

SR301

SERIES

REMOTE SEALS AND SANITARY
TRANSMITTERS



smar

The **SR301** series is a complete line of diaphragm seals including threaded, flanged and sanitary designs. The seals are available in a wide selection of wetted materials to meet various process requirements, but without being unnecessarily expensive.

Standard diaphragm seals are available in models conforming to ANSI, DIN and JIS specifications. Other standards are also available on request, consult Smar for available options. A wide variety of sizes and ratings are available for these standards. Flanged seals are available in dimensions up to 100 mm (4 in) and ratings up to 250 bar (2500 psi). Threaded seals are available in sizes up to 1½ in rated at 2000 psi.

The maximum process pressure depends on the seal rating and the maximum process temperature. The temperature limitation depends on the material and fill fluid chosen, and the minimum process pressure. Seals are available with fill fluids that can operate at temperatures as high as 300 °C. The complete system of seal, capillary and transmitter is manufactured and assembled in Smar's own factory under our own complete control.

The Smar SR301 line of remote seals is specially designed with a minimum diaphragm displacement to be used with Smar electronic pressure transmitters.

Great care has been taken in the design of the seals to ensure that the seal affects the high accuracy associated with Smar electronic transmitters as little as possible. Another major design objective was to adhere to standards and recommended practices for process connection and seal construction.

A remote seal isolates the pressure transmitter from the process while still allowing the transmitter to measure the pressure.

The main application for a remote seal is as a protective device, however, it also enables a differential pressure transmitter to be used for density measurement.

The function of a remote seal is:

- To prevent the process fluid from entering the pressure transmitter thereby protecting the instrument if the process fluid is corrosive and would otherwise attack and destroy the transmitter.
- To prevent process fluids with very high temperature from coming in contact with and destroying or otherwise affecting the pressure sensor.
- To prevent abrasive process fluids from scratching the isolating diaphragm. This may happen if the process fluid is carrying suspended solids.
- To prevent the process fluid from building up or solidifying inside the transmitter and blocking the transmission of pressure to the sensor. This may happen if the process fluid freezes, polymerizes or is carrying suspended solids, is viscous or crystallizing.
- Sanitary seals are used to prevent bacteria etc. to build up in cavities in the transmitter. These seals are designed to be easily cleaned. These are required in the pharmaceutical and food & beverage industries.

The remote seal is connected to the transmitter via an armored capillary. A properly installed remote seal hydraulically transmits the process pressure to the sensor of the pressure transmitter through the liquid filled capillary. The capillary is very thin and the transmitters are fitted with a special seal connection with a very small volume to keep the amount of fill fluid at a minimum.



Avoid these common mistakes:

Wetted materials not compatible with the process fluid. Consider normal operation as well as cleaning.

Fill fluid not compatible with the process fluid may cause hazardous situations in case of diaphragm ruptures and the fluids come in contact with each other. For some process fluids only a certain fill fluid may be used, but that fill fluid may be incompatible with other materials that may be present in piping etc. Other considerations are the food and drug industries where even mildly poisonous fill fluids cannot be used.

Vacuum below 600 mmHg requires special considerations. Operation at these high vacuums is possible if done right. Consult Smar for advice.

Process data such as pressure, temperature, required seal type and process fluid must be furnished to evaluate the application.

Only one seal or capillaries with different lengths on a differential pressure transmitter causes zero shift as the temperature changes.

Long capillaries cause response time to increase and augments temperature effect.

The temperature is beyond the upper or lower operating temperature range of the fill fluid.

The process pressure exceeds the seal pressure rating at maximum process temperature. The pressure rating for seals decreases with rising temperature and may under certain conditions be lower than the nominal rating.

Upper measurement ranges below 600 mmH₂O will see errors as the remote seal reduces the sensitivity of the transmitter.



Fill Fluid Considerations

Before a fill fluid is chosen, it must be determined that it is suitable for operation at the extremes of vacuum and temperature at which it will operate. Another important consideration is that the diaphragm may be damaged. It is therefore important that the fill fluid does not start a hazardous chemical reaction with the process fluid.

As a rule of thumb, do not use hydrocarbon based fill fluids, such as silicone, with strong oxidizers like: chlorine, hydrogen, hydrazine, oxygen, peroxide or nitric acid. Also do not use Fluorolube oil if there is a chance for it to come in contact with aluminium or magnesium. Special fill fluids are available.

Vacuum Considerations

The fill fluid vapor pressure point is dependent on temperature. At a combination of high temperature and pressure near vacuum the fill fluid may vaporize and the pressure measurement becomes inaccurate. The seal may also become permanently destroyed. Careful selection of fill fluid is therefore of up most importance.

The SR301 series offers four standard fill fluids. Brief data is given in table 5. For more data, e.g., vapor pressure curves, and fill fluids for special requirements, please contact Smar.

NOTE 1:

The user must insure that the right type of seal with the proper fill fluid and wetted materials is used, and if a remote seal should be used at all.

NOTE 2:

See our SR301 manual for temperature errors and response time calculations.

The **SR301T** is a single piece flanged remote seal. There is an optional lower housing with a flush connection. The diaphragm is welded to the upper housing enabling the user to remove the lower housing. The seal is bolted to the process connection with a sealing gasket in between.

The flush connection enables rinsing of the diaphragm to remove deposits without disconnecting the seal.

