SERVICE & OPERATING MANUAL

ORIGINAL INSTRUCTIONS

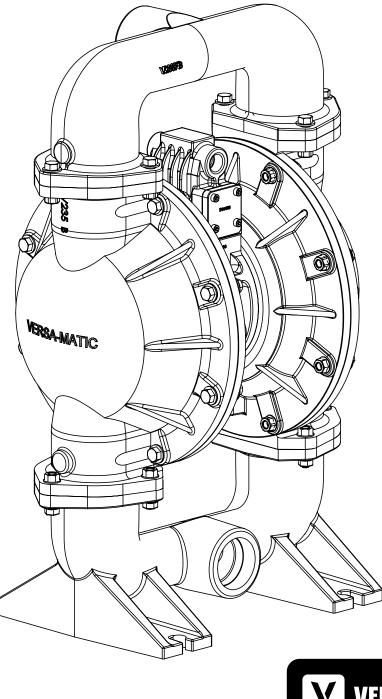


2" Elima-Matic Bolted Aluminum – ATEX

with Metal Center Section

E2 Metal Pumps • Aluminum







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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.



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.

Plastic pumps and plastic components are not UV stabilized.

Ultraviolet radiation can damage these parts and negatively af-

fect material properties. Do not expose to UV light for extended



periods of time.

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



WARNING

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 and piping connections are in good condition and are reinstalled properly during reassembly.



Use safe practices when lifting

ATEX Pumps - Conditions For Safe Use

- 1. Ambient temperature range is as specified in tables 1 & 2 on the next page
- 2. ATEX compliant pumps are suitable for use in explosive atmospheres when the equipment is properly grounded in accordance with local electrical codes
- 3. Conductive Polypropylene, conductive Acetal or conductive PVDF pumps are not to be installed in applications where the pumps may be subjected to oil, greases and hydraulic liquids.
- When operating pumps equipped with non-conductive diaphragms that exceed the maximum permissible projected area, as defined in EN ISO 80079-36 : 2016 section 6.7.5 table 8, the following protection methods must be applied
 Equipment is always used to transfer electrically conductive fluids or
 - Explosive environment is prevented from entering the internal portions of the pump, i.e. dry running.



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Temperature Tables

	[1		
Ambient Temperature	Process Temperature	Temperature	Maximum Surface	
Range [°C]	Range [°C]	Class	Temperature [°C]	
	-40°C to +80°C	Т5	T100°C	
	-40°C to +108°C	T4	T135°C	
-20°C to +60°C	-40°C to + 160°C	Т3		
	-40°C to +177°C	(225°C) T2	T200°C	

Table 1. Category 2 ATEX Rated Pumps

Table 2. Category M2 ATEX Rated Pumps for Mining

Ambient Temperature	Process Temperature
Range [°C]	Range [°C]
-20°C to +60°C	-40°C to +150°C

<u>Note:</u> The ambient temperature range and the process temperature range should not exceed the operating temperature range of the applied plastic parts as listed in the manuals of the pumps.



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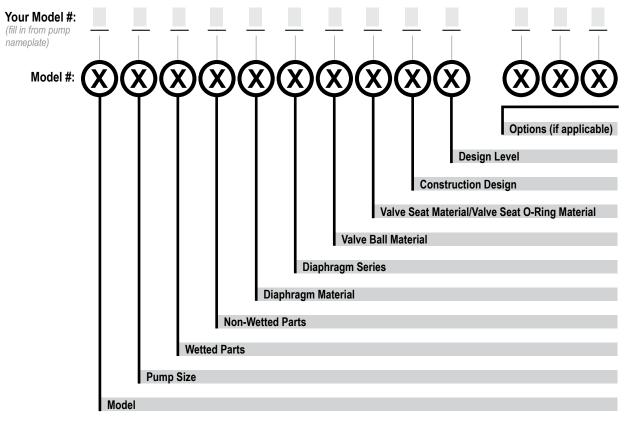
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Explanation of Pump Nomenclature

Your Serial #: (fill in from pump nameplate)



Mode

Madal	D		Now Wolferd Doute	Disastan Matarial
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	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 EPDŇ
	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	· · · · F · ·	ATEX ATEX Compliant
T Tef-Matic (2-piece)	4 ÈPDM	4 ÈPDM	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	С	HP High Pressure
integrated plate)	7 Hytrel	7 Hytrel		OE Original Elima-Matic
5 . ,	8 Polyurethane	8 Polyurethane		F Flap Valve
	A Acetal	A Aluminum w/ PTFE O-Rings		HD Horizontal Discharge

Y FDA Santoprene

- S Stainless Steel
- S Stainless Steel w/ PTFE O-Rings Y FDA Santoprene C Carbon Steel w/ PTFE O-Rings H Alloy C w/ PTFE O-Rings T PTFE Encapsulated Silicone O-Rings
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More than one option may be specified for a particular pump model.

charge 3A 3-A Certified

UL UL Listed **OB** Oil Bottle

Materials

Material Profile:		rating ratures:
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.	200°F 93°C	-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.	180°F 82°C	-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.	220°F 104°C	-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.

Note: This document is a high level guide. Please be aware that not all model and or material combinations are possible for all sizes. Please consult factory or your distributor for specific details.

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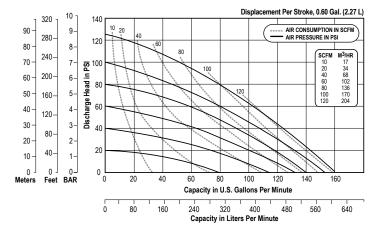
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Performance

E2 - 2" Bolted Aluminum Pump – Metal Center ELASTOMERIC AND TPE FITTED - RUGGED

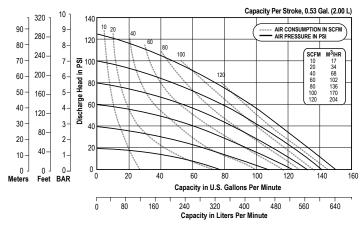
Flow Rate Adjustable to 0-163 gpm (617 lpm) Port Size
Suction
Discharge
Air Exhaust
Dry
Wet
Max Noise Level
Aluminum



NOTE: Performance based on the following: elastomeric fitted pump, flooded suction, water at ambient conditions. The use of other materials and varying hydraulic conditions may result in deviations in excess of 5%.

E2 - 2" Bolted Aluminum Pump – Metal Center ELASTOMERIC AND TPE FITTED - DOMED

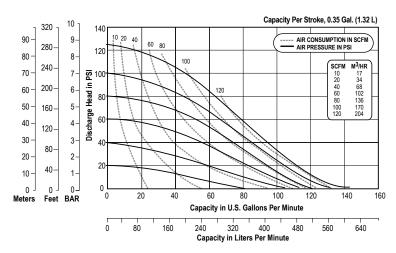
Flow Rate Adjustable to 0-154 Port Size	4 gpm (583 lpm)
Suction	2" NPT or BSP
Discharge	2" NPT or BSP
Air Inlet	1/2" NPT
Air Exhaust	1" NPT
Suction Lift	
Dry	17' (5.2 m)
Wet	
Max Solid Size (Diameter)	. ,
	7/16" (11.1 mm)
Max Noise Level	
Shipping Weights	
Aluminum	.81 lbs (36.7 kg)



NOTE: Performance based on the following: elastomeric fitted pump, flooded suction, water at ambient conditions. The use of other materials and varying hydraulic conditions may result in deviations in excess of 5%.

