DATA SHEET
Specifications & Performance

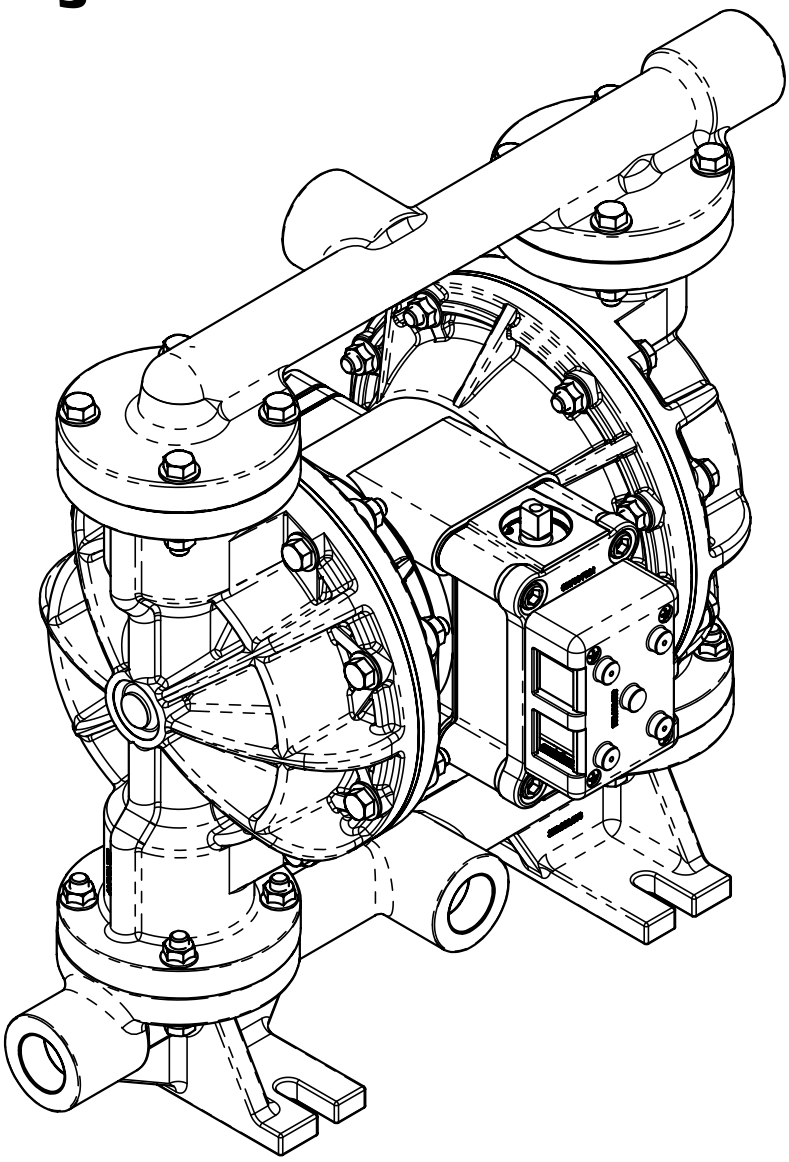
Certified Quality

Quality System
ISO 9001 Certified

Environmental Management System
ISO 14001 Certified

Member of: Hydraulic Institute

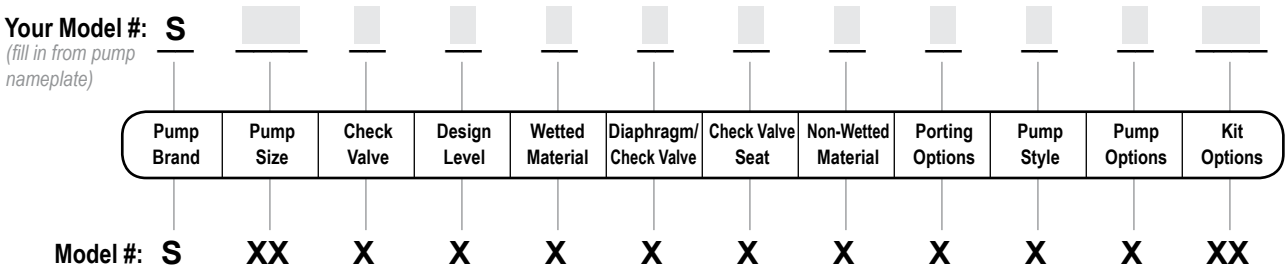
Model S1F
Non-Metallic
Design Level 3



Warren Rupp, Inc.
A Unit of IDEX Corporation
800 N. Main St.,
Mansfield, Ohio 44902 USA
Telephone (419) 524.8388
Fax (419) 522.7867
SANDPIPERPUMP.COM

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

Explanation of Pump Nomenclature



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
M Santoprene/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

