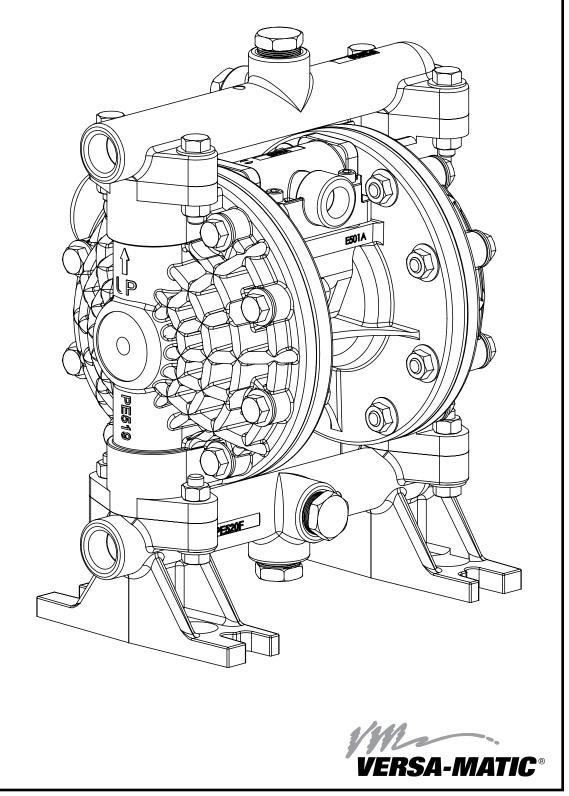
1/2" Elima-Matic Bolted Plastic - Drum Pump

with Non-Metallic Center Sections

E5 Plastic Pumps

Polypropylene





Safety Information

A 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.

A 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.

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.



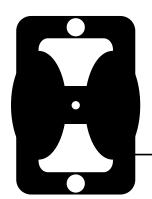
This pump is pressurized internally with air pressure during operation. Make certain that all fasteners are in good condition and are reinstalled properly during reassembly.



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.

A 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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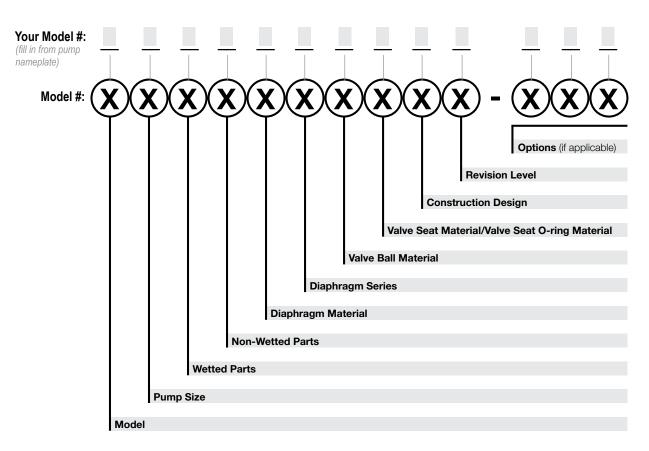
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Explanation of Pump Nomenclature

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
V V-Series	5 1/2"	S Stainless Steel	P Polypropylene	3 (FKM) Fluorocarbon
RE AirVantage	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	9 Geolast

		,	
Diaphragm Series	Valve Ball Material Valve	Seat/Valve Seat O-Ring Material	Construction Design
R Rugged	1 Neoprene	1 Neoprene	9 Bolted
D Dome	2 Nitrile	2 Nitrile	0 Clamped
X Thermo-Matic	3 (FKM) Fluorocarbon	3 (FKM) Fluorocarbon	•
T Tef-Matic (2-piece)	4 EPDM	4 EPDM	
B Versa-Tuff (1-piece)	5 PTFE	5 PTFE	
F FUSION (one-piece	6 Santoprene (XL)	6 Santoprene (XL)	
integrated plate)	7 Hytrel	7 Hytrel	
. ,	8 Polyurethane	8 Polyurethane	
	9 Geolast	9 Geolast	
	A Acetal	A Aluminum w/ PTFE O-Rings	

S Stainless Steel S Stainless Steel w/ PTFE O-Rings C Carbon Steel w/ PTFE O-Rings H Alloy C w/ PTFE O-Rings

T PTFE Encapsulated Silicone O-Rings

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.	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.

Ambient temperature range

-20 C to +40 C

Process temperature range

-20 C to +80 C for models rated as category 1 equipment -20 c to +100 C for model rated as category 2 equipment

In addition, the ambient temperature range and the process temperature range do not exceed the operating temperature range of the applied non-metallic parts as listed in the manuals of the pumps.

