

T4/A4

Original™ Series **METAL** Pumps

EOM

Engineering
Operation &
Maintenance



Simplify your process

ACCU-FLO™
SOLENOID DUMP TECHNOLOGY

TURBO-FLO™
PROGRESSIVE PUMP TECHNOLOGY

WILDEN®

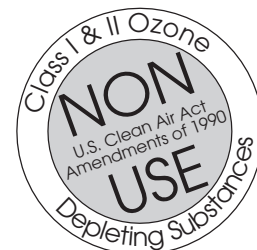
A **DOVER** COMPANY



WIL-10260-E-02
REPLACES EOM T4 & A4M 4/05

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SECTION 1

MODEL T4 METAL CAUTIONS – READ FIRST!



TEMPERATURE LIMITS:

Polypropylene	0°C to 79°C	32°F to 175°F
PVDF	-12°C to 107°C	10°F to 225°F
Neoprene	-17.8°C to 93.3°C	0°F to 200°F
Buna-N	-12.2°C to 82.2°C	10°F to 180°F
EPDM	-51.1°C to 137.8°C	-60°F to 280°F
Viton®	-40°C to 176.7°C	-40°F to 350°F
Wil-Flex™	-40°C to 107.2°C	-40°F to 225°F
Polyurethane	12.2°C to 65.6°C	10°F to 150°F
Saniflex™	-28.9°C to 104.4°C	-20°F to 220°F
PTFE	4.4°C to 104.4°C	40°F to 220°F



CAUTION: When choosing pump materials, be sure to check the temperature limits for all wetted components. Example: Viton® has a maximum limit of 176.7°C (350°F) but polypropylene has a maximum limit of only 79°C (175°F).



CAUTION: Maximum temperature limits are based upon mechanical stress only. Certain chemicals will significantly reduce maximum safe operating temperatures. Consult engineering guide for chemical compatibility and temperature limits.



CAUTION: Always wear safety glasses when operating pump. If diaphragm rupture occurs, material being pumped may be forced out air exhaust.



WARNING: Prevention of static sparking — If static sparking occurs, fire or explosion could result. Pump, valves, and containers must be properly grounded when handling flammable fluids and whenever discharge of static electricity is a hazard.



CAUTION: Do not exceed 8.6 bar (125 psig) air supply pressure.



CAUTION: Before any maintenance or repair is attempted, the compressed air line to the pump should be disconnected and all air pressure allowed to bleed from pump. Disconnect all intake, discharge and air lines. Drain the pump by turning it upside down and allowing any fluid to flow into a suitable container.



CAUTION: Blow out air line for 10 to 20 seconds before attaching to pump to make sure all pipe line debris is clear. Use an in-line air filter. A 5μ (micron) air filter is recommended.



NOTE: When installing PTFE diaphragms, it is important to tighten outer pistons simultaneously (turning in opposite directions) to ensure tight fit.



NOTE: Tighten clamp bands and retainers prior to installation. Fittings may loosen during transportation.



NOTE: Before starting disassembly, mark a line from each liquid chamber to its corresponding air chamber. This line will assist in proper alignment during reassembly.



CAUTION: Verify the chemical compatibility of the process and cleaning fluid to the pump's component materials in the Chemical Resistance Guide (see E4).



CAUTION: When removing the end cap using compressed air, the air valve end cap may come out with considerable force. Hand protection such as a padded glove or rag should be used to capture the end cap.



CAUTION: Only explosion proof (NEMA 7) solenoid valves should be used in areas where explosion proof equipment is required.



NOTE: All non lube-free air-operated pumps must be lubricated. Wilden suggests an arctic 5 weight oil (ISO grade 15). Do not over-lubricate pump. Over-lubrication will reduce pump performance.



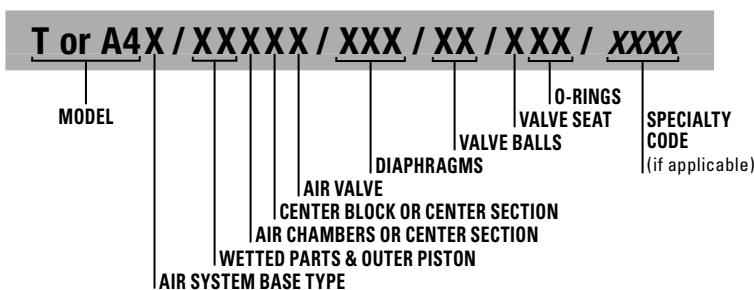
NOTE: On cast iron pumps equipped with PTFE diaphragms, balls and sealing rings, PTFE gasket kits should be utilized.



NOTE: UL-listed pumps must not exceed 3.4 bar (50 psig) air supply pressure.

SECTION 2

WILDEN PUMP DESIGNATION SYSTEM



T4 OR A4 METAL MATERIAL CODES

AIR SYSTEM BASE TYPE

A = ACCU-FLO™
T = TURBO-FLO™

WETTED PARTS & OUTER PISTON

AA = ALUMINUM / ALUMINUM
SS = STAINLESS STEEL / STAINLESS STEEL
WW = CAST IRON / CAST IRON
WM = CAST IRON / MILD STEEL

AIR CHAMBER / CENTER SECTION

A = ALUMINUM
C = PTFE-COATED ALUMINUM
M = MILD STEEL
N = NICKEL-PLATED ALUMINUM
P = POLYPROPYLENE

CENTER BLOCK / CENTER SECTION

A = ALUMINUM
C = PTFE COATED ALUMINUM
N = NICKEL PLATED ALUMINUM
P = POLYPROPYLENE

AIR VALVE

A = ALUMINUM
B = BRASS
C = PTFE COATED
D = BRASS W/OIL BOTTLE
N = NICKEL PLATED BRASS
S = STAINLESS STEEL

DIAPHRAGMS

BNS = BUNA-N (Red Dot)
BNU = BUNA-N, ULTRA-FLEX™ (Red Dot)
EPS = EPDM (Blue Dot)
EPU = EPDM, ULTRA-FLEX™ (Blue Dot)
FSS = SANIFLEX™ [Hytrel® (Cream)]
NES = NEOPRENE (Green Dot)
NEU = NEOPRENE, ULTRA-FLEX™ (Green Dot)
PUS = POLYURETHANE (Clear)
TEU = PTFE W/EPDM BACK-UP (White)
TNU = PTFE W/NEOPRENE BACK-UP (White)
TSU = PTFE W/SANIFLEX™ BACK-UP (White)
VTS = VITON® (White Dot)
VTU = VITON®, ULTRA-FLEX™ (White Dot)
WFS = WIL-FLEX™ [Santoprene® (Orange Dot)]

VALVE BALL

BN = BUNA-N (Red Dot)
EP = EPDM (Blue Dot)
FS = SANIFLEX™ [Hytrel® (Cream)]
NE = NEOPRENE (Green Dot)
PU = POLYURETHANE (Brown)
TF = PTFE (White)
VT = VITON® (White Dot)
WF = WIL-FLEX™ [Santoprene® (Orange Dot)]

VALVE SEAT

A = ALUMINUM*
BN = BUNA-N (Red Dot)
EP = EPDM (Blue Dot)
FS = SANIFLEX™ [Hytrel® (Cream)]
H = ALLOY C*
M = MILD STEEL*
NE = NEOPRENE (Green Dot)
PU = POLYURETHANE (Brown)
S = STAINLESS STEEL*
VT = VITON® (White Dot)
WF = WIL-FLEX™ [Santoprene® (Orange Dot)]
*No valve seat o-ring required.

VALVE SEAT O-RING

FS = FLUORO-SEAL™
TF = PTFE (White)

SPECIALTY CODES

0003 Spark free	0113 Stallion®, internals, spark free, BSPT	0181 Accu-Flo™, 24V AC / 12V DC x-proof coil, PFA coated hardware
0010 Spark free, SS outer piston	0120 Saniflo™ FDA, Wil-Gard II™ 110V	0183 Accu-Flo™, 24V AC / 12V DC x-proof coil, Wil-Gard II™ 110V
0014 BSPT	0124 Saniflo™ FDA, Accu-Flo™, 24 V DC x-proof coil, Intl., PTB approved	0184 Accu-Flo™, 24V DC coil, PFA coated hardware
0015 Spark free, BSPT	0127 Saniflo™ FDA, Accu-Flo™, 110V AC coil	0185 Accu-Flo™, 24V DC x-proof coil, PFA coated hardware
0023 Wing nuts	0128 Saniflo™ FDA, Accu-Flo™, 24 V AC / 12V DC coil	0194 Accu-Flo™, 24V DC coil, spark free
0030 Screen based	0129 Saniflo™ FDA, Accu-Flo™, 24V AC / 12V DC x-proof coil	0195 Accu-Flo™, 24V DC x-proof coil, spark free
0033 Screen based, spark free	0130 Saniflo™ FDA, Accu-Flo™, 110V AC x-proof coil	0196 Accu-Flo™, 24V AC / 12V DC coil, spark free
0036 Screen based, BSPT	0143 Accu-Flo™, 110V AC x-proof coil, BSPT	0197 Accu-Flo™, 24V AC / 12V DC x-proof coil, spark free
0037 Screen based, spark free, BSPT	0144 Accu-Flo™, 110V AC coil, BSPT	0198 Accu-Flo™, 110V AC coil, spark free
0044 Stallion®, balls & seats ONLY	0145 Accu-Flo™, 110V AC x-proof coil, Wil-Gard II™ 110V	0199 Accu-Flo™, 110V AC x-proof coil, spark free
0045 Stallion®, shaft & bumpers ONLY	0147 Accu-Flo™, 24V DC coil, spark free, BSPT	0360 Accu-Flo™, 24V DC coil, DIN flange
0046 Stallion®, internals, BSPT	0150 Accu-Flo™, 24V DC coil	0363 Accu-Flo™, 110V AC coil, Stallion® internals (balls & seats)
0048 Stallion®, internals	0151 Accu-Flo™, 24V AC / 12V DC coil	0206 PFA coated hardware, Wil-Gard II™ sensor wires ONLY
0050 Stallion	0153 Accu-Flo™, 24V AC / 12V DC x-proof coil	0231 Stallion®, externals (screen)
0051 Stallion®, BSPT	0154 Accu-Flo™, 24V DC x-proof coil	0232 SS outer piston, SS clamp bands and hardware
0067 Saniflo™ FDA, Wil-Gard II™ 220V	0155 Accu-Flo™, 110V AC coil	0233 Stallion®, externals (screen), BSPT
0070 Saniflo™ FDA	0156 Accu-Flo™, 110V AC x-proof coil	0315 PFA coated hardware, BSPT
0076 Saniflo™ FDA, Stallion® internals	0157 Accu-Flo™, 24V DC x-proof coil, Intl. PTB approved	0330 Wing nuts, BSPT
0079 Tri-clamp fittings, wing nuts	0158 Accu-Flo™, 24V DC x-proof coil, Intl., PTB approved, BSPT	0502 PFA coated hardware
0080 Tri-clamp fittings ONLY	0159 Accu-Flo™, 24V DC coil, Intl., PTB approved, DIN flange	0504 DIN flange
0090 UL listed	0160 Accu-Flo™, 24V DC coil, BSPT	0506 DIN flange, PFA coated hardware
0091 UL listed, Wil-Gard II™ 110V	0161 Accu-Flo™, 24V DC x-proof coil, BSPT	0513 SS outer pistons
0092 UL listed, screen based	0162 Accu-Flo™, 24V AC / 12V DC coil, BSPT	0603 PFA coated hardware, Wil-Gard II™ 110V
0100 Wil-Gard II™ 110V	0164 Accu-Flo™, 110V AC coil, Wil-Gard II™ sensor wires ONLY	0604 DIN flange, Wil-Gard II™ 220V
0102 Wil-Gard II™ sensor wires ONLY	0166 Accu-Flo™, 24V DC coil, Wil-Gard II™ 110V	0606 DIN flange, PFA coated hardware, Wil-Gard II™ 220V
0103 Wil-Gard II™ 220V	0167 Accu-Flo™, 24V AC / 12V DC coil, Wil-Gard II™ 110V	0608 PFA coated hardware, Wil-Gard II™ 220V
0104 Wil-Gard II™ 110V, spark free	0168 Accu-Flo™, 110V AC coil, Wil-Gard II™ 110V	
0105 Spark free, Wil-Gard II™ 220V	0169 Accu-Flo™, 110V AC coil, PFA coated hardware	
0108 BSPT, Wil-Gard II™ 220V	0180 Accu-Flo™, 24V AC / 12V DC coil PFA coated hardware	
0109 Spark free, BSPT, Wil-Gard II™ 220V		

NOTE: MOST ELASTOMERIC MATERIALS USE COLORED DOTS FOR IDENTIFICATION.

Viton® is a registered trademarks of DuPont Dow Elastomers.

WILDEN PUMP & ENGINEERING, LLC

SECTION 3

THE WILDEN PUMP – HOW IT WORKS

The Wilden diaphragm pump is an air-operated, positive displacement, self-priming pump. These drawings show the flow pattern through the pump upon its initial stroke. It is assumed the pump has no fluid in it prior to its initial stroke.

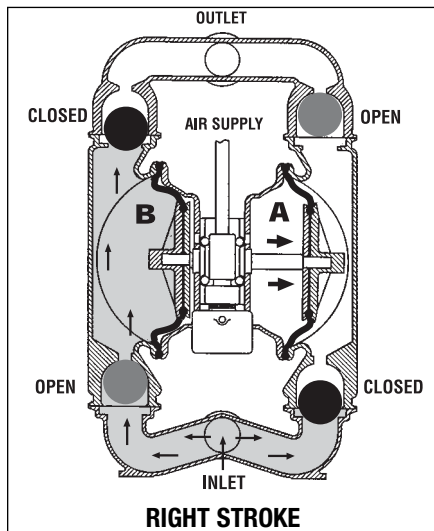


FIGURE 1 The air valve directs pressurized air to the back side of diaphragm A. The compressed air is applied directly to the liquid column separated by elastomeric diaphragms. The diaphragm acts as a separation membrane between the compressed air and liquid, balancing the load and removing mechanical stress from the diaphragm. The compressed air moves the diaphragm away from the center block of the pump. The opposite diaphragm is pulled in by the shaft connected to the pressurized diaphragm. Diaphragm B is on its suction stroke; air behind the diaphragm has been forced out to the atmosphere through the exhaust port of the pump. The movement of diaphragm B toward the center block of the pump creates a vacuum within chamber B. Atmospheric pressure forces fluid into the inlet manifold forcing the inlet valve ball off its seat. Liquid is free to move past the inlet valve ball and fill the liquid chamber (see shaded area).

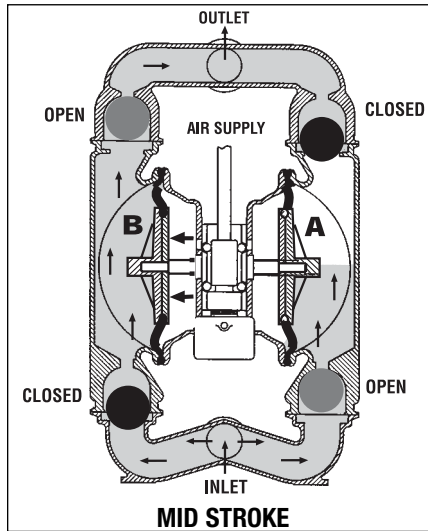


FIGURE 2 When the pressurized diaphragm, diaphragm A, reaches the limit of its discharge stroke, the air valve redirects pressurized air to the back side of diaphragm B. The pressurized air forces diaphragm B away from the center block while pulling diaphragm A to the center block. Diaphragm B is now on its discharge stroke. Diaphragm B forces the inlet valve ball onto its seat due to the hydraulic forces developed in the liquid chamber and manifold of the pump. These same hydraulic forces lift the discharge valve ball off its seat, while the opposite discharge valve ball is forced onto its seat, forcing fluid to flow through the pump discharge. The movement of diaphragm A toward the center block of the pump creates a vacuum within liquid chamber A. Atmospheric pressure forces fluid into the inlet manifold of the pump. The inlet valve ball is forced off its seat allowing the fluid being pumped to fill the liquid chamber.