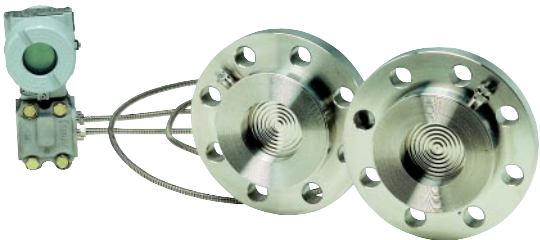
If installed correctly, the upper housing is not wetted (in contact with process fluid) during normal operation. However, the lower housing is.

Bolts, nuts are not supplied with the seal.

For dimensions see tables 2, 3 and 4.

For Pressure Limits see tables 5, 6 and ANSI B16.5 Pressure Limits (Appendix).

Material
316 SST.



MODEL SR301T		FLANGED "T" TYPE REMOTE SEAL					
CODE		Process Connection Size, Rating and Standard					
1	1	1" 150# ANSI B-16.5 RF	6	B	DN 25 PN10/40 DIN 2526 - FORM D		
1	2	1" 300# ANSI B-16.5 RF	6	E	DN 25 PN63/160 DIN 2526 - FORM D		
1	3	1" 600# ANSI B-16.5 RF	6	9	DN 25 PN250 DIN 2526 - FORM D		
1	4	1" 1500# ANSI B-16.5 RF	7	B	DN 40 PN10/40 DIN 2526 - FORM D		
1	5	1" 2500# ANSI B-16.5 RF	7	D	DN 40 PN63/100 DIN 2526 - FORM D		
2	1	1 1/2" 150# ANSI B-16.5 RF	7	8	DN 40 PN160 DIN 2526 - FORM D		
2	2	1 1/2" 300# ANSI B-16.5 RF	7	9	DN 40 PN250 DIN 2526 - FORM D		
2	3	1 1/2" 600# ANSI B-16.5 RF	8	B	DN 50 PN10/40 DIN 2526 - FORM D		
2	4	1 1/2" 1500# ANSI B-16.5 RF	8	6	DN 50 PN63 DIN 2526 - FORM D		
2	5	1 1/2" 2500# ANSI B-16.5 RF	8	7	DN 50 PN100 DIN 2526 - FORM D		
3	1	2" 150# ANSI B-16.5 RF	8	8	DN 50 PN160 DIN 2526 - FORM D		
3	2	2" 300# ANSI B-16.5 RF	8	9	DN 50 PN250 DIN 2526 - FORM D		
3	3	2" 600# ANSI B-16.5 RF	9	C	DN 80 PN25/40 DIN 2526 - FORM D		
3	4	2" 1500# ANSI B-16.5 RF	9	6	DN 80 PN63 DIN 2526 - FORM D		
3	5	2" 2500# ANSI B-16.5 RF	9	7	DN 80 PN100 DIN 2526 - FORM D		
4	1	3" 150# ANSI B-16.5 RF	9	8	DN 80 PN160 DIN 2526 - FORM D		
4	2	3" 300# ANSI B-16.5 RF	A	A	DN 100 PN10/16 DIN 2526 - FORM D		
4	3	3" 600# ANSI B-16.5 RF	A	C	DN 100 PN25/40 DIN 2526 - FORM D		
5	1	4" 150# ANSI B-16.5 RF	A	G	JIS 40A 20K		
5	2	4" 300# ANSI B-16.5 RF	D	F	JIS 50A 10K		
5	3	4" 600# ANSI B-16.5 RF	D	H	JIS 50A 40K		
			E	F	JIS 80A 10K		
			E	G	JIS 80A 20K		
			F	F	JIS 100A 10K		
CODE		Capillary Length					
1		500 mm					
2		1000 mm					
3		1500 mm					
4		2000 mm					
5		3000 mm					
6		4000 mm					
7		5000 mm					
8		6000 mm					
9		8000 mm					
A		10000 mm					
CODE		Diaphragm Material					
H		Hastelloy C276					
I		316L SST					
M		Monel 400					
T		Tantalum					
U		Titanium					
A		316L SST with Teflon Lining					
B		Tantalum with Teflon Lining					
G		316L SST Gold Plated					
CODE		Fill Fluid (1)					
A		DC 200/350 Silicone Oil					
D		DC 704 Silicone Oil					
F		MO-10 Fluorolube Oil					
G		Glycerium and Water					
K		Krytox					
N		Neobee M20 Propylene Oil					
S		DC 200/20 Silicone Oil					
T		Syltherm 800					
CODE		Lower Housing					
0		Without					
1		316 SST					
2		Hastelloy C276					
CODE		Gasket Material					
0		Without Gasket					
T		Teflon					
G		Grafoil					
C		Copper					
CODE		Optional Items*					
ZZ		Special Options - Specify					

SR301T - 4 - 2 - 3 - H - S - 1 - T / * ← TYPICAL MODEL NUMBER

(1) Fluorolube fill fluid is not available with Monel diaphragm
* Leave it blank for no optional items

FLANGED REMOTE SEAL WITH EXTENSION - SR301E

SR301

The **SR301E** is a single piece flanged connection seal. The diaphragm is extended from the housing and welded to the extension. The seal is bolted to the process connection with a sealing gasket in between.

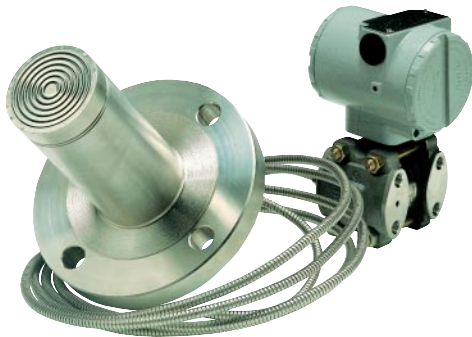
Bolts, nuts and gasket are not supplied with the seal.

