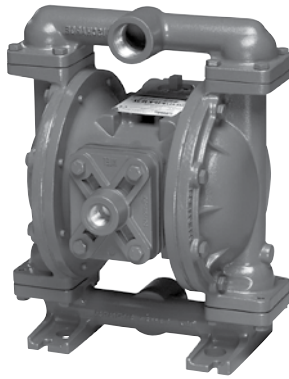


**WARREN
RUPP®**

Quality System
ISO9001 Certified

Environmental
Management System
ISO14001 Certified

IPEX
FLUID & METERING



SANDPIPER®

A WARREN RUPP PUMP BRAND

**S1F Metallic
Design Level 1
Ball Valve**

**Air-Operated
Double Diaphragm Pump**

ENGINEERING, PERFORMANCE
& CONSTRUCTION DATA

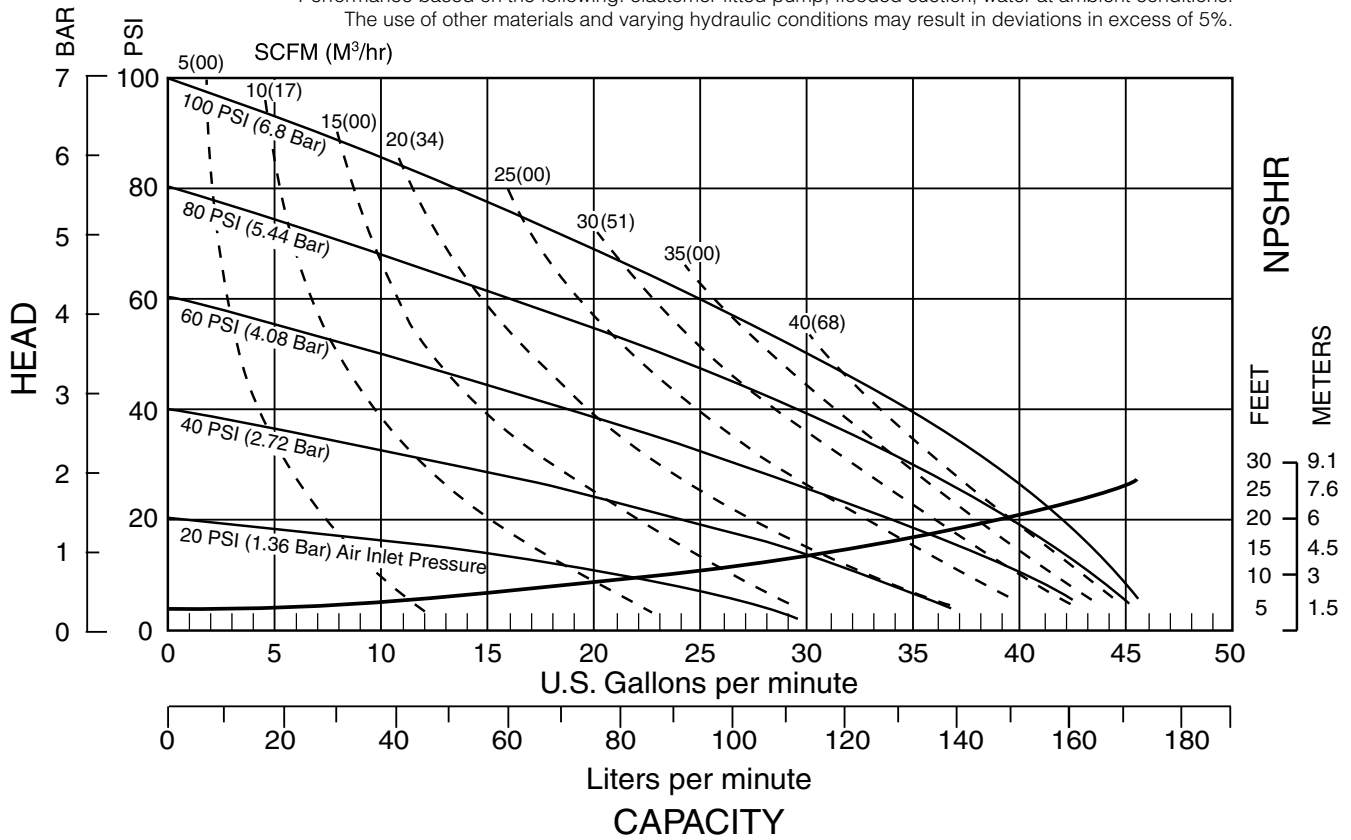


See pages 2, 7 and 8
for ATEX ratings.