Kit 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

Kit Options (cont.)
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

FM APPROVED IEC EEX m T4 CSA®

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

	ATEX Detail	Wetted Material Options	Non-Wetted Material Options	Pump Options	Kit Options
Ex	II 1G c T5 II 1D c T100°C I M1 c I M2 c	C, V	C	6	00
	II 2G c T5 II 2D c T100°C	C, V	C	0, 6	00
	II 2G Ex ia c IIC T5 II 2D Ex c iaD 20 IP67 T100°C	C, V	C	0, 6	P1
	II 2G EEx m c II T5 II 2D c IP65 T100°C	C, V	C	0, 6	A1, A2, A3, A4

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)

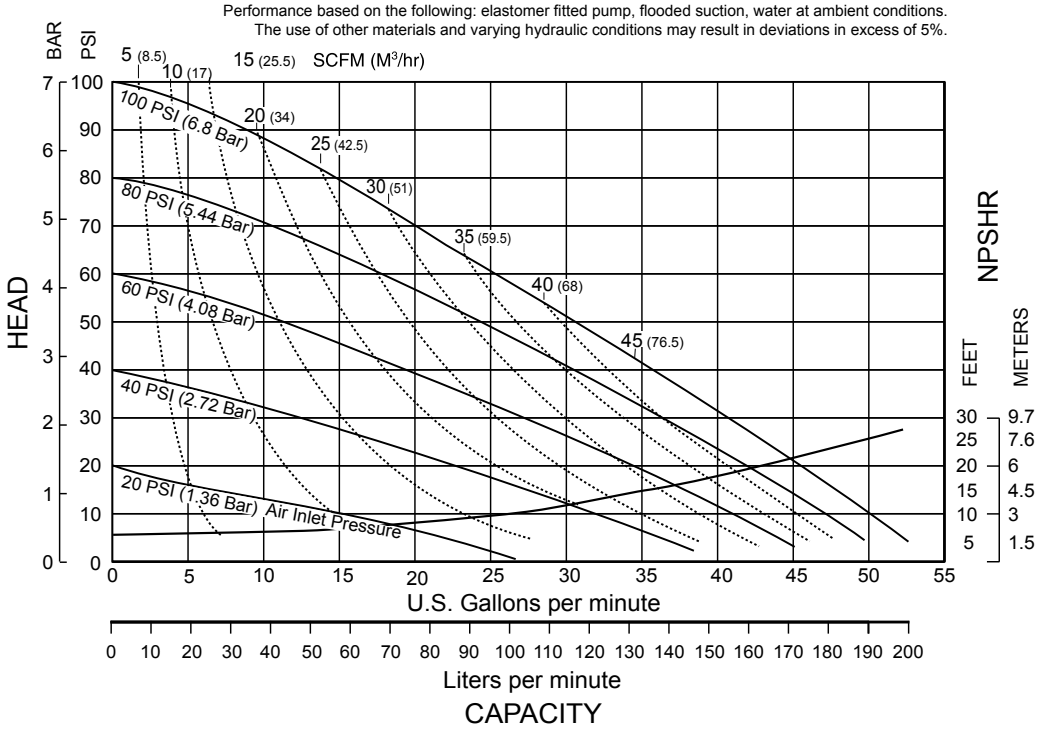
HEADS UP TO
- 100 psi or 231 ft. of water (7 bar or 70 meters)

