

# SERVICE & OPERATING MANUAL

## Original Instructions

**WARREN  
RUPP. INC.**

*Quality System  
ISO9001 Certified*

*Environmental  
Management System  
ISO14001 Certified*

**IDEX**



## Tranquilizer®

### Surge Suppressors for Air-Driven Diaphragm Pumps

### Metallic Construction



See pages 15  
for ATEX ratings



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# 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.

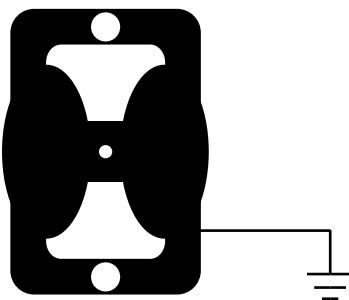


This pump is pressurized internally with air pressure during operation. Make certain that all fasteners are in good condition and are reinstalled properly during reassembly.



Use safe practices when lifting

## Grounding ATEX Pumps



ATEX compliant pumps are suitable for use in explosive atmospheres when the equipment is properly grounded in accordance with local electrical codes. Pumps equipped with electrically conductive diaphragms are suitable for the transfer of conductive or non-conductive fluids of any explosion group. When operating pumps equipped with non-conductive diaphragms that exceed the maximum permissible projected area, as defined in EN 13461-1: 2009 section 6.7.5 table 9, 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

For further guidance on ATEX applications, please consult the factory.

# WARREN RUPP, INC.

Quality System  
ISO9001 Certified

Environmental  
Management System  
ISO14001 Certified



- Nearly surge-free flow.
- Steadier pressures.
- Less shock to pipes.

Air-operated diaphragm pumps offer a wide range of benefits not available in any other type of pump. However, in some applications, pulsations in the discharge flow may be undesirable. Pulsation can be virtually eliminated by installing a Warren Rupp Tranquilizer®.

**At initial and subsequent start-ups** . . . air cushion is quickly established by liquid pressure pushing diaphragm upward, permitting entrance of air into air chamber, until the balancing air cushion causes the diaphragm to center at its mid-stroke normal operating position.

**During normal continuous operation thereafter** . . . the diaphragm always flexes at its mid-range position to absorb discharge pulsations against the adjoining air cushion already established.

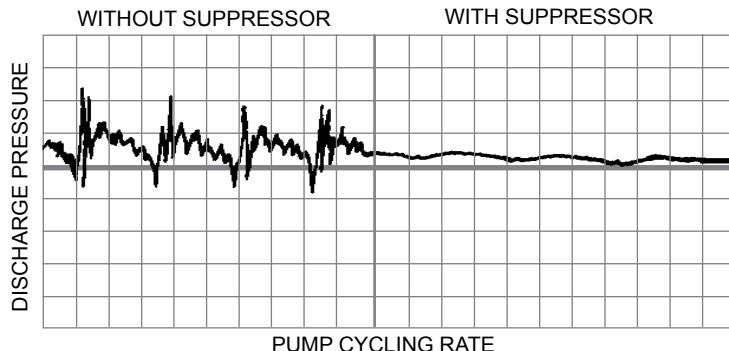
**In event of change in pumped liquid pressure** . . . the air cushion pressure is automatically increased or decreased as required to compensate for the change . . . always maintaining constant volume of air cushion, and the diaphragm always operating at its mid-position.

**When liquid flow stops and liquid pressure is released** . . . the air in air chamber is also exhausted to atmosphere.

## Tranquilizer®

- Automatically maintains a constant volume of air cushion for most effective surge suppression, regardless of pump pressure.
- Automatically self-charging and self-venting to maintain most efficient air cushion pressure . . . no more precharge pressure calculations or guesswork, no manual pressurizing, no periodic pressure checking.
- Air cushion separated from product by flexible diaphragm . . . prevents product aeration.
- External visual indication provides constant evidence of performance.
- Simple to install. Attention-free.

## Tranquilizer®



**Models TA1 and TA25**  
1-inch Tranquilizer® for use  
with 1-inch pumps

Air supply connection is  $\frac{1}{4}$ " NPT  
external pipe thread.

Maximum Operating Pressure – 125 psi.



**Models TA1½ and TA40**  
1½-inch Tranquilizer® for use  
with 1½-inch pumps

Air supply connection is  $\frac{1}{4}$ " NPT  
external pipe thread.

Maximum Operating Pressure – 125 psi.



**Models TA2 and TA50**  
Design Level 2  
2-inch Tranquilizer® for use  
with 1½, 2-inch pumps

Air supply connection is  $\frac{1}{4}$ " NPT  
external pipe thread.

Maximum Operating Pressure – 125 psi.



**Models TA3 and TA80**  
Design Level 2  
3-inch Tranquilizer® for use  
with 3-inch pumps

Air supply connection is  $\frac{1}{4}$ " NPT  
external pipe thread.

Maximum Operating Pressure – 125 psi.

## Materials of Construction:

Type Code	Diaphragm	Design Level	Wetted Parts	Porting (Internal Tapered Threads)
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Type Code	Diaphragm		Design Level	Wetted Parts	Porting (Internal Tapered Threads)	Porting Flange Style	Shipping Weight lbs./kg
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### Tranquilizer Model TA1

B-1-A	B	1	A	1" NPT
H-1-A	H	1	A	1" NPT
NG-1-A	NG	1	A	1" NPT
N-1-A	N	1	A	1" NPT
S-1-A	S	1	A	1" NPT
V-1-A	V	1	A	1" NPT
B-1-SS	B	1	SS	1" NPT
F-1-SS	F	1	SS	1" NPT
H-1-SS	H	1	SS	1" NPT
* NG-1-SS	NG	1	SS	1" NPT
N-1-SS	N	1	SS	1" NPT
S-1-SS	S	1	SS	1" NPT
V-1-SS	V	1	SS	1" NPT

