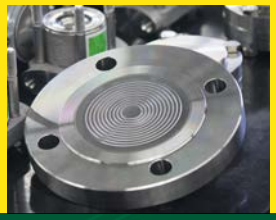
REOTEMP®

INSTRUMENTS

DIAPHRAGM SEALS

MADE IN THE USA

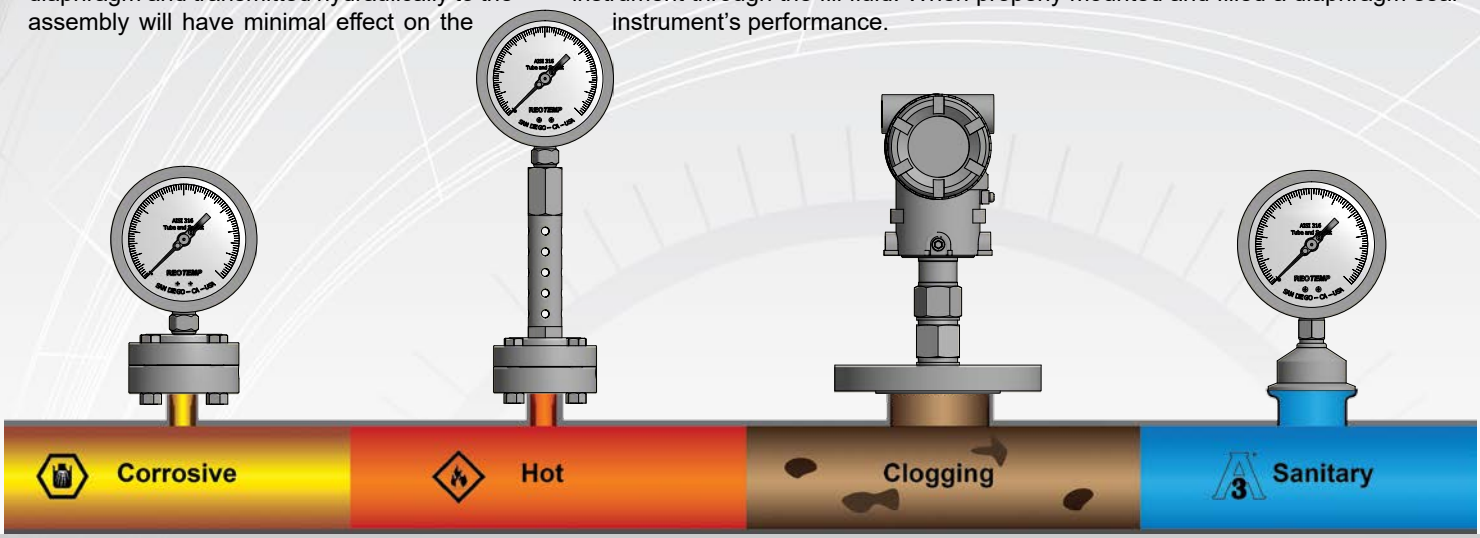


Measuring your world since 1965™

REOTEMP DIAPHRAGM SEALS

WHY A DIAPHRAGM SEAL?

Diaphragm seals are used in applications where the pressure sensor requires isolation from the process media. These applications may be corrosive, high temp, clogging, or require a sanitary fluid to remain captured in the piping or vessel. Rather than the process fluid interfacing with the pressure sensor, the pressure is exerted onto the flexible diaphragm and transmitted hydraulically to the instrument through the fill fluid. When properly mounted and filled a diaphragm seal assembly will have minimal effect on the instrument's performance.



APPLICATION CONSIDERATIONS

REOTEMP Diaphragm Seal Assemblies are carefully designed, built, and tested to maximize performance, increase instrument lifespan, and assure operator safety. The following should be considered when specifying a diaphragm seal:

1 INSTRUMENT CONSIDERATIONS

- Is there sufficient displacement to drive through its full range?
- Is the diaphragm sensitive enough for the measuring range and accuracy grade of the instrument?

