

SADDLE MOUNT DIAPHRAGM SEAL

Reotemp's Saddle Mount Diaphragm Seal is ideal for pressure measurement of high viscosity or clogging media where it is important to maintain uninterrupted process flow. Reotemp offers a robust and easy-to-install pipe saddle for new installations, or a variety of diaphragm seal housings to fit existing pipe saddles from other manufacturers.



W545

DIAPHRAGM SEALS

SPECIFICATIONS

Diaphragm	316SS, Hast C-276, Tantalum, Monel, Titanium, or others	
Lower Housing	316SS, Hast C-276, Monel, or others	
Gasket	PTFE, Grafoil, Kalrez, Silver Ag3N5, or Klinger	
Upper Housing	316SS Standard	
Process Temperature Limits		W545
	PTFE Gasket	-110/400°F
	Klinger Gasket	-110/500°F
	Grafoil Gasket	-40/750°F
	Kalrez	30/620°F
	Silver AG3N5	-150/850°F

Ambient Temperature Limits Determined by the pressure instrument.

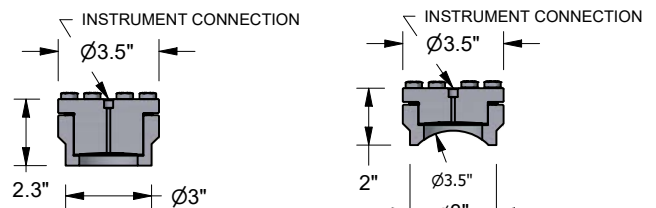
Minimum Recommended Span		W545
	2.5" & 3.5" Gauges	15 psi
	4", 4.5", & 6" Gauges	30 psi
	Transmitter (Gauge Pressure)	150" H ₂ O
	Transmitter (Differential Pressure)	300" H ₂ O _d
	Differential Pressure Gauge (D40/42 Only)	N/A

Seal Type	6-Bolt	B63	Type B; Up to 3" Pipe
		B64	Type B; 4" and Larger Pipe
8-Bolt	A83	Type A (Ashcroft); Up to 3" Pipe	
	A84	Type A (Ashcroft); 4" and Larger Pipe	
	B83	Type B (Conoflow/Ametek/RJ Global); Up to 3" Pipe	
	B84	Type B (Conoflow/Ametek/RJ Global); 4" and Larger Pipe	
	W83	Type R (Wika)	
	S8R	Reotemp Complete Assembly	

FEATURES / BENEFITS

- Welded Diaphragm for Maximum Durability
- Designed for applications where clogging and buildup can occur
- If your saddle is already welded in place, select from multiple manufacturer dimensions for a drop in replacement
- Easy Cleanout of Diaphragm Cavity without Compromising Filled System

New System

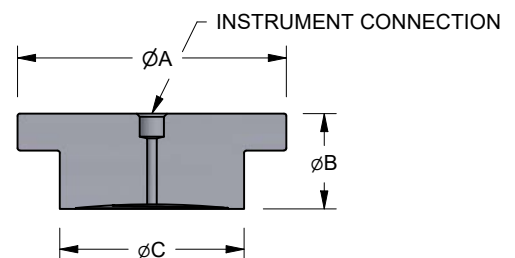


For 4" and Larger Pipes

For 3" Pipe

For Specific Product Drawings Configure Your Saddle Seal at reotemp.com

Replacement Upper



See Page 121 for Replacement Upper Detailed Drawings and Specifications.

SADDLE MOUNT DIAPHRAGM SEAL

HOW TO ORDER: Choose options to build a part number. For example: **W5452B63XXXHS8K-RTR-BH-PP**

