

SERVICE & OPERATING MANUAL

Original Instructions

Certified Quality



SAI GLOBAL

ISO 9001 Certified
ISO 14001 Certified

Member of
Hydraulic

**UK
CA**

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Tranquilizer®

Metallic Construction

Models:

TA1 & TA25

TA1½ & TA40

TA2 & TA50

TA3 & TA80



1: SPECS

2: INSTAL & OP

3: EXP VIEW

4: WARRANTY

SANDPIPER®
A WARREN RUPP, INC. BRAND

SANDPIPERPUMP.COM

Safety Information

! IMPORTANT



Read the safety warnings and instructions in this manual before Tranquilzer® installation and start-up. Failure to comply with the recommendations stated in this manual could damage the pump and void factory warranty.



When the Tranquilzer® is used for materials that tend to settle out or solidify, the Tranquilzer® should be flushed after each use to prevent damage. In freezing temperatures the Tranquilzer® should be completely drained between uses.

! CAUTION



Before Tranquilzer® operation, inspect all fasteners for loosening caused by gasket creep. Retighten loose fasteners to prevent leakage. Follow recommended torques stated in this manual.



WARNING

The use of non-OEM replacement parts will void (or negate) agency certifications, including CE, ATEX, CSA, 3A and EC1935 compliance (Food Contact Materials). Warren Rupp, Inc. cannot ensure nor warrant non-OEM parts to meet the stringent requirements of the certifying agencies.

! WARNING



When used for toxic or aggressive fluids, the Tranquilzer® should always be flushed clean prior to disassembly.



Before doing any maintenance on the pulsation dampener, be certain all pressure is completely vented from the Tranquilzer®, 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.



In the event of diaphragm rupture, pumped material may enter the air end of the Tranquilzer®, 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 Tranquilzer®, piping, valves, containers and other miscellaneous equipment must be properly grounded.



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

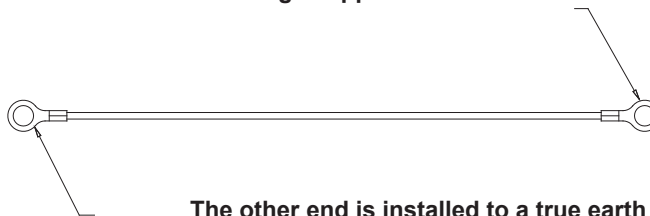


Use safe practices when lifting

RECYCLING

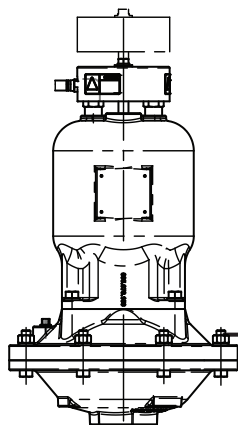
Many components of SANDPIPER® AODD pumps are made of recyclable materials. We encourage pump users to recycle worn out parts and pumps whenever possible, after any hazardous pumped fluids are thoroughly flushed.

One eyelet end is fastened to the surge suppressor hardware.



The other end is installed to a true earth ground.

Grounding ATEX Tranquilizers®



ATEX compliant tranquilizers® are suitable for use in explosive atmospheres when the equipment is properly grounded in accordance with local electrical codes. Tranquilizers® equipped with electrically conductive diaphragms are suitable for the transfer of conductive or non-conductive fluids of any explosion group. When operating tranquilizers® equipped with non-conductive diaphragms that exceed the maximum permissible projected area, as defined in EN ISO 80079:36 (See Safety Page) 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 Tranquilizers®, i.e. dry running

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

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.

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Tranquilizer® Options

	Model & Description	Max. Pressure	Air Inlet Size	Liquid Inlet Size	Dimensions inches (mm)
	TA1 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)
	TA25 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)
	TA1 1/2 Designed for 1" and 1 1/2" pumps.	125 psi 8.6 bar Self-charging. Self-venting.	1/4" NPT (external thread)	1 1/2" NPT (internal thread)	19 7/8" to 21. 3/8" height (505mm to 543mm) 10 1/2" diameter (267mm) NPT(F)
	TA40 Designed for 1" and 1 1/2" pumps.	125 psi 8.6 bar Self-charging. Self-venting.	1/4" NPT (external thread)	1 1/2" BSPT (tapered internal thread)	19 7/8" to 21. 3/8" height (505mm to 543mm) 10 1/2" diameter (267mm) NPT(F)
	TA2 Design Level 2 Designed for 1 1/2" 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) 12 1/2" diameter (317mm) NPT(F)
	TA50 Design Level 2 Designed for 1 1/2" 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) 12 1/2" diameter (317mm) NPT(F)
	TA3 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" 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.	1/4" NPT	3" BSPT (tapered internal thread) or 80mm DIN-style Flange	20 1/8" to 23 1/8" height (511mm to 587mm) 16 3/16" diameter (411mm) NPT(F)

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®.

- 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.

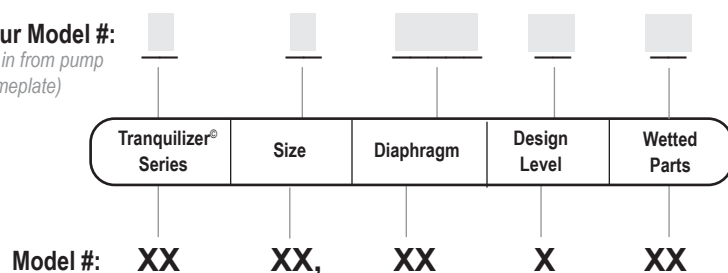
- Air cushion separated from product by flexible diaphragm . . . prevents product aeration.

- External visual indication provides constant evidence of performance.

- Simple to install. Attention-free.

Explanation of Nomenclature

Your Model #:
(fill in from pump
nameplate)



Tranquilizer Series

TA Tranquilizer

Size

- 1 1" NPT
- 25 1" BSP Tapered
- 1½ 1½" NPT
- 40 1½" BSP Tapered
- 2 2" NPT
- 50 2" BSP Tapered
- 3 3" NPT
- 80 3" BSP Tapered

Diaphragm Materials

- B Nitrile
- F FDA Accepted White Nitrile
- NG Neoprene Backup with PTFE Overlay
- H Hytrel
- I EPDM
- N Neoprene
- S Santoprene
- V FKM

Design Level

- 1 Models: TA1, TA25, TA1½, TA40
- 2 Models: TA2, TA50, TA3, TA80

Wetted Parts

- A Aluminum
- CI Cast Iron
- SS Stainless Steel
- HC Alloy-C Wetted

Your Serial #: (fill in from pump nameplate) _____

ATEX Detail



II 2 G Ex h IIC T5...225°C (T2) Gb
II 2 D Ex h IIIC T100°C...T200°C Db



Models equipped with stainless steel wetted parts (option **SS**) and PTFE diaphragms (option **NG**) are compliant with (EC) No 1935/2004 Food Contact Materials

Table 1. Category 1 & Category 2 ATEX Rated Pumps

Ambient Temperature Range [°C]	Process Temperature Range [°C] ¹	Temperature Class	Maximum Surface Temperature [°C]
-20°C to +60°C	-20°C to +80°C	T5	T100°C
	-20°C to +108°C	T4	T135°C
	-20°C to + 160°C	T3	T200°C
	-20°C to +177°C	(225°C) T2	

