Chapter III
Diaphragm seals

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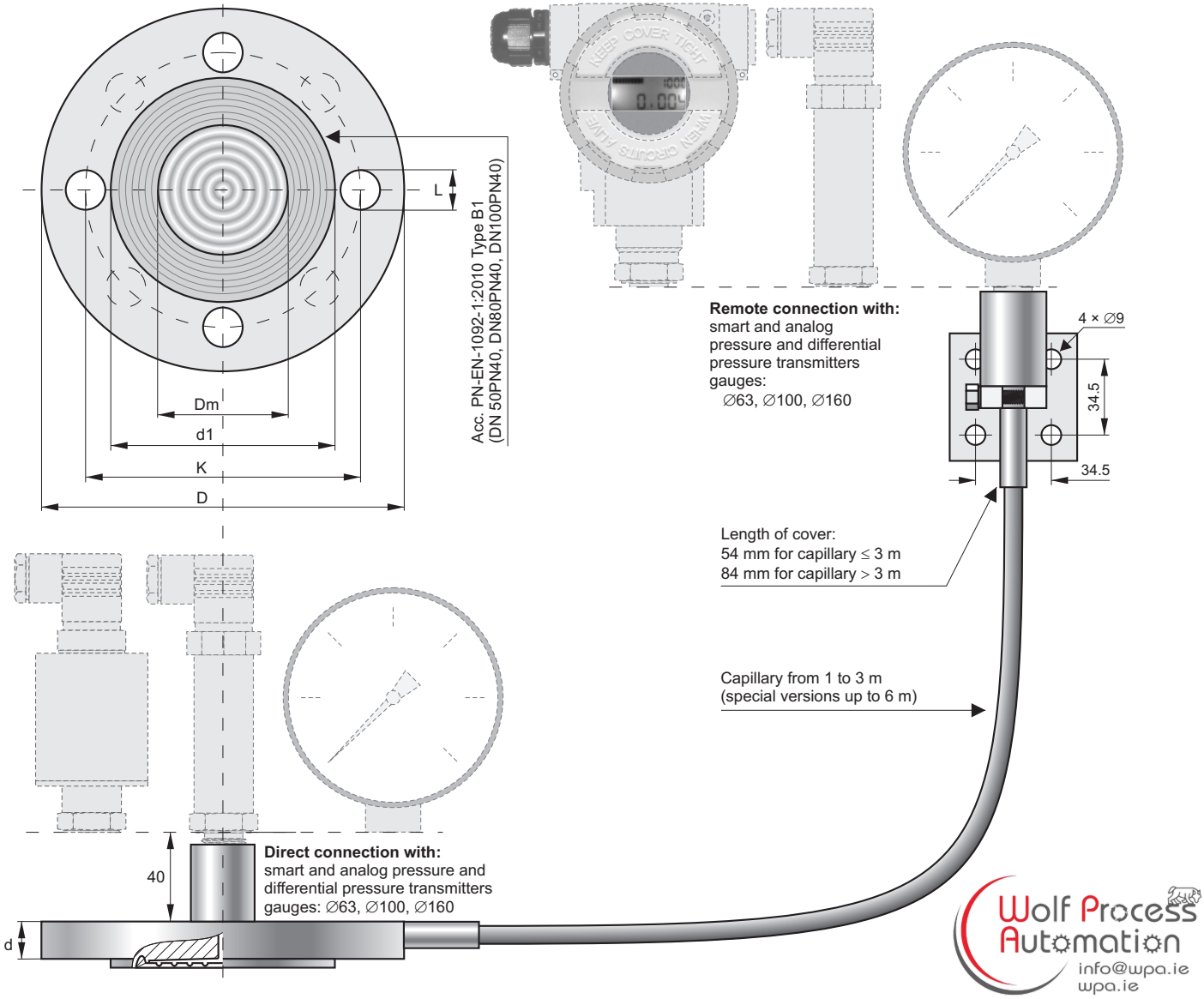
Flanged seals with flush diaphragm S-P



Diaphragm seal dimensions

Version	Diaphragm diameter **Dm**	Contact face diameter **d1**	Diameter of bolt circle **K**	External diameter **D**	Thickness **d**	Diameter of holes **L**	Number of holes
DN50 PN40/	59	102	125	165	22	18	4
2''ANSI 150	59	92	120,5	150	20	20	4
DN80 PN40	89	138	160	200	24	18	8
3'' ANSI 150	89	127	152,5	190	24	20	4
DN100 PN40	89	162	190	235	24	22	8
4'' ANSI 150	89	158	190,5	230	24	20	8

Application

The diaphragm seal is a pressure-transmitting, diaphragm-type device. The pressure signal is sent to the cooperating pressure measuring device (pressure transmitter, pressure gauge) through manometric liquid filling the space between the separating diaphragm of the seal and the pressure measuring device. The diaphragm seal task is to isolate the pressure measuring device from damaging impacts caused by either medium or installation:

– low or high temperature, increased viscosity, impurities;
– vibrations of the installation (remote diaphragm seal).

Recommended minimum measuring range (bar), depending on the type of the set: pressure measuring device - diaphragm seal

Pressure measuring device	Diaphragm seal type	Diaphragm seal version		
		DN50 / 2”	DN80 / 3”	DN100 / 4”
Smart transmitters*	direct	0.10	0.025	0.025
	remote (2 m)	1	0.25	0.25
PCE-28	direct	0.1	0.1	0.1
	remote (2 m)	1	0.25	0.25
∅63 gauge	direct	1	1	1
	remote (2 m)	2.5	1	1
∅100 gauge	direct	1	1	1
	remote (2 m)	2.5	1	1
∅160 gauge	direct	6	1	1
	remote (2 m)	6	1	1

* The ranges given in the table for the smart transmitters should be taken as set ranges.

Recommendations

The essential metrological problem at diaphragm seals operational use is an absolute thermal zero error, resulting from the thermal expansion of the manometer liquid. The expansion effect must be compensated for with the separating diaphragm flexibility.

To minimise this effect, it is advisable to:

– use capillaries as short as possible, in this way the volume of manometer liquid will be reduced;
– use the greater diameter seals, in order to maximise the separating diaphragm flexibility;
– locate the capillaries in the places, in which the temperature fluctuations will be minimal.

Zero error from ambient temperature change

Diaphragm seal type	Absolute zero error per 10°C for the diaphragm seal		
	DN50 / 2”	DN80/ 3”	DN100 / 4”
direct	0.5 mbar	0.4 mbar	0.4 mbar
remote (2 m capillary)	3 mbar	1 mbar	1 mbar

An additional zero error, resulting from temperature fluctuations in a medium, depends on the temperature gradient in the oil-based diaphragm sealing system. The error value is, in any case, significantly smaller than the error value shown in the table.

Temperature range of measured medium

Remote diaphragm seal			Direct diaphragm seal
Manometric liquid	Underpressure measurements	Overpressure measurements	
very high temperature (DH)	max. 200°C for p > 0,05bar ABS max. 250°C for p > 0,1bar ABS	15...380°C	-30...150°C
high temperature (DC)		-10...315°C	
low temperature (AK)	not recommended for measurement of pressures < 0,2 bar ABS	-60...200°C	
Note: When operating with an ambient temperature of < -15°C, heating of capillaries filled with DC fluid is recommended.			