E2 - 2" Bolted Aluminum Pump – Metal Center PTFE FITTED

Flow Rate Adjustable to 0-143 gpm (541 lpm) Port Size
Suction 2" NPT or BSP
Discharge 2" NPT or BSP
Air Inlet
Air Exhaust 1" NPT
Suction Lift
Dry
Wet
Max Solid Size (Diameter)
Max Noise Level 102 dB(A)
Shipping Weights
Aluminum 81 lbs (36.7 kg)



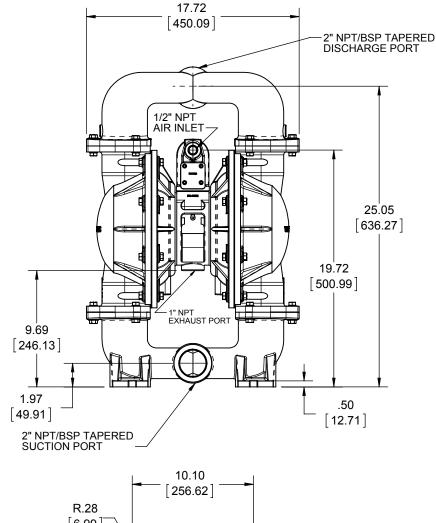
NOTE: Performance based on the following: PTFE fitted pump, flooded suction, water at ambient conditions. The use of other materials and varying hydraulic conditions may result in deviations in excess of 5%.

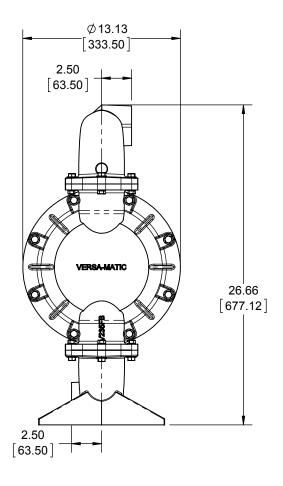
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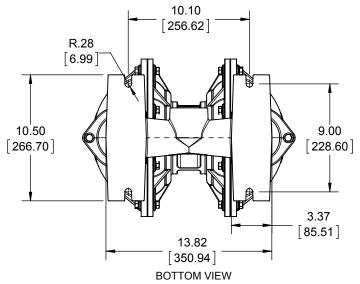
Dimensional Drawings

E2 Aluminum Bolted Dimensionally Interchangeable with Versamatic Clamped Pumps

Dimensions 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.









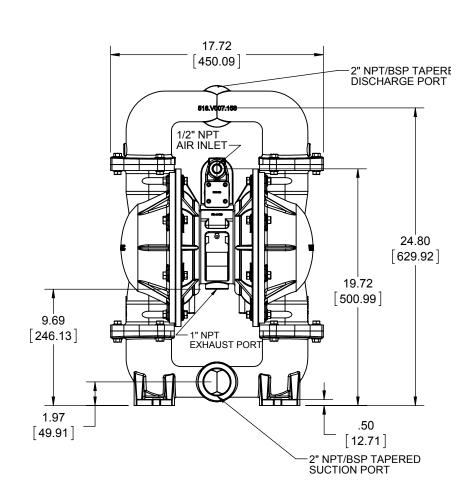
Dimensional Drawings

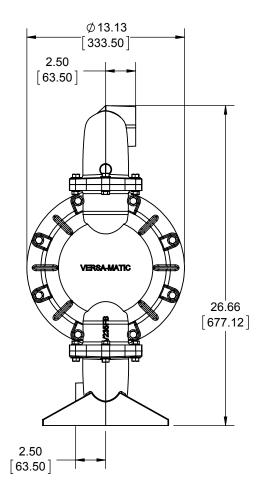
E2 Aluminum Bolted

Dimensionally Interchangeable with Wilden Clamped Pumps

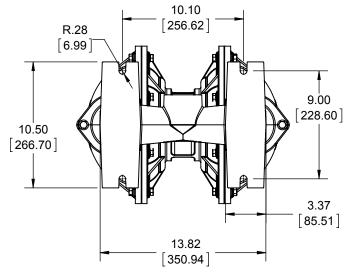
Dimensions in inches (mm dimensions in brackets)

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



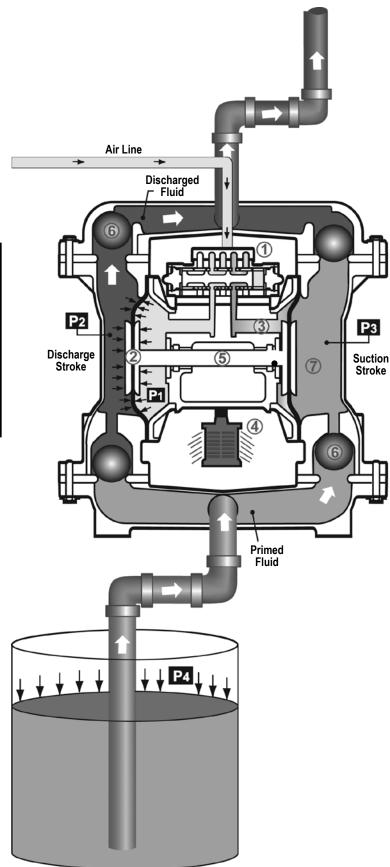


1: PUMP SPECS





Principle of Pump Operation



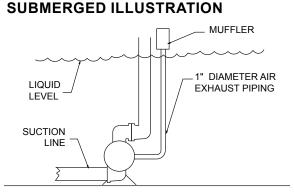
Air-Operated Double Diaphragm (AODD) pumps are powered by compressed air or nitrogen.

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 \mathcal{D} .

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.



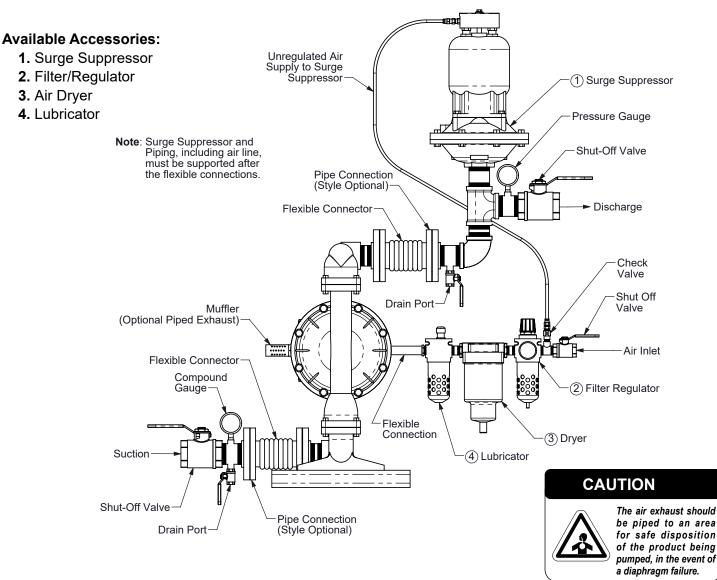
Pump can be submerged if the pump materials of construction are compatible with the liquid being pumped. The air exhaust must be piped above the liquid level. When the pumped product source is at a higher level than the pump (flooded suction condition), pipe the exhaust higher than the product source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



