



Diaphragm Seals

Type R Series with Removable Metal Diaphragm Seal

DESCRIPTION

Mansfield & Green R Series diaphragm seals feature removable metal diaphragms that can be replaced or repaired if required many times over. The diaphragm is self-retained in the upper housing for easy repair or replacement. This extends the life of the seal element and allows for field replacement and service. Type R Series seals have a low operating costs and greatly reduce the need to completely replace the entire seal element, even in harsh applications.

Type R Series diaphragm seals employ a diaphragm retained between two bolted members. In the clean-out design, the diaphragm is situated between the top and middle ring. In the plain design, the diaphragm is located between the top and bottom. Type R Series diaphragms have integral gaskets with a baked-on TEFLON[®] finish. The fill fluid cavity is also sealed by a VITON[®] O-ring. The seal element's upper housing is contoured to allow maximum movement and minimal distortion due to improper handling. Type R seal elements have a volumetric displacement of .07 cubic inches.



FEATURES

- Removable metal diaphragm
 - Self-gasketing simplifies field maintenance
 - Extends seal service life
 - Low operating costs
- Materials available for corrosive applications
- Ideal for general purpose applications
 - .07 cubic inch volumetric displacement
- Seal ratings to 5000 psig (345 bar)
- Continuous duty seal element

SEAL CONFIGURATIONS

Threaded Seal Elements

There are four basic versions of R Series diaphragm seals with threaded attachments. The RB seal element is used for pressure applications only and has a standard pressure rating of 2500 psig (optional 5000 psig) at 100°F (38°C). The RG seal element is similar to the RB seal, except that it has a 1/4 NPT flushing connection and optional 3000 psig rating. The RA seal element has a standard pressure rating of 2500 psig at 100°F (38°C), but may also be supplied with a pressure rating of up to 5000 psig. The RH seal element is similar to the RA seal element except that it features a 1/4 NPT flushing connection and optional 3000 psig rating.

Flanged Seal Elements

There are three basic versions of flanged R Series seal elements. The flange is a standard raised type. The RC seal element can be supplied in .5" and .75" with Class 150 thru 1500 ANSI flange ratings. A 1" and 1.5" version can be supplied with a Class 150 thru 1500 ANSI rating. 2" thru 4" versions are available with Class 150 to 1500 ANSI ratings. The RD Series features a 1/4 NPT flushing connection. Type RC seal elements are also available in DIN and metric sizes. The RR Series has an exposed tantalum diaphragm and 304 stainless steel tantalum-clad bottom. Type RR Series are available in sizes from .5" to 3". ANSI ratings from 150 to 1500 are available as standard.

In-line Flow Thru Seal Elements

In-line flow thru R Series diaphragm seals include the RJ versions for 3" and larger pipe connections. The RK versions are available with 1/4, 3/8, or 1/2 NPT process connections. The RM 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 RN 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 RP versions are for pipe sizes from 4" to 8" and with ANSI ratings of 150 or 300. These can be supplied with an optional TEFLON liner.

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Type R Series

with Removable Metal Diaphragm Seal

MODEL R SERIES SELECTION GUIDE

SEAL TYPE	SEAL MOUNTING	OPERATING TEMPERATURE	OPERATING PRESSURE	PROCESS APPLICATION	FLUSHING CONNECTION
RB	Thread	100°F (38°C)	2500 psig (172 bar) ¹	General Purpose	No Flush
RG	Thread	100°F (38°C)	2500 psig (172 bar) ²	General Purpose	With Flushing Connection
RA	Thread	100°F (38°C)	2500 psig (172 bar) ¹	Removable Bottom ³	No Flush
RH	Thread	100°F (38°C)	2500 psig (172 bar) ²	Removable Bottom ³	With Flushing Connection
RC	Flange	–	Flange Dependent	General Purpose	No Flush
RD	Flange	–	Flange Dependent	General Purpose	With Flushing Connection
RR	Flange	–	Flange Dependent	Tantalum Clad Bottom	No Flush
RJ	In-Line Flow Thru ^a	100°F (38°C)	1500 psig (103 bar)	Removable Bottom ³	No Flush
RK	In-Line Flow Thru ^b	100°F (38°C)	1500 psig (103 bar)	Removable Bottom ³	No Flush
RM	In-Line Flow Thru ^c	100°F (38°C)	1500 psig (103 bar) ²	Removable Bottom ³	No Flush
RN	In-Line Flow Thru ^d	–	Flange & Sched. Dependent	Removable Bottom ³	No Flush
RP	In-Line Flow Thru ^e	–	Flange & Sched. Dependent	Removable Bottom ³	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 Removable bottom without loss of fill fluid

^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

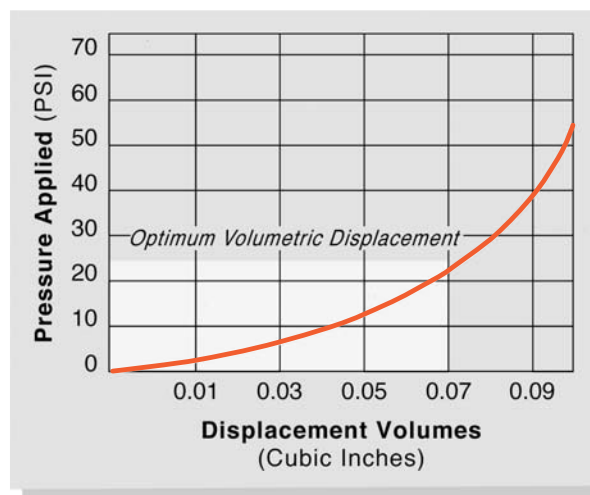
^e In-line flow thru for 4" to 8" pipe diameters

Application Note

Make sure the process and ambient temperatures do not exceed the seal element's fill fluid service temperature range.

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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