Maximum pressure for PN40 – 40 bar
Maximum pressure for ANSI 150 – 150 psi
Material of diaphragm and flange: 316Lss

Important:
- standard outlet capillary from flange:
  direct mounted diaphragm seal - axial
  remote mounted diaphragm seal - radial
  other configuration avaliable on request

Special versions

- Other standard ANSI or DIN
- Filled with edible oil (medium temp. -10...150°C)
- Direct diaphragm seal for medium temp. over 150°C
- Others

Ordering procedure

direct diaphragm seal: **pressure measuring device / S-P – DN..... / special version (description)**

remote diaphragm seal: **pressure measuring device / S-PK – DN..... / K = ... m / ..... / special version (description)**

Transmitter or gauge – see the code in the appropriate catalogue sheet

Diaphragm seal version

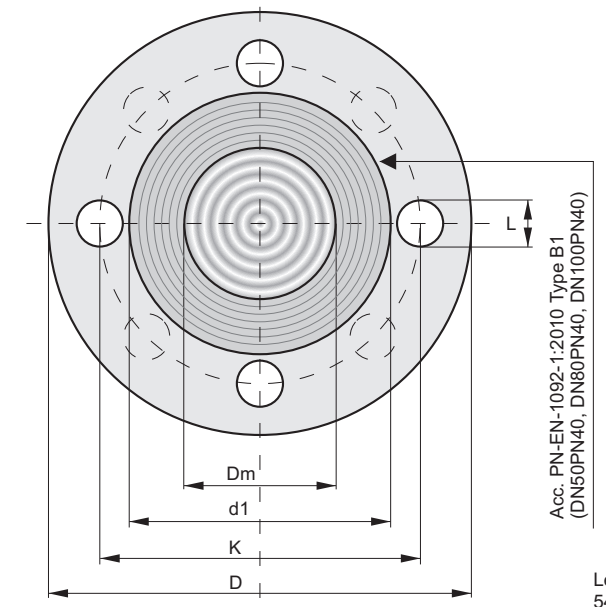
Capillary length

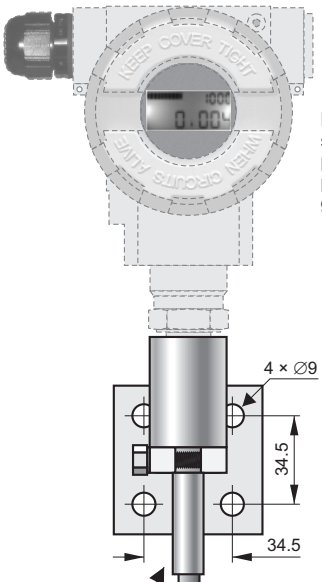
Type of manometric liquid – **DC** (high-temperature), **AK** (low-temperature)

Example: PCE-28 pressure transmitter, Exia version, measuring range 0 ÷ 1 bar, cable connection, direct flanged seal with flush diaphragm

PCE-28 / Exia / 0 ÷ 1 bar / PK / S-P – DN50PN40

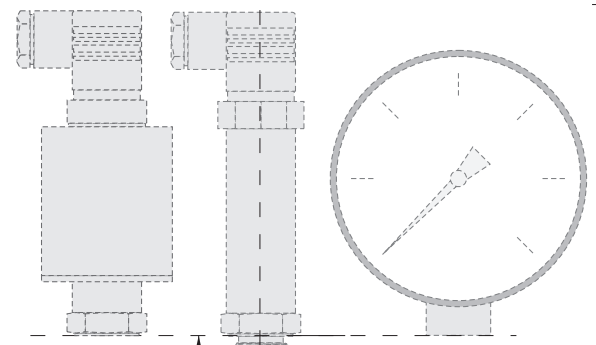
Flanged seals with extended diaphragm S-T



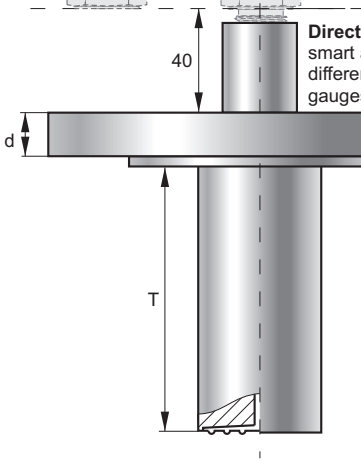


Remote connection with:
smart and analog pressure and differential pressure transmitters gauges:
∅63, ∅100, ∅160

Length of cover:
54 mm for capillary ≤ 3 m
84 mm for capillary > 3 m



Capillary from 1 to 3 m
(special versions up to 6 m)



Direct connection with:
smart and analog pressure and differential pressure transmitters gauges: ∅63, ∅100, ∅160

Diaphragm seal type S-TK-P- diaphragm seal with direct diaphragm cleaning system (Chapter III/ 18)

Diaphragm seal dimensions

Version	Diaphragm diameter **Dm**	Contact face diameter **d1**	Diameter of bolt circle **K**	External diameter **D**	Thick-ness **d**	Diameter of holes **L**	Number of holes	Tube length **T**
DN50 PN40	48	102	125	165	22	18	4	50, 100 150, 200
2''ANSI 150	48	92	120,5	150	20	20	4	
DN80 PN40	75	138	160	200	24	18	8	
3'' ANSI 150	75	127	152,5	190	24	20	4	
DN100 PN40	88	162	190	235	24	22	8	50, 100 150
4''ANSI 150	89	158	190,5	230	24	20	8	

Application

The diaphragm seal is a pressure-transmitting, diaphragm-type device. The pressure signal is sent to the cooperating pressure measuring device (pressure transmitter, pressure gauge) through manometric liquid filling the space between the separating diaphragm of the seal and the pressure measuring device. The diaphragm seal task is to isolate the pressure measuring device from damaging impacts caused by either medium or installation:

- low or high temperature, increased viscosity, impurities;
- tendency to crystallisation on the tank walls;
- vibrations of the installation (remote diaphragm seal).

The flanged diaphragm seal with extended diaphragm is typically applied to measure the pressure or level of the media in a multi-walled tank, where the separating diaphragm should be placed close to the inner wall of the tank.

Recommended minimum measuring range (bar), depending on the type of the set: pressure measuring device - diaphragm seal

Pressure measuring device	Seal type	Wykonanie separatora		
		DN50 / 2”	DN80 / 3”	DN100 / 4”
Smart transmitters*	direct	0,1	0.1	0.1
	remote (2 m)	6	0.5	0.25
PCE-28	direct	0.1	0.1	0.1
	remote (2 m)	2	0.5	2.5
∅63 manometer	direct	1	1	1
	remote (2 m)	2.5	2.5	1
∅100 manometer	direct	1	1	1
	remote (2 m)	2.5	2.5	1
∅160 manometer	direct	6	1	1
	remote (2 m)	6	2.5	1

* The ranges given in the table for smart transmitters should be taken as set ranges

Recommendations

The essential metrological problem at diaphragm seals operational use is an absolute thermal zero error, resulting from the thermal expansion of the manometer liquid. The expansion effect must be compensated for with the separating diaphragm flexibility.

To minimise this effect, it is advisable to:

– use capillaries as short as possible, in this way the volume of manometer liquid will be reduced;
– use the greater diameter seals, in order to maximise the separating diaphragm flexibility;
– locate the capillaries in the places, in which the temperature fluctuations will be minimal.

Zero error from ambient temperature change - diaphragm seal with a 100 mm of tube

Diaphragm seal type	Absolute zero error per 10°C for the diaphragm seal		
	DN50 / 2”	DN80 / 3”	DN100 / 4”
direct	2 mbar	0.6 mbar	0.4 mbar
remote (2 m capillary)	10 mbar	2 mbar	1 mbar

An additional zero error, resulting from temperature fluctuations in a medium, depends on the temperature gradient in the oil-based diaphragm sealing system. The error value is, in any case, significantly smaller than the error value shown in the table.

Temperature range of measured medium

Remote diaphragm seal			Direct diaphragm seal
Manometric liquid	Underpressure measurements	Overpressure measurements	
very high temperature (DH)	max. 200°C for p > 0,05 bar ABS max. 250°C for p > 0,1 bar ABS	15...380°C	-30...150°C
high temperature (DC)		-10...315°C	
low temperature (AK)	not recommended for measurement of pressures < 0,2 bar ABS	-60...200°C	
Note: When operating with an ambient temperature of < -15°C, heating of capillaries filled with DC fluid is recommended.			