¹Per CSA standards ANSI LC6-2018 US & Canadian Technical Letter R14, G-Series Natural Gas Models are restricted to (-20°C to + 80°C) process temperature

Materials

Material Profile:	Operating Temperatures:	
	Max.	Min.
CAUTION! Operating temperature limitations are as follows:		
Conductive Acetal: Tough, impact resistant, ductile. Good abrasion resistance and low friction surface. Generally inert, with good chemical resistance except for strong acids and oxidizing agents.	190°F 88°C	-20°F -29°C
EPDM: Shows very good water and chemical resistance. Has poor resistance to oils and solvents, but is fair in ketones and alcohols.	280°F 138°C	-40°F -40°C
FKM: (Fluorocarbon) Shows good resistance to a wide range of oils and solvents; especially all aliphatic, aromatic and halogenated hydrocarbons, acids, animal and vegetable oils. Hot water or hot aqueous solutions (over 70°F(21°C)) will attack FKM.	350°F 177°C	-40°F -40°C
Hytre®: Good on acids, bases, amines and glycols at room temperatures only.	220°F 104°C	-20°F -29°C
Neoprene: All purpose. Resistance to vegetable oils. Generally not affected by moderate chemicals, fats, greases and many oils and solvents. Generally attacked by strong oxidizing acids, ketones, esters and nitro hydrocarbons and chlorinated aromatic hydrocarbons.	200°F 93°C	-10°F -23°C
Nitrile: General purpose, oil-resistant. Shows good solvent, oil, water and hydraulic fluid resistance. Should not be used with highly polar solvents like acetone and MEK, ozone, chlorinated hydrocarbons and nitro hydrocarbons.	190°F 88°C	-10°F -23°C
Nylon: 6/6 High strength and toughness over a wide temperature range. Moderate to good resistance to fuels, oils and chemicals.	180°F 82°C	32°F 0°C

Ambient temperature range: -20°C to +40°C

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

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

Polypropylene: A thermoplastic polymer. Moderate tensile and flex strength. Resists strong acids and alkali. Attacked by chlorine, fuming nitric acid and other strong oxidizing agents.	180°F 82°C	32°F 0°C
PVDF: (Polyvinylidene Fluoride) A durable fluoroplastic with excellent chemical resistance. Excellent for UV applications. High tensile strength and impact resistance.	250°F 121°C	0°F -18°C
Santoprene®: Injection molded thermoplastic elastomer with no fabric layer. Long mechanical flex life. Excellent abrasion resistance.	275°F 135°C	-40°F -40°C
UHMW PE: A thermoplastic that is highly resistant to a broad range of chemicals. Exhibits outstanding abrasion and impact resistance, along with environmental stress-cracking resistance.	180°F 82°C	-35°F -37°C
Urethane: Shows good resistance to abrasives. Has poor resistance to most solvents and oils.	150°F 66°C	32°F 0°C
Virgin PTFE: (PFA/TFE) Chemically inert, virtually impervious. Very few chemicals are known to chemically react with PTFE; molten alkali metals, turbulent liquid or gaseous fluorine and a few fluoro-chemicals such as chlorine trifluoride or oxygen difluoride which readily liberate free fluorine at elevated temperatures.	220°F 104°C	-35°F -37°C

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

Metals:

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

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

For specific applications, always consult the Chemical Resistance Chart.

Material Codes - The Last 3 Digits of Part Number

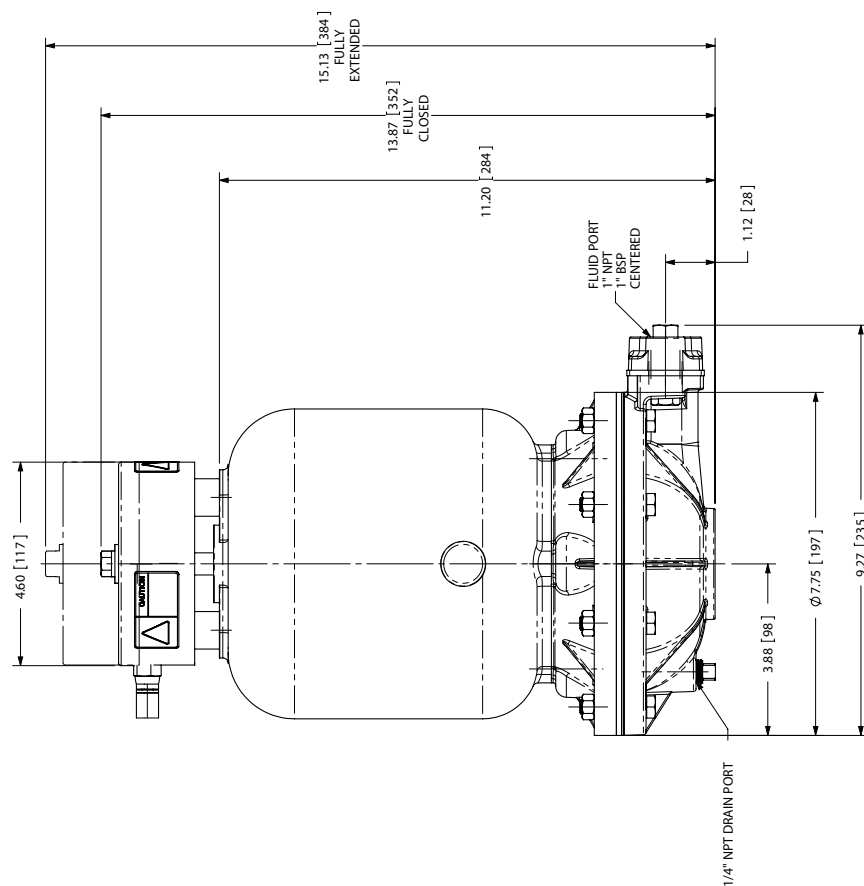
000.....Assembly, sub-assembly; and some purchased items	364.....EPDM Rubber Color coded: BLUE	• Delrin and Hytrel are registered tradenames of E.I. DuPont.
010.....Cast Iron	365.....Neoprene Rubber Color coded: GREEN	• Nylatron is a registered tradename of Polymer Corp.
015.....Ductile Iron	366.....Food Grade Nitrile	• Gylon is a registered tradename of Garlock, Inc.
020.....Ferritic Malleable Iron	368.....Food Grade EPDM	• Santoprene is a registered tradename of Exxon Mobil Corp.
080.....Carbon Steel, AISI B-1112	371.....Philthane (Tuftane)	• Rulon II is a registered tradename of Dixon Industries Corp.
110.....Alloy Type 316 Stainless Steel	374.....Carboxylated Nitrile	• Ryton is a registered tradename of Phillips Chemical Co.
111.....Alloy Type 316 Stainless Steel (Electro Polished)	375.....Fluorinated Nitrile	• Valox is a registered tradename of General Electric Co.
112.....Alloy C	378.....High Density Polypropylene	
113.....Alloy Type 316 Stainless Steel (Hand Polished)	379.....Conductive Nitrile	
114.....303 Stainless Steel	408.....Cork and Neoprene	
115.....302/304 Stainless Steel	425.....Compressed Fibre	
117.....440-C Stainless Steel (Martensitic)	426.....Blue Gard	
120.....416 Stainless Steel (Wrought Martensitic)	440.....Vegetable Fibre	
148.....Hardcoat Anodized Aluminum	500.....Delrin® 500	
150.....6061-T6 Aluminum	502.....Conductive Acetal, ESD-800	
152.....2024-T4 Aluminum (2023-T351)	503.....Conductive Acetal, Glass-Filled	
155.....356-T6 Aluminum	506.....Delrin® 150	
156.....356-T6 Aluminum	520.....Injection Molded PVDF Natural color	
157.....Die Cast Aluminum Alloy #380	540.....Nylon	
158.....Aluminum Alloy SR-319	542.....Nylon	
162.....Brass, Yellow, Screw Machine Stock	544.....Nylon Injection Molded	
165.....Cast Bronze, 85-5-5-5	550.....Polyethylene	
166.....Bronze, SAE 660	551.....Glass Filled Polypropylene	
170.....Bronze, Bearing Type, Oil Impregnated	552.....Unfilled Polypropylene	
180.....Copper Alloy	555.....Polyvinyl Chloride	
305.....Carbon Steel, Black Epoxy Coated	556.....Black Vinyl	
306.....Carbon Steel, Black PTFE Coated	558.....Conductive HDPE	
307.....Aluminum, Black Epoxy Coated	570.....Rulon II®	
308.....Stainless Steel, Black PTFE Coated	580.....Ryton®	
309.....Aluminum, Black PTFE Coated	600.....PTFE (virgin material) Tetrafluorocarbon (TFE)	
313.....Aluminum, White Epoxy Coated	603.....Blue Gylon®	
330.....Zinc Plated Steel	604.....PTFE	
332.....Aluminum, Electroless Nickel Plated	606.....PTFE	
333.....Carbon Steel, Electroless Nickel Plated	607.....Envelon	
335.....Galvanized Steel	608.....Conductive PTFE	
337.....Silver Plated Steel	610.....PTFE Encapsulated Silicon	
351.....Food Grade Santoprene®	611.....PTFE Encapsulated FKM	
353.....Geolast; Color: Black	632.....Neoprene/Hytrel®	
354.....Injection Molded #203-40 Santoprene® Duro 40D +/-5; Color: RED	633.....FKM/PTFE	
356.....Hytrel®	634.....EPDM/PTFE	
357.....Injection Molded Polyurethane	635.....Neoprene/PTFE	
358.....Urethane Rubber (Some Applications) (Compression Mold)	637.....PTFE, FKM/PTFE	
359.....Urethane Rubber	638.....PTFE, Hytrel®/PTFE	
360.....Nitrile Rubber Color coded: RED	639.....Nitrile/TFE	
363.....FKM (Fluorocarbon) Color coded: YELLOW	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	

