

**SERVICE AND OPERATING INSTRUCTIONS**

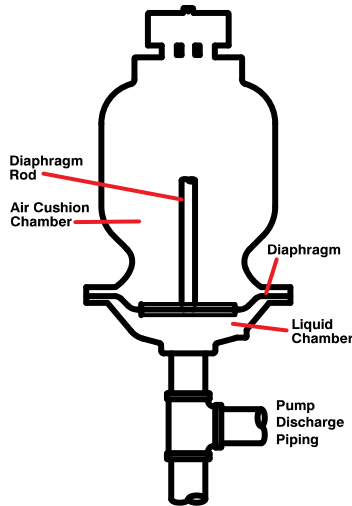
This Warren Rupp Tranquilizer® is a completely automatic diaphragm fitted surge suppressor to reduce the flow and pressure pulsations in a pumping system characteristic of reciprocating type pumps.

**Principle of Operation:** The Tranquilizer uses a flexible diaphragm to separate a liquid chamber from compressed air chambers. A rod connected to the center of one diaphragm activates the air inlet and exhaust valves, which automatically admit or exhaust air in the air chambers. This maintains the diaphragms in mid-range of stroke for maximum surge suppression.

**Installation:** Locate the Tranquilizer in discharge piping as close as possible to the pump. The unit will operate in any position. Connect air inlet connection to full plant air supply line before the air regulator to pump. Not to exceed 125PSI.

**Service Instructions:** When service is required, it is important to MAKE CERTAIN THAT INLET AIR PRESSURE IS DISCONNECTED. The diaphragms are serviced by simply removing the hex nuts or v-band, and removing the center spool casting. When Virgin PTFE diaphragms are used in conjunction with the elastomeric diaphragms they are placed over the “wetted” sides of each elastomeric diaphragm. Inlet and exhaust air valves are located externally for easy access and service.

**Warranty:** This unit is guaranteed for a period of five years against defective material and workmanship.



**! IMPORTANT**

*Read these safety warnings and instructions in this manual completely, before installation and start-up of the pulsation dampener. 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 pulsation dampener, and void factory warranty.*



**! CAUTION**

*Before surge suppressor operation, inspect all gasketed fasteners for looseness caused by gasket creep. Re-torque loose fasteners to prevent leakage. Follow recommended torques stated in this manual.*



**! WARNING**

*Before doing any maintenance on the pulsation dampener, be certain all pressure is completely vented from the pump, suction, discharge, piping, and all other openings and connections. Be certain the air supply is locked out or made non-operational, so that it cannot be started while work is being done on the pump. Be certain that approved eye protection and protective clothing are worn all times in the vicinity of the pump. Failure to follow these recommendations may result in serious injury or death.*



**! WARNING**

*Take action to prevent static sparking. Fire or explosion can result, especially when handling flammable liquids. The pump, piping, valves, containers or other miscellaneous equipment must be grounded. See page 8.*

**! HAZARD WARNING !**

*POSSIBLE EXPLOSION HAZARD can result if 1, 1, 1, -Trichloroethane, Methylene Chloride or other Halogenated Hydrocarbon solvents are used in pressurized fluid systems having Aluminum or Galvanized wetted parts. Death, serious bodily injury and/or property damage could result. Consult with the factory if you have questions concerning Halogenated Hydrocarbon solvents.*