Maximum pressure for PN40 – 40 bar
Maximum pressure for ANSI 150 – 150 psi
Material of diaphragm, tube and flange: 316Lss

Special versions

Other standards DIN and ANSI
Direct diaphragm seal for medium temp. over 150°C
Others

Important:
- standard outlet capillary from flange:
direct mounted diaphragm seal - axial
remote mounted diaphragm seal - radial
other configuration avaliable on request

Ordering procedure

direct diaphragm seal:
pressure measuring device / S-T – DN..... / T = ... mm / special version (description)

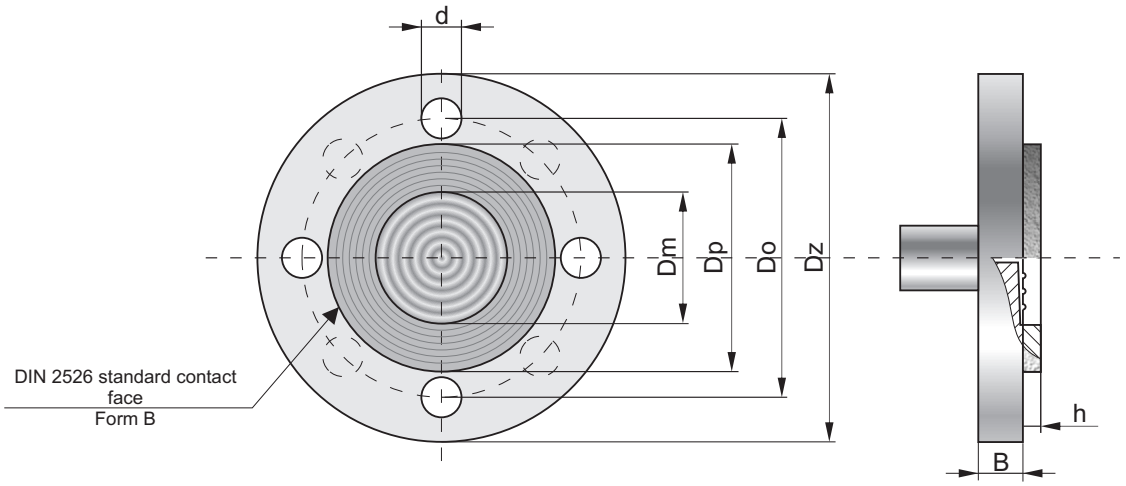
remote diaphragm seal:
pressure measuring device / S-TK – DN..... / T = ... mm / K = ... m / special version (description)

Transmitter or gauge – see the code in the appropriate catalogue sheet
Seal version
Tube length
Capillary length

Example: APC-2000ALW pressure transmitter, nominal measuring range 0 ÷ 25 bar, DN 50 remote flanged seal with extended diaphragm, 100 mm tube, 2 m capillary.

APC-2000ALW / 0 ÷ 25 bar / S-TK – DN50PN40 / T = 100 mm / K = 2 m

Chemical flanged seals with flush diaphragm S-Ch



Diaphragm seal dimensions acc. to DIN EN1092-1

Material of wetted parts	Version	Diaphragm diameter **Dm**	Contact face dia. **Dp**	Dia. of bolt circle **Do**	External diameter **Dz**	Thickness **B**	Thickness **h**	Diameter of holes **d**	Number of holes
Hastelloy, Nickel, Monel	**DN50PN10/40**	59	98	125	165	18	7	18	4
	DN80PN25/40	89	132	160	200	22	7	18	8
Titanium	**DN50PN10/40**	59	98	125	165	24	6	18	4
	DN80PN25/40	89	138	160	200	22	6	18	8
Tantalum	**DN50PN10/40**	59	102	125	165	18	3	18	4
	DN80PN25/40	89	138	160	200	22	3	18	8
Tantalum/Teflon	**DN50 PN16**	59	102	125	165	18	8	18	4
	DN80PN10/16	89	138	160	200	22	8	18	8
Teflon	**DN50PN10/40**	59	102	125	165	18	7	18	4
	DN80PN25/40	89	138	160	200	22	7	18	8

Diaphragm seal dimensions acc. to ANSI ASME 16.5

Material of wetted parts	Version	Diaphragm diameter **Dm**	Contact face dia. **Dp**	Dia. of bolt circle **Do**	External diameter **Dz**	Thickness **B**	Thickness **h**	Diameter of holes **d**	Number of holes
Hastelloy, Nickel, Monel	**2" ANSI 150**	59	92	120,5	150	18	7	20	4
	3" ANSI 150	89	123	152,5	190	22	7	20	4
Titanium	**2" ANSI 150**	59	92	120,5	150	18	2	20	4
	3" ANSI 150	89	127	152,5	190	22	2	20	4
Tantalum	**2" ANSI 150**	59	92	120,5	150	18	8	20	4
	3" ANSI 150	89	127	152,5	190	22	8	20	4
Tantalum/Teflon	**2" ANSI 150**	59	92	120,5	150	18	7	20	4
	3" ANSI 150	89	127	152,5	190	22	7	20	4

Application

The diaphragm seal is a pressure-transmitting, diaphragm-type device. The pressure signal is transfered to the cooperating pressure measuring device (pressure transmitter, pressure gauge) through manometric liquid filling the space between the separating diaphragm of the seal and the pressure measuring device. The diaphragm seal function is to isolate the pressure measuring device from damaging impacts caused by either medium or installation:

- high corrosiveness;
- low or high temperature, increased viscosity, impurities;
- vibrations of the installation (remote diaphragm seal).

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Recommended minimum measuring range (bar), depending on the type of the set: pressure measuring device - diaphragm seal

Pressure measuring device	Diaphragm seal type	Diaphragm seal version	
		DN50 PN16	DN80 PN40
Transmitter	direct	0.4	0.1
	remote	1	0.4
Gauge ∅100	direct	1	1
	remote	2.5	2.5

Available chemical-resistant materials

Diaphragm material	Contact face material	Over pressure limit
Monel	Monel	40 bar
Hastelloy	Hastelloy	40 bar
Nickel	Nickel	40 bar
Tantalum	Tantalum	40 bar
Tantalum	Teflon	16 bar
Titanium	Titanium	40 bar
Teflon	Teflon	40 bar
Gold	Gold	40 bar

Zero error from ambient temperature change

Diaphragm seal type	Absolute zero error per 10°C for the diaphragm seal	
	DN50	DN80
direct	5 mbar	2 mbar
remote (2 m capillary)	10 mbar	4 mbar

An additional zero error, resulting from temperature fluctuations in a medium, depends on the temperature gradient in the oil-based diaphragm sealing system. The error value is, in any case, significantly smaller than the error value shown in the table.

Medium temperature range

-30...180°C for remote diaphragm seal
special versions up to 250°C
-30...150°C for diaphragm seal

Important:
- standard outlet capillary from flange:
direct mounted diaphragm seal - axial
remote mounted diaphragm seal - axial
other configuration avaliable on request

Special versions

- Filling liquid – FLUOROLUBE
- Direct diaphragm seal for a medium temp. over 150°C
- Gold plated wetted parts material- after consulting with Aplisens.

