

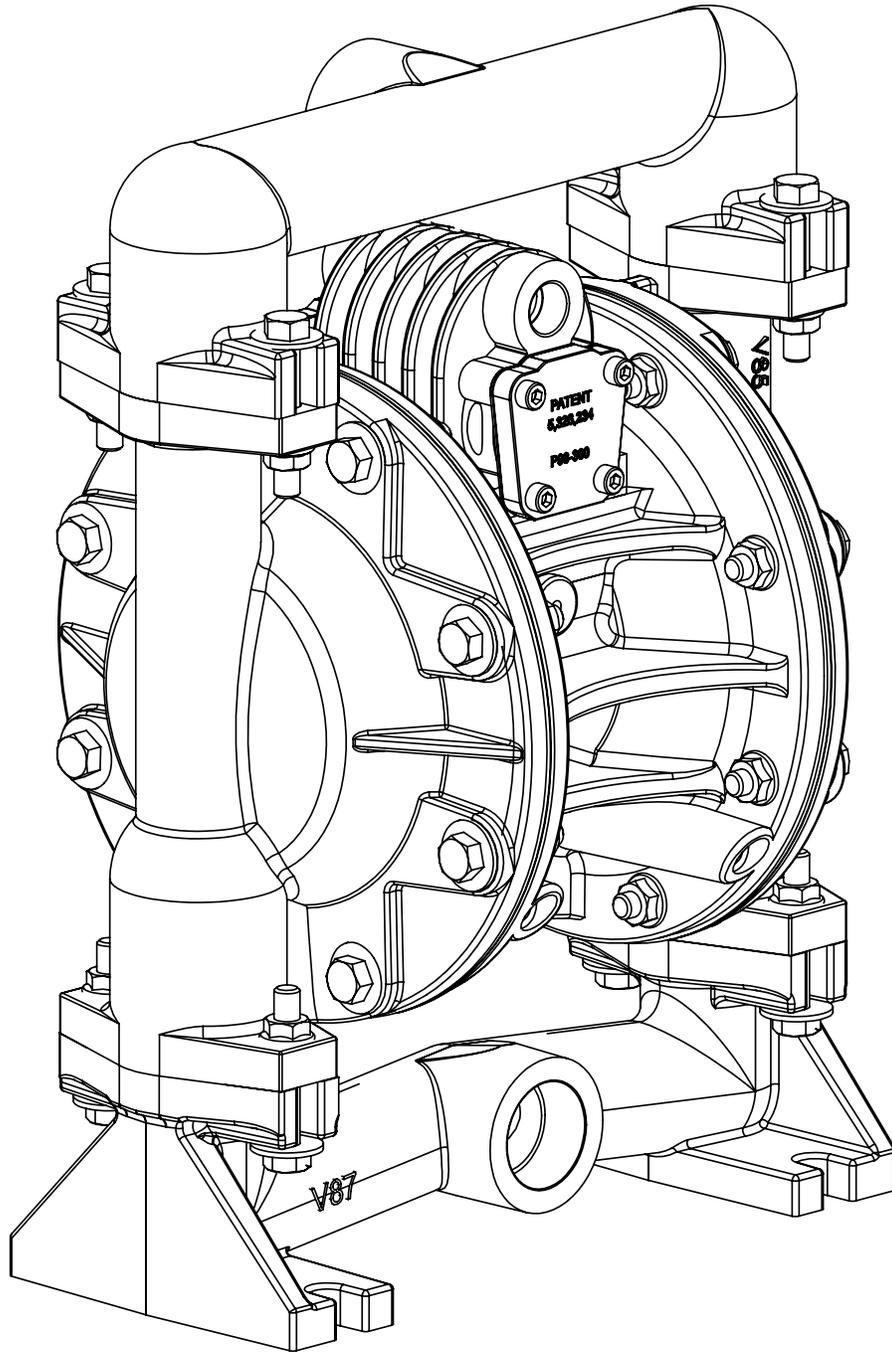
### 1" Elima-Matic Bolted Metal – ATEX

with Metallic Center Sections

# E1

#### E1 Metallic Pumps

- Aluminum
- Stainless Steel
- Alloy-C



1: PUMP SPECS

2: INSTAL & OP

3: EXP VIEW

4: WARRANTY

# Safety Information

## IMPORTANT



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



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

## CAUTION



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



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



### WARNING

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



### 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.

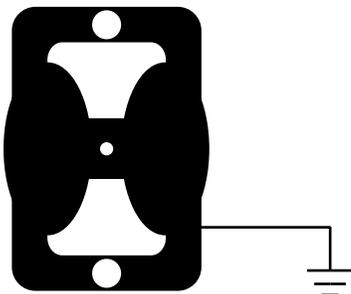


This pump is pressurized internally with air pressure during operation. Make certain that all fasteners are in good condition and are reinstalled properly during reassembly.



Use safe practices when lifting

## Grounding ATEX Pumps



ATEX compliant pumps are suitable for use in explosive atmospheres when the equipment is properly grounded in accordance with local electrical codes. Pumps equipped with electrically conductive diaphragms are suitable for the transfer of conductive or non-conductive fluids of any explosion group. When operating pumps equipped with non-conductive diaphragms that exceed the maximum permissible projected area, as defined in EN 13463-1: 2009 section 6.7.5 table 9, 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

For further guidance on ATEX applications, please consult the factory.

