SERVICE & OPERATING MANUAL
Original Instructions

WARREN RUPP, INC.

Quality System ISO9001 Certified

Environmental Management System ISO14001 Certified

Tranquilizer®

Surge Suppressors for Air-Driven Diaphragm Pumps

Metallic Construction

See pages 15 for ATEX ratings

IDEX

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Telephone (419) 524-8388 • Fax (419) 522-7867 • www.warrenrupp.com

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.

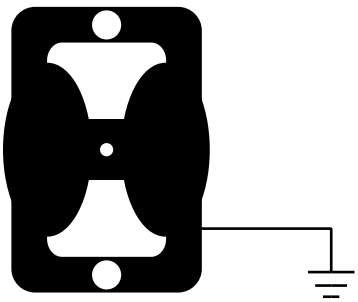
In the event of diaphragm rupture, pumped material may enter the air end of the pump, and be discharged into the atmosphere. If pumping a product that is hazardous or toxic, the air exhaust must be piped to an appropriate area for safe containment.

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.

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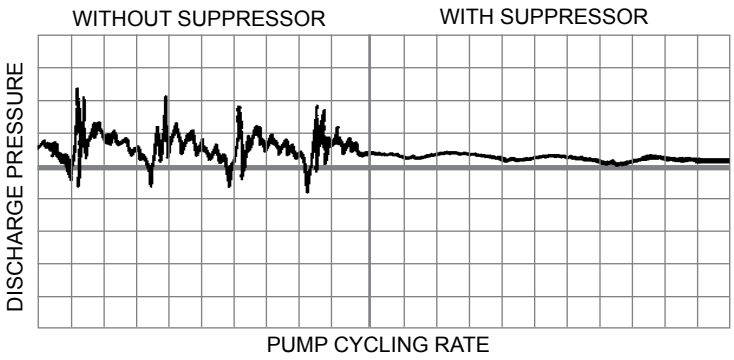
Tranquilizer®



- 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.

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

Air supply connection is ¼" 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 ¼" 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 ¼" 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 ¼" NPT external pipe thread.

Maximum Operating Pressure – 125 psi.

Materials of Construction:

Tranquilizer Model TA1

Type Code	Diaphragm	Design Level	Wetted Parts	Porting (Internal Tapered Threads)
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 TA1½

Type Code	Diaphragm	Design Level	Wetted Parts	Porting (Internal Tapered Threads)
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 TA2 Design level 2

Type Code	Diaphragm	Design Level	Wetted Parts	Porting (Internal Tapered Threads)
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-CI	B	2	CI	2" NPT
I-2-CI	I	2	CI	2" NPT
NG-2-CI	NG	2	CI	2" NPT
N-2-CI	N	2	CI	2" NPT
S-2-CI	S	2	CI	2" NPT
V-2-CI	V	2	CI	2" NPT
B-2-SS	B	2	SS	2" NPT
F-2-SS	F	2	SS	2" NPT

Tranquilizer Model TA25

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

Tranquilizer Model TA40

Type Code	Diaphragm		Design Level	Wetted Parts	Porting (Internal Tapered Threads)	Porting Flange Style	Shipping Weight lbs./kg
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 TA50 Design level 2

Type Code	Diaphragm		Design Level	Wetted Parts	Porting (Internal Tapered Threads)	Porting Flange Style	Shipping Weight lbs./kg
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-CI	B		2	CI	2" BSPT		35 / 15.9
I-2-CI	I		2	CI	2" BSPT		35 / 15.9
NG-2-CI	NG		2	CI	2" BSPT		35 / 15.9
N-2-CI	N		2	CI	2" BSPT		35 / 15.9
S-2-CI	S		2	CI	2" BSPT		35 / 15.9
V-2-CI	V		2	CI	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	3" ANSI Style
	N-2-SS	N	2	SS	3" NPT	3" ANSI Style
	V-2-SS	V	2	SS	3" NPT	3" ANSI Style
	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	105 / 47.6
	N-2-SS	N	2	SS	3" BSPT	PN10 80mm DIN	105 / 47.6
	V-2-SS	V	2	SS	3" BSPT	PN10 80mm DIN	105 / 47.6