Ordering procedure

direct diaphragm seal: **pressure measuring device / S-Ch ..... – DN..... / special version – description**

remote diaphragm seal: **pressure measuring device / S-ChK ..... – DN..... / K = ... m / special version – description**

Transmitter or gauge – see the code in the appropriate catalogue sheet

Material of diaphragm and contact face

Capillary length

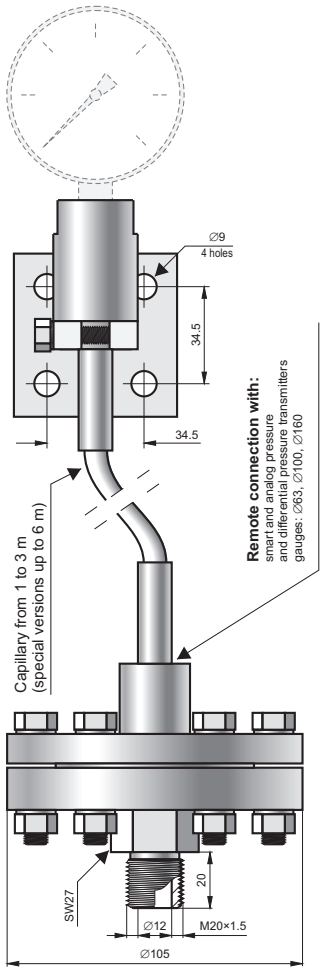
Diaphragm seal version

Example: APCE-2000PZ pressure transmitter, nominal measuring range 0÷1bar, direct chemical flanged seal with flush diaphragm and contact face made from titanium (DN80).

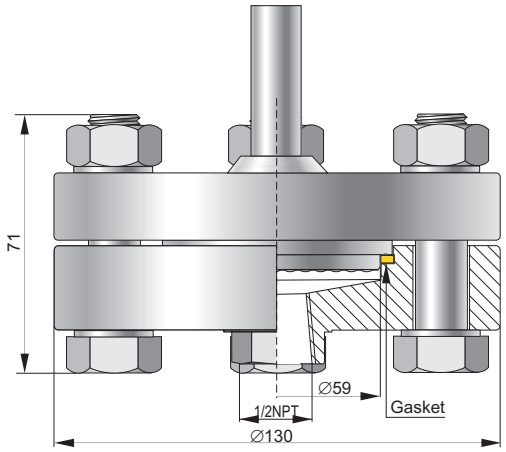
APCE-2000PZ / 0 ÷ 1 bar / S-Ch Titanium/Titanium – DN80PN40

When ordering a diaphragm seal please state the type of medium and the expected ranges of concentration and temperature.

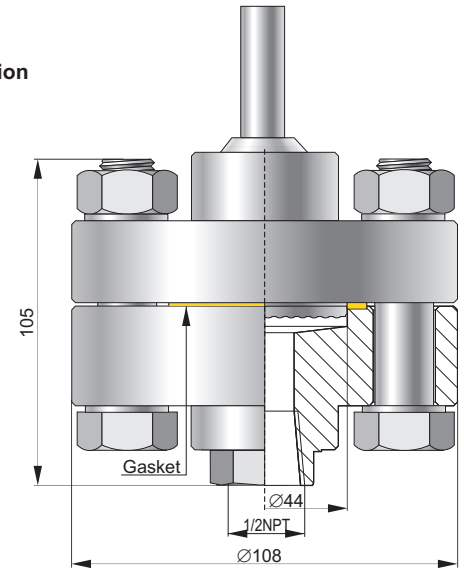
Threaded seals with large diaphragm S-Comp...



Type S-Comp
Mounting part with process connection
M20×1.5 (P type); G1/2″ (GP type)



Type S-Comp10M
Mounting part with process connection
1/2"NPTF



Type S-Comp25M
Type S-Comp60M
Mounting part with process connection
1/2"NPTF

Application

The diaphragm seal is a pressure-transmitting, diaphragm-type device. The pressure signal is sent to the co-operating pressure measuring device (pressure transmitter, pressure gauge) through manometric liquid filling the space between the separating diaphragm of the seal and the pressure measuring device. The diaphragm seal task is to isolate the pressure measuring device from damaging impacts caused by either medium or installation:

- low or high temperature, increased viscosity, impurities;
- vibrations of the installation (remote diaphragm seal);
- pressure fluctuations.

S-Comp diaphragm seals have a large separating diaphragm (∅70) while retaining a compact economic overall design. Benefits of S-Comp diaphragm seals include:

- the ability to take measurements within a narrow range;
- simplicity of assembly.

Maximum measuring range:

Type S-Comp:	0...16bar	**Type S-Comp10M:**	0…100bar
Type S-Comp25M:	0…250bar	**Type S-Comp60M:**	0…600bar

Recommended minimum measuring range (bar), depending on the type of the set: pressure measuring device - diaphragm seal

Diaphragm seal type	Transmitters APCE-2000*, PCE-28	Gauge ∅63	Gauge ∅100	Gauge ∅160
direct	0.2	1	1	1
remote	0.5	2.5	2.5	2.5

* The ranges given in the table for the smart APC-2000 transmitter should be taken as set ranges.

Zero error from ambient temperature change

Diaphragm seal type	Absolute error of zero
direct	0.6 mbar / 10°C
Remote (2m capillary)	2 mbar / 10°C

An additional zero error, resulting from temperature fluctuations in a medium, depends on the temperature gradient in the oil-based diaphragm sealing system. The error value is, in any case, significantly smaller than the error value shown in the table.

Medium temperature range

-30...200°C for remote diaphragm seal
-30...150°C for direct diaphragm seal

Material of diaphragm, flange and mounting part

00H17N14M2 (316Lss)

Special versions

Diaphragm made of Hastelloy C 276
Capillary outlet at the side of the diaphragm seal
Direct diaphragm seal for medium temp. over 150°C
Others

Ordering procedure

direct diaphragm seal: **pressure measuring device / type of S-Comp..... / special version (description)**

remote diaphragm seal: **pressure measuring device /type of S-CompK..... / K = ... m / special version (description)**

Transmitter or gauge – see the code in the appropriate catalogue sheet

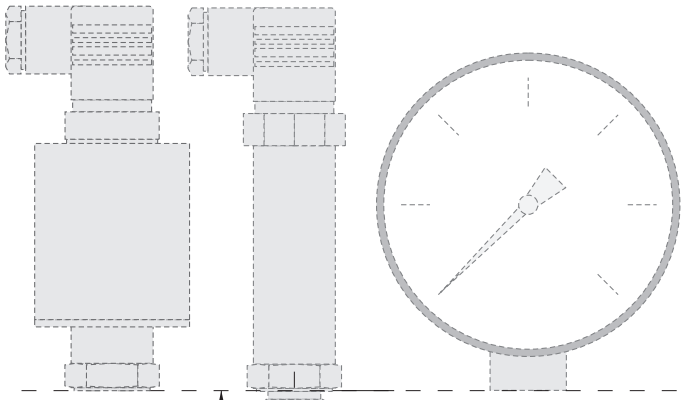
Mounting part design: type of process connection (P, GP)

Capillary length

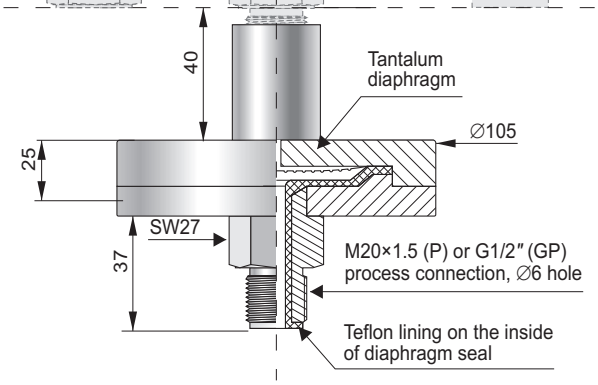
Example: MS-100 gauge, measuring range 0÷6bar, process connection outlet bottom, remote threaded seal with large diaphragm and separable mounting part with process connection M20×1.5, capillary length 1.5 m.

