

HYGENIC DIAPHRAGM SEAL

Reotemp's Series DSHS Diaphragm Seals incorporate a number of various connections used in the sanitary and hygienic markets. Ideal for applications in the Pharmaceutical, Dairy, and Food & Beverage market, the Series DSHS provides convenient diaphragm seal replacement for European and specialty sanitary connections. Reotemp will mount and fill a variety of instruments to these Hygienic Diaphragm Seals including Mechanical and Digital Pressure Gauges, Transmitters, and Switches.



DN 40 Female



1 1/2 SMS Male



DIAPHRAGM SEALS

SPECIFICATIONS

Materials
 Body: 316L
 Diaphragm: 316L
 Nut: 304SS

Wetted Part Surface 18-24 Ra

Process Temperature Limits

Process Connection	DN25/1"	DN32/ DN40/1.5"	DN50/2"	DN65/2.5"	DN80/3"
Process Temperature Limits	-20/160F	-40/250F	-40/400F	-40/750F	-40/750F

Ambient Temperature Limits Determined by Instrument.

Minimum Recommended Span

Process Connection	DN25/1"	DN32/ DN40/1.5"	DN50/2"	DN65/2.5"	DN80/3"
2.5" & 3.5" Gauges	60psi	30psi	15psi	15psi	100" WC
4", 4.5", & 6" Gauges	n/a	n/a	60psi	15psi	100" WC
Transmitter (Gauge Pressure)	30psi	15psi	5psi	50"WC	30" WC
Transmitter (Differential Pressure)	n/a	n/a	10psi	150"WC	50" WC
Maximum Working Pressure	See Table Drawing				

HYGENIC DIAPHRAGM SEAL

HOW TO ORDER: Choose options to build a part number. For example: **DSHSWD40FSS-DWD-BN-TS**

MODEL	INSTRUMENT CONNECTION	STYLE AND SIZE	BODY AND DIAPHRAGM MATERIAL	MOUNTING
DSHS = Diaphragm Seal, Hygenic Connection	W = Low-Volume, Weld Fitting 4 = 1/4" NPT 2 = 1/2" NPT B = 1/2" BSP	<u>DIN - EN11851</u> D25F DN25, Female Swivel Nut D32F DN32, Female Swivel Nut D40F DN40, Female Swivel Nut D50F DN50, Female Swivel Nut D65F DN65, Female Swivel Nut D80F DN80, Female Swivel Nut D40M DN40, Male Thread D50M DN50, Male Thread <u>SMS - Standard 1145</u> S10F 1", Female Swivel Nut S15F 1.5", Female Swivel Nut S20F 2", Female Swivel Nut S25F 2.5", Female Swivel Nut S30F 3", Female Swivel Nut S15M 1.5", Male Thread S20M 2", Male Thread <u>*Varivent (Tuchenhagen) Compatible</u> F66M Form F, 66mm diameter N84M Form N, 84mm diameter	SS = 316L SS Other material available, please inquire with factory	-DWD = Direct Mount, All Welded -DTD = Direct Mount, Threaded (not standard for sanitary applications) -RTR = 6" Cooling Tower, Welded -STW = 3" Cooling Standoff -G?? = PVC Coated Armor, 1mm, Welded See Page 87 for Complete Mounting Guide, Including Capillary with Bore Sizes -YYY = No Instrument Mount, Dry Seal Only
-BN		-TS		
FILL FLUID	OPTIONS			

- AG = Glycerin
- BN = NEOBEE M20
- AS = Silicone DC200
- BS = Food-Grade Silicone

See Page 93 for Complete Fill Guide

- XX = No Fill Fluid

- TC = PTFE Coated Diaphragm
- TS = SS Tag (1-10 Characters)
- MR = Mill Test Report
- EP = Electropolished Diaphragm
- OX = Cleaned for Oxygen or Chlorine Service (shipped in sealed bag)
- TS = SS Tag (1-10 Characters)

See Page 85 for Smart Transmitter Attachment Codes

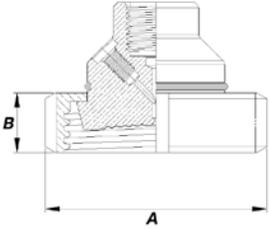
DIAPHRAGM SEALS

*Varivent is a registered trademark of (Tuchenhagen) GMBH

HYGENIC DIAPHRAGM SEAL

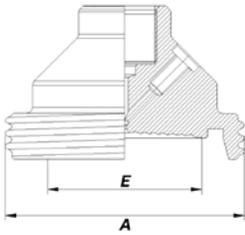
DIAPHRAGM SEALS

D.1 DIN - EN11851 Female



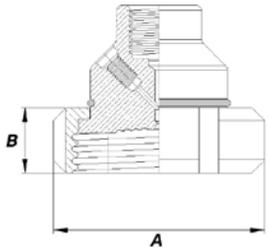
Part Code	DN25F	DN32F	DN40F	DN50F	DN65F	DN80F
Size	DN25	DN32	DN40	DN50	DN65	DN80
Outer Diameter (A)	63	70	78	92	112	129
Connection Height (B)	21	21	21	22	25	29
MWP (PSI)	600	600	600	400	400	400

