides of the pump.



STEP 2

Remove the “diaphragm rod” and the “pilot sleeve assembly” from the “Intermediate”.



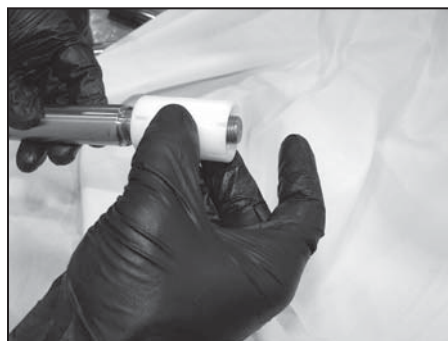
STEP 3

Remove the “lip seal” and “end spacer”.



STEP 4

Remove “O-rings” and “inner spacer”.



STEP 5

Remove “pilot sleeve” from diaphragm rod. The two piece rod must be disassembled to remove the “pilot sleeve”. Use the 3/4 inch wrenches to separate the rod. Note they are installed with thread locker.

PILOT VALVE ASSEMBLY

To assemble the pilot valve, reverse the order of disassembly. Should process fluid have contact with the pilot valve O-rings, they should be replaced as swelling may occur and cause irregular operation. During assembly, ensure that the open side of the lip-seals are facing outward. Lubrication of the pilot sleeve assembly, with a non-synthetic lubricant, is recommended in order to facilitate re-assembly into the intermediate. Magna-Lube or Magna-Plate are recommended for assembly lubrication (see detailed parts list for ordering information).

TORQUE SPECIFICATION CHART

RECOMMENDED TORQUE SPECIFICATIONS

	1-1/2" Pumps	Wrench Size
Manifold Bolts	30 ft-lbs (40.7 N-m)	9/16"
Chamber Bolts	15 ft-lbs (20.3 N-m)	9/16"
Air Valve Bolts	40 in-lbs (4.5 N-m)	7/16"
Inner Diaphragm Plate Nut	50 ft-lbs (67.8 N-m)	1 -1/16"
Intermediate Bolts	11 ft-lbs (14.9 N-m)	1/2"
Outer Diaphragm Plate	Hand tight then 1/8 to 1/4 turn more	

PARTS LIST - THREADED ALUMINUM & STAINLESS STEEL

FULL STROKE, A150-*A*-****-***

ITEM	DESCRIPTION	QTY	PUMP MODEL	PART NO.	MATERIAL
1	VALVE SLEEVE	1	All Models	10107-31	Acetal
2	SPACER PILOT SLEEVE	3	All Models	10205-40	Polypropylene
3	PILOT SLEEVE END, A150/A200	2	All Models	10208-40	Polypropylene
4 & 5	DIAPHRAGM ROD ASSEMBLY (FULL STROKE)	1	All non-PTFE Models	35003-00	Stainless Steel
6	SHUTTLE	1	All Models	10430-00	Special
7	SHUTTLE PLATE	1	All Models	10450-77	Ceramic
8	AIR VALVE SPOOL	1	All Models	10483-31	Acetal
9	DIAPHRAGM, A150	2	A150-*A*-N***-***	10614-11	Buna-N
			A150-*A*-V***-***	10614-13	Viton®/FKM
			A150-*A*-E***-***	10614-15	EPDM
			A150-*A*-G***-***	10614-19	Geolast®
			A150-*A*-S***-***	10614-23	Santoprene®
10	OUTER CHAMBER, A150	2	A150-*AA-****-***	10727-20	Aluminum
			A150-*A3-****-***	10727-26	Stainless Steel
11	VALVE SEAT, A150	4	A150-*A*-**A*-***	10930-20	Aluminum
			A150-*A*-**3*-***	10930-26	Stainless Steel
			A150-*A*-**P*-***	10930-39	Polypropylene
			A150-*A*-**Y*-***	10930-42	Nylon
12	BALL, A150	4	A150-*A*-N**_***	11010-21	Buna-N
			A150-*A*-V**_***	11010-13	Viton®/FKM
			A150-*A*-E**_***	11010-15	EPDM
			A150-*A*-G**_***	11010-19	Geolast®
			A150-*A*-S**_***	11010-23	Santoprene®
			A150-*A*-T**_***	11010-59	PTFE
13	INNER DIAPHRAGM PLATE (FULL STROKE)	2	All non-PTFE Models	11112-20	Aluminum
14	OUTER DIAPHRAGM PLATE WITH STUD	2	A150-*AA-****-***	11221-20	Aluminum
			A150-*A3-****-***	11221-26	Stainless Steel
15	DISCHARGE MANIFOLD - THREADED	1	A150-NAA-****-***	11332-20-NPT	Aluminum
			A150-NA3-****-***	11332-26-NPT	Stainless Steel
			A150-BAA-****-***	11332-20-BSPT	Aluminum
			A150-BA3-****-***	11332-26-BSPT	Stainless Steel
16	SUCTION MANIFOLD - THREADED	1	A150-NAA-****-***	11333-20-NPT	Aluminum
			A150-NA3-****-***	11333-26-NPT	Stainless Steel
			A150-BAA-****-***	11333-20-BSPT	Aluminum
			A150-BA3-****-***	11333-26-BSPT	Stainless Steel
17	INTERMEDIATE, A150/A200	1	All Models	11525-20	Aluminum
18	AIR VALVE BODY, A150/A200	1	All Models	11618-20	Aluminum
19	END PLUG, VALVE	1	All Models	11706-20	Aluminum
20	INNER CHAMBER, A150	2	All Models	11806-20	Aluminum
21	O-RING (AIR VALVE END PLUG)	1	All Models	11913-11	Nitrile
22	O-RING (END SPACER)	2	All Models	11919-11	Nitrile
23	O-RING (PILOT SLEEVE SPACER)	4	All Models	11919-16	Urethane
24	O-RING, VALVE SEAT	4	A150-*A*-***N-***	11952-11	Nitrile
			A150-*A*-***V-***	11952-13	Viton®/FKM
			A150-*A*-***E-***	11952-15	EPDM
			A150-*A*-***T-***	11952-17	PTFE