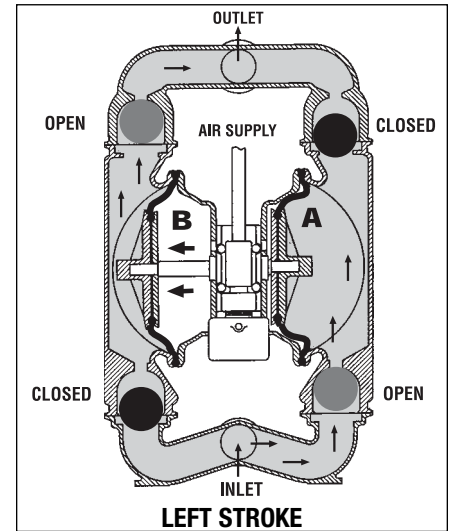
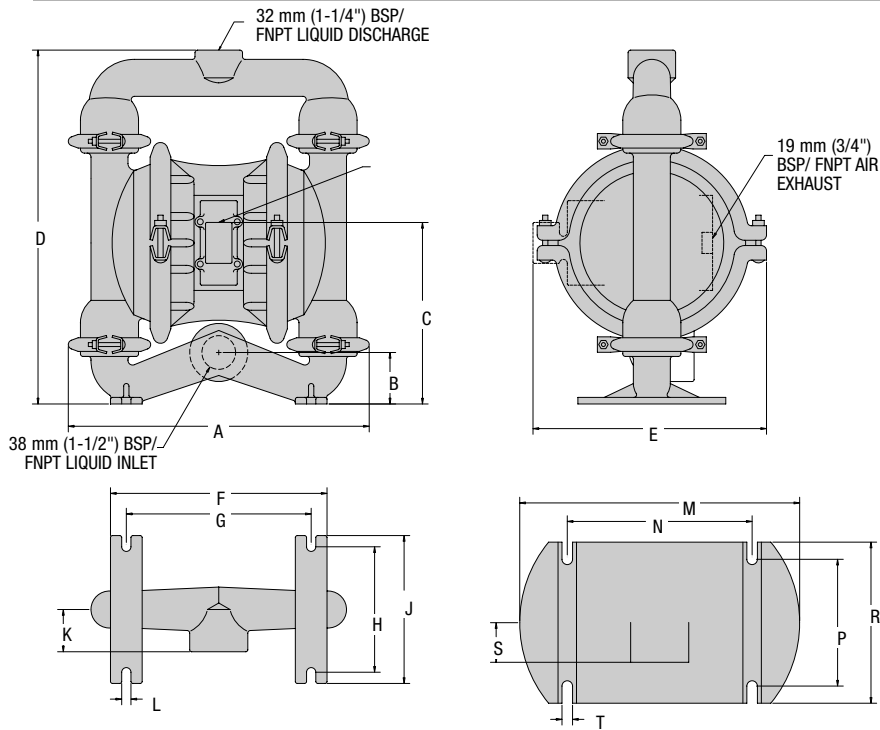


FIGURE 3 At completion of the stroke, the air valve again redirects air to the back side of diaphragm A, which starts diaphragm B on its exhaust stroke. As the pump reaches its original starting point, each diaphragm has gone through one exhaust and one discharge stroke. This constitutes one complete pumping cycle. The pump may take several cycles to completely prime depending on the conditions of the application.

SECTION 4A

DIMENSIONAL DRAWING T4 METAL



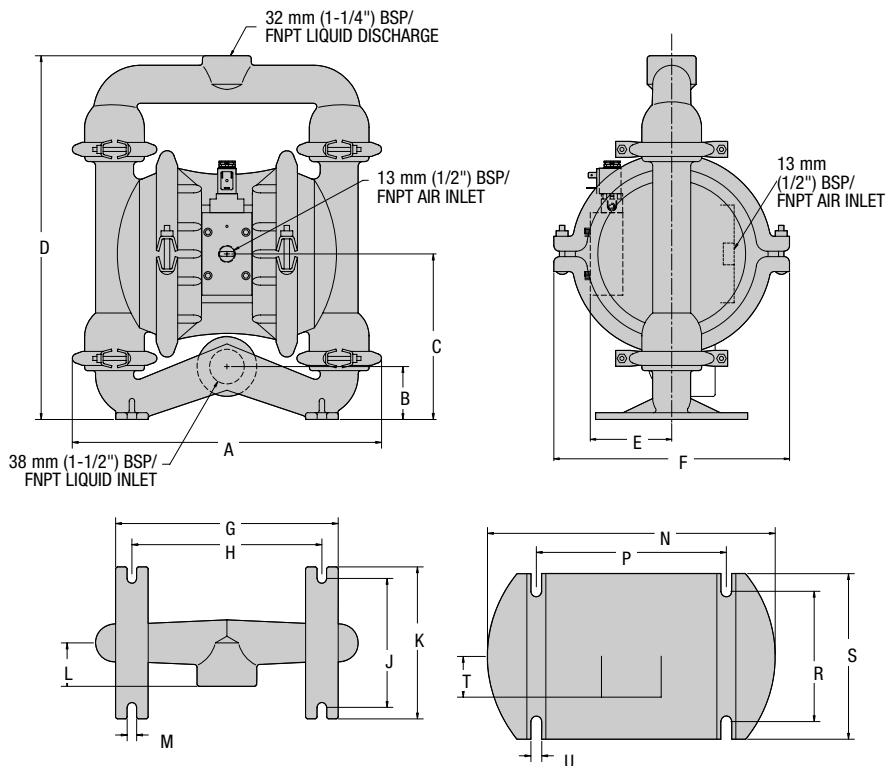
DIMENSIONS

ITEM	METRIC (mm)	STANDARD (inch)
A	391	15.4
B	63	2.5
C	219	8.6
D	442	17.4
E	285	11.2
F	262	10.3
G	224	8.8
H	152	6.0
J	178	7.0
K	67	2.6
L	11	0.4

BSP threads available.

SECTION 4B

DIMENSIONAL DRAWING A4 METAL ACCU-FLO™



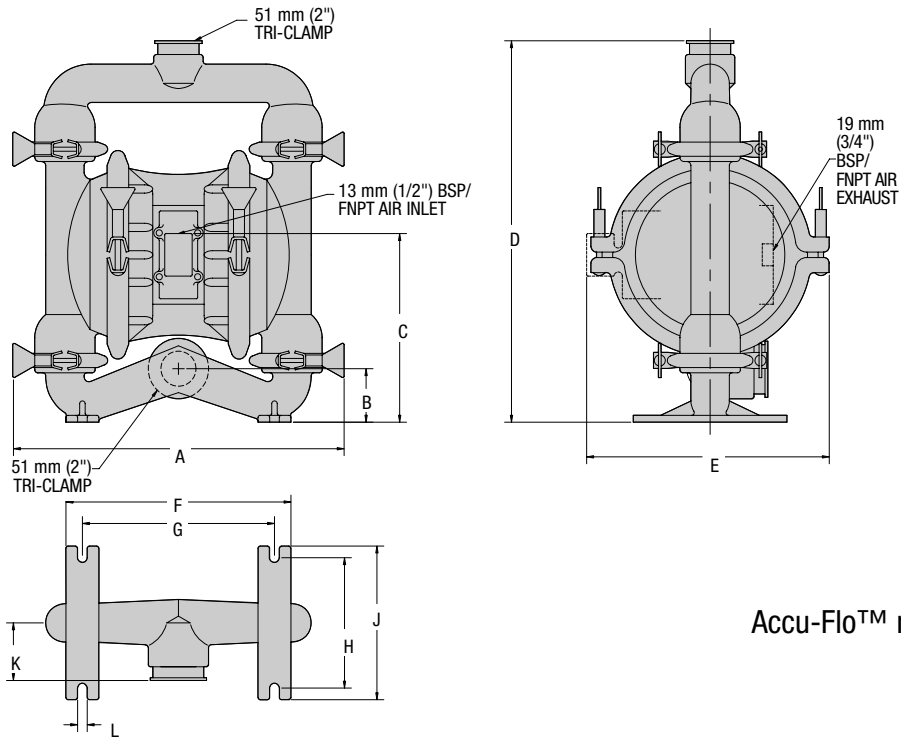
DIMENSIONS

ITEM	METRIC (mm)	STANDARD (inch)
A	391	15.4
B	63	2.5
C	198	7.8
D	442	17.4
E	95	3.8
F	285	11.2
G	262	10.3
H	224	8.8
J	152	6.0
K	178	7.0
L	51	2.0
M	11	0.4
N	336	13.2
P	222	8.8
R	151	5.9
S	195	7.7
T	49	1.9
U	13	0.5

BSP threads available.

SECTION 4C

DIMENSIONAL DRAWING T4 METAL SANIFLO^{FDA}



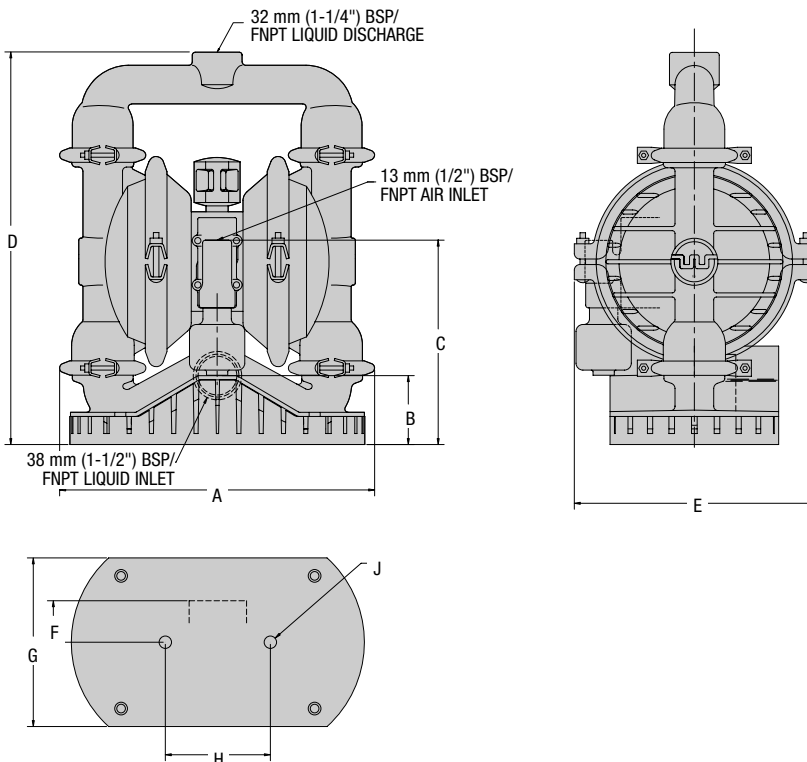
DIMENSIONS

ITEM	METRIC (mm)	STANDARD (inch)
A	391	15.4
B	63	2.5
C	219	8.6
D	442	17.4
E	285	11.2
F	262	10.3
G	224	8.8
H	152	6.0
J	178	7.0
K	67	2.6
L	11	0.4

Accu-Flo™ model available.

SECTION 4D

DIMENSIONAL DRAWING T4 METAL STALLION



DIMENSIONS

ITEM	METRIC (mm)	STANDARD (inch)
A	391	15.4
B	77	3.0
C	232	9.1
D	449	17.7
E	285	11.2
F	48	1.9
G	197	7.8
H	121	4.8
J	Ø14	Ø 0.6

BSP threads available.

SECTION 5E

PERFORMANCE CURVES

T4 METAL STALLION ULTRA-FLEX™-FITTED

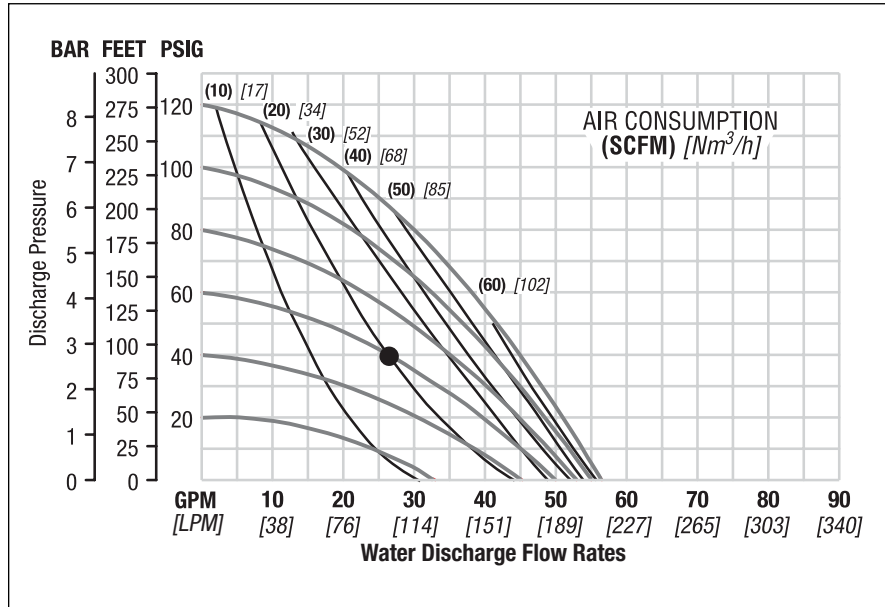
Height.....449 mm (17.7")
 Width.....391 mm (15.4")
 Depth285 mm (11.2")
 Est. Ship Weight.....Aluminum 20 kg (44 lbs)
 Air Inlet.....13 mm (1/2")
 Inlet.....38 mm (1-1/2")
 Outlet32 mm (1-1/4")
 Suction Lift4.27 m Dry (14')
 8.23 m Wet (27')

Displacement per
 Stroke0.64 l (0.17 gal.)¹
 Max. Flow Rate.....216 lpm (57 gpm)
 Max. Size Solids13 mm (1/2")

¹Displacement per stroke was calculated at 4.8 bar (70 psig) air inlet pressure against a 2 bar (30 psig) head pressure.

Example: To pump 98.4 lpm (26 gpm) against a discharge pressure head of 2.7 bar (40 psig) requires 4.1 bar (60 psig) and 35.7 Nm³/h (21 scfm) air consumption. (See dot on chart.)

Caution: Do not exceed 8.6 bar (125 psig) air supply pressure.



Flow rates indicated on chart were determined by pumping water.

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

SECTION 5F

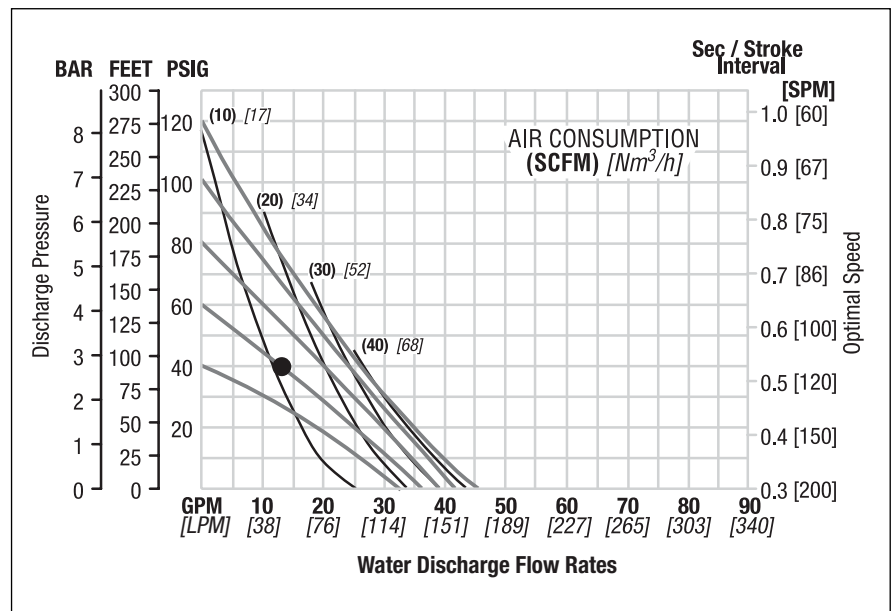
PERFORMANCE CURVES A4 METAL ACCU-FLO™ RUBBER-FITTED

Height.....442 mm (17.4")
 Width.....391 mm (15.4")
 Depth285 mm (11.2")
 Est. Ship Weight.....Aluminum 16 kg (36 lbs)
 Stainless Steel 25 kg (55 lbs)
 Cast Iron 25 kg (55 lbs)
 Hastelloy 25 kg (55 lbs)
 Air Inlet.....10 mm (3/8")
 Inlet.....38 mm (1-1/2")
 Outlet32 mm (1-1/4")
 Suction Lift7.6 m Dry (25')
 8.8 m Wet (29')
 Displacement per
 Stroke0.53 l (0.14 gal.)¹
 Max. Flow Rate.....174 lpm (46 gpm)
 Max. Size Solids4.8 mm (3/16")

¹Displacement per stroke was calculated at 4.8 bar (70 psig) air inlet pressure against a 2 bar (30 psig) head pressure.

Example: To pump 49 lpm (13 gpm) against a discharge pressure head of 2.7 bar (40 psig) requires 4.1 bar (60 psig) and 20 Nm³/h(12 scfm) air consumption, and a pump speed of 115 strokes/minute. (See dot on chart.)

Caution: Do not exceed 8.6 bar (125 psig) air supply pressure.



Flow curves are for "optimal speed" conditions only. The "optimal speed" is that speed which provides the maximum flow under a particular air and fluid pressure condition. The optimal speed varies for different fluid and air pressures. Recommendations for optimal speed can be found on the right side of the flow curve.

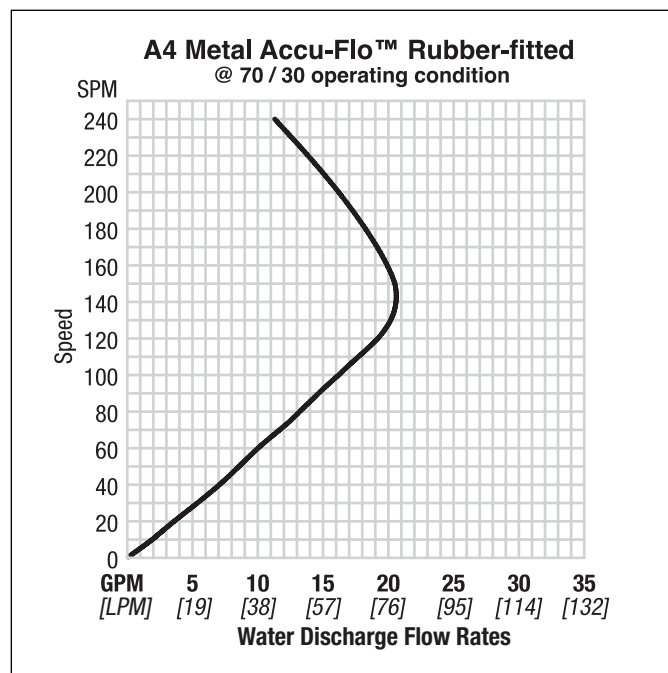
Flow rates indicated on chart were determined by pumping water.