D.2 DIN - EN11851 Male



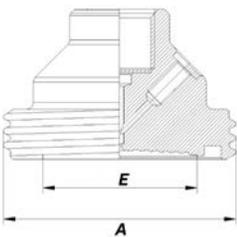
Part Code	D40M	D50M
Size	DN40	DN50
Outer Diameter (A)	65	78
Diaphragm Surface (E)	38	50
MWP (PSI)	600	400

D.3 SMS - Standard 1145 Female



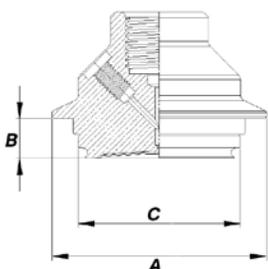
Part Code	S10F	S15F	S20F	S25F	S30F
Size	1"	1½"	2"	2½"	3"
Outer Diameter (A)	51	74	84	100	114
Connection Height (B)	19	23	24	28	31
MWP (PSI)	600	600	600	400	400

D.4 SMS - Standard 1145 Male



Part Code	S15M	S20M
Size	1½"	2"
Outer Diameter (A)	60	70
Diaphragm Surface (E)	34	46
MWP (PSI)	600	600

D.5 Varivent (Tuchenhagen) Compatible

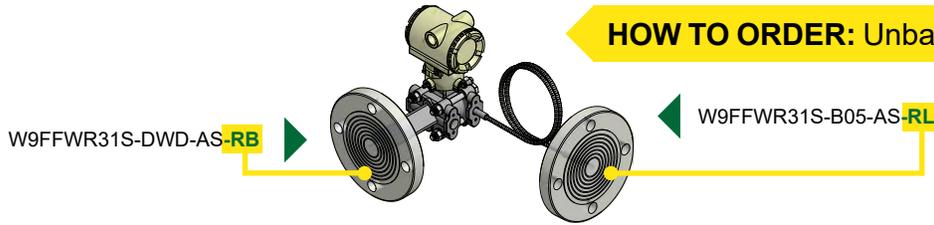


Part Code	F66M	N84M
Size	Form F	Form N
Outer Diameter (A)	66	84
Connection Height (B)	12.3	12.3
Connection Diameter (C)	50	68
MWP (PSI)	600	600

*All dimensions in mm

SMART TRANSMITTER ATTACHMENT

HOW TO ORDER: Unbalanced System Example

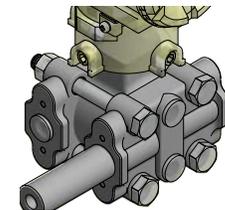
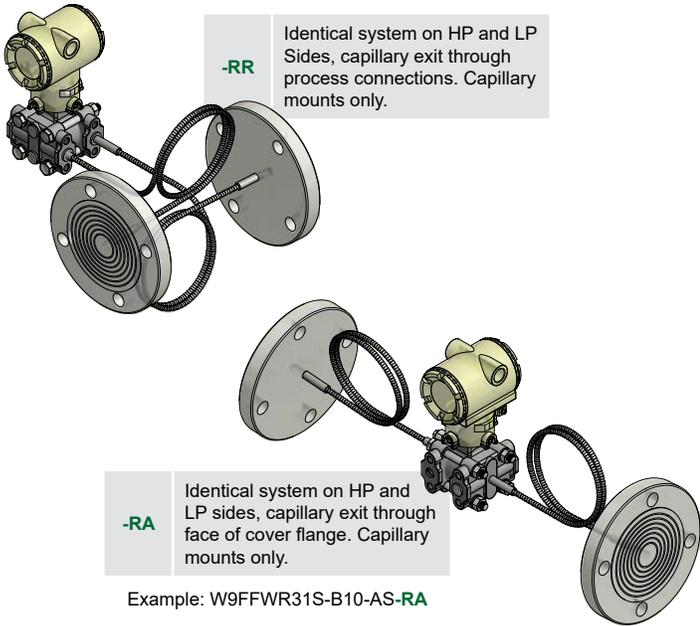


DIFFERENTIAL PRESSURE ASSEMBLY

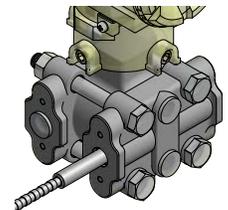
Balanced System A complete assembly with one part number that includes two diaphragm seals, two capillaries, two fills, and one complete assembly calibration certificate.

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.