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1: PUMP SPECS

2: INSTAL & OP

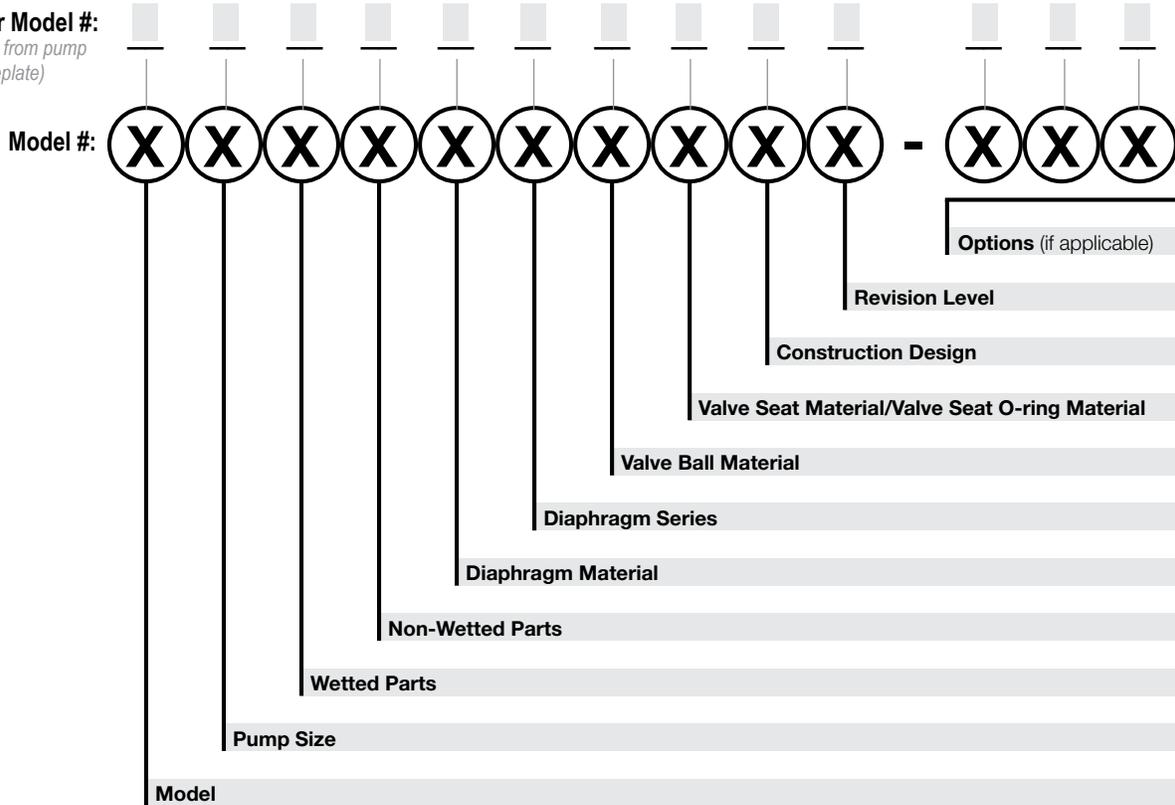
3: EXP VIEW

4: WARRANTY

# Explanation of Pump Nomenclature

Your Serial #: (fill in from pump nameplate) \_\_\_\_\_

Your Model #: (fill in from pump nameplate)



## Model

E Elima-Matic  
U Ultra-Matic  
V V-Series

## Pump Size

6 1/4"  
8 3/8"  
5 1/2"  
7 3/4"  
1 1"  
4 1-1/4" or 1-1/2"  
2 2"  
3 3"

## Wetted Parts

A Aluminum  
C Cast Iron  
S Stainless Steel  
H Alloy C  
P Polypropylene  
K Kynar  
G Groundable Acetal  
B Aluminum (screen mount)

## Non-Wetted Parts

A Aluminum  
S Stainless Steel  
P Polypropylene  
G Groundable Acetal  
Z PTFE-coated Aluminum  
J Nickel-plated Aluminum  
C Cast Iron  
Q Epoxy-Coated Aluminum

## Diaphragm Material

1 Neoprene  
2 Nitrile (Nitrile)  
3 FKM (Fluorocarbon)  
4 EPDM  
5 PTFE  
6 Santoprene XL  
7 Hytrel  
Y FDA Santoprene

## Diaphragm Series

R Rugged  
D Dome  
X Thermo-Matic  
T Tef-Matic (2-piece)  
B Versa-Tuff (1-piece)  
F FUSION (one-piece integrated plate)

## Valve Ball Material Valve

1 Neoprene  
2 Nitrile  
3 (FKM) Fluorocarbon  
4 EPDM  
5 PTFE  
6 Santoprene XL  
7 Hytrel  
8 Polyurethane  
A Acetal  
S Stainless Steel  
Y FDA Santoprene

## Seat/Valve Seat O-Ring Material

1 Neoprene  
2 Nitrile  
3 (FKM) Fluorocarbon  
4 EPDM  
5 PTFE  
6 Santoprene XL  
7 Hytrel  
8 Polyurethane  
A Aluminum w/ PTFE O-Rings  
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  
Y FDA Santoprene

## Construction Design

9 Bolted  
0 Clamped

## Design Level

A  
C

## Miscellaneous Options

B BSP Tapered Thread  
CP Center Port  
ATEX ATEX Compliant  
FP Food Processing  
SP Sanitary Pump  
HP High Pressure  
OE Original Elima-Matic  
F Flap Valve  
HD Horizontal Discharge  
3A 3-A Certified  
UL UL Listed  
OB Oil Bottle

# Materials

| Material Profile:   | Operating Temperatures: |                |
|---|-------------------------|----------------|
|   | Max.                    | Min.           |
| <b>CAUTION!</b> Operating temperature limitations are as follows:   |                         |                |
| <b>Conductive Acetal:</b> 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<br>88°C           | -20°F<br>-29°C |
| <b>EPDM:</b> Shows very good water and chemical resistance. Has poor resistance to oils and solvents, but is fair in ketones and alcohols.  | 280°F<br>138°C          | -40°F<br>-40°C |
| <b>FKM:</b> (Fluorocarbon) Shows good resistance to a wide range of oils and solvents; 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<br>177°C          | -40°F<br>-40°C |
| <b>Hytrel®:</b> Good on acids, bases, amines and glycols at room temperatures only.   | 220°F<br>104°C          | -20°F<br>-29°C |
| <b>Neoprene:</b> 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<br>93°C           | -10°F<br>-23°C |
| <b>Nitrile:</b> 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<br>88°C           | -10°F<br>-23°C |
| <b>Nylon:</b> 6/6 High strength and toughness over a wide temperature range. Moderate to good resistance to fuels, oils and chemicals.  | 180°F<br>82°C           | 32°F<br>0°C    |

|  |                |                |
|--|----------------|----------------|
| <b>Polypropylene:</b> A thermoplastic polymer. Moderate tensile and flex strength. Resists strong acids and alkali. Attacked by chlorine, fuming nitric acid and other strong oxidizing agents.  | 180°F<br>82°C  | 32°F<br>0°C    |
| <b>PVDF:</b> (Polyvinylidene Fluoride) A durable fluoroplastic with excellent chemical resistance. Excellent for UV applications. High tensile strength and impact resistance.   | 250°F<br>121°C | 0°F<br>-18°C   |
| <b>Santoprene®:</b> Injection molded thermoplastic elastomer with no fabric layer. Long mechanical flex life. Excellent abrasion resistance.   | 275°F<br>135°C | -40°F<br>-40°C |
| <b>UHMW PE:</b> 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<br>82°C  | -35°F<br>-37°C |
| <b>Urethane:</b> Shows good resistance to abrasives. Has poor resistance to most solvents and oils.  | 150°F<br>66°C  | 32°F<br>0°C    |
| <b>Virgin PTFE:</b> (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<br>104°C | -35°F<br>-37°C |
| <i>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.</i>   |                |                |
| <b>Metals:</b>   |                |                |
| <b>Alloy C:</b> Equal to ASTM494 CW-12M-1 specification for nickel and nickel alloy.   |                |                |
| <b>Stainless Steel:</b> 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.

