

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

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

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 Od	
	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

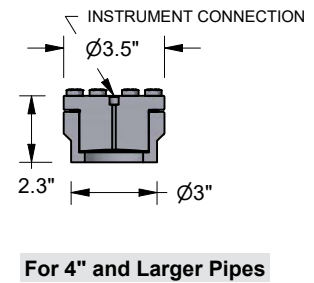
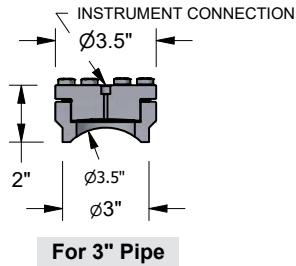
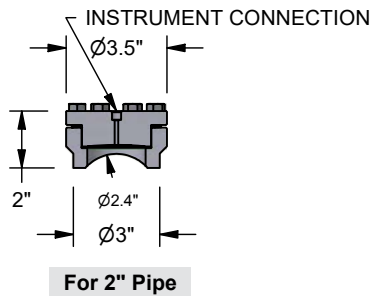
Pressure Ratings:

Pressure Rating (psi) vs. Temperature*						
Bolt Material	Process Temperature (°F)					
	100	300	500	650	750	850
Grade 8	2,250	1,750	1,495	1,380	N/A	N/A
316SS	1,250	970	830	770	745	730

*Pressure rating applies to complete assemblies under code S8R.

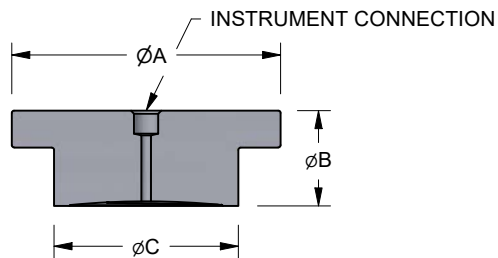
SADDLE MOUNT DIAPHRAGM SEAL

New System



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

Replacement Upper



See Page 35 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**

W545

2

B63

XXX

X

HS

SERIES	INSTRUMENT CONNECTION	SEAL TYPE AND MANUFACTURER	PIPE SIZE	SADDLE MATERIAL	DIAPHRAGM & BODY MATERIAL
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

8

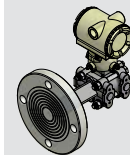
K

-RTR

-BH

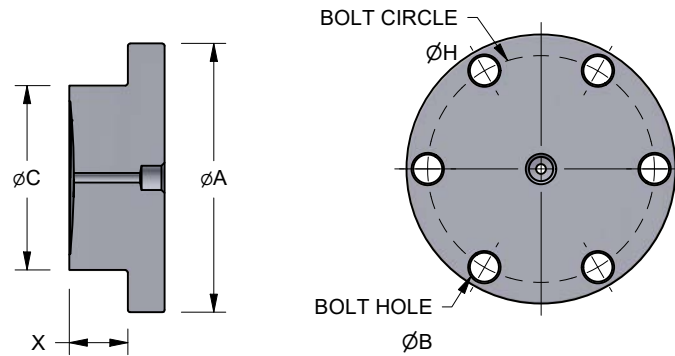
-PP

BOLTING	GASKET	INSTRUMENT MOUNT	SYSTEM FILL FLUID	OPTIONS
8 = Carbon Steel Grade 8, Yellow Chromate Coating S = Stainless Steel 316	K = Klinger C-4401 T = PTFE G = Grafoil S = 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> -6VA = Low Volume Goal Post Assembly; Vertical Mount; Gauge/Switch -CVA = Compact Tree Assembly; Vertical Mount; Gauge/Switch See Page 7 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 14 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 "diaphragm seal Options" on page 96 for Additional Options



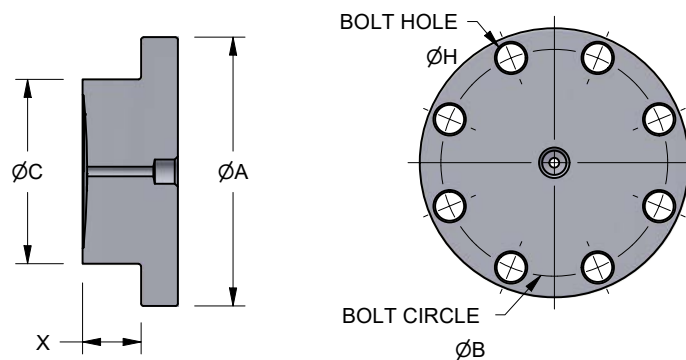
See Page 5 for Smart Transmitter Attachment Codes

SADDLE MOUNT DIAPHRAGM SEAL



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

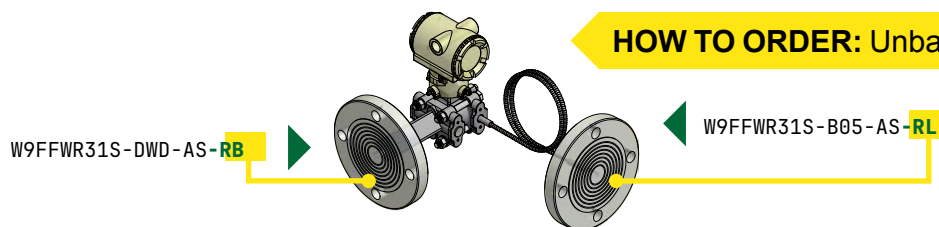


8 Bolt

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 R (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