SERIES	INSTRUMENT CONNECTION	SEAL TYPE AND MANUFACTURER	PIPE SIZE	SADDLE MATERIAL	DIAPHRAGM & BODY MATERIAL
W545	2	B63	XXX	X	HS
W545 = Welded Diaphragm, Saddle Seal	2 = 1/2" FNPT 4 = 1/4" FNPT W = Low Volume 8mm Connection	6-Bolt B63 = Type B; Up to 3" Pipe B64 = Type B; 4" and Larger Pipe 8-Bolt A83 = Type A Ashcroft; Up to 3" Pipe A84 = Type A Ashcroft; 4" and Larger Pipe B83 = Type B; Conoflow/Ametek/RJ Global; Up to 3" Pipe B84 = Type B; Conoflow/Ametek/RJ Global; 4" and Larger <i>Complete Assembly</i> S8R = Reotemp Complete Assembly	XXX = Upper Only/NA 025 = 2 1/2" Pipe 030 = 3" Pipe 040 = 4" and Larger Pipe Note: Specifying pipe size is only applicable for S8R selection	S = 316L F = 304L H = Hastelloy C276 M = Monel A400 C = Carbon Steel J = Titanium X = No Saddle/Lower Housing	SS = 316L Diaphragm & Body HS = Hastelloy C276 Diaphragm / 316L Body US = Tantalum Diaphragm / 316L Body 2S = Duplex 2205 Diaphragm / 316L Body MS = Monel A400 Diaphragm / 316L Body JS = Titanium Diaphragm / 316L Body Wetted

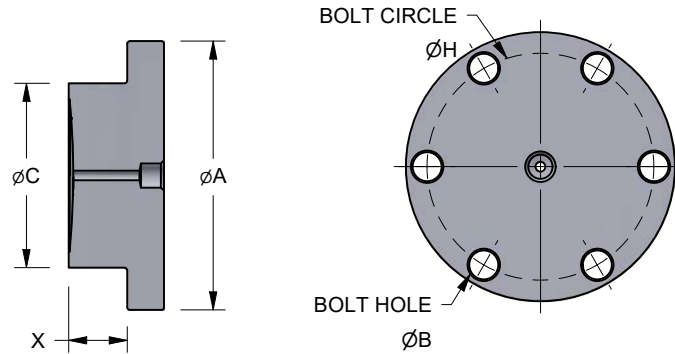
DIAPHRAGM SEALS

BOLTING	GASKET	INSTRUMENT MOUNT	SYSTEM FILL FLUID	OPTIONS
8	K	-RTR	-BH	-PP
8 = Carbon Steel Grade 8, Yellow Chromate Coating S = Stainless Steel 316	K = Klinger C-4401 T = PTFE G = Grafoil 5 = Silver Ag3N5 Z = Kalrez Wetted	<i>Direct Mount</i> -DTD = Direct Mount, Threaded -DWD = Direct Mount, Welded -RTR = 6" Cooling Tower -STW = 3" Cooling Standoff <i>Remote Mount</i> -A?? = Armored Capillary, Threaded -B?? = Armored Capillary, Welded -P?? = PVC Coated Armor, Threaded -W?? = PVC Coated Armor, Welded Note: ?? = Length in feet (e.g. 05 = 5 feet) <i>Tree Mount</i> -GVA = Low Volume Goal Post Assembly; Vertical Mount; Gauge/Switch -CVA = Compact Tree Assembly; Vertical Mount; Gauge/Switch See Page 98 for Complete Mounting Guide -YYY = Dry Seal, No Instrument	<i>Common Fills</i> -AS = Silicone DC200 -AG = Glycerin USP -BH = Silicone DC704 -C1 = Fomblin Y06 (inert) -C2 = Halocarbon 6.3 See Page 105 for Complete Fill Guide -XX = No Fill Fluid	-PP = Pulse Plus™ (Pulsation Protection) -OX = Cleaned for Oxygen Service -AU = Gold-Plated Diaphragm -TC = Teflon-Coated Diaphragm -TS = SS Tag (1-10 Character) -FW = Fill Port Welded Closed -MR = Mill Test Report -NC = NACE Certification -PM = Positive Material Identification Certification See Page 171 for Additional Options