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

SECTION 5G

70/30 OPERATING CONDITION A4 METAL ACCU-FLO™ RUBBER-FITTED

This curve demonstrates the flow created when the stroke rate is modified under a static air and fluid pressure condition. This curve can be applied to different pressure conditions to estimate the change in flow due to stroke rate.



SECTION 5H

PERFORMANCE CURVES

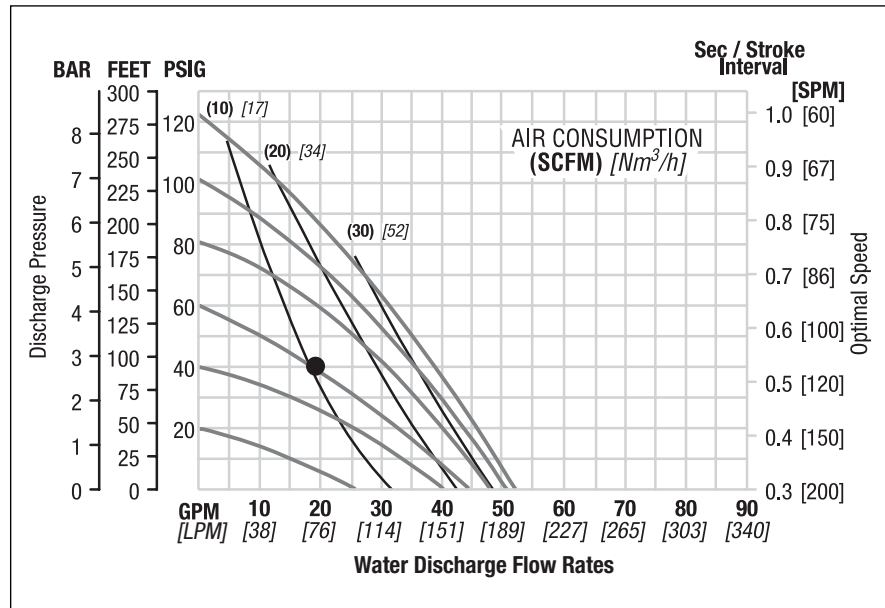
A4 METAL ACCU-FLO™ ULTRA-FLEX™-FITTED

Height..... 442 mm (17.4")
 Width..... 391 mm (15.4")
 Depth 285 mm (11.2")
 Est. Ship Weight..... Aluminum 16 kg (36 lbs)
 Stainless Steel 25 kg (55 lbs)
 Cast Iron 25 kg (55 lbs)
 Hastelloy 25 kg (55 lbs)
 Air Inlet..... 10 mm (3/8")
 Inlet..... 38 mm (1-1/2")
 Outlet 32 mm (1-1/4")
 Suction Lift..... 6.7 m Dry (22')
 8.8 m Wet (29')
 Displacement per
 Stroke 0.98 l (0.26 gal.)¹
 Max. Flow Rate..... 197 lpm (52 gpm)
 Max. Size Solids 4.8 mm (3/16")

¹Displacement per stroke was calculated at 4.8 bar (70 psig) air inlet pressure against a 2 bar (30 psig) head pressure.

Example: To pump 72 lpm (19 gpm) against a discharge pressure head of 2.7 bar (40 psig) requires 4.1 bar (60 psig), 18.7 Nm³/h (11 scfm) air consumption, and a pump speed of 115 strokes/minute. (See dot on chart.)

Caution: Do not exceed 8.6 bar (125 psig) air supply pressure.



Flow curves are for "optimal speed" conditions only. The "optimal speed" is that speed which provides the maximum flow under a particular air and fluid pressure condition. The optimal speed varies for different fluid and air pressures. Recommendations for optimal speed can be found on the right side of the flow curve.

Flow rates indicated on chart were determined by pumping water.

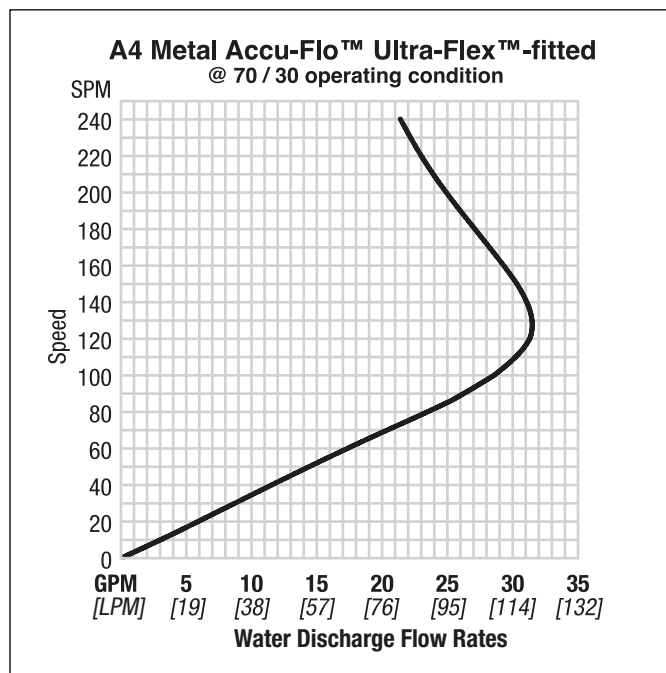
For optimum life and performance, pumps should be specified so that daily operation parameters will fall in the center of the pump performance curve.

SECTION 5I

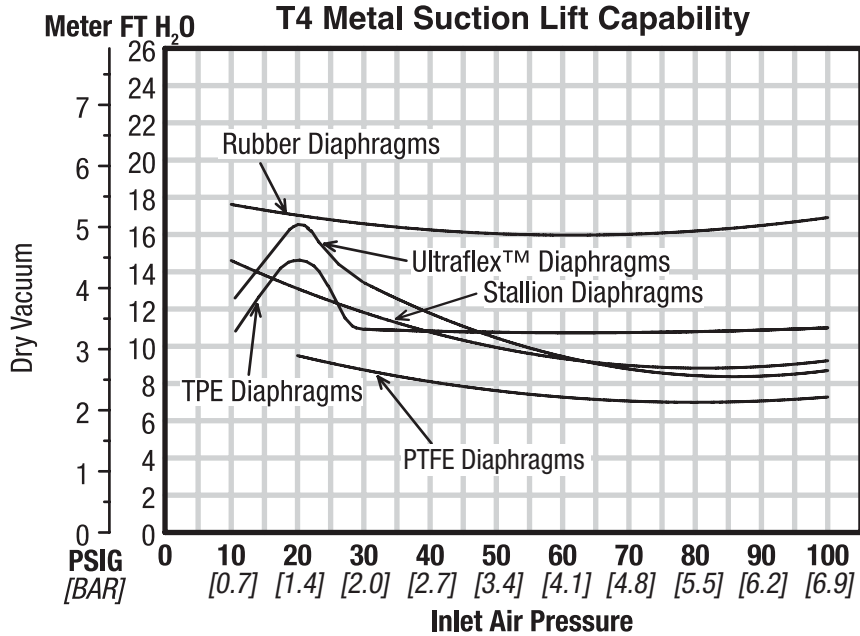
70/30 OPERATING CONDITION

A4 METAL ACCU-FLO™ ULTRA-FLEX™-FITTED

This curve demonstrates the flow created when the stroke rate is modified under a static air and fluid pressure condition. This curve can be applied to different pressure conditions to estimate the change in flow due to stroke rate.



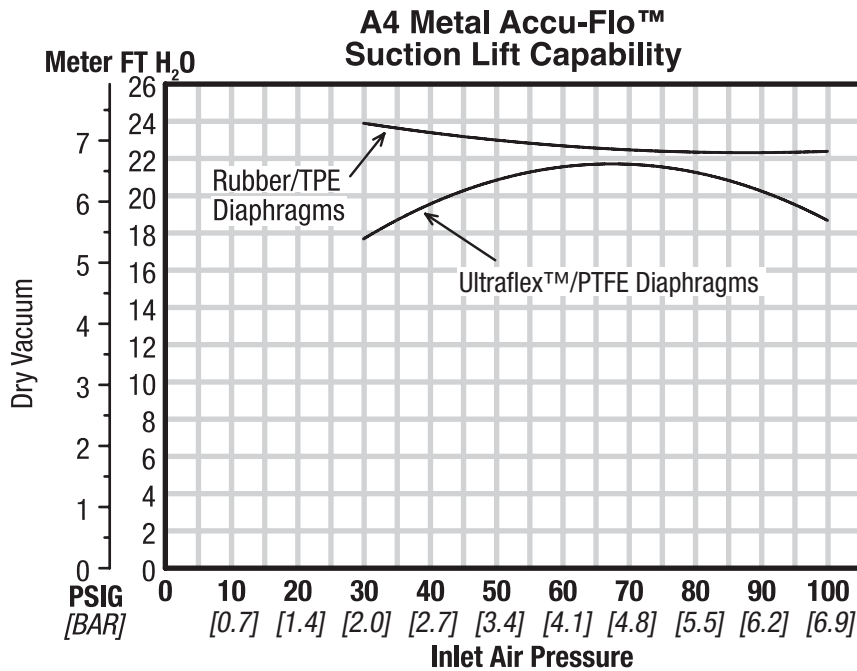
SECTION 6A – AIR-CONTROLLED SUCTION LIFT CURVES & DATA



Suction lift curves are calibrated for pumps operating at 1,000' (305 m) above sea level. This chart is meant to be a guide only. There are many variables which can affect your pump's operating characteristics. The number of intake

and discharge elbows, viscosity of pumping fluid, elevation (atmospheric pressure) and pipe friction loss all affect the amount of suction lift your pump will attain.

SECTION 6B – ACCU-FLO™ SUCTION LIFT CURVES & DATA



The solenoid was running at 150 strokes / minute.
Actual suction lift may vary with different pump speeds.

Suction lift curves are calibrated for pumps operating at 1,000' (305 m) above sea level. This chart is meant to be a guide only. There are many variables which can affect your pump's operating characteristics. The number of intake

and discharge elbows, viscosity of pumping fluid, elevation (atmospheric pressure) and pipe friction loss all affect the amount of suction lift your pump will attain.

SECTION 7A

INSTALLATION – T4 METAL AIR-OPERATED PUMPS

The Model T4 Metal pump has a 38 mm (1-1/2") inlet and 32 mm (1-1/4") outlet and is designed for flows to 307 lpm (81 gpm). The T4 Metal pump is manufactured with wetted parts of aluminum, cast iron, or stainless steel. The T4 Metal pump comes with either a center block or center section. The T4 center block is constructed of aluminum or nickel-plated aluminum. The T4 center section comes in polypropylene. The air distribution system consists of a brass air valve body, aluminum piston, Glyd™ rings and a bronze center section bushing. A variety of diaphragms, valve balls, valve seats, and o-rings are available to satisfy temperature, chemical compatibility, abrasion and flex concerns.

The suction pipe size should be at least 38 mm (1-1/2") diameter or larger if highly viscous material is being pumped. The suction hose must be non-collapsible, reinforced type as the T4 is capable of pulling a high vacuum. Discharge piping should be at least 32 mm (1-1/4"); larger diameter can be used to reduce friction losses. It is critical that all fittings and connections are airtight or a reduction or loss of pump suction capability will result.

INSTALLATION: Months of careful planning, study, and selection efforts can result in unsatisfactory pump performance if installation details are left to chance.

Premature failure and long term dissatisfaction can be avoided if reasonable care is exercised throughout the installation process.

LOCATION: Noise, safety, and other logistical factors usually dictate that "utility" equipment be situated away from the production floor. Multiple installations with conflicting requirements can result in congestion of utility areas, leaving few choices for siting of additional pumps.

Within the framework of these and other existing conditions, every pump should be located in such a way that four key factors are balanced against each other to maximum advantage.

1. **ACCESS:** First of all, the location should be accessible. If it's easy to reach the pump, maintenance personnel will have an easier time carrying out routine inspections and adjustments. Should major repairs become necessary, ease of access can play a key role in speeding the repair process and reducing total downtime.

2. **AIR SUPPLY:** Every pump location should have an air line large enough to supply the volume of air necessary to achieve the desired pumping rate (see pump performance chart). Use air pressure up to a maximum of 8.6 bar (125 psig) depending upon pumping requirements. The use of an air filter before the pump will ensure that the majority of any pipeline contaminants will be eliminated. For best results, the pumps should use an air filter, regulator, and lubricator system.

3. **SOLENOID OPERATION:** the pumps should use a 5µ micron air filter, needle valve and regulator. The use of an air filter before the pump will ensure that the majority of any pipeline contaminants will be eliminated.

4. **ELEVATION:** Selecting a site that is well within the pump's suction lift capability will assure that loss-of-prime troubles will be eliminated. In addition, pump efficiency can be adversely affected if proper attention is not given to elevation (see pump performance chart).

5. **PIPING:** Final determination of the pump site should not be made until the piping problems of each possible location have been evaluated. The impact of current and future installations should be considered ahead of time to make sure that inadvertent restrictions are not created for any remaining sites.

The best choice possible will be a site involving the shortest and the straightest hook-up of suction and discharge piping. Unnecessary elbows, bends, and fittings should be avoided. Pipe sizes should be selected so as to keep friction losses within practical limits. All piping should be supported independently of the pump. In addition, it should line up without placing stress on the pump fittings.

Expansion joints can be installed to aid in absorbing the forces created by the natural reciprocating action of the pump. If the pump is to be bolted down to a solid foundation, a mounting pad placed between the pump and foundation will assist in minimizing pump vibration. Flexible connections between the pump and rigid piping will also assist in minimizing pump vibration. If quick-closing valves are installed at any point in the discharge system, or if pulsation within a system becomes a problem, a surge suppressor should be installed to protect the pump, piping and gauges from surges and water hammer.

When pumps are installed in applications involving flooded suction or suction head pressures, a gate valve should be installed in the suction line to permit closing of the line for pump service.

The T4 can be used in submersible applications only when both wetted and non-wetted portions are compatible with the material being pumped. If the pump is to be used in a submersible application, a hose should be attached to the pump's air exhaust and the exhaust air piped above the liquid level.

If the pump is to be used in a self-priming application, be sure that all connections are airtight and that the suction lift is within the pump's ability. Note: Materials of construction and elastomer material have an effect on suction lift parameters. Please refer to pump performance data.

Pumps in service with a positive suction head are most efficient when inlet pressure is limited to 0.5–0.7 bar (7–10 psig). Premature diaphragm failure may occur if positive suction is 0.8 bar (11 psig) and higher.

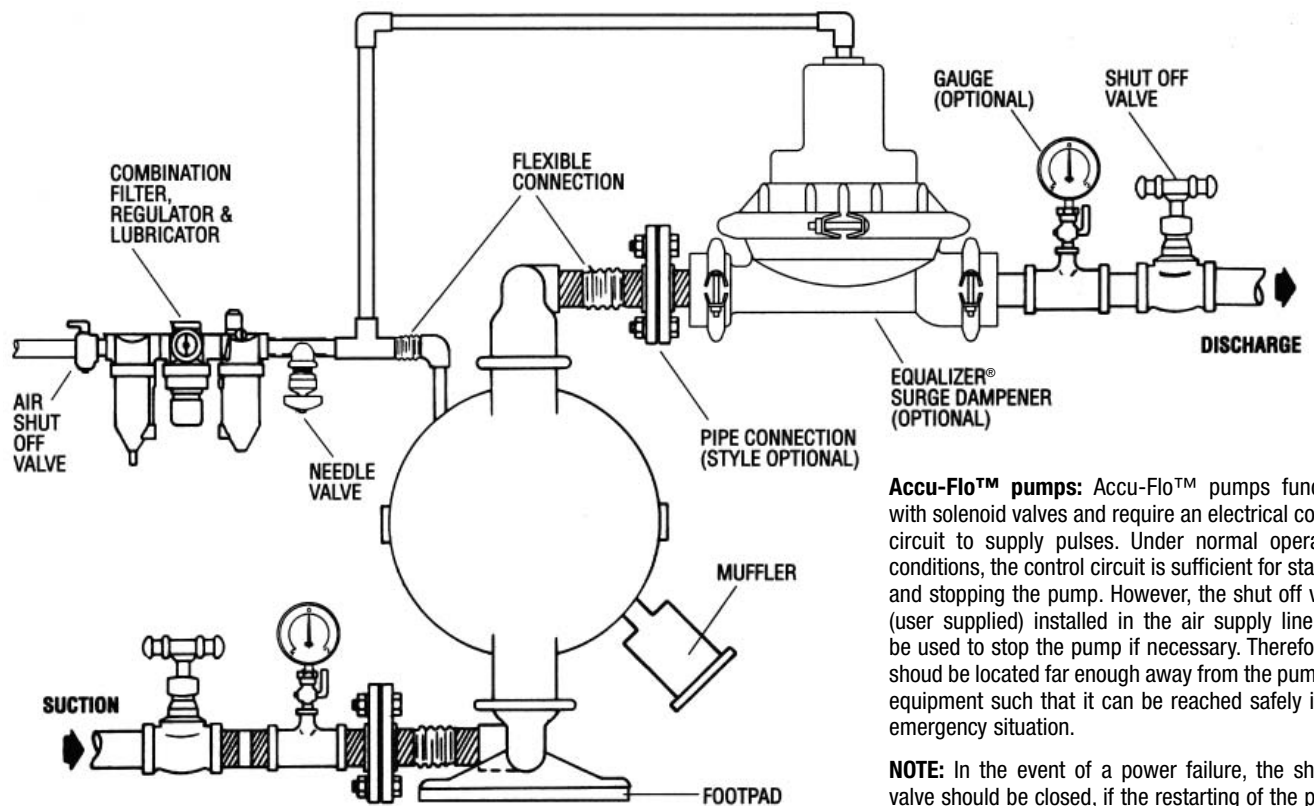
THE MODEL T4 WILL PASS 4.8 mm (3/16") SOLIDS. THE M4 STALLION WILL PASS 13 mm (1/2") SOLIDS. WHENEVER THE POSSIBILITY EXISTS THAT LARGER SOLID OBJECTS MAY BE SUCKED INTO THE PUMP, A STRAINER SHOULD BE USED ON THE SUCTION LINE.