AFTERMARKET PARTS

RIGHT PART, RIGHT NOW

Pumper Parts is your single source for parts that fit Air-Operated Double Diaphragm (AODD) pumps

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- ARO®
- Yamada®

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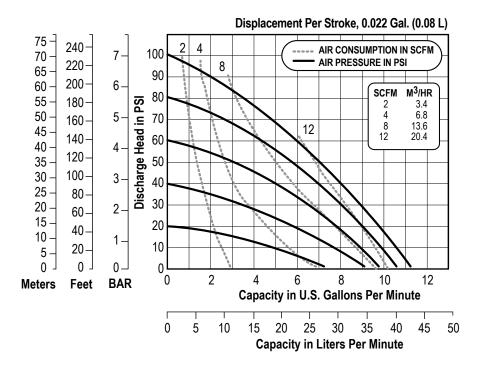
Pumper Parts and its products are not affiliated with any of the original equipment manufacturers referenced herein. All original equipment manufacturers names, colors, pictures, descriptions and part numbers are used for identification purposes only. Pumper Parts is a registered trade name of IDEX Corporation. All other trademarks, registered trademarks and product names are the property of their respective owners. Yamada is a registered trade name of Ingersoll-Rand Company. Wilden is a registered trade name of Wilden Pump and Engineering Company, a Dover Resources Company.



Performance

E5 1/2" Bolted Plastic Rubber and TPE Fitted

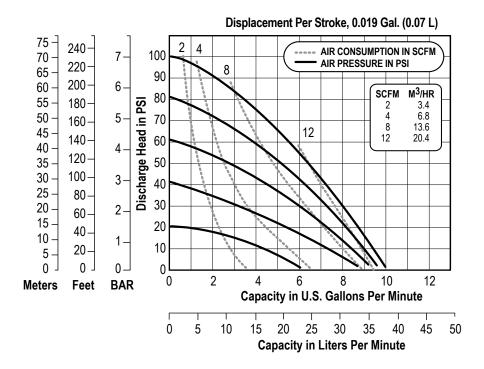
Flow Rate
1 1 2 11 1 2 2 2 2
Adjustable to 0-11 gpm (53 lpm)
Port Size
Suction 1/2" NPT
Discharge 1/2" NPT
Air Inlet
Air Exhaust
Suction Lift
Dry
Wet
Max Solid Size (Diameter)
Max Noise Level
Shipping Weights
Polypropylene 8.5 lbs (3.9 kg)



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%.

E5 1/2" Bolted Plastic PTFE Fitted

Flow Rate Adjustable to 0-10 gpm (37.9 lpm)
• • • • • • • • • • • • • • • • • • • •
Port Size
Suction 1/2" NPT
Discharge 1/2" NPT
Air Inlet
Air Exhaust
Suction Lift
Dry
Wet
Max Solid Size (Diameter)
Max Noise Level 85 dB(A)
Shipping Weights
Polypropylene 8.5 lbs (3.9 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%.

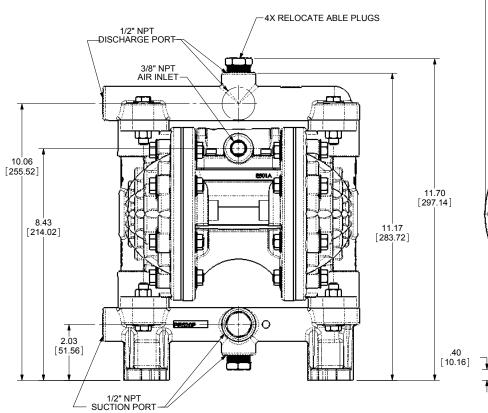


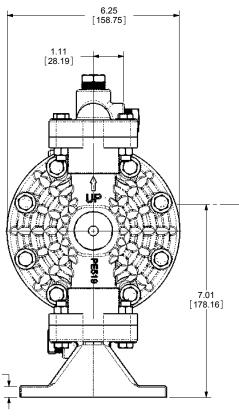
Dimensional Drawings

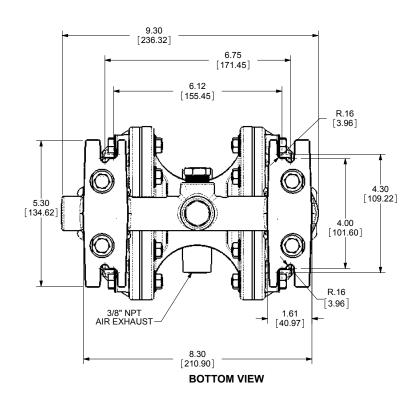
E5 Non-Metallic Bolted

Dimensions in inches (mm dimensions in brackets).