### Tranquilizer Model TA25

B-1-A	B		1	A	1" BSPT		14 / 6.35
H-1-A	H		1	A	1" BSPT		14 / 6.35
NG-1-A	NG		1	A	1" BSPT		14 / 6.35
N-1-A	N		1	A	1" BSPT		14 / 6.35
S-1-A	S		1	A	1" BSPT		14 / 6.35
V-1-A	V		1	A	1" BSPT		14 / 6.35
B-1-SS	B		1	SS	1" BSPT		18 / 8.16
F-1-SS	F		1	SS	1" BSPT		18 / 8.16
H-1-SS	H		1	SS	1" BSPT		18 / 8.16
* NG-1-SS	NG		1	SS	1" BSPT		18 / 8.16
N-1-SS	N		1	SS	1" BSPT		18 / 8.16
S-1-SS	S		1	SS	1" BSPT		18 / 8.16
V-1-SS	V		1	SS	1" BSPT		18 / 8.16

### Tranquillizer Model TA1½

B-1-A	B	1	A	1½" NPT
NG-1-A	NG	1	A	1½" NPT
N-1-A	N	1	A	1½" NPT
V-1-A	V	1	A	1½" NPT
B-1-A	B	1	A	1½" NPT
F-1-A	F	1	A	1½" NPT
* NG-1-SS	NG	1	SS	1½" NPT
N-1-SS	N	1	SS	1½" NPT
V-1-SS	V	1	SS	1½" NPT

### Tranquilizer Model TA40

B-1-A	B		1	A	1½" BSPT		28 / 12.7
NG-1-A	NG		1	A	1½" BSPT		28 / 12.7
N-1-A	N		1	A	1½" BSPT		28 / 12.7
V-1-A	V		1	A	1½" BSPT		28 / 12.7
B-1-SS	B		1	SS	1½" BSPT		35 / 15.9
F-1-SS	F		1	SS	1½" BSPT		35 / 15.9
* NG-1-SS	NG		1	SS	1½" BSPT		35 / 15.9
N-1-SS	N		1	SS	1½" BSPT		35 / 15.9
V-1-SS	V		1	SS	1½" BSPT		35 / 15.9

### Tranquilizer Model TA2 Design level 2

B-2-A	B	2	A	2" NPT
I-2-A	I	2	A	2" NPT
NG-2-A	NG	2	A	2" NPT
N-2-A	N	2	A	2" NPT
S-2-A	S	2	A	2" NPT
V-2-A	V	2	A	2" NPT
B-2-Cl	B	2	Cl	2" NPT
I-2-Cl	I	2	Cl	2" NPT
NG-2-Cl	NG	2	Cl	2" NPT
N-2-Cl	N	2	Cl	2" NPT
S-2-Cl	S	2	Cl	2" NPT
V-2-Cl	V	2	Cl	2" NPT
B-2-SS	B	2	SS	2" NPT
F-2-SS	F	2	SS	2" NPT

### Tranquilizer Model TA50 Design level 2

B-2-A	B		2	A	2" BSPT		28 / 12.7
I-2-A	I		2	A	2" BSPT		28 / 12.7
NG-2-A	NG		2	A	2" BSPT		28 / 12.7
N-2-A	N		2	A	2" BSPT		28 / 12.7
S-2-A	S		2	A	2" BSPT		28 / 12.7
V-2-A	V		2	A	2" BSPT		28 / 12.7
B-2-Cl	B		2	Cl	2" BSPT		35 / 15.9
I-2-Cl	I		2	Cl	2" BSPT		35 / 15.9
NG-2-Cl	NG		2	Cl	2" BSPT		35 / 15.9
N-2-Cl	N		2	Cl	2" BSPT		35 / 15.9
S-2-Cl	S		2	Cl	2" BSPT		35 / 15.9
V-2-Cl	V		2	Cl	2" BSPT		35 / 15.9
B-2-SS	B		2	SS	2" BSPT		35 / 15.9
F-2-SS	F		2	SS	2" BSPT		35 / 15.9

## Materials of Construction continued:

### Tranquilizer Model TA2 Design level 2, continued

Type Code	Diaphragm	Design Level	Wetted Parts	Porting (Internal Tapered Threads)	Porting Flange Style
*	NG-2-SS	NG	2	SS	2" NPT
	N-2-SS	N	2	SS	2" NPT
	V-2-SS	V	2	SS	2" NPT
	I-2-HC	I	2	HC	2" NPT
	NG-2-HC	NG	2	HC	2" NPT
	N-2-HC	N	2	HC	2" NPT
	V-2-HC	V	2	HC	2" NPT

### Tranquilizer Model TA3 Design level 2

B-2-A	B	2	A	3" NPT	3" ANSI Style
I-2-A	I	2	A	3" NPT	3" ANSI Style
NG-2-A	NG	2	A	3" NPT	3" ANSI Style
N-2-A	N	2	A	3" NPT	3" ANSI Style
V-2-A	V	2	A	3" NPT	3" ANSI Style
B-2-CI	B	2	CI	3" NPT	3" ANSI Style
I-2-CI	I	2	CI	3" NPT	3" ANSI Style
NG-2-CI	NG	2	CI	3" NPT	3" ANSI Style
N-2-CI	N	2	CI	3" NPT	3" ANSI Style
V-2-CI	V	2	CI	3" NPT	3" ANSI Style
B-2-SS	B	2	SS	3" NPT	3" ANSI Style
*	NG-2-SS	NG	2	SS	3" NPT
	N-2-SS	N	2	SS	3" NPT
	V-2-SS	V	2	SS	3" NPT
S-2-CI	S	2	CI	3" NPT	3" ANSI Style
S-2-A	S	2	A	3" NPT	3" ANSI Style
S-2-SS	S	2	SS	3" NPT	3" ANSI Style