INTAKE/DISCHARGE PIPE SIZE	CAPACITY	AIR VALVE	SOLIDS-HANDLING	HEADS UP TO	DISPLACEMENT/STROKE
1" NPT (internal) 1" BSP Tapered (internal)	0 to 45 gallons per minute (0 to 170 liters per minute)	No-lube, no-stall design	Up to .25 in. (6mm)	125 psi or 289 ft. of water (8.6 Kg/cm ² or 86 meters)	.11 Gallon / .42 liter

MODEL S1F Metallic 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%.



SANDPIPER® pumps are designed to be powered only by compressed air.

Ohio 44902 USA

Explanation of Pump Nomenclature, S1F Metallic · Design Level 1· Ball Valve

MODEL	Pump Brand	Pump Size	Check Valve Type	Design Level	Wetted Material	Diaphragm/Check Valve Materials	Check Valve Seat	Non-Wetted Material Options	Porting Options	Pump Style	Pump Options	Kit Options	Shipping Weight lbs. (kg)
S1FB1AIWANS000.	S	1F	B	1	A	I	W	A	N	S	0	00.	28 (13)
S1FB1AGTANS000.	S	1F	B	1	A	G	T	A	N	S	0	00.	28 (13)
S1FB1A1WANS000.	S	1F	B	1	A	1	W	A	N	S	0	00.	28 (13)
S1FB1ACTANS000.	S	1F	B	1	A	C	T	A	N	S	0	00.	28 (13)
S1FB1IBWANS000.	S	1F	B	1	I	B	W	A	N	S	0	00.	46 (21)
S1FB1IGTANS000.	S	1F	B	1	I	G	T	A	N	S	0	00.	46 (21)
S1FB1INWANS000.	S	1F	B	1	I	N	W	A	N	S	0	00.	46 (21)
S1FB1I1WANS000.	S	1F	B	1	I	1	W	A	N	S	0	00.	46 (21)
S1FB1SBWANS000.	S	1F	B	1	S	B	W	A	N	S	0	00.	43 (20)
S1FB1SGTANS000.	S	1F	B	1	S	G	T	A	N	S	0	00.	43 (20)
S1FB1SNWANS000.	S	1F	B	1	S	N	W	A	N	S	0	00.	43 (20)

Note: Models listed in the table are for reference only. See nomenclature below for other models.

Pump Brand
S= SANDPIPER®

Pump Size
1F=1"

Check Valve Type
B= Ball

Design Level
1= Design Level

Wetted Material
A= Aluminum
I= Cast Iron
S= Stainless Steel
H= Alloy C

Diaphragm Check Valve Materials
1= Santoprene®/Santoprene®
B= Nitrile/Nitrile
C= FKM/PTFE
I= EPDM/Santoprene®
G= PTFE-Neoprene/PTFE
N= Neoprene/Neoprene
Z= One-Piece Bonded/PTFE

Check Valve Seat
A= Aluminum
C= Carbon Steel
S= Stainless Steel
T= PTFE
W= UHMW

Non-Wetted Material Options
A= Painted Aluminum
I= Cast Iron
Y= Painted Aluminum with Stainless Steel Hardware
Z= Cast Iron with Stainless Steel Hardware

Porting Options
N= NPT Threads
B= BSP (Tapered) Threads
R= Raised Face 150# Threaded ANSI Flange


Pump Style
S= Standard

Pump Options
0= None
1= Sound Dampening Muffler
2= Mesh Muffler
3= High temperature Air Valve w/Integral Muffler
4= High temperature Air Valve w/Sound Dampening Muffler
5= High temperature Air Valve w/Mesh Muffler


▲ 6= Metal Muffler
▲ 7= Metal Muffler with Grounding Cable

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
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

(1)  II 1G c T5
II 3/1 G c T5
II 1D c T100°C
▲ I M1 c
I M2 c
Models equipped with Wetted Options I, S or H, Non-Wetted Options I or Z Pump Options 6 or 7, and Kit Option 0.
Note: See page 8 for ATEX Explanation of EC-Type Certificate

II 2G c T5
II 3/2 G c T5
II 2D c T100°C
Models equipped with Wetted Options A, I, S, or H, Non-Wetted Options A, I, Y, or Z, Pump Options 6 or 7, and Kit Option 0.
Note: See page 8 for ATEX Explanation of Type Examination Certificate

(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.

