

EOM

ENGINEERING OPERATION
& MAINTENANCE MANUAL

SD Advanced™ Surge Dampener



Where Innovation Flows

WILDEN®

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Warranty

Each and every product manufactured by Wilden is built to meet the highest standards of quality. Every pump is functionally tested to ensure integrity of operation. Wilden warrants that pumps, accessories and parts manufactured or supplied by it to be free from defects in material and workmanship for a period of five (5) years from date of installation or six (6) years from date of manufacture, whichever comes first.

For more information, and to register your Wilden pump for warranty, please visit <https://www.psgdover.com/wilden/support/warranty-registration>.

Certifications



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SECTION 1

PRECAUTIONS – READ FIRST!



WARNING: Always wear safety glasses when operating a pump to avoid eye injury. If diaphragm rupture occurs, material being pumped may be forced out of the air exhaust.



CAUTION: Do not over-lubricate air supply— excess lubrication will reduce pump performance. Pump is pre-lubed.



TEMPERATURE LIMITS:

Acetal	-29°C to 82°C	-20°F to 180°F
Buna-N	-12°C to 82°C	10°F to 180°F
Bunlast™	-40°C to 130°C	-40°F to 266°F
Geolast®	-40°C to 82°C	-40°F to 180°F
Neoprene	-18°C to 93°C	0°F to 200°F
Nordel™ EPDM	-51°C to 138°C	-60°F to 280°F
Nylon	-18°C to 93°C	0°F to 200°F
PFA	-7°C to 107°C	45°F to 225°F
Polypropylene	0°C to 79°C	32°F to 175°F
Polyurethane	-12°C to 66°C	10°F to 150°F
PVDF	-12°C to 107°C	10°F to 225°F
Saniflex	-29°C to 104°C	-20°F to 220°F
SIPD PTFE with EPDM-backed	4°C to 137°C	40°F to 280°F
SIPD PTFE with Neoprene-backed	4°C to 93°C	40°F to 200°F
PTFE*	4°C to 104°C	40°F to 220°F
FKM	-40°C to 177°C	-40°F to 350°F
Wil-Flex®	-40°C to 107°C	-40°F to 225°F

*4°C to 149°C (40°F to 300°F) - 13 mm (1/2") and 25 mm (1") models only.

NOTE: Not all materials are available for all models. See "Wilden Pump Designation System" for material options for your pump.



CAUTION: When choosing dampener materials, be sure to check the temperature limits for all wetted components. Example: FKM has a maximum limit of 177°C (350°F), but polypropylene has a maximum limit of only 79°C (175°F).



CAUTION: Maximum temperature limits are based on mechanical stress only. Certain chemicals will reduce maximum safe operating temperatures significantly. Consult the Chemical Resistance Guide for chemical compatibility and temperature limits.



WARNING: Prevent sparking — If static sparking occurs, fire or explosion could result. Pump, valves and containers must be grounded to a proper grounding point when handling flammable fluids and whenever discharge of static electricity is a hazard.



CAUTION: Do not exceed 8.6 bar (125 psig) air supply pressure.



CAUTION: Do not exceed 82°C (180°F) air inlet temperature for all models.



CAUTION: The process fluid and cleaning fluids must be compatible chemically with all wetted pump components.



CAUTION: Before attempting any maintenance or repair, disconnect the compressed air line to the dampener and allow all air pressure to bleed from the pump. Disconnect all intake, discharge, and air lines. Drain the dampener by allowing any fluid to flow into a suitable container. Be aware of any hazardous effects of contact with your process fluid.



CAUTION: Thoroughly flush dampeners before installing them into process lines. Clean and/or sanitize FDA- and USDA- approved pumps before using them.



CAUTION: Before attaching the air line to the dampener, blow out the air line for 10 to 20 seconds to make sure all pipeline debris is clear. Use an in-line air filter. A 5µ (micron) air filter is recommended.



CAUTION: Dampeners cannot be used in submersible applications.

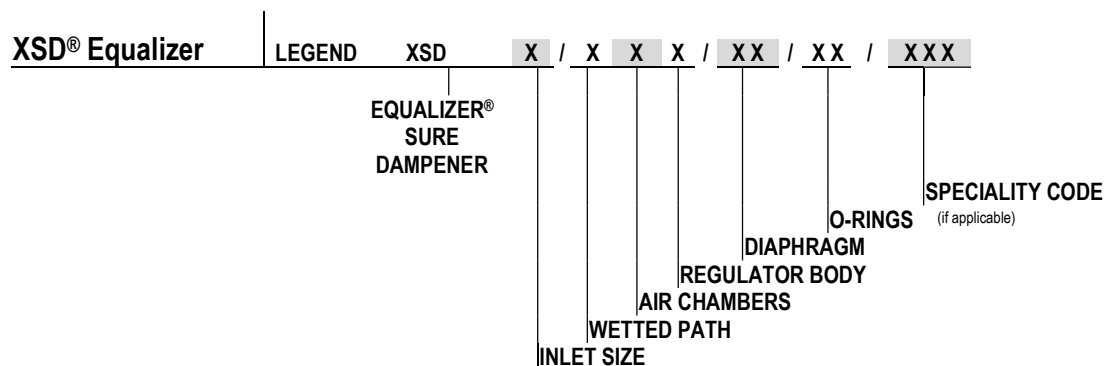


CAUTION: Before installation, tighten all hardware.



WARNING: This product can expose you to chemicals including Nickel, Chromium, Cadmium, or Cobalt, which are known to the State of California to cause cancer and/or birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.

WILDEN PUMP DESIGNATION SYSTEM



MODEL

INLET SIZE

WETTED PATH

A = ALUMINUM
H = ALLOY C (SD2)
K = PVDF
P = POLYPROPYLENE
S = STAINLESS STEEL
W = CAST IRON (SD1 & SD2)

AIR CHAMBERS

A = ALUMINUM (SD2)
C = PTFE COATED (SD1 & SD2)
M = MILD STEEL (SD1)
P = POLYPROPYLENE
S = STAINLESS STEEL
W = CAST IRON

AIR REGULATOR BODY

P = POLYPROPYLENE

DIAPHRAGMS

BN = BUNA-N
ND = EPDM
FG = SANIFLEX™ (SD1/2 & SD1)
NE = NEOPRENE (SD1 & SD2)
TF = PTFE TFE
TE = PTFE W/EPDM BACK-UP
TS = PTFE W/SANIFLEX™ BACK-UP
VT = FKM
WF = WIL-FLEX® (SD1/2 & SD1)

O-RING

BN = BUNA-N
TF = PTFE (WHITE)¹
TV = PTFE ENCAPSULATED FKM²

0014 BSPT
0040 ANSI Flange Connection (Advanced™)
0041 DIN Flanged Connection (Advanced™)
0315 = W/PTFE Coated Hardware & BSPT
0502 = W/PTFE Coated Hardware

! NOTE: Most elastomeric materials use colored dots for identification

! NOTE: Not all models are available with all material options

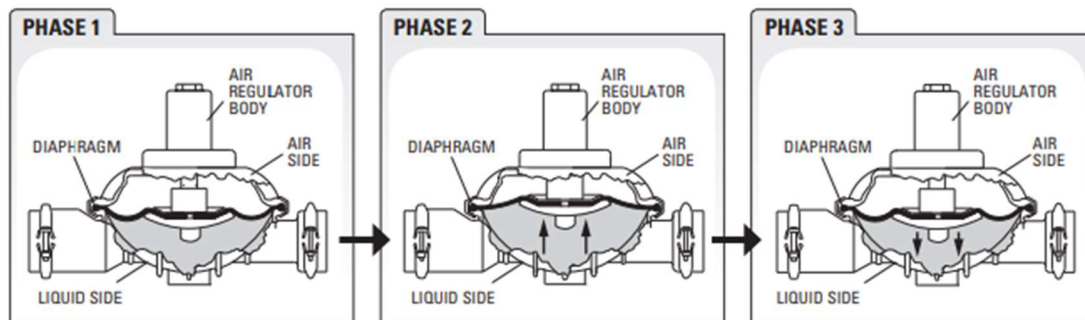
SECTION 3

HOW IT WORKS – DAMPENER

All reciprocating pumps generate discharge pressure fluctuation. The Equalizer® minimizes unwanted pressure fluctuation by providing a supplementary pumping action. This is accomplished by using a diaphragm as a separation membrane within the Equalizer® to trap a given volume of liquid on one side and pressurized air on the other.

When the fluid pressure falls in the system, the Equalizer® supplies additional pressure to the discharge line between pump strokes by displacing fluid via diaphragm movement. This movement provides the supplementary pumping action needed to reduce pressure variation and pulsation.

The Equalizer® automatically sets and maintains the correct air pressure matching the variations in liquid flow or discharge pressure generated by the pump. A shaft attached to the Equalizer® diaphragm triggers the addition or removal of the air within the non-wetted side of the Equalizer®. The Equalizer® automatically adjusts to any pressure and/or flow setting of the pump with no need for manual adjustment of the unit and/or system. The Equalizer® has proven to be the cost effective choice for protecting your liquid process system from unwanted pulsation or pressure fluctuation. Contact your local Wilden distributor for further information on the Equalizer® and other pumping solutions.