Dimensional Drawings

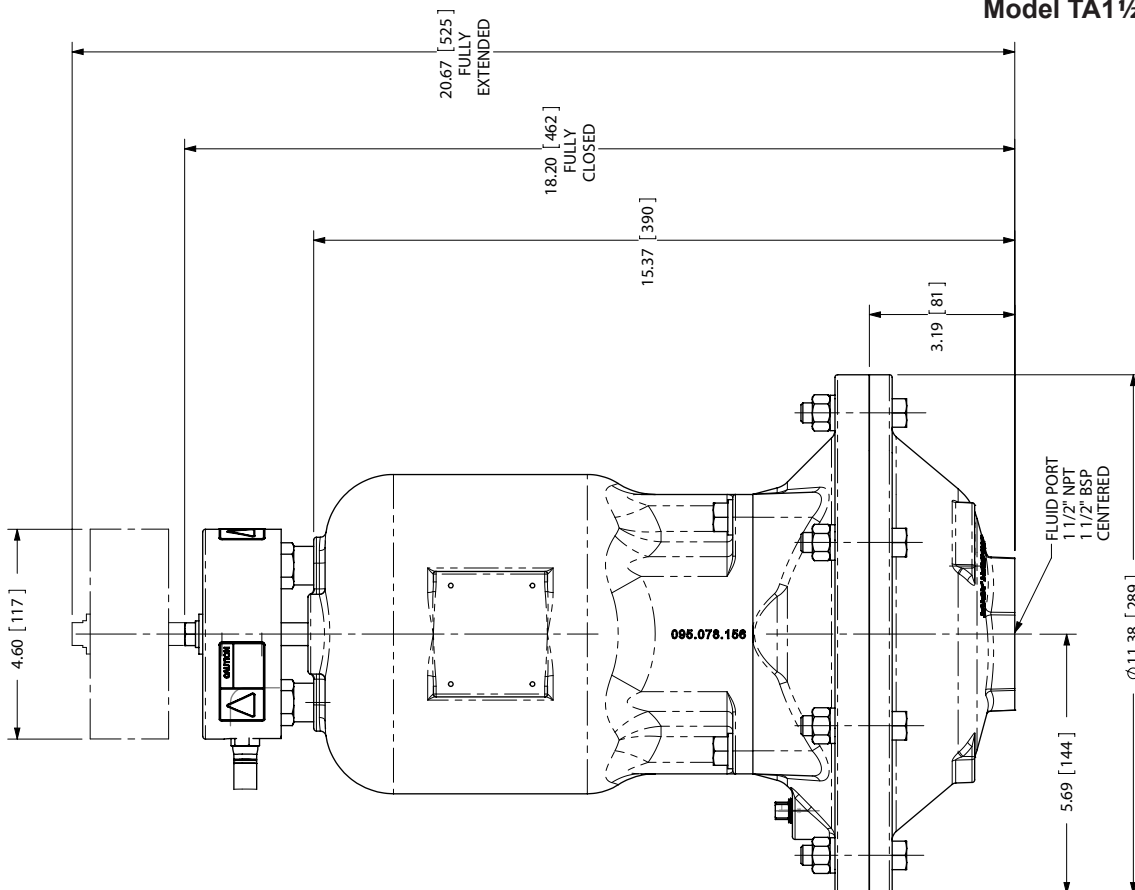
Dimensions are $\pm 1/8"$ ($\pm 3\text{mm}$). Figures in parenthesis = millimeters

1: PUMP SPECS

Model TA1 & TA25

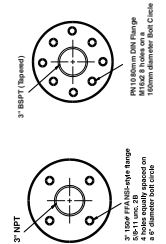


Model TA1½ & TA40



Dimensions are $\pm 1/8"$ ($\pm 3\text{mm}$). Figures in parenthesis = millimeters

1: PUMP SPECS



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 a compressed air chamber. A rod connected to the center of the diaphragm activates the air inlet and exhaust valves, which automatically admits or exhausts air to the air chamber. This maintains the diaphragms in mid-range of stroke for maximum surge suppression.

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.

