

# SERVICE & OPERATING MANUAL

Original Instructions



## Model VDA05 Model VDA07 Model VDA10

## Metallic and Non-Metallic Surge Dampeners

Quality System  
ISO9001 Certified

Environmental  
Management System  
ISO14001 Certified



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# SERVICE AND OPERATING MANUAL

**Model VDA05 1/2" Surge Dampener**  
**Model VDA07 3/4" Surge Dampener**  
**Model VDA10 1" Surge Dampener**

The Versa-Matic Surge Dampener reduces flow and pressure pulsation which is characteristic of reciprocating pumps.

## PRINCIPLE OF OPERATION

The surge dampener uses a flexible virgin PTFE diaphragm to separate a liquid chamber from a compressed air chamber. After the dampener is manually charged with air, the diaphragm strokes at the same rate as the pump strokes. This movement effectively "dampens" flow and pressure fluctuations.



### TEMPERATURE LIMITATIONS

Operating temperature limitations are as follows.

Material	Minimum Temp.	Maximum Temp.
PVDF	0°F / -18°C	212°F / 100°C
Nylon	32°F / 0°C	180°F / 82°C
Polypropylene	32°F / 0°C	180°F / 82°C
Virgin PTFE	-35°F / -31°C	212°F / 100°C
Nitrile	-10°F / -23°C	190°F / 88°C

## INSTALLATION & START-UP

Locate the unit in the discharge piping near the pump. The dampener will operate in any position. However, when used with liquids that tend to settle out, the unit should be installed at the top side of piping to provide easy discharge of foreign solids by gravity.

Adjust the inlet air pressure to the dampener until the pump runs as smoothly as possible. Watch the liquid discharging, or use a gauge, to detect pressure fluctuations. Then adjust pressure to the unit as needed.

**NOTE:** Self-relieving regulator 020-039-000 will make these adjustments easier.

## SERVICE

When service is required on the dampener, remove the 8 capscrews. The wetted chamber can be removed from the unit and exposes the diaphragm. Remove the diaphragm. When reassembling the wetted chamber onto the air chamber, use a torque wrench set at 70 in/lbs. (7.9 Newton meters)

## 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 surge 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 surge dampener, and void factory warranty.

