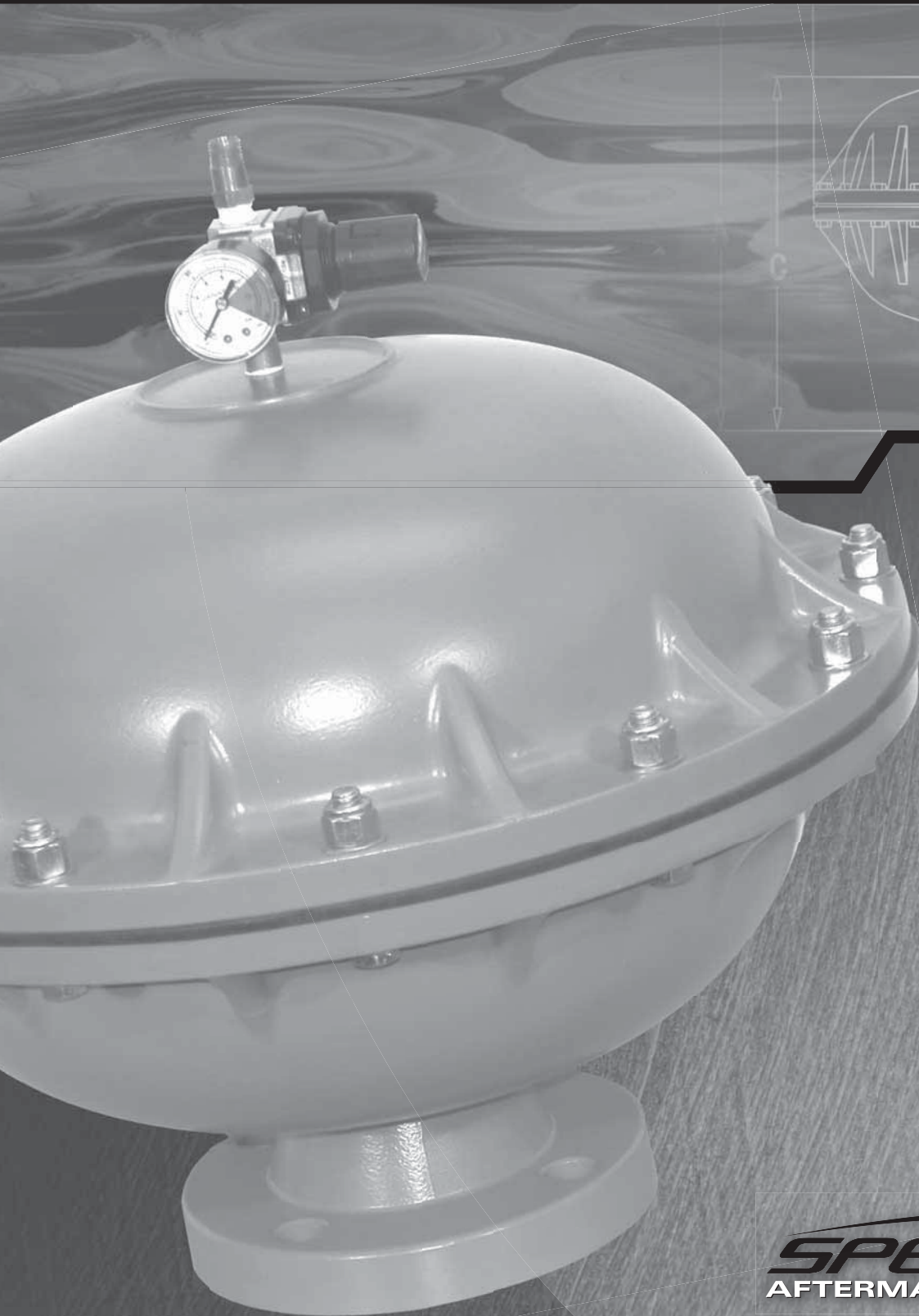


SPECTROM EQUALIZER®

EOM

Engineering
Operation &
Maintenance



SE50H

SE50F

SE80F

SPECTROM™
AFTERMARKET PUMP PARTS

SPC-19010-E-05
REPLACES SPC-19010-E-04

THE SPECTROM EQUALIZER®

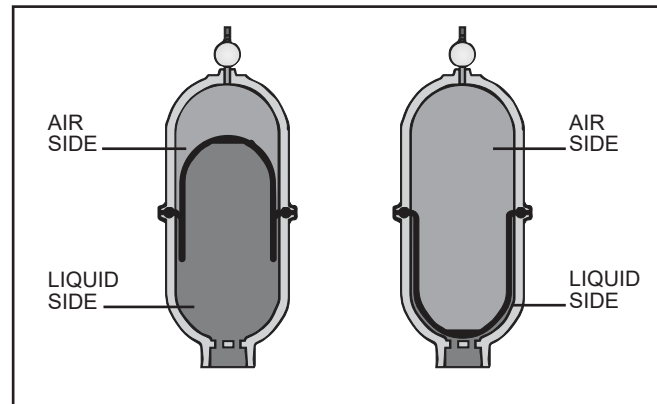
All reciprocating pumps experience a pressure fluctuation. The Spectrom Equalizer® minimizes unwanted pressure fluctuation by providing supplementary pumping action. This is accomplished by using a bladder within the Spectrom Equalizer® as a separation membrane between the air side and liquid side. As a positive displacement pump begins its next stroke, the pressure falls in the system and the Spectrom Equalizer® supplies additional pressure to the discharge line via bladder movement. This additional pressure virtually eliminates pressure variation and pulsation.

Spectrom Equalizers® are available in one size with two bladder materials. They can be installed on the suction of the pump as a suction stabilizer or on the discharge of the pump as a pulsation dampener.

Spectrom Equalizers® control fluid dynamics to ensure efficient and safe use of process systems. They have a proven track record in protecting your liquid process system from unwanted pulsation. Contact your local distributors for further information on the Equalizer® and other pumping solutions.

PRINCIPLES OF OPERATION

Spectrom Equalizers® operate on the principle that volume is inversely proportional to pressure ($P_1V_1=P_2V_2$). Compressed air or gas is introduced into the air chamber of the Spectrom Equalizer® to a specified pressure. The gas is entrapped by the elastomeric bladder, which prevents contact between the process fluid and compressed gas. Without the bladder, the gas will dissolve into the fluid and cause product contamination. When a pulse is created, fluid enters the wetted chamber of the Spectrom Equalizer®, displacing the bladder, compressing the gas and absorbing the shock. When the liquid pressure decreases, the gas expands, pushing the fluid back into the process line, virtually eliminating pressure variation and pulsation.



AIR CONTROL OPTIONS

MANUAL

Manual Spectrom Equalizer® models are equipped with a self-relieving regulator. It requires a permanent supply of compressed air and allows for easy adjustment of internal air pressure. This model can be used on the suction or discharge side of the pump. It is most effective when the air supplied is 4–6 psi below pump head pressure.

