# SERVICE & OPERATING MANUAL

**Original Instructions**

**Certified Quality**

ISO 9001 Certified
ISO 14001 Certified

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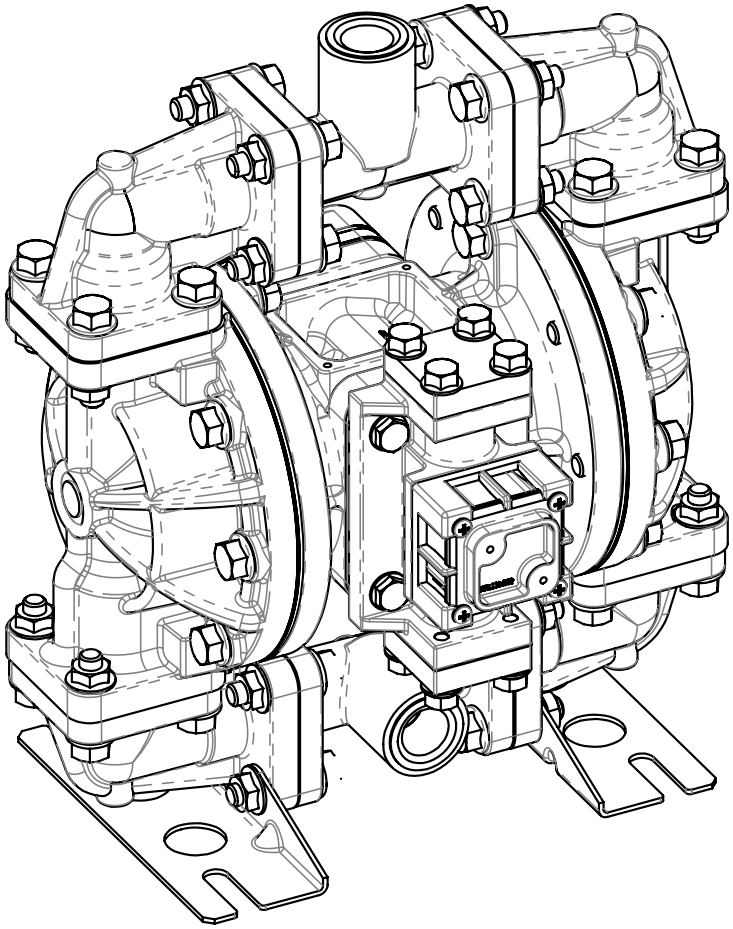
SANDPIPERPUMP.COM



# Model S05 Conductive Acetal

## Non-Metallic

## Design Level 2





SANDPIPER®
A WARREN RUPP, INC. BRAND
SANDPIPERPUMP.COM

# 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

*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 to 3 on the next page *(per Annex I of DEKRA 18ATEX0094X)*

2. ATEX compliant pumps are suitable for use in explosive atmospheres when the equipment is properly grounded in accordance with local electrical codes

3. **Non-Metallic ATEX Pumps only — See Explanation of Pump Nomenclature / ATEX Details Page**
   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.

4. The optionally provided solenoids shall be protected by a fuse corresponding to its rated current (max 3*Irat according to EN 60127) or by a motor protecting switch with short circuit and thermal instantaneous tripping (set to the rated current) as short circuit protection. For solenoids with a very low rated current, a fuse with the lowest current value according to the indicated standard will be sufficient. The fuse may be accommodated in the associated supply unit or shall be separately arranged. The rated voltage of the fuse shall be equal or greater than the stated rated voltage of the solenoid. The breaking capacity of the fuse shall be as high as or higher than the maximum expected short circuit current at the location of the installation (usually 1500 A). The maximum permissible ripple is 20% for all dc solenoids.
   ***Not applicable for all pump models — See Explanation of Pump Nomenclature / ATEX Details Page**

5. 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.

6. Pumps provided with the pulse output kit and used in the potentially explosive atmosphere caused by the presence of the combustible dust shall be installed in such a way that the pulse output kit is protected against impact
   ***Not applicable for all pump models — See Explanation of Pump Nomenclature / ATEX Details Page**

# Temperature Tables

### Table 1. Category 1 & Category 2 ATEX Rated Pumps

| Ambient Temperature Range [°C] | Process Temperature Range [°C][1] | Temperature Class | Maximum Surface Temperature [°C] |
|---|---|---|---|
| -20°C to +60°C | -20°C to +80°C | T5 | T100°C |
| | -20°C to +108°C | T4 | T135°C |
| | -20°C to + 160°C | T3 | T200°C |
| | -20°C to +177°C | (225°C) T2 | |

[1]Per CSA standards ANSI LC6-2018 US & Canadian Technical Letter R14, G-Series Natural Gas Models are restricted to (-20°C to + 80°C) process temperature

### Table 2. Category 2 ATEX Rated Pumps Equipped with Pulse Output Kit or Integral Solenoid:

| Ambient Temperature Range [°C] | Process Temperature Range [°C] | Temperature Class | Maximum Surface Temperature [°C] | Options | |
|---|---|---|---|---|---|
| | | | | Pulse Output Kit | Integral Solenoid |
| -20°C to +60°C | -20°C to +100°C | T5 | T100 | X | |
| -20°C to +50°C | -20°C to +100°C | T5 | T100 | | X |

[2]ATEX Pulse output or Intergral Solenoid Not Available For All Pump Models See Explanation of Pump Nomenclature / ATEX Details Page

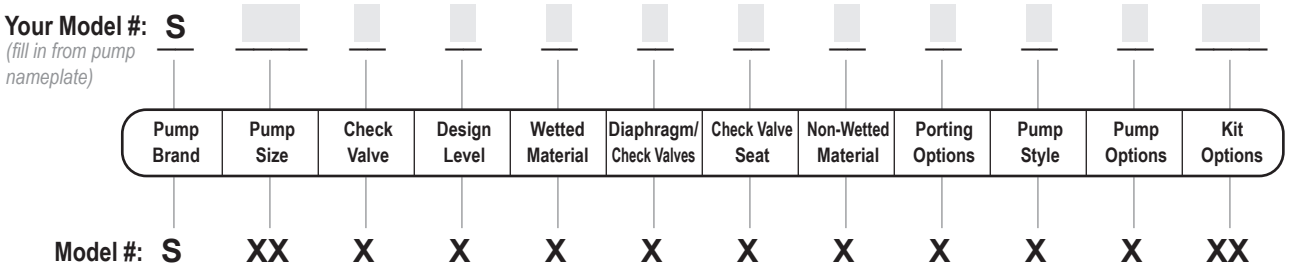
### Table 3. Category M1 ATEX Rated Pumps for Mining

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

Note: The ambient temperature range and the process temperature range should not exceed the operating temperature range of the applied non-metallic parts as listed in the manuals of the pumps.

# Table of Contents

# Explanation of Pump Nomenclature




**Pump Brand**
S SANDPIPER®

**Pump Size**
05 1/2"

**Check Valve Type**
B Soild Ball

**Design Level**
2 Design Level

**Wetted Material**
G Conductive Acetal

**Diaphragm/Check Valve Materials**
1 Santoprene/Santoprene
2 Virgin PTFE-Santoprene Backup/Virgin PTFE
B Nitrile/Nitrile
U Polyurethane/Polyurethane

**Check Valve Seat**
P Polypropylene
K PVDF
S Stainless Steel

**Non-Wetted Material Options**
X Non-painted Aluminum

**Porting Options**
N NPT Threads
B BSPT (Tapered) Threads

**Pump Style**
S Standard

**Pump Options**
0 None
6 Metal Muffler

FM APPROVED IEC EEX m T4

**Note:** Pump models equipped with these explosion-proof solenoid kit options E1, E3, E5, E7, E8 or E9, are certified and approved by the above agencies. They are NOT ATEX compliant.