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2: INSTAL & OP

Recommended Installation Guide



Installation And Start-Up

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

Air Supply

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

Air Valve Lubrication

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

Air Line Moisture

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

Air Inlet And Priming

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



Troubleshooting Guide

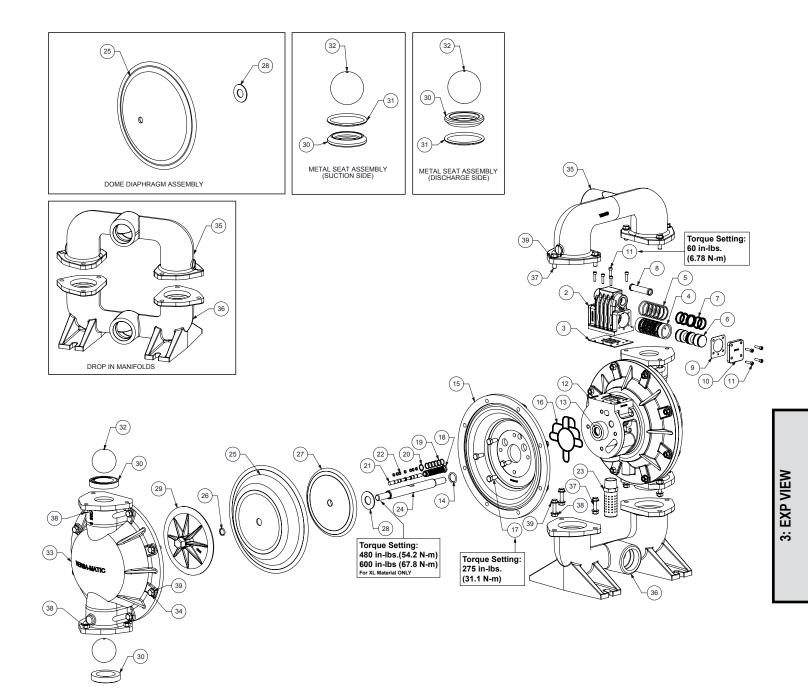
Symptom:	Potential Cause(s):	Recommendation(s):
Pump Cycles Once	Deadhead (system pressure meets or exceeds air supply pressure).	Increase the inlet air pressure to the pump. Pump is designed for 1:1 pressure ratio at zero flow. (Does not apply to high pressure 2:1 units).
	Air valve or intermediate 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).
/ Cycle	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
now onsatisfactory	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



2: INSTAL & OP

Composite Repair Parts Drawing - Elastomeric and TPE Fitted





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Composite Repair Parts List - Elastomeric and TPE Fitted

