THREADED FLUSH FACE DIAPHRAGM SEALS

DSTF

Reotemp's Threaded Flush Face Seals are ideal for high and medium pressure applications where process media clogging is a concern. The diaphragm is welded onto the end of the threads allowing for continuous flow of process media across the diaphragm and preventing any build-up of solids. Selection of process connection will greatly impact accuracy and temperature sensitivity.

SPECIFICATIONS

Wetted Materials Body: 316 SS, Hast-C
Diaphragm: 316SS, Hast-C

Process Temperature Limits

Process Connection	1/2"	3/4"	1" or 1.25"	1.5" or 2"
Limit	0/150°F	20/200°F	-40/400°F	-40/600°F

NOTE: Always use largest thread possible for smaller temperature effect.

Ambient Temperature Limits Determined by the pressure instrument.

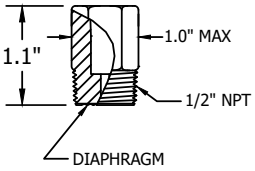
Minimum Recommended Span

Male Process Thread NPT	1/2"	3/4"	1"	1.25"	1.5" or 2"
2.5" & 3.5" Gauges	160 psi	100 psi	60 psi	30 psi	15 psi
4", 4.5", & 6" Gauges	n/a	n/a	160 psi	100 psi	30 psi
Transmitter (Gauge Pressure)	100 psi*	60 psi*	30 psi*	15 psi	5 psi
Transmitter (Differential Pressure)	n/a	n/a	n/a	n/a	n/a

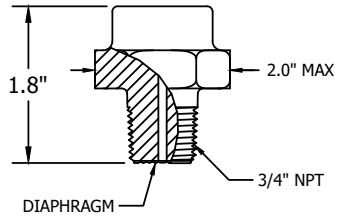
*Not Recommended for Critical Transmitter Applications.

Maximum Working Pressure Determined by the seal threads.

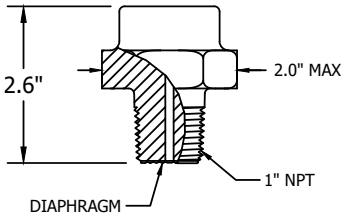
DSTF05



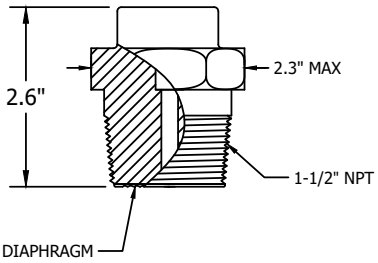
DSTF75



DSTF10



DSTF15



HOW TO ORDER: Choose options to build a part number. For example: DSTF75SS4-DTD-AS-OX

DSTF 75 SS 4 -DTD -AS -OX

MODEL

DSTF = Threaded Flush Face Diaphragm Seal

PROCESS CONNECTION

05 = 1/2" Male NPT
75 = 3/4" Male NPT
10 = 1" Male NPT
12 = 1-1/4" Male NPT
15 = 1-1/2" Male NPT
20 = 2" Male NPT
G1 = 1" BSPP (G1)
GH = 1.5" BSPP
G2 = 2" BSPP

DIAPHRAGM AND BODY MATERIAL

SS = 316L SS
HC = Hast. C-276

Wetted

INSTRUMENT CONNECTION

4 = 1/4" NPT
2 = 1/2" NPT[1]

[1]Not Available with 1/2" NPT Process Connection

MOUNTING

-DTD = Direct Mount, Threaded
-DWD = Direct Mount, Welded
-STW = 3" Cooling Standoff
-RTR = 6" Cooling Tower, Welded

-YYY = No Instrument Mount, Dry Seal Only

See Page 79 for Complete Mounting Guide

FILL FLUID

-AS = Silicone DC200
-AG = Glycerin USP
-C2 = Halocarbon 6.3

-XX = No Seal Fill, Dry Seal Only

See Page 84 for Complete Fill Guide

OPTIONS

-OX = Cleaned for Oxygen Service (Shipped in Sealed Bag)
-AU = Gold Plated Diaphragm (20 Microns Thick)
-TS = SS Tag (1-10 Characters)

THREADED FLUSH FACE DIAPHRAGM SEALS

Diaphragm Seal Suitability Guide

For applications where a diaphragm seal is required, the following diaphragm seal model types are most commonly assembled and filled to pressure gauges. This matrix identifies which diaphragm seal is appropriate based on the specified pressure range. Please reference the diaphragm seal data sheet and seal fill fluid guide for additional application considerations including max pressure, temperature limits, and material compatibility.