1: PUMP SPECS

# Performance

## E1 1" Bolted Metal Rubber and TPE Fitted

### Flow Rate

Adjustable to . . . . . 0-49 gpm (181.7 lpm)

### Port Size

Suction . . . . . 1" NPT

Discharge . . . . . 1" NPT

**Air Inlet** . . . . . 3/8" NPT

**Air Exhaust** . . . . . 1/2" NPT

### Suction Lift

Dry . . . . . 15' (4.6 m)

Wet . . . . . 31' (9.4 m)

### Max Solid Size (Diameter)

. . . . . 1/8" (3.2 mm)

**Max Noise Level** . . . . . 91 dB(A)

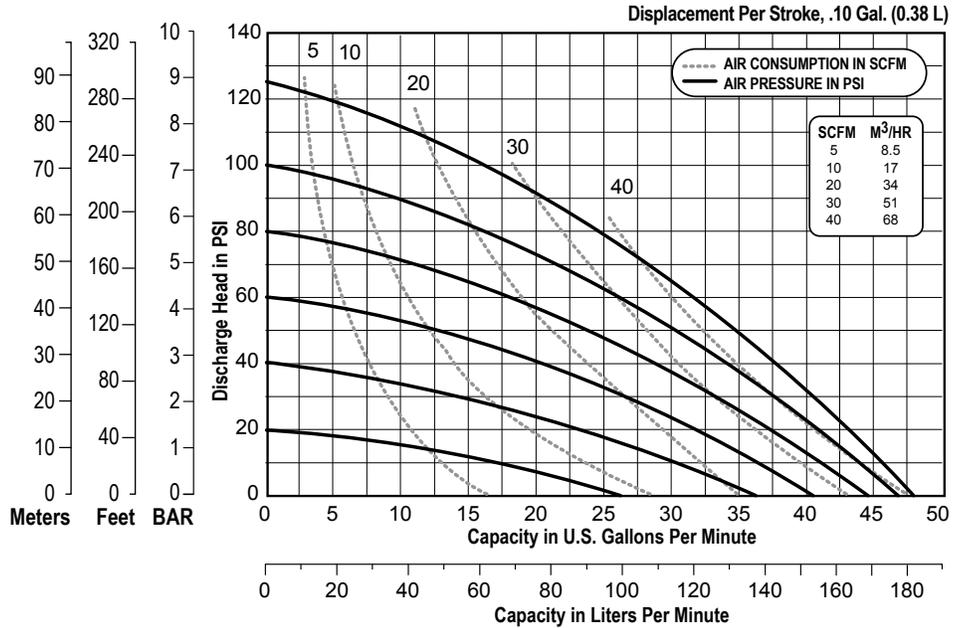
### Shipping Weights

Aluminum . . . . . 27 lbs (5 kg)

Stainless Steel . . . . . 40 lbs (7.7 kg)

Alloy-C . . . . . 40 lbs (7.7 kg)

1: PUMP SPECS



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%.

## E1 1" Bolted Metal PTFE Fitted

### Flow Rate

Adjustable to . . . . . 0-38 gpm (143.8 lpm)

### Port Size

Suction . . . . . 1" NPT

Discharge . . . . . 1" NPT

**Air Inlet** . . . . . 3/8" NPT

**Air Exhaust** . . . . . 1/2" NPT

### Suction Lift

Dry . . . . . 8' (2.4 m)

Wet . . . . . 31' (9.4 m)

### Max Solid Size (Diameter)

. . . . . 1/8" (3.2 mm)

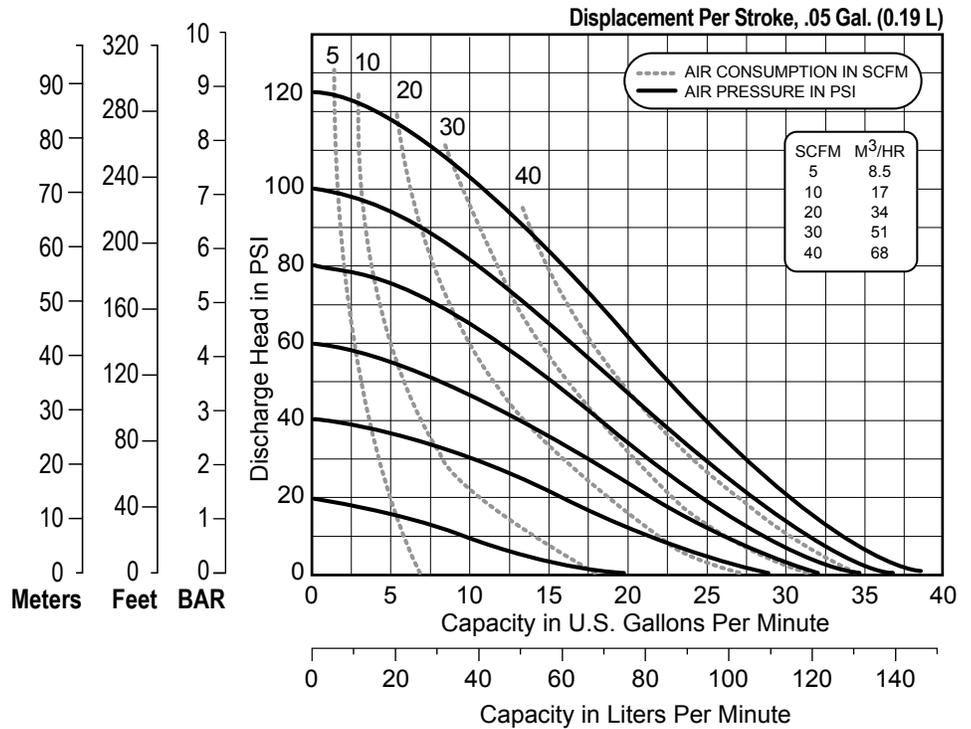
**Max Noise Level** . . . . . 95 dB(A)

