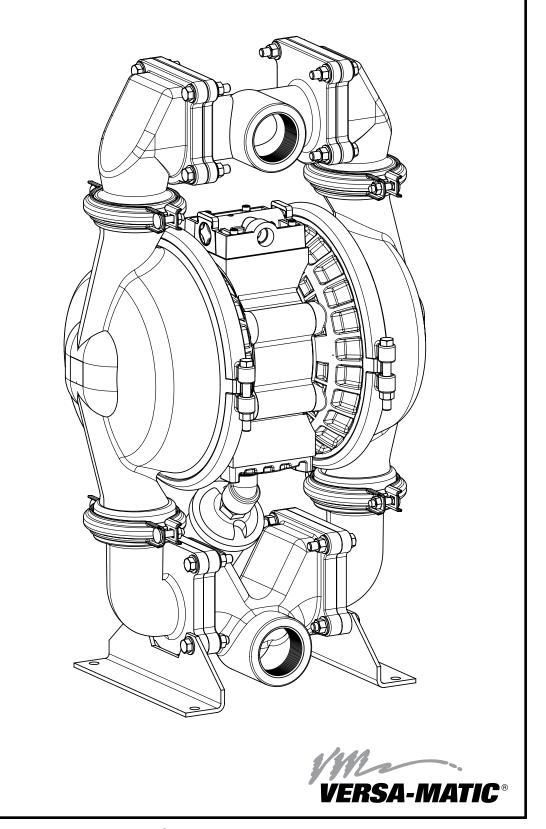
2" Ultra-Matic Metallic Flap Valve

U2 Metallic Pumps

Aluminum

U2 E⊞ (€



Safety Information

IMPORTANT



Read the safety warnings and instructions in this manual before pump installation and start-up. Failure to comply with the recommendations stated in this manual could damage the pump and void factory warranty.



When the pump is used for materials that tend to settle out or solidify, the pump should be flushed after each use to prevent damage. In freezing temperatures the pump should be completely drained between uses.

CAUTION



Before pump operation, inspect all fasteners for loosening caused by gasket creep. Retighten loose fasteners to prevent leakage. Follow recommended torques stated in this manual.



Nonmetallic pumps and plastic components are not UV stabilized. Ultraviolet radiation can damage these parts and negatively affect material properties. Do not expose to UV light for extended periods of time.



WARNING

Pump not designed, tested or certified to be powered by compressed natural gas. Powering the pump with natural gas will void the warranty.



The use of non-OEM replacement parts will void (or negate) agency certifications, including CE, ATEX, CSA, 3A and EC1935 compliance (Food Contact Materials). Warren Rupp, Inc. cannot ensure nor warrant non-OEM parts to meet the stringent requirements of the certifying agencies.

WARNING



When used for toxic or aggressive fluids, the pump should always be flushed clean prior to disassembly.



Before maintenance or repair, shut off the compressed air line, bleed the pressure, and disconnect the air line from the pump. Be certain that approved eye protection and protective clothing are worn at all times. Failure to follow these recommendations may result in serious injury or death.



Airborne particles and loud noise hazards. Wear eye and ear protection.



In the event of diaphragm rupture, pumped material may enter the air end of the pump, and be discharged into the atmosphere. If pumping a product that is hazardous or toxic, the air exhaust must be piped to an appropriate area for safe containment.



Take action to prevent static sparking. Fire or explosion can result, especially when handling flammable liquids. The pump, piping, valves, containers and other miscellaneous equipment must be properly grounded.



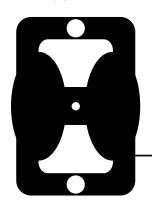
This pump is pressurized internally with air pressure during operation. Make certain that all fasteners are in good condition and are reinstalled properly during reassembly.



Use safe practices when lifting

Grounding the Pump

To be fully groundable, the pumps must be ATEX Compliant. Refer to the nomenclature page for ordering information.



Optional 8 foot long (244 centimeters) Ground Strap is available for easy ground connection.

To reduce the risk of static electrical sparking, this pump must be grounded. Check the local electrical code for detailed grounding instruction and the type of equipment required.

Refer to nomenclature page for ordering information.

WARNING



Take action to prevent static sparking. Fire or explosion can result, especially when handling flammable liquids. The pump, piping, valves, containers or other miscellaneous equipment must be grounded.



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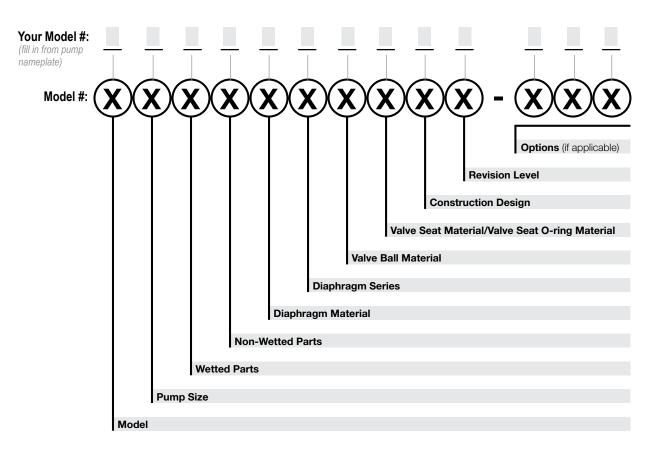
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Explanation of Pump Nomenclature

Your Serial #: (fill in from pump nameplate)



Model	Pump Size	Wetted Parts	Non-Wetted Parts	Diaphragm Material
E Elima-Matic	6 1/4"	A Aluminum	A Aluminum	1 Neoprene
U Ultra-Matic	8 3/8"	C Cast Iron	S Stainless Steel	2 Nitrile (Nitrile)
V V-Series	5 1/2"	S Stainless Steel	P Polypropylene	3 FKM (Fluorocarbon)
	7 3/4"	H Alloy C	G Groundable Acetal	4 EPDM
	1 1"	P Polypropylene	Z PTFE-coated Aluminum	5 PTFE
	4 1-1/4" or 1-1/2"	K Kynar	J Nickel-plated Aluminum	6 Santoprene XL
	2 2"	G Groundable Acetal	C Cast Iron	7 Hytrel
	3 3"	B Aluminum (screen mount)	Q Epoxy-Coated Aluminum	Y FDA Santoprene

Diaphragm Series	Valve Ball Material Valve	Seat/Valve Seat O-Ring Material	Construction Design	Miscellaneous Options
R Rugged	1 Neoprene	1 Neoprene	9 Bolted	B BSP Tapered Thread
D Dome	2 Nitrile	2 Nitrile	0 Clamped	CP Center Port
X Thermo-Matic	3 (FKM) Fluorocarbon	3 (FKM) Fluorocarbon		ATEX ATEX Compliant
T Tef-Matic (2-piece)	4 EPDM	4 EPDM	Design Level	FP Food Processing
B Versa-Tuff (1-piece)	5 PTFE	5 PTFE	A	SP Sanitary Pump
F FUSION (one-piece	6 Santoprene XL	6 Santoprene XL	C	HP High Pressure
integrated plate)	7 Hytrel	7 Hytrel		OE Original Elima-Matic
	8 Polyurethane	8 Polyurethane		F Flap Valve
	A Acetal	A Aluminum w/ PTFE O-Rings		HD Horizontal Discharge
	S Stainless Steel	S Stainless Steel w/ PTFE O-Rings		3A 3-A Certified
	Y FDA Santoprene	C Carbon Steel w/ PTFE O-Rings		UL UL Listed
		H Alloy C w/ PTFE O-Rings		OB Oil Bottle
		T PTFE Encapsulated Silicone O-R	ings	
		Y FDA Santoprene		