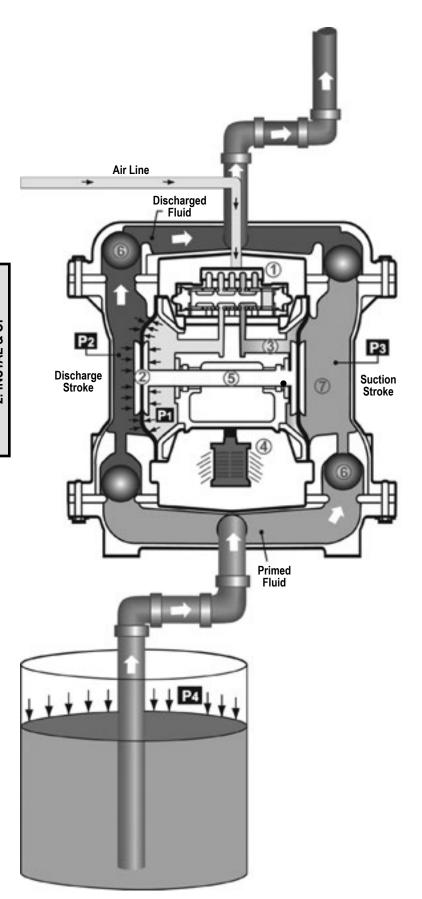
The dimensions on this drawing are for reference only. A certified drawing can be requested if physical dimensions are needed.







Principle of Pump Operation



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

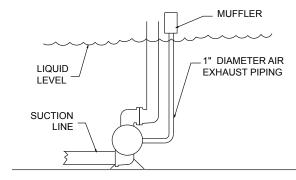
The main directional (air) control valve ① distributes compressed air to an air chamber, exerting uniform pressure over the inner surface of the diaphragm ②. At the same time, the exhausting air ③ from behind the opposite diaphragm is directed through the air valve assembly(s) to an exhaust port ④.

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.

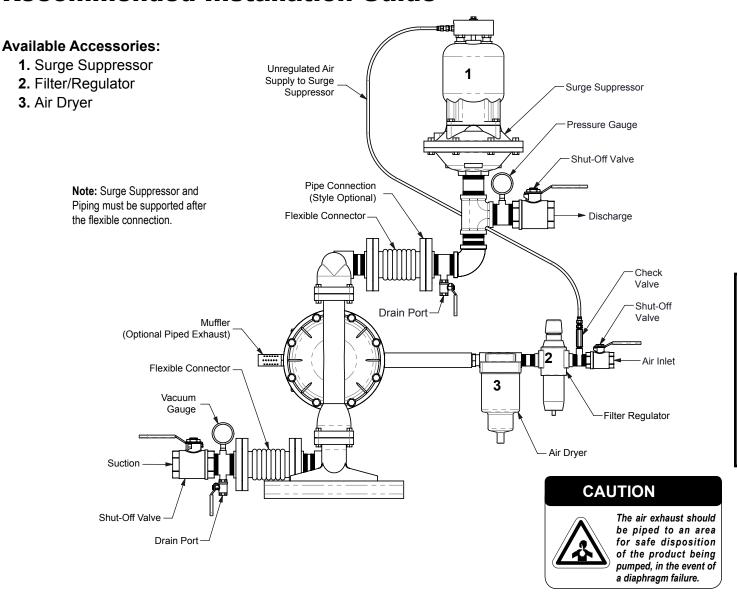
SUBMERGED ILLUSTRATION



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



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.