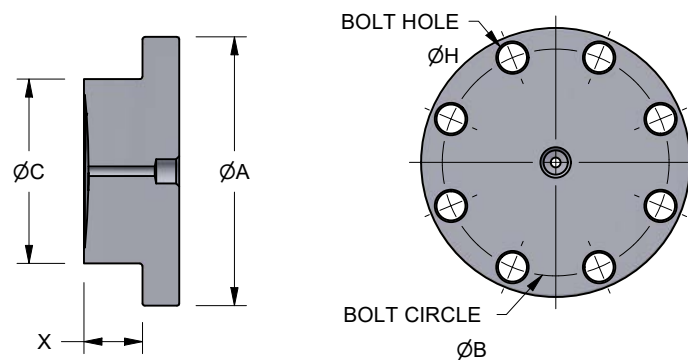
SADDLE MOUNT DIAPHRAGM SEAL

DIAPHRAGM SEALS



6 Bolt

6 Bolt	Type B (0.78") (For 3" and Smaller Pipe)	Type B (1.48") (For 4" and Larger Pipe)
Flange Dia. "A", in.	3.5	3.5
Extension Dia. "C", in.	2.4	2.4
Bolt Cir. Dia. "B", in.	2.99	2.99
Bolt Hole Dia., "H", in	0.33	0.33
Extension Length "X"	0.78	1.48

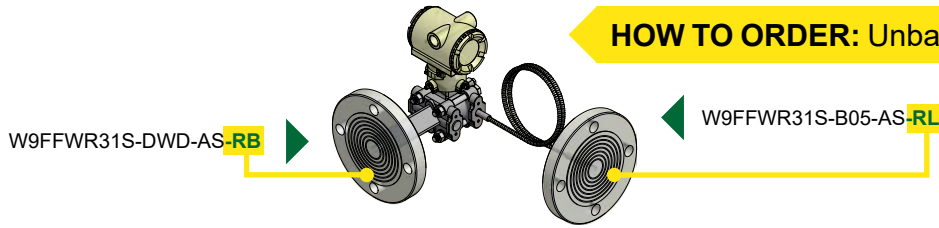


8 Bolt

8 Bolt	Type B (0.76") (For 3" Pipe and Smaller)	Type B (1.45") (For 4" Pipe and Larger)	Type A (0.78") (For 3" Pipe and Smaller)	Type A (1.46") (For 4" Pipe and Larger)	Type W (0.77")
Flange Dia. "A", in.	3.5	3.5	3.45	3.45	3.54
Extension Dia. "C", in.	2.4	2.4	2.48	2.48	2.52
Bolt Cir. Dia. "B", in.	2.91	2.91	2.99	2.99	2.89
Bolt Hole Dia., "H", in	0.33	0.33	0.27	0.27	0.33
Extension Length "X"	0.76	1.48	0.78	1.46	0.77

SMART TRANSMITTER ATTACHMENT

HOW TO ORDER: Unbalanced System Example

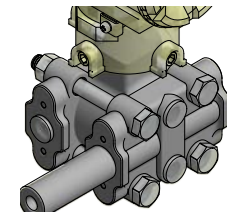
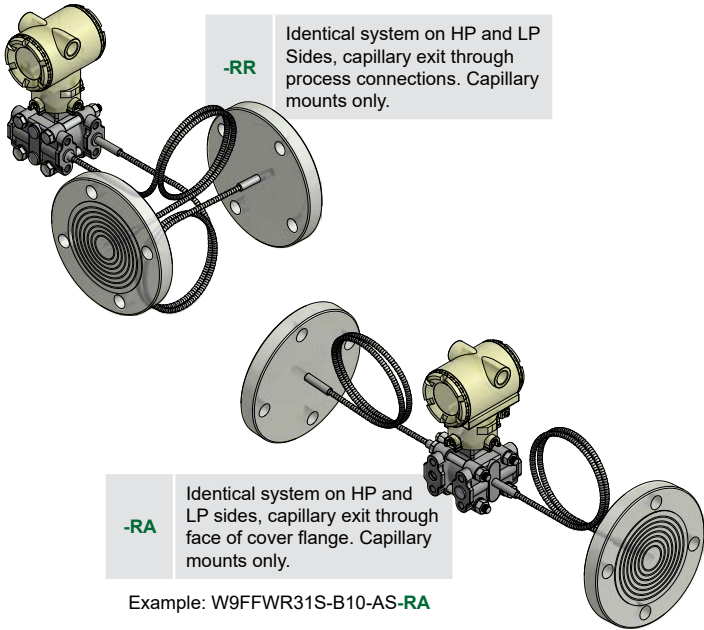


DIFFERENTIAL PRESSURE ASSEMBLY

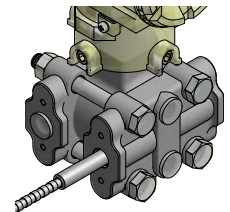
Balanced System A complete assembly with one part number that includes two diaphragm seals, two capillaries, two fills, and one complete assembly calibration certificate.