CAUTION: DO NOT EXCEED 8.6 BAR (125 PSIG) AIR SUPPLY PRESSURE. (3.4 BAR [50 PSIG] FOR UL MODELS.)

PUMPS SHOULD BE THOROUGHLY FLUSHED WITH WATER BEFORE INSTALLING INTO PROCESS LINES. FDA AND USDA PUMPS SHOULD BE CLEANED AND/OR SANITIZED BEFORE USE ON EDIBLE PRODUCTS.

BLOW OUT AIR LINE FOR 10 TO 20 SECONDS BEFORE ATTACHING TO PUMP TO MAKE SURE ALL PIPE LINE DEBRIS IS CLEAR. ALWAYS USE AN IN-LINE AIR FILTER.

SUGGESTED INSTALLATION



Accu-Flo™ pumps: Accu-Flo™ pumps function with solenoid valves and require an electrical control circuit to supply pulses. Under normal operating conditions, the control circuit is sufficient for starting and stopping the pump. However, the shut off valve (user supplied) installed in the air supply line can be used to stop the pump if necessary. Therefore, it should be located far enough away from the pumping equipment such that it can be reached safely in an emergency situation.

NOTE: In the event of a power failure, the shutoff valve should be closed, if the restarting of the pump is not desirable once power is regained.

AIR-OPERATED PUMPS: To stop the pump from operating in an emergency situation, simply close the shut-off valve (user supplied) installed in the air supply line. A properly functioning valve will stop the air supply to the pump, therefore stopping output. This shut-off valve should be located far enough away from the pumping equipment such that it can be reached safely in an emergency situation.

SECTION 7B – AIR OPERATION

SUGGESTED OPERATION AND MAINTENANCE INSTRUCTIONS

OPERATION: Pump discharge rate can be controlled by limiting the volume and/or pressure of the air supply to the pump (preferred method). An air regulator is used to regulate air pressure. A needle valve is used to regulate volume. Pump discharge rate can also be controlled by throttling the pump discharge by partially closing a valve in the discharge line of the pump. This action increases friction loss which reduces flow rate. This is useful when the need exists to control the pump from a remote location. When the pump discharge pressure equals or exceeds the air supply pressure, the pump will stop; no bypass or pressure relief valve is needed, and pump damage will not occur. The pump has reached a “deadhead” situation and can be restarted by reducing the fluid discharge pressure or increasing the air inlet pressure. The Wilden T4 pump runs solely on compressed air and does not generate heat, therefore your process fluid temperature will not be affected.

RECORDS: When service is required, a record should be made of all necessary repairs and replacements. Over a period of time, such records can become a valuable tool for predicting and preventing future maintenance problems and unscheduled downtime. In addition, accurate records make it possible to identify pumps that are poorly suited to their applications.

MAINTENANCE AND INSPECTIONS: Since each application is unique, maintenance schedules may be different for every pump. Frequency of use, line pressure, viscosity and abrasiveness of process fluid all affect the parts life of a Wilden pump. Periodic inspections have been found to offer the best means for preventing unscheduled pump downtime. Personnel familiar with the pump's construction and service should be informed of any abnormalities that are detected during operation.

SECTION 7C

OPERATING PRINCIPLES BEHIND ACCU-FLO™ PUMPS

In Accu-Flo™ pump models, the standard air valve is replaced with a two position, four-way solenoid valve that has a single operator and spring return. The valve is internally air piloted for longer coil and operator life.

When the solenoid is unpowered, one air chamber is pressurized with air, while the opposite chamber is exhausted. When electric power is applied, the solenoid shifts, and the pressurized air chamber is exhausted while the opposite chamber is pressurized. By alternately applying and removing power, the solenoid-operated pump runs like a standard Wilden pump.

The speed of the pump is controlled electrically. Since each stroke is controlled by an electrical signal, the pump is ideal for batching and other electrically controlled dispensing applications.

Although the speed of the pump is controlled electrically, the air pressure is important. Air pressure displaces the fluid, and if the pressure is insufficient to complete the physical stroke before an electronic impulse signals the pump to shift, the stroke will not be completed, and the displacement per stroke will be reduced. This does not harm the unit in any way, but it may cause inaccuracy when attempting to batch specific quantities with high precision if this effect is not taken into account.

There are three coil voltage options available. One coil allows for 24V DC operation. The second coil option allows for operation with either 12V DC or 24V AC at 60 Hz and the third coil option allows for 110V AC operation.

SECTION 7D

INSTALLATION – A4 METAL ACCU-FLO™ PUMPS

Before installing your A4 Accu-Flo™ pump, review Section 7A for general installation suggestions including Location, Access, Air Supply, Elevation, and Piping.

The Accu-Flo™ Model A4 has a 38 mm (1-1/2") inlet and 32 mm (1-1/4") outlet and is designed for flows to 196 lpm (52 gpm). This maximum flow rate was calculated at 200 strokes per minute with 8.3 bar (120 psig) air inlet against 0 bar (0 psig) discharge head. The A4 Metal pump is manufactured with wetted parts of polypropylene or PVDF. The center section of the A4 Metal pump is of aluminum or polypropylene construction. A variety of diaphragms, valve balls, and o-rings are available to satisfy temperature, chemical compatibility, abrasion and flex concerns.

All wiring used to operate the pump should be placed and connected according to the proper electrical codes. It is important that the wiring is of adequate gauge to carry the current required to operate the pump. In addition, it is necessary that the electrical power supply is large enough to supply the current required to operate the pump. Wiring should be above ground level if possible (in case of fluid spill or leakage), and all wiring and connections which could become wet or damp should be made watertight.

If the pump is to be used in a self-priming application, be sure that all connections are airtight and that the suction lift is within the pump's ability. Note: Materials of construction and elastomer material have an effect on suction lift parameters. Please refer to pump performance data.

Pumps in service with a positive suction head are most efficient when inlet pressure is limited to 0.5–0.7 bar (7–10 psig). Premature diaphragm failure may occur if positive suction head is 0.8 bar (11 psig) and higher.

The solenoid valve is rated for continuous duty; however, stopping on an even number stroke count insures that the electrical power is off when pump is stopped. This practice is safer and also eliminates unwanted strokes when the system is shut down and electrical power is off.

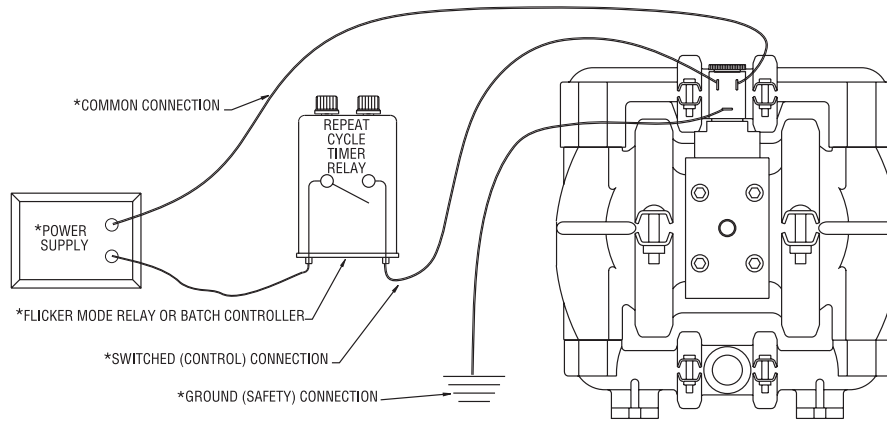
THE MODEL A4 WILL PASS 4.8 mm (3/16") SOLIDS. THE M4 STALLION WILL PASS 13 mm (1/2") SOLIDS. WHENEVER THE POSSIBILITY EXISTS THAT LARGER SOLID OBJECTS MAY BE SUCKED INTO THE PUMP, A STRAINER SHOULD BE USED ON THE SUCTION LINE.

WARNING: Before installation, consult chart in Section 10B to ensure proper electrical connection.

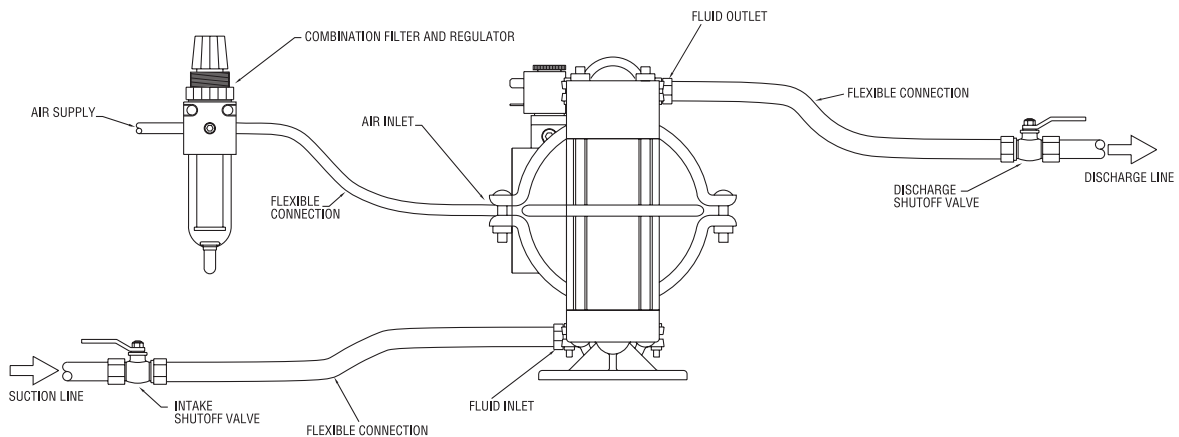
WARNING: The solenoid valve should not be used in an area where explosion proof equipment is required unless NEMA 7 valve is specified.

There are three coil options available in both NEMA 4 and NEMA 7 ratings. One coil allows for 110V AC operation, one allows for 24V DC operation, and the third allows for either 24V AC or 12V DC operation. Consult Section 10C for reference and part numbers.

ACCU-FLO™ ELECTRICAL CONNECTIONS



ACCU-FLO™ PLUMBING CONNECTIONS



SECTION 7E – ACCU-FLO™

SUGGESTED OPERATION AND MAINTENANCE INSTRUCTIONS

OPERATION: The speed of the pump is controlled electrically. Since each stroke is controlled by an electrical signal, the pump is ideal for batching and other electrically controlled dispensing applications.

Although the speed of the pump is controlled electrically, the air pressure is important. Air pressure displaces the fluid, and if the pressure is insufficient to complete the physical stroke before an electronic impulse signals the pump to shift, the stroke will not be completed, and the displacement per stroke will be reduced. This does not harm the unit in any way, but it may cause inaccuracy when attempting to batch specific quantities with high precision.

The solenoid operated pump is permanently lubricated during assembly, and requires no additional lubrication under normal operation. If the unit runs under extreme conditions (continuous operation at high speeds), it may be necessary to relubricate the center block with a **Buna-N compatible NLGI Grade 2 grease** every 50 million cycles. Continuous lubrication with a compatible oil is not harmful, and will provide longer seal life, but it may flush all grease out of the unit.

A red button on the side of the air valve is a manual override; when actuated it will shift the valve as if an electric current had actuated the solenoid.

RECORDS: When service is required, a record should be made of all necessary repairs and replacements. Over a period of time, such records can become a valuable tool for predicting and preventing future maintenance problems and unscheduled downtime. In addition, accurate records make it possible to identify pumps that are poorly suited to their applications.

MAINTENANCE AND INSPECTIONS: Since each application is unique, maintenance schedules may be different for every pump. Frequency of use, line pressure, viscosity and abrasiveness of process fluid all affect the parts life of a Wilden pump. Periodic inspections have been found to offer the best means for preventing unscheduled pump downtime. Personnel familiar with the pump's construction and service should be informed of any abnormalities that are detected during operation. Internal maintenance is not recommended for Accu-Flo™ solenoid air valves. When worn or damaged, a new air valve body, coil or terminal connector must be purchased. Please consult Section 9C for part numbers.

SECTION 7F – AIR-CONTROLLED TROUBLESHOOTING

Pump will not run or runs slowly.

1. Check air inlet screen and air filter for debris.
2. Check for sticking air valve, flush air valve in solvent.
3. Check for worn out air valve. If piston face in air valve is shiny instead of dull, air valve is probably worn beyond working tolerances and must be replaced.
4. Check center block Glyd™ rings. If worn excessively, they will not seal and air will simply flow through pump and out air exhaust. Use only Wilden Glyd™ rings as they are of special construction and ISO 15-5 wt oil with arctic characteristics.
5. Check for rotating piston in air valve.
6. Check type of lubricant being used. A higher viscosity oil than suggested may cause the piston to stick or run erratically. Wilden suggests the use of a hydraulic oil with arctic characteristics (ISO 15-5 wt).

Pump runs but little or no product flows.

1. Check for pump cavitation; slow pump speed down to match thickness of material being pumped.
2. Check for sticking ball checks. If material being pumped is not compatible with pump elastomers, swelling may

occur. Replace ball checks and o-rings with proper elastomers.

3. Check to make sure all suction connections are air tight, especially clamp bands around intake balls.

Pump air valve freezes.

Check for excessive moisture in compressed air. Either install dryer or hot air generator for compressed air.

Air bubbles in pump discharge.

1. Check for ruptured diaphragm.
2. Check tightness of clamp bands, especially at intake manifold.

Product comes out air exhaust.

1. Check for diaphragm rupture.
2. Check tightness of piston plates to shaft.

Pump rattles.

1. See E9 Troubleshooting Guide.
2. Create false discharge head or suction lift.

SECTION 7G – ACCU-FLO™ TROUBLESHOOTING

Pump will not run.

1. Check for pressurized air at the inlet. (Min. 3.1 bar [45 psig].)
2. Check air inlet and filter for debris.
3. Connect a test lamp to the two wires which run to pump and ensure that the lamp cycles on and off.
4. Make sure that the air valve manual override (small red knob on front of valve) is switched to the “O” position.
5. Check pilot pressure vent at the top of the operator/coil assembly to ensure that it is not clogged.
6. Check for a worn out air valve. If air continually blows out the exhaust in very large quantities, the air valve seals may be worn beyond their ability to function. In this case, the valve must be replaced.

NOTE: Before the valve is scrapped, it is possible that it may be saved by completely disassembling the valve, cleaning all components and relubricating the valve.

Pump runs but little or no fluid comes out.

1. Check that the discharge isolation valve is not closed.
2. Check that the electronic signal is slow enough that the pump is able to complete each physical stroke before it is signaled to change direction. The time required to complete the stroke is determined by a variety of factors which include fluid viscosity and head pressure. The shaft can be viewed if the muffler is removed to verify that the pump is stroking.
3. Check for pump cavitation; slow pump speed down to match the thickness of the material being pumped.
4. Check for sticking ball check valves. If the material being pumped is not compatible with the pump elastomers, swelling may occur. Replace ball check valves and o-ring with the proper elastomers.
5. Check to make sure that all suction connections are air tight, and that the clamp bands are properly tightened.

Pump air passages blocked with ice.

Check for excessive moisture in compressed air line. As

the air expands out the exhaust during the operation of the pump, water vapor entrapped in the compressed air can freeze and block the air passageways in the pump. If this occurs, it may be necessary to install a coalescing filter, an air dryer, or a hot air generator for the compressed air.

Air bubbles in pump discharge.

1. Check for ruptured diaphragm.
2. Check tightness of clamp bands, and the integrity of the o-rings, especially at intake manifold.

Product comes out air exhaust.

1. Check for diaphragm rupture.
2. Check tightness of piston plates to shaft.

Pump rattles.

1. See E9 Troubleshooting Guide.
2. Create false discharge head or suction lift.

Solenoid buzzes or solenoid burnout.

1. Incorrect voltage, faulty or dirty solenoid.

Solenoid valve fails to shift electrically but shifts with manual override.

1. Incorrect voltage, defective coil or wiring.

Solenoid valve fails to shift electrically or with manual override.

1. Inadequate air supply, contamination, inadequate or improper lubrication, mechanical binding in the valve.

Valve shifts but fails to return.

1. Broken spring, mechanical binding.

Excessive leaking from air valve vent.

1. Worn seals in air valve.

SECTION 8A

T4 METAL

DIRECTIONS FOR DISASSEMBLY/REASSEMBLY

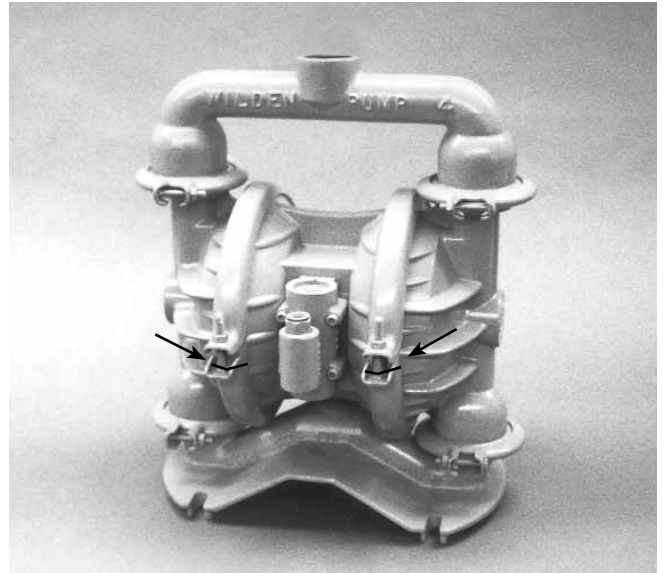
CAUTION: Before any maintenance or repair is attempted, the compressed air line to the pump should be disconnected and all air pressure allowed to bleed from the pump. Disconnect all intake, discharge, and air lines. Drain the pump by turning it upside down and allowing any fluid to flow into a suitable container. Be aware of any hazardous effects of contact with your process fluid.