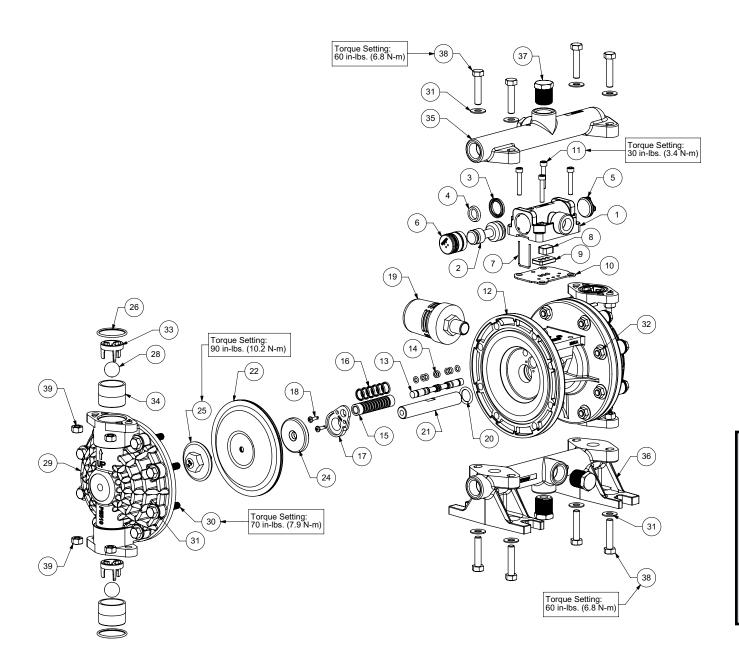
Troubleshooting Guide

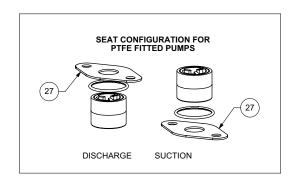
Symptom:	Potential Cause(s):	Recommendation(s):
Pump Cycles Once	Deadhead (system pressure meets or exceeds air supply pressure).	Increase the inlet air pressure to the pump. Pump is designed for 1:1 pressure ratio at zero flow. (Does not apply to high pressure 2:1 units).
	Air valve or intermediate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

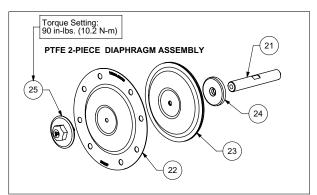
For additional troubleshooting tips contact After Sales Support at service.warrenrupp@idexcorp.com or 419-524-8388