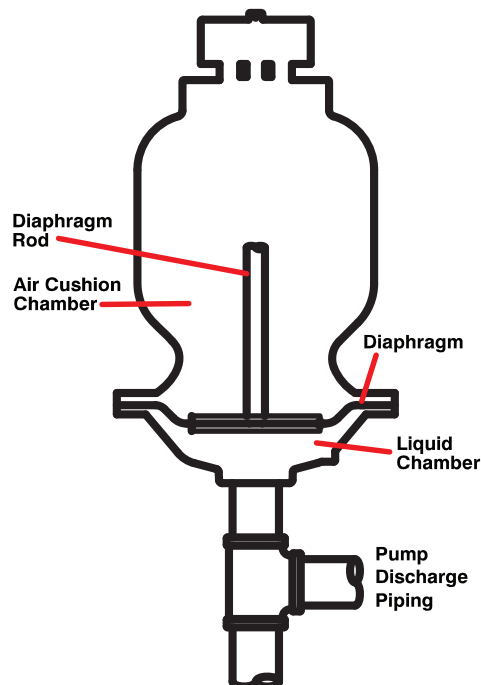
In event of change in pumped liquid pressure . . . the air cushion pressure is automatically increased or decreased as required to compensate for the change . . . always maintaining constant volume of air cushion, and the diaphragm always operating at its mid-position.

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

Service Instructions: DISCONNECT AIR INLET PRESSURE BEFORE SERVICING. 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” side of the elastomeric diaphragm. Inlet and exhaust air valves are externally located for easy access and service.

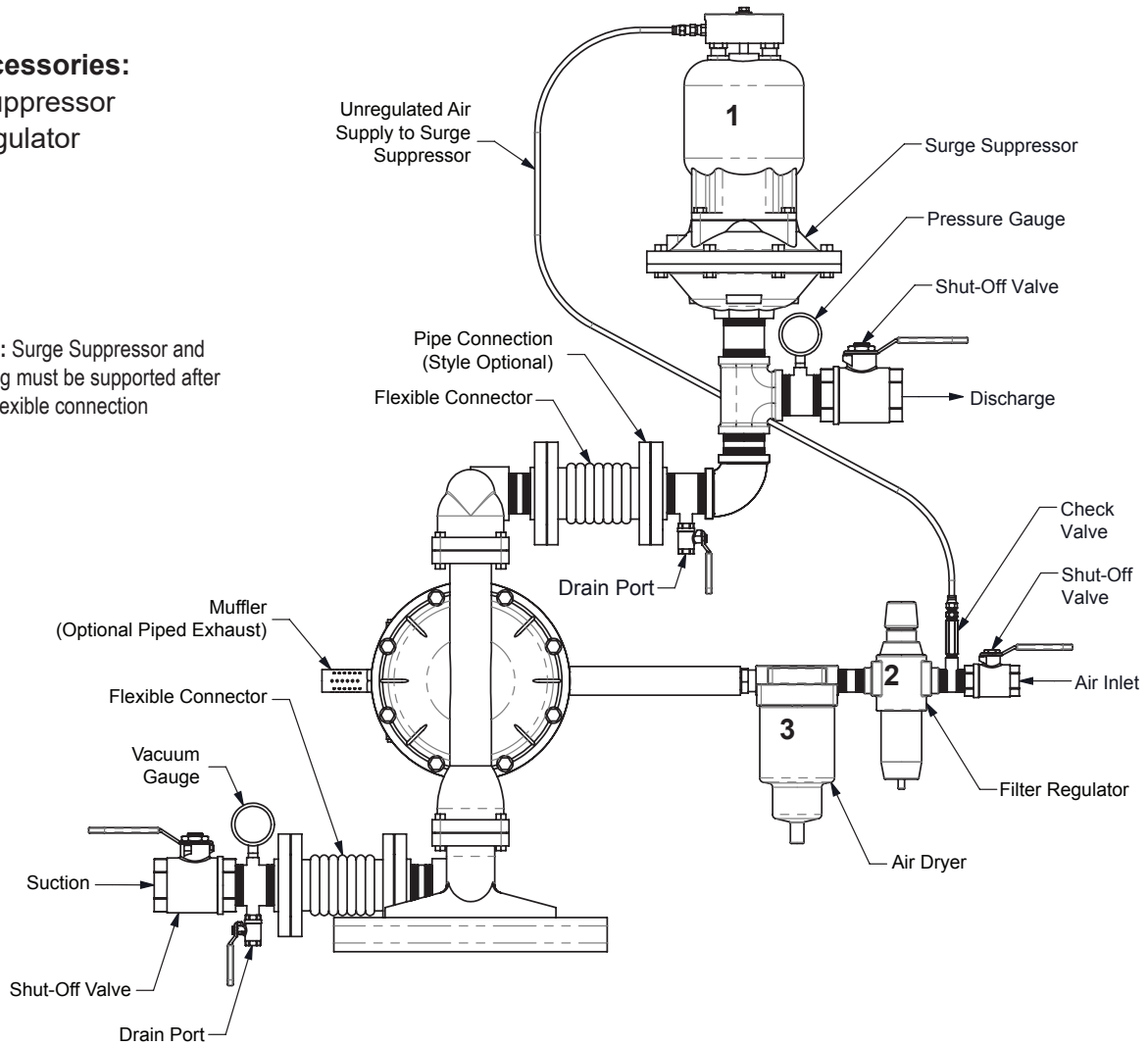


Recommended Installation Guide

Available Accessories:

1. Surge Suppressor
2. Filter/Regulator
3. Air Dryer

Note: Surge Suppressor and Piping must be supported after the flexible connection