For dimensions see tables 2, 3 and 4.

For Pressure Limits see tables 5, 6 and ANSI B 16.5a Pressure Limits (Appendix).

Material

316 SST.



MODEL SR301E		FLANGED REMOTE SEAL WITH EXTENSION	
CODE		Process Connection Size, Rating and Standard	
3	1	2" 150# ANSI B-16.5 RF	
3	2	2" 300# ANSI B-16.5 RF	
3	3	2" 600# ANSI B-16.5 RF	
4	1	3" 150# ANSI B-16.5 RF	
4	2	3" 300# ANSI B-16.5 RF	
4	3	3" 600# ANSI B-16.5 RF	
5	1	4" 150# ANSI B-16.5 RF	
5	2	4" 300# ANSI B-16.5 RF	
5	3	4" 600# ANSI B-16.5 RF	
8	B	DN 50 PN10/40 DIN 2526 - FORM D	
9	C	DN 80 PN25/40 DIN 2526 - FORM D	
A	A	DN 100 PN10/16 DIN 2526 - FORM D	
A	C	DN 100 PN25/40 DIN 2526 - FORM D	
CODE		Capillary Length	
1		500 mm	
2		1000 mm	
3		1500 mm	
4		2000 mm	
5		3000 mm	
6		4000 mm	
7		5000 mm	
8		6000 mm	
9		8000 mm	
A		10000 mm	
CODE		Diaphragm Material (2)	
H		Hastelloy C276	
I		316L SST	
M		Monel 400	
T		Tantalum	
U		Titanium	
A		316L SST with Teflon Lining	
B		Tantalum with Teflon Lining	
G		316L SST Gold Plated	
CODE		Fill Fluid (1)	
A		DC 200/350 Silicone Oil	
D		DC 704 Silicone Oil	
F		MO-10 Fluorolube Oil	
G		Glycerium and Water	
K		Krytox	
N		Neobee M20 Propylene Oil	
S		DC 200/20 Silicone Oil	
T		Syltherm 800	
CODE		Extension Length (2)	
1		50 mm (2")	
2		100 mm (4")	
3		150 mm (6")	
4		200 mm (8")	
5		250 mm (10")	
CODE		Optional Items*	
ZZ		Special Options - Specify	

SR301E - 4 | 2 | 3 - H | S - 1 / * ← TYPICAL MODEL NUMBER

(1) Fluorolube fill fluid is not available with Monel diaphragm

* Leave it blank for no optional items

The **SR301R** is a threaded connection seal. The diaphragm is welded to the upper housing enabling the user to remove the lower housing.

The lower and upper housing are bolted together and sealed with a gasket. The lower housing has an optional flush connection. The seal is threaded to the process connection.

The flush connection enables rinsing of the diaphragm to remove deposits without disconnecting the seal.

316 SST bolts and nuts are supplied with the seal.

Upper Housing Material: 316 SST

MODEL SR301R		THREADED REMOTE SEAL	
CODE		Process Connection Size, Rating and Standard	
1	1/4 NPT		
2	3/8 NPT		
3	1/2 NPT		
4	3/4 NPT		
5	1 NPT		
6	1 1/2 NPT (not available with flush connection)		
CODE		Pressure Limit	
1	2500 psi		
CODE		Capillary Length	
1	500 mm		
2	1000 mm		
3	1500 mm		
4	2000 mm		
5	3000 mm		
6	4000 mm		
7	5000 mm		
8	6000 mm		
9	8000 mm		
A	10000 mm		
CODE		Diaphragm Material	
H	Hastelloy C276		
I	316L SST		
M	Monel 400		
T	Tantalum		
U	Titanium		
A	316L SST with Teflon Lining		
B	Tantalum with Teflon Lining		
G	316L SST Gold Plated		
CODE		Fill Fluid (1)	
A	DC 200/350 Silicone Oil		
D	DC 704 Silicone Oil		
F	MO-10 Fluorolube Oil		
G	Glycerium and Water		
K	Krytox		
N	Neobee M20 Propylene Oil		
S	DC 200/20 Silicone Oil		
T	Syltherm 800		
CODE		Lower Housing	
I	316 SST		
H	Hastelloy C276		
CODE		Gasket Material	
T	Teflon (2)		
G	Grafoil		
C	Copper		
CODE		Flush Connection	
0	Without Flush Connection		
1	With Flush Connection (Except for 1 1/2 NPT Connection)		
CODE		Optional Items*	
ZZ	Special Options - Specify		

SR301R - 4 | 1 | 3 - H | A - 1 | T | 0 / * ← TYPICAL MODEL NUMBER

(1) Fluorolube fill fluid is not available with Monel diaphragm
 (2) Max. Temperature= 250 °C for Pressure ≥ 1 bar Abs
 Max. Temperature= 600 psi or 63 bar
 * Leave it blank for no optional items



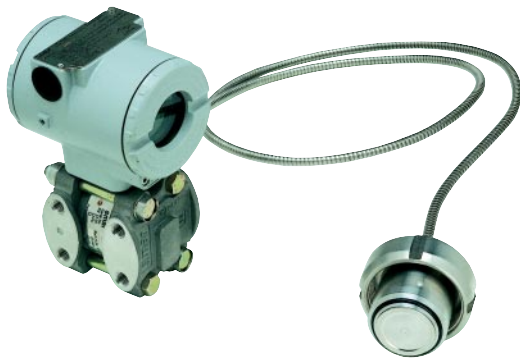
SANITARY REMOTE SEAL SR301S

SR301

The **SR301S** is a seal for food and other applications where sanitary connections are required. The diaphragm is welded to the housing. The connection to the process can be threaded or "Tri-Clamp" type, that allow an easy and quick connected/disconnected of the equipment to the process.

