



Diaphragm Seals

Type S Series

General Purpose Diaphragm Seal Elements

DESCRIPTION

Mansfield & Green S Series diaphragm seals feature a diaphragm which is permanently welded onto the seal element's upper flange. This design eliminates the need for a diaphragm retaining ring and minimizes the risk of fluid leakage during normal operation or seal element maintenance.

Type S Series seal elements feature an upper housing which is contoured. This design permit free movement of the diaphragm with accurate response to pressure changes. It also protects the seal element from distortion due to improper handling during maintenance routines.

Type S Series diaphragm seals have a volumetric displacement of .07 cubic inches. Filling screws are standard on all models except the high pressure Type SX Series.



FEATURES

- Diaphragm directly welded to upper flange
 - Eliminates retaining ring
 - Minimizes risk of leaks
- Continuous duty
- Ideal for general purpose application
- Materials available for corrosive applications
- Seal ratings to 10,000 psig (690 bar)
- Compatible with most 4.5" and smaller gauges

SEAL CONFIGURATIONS

Threaded Seal Elements

There are four basic versions of S Series diaphragm seals with threaded attachments. The SB seal element is used for pressure applications only and has a standard pressure rating of 2500 psig at 100°F (172 bar at 38°C) with an optional rating for up to 5000 psig (345 bar). The SG seal element is similar to the SB seal, except that it has a 1/4 NPT flushing connection. The SX seal element has a standard pressure rating of 10,000 psig at 100°F (690 bar at 38°C). This high pressure model can be supplied with 1/8, 1/4, 3/8, 1/2, 3/4, and 1 NPT process connections.

Flanged Seal Elements

There are two basic versions of flanged S Series seal elements. The flange is a standard raised type. The SC seal element can be supplied in .5" and .75". Both sizes can be supplied for standard ANSI Class ratings of 150, 300, 600, 1500, and 2500. Type SC seals are available in ring joint, flat face and DIN sizes. The SR series features a tantalum exposed diaphragm. 0.5" and 0.75" sizes are available for ANSI Class 150 and 300. 1" thru 3" sizes have standard ANSI Class 150, 300, 600, and 1500 ratings.

In-line Flow Thru Seal Elements

In-line flow thru S Series diaphragm seals include the SJ versions for 3" and larger pipe connections. The SK versions are available with 1/4, 3/8, or 1/2 NPT process connections with a standard pressure rating of 1500 psig with an optional pressure rating of 3000 psig. The SM version is for pipe sizes from .75" to 3" schedule 40 pipe (other schedules available) where the diaphragm seal element is to be directly welded to the process pipe. The SN version is for pipe sizes from .75" to 3" requiring ANSI ratings of 150 or 300. These can be supplied with an optional TEFLON[®] liner. The SP versions are for pipe sizes from 4" to 10" and with ANSI ratings of 150 or 300.

Options are available for all-welded construction

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MODEL S SERIES SELECTION GUIDE

SEAL TYPE	SEAL MOUNTING	OPERATING TEMPERATURE	OPERATING PRESSURE	PROCESS APPLICATION	FLUSHING CONNECTION
SB	Thread	100°F (38°C)	2500 psig (172 bar) ¹	General Purpose	No Flush
SG	Thread	100°F (38°C)	2500 psig (172 bar) ¹	General Purpose	With Flushing Connection
SX	Thread ³	100°F (38°C)	10000 psig (690 bar)	High Pressure	No Flush
SW	Thread ⁴	100°F (38°C)	2500 psig (172 bar)	EPA Clean Air Act	No Flush
SC	Flange	–	Flange Dependent	General Purpose	No Flush
SD	Flange	–	Flange Dependent	General Purpose	With Flushing Connection
SR	Flange	–	Flange Dependent	Tantalum Clad Bottom	No Flush
SJ	In-Line Flow Thru ^A	100°F (38°C)	1500 psig (103 bar) ²	Saddle Mounted	No Flush
SK	In-Line Flow Thru ^B	100°F (38°C)	1500 psig (103 bar) ²	Thread Attached	No Flush
SM	In-Line Flow Thru ^C	100°F (38°C)	1500 psig (103 bar) ²	Butt Welded	No Flush
SN	In-Line Flow Thru ^D	–	Flange & Sched. Dependent	Small Pipe	No Flush
SP	In-Line Flow Thru ^E	–	Flange & Sched. Dependent	Larger Pipe	No Flush

NOTE:

¹ Optional 5000 psig available at 100°F (345 bar at 38°C)

² Optional 3000 psig available at 100°F (207 bar at 38°C)

³ No bleed screw

⁴ Top, bottom, and diaphragm must be the same

^A In-line flow thru welded by user

^B In-line flow thru thread-attached connection

^C In-line flow thru welded by user, pipe supplied, schedule dependent

^D In-line flow thru for .75" to 3" pipe diameters

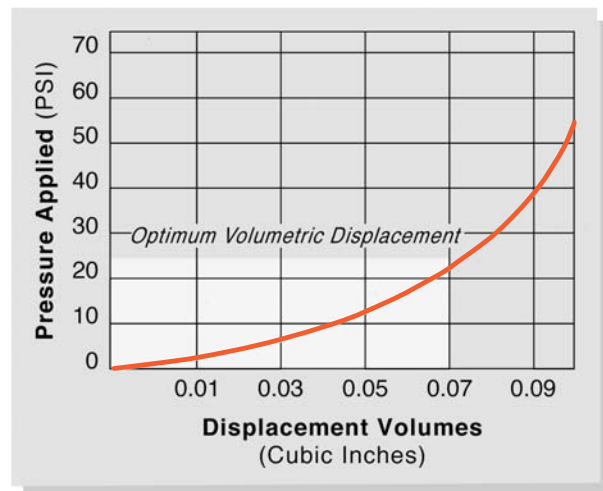
^E In-line flow thru for 4" to 10" pipe diameters

Application Note

Avoid sizing the diaphragm too small or with a diaphragm that may be too rigid and inflexible since thermal expansion of the fill fluid may lead to inaccurate pressure readings and zero shifts.

Special Requests

The diaphragm seal combinations in this catalog represent AMETEK's more commonly ordered products. If you don't find a seal combination in this specification sheet, or if you are in need of a special application or material, call us. AMETEK can supply you with the safe and reliable solution for most applications.



Pressure vs. Volumetric Displacement

Displacement curves are provided to assist in selecting a diaphragm seal with minimal full span displacement bias effects. This graph is for reference only and may not accurately represent the maximum displacement that may be used. Contact AMETEK for exact specifications.

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