Materials

Material Profile:		Operating Temperatures:	
CAUTION! Operating temperature limitations are as follows:	Max.	Min.	
Conductive Acetal: Tough, impact resistant, ductile. Good abrasion resistance and low friction surface. Generally inert, with good chemical resistance except for strong acids and oxidizing agents.	190°F 88°C	-20°F -29°C	
EPDM: Shows very good water and chemical resistance. Has poor resistance to oils and solvents, but is fair in ketones and alcohols.	280°F 138°C	-40°F -40°C	
FKM: (Fluorocarbon) Shows good resistance to a wide range of oils and sovents; especially all aliphatic, aromatic and halogenated hydrocarbons, acids, animal and vegetable oils. Hot water or hot aqueous solutions (over 70°F) will attack FKM.	350°F 177°C	-40°F -40°C	
Hytrel®: Good on acids, bases, amines and glycols at room temperatures only.	220°F 104°C	-20°F -29°C	
Neoprene: All purpose. Resistance to vegetable oils. Generally not affected by moderate chemicals, fats, greases and many oils and solvents. Generally attacked by strong oxidizing acids, ketones, esters and nitro hydrocarbons and chlorinated aromatic hydrocarbons.		-10°F -23°C	
Nitrile: General purpose, oil-resistant. Shows good solvent, oil, water and hydraulic fluid resistance. Should not be used with highly polar solvents like acetone and MEK, ozone, chlorinated hydrocarbons and nitro hydrocarbons.	190°F 88°C	-10°F -23°C	
Nylon: 6/6 High strength and toughness over a wide temperature range. Moderate to good resistance to fuels, oils and chemicals.	180°F 82°C	32°F 0°C	

Polypropylene: A thermoplastic polymer. Moderate tensile and flex strength. Resists stong acids and alkali. Attacked by chlorine, fuming nitric acid and other strong oxidizing agents.	180°F 82°C	32°F 0°C
PVDF: (Polyvinylidene Fluoride) A durable fluoroplastic with excellent chemical resistance. Excellent for UV applications. High tensile strength and impact resistance.	250°F 121°C	0°F -18°C
Santoprene ®: Injection molded thermoplastic elastomer with no fabric layer. Long mechanical flex life. Excellent abrasion resistance.	275°F 135°C	-40°F -40°C
UHMW PE: A thermoplastic that is highly resistant to a broad range of chemicals. Exhibits outstanding abrasion and impact resistance, along with environmental stress-cracking resistance.		-35°F -37°C
Urethane: Shows good resistance to abrasives. Has poor resistance to most solvents and oils.	150°F 66°C	32°F 0°C
Virgin PTFE: (PFA/TFE) Chemically inert, virtually impervious. Very few chemicals are known to chemically react with PTFE; molten alkali metals, turbulent liquid or gaseous fluorine and a few fluoro-chemicals such as chlorine trifluoride or oxygen difluoride which readily liberate free fluorine at elevated temperatures.		-35°F -37°C

Maximum and Minimum Temperatures are the limits for which these materials can be operated. Temperatures coupled with pressure affect the longevity of diaphragm pump components. Maximum life should not be expected at the extreme limits of the temperature ranges.

Metals:

Alloy C: Equal to ASTM494 CW-12M-1 specification for nickel and nickel alloy.

Stainless Steel: Equal to or exceeding ASTM specification A743 CF-8M for corrosion resistant iron chromium, iron chromium nickel and nickel based alloy castings for general applications. Commonly referred to as 316 Stainless Steel in the pump industry.

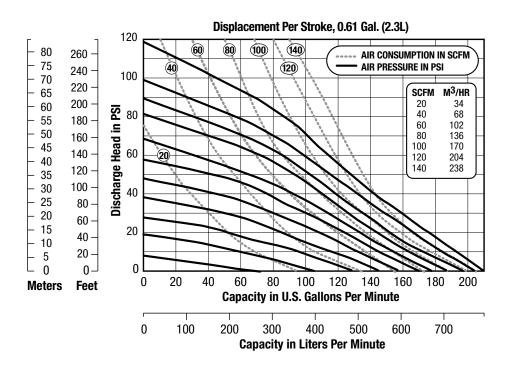
For specific applications, always consult the Chemical Resistance Chart.



Performance

U2 - 2" Metallic Food Processing

Flow Rate
Adjustable to 0-210 gpm (795 lpm)
Port Size
Suction 2" Female NPT (BSP)
Discharge 2" Female NPT (BSP)
Air Inlet
Air Exhaust
Suction Lift (Dry)
Rubber
PTFE
Max Solid Size (Diameter)
1.125" (29 mm)
Shipping Weights
Aluminum 77 lbs (35 kg)



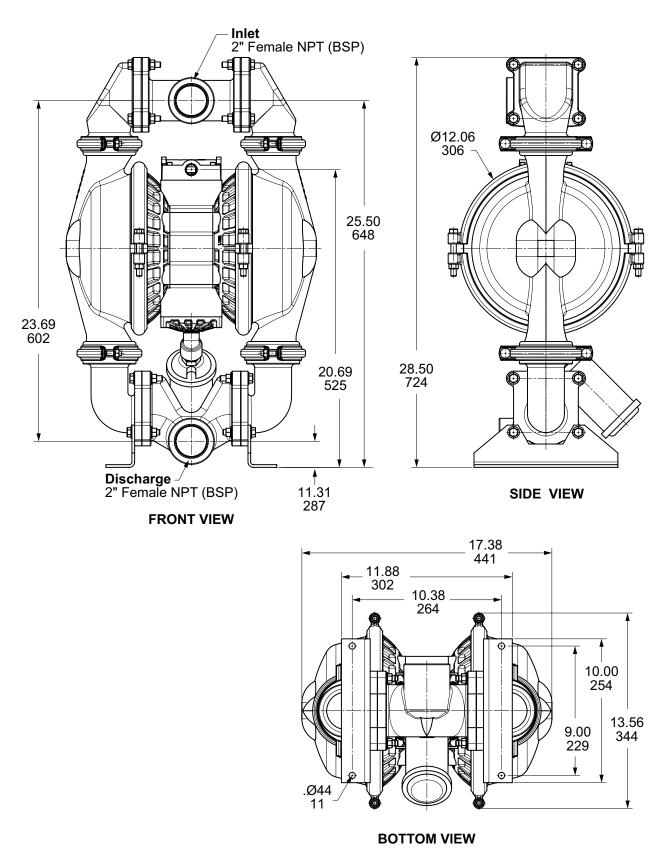
NOTE:For U2 pumps fitted with PTFE diaphragms, reduce water discharge figures by 20%. Suction lift is reduced to 10' (3.05m) dry and 20' (6.10m) wet.