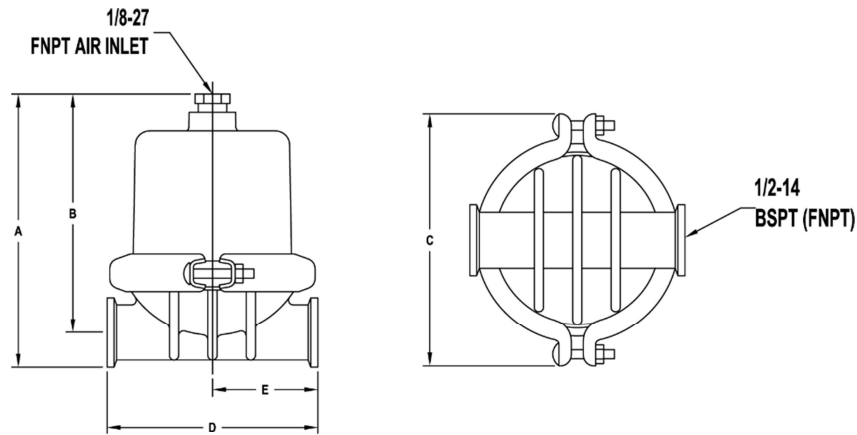
A compressed air line attached to the air regulator body sets and maintains pressure on the air side of the diaphragm. As the reciprocating pump begins its stroke, liquid discharge pressure increases which flexes the Equalizer® diaphragm inward. This action accumulates fluid in the liquid chamber (see Phase 2) and the air regulator allows compressed air to enter the air side.

When the pump redirects its motion upon stroke completion, the liquid discharge pressure decreases and compressed air in the air side forces the Equalizer® diaphragm to flex outward displacing the fluid into the discharge line (see Phase 3). This motion provides the supplementary pumping action needed to minimize pressure fluctuation.

SECTION 4

DIMENSIONAL DRAWING

SD1/2

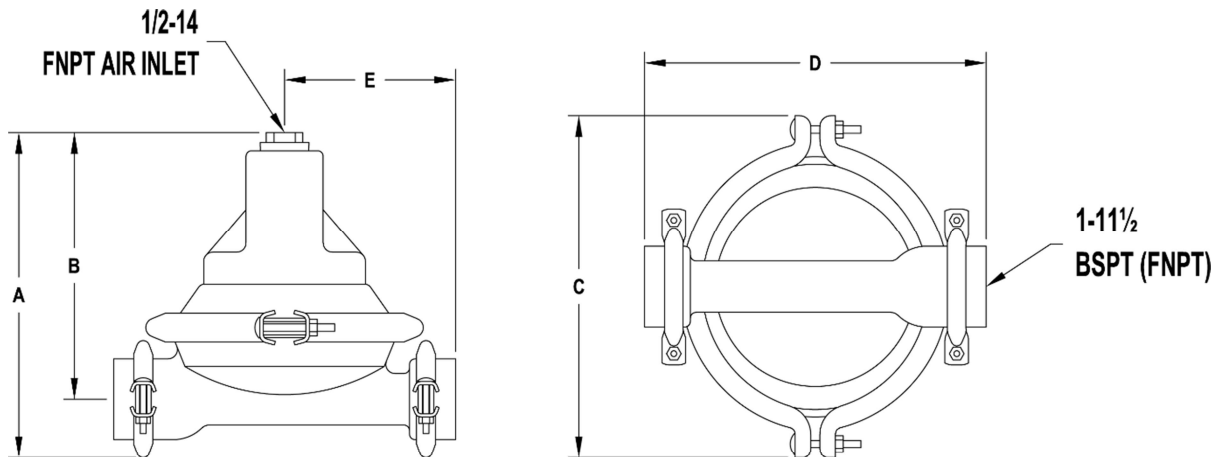


DIMENSIONS

ITEM	METAL		PLASTIC		PTFE	
	METIRC (mm)	STANDARD (inch)	METIRC (mm)	STANDARD (inch)	METIRC (mm)	STANDARD (inch)
A	180	7.1	180	7.1	175	6.9
B	160	6.3	157	6.2	157	6.2
C	175	6.9	175	6.9	175	6.9
D	117	4.6	142	5.6	145	5.7
E	69	2.7	71	2.8	71	2.8

LW0559 REV.A

SD1



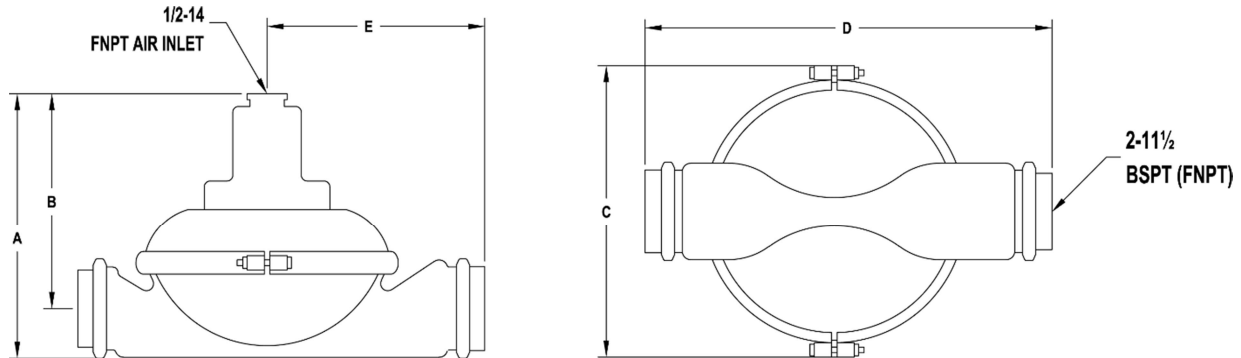
DIMENSIONS

ITEM	METAL		PLASTIC	
	METIRC (mm)	STANDARD (inch)	METIRC (mm)	STANDARD (inch)
A	279	11.0	292	11.5
B	229	9.0	236	9.3
C	290	11.4	290	11.4
D	295	11.6	384	15.1
E	147	5.8	191	7.5

LW0560 REV.A

DIMENSIONAL DRAWING

SD2 CLAMPED

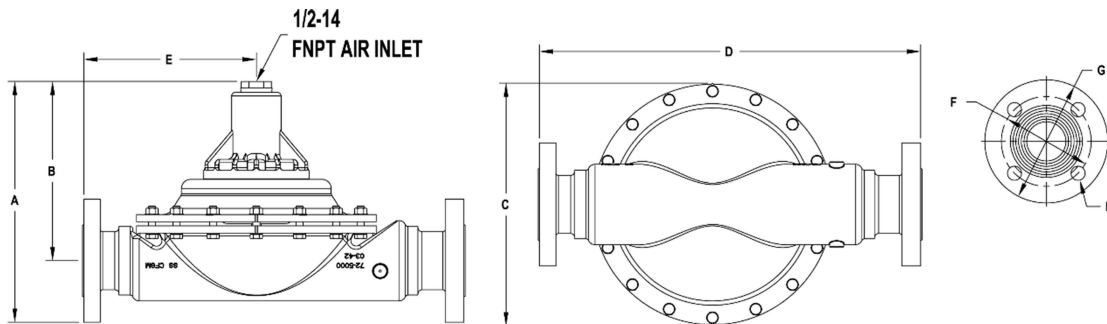


DIMENSIONS

ITEM	METAL		PLASTIC	
	METIRC (mm)	STANDARD (inch)	METIRC (mm)	STANDARD (inch)
A	305	12.0	343	13.5
B	249	9.8	267	10.5
C	351	13.8	351	13.8
D	455	17.9	493	19.4
E	244	9.6	274	10.8

LW0561 REV.A

SD2 BOLTED



DIMENSIONS

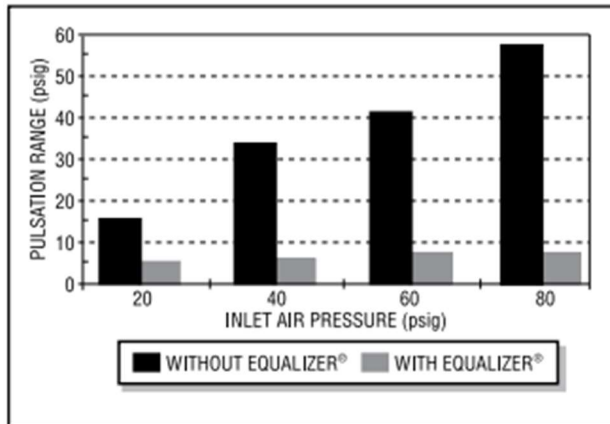
ITEM	METIRC (mm)	STANDARD (inch)
A	399	15.7
B	320	12.6
C	295	11.6
D	556	21.9
E	424	16.7
	DIN (mm)	ANSI (Inch)
F	125 DIA	4.8 DIA
G	165 DIA	6.5 DIA
H	18 DIA	0.8 DIA

LW0562 REV.A

SECTION 5

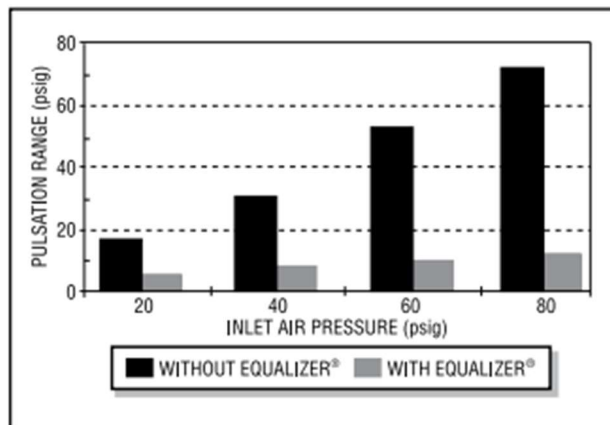
PERFORMANCE

The following bar charts highlight the effectiveness of the Equalizer® automatic surge dampeners. Pumps were operated at the stated air inlet pressures as the discharge pressure was then varied. The pulsation range was calculated from data points obtained using pressure transducers and an oscilloscope.



