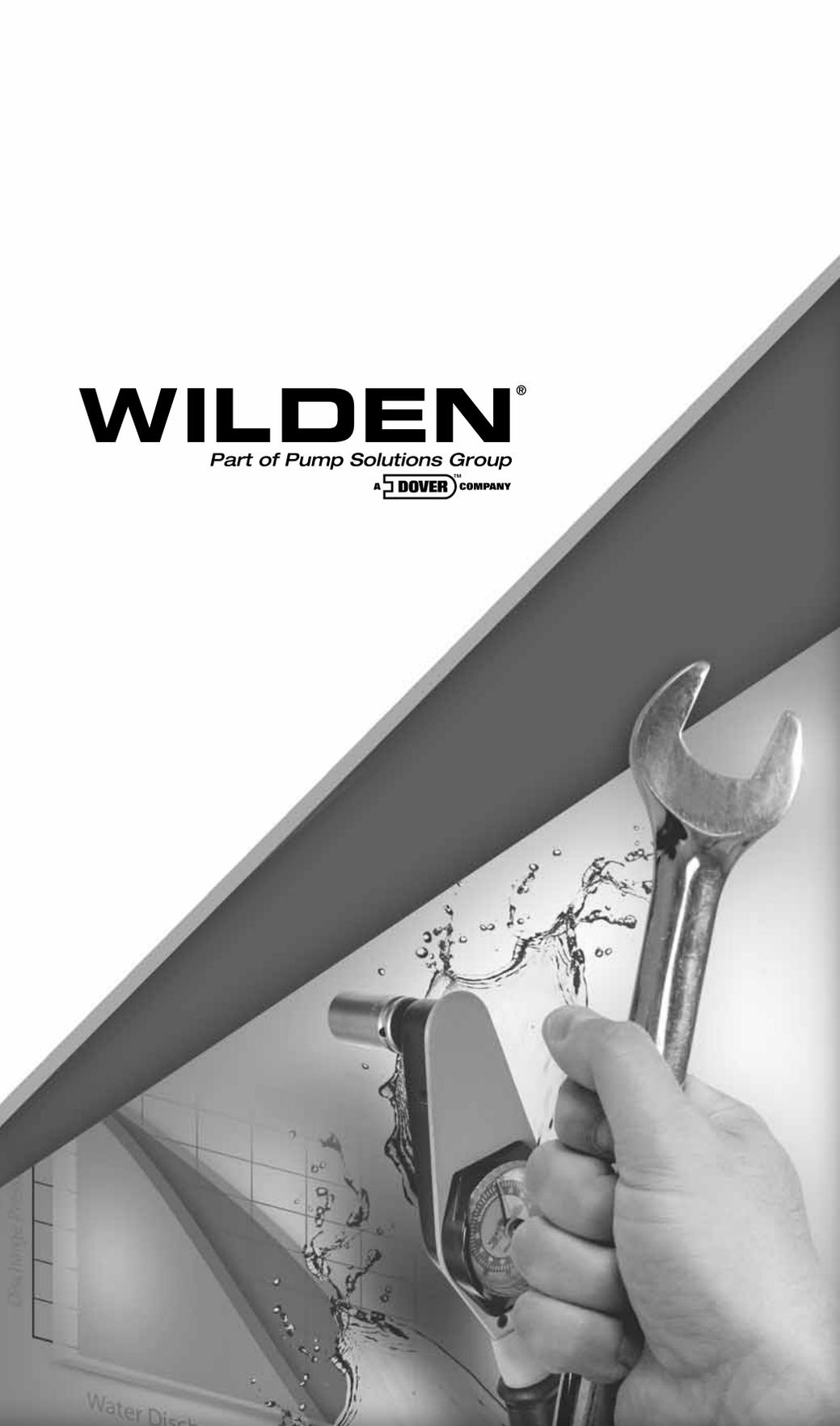
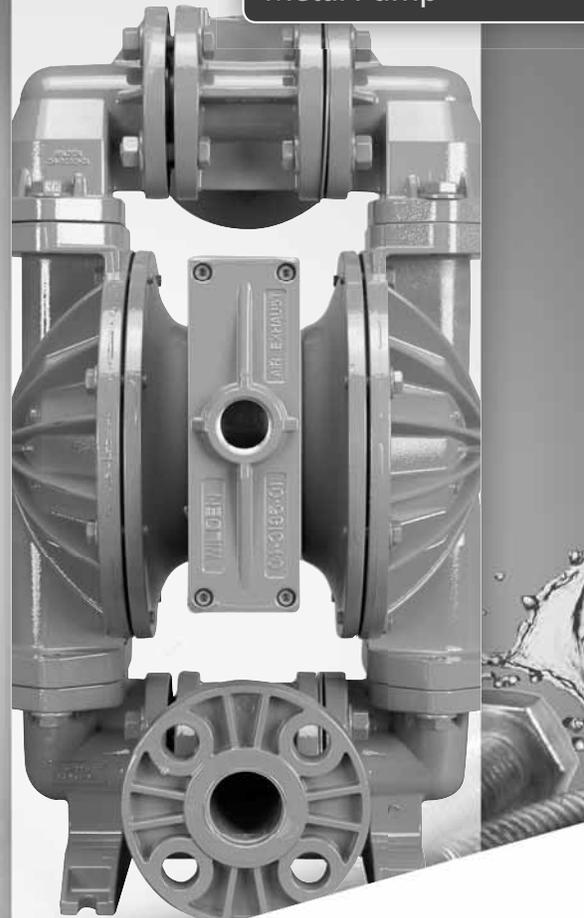


WILDEN[®]
Part of Pump Solutions Group
A **DOVER** COMPANY

EOM
Engineering
Operation &
Maintenance

HX400S
Advanced™ Series
Metal Pump



Where Innovation Flows

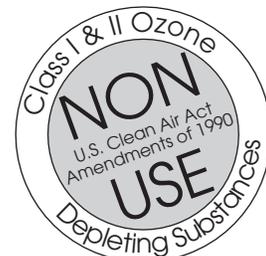
www.wildenpump.com



WIL-11111-E-03
TO REPLACE WIL-11111-E-02

TABLE OF CONTENTS

SECTION 1	CAUTIONS—READ FIRST!	1
SECTION 2	WILDEN[®] PUMP DESIGNATION SYSTEM	2
SECTION 3	HOW IT WORKS—PUMP & AIR DISTRIBUTION SYSTEM.	3
SECTION 4	DIMENSIONAL DRAWINGS	4
SECTION 5	PERFORMANCE	5
	A. HX400S PERFORMANCE	
	Operating Principle	6
	TPE-Fitted Aluminum.	10
	TPE-Fitted Stainless Steel	11
	B. SUCTION LIFT CURVE	12
SECTION 6	SUGGESTED INSTALLATION	13
	Operation/Maintenance	14
	Troubleshooting.	15
SECTION 7	PUMP DISASSEMBLY.	16
	HX400S Piston & Shaft Orientation	18
	Air Valve / Center Section Disassembly.	19
	Submersible Pro-Flo X [™]	21
	Reassembly Hints & Tips	22
SECTION 8	EXPLODED VIEW AND PARTS LISTING	
	TPE-Fitted Aluminum.	24
	TPE-Fitted Stainless Steel	26



CAUTIONS — READ FIRST!



TEMPERATURE LIMITS:

Neoprene	-17.7°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
Saniflex™	-28.9°C to 104.4°C	-20°F to 220°F
Wil-Flex™	-40°C to 107.2°C	-40°F to 225°F
Polytetrafluoroethylene (PTFE)	4.4°C to 104.4°C	40°F to 220°F
Polyurethane	-12.2°C to 65.6°C	10°F to 150°F
Tetra-Flex™ PTFE with Neoprene backing	4.4°C to 107.2°C	40°F to 225°F
Tetra-Flex™ PTFE with EPDM backing	-10°C to 137°C	14°F to 280°F

NOTE: Not all materials are available for all models. Refer to Section 2 for material options for your pump.



CAUTION: Do not apply compressed air to the exhaust port – pump will not function.



CAUTION: Do not over-lubricate air supply – excess lubrication will reduce pump performance. Pump is pre-lubricated.



CAUTION: Maximum temperature limits are based upon mechanical stress only. Certain chemicals will significantly reduce maximum safe operating temperatures. Consult Chemical Resistance Guide (E4) for chemical compatibility and temperature limits.



CAUTION: All piping, valves, gauges and other components installed on the liquid discharge must have a minimum pressure rating of 20.7 bar (300 psig).



CAUTION: The discharge pressure generated by this pump is two times the inlet pressure supplied.



CAUTION: Do not exceed 82°C (180°F) air inlet temperature for Pro-Flo X™ models.



CAUTION: Pumps should be thoroughly flushed before installing into process lines. FDA and USDA approved pumps should be cleaned and/or sanitized before being used.



NOTE: Cast-iron PTFE-fitted pumps come standard from the factory with expanded PTFE gaskets installed in the diaphragm bead of the liquid chamber. PTFE gaskets cannot be re-used. Consult PS-TG for installation instructions during reassembly.



CAUTION: Pro-Flo® pumps cannot be used in submersible applications. Pro-Flo X™ is available in both submersible and non-submersible options. Do not use non-submersible Pro-Flo X™ models in submersible applications. Turbo-Flo® pumps can also be used in submersible applications.



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 of the air exhaust.



WARNING: Prevention of static sparking — If static sparking occurs, fire or explosion could result. Pump, valve, 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 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.



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



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



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.



PUMP DESIGNATION SYSTEM

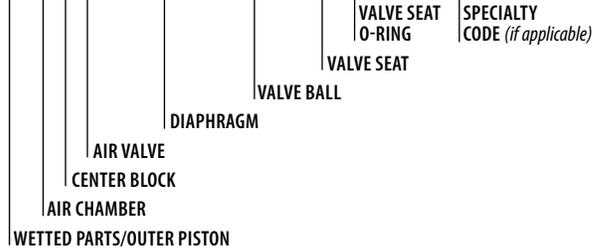
HX400S METAL

**38 mm (1-1/2") Pump
Maximum Flow Rate:
235 LPM (62 GPM)**

LEGEND

XHX400S / XXXXX / XXX / XX / XXX / XXXX

MODEL



MATERIAL CODES

MODEL

XHX400S = HIGH PRESSURE
SIMPLEX/ATEX

WETTED PARTS / OUTER PISTON

AS = ALUMINUM/STAINLESS STEEL
SS = STAINLESS STEEL/STAINLESS
STEEL

AIR CHAMBER

A = ALUMINUM
S = STAINLESS STEEL

CENTER BLOCK

A = ALUMINUM
S = STAINLESS STEEL

AIR VALVE

A = ALUMINUM
S = STAINLESS STEEL

DIAPHRAGM

FWS = SANITARY WIL-FLEX™¹

VALVE BALL

WF = WIL-FLEX™ [Santoprene®
(orange dot)]

VALVE SEAT

A = ALUMINUM
S = STAINLESS STEEL

VALVE SEAT O-RING

TF = PTFE (white dot)

NOTE: ¹Meets Requirements of FDA CFR21.177

SPECIALTY CODES

- 0245** Reverse manifolds
- 0247** Discharge & inlet manifold facing exhaust
- 0250** Discharge manifold facing air inlet
- 0320** Submersible center block
- 0504** DIN flange

NOTE: Most elastomeric materials use colored dots for identification.
NOTE: Not all models are available with all material options.
Hytrel® and Viton® are registered trademarks of DuPont Dow Elastomers.