Meaning of Abbreviations:

Kit available to convert to top porting

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

Hytrel® are registered tradenames of E.I. du Pont. Santoprene® is a registered tradename of Exxon Mobil Corp. Tranquilizer® is a registered tradename 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
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
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
HYTREL®: Good on acids, bases, amines, and glycols at room temperature.	220°F 104°C	-20°F -29°C
VIRGIN PTFE: Chemically inert, virtually impervious. Very few chemicals are know to chemically react with Teflon®, molten alkali metals, turbulent liquid or gases, 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: Shows good resistance to a wide range of oils and solvents; especially all alipphatic, aromatic and halogenated hydrocarbons, acids, animal and vegetables oils. Hot water or hot aqueous solutions (over 70° F) will attack FKM.	350°F 177°C	-40°F -40°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
SANTOPRENE®: Injection molded thermoplastic elastomer with no fabric layer. Long mechanical flex life. Excellent abrasion resistance.	275°F 135°C	-40°F -40°C
STAINLESS STEEL: 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.		
ALLOY C: 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".

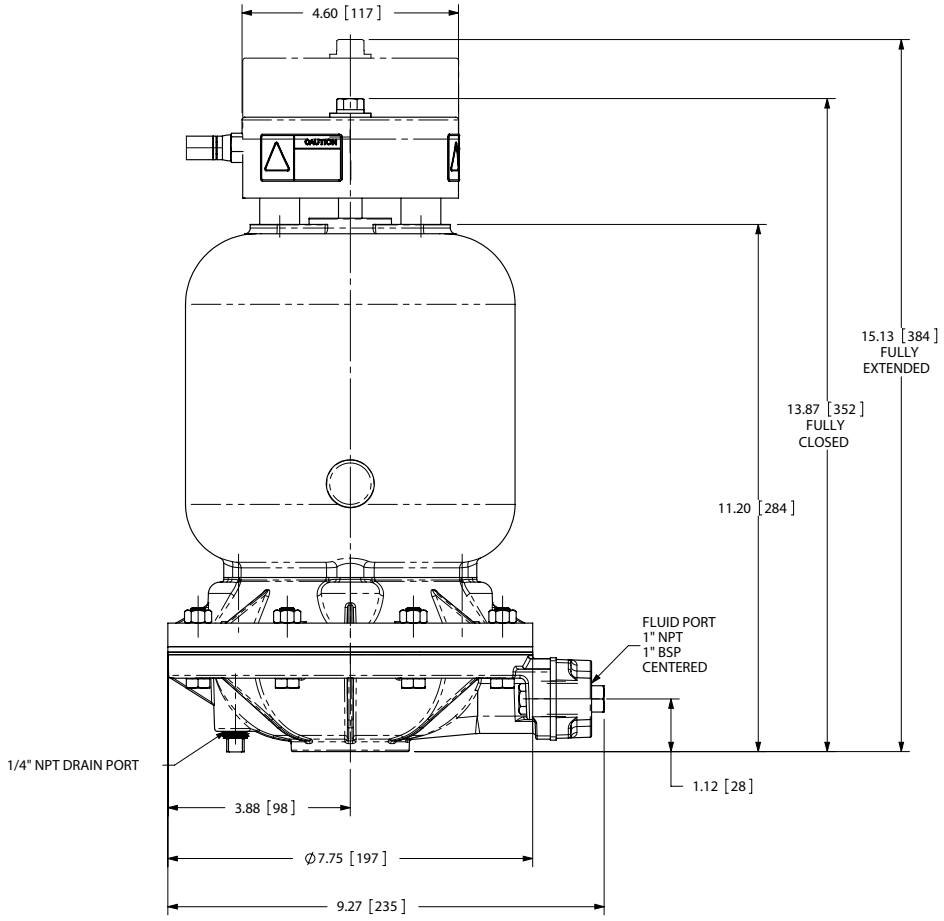
Ex II 2 G c T5
II 2 D c T100°C

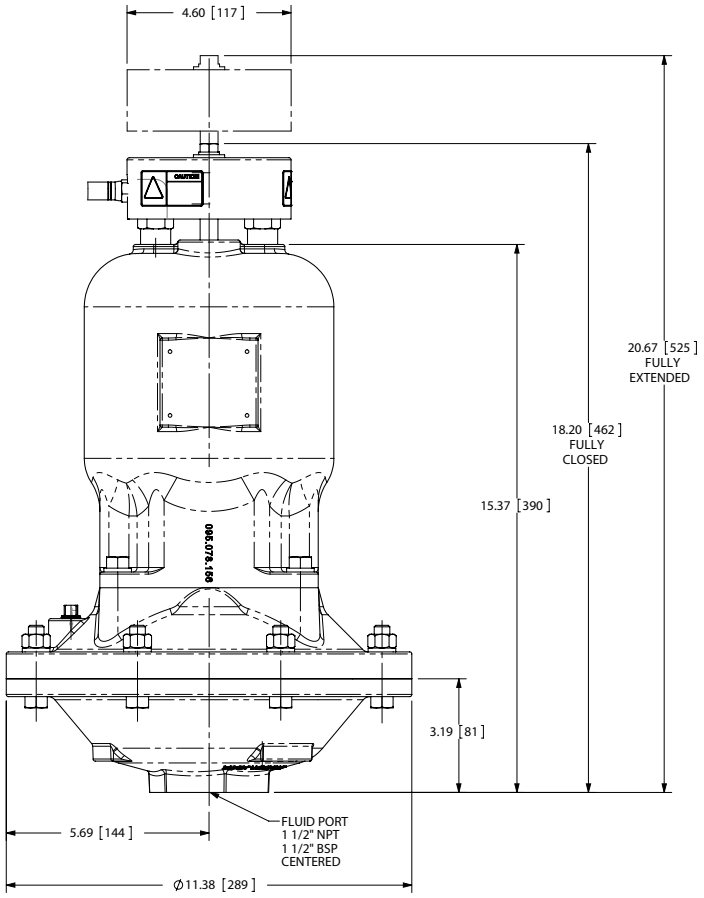
Model TA1

Air Inlet
¼" NPT (external) fitting
FLUID Port - 1" NPT

Model TA25

Air Inlet
¼" NPT (external) fitting
FLUID Port - 1" BSP
tapered thread





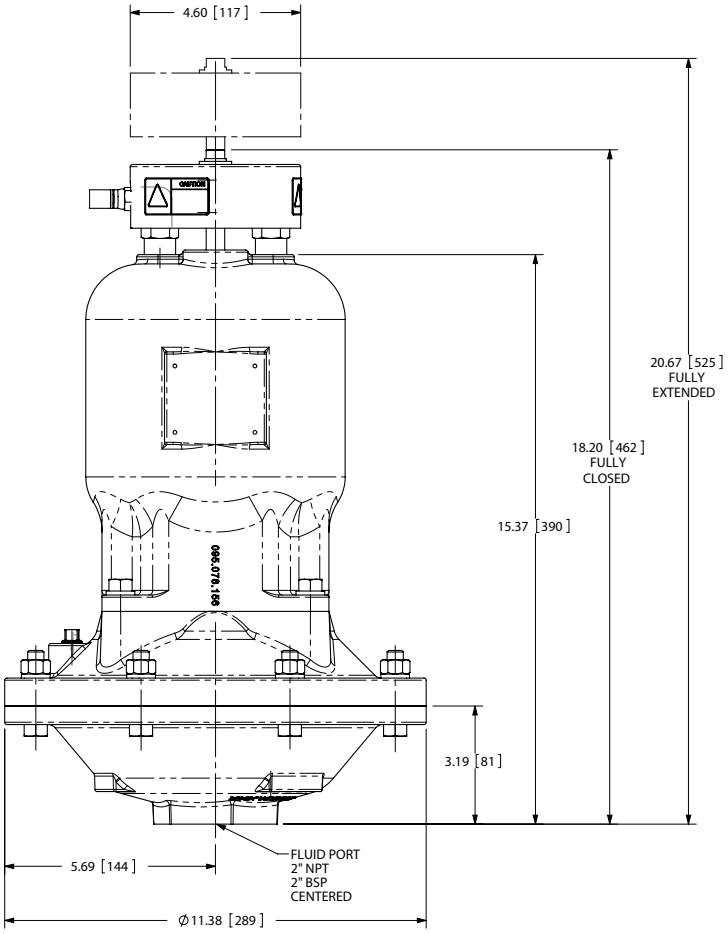
Model TA1½

Air Inlet
¼" NPT (external) fitting
FLUID Port - 1½" NPT

Model TA40

Air Inlet
¼" NPT (external) fitting
FLUID Port - 1½" BSP
tapered thread

All Dimensions ± .13" (3mm)