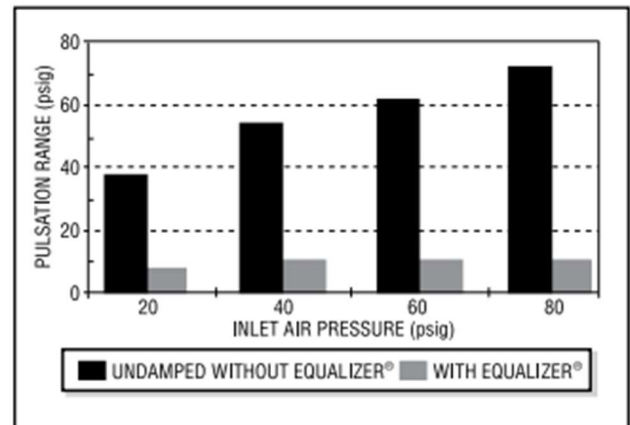
1/4" (6 MM) Pumps / SD 1/2

The above chart reflects the discharge pressure variation of a Wilden model 1/4" (6mm) Polypropylene pump with rubber elastomers compared to the same 1/4" (6mm) with a model SD1/2 Equalizer® installed.



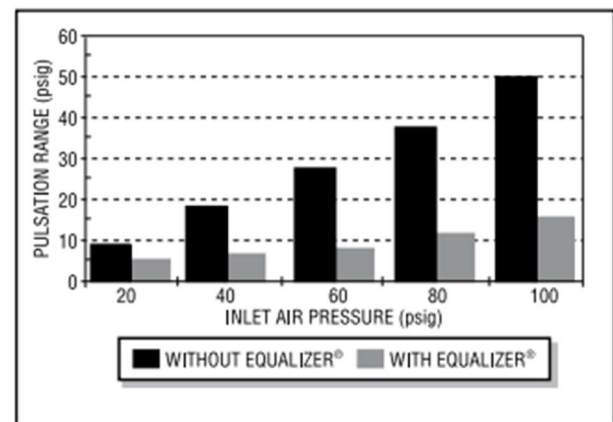
1/2" (13mm) pumps/SD1/2

The above chart reflects the discharge pressure variation of a Wilden model 1/2 (13mm) Polypropylene pump with rubber elastomers compared to the same 1/2 (13mm) with a model SD1/2 Equalizer® installed.



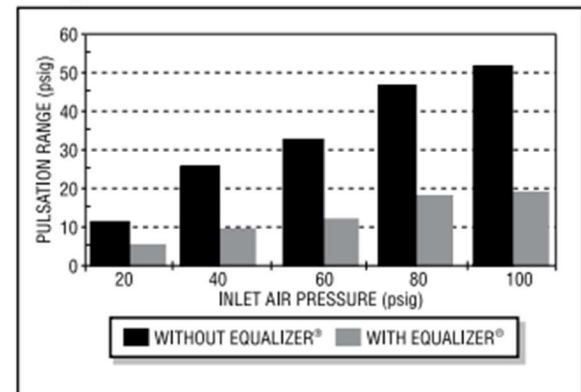
1" (25mm) pumps/SD1

The above chart reflects the discharge pressure variation of a Wilden model 1" (25mm) Polypropylene pump with rubber elastomers compared to the same 1" (25mm) with a model SD1 Equalizer® installed.



1-1/2" (38mm) pumps/SD2

The above chart reflects the discharge pressure variation of a Wilden model 1-1/2 (38mm) Polypropylene pump with rubber elastomers compared to the same 1-1/2 (38mm) with a model SD2 Equalizer® installed.



2" (51mm) pumps/SD2

The above chart reflects the discharge pressure variation of a Wilden model 2" (51mm) Polypropylene pump with rubber elastomers compared to the same 2" (51mm) with a model SD2 Equalizer® installed.

SECTION 6

SUGGESTED INSTALLATION, OPERATION, MAINTENANCE AND TROUBLESHOOTING

Suggested Installation

The model SD1/2 has a 13 mm (1/2") inlet/discharge, SD1 has a 25 mm (1") inlet/discharge and the model SD2 has a 51 mm (2") inlet/discharge. The Equalizer® can be installed in either horizontal or vertical orientations. A variety of materials are available to satisfy temperature, chemical compatibility, abrasion and flex concerns.

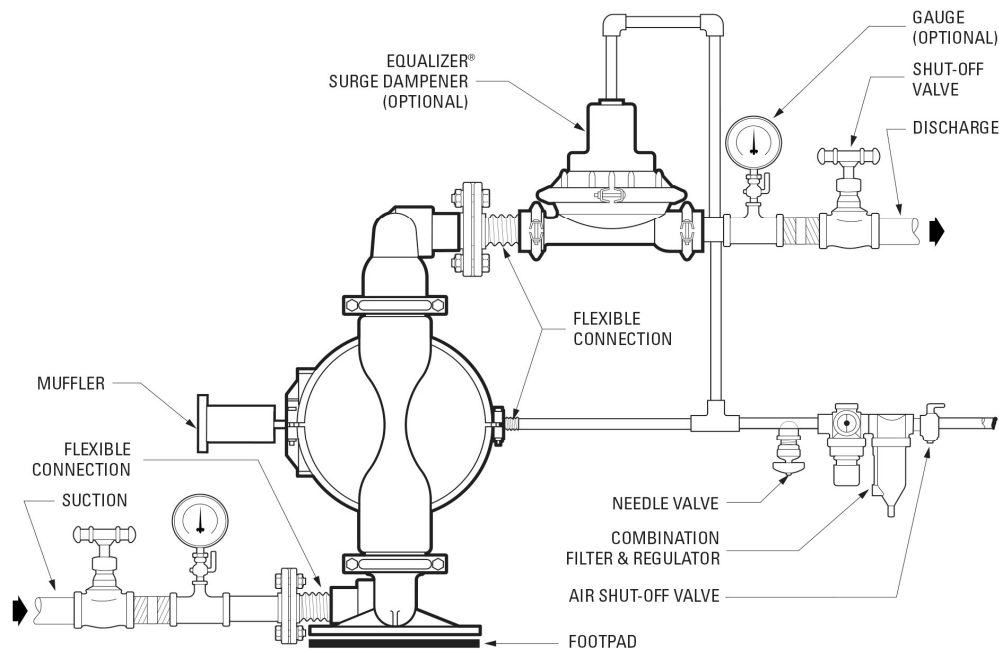
The Equalizer® installed on the discharge side of the pump minimizes pulsation and protects in-line equipment. It can also be connected on the suction side to prevent water hammer associated with a positive inlet condition.

Install the Equalizer® as shown below. The use of flexible connections and a Filter, Regulator, Lubricator (FRL) will extend parts life. Shut-off valves on the suction side of pump and the discharge side of Equalizer® will enable maintenance personnel to safely service the equipment. To maximize effectiveness, install the Equalizer® as close as possible to the discharge of the pump.

It is important to support the pipe immediately downstream from the Equalizer®. Use a tee connector on the pump air supply line and connect the line to the Equalizer® regulator body. This tee connector should be installed after the FRL. The Equalizer® consumes very little air, therefore, a 1/4" hose is more than adequate to supply enough air volume. When the air supply to the pump is shut down, the air to the Equalizer® will be shut off as well.

NOTE: In the event of a power failure, the shut-off valve should be closed if the restarting of the pump is not desirable once power is regained.

AIR-OPERATED PUMPS: To stop the pump from operating in an emergency situation, simply close the shut-off valve (user supplied) installed in the air supply line. A properly functioning valve will stop the air supply to the pump, therefore stopping output. This shut-off valve should be located far enough away from the pumping equipment such that it can be reached safely in an emergency situation.



Troubleshooting

1) When there is a significant drop in the fluid discharge pressure, there will be a noticeable release of air through the small bleed hole in the air regulator body. This is how the Equalizer® automatically adjusts itself for optimal suppression. This is a good way of verifying proper operation of the unit. If there is a continuous discharge of air out of this hole during steady fluid discharge pressure, the Equalizer® is not functioning properly and should be inspected. The air regulator body houses three (3) Glyd rings.

2) Fluid leakage around the clamp band area is normally stopped by tightening the clamp band bolts. If leakage continues, unit should be disassembled and inspected.

3) Air leakage between the adapter plate and air chamber requires tightening of four

SECTION 7

DISASSEMBLY / REASSEMBLY – SD1/2

DAMPENER DISASSEMBLY

Tools Required:

- 7/16" Open-Ended Wrench
- 7/8" Open-Ended Wrench
- O-Ring Pick



CAUTION: Before attempting any maintenance or repair, disconnect the compressed air line to the Equalizer® and the pump and allow all air pressure to bleed from the pump. Disconnect all intake, discharge, and air lines. Drain the pump by turning it upside down and allowing any fluid to flow into a suitable container. Be aware of any hazardous effects of contact with your process fluid.



NOTE: Your specific dampener model may vary from the configuration shown; however, pump disassembly procedure will be the same.



NOTE: Replace worn parts with genuine Wilden parts for reliable performance.