Composite Repair Parts Drawing







Composite Repair Parts List

		Air Valve Assembly			
Item #	Qty.	Description	Part	Number	
- Item π	1	Valve Body (includes items 1-11)	031 \	/004.552	
1	1	Valve Body		E500A	
2	1	Valve Spool Assembly (Includes items 3&4)		BUB ASY	
3	1	Large Valve Spool U-Cup	P98	8-104A	
4	1	Small Valve Spool U-Cup		104AUB	
5	1	End Cap Assembly (Includes O-Ring)	F:	500D	
i	<u> </u>	Reducing End Cap Assembly (Includes 560.0580.360			
6	1	O-Rings)	E500l	DUB ASY	
7	2	Staple	F	500F	
8	<u>-</u> 1	CT Air Diverter		0-075	
9	1	Air Diverter Plate	E500H		
10	1	Air Valve Gasket	360.V003.360		
11	4	Valve Mounting Screws		1004	
"	'	Center Section Assembly	9	1001	
	24		Part	Number	
Item #	Qty.	Description		ropylene	
12	1	Center Section		501A	
13	1	Pilot Spool ASY (Includes Item #14)		/003.000	
14	8	Pilot Spool O-Rings	560.	023.358	
15	1	Pilot Valve Sleeve ASY (Includes Item #16)		/003.000	
16	6	Pilot Valve Sleeve O-Rings	560.	033.358	
17	2	Shaft/Pilot Retainer		/001.554	
18	4	Retainer Screw	E	501C	
19	1	Muffler	V	TM-3	
		Diaphragm Assembly / Elastome	ers		
Item #	Qty.	Description	Part	Number	D'
20		·	TPE/RUBBER	PTFE 2 502B	-Piece
20	<u>2</u> 1	Main Shaft O-Ring		502B 502A	
21	<u> </u>	Main Shaft	"E505xx	502A 1	
22	2	Diaphragm		E505	5TF
	_	I Diapinagin	I (See Relow Material Chart)"		
			(See Below Material Chart)"		
23	2	Back-Up Diaphragm	N/A	E50	
23 24	2 2	Back-Up Diaphragm Inner Diaphragm Plate	N/A V	E50 199C	
23 24 25	2 2 2	Back-Up Diaphragm Inner Diaphragm Plate Outer Diaphragm Plate	N/A V PV199I	E50 199C B, KV199B	5N
23 24	2 2	Back-Up Diaphragm Inner Diaphragm Plate	N/A V PV1991	E50 199C	5N
23 24 25 26	2 2 2 4	Back-Up Diaphragm Inner Diaphragm Plate Outer Diaphragm Plate Valve Seat O-Ring	N/A V PV199i "E510xx (See Below Material Chart)"	E50 199C B, KV199B E510	5N TES
23 24 25 26 27	2 2 2 4 4	Back-Up Diaphragm Inner Diaphragm Plate Outer Diaphragm Plate Valve Seat O-Ring Manifold Seal	N/A V PV1999 "E510xx (See Below Material Chart) " N/A	E50 199C B, KV199B E510	TES
23 24 25 26	2 2 2 4	Back-Up Diaphragm Inner Diaphragm Plate Outer Diaphragm Plate Valve Seat O-Ring	N/A V PV199i "E510xx (See Below Material Chart)"	E50 199C B, KV199B E510	TES
23 24 25 26 27	2 2 2 4 4	Back-Up Diaphragm Inner Diaphragm Plate Outer Diaphragm Plate Valve Seat O-Ring Manifold Seal	N/A V PV199I "E510xx (See Below Material Chart)" N/A "V111xx (See Below Material Chart)"	E50 199C B, KV199B E510 V111	TES
23 24 25 26 27 28	2 2 2 4 4 4	Back-Up Diaphragm Inner Diaphragm Plate Outer Diaphragm Plate Valve Seat O-Ring Manifold Seal Valve Ball Wet End Assembly	N/A V PV199I "E510xx (See Below Material Chart)" N/A "V111xx (See Below Material Chart)" Part	E50 199C B, KV199B E510 E510 V111	TES
23 24 25 26 27 28	2 2 2 4 4 4 Qty.	Back-Up Diaphragm Inner Diaphragm Plate Outer Diaphragm Plate Valve Seat O-Ring Manifold Seal Valve Ball Wet End Assembly Description	N/A V PV199I "E510xx (See Below Material Chart) " N/A "V111xx (See Below Material Chart)" Part Polyp	E50 199C B, KV199B E510 E510 V111 Number propylene	TES
23 24 25 26 27 28 Item #	2 2 2 4 4 4 Qty.	Back-Up Diaphragm Inner Diaphragm Plate Outer Diaphragm Plate Valve Seat O-Ring Manifold Seal Valve Ball Wet End Assembly Description Water Chamber	N/A V PV199I "E510xx (See Below Material Chart) " N/A "V111xx (See Below Material Chart)" Part Polyp P	E50 199C B, KV199B E510 E510 V111 Number propylene E519	TES
23 24 25 26 27 28 Item # 29 30	2 2 2 4 4 4 Qty.	Back-Up Diaphragm Inner Diaphragm Plate Outer Diaphragm Plate Valve Seat O-Ring Manifold Seal Valve Ball Wet End Assembly Description	N/A V PV199I "E510xx (See Below Material Chart) " N/A "V111xx (See Below Material Chart)" Part Polyp P	E50 199C B, KV199B E510 E510 V111 Number propylene	TES
23 24 25 26 27 28 Item # 29 30 31	2 2 2 4 4 4 4 Qty. 2 16 16	Back-Up Diaphragm Inner Diaphragm Plate Outer Diaphragm Plate Valve Seat O-Ring Manifold Seal Valve Ball Wet End Assembly Description Water Chamber Water Chamber Bolt Water Chamber Washer	N/A V PV199I "E510xx (See Below Material Chart) " N/A "V111xx (See Below Material Chart)" Part Polyp P SV	E50 199C B, KV199B E510 E510 V111 Number oropylene E519 /187A /189C	TES