PROTECT

- Pipes and fittings from pulsation and vibration
- Valuable meters and in-line instrumentation
- Pump and valves from hydraulic shock and pressure surges
- Employees and the environment from leaked hazardous chemicals

ENSURE

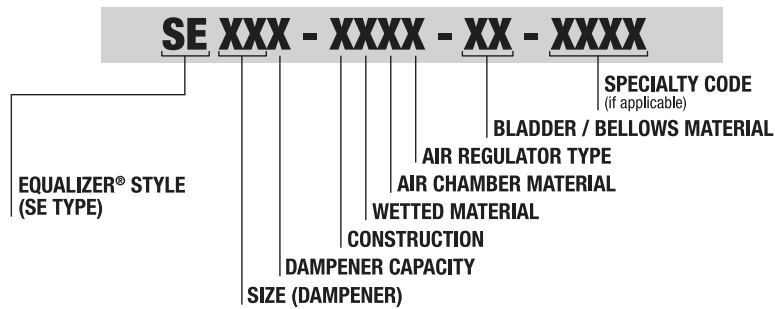
- Displacement per stroke accuracy and repeatability
- Uniform application of material in spraying and coating applications
- Steady pressure flows to filters which leads to increased filter life
- Complete suction stroke filling of pump liquid chamber

PREVENT

- Foaming, splashing and degradation of product
- Ruptured pipes and fittings due to thermal expansion and hydraulic shock
- Pump cavitation and the resulting premature diaphragm failure
- Hazardous material spills from failed equipment

SPECTROM EQUALIZER®

DESCRIPTION LEGEND



SIZE (DAMPENER)
 50 = 51 mm (2")
 80 = 76 mm (3")

DAMPENER CAPACITY
 F = FULL
 H = HALF (SE50H ONLY)

CONSTRUCTION
 B = BOLTED

WETTED MATERIAL
 A = ALUMINUM (SE80 ONLY)
 P = POLYPROPYLENE (SE50H & SE50F ONLY)

AIR CHAMBER MATERIAL
 A = ALUMINUM (SE80 ONLY)
 P = POLYPROPYLENE (SE50F ONLY)
 R = NORYL® (SE50H ONLY)

AIR REGULATOR TYPE
 A = AUTOMATIC (SE50H & SE80F ONLY)
 M = ADJUSTABLE

BLADDER / BELLOWS MATERIAL
 TF = PTFE
 WF = SANTOPRENE®

AIR REGULATOR TYPE
 0040 = BOLTED ANSI (SE80 ONLY)
 0041 = BOLTED DIN (SE80 ONLY)
 0600 = ANSI/DIN COMBO FLANGE (SE50H & SE50F ONLY)

*Santoprene® is a registered trademark of Monsanto Company, licensed to Advanced Elastomer Systems, L.P.
 *Blachoh is a trademark of Blachoh Fluid Control, Inc.
 *NORYL® is a trademark of SABIC Plastics

SPECTROM EQUALIZER®

BLADDER OPTIONS & TEMPERATURES

COMPOUND	TEMP. LIMIT	SUITABLE APPLICATION
Neoprene	0°F to 200°F -18°C to 90°C	Good abrasion resistance and flex; use with moderate chemicals.
Buna-N (Nitrile)	10°F to 180°F -12°C to 82°C	Good flex life; use with petroleum, solvents and oil-based fluids.
Sanoprene®	-40°F to 225°F -40°C to 107°C	Excellent choice as a low cost alternative to PTFE in many acidic and caustic applications such as sodium hydroxide, sulfuric or hydrochloric acids.
PTFE	40°F to 220°F -4°C to 104°C	Excellent choice when pumping highly aggressive fluids such as aromatic or chlorinated hydrocarbons, acids, caustics, ketones and acetates.

CAUTIONS – READ FIRST



CAUTION: Always wear safety glasses when installing, operating, or repairing pumps or Spectrom Equalizers®.



WARNING: Remove all pressure from Spectrom Equalizer® and pump system before attempting maintenance.



CAUTION: Do not exceed 10.3 Bar (150 psig).



CAUTION: If a system pressure test is to be performed, Spectrom Equalizers® must be charged with 80% of the system test pressure prior to test. This will avoid possible bladder damage.