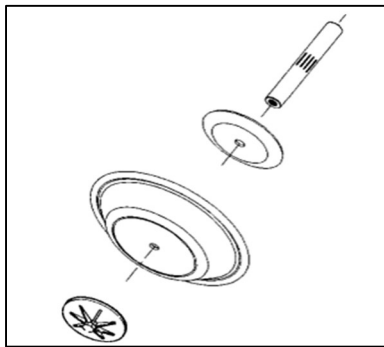


Figure 1

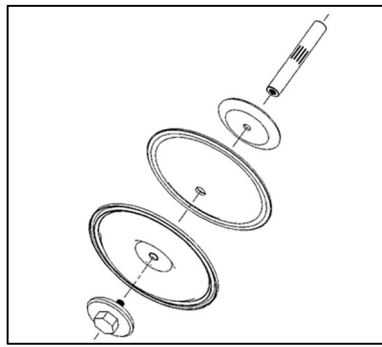
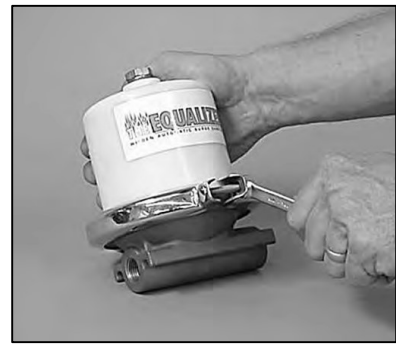


Figure 2

There are two types of diaphragm configurations available for the SD1/2: 1) Rubber diaphragm, and 2) PTFE primary diaphragm with back-up diaphragm. Observe the "This side out" marking on the convex side of the diaphragm. Install the inner piston, diaphragm(s), outer piston plate and stop on shaft. PTFE fitted Equalizers require PTFE gasket material tape to properly seal diaphragm bead area.



Step 1

Loosen clamp band with 7/16" open-ended wrench.



Step 2

Remove liquid chambers, inspect for damage, and set aside.



Step 3

Pull diaphragm assembly (shaft, diaphragm[s], inner and outer piston) away from air regulator body. Loosen outer piston with a 7/8" wrench or adjustable wrench and inspect diaphragm and shaft for abrasion or chemical attack. Soft jaws in vise may need to be used if outer piston does not unfasten easily.



Step 4

Remove large clamp band using a 1/2" deep well socket.

DISASSEMBLY / REASSEMBLY – SD1 and SD2

DAMPENER DISASSEMBLY

Tools Required SD1:

- 3/4" Socket
- 1/2" Socket
- 3/16" Allen Wrench
- O-Ring Pick
- Adjustable Wrench
- Pipe Wrench
- 2 Pry Bars (or screwdrivers)



CAUTION: Before attempting any maintenance or repair, disconnect the compressed air line to the Equalizer® and the pump and allow all air pressure to bleed from the pump. Disconnect all intake, discharge, and air lines. Drain the pump by turning it upside down and allowing any fluid to flow into a suitable container. Be aware of any hazardous effects of contact with your process fluid.



NOTE: Your specific dampener model may vary from the configuration shown; however, pump disassembly procedure will be the same.



NOTE: Replace worn parts with genuine Wilden parts for reliable performance.

Tools Required SD2:

- 3/4" Socket
- 1/2" Socket
- 11/16" Allen Wrench
- 7/32" Allen Wrench
- O-Ring Pick
- Adjustable Wrench
- Pipe Wrench
- 2 Pry Bars (or screwdrivers)



Step 1

Remove reducer bushing at top of regulator with a pipe wrench.



Step 2

Remove large clamp band



Step 3

Set liquid chamber aside.

DISASSEMBLY / REASSEMBLY – SD1 and SD2



Step 4

Loosen shaft assembly by using adjustable wrench on outer piston and 3/4" socket on shaft bolt inside air regulator body. Turn counterclockwise. One of two scenarios will occur: outer piston will loosen from shaft, or the shaft bolt will loosen from shaft.



Step 5, Scenario 1 – Part 1

If the outer piston loosens, remove outer piston, diaphragm, and inner piston and set aside.



Step 5, Scenario 1 – Part 2

Remove stop from shaft and set aside



Step 5, Scenario 1 – Part 3

Knock shaft through regulator with soft mallet.



Step 5, Scenario 1 – Part 4

Remove shaft bolt and washer from shaft.

NOTE: Protect the shaft from damage by using wood blocks or soft jaws in vice.



Step 5, Scenario 2 – Part 1

If the shaft bolt loosens, remove bolt and washer.



Step 5, Scenario 2 – Part 2

Turn the Equalizer® surge dampener upside down and use two pry bars between the inner piston and air chamber to pull the shaft assembly from the regulator and remove the stop.



Step 5, Scenario 2 – Part 3

Disassemble shaft assembly by loosening the outer piston.

NOTE: Protect the shaft from damage by using wood blocks or soft jaws in vice.



Step 6

Inspect the shaft for nicks or abrasion. Small nicks can usually be dressed out. If the shaft is chemically attacked or nicks are hindering operation, the shaft should be replaced.



Step 7

Replace Glyd™-rings in air regulator body. This is most easily accomplished by using a tool called an O-ring pick, available through most industrial supply companies. The air regulator body has 5 grooves cut into the inside diameter. There are three Glyd™-rings installed in the 1, 3, 5 positions. It is important that these Glyd™-rings be installed in the correct grooves so that the Equalizer® functions properly.



Step 8

Disassembly of the air chamber from the regulator is needed only in the event of air leakage. Leakage is usually stopped by tightening the Allen head bolts. If leakage persists, remove air chamber and replace gasket.



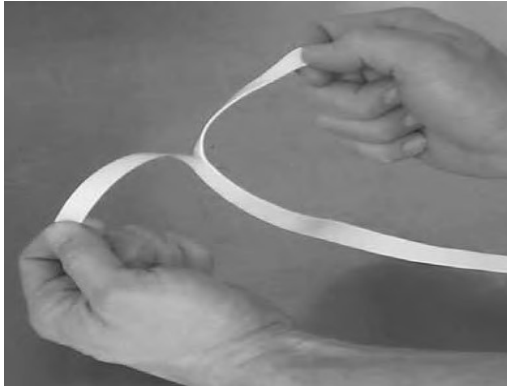
Step 9

Disassembly of the Surge ends/small clamp band is needed only in the event of leakage. Leakage is usually stopped by tightening the small band bolt. If leakage persists, remove surge ends and replace O-rings.

DISASSEMBLY / REASSEMBLY

Equalizers With PTFE Diaphragms Only

All PTFE fitted Equalizers require expanded PTFE gasket material with the exception of all aluminum Equalizers and stainless steel SD1 Equalizers. This type of PTFE is very strong, but soft. Its use assures a positive seal between the PTFE diaphragm outer bead and its corresponding groove in the liquid chamber. This gasket material should be replaced each time the Equalizer® is disassembled.



Select a strip of 1/2"-wide material and carefully remove the covering from the adhesive strip. Ensure that the adhesive strip remains attached to the gasket material. Starting at any point, place the gasket strip in the center of the diaphragm bead groove on the diaphragm and press lightly on the gasket to ensure that adhesive holds it in place during assembly. The ends of the gasket should overlap approximately 1/2". The part number for the gasket kit is 08-9502-99.



Assembly

Upon performing applicable maintenance to the air distribution system, the Equalizer® can now be reassembled. Please refer to the disassembly instructions for photos and parts placement. To reassemble the Equalizer®, follow the disassembly instructions in reverse order. The air regulator body needs to be assembled first, then the diaphragm and finally the wetted path. Please find the applicable torque specifications on this page. The following tips will assist in the assembly process.

- Lubricate air regulator body, Glyd rings and shaft bore center with NLGI grade 2 white EP bearing grease or equivalent.
- Clean the inside of the air regulator body bore to ensure no damage is done to new shaft seals.
- Stainless bolts should be lubed to reduce the possibility of seizing during tightening.

