

DATA SHEET

Specifications & Performance

Certified Quality



Quality System
ISO9001 Certified



Environmental Management System
ISO14001 Certified



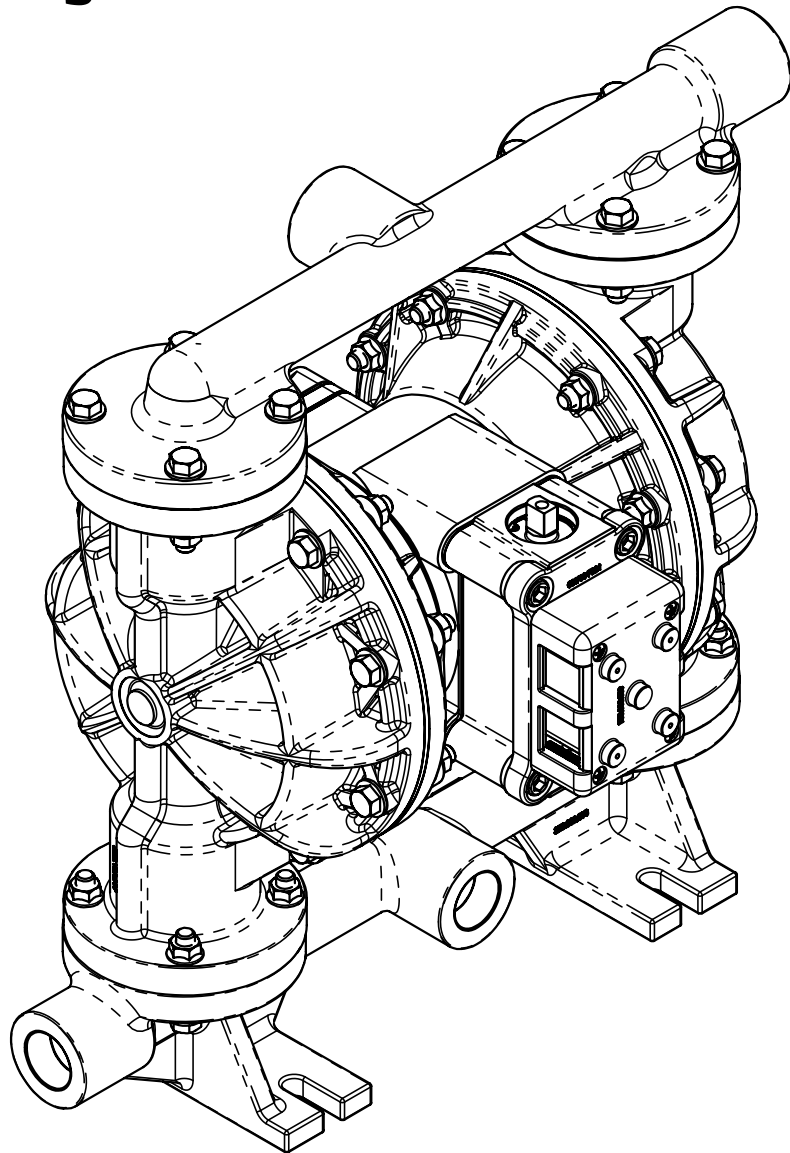
Warren Rupp, Inc.
A Unit of IDEX Corporation
800 N. Main St.,
Mansfield, Ohio 44902 USA
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SANDPIPERPUMP.COM



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Model S1F

Non-Metallic Design Level 3



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

Explanation of Pump Nomenclature

Your Model #: **S**
(fill in from pump nameplate)

Pump Brand	Pump Size	Check Valve	Design Level	Wetted Material	Diaphragm/Check Valve	Check Valve Seat	Non-Wetted Material	Porting Options	Pump Style	Muffler Options	Pump Options
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Model #: **S XX X X X X X X X X X XX**