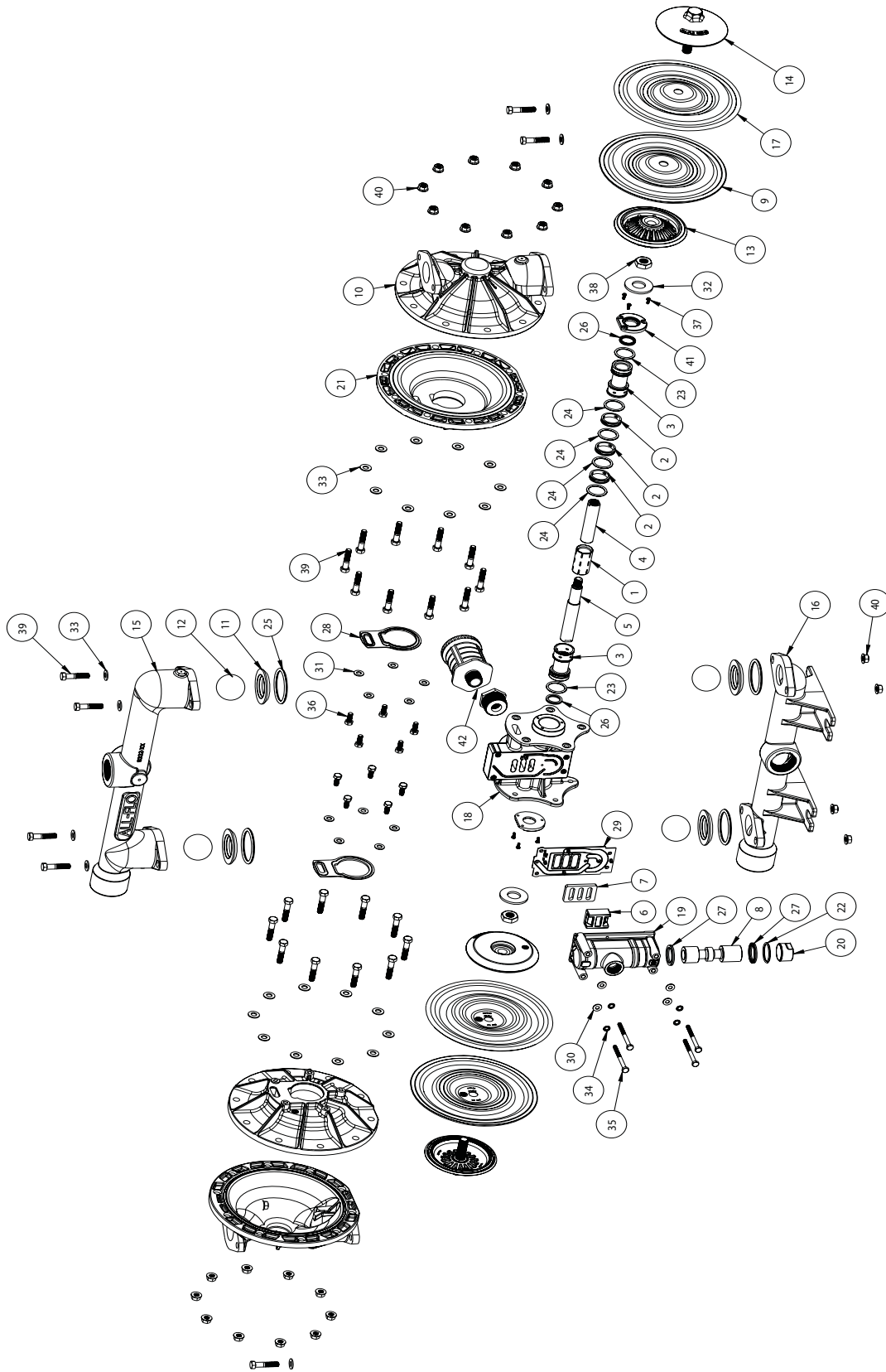
PARTS LIST - THREADED ALUMINUM & STAINLESS STEEL