The flush connection enables rinsing of the diaphragm to remove deposits without disconnecting the seal.

For seal dimensions see page B37.



MODEL SR301S		SANITARY REMOTE SEAL	
CODE		Process Connection Size Rating (1)	
4	1	Thread IDF - 2" 300# - With Extension	
5	1	Thread RJT - 2" 300# - With Extension	
6	1	Tri-Clamp - 2" 300# - With Extension	
6	2	Tri-Clamp - 2" 800# - With Extension	
7	1	Thread SMS - 2" 300# - With Extension	
8	1	Thread DN25 PN20 - DIN 11851 - With Extension	
9	1	Thread DN40 PN20 - DIN 11851 - With Extension	
A	1	Tri-Clamp DN50 PN20 - With Extension	
A	2	Tri-Clamp DN50 PN50 - With Extension	
B	1	Thread IDF - 2" 300# - Without Extension	
C	1	Thread RJT - 2" 300# - Without Extension	
D	1	Tri-Clamp - 2" 300# - Without Extension	
D	2	Tri-Clamp - 2" 800# - Without Extension	
E	1	Thread SMS - 2" 300# - Without Extension	
F	1	Tri-Clamp - 1½" 300# - Without Extension	
F	2	Tri-Clamp - 1½" 800# - Without Extension	
G	1	Tri-Clamp - 3" 300# - Without Extension	
G	2	Tri-Clamp - 3" 800# - Without Extension	
H	1	Thread DN40 PN20 - DIN 11851 - Without Extension	
I	1	Tri-Clamp - 3" 300# - With Extension	
I	2	Tri-Clamp - 3" 800# - With Extension	
K	1	Thread IDF - 3" 300# - With Extension	
L	1	Thread RJT - 3" 300# - With Extension	
M	1	Thread SMS - 3" 300# - With Extension	
CODE		Capillary Length	
1		500 mm	
2		1000 mm	
3		1500 mm	
4		2000 mm	
5		3000 mm	
6		4000 mm	
7		5000 mm	
8		6000 mm	
9		8000 mm	
A		10000 mm	
CODE		Diaphragm Material	
H		Hastelloy C276	
I		316L SST	
CODE		Fill Fluid	
A		DC 200/350 Silicone Oil	
D		DC 704 Silicone Oil	
F		MO-10 Fluorolube Oil	
G		Glycerium and Water	
S		DC 200/20 Silicone Oil	
CODE		Wetted O-Ring	
0		Without O-Ring	
T		With Teflon O-Ring	
B		Buna N	
V		Viton	
CODE		Tank Adapter	
0		Without Tank Adapter	
1		With Tank Adapter in 316 SST	
CODE		Tri-Clamp	
0		Without Tri-Clamp	
2		With Tri-Clamp in 304 SST	
CODE		Optional Items*	
ZZ		Special Options - Specify	

SR301S - 4 | 1 | B - I | A - T | 1 | 0 / * ← TYPICAL MODEL NUMBER

(1) Material in 316 SST
* Leave it blank for no optional items

MODEL LD301S		SANITARY DIFFERENTIAL PRESSURE TRANSMITTER	
CODE	Range		
2	1.25 to 50 kPa	5	to 200 inH ₂ O
3	2.08 to 250 kPa	8.33	to 1000 inH ₂ O
4	20.8 to 2500 kPa	3	to 360 psi
5	625.0 to 5515 kPa	90	to 800 psi
Note: The range can be extended up to 0.75 LRL and 1.2 URL with small degradation of accuracy. The Upper Range Value must be limited to the flange rating.			
CODE	Diaphragm Material and Fill Fluid (Low Side)		
1	316L SST - Silicone Oil		
2	316L SST - Fluorolube Oil		
3	Hastelloy C276 - Silicone Oil		
4	Hastelloy C276 - Fluorolube Oil		
5	Monel 400 - Silicone Oil		
7	Tantalum - Silicone Oil		
8	Tantalum - Fluorolube Oil		
CODE	Flange, Adapter and Drain/Vent Valves Material (Low Side)		
I	316 SST		
CODE	Wetted O-Rings Material (Low Side)		
O	Without O-Rings (Remote Seal)		
B	Buna N		
E	Ethylene - Propylene		
T	Teflon		
V	Viton		
CODE	Drain/Vent Position (Low Side)		
0	Without Drain/Vent (Remote Seal)		
U	Top		
D	Bottom		
CODE	Local Indicator		
0	Without Indicator		
1	With Digital Indicator		
CODE	Process Connection (Low Side)		
0	¼ - 18 NPT or Manifold (Without Adapter)		
1	½ - 14 NPT (With Adapter)		
CODE	Electrical Connection		
0	½ - 14 NPT		
A	M20 x 1,5		
B	Pg 13,5 DIN		
CODE	Local Adjustment		
1	With Local Adjustment		
CODE	Process Connection Size and Rating (1)	CODE	Process Connection Size and Rating (1)
4	Thread IDF - 2" 300# - With Extension	H	Thread DN40 PN20 - DIN 11851 - Without Extension
5	Thread RJT - 2" 300# - With Extension	I	Tri-Clamp - 3" 300# - With Extension
6	Tri-Clamp - 2" 300# - With Extension	J	Tri-Clamp - 3" 800# - With Extension
7	Thread SMS - 2" 300# - With Extension	K	Thread IDF - 3" 300# - With Extension
8	Thread DN25 PN20 - DIN 11851 - With Extension	L	Thread RJT - 3" 300# - With Extension
9	Thread DN40 PN20 - DIN 11851 - With Extension	M	Thread SMS - 3" 300# - With Extension
A	Tri-Clamp DN50 PN20 - With Extension	N	Tri-Clamp - 2" 800# - With Extension
B	Thread IDF - 2" 300# - Without Extension	O	Tri-Clamp - DN50 - PN50 - With Extension
C	Thread RJT - 2" 300# - Without Extension	P	Tri-Clamp - 2" 800# - Without Extension
D	Tri-Clamp - 2" 300# - Without Extension	Q	Tri-Clamp - 1½" 800# - Without Extension
E	Thread SMS - 2" 300# - Without Extension	R	Tri-Clamp - 3" 800# - Without Extension
F	Tri-Clamp - 1½" 300# - Without Extension		
G	Tri-Clamp - 3" 300# - Without Extension		
CODE	Flange Material (Level Tap)		
I	316 SST		
H	Hastelloy C276		
CODE	Fill Fluid (High Side) (1)		
A	DC 200/350 Silicone Oil		
D	DC 704 Silicone Oil		
F	MO-10 Fluorolube Oil		
G	Glycerium and Water		
N	Neobee M20 Propylene Glycol Oil		
S	DC 200/20 Silicone Oil		
CODE	Diaphragm Material (High Side)		
0	Without O-Ring		
B	Buna N		
V	Viton		
T	Teflon		
CODE	Tank Adapter		
0	Without Tank Adapter (Supplied by Customer)		
1	With Tank Adapter 316 SST		
CODE	Tri-Clamp		
0	Without Tri-Clamp		
2	With Tri-Clamp in 304 SST		
CODE	Optional Items*		
ZZ	Special Options - Specify		