CAUTION: Do not exceed 125 psig (8.5 bars) air supply or liquid pressure.

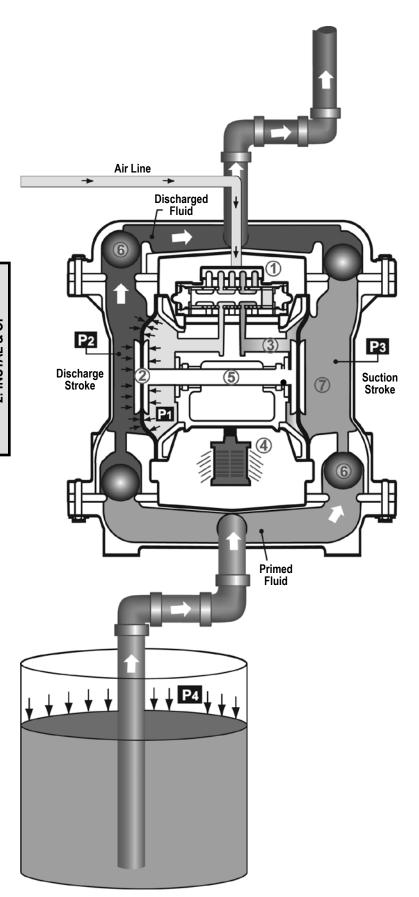
Dimensional Drawings

U2 Metallic Flap ValveDimensions in inches (mm dimensions in brackets)

The dimensions on this drawing are for reference only. A certified drawing can be requested if physical dimensions are needed.



Principle of Pump Operation



Air-Operated Double Diaphragm (AODD) pumps are powered by compressed air or nitrogen.

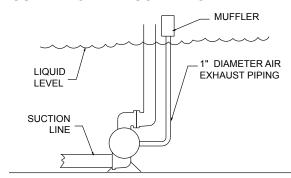
The main directional (air) control valve ① distributes compressed air to an air chamber, exerting uniform pressure over the inner surface of the diaphragm ②. At the same time, the exhausting air ③ from behind the opposite diaphragm is directed through the air valve assembly(s) to an exhaust port ④.

As inner chamber pressure **(P1)** exceeds liquid chamber pressure **(P2)**, the rod ⑤ connected diaphragms shift together creating discharge on one side and suction on the opposite side. The discharged and primed liquid's directions are controlled by the check valves (ball or flap)⑥ orientation.

The pump primes as a result of the suction stroke. The suction stroke lowers the chamber pressure **(P3)** increasing the chamber volume. This results in a pressure differential necessary for atmospheric pressure **(P4)** to push the fluid through the suction piping and across the suction side check valve and into the outer fluid chamber T.

Suction (side) stroking also initiates the reciprocating (shifting, stroking or cycling) action of the pump. The suction diaphragm's movement is mechanically pulled through its stroke. The diaphragm's inner plate makes contact with an actuator plunger aligned to shift the pilot signaling valve. Once actuated, the pilot valve sends a pressure signal to the opposite end of the main directional air valve, redirecting the compressed air to the opposite inner chamber.

SUBMERGED ILLUSTRATION



Pump can be submerged if the pump materials of construction are compatible with the liquid being pumped. The air exhaust must be piped above the liquid level. When the pumped product source is at a higher level than the pump (flooded suction condition), pipe the exhaust higher than the product source to prevent siphoning spills.



Recommended Installation Guide

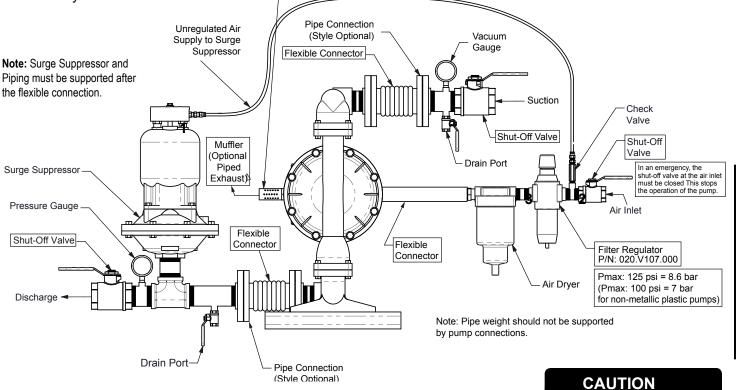
Available Accessories:

1. Surge Suppressor

2. Filter/Regulator

In the event of a diaphragm rupture, pumped fluid can enter the air center section of the pump and exit through the air exhaust port. When pumping hazardous fluids, it is recommended to pump the exhaust air to a safe location.

3. Air Dryer



Installation And Start-Up

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

Air Supply

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

Air Valve Lubrication

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

Air Line Moisture

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

Air Inlet And Priming

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



The air exhaust should be piped to an area for safe disposition of the product being pumped, in the event of a diaphragm failure.