Pump Brand
S SANDPIPER®

Pump Size
1F 1" Full Flow

Check Valve Type
B Ball

Design Level
3 Design Level

Wetted Material

- K PVDF
- P Polypropylene
- C Conductive Polypropylene
- V Conductive PVDF

Diaphragm/Check Valve Materials

- 1 Santoprene/Santoprene
- 2 PTFE Santoprene Backup/PTFE
- 3 PTFE Pumping, PTFE-Santoprene Backup Driver/PTFE
- 4 Santoprene Pumping/Santoprene
- B Nitrile/Nitrile
- G PTFE-Neoprene Backup/PTFE
- N Neoprene/Neoprene
- V FKM/FKM
- Y PTFE Pumping/One-Piece Bonded Driver/PTFE
- Z One-Piece Bonded/PTFE
- Check Valve Seat**
- K PVDF
- P Polypropylene

Non-Wetted Material Options

- P Polypropylene
- 1 40% Glass Filled Polypropylene with PTFE hardware
- C Conductive Polypropylene

Porting Options

- N NPT Thread
- U Universal (Fits ANSI and DIN)
- 7 Dual Porting (ANSI)
- 8 Top Dual Porting (ANSI)
- 9 Bottom Dual Porting (ANSI)

Pump Style

- D With Electronic Leak Detection (110 V)
- E With Electronic Leak Detection (220V)
- I Inline Porting NPT Threads
- M With Mechanical Leak Detection
- S Standard
- V With Visual Leak Detection

Pump Options


- 0 None
- 1 Sound Dampening Muffler
- 2 Mesh Muffler
- 3 Expanded Clearance Air Valve w/Integral Muffler
- 4 Expanded Clearance Air Valve w/Sound Dampening Muffler
- 5 Expanded Clearance Air Valve w/Mesh Muffler
- 6 Metal Muffler
- 7 Metal Muffler with Grounding Cable

Pump Options

- 00. None
- P0. 10.30VDC Pulse Output Kit
- P1. Intrinsically-Safe 5.30VDC, 110/120VAC 220/240 VAC Pulse Output Kit
- P2. 110/120 or 220/240VAC Pulse Output Kit
- E0. Solenoid Kit with 24VDC Coil
- E1. Solenoid Kit with 24VDC Explosion-Proof Coil
- E2. Solenoid Kit with 24VAC/12VDC Coil
- E3. Solenoid Kit with 12VDC Explosion-Proof Coil
- E4. Solenoid Kit with 110VAC Coil
- E5. Solenoid Kit with 110VAC Explosion-Proof Coil
- E6. Solenoid Kit with 220VAC Coil
- E7. Solenoid Kit with 220VAC Explosion-Proof Coil
- E8. Solenoid Kit with 110VAC, 50 Hz Explosion-Proof Coil
- E9. Solenoid Kit with 230VAC, 50 Hz Explosion-Proof Coil
- SP. Stroke Indicator Pins
- A1. Solenoid Kit with 12 VDC ATEX Compliant Coil
- A2. Solenoid Kit with 24 VDC ATEX Compliant Coil
- A3. Solenoid Kit with 110/120 VAC 50/60 Hz ATEX Compliant Coil
- A4. Solenoid Kit with 220/240 VAC 50/60 Hz ATEX Compliant Coil


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

ATEX Detail

- (1)  II 1G c T5
II 3/1 G c T5
II 1D c T100°C
I M1 c
I M2 c




Note: Pumps are only ATEX compliant when ordered with wetted material option C or V, non-wetted material option C, pump option 0, 6 or 7, and kit option 0.

- (3)  II 2G EEx m c II T5
II 3/2 2G EEx m c II T5
II 2D c IP65 T100°C



Note: Pumps ordered with the options listed in (1) to the left are ATEX compliant when ordered with kit option A1, A2, A3, or A4. Compressed Air Temperature Range: Maximum Ambient Temperature to plus 50°C.

***Note:** See Special Conditions For Safe Use.

- (2)  II 2G Ex ia c IIC T5
II 3/2 G Ex ia c IIC T5
II 2D Ex c ia 20 IP67 T100°C



Note: Pumps ordered with the options listed in (1) to the left are ATEX compliant when ordered with kit option P1.

- (4)  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.