### Shipping Weights

Aluminum . . . . . 27 lbs (5 kg)

Stainless Steel . . . . . 40 lbs (7.7 kg)

Alloy-C . . . . . 40 lbs (7.7 kg)



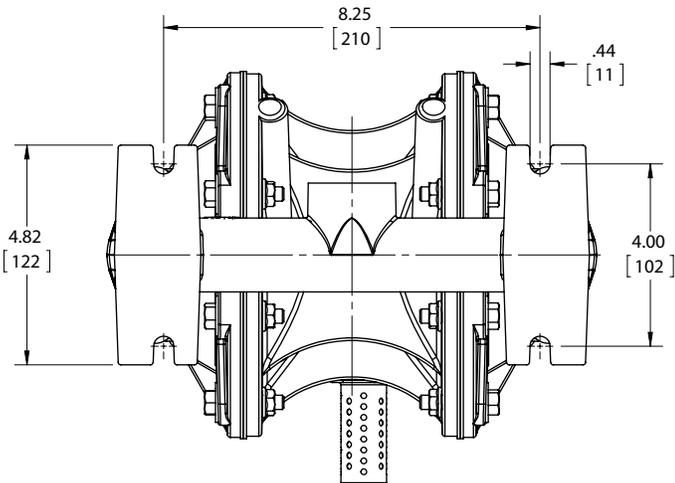
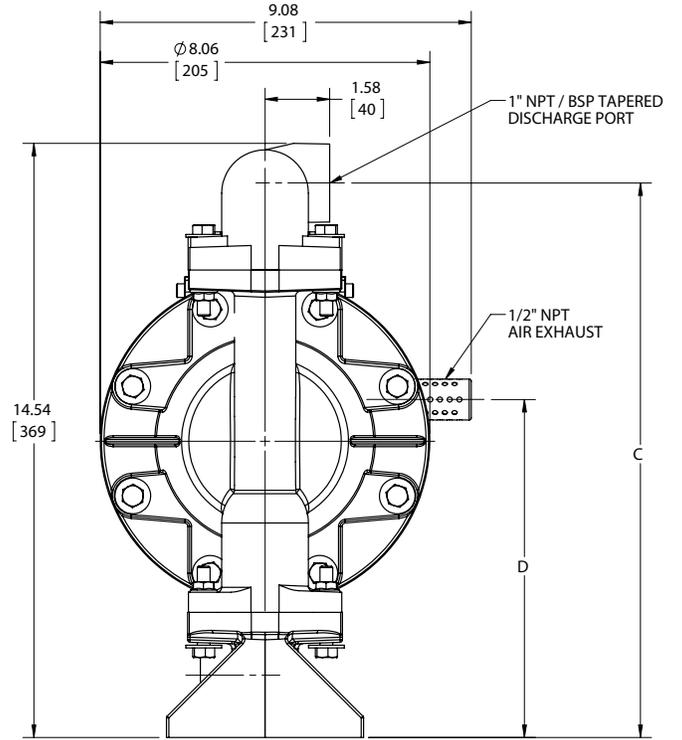
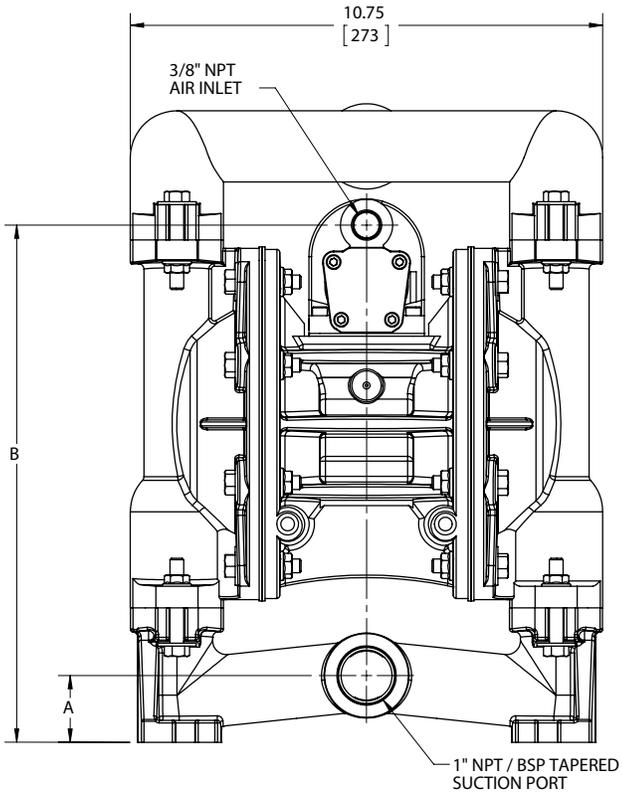
NOTE: Performance based on the following: PTFE fitted pump, flooded suction, water at ambient conditions. The use of other materials and varying hydraulic conditions may result in deviations in excess of 5%.

# Dimensional Drawings

## E1 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.



|   | ALUMINUM    | STAINLESS STEEL ALLOY "C" |
|---|-------------|---------------------------|
| A | 1.52 [39]   | 1.65 [42]                 |
| B | 11.78 [299] | 11.90 [302]               |
| C | 13.57 [345] | 13.73 [349]               |
| D | 8.27 [218]  | 8.35 [212]                |

1: PUMP SPECS

# Principle of Pump Operation

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

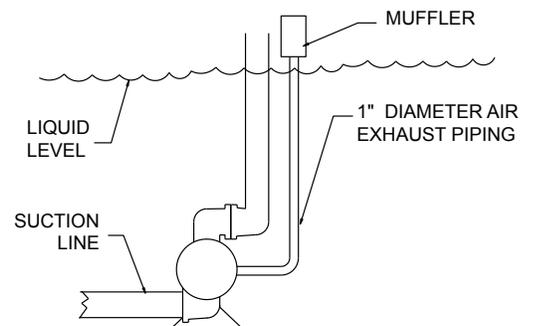
The main directional (air) control valve ① distributes compressed air to an air chamber, exerting uniform pressure over the inner surface of the diaphragm ②. At the same time, the exhausting air ③ from behind the opposite diaphragm is directed through the air valve assembly(s) to an exhaust port ④.