Troubleshooting Guide

Symptom:	Potential Cause(s):	Recommendation(s):
Pump Cycles Once	Deadhead (system pressure meets or exceeds air supply pressure).	Increase the inlet air pressure to the pump. Pump is designed for 1:1 pressure ratio at zero flow. (Does not apply to high pressure 2:1 units).
	Air valve or intermediate gaskets installed incorrectly.	Install gaskets with holes properly aligned.
	Bent or missing actuator plunger.	Remove pilot valve and inspect actuator plungers.
Pump Will Not Operate	Pump is over lubricated.	Set lubricator on lowest possible setting or remove. Units are designed for lube free operation.
/ Cycle	Lack of air (line size, PSI, CFM).	Check the air line size and length, compressor capacity (HP vs. cfm required).
, 5,5	Check air distribution system.	Disassemble and inspect main air distribution valve, pilot valve and pilot valve actuators.
	Discharge line is blocked or clogged manifolds.	Check for inadvertently closed discharge line valves. Clean discharge manifolds/piping.
	Deadhead (system pressure meets or exceeds air supply pressure).	Increase the inlet air pressure to the pump. Pump is designed for 1:1 pressure ratio at zero flow. (Does not apply to high pressure 2:1 units).
	Blocked air exhaust muffler.	Remove muffler screen, clean or de-ice, and re-install.
	Pumped fluid in air exhaust muffler.	Disassemble pump chambers. Inspect for diaphragm rupture or loose diaphragm plate assembly.
	Pump chamber is blocked.	Disassemble and inspect wetted chambers. Remove or flush any obstructions.
Pump Cycles and Will	Cavitation on suction side.	Check suction condition (move pump closer to product).
Not Prime or No Flow	Check valve obstructed. Valve ball(s) not seating properly or sticking.	Disassemble the wet end of the pump and manually dislodge obstruction in the check valve pocket. Clean out around valve ball cage and valve seat area. Replace valve ball or valve seat if damaged. Use heavier valve ball material.
	Valve ball(s) missing (pushed into chamber or manifold).	Worn valve ball or valve seat. Worn fingers in valve ball cage (replace part). Check Chemical Resistance Guide for compatibility.
	Valve ball(s)/seat(s) damaged or attacked by product.	Check Chemical Resistance Guide for compatibility.
	Check valve and/or seat is worn or needs adjusting.	Inspect check valves and seats for wear and proper setting. Replace if necessary.
	Suction line is blocked.	Remove or flush obstruction. Check and clear all suction screens or strainers.
	Excessive suction lift.	For lifts exceeding 20' of liquid, filling the chambers with liquid will prime the pump in most cases.
	Suction side air leakage or air in product.	Visually inspect all suction-side gaskets and pipe connections.
	Pumped fluid in air exhaust muffler.	Disassemble pump chambers. Inspect for diaphragm rupture or loose diaphragm plate assembly.
Pump Cycles Running	Over lubrication.	Set lubricator on lowest possible setting or remove. Units are designed for lube free operation.
Sluggish/Stalling,	Icing.	Remove muffler screen, de-ice, and re-install. Install a point of use air drier.
Flow Unsatisfactory	Clogged manifolds.	Clean manifolds to allow proper air flow
, non cheanciación,	Deadhead (system pressure meets or exceeds air supply pressure).	Increase the inlet air pressure to the pump. Pump is designed for 1:1 pressure ratio at zero flow. (Does not apply to high pressure 2:1 units).
	Cavitation on suction side.	Check suction (move pump closer to product).
	Lack of air (line size, PSI, CFM).	Check the air line size, length, compressor capacity.
	Excessive suction lift.	For lifts exceeding 20' of liquid, filling the chambers with liquid will prime the pump in most cases.
	Air supply pressure or volume exceeds system hd.	Decrease inlet air (press. and vol.) to the pump. Pump is cavitating the fluid by fast cycling.
	Undersized suction line.	Meet or exceed pump connections.
	Restrictive or undersized air line.	Install a larger air line and connection.
	Suction side air leakage or air in product.	Visually inspect all suction-side gaskets and pipe connections.
	Suction line is blocked.	Remove or flush obstruction. Check and clear all suction screens or strainers.
	Pumped fluid in air exhaust muffler.	Disassemble pump chambers. Inspect for diaphragm rupture or loose diaphragm plate assembly.
	Check valve obstructed.	Disassemble the wet end of the pump and manually dislodge obstruction in the check valve pocket.
	Check valve and/or seat is worn or needs adjusting.	Inspect check valves and seats for wear and proper setting. Replace if necessary.
	Entrained air or vapor lock in chamber(s).	Purge chambers through tapped chamber vent plugs. Purging the chambers of air can be dangerous.
Product Leaking	Diaphragm failure, or diaphragm plates loose.	Replace diaphragms, check for damage and ensure diaphragm plates are tight.
Through Exhaust	Diaphragm stretched around center hole or bolt holes.	Check for excessive inlet pressure or air pressure. Consult Chemical Resistance Chart for compatibility with products, cleaners, temperature limitations and lubrication.
Premature Diaphragm	Cavitation.	Enlarge pipe diameter on suction side of pump.
Failure	Excessive flooded suction pressure.	Move pump closer to product. Raise pump/place pump on top of tank to reduce inlet pressure. Install Back pressure device (Tech bulletin 41r). Add accumulation tank or pulsation dampener.
	Misapplication (chemical/physical incompatibility).	Consult Chemical Resistance Chart for compatibility with products, cleaners, temperature limitations and lubrication.
	Incorrect diaphragm plates or plates on backwards, installed incorrectly or worn.	Check Operating Manual to check for correct part and installation. Ensure outer plates have not been worn to a sharp edge.
Unbalanced Cycling	Excessive suction lift.	For lifts exceeding 20' of liquid, filling the chambers with liquid will prime the pump in most cases.
	Undersized suction line.	Meet or exceed pump connections.
	Pumped fluid in air exhaust muffler.	Disassemble pump chambers. Inspect for diaphragm rupture or loose diaphragm plate assembly.
	Suction side air leakage or air in product.	Visually inspect all suction-side gaskets and pipe connections.
	Check valve obstructed.	Disassemble the wet end of the pump and manually dislodge obstruction in the check valve pocket.
	Check valve and/or seat is worn or needs adjusting.	Inspect check valves and seats for wear and proper setting. Replace if necessary.
	Entrained air or vapor lock in chamber(s).	Purge chambers through tapped chamber vent plugs.

For additional troubleshooting tips contact After Sales Support at service.warrenrupp@idexcorp.com or 419-524-8388