2 DIAPHRAGM SEAL MOUNTING

- How will the diaphragm seal mount to the process? Threaded? Flanged? Clamped?
- How will the instrument mount to the diaphragm seal? Threaded? Welded?
- Will the instrument be mounted directly to the seal or with capillary?

3 PROCESS CHARACTERISTICS

- What are the pressure and temperature limits?
- Are there issues with clogging or high viscosity?
- Is there severe shock and pulsation?
- Is the process fluid compatible with the wetted material and gasket?

4 AMBIENT CHARACTERISTICS

- Are there extreme or fluctuating ambient temperatures?
- Is the outside environment corrosive?

5 VACUUM CONSIDERATIONS

- Will the assembly be operating in deep vacuum (< 5psia)? If yes, contact the factory with process specifications.

WHY CHOOSE REOTEMP DIAPHRAGM SEALS?

- ✓ 20+ Years of Manufacturing Experience
- ✓ All Products Made in the USA
- ✓ Material Traceability Available on All Parts (No India or China Material)
- ✓ Fastest Delivery Times in the Industry
- ✓ Helium Leak Tested Diaphragm Welds
- ✓ 100% Leak Checking on Filled Assemblies

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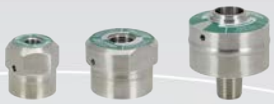
- ✓ Data Sheets
- ✓ Part Builders
- ✓ Pricing
- ✓ Drawings

	Mini Seals	Flush Face	Sanitary	Annular/Flow-Thru
				
	MS4/MS6/MS8	**DSTF**	**DSTC**	**ORR/ORT**
Standard Instrument Pairing	Pressure Gauges, General Purpose Transmitters, Pressure Switches	Pressure Gauges, General Purpose Transmitters, Solid State Pressure Switches	Pressure Gauges, General Purpose Transmitters, Smart Transmitters, Pressure Switches	Pressure Gauges, General Purpose Transmitters, Smart Transmitters, Pressure Switches
Available Process Connection	Female NPT: 1/4”, 1/2” Male NPT: 1/4”, 1/2”, 3/4”, 1”	Male NPT: 1/2”, 3/4”, 1”, 1.5”	3/4”, 1.5”, 2”, 2.5”, 3” Tri-Clamp®	2” - 48” Pipe Sizes
Max. Working Pressure @ 70°F	Up to 5,000 psi	Up to 10,000 psi	1,000 psi	275-720 psi
Max. Temperature	750°F	Up to 750°F	400°F	400°F
Available Wetted Material	316SS Monel Hastelloy C-276	316SS	316SS Hastelloy C-276 (Optional Electropolish)	Carbon Steel 316SS Teflon® Coated Carbon Steel PVC
Available Gasket Material	No Gasket, All Welded	No Gasket, All Welded	User Supplied	Buna, Teflon®, Viton®, Natural Rubber, and more
Standard Delivery	3-5 Days	3-5 Days	3-5 Days	2-6 Weeks

	Threaded Offline	Flanged Offline	Flanged Flush/Pancake	Flanged Extended
				
	W51/W61/W71 T51/V61/T61	**W5/W6/W7 T5/T6/V5**	**W9F**	**W9XT**
Standard Instrument Pairing	Pressure Gauges, General Purpose Transmitters, Smart Transmitters, Pressure Switches, Mechanical Differential Pressure Gauges		Smart Transmitters (Differential & Gauge Pressure)	Smart Transmitters (Differential & Gauge Pressure)
Available Process Connection	Female NPT 1/4” thru 1.5” NPT	ANSI Flange 1/2” thru 3” (150# - 1500#)	ANSI Flange (2”, 3”, 4”) (150# - 1500#)	ANSI Flange (2”, 3”, 4”) (150# - 1500#)
Max. Working Pressure @ 70°F	Up to 10,000 psi	Per Flange Rating	Per Flange Rating	Per Flange Rating
Max. Temperature	750°F	750°F	750°F	750°F
Available Wetted Material	316L, Hastelloy C-276, Monel A400, Viton®, Tantalum, Inconel, Hastelloy B, Nickel, Teflon® PTFE		316L SS, Hastelloy C-276, Tantalum, Hastelloy B2, Duplex SS, Monel 400	316L SS Hastelloy C-276
Available Gasket Material	Klinger C-4401, PTFE, Grafoil®		User Supplied	User Supplied
Standard Delivery	3-5 Days	5-7 Days	5-7 Days	5-7 Days