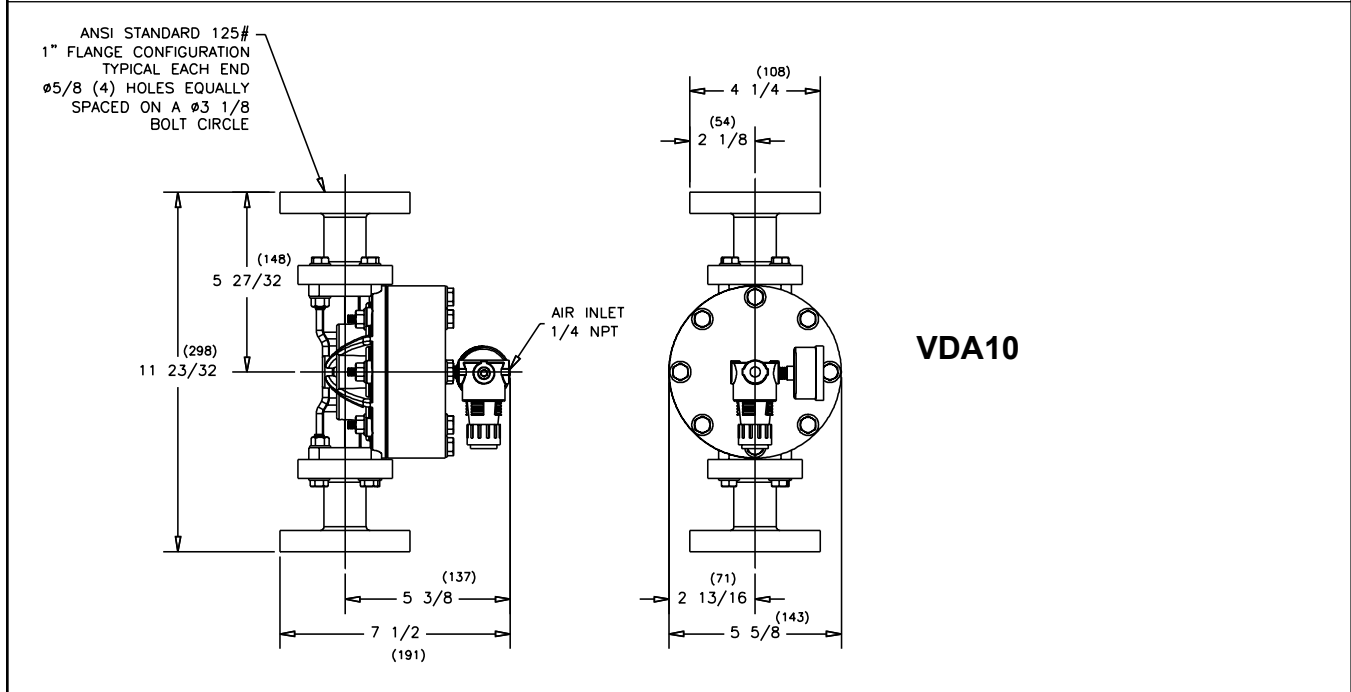
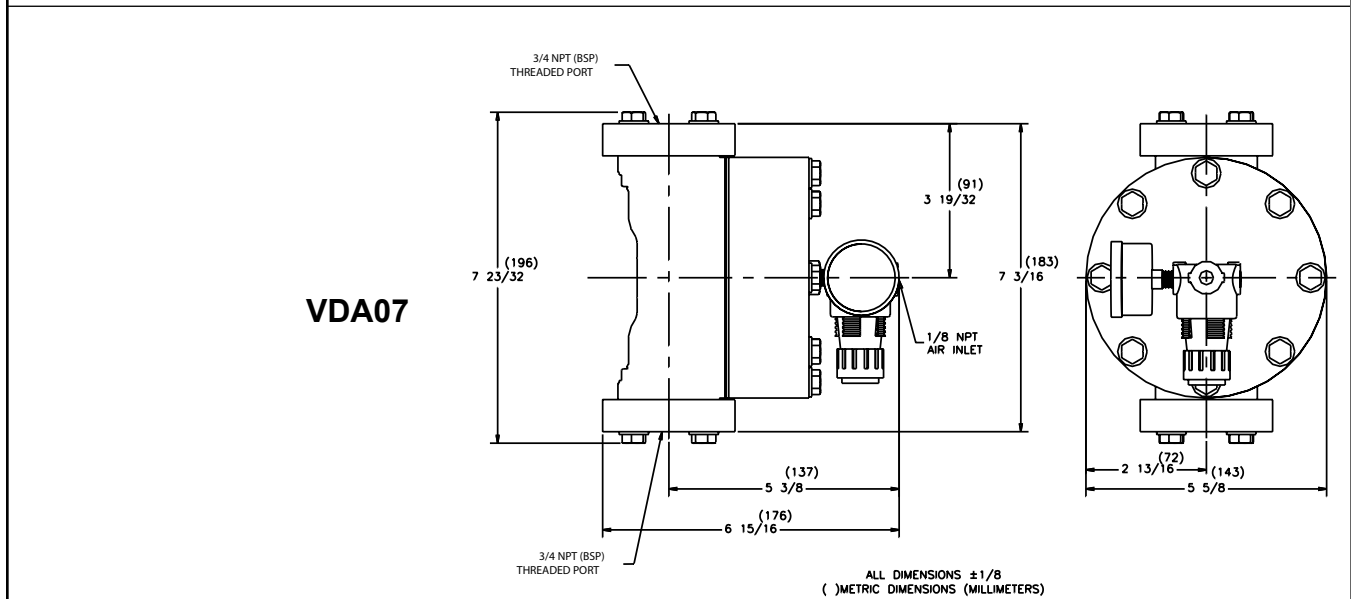
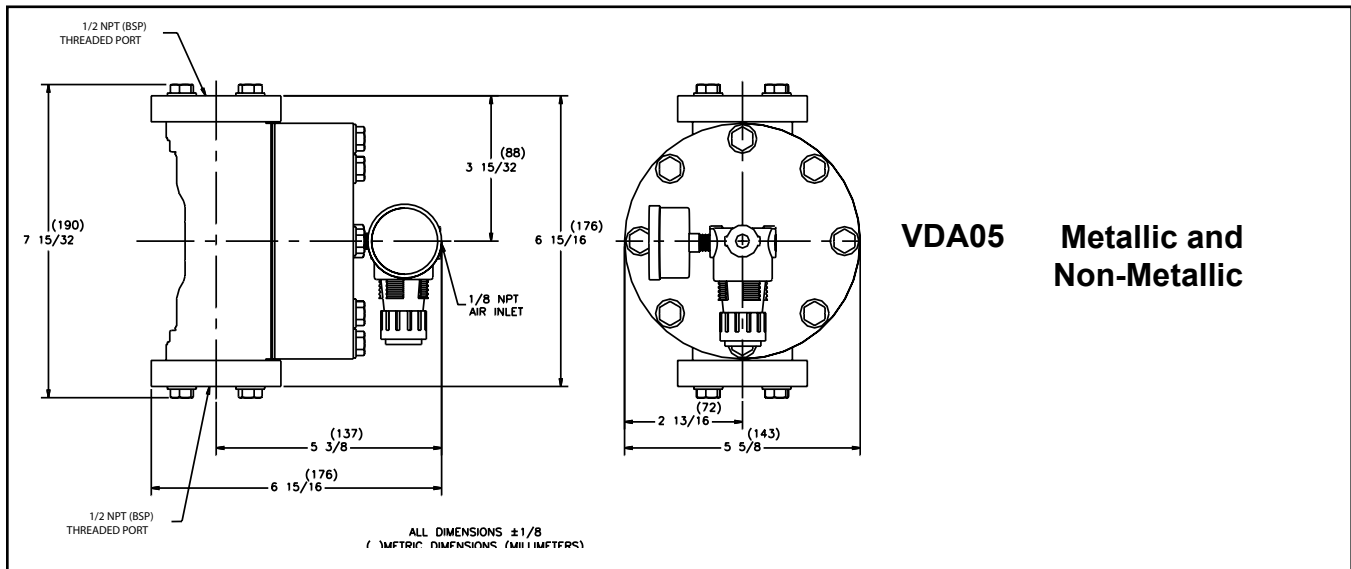
Maximum operating pressure is 100 psi (7 bar). Limitation are based upon mechanical stress only and may be significantly altered by pumping certain chemicals. Consult engineering guides for chemical compatibilities and temperature limits.