HOW IT WORKS—PUMP DISTRIBUTION SYSTEM

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.

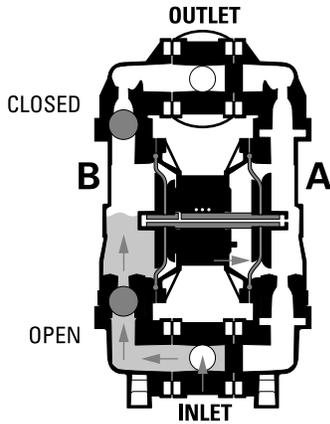


FIGURE 1 When air pressure is supplied to the pump, the air valve directs pressure to the back side of the diaphragm **A**. The compressed air moves the diaphragm away from the center section of the pump. The opposite diaphragm is pulled in by the shaft connected to the pressurized diaphragm. Diaphragm **B** is on its suction stroke; air behind the diaphragm has been forced out to the atmosphere through the exhaust port. The movement of diaphragm **B** towards the center section of the pump creates a vacuum within the chamber **B**. Atmospheric pressure forces fluid into the inlet manifold forcing the inlet valve ball off of its seat. Liquid is free to move past the inlet valve ball and fill the liquid chamber (see shaded area).

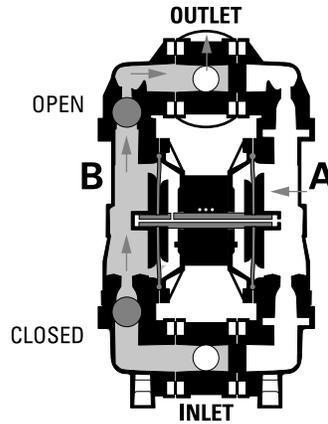


FIGURE 2 Once the shaft has reached the end of its stroke, the air valve redirects pressurized air to the back side of the diaphragm **B**. This pressurized air is also directed to the opposite side of the diaphragm **A** through a passageway that is routed through the common shaft and outer piston. The pressurized air forces diaphragm **B** away from the center section while also pushing diaphragm **A** to the center section. 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 of its seat, forcing fluid to flow through the pump discharge. The pressure on diaphragm **A** creates a force on the shaft that is combined with the pressure from diaphragm **B**. This total load is transferred to the liquid creating a liquid pressure that is two times greater than the supplied air pressure.

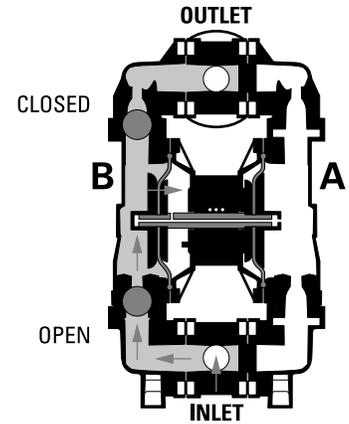
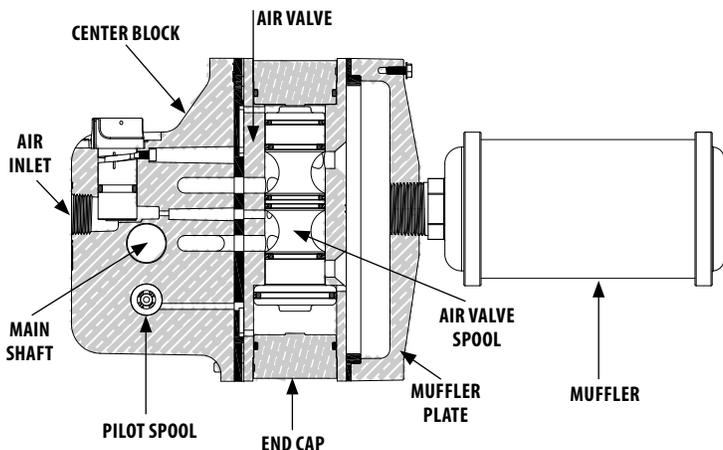


FIGURE 3 At completion of the stroke, the air valve again redirects air to the back side of the diaphragm **A**, which starts diaphragm **B** on its exhaust stroke. As the pump reaches its original starting point, each diaphragm has gone through one exhaust and one discharge stroke. This constitutes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



HOW IT WORKS—AIR DISTRIBUTION SYSTEM

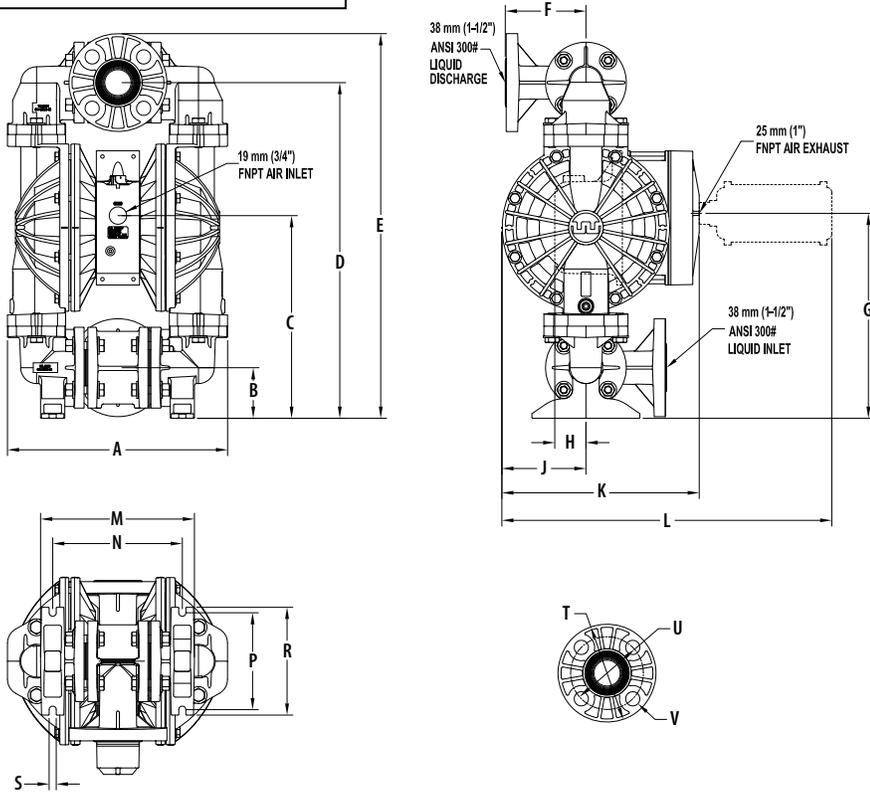


The Pro-Flo X[™] patented air distribution system incorporates two moving parts: the air valve spool and the pilot spool. The heart of the system is the air valve. This valve design incorporates an unbalanced spool. The smaller end of the spool is pressurized continuously, while the large end is alternately pressurized, then exhausted, to move the spool. The air valve spool directs pressurized air to one air chamber while exhausting the other. The air causes the main shaft/diaphragm assembly to shift to one side — discharging liquid on that side and pulling liquid in on the other side. When the shaft reaches the end of its stroke, the inner piston actuates the pilot spool, which pressurizes and exhausts the large end of the air valve spool. The repositioning of the air valve spool routes the air to the other air chamber.



DIMENSIONAL DRAWINGS

HX400S ALUMINUM

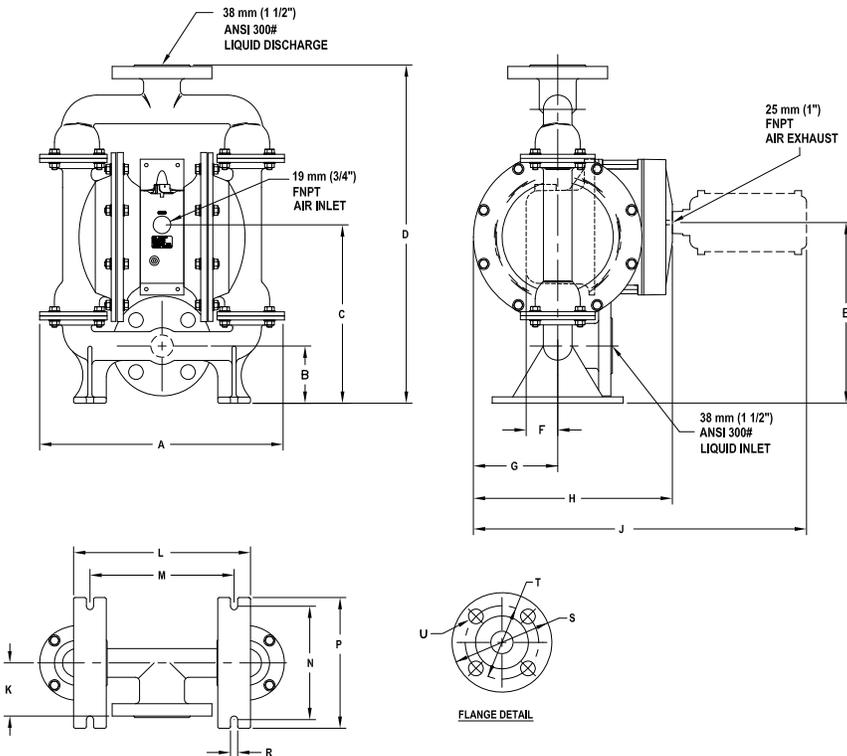


DIMENSIONS

ITEM	METRIC (mm)	STANDARD (inch)
A	345	13.6
B	79	3.1
C	318	12.5
D	528	20.8
E	605	23.8
F	127	5.0
G	323	12.7
H	48	1.9
J	132	5.2
K	310	12.2
L	518	20.4
M	241	9.5
N	203	8.0
P	152	6.0
R	170	6.7
S	10	0.4
	DIN (mm)	ANSI (inch)
T	150 DIA.	6.1 DIA.
U	110 DIA.	4.5 DIA.
V	18 DIA.	0.9 DIA.

REV A

HX400S STAINLESS STEEL



DIMENSIONS

ITEM	METRIC (mm)	STANDARD (inch)
A	384	15.1
B	89	3.5
C	277	10.9
D	528	20.8
E	279	11.0
F	48	1.9
G	132	5.2
H	310	12.2
J	508	20.0
K	84	3.3
L	274	10.8
M	224	8.8
N	178	7.0
P	203	8.0
R	10	0.4
	DIN (mm)	ANSI (inch)
S	150 DIA.	6.1 DIA.
T	110 DIA.	4.5 DIA.
U	18 DIA.	0.9 DIA.

REV B

HX400S



HX400S ADVANCED™ PERFORMANCE



PRO-FLO X™ OPERATING PRINCIPLE

The Pro-Flo X™ air distribution system with the revolutionary Efficiency Management System (EMS) offers flexibility never before seen in the world of AODD pumps. The patent-pending EMS is simple and easy to use. With the turn of an integrated

control dial, the operator can select the optimal balance of flow and efficiency that best meets the application needs. Pro-Flo X™ provides higher

performance, lower operational costs and flexibility that exceeds previous industry standards.