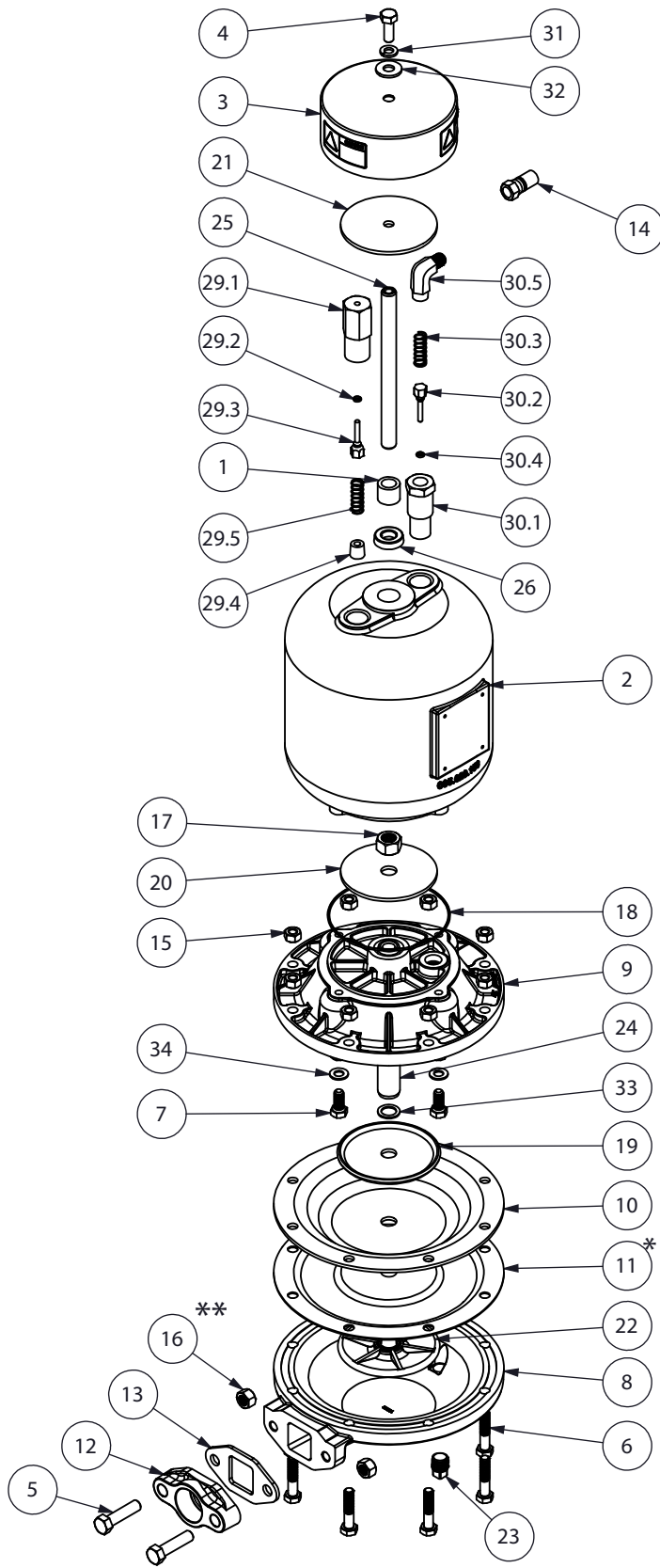


Installation:

Locate the Tranquizer 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.

Composite Repair Parts Drawing- TA1 & TA25

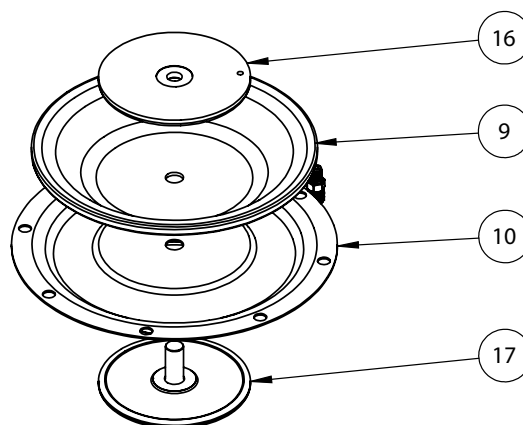
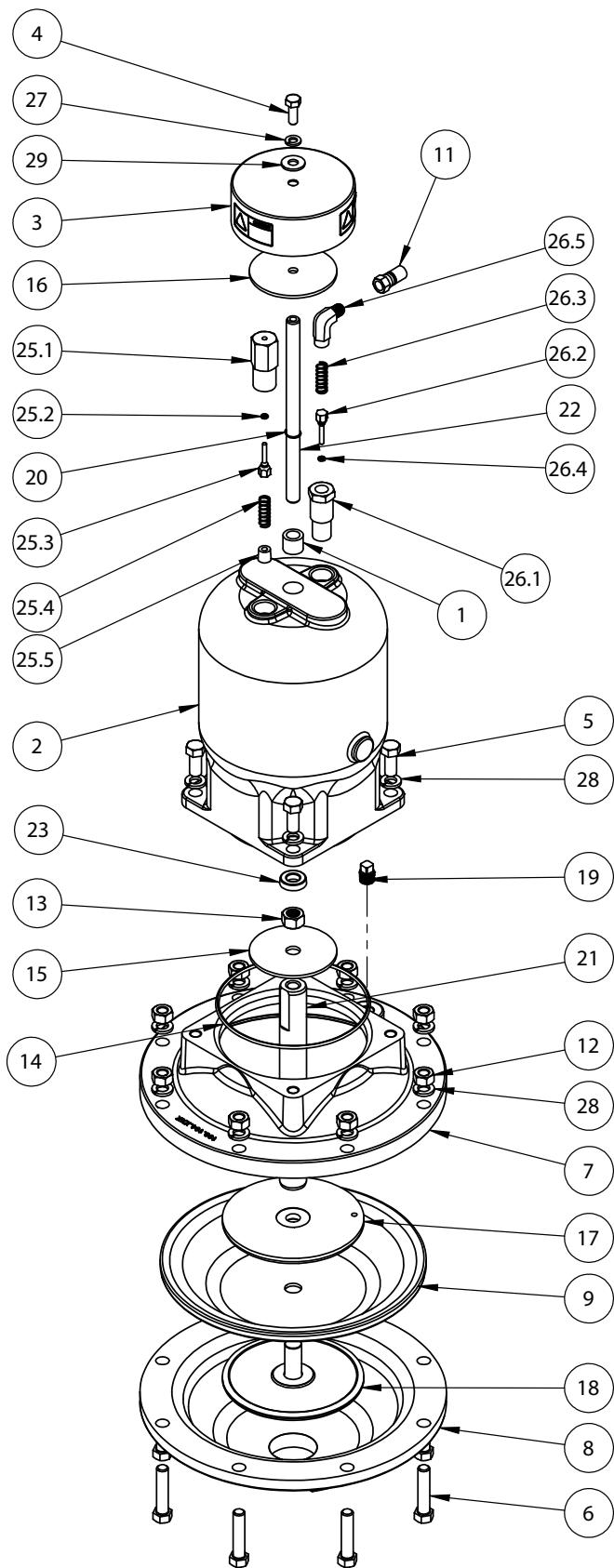
TA1 & TA25
3: EXP VIEW



Composite Repair Parts List- TA1 & TA25

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, Santoprene	1
	286.008.356	Diaphragm, Hytrel	1
	286.008.360	Diaphragm, Nitrile	1
	286.008.363	Diaphragm, FKM	1
	286.008.364	Diaphragm, EPDM	1
	286.008.365	Diaphragm, Neoprene	1
	286.008.366	Diaphragm, FDA Nitrile	1
11	286.015.604	Diaphragm, Overlay	1
12	334.018.110	Flange, Threaded (Stainless and PTFE Models)	1
	334.018.110E	Flange, Threaded (1" BSP Tapered; Model TA25)	1
	334.018.156	Flange, Threaded	1
	334.018.156E	Flange, Threaded (1" BSP Tapered Model TA25)	1
13	360.030.425	Gasket, Flange	1
	360.030.600	Gasket, Flange (PTFE and FKM Models)	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 Models)	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 Models)	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