23 24 25 26 27 28 Item # 29 30 31 32	2 2 2 4 4 4 4 Qty. 2 16 16	Back-Up Diaphragm Inner Diaphragm Plate Outer Diaphragm Plate Valve Seat O-Ring Manifold Seal Valve Ball Wet End Assembly Description Water Chamber Water Chamber Bolt Water Chamber Washer Water Chamber Nut	N/A V PV199I "E510xx (See Below Material Chart)" N/A "V111xx (See Below Material Chart)" Part Polyp P SV SV	E50 199C B, KV199B E510 E510 V111 Number oropylene E519 V187A V189C V185B	TES
23 24 25 26 27 28 Item # 29 30 31 32 33	2 2 2 4 4 4 4 Qty. 2 16 16 16	Back-Up Diaphragm Inner Diaphragm Plate Outer Diaphragm Plate Valve Seat O-Ring Manifold Seal Valve Ball Wet End Assembly Description Water Chamber Water Chamber Bolt Water Chamber Washer Water Chamber Nut Valve Ball Cage	N/A V PV199I "E510xx (See Below Material Chart)" N/A "V111xx (See Below Material Chart)" Part Polyp P SV SV SV	E50 199C B, KV199B E510 V111 Number Propylene E519 V187A V189C V185B E522	TES
23 24 25 26 27 28 Item # 29 30 31 32	2 2 2 4 4 4 4 Qty. 2 16 16	Back-Up Diaphragm Inner Diaphragm Plate Outer Diaphragm Plate Valve Seat O-Ring Manifold Seal Valve Ball Wet End Assembly Description Water Chamber Water Chamber Bolt Water Chamber Washer Water Chamber Nut Valve Ball Cage Valve Ball Seat	N/A V PV199I "E510xx (See Below Material Chart)" N/A "V111xx (See Below Material Chart)" Part Polyp P SV SV SV	E50 199C B, KV199B E510 E510 V111 Number oropylene E519 V187A V189C V185B	TES
23 24 25 26 27 28 Item # 29 30 31 32 33 34	2 2 2 4 4 4 Qty. 2 16 16 16 4 4	Back-Up Diaphragm Inner Diaphragm Plate Outer Diaphragm Plate Valve Seat O-Ring Manifold Seal Valve Ball Wet End Assembly Description Water Chamber Water Chamber Bolt Water Chamber Washer Water Chamber Nut Valve Ball Cage Valve Ball Seat "Discharge Manifold Assembly	N/A V PV199I "E510xx (See Below Material Chart)" N/A "V111xx (See Below Material Chart)" Part Polyp P SV SV SV P	E50 199C B, KV199B E510 E510 V111 Number Propylene E519 V187A V189C V185B E522 E521	TES
23 24 25 26 27 28 Item # 29 30 31 32 33	2 2 2 4 4 4 4 Qty. 2 16 16 16	Back-Up Diaphragm Inner Diaphragm Plate Outer Diaphragm Plate Valve Seat O-Ring Manifold Seal Valve Ball Wet End Assembly Description Water Chamber Water Chamber Bolt Water Chamber Washer Water Chamber Nut Valve Ball Cage Valve Ball Seat "Discharge Manifold Assembly (Includes Plugs)"	N/A V PV199I "E510xx (See Below Material Chart)" N/A "V111xx (See Below Material Chart)" Part Polyp P SV SV SV P	E50 199C B, KV199B E510 V111 Number Propylene E519 V187A V189C V185B E522	TES
23 24 25 26 27 28 Item # 29 30 31 32 33 34 35	2 2 2 4 4 4 Qty. 2 16 16 16 4 4	Back-Up Diaphragm Inner Diaphragm Plate Outer Diaphragm Plate Valve Seat O-Ring Manifold Seal Valve Ball Wet End Assembly Description Water Chamber Water Chamber Bolt Water Chamber Washer Water Chamber Washer Valve Ball Cage Valve Ball Seat "Discharge Manifold Assembly (Includes Plugs)" "Suction Manifold Assembly	N/A V PV199I "E510xx (See Below Material Chart)" N/A "V111xx (See Below Material Chart)" Part Polyp P SN SN SN P P PE5	E50 199C B, KV199B E510 V111 Number Propylene E519 V187A V189C V185B E522 E521 E520 ASY	TES
23 24 25 26 27 28 Item # 29 30 31 32 33 34 35	2 2 2 4 4 4 4 Qty. 2 16 16 16 4 4 1	Back-Up Diaphragm Inner Diaphragm Plate Outer Diaphragm Plate Valve Seat O-Ring Manifold Seal Valve Ball Wet End Assembly Description Water Chamber Water Chamber Bolt Water Chamber Washer Water Chamber Washer Water Chamber Nut Valve Ball Cage Valve Ball Seat "Discharge Manifold Assembly (Includes Plugs)" "Suction Manifold Assembly (Includes Plugs)"	N/A V PV199I "E510xx (See Below Material Chart)" N/A "V111xx (See Below Material Chart)" Part Polyp SV SV P P PE52	E50 199C B, KV199B E510 E510 V111 Number Iropylene E519 V187A V189C V188B E522 E521 E520 ASY	TES