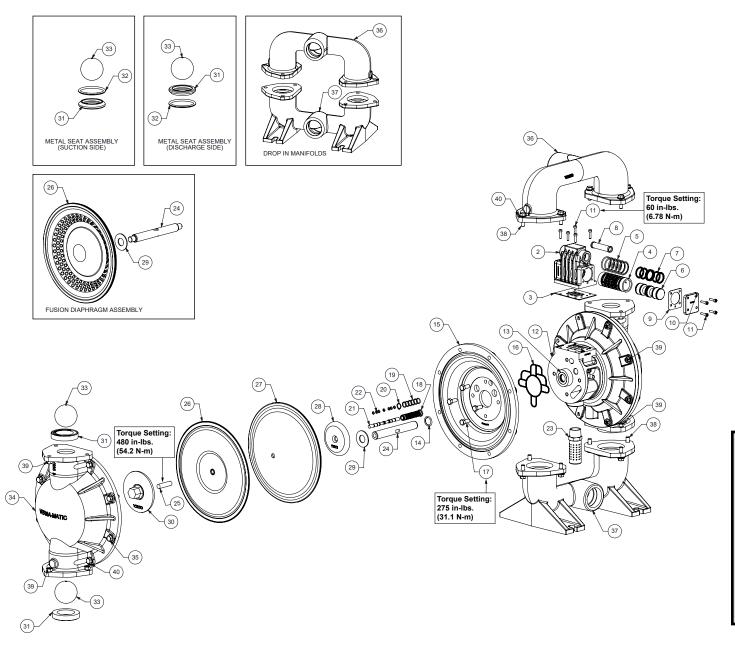
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Image: Probability of the flag	ltem #	Qtv.	Description	Air valve Assembly	Part N	umber	
1 Value Book Assignme 2-11 031 V002 156 3 1 Value Book Gastet P24-202 3 1 Value Book Gastet P24-202 4 1 Value Score 755 (VVG 44 5 6 Value Score Score 755 (VVG 44 6 1 Value Score Score P24-202 7 1 Value Score Score Score P24-205 P24-205 10 2 End Case Sestet P24-205 11 13 Mounter Scores 16 Inculued on lasm 10 Store Score Score P24-205 11 13 A Mounter Scores 16 Inculued on lasm 10 Store Score Score P24-205 12 1 Core Score Score Score P24-205 P34-303 13 2 End Case Sestet P24-205 14 2 Manther Score 16 Inculue Assembly Includes Ince 16 20 P34-033 15 2 Art Chamber 16 20 P24-103 16 1 P34 Core Score Score 16 20 P34-033 17 2 Art Chamber 16 20 P34-033 <t< td=""><td></td><td></td><td>Air Side Repair Kit (Includes Items</td><td></td><td></td><td></td><td></td></t<>			Air Side Repair Kit (Includes Items				
2 1 Nate Body 065 V001 155 4 1 Wate Sterve 755 V006 155 5 6 975 V006 155 975 V006 155 7 6 Globe Rona Sesenbly Includes Items 71 75 V006 155 8 1 Art Value Score Son Sesenbly P24 200 9 2 End Cap Castet P24 201 9 2 End Cap Castet P24 300 11 13 Mounting Screeve (8 Includes Item 11) Store Store 12 1 Center Block Assembly (Includes Item 12 & 14) P24 4000 C ASY Store 13 2 Man Staft C-Ring P24 4000 C ASY Store Store 14 2 Man Staft C-Ring P24 4000 C ASY Store Store 14 2 Man Staft C-Ring P24 4000 C ASY Store Store 15 2 Ar Chamber P24 4000 C ASY P24 4000 C ASY Store 16 1 P101 Soon Assembly Includes Item 13 & 14 P24 4000 C ASY Store Store <td>1</td> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td>	1	1					
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10 2 End Cap P34-300 Item # Qtv. Description Center Section Assembly Part Number 12 1 Center Block Assembly (Includes item 13 & 14) P24-400Co.85Y Part Number 13 2 Marchands Grop P24-400Co.85Y Part Number 13 2 Arc Chamber Gastet P79-199 Part Number 14 2 Arc Chamber Gastet P79-199 Part Number 16 2 Arc Chamber Gastet P79-199 Part Number 17 8 Bolt Point Regist (Includes item 18-22) 476 V018 000 Part Number 19 6 Orang 65 (0.11.358 Part Number Part Number 20 1 Pilot Space Assembly (Includes item 22) 775 V002.000 Part Number 21 1 Marting Part Number Part Number Part Number 22 1 Disperimer Name V2210 NiA V225xx 23 4 Valve Seat Orang Pate V2210 NiA		1	Air Valve Screen		P24	-210	
11 13 Mounting Screws (6) included on item 1) St001 Item # Orc. Description Part Number 12 1. Criter Elock Assembly (includes item 13.8.14) P24.400C.ASY 13 2. Bearnel sleve P31.403 14 2. Man Shaft C-Bring P24.400C 15 2. Aft Chamber P31.403 16 1. P101 Repart K1 (Includes item 18.22) 476.9016.000 17 8 1. P101 Steve Assembly (includes item 2) 775.9002.000 18 1. P101 Steve Assembly (includes item 2) 775.9002.000 1 20 1. Retaining Ring 660.000 1 1 21 1. Mulfer Diaphragm Risk Varase-Dome 1 23 1. Mulfer Diaphragm Risk Varase-Dome 1 24 1. Main Shaft Varase-Dome Varase-Dome 24 1. Main Shaft Varase-Dome NA 25 2.					P24	-205	
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24 1 Main Shaft P24-103 25 2 Diaphram (See Below Material Chart) V224xx V225xx 26 2 Oring V221b N/A 27 2 Inner Diaphragm Plate V221b N/A 28 2 Bumper Washer V221b V226b 29 2 Outer Diaphragm Plate VB21 V226x 30 4 Valve Seat (See Below Material Chart) VB226 V240x 31 4 Valve Seat O-Ring (See Below Material Chart) V240x V827 32 4 Valve Seat O-Ring (See Below Material Chart) V241xx V241x Wet End Assembly Water Chamber V235FB 34 16 Water Chamber Bolt 170.020.300 Discharge Manifold V236FB Discharge Drop in Manifold 518.V007.156 35 1 Discharge Drop in Manifold 518.V007.156 W WD Discharge Drop in Manifold V237FB <td< td=""><td>Item #</td><td>Qty.</td><td>Description</td><td>Versa-F</td><td></td><td></td><td>Dome</td></td<>	Item #	Qty.	Description	Versa-F			Dome
26 2 O-ring V221D N/A 27 2 Inner Diaphragm Plate V221B V226B 28 2 Bumper Washer P24-501 V226B 29 2 Outer Diaphragm Plate VB221 VB226 30 4 Valve Seat (See Below Material Chart) VB226 V240xx 31 4 Valve Seat (See Below Material Chart) (See Note 2) V241xx 32 4 Valve Saal (See Below Material Chart) V240xx V241xx 33 2 Water Chamber V235FB V241xx 34 16 Water Chamber Bolt 170.020.330 Discharge Drop in Manifold 35 1 Discharge Drop in Manifold 518.V007.156 Discharge Drop in Manifold 36 1 Suction Manifold (BSP) 518.V007.156 Suction Manifold (BSP) 36 1 Suction Manifold (BSP) 518.V006.156 Suction Manifold (BSP) 37 12 Manifold (BSP) 518.V006.156 Suction Manifold (BSP) 518.V006.156	24	1			P24	-103	
27 2 Inner Diaphragm Plate V221B V226B 28 2 Bumper Washer P24 501 VB26 29 2 Outer Diaphragm Plate VB21 VB26 30 4 Valve Seat (See Below Material Chart) V240x VB26 31 4 Valve Seat (See Below Material Chart) V240x V240x 32 4 Valve Ball (See Below Material Chart) V241xx V241xx 10 4 Valve Ball (See Below Material Chart) V241xx V241xx 11 6 Water Chamber V235FB V235FB 33 2 Water Chamber Polt 170.020.330 V235FB 34 16 Water Chamber Polt V235FB V235FB 35 1 Discharge Drop in Manifold 518.V007.156 V235FB 35 1 Suction Drop in Manifold (BSP) 518.V007.156 W Suction Drop in Manifold 36 1 Suction Drop in Manifold (BSP) 518.V007.156 W Suction Drop in Manifold V237FBSP							
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32 4 Valve Ball (See Below Material Chart) V241xx Wet End Assembly 33 2 Water Chamber V235FB 34 16 Water Chamber Bolt 170.020.330 34 16 Water Chamber Bolt 170.020.330 35 1 Discharge Manifold V236FB 36 1 Discharge Drop in Manifold 518.V007.156 WD Discharge Drop in Manifold (BSP) 518.V007.156 WE WD Discharge Drop in Manifold (BSP) 518.V007.156 WE WD Discharge Drop in Manifold (BSP) 518.V007.156 WE Suction Manifold (BSP, Option) V237FBBSP Suction Drop in Manifold (BSP) 518.V006.156 Suction Drop in Manifold (BSP) V337FB Suction Drop in Manifold (BSP) V384C 38 28 Nut V354C 39 28 Nut V320CA Wesher V225N V241N V240N N/A Nthrile V224N V225N V241N V240N N/A 39 28 <td></td> <td></td> <td>Valve Seat (See Below Material Chart)</td> <td></td> <td></td> <td></td> <td></td>			Valve Seat (See Below Material Chart)				