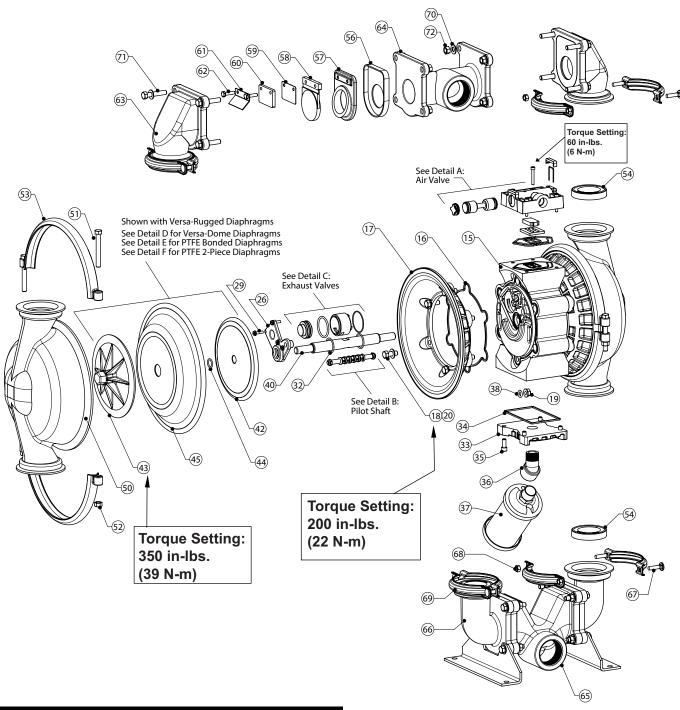


Composite Repair Parts List

Standard: Polypropylene Air Valve Assembly			
Air Valve Assembly (Includes items 1-10) 1 E200 1 Valve Body 1 E200A 2 Valve Spool Assembly 1 E200B ASY (Includes U-Cups) 3 Valve Spool U-Cup 2 P98-104A 4 End Cap Assembly 2 E500D ASY (Includes O-Rings) 5 End Cap Staple 2 E500F 6 Staple Retainer 2 E200L 7 Air Diverter 1 E200G 8 Valve Insert 1 E200H 9 Valve Gasket 1 E200J 10 Valve Cap Screw 4 P24-209 AIR END ASSEMBLY Item Description Qty Standard: Polypropylene / Aluminum 15 Center Block 1 E210 16 Air Chamber Gasket 2 E212 17 Air Chamber 2 E211 18 Air Chamber Bolt 12 V302G 19 Air Chamber Nut 2 V354C			
(Includes items 1-10) 1 Valve Body 1 E200A 2 Valve Spool Assembly 1 E200B ASY (Includes U-Cups) 3 Valve Spool U-Cup 2 P98-104A 4 End Cap Assembly 2 E500D ASY (Includes O-Rings) 5 End Cap Staple 2 E500F 6 Staple Retainer 2 E200L 7 Air Diverter 1 E200G 8 Valve Insert 1 E200H 9 Valve Gasket 1 E200J 10 Valve Cap Screw 4 P24-209 AIR END ASSEMBLY Item Description Qty Standard: Polypropylene / Aluminum 15 Center Block 1 E210 16 Air Chamber Gasket 2 E212 17 Air Chamber 2 E211 18 Air Chamber Bolt 12 V302G 19 Air Chamber Nut 2 V354C			
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5 End Cap Staple 2 E500F 6 Staple Retainer 2 E200L 7 Air Diverter 1 E200G 8 Valve Insert 1 E200H 9 Valve Gasket 1 E200J 10 Valve Cap Screw 4 P24-209 AIR END ASSEMBLY Item Description Qty Standard: Polypropylene / Aluminum 15 Center Block 1 E210 16 Air Chamber Gasket 2 E212 17 Air Chamber 2 E211 18 Air Chamber Bolt 12 V302G 19 Air Chamber Nut 2 V354C			
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7 Air Diverter 1 E200G 8 Valve Insert 1 E200H 9 Valve Gasket 1 E200J 10 Valve Cap Screw 4 P24-209 AIR END ASSEMBLY Item Description Qty Standard: Polypropylene / Aluminum 15 Center Block 1 E210 16 Air Chamber Gasket 2 E212 17 Air Chamber 2 E211 18 Air Chamber Bolt 12 V302G 19 Air Chamber Nut 2 V354C			
8 Valve Insert 1 E200H 9 Valve Gasket 1 E200J 10 Valve Cap Screw 4 P24-209 AIR END ASSEMBLY Item Description Qty Standard: Polypropylene / Aluminum 15 Center Block 1 E210 16 Air Chamber Gasket 2 E212 17 Air Chamber 2 E211 18 Air Chamber Bolt 12 V302G 19 Air Chamber Nut 2 V354C			
9 Valve Gasket 1 E200J 10 Valve Cap Screw 4 P24-209 AIR END ASSEMBLY Item Description Qty Standard: Polypropylene / Aluminum 15 Center Block 1 E210 16 Air Chamber Gasket 2 E212 17 Air Chamber 2 E211 18 Air Chamber Bolt 12 V302G 19 Air Chamber Nut 2 V354C			
10 Valve Cap Screw 4 P24-209			
AIR END ASSEMBLY Item Description Qty Standard: Polypropylene / Aluminum 15 Center Block 1 E210 16 Air Chamber Gasket 2 E212 17 Air Chamber 2 E211 18 Air Chamber Bolt 12 V302G 19 Air Chamber Nut 2 V354C			
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16 Air Chamber Gasket 2 E212 17 Air Chamber 2 E211 18 Air Chamber Bolt 12 V302G 19 Air Chamber Nut 2 V354C			
17 Air Chamber 2 E211 18 Air Chamber Bolt 12 V302G 19 Air Chamber Nut 2 V354C			
19 Air Chamber Nut 2 V354C			
	V302G		
20 Air Chamber Washer 12 V302GA			
21 Bushing 2 E201MB			
22 Pilot Shaft 1 E203A			
23 Pilot Shaft Spacer 5 P24-106P			
24 Pilot Shaft O-Ring 6 P24-107			
25 Stop Nut 2 P24-108			
26 Shaft Retainer – Left 1 E201B-L ASY (Includes O-Rings)			
27 Shaft Retainer – Right (not shown) 1 E201B-R ASY (Includes O-Rings)			
28 Shaft Retainer O-Ring 2 E201B-5 29 Shaft Retainer Screw 8 10-050			
29 Shaft Retainer Screw 8 10-050 30 Exhaust Valve 2 E202 ASY			
31 Exhaust Sleeve O-Ring 2 E202 ASY 32 E202 ASY 33 Exhaust Sleeve O-Ring 2 560.013.360			
31 Exhibits Sieeve O-Ring 2 300.013.300			
33 Muffler Plate 1 E201H			
34 Muffler Plate Gasket 1 E200J-1			
35 Muffler Plate Cap Screw 4 E201G			
36 Muffler Elbow 1 PE201N			
37 Muffler 1 V20AEM			
38 Air Chamber O-Ring 2 P24-107			
DIAPHRAGM ASSEMBLY	T (1 . O.D.)		
Item Description Qty Rugged Dome Fusion 40 Main Shaft 1 P24-103 P24-103 P24-103F	Teflon 2-Piece P24-102		
41 Diaphragm Shaft Stud 2 N/A N/A N/A	V221F		
42 Inner Diaphragm Plate 2 V221B V226B N/A	V221TI		
	V221TO		
43 Outer Diaphragm Plate 2 VB221 VB226 N/A	V221TO N/A		
43 Outer Diaphragm Plate 2 VB221 VB226 N/A 44 Diaphragm O-Ring 2 V221D N/A N/A	V221TO N/A		
43 Outer Diaphragm Plate 2 VB221 VB226 N/A			
43 Outer Diaphragm Plate 2 VB221 VB226 N/A 44 Diaphragm O-Ring 2 V221D N/A N/A V224BN V224N V225BN V225N	N/A		