Performance

S1F NON-METALLIC

SUCTION/DISCHARGE PORT SIZE

- 1" ANSI Flange or
PN10 25mm DIN Flange

CAPACITY

- 0 to 53 gallons per minute
(0 to 200 liters per minute)

AIR DISTRIBUTION VALVE

- No-lube, no-stall design

SOLIDS-HANDLING

- Up to .25 in. (6mm)

HEADS UP TO

- 100 psi or 231 ft. of water
(7 bar or 70 meters)

DISPLACEMENT/STROKE

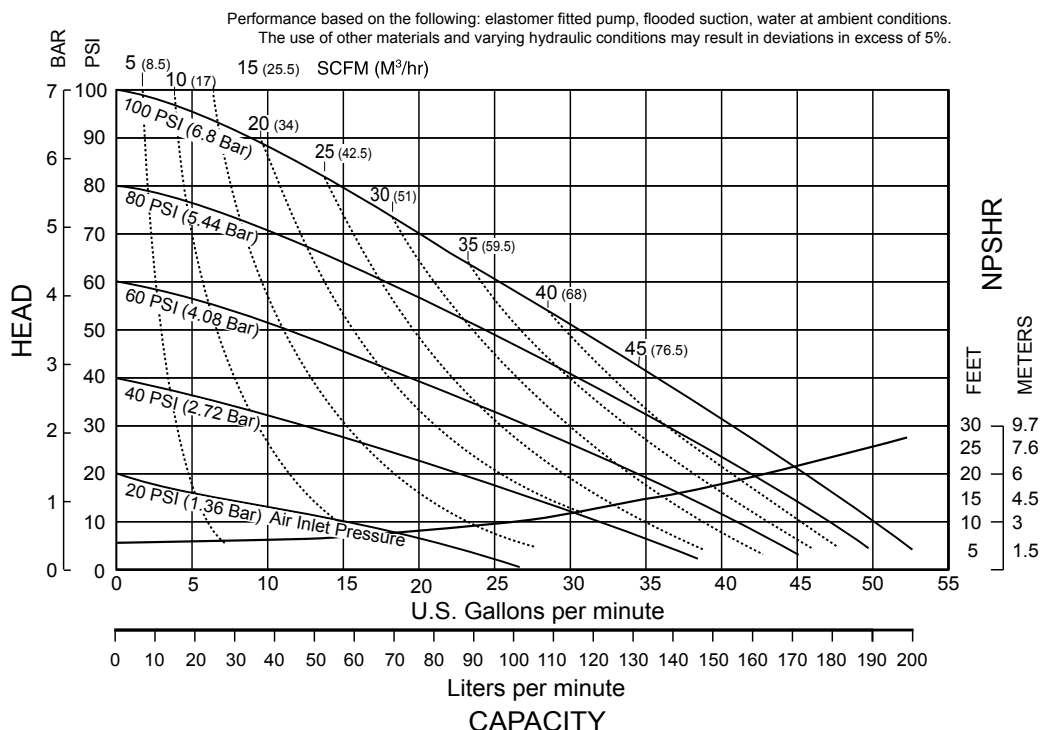
- .19 Gallon / .72 liter

MAXIMUM OPERATING PRESSURE

- 100 psi (7 bar)

SHIPPING WEIGHT

- Polypropylene 42 lbs. (19kg)
- PVDF 54 lbs. (24kg)



1: PUMP SPECS

Materials

Material Profile:	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 solvents; especially all aliphatic, aromatic and halogenated hydrocarbons, acids, animal and vegetable oils. Hot water or hot aqueous solutions (over 70°F (21°C)) will attack FKM.	350°F 177°C	-40°F -40°C
Hytrei®: 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

Ambient temperature range: -20°C to +40°C

Process temperature range: -20°C to +80°C for models rated as category 1 equipment

-20°C to +100°C for models rated as category 2 equipment

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

Polypropylene: 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 82°C	32°F 0°C
PVDF: (Polyvinylidene Fluoride) A durable fluoroplastic with excellent chemical resistance. Excellent for UV applications. High tensile strength and impact resistance.	250°F 121°C	0°F -18°C
Santoprene®: Injection molded thermoplastic elastomer with no fabric layer. Long mechanical flex life. Excellent abrasion resistance.	275°F 135°C	-40°F -40°C
UHMW PE: A thermoplastic that is highly resistant to a broad range of chemicals. Exhibits outstanding abrasion and impact resistance, along with environmental stress-cracking resistance.	180°F 82°C	-35°F -37°C
Urethane: Shows good resistance to abrasives. Has poor resistance to most solvents and oils.	150°F 66°C	32°F 0°C
Virgin PTFE: (PFA/TFE) Chemically inert, virtually impervious. Very few chemicals are known to chemically react with PTFE; molten alkali metals, turbulent liquid or gaseous fluorine and a few fluoro-chemicals such as chlorine trifluoride or oxygen difluoride which readily liberate free fluorine at elevated temperatures.	220°F 104°C	-35°F -37°C