DISPLACEMENT/STROKE
- .19 Gallon / .72 liter

MAXIMUM OPERATING PRESSURE
- 100 psi (7 bar)

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

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:	Operating Temperatures:	
⚠ *CAUTION! Operating temperature limitations are as follows:*	Max.	Min.
Conductive Acetal: Tough, impact resistant, ductile. Good abrasion resistance and low friction surface. Generally inert, with good chemical resistance except for strong acids and oxidizing agents.	190°F 88°C	-20°F -29°C
EPDM: Shows very good water and chemical resistance. Has poor resistance to oils and solvents, but is fair in ketones and alcohols.	280°F 138°C	-40°F -40°C
FKM: (Fluorocarbon) Shows good resistance to a wide range of oils and 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
Hytrel®: Good on acids, bases, amines and glycols at room temperatures only.	220°F 104°C	-20°F -29°C
Neoprene: All purpose. Resistance to vegetable oils. Generally not affected by moderate chemicals, fats, greases and many oils and solvents. Generally attacked by strong oxidizing acids, ketones, esters and nitro hydrocarbons and chlorinated aromatic hydrocarbons.	200°F 93°C	-10°F -23°C
Nitrile: General purpose, oil-resistant. Shows good solvent, oil, water and hydraulic fluid resistance. Should not be used with highly polar solvents like acetone and MEK, ozone, chlorinated hydrocarbons and nitro hydrocarbons.	190°F 88°C	-10°F -23°C
Nylon: 6/6 High strength and toughness over a wide temperature range. Moderate to good resistance to fuels, oils and chemicals.	180°F 82°C	32°F 0°C
Polypropylene: A thermoplastic polymer. Moderate tensile and flex strength. Resists stong acids and alkali. Attacked by chlorine, fuming nitric acid and other strong oxidizing agents.	180°F 82°C	32°F 0°C
PVDF: (Polyvinylidene Fluoride) A durable fluoroplastic with excellent chemical resistance. Excellent for UV applications. High tensile strength and impact resistance.	250°F 121°C	0°F -18°C
Santoprene®: Injection molded thermoplastic elastomer with no fabric layer. Long mechanical flex life. Excellent abrasion resistance.	275°F 135°C	-40°F -40°C
UHMW PE: A thermoplastic that is highly resistant to a broad range of chemicals. Exhibits outstanding abrasion and impact resistance, along with environmental stress-cracking resistance.	180°F 82°C	-35°F -37°C
Urethane: Shows good resistance to abrasives. Has poor resistance to most solvents and oils.	150°F 66°C	32°F 0°C
Virgin PTFE: (PFA/TFE) Chemically inert, virtually impervious. Very few chemicals are known to chemically react with PTFE; molten alkali metals, turbulent liquid or gaseous fluorine and a few fluoro-chemicals such as chlorine trifluoride or oxygen difluoride which readily liberate free fluorine at elevated temperatures.	220°F 104°C	-35°F -37°C

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

Metals:

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

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

For specific applications, always consult the Chemical Resistance Chart.