<p>Turning the dial changes the relationship between air inlet and exhaust porting.</p>	<p>Each dial setting represents an entirely different flow curve</p>	<p>Pro-Flo X™ pumps are shipped from the factory on setting 4, which is the highest flow rate setting possible</p>	<p>Moving the dial from setting 4 causes a decrease in flow and an even greater decrease in air consumption.</p>	<p>When the air consumption decreases more than the flow rate, efficiency is improved and operating costs are reduced.</p>

Example 1

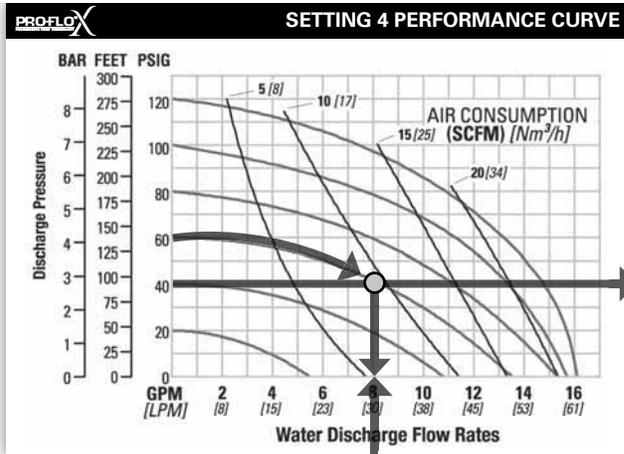


Figure 1

Example data point = **8.2** GPM

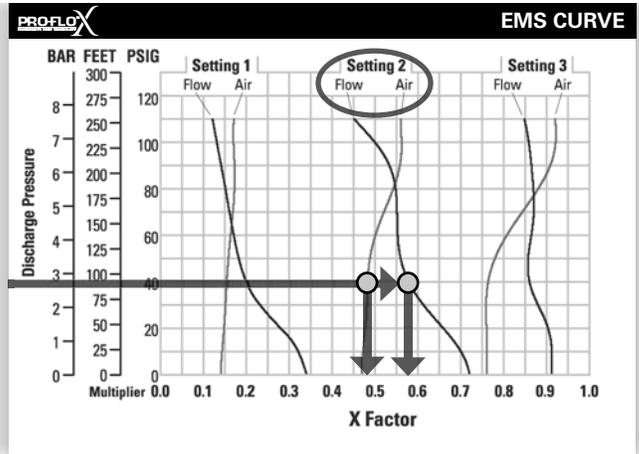


Figure 2

Example data point = **0.58** flow multiplier
0.48 air multiplier

This is an example showing how to determine flow rate and air consumption for your Pro-Flo X™ pump using the Efficiency Management System (EMS) curve and the performance curve. For this example we will be using 4.1 bar (60 psig) inlet air pressure and 2.8 bar (40 psig) discharge pressure and EMS setting 2.

Step 1: Identifying performance at setting 4. Locate the curve that represents the flow rate of the pump with 4.1 bar (60 psig) air inlet pressure. Mark the point where this curve crosses the horizontal line representing 2.8 bar (40 psig) discharge pressure. (Figure 1). After locating your performance point on the flow curve, draw a vertical line downward until reaching the bottom scale on the chart. Identify the flow rate (in this case, 8.2 gpm). Observe location of performance point relative to air consumption curves and approximate air consumption value (in this case, 9.8 scfm).

Step 2: Determining flow and air X Factors. Locate your discharge pressure (40 psig) on the vertical axis of the EMS curve (Figure 2). Follow along the 2.8 bar (40 psig) horizontal line until intersecting both flow and air curves for your desired EMS setting (in this case, setting 2). Mark the points where the EMS curves intersect the horizontal discharge pressure line. After locating your EMS points on the EMS

curve, draw vertical lines downward until reaching the bottom scale on the chart. This identifies the flow X Factor (in this case, 0.58) and air X Factor (in this case, 0.48).

Step 3: Calculating performance for specific EMS setting. Multiply the flow rate (8.2 gpm) obtained in Step 1 by the flow X Factor multiplier (0.58) in Step 2 to determine the flow rate at EMS setting 2. Multiply the air consumption (9.8 scfm) obtained in Step 1 by the air X Factor multiplier (0.48) in Step 2 to determine the air consumption at EMS setting 2 (Figure 3).

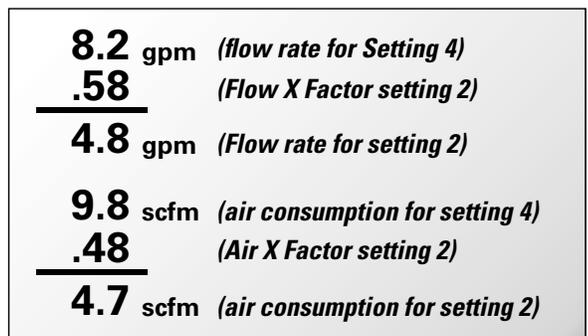


Figure 3

The flow rate and air consumption at Setting 2 are found to be 18.2 lpm (4.8 gpm) and 7.9 Nm³/h (4.7 scfm) respectively.

Example 2.1

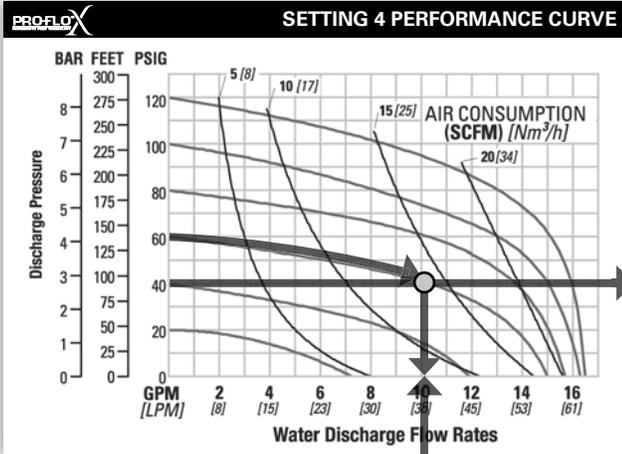


Figure 4

Example data point = **10.2** gpm

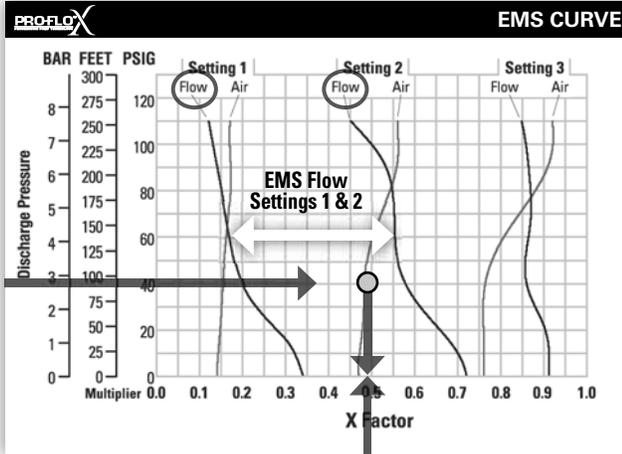


Figure 5

0.49 flow multiplier

This is an example showing how to determine the inlet air pressure and the EMS setting for your Pro-Flo X™ pump to optimize the pump for a specific application. For this example we will be using an application requirement of 18.9 lpm (5 gpm) flow rate against 2.8 bar (40 psig) discharge pressure. This example will illustrate how to calculate the air consumption that could be expected at this operational point.

DETERMINE EMS SETTING

Step 1: Establish inlet air pressure. Higher air pressures will typically allow the pump to run more efficiently, however, available plant air pressure can vary greatly. If an operating pressure of 6.9 bar (100 psig) is chosen when plant air frequently dips to 6.2 bar (90 psig) pump performance will vary. Choose an operating pressure that is within your compressed air system's capabilities. For this example we will choose 4.1 bar (60 psig).

Step 2: Determine performance point at setting 4. For this example an inlet air pressure of 4.1 bar (60 psig) inlet air pressure has been chosen. Locate the curve that represents the performance of the pump with 4.1 bar (60 psig) inlet air pressure. Mark the point where this curve crosses the horizontal line representing 2.8 bar (40 psig) discharge pressure. After locating this point on the flow curve, draw a vertical line downward until reaching the bottom scale on the chart and identify the flow rate.

In our example it is 38.6 lpm (10.2 gpm). This is the setting 4 flow rate. Observe the location of the performance point relative to air consumption curves and approximate air consumption value. In our example setting 4 air consumption is 24 Nm³/h (14 scfm). See figure 4.

Step 3: Determine flow X Factor. Divide the required flow rate 18.9 lpm (5 gpm) by the setting 4 flow rate 38.6 lpm (10.2 gpm) to determine the flow X Factor for the application.

$$5 \text{ gpm} / 10.2 \text{ gpm} = 0.49 \text{ (flow X Factor)}$$

Step 4: Determine EMS setting from the flow X Factor. Plot the point representing the flow X Factor (0.49) and the application discharge pressure 2.8 bar (40 psig) on the EMS curve. This is done by following the horizontal 2.8 bar (40 psig) psig discharge pressure line until it crosses the vertical 0.49 X Factor line. Typically, this point lies between two flow EMS setting curves (in this case, the point lies between the flow curves for EMS setting 1 and 2). Observe the location of the point relative to the two curves it lies between and approximate the EMS setting (figure 5). For more precise results you can mathematically interpolate between the two curves to determine the optimal EMS setting.

For this example the EMS setting is 1.8.

Example 2.2

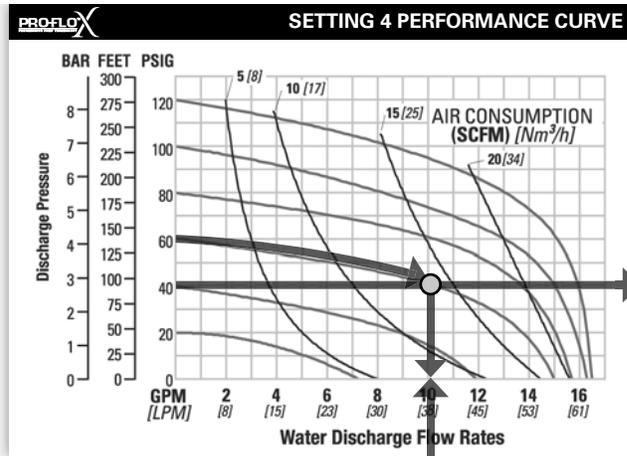


Figure 6

Example data point = **10.2** gpm

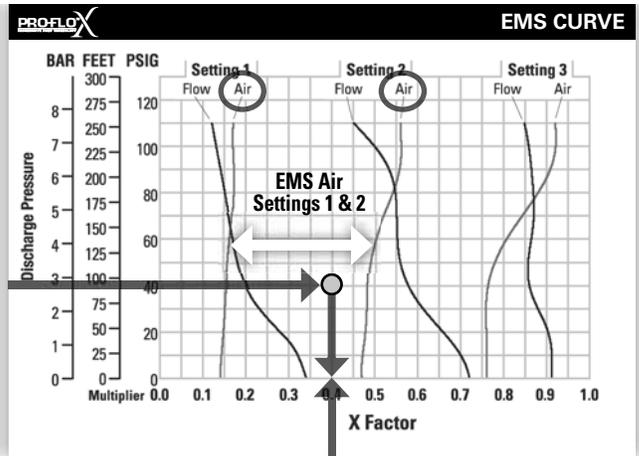


Figure 7

Example data point = **0.40** air multiplier

Determine air consumption at a specific EMS setting.