**Your Serial #:** *(fill in from pump nameplate)* _____

**Special Conditions For Safe Use:** 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

# ATEX Detail

II 2 G Ex h IIC T5...225°C (T2) Gb
II 2 D Ex h IIIC T100°C...T200°C Db

# Performance

## S05 CONDUCTIVE ACETAL

**SUCTION/DISCHARGE PORT SIZE**
- ½" NPT (Internal)
- ½" BSPT (Tapered)
- 1" NPT (External)
- 1" BSPT (Tapered)

**CAPACITY**
- 0 to 14 gallons per minute (0 to 52 liters per minute)

**AIR DISTRIBUTION VALVE**
- No-lube, no-stall design

**SOLIDS-HANDLING**
- Up to .125 in. (3mm)

**HEADS UP TO**
- 100 psi or 231 ft. of water (7 Kg/cm$^2$ or 70 meters)

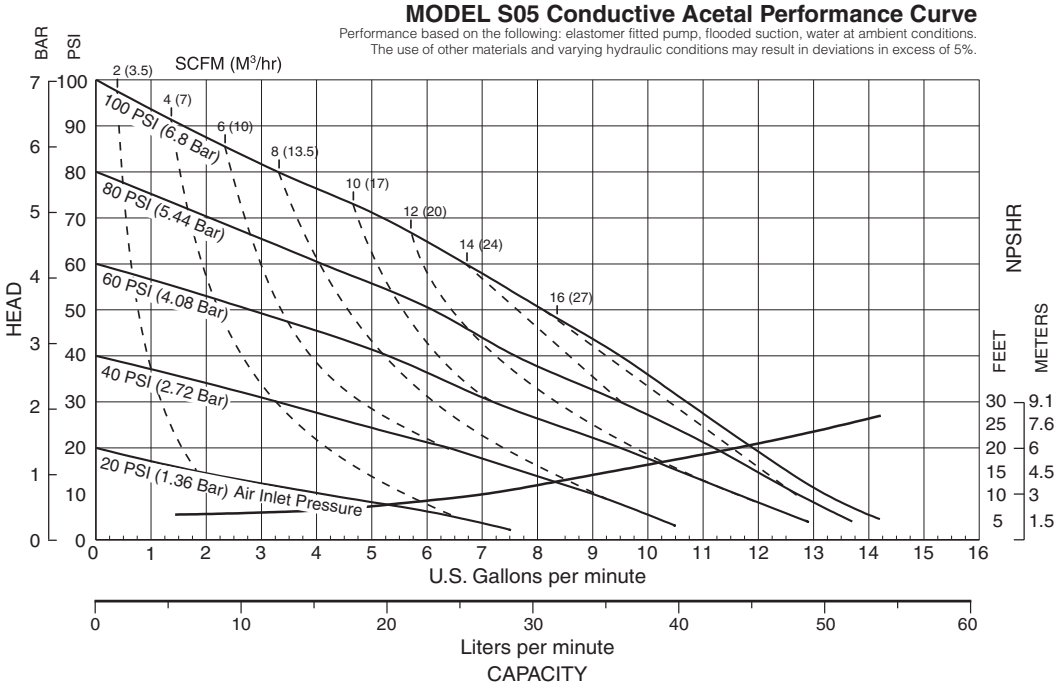
**DISPLACEMENT/STROKE**
- .026 Gallon / .098 liter

**MAXIMUM OPERATING PRESSURE**
- 100 psi (6.8 bar)

**SHIPPING WEIGHT**
- 17 lbs. (8 kg)

**MODEL S05 Conductive Acetal Performance Curve**

Performance based on the following: elastomer 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%.




# Materials

| Material Profile: ⚠ *CAUTION! Operating temperature limitations are as follows:* | Operating Temperatures: 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:

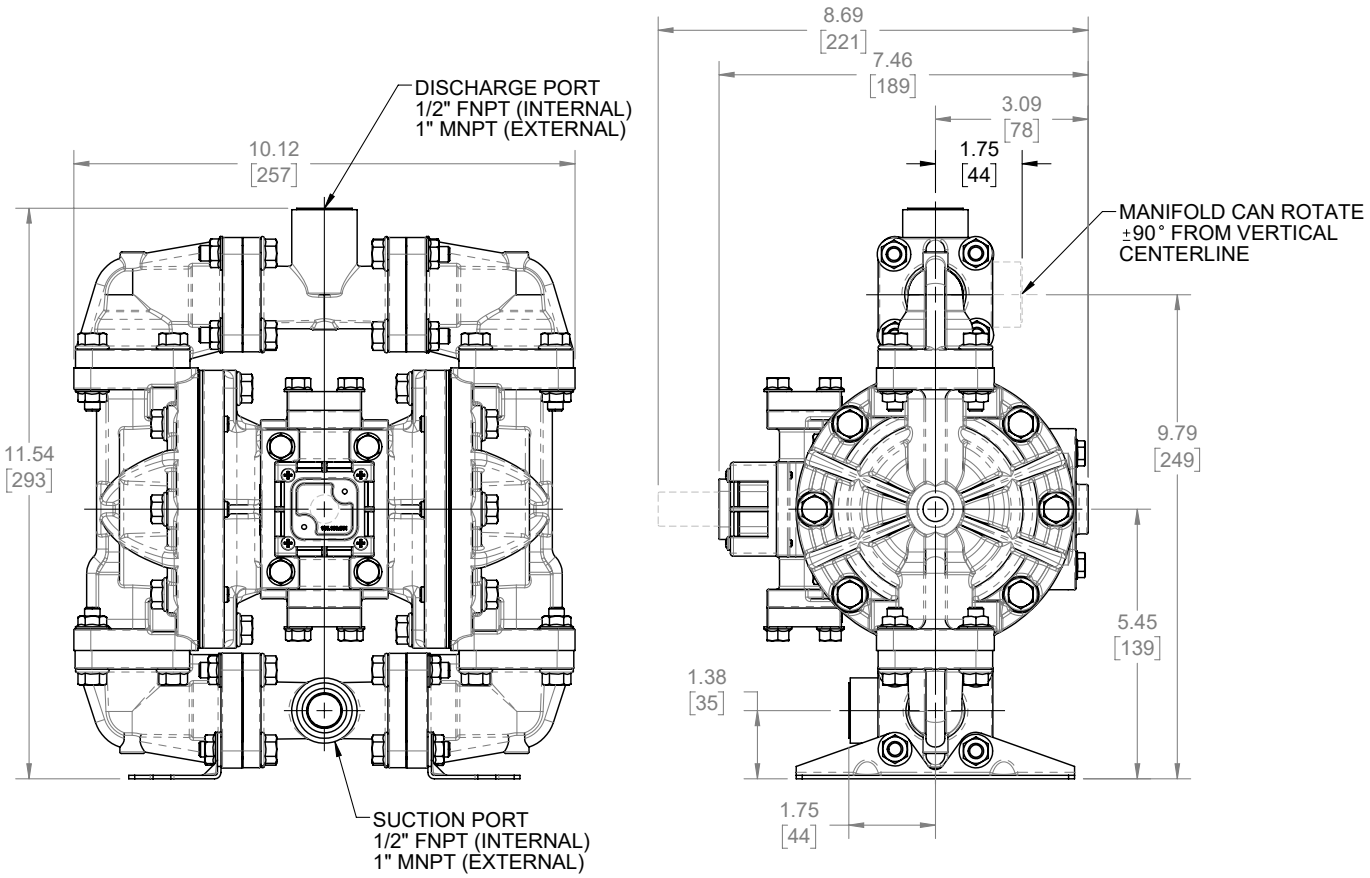
**Alloy C:** Equal to ASTM494 CW-12M-1 specification for nickel and nickel alloy.

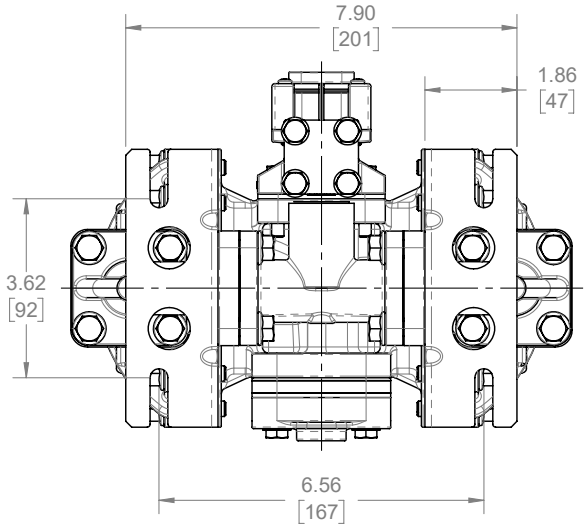
**Stainless Steel:** Equal to or exceeding ASTM specification A743 CF-8M for corrosion resistant iron chromium, iron chromium nickel and nickel based alloy castings for general applicaitons. Commonly referred to as 316 Stainless Steel in the pump industry.

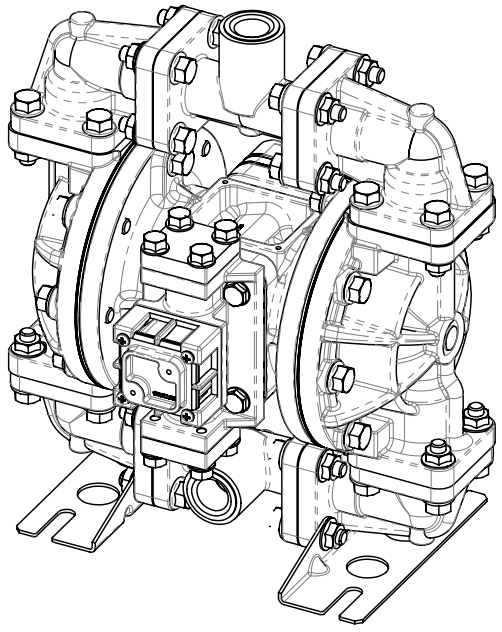
For specific applications, always consult the Chemical Resistance Chart.