23 24 25 26 27 28 Item # 29 30 31 32 33 34 35 36	2 2 2 4 4 4 4 Qty. 2 16 16 16 4 4 1	Back-Up Diaphragm Inner Diaphragm Plate Outer Diaphragm Plate Valve Seat O-Ring Manifold Seal Valve Ball Wet End Assembly Description Water Chamber Water Chamber Bolt Water Chamber Washer Water Chamber Washer Water Chamber Nut Valve Ball Cage Valve Ball Seat "Discharge Manifold Assembly (Includes Plugs)" "Suction Manifold Assembly (Includes Plugs)" Manifold Plugs	N/A V PV199I "E510xx (See Below Material Chart)" N/A "V111xx (See Below Material Chart)" Part Polyp SV SV SV P PE52 PE52	E50 199C B, KV199B E510 E510 V111 Number ITOPYIENE E519 V187A V189C V185B E522 E521 E520 ASY 20F ASY 058.552	TES
23 24 25 26 27 28 Item # 29 30 31 32 33 34 35 36 37 38	2 2 2 4 4 4 4 2 16 16 16 4 4 1	Back-Up Diaphragm Inner Diaphragm Plate Outer Diaphragm Plate Valve Seat O-Ring Manifold Seal Valve Ball Wet End Assembly Description Water Chamber Water Chamber Bolt Water Chamber Washer Water Chamber Washer Valve Ball Cage Valve Ball Seat "Discharge Manifold Assembly (Includes Plugs)" "Suction Manifold Plugs Manifold Plugs Manifold Bolts	N/A V PV199I "E510xx (See Below Material Chart)" N/A "V111xx (See Below Material Chart)" Part Polyp P SV SV SV P P PE52 618.	E50 199C B, KV199B E510 E510 V111 Number Propylene E519 V187A V189C V185B E522 E521 E20 ASY 20F ASY 058.552 V189D	TES
23 24 25 26 27 28 Item # 29 30 31 32 33 34 35 36 37 38 31	2 2 2 4 4 4 4 2 16 16 16 4 4 1 1 1 4 8	Back-Up Diaphragm Inner Diaphragm Plate Outer Diaphragm Plate Valve Seat O-Ring Manifold Seal Valve Ball Wet End Assembly Description Water Chamber Water Chamber Bolt Water Chamber Washer Water Chamber Nut Valve Ball Cage Valve Ball Seat "Discharge Manifold Assembly (Includes Plugs)" "Suction Manifold Plugs Manifold Bolts Manifold Washer	N/A V PV199I "E510xx (See Below Material Chart)" N/A "V111xx (See Below Material Chart)" Part Polyp P SN SN SN P P PE52 618.	E50 199C B, KV199B E510 E510 V111 Number Propylene E519 V187A V189C V185B E522 E521 E520 ASY 20F ASY 058.552 V189D V189C	TES
23 24 25 26 27 28 Item # 29 30 31 32 33 34 35 36 37 38	2 2 2 4 4 4 4 2 16 16 16 4 4 1	Back-Up Diaphragm Inner Diaphragm Plate Outer Diaphragm Plate Valve Seat O-Ring Manifold Seal Valve Ball Wet End Assembly Description Water Chamber Water Chamber Bolt Water Chamber Washer Water Chamber Nut Valve Ball Cage Valve Ball Seat "Discharge Manifold Assembly (Includes Plugs)" "Suction Manifold Assembly (Includes Plugs)" Manifold Plugs Manifold Bolts Manifold Washer Manifold Washer Manifold Nut	N/A V PV199I "E510xx (See Below Material Chart)" N/A "V111xx (See Below Material Chart)" Part Polyp P SN SN SN P P PE5 PE5 618. SV SN	E50 199C B, KV199B E510 E510 V111 Number Propylene E519 V187A V189C V185B E522 E521 E20 ASY 20F ASY 058.552 V189D	TES
23 24 25 26 27 28 tem # 29 30 31 32 33 34 35 36 37 38 31	2 2 2 4 4 4 4 2 16 16 16 4 4 1 1 1 4 8	Back-Up Diaphragm Inner Diaphragm Plate Outer Diaphragm Plate Valve Seat O-Ring Manifold Seal Valve Ball Wet End Assembly Description Water Chamber Water Chamber Bolt Water Chamber Washer Water Chamber Washer Valve Ball Cage Valve Ball Cage Valve Ball Seat "Discharge Manifold Assembly (Includes Plugs)" "Suction Manifold Assembly (Includes Plugs)" Manifold Plugs Manifold Bolts Manifold Washer Manifold Nut Elastomer Material Specificatio	N/A V PV199I "E510xx (See Below Material Chart)" N/A "V111xx (See Below Material Chart)" Part Polyp P SN SN SN P P PE5 PE5 618. SV	E50 199C B, KV199B E510 E510 V111 Number Propylene E519 V187A V189C V185B E522 E521 E20 ASY 20F ASY 058.552 V189D V189C V164D	TES TFG TF
23 24 25 26 27 28 Item # 29 30 31 32 33 34 35 36 37 38 31	2 2 2 4 4 4 4 2 16 16 16 4 4 1 1 1 4 8	Back-Up Diaphragm Inner Diaphragm Plate Outer Diaphragm Plate Valve Seat O-Ring Manifold Seal Valve Ball Wet End Assembly Description Water Chamber Water Chamber Bolt Water Chamber Washer Water Chamber Nut Valve Ball Cage Valve Ball Seat "Discharge Manifold Assembly (Includes Plugs)" "Suction Manifold Assembly (Includes Plugs)" Manifold Plugs Manifold Bolts Manifold Washer Manifold Washer Manifold Nut	N/A V PV199I "E510xx (See Below Material Chart)" N/A "V111xx (See Below Material Chart)" Part Polyp P SN SN SN P P PE5 PE5 618. SV SN	E50 199C B, KV199B E510 E510 V111 Number Propylene E519 V187A V189C V185B E522 E521 E520 ASY 20F ASY 058.552 V189D V189C	TES