MS-100 / 0 ÷ 6 bar / S-CompK M20×1.5 / K = 1.5 m

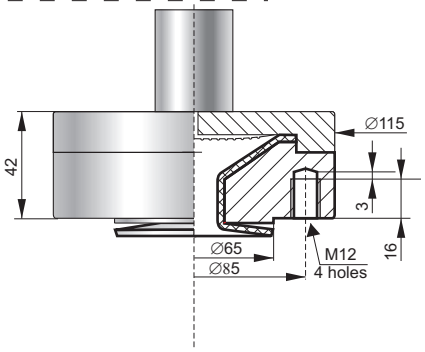
Threaded chemical seals with large diaphragm S-CompCh



- ✓ **Measurement the pressure of hydrochloric, sulphuric and nitric acids in any concentration**
- ✓ **Measurement the pressure of chlorine**



Version with M20x1,5 process connection



Version with process connection size DN25

Application

S-CompCh seals are applicable for measuring the pressure of corrosive media. The wetted parts of the diaphragm seal are made of Teflon and tantalum. Several corrosive chemicals, except for hydrofluoric acid, gaseous fluorine and soda lye, can be measured.

Recommended minimum measuring range (bar), depending on the type of the set: pressure measuring device - diaphragm seal

Diaphragm seal type	Transmitter	Gauge ∅100
direct	0.4	1
remote	1	6

Zero error from ambient temperature change

direct diaphragm seal: 1 mbar / 10°C

remote diaphragm seal (2m capillary): 6 mbar / 10°C

An additional zero error, resulting from temperature fluctuations in a medium, depends on the temperature gradient in the oil-based diaphragm sealing system. The error value is, in any case, significantly smaller than the error value shown above.

Maximum measuring rage 0...16 bar
Over pressure limit 25 bar
Medium temperature range -30...100°C

Ordering procedure

direct diaphragm seal: **pressure measuring device / S-CompCh .....**

remote diaphragm seal: **measuring device / S-CompChK ..... / K = ... m**

Transmitter or gauge – see the code in the appropriate catalogue sheet

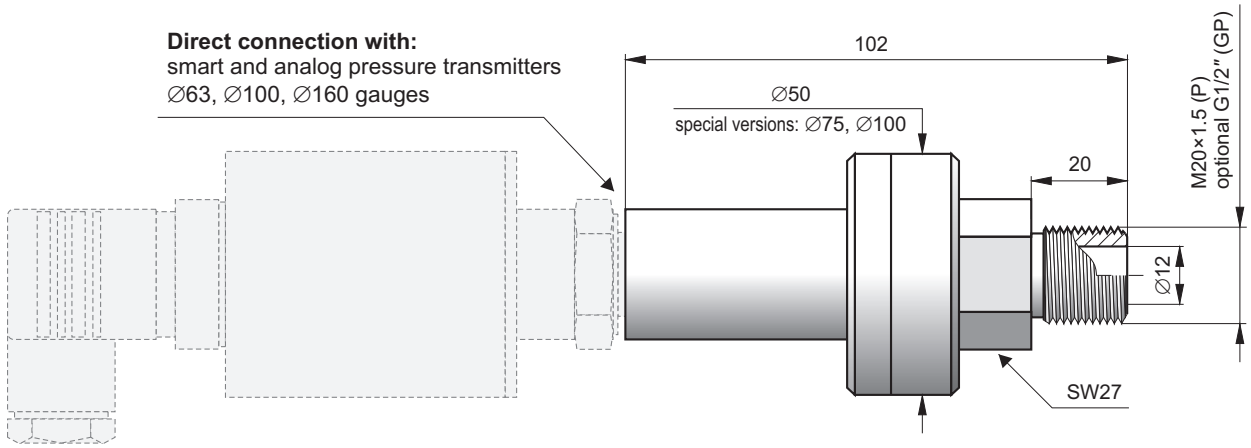
Type of process connection: P, GP,DN25

Capillary length

Example: APCE-2000PZ- pressure transmitter, nominal measuring range 0÷7 bar, threaded chemical seal with large diaphragm, GP process connection G1/2″.

APCE-2000PZ / 0 ÷ 7 bar / S-CompCh GP

Threaded seals with large diaphragm S-Mazut



Application

The S-Mazut diaphragm seal is applicable to measurement of viscous liquids, at temperatures up to 150°C (300°C when remote diaphragm seal is used). A typical application is to measure the pressure of heavy fuel oil (petroleum atmospheric residue) in burners and in heat centers of power boilers.

Recommended minimum measuring range (bar), depending on the type of the set: pressure measuring device - diaphragm seal

Diaphragm seal type	Pressure transmitter			∅100 gauge		
	S-Mazut	S-Mazut75	S-Mazut100	S-Mazut	S-Mazut75	S-Mazut100
direct	2,5 bar	0,1 bar	0,05 bar	2,5 bar	1 bar	1 bar
remote	6 bar	0,4 bar	0,25 bar	6 bar	2,5 bar	1 bar

Zero error from ambient temperature change

Diaphragm seal type	S-Mazut	S-Mazut75	S-Mazut100
direct	4 mbar / 10°C	2 mbar / 10°C	0,8 mbar / 10°C
Remote (capillary 2m)	5 mbar / 10°C	3 mbar / 10°C	1 mbar / 10°C

For a set: pressure transmitter - special diaphragm seal (special diaphragm seal means the larger diaphragm diameter), there is the following relation: the quantity of thermal errors decreases proportionally to the cubed value of the active diameter of the separating diaphragm (i.e. to the diameter value raised to the third power).

An additional zero error, resulting from temperature fluctuations in a medium, depends on the temperature gradient in the oil-based diaphragm sealing system. The error value is, in any case, significantly smaller than the error value shown above.

Maximum measuring range 0...70 bar

Overpressure limit

S-Mazut 110 bar
S-Mazut75 50 bar
S-Mazut100 40 bar

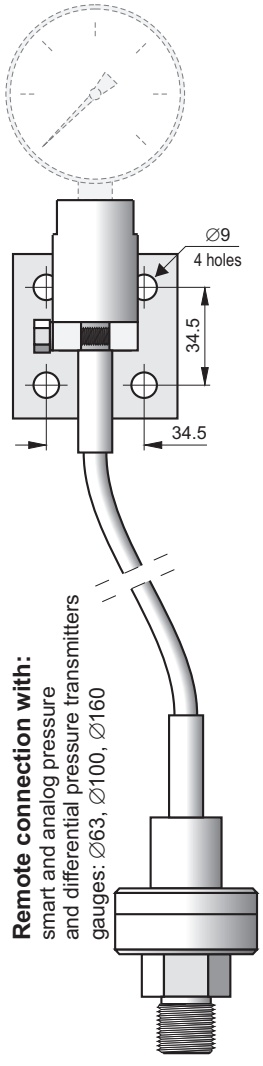
Medium temperature range

-10...315°C for remote seal
-10...150°C for direct seal

Material of diaphragm and seal 316Lss

Special versions

∅75 and ∅100 versions for low ranges
Others



Ordering procedure

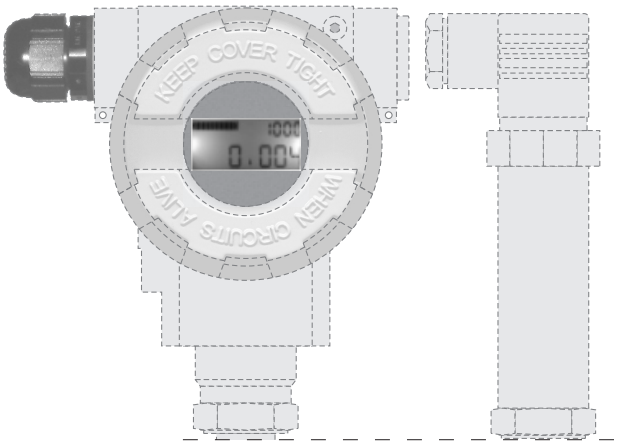
direct diaphragm seal:
pressure measuring device / S-Mazut / type of process connection **P, GP / special version (description)**