Total Gauge Span* (in psi)

Gauge Size	Thread Size	15	30	45	60	75	100	160	200 +
2.5"	1/2"	X	X	S	S	S	T	T	
	3/4"	X	S	S	T	T	T		
	1"	S	S	T	T	T			
	1.25"	T	T						
	1.5/2"								
3.5"	1/2"	X	X	X	S	S	S	T	
	3/4"	X	X	S	S	S	T	T	
	1"	X	S	S	T	T	T		
	1.25"	T	T						
	1.5/2"								
4.0"	1/2"	X	X	X	X	X	X	X	X
	3/4"	X	X	X	X	X	X	X	
	1"	X	X	X	X	S	T	T	
	1.25"	X	X	X	T	T	T		
	1.5/2"	S	T	T					
4.5"	1/2"	X	X	X	X	X	X	X	X
	3/4"	X	X	X	X	X	X	X	X
	1"	X	X	X	X	X	S	S	T
	1.25"	X	X	X	X	S	S	T	
	1.5/2"	X	S	S	T	T			
Transmitter	1/2"	S	S	S	S	S	T	T	
	3/4"	S	S	S	S	T	T	T	
	1"	S	S	T	T	T			
	1.25"	T	T	T					
	1.5/2"								

*Total gauge span is additive of negative and positive pressures.

Example: -15 - 0 - 30 psi = 45 psi span

- Assembly will function correctly with minimal accuracy degradation.
- T — Assembly will function correctly given stable temperature.
- S — Assembly is highly sensitive to orientation and temperature variance. Reotemp cannot guarantee a stated accuracy.
- X — Assembly will not work. The diaphragm does not displace enough fill fluid to drive the pressure gauge.

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:

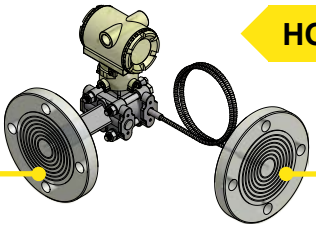
- ✓ 24-hour Minimum Fluid De-gassing
- ✓ Evacuated Instrument Chamber Up to 10^{-8} mbar Absolute
- ✓ Complete Fill Integrity Check
- ✓ Fill-port Leak Test
- ✓ Post-fill Static Test
- ✓ Verification of Instrument Calibration
- ✓ High-temp Pipe Sealant Option for Joints
- ✓ Tamper-proof (Inspection Seal)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

Part Number Code	Name	Description	Temperature Range (Vacuum Service <5psia)	Pulse+™	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
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.

SMART TRANSMITTER ATTACHMENT



HOW TO ORDER: Unbalanced System Example

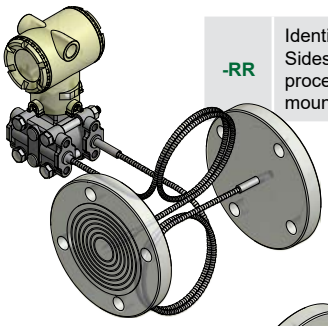
W9FFWR31S-DWD-AS-**RB**

W9FFWR31S-B05-AS-**RL**

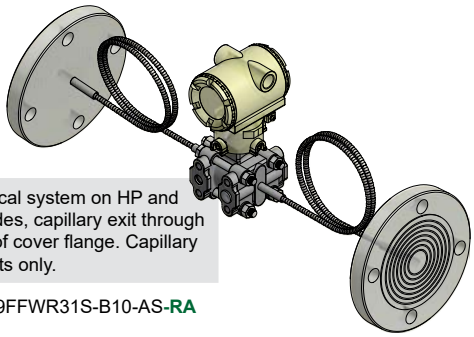
DIFFERENTIAL PRESSURE ASSEMBLY

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.