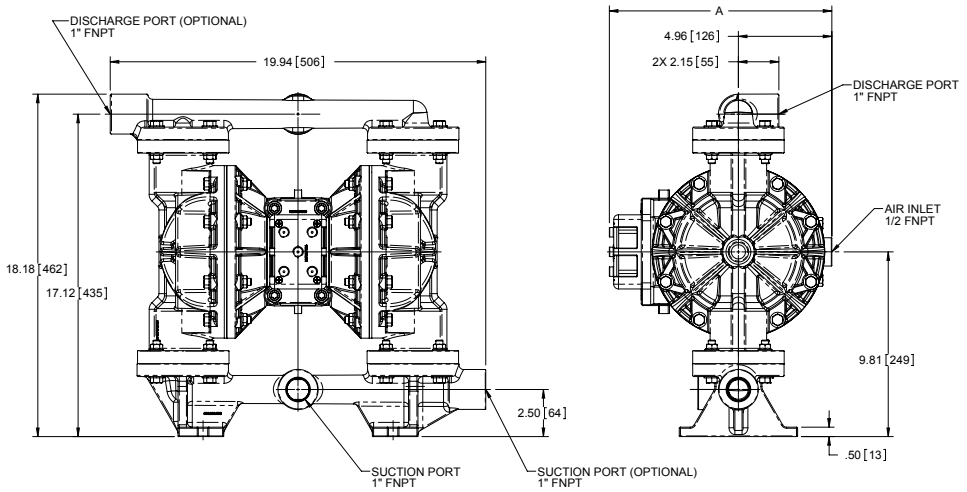
Ambient temperature range: -20°C to +40°C
Process temperature range: -20°C to +80°C for models rated as category 1 equipment
-20°C to +100°C for models rated as category 2 equipment

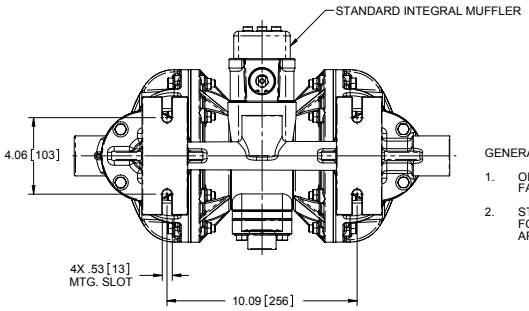
In addition, the ambient temperature range and the process temperature range do not exceed the operating temperature range of the applied non-metallic parts as listed in the manuals of the pumps.

Dimensional Drawings

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
IN-LINE PORTED OPTION
DIMENSIONAL TOLERANCE = ±.125 [3mm]

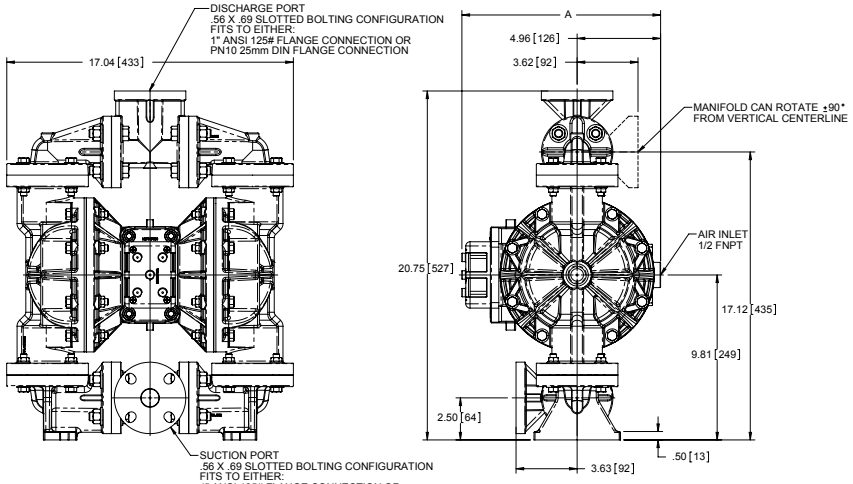
	Standard Integral Muffler Option	Mesh & Sound Dampening Muffler Option
A	11.81 [300]	13.50 [343]

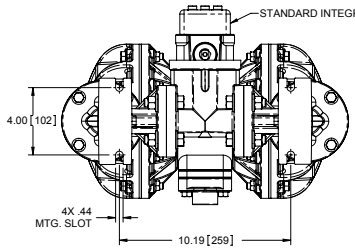
GENERAL NOTES

1. OPTIONAL SUCTION & DISCHARGE SIDE PORTS WILL BE PLUGGED AT FACTORY, NOT SHOWN
2. STANDARD INTEGRAL MUFFLER (SHOWN) COVERS 1" FNPT EXHAUST PORT FOR OPTIONAL MUFFLER STYLES OR PIPING EXHAUST AIR IN SUBMERGED APPLICATIONS