Maximum Torque Specifications

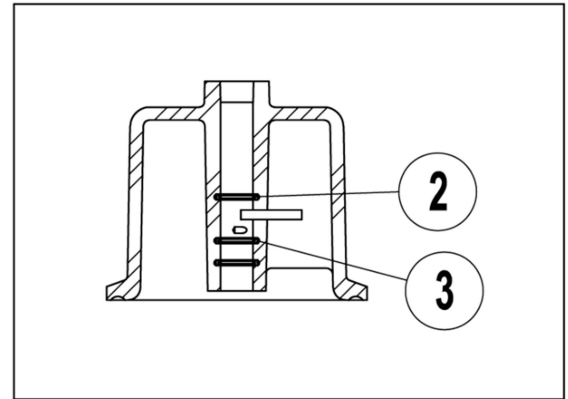
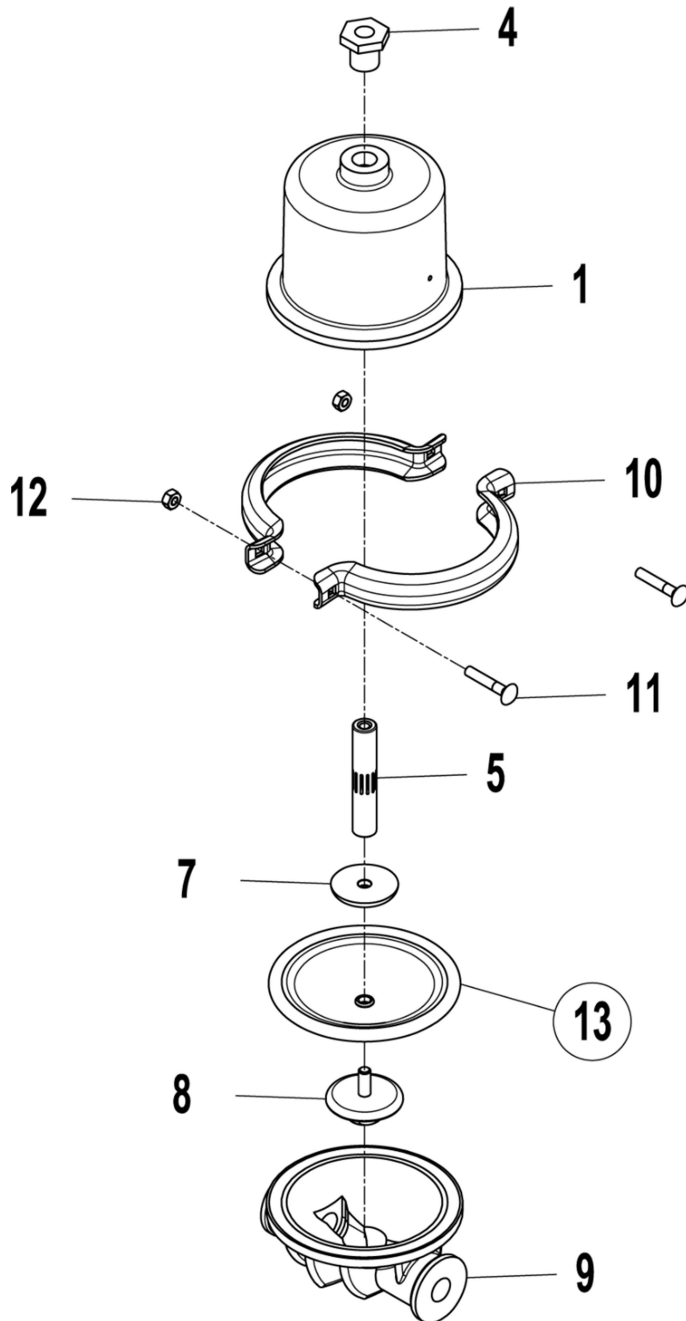
Model	Description of Part	Torque
METAL AND PLASTIC SD1/2 EQUALIZER®	Air Regulator Body	8 N·m (75 in-lb)
	Outer Piston	8 N·m (75 in-lb)
	Clamp Band Assembly – Rubber Fitted	7.4 N·m (65 in-lb)
	Clamp Band Assembly – PTFE Fitted	9.6 N·m (85 in-lb)
METAL SD1 EQUALIZER®	Air Regulator Body	38 N·m (28 ft-lb)
	Shaft Assembly	44.7 N·m (33 ft-lb)
	Small Clamp Band	3.4 N·m (30 in-lb)
	Large Clamp Band – Rubber	11.3 N·m (100 in-lb)
	Large Clamp Band - PTFE	13.6 N·m (120 in-lb)
PLASTIC SD1 EQUALIZER®	Air Regulator Body	38 N·m (28 ft-lb)
	Shaft Assembly	44.7 N·m (33 ft-lb)
	Small Clamp Bands	9.6 N·m (85 in-lb)
	Large Clamp Bands	18.6 N·m (165 in-lb)

Model	Description of Part	Torque
METAL SD2 EQUALIZER®	Air Regulator Body	38 N·m (28 ft-lb)
	Shaft Assembly – Rubber	44.7 N·m (33 ft-lb)
	Shaft Assembly – PTFE	78.6 N·m (58 ft-lb)
	Small Clamp Band – Rubber	3 N·m (27 in-lb)
	Small Clamp Band - PTFE	6.6 N·m (58 in-lb)
	Large Clamp Band	38 N·m (28 ft-lb)
PLASTIC SD2 EQUALIZER®	Air Regulator Body	38 N·m (28 ft-lb)
	Shaft Assembly – Rubber	44.7 N·m (33 ft-lb)
	Shaft Assembly – PTFE	78.6 N·m (58 ft-lb)
	Small Clamp Band	10.2 N·m (90 in-lb)
	Large Clamp Band	38 N·m (28 ft-lb)
METAL SD2 BOLTED EQUALIZER®	Air Regulator Body	38 N·m (28 ft-lb)
	Shaft Assembly – Rubber	44.7 N·m (33 ft-lb)
	Shaft Assembly - PTFE	78.6 N·m (58 ft-lb)
	Liquid to Air Chamber	27.1 N·m (20 ft-lb)

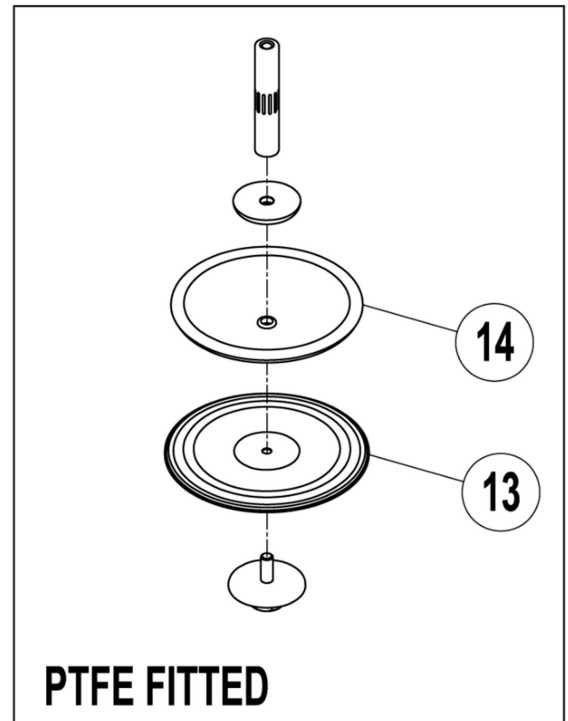
SECTION 8

EXPLODED VIEW AND PARTS LIST

THE EQUALIZER® - SD1/2



ALL CIRCLED PART IDENTIFIERS ARE INCLUDED IN REPAIR KITS



LW0564 REV.A

EXPLODED VIEW AND PARTS LIST

THE EQUALIZER® - SD1/2

Item	Part Description	Qty.	SD1/2/PPP/... P/N	SD1/2/KPP/... P/N	SD1/2/APP/... P/N	SD1/2/SPP/... P/N
1	Air Regulator Body ¹	1	72-8500-20			
2	Slipper Seal	3	01-3210-55-200			
3	O-Ring, Back-Up -115 (Ø.674 x Ø.103)	3	01-2390-52			
4	Bushing, Reducer	1	72-6950-07			
5	Straight Shaft	1	01-3800-03-07			
6	Stud, 5/16-18 x 1.38 Threaded (not shown)	1				01-6150-03
7	Piston, Inner	1	01-3710-01			
8	Piston, Outer	1	04-4570-20-500	01-4570-21-500	01-4570-01	01-4570-03
9	Chamber, Liquid (NPT)	1	72-5000-20	72-5000-21	72-5000-01	72-5000-03
	Chamber, Liquid (BSPT)	1	72-5000-20-14	72-5000-21-14	72-5000-01-14	72-5000-03-14
10	Clamp Band Assembly	1	01-7300-03			
11	Bolt, 1/4-20 x 2.25 Rnd Hd Sq Neck	2	01-6070-03			
12	Nut, 1/4-20 Hex	2	04-6400-03			
13	Diaphragm, Primary³	1	*			
14	Diaphragm, Back-Up²	1	*			

¹Air Regulator Body included slipper seals and back-up O-rings

LW0565 REV. A

²Back-Up diaphragm is only utilized with PTFE Primary Diaphragm

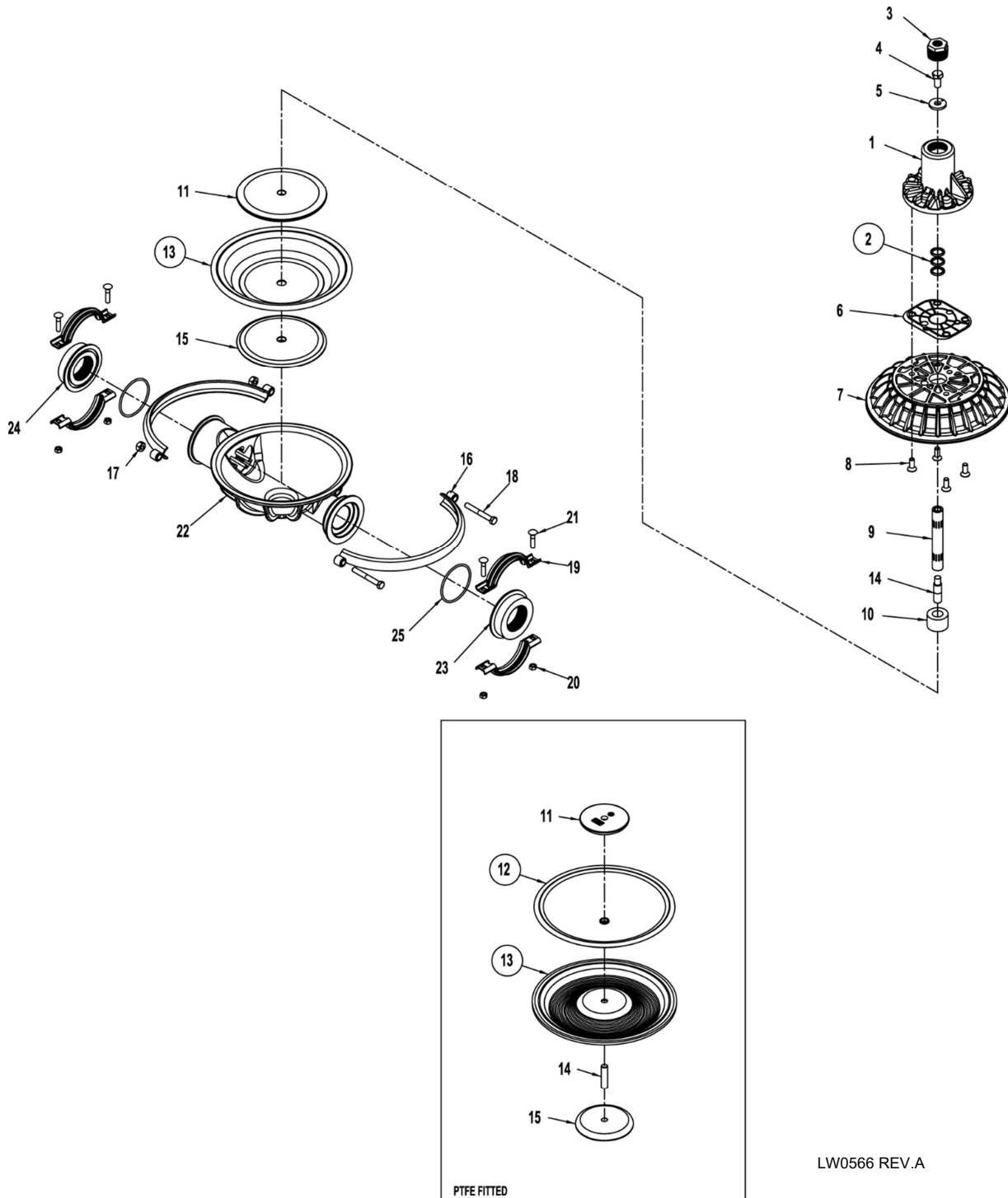
³PTFE Gasket Kit, P/N 01-9500-99, Required