FULL STROKE, A150-*A*-****-***

ITEM	DESCRIPTION	QTY	PUMP MODEL	PART NO.	MATERIAL
25	LIP SEAL (DIAPHRAGM ROD)	2	All Models	12002-76	Nitrile
26	LIP SEAL (AIR VALVE)	2	All Models	12003-76	Nitrile
27	INNER CHAMBER GASKET, A150/A200	2	All Models	12123-19	Nitrile
28	GASKET, AIR VALVE, A150/A200	1	All Models	12124-19	Nitrile
29	FLAT WASHER, (1/4") SAE	4	A150-*AA-****-*0*	12300-25	Plated Steel
			A150-*A3-****-*0*	12300-26	Stainless Steel
30	FLAT WASHER, (5/16")	10	A150-*AA-****-*0*	12310-25	Plated Steel
			A150-*A3-****-*0*	12310-26	Stainless Steel
31	BUMPER	2	All Models	12317-16	Urethane
32	COMPRESSION WASHER, (3/8")	28	A150-*AA-****-*0*	12326-25	Plated Steel
			A150-*A3-****-*0*	12326-26	Stainless Steel
33	LOCK WASHER, (1/4")	4	A150-*AA-****-*0*	12350-25	Plated Steel
			A150-*A3-****-*0*	12350-26	Stainless Steel
34	CAP SCREW, (1/4"-20 X 3")	4	A150-*AA-****-*0*	12516-25	Plated Steel
			A150-*A3-****-*0*	12516-26	Stainless Steel
35	CAP SCREW, (5/16"-18 X 3/4")	10	A150-*AA-****-*0*	12536-25	Plated Steel
			A150-*A3-****-*0*	12536-26	Stainless Steel
36	SELF-LOCKING PHILLIPS SCREW, (#6-32 X 3/8")	6	All Models	12571-26	Stainless Steel
37	NUT, (5/8"-11)	2	All Models	12579-25	Plated Steel
38	CAP SCREW, (3/8"-16 X 1-3/4")	28	A150-*AA-****-*0*	12581-25	Plated Steel
			A150-*A3-****-*0*	12581-26	Stainless Steel
39	FLANGE NUT, (3/8"-16)	28	A150-*AA-****-*0*	12612-25	Plated Steel
			A150-*A3-****-*0*	12612-26	Stainless Steel
40	RETAINING PLATE, A150/A200	2	All Models	12717-54	Nylon
41	MUFFLER w/ BUSHING	1	A150-*A*-****-*0*	13013-00	Polypropylene
			Optional	13010-00	Metal
1, 2, 3, 22, 23, 25	PILOT VALVE ASSEMBLY	1	All Models	APK-150-A	Various
6, 7, 8, 18, 19, 21, 26, 28	MAIN AIR VALVE ASSEMBLY	1	All Models	AMK-150-A	Various
	PIPE PLUG (NOT PICTURED) 1-1/2"	1		12270-20-BSPT	Aluminum
				12270-20-NPT	Aluminum
				12270-26-BSPT	Stainless Steel
				12270-26-NPT	Stainless Steel
	PIPE PLUG (NOT PICTURED) 1-1/4"	1		12275-20-BSPT	Aluminum
				12275-20-NPT	Aluminum
				12275-26-BSPT	Stainless Steel
				12275-26-NPT	Stainless Steel
	Magnalube .75 OZ.	1	All Models	13404-00	Grease