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.

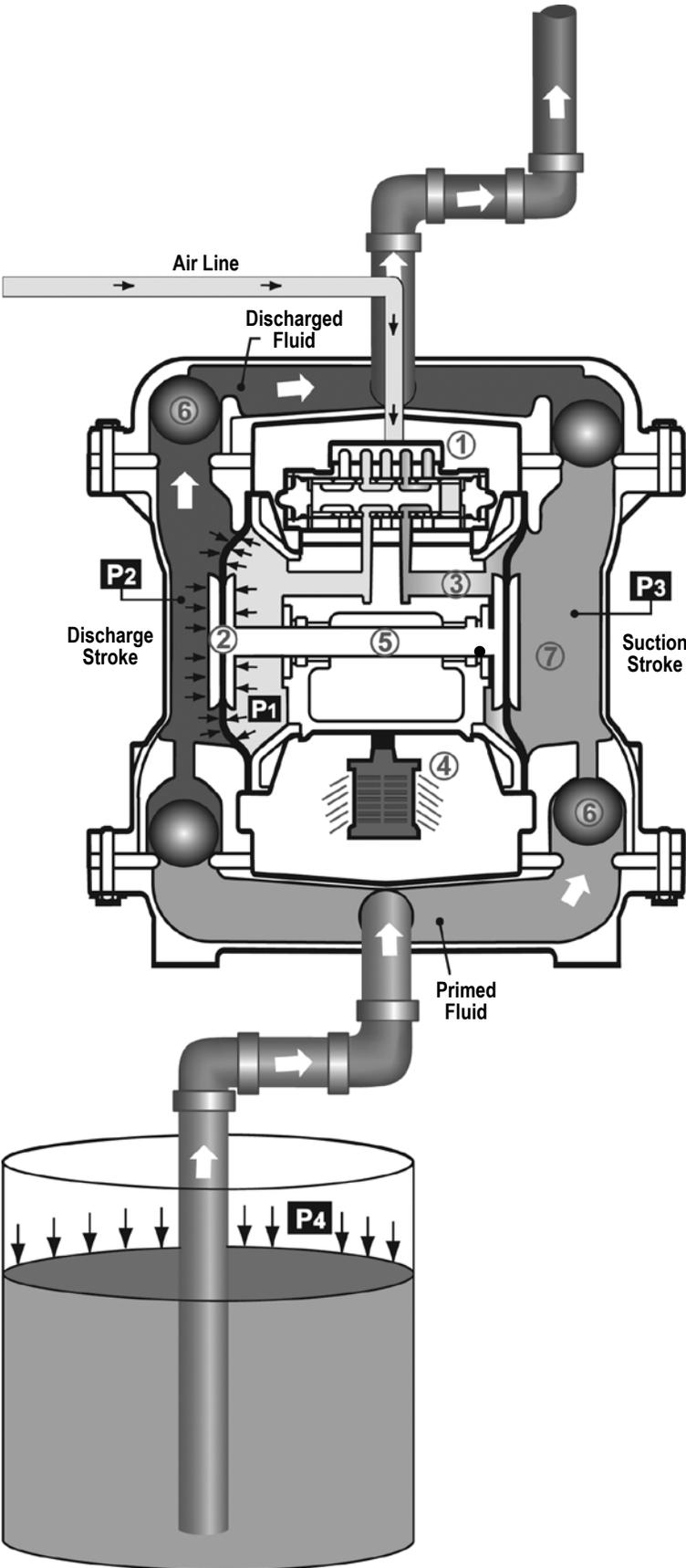
The pump primes as a result of the suction stroke. The suction stroke lowers the chamber pressure (P3) increasing the chamber volume. This results in a pressure differential necessary for atmospheric pressure (P4) to push the fluid through the suction piping and across the suction side check valve and into the outer fluid chamber ⑦.

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.