Model TA2

Design Level 2

Air Inlet

¼" NPT (external) fitting

2" NPT Fluid Port

Model TA50

Design Level 2

Air Inlet

¼" NPT (external) fitting

2" BSP(Tapered) Fluid Port

Model TA3

Design Level 2

Air Inlet

¼" NPT (external) fitting

FLUID Port

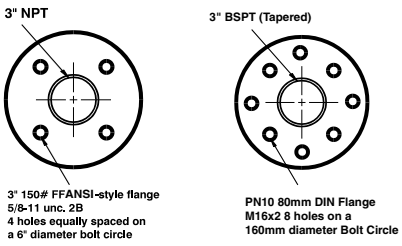
Model TA80

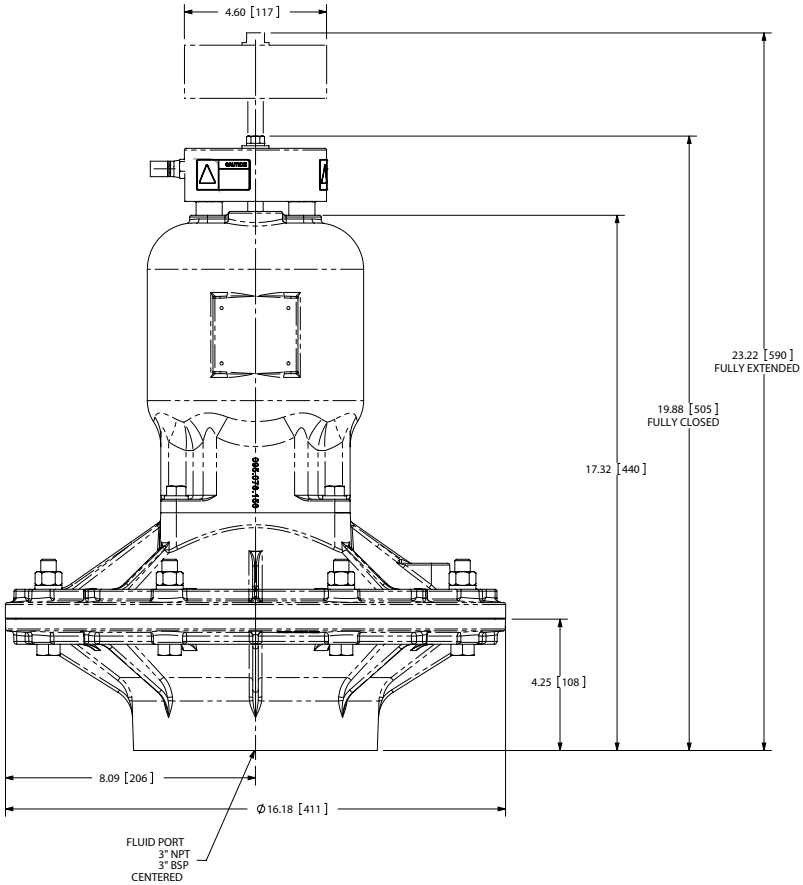
Design Level 2

Air Inlet

¼" NPT (external) fitting

FLUID Port





All Dimensions ± .13" (3mm)

WARREN RUPP, INC.