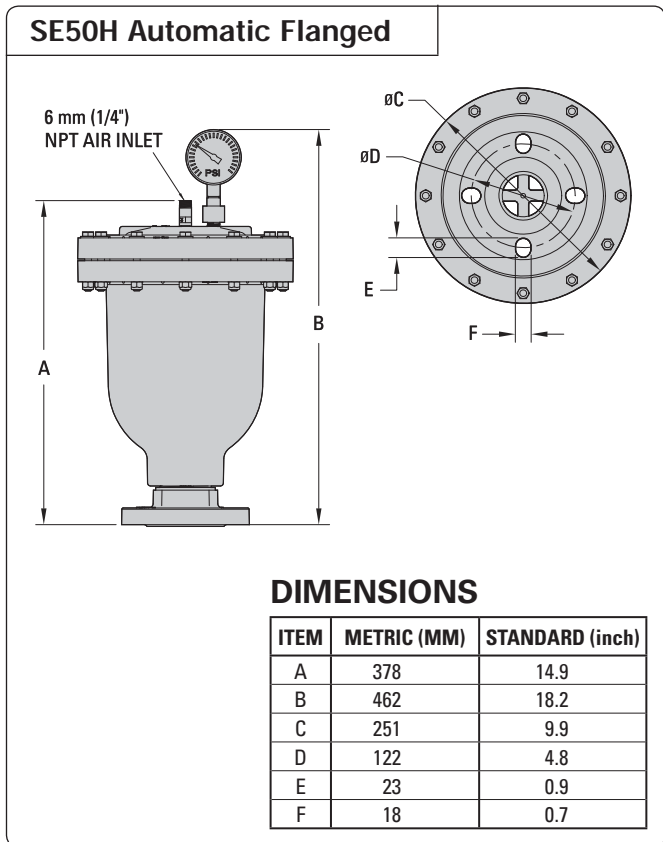
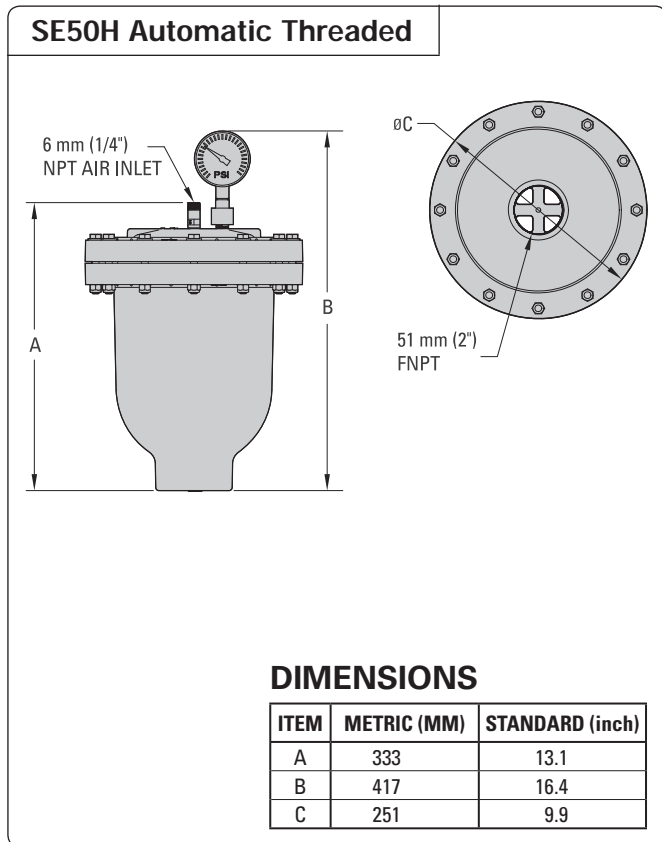
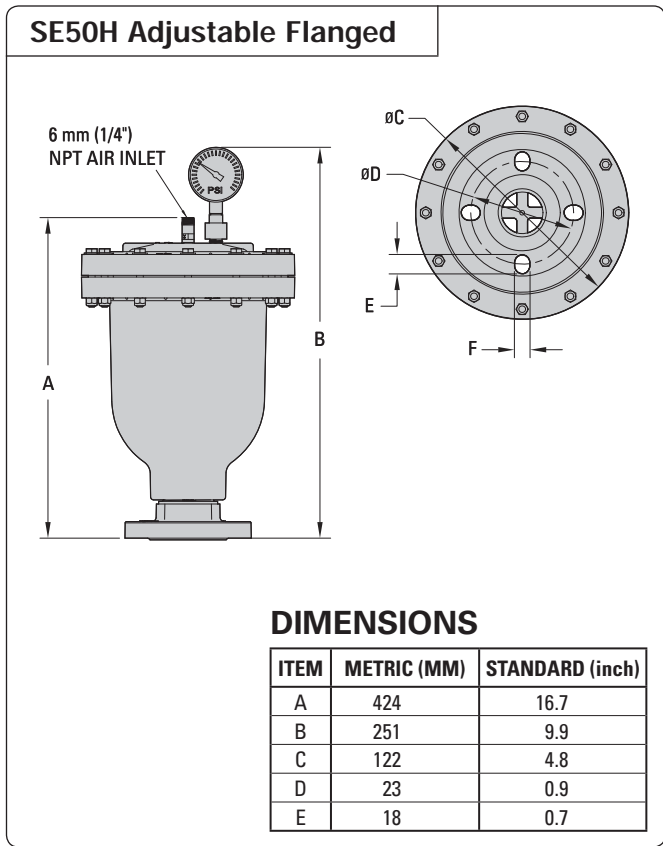
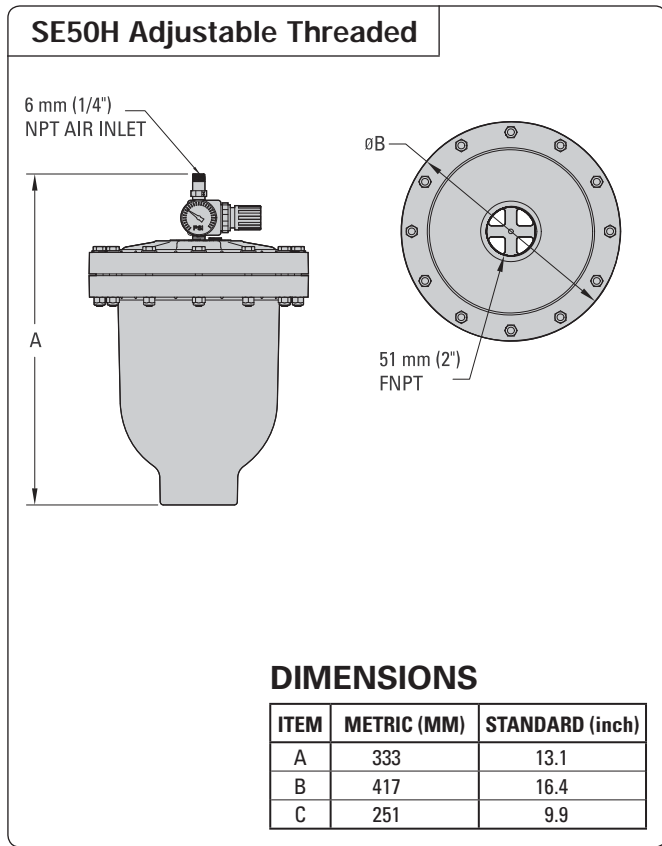


Temperature and pressure affect the strength and chemical resistance of plastic and rubber. Consult factory for assistance.

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 *Blachoh is a trademark of Blachoh Fluid Control, Inc.
 *NORYL® is a trademark of SABIC Plastics