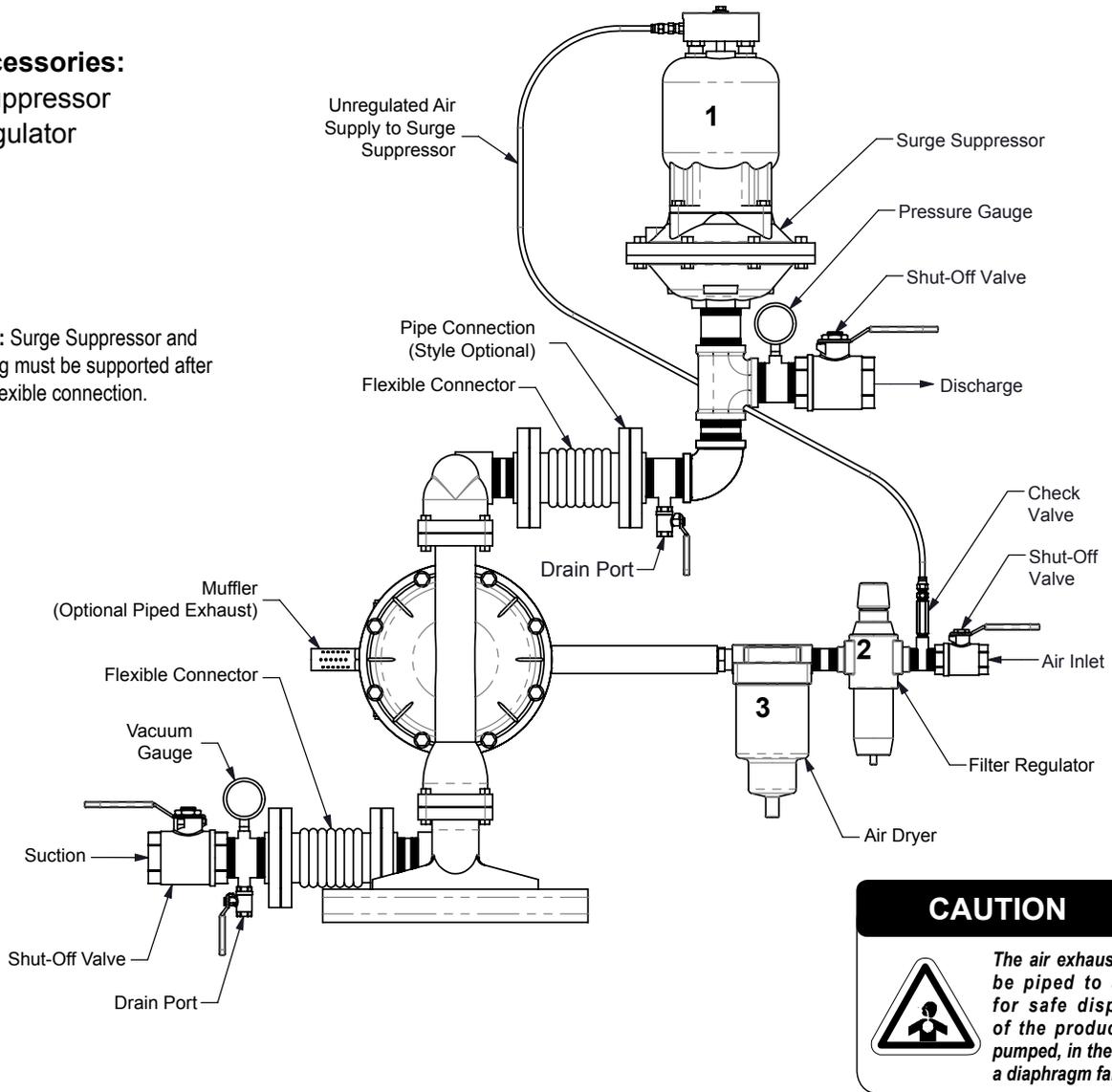
2: INSTAL & OP

# Recommended Installation Guide

## Available Accessories:

1. Surge Suppressor
2. Filter/Regulator
3. Air Dryer

**Note:** Surge Suppressor and Piping must be supported after the flexible connection.



2: INSTAL & OP

## 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

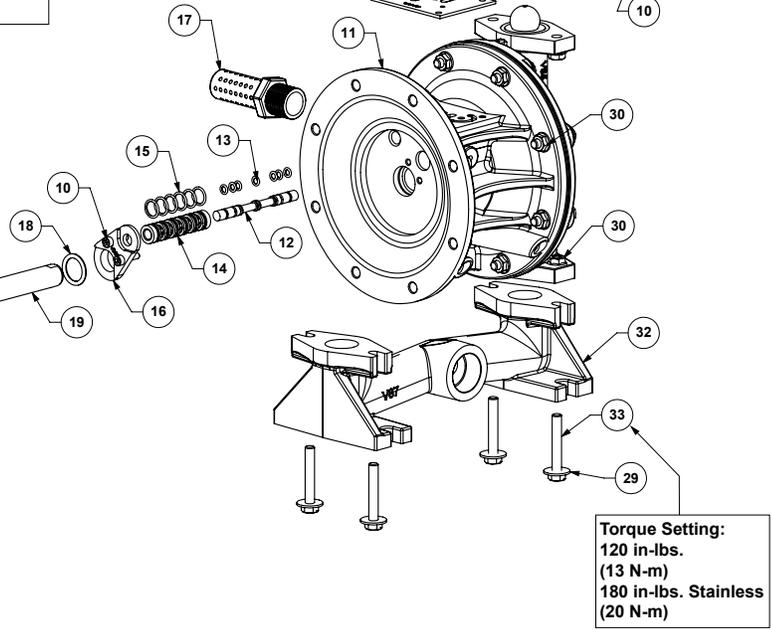
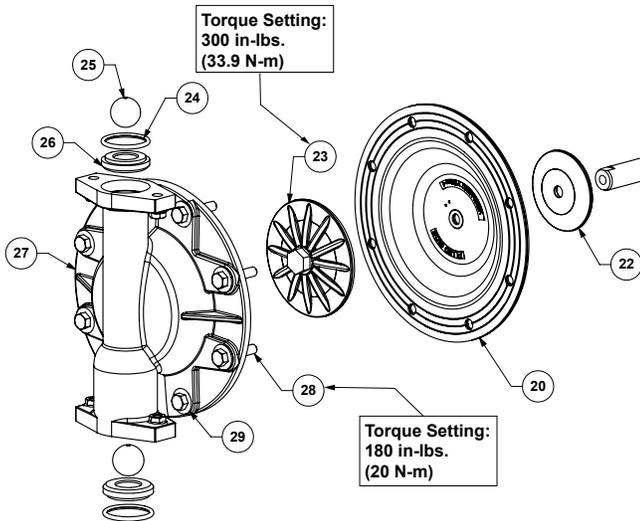
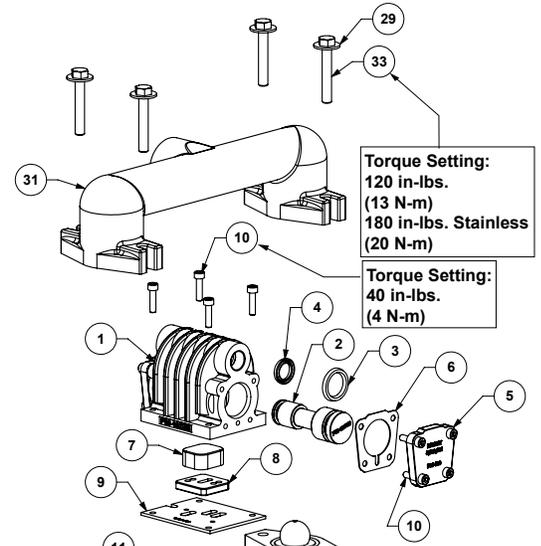
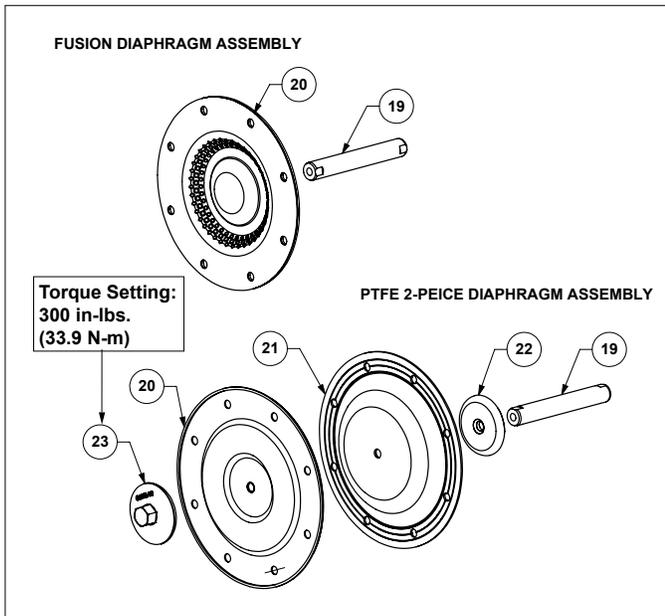
To start the pump, slightly open the air shut-off valve. After the pump primes, the air valve can be opened to increase air flow as desired. If opening the valve increases cycling rate, but does not increase the rate of flow, cavitation has occurred. The valve should be closed slightly to obtain the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