### CAUTION




### CAUTION

Before surge dampener 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.

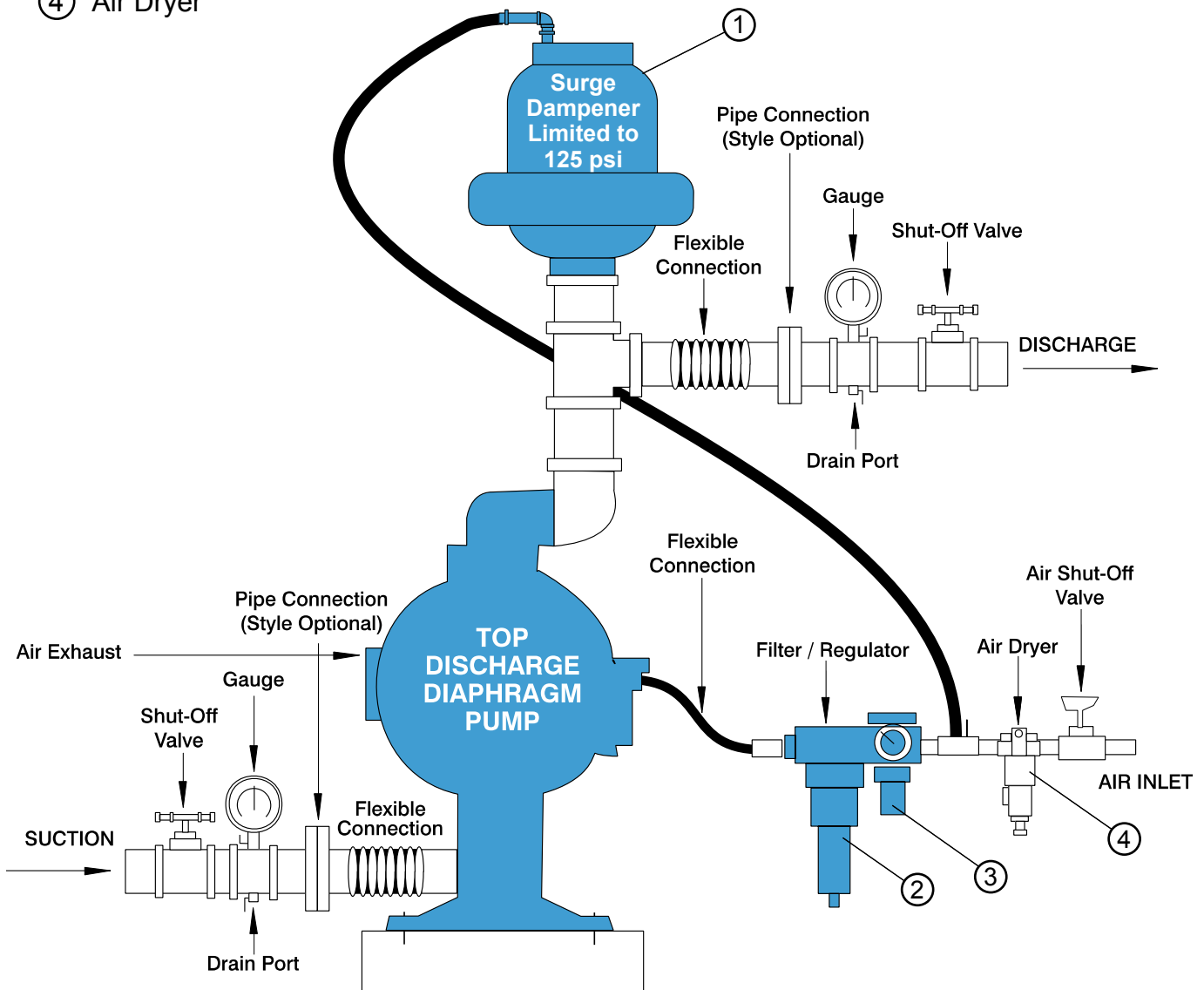
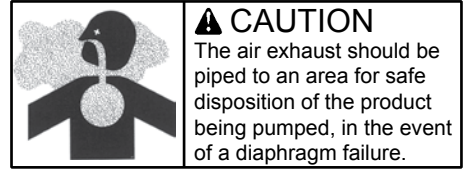


# INSTALLATION GUIDE

## Top Discharge Ball Unit

 Available From  
Versa-Matic

- ① Surge Dampener
- ② Filter/Regulator
- ③ Lubricator
- ④ Air Dryer





**REPAIR PARTS LIST**  
**Model VDA05 1/2" Surge Dampener**  
**Model VDA07 3/4" Surge Dampener**  
**Model VDA10 1" Surge Dampener**