The Wilden T4 has a 38 mm (1-1/2") inlet and 32 mm (1-1/4") outlet and is designed for flows up to 81 gpm (307 lpm). The model T4 is available in aluminum, cast iron, or 316 stainless steel wetted parts. The air valve is manufactured of brass, PTFE-coated brass, nickel-plated brass or stainless steel. All o-rings used in the pump are of a special material and shore hardness which should only be replaced with factory-supplied parts.

TOOLS REQUIRED:

Adjustable Wrench
1/2" Wrench
3/8" Box Wrench
3/16" Allen Wrench
Vise equipped with soft jaws (such as plywood, plastic or other suitable material)

NOTE: The model used for these instructions incorporates rubber diaphragms, balls, and seats. Models with PTFE diaphragms, balls and seats are the same except where noted. The procedures for A4 Accu-Flo™ pumps are the same except for the air distribution system.

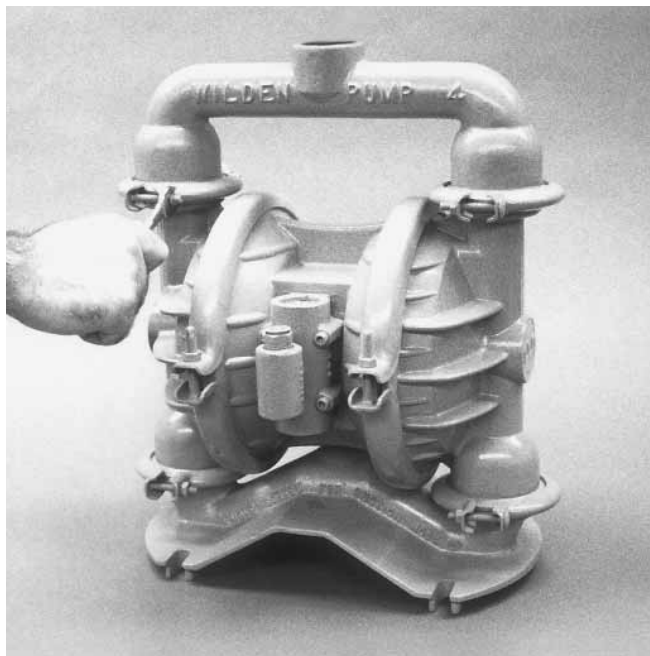


DISASSEMBLY:

Figure 1

Step 1.

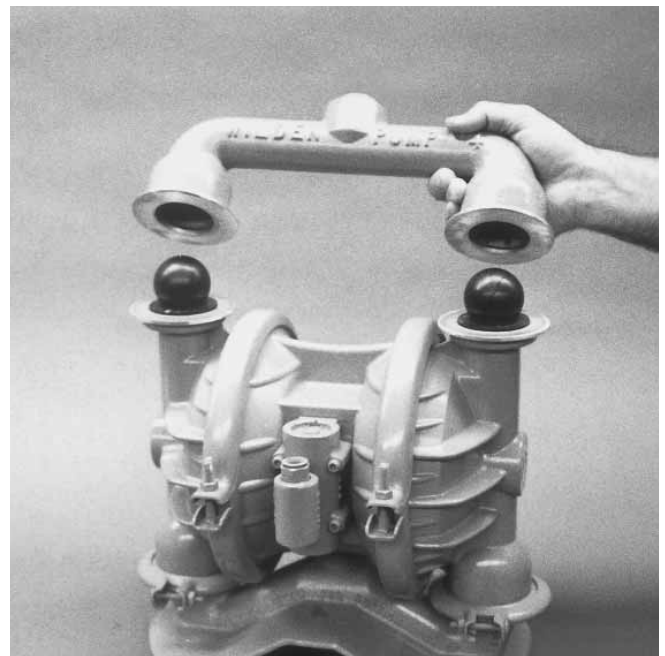
Before starting disassembly, mark a line from each liquid chamber to its corresponding air chamber. This line will assist in proper alignment during reassembly.



Step 2.

Figure 2

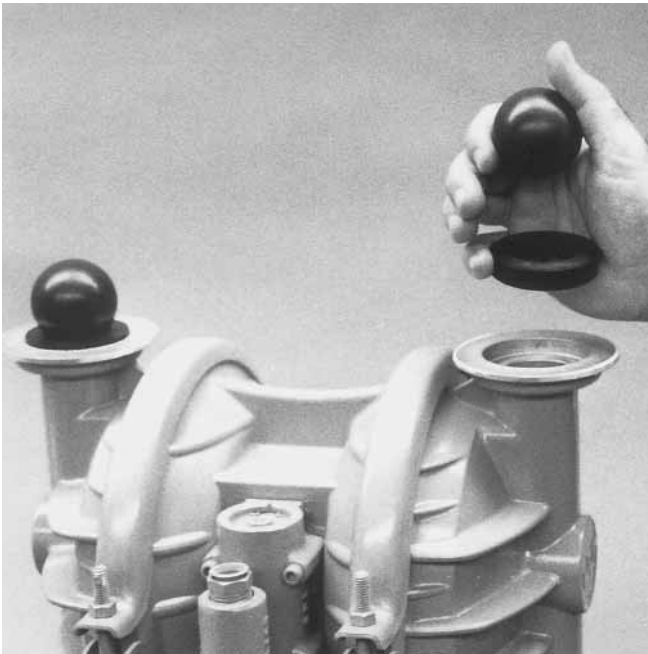
Utilizing a 1/2" wrench, remove the two small clamp bands that fasten the discharge manifold to the liquid chambers.



Step 3.

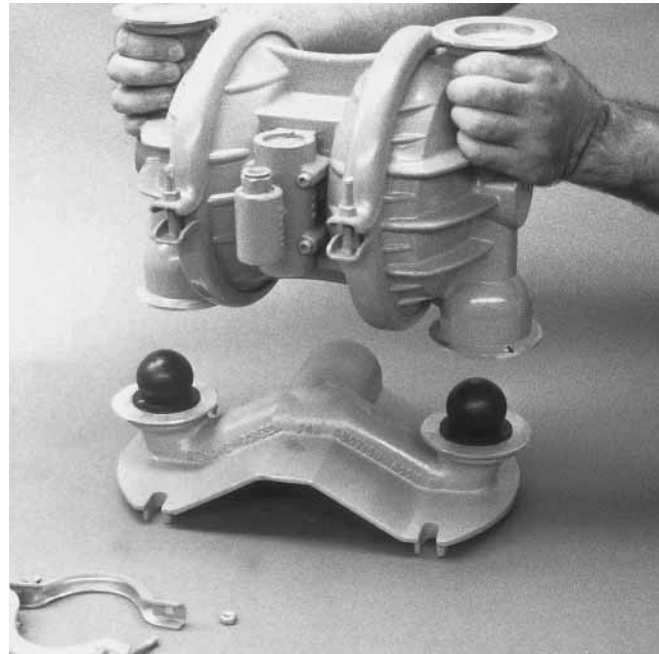
Figure 3

Lift away the discharge manifold to expose the valve balls and seats.



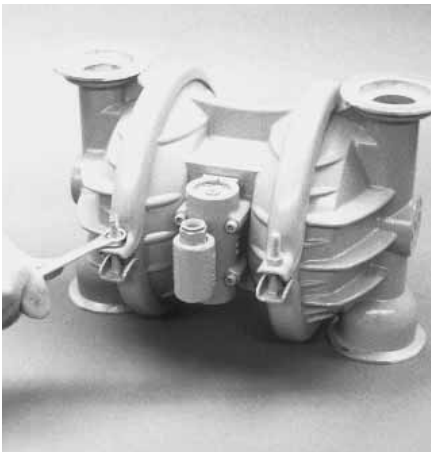
Step 4. *Figure 4*

Remove the discharge valve balls and seats from the liquid chambers and inspect for nicks, gouges, chemical attack or abrasive wear. Replace worn parts with genuine Wilden parts for reliable performance.



Step 5. *Figure 5*

Remove the two small clamp bands, which fasten the intake manifold to the liquid chambers. Lift liquid chambers and center section from intake manifold to expose intake valve balls and seats.



Step 6. *Figure 6*

Remove one set of large clamp bands which secure one liquid chamber to the center section.



Step 7. *Figure 7*

Lift liquid chamber away from center section to expose diaphragm and outer piston.



Step 8. *Figure 8*

Using an adjustable wrench, or by rotating the diaphragm by hand, remove the diaphragm assembly.



Step 9A.

Figure 9A



Figure 9B



Step 10.

Figure 10

NOTE: Due to varying torque values, one of the following two situations may occur:
 1) The outer piston, diaphragm and inner piston remain attached to the shaft and the entire assembly can be removed from the center section (*Figure 9A*);

2) The outer piston, diaphragm and inner piston separate from the shaft which remains connected to the opposite side diaphragm assembly (*Figure 9B*). Repeat disassembly instructions for the opposite liquid chamber. Inspect diaphragm assembly and shaft for signs of wear or chemical attack. Replace all worn parts with genuine Wilden parts for reliable performance.

To remove diaphragm assembly from shaft, secure shaft with soft jaws (a vise fitted with plywood or other suitable material) to ensure shaft is not nicked, scratched or gouged. Using an adjustable wrench, remove diaphragm assembly from shaft.

SECTION 8B

TURBO-FLO™ AIR VALVE/ CENTER BLOCK DIRECTIONS FOR DISASSEMBLY/REASSEMBLY

The air valve assembly consists of both the air valve body and piston and the center block. The unique design of the air valve relies only on differential pressure to effect the diaphragm shift. It is reliable and simple to maintain. The bushing in the center block, along with the diaphragm shaft, provides the “trigger” to tell the air valve to shift. The following procedure will ensure that the air valve on your Wilden pump will provide long trouble-free service.

AIR VALVE ASSEMBLY AND DISASSEMBLY:

The air valve (P/N 04-2000-07) can be disconnected from the pump by removing the four socket head cap screws which attach it to the center block. The piston should move freely and the ports in the piston should line up with the ports on the face of the air valve body (see *Figure D*). The piston should also appear to be dull, dark gray in color. If the piston appears to be a shiny aluminum color, the air valve is probably worn beyond working tolerances and should be replaced.

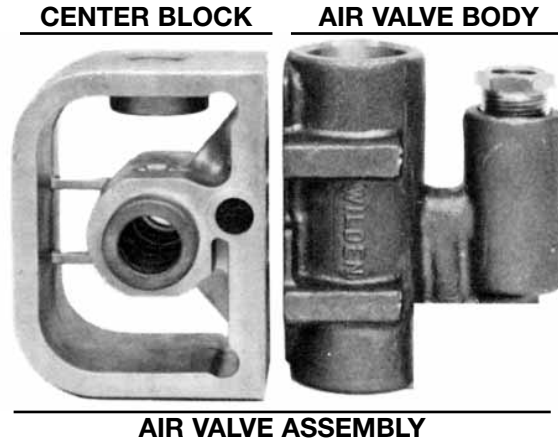


Figure A

If the piston does not move freely in the air valve, the entire air valve should be immersed in a cleaning solution. **[NOTE: Do not force the piston by inserting a metal object.]** This soaking should remove any accumulation of sludge and grit which is preventing the air valve piston from moving freely. Also, remove and clean the air valve screen (P/N 04-2500-03). If the air valve piston does not move freely after the above cleaning, the air valve should be disassembled as follows: Remove the snap ring from the top end of the air valve cylinder and apply an air jet to the 3/16-inch hole on the opposite end of the air valve face (see *Figure C*). **CAUTION:** The air valve end cap may come out with considerable force. Inspect the piston and cylinder bore for nicks and scoring.

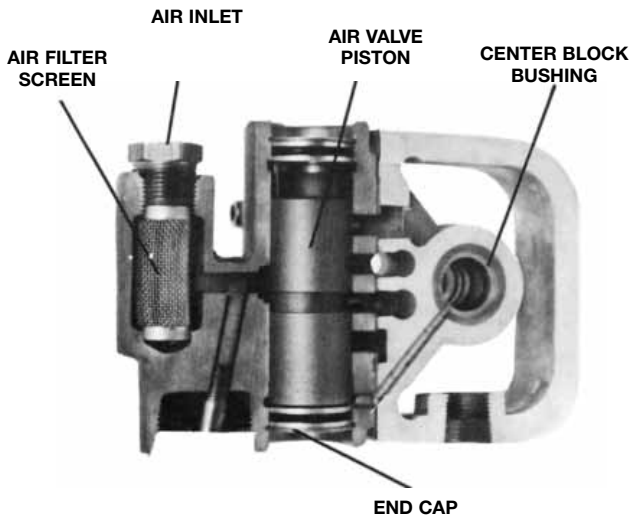


Figure B

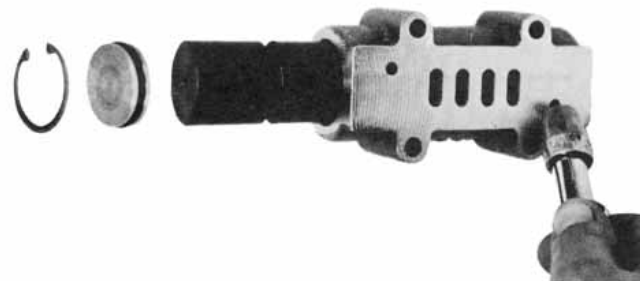


Figure C

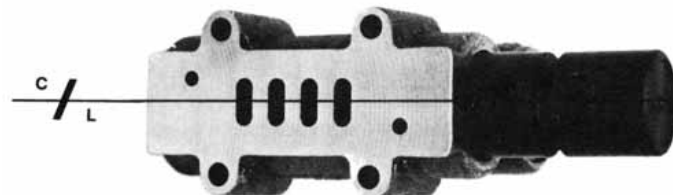


Figure D

Small nicks can usually be dressed out and the piston returned to service. Inspect the cylinder end caps (P/N 04-2300-23 has the piston guide pin and P/N 04-2330-23 does not.) Make sure that the guide pin is straight and smooth or the piston will not move freely in the cylinder. Inspect the anti-centering pin holes found at the ends of the air valve piston and ensure they are free of debris. New o-rings (P/N 04-2390-52) should be installed on the end caps. Lubricate the o-rings with an arctic 5 weight hydraulic oil (ISO grade 15) and install the end caps, assuring that proper alignment of the piston and cylinder ports is maintained (see *Figure D*). Reinstall air valve to center block of pump. Tighten per the torque specification*.

GLYD™ RING REPLACEMENT:

When the Glyd™ rings become worn, they will no longer seal and must be replaced. Due to the design characteristics of the Glyd™ rings, it is suggested that you use the Ringer Seal installation kit when replacing Glyd™ rings. Consult EOM-Ringer for installation instructions.

CENTER BLOCK ASSEMBLY (P/N 04-3100-01-225):

The pump's center block (P/N 04-3100-01-225) consists of a die cast housing with a cast-in-bronze bushing (*Figure G*). *Figure H* shows T4 injection-molded polypropylene center section (P/N 04-3150-20) and alignment with air valve. The bushing has eleven grooves cut on the inside diameter. There are seven Glyd™ rings that fit in these grooves (see *Figure E*). Since these Glyd™ rings form a part of the shifting function of the pump, it is necessary that they be located in the proper grooves. The bronze bushing is replaceable in cast iron center block only. When bushing wear becomes excessive, a new center block must be used.

Grooves In Bushing Which Contain Glyd™ Rings

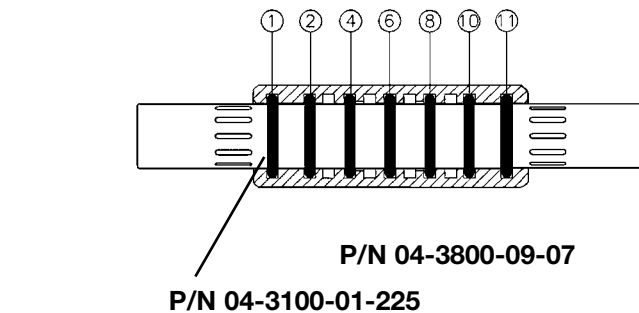


Figure E



Figure F (Side View)

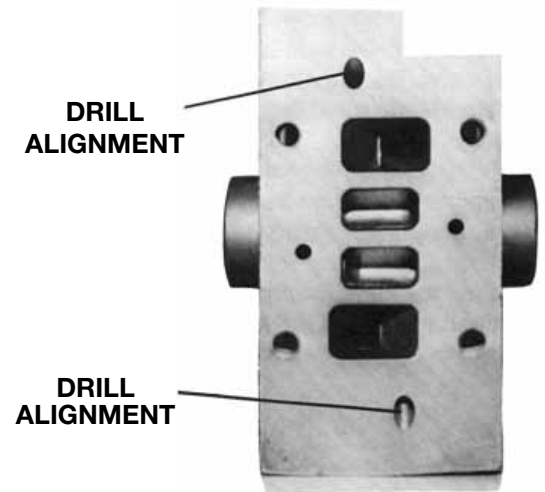


Figure G
Center Block
(Front View)

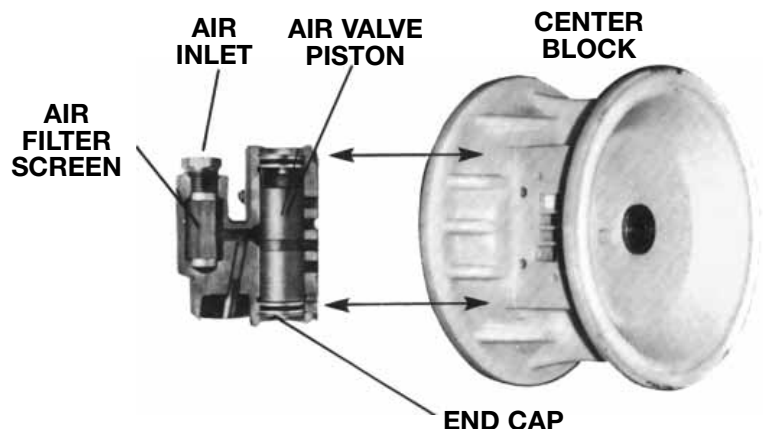


Figure H

*Refer to Section 8 for torque specifications.