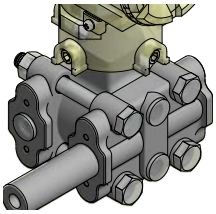


-RR	Identical system on HP and LP Sides, capillary exit through process connections. Capillary mounts only.

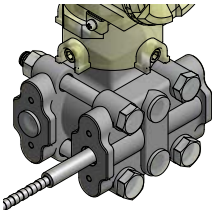


-RA	Identical system on HP and LP sides, capillary exit through face of cover flange. Capillary mounts only.

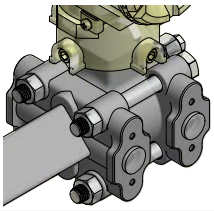
Example: W9FFWR31S-B10-AS-**RA**



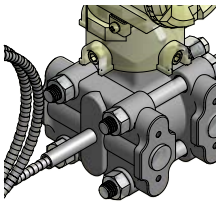
-RH	Mount via Process Connections
Side	High Pressure



-RL	Mount via Process Connections
Side	Low Pressure



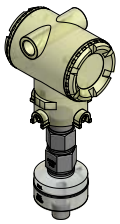
-RB	Mount via Face of Cover Flange
Side	High Pressure



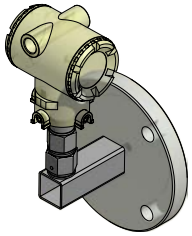
-RC	Mount via Face of Cover Flange
Side	Low Pressure

GAUGE PRESSURE ASSEMBLY

In Line Pressure Transmitter

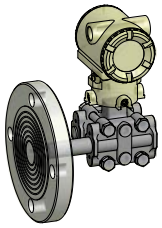


-R1	Mount to In-Line Gauge Pressure Transmitter. Direct or remote mount.

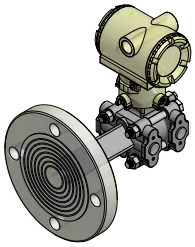


-R4	Horizontal Mount (Tank Mount) to In-Line Gauge Pressure Transmitter. Direct mount only.