Unbalanced DP System Where seal, mount, capillary, or fill is not identical. A complete assembly includes one diaphragm seal on the HP side AND one diaphragm seal on the LP side.

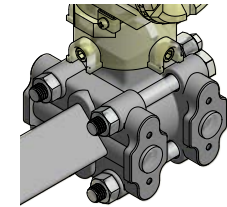
DIAPHRAGM SEALS



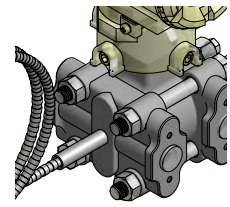
-RH Mount via Process Connections
Side High Pressure



-RL Mount via Process Connections
Side Low Pressure



-RB Mount via Face of Cover Flange
Side High Pressure



-RC Mount via Face of Cover Flange
Side Low Pressure

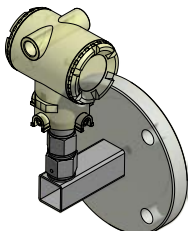
GAUGE PRESSURE ASSEMBLY

In Line Pressure Transmitter

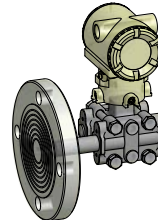
Traditional Mount for Gauge Pressure Seal mount on one side only, other side is vented.



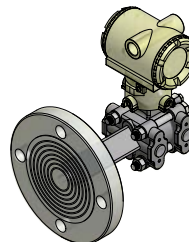
-R1 Mount to In-Line Gauge Pressure Transmitter. Direct or remote mount.



-R4 Horizontal Mount (Tank Mount) to In-Line Gauge Pressure Transmitter. Direct mount only.



-R2 Instrument mount through process connections, HP Side. Use "R3" if mounting to LP side

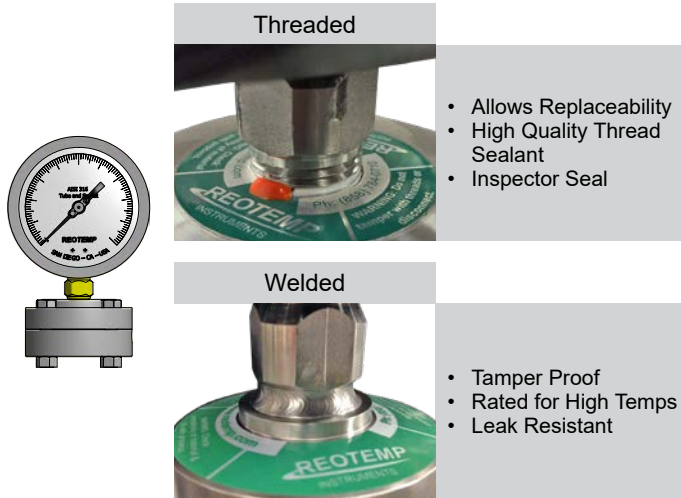


-R8 Instrument mount through face of cover flange, HP Side. Use "R9" if mounting to LP Side

INSTRUMENT MOUNTING CONFIGURATIONS

DIRECT MOUNT

Direct Mounting a pressure gauge, switch, or transmitter is the most common diaphragm seal assembly.



- Allows Replaceability
- High Quality Thread Sealant
- Inspector Seal

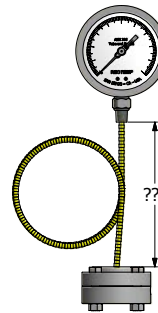
- Tamper Proof
- Rated for High Temps
- Leak Resistant

Code	Description	Max. Temp
-DTD	Threaded Instrument Connection	400°F
-DWD	Welded Instrument Connection	600°F

Assembly Notes: Welded connection recommended for pressure exceeding 1,500 psi for purposes of leak prevention.