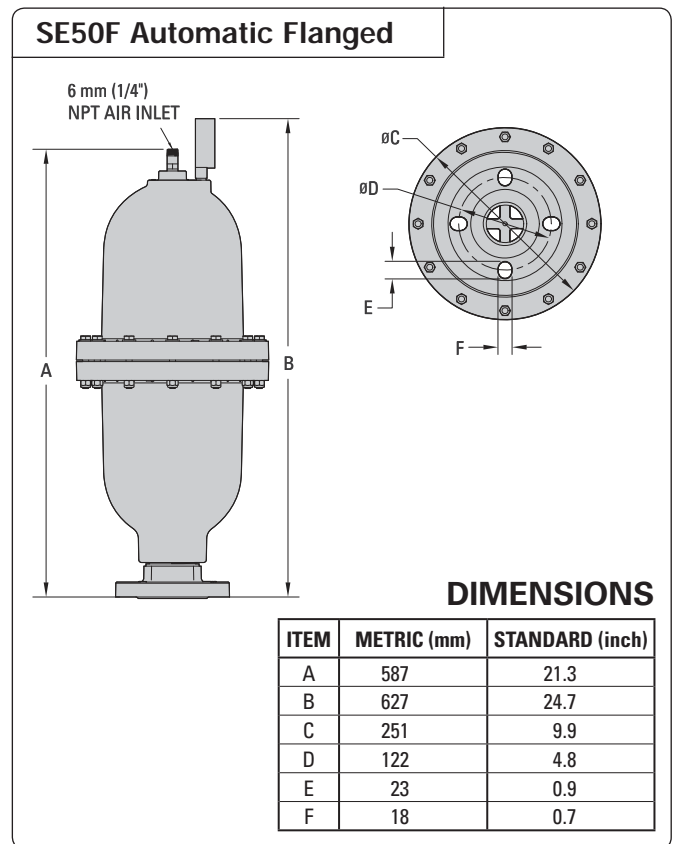
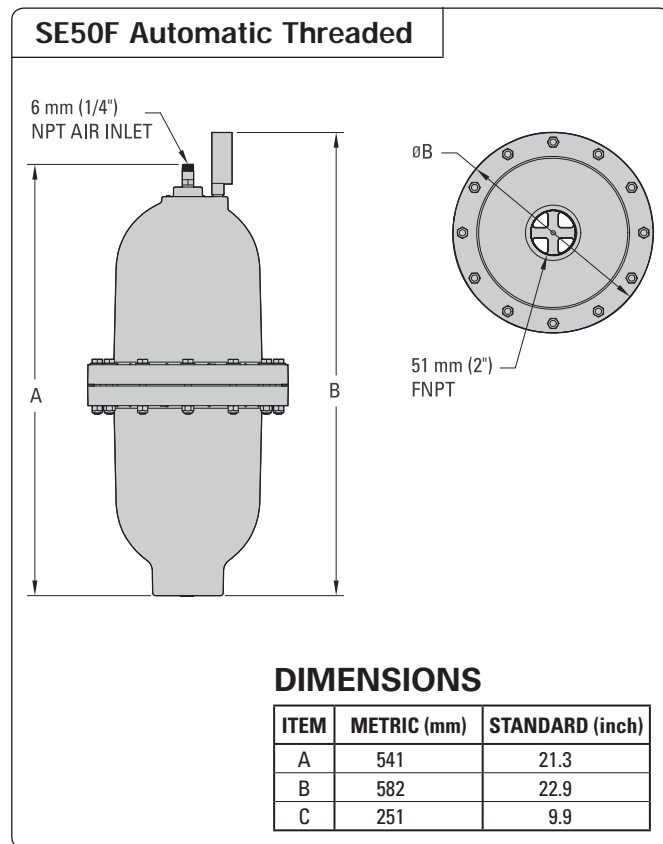
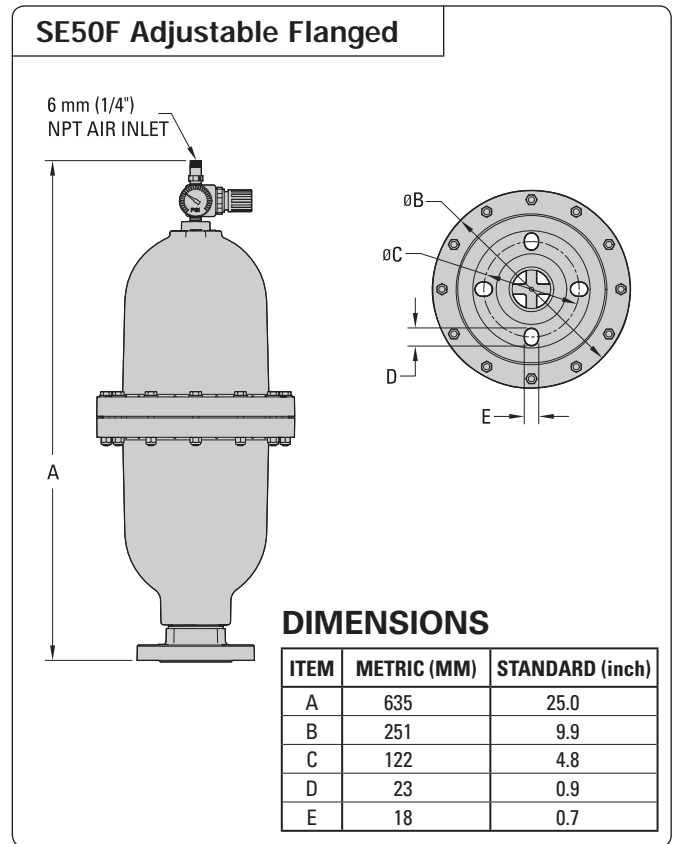
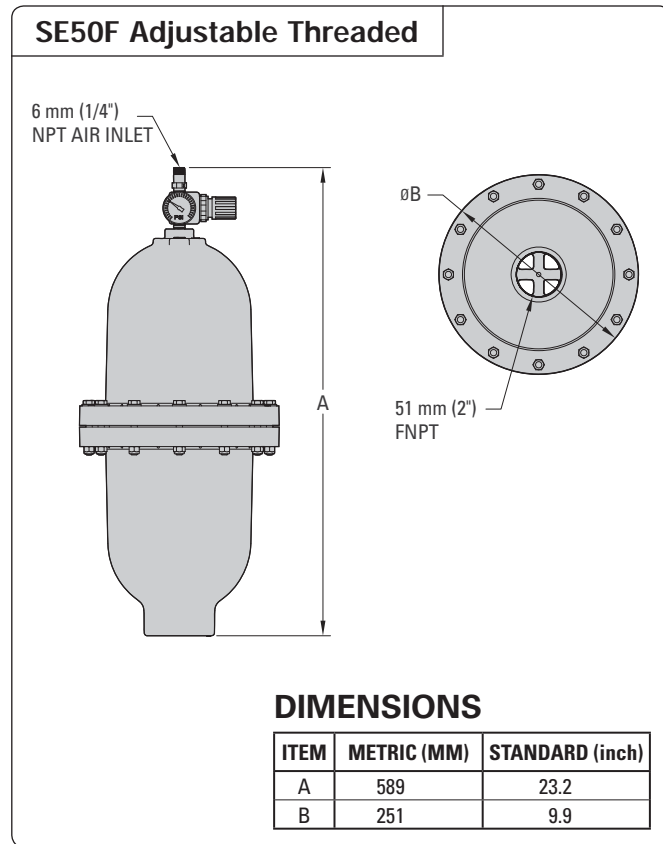
SPECTROM EQUALIZER®

DIMENSIONAL DRAWING



SPECTROM EQUALIZER®

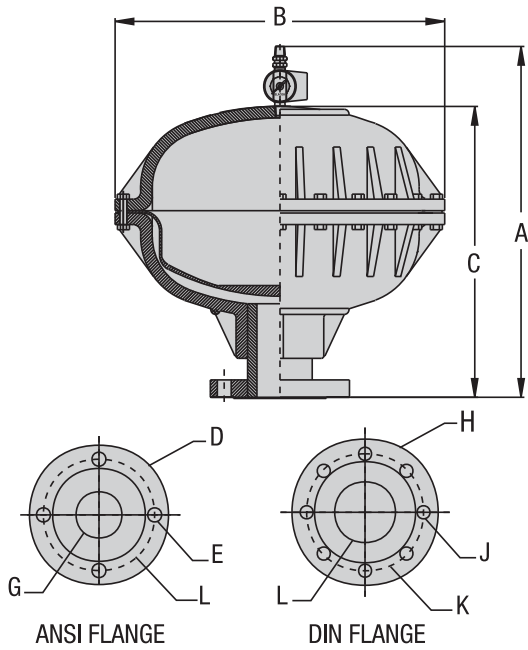
DIMENSIONAL DRAWING



SPECTROM EQUALIZER®

DIMENSIONAL DRAWING

SE80 Adjustable Flanged



ITEM	METRIC (mm)	STANDARD (inch)
A	42°	17.0
B	457	18.0
C	356	14.0
ANSI FLANGE		
D	200 DIA.	7.5 DIA.
E	18 DIA.	0.8 DIA.
F	152 DIA.	0.6 DIA.
G	76 DIA.	0.3 DIA.
DIN FLANGE		
H	200 DIA.	7.9 DIA.
J	18 DIA.	0.7 DIA.
K	160 DIA.	6.3 DIA.
L	80 DIA.	3.1 DIA.