# S05 Conductive Acetal

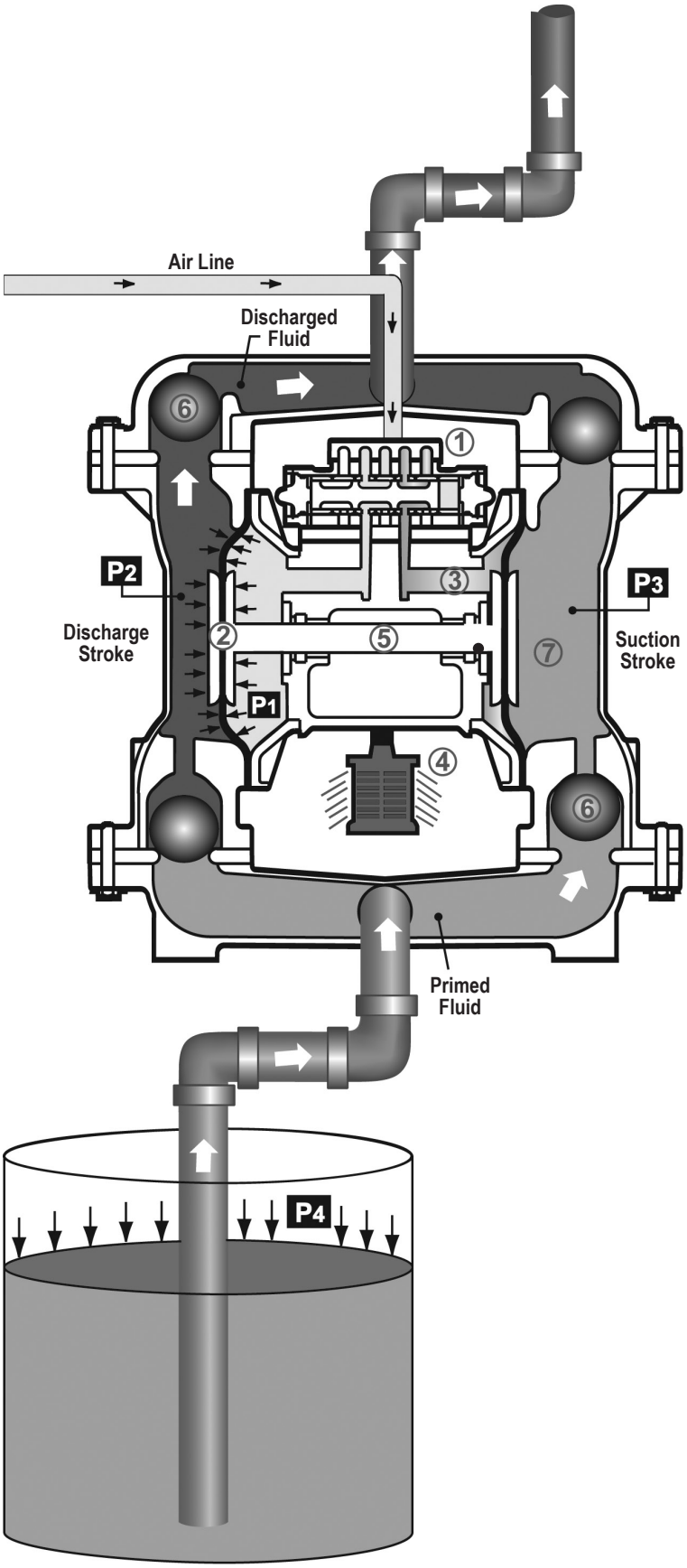
Dimensions in inches (metric dimensions in brackets). Dimensional Tolerance .125" (3mm).



# Principle of Pump Operation




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

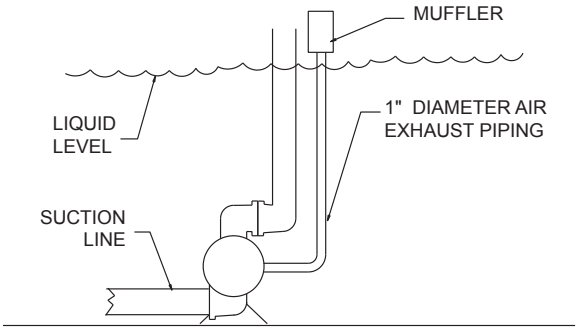
The main directional (air) control valve distributes compressed air to an air chamber, exerting uniform pressure over the inner surface of the diaphragm . At the same time, the exhausting air from behind the opposite diaphragm is directed through the air valve assembly(s) to an exhaust port .

As inner chamber pressure **(P1)** exceeds liquid chamber pressure **(P2)**, the rod 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) 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 .

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

## SUBMERGED ILLUSTRATION



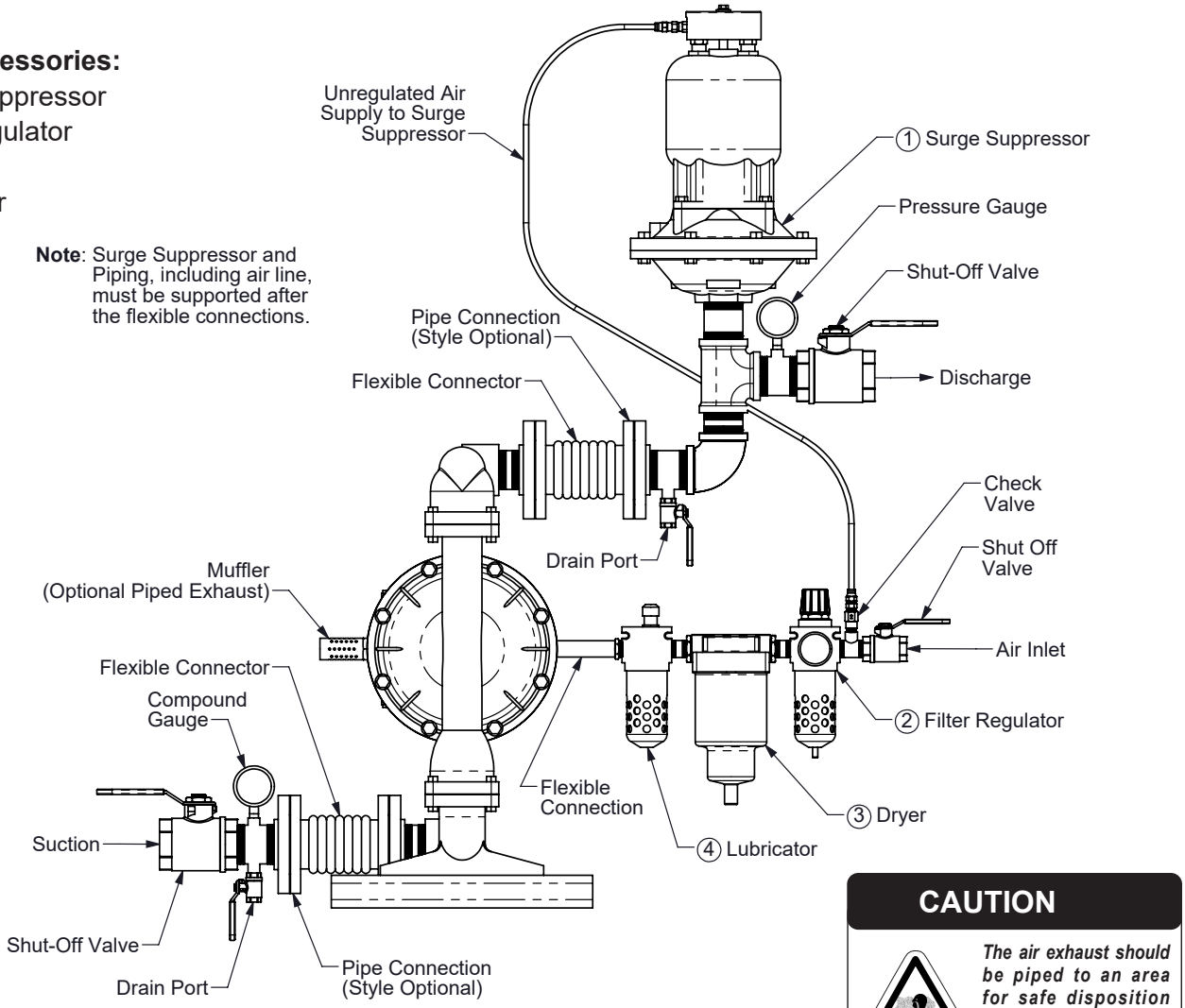

Pump can be submerged if the pump materials of construction are compatible with the liquid being pumped. The air exhaust must be piped above the liquid level. When the pumped product source is at a higher level than the pump (flooded suction condition), pipe the exhaust higher than the product source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