REMOTE MOUNT

Remote Mounting a pressure instrument using flexible capillary is a common mounting method when the point of measurement is in a hazardous or inconvenient location.



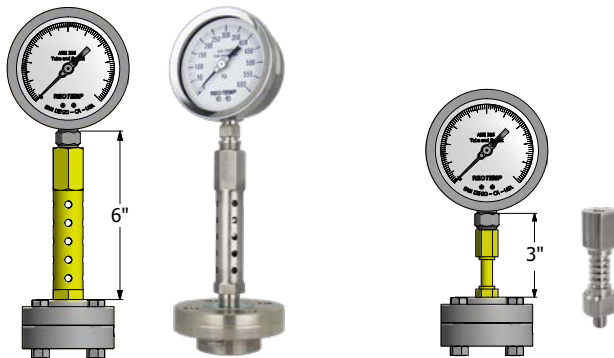
Code	Description
A	Armored, Threaded, 2mm
B	Armored, Welded, 2mm
W	PVC, Threaded, 2mm
P	PVC, Welded, 2mm
C	Armored, Threaded, 1mm
E	Armored, Welded, 1mm
F	PVC, Threaded, 1mm
G	PVC, Welded, 1mm
H	Armored, Threaded, 0.55mm
J	Armored, Welded, 0.55mm
K	PVC, Threaded, 0.55mm
L	PVC, Welded, 0.55mm

Note: ?? = Length in feet (e.g. 05 = 5 feet)

Assembly Notes: 2mm, 1mm, and .55mm are capillary inner diameter. Ambient temperature limit of PVC coated armor is 250°F. Process temperature limit of threaded connections is 400°F. Standard instrument connection is threaded (Smart Transmitters are welded), unless specified by customer.

COOLING ELEMENTS

Used in either high temp or cold temp applications, Cooling Elements mounted above diaphragm seals quickly normalize fluid temperature toward ambient. This protects the pressure instrument while still maintaining the convenience of a direct mount.

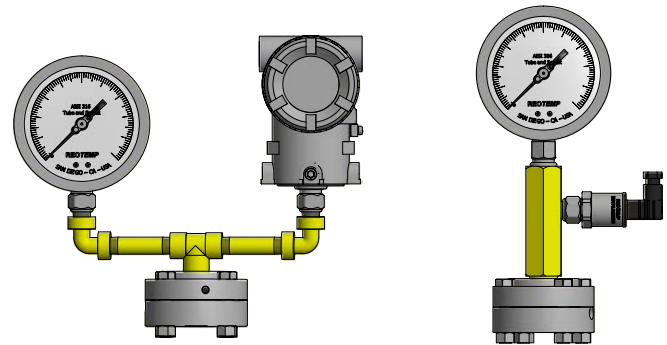


Code	Description	Max. Temp
-RTR	6" Cooling Tower	750°F
-STW	3" Cooling Standoff	600°F

Assembly Notes: Cooling elements are welded to diaphragm seal. Instruments are threaded to cooling element unless specified. All lengths are nominal.

TREE ASSEMBLIES

Tree Assemblies offer the ability to mount two pressure instruments onto one diaphragm seal, allowing the user to gain both a local indication and a remote signal without adding an additional pipe insertion.



Code	Description	Max. Temp
-TRE	Goal Post, Low Pressure Assembly (Max. 150 psi)	400°F
-TRX	Goal Post, Heavy Duty (Max. 3,000 psi)	600°F
-TRM	Compact Tree Assembly (Max. 3,000 psi)	600°F

Assembly Notes: Threaded joints are fully welded for consistent instrument orientation. Instrument connections are threaded unless specified by customer. Diaphragm seal must displace enough fluid to drive both instruments.