S1F Non-Metallic Side Ported Options

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





S1F NON-METALLIC
CENTER PORTED OPTION
DIMENSIONAL TOLERANCE = ±.125 [3mm]

	Standard Integral Muffler Option	Mesh & Sound Dampening Muffler Option
A	11.81 [300]	13.50 [343]

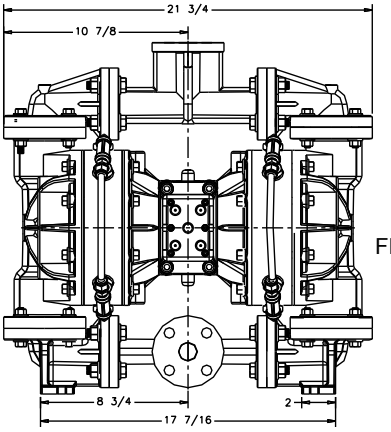
GENERAL NOTES

1. STANDARD INTEGRAL MUFFLER (SHOWN) COVERS 1" FNPT EXHAUST PORT FOR OPTIONAL MUFFLER STYLES OR PIPING EXHAUST AIR IN SUBMERGED APPLICATIONS

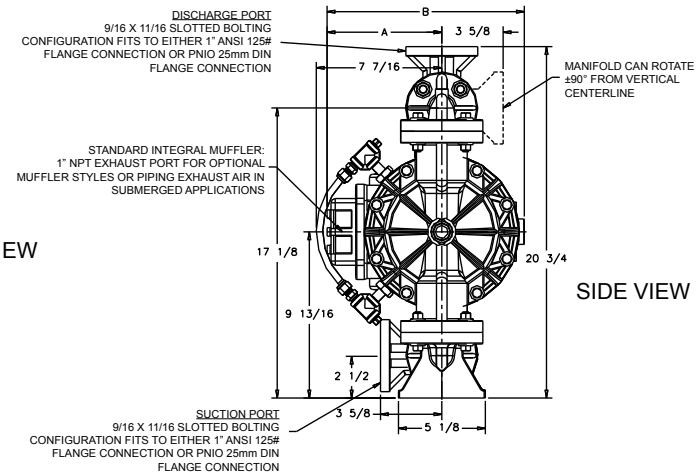
Dimensional Drawings

S1F Non-Metallic with Spill Containment

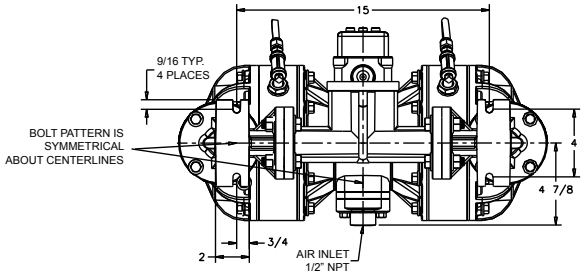
Dimensions in Inches. Dimensional tolerance: ±1/8"