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

Metals:

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

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

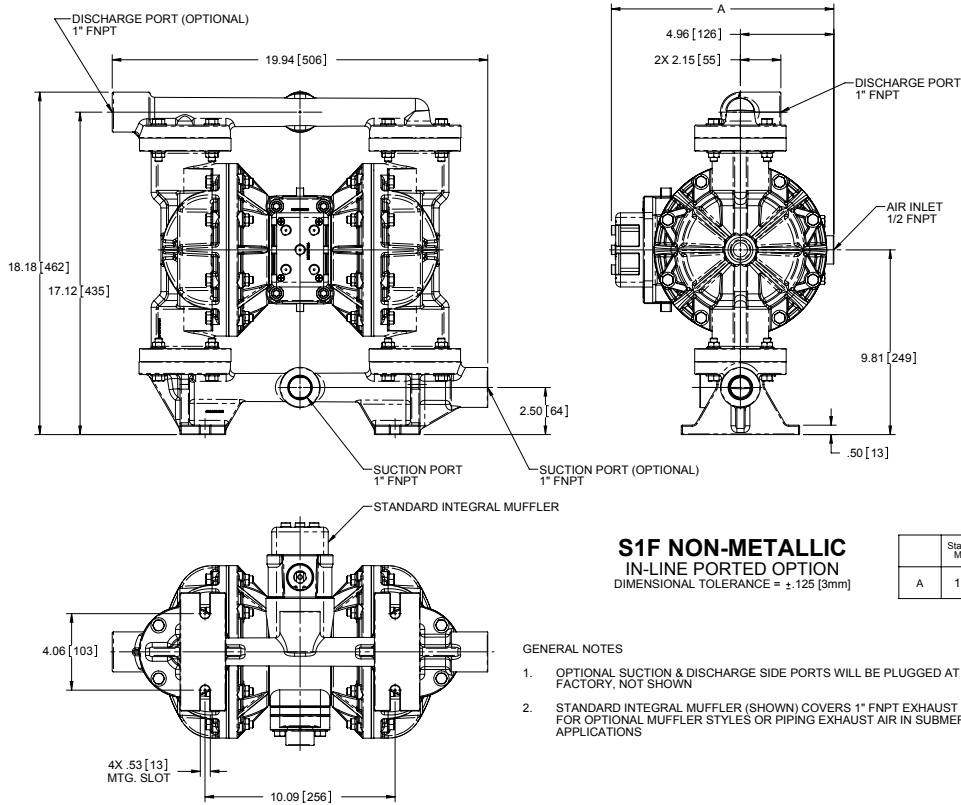
For specific applications, always consult the Chemical Resistance Chart.