# MATERIAL CODES

## THE LAST 3 DIGITS OF PART NUMBER

000	Assembly, sub-assembly; and some purchased items	337	Silver Plated Steel	555	Polyvinyl Chloride
010	Cast Iron	340	Nickel Plated	556	Black Vinyl
012	Powered Metal	342	Filled Nylon	558	Conductive HDPE
015	Ductile Iron	351	Food Grade Santoprene	570	Rulon II
020	Ferritic Malleable Iron	353	Geolast; Color: Black	580	Ryton
025	Music Wire	354	Injection Molded #203-40 Santoprene- Duro 40D +/-5; Color: RED	590	Valox
080	Carbon Steel, AISI B-1112			591	Nylatron G-S
100	Alloy 20	355	Thermal Plastic	592	Nylatron NSB
110	Alloy Type 316 Stainless Steel	356	Hytrel	600	PTFE (virgin material) Tetrafluorocarbon (TFE)
111	Alloy Type 316 Stainless Steel (Electro Polished)	357	Injection Molded Polyurethane	601	PTFE (Bronze and moly filled)
112	Alloy C	358	Urethane Rubber (Some Applications) (Compression Mold)	602	Filled PTFE
113	Alloy Type 316 Stainless Steel (Hand Polished)			603	Blue Gylon
114	303 Stainless Steel	359	Urethane Rubber	604	PTFE
115	302/304 Stainless Steel	360	Nitrile Rubber Color coded: RED	606	PTFE
117	440-C Stainless Steel (Martensitic)	361	Nitrile	607	Envelon
120	416 Stainless Steel (Wrought Martensitic)	363	FKM (Fluorocarbon). Color coded: YELLOW	608	Conductive PTFE
123	410 Stainless Steel (Wrought Martensitic)	364	E.P.D.M. Rubber. Color coded: BLUE	610	PTFE Encapsulated Silicon
148	Hardcoat Anodized Aluminum	365	Neoprene Rubber. Color coded: GREEN	611	PTFE Encapsulated FKM
149	2024-T4 Aluminum	366	Food Grade Nitrile	632	Neoprene/Hytrel
150	6061-T6 Aluminum	368	Food Grade EPDM	633	FKM/PTFE
151	6063-T6 Aluminum	370	Butyl Rubber Color coded: BROWN	634	EPDM/PTFE
152	2024-T4 Aluminum (2023-T351)			635	Neoprene/PTFE
154	Almag 35 Aluminum	371	Philthane (Tuftane)	637	PTFE, FKM/PTFE
155	356-T6 Aluminum	374	Carboxylated Nitrile	638	PTFE, Hytrel/PTFE
156	356-T6 Aluminum	375	Fluorinated Nitrile	639	Nitrile/TFE
157	Die Cast Aluminum Alloy #380	378	High Density Polypropylene	643	Santoprene®/EPDM
158	Aluminum Alloy SR-319	379	Conductive Nitrile	644	Santoprene®/PTFE
159	Anodized Aluminum	405	Cellulose Fibre	656	Santoprene Diaphragm and Check Balls/EPDM Seats
162	Brass, Yellow, Screw Machine Stock	408	Cork and Neoprene	661	EPDM/Santoprene
165	Cast Bronze, 85-5-5-5	425	Compressed Fibre	666	FDA Nitrile Diaphragm, PTFE Overlay, Balls, and Seals
166	Bronze, SAE 660	426	Blue Gard	668	PTFE, FDA Santoprene/PTFE
170	Bronze, Bearing Type, Oil Impregnated	440	Vegetable Fibre		
175	Die Cast Zinc	465	Fibre		
180	Copper Alloy	500	Delrin 500		
305	Carbon Steel, Black Epoxy Coated	501	Delrin 570		
306	Carbon Steel, Black PTFE Coated	502	Conductive Acetal, ESD-800		
307	Aluminum, Black Epoxy Coated	503	Conductive Acetal, Glass-Filled		
308	Stainless Steel, Black PTFE Coated	505	Acrylic Resin Plastic		
309	Aluminum, Black PTFE Coated	506	Delrin 150		
310	PVDF Coated	520	Injection Molded PVDF Natural color		
313	Aluminum, White Epoxy Coated	540	Nylon		
330	Zinc Plated Steel	541	Nylon		
331	Chrome Plated Steel	542	Nylon		
332	Aluminum, Electroless Nickel Plated	544	Nylon Injection Molded		
333	Carbon Steel, Electroless Nickel Plated	550	Polyethylene		
335	Galvanized Steel	551	Glass Filled Polypropylene		
336	Zinc Plated Yellow Brass	552	Unfilled Polypropylene		
		553	Unfilled Polypropylene		

Delrin and Hytrel are registered tradenames of E.I. DuPont.

Gylon is a registered tradename of Garlock, Inc.

Nylatron is a registered tradename of Polymer Corp.

Santoprene is a registered tradename of Exxon Mobil Corp.

Rulon II is a registered tradename of Dixon Industries Corp.

Ryton is a registered tradename of Phillips Chemical Co.