SPECTROM EQUALIZER®

INSTALLATION

MOUNTING POSITION

Mount the Spectrom Equalizer® as close to the pump discharge as possible to absorb the pressure fluctuation at its source. If using a flexible connector to isolate the pump from the system piping (which is recommended), the Spectrom Equalizer® should be mounted to the pump discharge manifold. The flexible connector should then be attached between the Spectrom Equalizer® tee and the rest of the piping system. The unit should be mounted within 10 pipe diameters of pump discharge for maximum effectiveness.

Since pressure is equal in all directions, the Spectrom Equalizer® can be installed in many orientations — vertical, horizontal, or upside down. Spectrom does recommend a vertical position for better draining of the unit. Limitations for horizontal and upside-down mounting include applications or fluids that have high specific gravity, high viscosity, settling of heavy material or possible air entrapment concerns.

AIR LINE CONNECTION

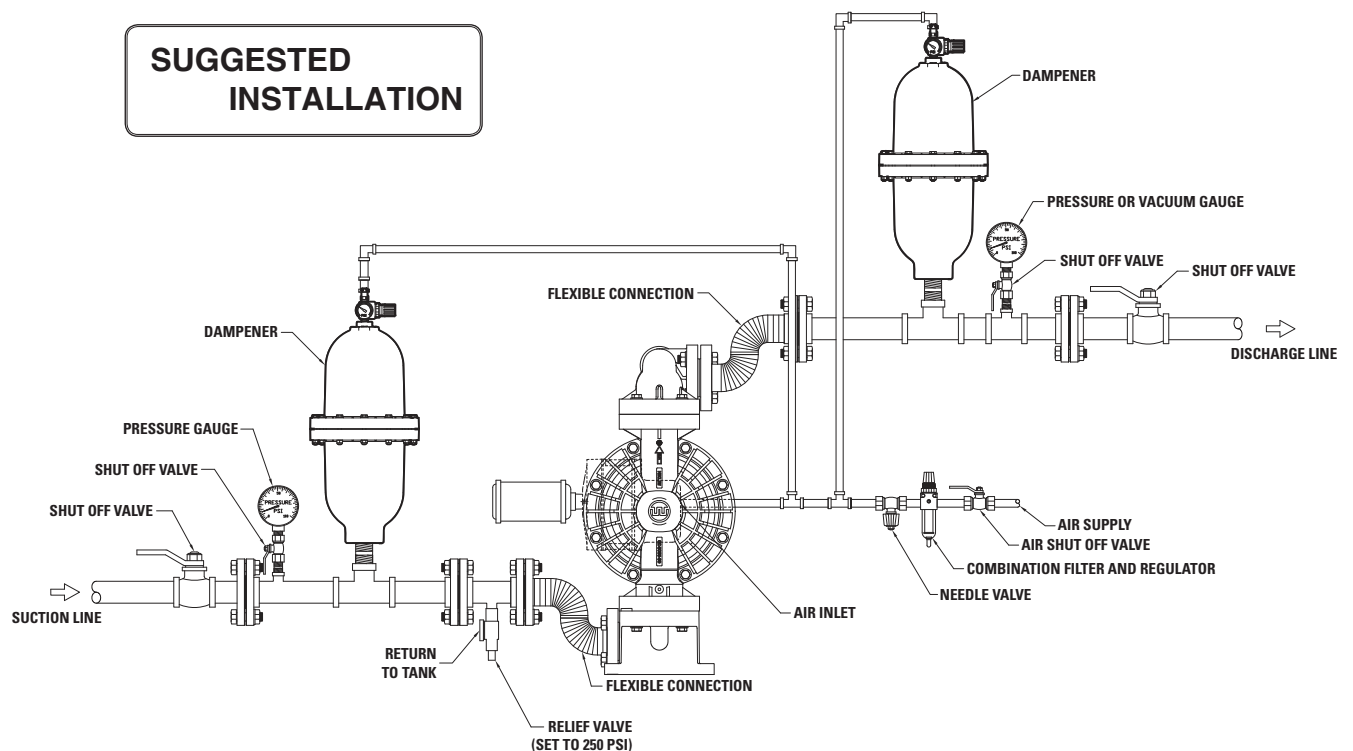
Using a 1/4" flexible air hose, run an air line to the top of the Spectrom Equalizer® and connect it to the top of the regulator (Manual model). The air supply to the Spectrom Equalizer® must be **greater** than the pump discharge and/or pump pressure. If the dampener is being used in conjunction with a air-operated, double-diaphragm

pump, a tee can be used to run the air line to the dampener from the pump's air supply line. The tee must be placed in the air supply line before any pump controller or instrumentation, such as filter, regulator, lubricator or other pump control valves. Otherwise, a constant air supply must be available for proper operation.

CHARGING AND START-UP

Prior to starting the pump, charge the Spectrom Equalizer® with air line pressure to exceed the system pressure (maximum of 150 psi) by opening the regulator. Start the pump to generate head. As head is achieved, gradually decrease the regulated air supply pressure into the Spectrom Equalizer® by adjusting the regulator on top. Allow the system to respond

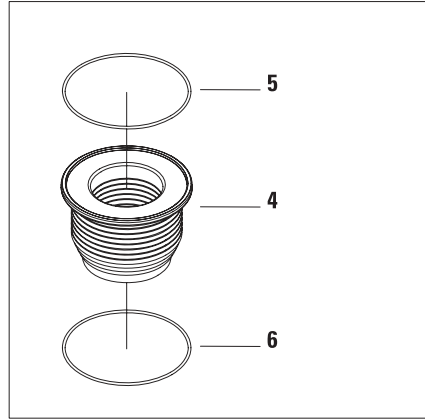
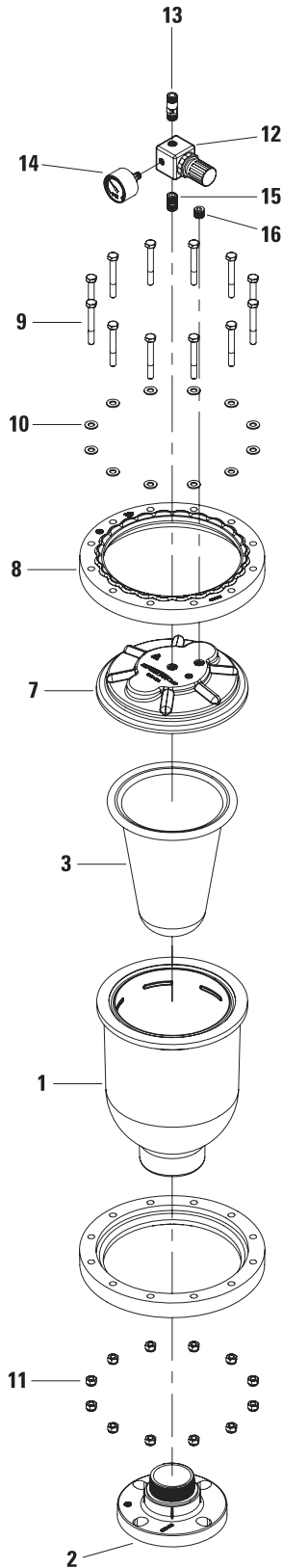
to the adjustment (this may take a minute or two) before continuing any further adjustments. Generally, pulsation is most effectively minimized when the air supply is regulated at 4–6 psi below the pump head.