### Tranquilizer Model TA50 Design level 2, continued

Type Code	Diaphragm	Design Level	Wetted Parts	Porting (Internal Tapered Threads)	Porting Flange Style	Shipping Weight lbs./kg
*	NG-2-SS	NG	2	SS	2" BSPT	35 / 15.9
	N-2-SS	N	2	SS	2" BSPT	35 / 15.9
	V-2-SS	V	2	SS	2" BSPT	35 / 15.9
	I-2-HC	I	2	HC	2" BSPT	35 / 15.9
	NG-2-HC	NG	2	SS	1½" BSPT	35 / 15.9
	N-2-HC	N	2	HC	1½" BSPT	35 / 15.9
	V-2-HC	V	2	HC	1½" BSPT	35 / 15.9

### Tranquilizer Model TA80 Design level 2

B-2-A	B	2	A	3" BSPT	PN10 80 mm DIN	89 / 40.4
I-2-A	I	2	A	3" BSPT	PN10 80mm DIN	89 / 40.4
NG-2-A	NG	2	A	3" BSPT	PN10 80mm DIN	89 / 40.4
N-2-A	N	2	A	3" BSPT	PN10 80mm DIN	89 / 40.4
V-2-A	V	2	A	3" BSPT	PN10 80mm DIN	89 / 40.4
B-2-CI	B	2	CI	3" BSPT	PN10 80mm DIN	109 / 49.4
I-2-CI	I	2	CI	3" BSPT	PN10 80mm DIN	109 / 49.4
NG-2-CI	NG	2	CI	3" BSPT	PN10 80mm DIN	109 / 49.4
N-2-CI	N	2	CI	3" BSPT	PN10 80mm DIN	109 / 49.4
V-2-CI	V	2	CI	3" BSPT	PN10 80mm DIN	109 / 49.4
B-2-SS	B	2	SS	3" BSPT	PN10 80mm DIN	105 / 47.6
*	NG-2-SS	NG	2	SS	3" BSPT	PN10 80mm DIN
	N-2-SS	N	2	SS	3" BSPT	PN10 80mm DIN
	V-2-SS	V	2	SS	3" BSPT	PN10 80mm DIN

**Meaning of Abbreviations:**

A	= Aluminum	N	= Neoprene
B	= Nitrile	NG	= Neoprene Backup/PTFE Overlay
CI	= Cast Iron	S	= Santoprene®
F	= FDA White Nitrile	* V	= FKM (Fluorocarbon)
Kit available to convert to top porting		H	= Hytrel®
		I	= EPDM
			SS = Stainless Steel
			HC = Alloy C

Hytrel® are registered trademarks of E.I. du Pont. Santoprene® is a registered trademark of Exxon Mobil Corp. Tranquilizer® is a registered trademark of Warren Rupp, Inc.

 \*Models equipped with stainless steel and PTFE wet end components are compliant with EC 1935/2004 - Materials in food contact.

MATERIALS						Operating Temperatures	
						Maximum	Minimum
<b>NITRILE:</b> 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
<b>NEOPRENE:</b> 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
<b>HYTREL®:</b> Good on acids, bases, amines, and glycols at room temperature.						220°F 104°C	-20°F -29°C
<b>VIRGIN PTFE:</b> Chemically inert, virtually impervious. Very few chemicals are known to chemically react with Teflon®, molten alkali metals, turbulent liquid or gases, fluorine and a few fluorochemicals such as chlorine trifluoride or oxygen difluoride which readily liberate free fluorine at elevated temperatures.						220°F 104°C	-35°F -37°C
<b>FKM:</b> 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
<b>EPDM:</b> 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
<b>SANTOPRENE®:</b> Injection molded thermoplastic elastomer with no fabric layer. Long mechanical flex life. Excellent abrasion resistance.						275°F 135°C	-40°F -40°C
<b>STAINLESS STEEL:</b> CF-8M equal to or exceeding ASTM specification A743 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.							
<b>ALLOY C:</b> CW-12MW equal to or exceeding ASTM A494 specification for nickel and nickel alloy castings.							

For specific applications, always consult the Warren Rupp "Chemical Resistance Chart".



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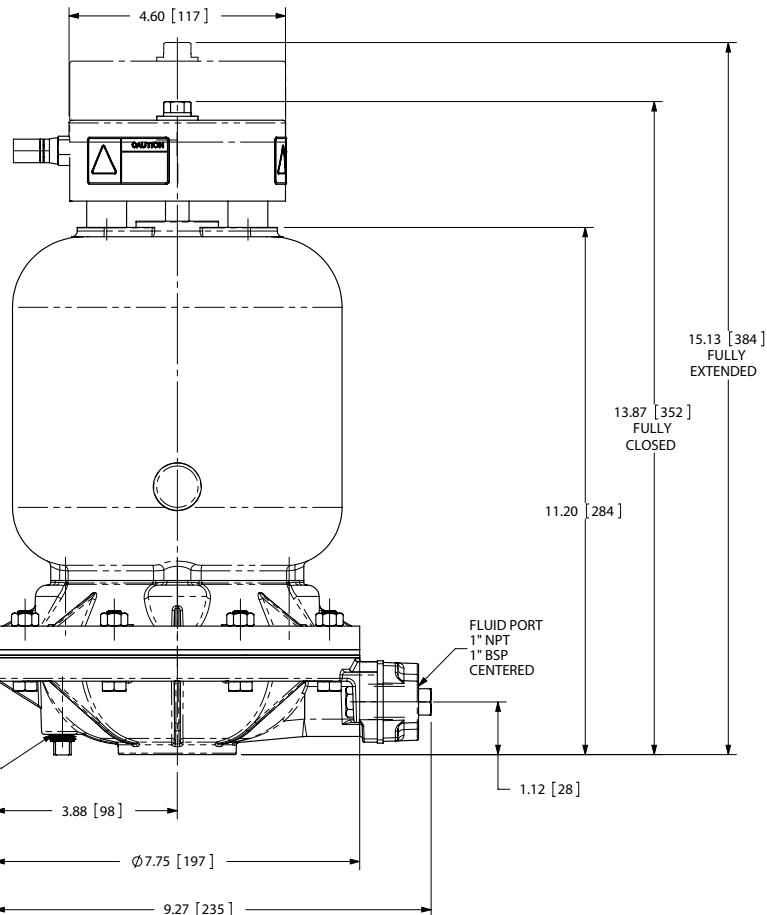
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## Model TA1