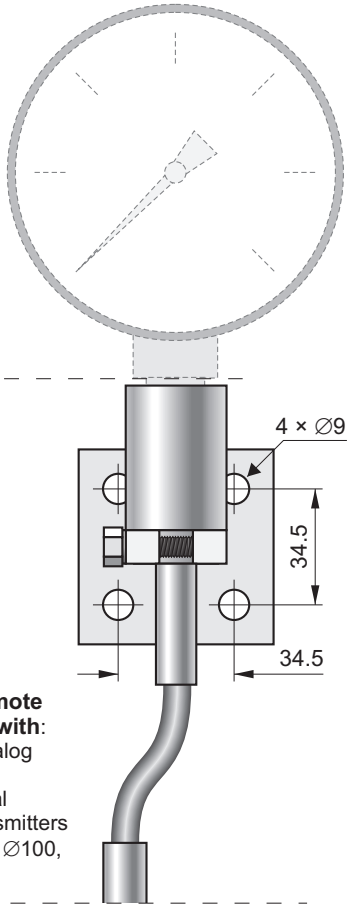
remote diaphragm seal:
pressure measuring device / S-MazutK / K = ... m / type of process connection **P, GP / special version (description)**

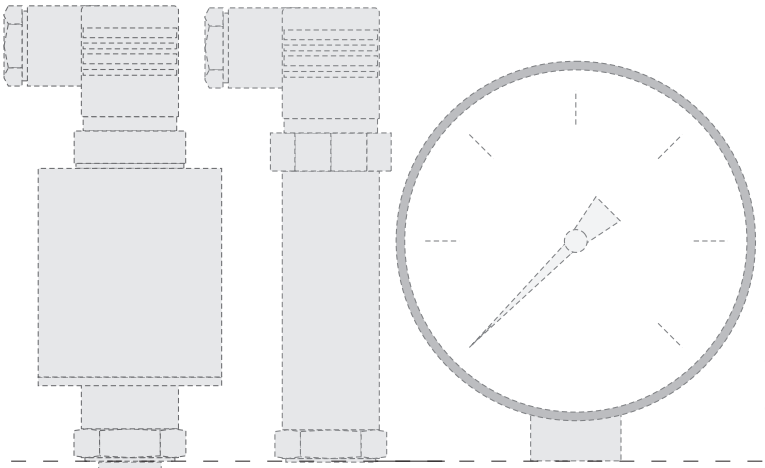
Transmitter or gauge – see the code in the appropriate catalogue sheet

Capillary length

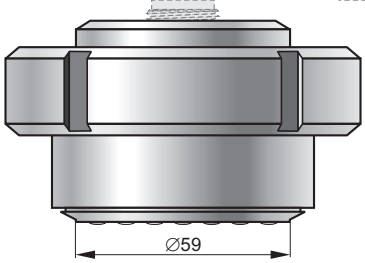
Sanitary diaphragm seals



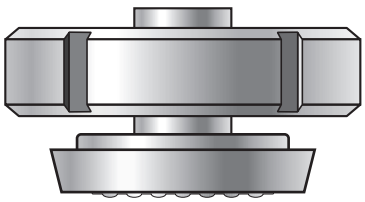




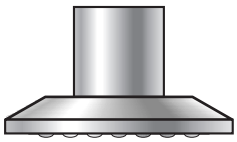
Direct or remote connection with: smart and analog pressure and differential pressure transmitters gauges: ∅63, ∅100, ∅160



S-Poziom 50mm diaphragm seal

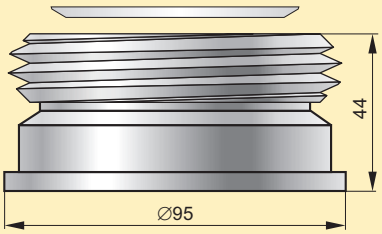


S-DIN 50mm diaphragm seal

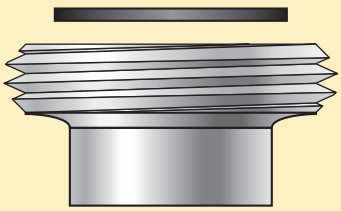


S-Clamp 2″ diaphragm seal

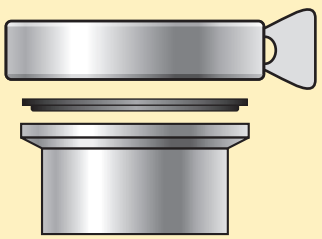
Fitting accessories for sanitary diaphragm seals if required



Socket S-Poziom with a gasket



DIN 11851, size 50mm connection with a gasket



Tri-Clamp, size 2″ connection with clamp and gasket

Application

The diaphragm seal is a pressure-transmitting, diaphragm-type device. The pressure signal is sent to the cooperating pressure measuring device (pressure transmitter, pressure gauge) through manometric liquid filling the space between the separating diaphragm of the seal and the pressure measuring device. The diaphragm seal task is to isolate the pressure measuring device from damaging impacts caused by either medium or installation:

- low or high temperature, increased viscosity, impurities;
- vibrations of the installation (remote diaphragm seal);
- pressure fluctuations.

The both S-DIN and S-Clamp types of sanitary diaphragm seals can be used under aseptic conditions. They are typically applied to measure the pressure of media in the food and pharmaceutical industries.

Aseptic S-Poziom separator is typically mounted in the bottom parts of tanks. The construction has a diaphragm placed forward and so it does not make a hollow in the surface of the tank bottom part, which eliminates the settling of either the material or washing agent in a connection of the pressure device.

Maximum measuring range 25bar

Recommended minimum measuring range (bar), depending on the type of the set: pressure measuring device - diaphragm seal

Diaphragm seal type	Smart transmitters*, PCE-28	Gauge ∅63	Gauge ∅100	Gauge ∅160
direct	0.1	1	1	6
remote	0.5	2.5	2.5	6

* The ranges given in the table for smart transmitters should be taken as set ranges.

Note: for measuring ranges lower than those listed in the table, we recommend special models of diaphragm seal, i.e.: Clamp 3″ and DIN 80mm

Zero error from ambient temperature change

Diaphragm seal type	Absolute zero error	
	S-Clamp and **S-DIN**	**S-Poziom**
direct	0.8 mbar / 10°C	0.3 mbar / 10°C
Remote (2m capillary)	5 mbar / 10°C	3 mbar / 10°C

An additional zero error, resulting from temperature fluctuations in a medium, depends on the temperature gradient in the oil-based diaphragm sealing system. The error value is, in any case, significantly smaller than the error value shown in the table.

For a set: pressure transmitter - special diaphragm seal (special diaphragm seal means the larger diaphragm diameter), there is the following relation: the quantity of thermal errors decreases proportionally to the cubed value of the active diameter of the separating diaphragm (i.e. to the diameter value raised to the third power).