Standard delivery represents the average expected lead time for low quantities of standard configurations. Contact customer service for specific product deliveries.

COMMON CONFIGURATIONS

The pressure instrument and diaphragm seal assemblies shown below are examples of completely filled and tested assemblies and their corresponding part numbers.

Instrument
PT45P1A2P20-G-T-HV

Seal
W51522SSS-TKDTD-AS

Application
The most common gauge seal assembly for threaded connections. For use with corrosive, clogging or moderately hot process media.

Instruments
PR35S1A4D25-D-T
TG1P25-1A4A00

Seal
DSTC15SS4-TRM-AG

Application
For use in a sanitary or clean-in-place application where the user would like both a mechanical dial pressure gauge and electronic output on the same connection port.

Instrument
PC40S1A4M250-D-T

Seal
W7254R21SSS-TDTD-AS

Application
Low pressure gauge with a high accuracy diaphragm seal. For use with corrosive gas or liquid on a flanged connection.

Instrument
Customer Supplied In-Line Smart Pressure Transmitter

Seal
MS8QWM2XS-RTR-BH-R1

Application
For use in high temperature service where a diaphragm seal is required to protect the pressure transmitter from process temperature as high as 750°F.

Instrument
PT45P1A2P17-D-T-TS

Seal
W51523SSC-TKA25-AS

Application
For use where the pressure measurement point is a long distance from where the operator can conveniently and safely read the gauge.