*Elastomer Options Listed on Page 29

All bold face items are primary wear items

EXPLODED VIEW AND PARTS LIST

THE EQUALIZER® - SD1 & SD2



LW0566 REV.A

EXPLODED VIEW AND PARTS LIST

THE EQUALIZER® - SD1 METAL

Item	Part Description	Qty.	SD1/AAP/... P/N	SD1/AAP/TF/... P/N	SD1/SAP/... P/N	SD1/SAP/TF/... P/N
1	Air Regulator Body ¹	1	72-8500-20			
2	Glyd™ Ring	3	08-3210-55-225			
3	Bushing, Reducer 1-1/4 x 1/2 NPT	1	706950-08			
4	Screw, HHC 1/2-20 x 1	1	04-6090-08			
5	Washer (.53 x 1.38 x .17)	1	70-6790-08			
6	Gasket, Center Block	1	71-3520-56			
7	Air Chamber	1	70-3650-01			
8	Screw, HSFHS (3/8-16 x 1")	4	71-6250-08			
9	Shaft	1	04-3820-03-07			
10	Stop	1	70-8810-17			
11	Piston, Inner	1	04-3700-08	70-3750-01	04-3700-08	70-3750-01
12	Diaphragm, Back-Up	1		04-1060-51		04-1060-51
13	Diaphragm, Primary²	1	*	04-1010-55	*	04-1010-55
14	Stud, 1/2-20 x 1-7/8	1		08-6150-08		08-6150-08
15	Piston, Outer	1	04-4552-01	04-4600-01	04-4550-03	04-4600-03
16	Large Clamp Band Assembly	1	04-7330-08	04-7330-03		
17	Nut, Hex (5/16-18)	2	04-6420-08	08-6400-03		
18	Screw, HHC (5/16-18 x 2-1/2)	2	04-6070-08	04-6070-03		
19	Small Clamp Band Assembly	2	04-7100-08	04-7100-03		
20	Nut, Hex (1/4-20)	4	04-6400-08	04-6400-03		
21	Screw, HHC (1/4-20 x 2)	4	04-6050-08	01-6070-03		
22	Liquid Chamber	1	04-5000-01		04-5000-03	
23	Surge End (NPT)	1	70-8600-01		70-8600-03	
	Surge End (BSPT)	1	70-8600-01-14		70-8600-03-14	
24	Surge End (NPT)	1	70-8600-01		70-8600-03	
	Surge End (BSPT)	1	70-8600-01-14		70-8600-03-14	
25	Surge End O-Ring -229 (2.359 x .139)	2	*	70-1280-55	*	70-1280-55

¹Air Regulator Body included slipper seals and back-up O-rings

²PTFE Gasket Kit, P/N 01-9500-99, Required

*Elastomer Options Listed on Page 29

All bold face items are primary wear items

LW0567 REV. A

EXPLODED VIEW AND PARTS LIST

THE EQUALIZER® - SD1 POLYPROPYLENE

Item	Part Description	Qty.	SD1/PAP/... P/N	SD1/PAP/TF/... P/N	SD1/PCP/0502 P/N	SD1/PCP/TF/0502 P/N
1	Air Regulator Body ¹	1	72-8500-20			
2	Glyd™ Ring	3	08-3210-55-225			
3	Bushing, Reducer 1-1/4 x 1/2 NPT	1	70-9950-08		70-6950-05	
4	Screw, HHC 1/2-20 x 1	1	04-6090-08			
5	Washer (.53 x 1.38 x .17)	1	70-6790-08			
6	Gasket, Center Block	1	71-3520-56			
7	Air Chamber	1	70-3650-01		70-3650-05	
8	Screw, HSFHS (3/8-16 x 1")	4	71-6250-08			
9	Shaft	1	04-3820-03-07			
10	Stop	1	70-8810-17			
11	Piston, Inner	1	04-3700-08	04-3750-01	04-3700-08	04-3750-01
12	Diaphragm, Back-Up	1		04-1060-51		04-1060-51
13	Diaphragm, Primary ²	1	*	04-1010-55	*	04-1010-55
14	Stud, 1/2-20 x 1-7/8	1				
15	Piston, Outer	1	04-4550-20-500	04-4600-20-500	04-4550-20-500	04-4600-21-500
16	Large Clamp Band Assembly	1	04-7300-03-500		04-7300-05-500	
17	Nut, Heavy Hex (5/16-18)	2	08-6400-03		08-6400-05	
18	Screw, HHC (5/16-18 x 2-1/2)	2	04-6070-03		04-6070-05	
19	Small Clamp Band Assembly	2	04-7100-03-500		04-7100-05-500	
20	Nut, Hex (5/16-18)	4	08-6400-03		08-6400-05	
21	Screw, HHC (5/16-18 x 2)	4	08-6050-03-500		08-6050-05-500	
22	Liquid Chamber	1	04-5000-20			
23	Surge End (NPT)	1	70-8600-20			
	Surge End (BSPT)	1	70-8600-20-14			
24	Surge End (NPT)	1	70-8600-20			
	Surge End (BSPT)	1	70-8600-20-14			
25	Surge End O-Ring -236 (3.234 x .139)	2	*	70-1270-60	*	70-1270-60

¹Air Regulator Body included slipper seals and back-up O-rings

²PTFE Gasket Kit, P/N 01-9500-99, Required

*Elastomer Options Listed on Page 29

All bold face items are primary wear items

LW0567 REV. A

EXPLODED VIEW AND PARTS LIST

THE EQUALIZER® - SD1 PVDF

Item	Part Description	Qty.	SD1/KAP/... P/N	SD1/KAP/TF/... P/N	SD1/KCP/0502 P/N	SD1/KCP/TF/0502 P/N
1	Air Regulator Body ¹	1	72-8500-20			
2	Glyd™ Ring	3	08-3210-55-225			
3	Bushing, Reducer 1-1/4 x 1/2 NPT	1	70-9950-08		70-6950-05	
4	Screw, HHC 1/2-20 x 1	1	04-6090-08			
5	Washer (.53 x 1.38 x .17)	1	70-6790-08			
6	Gasket, Center Block	1	71-3520-56			
7	Air Chamber	1	70-3650-01		70-3650-05	
8	Screw, HSFHS (3/8-16 x 1")	4	71-6250-08			
9	Shaft	1	04-3820-03-07			
10	Stop	1	70-8810-17			
11	Piston, Inner	1	04-3700-08	04-3750-01	04-3700-08	04-3750-01
12	Diaphragm, Back-Up	1		04-1060-51		04-1060-51
13	Diaphragm, Primary²	1	*	04-1010-55	*	04-1010-55
14	Stud, 1/2-20 x 1-7/8	1				
15	Piston, Outer	1	04-4550-21-500	04-4600-21-500	04-4550-21-500	04-4600-21-500
16	Large Clamp Band Assembly	1	04-7300-03-500		04-7300-05-500	
17	Nut, Heavy Hex (5/16-18)	2	08-6400-03		08-6400-05	
18	Screw, HHC (5/16-18 x 2-1/2)	2	04-6070-03		04-6070-05	
19	Small Clamp Band Assembly	2	04-7100-03-500		04-7100-05-500	
20	Nut, Hex (5/16-18)	4	08-6400-03		08-6400-05	
21	Screw, HHC (5/16-18 x 2)	4	08-6050-03-500		08-6050-05-500	
22	Liquid Chamber	1	04-5000-21			
23	Surge End (NPT)	1	70-8600-21			
	Surge End (BSPT)	1	70-8600-21-14			
24	Surge End (NPT)	1	70-8600-21			
	Surge End (BSPT)	1	70-8600-21-14			
25	Surge End O-Ring -236 (3.234 x .139)	2	*	70-1270-60	*	70-1270-60