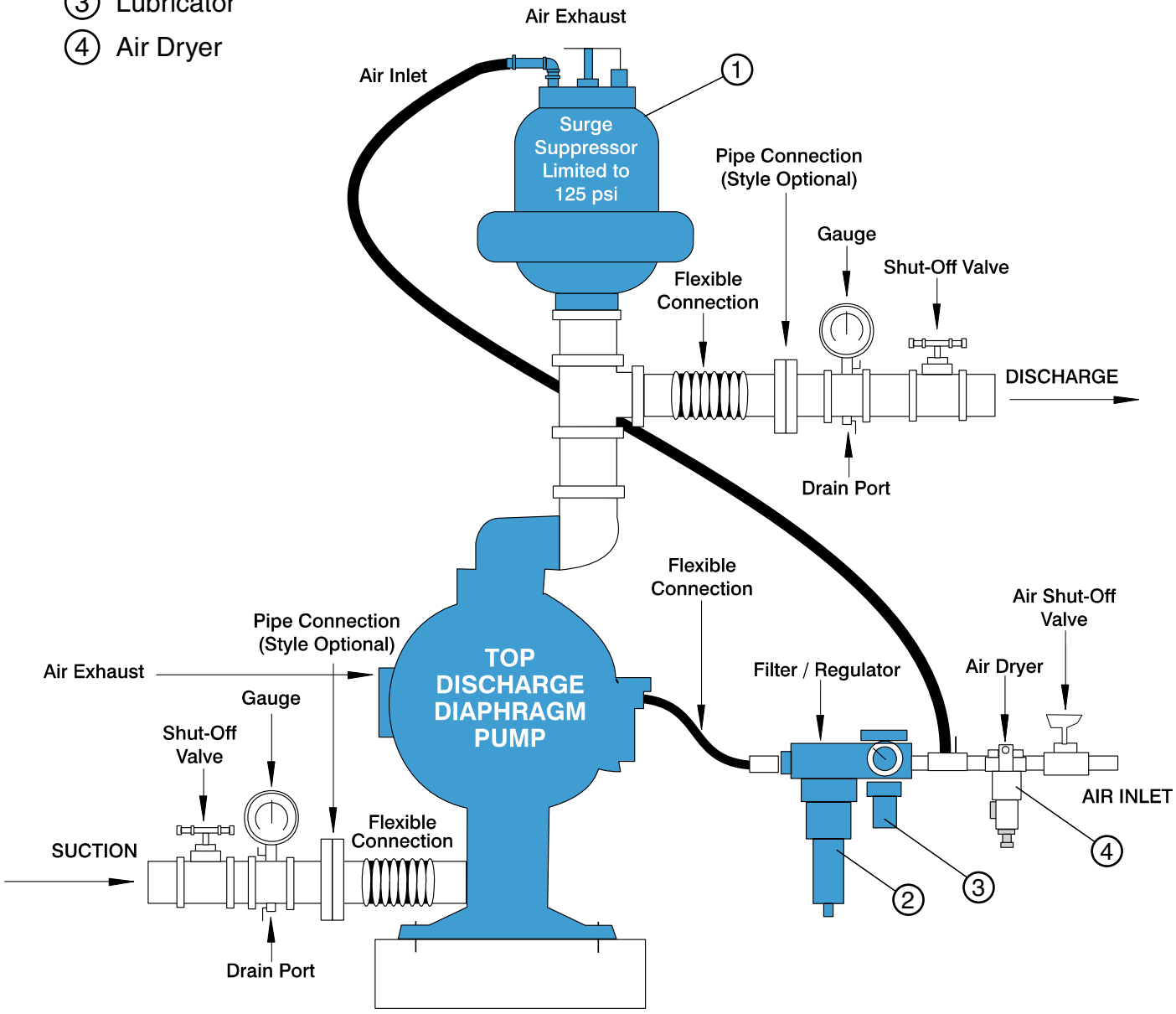
INSTALLATION GUIDE

Top Discharge Ball or Flap Valve Unit

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
	**TA1** **Designed for 1" pumps.**	125 psi 8.6 bar Self-charging. Self-venting.	¼" NPT (external thread)	1" NPT	13 5/8" to 15 1/8" height (346mm to 384mm) 9" diameter (229mm) NPT(F)		■		■		■	■	■	■	■
	TA25 **Designed for 1" pumps.**	125 psi 8.6 bar Self-charging. Self-venting.	¼" NPT (external thread)	1" BSPT (tapered internal thread)	13 5/8" to 15 1/8" height (346mm to 384mm) 9" diameter (229mm) NPT(F)		■		■		■	■	■	■	■
	**TA1½** **Designed for 1" and 1½" pumps.**	125 psi 8.6 bar Self-charging. Self-venting.	¼" NPT (external thread)	1½" NPT (internal thread)	19 7/8" to 21. 3/8" height (505mm to 543mm) 10½" diameter (267mm) NPT(F)		■	■	■		■	■	■	■	■
	TA40 **Designed for 1" and 1½" pumps.**	125 psi 8.6 bar Self-charging. Self-venting.	¼" NPT (external thread)	1½" BSPT (tapered internal thread)	19 7/8" to 21. 3/8" height (505mm to 543mm) 10½" diameter (267mm) NPT(F)		■	■	■		■	■	■	■	■