Instrument
Customer Supplied dP Transmitter

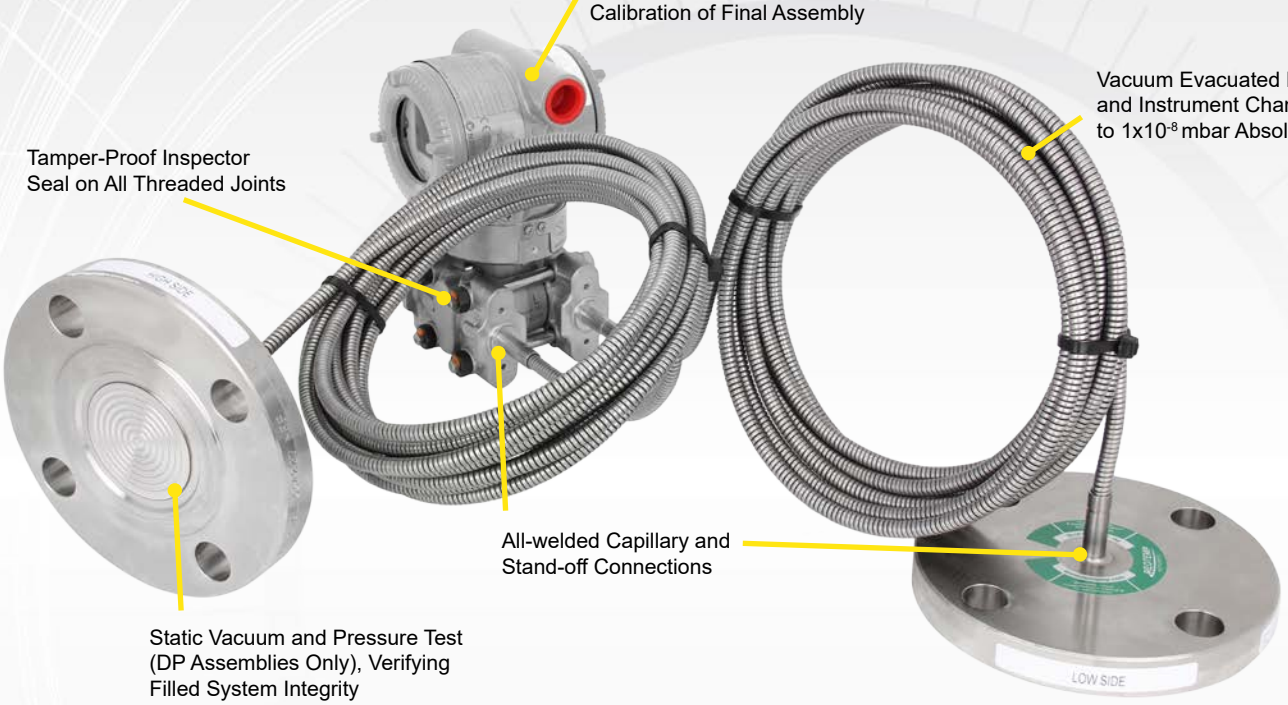
Seal
W9FF31S-W20-AS-RR

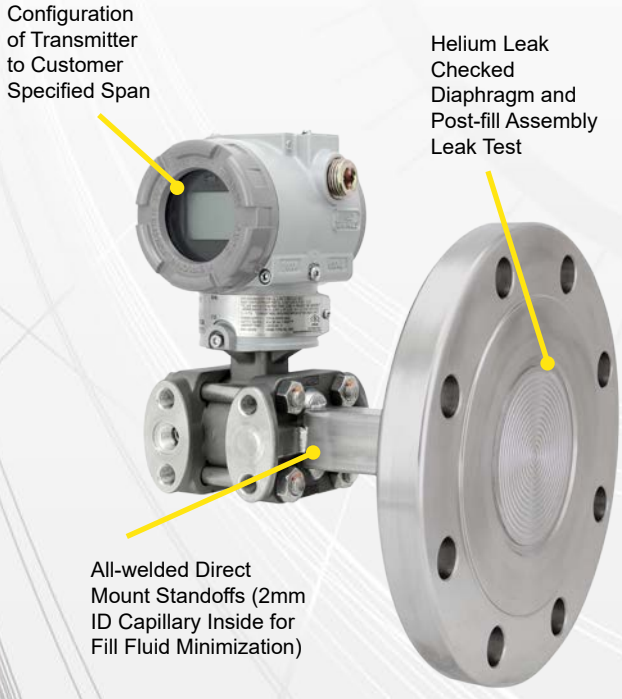
Application
For use monitoring tank level, measuring flow across an orifice plate, measuring pressure drop across a valve or filter, and other dP application. Flush diaphragm seals are most commonly used with process media that clogs or coagulates in limited flow areas and dead legs.

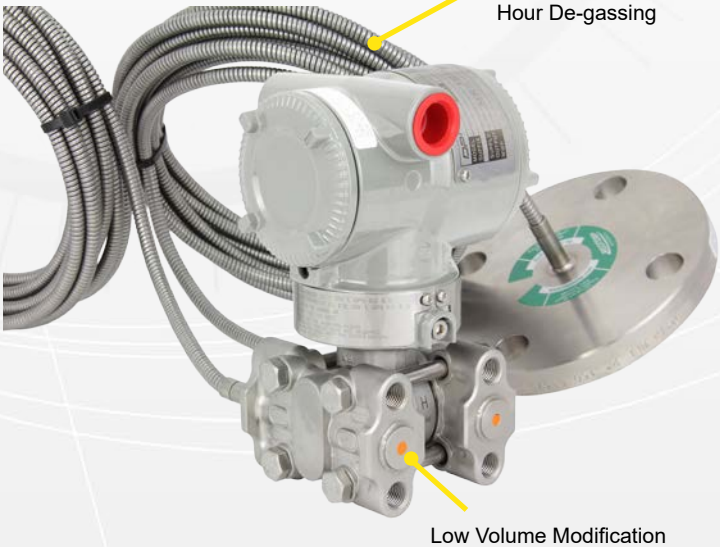
DIAPHRAGM SEAL ASSEMBLY TO SMART TRANSMITTERS