Dimensional Drawings

1: PUMP SPECS

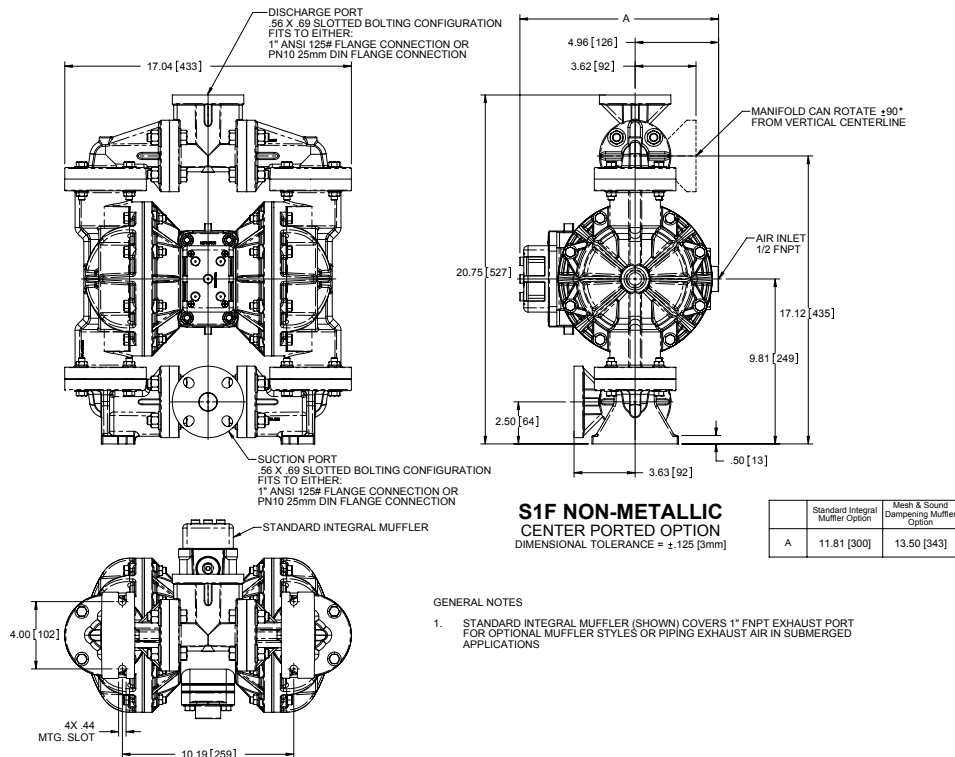
S1F Non-Metallic Inline Ported Option- Polypropylene Wet End Models ONLY

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



S1F Non-Metallic Side Ported Options

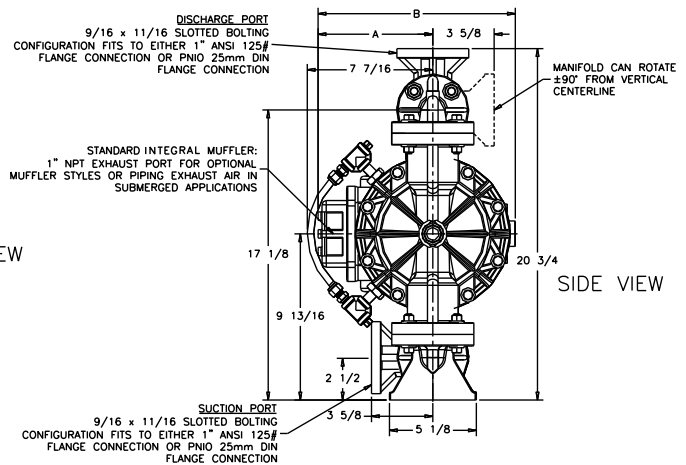
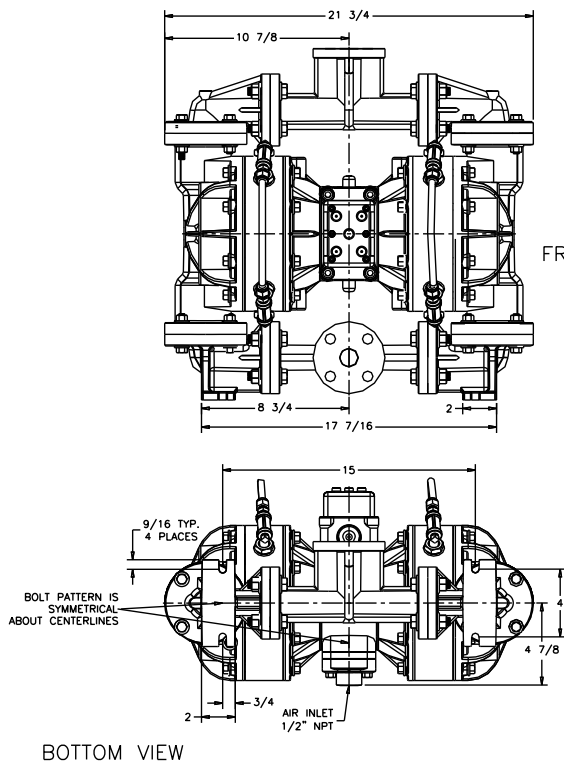
Dimensions in inches (metric dimensions in brackets). Dimensional Tolerance .125" (3mm).