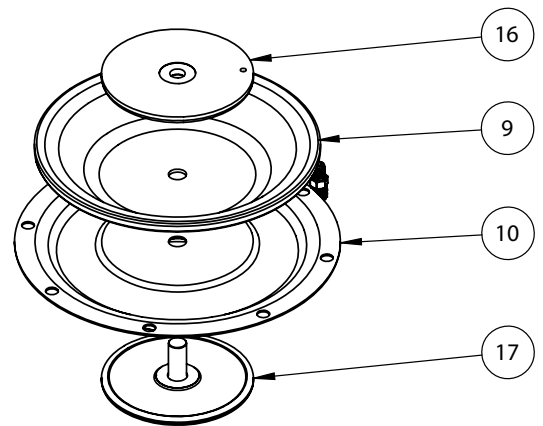
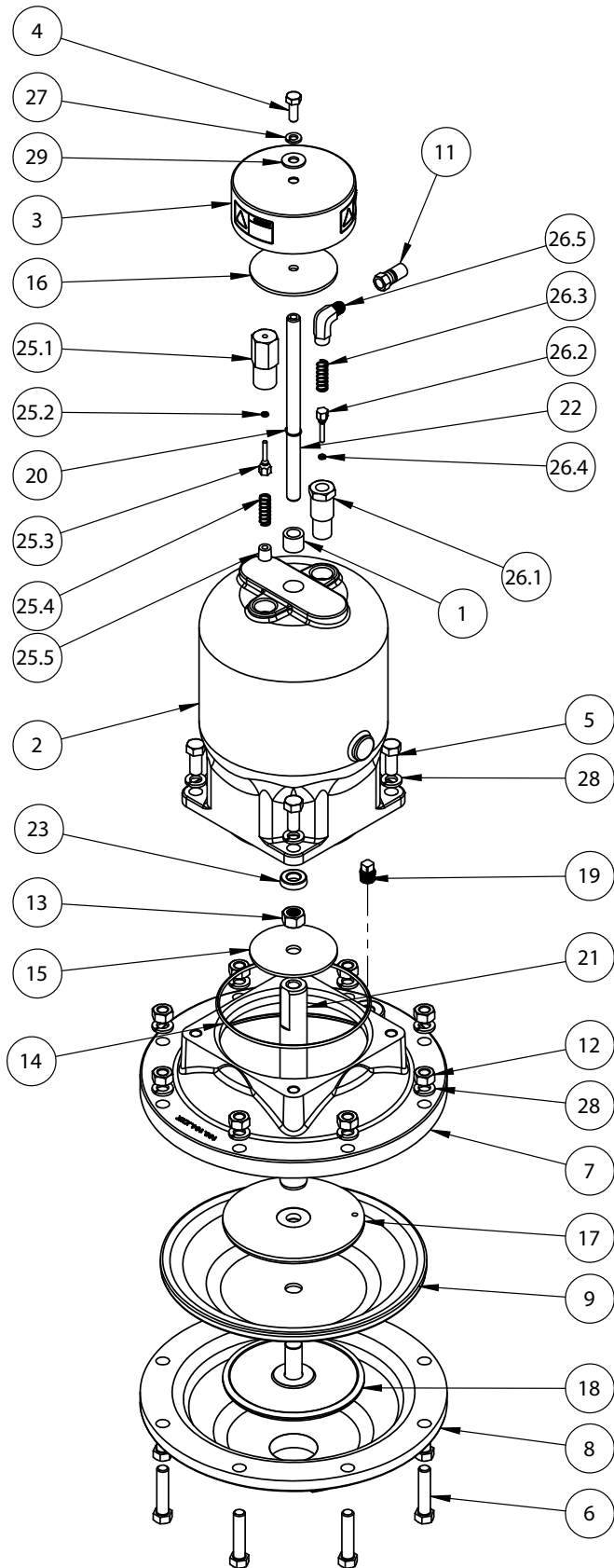
Valox is a registered tradename of General Electric Co.

PortaPump, Tranquilizer and SludgeMaster are registered tradenames of Warren Rupp, Inc.