Air Inlet

1/4" NPT (external) fitting

FLUID Port - 1" NPT



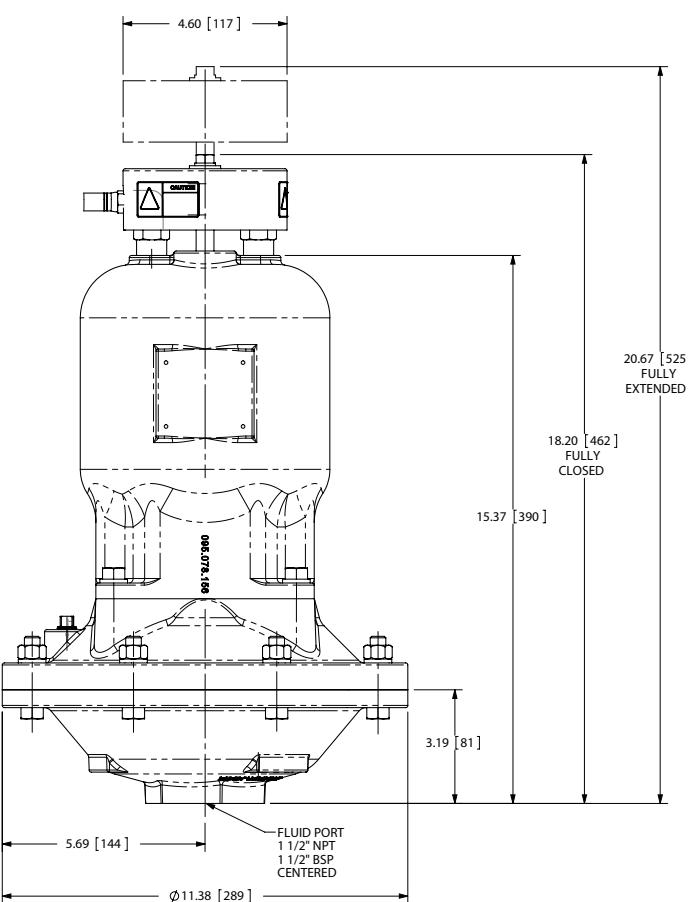
## Model TA25

Air Inlet

1/4" NPT (external) fitting

FLUID Port - 1" BSP

tapered thread



## Model TA1½

Air Inlet

1/4" NPT (external) fitting

FLUID Port - 1½" NPT

## Model TA40

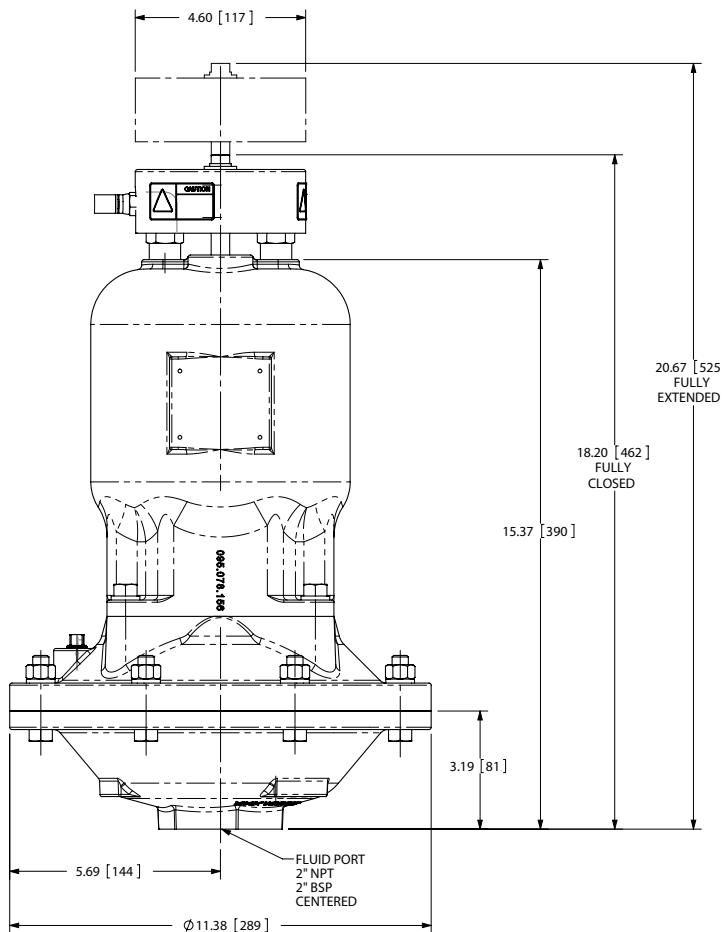
Air Inlet

1/4" NPT (external) fitting

FLUID Port - 1½" BSP

tapered thread

All Dimensions  $\pm .13"$  (3mm)