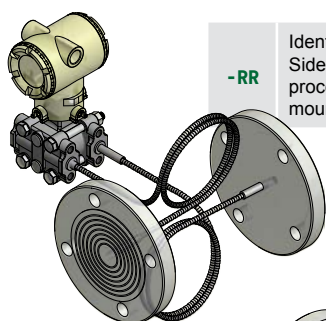
HOW TO ORDER: Unbalanced System Example



DIFFERENTIAL PRESSURE ASSEMBLY

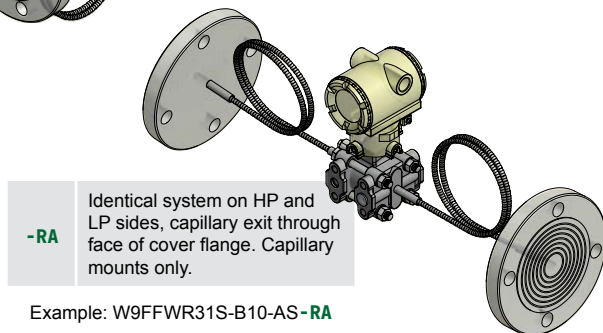
Balanced System A complete assembly with one part number that includes two diaphragm seals, two capillaries, two fills, and one complete assembly calibration certificate.

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.



-RR

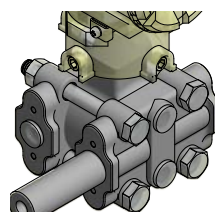
Identical system on HP and LP Sides, capillary exit through process connections. Capillary mounts only.



-RA

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

Example: W9FFWR31S-B10-AS-RA

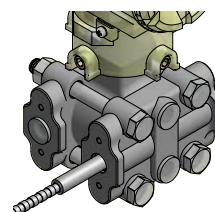


-RH

Mount via Process Connections

Side

High Pressure

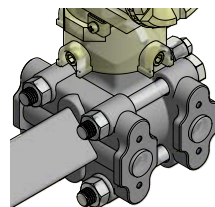


-RL

Mount via Process Connections

Side

Low Pressure

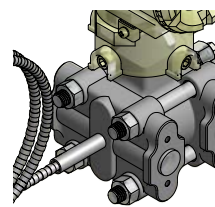


-RB

Mount via Face of Cover Flange

Side

High Pressure



-RC

Mount via Face of Cover Flange

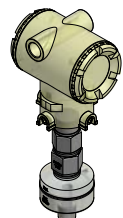
Side

Low Pressure

GAUGE PRESSURE ASSEMBLY

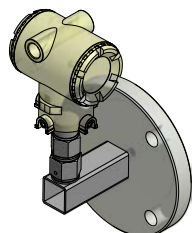
In Line Pressure Transmitter

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



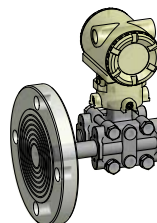
-R1

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



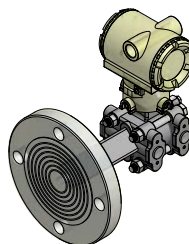
-R4

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



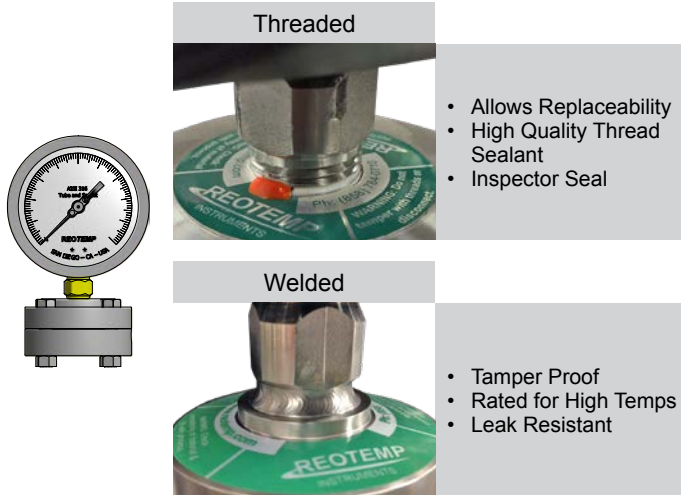
-R8

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.

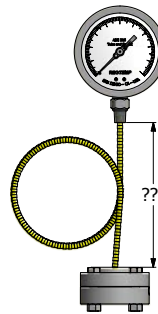


Code	Description	Max. Temp
-DTD	Threaded Instrument Connection	400°F
-DWD	Welded Instrument Connection	600°F

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.