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



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

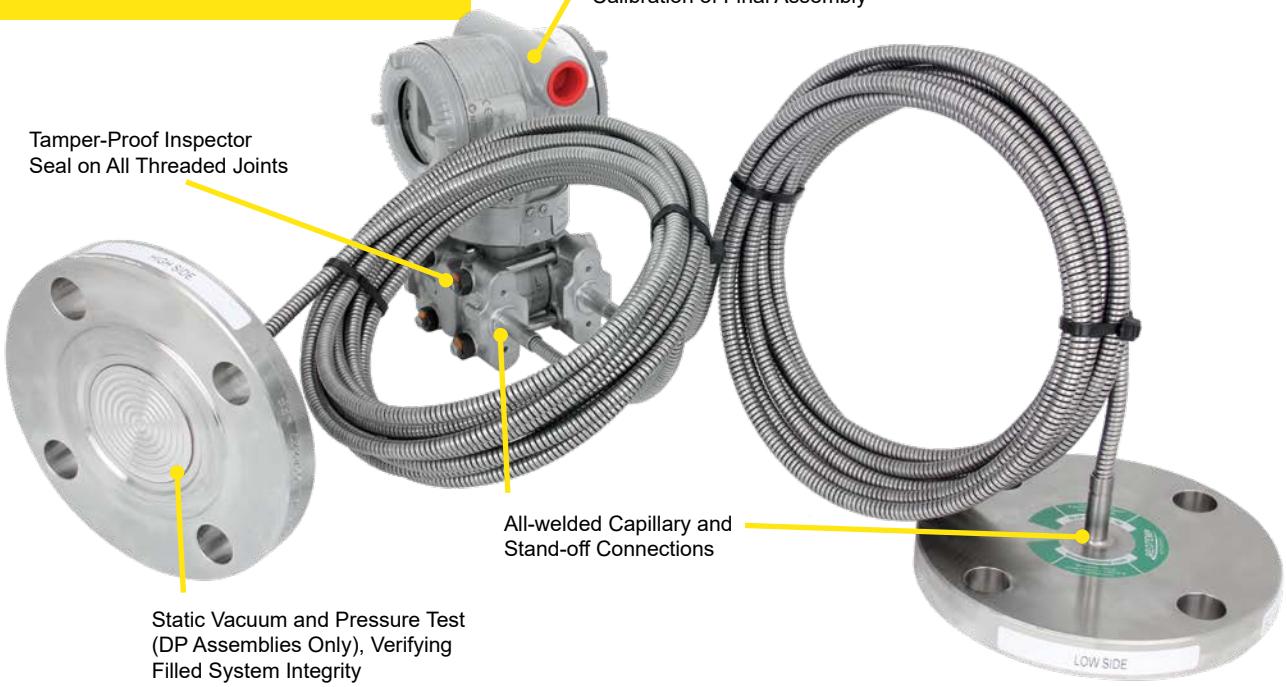


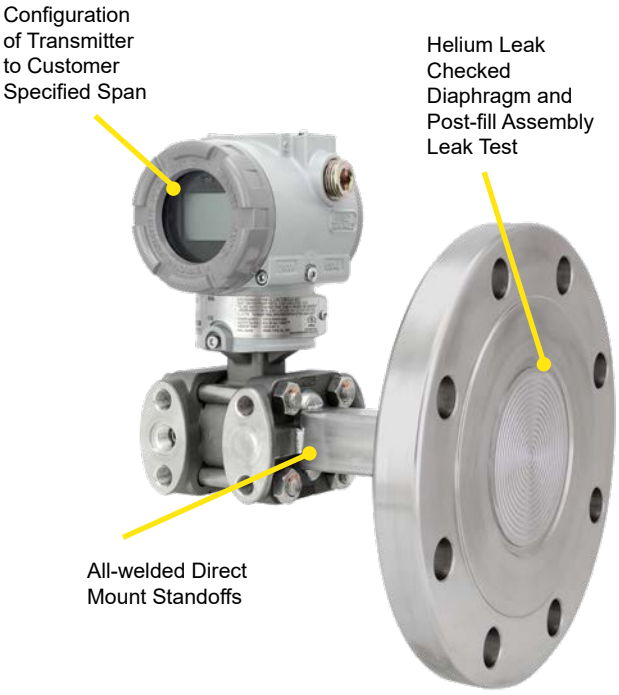
-R8	Instrument mount through face of cover flange, HP Side. Use “R9” if mounting to LP Side

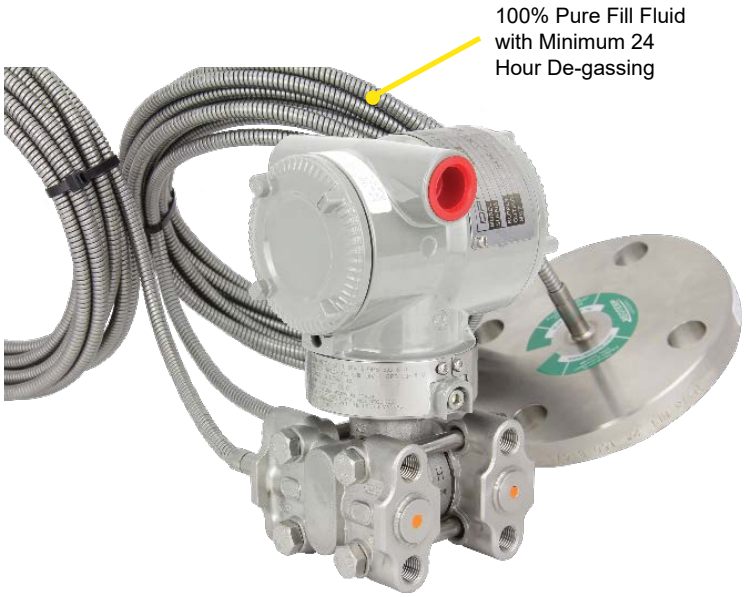
DIAPHRAGM SEAL ASSEMBLY TO SMART TRANSMITTERS