Step 1: Determine air X Factor. In order to determine the air X Factor, identify the two air EMS setting curves closest to the EMS setting established in example 2.1 (in this case, the point lies between the air curves for EMS setting 1 and 2). The point representing your EMS setting (1.8) must be approximated and plotted on the EMS curve along the horizontal line representing your discharge pressure (in this case, 40 psig). This air point is different than the flow point plotted in example 2.1. After estimating (or interpolating) this point on the curve, draw a vertical line downward until reaching the bottom scale on the chart and identify the air X Factor (figure 7).

For this example the air X Factor is **0.40**

Step 2: Determine air consumption. Multiply your setting 4 air consumption (14 scfm) value by the air X Factor obtained above (0.40) to determine your actual air consumption.

$$14 \text{ scfm} \times 0.40 = 5.6 \text{ SCFM}$$

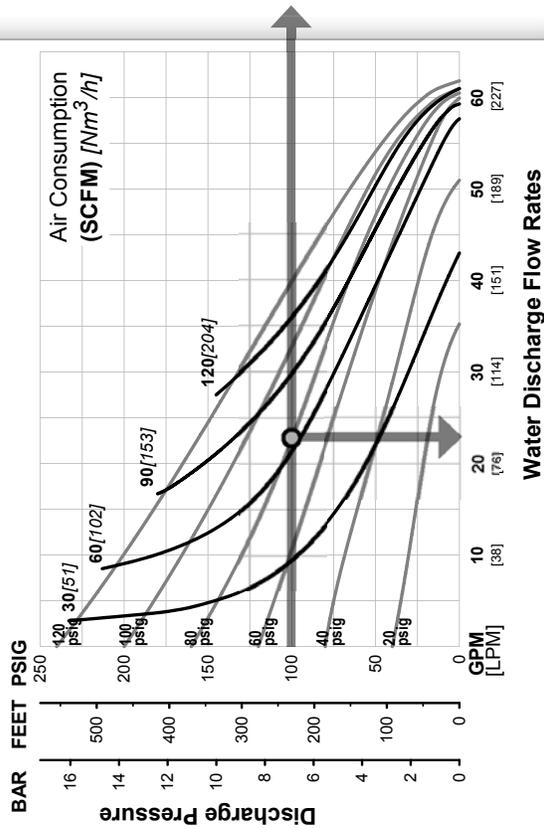
In summary, for an application requiring 18.9 lpm (5 gpm) against 2.8 bar (40 psig) discharge pressure, the pump inlet air pressure should be set to 4.1 bar (60 psig) and the EMS dial should be set to 1.8. The pump would then consume 9.5 Nm³/h (5.6 scfm) of compressed air.



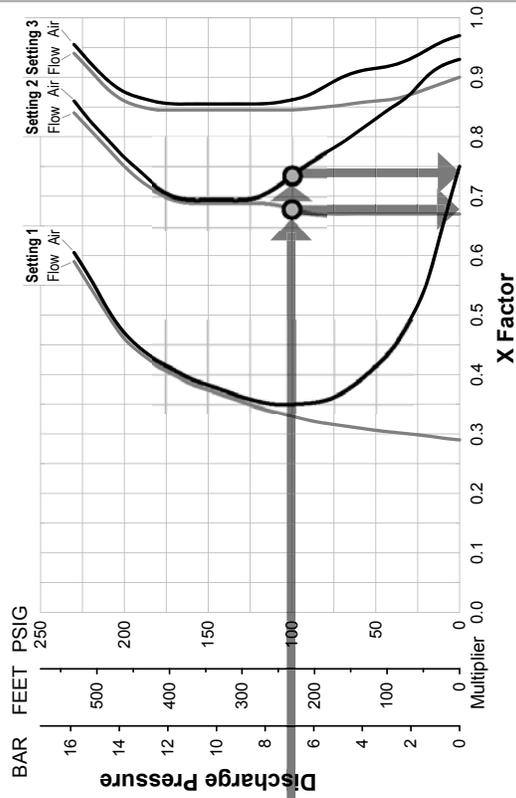
PERFORMANCE

HX400S ALUMINUM TPE-FITTED

SETTING 4 PERFORMANCE CURVE



EMS CURVE



TECHNICAL DATA

Height.....	605 mm (23.8")
Width.....	345 mm (13.6")
Depth.....	310 mm (12.2")
Est. Ship Weight.....	Aluminum 27 kg (60 lbs)
Air Inlet.....	19 mm (3/4")
Inlet.....	38 mm (1-1/2")
Outlet.....	38 mm (1-1/2")
Suction Lift.....	2.5 m Dry (8.2') 8.6 m Wet (28.2')
Disp. Per Stroke.....	0.5 l (0.12 gal) ¹
Max. Flow Rate.....	235 lpm (62 gpm)
Max. Size Solids.....	8.0 mm (5/16")

¹Displacement per stroke was calculated at 4.8 bar (70 psig) air inlet pressure against a 2.1 bar (30 psig) head pressure.

The Efficiency Management System (EMS) can be used to optimize the performance of your Wilden pump for specific applications. The pump is delivered with the EMS adjusted to setting 4, which allows maximum flow.

The EMS curve allows the pump user to determine flow and air consumption at each EMS setting. For any EMS setting and discharge pressure, the "X factor" is used as a multiplier with the original values from the setting 4 performance curve to calculate the actual flow and air consumption values for that specific EMS setting.

NOTE: you can interpolate between the setting curves for operation at intermediate EMS settings.

EXAMPLE

A HX400S aluminum, TPE-fitted pump operating at EMS setting 4, achieved a flow rate of 87 lpm (23 gpm) using 110 Nm³/h (65 scfm) of air when run at 5.5 bar (80 psig) air inlet pressure and 6.9 bar (100 psig) discharge pressure (See dot on performance curve).

The end user did not require that much flow and wanted to reduce air consumption at his facility. He determined that EMS setting 2 would meet his needs. At 6.9 bar (100 psig) discharge pressure and EMS setting 2, the flow "X factor" is 0.74 and the air "X factor" is 0.68 (see dots on EMS curve).

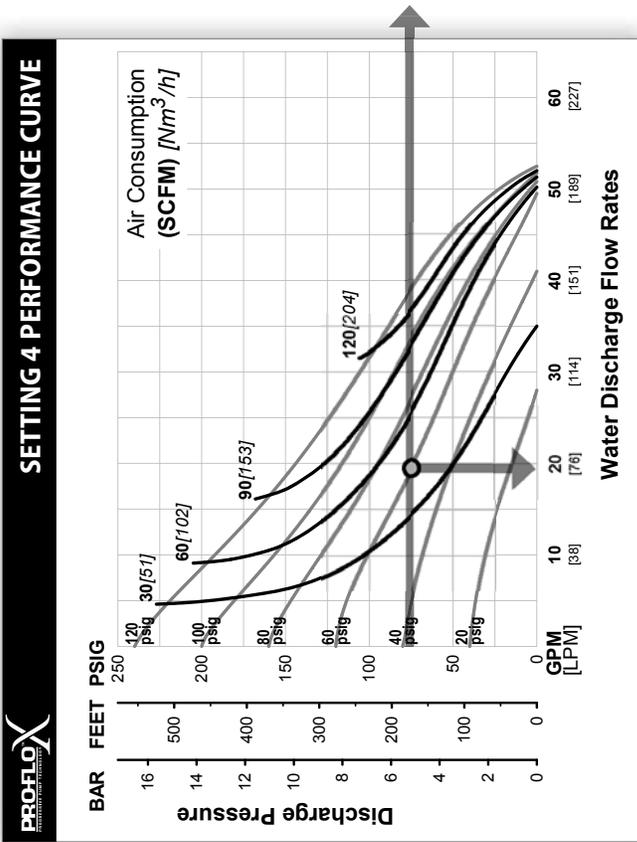
Multiplying the original setting 4 values by the "X factors" provides the setting 2 flow rate of 64 lpm (17 gpm) and an air consumption of 75 Nm³/h (44 scfm). The flow rate was reduced by 26% while the air consumption was reduced by 32%, thus providing increased efficiency.

For a detailed example for how to set your EMS, see end of performance curve section.

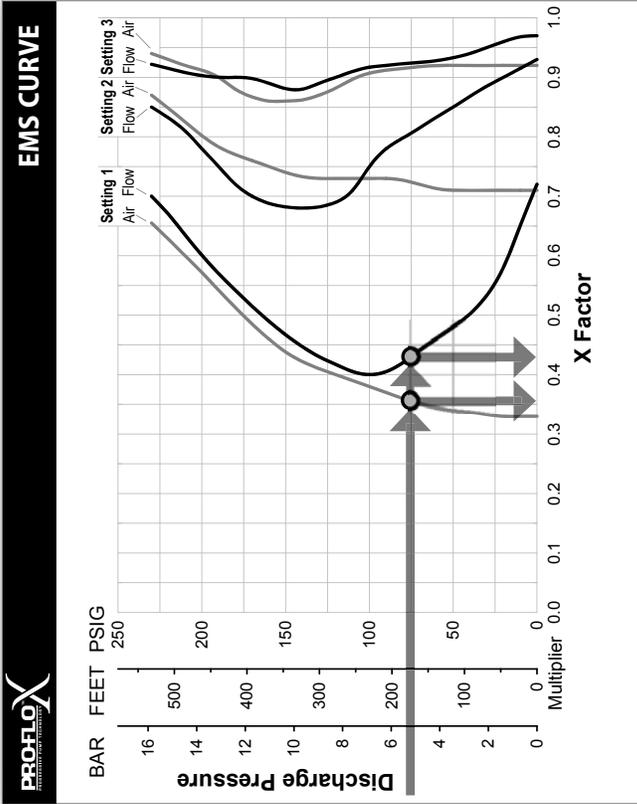
CAUTION: Do not exceed 8.6 bar (125 psig) air supply pressure.

HX400S STAINLESS STEEL TPE-FITTED

SETTING 4 PERFORMANCE CURVE



EMS CURVE



TECHNICAL DATA

Height.....	528 mm (20.8")
Width.....	384 mm (15.1")
Depth.....	310 mm (12.2")
Est. Ship Weight.....	Stainless Steel 37 kg (82 lb)
Air Inlet.....	19 mm (3/4")
Inlet.....	38 mm (1-1/2")
Outlet.....	38 mm (1-1/2")
Suction Lift.....	2.3 m Dry (8.2') 8.6 m Wet (28.2')
Disp. Per Stroke.....	0.4 l (0.11 gal) ¹
Max. Flow Rate.....	199 lpm (53 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 2.1 bar (30 psig) head pressure.

The Efficiency Management System (EMS™) can be used to optimize the performance of your Wilden pump for specific applications. The pump is delivered with the EMS adjusted to setting 4, which allows maximum flow.

The EMS curve allows the pump user to determine flow and air consumption at each EMS setting. For any EMS setting and discharge pressure, the "X factor" is used as a multiplier with the original values from the setting 4 performance curve to calculate the actual flow and air consumption values for that specific EMS setting.

NOTE: you can interpolate between the setting curves for operation at intermediate EMS settings.

EXAMPLE

A HX400S stainless steel, TPE-fitted pump operating at EMS setting 4, achieved a flow rate of 72 lpm (19 gpm) using 76 Nm³/h (45 scfm) of air when run at 4.1 bar (60 psig) air inlet pressure and 5.2 bar (75 psig) discharge pressure (See dot on performance curve).