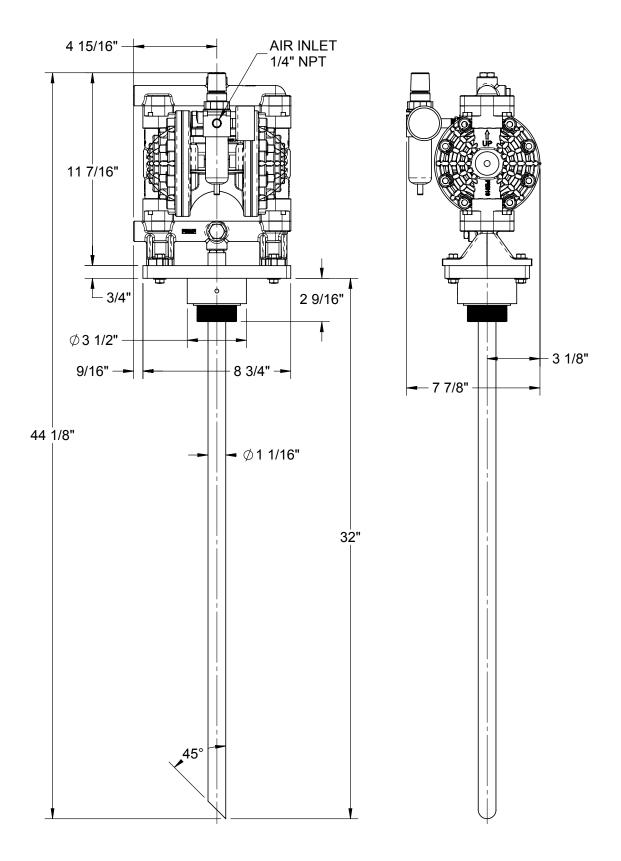
VERSA-MATIC® e5PPDrumnmdlCsm-rev0915

Santoprene

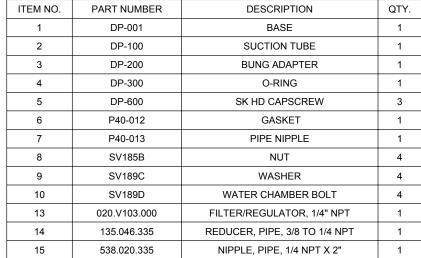
Dimensional Drawings

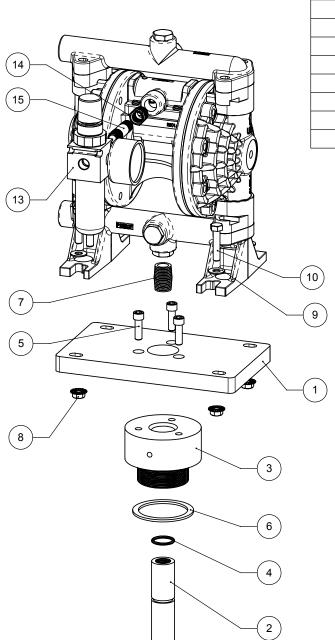
E5 Non-Metallic Bolted - Drum Dimensions in inches (mm dimensions in brackets).

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



Composite Drum Repair Parts





3: EXP VIEW

11 • Model E5 Non-Metallic Bolted

Written Warranty

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.

~ 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:

Dave Roseberry

Engineering Manager

DATE: August 10, 2011

FECHA: DATUM: DATA: DATO: PÄIVÄYS:

VMOR 044FM

2006/42/EC

EN809:1998+

A1:2009

to Annex VIII

on Machinery, according

04/19/2012 REV 07