LD301S - 2 | 1 | I - B | U | 1 | 0 - 0 | 1 - 4 | H | A - 0 | 1 | 2 / * ← TYPICAL MODEL NUMBER

(1) Material in 316 SST
* Leave it blank for no optional items.

Accuracy

The overall accuracy* for remote seal and transmitter assembly is given as:

$$\text{Accuracy}(\%) = \frac{E_S + E_T}{\text{Span}} \cdot 100$$

E_S - Remote Seal error (table A)

E_T - Transmitter error (mmH₂O)**

* The temperature effect is not considered.

** Consult the transmitter manual.

Table 1 - Maximum intrinsic error for the remote seal, according to diameter, connection and capillary length.

CAPILLARY AND SEALS NUMBER	DIAPHRAGM TYPE	1", DN25	1 1/2", 2", DN40, DN50 THREADED	3", DN80	4", DN100
0.5 m or Level	1 seal	8.5	6	4.3	3
	2 seals	5.7	5.2	4	3
1 m	1 seal	10.5	6.5	4.4	3
	2 seals	6.1	5.3	4	3
1.5 m	1 seal	12	7	4.5	3.2
	2 seals	6.4	5.4	4.1	3
3 m	1 seal	18	8	4.8	3.3
	2 seals	7.6	5.6	4.2	3
5 m	1 seal	25	10	5	3.4
	2 seals	9	6	4.2	3
10 m	1 seal	44	14	6	4
	2 seals	7	7	4.4	3.2

Table 2 - ANSI B 16.5 Dimensions

DN (in)	Class	Dimensions (mm)								X
		A	B	C	D	E	F	G	H	
1	150	108	79.2	20	1.6	15.7	50.8	33	63.5	4
	300	123.9	88.9	20	1.6	19.1	50.8	33	63.5	4
	600	123.9	88.9	24.4	1.6	19.1	50.8	33	63.5	4
	1500	149.3	101.6	35.4	6.4	25.4	50.8	33	63.5	4
	2500	158	108	42	6.4	25.4	50.8	33	63.5	4
1 1/2	150	127	98.6	20	1.6	15.7	73.2	48	82	4
	300	155.4	114.3	21	1.6	22.3	73.2	48	82	4
	600	155.4	114.3	29.3	6.4	22.3	73.2	48	82	4
	1500	177.8	124	38.6	6.4	28.4	73.2	48	82	4
	2500	203.2	146	51.5	6.4	31.8	73.2	48	82	4
2	150	152.4	120.7	22	1.6	19.1	91.9	48	100	4
	300	165.1	127	22.8	1.6	19.1	91.9	48	100	8
	600	165.1	127	32.3	6.4	19.1	91.9	48	100	8
	1500	215.9	165	45	6.4	25.4	91.9	48	100	8
	2500	235	171.5	57.7	6.4	25.4	91.9	48	100	8
3	150	190.5	152.4	24.4	1.6	19.1	127	70	132	4
	300	209.5	168.1	29	1.6	22.2	127	70	132	8
	600	209.5	168.1	38.7	6.4	22.2	127	70	132	8
4	150	228.6	190.5	24.4	1.6	19.1	158	90	170	8
	300	254	200	32.2	1.6	22.3	158	90	170	8
	600	273	215.9	45	6.4	25.4	158	91	170	8