(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.

(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.

**CAUTION! Operating temperature limitations are as follows:**

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.

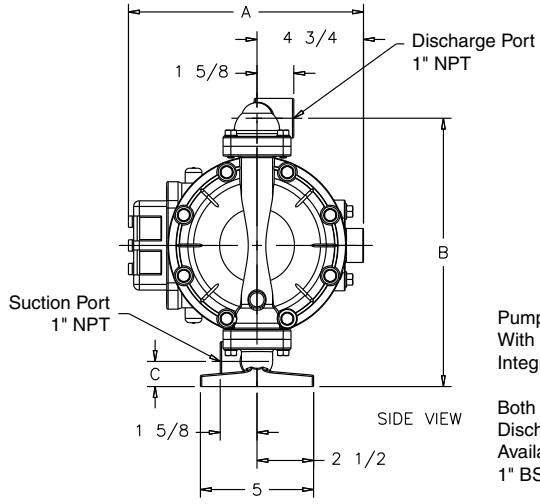
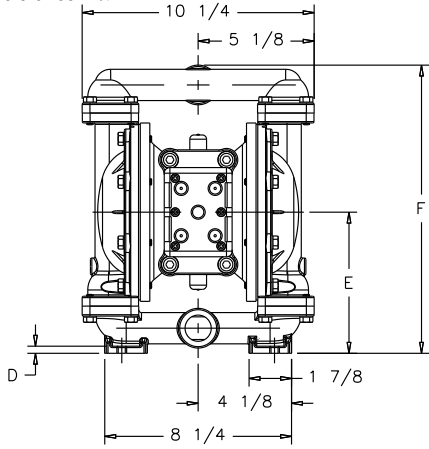
Materials	Operating Temperatures	
	Maximum	Minimum
Nitrile General purpose, oil-resistant. Shows good solvent, oil, water and hydraulic fluid resistance. Should not be used with highly polar solvents like acetone and MEK, ozone, chlorinated hydrocarbons and nitro hydrocarbons.	190°F 88°C	-10°F -23°C
EPDM Shows very good water and chemical resistance. Has poor resistance to oil and solvents, but is fair in ketones and alcohols.	280°F 138°C	-40°F -40°C
NEOPRENE All purpose. Resistant to vegetable oils. Generally not affected by moderate chemicals, fats, greases and many oils and solvents. Generally attacked by strong oxidizing acids, ketones, esters, nitro hydrocarbons and chlorinated aromatic hydrocarbons.	200°F 93°C	-10°F -23°C
PTFE Chemically inert, virtually impervious. Very few chemicals are known to react chemically 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
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) will attack FKM.	350°F 177°C	-40°F -40°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
Polypropylene A thermoplastic polymer. Moderate tensile and flex strength. Resists strong acids and alkalis. Attacked by chlorine, fuming nitric acid and other strong oxidizing agents.	180°F 82°C	32°F 0°C
Conductive HDPE	180°F 82°C	-35°F -37°C

For specific applications, always consult "Chemical Resistance Chart" Technical Bulletin