Composite Repair Parts Drawing- TA1 ½ & TA40

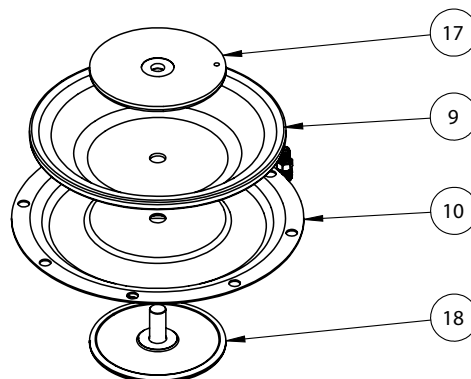
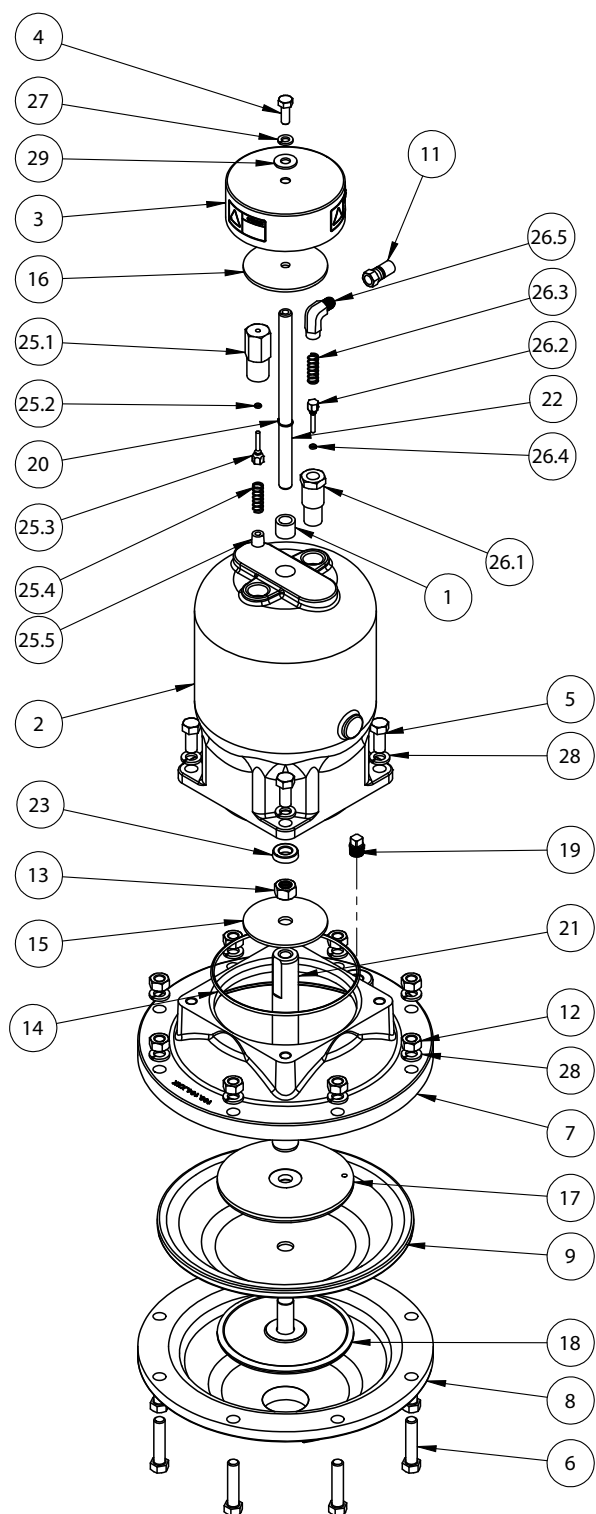


Composite Repair Parts List- TA1½ & TA40

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
	196.196.156E	Chamber, Outer - 1½" BSP Tapered, Model TA40	1
	196.196.010	Chamber, Outer - NPT	1
	196.196.010E	Chamber, Outer - 1½" BSP Tapered, Model TA40	1
	196.196.110	Chamber, Outer - NPT	1
	196.196.110E	Chamber, Outer - 1½" BSP Tapered, Model TA40	1
	196.196.112	Chamber, Outer - NPT	1
	196.196.112E	Chamber, Outer - 1½" BSP Tapered, Model TA40	1
9	286.005.360	Diaphragm	1
	286.005.363	Diaphragm	1
	286.005.364	Diaphragm	1
	286.005.365	Diaphragm	1
	286.005.351	Diaphragm	1
	286.005.354	Diaphragm	1
	286.005.357	Diaphragm	1
10	286.020.604	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	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	1
	612.039.010	Plate, Diaphragm Outer - Cast Iron Units	1
	612.097.110	Plate, Diaphragm Outer - Stainless Units	1
	612.097.112	Plate, Diaphragm Outer - Hastalloy Units	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	720.012.360	U-Cup, Shaft Seal	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

Composite Repair Parts Drawing- TA2 & TA50

3: EXP VIEW
TA2 & TA50

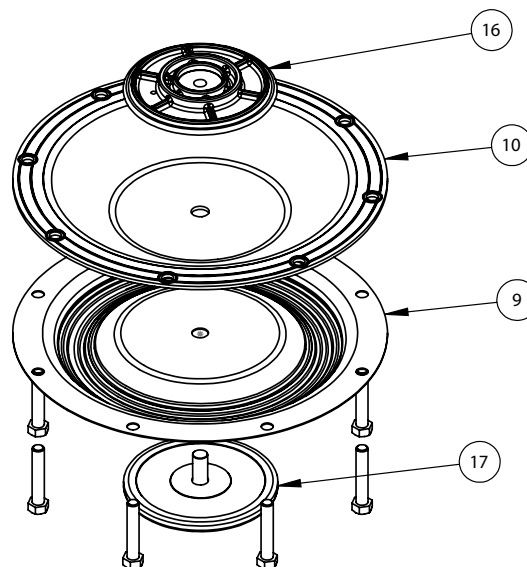
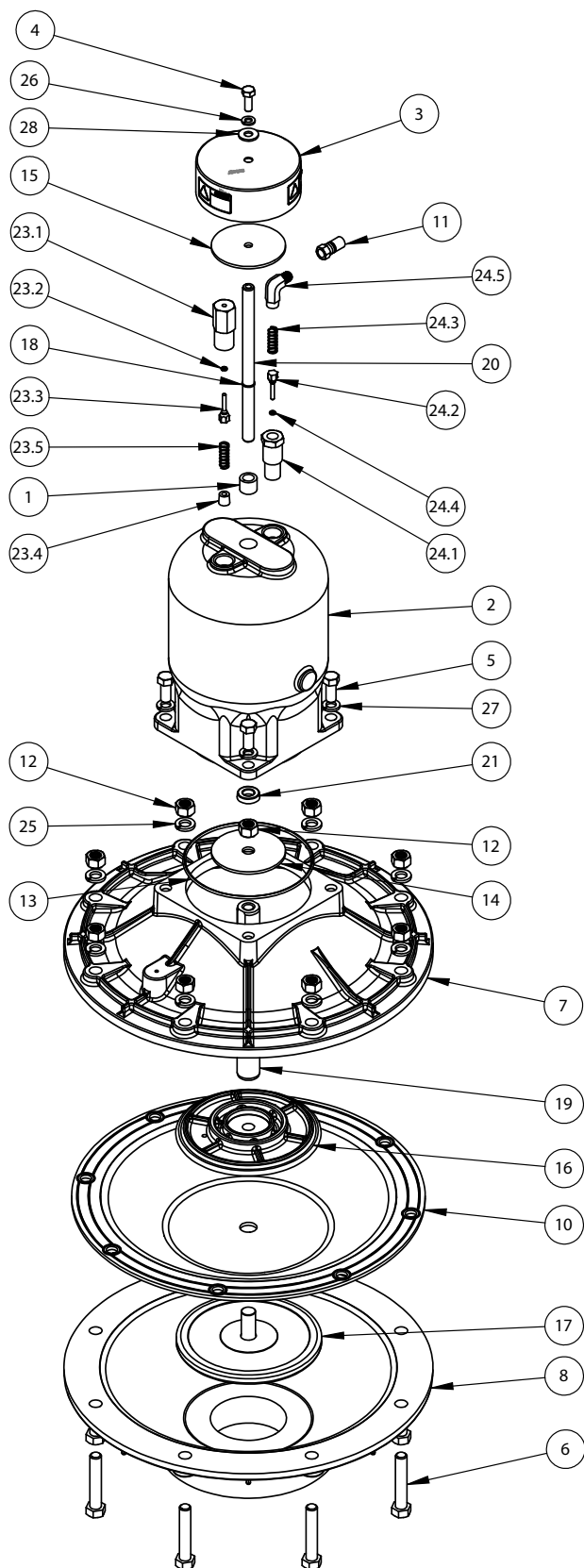