Table 3 - DIN 2501 Dimensions

DN	PN	Dimensions (mm)								X
		A	B	C	D	E	F	G	H	
25	10/40	115	85	20	2	14	68	33	72	4
	64/160	140	100	24	2	18	68	33	72	4
	250	150	105	28	2	22	68	33	72	4
40	10/40	150	110	20	3	18	88	48	94	4
	64/160	170	125	28	3	22	88	48	94	4
50	250	185	135	34	3	26	88	48	94	4
	10/40	165	125	20	3	18	102	48	107	4
	64	180	135	26	3	22	102	48	107	4
	100/160	195	145	30	3	26	102	48	107	4
80	250	200	150	38	3	26	102	48	107	8
	10/40	200	160	24	3	18	138	70	142	8
	64	215	170	28	3	22	138	70	142	8
100	100/160	230	180	36	3	26	138	70	142	8
	10/16	220	180	20	3	18	158	90	162	8
25/40	235	190	24	3	22	162	90	168	8	

Notes:

- 1: X - Number of Flange Holes
- 2: Raised Face (RF) for ANSI Standard
Smooth Face (DIN 2526 Form D) for DIN Standard
- 3: H - Only Applicable to SR301T with Flush Connection

Table 4 - DIN Pressure Limits

PN	Pressure Limit @ 120 °C
10/16	16 bar
25/40	40 bar
64	64 bar
100/160	160 bar
250	250 bar

Table 5 - JIS Pressure Limits

Class	Pressure Limit @ 120 °C
10 K	14 bar
20 K	28 bar
40 K	68 bar

Table 6 - Tri-Clamp Pressure Limits

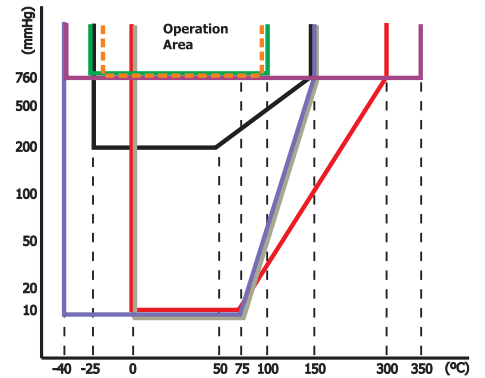
DN	Low Pressure		High Pressure	
	@ 20°C	@ 120°C	@ 20°C	@ 120°C
1½"	35 bar	20 bar	100 bar	80 bar
2"	30 bar	20 bar	70 bar	55 bar
3"	25 bar	15 bar	70 bar	55 bar

Note:

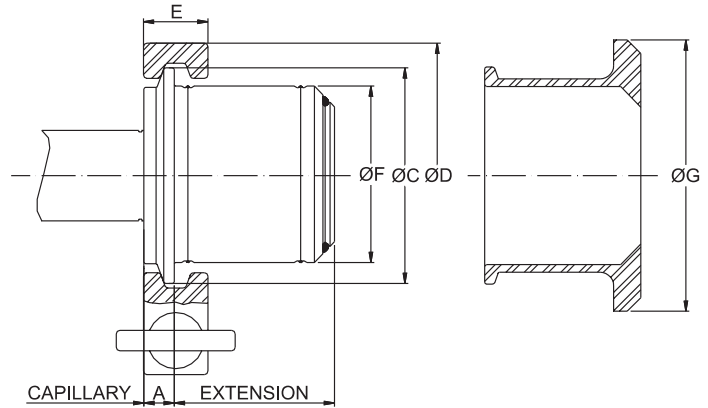
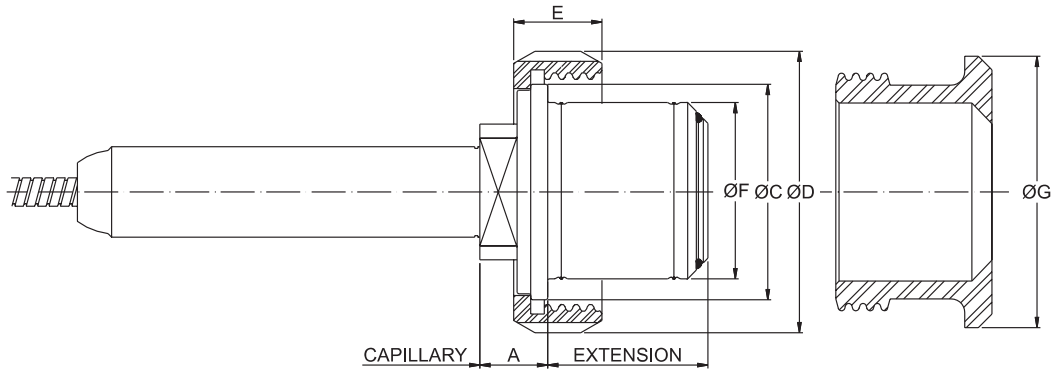
For Flanges ANSI B16.5a Pressure Limits see Table Flange Ratings page I5.