SPECTROM EQUALIZER®

SE50H EXPLODED VIEW & PARTS LISTING

Adjustable Version



Item #	Description	Qty.	SE50H/BPRM/ TF P/N	SE50H/BPRM/ TF/0600 P/N	SE50H/BPRM/ WF P/N	SE50H/BPRM/ WF/0600 P/N
1	Housing, Wetted	1	S101-27	S101-28	S101-27	S101-28
2	Flange, Mounting	1	N/A	1	N/A	1
3	Bladder, Elastomeric	1	N/A	N/A	S101-13	S101-13
4	Bellows, PTFE	1	S101-10	S101-10	N/A	N/A
5	O-ring (-259), Viton	2	2	2	N/A	N/A
6	O-ring (-259), Encapsulated Viton	2	2	2	N/A	N/A
7	Cover, Combination Top	1	S141-43A	S141-43A	S141-43A	S141-43A
8	Band, Ring	2	S105-26 ³	S105-26 ³	S105-26 ³	S105-26 ³
10	Hardware Assembly	1	S105-80	S105-80	S105-80	S105-80
12	Regulator, Air	1	S101-21	S101-21	S101-21	S101-21
13	Valve, 1/4" NPT Check	1	S101-31	S101-31	S101-31	S101-31
14	Gauge, 1/8" NPT Air Pressure	1	S101-20	S101-20	S101-20	S101-20
15	Nipple, 1/4" NPT	1	S101-23	S101-23	S101-23	S101-23
16	Plug, 1/4" NPT Pipe	1	no equiv.**	no equiv.**	no equiv.**	no equiv.**

¹The part number for the wetted housing includes the flange.

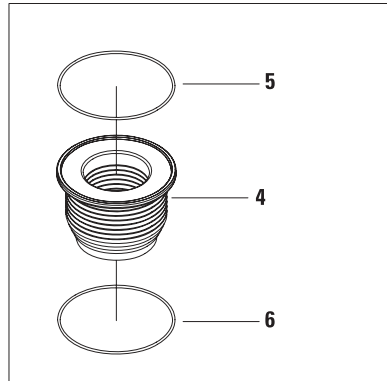
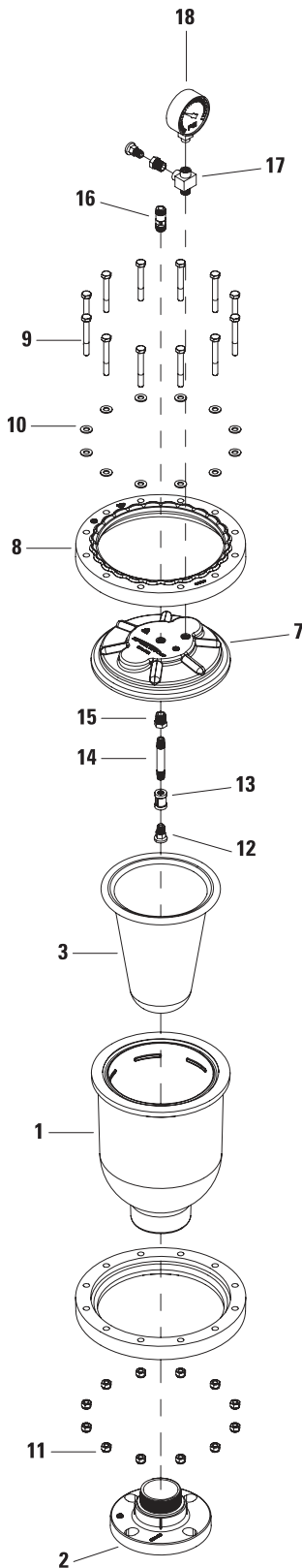
²The part number for the bellows includes the Viton® and encapsulated Viton® o-rings.

³This part number includes the fasteners.

SPECTROM EQUALIZER®

SE50H EXPLODED VIEW & PARTS LISTING

Automatic Version



Item #	Description	Qty.	SE50H/BPRA/ TF P/N	SE50H/BPRA/ TF/0600 P/N	SE50H/BPRA/ WF P/N	SE50H/BPRA/ WF/0600 P/N
1	Housing, Wetted	1	S101-27	S101-28	S101-27	S101-28
2	Flange, Mounting	1	N/A	¹	N/A	¹
3	Bladder, Elastomeric	1	N/A	N/A	S101-13	S101-13
4	Bellows, PTFE	1	S101-10	S101-10	N/A	N/A
5	O-ring (-259), Viton	2	²	²	N/A	N/A
6	O-ring (-259), Encapsulated Viton	2	²	²	N/A	N/A
7	Cover, Combination Top	1	S141-43A	S141-43A	S141-43A	S141-43A
8	Band, Ring	2	S105-26_	S105-26_	S105-26_	S105-26_
10	Hardware Assembly	1	S105-80	S105-80	S105-80	S105-80
12	Valve, 1/8" NPT Poppet	2	S101-31	S101-31	S101-31A	S101-31A
13	Coupling, 1/8" FNPT _ 1/8" FNPT	1	S101-59	S101-59	N/A	N/A
14	Nipple, 1/8" NPT x 2.81 Lg	1	S101-36	S101-36	N/A	N/A
15	Bushing, 1/8" FNPT _ 1/4" NPT Reducer	2	S301-32	S301-32	S301-32	S301-32
16	Valve, 1/4" NPT One-way Check	1	S101-23	S101-23	S101-23	S101-23
17	Tee, 3-way 1/4" NPT	1	S101-46	S101-46	S101-46	S101-46
18	Gauge, 1/4" NPT Air Pressure	1	S101-33	S101-33	S101-33	S101-33

¹The part number for the wetted housing includes the flange.

²The part number for the bellows includes the Viton® and encapsulated Viton® o-rings.

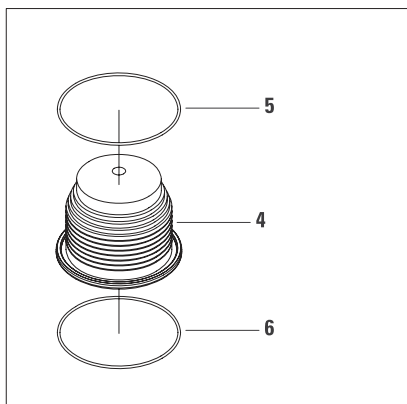
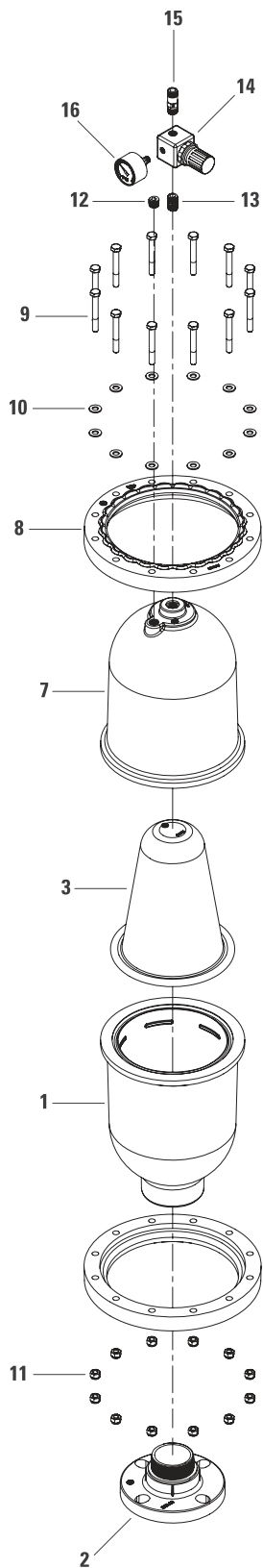
³This part number includes the fasteners.