The end user did not require that much flow and wanted to reduce air consumption at his facility. He determined that EMS setting 1 would meet his needs. At 5.2 bar (75 psig) discharge pressure and EMS setting 1, the flow "X factor" is 0.43 and the air "X factor" is 0.36 (see dots on EMS curve).

Multiplying the original setting 4 values by the "X factors" provides the setting 1 flow rate of 31 lpm (8 gpm) and an air consumption of 28 Nm³/h (16 scfm). The flow rate was reduced by 57% while the air consumption was reduced by 64%, thus providing increased efficiency.

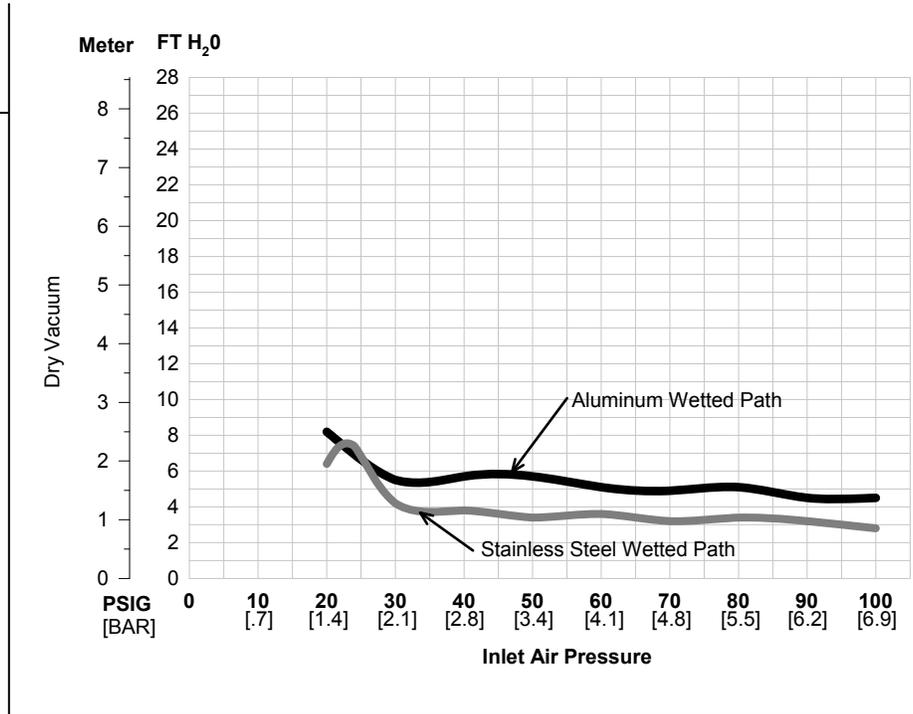
For a detailed example for how to set your EMS, see end of performance curve section.

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



SUCTION LIFT CURVE

HX400S METAL



Suction lift curves are calibrated for pumps operating at 305 m (1,000') 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.

Wilden pumps are designed to meet the performance requirements of even the most demanding pumping applications. They have been designed and manufactured to the highest standards and are available in a variety of liquid-path materials to meet your chemical-resistance needs. Refer to the performance section of this manual for an in-depth analysis of the performance characteristics of your pump. Wilden offers the widest variety of elastomer options in the industry to satisfy temperature, chemical-compatibility, abrasion-resistance and flex concerns.

The suction-pipe size should be at least the equivalent or larger than the diameter size of the suction inlet on your Wilden pump. The suction hose must be non-collapsible, reinforced type as these pumps are capable of pulling a high vacuum. Discharge piping should also be the equivalent or larger than the diameter of the pump discharge which will help 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 where equipment will be situated on the production floor. Multiple installations with conflicting requirements can result in congestion of utility areas, leaving few choices for additional pumps.

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

ACCESS: First of all, the pump's location should be easily 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.

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. Use air pressure up to a maximum of 8.6 bar (125 psig) depending on pumping requirements.

For best results, the pumps should use a 5 μ (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.

SOLENOID OPERATION: When operation is controlled by a solenoid valve in the air line, three-way valves should be used. This valve allows trapped air between the valve and the pump to bleed off which improves pump performance. Pumping volume can be estimated by counting the number of strokes per minute and then multiplying the figure by the displacement per stroke.

MUFFLER: Sound levels are reduced below OSHA specifications using the standard Wilden muffler. Other mufflers can be used to further reduce sound levels, but they usually reduce pump performance.

ELEVATION: Selecting a site that is well within the pump's dynamic 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 site location.

PIPING: Final determination of the pump site should not be made until the piping challenges of each possible location have been evaluated. The impact of current and future installations should be consid-

ered ahead of time to make sure that inadvertent restrictions are not created for any remaining sites.

The best choice possible to locate the pump will be a site featuring the shortest and straightest hook-up of suction and discharge piping. Unnecessary elbows, bends, and fittings should be avoided. Pipe sizes should be selected to keep friction losses within practical limits. All piping should be supported independently of the pump. In addition, the piping should be aligned to avoid placing stress on the pump fittings.

Flexible hose or 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 location, a mounting pad placed between the pump and the 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 (SD Equalizer[®]) should be installed to protect the pump, piping and gauges from surges and water hammer.

If the pump is to be used in a self-priming application, make sure that all connections are airtight and that the suction lift is within the model's ability.

NOTE: Materials of construction and elastomer material have an effect on suction-lift parameters. Please refer to the performance section for specifics.

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.

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 0.7 bar (10 psig) and higher.

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.

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.

SUBMERSIBLE APPLICATIONS: Pro-Flo X[™] pumps can be used for submersible applications, when using the Pro-Flo X[™] submersible option. Turbo-Flo[™] pumps can also be used for submersible applications.

NOTE: Pro-Flo[®] and Accu-Flo[™] pumps are not submersible.

ALL WILDEN PUMPS ARE CAPABLE OF PASSING SOLIDS. A STRAINER SHOULD BE USED ON THE PUMP INTAKE TO ENSURE THAT THE PUMP'S RATED SOLIDS CAPACITY IS NOT EXCEEDED.

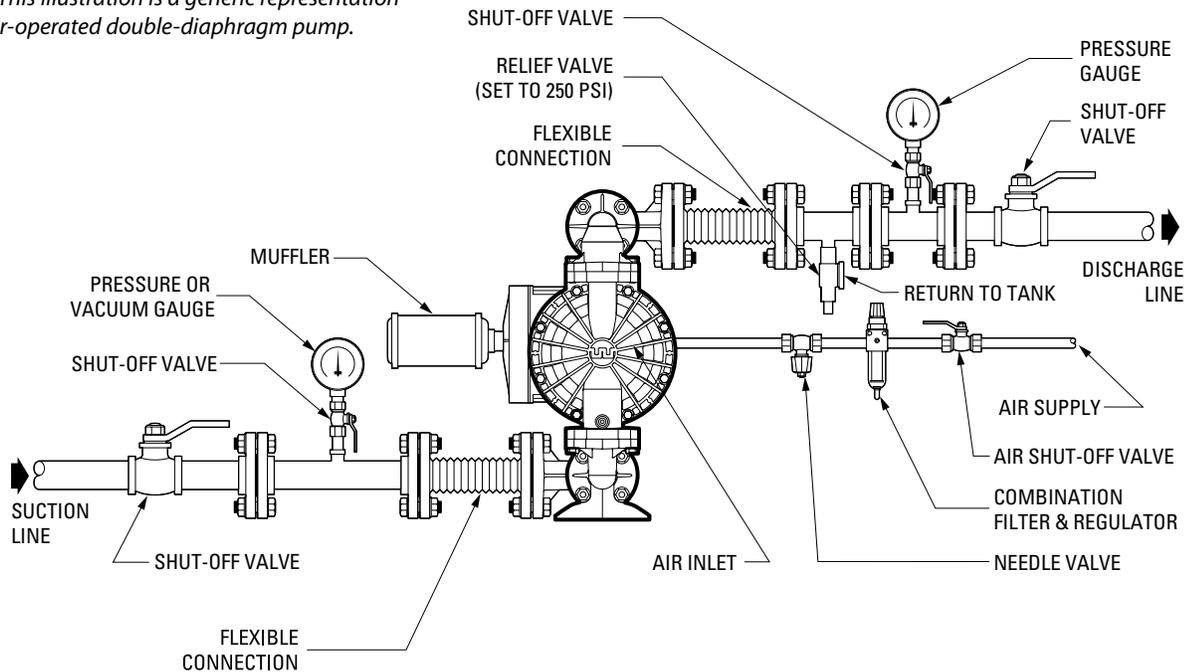
CAUTION: DO NOT EXCEED 8.6 BAR (125 PSIG) AIR SUPPLY PRESSURE.

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

NOTE: In the event of a power failure, the shut-off valve should be closed if the restarting of the pump is not desired once power is regained.

SUGGESTED INSTALLATION

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



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 so that it can be reached safely in an emergency situation.

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

SUGGESTED OPERATION & MAINTENANCE

OPERATION: The HX400S is pre-lubricated, and does not require in-line lubrication. Additional lubrication will not damage the pump; however, if the pump is heavily lubricated by an external source, the pump's internal lubrication may be washed away. If the pump is then moved to a non-lubricated location, it may need to be disassembled and re-lubricated as described in the ASSEMBLY/DISASSEMBLY INSTRUCTIONS.

The 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. The 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. At this point, the pump has reached a "deadhead" condition and can be restarted

by reducing the fluid discharge pressure or increasing the air inlet pressure. Wilden® pumps run solely on compressed air and do not generate heat, therefore the temperature of the process fluid will not be affected.

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, operation and service should be informed of any abnormalities that are detected during operation.

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.

PUMP WILL NOT RUN OR RUNS SLOWLY.

1. Ensure that the air inlet pressure is at least 0.4 bar (6 psig) above startup pressure and that the differential pressure (the difference between air inlet and liquid discharge pressures) is not less than 0.7 bar (10 psig).
2. Check air inlet filter for debris (see recommended installation).
3. Check for extreme air leakage (blow by) which would indicate worn seals/bores in the air valve, pilot spool, main shaft.
4. Disassemble pump and check for obstructions in the air passageways or objects which would obstruct the movement of internal parts.
5. Check for sticking ball check valves. If material being pumped is not compatible with pump elastomers, swelling may occur. Replace ball check valves and seals with proper elastomers. Also, as the check valve balls wear out, they become smaller and can become stuck in the seats. In this case, replace balls and seats.
6. Check for broken inner piston which will cause the air valve spool to be unable to shift.
7. Remove plug from pilot spool exhaust.

PUMP RUNS BUT LITTLE OR NO PRODUCT FLOWS.

1. Check for pump cavitation; slow pump speed down to allow thick material to flow into liquid chambers.
2. Verify that vacuum required to lift liquid is not greater than the vapor pressure of the material being pumped (cavitation).
3. Check for sticking ball check valves. If material being pumped is not compatible with pump elastomers, swelling may occur. Replace ball check valves and seats with proper elastomers. Also, as the check valve balls wear out, they become smaller and can become stuck in the seats. In this case, replace balls and seats.

PUMP AIR VALVE FREEZES.

1. Check for excessive moisture in compressed air; either install a dryer or hot-air generator for compressed air. Alternatively, a coalescing filter may be used to remove the water from the compressed air in some applications.

AIR BUBBLES IN PUMP DISCHARGE.