Table 8 - Fill Fluid Characteristics

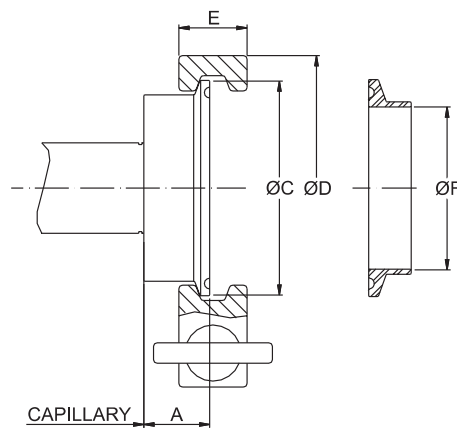
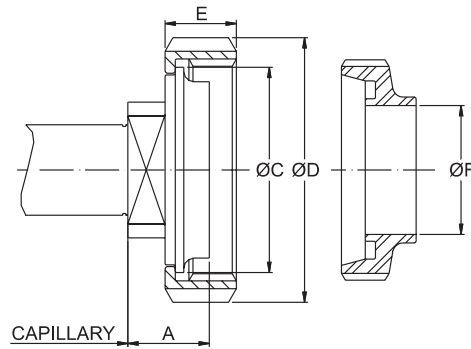
Fill Fluid	Temperature Limit at P abs > 1 atm (°C)	Density (g/cm³) @ 25 °C	Thermal expansion coefficient (1/°C)
DC200/20 Silicone Oil	-40 to 150	0.95	0.00107
MO-10 Fluorolube Oil	-20 to 100	1.91	0.000799
DC704 Silicone Oil	0 to 300	1.07	0.000874
DC200/350 Silicone Oil	0 to 150	0.97	0.00096
Neobee M20 Propylene Glycol Oil	-25 to 150	0.90	0.0009
Glycerium and Water	-17 to 93	1.13	0.001
Syltherm 800	-40 to 350	0.934	0.00034

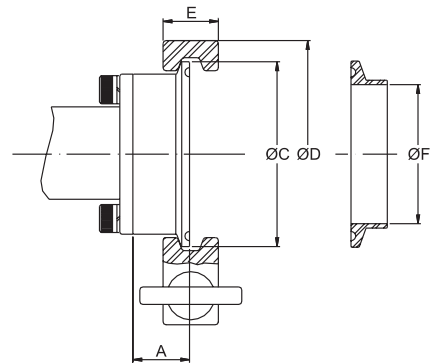
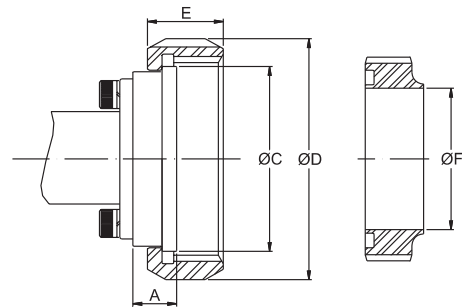
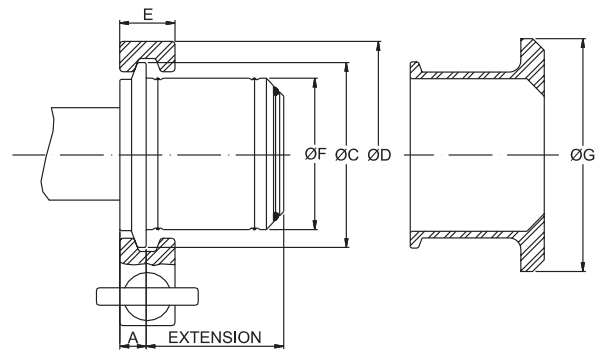
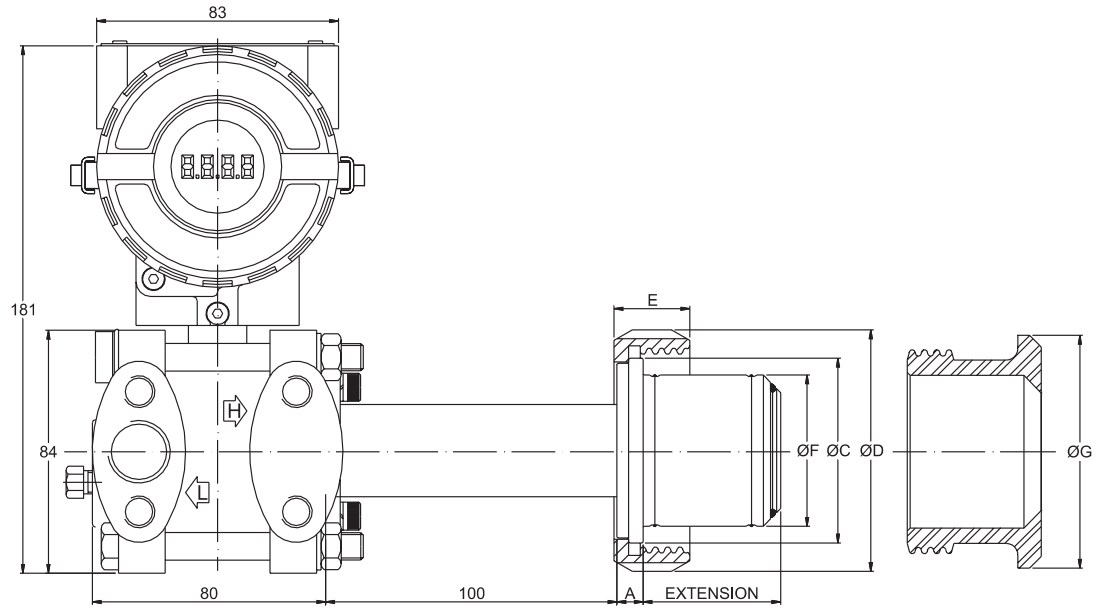


- S - DC200/20 Silicone Oil
- F - MO-10 Fluorolube Oil
- D - DC704 Silicone Oil
- A - DC200/350 Silicone Oil - Food Grade
- N - Neobee M20 Propylene Glycol Oil
- G - Glycerium and Water
- T - Syltherm 800