# Recommended Installation Guide

**Available Accessories:**

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

**Note**: Surge Suppressor and Piping, including air line, must be supported after the flexible connections.




**CAUTION**

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

**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**

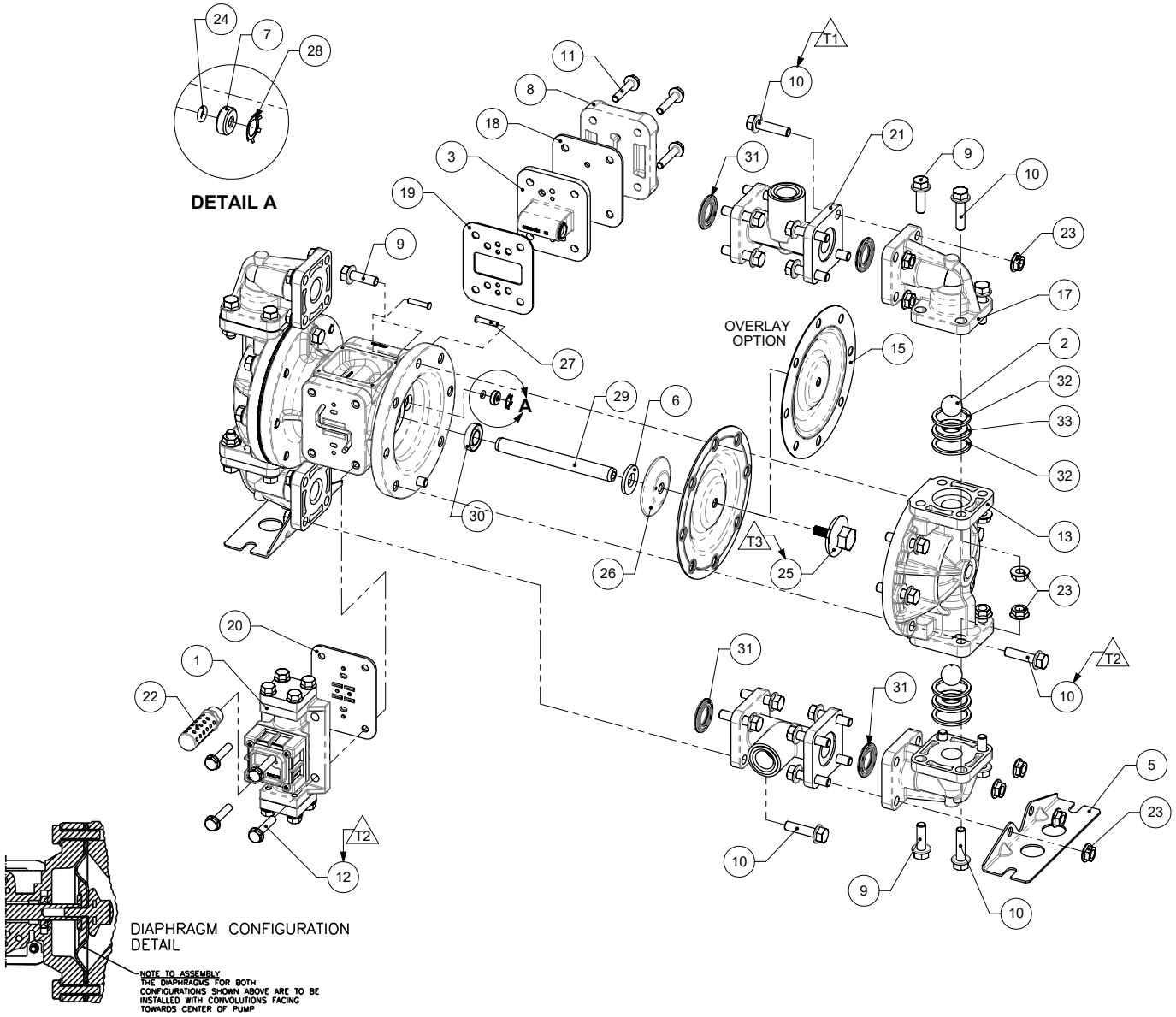
To start the pump, slightly open the air shut-off valve. After the pump primes, the air valve can be opened to increase air flow as desired. If opening the valve increases cycling rate, but does not increase the rate of flow, cavitation has occurred. The valve should be closed slightly to obtain the 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 / Cycle** | 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. |
| **Pump Cycles and Will Not Prime or No Flow** | 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. |
| **Pump Cycles Running Sluggish/Stalling, Flow Unsatisfactory** | 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. |
| **Product Leaking Through Exhaust** | 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. |
| **Premature Diaphragm Failure** | 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. |
| **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




# Service & Repair Kits

**476.221.000** **AIR END KIT**
Seals, O-ring, Gaskets, Retaining Rings, Air Valve Assembly, Pilot Valve Assembly

**476.403.360** **WET END KIT**
Nitrile Diaphragms, Nitrile Check Balls, Acetal Seats, and PTFE Seals

**476.403.354** **WET END KIT**
Santoprene Diaphragms, Santoprene Check Balls, Acetal Seats and PTFE Seals

**476.403.357** **WET END KIT**
Polyurethane Diaphragms, Nitrile Spacer Gaskets, Santoprene Check Balls, Acetal Seats and PTFE Seals

**476.403.654** **WET END KIT**
Santoprene Diaphragms, PTFE Overlay Diaphragm, PTFE Check Balls, Acetal Seats and PTFE Seals

****Note: Pumps equipped with these components are <u>not</u> ATEX compliant.**

# Composite Repair Parts List

| Item | Part Number | Description | Qty |
|---|---|---|---|
| 1 | 031.186.003 | Air Valve Assembly | 1 |
| | 031.191.001 | Air Valve Assembly (with integral muffler) | 1 |
| 2 | 050.027.354 | Ball, Check | 4 |
| | 050.027.357 | Ball, Check | 4 |
| | 050.027.360 | Ball, Check | 4 |
| | 050.022.600 | Ball, Check | 4 |
| 3 | 095.116.000 | Pilot Valve Assembly | 1 |
| 4 | 114.023.157 | Bracket, Intermediate | 1 |
| 5 | 115.140.115 | Bracket, Mounting | 2 |
| 6 | 132.034.360 | Bumper, Diaphragm | 2 |
| 7 | 135.036.506 | Bushing, Plunger | 2 |
| 8 | 165.110.157 | Cap, Air Inlet | 1 |
| 9 | 171.062.115 | Capscrew, Flanged 5/16-18 X 1.00 | 12 |
| 10 | 171.063.115 | Capscrew, Flanged 5/16-18 X 1.25 | 36 |
| 11 | 171.076.115 | Capscrew, Flanged 1/4-20 X 1.50 | 4 |
| 12 | 171.077.115 | Capscrew, Flanged 1/4-20 X .75 | 4 |
| 13 | 196.178.502 | Chamber, Outer | 2 |
| 14 | 286.095.354 | Diaphragm | 2 |
| | 286.095.357 | Diaphragm | 2 |
| | 286.095.360 | Diaphragm | 2 |
| | 286.116.000 | Diaphragm, One.Piece Bonded | 2 |
| 15 | 286.096.600 | Diaphragm, Overlay | 2 |
| 16 | 312.106.502 | Elbow, Suction | 2 |
| 17 | 312.112.502 | Elbow, Discharge | 2 |
| 18 | 360.100.379 | Gasket, Air Inlet | 1 |
| 19 | 360.108.360 | Gasket, Pilot Valve | 1 |
| 20 | 360.102.360 | Gasket, Air Valve | 1 |
| 21 | 518.138.502 | Manifold, NPT | 2 |
| | 518.138.502E | Manifold, BSPT (Tapered) | 2 |
| 22 | 530.035.000 | Muffler, Metal (not used with 031.191.001) | 1 |
| 23 | 544.005.115 | Nut, Flanged 5/16-18 | 24 |
| 24 | 560.001.360 | O.ring | 2 |
| 25 | 612.091.502 | Plate, Outer Diaphragm | 2 |
| 26 | 612.177.330 | Plate, Inner Diaphragm | 2 |
| | 612.221.330 | Plate, Inner Diaphragm (use with 286.116.000) | 2 |
| 27 | 620.019.115 | Plunger, Actuator | 2 |
| 28 | 675.042.115 | Ring, Retaining | 2 |
| 29 | 685.056.120 | Rod, Diaphragm | 1 |
| 30 | 720.012.360 | Seal, Diaphragm Rod | 2 |
| 31 | 720.045.600 | Seal, Manifold | 4 |
| 32 | 722.099.600 | Seat, Check Valve | 4 |
| 33 | 920.025.000 | Grounding Cable | 1 |
| 32 | 720.065.600 | Seal, Check Valve | 8 |
| 33 | 722.100.506 | Seat, Check Valve | 4 |
| | 920.025.000 | Grounding Cable (Not shown) | 1 |

# 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
111 Alloy 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 E.P.D.M. 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
557 Unfilled Conductive Polypropylene
558 Conductive HDPE
559 Glass-Filled Conductive Polypropylene
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.