# Troubleshooting Guide

| Symptom:  | Potential Cause(s):   | Recommendation(s):   |
|---|---|--|
| <b>Pump Cycles Once</b>   | 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.  |
| <b>Pump Will Not Operate / Cycle</b>                              | Pump is over lubricated.  | Set lubricator on lowest possible setting or remove. Units are designed for lube free operation.   |
|   | Lack of air (line size, PSI, CFM).  | Check the air line size and length, compressor capacity (HP vs. cfm required).   |
|   | 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.   |
| <b>Pump Cycles and Will Not Prime or No Flow</b>                  | Cavitation on suction side.   | Check suction condition (move pump closer to product).   |
|   | 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.  |
| <b>Pump Cycles Running Sluggish/Stalling, Flow Unsatisfactory</b> | Over lubrication.   | Set lubricator on lowest possible setting or remove. Units are designed for lube free operation.   |
|   | Icing.  | Remove muffler screen, de-ice, and re-install. Install a point of use air drier.   |
|   | 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. |  |
| <b>Product Leaking Through Exhaust</b>                            | Diaphragm failure, or diaphragm plates loose.   | Replace diaphragms, check for damage and ensure diaphragm plates are tight.  |
|   | 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.  |
| <b>Premature Diaphragm Failure</b>                                | Cavitation.   | Enlarge pipe diameter on suction side of pump.   |
|   | 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.   |
| <b>Unbalanced Cycling</b>   | 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](mailto:service.warrenrupp@idexcorp.com) or 419-524-8388

# Composite Repair Parts Drawing



3: EXP VIEW

# Composite Repair Parts List

| Air Valve Assembly                |               |  |  |  |             |
|-----------------------------------|---------------|--|--|--|-------------|
| Item #                            | Qty.          | Description  | Part Number                              |  |             |
|                                   |               |  | Aluminum                                 | Nickel Plated                          |             |
|                                   |               | Air Side Repair Kit (Includes Items 3,4,6-9,12-15,16,18) | 476.V015.000                             |  |             |
| -                                 | 1             | Air Valve Assembly (includes items 1-10)                 | 031.V006.156                             | 031.V006.3332                          |             |
| 1                                 | 1             | Valve Body   | P98-102UB                                | P98-102UB-NP                           |             |
| 2                                 | 1             | Valve Spool Assembly (Includes items 3&4)                | P98-105UB ASY                            |  |             |
| 3                                 | 1             | Large Valve Spool U-Cup                                  | P98-105B                                 |  |             |
| 4                                 | 1             | Small Valve Spool U-Cup                                  | P98-105A                                 |  |             |
| 5                                 | 2             | Metal End Cap  | P98-300                                  | P98-300NP                              |             |
| 6                                 | 2             | End Cap Gasket (for metal)                               | P98-110                                  |  |             |
| 7                                 | 1             | CT Air Diverter  | P98-105CT                                |  |             |
| 8                                 | 1             | Air Diverter Plate                                       | P98-106                                  |  |             |
| 9                                 | 1             | Air Valve Gasket   | P98-111UB                                |  |             |
| 10                                | 12            | Mounting Screws (8 included on Air Valve Assembly)       | S1001                                    |  |             |
| Center Section Assembly           |               |  |  |  |             |
| Item #                            | Qty.          | Description  | Part Number                              |  |             |
|                                   |               |  | Aluminum                                 | Nickel Plated                          |             |
| 11                                | 1             | Center Section   | 114.V001.157                             | 114.V001.332                           |             |
|                                   |               | Pilot Repair Kit (Includes Items 12-16)                  | 476.V014.000                             |  |             |
| 12                                | 1             | Pilot Spool ASY (includes item 13)                       | 775.V005.000                             |  |             |
| 13                                | 7             | Pilot Spool O-Rings                                      | 560.023.358                              |  |             |
| 14                                | 1             | Pilot Valve Sleeve ASY (includes item 15)                | 755.V004.000                             |  |             |
| 15                                | 6             | Pilot Valve Sleeve O-Rings                               | 560.101.358                              |  |             |
| 16                                | 2             | Shaft/Pilot Retainer                                     | 670.V002.554                             |  |             |
| 10                                | 4             | Retainer Screw   | S1001                                    |  |             |
| 17                                | 1             | Muffler  | VTM-4A                                   |  |             |
| Diaphragm Assembly / Elastomers   |               |  |  |  |             |
| Item #                            | Qty.          | Description  | Part Number                              |  |             |
|                                   |               |  | TPE/RUBBER                               | PTFE 2-Piece                           | PTFE Fusion |
| 18                                | 2             | Main Shaft O-Ring  | P50-403                                  |  |             |
| 19                                | 1             | Main Shaft   | 685.V001.120                             | P50-108                                |             |
| 20                                | 2             | Diaphragm  | "V183xx-1<br>(See Below Material Chart)" | V183TF-1                               | V183F       |
| 21                                | 2             | Back-Up Diaphragm  | N/A                                      | V183TB                                 | N/A         |
| 22                                | 2             | Inner Diaphragm Plate                                    | V181C                                    | V181C                                  | N/A         |
| 23                                | 2             | Outer Diaphragm Plate (See Note 1 Below)                 | V81B, SV181B ASY,<br>HV181TO             | SV181TO, HV181TO                       | N/A         |
| 24                                | 4             | Valve Seat O-Ring  | "V90xx<br>(See Below Material Chart)"    | SV190TF<br>(Replace after disassembly) |             |
| 25                                | 4             | Valve Ball   | "V191xx<br>(See Below Material Chart)"   | V191TF                                 |             |
| Wet End Assembly                  |               |  |  |  |             |
| Item #                            | Qty.          | Description  | Part Number                              |  |             |
|                                   |               |  | Aluminum                                 | Stainless Steel                        | Hastelloy   |
| 26                                | 4             | Valve Seat   | V90A                                     | SV190                                  | HV190       |
| 27                                | 2             | Water Chamber  | V85DC                                    | SV185                                  | HV185       |
| 28                                | 16            | Water Chamber Bolt                                       | V189A                                    | SV189D                                 |             |
| 29                                | 16            | Water Chamber Washer                                     | V189C                                    | SV189C                                 |             |
| 30                                | 16            | Water Chamber Nut  | V185B                                    | SV185B                                 |             |
| 31                                | 1             | Discharge Manifold                                       | V86                                      | SV186                                  | HV186       |
|                                   |               | Discharge Manifold (BSP Option)                          | V86BSP                                   | SV186BSP                               | HV186BSP    |
| 32                                | 1             | Suction Manifold   | V87                                      | SV187                                  | HV187       |
|                                   |               | Suction Manifold (BSP Option)                            | V87BSP                                   | SV187BSP                               | HV187BSP    |
| 33                                | 8             | Manifold Bolt  | V187A                                    | SV189D                                 |             |
| 29                                | 8             | Manifold Washer  | V189C                                    | SV189C                                 |             |
| 30                                | 8             | Manifold Nut   | V185B                                    | SV185B                                 |             |
| Elastomer Material Specifications |               |  |  |  |             |
| Material                          | Diaphragm P/N | Valve Ball P/N   | O-Ring P/N                               |  |             |
| Neoprene                          | V183N-1       | V191N  | N/A                                      |  |             |
| Buna Nitrile                      | V183BN-1      | V191BN   | V90BN                                    |  |             |
| Viton                             | V183VT-1      | V191VT   | V90VT                                    |  |             |
| Nordel                            | V183ND-1      | V191ND   | V90ND                                    |  |             |
| Santoprene                        | V183TPEXL-1   | V191TPEXL  | V190XL                                   |  |             |
| Hytrel                            | V183TPEFG     | V191TPEFG  | N/A                                      |  |             |
| Acetal                            | N/A           | V191A  | N/A                                      |  |             |
| Stainless Steel                   | N/A           | V191SS   | N/A                                      |  |             |