Composite Repair Parts List- TA2 & TA50

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	196.195.156	Chamber, Outer - NPT	1
	196.195.156E	Chamber, Outer - 2" BSP Tapered, Model TA50	1
	196.195.010	Chamber, Outer - NPT	1
	196.195.010E	Chamber, Outer - 2" BSP Tapered, Model TA50	1
	196.195.110	Chamber, Outer - NPT	1
	196.195.110E	Chamber, Outer - 2" BSP Tapered, Model TA50	1
	196.195.112	Chamber, Outer - NPT	1
	196.195.112E	Chamber, Outer - 2" BSP Tapered, Model TA50	1
9	286.005.360	Diaphragm	1
	286.005.363	Diaphragm	1
	286.005.364	Diaphragm	1
	286.005.365	Diaphragm	1
	286.005.351	Diaphragm	1
	286.005.354	Diaphragm	1
	286.005.357	Diaphragm	1
10	286.020.604	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	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	1
	612.039.010	Plate, Diaphragm Outer - Cast Iron Units	1
	612.097.110	Plate, Diaphragm Outer - Stainless Units	1
	612.097.112	Plate, Diaphragm Outer - Hastalloy Units	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	720.012.360	U-Cup, Shaft Seal	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

Composite Repair Parts Drawing- TA3 & TA80

TA3 & TA80
3: EXP VIEW



Composite Repair Parts List- TA3 & TA80

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	170.082.330	Capscrew, Hex Hd, 1/2-13UNC X 2.75	8
7	196.100.015	Chamber, Inner	1
8	196.146.156	Chamber, Outer	1
	196.146.156E	Chamber, Outer (3" BSP Tapered/PN10 80mm DIN, Model TA80)	1
	196.146.010	Chamber, Outer	1
	196.146.010E	Chamber, Outer (3" BSP Tapered/PN10 80mm DIN, Model TA80)	1
	196.146.110	Chamber, Outer	1
	196.146.110E	Chamber, Outer (3" BSP Tapered/PN10 80mm DIN, Model TA80)	1
9	286.098.604	Diaphragm, Overlay	1
10	286.098.360	Diaphragm	1
	286.098.363	Diaphragm	1
	286.098.364	Diaphragm	1
	286.098.365	Diaphragm	1
	286.098.354	Diaphragm	1
	286.098.351	Diaphragm	1
11	866.078.330	Tube Fitting	1
12	545.008.330	Nut, Hex - 1/2-13	9
13	560.022.360	O-Ring	1
14	612.043.330	Plate, Activator	1
15	612.044.330	Plate, Activator	1
16	612.192.157	Plate, Inner Diaphragm	1
17	612.194.157	Plate, Outer Diaphragm Assy. (Alum Units Only)	1
	612.194.010	Plate, Outer Diaphragm Assy. (Cast Iron Units Only)	1
	612.194.110	Plate, Outer Diaphragm Assy. (Stainless Units Only)	1
18	675.054.080	Ring, Retainer	1
19	685.066.120	Rod, Diaphragm	1
20	685.048.120	Rod, Activator	1
21	720.012.360	U-cup, Shaft Seal	1
23	893.021.000	Valve Assembly	1
23.1	095.020.162	Body, Valve	1
23.2	560.001.360	O-Ring	1
23.3	622.002.162	Poppet	1
23.4	670.007.162	Spring Retainer	1
23.5	780.013.115	Spring, Compression	1
24	893.023.000	Valve Assembly	1
24.1	095.019.162	Body, Valve	1
24.2	622.002.162	Poppet	1
24.3	780.013.115	Spring, Compression	1
24.4	560.001.360	O-Ring	1
24.5	866.010.162	Elbow, Male	1
25	900.003.330	Washer, Lock - 1/2	8
26	900.004.330	Washer, Lock - 5/16	1
27	900.006.330	Washer, Lock - 7/16	4
28	901.009.115	Washer, Flat - 5/16	1

TA3 & TA80

3: EXP VIEW

5 - YEAR Limited Product Warranty

Warren Rupp, Inc. ("Warren Rupp") warrants to the original end-use purchaser that no product sold by Warren Rupp that bears a Warren Rupp brand shall fail under normal use and service due to a defect in material or workmanship within five years from the date of shipment from Warren Rupp's factory. Warren Rupp brands include Warren Rupp®, SANDPIPER®, SANDPIPER Signature Series™, MARATHON®, Porta-Pump®, SludgeMaster™ and Tranquilizer®.

The use of non-OEM replacement parts will void (or negate) agency certifications, including CE, ATEX, CSA, 3A and EC1935 compliance (Food Contact Materials). Warren Rupp, Inc. cannot ensure nor warrant non-OEM parts to meet the stringent requirements of the certifying agencies.

~ See complete warranty at <https://www.sandpiperpump.com/>



EC Declaration of Conformity

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

Certifies that Air-Operated Double Diaphragm Pump Models: DSB Series, DMF Series, G Series, HDB Series, HDF Series, HP Series, F Series, MS Series, S Series, SL Series, SP Series, SSB Series, T Series, U1F Series, WR Series; High Pressure Pump Models: EH Series, GH Series, SH Series; Submersible Pump Models: SMA3 Series, SPA Series; and Surge Dampener/Suppressor Models: DA Series, TA Series comply with the European Community Directive 2006/42/EC on Machinery, according to Annex VIII. This product has used Harmonized Standard EN809:2012, Pumps and Pump Units for Liquids - Common Safety Requirements, to verify conformance.

October 3, 2022

DATE/APPROVAL/TITLE:

Technical File on record with:
DEKRA Certification B.V.
Meander 1051
6825 MJ Arnhem
The Netherlands

A handwritten signature in black ink, appearing to read 'Dennis Hall'.

Signature of authorized person

Dennis Hall

Printed name of authorized person

Engineering Manager

Title





EC Declaration of Conformity

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

Certifies that Air-Operated Double Diaphragm Pump Models: DSB Series, DMF Series, G Series, HDB Series, HDF Series, HP Series, F Series, MS Series, S Series, SL Series, SP Series, SSB Series, T Series, U1F Series, WR Series; High Pressure Pump Models: EH Series, GH Series, SH Series; Submersible Pump Models: SMA3 Series, SPA Series; and Surge Dampener/Suppressor Models: DA Series, TA Series comply with the United Kingdom Statutory Instruments 2008 No. 1597, The Supply of Machinery (Safety) Regulations 2008, according to Annex VIII. This product has used Designated Standard EN809:2012, Pumps and Pump Units for Liquids - Common Safety Requirements, to verify conformance.