* Any Character

THREADED ALUMINUM & STAINLESS STEEL PTFE SHORT STROKE, A150-*A*-T***-***



PARTS LIST - THREADED ALUMINUM & STAINLESS STEEL

PTFE SHORT STROKE, A150-*A*-T***-***

ITEM	DESCRIPTION	QTY	PUMP MODEL	PART NO.	MATERIAL
1	VALVE SLEEVE	1	All Models	10107-31	Acetal
2	SPACER PILOT SLEEVE	3	All Models	10205-40	Polypropylene
3	PILOT SLEEVE END, A150/A200	2	All Models	10208-40	Polypropylene
4 & 5	DIAPHRAGM ROD ASSEMBLY (SHORT STROKE)	1	A150-*A*-T***-***	35004-00	Stainless Steel
6	SHUTTLE	1	All Models	10430-00	Special
7	SHUTTLE PLATE	1	All Models	10450-77	Ceramic
8	AIR VALVE SPOOL	1	All Models	10483-31	Acetal
9	BACKUP DIAPHRAGM	2	A150-*A*-T***-***	10615-23	Santoprene
10	OUTER CHAMBER, A150	2	A150-*AA-****-*** A150-*A3-****-***	10727-20 10727-26	Aluminum Stainless Steel
11	VALVE SEAT, A150	4	A150-*A*-**A*-*** A150-*A*-**3*-*** A150-*A*-**P*-*** A150-*A*-**Y*-***	10930-20 10930-26 10930-39 10930-42	Aluminum Stainless Steel Polypropylene Nylon
12	BALL, A150	4	A150-*A*-*N**-* A150-*A*-*V**-* A150-*A*-*E**-* A150-*A*-*G**-* A150-*A*-*S**-* A150-*A*-*T**-*	11010-21 11010-13 11010-15 11010-19 11010-23 11010-59	Buna-N Viton®/FKM EPDM Geolast® Santoprene® PTFE
13	INNER DIAPHRAGM PLATE (SHORT STROKE)	2	A150-*A*-T***-***	11114-20	Aluminum
14	OUTER DIAPHRAGM PLATE WITH STUD	2	A150-*AA-****-*** A150-*A3-****-***	11221-20 11221-26	Aluminum Stainless Steel
15	DISCHARGE MANIFOLD - THREADED	1	A150-NAA-****-*** A150-NA3-****-*** A150-BAA-****-*** A150-BA3-****-***	11332-20-NPT 11332-26-NPT 11332-20-BSPT 11332-26-BSPT	Aluminum Stainless Steel Aluminum Stainless Steel
16	SUCTION MANIFOLD - THREADED	1	A150-NAA-****-*** A150-NA3-****-*** A150-BAA-****-*** A150-BA3-****-***	11333-20-NPT 11333-26-NPT 11333-20-BSPT 11333-26-BSPT	Aluminum Stainless Steel Aluminum Stainless Steel
17	OVERLAY (DIAPHRAGM)	1	A150-*A*-T***-***	11410-59	PTFE
18	INTERMEDIATE, A150/A200	1	All Models	11525-20	Aluminum
19	AIR VALVE BODY, A150/A200	1	All Models	11618-20	Aluminum
20	END PLUG, VALVE	1	All Models	11706-20	Aluminum
21	INNER CHAMBER, A150	2	All Models	11806-20	Aluminum
22	O-RING (AIR VALVE END PLUG)	1	All Models	11913-11	Nitrile
23	O-RING (END SPACER)	2	All Models	11919-11	Nitrile
24	O-RING (PILOT SLEEVE SPACER)	4	All Models	11919-16	Urethane
25	O-RING, VALVE SEAT	4	A150-*A*-***N-*** A150-*A*-***V-*** A150-*A*-***E-*** A150-*A*-***T-***	11952-11 11952-13 11952-15 11952-17	Nitrile Viton®/FKM EPDM PTFE

PARTS LIST - THREADED ALUMINUM & STAINLESS STEEL

PTFE SHORT STROKE, A150-*A*-T***-***

ITEM	DESCRIPTION	QTY	PUMP MODEL	PART NO.	MATERIAL	
26	LIP SEAL (DIAPHRAGM ROD)	2	All Models	12002-76	Nitrile	
27	LIP SEAL (AIR VALVE)	2	All Models	12003-76	Nitrile	
28	INNER CHAMBER GASKET, A150/A200	2	All Models	12123-19	Nitrile	
29	GASKET, AIR VALVE, A150/A200	1	All Models	12124-19	Nitrile	
30	FLAT WASHER, (1/4") SAE	4	All Models	A150-*AA-****-*0*	12300-25	Plated Steel
				A150-*A3-****-*0*	12300-26	Stainless Steel
31	FLAT WASHER, (5/16")	10	All Models	A150-*AA-****-*0*	12310-25	Plated Steel
				A150-*A3-****-*0*	12310-26	Stainless Steel
32	BUMPER	2	All Models	12317-16	Urethane	
33	COMPRESSION WASHER, (3/8")	28	All Models	A150-*AA-****-*0*	12326-25	Plated Steel
				A150-*A3-****-*0*	12326-26	Stainless Steel
34	LOCK WASHER, (1/4")	4	All Models	A150-*AA-****-*0*	12350-25	Plated Steel
				A150-*A3-****-*0*	12350-26	Stainless Steel
35	CAP SCREW, (1/4"-20 X 3")	4	All Models	A150-*AA-****-*0*	12516-25	Plated Steel
				A150-*A3-****-*0*	12516-26	Stainless Steel
36	CAP SCREW, (5/16"-18 X 3/4")	10	All Models	A150-*AA-****-*0*	12536-25	Plated Steel
				A150-*A3-****-*0*	12536-26	Stainless Steel
37	SELF-LOCKING PHILLIPS SCREW, (#6-32 X 3/8")	6	All Models	12571-26	Stainless Steel	
38	NUT, (5/8"-11)	2	All Models	12579-25	Plated Steel	
39	CAP SCREW, (3/8"-16 X 1-3/4")	28	All Models	A150-*AA-****-*0*	12581-25	Plated Steel
				A150-*A3-****-*0*	12581-26	Stainless Steel
40	FLANGE NUT, (3/8"-16)	28	All Models	A150-*AA-****-*0*	12612-25	Plated Steel
				A150-*A3-****-*0*	12612-26	Stainless Steel
41	RETAINING PLATE, A150/A200	2	All Models	12717-54	Nylon	
42	MUFFLER w/ BUSHING	1	All Models	A150-*A*-****-*0*	13013-00	Polypropylene
				Optional	13010-00	Metal
1, 2, 3, 23, 24, 26	PILOT VALVE ASSEMBLY	1	All Models	APK-150-A	Various	
6, 7, 8, 18, 19, 20, 22, 27, 29	MAIN AIR VALVE ASSEMBLY	1	All Models	AMK-150-A	Various	
	PIPE PLUG (NOT PICTURED) 1-1/2"	1	All Models	12270-20-BSPT	Aluminum	
				12270-20-NPT	Aluminum	
				12270-26-BSPT	Stainless Steel	
				12270-26-NPT	Stainless Steel	
	PIPE PLUG (NOT PICTURED) 1-1/4"	1	All Models	12275-20-BSPT	Aluminum	
				12275-20-NPT	Aluminum	
				12275-26-BSPT	Stainless Steel	
				12275-26-NPT	Stainless Steel	
	Magnalube .75 OZ.	1	All Models	13404-00	Grease	