	**TA2** **Design Level 2** **Designed for 1½ and 2" pumps.**	125 psi 8.6 bar Self-charging. Self-venting.	¼" NPT (external thread)	2" NPT (internal thread)	20¼" to 23 3/16" height (514mm to 589mm) 12½" diameter (317mm) NPT(F)		■	■	■		■	■	■	■	■
	TA50 **Design Level 2** **Designed for 1½ and 2" pumps.**	125 psi 8.6 bar Self-charging. Self-venting.	¼" NPT	2" BSPT (tapered internal thread)	20¼" to 23 3/16" height (514mm to 589mm) 12½" diameter (317mm) NPT(F)		■	■	■		■	■	■	■	■
	**TA3** **Design Level 2** **Designed for 3" and 4" pumps.**	125 psi 8.6 bar Self-Charging. Self-venting.	¼" 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)		■	■	■		■	■	■	■	■
	TA80 **Design Level 2** **Designed for 3" and 4" pumps.**	125 psi 8.6 bar Self-Charging. Self-venting.	¼" 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

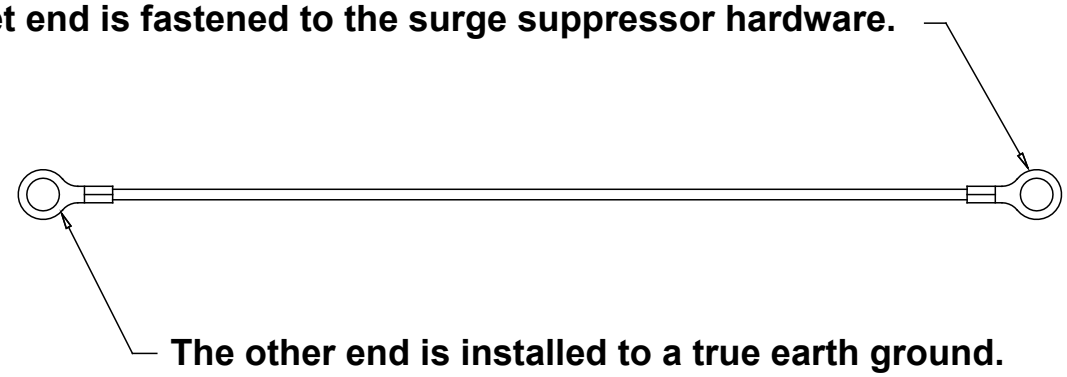
E = EPDM
N = Neoprene
NT= Overlay, Neoprene with Virgin PTFE

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

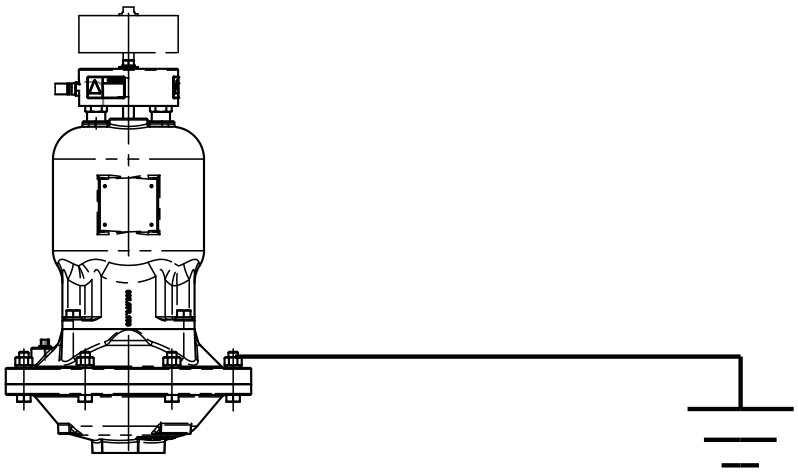
HC= Alloy C
SS= Alloy 316 stainless steel