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Image: Second	35	1	Discharge Drop in Manifold				
WD Discharge Drop in Manifold (BSP)518.V007.156 WE361Suction Manifold (BSP Option)V237FBBSP361Suction Drop in Manifold518.V006.1563712Manifold (BSP)518.V006.156 E3828NutV251D3828NutV354C3928WasherV302GAElastomer Material SpecificationsMaterialVersa-Rugged Diaphragm P/NVersa-Dome Diaphragm P/N"Ball P/N"Seat P/NSeat O-RingNeopreneV224NV225NV241NV240NN/ANitrileV224BNV225NV241NV240NN/AFKMV224NDV225NDV241NDV240NDN/APTFEN/AN/AV225NDV241NDV240NDN/APTFEN/AN/AV225NDV241NDV240NDN/APTFEN/AN/AN/AV241TFV240TFV240TSantopreneV224TPEXLV225TPEXLV241TPEXLV240TFV240THytrelV224TPEFGV225TPEFGV241TPEFGV240TN/AHytrelV224TPEFGV225TPEFGV241TPEFGV240AN/AAluminumN/AN/AN/AN/AN/AN/A							
361Suction ManifoldV237FB361Suction Manifold (BSP Option)V237FBSSPSuction Drop in Manifold (BSP)518.V006.1563712Manifold BoltV251D3828NutV251D3928WasherV332GAElastomer Material SpecificationsMaterialVersa-Rugged Diaphragm P/NVersa-Dome Diaphragm P/N"Ball P/N"Seat P/NSeat O-RingNeopreneV224NV225NV241NV240NN/ANitrileV224NV225NV241NV240NN/AFKMV224VTV225NV241NV240NN/AFKMV224NDV225NV241NV240NN/APTFEN/AN/AV241TV240NDN/APTFEN/AN/AV241TFV240NDN/APTFEN/AN/AV241TFV240TFV240TSantopreneV224TPEXLV225TPEXLV241TPEFGN/AHytrelV224TPEFGV225TPEFGV241TPEFGV240AAluminumN/AN/AN/AN/A			WD Discharge Drop in Manifold (BSP)		518.V00	7.156 WE	
36 1 Suction Drop in Manifold 518.V006.156 37 12 Manifold Bolt V251D 38 28 Nut V354C 39 28 Washer V302GA Elastomer Material Specifications Material Versa-Rugged Diaphragm P/N Versa-Dome Diaphragm P/N Seat P/N Seat O-Ring Neoprene V224N V225N V241N V240N N/A Nitrile V224VT V225N V241N V240N N/A FKM V224VT V225VT V241VT V240N N/A EPDM V224ND V225ND V241ND V240ND N/A PTFE N/A N/A V241ND V240ND N/A PTFE N/A N/A V241TF V240T N/A Hytrel V224TPEXL V225TPEXL V241TF V240T N/A Aluminum N/A N/A N/A N/A See Note 1 Below) <td< td=""><td></td><td></td><td>Suction Manifold</td><td></td><td>V23</td><td>7FB</td><td></td></td<>			Suction Manifold		V23	7FB	
Suction Drop in Manifold (BSP)518.V006.156 E3712Manifold BoltV251D3828NutV354C3928WasherV302GAElastomer Material SpecificationsWersa-Rugged Diaphragm P/NVersa-Dome Diaphragm P/N"Ball P/N"Seat P/NSeat O-RingNeopreneV224NV225NV241NV240NN/ANitrileV224BNV225BNV241BNV240BNN/AFKMV224VTV225VTV241VTV240VTN/AFFEN/AV/AV225NDV241NDV240VTN/APTFEN/AN/AV225NDV241NDV240VTN/APTFEN/AN/AV241TFV240TFV240TSantopreneV224TPEXLV225TPEXLV241TPEXLV240TFV240THytrelV224TPEFGV225TPEFGV241TPEFGN/AN/AAluminumN/AN/AN/AN/AN/A	36	1					
3712Manifold BoltV251D3828NutV354C3928WasherV302GAElastomer Material SpecificationsMaterialVersa-Rugged Diaphragm P/NVersa-Dome Diaphragm P/N"Ball P/N"Seat P/NSeat O-RingMeopreneV224NV225NV241NV240NN/ANitrileV224BNV225BNV241BNV240BNN/AFKMV224VTV225VTV241NDV240BNN/AFKMV224VDV225VTV241NDV240VTN/APTFEN/AN/AV241TFV240TFV240TSantopreneV224TPEXLV225TPEXLV241TPEXLV240TFV240THytrelV224TPEFGV225TPEKLV241TPEKLV240TFN/AAluminumN/AN/AN/AN/AN/AAluminumN/AN/AN/AN/AN/A					518.VU	00.150 06.156 E	
3828NutV354C3928WasherV302GAElastomer Material SpecificationsMaterialVersa-Rugged Diaphragm P/NVersa-Dome Diaphragm P/N"Ball P/N"Seat P/NSeat O-RingNeopreneV224NV225NV241NV240NN/ANitrileV224BNV225NV241BNV240BNN/AFKMV224VTV225VTV241VTV240VTN/AFKMV224VDV225NDV241NDV240VTN/APTFEN/AN/AV225NDV241NDV240VTN/APTFEN/AN/AV241TFV240TFV240TSantopreneV224TPEXLV225TPEXLV241TPEXLV240TPEXLN/AHytrelV224TPEFGV225TPEFGV241TPEFGV240TN/AAluminumN/AN/AN/AN/AN/AN/A	37	12	Manifold Bolt		V2	51D	
Elastomer Material SpecificationsMaterialVersa-Rugged Diaphragm P/NVersa-Dome Diaphragm P/N"Ball P/N"Seat P/NSeat O-RingNeopreneV224NV225NV241NV240NN/ANitrileV224BNV225BNV241BNV240BNN/AFKMV224VTV225VTV241VTV240BNN/AEPDMV224NDV225NDV241NDV240NDN/APTFEN/AN/AV241TFV240TFV240TSantopreneV224TPEXLV225TPEXLV241TPEXLV240TPEXLN/AHytrelV224TPEFGV225TPEFGV241TPEFGV240TPEFGN/AAluminumN/AN/AN/AN/AN/AN/A	38	28	Nut		V3	54C	
MaterialVersa-Rugged Diaphragm P/NVersa-Dome Diaphragm P/N"Ball P/N"Seat P/NSeat O-RingNeopreneV224NV225NV241NV240NN/ANitrileV224BNV225BNV241BNV240BNN/AFKMV224VTV225VTV241VTV240BNN/AEPDMV224NDV225NDV241NDV240VTN/APTFEN/AN/AV241NFV240TFV240TSantopreneV224TPEXLV225TPEXLV241TPEXLV240TFV240THytrelV224TPEFGV225TPEFGV241TPEFGV240TPEFGN/AAluminumN/AN/AN/AN/AN/AN/A	39	1 28		omer Material Specific	V30	26A	
NeopreneV224NV225NV241NV240NN/ANitrileV224BNV225BNV241BNV240BNN/AFKMV224VTV225VTV241VTV240VTN/AEPDMV224NDV225NDV241NDV240NDN/APTFEN/AN/AV241TFV240TFV240TSantopreneV224TPEXLV225TPEXLV241TPEXLV240TEXLN/AHytrelV224TPEFGV225TPEFGV241TPEFGV240TPEFGN/AAluminumN/AN/AN/AN/AN/AN/A	Mate	erial		Versa-Dome		Seat P/N	Seat O-Ring
Nitrile V224BN V225BN V241BN V240BN N/A FKM V224VT V225VT V241VT V240VT N/A EPDM V224ND V225ND V241ND V240ND N/A PTFE N/A N/A V241TF V240TF V240T Santoprene V224TPEXL V225TPEXL V241TPEXL V240TPEXL N/A Hytrel V224TPEFG V225TPEFG V241TPEFG V240TPEFG N/A Aluminum N/A N/A N/A N/A N/A				Diaphragm P/N			-
FKM V224VT V225VT V241VT V240VT N/A EPDM V224ND V225ND V241ND V240ND N/A PTFE N/A N/A V241TF V240TF V240T Santoprene V224TPEXL V225TPEXL V241TPEXL V240TPEXL N/A Hytrel V224TPEFG V225TPEFG V241TPEFG V240TPEFG N/A Aluminum N/A N/A N/A N/A N/A			V224IN V224BN	V225BN			
PTFEN/AN/AV241TFV240TFV240TSantopreneV224TPEXLV225TPEXLV241TPEXLV240TPEXLN/AHytrelV224TPEFGV225TPEFGV241TPEFGV240TPEFGN/AAluminumN/AN/AN/AV240A (See Note 1 Below)N/A	FK	M	V224VT	V225VT	V241VT	V240VT	N/A
Santoprene V224TPEXL V225TPEXL V241TPEXL V240TPEXL N/A Hytrel V224TPEFG V225TPEFG V241TPEFG V240TPEFG N/A Aluminum N/A N/A N/A V240A (See Note 1 Below) N/A					V241ND		
Hytrel V224TPEFG V225TPEFG V241TPEFG V240TPEFG N/A Aluminum N/A N/A N/A V240A (See Note 1 Below) N/A							
Aluminum N/A N/A V240A (See Note 1 Below) N/A							
				N/A V240A N/A			
	Notes:					(See Note 1 Below)	1 1/7 1