Medium temperature range

-30...200°C for remote diaphragm seal
-20...150°C for direct diaphragm seal
-30...85°C for measuring ranges to –1bar

Material of diaphragm and seal

00H17N14M2 (316Lss)

Special versions

- ◊ filling liquid - edible oil (medium temp. range -10...150°C)
- ◊ Other sanitary seals, eg. DIN 25 mm, DIN 40 mm, Tri-Clamp 1", Tri-Clamp 1,5″, SMS 50 mm, DRD, Homogenizator, Varivent
- ◊ Seal with customised connection
- ◊ Direct diaphragm seal for medium temp. over 150°C
- ◊ Others

Ordering procedure

direct diaphragm seal: **pressure measuring device / S-..... / special version (description)**

remote diaphragm seal: **pressure measuring device / S-.....K / K = ... m / special version (description)**

Transmitter or gauge – see the code in the appropriate catalogue sheet

Type and size of sanitary seal

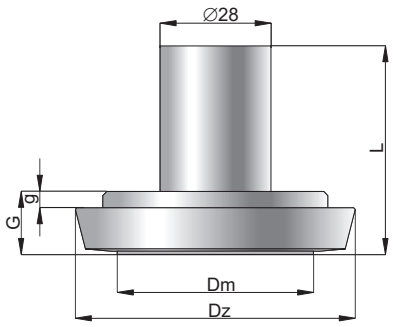
Capillary length

Example: PCE-28 pressure transmitter, measuring range 0÷6bar, field casing, direct sanitary diaphragm seal type S-DIN, size 50mm

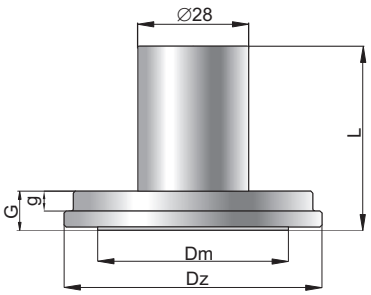
PCE-28 / 0 ÷ 6 bar / PZ / S-DIN 50

Diaphragm seal dimensions

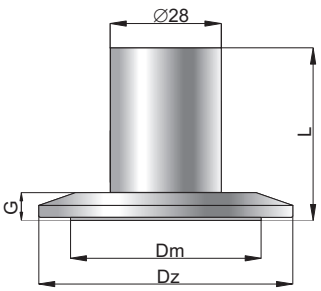
S-DIN



S-SMS



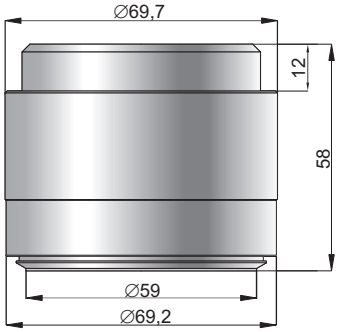
S-Clamp



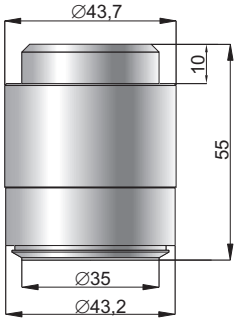
	Dz [mm]	**Dm** [mm]	**G** [mm]	**g** [mm]	**L** [mm]
S-DIN 25	44	25	15,8	5	52,3
S-DIN 32	50	30	15,8	5	52,3
S-DIN 40	56	35	14,8	4	51,3
S-DIN 50	68,5	48	15,8	4	51,3
S-DIN 65	86	59	16,8	4	52,3
S-DIN 80	100	75	16,8	4	52,3
S-SMS 1"	35,5	25	6,2	2	42,7
S-SMS 1,5"	54,9	35	10	4	46,5
S-SMS 2"	64,9	48	10	5	46,5

	Dz [mm]	**Dm** [mm]	**G** [mm]	**L** [mm]
S-Clamp 1"	50,5	22	7	43,5
S-Clamp 1,5"	50,5	35	7	43,5
S-Clamp 2"	64	48	7	43,5
S-Clamp 2,5"	77,5	54	7	43,5
S-Clamp 3"	91	70	7,8	44,3
S-Clamp 4"	119	89	9,8	45,8
S-Clamp DN 25	50,5	25	7	43,5
S-Clamp DN 40	50,5	35	7	43,5
S-Clamp DN 50	64	48	7	43,5
S-Clamp DN 65	91	70	7,8	44,3
S-Clamp DN 100	119	89	9,8	45,8

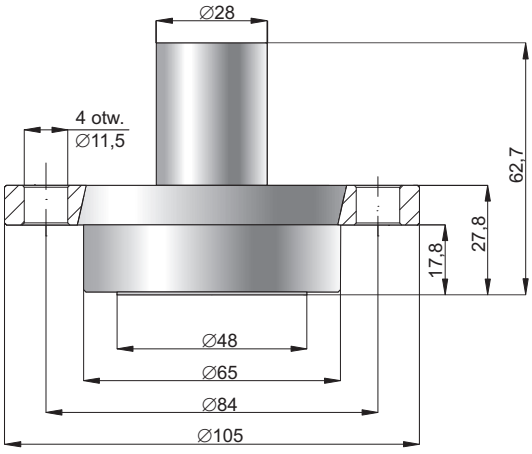
S-POZIOM 50



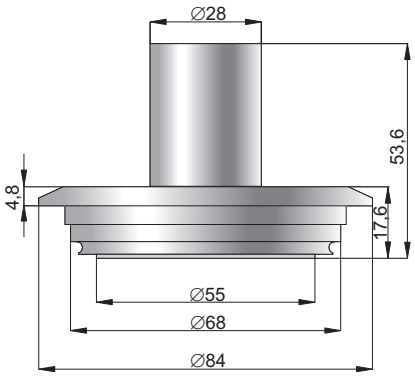
S-POZIOM 25



S-DRD 65

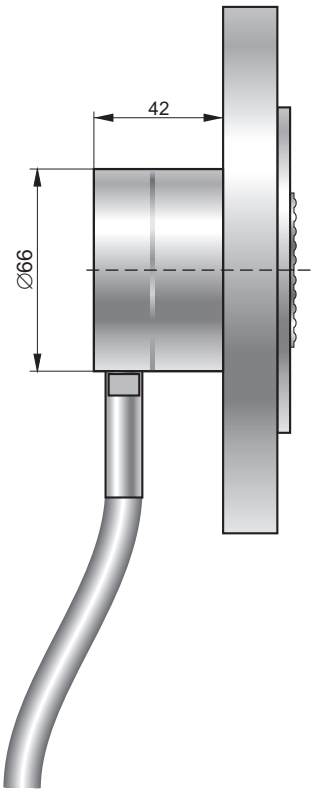


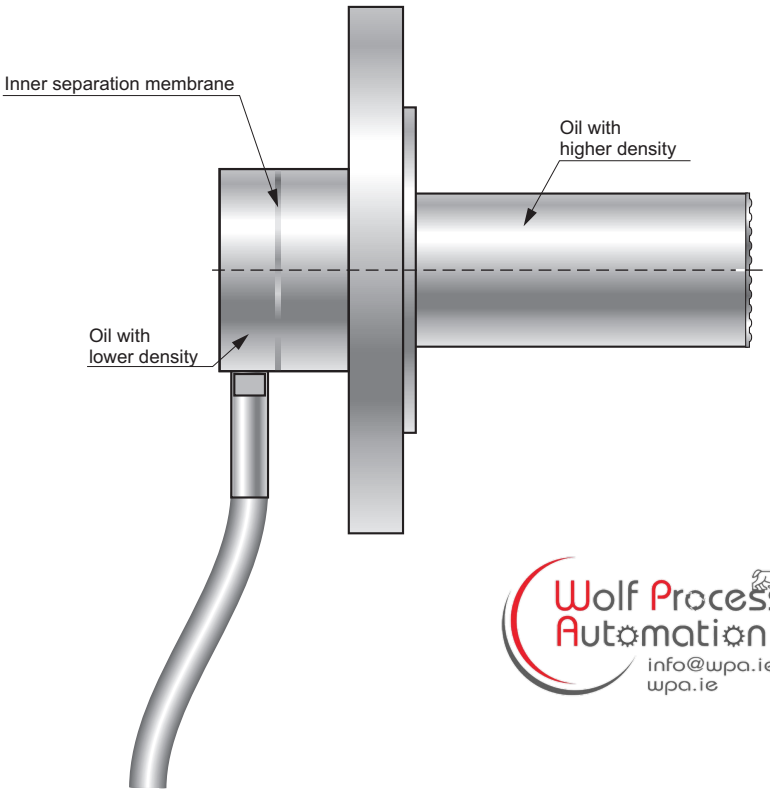
S-Varivent DN50



Flanged diaphragm seals for high-temperature applications in low ambient temperature S-NORD

NEW





S-NORD-PK-...