## Model TA2

### Design Level 2

Air Inlet

1/4" NPT (external) fitting

2" NPT Fluid Port

## Model TA50

### Design Level 2

Air Inlet

1/4" NPT (external) fitting

2" BSP(Tapered) Fluid Port

## Model TA3

### Design Level 2

Air Inlet

1/4" NPT (external) fitting

FLUID Port

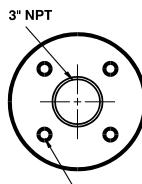
## Model TA80

### Design Level 2

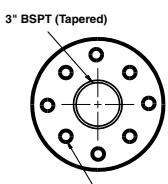
Air Inlet

1/4" NPT (external) fitting

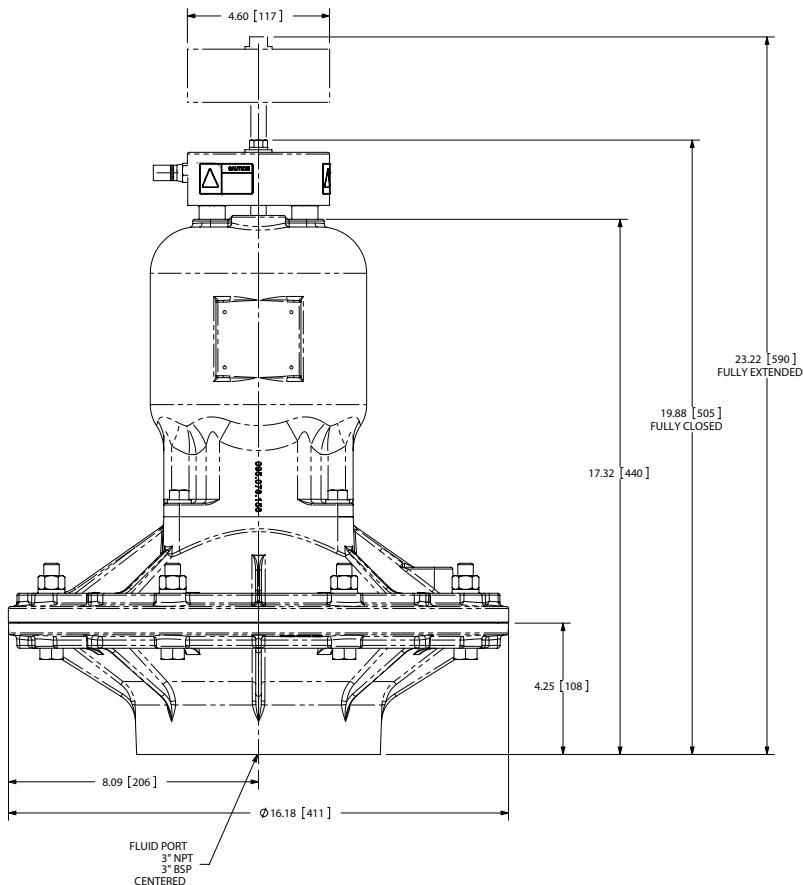
FLUID Port



3" NPT  
3" 150# FF ANSI-style flange  
5/8-11 unc. 2B  
4 holes equally spaced on a  
6" diameter bolt circle



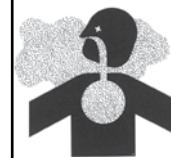
3" BSPT (Tapered)  
3" PN10 80mm DIN Flange  
M16x2 8 holes on a  
160mm diameter Bolt Circle



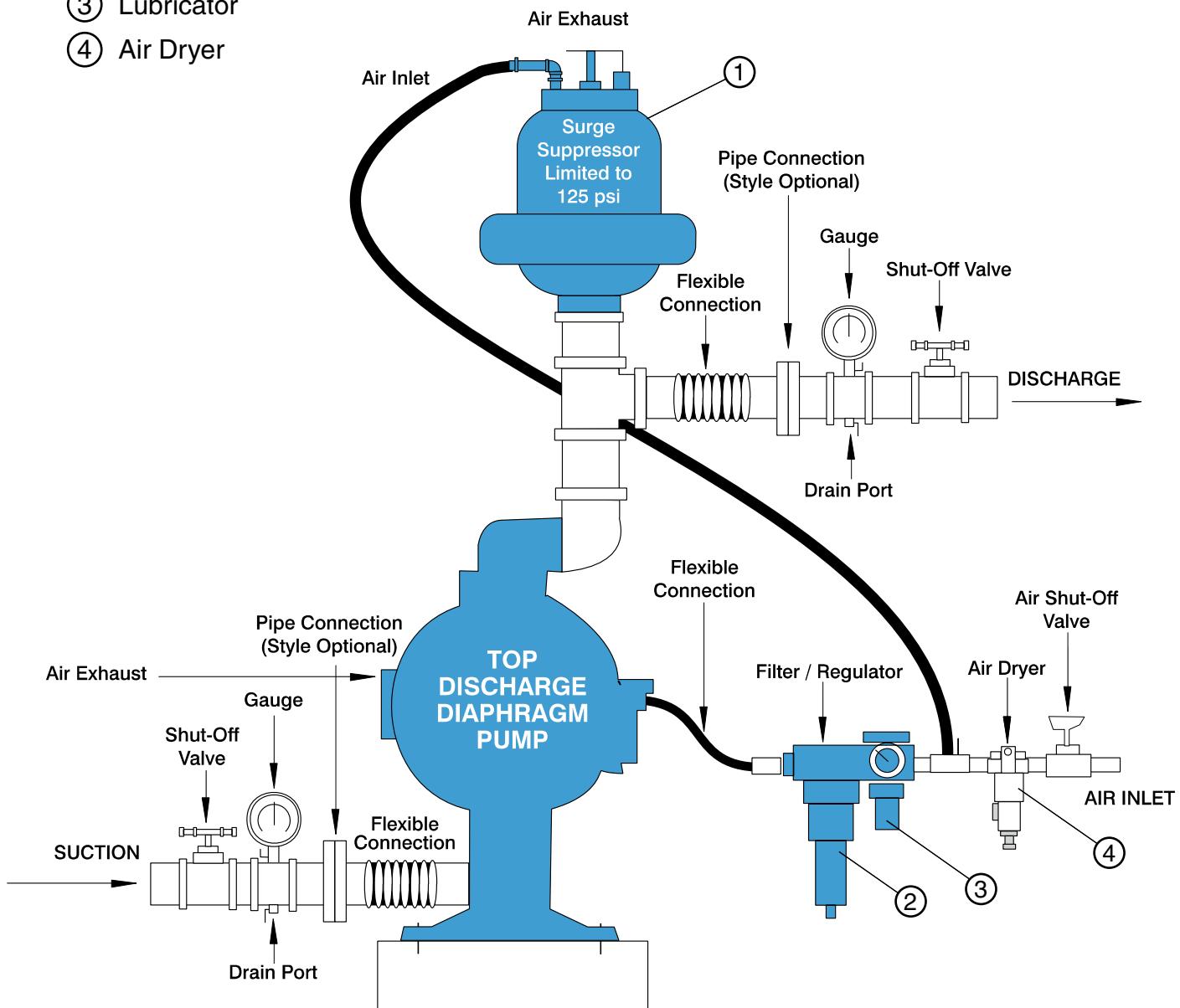
All Dimensions  $\pm .13"$  (3mm)