SECTION 8C

REASSEMBLY HINTS & TIPS

ASSEMBLY:

Upon performing applicable maintenance to the air distribution system, the pump can now be reassembled. Please refer to the disassembly instructions for photos and parts placement. To reassemble the pump, follow the disassembly instructions in reverse order. The air distribution system needs to be assembled first, then the diaphragms and finally the wetted path. Please find the applicable torque specifications on this page. The following tips will assist in the assembly process.

- Clean the inside of the center section shaft bushing to ensure no damage is done to new seals.
- Stainless bolts should be lubed to reduce the possibility of seizing during tightening.
- Be sure to tighten outer pistons simultaneously on PTFE-fitted pumps to ensure proper torque values.

MAXIMUM TORQUE SPECIFICATIONS

Description of Part	Metal Pumps
Air Valve	3.4 N·m [30 in-lbs]
Outer Piston	54.2 N·m [40 ft-lbs]
Small Clamp Band	3.4 N·m [30 in-lbs]
Large Clamp Band (Rubber-Fitted)	10.7 N·m [95 in-lbs]
Large Clamp Band (PTFE-Fitted)	13.5 N·m [120 in-lbs]
Center Block Assembly	8.5 N·m [75 in-lbs]
Polyurethane Screen Base	2.3 N·m [20 in-lbs]

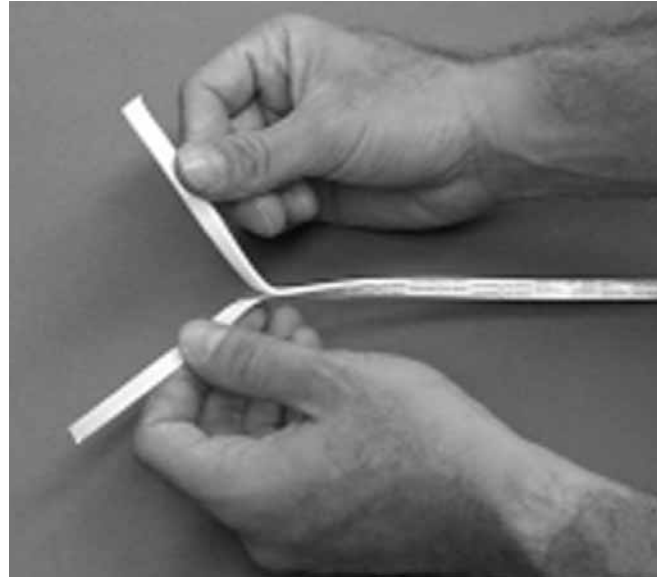
SECTION 8D

GASKET KIT INSTALLATION

The Wilden T4 cast iron pumps require PTFE gasket tape on the liquid chambers (P/N 04-9502-99). Other pump types may use PTFE gasket kits for additional sealing characteristics.

During reassembly follow the procedures listed in your pump's Engineering, Operation and Maintenance manual. Carefully prepare sealing surfaces by removing all debris and foreign matter from diaphragm bead and all mating surfaces. If necessary, smooth or deburr all sealing surfaces. Mating surfaces must be properly aligned in order to ensure positive sealing characteristics.

Always wear safety glasses when performing maintenance on any Wilden product.



Step 1

Gently remove the adhesive covering from the back of the PTFE tape. Ensure that the adhesive strip remains attached to the PTFE tape.



Step 2

Starting at any point, place the PTFE tape in the center of the diaphragm bead groove on the liquid chamber and press lightly on the tape to ensure that the adhesive holds in place during assembly. Do not stretch the tape during placement in the center of diaphragm bead groove.



Step 3

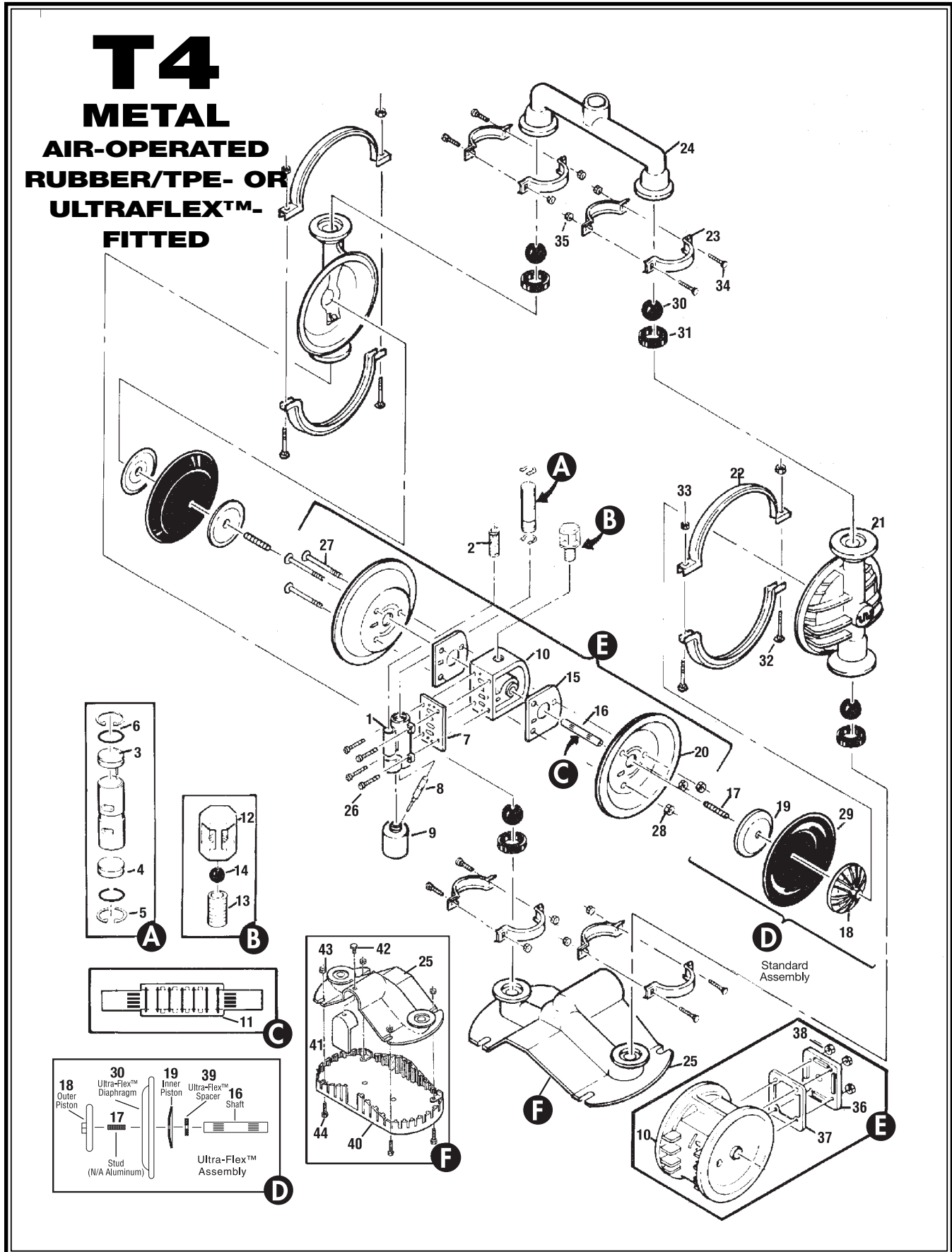
The end of the tape should overlap approximately 13 mm (1/2"). Proceed to install the PTFE tape on the remaining diaphragm.

SECTION 9A

EXPLODED VIEW/PARTS LISTING

T4

**METAL
AIR-OPERATED
RUBBER/TPE- OR
ULTRAFLEX™-
FITTED**



T4 Metal, Rubber/TPE- OR ULTRA-FLEX™ -Fitted

Item	Description	Qty. Per Pump	Aluminum Pumps											
			T4/AAMAB P/N	T4/AAPPB P/N	T4/AAMAB/0003 P/N	T4/AAPPB/0003 P/N	T4/AAMAD/0050 P/N	T4/SSPPB P/N	T4/SSNNN P/N	T4/WVPPB P/N	T4/WVPPB/0022 P/N	T4/SSNNN/0070 P/N	T4/SSPPN/0070 P/N	
1	Air Valve ¹	1	04-2000-07	04-2000-07	04-2000-07	04-2000-07	04-2080-07	04-2000-07	04-2000-06	04-2000-07	04-2000-07	04-2000-06	04-2000-06	
2	Air Valve Screen	1	04-2500-07	04-2500-07	04-2500-07	04-2500-07	04-2500-07	04-2500-07	04-2500-03	04-2500-07	04-2500-07	04-2500-03	04-2500-03	
3	Air Valve Cap w/Guide (Top)	1	04-2300-23	04-2300-23	04-2300-23	04-2300-23	04-2300-23	04-2300-23	04-2300-23	04-2300-23	04-2300-23	04-2300-23	04-2300-23	
4	Air Valve Cap w/o Guide (Bottom)	1	04-2330-23	04-2330-23	04-2330-23	04-2330-23	04-2330-23	04-2330-23	04-2330-23	04-2330-23	04-2330-23	04-2330-23	04-2330-23	
5	Snap Ring	2	04-2650-03	04-2650-03	04-2650-03	04-2650-03	04-2650-03	04-2650-03	04-2650-03	04-2650-03	04-2650-03	04-2650-03	04-2650-03	
6	Air Valve Cap O-Ring	2	04-2390-52	04-2390-52	04-2390-52	04-2390-52	04-2390-52	04-2390-52	04-2390-52	04-2390-52	04-2390-52	04-2390-52	04-2390-52	
7	Air Valve Gasket — Buna-N	1	04-2600-52	04-2600-52	04-2600-52	04-2600-52	04-2600-52	04-2600-52	04-2600-52	04-2600-52	04-2600-52	04-2600-52	04-2600-52	
8	Lubricator Capillary Rod Assy. (Optional)	1	04-2900-99	04-2900-99	04-2900-99	04-2900-99	04-2900-99	04-2900-99	04-2900-99	04-2900-99	04-2900-99	04-2900-99	04-2900-99	
9	Lubricator Oil Bottle (Optional)	1	04-2850-01	04-2850-01	04-2850-01	04-2850-01	04-2850-01	04-2850-01	04-2850-01	04-2850-01	04-2850-01	04-2850-01	04-2850-01	
	Plug (Not shown)		N/R	N/R	N/R	N/R	N/R	08-7000-07	N/R	N/R	N/R	N/R	N/R	
10	Center Section/Block	1	04-3100-01-225	04-3150-20-225	04-3100-01-225	04-3150-20-225	04-3100-01-225	04-3150-20-225	04-3100-06-225	04-3150-20-225	04-3150-20-225	04-3100-06-225	04-3150-20-225	
11	Glyd™ Ring	7	08-3210-55-225	08-3210-55-225	08-3210-55-225	08-3210-55-225	08-3210-55-225	08-3210-55-225	08-3210-55-225	08-3210-55-225	08-3210-55-225	08-3210-55-225	08-3210-55-225	
12	Check Body	1	N/R	N/A	N/R	N/A	08-3550-01	N/A	N/R	N/A	N/A	N/R	N/A	
13	Nipple 3/4" x Close	1	N/R	N/A	N/R	N/A	08-7420-08	N/A	N/R	N/A	N/A	N/R	N/A	
14	Check Ball	1	N/R	N/A	N/R	N/A	08-1450-51	N/A	N/R	N/A	N/A	N/R	N/A	
15	Block Gasket	2	04-3520-30	N/A	04-3520-30	N/A	04-3520-30	N/A	04-3520-52	N/A	N/A	04-3520-52	N/A	
16	Shaft	1	04-3800-09-07	04-3800-09-07	04-3800-09-07	04-3800-09-07	N/A	04-3800-09-07	04-3800-09-07	04-3800-09-07	04-3800-09-07	04-3800-09-07	04-3800-09-07	
	Shaft, Ultra-Flex™	1	04-3830-09-07	04-3830-09-07	04-3830-09-07	04-3830-09-07	04-3830-09-07	04-3830-09-07	04-3830-09-07	04-3830-09-07	04-3830-09-07	04-3830-09-07	04-3830-09-07	
17	Shaft Stud (M4/WVPPB: Bolt)	2	04-6150-08	04-6150-08	04-6150-08	04-6150-08	N/A	04-6150-08	04-6150-08	04-6150-08	04-6090-08	04-6150-08	04-6150-08	
	Stud, Ultra-Flex™	2	N/A	N/A	N/A	N/A	N/A	04-6152-08	04-6152-08	04-6152-08	04-6152-08	04-6152-08	04-6152-08	
18	Piston, Outer	2	04-4552-01	04-4552-01	04-4552-01	04-4552-01	N/A	04-4550-03	04-4550-03	04-4550-03	04-4550-08	04-4550-03	04-4550-03	
	Piston, Outer, Ultra-Flex™	2	04-4560-01	04-4560-01	04-4560-01	04-4560-01	04-4560-01	02-4550-03	02-4550-03	04-4560-02	04-4560-02	02-4550-03	02-4550-03	
19	Piston, Inner	2	04-3700-08	04-3700-08	04-3700-08	04-3700-08	N/A	04-3700-08	04-3700-08	04-3700-08	04-3700-08	04-3700-08	04-3700-08	
	Piston, Inner, Ultra-Flex™	2	04-3760-08	04-3760-08	04-3760-08	04-3760-08	04-3760-08	04-3760-08	04-3760-08	04-3760-08	04-3760-08	04-3760-08	04-3760-08	
20	Air Chamber	2	04-3650-08	N/R	04-3650-08	N/R	04-3650-08	N/R	04-3650-06	N/R	N/R	04-3650-06	N/R	
21	Liquid Chamber	2	04-5000-01	04-5000-01	04-5000-01	04-5000-01	04-5000-01	04-5000-03	04-5000-03	04-5000-02	04-5000-02	04-5000-03	04-5000-03	
22	Clamp Band (Large)	2	04-7300-08	04-7330-08	04-7300-03	04-7330-03	04-7300-08	04-7330-03	04-7300-03	04-7330-08	04-7330-03	04-7300-03-70	04-7330-03-70	
23	Clamp Band (Small)	4	04-7100-08	04-7100-08	04-7100-03	04-7100-03	04-7100-08	04-7100-03	04-7100-03	04-7100-08	04-7100-03	04-7100-03-70	04-7100-03-70	
24	Discharge Manifold	1	04-5020-01	04-5020-01	04-5020-01	04-5020-01	04-5020-01	04-5020-03	04-5020-03	04-5020-02	04-5020-02	04-5020-03-70	04-5020-03-70	
25	Inlet Housing	1	04-5080-01	04-5080-01	04-5080-01	04-5080-01	04-5080-01	04-5080-03	04-5080-03	04-5080-02	04-5080-02	04-5080-03-70	04-5080-03-70	
26	Air Valve Cap Screw	4	04-6000-08	04-6000-03-500	04-6000-03	04-6000-03-500	04-6000-08	04-6000-03-500	04-6000-03	04-6000-03-500	04-6000-03-500	04-6000-03	04-6000-03-500	
27	Hex Head Cap Screw 1/4"-20 x 3"	3	04-6130-08	N/R	04-6130-08	N/R	04-6130-08	N/R	04-6130-08	N/R	N/R	04-6130-08	N/R	
28	Hex Head Nut 1/4"-20	3	04-6400-08	N/R	04-6400-08	N/R	04-6400-08	N/R	04-6400-08	N/R	N/R	04-6400-08	N/R	
29	Diaphragm*	2	*	*	*	*	*	*	*	*	*	04-1010-56	04-1010-56	
30	Valve Ball*	4	*	*	*	*	*	*	*	*	*	04-1080-56	04-1080-56	
31	Valve Seat*	4	*	*	*	*	*	*	*	*	*	04-1120-56	04-1120-56	
32	Large Clamp Band Bolt 5/16"-18 x 2-1/4"	4	04-6070-08	04-6070-08	04-6070-03	04-6070-03	04-6070-08	04-6070-03	04-6070-03	04-6070-08	04-6070-03	04-6070-03	04-6070-03	
33	Large Hex Nut 5/16"-18	4	04-6420-08	04-6420-08	08-6400-03	08-6400-03	04-6420-08	08-6400-03	08-6400-03	04-6420-08	08-6400-03	08-6660-03-72	08-6660-03-72	
34	Small Clamp Band Bolt 1/4"-20 x 1-3/4"	8	04-6050-08	04-6050-08	01-6070-03	01-6070-03	04-6050-08	01-6070-03	01-6070-03	04-6050-08	01-6070-03	01-6070-03	01-6070-03	
35	Small Hex Nut 1/4"-20	8	04-6400-08	04-6400-08	04-6400-03	04-6400-03	04-6400-08	04-6400-03	04-6400-03	04-6400-08	04-6400-03	04-6650-03-70	04-6650-03-70	
36	Muffler Plate	1	N/R	04-3180-20	N/R	04-3180-20	N/A	04-3180-20	N/R	04-3180-20	04-3180-20	N/R	04-3180-20	
37	Muffler Plate Gasket — Buna-N	1	N/R	04-3500-52	N/R	04-3500-52	N/A	04-3500-52	N/R	04-3500-52	04-3500-52	N/R	04-3500-52	
38	Air Valve Hex Nut 1/4"-20	4	N/R	04-6400-03	N/R	04-6400-03	N/A	04-6400-03	N/R	04-6400-03	04-6400-03	N/R	04-6400-03	
39	Spacer, Ultra-Flex™	2	04-3860-08	04-3860-08	04-3860-08	04-3860-08	04-3860-08	04-3860-08	04-3860-08	04-3860-08	04-3860-08	04-3860-08	04-3860-08	
40	Screen, Stallion	1	N/R	N/R	N/R	N/R	04-5620-62	N/A	N/A	N/A	N/R	N/A	N/A	
41	Suction Cover	1	N/R	N/R	N/R	N/R	04-5660-01	N/A	N/A	N/R	N/R	N/A	N/A	
42	Screw, HHC, 3/8"-16 x 7/8"	1	N/R	N/R	N/R	N/R	08-6140-03	N/A	N/A	N/R	N/R	N/A	N/A	
43	Nut, Hex 3/8"-16	4	N/R	N/R	N/R	N/R	08-6450-03	N/A	N/A	N/R	N/R	N/A	N/A	
44	Screw, HHC, 3/8"-16 x 1-1/2"	4	N/R	N/R	N/R	N/R	08-6190-03-42	N/A	N/A	N/R	N/R	N/A	N/A	
	Bumper Pad (not shown)	2	N/A	N/A	N/A	N/A	08-6901-23	N/A	N/A	N/A	N/A	N/A	N/A	

¹Air Valve Assembly includes items 2-6.*For optional T4 Metal Pump elastomers, Section 10A (page 32).