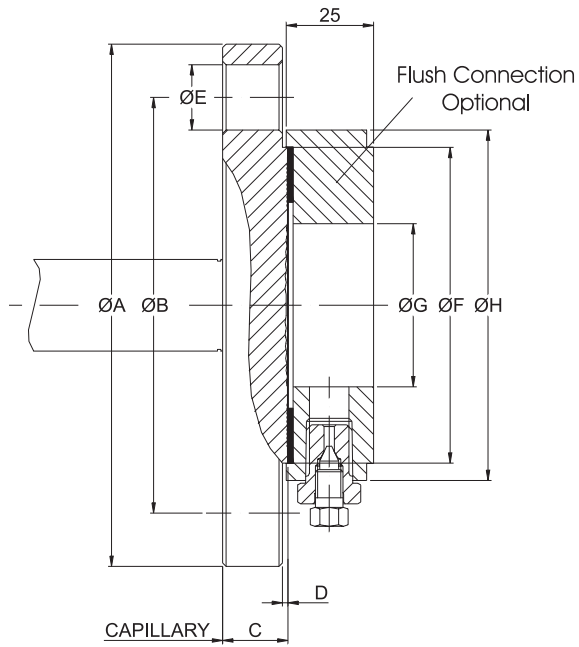


SR301S - DIMENSIONS							
nominal	A	ØC	ØD	E	ØF	ØG	ext.
DN40 with extension	20.5	60.5	78	21	52	80	47.2
DN40 without extension	20	60.5	78	21	40.2	-	-
1½" SMS without extension	21	55	74	25	35	-	-
1½" TC without extension	20	50	61	19	35	-	-
1½" TC high pressure	20	50	66	25.4	35	-	-
2" with extension	SMS	20.5	63.5	83	26	52	80 47.2
	RJT	20.5	66.7	86	22	52	80 47.2
	IDF	20.5	60.5	77	30	52	80 47.2
	TC	20.5	63.5	76.5	19	52	80 47.2
	TC high pressure	20.5	63.5	81	25.4	52	80 47.2
2" without extension	SMS	23	63.5	83	26	47.6	- -
	RJT	22	66.7	86	22	47.6	- -
	IDF	23	60.5	77	30	47.6	- -
	TC	20	63.5	76.5	19	47.6	- -
	TC high pressure	20	63.5	81	25.4	47.6	- -
3" with extension	SMS	18	93	113	32	72.5	100 50
	RJT	18	92.1	112	22.2	72.5	100 50
	IDF	18	87.5	102	30	72.5	100 50
	TC	18	91	110	22	72.5	100 50
	TC high pressure	18	91	115	28.5	72.5	100 50
3" TC without extension	20	91	110	22	73	- -	
3" TC high pressure	20	91	115	28.5	73	- -	



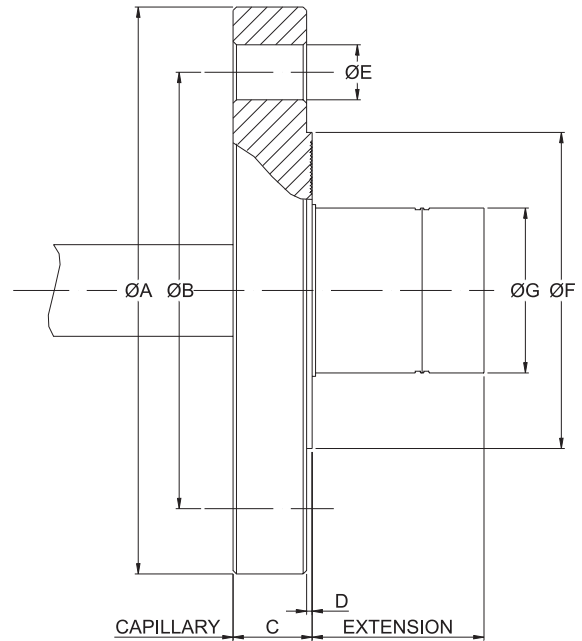


LD301S - DIMENSIONS							
nominal	A	øC	øD	E	øF	øG	ext.
DN25 with extension	32.7	47.5	63	22.5	43.2	80	26.3
DN40 with extension	9	60.5	78	21	52	80	47.2
DN40 without extension	20	60.5	78	21	40.2	-	-
1½" SMS without extension	20	55	74	25	35	-	-
1½" TC without extension	30	50	61	19	35	-	-
2" with extension	1½" TC without high pressure	30	50	66	25.4	35	-
	SMS	9	63.5	83	26	52	80
	RJT	9	66.7	86	22	52	80
	IDF	9	60.5	77	30	52	80
	TC	9	63.5	76.5	19	52	80
	TC high pressure	9	63.5	81	25.4	52	80
2" without extension	SMS	20	63.5	83	26	47.6	-
	RJT	22	66.7	86	22	47.6	-
	IDF	20	60.5	77	30	47.6	-
	DN50	20	68.5	92	22	50	-
	TC	20	63.5	76.5	19	47.6	-
	TC high pressure	20	63.5	81	25.4	47.6	-
3" with extension	SMS	8	93	113	32	72.5	100
	RJT	8	92.1	112	22.2	72.5	100
	IDF	8	87.5	102	30	72.5	100
	TC	8	91	110	22	72.5	100
	TC high pressure	8	91	115	28.5	72.5	100
3" TC without extension	20	91	110	22	73	-	-
3" TC high pressure	20	91	115	28.5	73	-	-



SR301T

SR301E



SR301R