Available from  
Warren Rupp

- ① Tranquilizer
- ② Filter/Regulator
- ③ Lubricator
- ④ Air Dryer



**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.



# Tranquilizer® Options

	Model & Description	Max. Pressure	Air Inlet Size	Liquid Inlet Size	Dimensions inches (mm)	Available Wetted Materials									
						Chamber					Diaphragm				
						AL	SS	CI	HC	N	B	V	I	NT	S
	<b>TA1</b> Designed for 1" pumps.	125 psi 8.6 bar Self-charging. Self-venting.	1/4" NPT (external thread)	1" NPT	13 5/8" to 15 1/8" height (346mm to 384mm) 9" diameter (229mm) NPT(F)										
	<b>TA25</b> Designed for 1" pumps.	125 psi 8.6 bar Self-charging. Self-venting.	1/4" NPT (external thread)	1" BSPT (tapered internal thread)	13 5/8" to 15 1/8" height (346mm to 384mm) 9" diameter (229mm) NPT(F)										
	<b>TA1½</b> Designed for 1" and 1½" pumps.	125 psi 8.6 bar Self-charging. Self-venting.	1/4" NPT (external thread)	1½" NPT (internal thread)	19 7/8" to 21. 3/8" height (505mm to 543mm) 10½" diameter (267mm) NPT(F)										
	<b>TA40</b> Designed for 1" and 1½" pumps.	125 psi 8.6 bar Self-charging. Self-venting.	1/4" NPT (external thread)	1½" BSPT (tapered internal thread)	19 7/8" to 21. 3/8" height (505mm to 543mm) 10½" diameter (267mm) NPT(F)										
	<b>TA2</b> Design Level 2 Designed for 1½ and 2" pumps.	125 psi 8.6 bar Self-charging. Self-venting.	1/4" NPT (external thread)	2" NPT (internal thread)	20 1/4" to 23 3/16" height (514mm to 589mm) 12½" diameter (317mm) NPT(F)										
	<b>TA50</b> Design Level 2 Designed for 1½ and 2" pumps.	125 psi 8.6 bar Self-charging. Self-venting.	1/4" NPT	2" BSPT (tapered internal thread)	20 1/4" to 23 3/16" height (514mm to 589mm) 12½" diameter (317mm) NPT(F)										
	<b>TA3</b> Design Level 2 Designed for 3" and 4" pumps.	125 psi 8.6 bar Self-Charging. Self-venting.	1/4" NPT	3" 150# Ansi-style flange or 3" NPT internal thread	20 1/8" to 23 1/8"m height (511mm to 587mm) 16 3/16" diameter (411mm) NPT(F)										
	<b>TA80</b> Design Level 2 Designed for 3" and 4" pumps.	125 psi 8.6 bar Self-Charging. Self-venting.	1/4" NPT	3" BSPT (tapered internal thread) or 80mm DIN-style Flange	20 1/8" to 23 1/8"m height (511mm to 587mm) 16 3/16" diameter (411mm) NPT(F)										

AL= Aluminum  
B = Nitrile  
CI = Cast iron

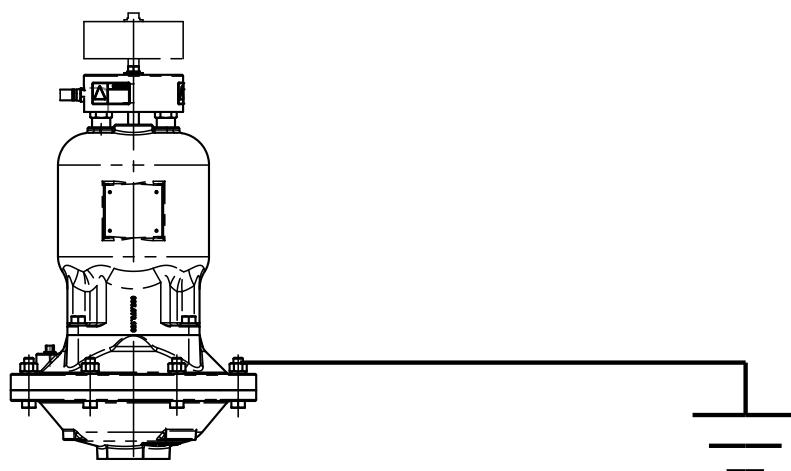
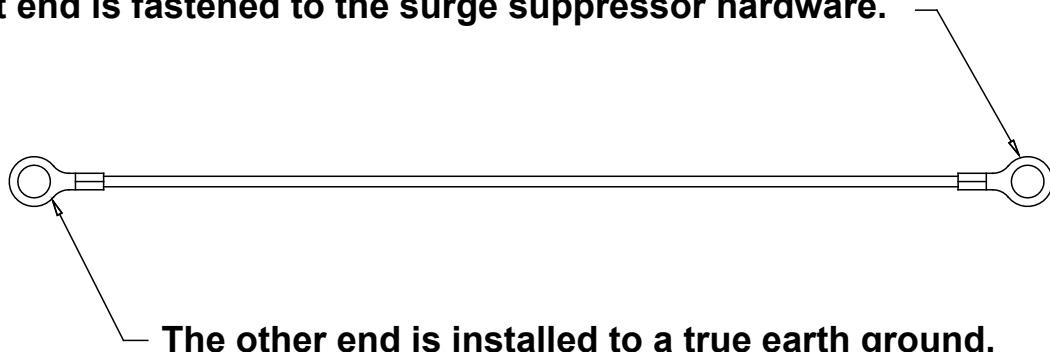
E = EPDM  
N = Neoprene  
NT= Overlay, Neoprene with Virgin PTFE

T = Virgin PTFE  
V = FKM (Fluorocarbon)  
S = Santoprene®

HC= Alloy C  
SS= Alloy 316 stainless steel

# Grounding The Tranquilizer®

One eyelet end is fastened to the surge suppressor hardware.