**Note:** The outer diaphragm plate material is to match the water chamber material

3: EXP VIEW

# 5 - YEAR Limited Product Warranty

Quality System ISO9001 Certified • Environmental Management Systems ISO14001 Certified

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

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

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

## DECLARATION OF CONFORMITY

DECLARATION DE CONFORMITE • DECLARACION DE CONFORMIDAD • ERKLÄRUNG BEZÜGLICH EINHALTUNG DER VORSCHRIFTEN  
DICHIARAZIONE DI CONFORMITÀ • CONFORMITEITSVERKLARING • DEKLARATION OM ÖVERENSSTÄMMELSE  
EF-OVERENSSTEMMELSESERKLÄRING • 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 Direktive:

Tämä tuote täyttää seuraavien EC Direktiivien vaatimukset:

Dette produkt oppfyller kravene til følgende EC Direktiver:

Este produto está de acordo com as seguintes Directivas comunitárias:

**2006/42/EC**  
on Machinery, according  
to Annex VIII

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

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

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

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

Questo prodotto ha utilizzato i seguenti standards per verificare la conformità:

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 overensstemmelse med følgende harmoniserte standarder:

Este produto utilizou os seguintes padrões harmonizados para verificar conformidade:

**EN809:1998+**  
**A1:2009**

### AUTHORIZED/ APPROVED BY:

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

*David Roseberry*  
Dave Roseberry

Director of Engineering

Authorized Representative:  
IDEX Pump Technologies  
R79 Shannon Industrial Estate,  
Shannon, Co. Clare Ireland  
Attn: Barry McMahon

**DATE: February 27, 2017**

FECHA:  
DATUM:  
DATA:  
DATO:  
PÄIVÄYS:



VMQR 044FM

06/14/2017 REV 08

# EC / EU DECLARATION OF CONFORMITY

The objective of the declaration described is in conformity with the relevant Union harmonisation legislation:  
Directive 94/9/EC (until April 19, 2016) and Directive 2014/34/EU (from April 20, 2016).



Date of Issue: 10 May 2014

Technical File No.: 203104000-1410/MER

Quality System Registration No: ISO 9001-2000

Conforming Apparatus: Air-Operated Metal  
Double Diaphragm Pumps for Use In Potentially  
Explosive Atmospheres

Hazardous Location Applied: **Elima-Matic metallic pumps**

1. I M2 c
2. II 2G c T5
3. II 2D c T100°C

**Elima-Matic non-metallic pumps**

4. II 2G c T6
5. II 2D c T85°C

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

On File With: DEKRA Certification B.V. (0344)  
Meander 1051  
6825 MJ Arnhem  
The Netherlands

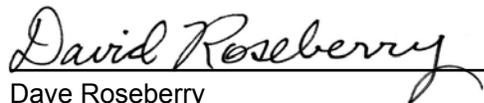
Harmonized Standards Applied: EN 13463-1:2009 Non-Electrical Equipment  
Potentially Explosive Atmospheres-Part 1 Basic  
Methods and Requirements  
EN 13463-5:2011 Non-Electrical Equipment for  
Potentially Explosive Atmospheres-Part 5  
Protection by Constructional Safety

Equipment:

1. Elima-Matic Series metal pumps
2. Elima-Matic Series non-metallic pumps

We hereby certify that the equipment described above conforms with the protection requirements of Council Directive 94/9/EC of 23 March 1994 Annex VIII on the approximation of the laws of the Member States Concerning Equipment and Protective Systems Intended for use in Potentially Explosive Atmospheres

DATE/OF REVISION/TITLE:  
07 April 2016

  
Dave Roseberry  
Director of Engineering

**VERSA-MATIC**<sup>®</sup>

**IDEX**