Dimensional Drawings

S1F Non-Metallic with Spill Containment

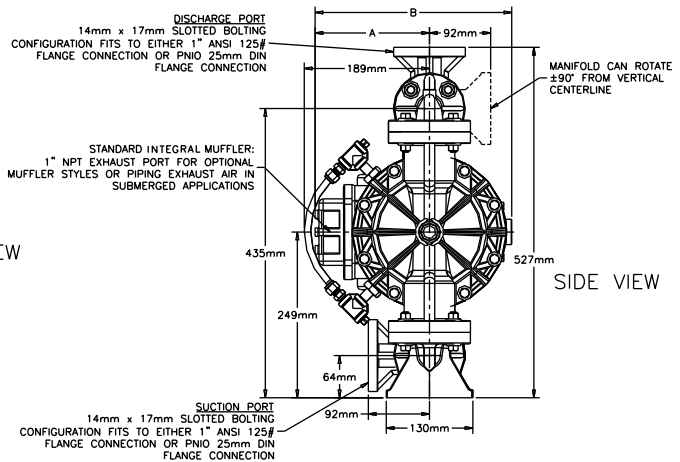
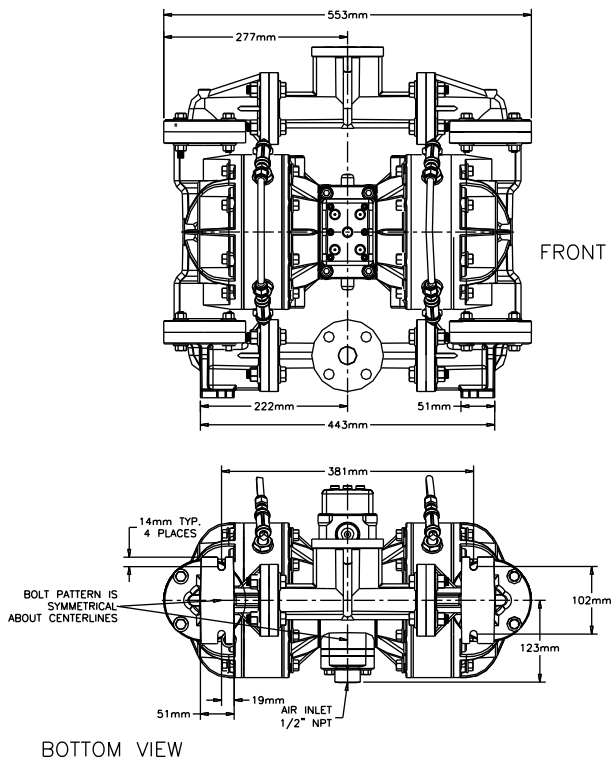
Dimensions in Inches. Dimensional tolerance: ±1/8"



DIMENSION	A	B
Standard Pump	5 5/8"	10 1/4"
Pulse Output Kit	5 5/8"	10 1/4"
Mesh Muffler	8 9/16"	11 1/8"
Sound Dampening Muffler	8 9/16"	11 1/8"

S1F Non-Metallic with Spill Containment (Metric)

Dimensions in Millimeters. Dimensional tolerance: ±3mm



DIMENSION	A	B
Standard Pump	143mm	260mm
Pulse Output Kit	143mm	260mm
Mesh Muffler	167mm	283mm
Sound Dampening Muffler	167mm	283mm

Written Warranty

5 - YEAR Limited Product Warranty

Quality System ISO9001 Certified • Environmental Management Systems ISO14001 Certified

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 SANDPIPER®, MARATHON®, PortaPump®, SludgeMaster™ and Tranquilizer®.

~ See complete warranty at www.sandpiperpump.com/About/guaranteesandwarranties.html ~

**WARREN
RUPP®**

Declaration of Conformity

**Manufacturer: Warren Rupp, Inc.®, 800 N. Main Street, P.O. Box 1568,
Mansfield, Ohio, 44901-1568 USA**

Certifies that Air-Operated Double Diaphragm Pump Series: HDB, HDF, M Non-Metallic, S Non-Metallic, M Metallic, S Metallic, T Series, G Series, U Series, EH and SH High Pressure, RS Series, W Series, SMA and SPA Submersibles, and Tranquilizer Surge Suppressors comply with the European Community Directive 2006/42/EC on Machinery, according to Annex VIII. This product has used Harmonized Standard EN 809, Pumps and Pump Units for Liquids - Common Safety Requirements, to verify conformance.