DIAPHRAGM SEALS

FILL GUIDE

Diaphragm seals are designed to protect pressure instruments from hot process media and corrosive chemicals while minimizing any negative effect on instrument accuracy and durability. A well-made diaphragm seal can achieve this goal only if it is properly assembled, filled, and tested. Reotemp's highly trained technicians use state-of-the-art equipment so that every diaphragm seal assembly is filled and tested to assure optimal instrument performance:

- ✓ 24-hour Minimum Fluid De-gassing
- ✓ Evacuated Instrument Chamber Up to 10⁻⁸ mbar Absolute
- ✓ Complete Fill Integrity Check
- ✓ Fill-port Leak Test
- ✓ Post-fill Static Test
- ✓ Verification of Instrument Calibration
- ✓ High-temp Pipe Sealant Option for Joints
- ✓ Tamper-proof (Inspection Seal) Lacquer used on All Threaded Joints
- ✓ Sturdy Diaphragm Packaging Protection

DIAPHRAGM SEALS

Part Number Code	Name	Description	Temperature Range (Vacuum Service <5psia)		Viscosity cst @ ~77°F	Specific Gravity @ ~77°F	Thermal Expansion cc/cc°C
STANDARD FILL FLUID							
AS	Silicone DC200 ¹	This is the standard fill fluid for most diaphragm seal applications.	-40°F to 400°F (-40°F to 250°F)	Yes	20	0.94	.00104
HIGH TEMP SILICONE							
BH	Silicone DC704 ¹	Standard for Smart Transmitters and capillary systems. Performs well in applications with high temperature and a deep vacuum.	0°F to 650°F (0°F to 450°F)	No	44	1.07	.00077
B1	Silicone DC710 ¹	Highest temperature rating; ideal for gauge seal assemblies. Too thick for capillary assemblies. Response time can become very slow in cold conditions.	50°F to 750°F (50°F to 400°F)	Yes	500	1.11	.00043
C8	Syltherm 800 ²	Low viscosity allows it to perform well in both low and high temperatures. Not recommended for vacuum service or at high temperatures when under low static pressure.	-40°F to 750°F (-40°F to 150°F)	No	9.5	0.93	.00136
B5	Silicone DC705 ¹	Performs very well in high temperatures when under vacuum. The high viscosity and freezing point of this fluid makes it a poor choice for cold or outdoor installations without heat tracing.	50°F to 675°F (50°F to 550°F)	Yes	175	1.09	.00096
B2	Silicone DC550 ¹	Similar high temperature performance as DC705, however it performs better at lower temperatures.	-40°F to 575°F (-40°F to 400°F)	No	125	1.07	.00076
FOOD GRADE							
AG	Glycerin USP	This is the standard fill fluid for most gauge seal assemblies for food, beverage, and pharmaceutical applications. Its high viscosity will cause very slow response at times in low temperature and outdoor installations.	60°F to 450°F (Not Suitable)	Yes	1100	1.26	.00061
BN	NEOBEE M20 ⁷	Low viscosity and a wide temperature range makes this the standard sanitary fill fluid for Smart Transmitters and capillary systems.	-10°F to 400°F (-10°F to 200°F)	No	10	0.92	.00101
BS	Food Grade Silicone	Highest temperature limit for food grade fluids. Because of its high viscosity it does not perform well in low temperatures.	20°F to 550°F (20°F to 250°F)	Yes	350	0.97	.00096
BP	Propylene Glycol	This is the fill fluid used when Glycol is called for on the customer specification. It has a very narrow temperature range.	0°F to 200°F (Not Suitable)	No	2.85	1.03	.00073
INERT (TYPICALLY FOR CHLORINE AND OXYGEN APPLICATIONS OR IN SILICONE-FREE ENVIRONMENTS)							
C1	Fomblin Y06 ⁴	Ideal inert fluid for transmitter applications. Relatively high vapor pressure above 200°F. Not recommended for use in high temperature situations with low static pressure.	-40°F to 450°F (0°F to 250°F)	No	71	1.88	.00086
C2	Halocarbon 6.3 ³	Standard inert fluid used in gauge seal assemblies.	-40°F to 400°F (-40°F to 200°F)	Yes	6.3	1.87	.00084
C3	Halocarbon 1.8 ³	Typically used in low temperature applications because of its low viscosity.	-110°F to 220°F (-100°F to 100°F)	No	1.8	1.82	.00084
C4	Fluorolube FS-5 ⁵	Similar performance to Halocarbon 6.3, however not suitable for vacuum service.	-40°F to 450°F (Not Suitable)	No	5	1.86	.00087
SPECIALTY							
CK	Krytox 1506 ⁶	Specialty fill fluid, inert.	-40°F to 350°F (-40°F to 300°F)	No	62	1.88	.00095
BE	Ethylene Glycol	Occasionally used in annular (O-ring) seal assemblies.	-25°F to 320°F (Not Suitable)	No	30	1.10	.00062
CT	Syltherm XLT ²	Used for very low process temperatures.	-150°F to 500°F (Not Suitable)	No	1.4	0.85	.00168