* Any Character

PARTS LIST - FLANGED STAINLESS STEEL FULL STROKE

A150-FA3-****-***

ITEM	DESCRIPTION	QTY	PUMP MODEL	PART NO.	MATERIAL
1	VALVE SLEEVE	1	All Models	10107-31	Acetal
2	SPACER PILOT SLEEVE	3	All Models	10205-40	Polypropylene
3	PILOT SLEEVE END, A150/A200	2	All Models	10208-40	Polypropylene
4 & 5	DIAPHRAGM ROD ASSEMBLY (FULL STROKE)	1	All Models	35003-00	Stainless Steel
6	SHUTTLE	1	All Models	10430-00	Special
7	SHUTTLE PLATE	1	All Models	10450-77	Ceramic
8	AIR VALVE SPOOL	1	All Models	10483-31	Acetal
9	DIAPHRAGM, A150	2	A150-*A*-N***-*** A150-*A*-V***-*** A150-*A*-E***-*** A150-*A*-G***-*** A150-*A*-S***-***	10614-11 10614-13 10614-15 10614-19 10614-23	Buna-N Viton/FKM EPDM Geolast Santoprene
10	OUTER CHAMBER, A150	2	A150-*A3-****-***	10727-26	Stainless Steel
11	VALVE SEAT, A150	4	A150-*A*-**A*-*** A150-*A*-**3*-*** A150-*A*-**P*-*** A150-*A*-**Y*-***	10930-20 10930-26 10930-39 10930-42	Aluminum Stainless Steel Polypropylene Nylon
12	BALL, A150	4	A150-*A*-*N**-* A150-*A*-*V**-* A150-*A*-*E**-* A150-*A*-*G**-* A150-*A*-*S**-* A150-*A*-*T**-*	11010-21 11010-13 11010-15 11010-19 11010-23 11010-59	Buna-N Viton/FKM EPDM Geolast Santoprene PTFE
13	INNER DIAPHRAGM PLATE (FULL STROKE)	2	All non-PTFE Models	11112-20	Aluminum
14	OUTER DIAPHRAGM PLATE WITH STUD	2	A150-*A3-****-***	11221-26	Stainless Steel
15	DISCHARGE MANIFOLD (FLANGED)	1	A150-FA3-****-***	11336-26	Stainless Steel
16	SUCTION MANIFOLD (FLANGED)	1	A150-FA3-****-***	11337-26	Stainless Steel
17	INTERMEDIATE, A150/A200	1	All Models	11525-20	Aluminum
18	AIR VALVE BODY, A150/A200	1	All Models	11618-20	Aluminum
19	END PLUG, VALVE	1	All Models	11706-20	Aluminum
20	INNER CHAMBER, A150	2	All Models	11806-20	Aluminum
21	O-RING (AIR VALVE END PLUG)	1	All Models	11913-11	Nitrile
22	O-RING (END SPACER)	2	All Models	11919-11	Nitrile
23	O-RING (PILOT SLEEVE SPACER)	4	All Models	11919-16	Urethane
24	O-RING, VALVE SEAT	4	A150-*A*-***N-*** A150-*A*-***V-*** A150-*A*-***E-*** A150-*A*-***T-***	11952-11 11952-13 11952-15 11952-17	Nitrile Viton/FKM EPDM PTFE