1. Check for ruptured diaphragm.
2. Check tightness of outer pistons (refer to Section 7).
3. Check tightness of fasteners and integrity of O-rings and seals, especially at intake manifold.
4. Ensure pipe connections are airtight.

PRODUCT COMES OUT AIR EXHAUST.

1. Check for diaphragm rupture.
2. Check tightness of outer pistons to shaft.



PUMP DISASSEMBLY

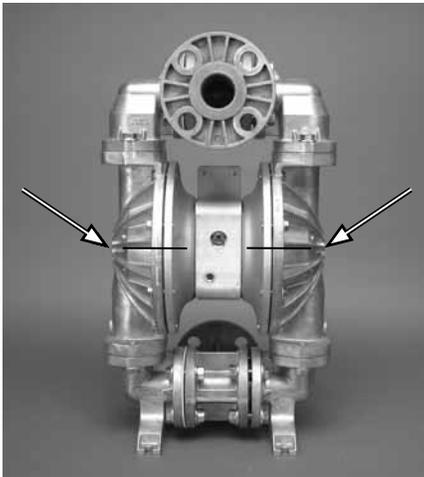
TOOLS REQUIRED:

- 9/16" Wrench
- 3/4" Wrench
- Adjustable Wrench
- Vise equipped w/soft jaws (such as plywood, plastic or other suitable material)

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

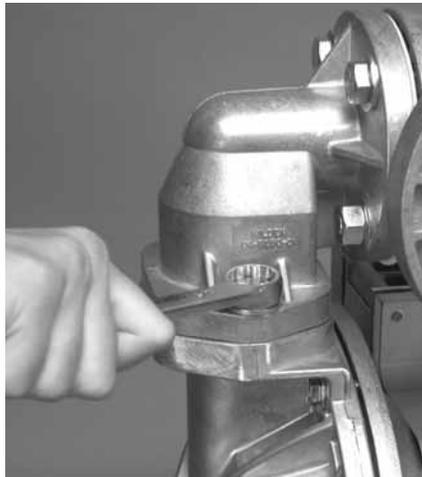
any hazardous effects of contact with your process fluid.

NOTE: All O-rings used in the pump are made of special material and at any of sign of hardness should be replaced with only factory-supplied parts.



Step 1.

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



Step 2.

Using a 3/4" wrench, loosen the discharge manifold from the liquid chambers.



Step 3.

Remove the discharge manifold to expose the top-left valve ball.

NOTE: the HX400S pump does not use valve balls in the amplification chamber.



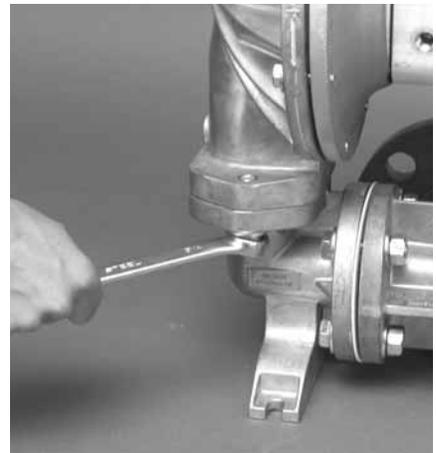
Step 4.

Remove the discharge valve ball, valve seat and valve seat O-ring from the left liquid chamber and inspect for nicks, gouges, chemical attack or abrasive wear. Replace worn parts with genuine Wilden® parts for reliable performance.



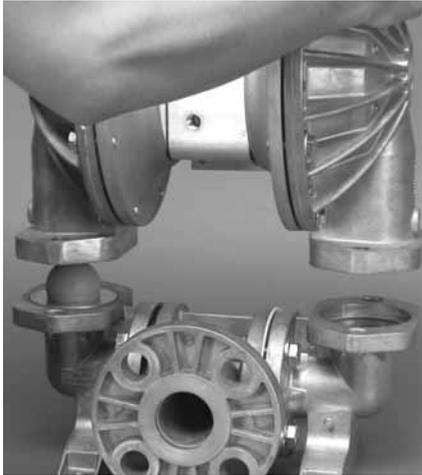
Step 5.

To ensure no excessive wear or damage has occurred to the amplification chamber plug O-rings, remove plugs located between top and bottom tee sections and elbows (right side of pump only). Inspect and replace seat plug O-rings if necessary. Install Buna® O-ring on air side of plug and the encapsulated Viton® O-ring on liquid side of plug.



Step 6.

Using a 3/4" wrench, loosen the inlet manifold from the liquid chambers.



Step 7.

Lift liquid chambers and center section away from inlet manifold to expose left inlet valve ball, valve seat and valve seat O-ring. Inspect for nicks, gouges, chemical attack or abrasive wear.



Step 8.

Using a 9/16" wrench, remove the liquid chamber from the center section.



Step 9.

The liquid chamber should be removed to expose the diaphragm and outer piston.



Step 10.

Using an adjustable wrench, remove the diaphragm assembly from diaphragm shaft by turning counter-clockwise.



Step 11.

After loosening and removing the diaphragm assembly, remove opposite liquid chamber.



Step 12.

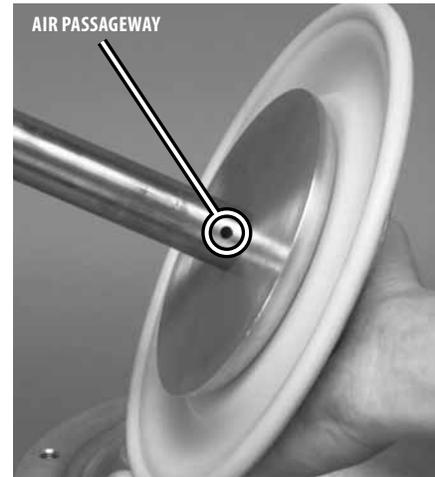
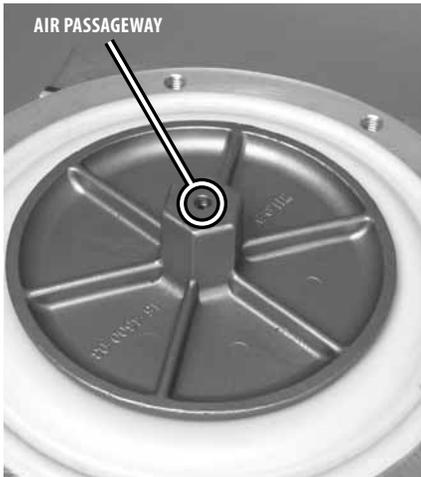
After removing the opposite liquid chamber, the remaining diaphragm assembly and diaphragm shaft can be easily removed.



Step 13.

To remove diaphragm assembly from shaft, secure shaft with soft jaws (a vise fitted with plywood, plastic or other suitable material) to ensure shaft is not nicked, scratched or gouged. Using an adjustable wrench, remove diaphragm assembly from shaft. Inspect all parts for wear and replace with genuine Wilden[®] parts, if necessary.

HX400S PISTON & SHAFT ORIENTATION



The outer piston on the side of the amplification chamber has an air passageway at the center of the outer piston lug. This air passageway allows air to flow from the opposite air chamber to the amplification chamber. This principle is how the HX400S high-pressure pump achieves a 2:1 ratio of inlet air pressure to discharge pressure. When reassembling the HX400S pump, the outer piston (with the air passageway) has to be positioned on the same side as the amplification chamber. If it is not reassembled correctly, the pump will not operate and process fluid will enter the air distribution system through the air passageway located at the shaft lug.

This same air passageway continues through the diaphragm shaft, exits out of the diaphragm shaft via a 90° turn and into the air chamber located on the wetted side of the pump. The air passageway has to be positioned in the air chamber on the wetted side of the pump, opposite the amplification chamber.

AIR VALVE / CENTER SECTION DISASSEMBLY

TOOLS REQUIRED:

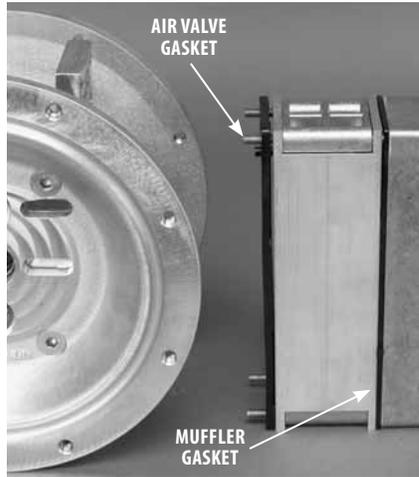
- 3/16" Hex Head Wrench
- 1/4" Hex Head Wrench
- Snap Ring Pliers
- O-Ring Pick

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 hazardous effects of contact with your process fluid.



Step 1.

Using a 3/16" hex head wrench, loosen air valve bolts.



Step 2.

Remove muffer plate and air valve bolts from air valve assembly. Lift away air valve assembly and remove air valve gasket and muffer plate gasket for inspection. Replace if necessary.



Step 3.

Remove air valve end cap to expose air valve spool by simply lifting up on end cap once air valve bolts are removed.

NOTE: Pro-Flo X™ air valve incorporates an end cap at both ends of the air valve.



Step 4.

Remove the air valve spool from the air valve body by threading one air valve bolt into the end of the air valve spool and gently sliding the spool out of the air valve body. Inspect seals for signs of wear and replace entire assembly if necessary.



Step 5.

Remove pilot sleeve retaining snap ring on both sides of center section with snap ring pliers.

Use caution when handling air valve spool to prevent damaging seals.

NOTE: Seals should not be removed from assembly. Seals are not sold separately.

AIR VALVE / CENTER SECTION DISASSEMBLY



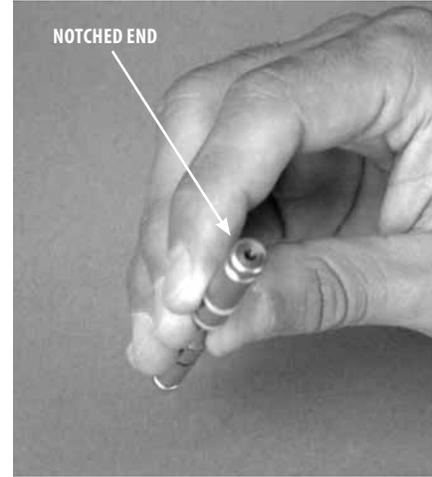
Step 6.

Remove pilot spool sleeve from center section.



Step 7.

Using an O-ring pick, gently remove the O-ring from the opposite side of the “notched end” on one side of the pilot spool. Gently remove the pilot spool from pilot spool sleeve and inspect for nicks, gouges and wear. Replace pilot sleeve or outer sleeve O-rings if necessary. During re-assembly, never insert the pilot spool into the sleeve with the “notched end” first, this end incorporates the urethane O-ring and will be damaged as it slides over the ports cut in the sleeve.