ITEM NO.	PART NUMBER	DESCRIPTION	TOTAL RQD.
1	196-161-552	Chamber, Outer	1
	196-161-520	Chamber, Outer	1
	196-161-542	Chamber, Outer	1
	196-171-110	Chamber, Outer (VDA05 Metallic only)	1
	196-171-157	Chamber, Outer (VDA05 Metallic only)	1
2	360-099-360	Gasket, Spacer	1
3	334-103-552	Flange, Threaded 1/2" NPT (VDA05)	2
	334-103-542	Flange, Threaded 1/2" NPT (VDA05)	2
	334-103-600	Flange, Threaded 1/2" NPT (VDA05)	2
	334-109-110	Flange, Threaded 1/2" NPT (Metallic VDA05 only)	2
	334-109-150	Flange, Threaded 1/2" NPT (Metallic VDA05 only)	2
	334-104-552	Flange, Threaded 3/4" NPT (VDA07)	2
	334-104-542	Flange, Threaded 3/4" NPT (VDA07)	2
	334-104-600	Flange, Threaded 3/4" NPT (VDA07)	2
	334-107-552	Flange, 1" ANSI (VDA10)	2
4	135-022-115	Bushing, Reducer	2
5	196-166-552	Chamber, Inner	1
6	720-058-600	Seal, Flange	2
	720-063-600	Seal, Flange (Metallic VDA05 only)	2
<b>7</b>	<b>286-097-600</b>	<b>Diaphragm</b>	<b>1</b>
8	171-064-115	Capscrew Hex Flange 5/16 -18 x 1.50	8
	171-064-308	Capscrew Hex Flange 5/16 -18 x 1.50	8
	170-029-330	Capscrew, Hex Flange 5/16 x 1.50 (Metallic VDA05 only)	4
9	544-005-115	Nut 5/16 Hex Flange Nut 5/16-18	10
	544-005-308	Nut 5/16 Hex Flange Nut 5/16-18	10
	545.004-330	Hex Flange Nut (Metallic VDA05 only)	10
10	171-070-115	Capscrew Hex Flange 5/16 -18 x 3.00	6
	171-070-308	Capscrew Hex Flange 5/16 -18 x 3.00	6
	171-070-330	Capscrew, Hex Flange (Metallic VDA05 only)	2
11	171-069-115	Capscrew Hex Flange 5/16 -18 x 2.5	2
	171-069-308	Capscrew Hex Flange 5/16 -18 x 2.5	2
	171-069-330	Capscrew, Hex Flange (Metallic VDA05 only)	2
12	538-002-115	Nipple 1/8 NPT	1
13	020-039-000	Regulator W/Gauge	1
14	170-045-330	Capscrew Hex Flange (VDA05 Metallic Only) 5/16 -18 x 1.25	4
15	900-004-330	LockWasher (VDA05 Metallic Only)	14
16	901-038-115	Flat Washer (Non-Metallic Only)	2