¹Air Regulator Body included slipper seals and back-up O-rings

²PTFE Gasket Kit, P/N 01-9500-99, Required

*Elastomer Options Listed on Page 29

All bold face items are primary wear items

LW0567 REV. A

EXPLODED VIEW AND PARTS LIST

THE EQUALIZER® - SD2 ALUMINUM

Item	Part Description	Qty.	SD2/AAP/... P/N	SD2/AAP/TF/... P/N
1	Air Regulator Body ¹	1	72-8500-20	
2	Glyd™ Ring	3	08-3210-55-225	
3	Bushing, Reducer 1-1/4 x 1/2 NPT	1	70-6950-08	
4	Screw, HHC 1/2-20 x 1	1	04-6090-08	
5	Washer (.53 x 1.38 x .17)	1	70-6790-08	
6	Gasket, Center Block	1	71-3520-30	
7	Air Chamber	1	71-3650-01	
8	Screw, HSFHS (3/8-16 x 1")	4	71-6250-08	
9	Shaft	1	04-3820-03-07	
10	Stop	1	71-8800-17	
11	Piston, Inner	1	04-3700-08	08-3750-01
12	Diaphragm, Back-Up	1		08-1060-51
13	Diaphragm, Primary²	1	*	08-1010-55
14	Stud, 1/2-20 x 1-7/8	1		08-6150-08
15	Piston, Outer	1	04-4552-01	08-4600-01
16	Large Clamp Band Assembly	1	08-7300-08	08-7300-03
17	Nut, Heavy Hex (3/8-16)	2	08-6450-08	08-6450-03
18	Screw, HHC (3/8-16 x 3)	2	08-6120-08	08-6120-03
19	Small Clamp Band Assembly	2	08-7100-08	08-7100-03
20	Nut, Hex (5/16-18)	4	04-6420-08	08-6400-03
21	Screw, HHC (5/16-18 x 1-3/8)	4	08-6050-08	08-6030-03
22	Liquid Chamber	1	08-5000-01	
23	Surge End (NPT)	1	71-8601-01	
	Surge End (BSPT)	1	71-8601-01-14	
24	Surge End (NPT)	1	71-8601-01	
	Surge End (BSPT)	1	71-8601-01-14	
25	Surge End O-Ring -235 (3.109 x .139)	2	*	71-1280-55

¹Air Regulator Body included slipper seals and back-up O-rings

LW0568 REV. A

²PTFE Gasket Kit, P/N 01-9500-99, Required

*Elastomer Options Listed on Page 29

All bold face items are primary wear items

EXPLODED VIEW AND PARTS LIST

THE EQUALIZER® - SD2 CAST IRON

Item	Part Description	Qty.	SD2/WAP/... P/N	SD2/WWP/... P/N	SD2/WAP/TF/... P/N	SD2/WWP/TF/... P/N
1	Air Regulator Body ¹	1	72-8500-20			
2	Glyd™ Ring	3	08-3210-55-225			
3	Bushing, Reducer 1-1/4 x 1/2 NPT	1	70-6950-08			
4	Screw, HHC 1/2-20 x 1	1	04-6090-08			
5	Washer (.53 x 1.38 x .17)	1	70-6790-08			
6	Gasket, Center Block	1	71-3520-30			
7	Air Chamber	1	71-3650-01	71-3650-02	71-3650-01	71-3650-02
8	Screw, HSFHS (3/8-16 x 1")	4	71-6250-08			
9	Shaft	1	04-3820-03-07			
10	Stop	1	71-8800-17			
11	Piston, Inner	1	04-3700-08		08-3750-01	
12	Diaphragm, Back-Up	1			08-1060-51	
13	Diaphragm, Primary²	1	*		08-1010-55	
14	Stud, 1/2-20 x 1-7/8	1			08-6150-08	
	Screw, HHC (1/2-20 x 1)	1	04-6090-08			
	Washer, Shaft Bolt	1	04-6800-08			
15	Piston, Outer	1	04-4550-08		08-4600-03	
16	Large Clamp Band Assembly	1	08-7300-08	08-7300-03		
17	Nut, Heavy Hex (3/8-16)	2	08-6450-08	08-6450-03		
18	Screw, HHC (3/8-16 x 3)	2	08-6120-08	08-6120-03		
19	Small Clamp Band Assembly	2	08-7100-08	08-7100-03		
20	Nut, Hex (5/16-18)	4	04-6420-08	08-6400-03		
21	Screw, HHC (5/16-18 x 1-3/8)	4	08-6050-08	08-6030-03		
22	Liquid Chamber	1	08-5000-02			
23	Surge End (NPT)	1	71-8601-03			
	Surge End (BSPT)	1	71-8601-03-14			
24	Surge End (NPT)	1	71-8601-03			
	Surge End (BSPT)	1	71-8601-03-14			
25	Surge End O-Ring -235 (3.109 x .139)	2	*		71-1280-55	

¹Air Regulator Body included slipper seals and back-up O-rings

²PTFE Gasket Kit, P/N 01-9500-99, Required

*Elastomer Options Listed on Page 29

All bold face items are primary wear items

LW0568 REV. A

EXPLODED VIEW AND PARTS LIST

THE EQUALIZER® - SD2 STAINLESS STEEL

Item	Part Description	Qty.	SD2/SAP/... P/N	SD2/SSP/... P/N	SD2/SAP/TF/... P/N	SD2/SSP/TF/... P/N
1	Air Regulator Body ¹	1	72-8500-20			
2	Glyd™ Ring	3	08-3210-55-225			
3	Bushing, Reducer 1-1/4 x 1/2 NPT	1	70-6950-08			
4	Screw, HHC 1/2-20 x 1	1	04-6090-08			
5	Washer (.53 x 1.38 x .17)	1	70-6790-08			
6	Gasket, Center Block	1	71-3520-30			
7	Air Chamber	1	71-3650-01	71-3650-03	71-3650-01	71-3650-03
8	Screw, HSFHS (3/8-16 x 1")	4	71-6250-08			
9	Shaft	1	04-3820-03-07			
10	Stop	1	71-8800-17			
11	Piston, Inner	1	04-3700-08		08-3750-01	
12	Diaphragm, Back-Up	1			08-1060-51	
13	Diaphragm, Primary²	1	*		08-1010-55	
14	Stud, 1/2-20 x 1-7/8	1			08-6150-08	
15	Piston, Outer	1	04-4550-03		08-4600-03	
16	Large Clamp Band Assembly	1	08-7300-03			
17	Nut, Heavy Hex (3/8-16)	2	08-6450-03			
18	Screw, HHC (3/8-16 x 3)	2	08-6120-03			
19	Small Clamp Band Assembly	2	08-7100-03			
20	Nut, Hex (5/16-18)	4	08-6400-03			
21	Screw, HHC (5/16-18 x 1-3/8)	4	08-6050-03			
22	Liquid Chamber	1	08-5000-03			
23	Surge End (NPT)	1	71-8601-03			
	Surge End (BSPT)	1	71-8601-03-14			
24	Surge End (NPT)	1	71-8601-03			
	Surge End (BSPT)	1	71-8601-03-14			
25	Surge End O-Ring -235 (3.109 x .139)	2	*		71-1280-55	

¹Air Regulator Body included slipper seals and back-up O-rings

²PTFE Gasket Kit, P/N 01-9500-99, Required

*Elastomer Options Listed on Page 29

All bold face items are primary wear items

LW0568 REV. A

EXPLODED VIEW AND PARTS LIST

THE EQUALIZER® - SD2 POLYPROPYLENE

Item	Part Description	Qty.	SD2/PAP/... P/N	SD2/PAP/TF/... P/N	SD2/PCP/0502 P/N	SD2/PCP/TF/0502 P/N
1	Air Regulator Body ¹	1	72-8500-20			
2	Glyd™ Ring	3	08-3210-55-225			
3	Bushing, Reducer 1-1/4 x 1/2 NPT	1	70-6950-08		70-6950-05	
4	Screw, HHC 1/2-20 x 1	1	04-6090-08			
5	Washer (.53 x 1.38 x .17)	1	70-6790-08			
6	Gasket, Center Block	1	71-3520-30			
7	Air Chamber	1	71-3650-01		71-3650-05	
8	Screw, HSFHS (3/8-16 x 1")	4	71-6250-08			
9	Shaft	1	04-3820-03-07			
10	Stop	1	71-8800-17			
11	Piston, Inner	1	04-3700-08	08-3750-01	04-3700-08	08-3750-01
12	Diaphragm, Back-Up	1		08-1060-51		08-1060-51
13	Diaphragm, Primary²	1	*	08-1010-55	*	08-1010-55
14	Stud, 1/2-20 x 1-1/2	1				
15	Piston, Outer	1	04-4550-20-500	08-4600-21-500	04-4550-20-500	08-4600-21-500
16	Large Clamp Band Assembly	1	08-7300-03-500		08-7300-05-500	
17	Nut, Heavy Hex (3/8-16)	2	08-6450-03		08-6420-05	
18	Screw, HHC (3/8-16 x 2-1/2)	2	08-6070-03-500		08-6070-05-500	
19	Small Clamp Band Assembly	2	08-7200-03-500		08-7200-05-500	
20	Nut, Hex (5/16-18)	4	08-6400-03		08-6400-05	
21	Screw, HHC (5/16-18 x 2-1/2)	4	04-6070-03		04-6070-05	
22	Liquid Chamber	1	08-5000-20			
23	Surge End (NPT)	1	71-8700-20			
	Surge End (BSPT)	1	71-8700-20-14			
24	Surge End (NPT)	1	71-8710-20			
	Surge End (BSPT)	1	71-8710-20-14			
25	Surge End O-Ring -245 (4.359 x .139)	2	*	71-1270-60	*	71-1270-60