Dimensions: S1F Metallic

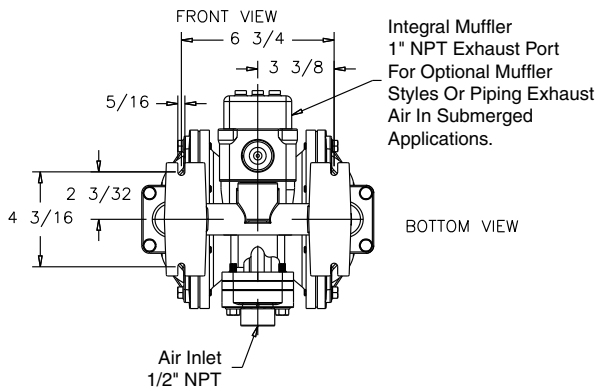
Dimensions in Inches

Dimensional Tolerance: $\pm 1/8"$



Pump Shown With 530-028-550 Integral Muffler

Both Suction And Discharge Ports Are Available With 1" BSP Tapered Connection

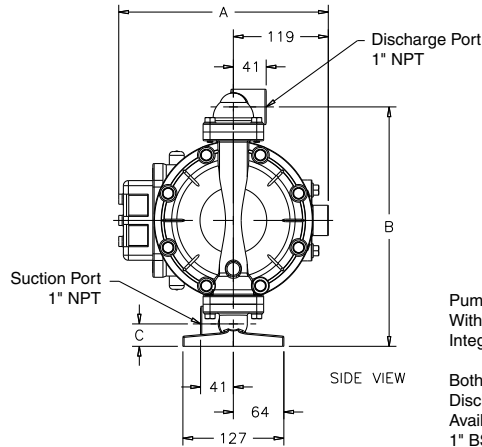
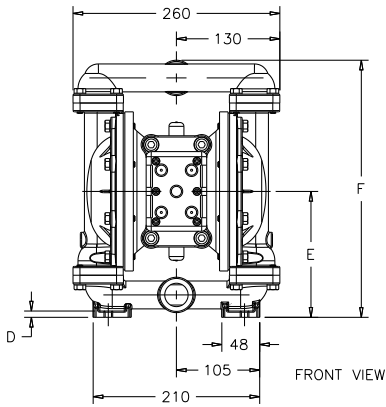


Dimension	A	B	C	D	E	F
Integral Muffler	10 3/8					
Pulse Output Kit	10 3/8					
Aluminum & Cast Iron		11 27/32	1 3/32	5/16	6 7/32	12 23/32
Stainless Steel		11 31/32	1 7/32	7/16	6 11/32	12 27/32
Mesh Muffler	13					
Sound Dampening Muffler	13					
Metal Muffler	12 1/2					

Metric Dimensions: S1F Metallic

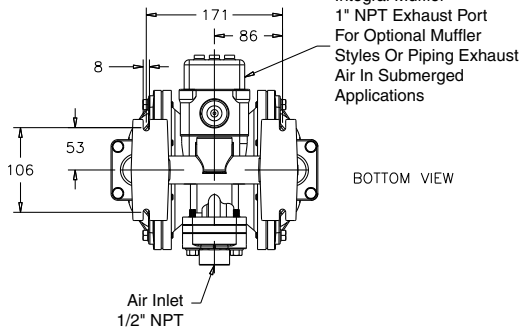
Dimensions in Millimeters

Dimensional Tolerance: $\pm 3\text{mm}$



Pump Shown With 530-028-550 Integral Muffler

Both Suction And Discharge Ports Are Available With 1" BSP Tapered Connection



Dimension	A	B	C	D	E	F
Integral Muffler	264					
Pulse Output Kit	264					
Aluminum & Cast Iron		301	28	8	158	323
Stainless Steel		304	31	11	161	326
Mesh Muffler	330					
Sound Dampening Muffler	330					
Metal Muffler	319					

**WARREN
RUPP, INC.®**

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, RS Series U Series, EH and SH High Pressure, 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

October 20, 2005
Date of issue

David Roseberry
Printed name of authorized person

Engineering Manager
Title

Revision Level: E

MAY 27, 2010
Date of revision

IDEX
FLUID & METERING



Declaration of Conformity

Declaration of Conformity

WARREN RUPP, INC.[®]

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 44901-1568 USA

Applicable Standard:

EN13463-1: 2001,
EN13463-5: 2003



EN 60079-25: 2004

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

AODD Pumps and Surge Suppressors

For Type Examination Designations, see page 2 (back)

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

SANDPIPER[®]
A WARREN RUPP, INC. BRAND

Tranquilizer[®]

DATE/APPROVAL/TITLE:
27 MAY 2010


David Roseberry
David Roseberry, Engineering Manager

IDEX
FLUID & METERING

WARREN RUPP, INC.®

EC Declaration of Conformity

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