NOTE: Muffler (P/N 04-3510-99) (not shown) is standard on all T4 pumps. (Comes equipped with P/N 08-3250-08 3/4" 45 degree street elbow for metal center section only.)

NOTE: Muffler (P/N 08-3510-99) (not shown) is available upon request. (Comes equipped with P/N 08-3250-08 3/4" 45 degree street elbow.)

NOTE: Aluminum pumps are available with a screen base. Requires (1) 04-5620-01 (Screen), (4) 04-6140-08 (Bolt) and (4) 15-6720-08 (Washer). BSP threads available.

0003 Specialty Code = Alloy-Fitted

0022 Specialty Code = Stainless Steel Clamp Bands

0050 Specialty Code = Stallion

0070 Specialty Code = Saniflo^{FD}A

NOTE: Stallion models come standard with rubber Ultra-Flex™ diaphragms only.

See Elastomer Section for details.

NOTE: Stallion model pumps require an additional screen base (P/N 04-5620-62), 4 bolts (P/N 08-6190-03-42), 4 hex nuts (P/N 08-6450-03), one suction cover (P/N 04-5660-01) and one bolt (P/N 08-6140-03). See exploded view on page 26 for details.

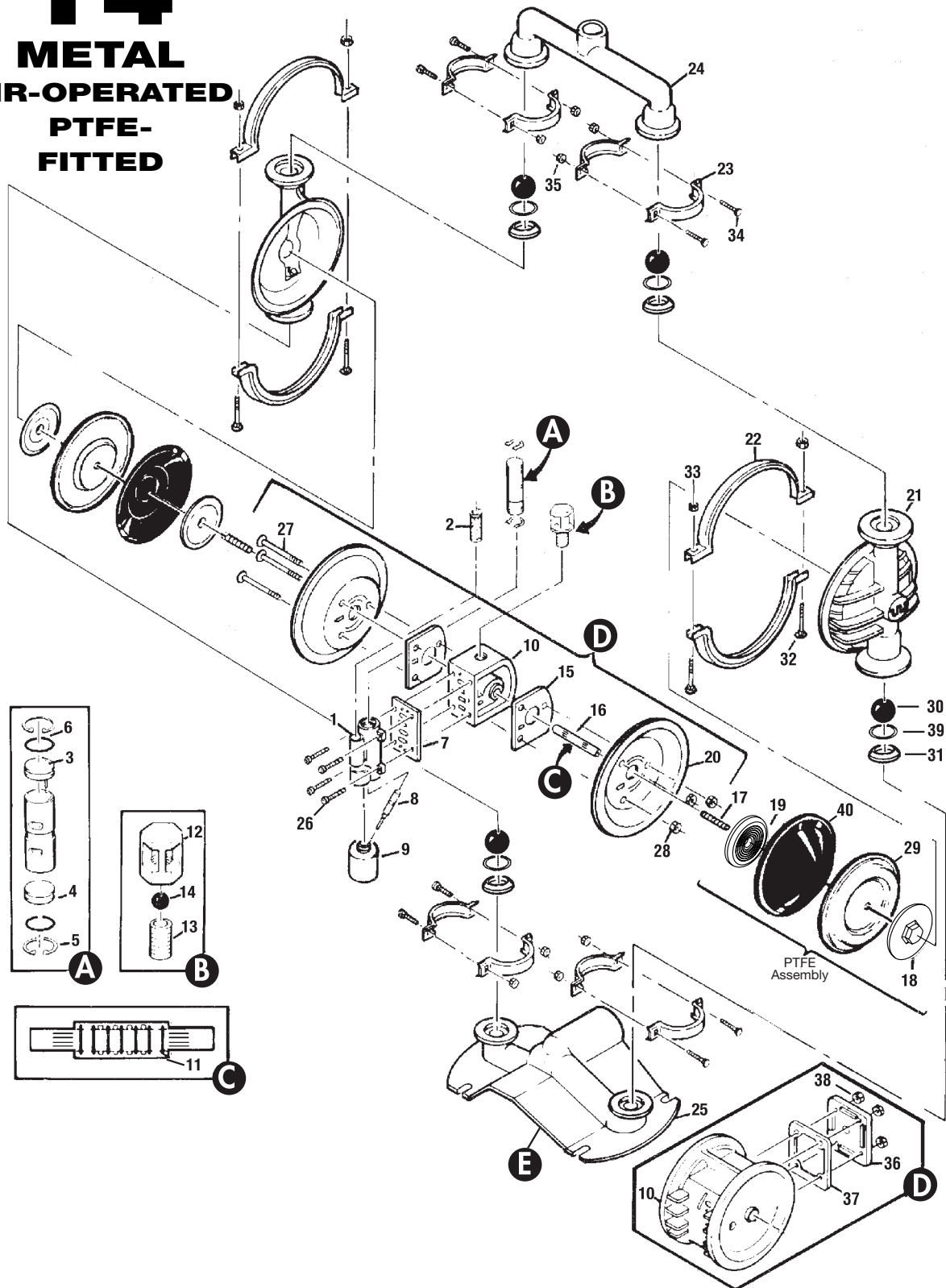
NOTE: Cast iron pumps require a reinforcing washer (P/N 04-6800-08) between the outer piston (P/N 04-4550-08) and bolt (P/N 04-6090-08).

All boldface items are primary wear parts.

SECTION 9B

EXPLODED VIEW/PARTS LISTING

T4 METAL AIR-OPERATED PTFE- FITTED



T4 Metal, PTFE-Fitted

Item	Description	Qty. Per Pump	T4/AAPPB P/N	T4/AAPPB/0003 P/N	T4/SSPPB P/N	T4/WWPPB P/N	T4/SSNNN/0070 P/N	T4/SSPPN/0070 P/N
1	Air Valve1	1	04-2000-07	04-2000-07	04-2000-07	04-2000-07	04-2000-06	04-2000-06
2	Air Valve Screen	1	04-2500-07	04-2500-07	04-2500-07	04-2500-07	04-2500-03	04-2500-03
3	Air Valve Cap w/Guide (Top)	1	04-2300-23	04-2300-23	04-2300-23	04-2300-23	04-2300-23	04-2300-23
4	Air Valve Cap w/o Guide (Bottom)	1	04-2330-23	04-2330-23	04-2330-23	04-2330-23	04-2330-23	04-2330-23
5	Snap Ring	2	04-2650-03	04-2650-03	04-2650-03	04-2650-03	04-2650-03	04-2650-03
6	Air Valve Cap O-Ring	2	04-2390-52	04-2390-52	04-2390-52	04-2390-52	04-2390-52	04-2390-52
7	Air Valve Gasket — Buna-N	1	04-2600-52	04-2600-52	04-2600-52	04-2600-52	04-2600-52	04-2600-52
8	Lubricator Capillary Rod Assy. (Optional)	1	04-2900-99	04-2900-99	04-2900-99	04-2900-99	04-2900-99	04-2900-99
9	Lubricator Oil Bottle (Optional)	1	04-2850-01	04-2850-01	04-2850-01	04-2850-01	04-2850-01	04-2850-01
10	Center Block/Section	1	04-3150-20-225	04-3150-20-225	04-3150-20-225	04-3150-20-225	04-3100-06-225	04-3150-20-225
11	Glyd™ Ring	7	08-3210-55-225	08-3210-55-225	08-3210-55-225	08-3210-55-225	08-3210-55-225	08-3210-55-225
12	Check Body	1	N/A	N/A	N/A	N/A	N/R	N/A
13	Nipple 3/4" x Close	1	N/A	N/A	N/A	N/A	N/R	N/A
14	Check Ball	1	N/A	N/A	N/A	N/A	N/R	N/A
15	Block Gasket — Buna-N	2	N/A	N/A	N/A	N/A	04-3520-52	N/A
16	Shaft	1	04-3820-09-07	04-3820-09-07	04-3820-09-07	04-3820-09-07	04-3820-09-07	04-3820-09-07
17	Shaft Stud	2	04-6150-08	04-6150-08	04-6150-08	04-6150-08	04-6150-08	04-6150-08
18	Piston, Outer	2	04-4600-01	04-4600-01	04-4600-03	04-4600-03	04-4600-03	04-4600-03
19	Piston, Inner	2	04-3750-01	04-3750-01	04-3750-01	04-3750-01	04-3750-01	04-3750-01
20	Air Chamber	2	N/R	N/R	N/R	N/R	04-3650-06	N/R
21	Liquid Chamber	2	04-5000-01	04-5000-01	04-5000-03	04-5000-02	04-5000-03	04-5000-03
22	Clamp Band (Large)	2	04-7330-03	04-7330-03	04-7330-03	04-7330-03	04-7300-03-70	04-7330-03-70
23	Clamp Band (Small)	4	04-7100-03	04-7100-03	04-7100-03	04-7100-03	04-7100-03-70	04-7100-03-70
24	Discharge Manifold	1	04-5020-01	04-5020-01	04-5020-03	04-5020-02	04-5020-03-70	04-5020-03-70
25	Inlet Housing	1	04-5080-01	04-5080-01	04-5080-03	04-5080-02	04-5080-03-70	04-5080-03-70
26	Air Valve Cap Screw 1/4"-20 x 6-11/16"	4	04-6000-03-500	04-6000-03-500	04-6000-03-500	04-6000-03-500	04-6000-03	04-6000-03-500
27	Hex Head Cap Screw 1/4"-20 x 3"	3	N/R	N/R	N/R	N/R	04-6130-08	N/R
28	Hex Head Nut 1/4"-20	3	N/R	N/R	N/R	N/R	04-6400-08	N/R
29	Diaphragm	2	04-1010-55	04-1010-55	04-1010-55	04-1010-55	04-1010-55	04-1010-55
30	Valve Ball	4	04-1080-55	04-1080-55	04-1080-55	04-1080-55	04-1080-55	04-1080-55
31	Valve Seat	4	04-1121-01	04-1121-01	04-1121-03	04-1121-08	04-1121-03	04-1121-03
32	Large Clamp Band Bolt 5/16"-18 x 2-1/4"	4	04-6070-03	04-6070-03	04-6070-03	04-6070-03	04-6070-03	04-6070-03
33	Large Hex Nut 5/16"-18	4	08-6400-03	08-6400-03	08-6400-03	08-6400-03	08-6660-03-72	08-6660-03-72
34	Small Clamp Band Bolt 1/4"-20 x 1-3/4"	8	01-6070-03	01-6070-03	01-6070-03	01-6070-03	01-6070-03	01-6070-03
35	Small Hex Nut 1/4"-20	8	04-6400-03	04-6400-03	04-6400-03	04-6400-03	04-6650-03-70	04-6650-03-70
36	Muffler Plate	1	04-3180-20	04-3180-20	04-3180-20	04-3180-20	N/R	04-3180-20
37	Muffler Plate Gasket — Buna-N	1	04-3500-52	04-3500-52	04-3500-52	04-3500-52	N/R	04-3500-52
38	Air Valve Hex Nut 1/4"-20	4	04-6400-03	04-6400-03	04-6400-03	04-6400-03	N/R	04-6400-03
39	Valve Seat O-Ring ²	4	04-1200-55	04-1200-55	04-1200-55	04-1200-55	04-1200-55	04-1200-55
40	Back-up Diaphragm*	2	04-1060-51	04-1060-51	04-1060-51	04-1060-51	04-1060-51	04-1060-51

¹Air Valve Assembly includes items 2–6.

²Fluoro-Seal™ o-rings available upon request.

NOTE — Muffler (P/N 04-3510-99) (not shown) is standard on all pumps. (Metal center blocks come with a 45° street elbow.)

*Back-up Diaphragm for PTFE-fitted pump: P/N 04-1060-51. Saniflex™ Back-up Diaphragm, P/N 04-1060-56, is available upon request for PTFE-fitted pumps.

Please consult your local distributor.

All PTFE fitted cast iron pumps require 1/2" gasket tape P/N 04-9502-99

BSP threads available.

0003 Specialty Code = Alloy-Fitted

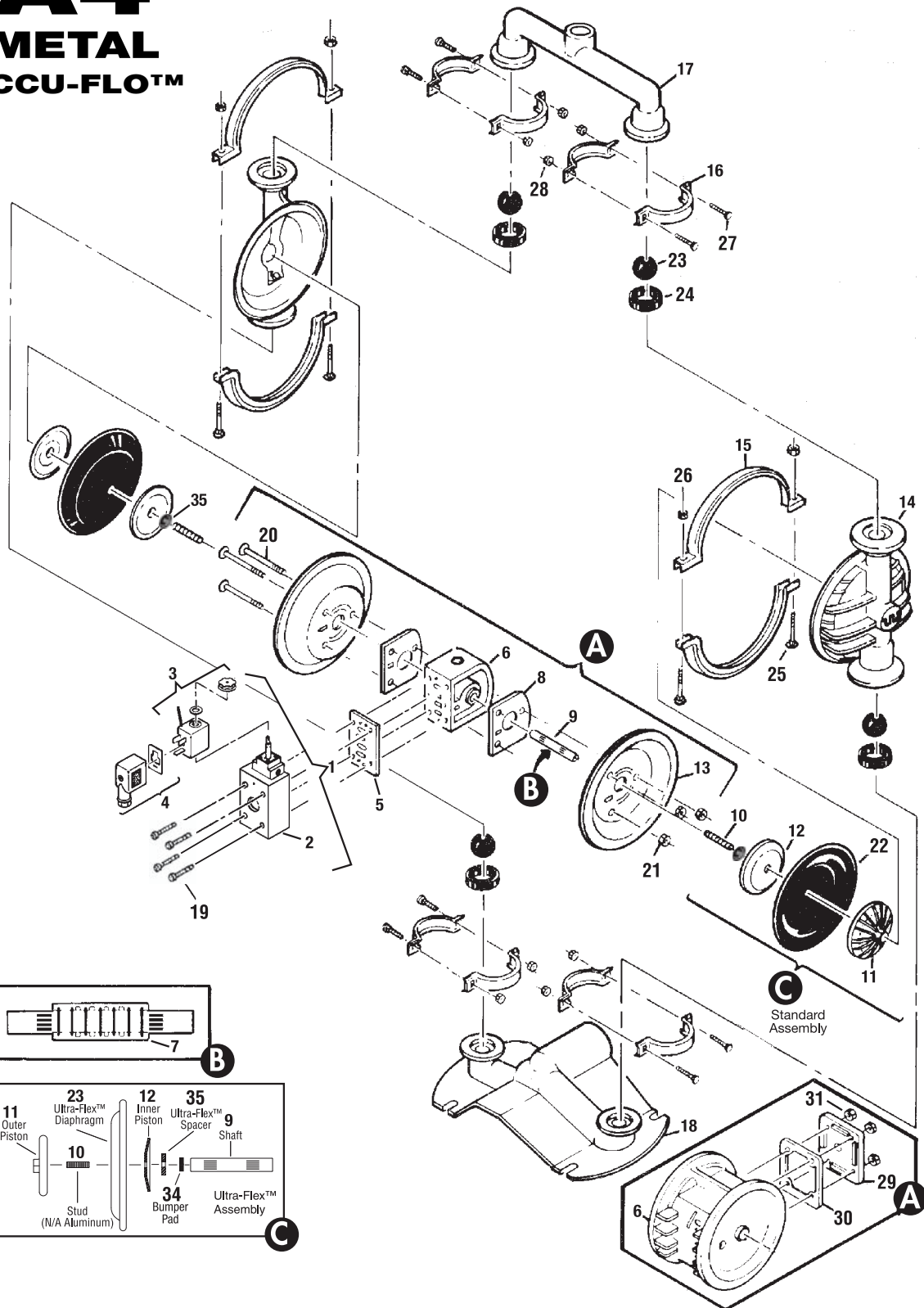
0070 Specialty Code = Saniflo[®]DA

All boldface items are primary wear parts.