SPECTROM EQUALIZER®

SE50F EXPLODED VIEW & PARTS LISTING

W

Adjustable Version



Item #	Description	Qty.	SE50F/BPPM/ TF P/N	SE50F/BPPM/ TF/0600 P/N	SE50F/BPPM/ WF P/N	SE50F/BPPM/ WF/0600 P/N
1	Housing, Wetted	1	S101-27	S101-28	S101-27	S101-27
2	Flange, Mounting	1	N/A	¹	N/A	¹
3	Bladder, Elastomeric	1	N/A	N/A	S101-13	S101-13
4	Bellows, PTFE	1	S101-10	S101-10	N/A	N/A
5	O-ring (-259), Viton	2	²	²	N/A	N/A
6	O-ring (-259), Encapsulated Viton®	2	²	²	N/A	N/A
7	Housing, Combination Non-Wetted	1	S101-24A	S101-24A	S101-24A	S101-24A
8	Band, Ring	2	S105-26 ³	S105-26 ³	S105-26 ³	S105-26 ³
10	Hardware Assembly	1	S105-80	S105-80	S105-80	S105-80
12	Plug, 1/4" NPT Pipe	1	no equiv.**	no equiv.**	no equiv.**	no equiv.**
13	Nipple, 1/4" NPT	1	S101-23	S101-23	S101-23	S101-23
14	Regulator, 1/4" NPT Air	1	S101-21	S101-21	S101-21	S101-21
15	Valve, 1/4" NPT One-way Check	1	S101-30	S101-30	S101-30	S101-30
16	Gauge, 1/8" NPT Air Pressure	1	S101-20	S101-20	S101-20	S101-20

¹The part number for the wetted housing includes the flange.

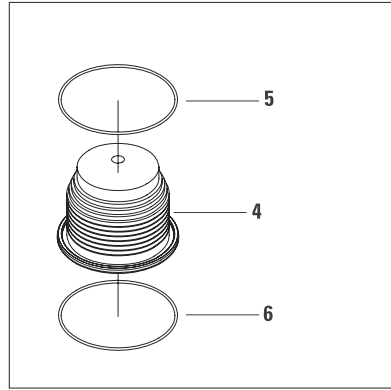
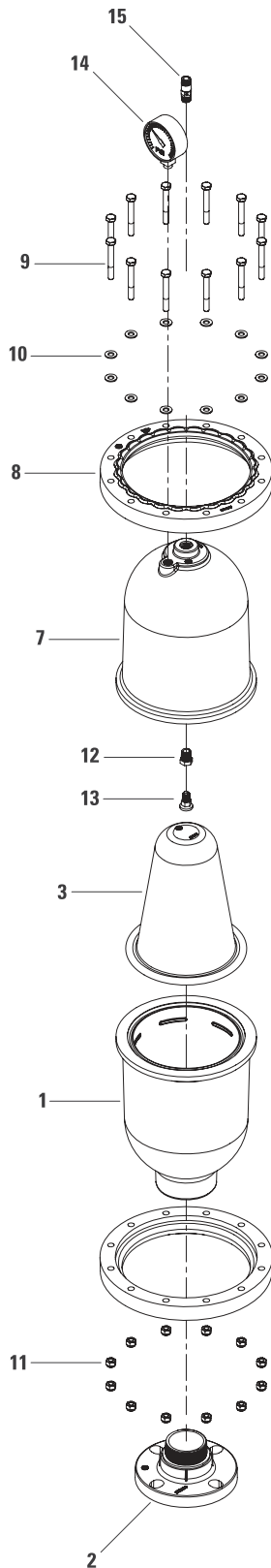
²The part number for the bellows includes the Viton® and encapsulated Viton® o-rings.

³This part number includes the fasteners.

SPECTROM EQUALIZER®

SE50F EXPLODED VIEW & PARTS LISTING

Automatic Version



Item #	Description	Qty.	SE50F/BPPA/ TF P/N	SE50F/BPPA/ TF/0600 P/N	SE50F/BPPA/ WF P/N	SE50F/BPPA/ WF/0600 P/N
1	Housing, Wetted	1	S101-27	S101-28	S101-27	S101-27
2	Flange, Mountin ¹	1	N/A	¹	N/A	¹
3	Bladder, Elastomeric	1	N/A	N/A	S101-13	S101-13
4	Bellows, PTFE	1	S101-10	S101-10	N/A	N/A
5	O-ring (-259), Viton	2	²	²	N/A	N/A
6	O-ring (-259), Encapsulated Viton®	2	²	²	N/A	N/A
7	Housing, Combination Non-Wetted	1	S101-24A	S101-24A	S101-24A	S101-24A
8	Band, Ring	2	S105-26_	S105-26_	S105-26_	S105-26_
10	Hardware Assembly	1	S105-80	S105-80	S105-80	S105-80
12	Bushing, 1/8" FNPT x 1/4" NPT Reducer	1	S301-32	S301-32	S301-32	S301-32
13	Valve, 1/8" NPT Poppet	1	S101-31A	S101-31A	S101-31A	S101-31A
14	Gauge, 1/4" NPT Air Pressure	1	S101-33	S101-33	S101-33	S101-33
15	Valve, 1/4" NPT One-way Check	1	S101-23	S101-23	S101-23	S101-23

¹The part number for the wetted housing includes the flange.

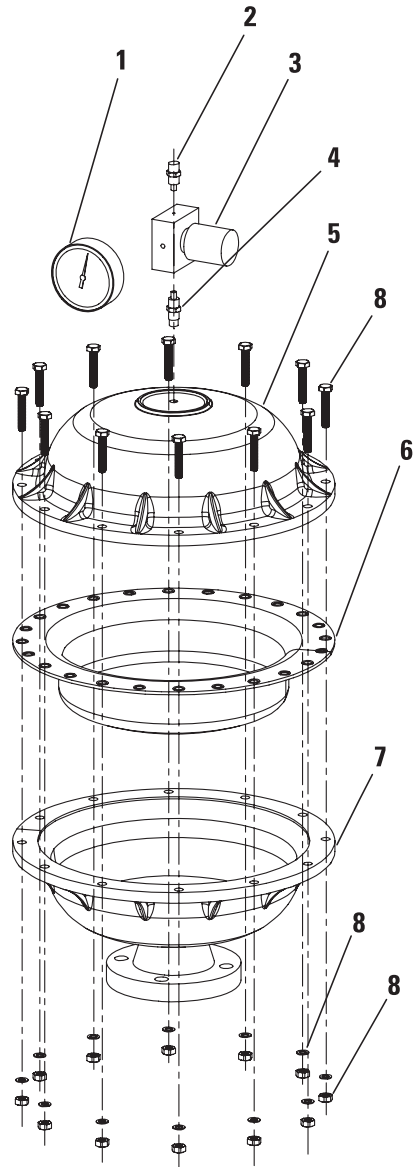
²The part number for the bellows includes the Viton® and encapsulated Viton® o-rings.