This optional 8 foot long (244 centimeters) Ground Strap (920-025-000) is available for easy ground connection.

To reduce the risk of static electrical sparking, this surge suppressor must be grounded. Check the local electrical code for detailed grounding instruction and the type of equipment required.

## SERVICE AND OPERATING INSTRUCTIONS

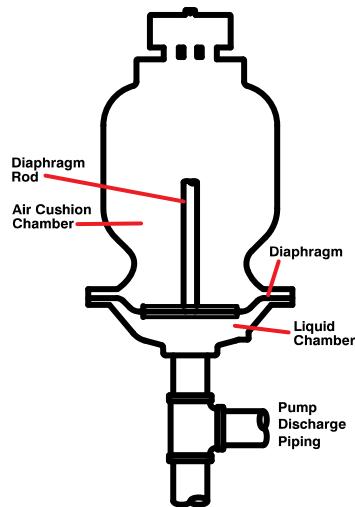
This Warren Rupp Tranquilizer® is a completely automatic diaphragm fitted surge suppressor to reduce the flow and pressure pulsations in a pumping system characteristic of reciprocating type pumps.

**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	355	Thermal Plastic	600	PTFE (virgin material)
100	Alloy 20	356	Hytrell		Tetrafluorocarbon (TFE)
110	Alloy Type 316 Stainless Steel	357	Injection Molded Polyurethane	601	PTFE (Bronze and moly filled)
111	Alloy Type 316 Stainless Steel (Electro Polished)	358	Urethane Rubber (Some Applications) (Compression Mold)	602	Filled PTFE
112	Alloy C	359	Urethane Rubber	603	Blue Gylon
113	Alloy Type 316 Stainless Steel (Hand Polished)	360	Nitrile Rubber Color coded: RED	604	PTFE
114	303 Stainless Steel	361	Nitrile	606	PTFE
115	302/304 Stainless Steel	363	FKM (Fluorocarbon). Color coded: YELLOW	607	Envelon
117	440-C Stainless Steel (Martensitic)	364	E.P.D.M. Rubber. Color coded: BLUE	608	Conductive PTFE
120	416 Stainless Steel (Wrought Martensitic)	365	Neoprene Rubber. Color coded: GREEN	610	PTFE Encapsulated Silicon
123	410 Stainless Steel (Wrought Martensitic)	366	Food Grade Nitrile	611	PTFE Encapsulated FKM
148	Hardcoat Anodized Aluminum	368	Food Grade EPDM	632	Neoprene/Hytrel
149	2024-T4 Aluminum	370	Butyl Rubber	633	FKM/PTFE
150	6061-T6 Aluminum	371	Color coded: BROWN	634	EPDM/PTFE
151	6063-T6 Aluminum	372	Philthane (Tuftane)	635	Neoprene/PTFE
152	2024-T4 Aluminum (2023-T351)	374	Carboxylated Nitrile	637	PTFE, FKM/PTFE
154	Almag 35 Aluminum	375	Fluorinated Nitrile	638	PTFE, Hytrell/PTFE
155	356-T6 Aluminum	378	High Density Polypropylene	639	Nitrile/TFE
156	356-T6 Aluminum	379	Conductive Nitrile	643	Santoprene®/EPDM
157	Die Cast Aluminum Alloy #380	405	Cellulose Fibre	644	Santoprene®/PTFE
158	Aluminum Alloy SR-319	408	Cork and Neoprene	656	Santoprene Diaphragm and Check Balls/EPDM Seats
159	Anodized Aluminum	425	Compressed Fibre	661	EPDM/Santoprene
162	Brass, Yellow, Screw Machine Stock	426	Blue Gard	666	FDA Nitrile Diaphragm, PTFE Overlay, Balls, and Seals
165	Cast Bronze, 85-5-5-5	440	Vegetable Fibre	668	PTFE, FDA Santoprene/PTFE
166	Bronze, SAE 660	465	Fibre		Delrin and Hytrell are registered tradenames of E.I. DuPont.
170	Bronze, Bearing Type, Oil Impregnated	500	Delrin 500		Gylon is a registered trademark of Garlock, Inc.
175	Die Cast Zinc	501	Delrin 570		Nylatron is a registered trademark of Polymer Corp.
180	Copper Alloy	502	Conductive Acetal, ESD-800		Santoprene is a registered trademark of Exxon Mobil Corp.
305	Carbon Steel, Black Epoxy Coated	503	Conductive Acetal, Glass-Filled		Rulon II is a registered trademark of Dixon Industries Corp.
306	Carbon Steel, Black PTFE Coated	505	Acrylic Resin Plastic		Ryton is a registered trademark of Phillips Chemical Co.
307	Aluminum, Black Epoxy Coated	506	Delrin 150		Valox is a registered trademark of General Electric Co.
308	Stainless Steel, Black PTFE Coated	520	Injection Molded PVDF		PortaPump, Tranquilizer and SludgeMaster are registered trademarks of Warren Rupp, Inc.
309	Aluminum, Black PTFE Coated	540	Natural color		
310	PVDF Coated	541	Nylon		
313	Aluminum, White Epoxy Coated	542	Nylon		
330	Zinc Plated Steel	544	Nylon Injection Molded		
331	Chrome Plated Steel	550	Polyethylene		
332	Aluminum, Electroless Nickel Plated	551	Glass Filled Polypropylene		
333	Carbon Steel, Electroless Nickel Plated	552	Unfilled Polypropylene		
335	Galvanized Steel	553	Unfilled Polypropylene		
336	Zinc Plated Yellow Brass				