43 Outer Diaphragm Plate 2 VB221 VB226 N/A 44 Diaphragm O-Ring 2 V221D N/A N/A V224BN V224N V225BN V225N 45 Diaphragm 2 V224TPEXL V224VT V225TPEXL V225VT V227F V224ND V224TPEFG V225ND V225TPEFG V225ND V225TPEFG VA 46 Back-up Diaphragm 2 N/A N/A N/A	N/A		
43 Outer Diaphragm Plate 2 VB221 VB226 N/A 44 Diaphragm O-Ring 2 V221D N/A N/A V224BN V224N V225BN V225N 45 Diaphragm 2 V224TPEXL V224VT V225TPEXL V225VT V227F V224ND V224TPEFG V225ND V225TPEFG 46 Back-up Diaphragm 2 N/A N/A N/A WET END ASSEMBLY	N/A V224TF		
43 Outer Diaphragm Plate 2 VB221 VB226 N/A 44 Diaphragm O-Ring 2 V221D N/A N/A 45 Diaphragm 2 V224BN V224N V225BN V225N V227F 45 Diaphragm 2 V224TPEXL V224VT V225TPEXL V225VT V227F V224ND V224TPEFG V225ND V225TPEFG V225ND V225TPEFG N/A N/A 46 Back-up Diaphragm 2 N/A N/A N/A WET END ASSEMBLY Item Description Qty Standard: Aluminum	N/A V224TF		
43 Outer Diaphragm Plate 2 VB221 VB226 N/A 44 Diaphragm O-Ring 2 V221D N/A N/A 45 Diaphragm 2 V224RN V224N V225BN V225N V227F 45 Diaphragm 2 V224TPEXL V224VT V225TPEXL V225VT V227F V224ND V224TPEFG V225ND V225TPEFG V225ND V225TPEFG N/A N/A 46 Back-up Diaphragm 2 N/A N/A N/A WET END ASSEMBLY Standard: Aluminum V235 V235	N/A V224TF		
43 Outer Diaphragm Plate 2 VB221 VB226 N/A 44 Diaphragm O-Ring 2 V221D N/A N/A 45 Diaphragm 2 V224RN V224N V225BN V225N V227F 45 Diaphragm 2 V224TPEXL V224VT V225TPEXL V225VT V227F V224ND V224TPEFG V225ND V225TPEFG V225ND V225TPEFG N/A N/A 46 Back-up Diaphragm 2 N/A N/A N/A WET END ASSEMBLY V236 V235 V230C V230C	N/A V224TF		
43 Outer Diaphragm Plate 2 VB221 VB226 N/A 44 Diaphragm O-Ring 2 V221D N/A N/A 45 Diaphragm 2 V224RN V224N V225BN V225N V227F 46 Back-up Diaphragm 2 N/A N/A N/A WET END ASSEMBLY Item Description Qty Standard: Aluminum 50 Water Chamber 2 V235 51 Large Clamp Bolt 4 V230C 52 Large Clamp Nut 20 V230D	N/A V224TF		
43 Outer Diaphragm Plate 2 VB221 VB226 N/A 44 Diaphragm O-Ring 2 V221D N/A N/A 45 Diaphragm 2 V224PBN V224N V225BN V225N V227F 45 Diaphragm 2 V224ND V224TPEFG V225ND V225TPEXL V225VT V227F 46 Back-up Diaphragm 2 N/A N/A N/A WET END ASSEMBLY Item Description Qty Standard: Aluminum 50 Water Chamber 2 V235 51 Large Clamp Bolt 4 V230C 52 Large Clamp Nut 20 V230D 53 Large Clamp Assembly 2 V230	N/A V224TF V224TFB		
43 Outer Diaphragm Plate 2 VB221 VB226 N/A 44 Diaphragm O-Ring 2 V221D N/A N/A 45 Diaphragm 2 V224PBN V224N V225BN V225N V227F 45 Diaphragm 2 V224ND V224TPEFG V225ND V225TPEXL V225VT V227F 46 Back-up Diaphragm 2 N/A N/A N/A WET END ASSEMBLY Item Description Qty Standard: Aluminum 50 Water Chamber 2 V235 51 Large Clamp Bolt 4 V230C 52 Large Clamp Nut 20 V230D 53 Large Clamp Assembly 2 V230 54 Valve Seat 4 V240BN V240N V240ND V240TPEFG V240TF V240VT V240VT V240TPEXL V240V	N/A V224TF V224TFB		
43 Outer Diaphragm Plate 2 VB221 VB226 N/A 44 Diaphragm O-Ring 2 V221D N/A N/A 45 Diaphragm 2 V224BN V224N V225BN V225N V227F 45 Diaphragm 2 V224ND V224TPEFG V225ND V225TPEXL V225VT V227F 46 Back-up Diaphragm 2 N/A N/A N/A WET END ASSEMBLY Item Description Qty Standard: Aluminum 50 Water Chamber 2 V235 51 Large Clamp Bolt 4 V230C 52 Large Clamp Nut 20 V230D 53 Large Clamp Assembly 2 V230 54 Valve Seat 4 V240BN V240N V240ND V240TPEFG V240TF V240VT V240TPEXL V240V 55 Valve Seat O-Ring (Not Shown) 4 V240T (Use with V240A SV240 HV240 WV240 only)	N/A V224TF V224TFB		
43 Outer Diaphragm Plate 2 VB221 VB226 N/A 44 Diaphragm O-Ring 2 V221D N/A N/A 45 Diaphragm 2 V224BN V224N V225BN V225VT V227F 45 Diaphragm 2 V224ND V224TPEFG V225ND V225TPEFG 46 Back-up Diaphragm 2 N/A N/A N/A WET END ASSEMBLY Item Description Qty Standard: Aluminum 50 Water Chamber 2 V235 51 Large Clamp Bolt 4 V230C 52 Large Clamp Nut 20 V230D 53 Large Clamp Assembly 2 V230 54 Valve Seat 4 V240BN V240N V240ND V240TPEFG V240TF V240VT V240TPEXL V240F 55 Valve Seat O-Ring (Not Shown) 4 V240T (Use with V240A SV240 HV240 WV240 only) 56 Seal Ring 4 FV26BN FV26ND V246VT	N/A V224TF V224TFB		
43 Outer Diaphragm Plate 2 VB221 VB226 N/A 44 Diaphragm O-Ring 2 V221D N/A N/A 45 Diaphragm 2 V224BN V224N V225BN V225VT V227F 46 Back-up Diaphragm 2 N/A N/A N/A WET END ASSEMBLY Item Description Qty Standard: Aluminum 50 Water Chamber 2 V235 51 Large Clamp Bolt 4 V230C 52 Large Clamp Nut 20 V230D 53 Large Clamp Assembly 2 V230 54 Valve Seat 4 V240BN V240N V240ND V240TPEFG V240TF V240VT V240TPEXL V240/V 55 Valve Seat O-Ring (Not Shown) 4 V240T (Use with V240A SV240 HV240 WV240 only) 56 Seal Ring 4 FV26BN FV26ND V246VT 57 Seal Plate 4 FV26BN FV26ND V246VT	N/A V224TF V224TFB		