SECTION 9C

EXPLODED VIEW/PARTS LISTING

A4 METAL ACCU-FLO™



A4 Metal Accu-Flo™

Item	Description	Qty. Per Pump	Rubber-Fitted				PTFE-Fitted			
			A4/AAMAA/0150 P/N	A4/HHPPA/0150 P/N	A4/SSPPA/0150 P/N	A4/WWPPA/0150 P/N	A4/AAPPA/0150 P/N	A4/HHPPA/0150 P/N	A4/SSPPA/0150 P/N	A4/WSPPA/0150 P/N
1	Solenoid Valve Assembly	1	04-2000-99-150	04-2000-99-150	04-2000-99-150	04-2000-99-150	04-2000-99-150	04-2000-99-150	04-2000-99-150	04-2000-99-150
2	Main Valve Body	1	04-2000-01-150	04-2000-01-150	04-2000-01-150	04-2000-01-150	04-2000-01-150	04-2000-01-150	04-2000-01-150	04-2000-01-150
3	Coil	1	00-2110-99-150	00-2110-99-150	00-2110-99-150	00-2110-99-150	00-2110-99-150	00-2110-99-150	00-2110-99-150	00-2110-99-150
4	Terminal Connector	1	00-2130-99	00-2130-99	00-2130-99	00-2130-99	00-2130-99	00-2130-99	00-2130-99	00-2130-99
5	Air Valve Gasket — Buna-N	1	04-2600-52	04-2600-52	04-2600-52	04-2600-52	04-2600-52	04-2600-52	04-2600-52	04-2600-52
6	Center Section/Block	1	04-3100-01-225	04-3150-20-225	04-3150-20-225	04-3150-20-225	04-3150-20-225	04-3150-20-225	04-3150-20-225	04-3150-20-225
7	Glyd™ Ring	7	08-3210-55-225	08-3210-55-225	08-3210-55-225	08-3210-55-225	08-3210-55-225	08-3210-55-225	08-3210-55-225	08-3210-55-225
8	Block Gasket	2	04-3520-30	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9	Shaft, Rubber/TPE	1	08-3840-09	08-3840-09	08-3840-09	08-3840-09	N/A	N/A	N/A	N/A
	Shaft, Ultra-Flex™	1	04-3835-09	04-3835-09	04-3835-09	04-3835-09	N/A	N/A	N/A	N/A
	Shaft, PTFE	1	N/A	N/A	N/A	N/A	04-3825-09	04-3825-09	04-3825-09	04-3825-09
10	Shaft Stud	2	04-6150-08	04-6150-08	04-6150-08	04-6090-08	04-6150-08	04-6150-08	04-6150-08	04-6150-08
	Shaft Stud, Ultra-Flex™	2	N/A	04-6152-08	04-6152-08	04-6152-08	N/A	N/A	N/A	N/A
11	Piston, Outer	2	04-4552-01	04-4550-04	04-4550-03	04-4550-08	04-4600-01	04-4600-04	04-4600-03	04-4600-03
	Piston, Outer, Ultra-Flex™	2	04-4560-01	02-4550-04	02-4550-03	04-4560-02	N/A	N/A	N/A	N/A
12	Piston, Inner	2	04-3700-08	04-3700-08	04-3700-08	04-3700-08	04-3750-01	04-3750-01	04-3750-01	04-3750-01
	Piston, Inner, Ultra-Flex™	2	04-3760-08	04-3760-08	04-3760-08	04-3760-08	N/A	N/A	N/A	N/A
13	Air Chamber	2	04-3650-08	N/R	N/R	N/R	N/R	N/R	N/R	N/R
14	Liquid Chamber	2	04-5000-01	04-5000-04	04-5000-03	04-5000-02	04-5000-01	04-5000-04	04-5000-03	04-5000-02
15	Clamp Band (Large)	2	04-7300-08	04-7330-03	04-7330-03	04-7330-08	04-7330-03	04-7330-03	04-7330-03	04-7330-03
16	Clamp Band (Small)	4	04-7100-08	04-7100-03	04-7100-03	04-7100-08	04-7100-03	04-7100-03	04-7100-03	04-7100-03
17	Discharge Manifold	1	04-5020-01	04-5020-04	04-5020-03	04-5020-02	04-5020-01	04-5020-04	04-5020-03	04-5020-02
18	Inlet Housing	1	04-5080-01	04-5080-04	04-5080-03	04-5080-02	04-5080-01	04-5080-04	04-5080-03	04-5080-02
19	Air Valve Cap Screw 1/4"-20 x 6-11/16"	4	04-6000-08	04-6000-03-500	04-6000-03-500	04-6000-03-500	04-6000-03-500	04-6000-03-500	04-6000-03-500	04-6000-03-500
20	Hex Head Cap Screw 1/4"-20 x 3"	3	04-6131-08	N/R	N/R	N/R	N/R	N/R	N/R	N/R
21	Hex Head Nut 1/4"-20	3	04-6400-08	N/R	N/R	N/R	N/R	N/R	N/R	N/R
22	Diaphragm*	2	*	*	*	*	04-1010-55	04-1010-55	04-1010-55	04-1010-55
23	Valve Ball*	4	*	*	*	*	04-1080-55	04-1080-55	04-1080-55	04-1080-55
24	Valve Seat*	4	*	*	*	*	04-1121-01	04-1121-04	04-1121-03	04-1121-08
25	Large Clamp Band Bolt 5/16"-18 x 2-1/4"	4	04-6070-08	04-6070-03	04-6070-03	04-6070-08	04-6070-03	04-6070-03	04-6070-03	04-6070-03
26	Large Hex Nut 5/16"-18	4	04-6420-08	08-6400-03	08-6400-03	04-6420-08	08-6400-03	08-6400-03	08-6400-03	08-6400-03
27	Small Clamp Band Bolt 1/4"-20 x 1-3/4"	8	04-6050-08	01-6070-03	01-6070-03	04-6050-08	01-6070-03	01-6070-03	01-6070-03	01-6070-03
28	Small Hex Nut 1/4"-20	8	04-6400-08	04-6400-03	04-6400-03	04-6400-08	04-6400-03	04-6400-03	04-6400-03	04-6400-03
29	Muffler Plate	1	N/R	04-3180-20	04-3180-20	04-3180-20	04-3180-20	04-3180-20	04-3180-20	04-3180-20
30	Muffler Plate Gasket — Buna-N	1	N/R	04-3500-52	04-3500-52	04-3500-52	04-3500-52	04-3500-52	04-3500-52	04-3500-52
31	Air Valve Hex Nut 1/4"-20	4	N/R	04-6400-03	04-6400-03	04-6400-03	04-6400-03	04-6400-03	04-6400-03	04-6400-03
32	Valve Seat O-Ring ² (Not shown)	4	N/R	N/R	N/R	N/R	04-1200-55	04-1200-55	04-1200-55	04-1200-55
33	Back-up Diaphragm* (Not shown)	2	N/A	N/A	N/A	N/A	04-1060-51	04-1060-51	04-1060-51	04-1060-51
34	Bumper Pad	2	08-6900-23-50	08-6900-23-50	08-6900-23-50	08-6900-23-50	08-6900-23-50	08-6900-23-50	08-6900-23-50	08-6900-23-50
35	Spacer, Ultra-Flex™ ONLY	2	04-3860-08	04-3860-08	04-3860-08	04-3860-08	N/A	N/A	N/A	N/A

¹Air Valve Assembly includes items 2–4.

²Fluoro-Seal™ o-rings available upon request.

NOTE — Muffler (P/N 04-3510-99) (not shown) is standard on all pumps. (Metal center blocks come with a 45° street elbow.) P/N 08-3250-08

*Back-up Diaphragm for PTFE-fitted pump: P/N 04-1060-51. Saniflex backup (01-1060-56) available on request. Please consult your local distributor.

All PTFE cast iron pumps require 1/2" gasket type P/N 04-9502-99.

BSP threads available.

NOTE: Cast iron pumps require a reinforcing washer (P/N 04-6800-08) between the outer piston (P/N 04-4550-08) and bolt (P/N 04-6090-08).

NOTE: Additional solenoid options are available. Please consult Section 10C (page 33) for reference.

0150 Specialty Code = Solenoid-Operated, 24V DC.

All boldface items are primary wear parts.

SECTION 10A – AIR-OPERATED ELASTOMER OPTIONS

T4 Metal Pumps

MATERIAL	Diaphragms (2) P/N	ULTRA-FLEX™ DIAPHRAGMS (2) P/N	VALVE BALLS (4) P/N	VALVE SEATS (4) P/N	VALVE SEAT* O-RINGS (4) P/N	ULTRA-FLEX™ OUTER PISTONS (2) P/N
Neoprene	04-1010-51	04-1020-51	04-1080-51	04-1120-51	N/A	N/A
Buna-N	04-1010-52	04-1020-52	04-1080-52	04-1120-52	N/A	N/A
EPDM	04-1010-54	04-1020-54	04-1080-54	04-1120-54	N/A	N/A
Viton®	04-1010-53	04-1020-53	04-1080-53	04-1120-53	N/A	N/A
Polyurethane	04-1010-50	N/A	04-1080-50	04-1120-50	N/A	N/A
Wil-Flex™	04-1010-58	N/A	04-1080-58	04-1120-58	N/A	N/A
Saniflex™	04-1010-56	N/A	04-1080-56	04-1120-56	N/A	N/A
Fluoro-Seal™	N/A	N/A	N/A	N/A	04-1200-34	N/A
PTFE	04-1010-55	N/A	04-1080-55	N/A	04-1200-55	N/A
Aluminum	N/A	N/A	N/A	04-1121-01	N/A	04-4560-01
Carbon Steel	N/A	N/A	N/A	04-1121-08	N/A	N/A
Stainless Steel	N/A	N/A	N/A	04-1121-03	N/A	02-4550-03
Alloy C	N/A	N/A	N/A	04-1121-04	N/A	02-4550-04
Cast Iron	N/A	N/A	N/A	N/A	N/A	04-4560-02

*NOTE: Rubber valve seats do not require an o-ring.

SECTION 10B – STALLION ELASTOMER OPTIONS

T4 Metal STALLION Pumps

MATERIAL	Diaphragms (2) P/N	VALVE BALLS (4) P/N	VALVE SEATS (4) P/N
Neoprene	04-1020-51	04-1080-51-50	04-1120-51-50
Buna-N	04-1020-52	04-1080-52-50	04-1120-52-50
EPDM	04-1020-54	04-1080-54-50	04-1120-54-50
Viton®	04-1020-53	04-1080-53-50	04-1120-53-50

SECTION 10C – ACCU-FLO™

ELECTRICAL REFERENCE

NEMA 4 / UL / CSA

Part Number	Voltage ±10%			Power (W) ±10%	Current (A)			Resistivity (Ω)
	DC	AC			DC	AC		
		60 Hz	50 Hz			Inrush	Holding	
00-2110-99-150	24	48	44	4.8	.20	.20	.20	121
00-2110-99-151	12	24	22	4.8	.40	.40	.40	32
00-2110-99-155	60	120	110	4.8	.08	.08	.06	840

NEMA 7 / UL / CSA

Part Number	Voltage ±10%			Power (W) ±10%	Current (A)			Resistivity (Ω)
	DC	AC			DC	AC		
		60 Hz	50 Hz			Inrush	Holding	
00-2110-99-153	12	24	22	7	.60	.55	.32	19
00-2110-99-154	24	48	44	7	.30	.30	.18	75
00-2110-99-156	60	120	110	7	.12	.13	.06	475

INTERNATIONAL EXPLOSION PROOF / CENELEC / PTB FILE # EX-91.C.2027

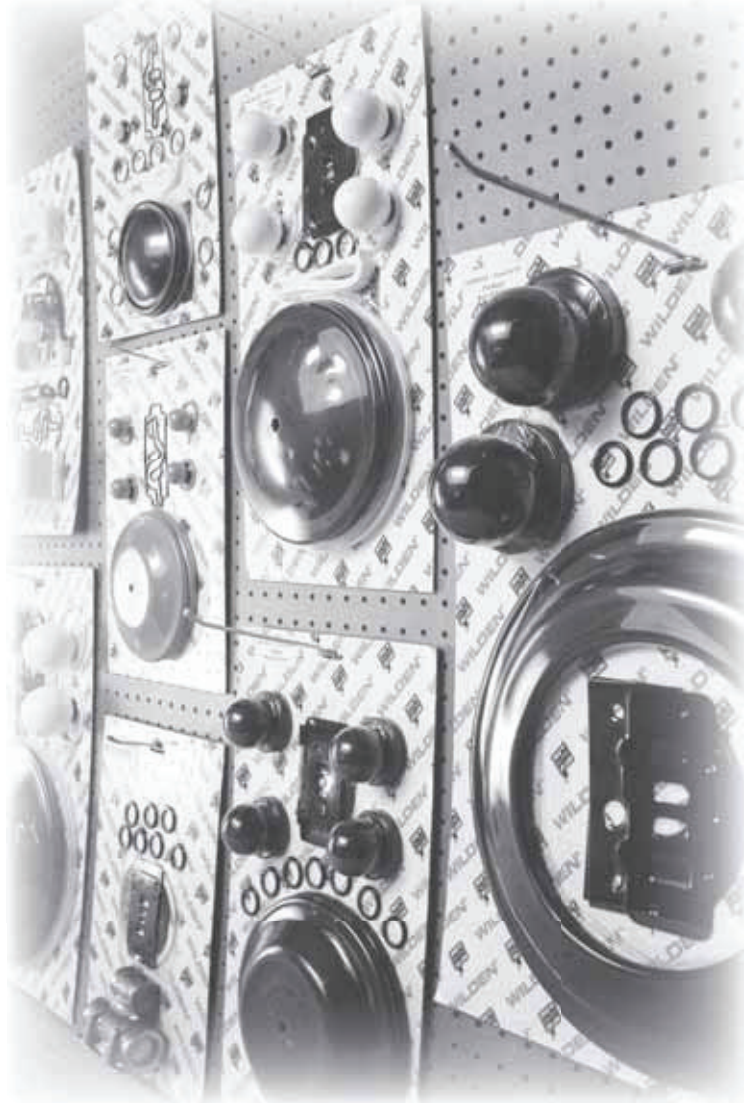
Part Number	DC Voltage ±10%	Power (W) ±10%	Current (A)		Resistivity (Ω)
			Inrush	Holding	
00-2110-99-157	24	3.3	.135	.135	177

Elastomer Kits

Your Solutions — Wrapped Up

Program Details:

- **Elastomer & ADS Repair Kits**
- **All Sizes Available**
- **PTFE, Rubber & TPE Elastomers**
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- **Eliminates Order Errors**
- **Reduces Re-Build Time**
- **Rejuvenates Your Pump**



NOTE: See Section 9.

WILDEN®
A DOVER COMPANY

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(909) 422-1730 • FAX (909) 783-3440
www.wildenpump.com

WARRANTY

Each and every product manufactured by Wilden Pump and Engineering, LLC is built to meet the highest standards of quality. Every pump is functionally tested to insure integrity of operation.

Wilden Pump and Engineering, LLC warrants that pumps, accessories and parts manufactured or supplied by it to be free from defects in material and workmanship for a period of five (5) years from date of installation or six (6) years from date of manufacture, whichever comes first. Failure due to normal wear, misapplication, or abuse is, of course, excluded from this warranty.

Since the use of Wilden pumps and parts is beyond our control, we cannot guarantee the suitability of any pump or part for a particular application and Wilden Pump and Engineering, LLC shall not be liable for any consequential damage or expense arising from the use or misuse of its products on any application. Responsibility is limited solely to replacement or repair of defective Wilden pumps and parts.

All decisions as to the cause of failure are the sole determination of Wilden Pump and Engineering, LLC.

Prior approval must be obtained from Wilden for return of any items for warranty consideration and must be accompanied by the appropriate MSDS for the product(s) involved. A Return Goods Tag, obtained from an authorized Wilden distributor, must be included with the items which must be shipped freight prepaid.

The foregoing warranty is exclusive and in lieu of all other warranties expressed or implied (whether written or oral) including all implied warranties of merchantability and fitness for any particular purpose. No distributor or other person is authorized to assume any liability or obligation for Wilden Pump and Engineering, LLC other than expressly provided herein.

PLEASE PRINT OR TYPE AND FAX TO WILDEN

PUMP INFORMATION			
Item # _____		Serial # _____	
Company Where Purchased _____			
YOUR INFORMATION			
Company Name _____			
Industry _____			
Name _____		Title _____	
Street Address _____			
City _____	State _____	Postal Code _____	Country _____
Telephone _____	Fax _____	E-mail _____	Web Address _____
Number of pumps in facility? _____		Number of Wilden pumps? _____	
Types of pumps in facility (check all that apply): <input type="checkbox"/> Diaphragm <input type="checkbox"/> Centrifugal <input type="checkbox"/> Gear <input type="checkbox"/> Submersible <input type="checkbox"/> Lobe			
<input type="checkbox"/> Other _____			
Media being pumped? _____			
How did you hear of Wilden Pump? <input type="checkbox"/> Trade Journal <input type="checkbox"/> Trade Show <input type="checkbox"/> Internet/E-mail <input type="checkbox"/> Distributor			
<input type="checkbox"/> Other _____			

ONCE COMPLETE, FAX TO (909) 783-3440

NOTE: WARRANTY VOID IF PAGE IS NOT FAXED TO WILDEN

WILDEN PUMP & ENGINEERING, LLC