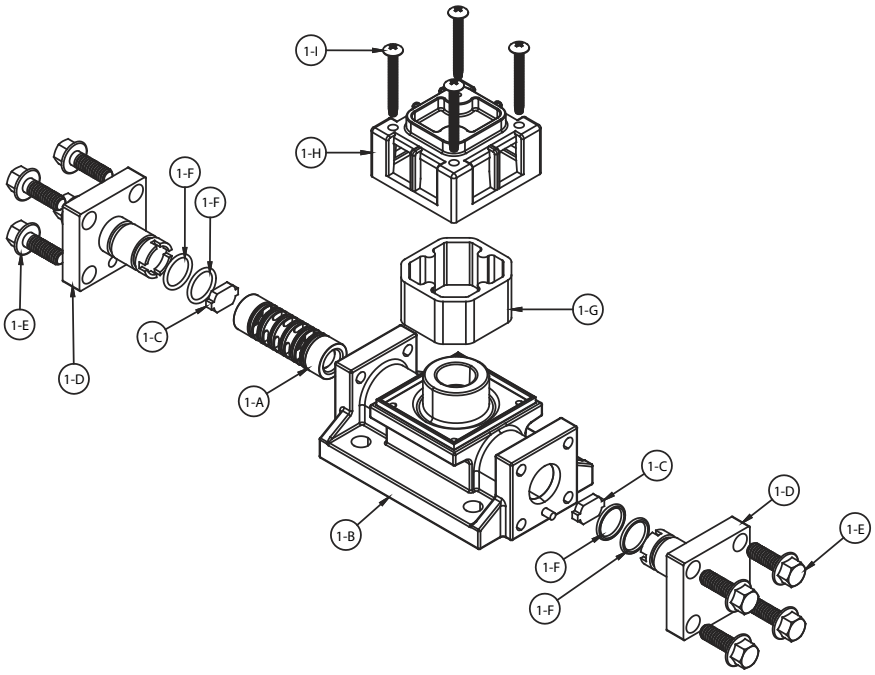
Ryton is a registered tradename of Phillips Chemical Co.

Valox is a registered tradename of General Electric Co.

## RECYCLING

Warren Rupp is an ISO14001 registered company and is committed to minimizing the impact our products have on the environment. Many components of SANDPIPER® 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 SANDPIPER products is a vital part of Warren Rupp's commitment to environmental stewardship.

# Air Distribution Valve Assembly




**MAIN AIR VALVE ASSEMBLY PARTS LIST**

| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 031.191.001 | Valve Assembly | 1 |
| 1-A | 031.132.000 | Sleeve and Spool Set | 1 |
| 1-B | 095.106.157 | Valve Body | 1 |
| 1-C | 132.038.357 | Bumper | 2 |
| 1-D | 165.128.157 | End Cap | 2 |
| 1-E | 171.076.115 | Hex Flange Capscrew 1/4-20 x .75 | 8 |
| 1-F | 560.101.360 | O-ring | 4 |
| 1-G | 530.030.550 | Muffler | 1 |
| 1-H | 165.109.503 | Muffler Cap | 1 |
| 1-I | 706.027.115 | Machine Screw 6-32 x 1.25 | 4 |

MAIN AIR VALVE ASSEMBLY PARTS LIST
(For pumps equipped with metal muffler or piped exhaust)

| | | | |
|---|---|---|---|
| 1 | 031-186-003 | Valve Assembly (Same as above 031-191-001 minus items 1-G, 1-H, and 1-I) | 1 |

****Note: Pumps equipped with these Valve Assemblies are <u>not</u> ATEX compliant.**

**AIR DISTRIBUTION VALVE SERVICING**

To service the air valve first shut off the compressed air, bleed pressure from the pump, and disconnect the air supply line from the pump.

Step #1: See COMPOSITE REPAIR PARTS DRAWING.

Using a 3/8" wrench or socket, remove the four hex capscrews (items 11). Remove the air valve assembly from the pump.

Remove and inspect gasket (item 22) for cracks or damage. Replace gasket if needed.

Step #2: Disassembly of the air valve.

Using a 3/8" wrench or socket, remove the eight hex capscrews (items 1-E) that fasten the end caps to the valve body. Next remove the two end caps (items 1-D). Inspect the two o-rings (items 1-F) on each end cap for damage or wear. Replace the o-rings as needed.

Remove the bumpers (items 1-C). Inspect the bumpers for damage or wear. Replace the bumpers as needed.

Remove the spool (part of item 1-A) from the sleeve. Be careful not to scratch or damage the outer diameter of the spool. Wipe spool with a soft cloth and inspect for scratches or wear.

Inspect the inner diameter of the sleeve (part of item 1-A) for dirt, scratches, or other contaminants. Remove the sleeve if needed and replace with a new sleeve and spool set (item 1-A).

Step #3: Reassembly of the air valve.

Install one bumper (item 1-C) and one end cap (item 1-D), with two o-rings (items 1-F), and fasten with four hex capscrews (items 1-E) to the valve body (item 1-B). Align hole in end cap with roll pin on valve body.

Remove the new sleeve an spool set (item 1-A) from the plastic bag. Carefully remove the spool from the sleeve. Install the six o-rings (item 1-F) into the six grooves on the sleeve. Apply a light coating of grease to the o-rings before installing the sleeve into the valve body (item 1-B), align the slots in the sleeve with the slots in the valve body. Insert the spool into the sleeve. Be careful not to scratch or damage the spool during installation. Install the remaining bumper and end cap (with o-rings), and fasten with the remaining hex capscrews. Align hole in end cap with roll pin on valve body.

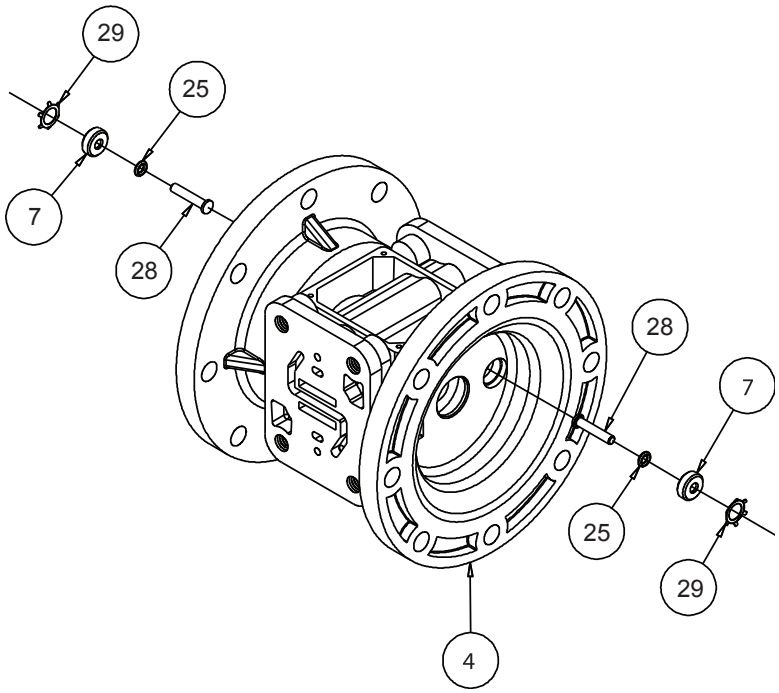
Fasten the air valve assembly (item 1) and gasket to the pump.Connect the air line to the pump. The pump is now ready for operation.

**⚠ IMPORTANT**

***Read these instructions completely, before installation and start-up. It is the responsibility of the purchaser to retain this manual for reference. Failure to comply with the recommendations stated in this manual will damage the pump, and void factory warranty.***

**ATEX Compliant**

# Intermediate Assembly






### ACTUATOR PLUNGER SERVICING

To service the actuator plunger first shut off the compressed air supply, bleed the pressure from the pump, and disconnect the air supply line from the pump.

Step #1: See PUMP ASSEMBLY DRAWING.

Using a 3/8" wrench or socket, remove the four capscrews (items 11). Remove the air inlet cap (item 8) and air inlet gasket (item 19). The pilot valve assembly (item 3) can now be removed.

Step #2: Servicing the actuator plungers.