Notes:

1.) The Metal seat material is to match the water chamber material. In addition to this seat, (4) o-rings are needed. (Ref Note 2) 2.) These (4) o-rings are only used with Metal fitted seats.



Composite Repair Parts Drawing - PTFE Fitted





Composite Repair Parts List - PTFE Fitted

			Air Value Assembly	
Item #	Qty.	Description	Air Valve Assembly Part Nu	mber
	Gity.	Air Side Repair Kit (Includes Items	476.V02	
		3,5,7,9,14,16,18-22)		
1 2		Valve Body (includes items 2-11)	031.V002.156	
3		Valve Body Valve Body Gasket	095.V001.156 P24-202	
4		Valve Sleeve	755.V00	
5	6	O-ring	560.200	5.360
6	1	Valve Spool Assembly (Includes items 7)	775.V00	1.000
7	6	Glyde Ring Assembly	P34-2	
8	1	Air Valve Screen End Cap Gasket	P24-2 P24-2	
10	2	End Cap Gasket End Cap	P24-2 P34-3	
11	13	Mounting Screws (8 included on item 1)	S10	
			Center Section Assembly	
Item #	Qty.	Description	Part Nu	
<u>12</u> 13	1 2	Center Block Assembly (Includes item 13 & 14) Bearing Sleeve	P24-400E P31-4	
14	2	Main Shaft O-Ring	P24-4	
15	2	Air Chamber	196.V00	4.156
16	2	Air Chamber Gasket	P79-	109
17	8	Bolt	P24-	
10	1	Pilot Repair Kit (Includes Items 18-22)	476.V01	
18 19	6	Pilot Sleeve Assembly (include item 19) O-ring	755.V00 560.10	
20		Retaining Ring	675.03	7.080
21	1	Pilot Spool Assembly (Includes item 22)	775.V00	2.000
22	8	O-ring	560.023	3.358
23	1	Muffler	530.03 530.03	3.000
			Part Nu	mber
Item #	Qty.	Description	PTFE Two Piece	Fusion
24	1	Main Shaft	P24-102	P24-103F
25 26	2	Shaft Stud Diaphraom	V221F V224TF-FB	N/A V224F
20	2	Back Up Diaphragm	V224TFB	N/A
28	2	Inner Diaphragm Plate	V221TI	N/A
29	2		P24-5	501
30		Bumper Washer	1 24-3	
31	2	Outer Diaphragm Plate	V221TO	N/A
	4	Outer Diaphragm Plate Valve Seat (See Material Chart Below)	V221TO V240	N/A Dxx
32	4 4	Outer Diaphragm Plate Valve Seat (See Material Chart Below) Valve Seat O-Ring	V221TO V240 V240T (See	N/A 0xx e Note 1)
	4	Outer Diaphragm Plate Valve Seat (See Material Chart Below)	V221TO V240 V240T (Ser V241 Wet End Assembly	N/A 0xx e Note 1) TF
32 33 Item #	4 4 4 Qty.	Outer Diaphragm Plate Valve Seat (See Material Chart Below) Valve Seat O-Ring Valve Ball Description	V221TO V240 V240T (Ser V241 Wet End Assembly Part Nu	N/A 0xx e Note 1) TF mber
32 33 Item # 34	4 4 4 Qty. 2	Outer Diaphragm Plate Valve Seat (See Material Chart Below) Valve Seat O-Ring Valve Ball Description Water Chamber	V221TO V240 V240T (Ser V241 Wet End Assembly Part Nu V235	N/A bxx e Note 1) TF mber FB
32 33 Item #	4 4 4 Qty.	Outer Diaphragm Plate Valve Seat (See Material Chart Below) Valve Seat O-Ring Valve Ball Description Water Chamber Water Chamber Bolt	V221TO V240 V240T (Se V240T (Se V241 Wet End Assembly Part Nu V235 170.020	N/A e Note 1) TF mber FB 0.330
32 33 Item # 34	4 4 4 Qty. 2	Outer Diaphragm Plate Valve Seat (See Material Chart Below) Valve Seat O-Ring Valve Ball Description Water Chamber Water Chamber Discharge Manifold	V221TO V240 V240T (Ser V241 Wet End Assembly Part Nu V235 170.02 V236	N/A bxx e Note 1) TF mber FB 0.330 FB
32 33 Item # 34 35	4 4 Qty. 2 16	Outer Diaphragm Plate Valve Seat (See Material Chart Below) Valve Seat O-Ring Valve Ball Description Water Chamber Water Chamber Bolt Discharge Manifold Discharge Manifold Discharge Drop in Manifold	V221TO V240 V240T (Ser V241 Wet End Assembly Part Nu V235 170.020 V236 V236 V236 V236 V236 V236 V236 V236	N/A bxx e Note 1) TF mber FB 0.330 FB 3BSP 6.156
32 33 Item # 34	4 4 4 Qty. 2	Outer Diaphragm Plate Valve Seat (See Material Chart Below) Valve Seat O-Ring Valve Ball Description Water Chamber Water Chamber Bolt Discharge Manifold Discharge Manifold Discharge Drop in Manifold Discharge Drop in Manifold (BSP)	V221TO V240 V240T (Ser V241 Wet End Assembly Part Nu V235 1770.020 V236FE V236FE V236FE 518.V000	N/A bxx e Note 1) TF mber FB 0.330 FB 3BSP 6.156 5.156 E
32 33 Item # 34 35	4 4 Qty. 2 16	Outer Diaphragm Plate Valve Seat (See Material Chart Below) Valve Seat O-Ring Valve Ball Description Water Chamber Water Chamber Bolt Discharge Manifold Discharge Manifold Discharge Drop in Manifold Discharge Drop in Manifold (BSP) WD Discharge Drop in Manifold	V221TO V240 V240T (Sec V240T (Sec V241 Wet End Assembly Part Nu V235 170.020 V236 V236 V236 V236 V236 V236 V236 V236	N/A bxx e Note 1) TF B 0.330 FB 3BSP 6.156 0.156 E 156 W
32 33 Item # 34 35	4 4 Qty. 2 16	Outer Diaphragm Plate Valve Seat (See Material Chart Below) Valve Seat O-Ring Valve Ball Description Water Chamber Water Chamber Bolt Discharge Manifold Discharge Drop in Manifold Discharge Drop in Manifold Discharge Drop in Manifold Discharge Drop in Manifold WD Discharge Drop in Manifold	V221TO V240 V240T (Sec V240T (Sec V241 Wet End Assembly Part Nu V235 1770.020 V236FE V236FE V236FE S18.V000 518.V000 518.V000	N/A bxx e Note 1) TF FB 0.330 FB 3BSP 6.156 6.156 5.156 E 156 W 0.156 E
32 33 Item # 34 35 36	4 4 2 16 1	Outer Diaphragm Plate Valve Seat (See Material Chart Below) Valve Seat O-Ring Valve Ball Description Water Chamber Water Chamber Bolt Discharge Manifold Discharge Drop in Manifold Discharge Drop in Manifold WD Discharge Drop in Manifold WD Discharge Drop in Manifold WD Discharge Drop in Manifold Suction Manifold	V221TO V240 V240T (Sec V240T (Sec V241 Wet End Assembly Part Nu V235 170.020 V236 V236 V236 V236 V236 S18.V000 518.V000 518.V000 S18.V000	N/A bxx e Note 1) TF B 0.330 FB BBSP 6.156 0.156 0.156 0.156 0.156 D 0.156 E 5.156 D 0.156 E 5.156 D 0.156 E 5.156 D 0.156 E 5.156 D 0.156 E 5.156 D 0.156 E 5.156 D 0.156 E 5.156 D 0.156 E 5.156 D 0.156 E 5.156 D 0.156 E 5.156 D 0.156 E 5.156 D 0.156 E 5.156 D 0.156 E 5.156 D 0.156 E 5.156 D 0.156 D 0.156 E 5.156 D 0.156 D 0.156 E 5.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.156 D 0.157 D 0.156 D 0.156 D 0.157 D 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