1 Trademark Dow Corning

3 Trademark Halocarbon Product Corporation

5 Trademark Hooker Chemical Company

7 Trademark Stepan Specialty Products

2 Trademark The Dow Chemical Company

4 Trademark AUSIMONT S.P.A

6 Trademark The Chemours Company FC, LLC

Note: PulsePlus™ fill fluids may have different physical properties than specified. Chemical composition and temperature ranges do not vary.

DIAPHRAGM SEAL OPTIONS

DIAPHRAGM SEALS

		MS4 MS6 MS8	W5 W6 W7	T5 T6 V5	W9FF W9FR	W9XT	W9FP	DSTC75	DSTC15 AND LARGER	DSTF05	DSTF75 AND LARGER	DSPP	OR	DXFR
PULSATION PROTECTION (ONLY AVAILABLE WITH REOTEMP PRESSURE GAUGE MOUNTED TO SEAL)														
-PP	Pulse Plus™	✓	✓	✓	✓	✓	N/A	N/A	✓	N/A	✓	✓	✓	N/A
DIAPHRAGM COATING														
-AU	Gold Plated Diaphragm	N/A	✓	N/A	✓	✓	✓	✓	✓	✓	✓	✓	N/A	N/A
-TC	Teflon Coated Diaphragm PTFE	N/A	✓	N/A	✓	✓	✓	N/A	✓	N/A	✓	✓	N/A	N/A
-EP	Electropolished Diaphragm	N/A	N/A	N/A	N/A	N/A	N/A	✓	✓	✓	✓	✓	N/A	N/A
FILL														
-FW	Fill Port Welded Closed	STD ¹	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	N/A	N/A
-VF	Fill for Vacuum Service	N/A	✓	N/A	✓	✓	✓	N/A	✓	N/A	✓	✓	N/A	N/A
CLEANING AND FINISH														
-DG	Degreased, Shipped in Sealed Bag	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	N/A	✓
-OX	Cleaned for Oxygen Service per ASME B40.1	✓	✓	N/A	✓	✓	✓	✓	✓	✓	✓	✓	N/A	✓
-OY	Cleaned for Oxygen Service per MIL-STD-1330D	✓	✓	N/A	✓	✓	✓	✓	✓	✓	✓	✓	N/A	✓
PLUG FOR FLUSH PORT														
-GS	1/4" SS Plug Installed	STD	STD	STD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	✓
-JS	1/2" SS Plug Installed	N/A	STD	STD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	✓
-GH	1/4" Hast C Plug Installed	✓	✓	✓	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	✓
-JH	1/2" Hast C Plug Installed	N/A	✓	✓	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	✓
-GM	1/4" Monel Plug Installed	N/A	✓	✓	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	✓
-JM	1/2" Monel Plug Installed	N/A	✓	✓	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	✓
TAG OPTION														
-TS	Stainless Steel Tag (1-10 Characters)								✓					
-TM	Stainless Steel Tag (11-80 Characters)								✓					
-TP	Paper Tag								✓					
CERTIFICATION OPTIONS														
-NC	Certificate of NACE Compliance	✓	✓	N/A	✓	✓	✓	N/A	N/A	✓	✓	✓	N/A	✓
-CM	General Material Conformance	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
-MR	MTR - Mill Test Report Certificate	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	N/A	✓
-PM	PMI - Positive Material Identification Certificate	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	N/A	✓
-HT	Hydrostatic Test per ASME B31.3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	N/A	N/A
-HL	Helium Leak Test Certificate	✓	✓	N/A	✓	✓	✓	✓	✓	✓	✓	✓	N/A	N/A

✓ Indicates that the option is available
 N/A Indicates the option is not available

¹ Standard on MS8, available on MS4 & MS6.