Grounding The Tranquilizer®

One eyelet end is fastened to the surge suppressor hardware.



The other end is installed to a true earth ground.



⚠ 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.

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

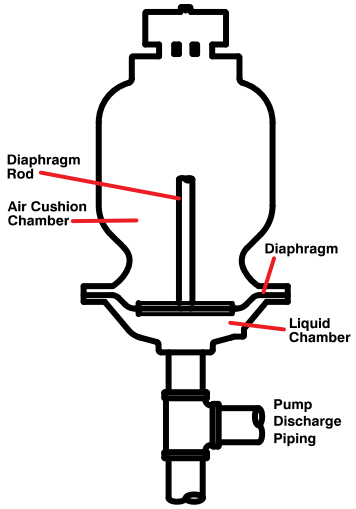
This Warren Rupp Tranquilizer® is a completely automatic diaphragm fitted surge suppressor to reduce the flow and pressure pulsations in a pumping system characteristic of reciprocating type pumps.

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

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 Dixion 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.

WARREN RUPP, INC.

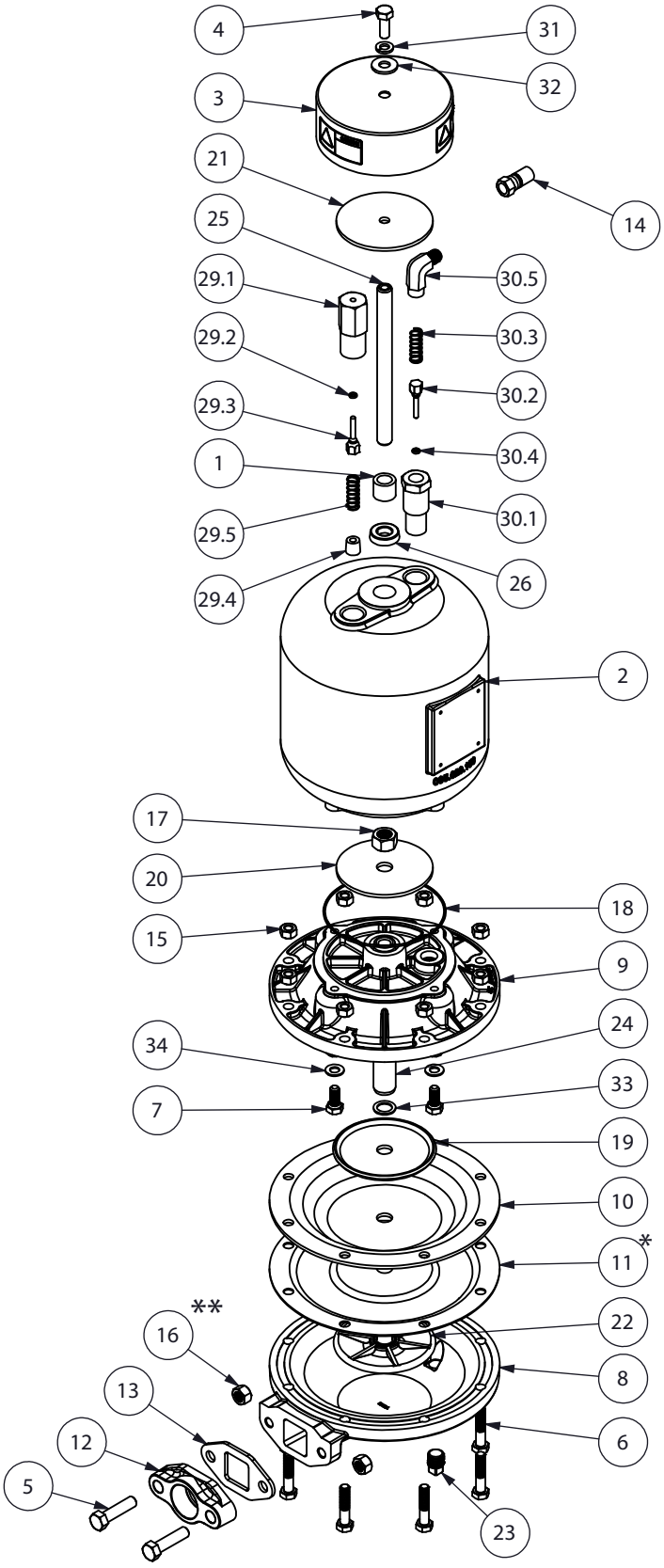
IDEX

REPAIR PARTS LIST and DRAWING
Tranquilizer® Model TA1
Metallic Construction

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	070.014.170	Bearing, Sleeve	1
2	095.029.156	Body	1
3	165.023.000	Cap	1
4	170.005.330	Capscrew, Hex Hd 5/16-18 X 7/8	1
5	170.009.330	Capscrew, Hex Hd 3/8-16 x 1 1/2	2
6	170.029.330	Capscrew, Hex Hd 5/16-18 x 1 1/2	8
7	170.057.330	Capscrew, Hx Hd 5/16-18 x 3/4	4
8	196.012.110	Outer Chamber (Stainless Units)	1
	196.012.157	Outer Chamber	1
9	196.018.157	Chamber	1
10	**286.008.354**	**Diaphragm**	**1**
	286.008.356	**Diaphragm**	**1**
	286.008.360	**Diaphragm**	**1**
	286.008.363	**Diaphragm**	**1**
	286.008.364	**Diaphragm**	**1**
	286.008.365	**Diaphragm**	**1**
	286.008.366	**Diaphragm**	**1**
11	**286.015.604**	**Diaphragm, Overlay**	**1**
12	334.018.110	Flange, Threaded (Stainless and PTFE Units)	1
	334.018.156	Flange, Threaded	1