October 17, 2022

DATE/APPROVAL/TITLE:

Technical File on record with:
DEKRA Certification UK Limited
Stokenchurch House
Oxford Road
Stokenchurch
HP14 3SX

Signature of authorized person

Dennis Hall

Printed name of authorized person

Engineering Manager

Title





ATEX



EU Declaration of Conformity

Manufacturer:

Warren Rupp, Inc.
A Unit of IDEX Corporation
800 North Main Street
Mansfield, OH 44902 USA

This declaration of conformity is issued under the sole responsibility of the manufacturer. Warren Rupp, Inc. declares that Air Operated Double Diaphragm Pumps (AODD) and Surge Suppressors listed below comply with the requirements of Directive **2014/34/EU** and applicable harmonized standards.

Harmonized Standards:

- EN ISO 80079-36: 2016
- EN ISO 80079-37: 2016
- EN 60079-25: 2010

1. AODD Pumps and Surge Suppressors - Technical File on record with DEKRA Certification B.V.
Meander 1051
6825 MJ Arnhem
The Netherlands

Hazardous Location Applied:



- II 2 G Ex h IIC T5...225°C (T2) Gb
- II 2 D Ex h IIIC T100°C...T200°C Db
- Metallic pump models with external aluminum components (DMF Series, EH Series, F Series, G & GH Series, HDB Series, HDF Series, MS Series, S Series, SH Series, SL Series, SP Series, ST Series, T Series, and U1F Series)
- Conductive plastic pump models with integral muffler (PB Series, S Series, SL Series, SP Series)
- Tranquilizer® surge suppressors (TA Series)



- II 2 G Ex h IIB T5...225°C (T2) Gb
- II 2 D Ex h IIIB T100°C...T200°C Db
- ST Series with sight tubes (VL) and HP Series because of the projected area of non-conductive external components

2. AODD Pumps - EU Type Examination Certificate No.: DEKRA 18ATEX0094X - DEKRA Certification B.V. (0344)

Hazardous Location Applied:



- I M1 Ex h I Ma
- II 1 G Ex h IIC T5...225°C (T2) Ga
- II 1 D Ex h IIIC T100°C...T200°C Da
- Metallic pump models with no external aluminum (S series, HDB Series, HDF Series, G Series)
- Conductive plastic pumps equipped with metal muffler (S series, PB Series)



- II 2 G Ex h ia IIC T5 Gb
- II 2 D Ex h ia IIIC T100°C Db
- All pump model series excluding G15, G20, G30 equipped with ATEX rated pulse output option



- II 2 G Ex h mb IIC T5 Gb
- II 2 D Ex h mb IIIC T100°C Db
- Pump model series S05, S1F, S15, S20, S30 equipped with ATEX rated integral solenoid option

Meander 1051
6825 MJ Arnhem
The Netherlands

- See "ATEX Details" page in user's manual for more information
- See "Safety Information" page for conditions of safe use

DATE/APPROVAL/TITLE:
03 OCT 2022


Dennis Hall
Engineering Manager



UKEx



EU Declaration of Conformity

Manufacturer:

Warren Rupp, Inc.
A Unit of IDEX Corporation
800 North Main Street
Mansfield, OH 44902 USA

This declaration of conformity is issued under the sole responsibility of the manufacturer.

Warren Rupp, Inc declares that Air Operated Double Diaphragm Pumps (AODD) and Surge Suppressors listed below comply with the requirements of United Kingdom Statutory Instruments **2016 No. 1107** and all the applicable standards.

Designated Standards:

- EN ISO 80079-36: 2016
- EN ISO 80079-37: 2016
- EN 60079-25: 2010

1. AODD Pumps and Surge Suppressors - Technical File on record with: DEKRA Certification UK Limited
Stokenchurch House
Oxford Road
Stokenchurch
HP14 3SX

Hazardous Location Applied:



II 2 G Ex h IIC T5...225°C (T2) Gb

II 2 D Ex h IIC T100°C...T200°C Db

- Metallic pump models with external aluminum components (DMF Series, EH Series, F Series, G & GH Series, HDB Series, HDF Series, MS Series, S Series, SH Series, SL Series, SP Series, ST Series, T Series, and U1F Series)
- Conductive plastic pump models with integral muffler (PB Series, S Series, SL Series, SP Series)
- Tranquilizer® surge suppressors (TA Series)



II 2 G Ex h IIB T5...225°C (T2) Gb

II 2 D Ex h IIB T100°C...T200°C Db

- ST Series with sight tubes (VL) and HP Series because of the projected area of non-conductive external components

- See "ATEX Details" page in user's manual for more information
- See "Safety Information" page for conditions of safe use

DATE/APPROVAL/TITLE:
17 OCT 2022


Dennis Hall
Engineering Manager



Declaration of Compliance

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

certifies that the below Air-Operated Double Diaphragm Food Processing Pump Models and Tranquilizer® Surge Suppressor Models comply with the European Community Regulations:

(EC) No 1935/2004 for Food Contact Materials

(EC) No 2023/2006 Good Manufacturing Practice

(EU) No 10/2011 on plastic materials and articles intended to come in contact with food

Food Processing Pump Models:

F##B1SDD#TF600	F##B1SHD#TF600	F##B1SKD#TF600	F##B1SZD#TF600
F##B1SDH#TF600	F##B1SHH#TF600	F##B1SKH#TF600	F##B1SZH#TF600
F##B1SDS#TF600	F##B1SHS#TF600	F##B1SKS#TF600	F##B1SZS#TF600
F15B1SDS#TC600	F15B1SHS#TC600	F15B1SKS#TC600	F15B1SZS#TC600
F20B1SDS#TC600	F20B1SHS#TC600	F20B1SKS#TC600	F20B1SZS#TC600
SSB2,TD3SS			
T##B1S9S#TS600	T##B1SAS#TS600	T##B1SDS#TS600	T##B1SLS#TS600
T##B1S9T#TS600	T##B1SAT#TS600	T##B1SDT#TS600	T##B1SLT#TS600

Tranquilizer® Surge Suppressors:

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

- Materials used in equipment intended for food contact (Annex I (EC) No 1935/2004) :
 - Rubber
 - Metals & Alloys
 - Plastics

Plastic Materials: PTFE and FKM/ PTFE coated

The plastic components are suitable to come in contact with multiple food types, provided that storage contact

time does not exceed 1/2 hour, contact temperature does not exceed 40°C and maximum operating temperatures within the instructions manual are not exceeded. Diaphragm failure may allow process fluids to come in contact with nonconforming materials. Regular inspections are recommended.

- This Declaration is based on :
 - Declaration of Conformities from raw material suppliers
 - Total Migration Analysis per (EU) No 10/2011
- Supporting document will be made available to competent authorities to demonstrate compliance

Signature of authorized person

Dennis Hall

Printed name of authorized person

February 8, 2013

Date of issue

Engineering Manager

Title

October 3, 2022

Date of revision