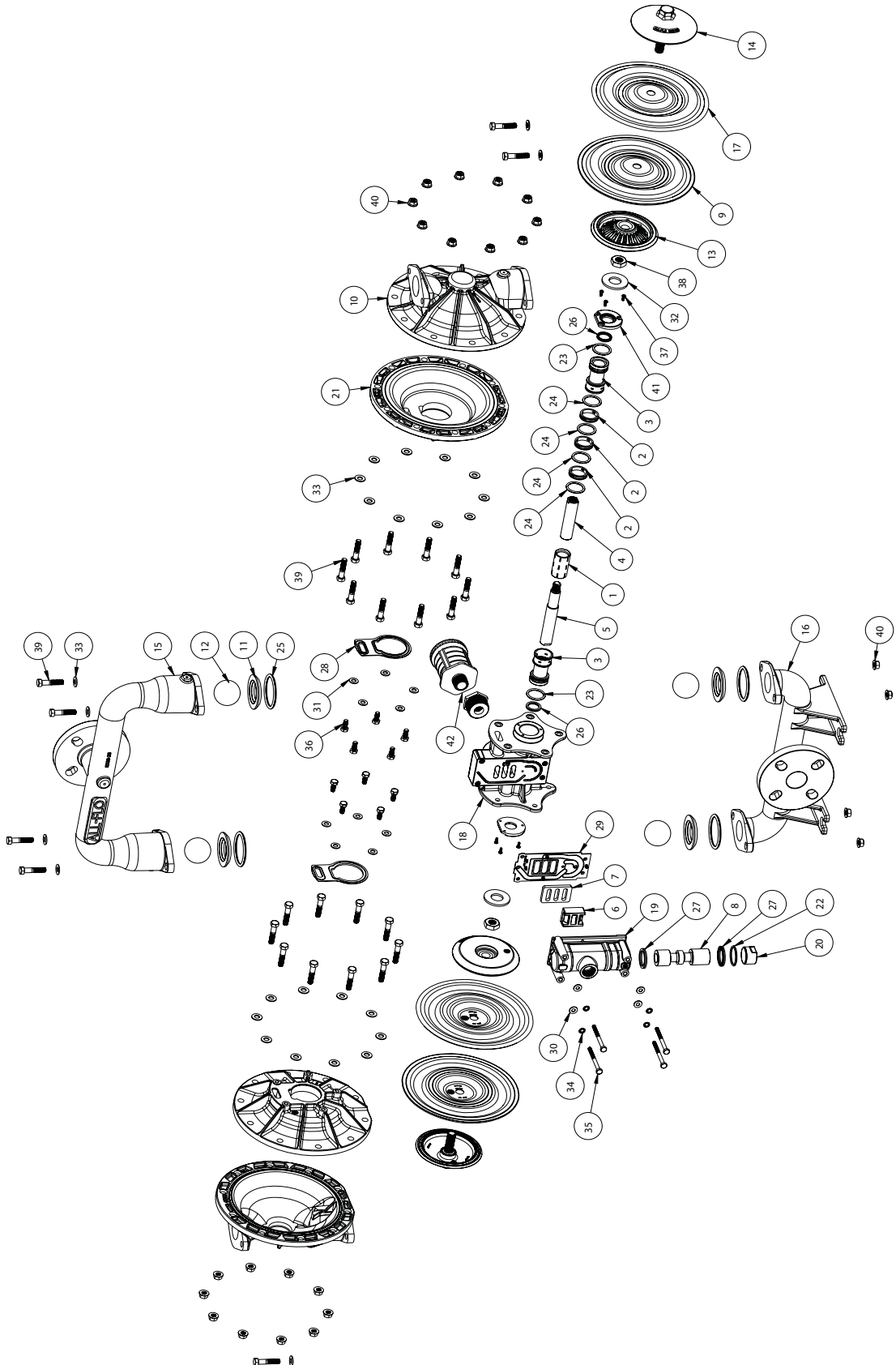
PARTS LIST - FLANGED STAINLESS STEEL FULL STROKE