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	070.014.170	Bearing, Sleeve	1
2	095.078.156	Body	1
3	165.023.000	Cap	1
4	170.005.330	Capscrew, Hex Hd - 5/16-18 X 7/8	1
5	170.024.330	Capscrew, Hex Hd - 7/16-14 X 1	4
6	170.060.330	Capscrew, Hex Hd - 7/16-14 X 2	8
7	196.194.156	Chamber, Inner	1
8	196.196.156	Chamber, Outer - NPT	1
	196.196.010	Chamber, Outer - NPT	1
	196.196.110	Chamber, Outer - NPT	1
	196.196.112	Chamber, Outer - NPT	1
9	<b>286.005.360</b>	<b>Diaphragm</b>	<b>1</b>
	<b>286.005.363</b>	<b>Diaphragm</b>	<b>1</b>
	<b>286.005.364</b>	<b>Diaphragm</b>	<b>1</b>
	<b>286.005.365</b>	<b>Diaphragm</b>	<b>1</b>
	<b>286.005.351</b>	<b>Diaphragm</b>	<b>1</b>
	<b>286.005.354</b>	<b>Diaphragm</b>	<b>1</b>
	<b>286.005.357</b>	<b>Diaphragm</b>	<b>1</b>
10	<b>286.020.604</b>	<b>Diaphragm, Overlay PTFE</b>	<b>1</b>
11	866.078.330	Tube Fitting	1
12	545.007.330	Nut, Hex - 7/16-14	8
13	545.008.330	Nut, Hex - 1/2-13	1
14	560.022.360	O-Ring	1
15	612.043.330	Plate, Activator	1
16	612.044.330	Plate, Activator	1
17	612.047.330	Plate, Diaphragm Inner	1
18	612.039.157	Plate, Diaphragm Outer - Alum Units Only	1
	612.039.010	Plate, Diaphragm Outer - Cast Iron Units Only	1
	612.097.110	Plate, Diaphragm Outer - Stainless Units Only	1
	612.097.112	Plate, Diaphragm Outer - Hastalloy Units Only	1
19	618.003.330	Plug, 1/4 Pipe	1
20	675.054.080	Ring, Retainer	1
21	685.066.120	Rod, Diaphragm	1
22	685.067.120	Rod, Activator	1
23	<b>720.012.360</b>	<b>U-Cup, Shaft Seal</b>	<b>1</b>
25	893.021.000	Valve Assembly	1
25.1	095.020.162	Body, Valve	1
25.2	560.001.360	O-Ring	1
25.3	622.002.162	Poppet	1
25.4	670.007.162	Spring, Retainer	1
25.5	780.013.115	Spring, Compression	1
26	893.023.000	Valve Assembly	1
26.1	095.019.162	Body, Valve	1
26.2	622.002.162	Poppet	1
26.3	780.013.115	Spring, Compression	1
26.4	560.001.360	O-Ring	1
26.5	866.010.162	Elbow, Male	1
27	900.004.330	Washer, Lock - 5/16	1
28	900.006.330	Washer, Lock - 7/16	12
29	901.009.330	Washer, Flat - 5/16	1

# Model TA1½



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# **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, 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 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

Director of Engineering  
Title

Revision Level: F

April 19, 2012  
Date of revision



# **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 Corporation  
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 1 G c T5
II 2 G Ex ia c II CT5	II 1 D c T100°C
II 2 D Ex c iaD 20 IP67 T100°C	II 2 G c T5
II 2 G Eex m c II T5	II 2 D c T100°C
II 2 D c IP65 T100°C	II 2 G c IIB T5

**SANDPIPER®**  
A WARREN RUPP, INC. BRAND

**Tranquilizer®**

DATE/APPROVAL/TITLE:  
18 March 2016

*David Roseberry*  
David Roseberry, Director of Engineering

**IDEX**

# **WARREN RUPP, INC.**

## **Declaration of Conformity**

### **Manufacturer:**

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

certifies that SANDPIPER® Air-Operated Double Diaphragm  
Food Processing Pump Models and Tranquilizer® Surge Suppressor  
Models comply with the European Community Regulation  
1935/2004/EC for Food Contact Materials.

### **Food Processing Pump Models:**

T1FB1SASWTS600. T15B1SDSWTS600. T20B1SASWTS600. T30B1SASWTS600. SSB2, TD3SS.  
T1FB1S9SWTS600. T15B1SSSWTS600. T20B1SDSWTS600. T30B1SDSWTS600.  
T1FB1SDSWTS600. T15B1SDSSTS600. T20B1SASSTS600. T30B1SASSTS600.  
T1FB1SLSWTS600. T15B1SSSSTS600. T20B1SDSSTS600. T30B1SDSSTS600.  
T1FB1S9TWTS600. T15B1SSTWTS600.  
T15B1SSTSTS600.

### **Tranquilizer® Surge Suppressors:**

TA1,NG1SS      TA2,NG2SS  
TA25,NG1SS      TA50,NG2SS  
TA1-1/2,NG1SS      TA3,NG2SS  
TA40,NG1SS      TA80,NG2SS

David Roseberry  
Signature of authorized person

David Roseberry  
Printed name of authorized person

Revision Level: A

February 8, 2013  
Date of issue

Engineering Manager  
Title

May 2, 2013  
Date of revision

**IDEX**