43 Outer Diaphragm Plate 2 VB221 VB226 N/A 44 Diaphragm O-Ring 2 V221D N/A N/A 45 Diaphragm 2 V224RN V224N V225BN V225N V227F 46 Back-up Diaphragm 2 N/A N/A N/A WET END ASSEMBLY Item Description Qty Standard: Aluminum 50 Water Chamber 2 V235 51 Large Clamp Bolt 4 V230C 52 Large Clamp Nut 20 V230D 53 Large Clamp Assembly 2 V230 54 Valve Seat 4 V240BN V240N V240ND V240TPEFG V240TT V240TPEXL V240I/V V240TPEXL V	N/A V224TF V224TFB		
43 Outer Diaphragm Plate 2 VB221 VB226 N/A 44 Diaphragm O-Ring 2 V221D N/A N/A 45 Diaphragm 2 V224RN V224N V225BN V225N V227F 46 Back-up Diaphragm 2 N/A N/A N/A N/A WET END ASSEMBLY Item Description Qty Standard: Aluminum 50 Water Chamber 2 V235 51 Large Clamp Bolt 4 V230C 52 Large Clamp Nut 20 V230D 53 Large Clamp Assembly 2 V230 54 Valve Seat 4 V240BN V240N V240ND V240TPEFG V240TF V240VT V240TPEXL V240///V240FEXL V240///V240///V240///V240///V240///V240///V240///V240///V	N/A V224TF V224TFB		
43 Outer Diaphragm Plate 2 VB221 VB226 N/A 44 Diaphragm O-Ring 2 V221D N/A N/A 45 Diaphragm 2 V224RN V224N V225BN V225N V227F 46 Back-up Diaphragm 2 N/A N/A N/A N/A WET END ASSEMBLY Item Description Qty Standard: Aluminum 50 Water Chamber 2 V235 51 Large Clamp Bolt 4 V230C 52 Large Clamp Nut 20 V230D 53 Large Clamp Assembly 2 V230 54 Valve Seat 4 V240BN V240N V240ND V240TPEFG V240TF V240VT V240TPEXL V240/V 55 Valve Seat O-Ring (Not Shown) 4 V240T (Use with V240A SV240 HV240 WV240 only) 56 Seal Ring 4 FV26BN FV26ND FV26ND V246VT 57 Seal Plate 4 FV28BN FV24N FV24ND FV24VT 58 Flap 4 FV24BN FV24ND FV24ND FV24VT	N/A V224TF V224TFB		
43 Outer Diaphragm Plate 2 VB221 VB226 N/A 44 Diaphragm O-Ring 2 V221D N/A N/A 45 Diaphragm 2 V224PN V224N V225BN V225N 45 Diaphragm 2 V224PEXL V224VT V225TPEXL V225VT V227F 46 Back-up Diaphragm 2 N/A N/A N/A	N/A V224TF V224TFB		
43 Outer Diaphragm Plate 2 VB221 VB226 N/A 44 Diaphragm O-Ring 2 V221D N/A N/A 45 Diaphragm 2 V224RBN V224N V225TPEXL V225VT V227F 46 Back-up Diaphragm 2 N/A N/A N/A WET END ASSEMBLY Item Description Qty Standard: Aluminum 50 Water Chamber 2 V235 51 Large Clamp Bolt 4 V230C 52 Large Clamp Nut 20 V230D 53 Large Clamp Assembly 2 V230 54 Valve Seat 4 V240RN V240N V240ND V240TPEFG V240TF V240VT V240TPEXL V240V 55 Valve Seat O-Ring (Not Shown) 4 V240T (Use with V240A SV240 HV240 WV240 only) 56 Seal Ring 4 FV26BN FV26N FV26ND V246VT 57 Seal Plate 4 FV24BN FV24N FV24ND FV24VT 59 PTFE Pad 4 FV25FF 60 Pad<	N/A V224TF V224TFB		
43 Outer Diaphragm Plate 2 VB221 VB226 N/A 44 Diaphragm O-Ring 2 V221D N/A N/A 45 Diaphragm 2 V224PN V224N V225BN V225N 45 Diaphragm 2 V224PEXL V224VT V225TPEXL V225VT V227F 46 Back-up Diaphragm 2 N/A N/A N/A	N/A V224TF V224TFB		
43 Outer Diaphragm Plate 2 VB221 VB226 N/A 44 Diaphragm O-Ring 2 V221D N/A N/A 45 Diaphragm 2 V224BN V224N V225BN V225N 45 Diaphragm 2 V224TPEXL V224VT V225TPEXL V225VT V227F 46 Back-up Diaphragm 2 N/A N/A N/A	N/A V224TF V224TFB		
A3 Outer Diaphragm Plate 2 VB221 VB226 N/A	N/A V224TF V224TFB		
A3	N/A V224TF V224TFB		
A3 Outer Diaphragm Plate 2 VB221 VB226 N/A	N/A V224TF V224TFB		
A3 Outer Diaphragm Plate 2 VB221 VB226 N/A	N/A V224TF V224TFB		
43 Outer Diaphragm Plate 2 VB221 VB226 N/A 44 Diaphragm O-Ring 2 V221D N/A N/A V224BN V224N V225BN V225N 45 Diaphragm 2 V224TPEXL V224VT V225TPEXL V225VT V227F 46 Back-up Diaphragm 2 N/A N/A 46 Back-up Diaphragm 2 N/A N/A 47 V224ND V224TPEFG V225ND V225TPEFG 48 Back-up Diaphragm 2 N/A N/A 49 V240ND V224TPEFG V225ND V225TPEFG 50 Water Chamber 2 V235 51 Large Clamp Bolt 4 V230C 52 Large Clamp Bolt 4 V230C 53 Large Clamp Assembly 2 V230 54 Valve Seat 4 V240BN V240N V240ND V240TPEFG V240TF V240VT V240TPEXL V240V 55 Valve Seat 4 V240BN V240N V240ND V240TPEFG V240TF V240VT V240TPEXL V240V 55 Valve Seat 4 V240BN V240N V240ND V240TPEFG V240TF V240VT V240TPEXL V240V 55 Valve Seat 5 V250 V250 57 Seal Plate 4 FV26BN FV26N FV26ND V240T 58 Flap 4 FV24BN FV24N FV24ND FV24VT 59 PTFE Pad 4 FV25BN FV24N FV24ND FV24VT 59 PTFE Pad 4 FV25BN FV24N FV24ND FV25VT 61 Flap Retainer 4 FV25BN FV24N FV25ND FV25VT 61 Flap Retainer 4 FV27AS 62 Flap Retainer Bolt 8 FV27AS 63 Discharge Blow 2 FV236E 64 Discharge Banifold 1 FV237* 66 Suction Blow 2 FV237* 67 Small Clamp Bolt 8 V239B 68 Small Clamp Bolt 8 V239B 68 Small Clamp Bolt 8 V239G 69 Small Clamp Sasembly 4 V239 60 FManifold Washer 12 V302GA 60 V302GA V302GA V302GA 60 V302GA V302GA V302GA 60 V302FN V302GA V302FN 60 V302FN V302GA V302GA 60 V302FN V302GA 60 V302FN V302FN V302FN 60 V302FN V302FN V302FN V302GA 60 V302FN V302	N/A V224TF V224TFB		
A3 Outer Diaphragm Plate 2 VB221 VB226 N/A	N/A V224TF V224TFB		