¹Air Regulator Body included slipper seals and back-up O-rings

²PTFE Gasket Kit, P/N 01-9500-99, Required

*Elastomer Options Listed on Page 29

All bold face items are primary wear items

LW0568 REV. A

EXPLODED VIEW AND PARTS LIST

THE EQUALIZER® - SD2 PVDF

Item	Part Description	Qty.	SD2/KAP/... P/N	SD2/KAP/TF/... P/N	SD2/KCP/0502 P/N	SD2/KCP/TF/0502 P/N
1	Air Regulator Body ¹	1	72-8500-20			
2	Glyd™ Ring	3	08-3210-55-225			
3	Bushing, Reducer 1-1/4 x 1/2 NPT	1	70-6950-08		70-6950-05	
4	Screw, HHC 1/2-20 x 1	1	04-6090-08			
5	Washer (.53 x 1.38 x .17)	1	70-6790-08			
6	Gasket, Center Block	1	71-3520-30			
7	Air Chamber	1	71-3650-01		71-3650-05	
8	Screw, HSFHS (3/8-16 x 1")	4	71-6250-08			
9	Shaft	1	04-3820-03-07			
10	Stop	1	71-8800-17			
11	Piston, Inner	1	04-3700-08	08-3750-01	04-3700-08	08-3750-01
12	Diaphragm, Back-Up	1		08-1060-51		08-1060-51
13	Diaphragm, Primary²	1	*	08-1010-55	*	08-1010-55
14	Stud, 1/2-20 x 1-1/2	1				
15	Piston, Outer	1	04-4550-21-500	08-4600-21-500	04-4550-21-500	08-4600-21-500
16	Large Clamp Band Assembly	1	08-7300-03-500		08-7300-05-500	
17	Nut, Heavy Hex (3/8-16)	2	08-6450-03		08-6420-05	
18	Screw, HHC (3/8-16 x 2-1/2)	2	08-6070-03-500		08-6070-05-500	
19	Small Clamp Band Assembly	2	08-7200-03-500		08-7200-05-500	
20	Nut, Hex (5/16-18)	4	08-6400-03		08-6400-05	
21	Screw, HHC (5/16-18 x 2-1/2)	4	04-6070-03		04-6070-05	
22	Liquid Chamber	1	08-5000-21			
23	Surge End (NPT)	1	71-8700-21			
	Surge End (BSPT)	1	71-8700-21-14			
24	Surge End (NPT)	1	71-8710-21			
	Surge End (BSPT)	1	71-8710-21-14			
25	Surge End O-Ring -245 (4.359 x .139)	2	*	71-1270-60	*	71-1270-60

¹Air Regulator Body included slipper seals and back-up O-rings

²PTFE Gasket Kit, P/N 01-9500-99, Required

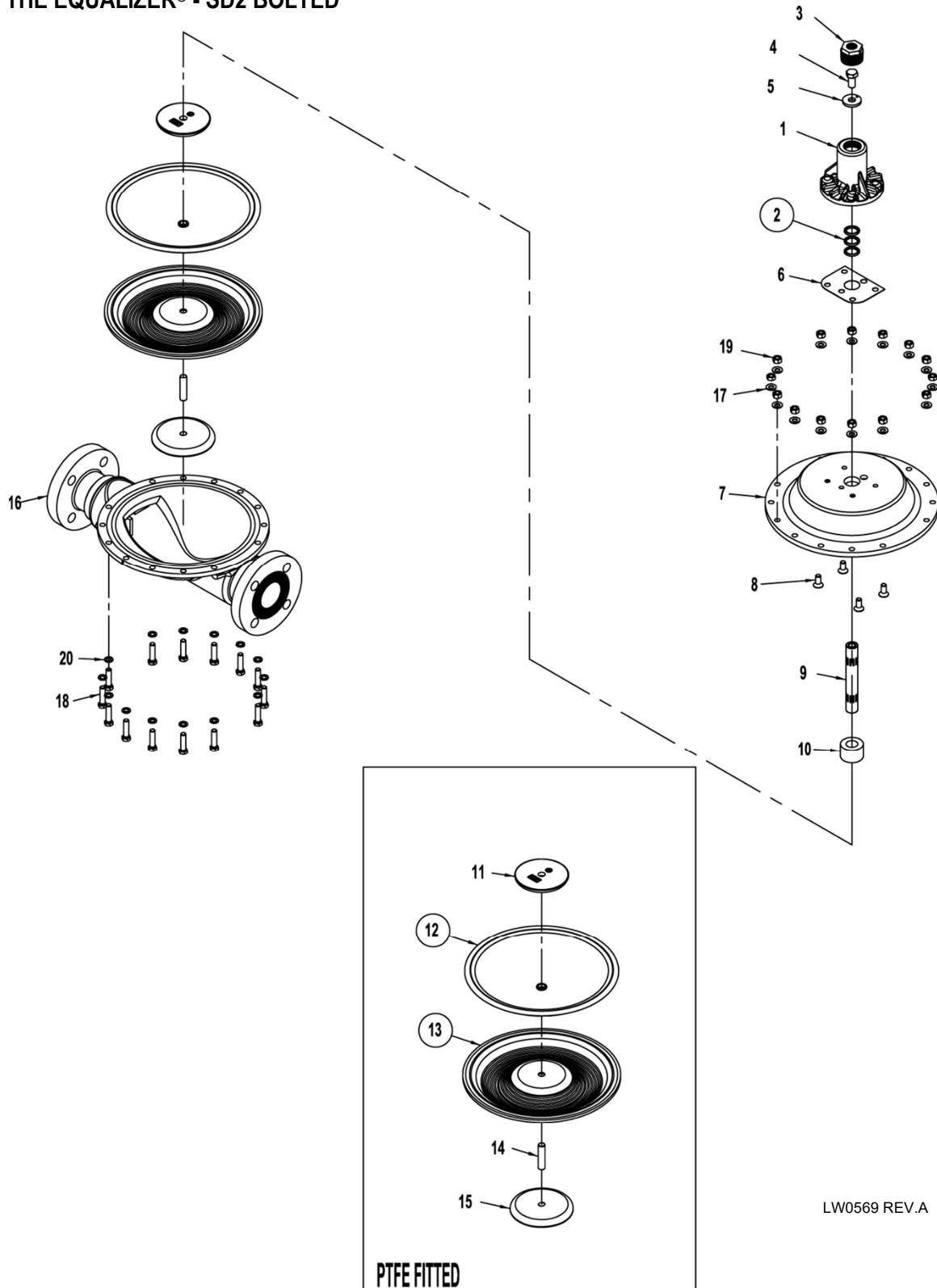
*Elastomer Options Listed on Page 29

All bold face items are primary wear items

LW0568 REV. A

EXPLODED VIEW AND PARTS LIST

THE EQUALIZER® - SD2 BOLTED



LW0569 REV.A

EXPLODED VIEW AND PARTS LIST

THE EQUALIZER® - SD2 BOLTED

Item	Part Description	Qty.	SD2/SSP/TF/0040 P/N	SD2/HSP/TF/0040 P/N
1	Air Regulator Body ¹	1	72-8500-20	
2	Glyd™ Ring	3	08-3210-55-225	
3	Bushing, Reducer 1-1/4 x 1/2 NPT	1	70-6950-08	
4	Screw, HHC 1/2-20 x 1	1	04-6090-08	
5	Washer (.53 x 1.38 x .17)	1	70-6790-08	
6	Gasket, Center Block	1	71-3520-30	
7	Air Chamber	1	71-3650-03-42	
8	Screw, HSFHS (3/8-16 x 1")	4	71-6250-08	
9	Shaft	1	04-3820-03-07	
10	Stop	1	71-8800-17	
11	Piston, Inner	1	08-3750-01	
12	Diaphragm, Back-Up	1	08-1060-51	
13	Diaphragm, Primary	1	08-1010-55-42	
14	Stud, 1/2-20 x 1-7/8	1	08-6150-08	
15	Piston, Outer	1	08-4600-03	08-4600-04
16	Liquid Chamber	1	71-5000-03-42	71-5000-04-42
17	Washer, Flat (.390 x .625 x .063)	14	02-6730-03	
18	Screw, HHC (3/8-16 x 1-1/2)	14	08-6190-03-42	
19	Nut, Hex (3/8-16)	14	02-6430-03	
20	Washer, Disk Spring (.380 x .750)	14	08-6820-03-42	

¹Air Regulator Body includes qty. 3 Glyd™ Rings

NOTE: PTFE Gasket Kit not required on Bolted Dampeners

*Elastomer options listed on page 29

All bold face items are primary wear items

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SECTION 9

ELASTOMER OPTIONS

	ELASTOMER	DIAPHRAGM	BACK-UP DIAPHRAGM	O-RINGS
METAL AND PLASTIC SD1/2 EQUALIZER®	Neoprene		01-1060-51	
	Nitrile	01-1010-52		
	FKM	01-1010-53		
	PTFE	01-1010-55		
	Saniflex™	01-1010-56		
	Wil-Flex™	01-1010-58		
METAL SD1 EQUALIZER®	Neoprene	04-1010-51	04-1060-51	
	Nitrile	04-1010-52		70-1280-52
	FKM	04-1010-53		
	EPDM	04-1010-54		
	PTFE	04-1010-55		70-1280-55
	Saniflex™	04-1022-56	04-1060-56	
	Wil-Flex™	04-1022-58		
PLASTIC SD1 EQUALIZER®	Neoprene	04-1010-51	04-1060-51	
	Nitrile	04-1010-52		70-1270-52
	FKM	04-1010-53		
	EPDM	04-1010-54		
	PTFE	04-1010-55		
	PTFE Encapsulated FKM			70-1270-60
	Saniflex™	04-1022-56	04-1060-56	
METAL SD2 EQUALIZER®	Neoprene	08-1010-51-06	08-1060-51	
	Nitrile	08-1010-52-06		71-1281-52
	FKM	08-1010-53-06		
	EPDM	08-1010-54-06		
	PTFE	08-1010-55		71-1281-55
	Saniflex™		08-1060-56	
PLASTIC SD2 EQUALIZER®	Neoprene	08-1010-51-06	08-1060-51	
	Nitrile	08-1010-52-06		71-1270-52
	FKM	08-1010-53-06		
	EPDM	08-1010-54-06		
	PTFE	08-1010-55		
	PTFE Encapsulated FKM			71-1270-60
	Saniflex™		08-1060-56	

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