David Roseberry
Signature of authorized person

David Roseberry
Printed name of authorized person

October 20, 2005
Date of issue

Engineering Manager
Title

Revision Level: E

May 27, 2010
Date of revision





EC Declaration of Conformity

In accordance with ATEX Directive 94/9/EC,
Equipment intended for use in potentially explosive environments.

Manufacturer: Warren Rupp, Inc.®, A Unit of IDEX Corporation
800 North Main Street, P.O. Box 1568, Mansfield, OH 44902 USA

EN 60079-25: 2004

For pumps equipped with Pulse Output ATEX Option
KEMA Quality B.V. (0344)

Applicable Standard:

EN13463-1: 2001,
EN13463-5: 2003



AODD Pumps and Surge Suppressors

For Type Examination Designations

AODD (Air-Operated Double Diaphragm) Pumps

EC Type Examination Certificate No. Pumps: KEMA 09ATEX0071 X
KEMA Quality B.V.
Utrechtseweg 310
6812 AR Arnhem, The Netherlands




Tranquilizer®



DATE/APPROVAL/TITLE:
27 MAY 2010

David Roseberry
David Roseberry, Engineering Manager

ATEX Summary of Markings

Type	Marking		Listed In	Non-Conductive Fluids	
Pump types, S1F, S15, S20, and S30 provided with the pulse output option		II 2 G Ex ia c IIC T5 II 3/2 G Ex ia c IIC T5 II 2 D Ex c iaD 20 IP67 T100°C	KEMA 09ATEX0071 X CE 0344	KEMA 09ATEX0071 X KEMA 09ATEX0071 X KEMA 09ATEX0071 X	No Yes Yes
Pump types, S1F, S15, S20, and S30 provided with the integral solenoid option		II 2 G EEx m c II T5 II 3/2 G EEx m c II T5 II 2 D c IP65 T100°C	KEMA 09ATEX0071 X CE 0344	KEMA 09ATEX0071 X KEMA 09ATEX0071 X KEMA 09ATEX0071 X	No Yes Yes
Pump types, HDB1½, HDB40, HDB2, HDB50, HDB3, HDF1, HDF25, HDF2, HDF3M, PB¼, S05, S1F, S15, S20, S30, SB1, SB25, ST1½, ST40, G15, G20, and G30, without the above listed options, no aluminum parts		II 1 G c T5 II 3/1 G c T5 II 1 D c T100°C I M1 c I M2 c	KEMA 09ATEX0071 X KEMA 09ATEX0072 X CE 0344	KEMA 09ATEX0071 X KEMA 09ATEX0071 X KEMA 09ATEX0071 X KEMA 09ATEX0071 X KEMA 09ATEX0072 X	No Yes Yes No Yes
Pump types, DMF2, DMF3, HDB1½, HDB40, HDB2, HDB50, HDB3, HDF1, HDF25, HDF2, HDF3M, PB¼, S05, S1F, S15, S20, S30, SB1, SB25, SE½, ST1, ST25, ST1½, ST40, U1F, G05, G1F, G15, G20, and G30		II 2 G c T5 II 3/2 G c T5 II 2 D c T100°C	KEMA 09ATEX0072 X CE	KEMA 09ATEX0072 X KEMA 09ATEX0072 X KEMA 09ATEX0072 X	No Yes Yes
Surge Suppressors all types		II 2 G T5 II 3/2 G T5 II 2 D T100°C	KEMA 09ATEX0073 CE	KEMA 09ATEX0073 KEMA 09ATEX0073 KEMA 09ATEX0073	No Yes Yes

EC Type Certificate No. Pumps: KEMA 09ATEX0071 X
Type Certificate No. Pumps: KEMA 09ATEX0072 X
Type Certificate No. Suppressors: KEMA 09ATEX0073