32 33 Item # 34 35	4 4 Qty. 2 16	Outer Diaphragm Plate Valve Seat (See Material Chart Below) Valve Seat O-Ring Valve Ball Description Water Chamber Water Chamber Bolt Discharge Manifold Discharge Drop in Manifold Discharge Drop in Manifold WD Discharge Drop in Manifold WD Discharge Drop in Manifold By Suction Manifold (BSP) Suction Manifold Suction Manifold	V221TO V240 V240T (Server V240T (Server V241 Wet End Assembly Part Nu V235 V235 V236 V236 V236 V236 V236 V236 V236 V236	N/A bxx e Note 1) TF mber FB 0.330 FB 0.330 FB 0.156 0.156 0.156 0.156 E .156 W 0.156 E FB 3BSP 7.156
32 33 Item # 34 35 36 36	4 4 2 16 1	Outer Diaphragm Plate Valve Seat (See Material Chart Below) Valve Seat O-Ring Valve Ball Description Water Chamber Water Chamber Bolt Discharge Manifold Discharge Manifold Discharge Drop in Manifold Discharge Drop in Manifold WD Discharge Drop in Manifold WD Discharge Drop in Manifold Suction Manifold (BSP) Suction Manifold Suction Manifold (BSP) Suction Manifold Suction Drop in Manifold Suction Drop in Manifold Suction Drop in Manifold Suction Drop in Manifold	V221TO V240 V240T (Ser V241 Wet End Assembly Part Nu V235 V235 V236 V236 V236 V236 V236 V236 V236 V236	N/A bxx e Note 1) TF FB 0.330 FB 3BSP 66.156 0.156 E 0.156 E 0.156 E 5.156 W 0.156 E FB 3BSP 7.156 7.156 E
32 33 Item # 34 35 36 37 37 38	4 4 2 16 1 1	Outer Diaphragm Plate Valve Seat (See Material Chart Below) Valve Seat O-Ring Valve Ball Description Water Chamber Water Chamber Bolt Discharge Manifold Discharge Manifold Discharge Drop in Manifold Discharge Drop in Manifold WD Discharge Drop in Manifold WD Discharge Drop in Manifold Suction Manifold (BSP) Suction Manifold Suction Drop in Manifold Discharge Drop in Manifold	V221TO V240 V240T (Ser V241 Wet End Assembly Part Nu V235 170.02 V236 V236 V236 V236 V236 V236 V236 S18.V006 518.V006 518.V006 518.V006 518.V006 518.V006 518.V006 518.V006 V237 V237 V237 S18.V006	N/A bxx a Note 1) TF mber FB 0.330 FB 3BSP 6.156 0.156 E .156 E FB 3BSP .156 E FB .156 E FB .156 E FB .156 E .156 E .156 E .156 E .156 E .156 D .156 E .150 E <
32 33 Item # 34 35 36 36 37 37 38 39	4 4 2 16 1 1 1 28	Outer Diaphragm Plate Valve Seat (See Material Chart Below) Valve Seat O-Ring Valve Ball Description Water Chamber Water Chamber Bolt Discharge Manifold Discharge Manifold Discharge Drop in Manifold Discharge Drop in Manifold WD Discharge Drop in Manifold WD Discharge Drop in Manifold WD Discharge Drop in Manifold Suction Manifold (BSP) Suction Manifold Suction Drop in Manifold Suctin Drop in	V221TO V240 V240T (Ser V241 Wet End Assembly Part Nu V235 Part Nu V235 V235 V235 V235 V236 V236 V236 V236 V236 V236 V236 V236	N/A bxx e Note 1) TF B D.330 FB BBSP 6.156 C.156 E C.156 W C.156 E FB BBSP 7.156 E T.156 C.156 E D C.156 E D C.156 E C.156 E C
32 33 Item # 34 35 36 37 37 38	4 4 2 16 1 1	Outer Diaphragm Plate Valve Seat (See Material Chart Below) Valve Seat O-Ring Valve Ball Description Water Chamber Water Chamber Bolt Discharge Manifold Discharge Manifold Discharge Drop in Manifold Discharge Drop in Manifold WD Discharge Drop in Manifold WD Discharge Drop in Manifold Suction Manifold (BSP) Suction Manifold Suction Drop in Manifold Discharge Drop in Manifold	V221TO V240 V240T (Ser V240T (Ser V241 Wet End Assembly Part Nu V235 170.020 V236 V236 V236 V236 V236 V236 V236 V236	N/A bxx e Note 1) TF B D.330 FB BBSP 6.156 C.156 E C.156 W C.156 E FB BBSP 7.156 E T.156 C.156 E D C.156 E D C.156 E C.156 E C
32 33 Item # 34 35 36 36 37 37 38 39	4 4 2 16 1 1 1 28	Outer Diaphragm Plate Valve Seat (See Material Chart Below) Valve Seat O-Ring Valve Ball Description Water Chamber Water Chamber Bolt Discharge Manifold Discharge Manifold Discharge Drop in Manifold Discharge Drop in Manifold WD Discharge Drop in Manifold WD Discharge Drop in Manifold WD Discharge Drop in Manifold Suction Manifold (BSP) Suction Manifold Suction Drop in Manifold Suctin Drop in	V221TO V240 V240T (Ser V240T (Ser V240T (Ser V240T (Ser V241 V241 Wet End Assembly V241 Vet End Assembly Part Nu V236 V236 V236 V236 V236 V236 S18.V000 518.V000 S18.V000 518.V000 V237FE V237FE V237FE S18.V000 S18.V000 S18.V000 V337 V237FE V332 V332 V354 V354 V354 V354 V354 V354	N/A bxx e Note 1) TF mber FB 0.330 FB 3BSP 6.156 5.156 E .156 W 5.156 E .156 W 5.156 E FB 3BSP 7.156 E 1D 4C GA
32 33 Item # 34 35 36 36 37 37 38 39	4 4 2 16 1 1 1 28	Outer Diaphragm Plate Valve Seat (See Material Chart Below) Valve Seat O-Ring Valve Ball Description Water Chamber Water Chamber Bolt Discharge Manifold Discharge Manifold (BSP Option) Discharge Drop in Manifold Discharge Drop in Manifold WD Discharge Drop in Manifold WD Discharge Drop in Manifold Suction Manifold Suction Manifold Suction Drop in Manifold Washer	V221TO V240 V240T (Ser V240T (Ser V240T (Ser V240T (Ser V241 V240T (Ser Wet End Assembly V241 Wet End Assembly Part Nu V235 170.020 V236FE V236FE V236FE 518.V000 518.V000 518.V000 518.V000 518.V000 V237FE 518.V000 S18.V007 V237FE S18.V007 V237FE V302 V302 Material Specifications V302	N/A bxx

Notes:

3: EXP VIEW

1.) These (4) o-rings are only used with Metal fitted seats.