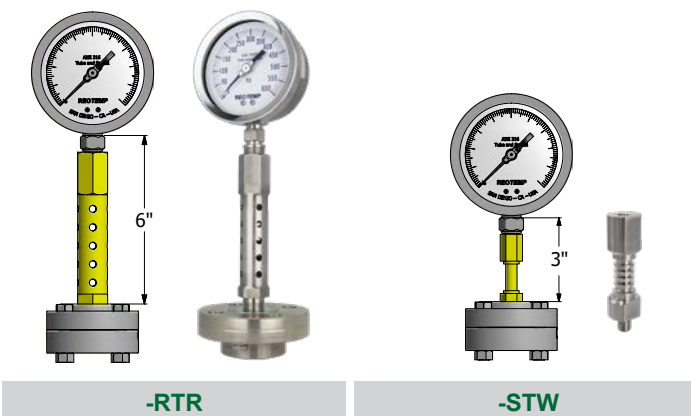
Code	Description
A	Armored, Threaded, 2mm
B	Armored, Welded, 2mm
W	PVC, Threaded, 2mm
P	PVC, Welded, 2mm
C	Armored, Threaded, 1mm
E	Armored, Welded, 1mm
F	PVC, Threaded, 1mm
G	PVC, Welded, 1mm
H	Armored, Threaded, 0.55mm
J	Armored, Welded, 0.55mm
K	PVC, Threaded, 0.55mm
L	PVC, Welded, 0.55mm

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.

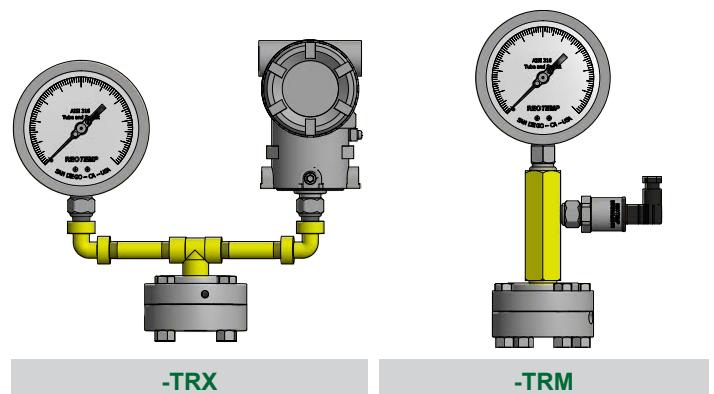


Code	Description	Max. Temp
-RTR	6" Cooling Tower	750°F
-STW	3" Cooling Standoff	600°F

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
-TRX	Goal Post Tree Assembly	850°F
-TRM	Compact Tree Assembly	850°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 10⁻⁶ 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
DH	HTH 850	Used for ultra high temperature applications	50°F to 850°F (50°F to 600°F)	Yes	1000	1.2	.00059

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

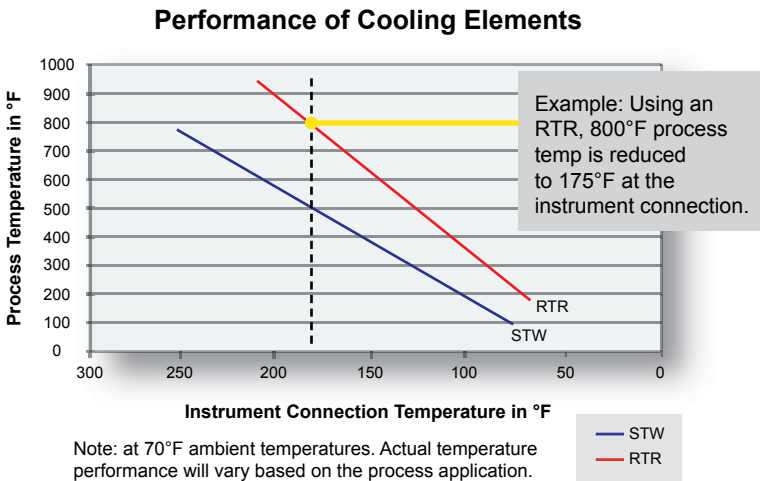
7 Trademark Stepan Specialty Products

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

COOLING TOWERS

HOW TO ORDER: Choose options to build a part number. For example: **STW4M4M**

MODEL	INSTRUMENT CONNECTION	PROCESS CONNECTION
RTR = Cooling Tower	4M = 1/4" Male NPT	4M = 1/4" Male NPT
STW = Cooling Standoff	4F = 1/4" Female NPT	2M = 1/2" Male NPT
	2M = 1/2" Male NPT	
	2F = 1/2" Female NPT	



Maximum Working Pressure		
Temperature in Fahrenheit	RTR (psi)	STW (psi)
100	6000	12,000
200	5160	10,325
300	4660	9,325
400	4280	8,560
500	3980	7,965
600	3755	7,510
650	3680	7,360
700	3620	7,245
750	3555	7,115
800	3515	7,035
850	3480	6,965
900	3455	6,920
950	3215	6,440
1000	3025	6,065
1050	2995	6,005
1100	2535	5,085
1150	1965	3,945
1200	1535	3,085
1250	1220	2,450
1300	970	1,945
1350	800	1,605
1400	625	1,260
1450	485	980
1500	340	690