REOTEMP specializes in the unique craft of assembling diaphragm seals to field transmitters for the purpose of measuring pressure, differential pressure, level, and flow. As a trusted supplier to many of the world's leading transmitter manufacturers, REOTEMP can assemble a diaphragm seal system to virtually any make or model transmitter. Every transmitter mount includes the features below to ensure superior performance and durability for every assembly. REOTEMP also offers repair, refurbishment or replacement of used transmitters with remote seals.

STANDARD FEATURES ON ALL REOTEMP ASSEMBLIES







WHY A REOTEMP DIAPHRAGM SEAL ASSEMBLY?

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 Used on All Threaded Joints (Welded Joints Upon Request)
- ✓ Tamper-proof (Inspection Seal) Lacquer used on All Threaded Joints
- ✓ Sturdy Diaphragm Packaging Protection

Part Number Code	Name	Description	Temperature Range (Vacuum Service <5psia)	Pulse+™	Viscosity cst @ ~77ºF	Specific Gravity @ ~77ºF	Thermal Expansion cc/cc/ºC
STANDARD FILL FLUID							
AS	Silicone DC200[1]	This is the standard fill fluid for most diaphragm seal applications.	-40ºF to 400ºF (-40ºF to 250ºF)	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.	0ºF to 650ºF (0ºF to 450ºF)	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.	50ºF to 750ºF (50ºF to 400ºF)	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.	-40ºF to 750ºF (-40ºF to 150ºF)	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.	50ºF to 675ºF (50ºF to 550ºF)	Yes	175	1.09	.00096
B2	Silicone DC550[1]	Similar high temperature performance as DC705, however it performs better at lower temperatures.	-40ºF to 575ºF (-40ºF to 400ºF)	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 pharmeceutical applications. Its high viscosity will cause very slow response at times in low temperature and outdoor installations.	60ºF to 450ºF (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.	-10ºF to 400ºF (-10ºF to 200ºF)	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.	20ºF to 550ºF (20ºF to 250ºF)	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.	0ºF to 200ºF (Not Suitable)	No	2.85	1.03	.00073
INERT (TYPICALLY FOR CHLORINE AND OXYGEN APPICATIONS OR IN SILICONE-FREE ENVIRONMENTS)							
C1	Fomblin Y06[4]	Ideal inert fluid for transmitter applications. Relatively high vapor pressure above 200ºF. Not recommended for use in high temperature situations with low static pressure.	-40ºF to 450ºF (0ºF to 250ºF)	No	71	1.88	.00086
C2	Halocarbon 6.3[3]	Standard inert fluid used in gauge seal assemblies.	-40ºF to 400ºF (-40ºF to 200ºF)	Yes	6.3	1.97	.00084
C3	Halocarbon 1.8[3]	Typically used in low temperature applications because of its low viscosity.	-110ºF to 220ºF (-100ºF to 100ºF)	No	1.8	1.82	.00084
C4	Fluorolube FS-5[5]	Similar performance to Halocarbon 6.3, however not suitable for vacuum service.	-40ºF to 450ºF (Not Suitable)	No	5	1.86	.00087
SPECIALTY							
CK	Krytox 1506[6]	Specialty fill fluid, inert.	-40ºF to 350ºF (-40ºF to 300ºF)	No	62	1.88	.00095
BE	Ethylene Glycol	Occasionally used in annular (O-ring) seal assemblies.	-25ºF to 320ºF (Not Suitable)	No	30	1.10	.00062

1 Trademark Dow Corning
2 Trademark The Dow Chemical Company
3 Trademark Halocarbon Product Corporation
4 Trademark AUSIMONT S.P.A
5 Trademark Hooker Chemical Company
6 Trademark The Chemours Company FC, LLC
7 Trademark Stepan Specialty Products

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

REOTEMP®

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