FRONT VIEW



SIDE VIEW

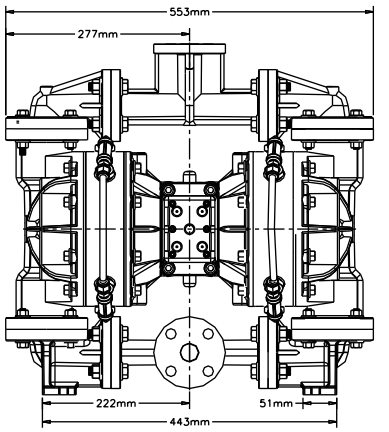


BOTTOM VIEW

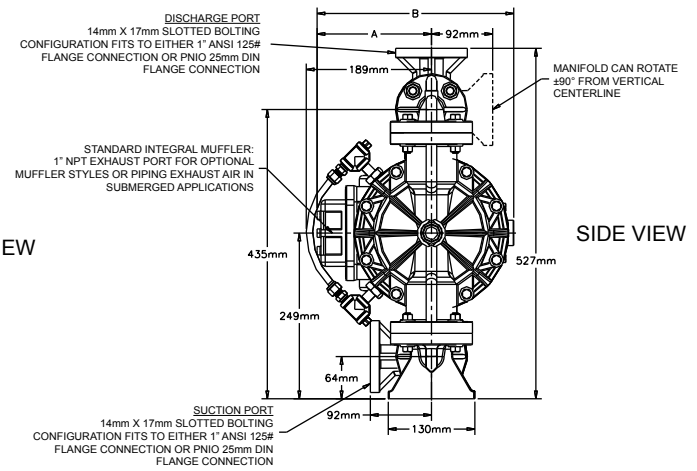
DIMENSION	A	B
Standard Pump	5 5/8"	10 1/4"
Pulse Output Kit	5 5/8"	10 1/4"
Mesh Muffler	8 9/16"	11 1/8"
Sound Dampening Muffler	8 9/16"	11 1/8"

S1F Non-Metallic with Spill Containment (Metric)

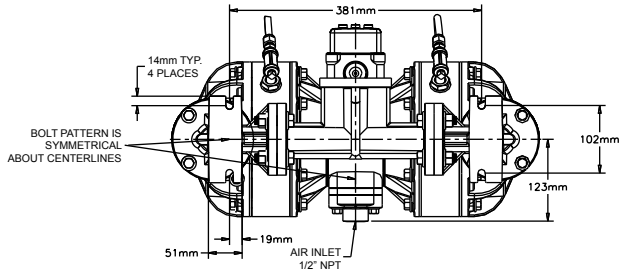
Dimensions in Millimeters. Dimensional tolerance: ±3mm



FRONT VIEW



SIDE VIEW



BOTTOM VIEW

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

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

~ See sandpiperpump.com/content/warranty-certifications for complete warranty, including terms and conditions, limitations and exclusions. ~

WARREN RUPP, INC.

Declaration of Conformity

Manufacturer: Warren Rupp, Inc., 800 N. Main Street
Mansfield, Ohio, 44902 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 EN809:1998+A1:2009, Pumps and Pump Units for Liquids - Common Safety Requirements, to verify conformance.

David Roseberry
Signature of authorized person

October 20, 2005
Date of issue

David Roseberry
Printed name of authorized person

Engineering Manager
Title

Revision Level: F

August 23, 2012
Date of revision

IDEX

CE

WARREN RUPP, INC.

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).

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

Applicable Standard:
EN13463-1: 2001
EN13463-5: 2003
EN60079-25: 2004
Harmonised Standard:
EN13463-1: 2009
EN13463-5: 2011
EN60079-25:2010

The harmonised standards have been compared to the applicable standards used for certification purposes and no changes in the state of the art technical knowledge apply to the listed equipment.

AODD Pumps and Surge Suppressors
Technical File No.: 203104000-1410/MER

AODD (Air-Operated Double Diaphragm) Pumps
EC Type Examination Certificate No. Pumps: KEMA 09ATEX0071 X

DEKRA Certification B.V. (0344)
Meander 1051
6825 MJ Arnhem
The Netherlands

Hazardous Locations Applied:

I M1 c
II 2 G Ex ia c IIC T5
II 2 D Ex c iaD 20 IP67 T100°C
II 2 G Eex m c II T5
II 2 D c IP65 T100°C
II 1 G c T5
II 1 D c T100°C
II 2 G c T5
II 2 D c T100°C

SANDPIPER®
A WARREN RUPP, INC. BRAND

Tranquilizer®

DATE/APPROVAL/TITLE:
18 March 2016

David Roseberry
David Roseberry, Director of Engineering

IDEX