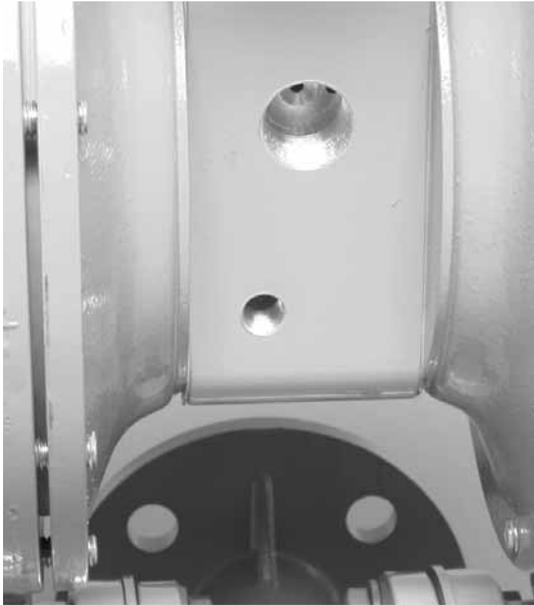


NOTE: Seals should not be removed from pilot spool. Seals are not sold separately.



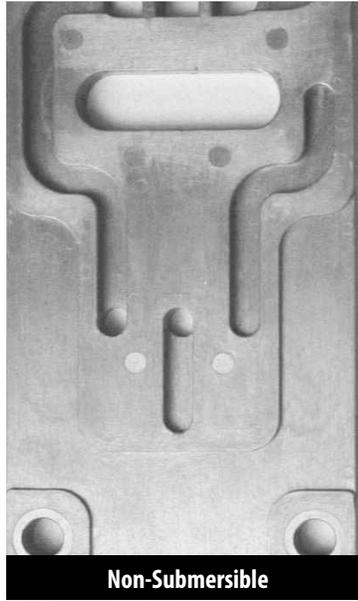
Step 8.

Check center section Glyd[™] rings for signs of wear. If necessary, remove Glyd[™] rings with O-ring pick and replace.



Step 1.

Install a 1/4" NPT pipe plug (00-7010-08) into the pilot spool bleed port located at the front of the center block.



Step 2.

Next, install an optional submersible air valve gasket (04-2621-52). The submersible air valve gasket can be purchased as a spare part or included with the purchase of a new Pro-Flo X™ pump.



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.

- Lubricate air valve bore, center section shaft and pilot spool bore with NLGI grade 2 white EP bearing grease or equivalent.
- Clean the inside of the center section shaft bore to ensure no damage is done to new seals.
- A small amount of NLGI grade 2 white EP bearing grease can be applied to the muffler and air valve gaskets to locate gaskets during assembly.
- Make sure that the exhaust port on the muffler plate is centered between the two exhaust ports on the center section.
- Stainless-steel bolts should be lubricated to reduce the possibility of seizing during tightening.

PRO-FLO X™ MAXIMUM TORQUE SPECIFICATIONS	
Description of Part	Torque
Air Valve	13.6 N·m (120 in-lbs)
Air Chamber/Center Block	27.1 N·m (20 ft-lbs)
Outer Pistons, Rubber & PTFE	105.8 N·m (78 ft-lbs)
Liquid Chamber to Air Chamber, Aluminum	47.5 N·m (35 ft-lbs)
Liquid Chamber to Air Chamber, Stainless Steel	17.6 N·m (13 ft-lbs)
Manifolds, T-section, Aluminum	27.1 N·m (20 ft-lbs)
Manifolds, Stainless Steel	33.9 N·m (25 ft-lbs)

SHAFT SEAL INSTALLATION:

PRE-INSTALLATION

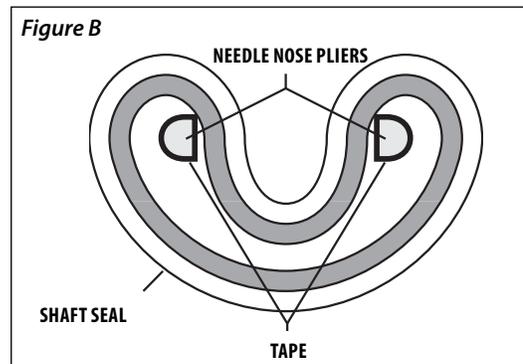
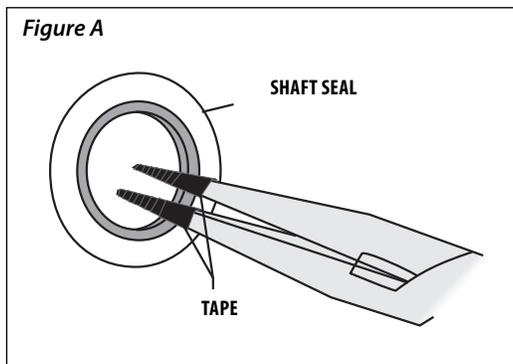
- Once all of the old seals have been removed, the inside of the bushing should be cleaned to ensure no debris is left that may cause premature damage to the new seals.

INSTALLATION

The following tools can be used to aid in the installation of the new seals:

Needle Nose Pliers • Phillips Screwdriver • Electrical Tape

- Wrap electrical tape around each leg of the needle nose pliers (heat shrink tubing may also be used). This is done to prevent damaging the inside surface of the new seal.
- With a new seal in hand, place the two legs of the needle nose pliers inside the seal ring. (See Figure A.)
- Open the pliers as wide as the seal diameter will allow, then with two fingers pull down on the top portion of the seal to form kidney bean shape. (See Figure B.)
- Lightly clamp the pliers together to hold the seal into the kidney shape. Be sure to pull the seal into as tight of a kidney shape as possible, this will allow the seal to travel down the bushing bore easier.
- With the seal clamped in the pliers, insert the seal into the bushing bore and position the bottom of the seal into the correct groove. Once the bottom of the seal is seated in the groove, release the clamp pressure on the pliers. This will allow the seal to partially snap back to its original shape.
- After the pliers are removed, you will notice a slight bump in the seal shape. Before the seal can be properly resized, the bump in the seal should be removed as much as possible. This can be done with either the Phillips screwdriver or your finger. With either the side of the screwdriver or your finger, apply light pressure to the peak of the bump. This pressure will cause the bump to be almost completely eliminated.
- Lubricate the edge of the shaft with NLGI grade 2 white EP bearing grease.
- Slowly insert the center shaft with a rotating motion. This will complete the resizing of the seal.
- Perform these steps for the remaining seal.