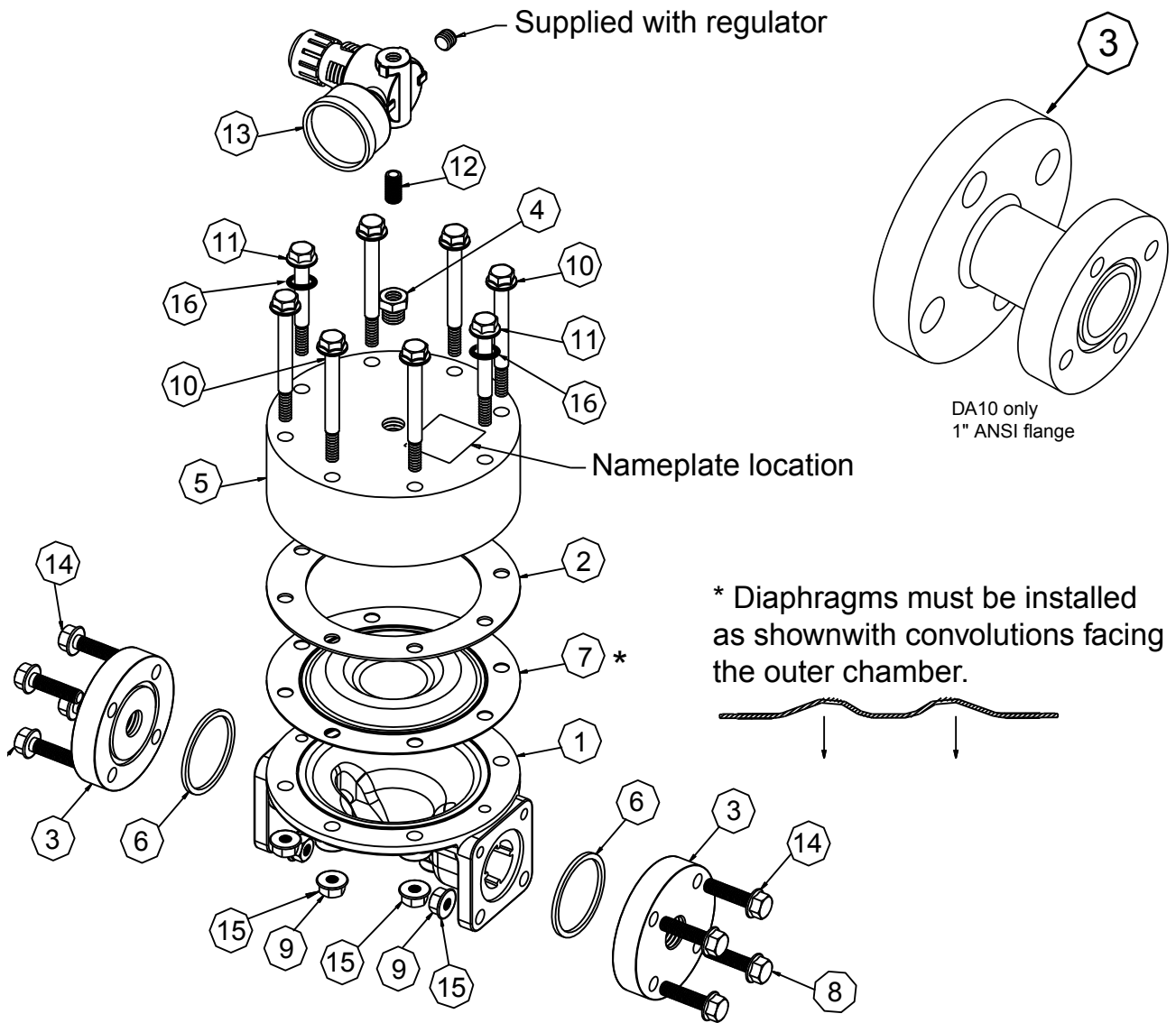
Repair Parts shown in **bold face (darker)** type are more likely to need replacement after extended periods of normal use. They are readily available from most Versa-Matic distributors. The pump owner may prefer to maintain a limited inventory of these parts in his own stock to reduce repair downtime to a minimum.

**IMPORTANT:** When ordering repair parts always furnish pump model number, serial number and type number.

**MATERIAL CODES**  
**The Last 3 Digits of Part Number**

000...	Assembly, sub-assembly; and some purchased items
110...	CF*M (316) Stainless Steel
115...	302/304 Stainless Steel
157...	380/383 Die Cast Aluminum
308...	Stainless Steel; Black PTFE Coated
330...	Zinc Plated Carbon Steel
360...	Nitrile Rubber. Color coded: RED
520...	Injection Molded PVDF, Natural Color,
542...	Nylon
552...	Polypropylene
600...	Virgin PTFE

# REPAIR PARTS DRAWING



Declaration of Conformity

Declaration of Conformity



## Declaration of Conformity

**Manufacturer:**

**Versa-Matic®, Warren Rupp, Inc., 800 N. Main Street, P.O. Box 1568,  
Mansfield, Ohio, 44901-1568 USA**

Certifies that Air-Operated Double Diaphragm Pump Series:  
Non-Metallic E Series, VTA Series Metallic Surge Suppressors and  
VDA Non-Metallic Surge Dampeners comply with the European Community  
Directive 2006/42/EC on Machinery, according to Annex VIII. This product  
has used Harmonized Standard EN 809, Pumps and Pump Units  
for Liquids - Common Safety Requirements, to verify conformance.

David Roseberry  
Signature of authorized person

David Roseberry  
Printed name of authorized person

Revision Level: C

October 17, 2007  
Date of issue

Engineering Manager  
Title

May 27, 2010  
Date of revision