See PUMP ASSEMBLY DRAWING.

The actuator plungers (items 28) can be reached through the stem cavity of the pilot valve in the intermediate bracket (item 4). To service bushings, o-rings and retaining rings, see Intermediate Drawing.

Remove the plungers (items 28) from the bushings (item 7) in each end of the intermediate cavity. Inspect for wear or damage. Replace plunger as needed. Apply a light coating of grease to each o-ring and re-install the plungers in to the bushings. Push the plungers in as far as they will go.

Step #3: Re-install the pilot valve assembly into the intermediate assembly.

Be careful to align the ends of the stem between the plungers when inserting the stem of the pilot valve into the cavity of the intermediate.

Re-install the gasket (item 19), air inlet cap (item 8) and capscrews (items 11).

Connect the air supply to the pump. The pump is now ready for operation.

PLUNGER BUSHING, O-RING, AND RETAINING RING SERVICING

To service the plunger bushing components first remove the two retaining rings (items 29) using a small flat screwdriver. *Note: It is recommended that new retaining rings be installed.

Next remove the two plunger bushings (items 7). Inspect the bushings for wear or scratches. Replace the bushings as necessary.

Inspect the two o-rings (25) for cuts and/or wear.

### INTERMEDIATE REPAIR PARTS LIST

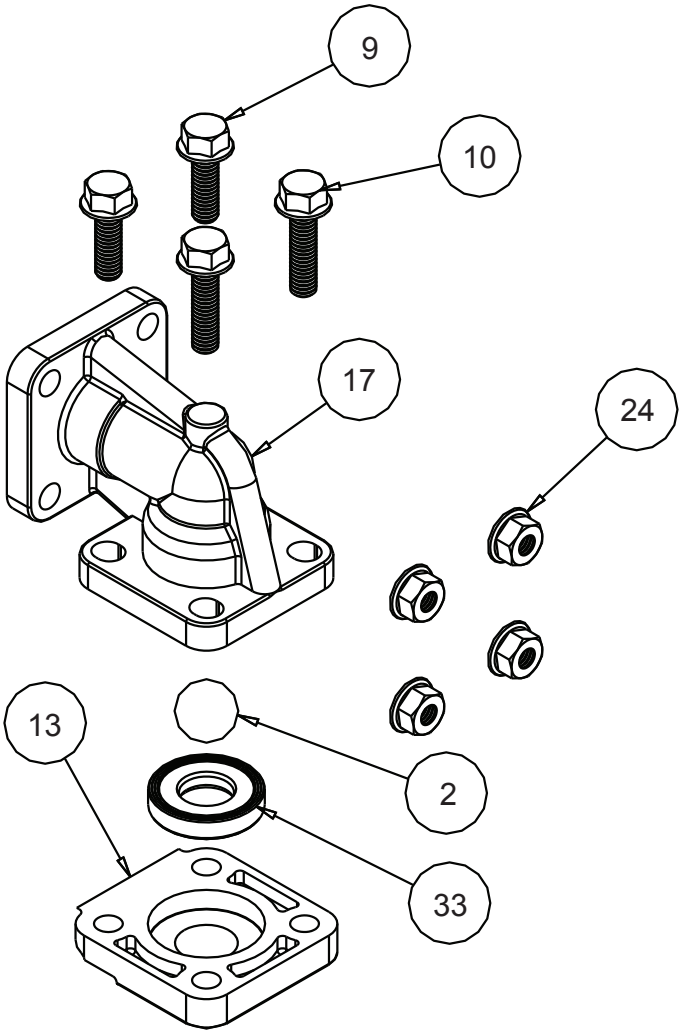
| Item | Part Number | Description | Qty |
|---|---|---|---|
| 4 | 114.023.157 | Bracket, Intermediate | 1 |
| 7 | 135.036.506 | Bushing, Plunger | 2 |
| 25 | 560.001.360 | O-Ring | 2 |
| 28 | 620.019.115 | Plunger, Actuator | 2 |
| 29 | 675.042.115 | Ring, Retaining* | 2 |

*Note: It is recommended that when plunger components are serviced , new retaining rings be installed.

**⚠ IMPORTANT**

*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. In the event of a diaphragm failure a complete rebuild of the center section is recommended.*

# Check Valve Drawing






### MODULAR CHECK BALL VALVE SERVICING

Before servicing the check valves, first shut off the suction line and then the discharge line to the pump. Next, shut off the compressed air supply, bleed air pressure from the pump, and disconnect the air supply line from the pump. Drain any remaining fluid from the pump. The pump can now be removed for service.

To access the modular check valve, remove the elbows (items 16 and 17 from pump composite repair parts drawing). Use a 1/2" wrench or socket to remove the fasteners. Once the elbows are removed, the modular check valves can be seen in the cavities of the outer chamber (items 13).

Inspect the check balls (items 2) for wear, abrasion, or cuts on the spherical surface. The check valve seats (items 33) should be inspected for cuts, abrasive wear, or embedded material on the surfaces of both the external and internal chamfers. The spherical surface of the check balls must seat flush to the surface of the inner chamfer on the check valve seats for the pump to operate to peak efficiency. Replace any worn or damaged parts as necessary.

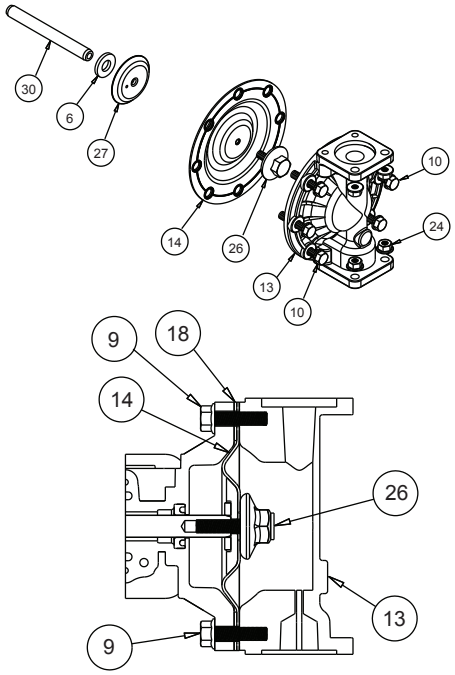
RE-ASSEMBLE THE CHECK VALVE

Place a check ball (item 2) in the ball cage of either the discharge elbow or the outer chamber. Install a check valve seat in the counter on each end of the chamber. Refasten the elbows to the chamber.

**⚠ IMPORTANT**

***Read these instructions completely, before installation and start-up. It is the responsibility of the purchaser to retain this manual for reference. Failure to comply with the recommendations stated in this manual will damage the pump, and void factory warranty.***

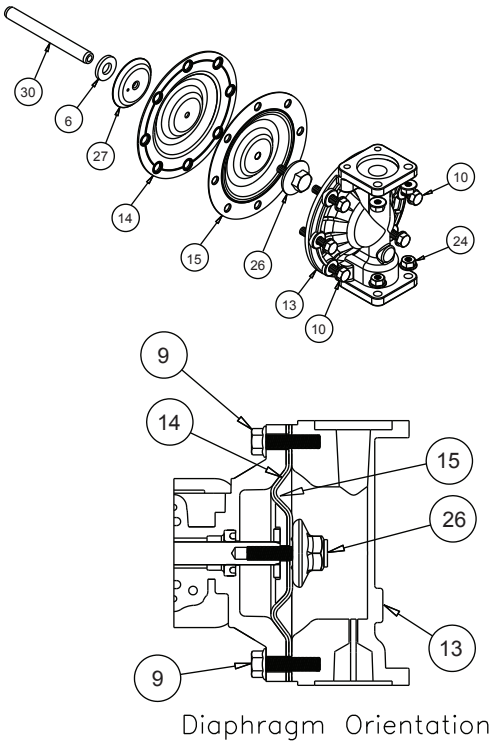
# Diaphragm Service Drawing




Diaphragm Orientation
Install diaphragm and spacer as shown above.

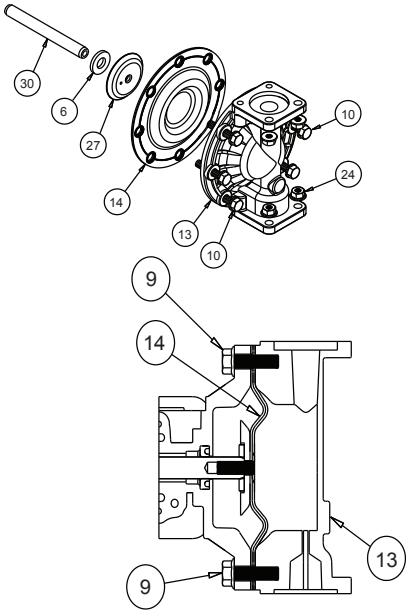


## Diaphragm Service Drawing, With Overlay




Diaphragm Orientation
Install diaphragm and overlay as shown above.