2.) This Metal seat requires (4) V240T O-Rings.



Material Codes - The Last 3 Digits of Part Number

- 000.....Assembly, sub-assembly; and some purchased items 010.....Cast Iron 015.....Ductile Iron 020.....Ferritic Malleable Iron 080.....Carbon Steel, AISI B-1112 110.....Alloy Type 316 Stainless Steel 111Alloy Type 316 Stainless Steel (Electro Polished) 112.....Alloy C 113.....Alloy Type 316 Stainless Steel (Hand Polished) 114.....303 Stainless Steel 115.....302/304 Stainless Steel 117.....440-C Stainless Steel (Martensitic) 120.....416 Stainless Steel (Wrought Martensitic) 148.....Hardcoat Anodized Aluminum 150.....6061-T6 Aluminum 152.....2024-T4 Aluminum (2023-T351) 155.....356-T6 Aluminum 156.....356-T6 Aluminum 157.....Die Cast Aluminum Alloy #380 158.....Aluminum Alloy SR-319 162.....Brass, Yellow, Screw Machine Stock 165.....Cast Bronze, 85-5-5-5 166.....Bronze, SAE 660 170.....Bronze, Bearing Type, **Oil Impregnated** 180.....Copper Alloy 305.....Carbon Steel, Black Epoxy Coated 306.....Carbon Steel, Black PTFE Coated 307.....Aluminum, Black Epoxy Coated 308.....Stainless Steel, Black PTFE Coated 309.....Aluminum, Black PTFE Coated 313.....Aluminum, White Epoxy Coated 330.....Zinc Plated Steel 332.....Aluminum, Electroless Nickel Plated 333.....Carbon Steel, Electroless Nickel Plated 335.....Galvanized Steel 337.....Silver Plated Steel 351.....Food Grade Santoprene® 353.....Geolast; Color: Black 354.....Injection Molded #203-40 Santoprene® Duro 40D +/-5; Color: RED 356.....Hytrel® 357.....Injection Molded Polyurethane 358.....Urethane Rubber (Some Applications) (Compression Mold) 359.....Urethane Rubber 360.....Nitrile Rubber Color coded: RED 363.....FKM (Fluorocarbon)

- Color coded: YELLOW
- 364.....EPDM Rubber Color coded: BLUE 365.....Neoprene Rubber Color coded: GREEN 366.....Food Grade Nitrile 368.....Food Grade EPDM 371.....Philthane (Tuftane) 374.....Carboxylated Nitrile 375.....Fluorinated Nitrile 378.....High Density Polypropylene 379.....Conductive Nitrile 408.....Cork and Neoprene 425.....Compressed Fibre 426.....Blue Gard 440.....Vegetable Fibre 500.....Delrin® 500 502.....Conductive Acetal, ESD-800 503.....Conductive Acetal, Glass-Filled 506.....Delrin® 150 520.....Injection Molded PVDF Natural color 540.....Nylon 542 Nylon 544.....Nylon Injection Molded 550.....Polyethylene 551.....Glass Filled Polypropylene 552.....Unfilled Polypropylene 555.....Polyvinyl Chloride 556.....Black Vinyl 558.....Conductive HDPE 570.....Rulon II® 580.....Ryton® 600.....PTFE (virgin material) Tetrafluorocarbon (TFE) 603.....Blue Gylon® 604.....PTFE 606.....PTFE 607.....Envelon 608.....Conductive PTFE 610.....PTFE Encapsulated Silicon 611.....PTFE Encapsulated FKM 632.....Neoprene/Hytrel® 633.....FKM/PTFE 634.....EPDM/PTFE 635.....Neoprene/PTFE 637.....PTFE, FKM/PTFE 638.....PTFE, Hytrel®/PTFE 639.....Nitrile/TFE 643.....Santoprene®/EPDM 644.....Santoprene®/PTFE 656.....Santoprene® Diaphragm and Check Balls/EPDM Seats 661.....EPDM/Santoprene® 666.....FDA Nitrile Diaphragm, PTFE Overlay, Balls, and Seals 668.....PTFE, FDA Santoprene®/PTFE
- · Delrin and Hytrel are registered tradenames of E.I. DuPont.
- Nylatron is a registered tradename of Polymer Corp.
- · Gylon is a registered tradename of Garlock. Inc.
- · Santoprene is a registered tradename of Exxon Mobil Corp.
- Rulon II is a registered tradename of Dixion Industries Corp.
- Ryton is a registered tradename of Phillips Chemical Co.
- · Valox is a registered tradename of General Electric Co.

RECYCLING

Warren Rupp, manufacturer of Versamatic, is an ISO14001 registered company and is committed to minimizing the impact our products have on the environment. Many components of Versamatic® AODD pumps are made of recyclable materials. We encourage pump users to recycle worn out parts and pumps whenever possible, after any hazardous pumped fluids are thoroughly flushed. Pump users that recycle will gain the satisfaction to know that their discarded part(s) or pump will not end up in a landfill. The recyclability of Versamatic products is a vital part of Warren Rupp's commitment to environmental stewardship.



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5 - YEAR Limited Product Warranty

Quality System ISO9001 Certified • Environmental Management Systems ISO14001 Certified

Versamatic warrants to the original end-use purchaser that no product sold by Versamatic that bears a Versamatic 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 Versamatic'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://vm.salesmrc.com/pdfs/VM_Product_Warranty.pdf

DECLARATION OF CONFORMITY

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

MANUFACTURED BY:

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



2006/42/EC

EN809:2012

to Annex VIII

on Machinery, according

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:

Versamatic, 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 siquientes 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

osebe

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:





WWW.VERSAMATIC.COM

PÄIVÄYS:

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EU Declaration of Conformity			
Manufacturer: Versamatic A Unit of IDEX Corporation 800 North Main Street Mansfield, OH 44902 USA	<		
Warren Rupp, Inc declares that Air Operated Double Diaphragm Pur listed below comply with the requirements of Directive 2014/34/EU a			
Applicable Standards: • EN ISO 80079-36: 2016 • EN ISO 80079-37: 2016	• EN60079-25: 2010		
1. AODD Pumps and Surge Suppressors - Technical File No.: 2031	0400 -1410/MER		
Hazardous Location Applied:			
𝔄 II 2 G Ex h IIC T5225°C (T2) Gb II 2 D Ex h IIIC T100°CT200°C Db			
 Metal pump models with external aluminum components (I Versa-Surge[®] surge suppressors (VTA-Series) 	E-series)		
2. AODD Pumps - Technical File No.: 20310400 -1410/MER - On File	With: DEKRA Certification B.V. (0344) Meander 1051 6825 MJ Arnhem		
Hazardous Location Applied:	The Netherlands		
I M2 Ex h Mb (Ex) II 2 G Ex h IIC T5225°C (T2) Gb II 2 D Ex h IIIC T100°CT200°C Db			
 Metal pump models with no external aluminum (E-Series) Conductive plastic pumps (E-Series Plastic) 			
See "Safety Information" page for conditions of safe use			
DATE/OF REVISION/TITLE: 19 DEC 2018	David Reseberry Dave Roseberry Director of Engineering		
	IEEX		

VM_DofC_ATEX_MetallicAndNon-Metallic_V_rev1218