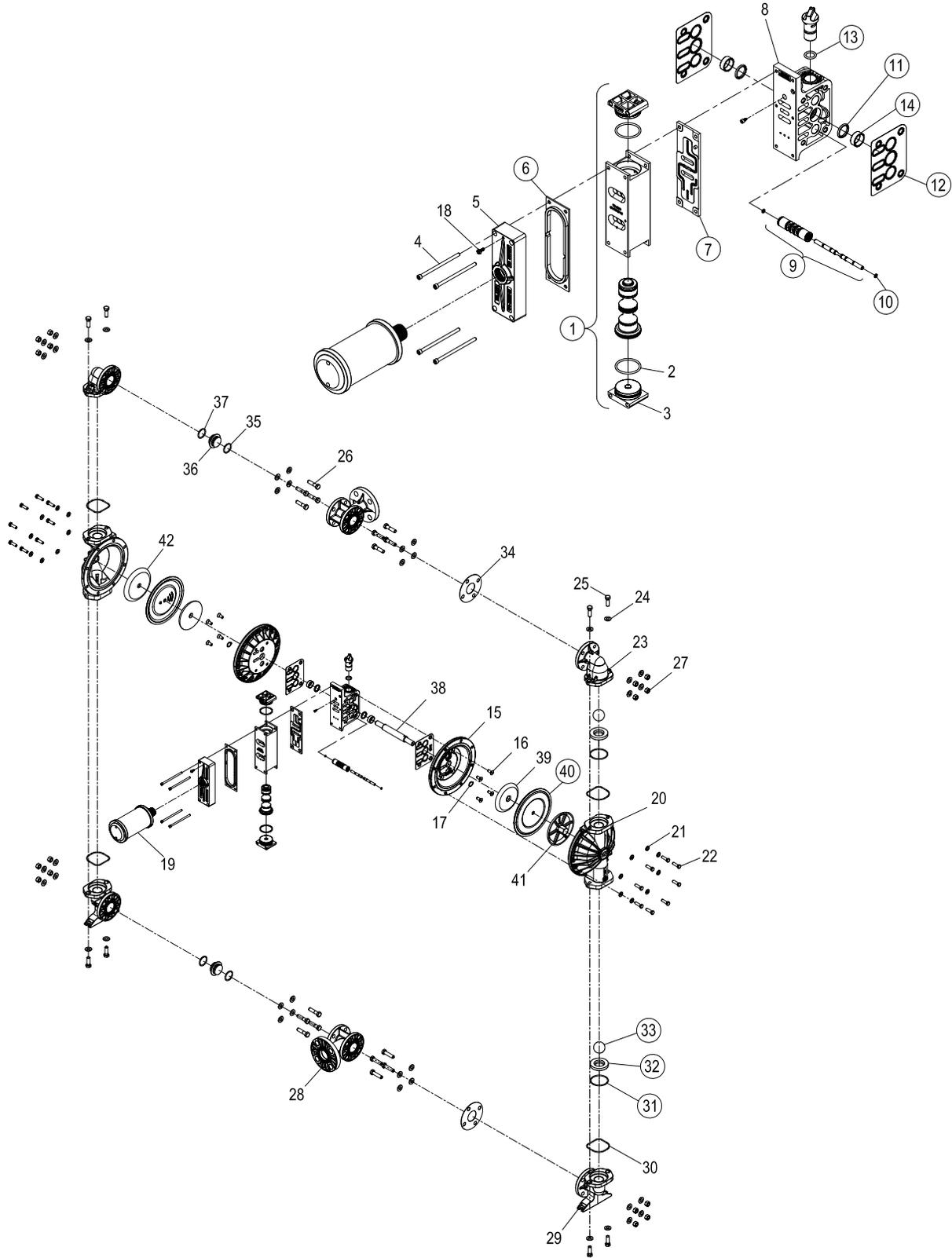


EXPLODED VIEW & PARTS LISTING

HX400S ALUMINUM

TPE-FITTED

EXPLODED VIEW





EXPLODED VIEW & PARTS LISTING



HX400S ALUMINUM

TPE-FITTED

PARTS LISTING

ITEM	DESCRIPTION	QTY.	XHX400S/ASAAA P/N
AIR DISTRIBUTION COMPONENTS			
1	Pro-Flo V™ Air Valve Assembly¹	1	04-2030-01
2	O-Ring (-225), End Cap (Ø1.859" x Ø.139")	2	04-2390-52-700
3	End Cap	2	04-2340-01
4	Screw, SHC, Air Valve (1/4"-20 x 4-1/2")	4	01-6000-03
5	Muffler Plate, Pro-Flo V™	1	04-3185-01
6	Gasket, Muffler Plate, Pro-Flo V™	1	04-3502-52
7	Gasket, Air Valve, Pro-Flo V™	1	04-2620-52
8	Center Block Assembly, Pro-Flo X™ ²	1	15-3126-01
9	Pilot Sleeve Assembly	1	04-3880-99
10	Pilot Spool Retaining O-Ring	2	04-2650-49-700
11	Shaft Seal	2	15-3210-55-225
12	Gasket, Center Block, Pro-Flo V™	2	04-3529-52
13	O-Ring (-210), Adjuster (Ø.734" x Ø.139")	1	02-2300-52
14	Bushing, Shaft	2	15-3306-13
15	Air Chamber, Pro-Flo V™	2	04-3694-01
16	Screw, HSFHS (3/8"-16 x 1")	8	71-6250-08
17	Retaining Ring	2	04-3890-03
18	Grounding Screw, 10-32 X .50" Self Tapping	1	04-6345-08
19	Muffler	1	15-3510-99R
WETTED PATH COMPONENTS			
20	Liquid Chamber	2	04-4980-01
21	Washer (3/8")	16	15-6740-08-50
22	Screw, HHC (3/8"-16 x 1-1/4")	16	04-6140-08
23	Discharge Elbow	2	04-5250-01
24	Washer (1/2")	40	04-6730-08
25	Screw, HHC (1/2"-13 x 1-1/2")	8	04-6180-08
26	Screw, HHC (1/2"-13 x 2")	16	04-6210-08
27	Hex Nut (1/2"-13)	16	15-6420-08
28	Tee, Section ANSI, XHX400S	2	04-5181-01
	Tee, Section DIN, XHX400S	2	04-5186-01
29	Inlet Elbow	2	04-5210-01
GASKETS/VALVE BALLS/VALVE SEATS/VALVE O-RINGS			
30	Manifold O-Ring (-237) (Ø3.359" x Ø.139")	4	04-1370-55
31	Valve Seat O-Ring (-232) (Ø2.734" x Ø.139")	4	04-1205-55
32	Seat, Valve	2	04-1125-01
33	Ball, Valve	2	04-1080-58
34	Gasket, Tee Section Manifold	2	04-1325-55
35	O-Ring (Ø1.484" x Ø.139") Viton®	2	05-1370-60
36	Seat, Plug, XHX400S	2	04-1135-01
37	O-Ring (Ø1.484" x Ø.139") Buna®-N	2	02-1230-52
FULL STROKE TPE COMPONENTS			
38	Shaft	1	04-3845-08
39	Piston, Inner	2	15-3750-01
40	Diaphragm, Primary	2	04-1011-57
41	Piston, Outer	1	15-4600-03
42	Piston, Outer	1	04-4565-03

¹ Air Valve Assembly includes items 2 and 3.

² Center Block Assembly includes item 11, 13 and 14.

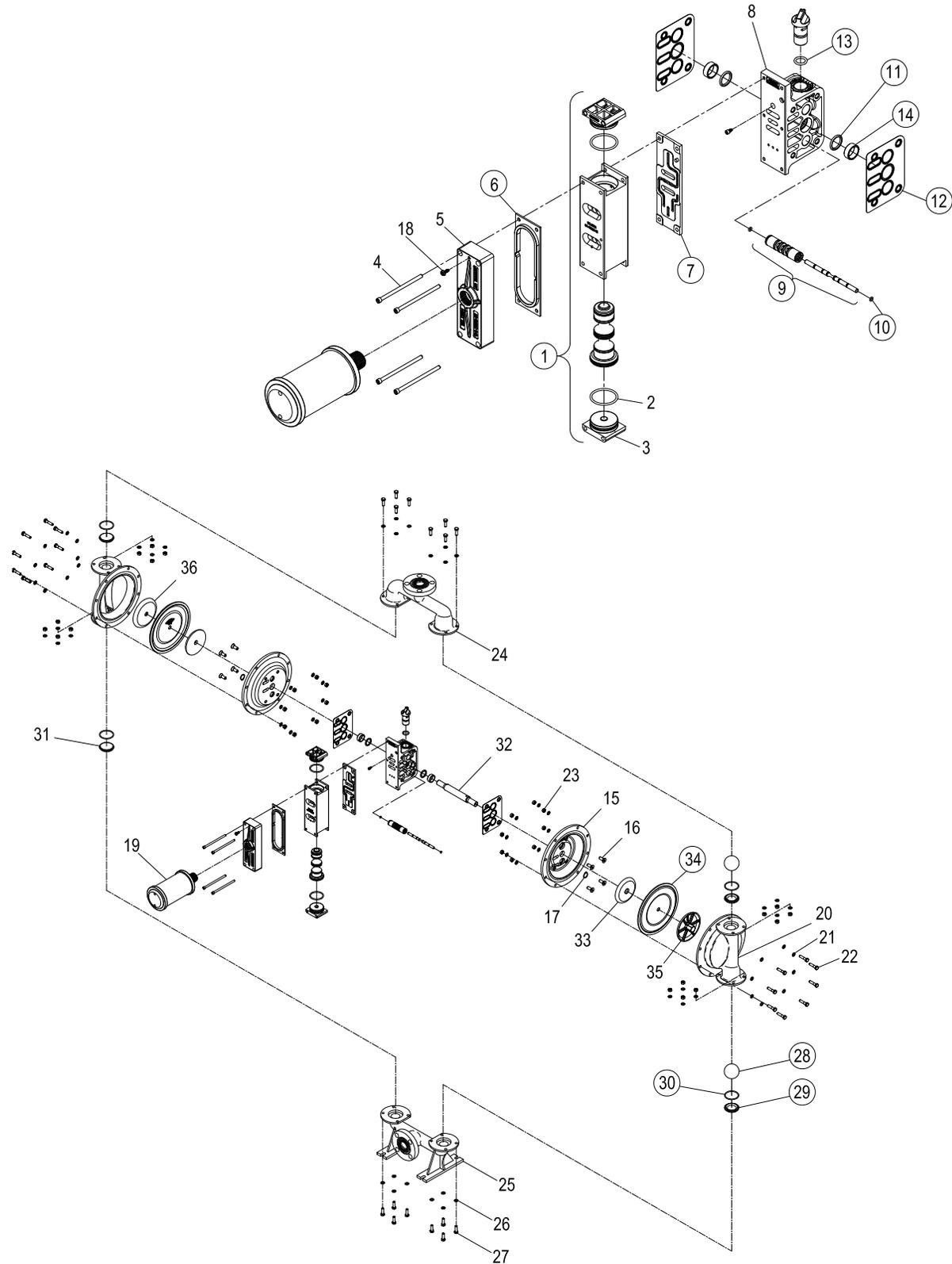
All **boldface** items are primary wear parts.

EXPLODED VIEW & PARTS LISTING

HX400S STAINLESS STEEL

TPE-FITTED

EXPLODED VIEW





EXPLODED VIEW & PARTS LISTING



HX400S STAINLESS STEEL

TPE - FITTED

PARTS LISTING

ITEM	DESCRIPTION	QTY.	XHX400S/SSAAA P/N	XHX400S/SSSSS P/N
AIR DISTRIBUTION COMPONENTS				
1	Pro-Flo V™ Air Valve Assembly¹	1	04-2030-01	04-2030-03
2	O-Ring (-225), End Cap (Ø1.859" x Ø.139")	2	04-2390-52-700	04-2390-52-700
3	End Cap	2	04-2340-01	04-2340-03
4	Screw, SHC, Air Valve (1/4"-20 x 4-1/2")	4	01-6000-03	01-6000-03
5	Muffler Plate, Pro-Flo V™	1	04-3185-01	04-3185-03
6	Gasket, Muffler Plate, Pro-Flo V™	1	04-3502-52	04-3502-52
7	Gasket, Air Valve, Pro-Flo V™	1	04-2620-52	04-2620-52
8	Center Block Assembly, Pro-Flo X™ ²	1	15-3126-01	15-3126-03
9	Pilot Sleeve Assembly	1	04-3880-99	04-3880-99
10	Pilot Spool Retaining O-Ring	2	04-2650-49-700	04-2650-49-700
11	Shaft Seal	2	15-3210-55-225	15-3210-55-225
12	Gasket, Center Block, Pro-Flo V™	2	04-3529-52	04-3529-52
13	O-Ring (-210), Adjuster (Ø.734" x Ø.139")	1	02-2300-52	02-2300-52
14	Bushing, Shaft	2	15-3306-13	15-3306-13
15	Air Chamber, Pro-Flo V™	2	04-3696-01	04-3694-03
16	Screw, HSFHS (3/8"-16 x 1")	8	71-6250-08	71-6250-08
17	Retaining Ring	2	04-3890-03	04-3890-03
18	Grounding Screw, 10-32 X .50" Self Tapping	1	04-6345-08	04-6345-08
19	Muffler	1	15-3510-99R	15-3510-99R
WETTED PATH COMPONENTS				
20	Liquid Chamber, Bolted	2	04-5000-03-42	04-5000-03-42
21	Disc Spring Washer, 5/16"	32	08-6810-03-42	08-6810-03-42
22	Screw, HHC (5/16"-18 x 1-3/8")	16	08-6100-03	08-6100-03
23	Hex Nut (5/16"-18)	32	08-6400-03	08-6400-03
24	Discharge Manifold, ANSI	1	04-5032-03	04-5032-03
	Discharge Manifold, DIN	1	04-5020-03-43	04-5020-03-43
25	Inlet Manifold, ANSI	1	04-5092-03	04-5092-03
	Inlet Manifold, DIN	1	04-5080-03-43	04-5080-03-43
26	Flat Washer (5/16")	32	08-6730-03-42	08-6730-03-42
27	Screw, HHC (5/16"-18 x 1")	16	08-6180-03-42	08-6180-03-42
GASKETS/VALVE BALLS/VALVE SEATS/VALVE O-RINGS				
28	Ball, Valve	2	04-1080-58	04-1080-58
29	Seat, Valve	2	04-1121-03	04-1121-03
30	Valve Seat O-Ring (-226) (Ø1.984" x Ø.139")	4	04-1200-55	04-1200-55
31	Seat, Plug, XHX400S	2	04-1135-03	04-1135-03
FULL STROKE TPE COMPONENTS				
32	Shaft	1	04-3846-08	04-3846-08
33	Piston, Inner	2	15-3750-01	15-3750-01
34	Diaphragm, Primary	2	04-1011-57	04-1011-57
35	Piston, Outer	1	15-4600-03	15-4600-03
36	Piston, Outer	1	04-4565-03	04-4565-03

¹ Air Valve Assembly includes items 2 and 3.

² Center Block Assembly includes item 11, 13 and 14.

All **boldface** items are primary wear parts.



NOTES

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

ABAQUE™
PERISTALTIC PUMPS
mouvex.com

ALMATEC®
AIR-OPERATED
DIAPHRAGM PUMPS
almatec.de

BLACKMER®
VANE PUMPS & COMPRESSORS
blackmer.com

ENVIROGEAR®
INTERNAL GEAR PUMPS
envirogearpump.com

FLUID DYNAMICS™
POLYMER BLENDING SYSTEMS
neptune1.com

GRISWOLD™
CENTRIFUGAL PUMPS
griswoldpump.com

MAAG® GROUP
GEAR PUMPS, PELLETIZING,
& FILTRATION SYSTEMS
maag.com

MOUVEX®
ECCENTRIC DISC PUMPS,
VANE PUMPS &
COMPRESSORS
mouvex.com

NEPTUNE™
DIAPHRAGM (METERING) PUMPS,
POLYMER SYSTEMS & MIXERS
neptune1.com

QUATTROFLOW™
4-PISTON DIAPHRAGM
quattroflow.com

REDSCREW™
SCREW PUMPS
redscrewpump.com

SYSTEM ONE®
CENTRIFUGAL PUMPS
blackmer.com

WILDEN®
AIR-OPERATED
DIAPHRAGM PUMPS
wildenpump.com



PSG reserves the right to modify the information and illustrations contained in this document without prior notice. This is a non-contractual document. 06-2012

22069 Van Buren Street,
Grand Terrace, CA 92313-5607
Telephone: (909) 422-1730
Fax: (909) 783-3440

www.wildenpump.com

Authorized Representative:

[Blank area for Authorized Representative information]