³This part number includes the fasteners.

SPECTROM EQUALIZER®

SE80F EXPLODED VIEW & PARTS LISTING

Adjustable Version



Item	Description	Qty.	SE80F/BAAM/ BN/0040 P/N	SE80F/BAAM/ NE/0040 P/N	SE80F/BAAM/ BN/0041 P/N	SE80F/BAAM/ NE/0041 P/N
1	Gauge	1	S101-20	S101-20	S101-20	S101-20
2	Nipple	1	S101-23	S101-23	S101-23	S101-23
3	Air Regulator	1	S101-21	S101-21	S101-21	S101-21
4	Check Valve	1	S101-30	S101-30	S101-30	S101-30
5	Non-wetted Housing - Alum	1	S4000-24	S4000-24	S4000-24	S4000-24
6	Bladder - Buna-N	1	S4000-29	N/A	S4000-29	N/A
	Bladder - Neoprene	1	N/A	S4000-25	N/A	S4000-25
7	Wetted Housing - Alum/ANSI	1	S4000-27	S4000-27	N/A	N/A
	Wetted Housing - Alum/DIN	1	N/A	N/A	S4000-27-DIN	S4000-27-DIN
8	Hardware Assembly	12 ea.	S4000-47	S4000-47	S4000-47	S4000-47

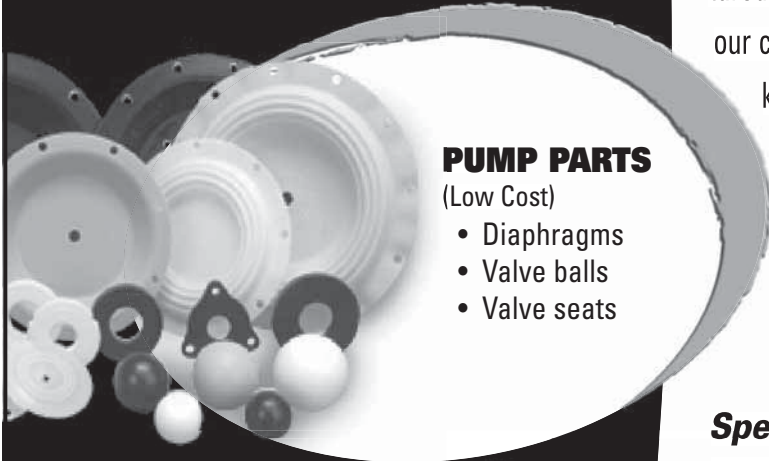
Finding A Spares Nightmare



PRODUCTS: AODD

(Air Operated Double Diaphragm Pumps)

- Warren-Rupp®
- ARO®
- Other



PUMP PARTS

(Low Cost)

- Diaphragms
- Valve balls
- Valve seats



KNOWLEDGE & SERVICE

- Competitive pricing
- Delivery
- Service
- Inventory

Sleep easier with

SPECTROM
AFTERMARKET PUMP PARTS

Spectrom is not your typical after market part supplier. We do not simply sell pump parts; we provide value added procurement solutions.

Our unique network enables us to purchase effectively, resulting in low cost solutions. We also know that low purchase price is not enough - quality, integrity and inventory are also important. Spectrom is structured to provide Pre and Post sales support, giving our customers value added application and pump knowledge.

Contact us to have a procurement solution developed for you. We don't just fit you into a generic system, we develop specific solutions that achieve results.

Spectrom will ship your order from our facility within 3 working days!

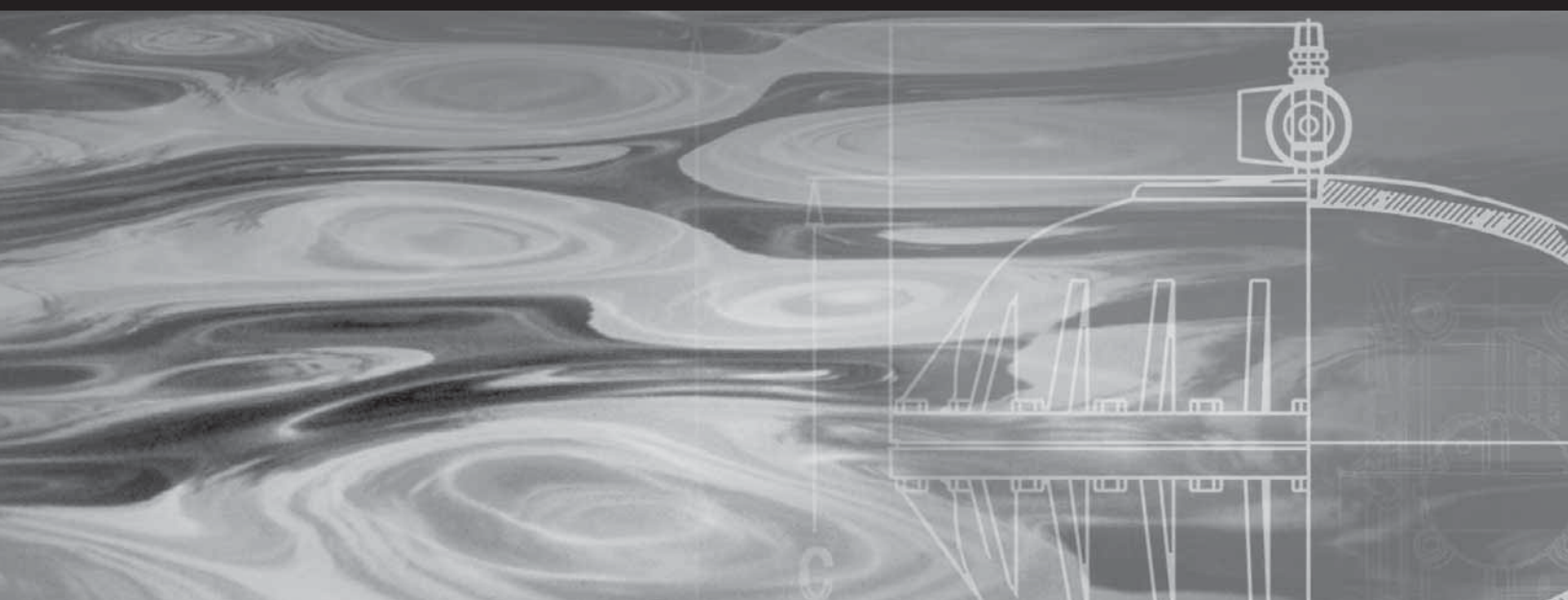
WARNING: These parts may exhibit better life than OEM parts.

SPECTROM
AFTERMARKET PUMP PARTS

1-909-512-1261 www.spectromparts.com

NOTES:

NOTES:



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AFTERMARKET PUMP PARTS

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