## Diaphragm Service Drawing with One-Piece Bonded




Diaphragm Orientation
Install diaphragm (286.116.000) as shown above.

# Diaphragm Servicing

## DIAPHRAGM SERVICING

To service the diaphragms first shut off the suction, then shut off the discharge lines to the pump. Shut off the compressed air supply, bleed the pressure from the pump, and disconnect the air supply line from the pump. Drain any remaining liquid from the pump.

Step #1: See the pump composite repair parts drawing, and the diaphragm servicing illustration.

Using a 1/2" wrench or socket, remove the 16 capscrews (items 9 & 10), and flanged nuts that fasten the elbows (items 16 and 17) to the outer chambers (items 13). Remove the elbows with the manifolds and spacers attached.

Step #2: Removing the outer chambers.

Using a 1/2" wrench or socket, remove the 16 capscrews (items 9 and 10), and flanged nuts that fasten the outer chambers, diaphragms, and intermediate (item 4) together.

Step #3: Removing the diaphragm assemblies.

Use a 3/4" (19mm) wrench or six pointed socket to remove the diaphragm assemblies (outer plate, diaphragm, and inner plate) from the diaphragm rod (item 30) by turning counterclockwise.

Insert a 6-32 set screw into the smaller tapped hole in the inner diaphragm plate (item 27). Insert the protruding stud and the 6-32 fastener loosely into a vise. Use a 3/4" wrench or socket to remove the outer diaphragm plate (item 26) by turning counterclockwise. Inspect the diaphragm (item 14) for cuts, punctures, abrasive wear or chemical attack. Replace the diaphragms if necessary.

Step #4: Installing the diaphragms.

Push the threaded stud of the outer diaphragm plate through the center hole of the diaphragm. Thread the inner plate clockwise onto the stud. Insert the loose assembly with the above 6-32 fastener back into the vise. Use a torque wrench to tighten the diaphragm assembly together to 90 in lbs. (10.17 Newton meters) 120 in lbs. Santoprene (13.56 Newton meters). Allow a minimum of 15 minutes to elapse after torquing, then re-torque the assembly to compensate for stress relaxation in the clamped assembly.

Step #5: Installing the diaphragm assemblies to the pump.

Make sure the bumper (item 6) is installed over the diaphragm rod.

Thread the stud of the one diaphragm assembly clockwise into the tapped hole at the end of the diaphragm rod (item 30) until the inner diaphragm plate is flush to the end of the rod. Insert rod into pump.

Align the bolt holes in the diaphragm with the bolt pattern in the intermediate (item 4).

Fasten the outer chamber (item 13) to the pump, using the capscrews (items 9 and 10) and flanged nuts.

On the opposite side of the pump, pull the diaphragm rod out as far as possible. Make sure the bumper (item 6) is installed over the diaphragm rod.

Thread the stud of the remaining diaphragm assembly clockwise into the tapped hole at the end of the diaphragm rod (item 30) as far as possible and still allow for alignment of the bolt holes in the diaphragm with the bolt pattern in the inner chamber. Install diaphragms with convolutions facing towards center of pump. See sectional view on previous page.

Fasten the remaining outer chamber (item 13) to the pump, using the capscrews (items 9 and 10) and flanged nuts.

Step #6: Re-install the elbow/spacer/manifold assemblies to the pump, using the capscrews (items 9 & 10) and flanged nuts.

The pump is now ready to be re-installed, connected and returned to operation.

OVERLAY DIAPHRAGM SERVICING

The overlay diaphragm (item 15) is designed to fit snugly over the exterior of the standard TPE diaphragm (item14).

ONE PIECE DIAPHRAGM SERVICING (Bonded PTFE with intergral plate)

The One Piece diaphragm has a treaded stud installed in the intergral plate at the factory. The inner diaphragm plate has a through hole instead of a threaded hole.

Place the inner plate over the diaphragm stud and thread the first diaphragm / inner plate onto the diapragm rod only until the inner plate contacts the rod. Do not tighten.

A small amount of grease may be applied between the inner plate and the diaphragm to facilitate assembly.

Insert the diaphragm / rod assembly into the pump and install the outer chamber. Turn the pump over and thread the second daiphragm / inner plate onto the diaphragm rod. Turn the diapragm until the inner plate contacts the rod and hand tighten the assembly. Continue tightening until the bolt holes align with the inner chamber holes. DO NOT LEAVE THE ASSEMBLY LOOSE.

**⚠ IMPORTANT**

***Read these instructions completely, before installation and start-up. It is the responsibility of the purchaser to retain this manual for reference. Failure to comply with the recommendations stated in this manual will damage the pump, and void factory warranty.***

## PUMPING HAZARDOUS LIQUIDS

When a diaphragm fails, the pumped liquid or fumes enter the air end of the pump. Fumes are exhausted into the surrounding environment. When pumping hazardous or toxic materials, the exhaust air must be piped to an appropriate area for safe disposal. See illustration #1 at right.

This 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. See illustration #2 at right. Piping used for the air exhaust must not be smaller than 1/2" (2.54 cm) diameter. Reducing the pipe size will restrict air flow and reduce pump performance. 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. See illustration #3 at right.

## CONVERTING THE PUMP FOR PIPING THE EXHAUST AIR

The following steps are necessary to convert the pump to pipe the exhaust air away from the pump.

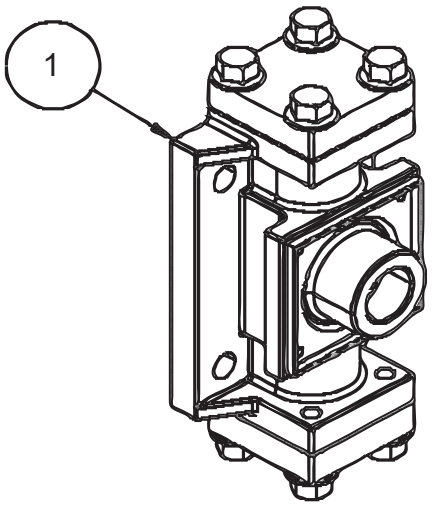
Use a Phillips screwdriver to remove the four machine screws (item 1-I).

Remove the muffler cap and muffler. The air distribution valve body has 3/8" NPT threads for installation of metal muffler or piped exhaust.

IMPORTANT INSTALLATION NOTE:

The manufacturer recommends installing a conductive flexible hose or connection between the pump and any rigid plumbing. This reduces stresses on the molded plastic threads of the air exhaust port. Failure to do so may result in damage to the air distribution valve body.

Any piping or hose connected to the pump's air exhaust port must be groundable and physically supported. Failure to support these connections could also result in damage to the air distribution valve body.