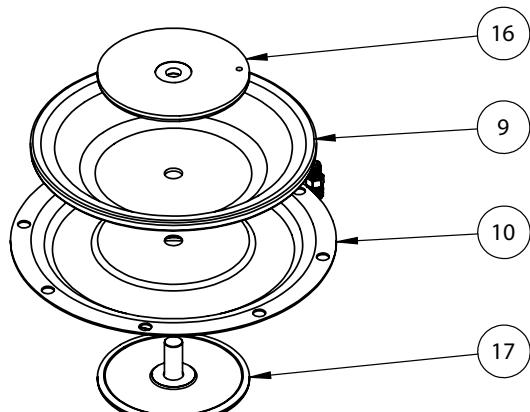
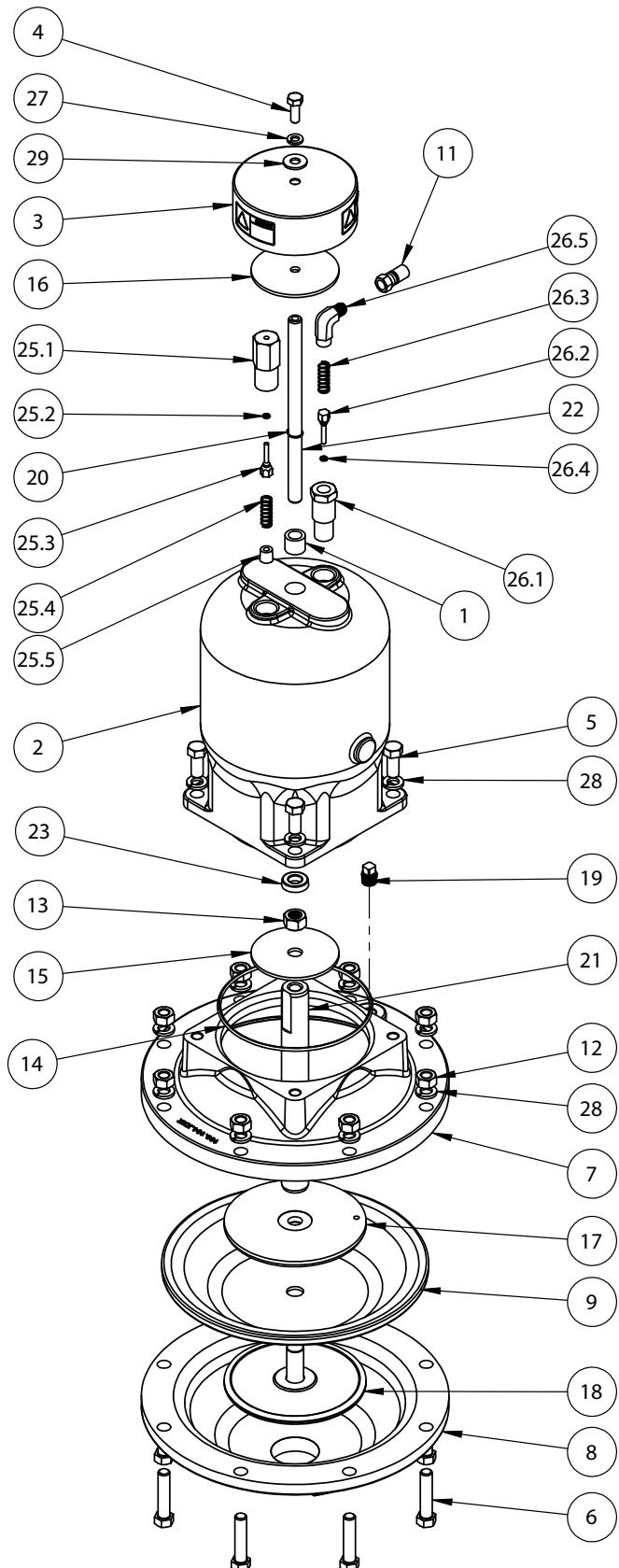


**ITEM**

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	196.196.156E	Chamber, Outer - 1½" BSP Tapered	1
	196.196.010E	Chamber, Outer - 1½" BSP Tapered	1
	196.196.110E	Chamber, Outer - 1½" BSP Tapered	1
	196.196.112E	Chamber, Outer - 1½" BSP Tapered	1
9	<b>286.005.360</b>	Diaphragm	1
	<b>286.005.363</b>	Diaphragm	1
	<b>286.005.364</b>	Diaphragm	1
	<b>286.005.365</b>	Diaphragm	1
	<b>286.005.351</b>	Diaphragm	1
	<b>286.005.354</b>	Diaphragm	1
	<b>286.005.357</b>	Diaphragm	1
10	<b>286.020.604</b>	Diaphragm, Overlay PTFE	1
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	<b>612.043.330</b>	Plate, Activator	1
16	<b>612.044.330</b>	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>	1
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

Parts that are **boxed** are not available for sale

# Model TA40



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®Tranquilizer is a registered trademark of Warren Rupp, Inc.

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# 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.

A handwritten signature of "David Roseberry" is written over a horizontal line.

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

The logo for IDEX is located in the bottom left corner. It consists of the word "IDEX" in a bold, sans-serif font, with a stylized "X" shape integrated into the letter "D".

The CE mark is located in the bottom right corner. It consists of the letters "CE" in a bold, sans-serif font, enclosed within a circular border.



## 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 IIC T5 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

**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. T15B1SSSTS600. 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

February 8, 2013

Date of issue

David Roseberry

Printed name of authorized person

Engineering Manager

Title

Revision Level: A

May 2, 2013

Date of revision

**IDEX**



**CE**