13	**360.030.425**	**Gasket, Flange**	**1**
	360.030.600	**Gasket, Flange (PTFE and FKM Units)**	**1**
14	866.078.330	Tube Fitting	1
15	545.004.330	Nut, Hex 5/16-18	8
16	545.005.330	Nut, Hex 3/8-16 (Stainless Units)	2
17	545.008.330	Nut, Hex 1/2-13	1
18	**560.040.360**	**O-Ring**	**1**
19	612.022.330	Plate, Inner Diaphragm	1
20	612.043.330	Plate, Activator	1
21	612.044.330	Plate, Activator	1
22	612.101.110	Plate, Outer Diaphragm	1
	612.108.157	Plate, Outer Diaphragm	1
23	618.003.110	Plug, 1/4 Pipe (Stainless Units)	1
	618.003.330	Plug, 1/4 Pipe	1
24	685.027.120	Rod, Diaphragm	1
25	685.028.120	Rod, Activator	1
26	**720.012.360**	**Seal, Shaft**	**1**
29	893.021.000	Valve Assembly	1
29.1	095.020.162	Body, Valve	1
29.2	**560.001.360**	**O-Ring**	**1**
29.3	622.002.162	Poppet	1
29.4	670.007.162	Spring, Retainer	1
29.5	780.013.115	Spring, Compression	1
30	893.023.000	Valve Assembly	1
30.1	095.019.162	Body, Valve	1
30.2	622.002.162	Poppet	1
30.3	780.013.115	Spring, Compression	1
30.4	**560.001.360**	**O-Ring**	**1**
30.5	866.010.162	Elbow, Male	1
31	900.004.330	Washer, Lock 5/16	1
32	901.009.115	Washer, Flat 5/16	1
33	901.012.180	Washer, Sealing	1
34	901.014.180	Washer, Sealing	4

Parts underlined are only available for sale in kits

Model TA1



* Used only on PTFE fitted units
** Used only on Stainless Steel fitted units

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

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 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.	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

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