## CONVERTED EXHAUST ILLUSTRATION

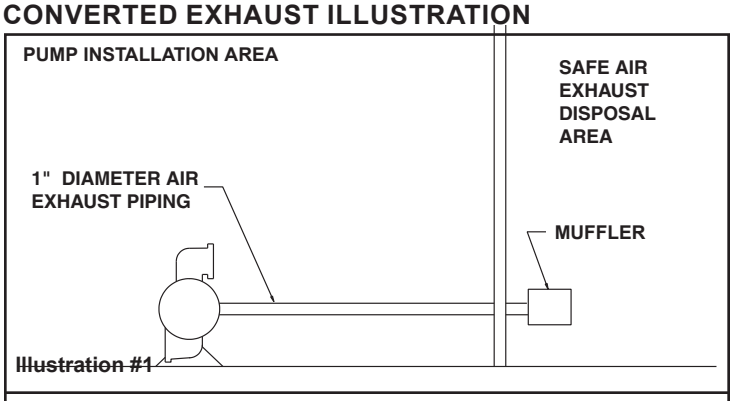



Illustration #1

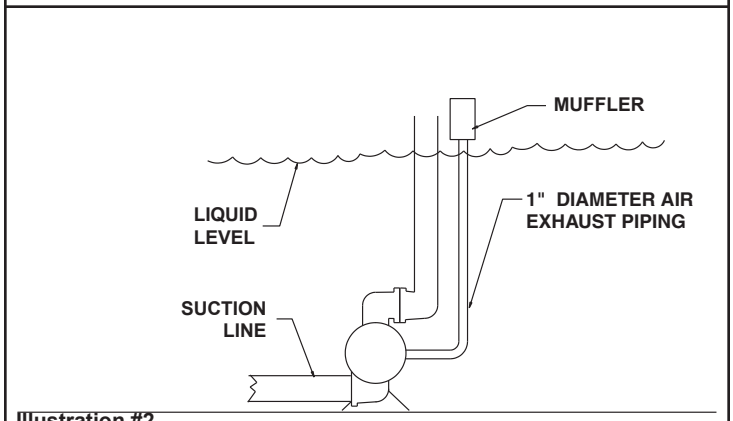



Illustration #2

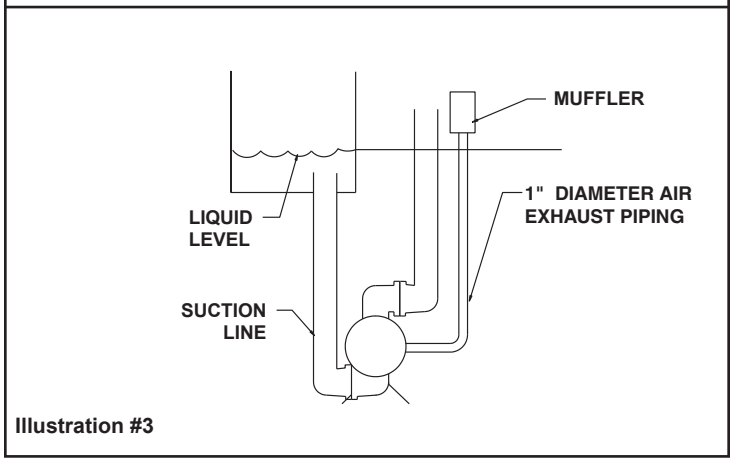



Illustration #3

# 5 - YEAR Limited Product Warranty

*Warren Rupp, Inc. ("Warren Rupp") warrants to the original end-use purchaser that no product sold by Warren Rupp that bears a Warren Rupp 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 Warren Rupp's factory. Warren Rupp brands include Warren Rupp®,SANDPIPER®, SANDPIPER Signature Series™, MARATHON®, Porta-Pump®, SludgeMaster™ and Tranquilizer®.*

*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.*

SANDPIPER®

## EC Declaration of Conformity

**Manufacturer:**
**Warren Rupp, Inc.**
**800 N. Main Street**
**Mansfield, Ohio, 44902 USA**

Certifies that Air-Operated Double Diaphragm Pump Models: DSB Series, DMF Series, G Series, HDB Series, HDF Series, HP Series, F Series, MS Series, S Series, SL Series, SP Series, SSB Series, T Series, U1F Series, WR Series; High Pressure Pump Models: EH Series, GH Series, SH Series; Submersible Pump Models: SMA3 Series, SPA Series; and Surge Dampener/ Suppressor Models: DA Series, TA Series comply with the European Community Directive 2006/42/EC on Machinery, according to Annex VIII. This product has used Harmonized Standard EN809:2012, Pumps and Pump Units for Liquids - Common Safety Requirements, to verify conformance.

October 3, 2022
DATE/APPROVAL/TITLE:

Technical File on record with:
DEKRA Certification B.V.
Meander 1051
6825 MJ Arnhem
The Netherlands

Signature of authorized person

Dennis Hall
Printed name of authorized person

Engineering Manager
Title

IDEX

CE

SANDPIPER®

# EC Declaration of Conformity

**Manufacturer:**
**Warren Rupp, Inc.**
**800 N. Main Street**
**Mansfield, Ohio, 44902 USA**

Certifies that Air-Operated Double Diaphragm Pump Models: DSB Series, DMF Series, G Series, HDB Series, HDF Series, HP Series, F Series, MS Series, S Series, SL Series, SP Series, SSB Series, T Series, U1F Series, WR Series; High Pressure Pump Models: EH Series, GH Series, SH Series; Submersible Pump Models: SMA3 Series, SPA Series; and Surge Dampener/ Suppressor Models: DA Series, TA Series comply with the United Kingdom Statutory Instruments 2008 No. 1597, The Supply of Machinery (Safety) Regulations 2008, according to Annex VIII. This product has used Designated Standard EN809:2012, Pumps and Pump Units for Liquids - Common Safety Requirements, to verify conformance.

October 17, 2022
DATE/APPROVAL/TITLE:

Technical File on record with:
DEKRA Certification UK Limited
Stokenchurch House
Oxford Road
Stokenchurch
HP14 3SX

Signature of authorized person

Dennis Hall
Printed name of authorized person

Engineering Manager
Title

IDEX

UK CA

SANDPIPER®

SCAN ME

Register Your Pump

7: WARRANTY

SANDPIPER®

# ATEX

IDEX

# EU Declaration of Conformity

**Manufacturer:**
Warren Rupp, Inc.
A Unit of IDEX Corporation
800 North Main Street
Mansfield, OH 44902 USA

This declaration of conformity is issued under the sole responsibility of the manufacturer. Warren Rupp, Inc. declares that Air Operated Double Diaphragm Pumps (AODD) and Surge Suppressors listed below comply with the requirements of Directive **2014/34/EU** and applicable harmonized standards.

Harmonized Standards:
- EN ISO 80079-36: 2016
- EN ISO 80079-37: 2016
- EN 60079-25: 2010

1. AODD Pumps and Surge Suppressors - Technical File on record with: DEKRA Certification B.V.
Meander 1051
6825 MJ Arnhem
The Netherlands

Hazardous Location Applied:

Ⓔx II 2 G Ex h IIC T5...225°C (T2) Gb
II 2 D Ex h IIIC T100°C...T200°C Db
- Metallic pump models with external aluminum components (DMF Series, EH Series, F Series, G & GH Series, HDB Series, HDF Series, MS Series, S Series, SH Series, SL Series, SPB Series, ST Series, T Series, and U1F Series)
- Conductive plastic pump models with integral muffler (PB1/4 Series, S Series, SL Series, SPE Series)
- Tranquilizer® surge suppressors (TA Series)

Ⓔx II 2 G Ex h IIB T5...225°C (T2) Gb
II 2 D Ex h IIIB T100°C...T200°C Db
- ST Series with sight tubes (VL) and HP Series because of the projected area of non-conductive external components

2. AODD Pumps - EU Type Examination Certificate No.: DEKRA 18ATEX0094X - DEKRA Certification B.V. (0344)
Meander 1051
6825 MJ Arnhem
The Netherlands

Hazardous Location Applied:

Ⓔx I M1 Ex h I Ma
II 1 G Ex h IIC T5...225°C (T2) Ga
II 1 D Ex h IIIC T100°C...T200°C Da
- Metallic pump models with no external aluminum (HDB Series, HDF Series, G Series, S Series, SPB Series)
- Conductive plastic pumps equipped with conductive muffler (S Series, SPE Series)

Ⓔx II 2 G Ex h ia IIC T5 Gb
II 2 D Ex h ia IIIC T100°C Db
- Pump models with ATEX rated pulse output kit option (HDB Series, HDF Series, PB1/4, S Series, SB Series)

Ⓔx II 2 G Ex h mb IIC T5 Gb
II 2 D Ex h mb tb IIIC T100° Db
- Pump model series S05, S1F, S15, S20, S30 equipped with ATEX rated integral solenoid option

➢ See “ATEX Details” page in user’s manual for more information
➢ See “Safety Information” page for conditions of safe use

DATE/APPROVAL/TITLE:
9 NOV 2023

Dennis Hall
Engineering Manager

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SANDPIPER®

# UKEx

IDEX

# EU Declaration of Conformity

**Manufacturer:**

Warren Rupp, Inc.
A Unit of IDEX Corporation
800 North Main Street
Mansfield, OH 44902 USA

This declaration of conformity is issued under the sole responsibility of the manufacturer.
Warren Rupp, Inc declares that Air Operated Double Diaphragm Pumps (AODD) and Surge Suppressors listed below comply with the requirements of United Kingdom Statutory Instruments **2016 No. 1107** and all the applicable standards.

Designated Standards:

- EN ISO 80079-36: 2016
- EN ISO 80079-37: 2016
- EN 60079-25: 2010

1. AODD Pumps and Surge Suppressors - Technical File on record with: DEKRA Certification UK Limited
Stokenchurch House
Oxford Road
Stokenchurch
HP14 3SX

Hazardous Location Applied:

II 2 G Ex h IIC T5...225°C (T2) Gb
II 2 D Ex h IIIC T100°C...T200°C Db

- Metallic pump models with external aluminum components (DMF Series, EH Series, F Series, G & GH Series, HDB Series, HDF Series, MS Series, S Series, SH Series, SL Series, SPB Series, ST Series, T Series, and U1F Series)
- Conductive plastic pump models with integral muffler (PB1/4 Series, S Series, SL Series, SPE Series)
- Tranquilizer® surge suppressors (TA Series)

II 2 G Ex h IIB T5...225°C (T2) Gb
II 2 D Ex h IIIB T100°C...T200°C Db

- ST Series with sight tubes (VL) and HP Series because of the projected area of non-conductive external components

➢ See “ATEX Details” page in user’s manual for more information
➢ See “Safety Information” page for conditions of safe use

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