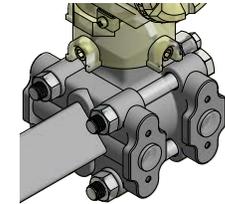
DIAPHRAGM SEALS



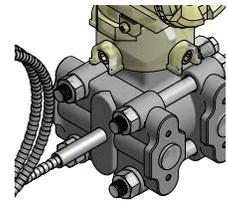
-RH Mount via Process Connections
Side High Pressure



-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

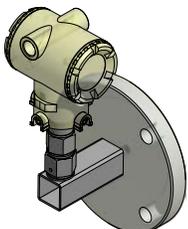
GAUGE PRESSURE ASSEMBLY

In Line Pressure Transmitter

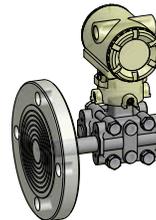
Traditional Mount for Gauge Pressure Seal mount on one side only, other side is vented.



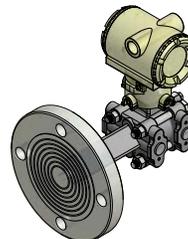
-R1 Mount to In-Line Gauge Pressure Transmitter. Direct or remote mount.



-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

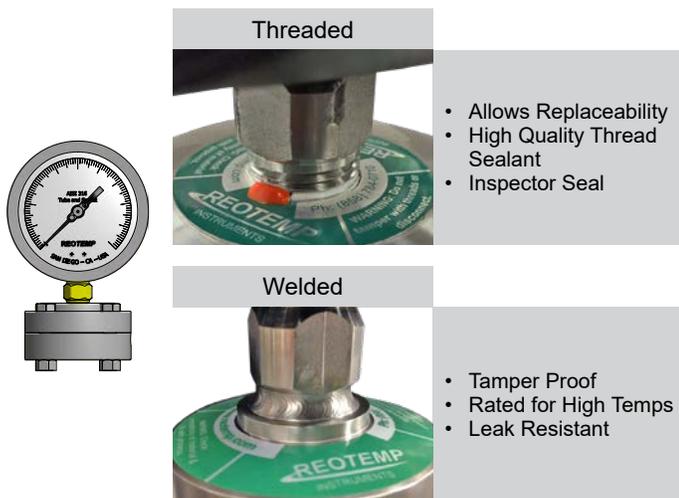


-R8 Instrument mount through face of cover flange, HP Side. Use "R9" if mounting to LP Side

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

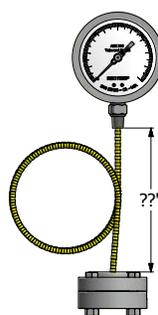
- Tamper Proof
- Rated for High Temps
- Leak Resistant

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.



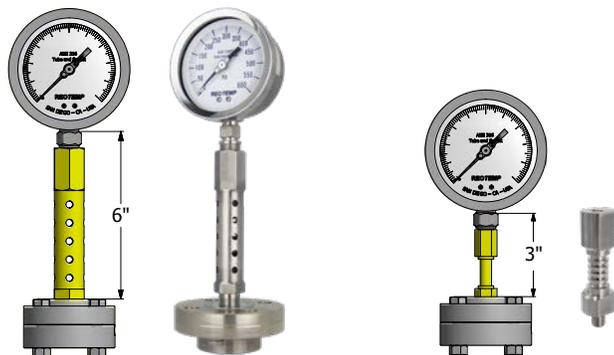
Code	Description
A	Armored, Threaded, 2mm
B	Armored, Welded, 2mm
W	PVC, Threaded, 2mm
P	PVC, Welded, 2mm
C	Armored, Threaded, 1mm
E	Armored, Welded, 1mm
F	PVC, Threaded, 1mm
G	PVC, Welded, 1mm
H	Armored, Threaded, 0.55mm
J	Armored, Welded, 0.55mm
K	PVC, Threaded, 0.55mm
L	PVC, Welded, 0.55mm

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.

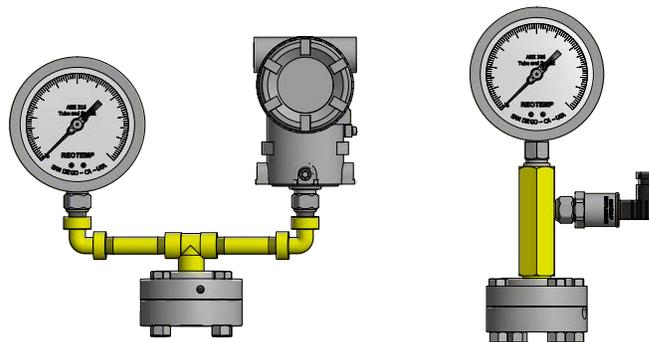


Code	Description	Max. Temp
-RTR	6" Cooling Tower	750°F
-STW	3" Cooling Standoff	600°F

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.

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

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 SEALS

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