A150-FA3-****-***

ITEM	DESCRIPTION	QTY	PUMP MODEL	PART NO.	MATERIAL
25	LIP SEAL (DIAPHRAGM ROD)	2	All Models	12002-76	Nitrile
26	LIP SEAL (AIR VALVE)	2	All Models	12003-76	Nitrile
27	INNER CHAMBER GASKET, A150/A200	2	All Models	12123-19	Nitrile
28	GASKET, AIR VALVE, A150/A200	1	All Models	12124-19	Nitrile
29	FLAT WASHER, (1/4") SAE	4	A150-FA3-****-*0*	12300-26	Stainless Steel
30	FLAT WASHER, (5/16")	10	A150-FA3-****-*0*	12300-26	Stainless Steel
31	BUMPER	2	All Models	12317-16	Urethane
32	COMPRESSION WASHER, (3/8")	28	A150-FA3-****-*0*	12326-26	Stainless Steel
33	LOCK WASHER, (1/4")	4	A150-FA3-****-*0*	12350-26	Stainless Steel
34	CAP SCREW, (1/4"-20 X 3")	4	A150-FA3-****-*0*	12516-26	Stainless Steel
35	CAP SCREW, (5/16"-18 X 3/4")	10	A150-FA3-****-*0*	12536-26	Stainless Steel
36	SELF-LOCKING PHILLIPS SCREW, (#6-32 X 3/8")	6	All Models	12571-26	Stainless Steel
37	NUT, (5/8"-11)	2	All Models	12579-25	Plated Steel
38	CAP SCREW, (3/8"-16 X 1-3/4")	28	A150-FA3-****-*0*	12581-26	Stainless Steel
39	FLANGE NUT, (3/8"-16)	28	A150-FA3-****-*0*	12612-26	Stainless Steel
40	RETAINING PLATE, A150/A200	2	All Models	12717-54	Nylon
41	MUFFLER w/ BUSHING	1	A150-*A*-****-*0* Optional	13013-00 13010-00	Polypropylene Metal
1, 2, 3, 22, 23, 25	PILOT VALVE ASSEMBLY	1	All Models	APK-150-A	Various
6, 7, 8, 18, 19, 21, 26, 28	MAIN AIR VALVE ASSEMBLY	1	All Models	AMK-150-A	Various
	PIPE PLUG (NOT PICTURED) 1-1/2"	1		12270-20-BSPT 12270-20-NPT 12270-26-BSPT 12270-26-NPT	Aluminum Aluminum Stainless Steel Stainless Steel
	PIPE PLUG (NOT PICTURED) 1-1/4"	1		12275-20-BSPT 12275-20-NPT 12275-26-BSPT 12275-26-NPT	Aluminum Aluminum Stainless Steel Stainless Steel
	Magnalube .75 OZ.	1	All Models	13404-00	Grease

* Any Character

FLANGED STAINLESS STEEL PTFE SHORT STROKE A150-FA3-T***-***



PARTS LIST - FLANGED STAINLESS STEEL SHORT STROKE

A150-FA3-T***-***

ITEM	DESCRIPTION	QTY	PUMP MODEL	PART NO.	MATERIAL
1	VALVE SLEEVE	1	All Models	10107-31	Acetal
2	SPACER PILOT SLEEVE	3	All Models	10205-40	Polypropylene
3	PILOT SLEEVE END, A150/A200	2	All Models	10208-40	Polypropylene
4 & 5	DIAPHRAGM ROD ASSEMBLY (SHORT STROKE)	1	All Models	35004-00	Stainless Steel
6	SHUTTLE	1	All Models	10430-00	Special
7	SHUTTLE PLATE	1	All Models	10450-77	Ceramic
8	AIR VALVE SPOOL	1	All Models	10483-31	Acetal
9	BACKUP DIAPHRAGM	2	A150-*A*-T***-***	10615-23	Santoprene
10	OUTER CHAMBER, A150	2	A150-*A3-****-***	10727-26	Stainless Steel
11	VALVE SEAT, A150	4	A150-*A*-**A*-*** A150-*A*-**3*-*** A150-*A*-**P*-*** A150-*A*-**Y*-***	10930-20 10930-26 10930-39 10930-42	Aluminum Stainless Steel Polypropylene Nylon
12	BALL, A150	4	A150-*A*-*N**-* A150-*A*-*V**-* A150-*A*-*E**-* A150-*A*-*G**-* A150-*A*-*S**-* A150-*A*-*T**-*	11010-21 11010-13 11010-15 11010-19 11010-23 11010-59	Buna-N Viton/FKM EPDM Geolast Santoprene PTFE
13	INNER DIAPHRAGM PLATE (SHORT STROKE)	2	A150-*A*-T***-***	11114-20	Aluminum
14	OUTER DIAPHRAGM PLATE WITH STUD	2	A150-*A3-****-***	11221-26	Stainless Steel
15	DISCHARGE MANIFOLD (FLANGED)	1	A150-FA3-****-***	11336-26	Stainless Steel
16	SUCTION MANIFOLD (FLANGED)	1	A150-FA3-****-***	11337-26	Stainless Steel
17	OVERLAY (DIAPHRAGM)	1	A150-*A*-T***-***	11410-59	PTFE
18	INTERMEDIATE, A150/A200	1	All Models	11525-20	Aluminum
19	AIR VALVE BODY, A150/A200	1	All Models	11618-20	Aluminum
20	END PLUG, VALVE	1	All Models	11706-20	Aluminum
21	INNER CHAMBER, A150	2	All Models	11806-20	Aluminum
22	O-RING (AIR VALVE END PLUG)	1	All Models	11913-11	Nitrile
23	O-RING (END SPACER)	2	All Models	11919-11	Nitrile
24	O-RING (PILOT SLEEVE SPACER)	4	All Models	11919-16	Urethane
25	O-RING, VALVE SEAT	4	A150-*A*-***N-*** A150-*A*-***V-*** A150-*A*-***E-*** A150-*A*-***T-***	11952-11 11952-13 11952-15 11952-17	Nitrile Viton/FKM EPDM PTFE