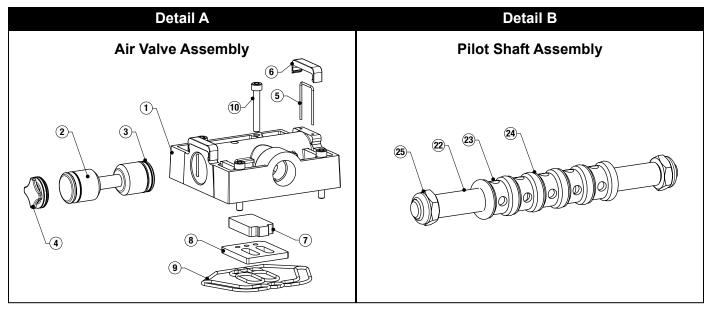
Composite Repair Parts Drawing - Exploded View

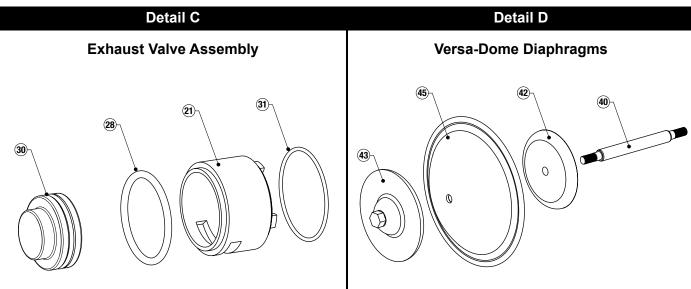


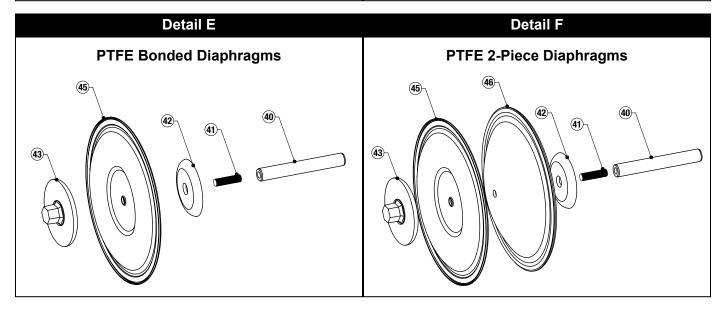
Torque Settings			
Small Clamp Bolts	50 in-lbs (5.6 N-m)		
Large Clamp Bolts	20ft-lbs (27 N-m)		
Diaphragm Plates — Rubber	65 ft-lbs (88 N-m)		
Diaphragm Plates — PTFE	65 ft-lbs (88 N-m)		
Air Valve Cap Screws	25 in-lbs (2.8 N-m)		
Muffler Plate Cap Screws	30 in-lbs (3.4 N-m)		
Air Chamber Bolts	20 ft-lbs (27 N-m)		



Composite Repair Parts Drawing - Detail Views









Repair Kits

AIR VALVE KIT: U2 AV KIT		
Part #	Description	Qty.
P98-104A	Valve Spool O-Ring	2
E200J	Valve Gasket	1
E200G	Air Diverter	1
E200H	Valve Insert	1

PILOT VALVE KIT: U2 PV Kit		
Part #	Description	Qty.
P24-107	Pilot Shaft O-Ring	6
P24-106P	Pilot Shaft Spacer	5
P24-108	Stop Nut	2
P24-403	Main Shaft O-Ring	2



5 - YEAR Limited Product Warranty

Quality System ISO9001 Certified • Environmental Management Systems ISO14001 Certified

Versa-Matic warrants to the original end-use purchaser that no product sold by Versa-Matic that bears a Versa-Matic brand shall fail under normal use and service due to a defect in material or workmanship within five years from the date of shipment from Versa-Matic's factory.

The use of non-OEM replacement parts will void (or negate) agency certifications, including CE, ATEX, CSA, 3A and EC1935 compliance (Food Contact Materials). Warren Rupp, Inc. cannot ensure nor warrant non-OEM parts to meet the stringent requirements of the certifying agencies.

~ See complete warranty at http://www.versamatic.com/pdfs/VM%20Product%20Warranty.pdf ~

DECLARATION OF CONFORMIT

DECLARATION DE CONFORMITE • DECLARACION DE CONFORMIDAD • ERKLÄRUNG BEZÜGLICH EINHALTUNG DER VORSCHRIFTEN DICHIARAZIONE DI CONFORMITÀ • CONFORMITEITSVERKLARING • DEKLARATION OM ÖVERENSSTÄMMELSE EF-OVERENSSTEMMELSESERKLÆRING • VAATIMUSTENMUKAISUUSVAKUUTUS • SAMSVARSERKLÄRING DECLARAÇÃO DE CONFORMIDADE

MANUFACTURED BY:

FABRIQUE PAR: FABRICADA POR: HERGESTELLT VON: FABBRICATO DA: VERVAARDIGD DOOR: TILLVERKAD AV: FABRIKANT: VALMISTAJA: PRODUSENT: FABRICANTE:

VERSA-MATIC®

Warren Rupp, Inc. A Unit of IDEX Corporation 800 North Main Street P.O. Box 1568 Mansfield, OH 44901-1568 USA

Tel: 419-526-7296 Fax: 419-526-7289



PUMP MODEL SERIES: E SERIES, V SERIES, VT SERIES, VSMA3, SPA15, **RE SERIES AND U2 SERIES**

This product complies with the following European Community Directives:

Ce produit est conforme aux directives de la Communauté européenne suivantes: Este producto cumple con las siguientes Directrices de la Comunidad Europea: Dieses produkt erfüllt die folgenden Vorschriften der Europäischen Gemeinschaft:

Questo prodotto è conforme alle seguenti direttive CEE: Dir produkt voldoet aan de volgende EG-richtlijnen:

Denna produkt överensstämmer med följande EU direktiv:

Versa-Matic, Inc., erklærer herved som fabrikant, at ovennævnte produkt er i overensstemmelse med bestemmelserne i Direkktive:

Tämä tuote täyttää seuraavien EC Direktiivien vaatimukstet:

Dette produkt oppfyller kravene til følgende EC Direktiver:

Este produto está de acordo com as seguintes Directivas comunitárias:

This product has used the following harmonized standards to verify conformance:

Ce materiel est fabriqué selon les normes harmonisées suivantes, afin d'en garantir la conformité:

Este producto cumple con las siguientes directrices de la comunidad europa:

Dieses produkt ist nach folgenden harmonisierten standards gefertigtworden, die übereinstimmung wird bestätigt:

Questo prodotto ha utilizzato i seguenti standards per verificare la conformita':

De volgende geharmoniseerde normen werden gehanteerd om de conformiteit van dit produkt te garanderen:

För denna produkt har följande harmoniserande standarder använts för att bekräfta överensstämmelse:

Harmoniserede standarder, der er benyttet:

Tässä tuotteessa on sovellettu seuraavia yhdenmukaistettuja standardeja:

Dette produkt er produsert i overenstemmelse med fløgende harmoniserte standarder:

Este produto utilizou os seguintes padrões harmonizados para varificar conformidade:

AUTHORIZED/APPROVED BY:

Approuve par: Aprobado por: Genehmigt von: approvato da: Goedgekeurd door: Underskrift: Valtuutettuna: Bemyndiget av: Autorizado Por:

06/14/2017 REV 08

Dave Roseberry Director of Engineering

Authorized Representative: **IDEX Pump Technologies** R79 Shannon Industrial Estate, Shannon, Co. Clare Ireland

Attn: Barry McMahon

DATE: February 27, 2017

FECHA: DATUM: DATA: DATO: PÄIVÄYS:

2006/42/EC

EN809:1998+

A1:2009

to Annex VIII

on Machinery, according

VMOR 044FM