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



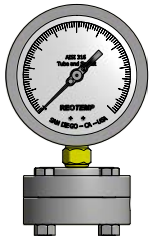




INSTRUMENT MOUNTING CONFIGURATIONS

DIRECT MOUNT

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



Threaded

- Allows Replaceability
- High Quality Thread Sealant
- Inspector Seal

Welded

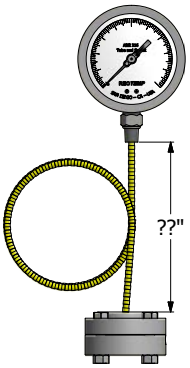
- Tamper Proof
- Rated for High Temps
- Leak Resistant

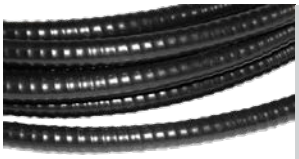
Code	Description	Max. Temp
-DTD	Threaded Instrument Connection	400°F
-DWD	Welded Instrument Connection	600°F

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.





PVC Coated SS Flex Armor

SS Flex Armor

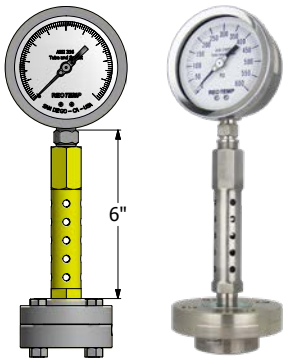
Code	Description	Max. Temp
-P??	PVC Coated SS Armor, Threaded to Seal	400°F
-W??	PVC Coated SS Armor, Welded to Seal	600°F
-A??	SS Flexible Armor, Threaded to Seal	400°F
-B??	SS Flexible Armor, Welded to Seal	750°F

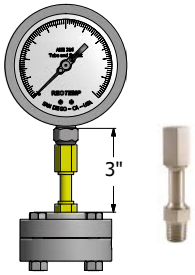
Note: ?? = Length in feet (e.g. 05 = 5 feet)

Assembly Notes: Capillary has a 2mm inner diameter unless specified differently by customer. Ambient temp limit of PVC coated armor is 250ºF. 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.





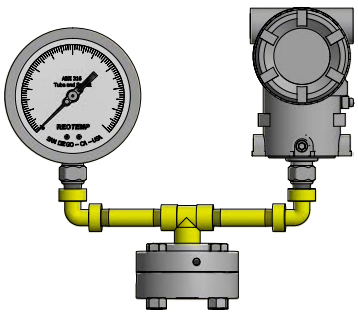
-RTR | -STW

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

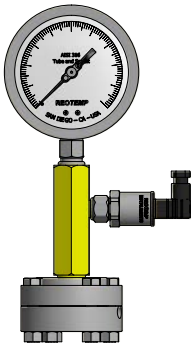
Assembly Notes: Cooling elements are welded to diaphragm seal. Instruments are threaded to cooling element unless specified. All lengths are nominal.

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.



-TRE & -TRX



-TRM

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 SEAL OPTIONS

Visit reotemp.com

✓ Check Stock ✓ Get Price
✓ Configure Part # ✓ Download PDF Data Sheets

		MS4 MS6 MS8	W5 W6 W7	T5 T6 V5	W9FF W9FR	W9XT	W9FP	DSTC75	DSTC15 AND LARGER	DSTF05	DSTF75 AND LARGER	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	✓
-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	✓
-GH	1/4” Hast C Plug Installed	✓	✓	✓	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	✓
-GM	1/4” Monel Plug Installed	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	✓
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.