PARTS LIST - FLANGED STAINLESS STEEL SHORT STROKE

A150-FA3-T***-***

ITEM	DESCRIPTION	QTY	PUMP MODEL	PART NO.	MATERIAL
26	LIP SEAL (DIAPHRAGM ROD)	2	All Models	12002-76	Nitrile
27	LIP SEAL (AIR VALVE)	2	All Models	12003-76	Nitrile
28	INNER CHAMBER GASKET, A150/A200	2	All Models	12123-19	Nitrile
29	GASKET, AIR VALVE, A150/A200	1	All Models	12124-19	Nitrile
30	FLAT WASHER, (1/4") SAE	4	A150-FA3-****-*0*	12300-26	Stainless Steel
31	FLAT WASHER, (5/16")	10	A150-FA3-****-*0*	12300-26	Stainless Steel
32	BUMPER	2	All Models	12317-16	Urethane
33	COMPRESSION WASHER, (3/8")	28	A150-FA3-****-*0*	12326-26	Stainless Steel
34	LOCK WASHER, (1/4")	4	A150-FA3-****-*0*	12350-26	Stainless Steel
35	CAP SCREW, (1/4"-20 X 3")	4	A150-FA3-****-*0*	12516-26	Stainless Steel
36	CAP SCREW, (5/16"-18 X 3/4")	10	A150-FA3-****-*0*	12536-26	Stainless Steel
37	SELF-LOCKING PHILLIPS SCREW, (#6-32 X 3/8")	6	All Models	12571-26	Stainless Steel
38	NUT, (5/8"-11)	2	All Models	12579-25	Plated Steel
39	CAP SCREW, (3/8"-16 X 1-3/4")	28	A150-FA3-****-*0*	12581-26	Stainless Steel
40	FLANGE NUT, (3/8"-16)	28	A150-FA3-****-*0*	12612-26	Stainless Steel
41	RETAINING PLATE, A150/A200	2	All Models	12717-54	Nylon
42	MUFFLER w/ BUSHING	1	A150-*A*-****-*0*	13013-00	Polypropylene
			Optional	13010-00	Metal
1, 2, 3, 23, 24, 26	PILOT VALVE ASSEMBLY	1	All Models	APK-150-A	Various
6, 7, 8, 19, 20, 22, 27, 29	MAIN AIR VALVE ASSEMBLY	1	All Models	AMK-150-A	Various
	PIPE PLUG (NOT PICTURED) 1-1/2"	1		12270-20-BSPT	Aluminum
				12270-20-NPT	Aluminum
				12270-26-BSPT	Stainless Steel
				12270-26-NPT	Stainless Steel
	PIPE PLUG (NOT PICTURED) 1-1/4"	1		12275-20-BSPT	Aluminum
				12275-20-NPT	Aluminum
				12275-26-BSPT	Stainless Steel
				12275-26-NPT	Stainless Steel
	Magnalube .75 OZ.	1	All Models	13404-00	Grease

* Any Character

ELASTOMERS & REPAIR KITS

WETTED ELASTOMERS

BUNA-N (NITRILE)

is a general purpose elastomer used with water and many oils. Temperature range 10°F to 180°F (-12C to 82C).

GEOLAST®

is an injection molded thermoplastic material with characteristics similar to Nitrile. Has excellent abrasion resistance. Temperature range 10°F to 180°F (-12C to 82C).

EPDM

is a general purpose elastomer with good resistance to many acids and bases. Temperature range -40°F to 280°F (-40C to 138C).

SANTOPRENE®

is an injection molded material with characteristics similar to EPDM. Has excellent abrasion resistance. Temperature range -40°F to 225°F (-40C to 107C).

VITON®

is an elastomer with good corrosion resistance to a wide variety of chemicals. Temperature range -40°F to 350°F (-40C to 177C).

FKM

is an elastomer with good corrosion resistance to a wide variety of chemicals. Similar in chemical resistance to Viton®. Temperature range -40°F to 350°F (-40C to 177C).

PTFE (POLYTETRAFLUOROETHYLENE)

is a thermoplastic polymer that is inert to most chemicals. Similar in chemical resistance to Teflon®. Temperature range 40°F to 220°F (4C to 104C).

Most of the above elastomers are available in FDA approved formulations.

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Geolast® is a registered trademark of ExxonMobil Chemical Co.
Santoprene® is a registered trademark of ExxonMobil Chemical Co.
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Magnalube® is a registered trademark of Carleton-Stuart Corp.

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All-Flo does not warrant any part or component that it does not manufacture, but will assign to the original end-user purchaser of any warranty received by it from the manufacturer, to extent such pass through is permitted by the manufacturer



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