S-NORD-TK-...

Application

S-NORD diaphragm seals are applicable to the measurement in high-temperature application in low ambient temperature. Diaphragm seal is filled with two different kind of silicon oils with different density separated by membrane. High-temperature oil which is used from the process side allows to use diaphragm seal for medium up to 380°C. Capillary is filled with oil with lower density and due to this devices with S-NORD diaphragm seal can be used in low ambient temperature. S-NORD diaphragm seals can be produced with all flanges described on pages III/2 (S-P diaphragm seals) and III/4 (S-T diaphragm seals) as well.

Ordering procedure

pressure measuring device / S-NORD-PK-DN... / K=...m

pressure measuring device / S-NORD-TK-DN... / T=...mm / K=...m

Transmitter or gauge – see the code in the appropriate catalogue sheet

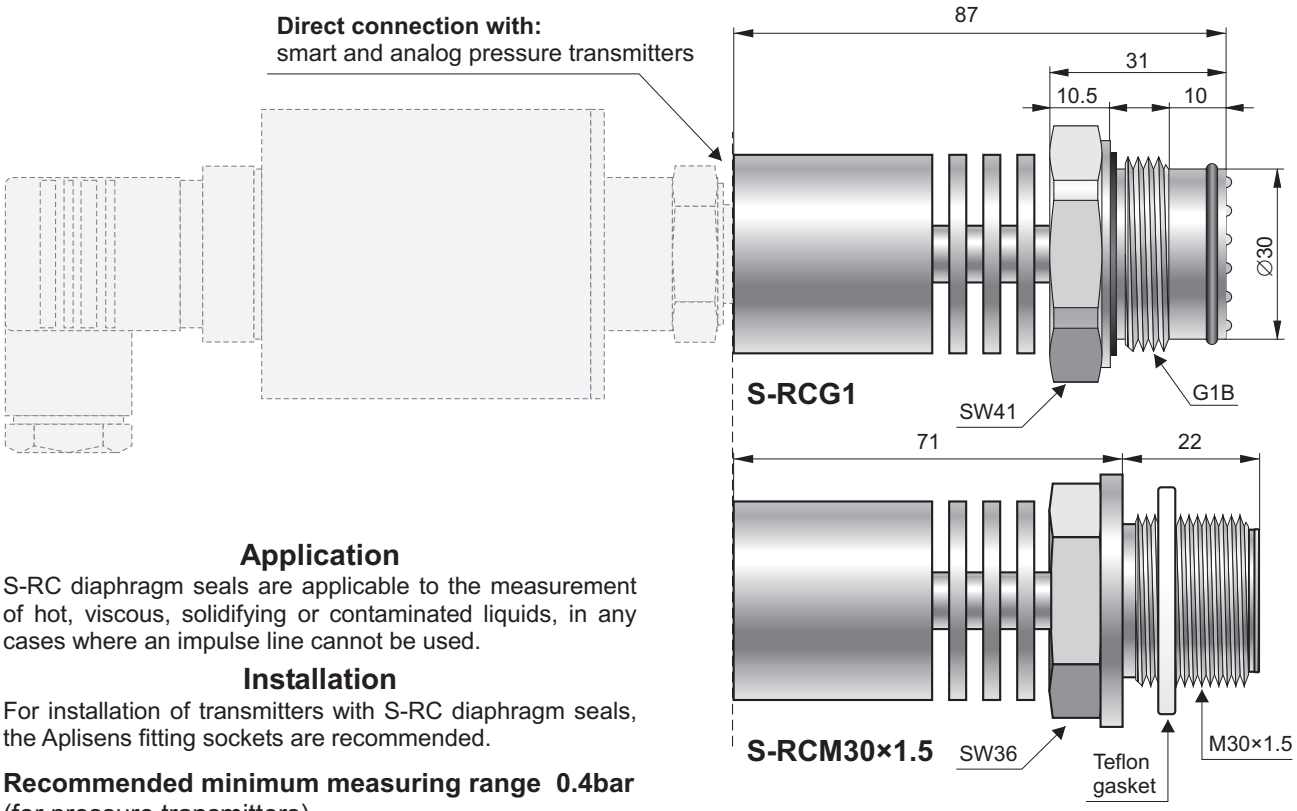
Diaphragm seal version

Tube length

Capillary

Threaded seals with flush diaphragm and radiator S-RC

Direct connection with:
smart and analog pressure transmitters



Application

S-RC diaphragm seals are applicable to the measurement of hot, viscous, solidifying or contaminated liquids, in any cases where an impulse line cannot be used.

Installation

For installation of transmitters with S-RC diaphragm seals, the Aplisens fitting sockets are recommended.

Recommended minimum measuring range 0.4bar
(for pressure transmitters)

Zero error from ambient temperature change

60 mbar / 10°C for range ≥ 2.5 bar

10 mbar / 10°C for range < 2.5 bar

An additional zero error, resulting from temperature fluctuations in a medium, depends on the temperature gradient in the oil-based diaphragm sealing system. The error value is, in any case, significantly smaller than the error value shown above.

Maximum measuring range

0...40 bar for S-RCG1 and S-RCM30×2
0...160 bar for S-RCM30×1.5

Overpressure limit

100 bar for S-RCG1 and S-RCM30×2; 250 bar for S-RCM30×1.5

Medium temperature range	0...160°C
Material of diaphragm and seal	00H17N14M2 (316Lss)

Special versions

- ◊ Diaphragm seal for temperatures up to 260°C
- ◊ Hastelloy – wetted parts of diaphragm seal made of Hastelloy C276 (overpressure limit 40 bar)
- ◊ Aseptic version S-RCG1, S-RCM30×2: sealing upstream the thread, filling liquid - edible oil (max. temp. 150°C)
- ◊ Others

Ordering procedure

transmitter / S-RC___ / special version – description

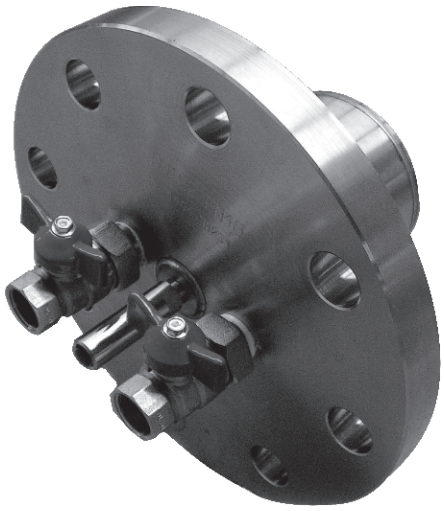
Pressure transmitter – see the code in the appropriate catalogue sheet

Type of process connection: **CG1″**, **CM30×2**, **CM30×1.5**

Example: PCE-28 pressure transmitter, range 0–1bar, cable electrical connection, S-RC diaphragm seal with CG1″ process connection.

PCE-28 / 0 ÷ 1 bar / PK / S-RCG1

Flanged seals with extended diaphragm and direct diaphragm cleaning system S-TK-P



Application

S-TK-P diaphragm seals are special execution of flanged seals with extended diaphragm S-TK–DN100/T=100mm with additional diaphragm cleaning system.

S-TK-P are applicable to the measurement of very viscous medium. Cleaning system allows to clean membrane without dismounting diaphragm seal from the application.

Cleaning medium (e.g. water) is supplied to the membrane surface via two channels placed inside the diaphragm seal.

Cleaning is performed periodically with intervals suitable to the measured medium. Flushing channels are ended with two ½" ball valves in the back of diaphragm seal.

Ordering procedure

transmitter / S-TK-P / K = ... m

Pressure transmitter – see the code in the appropriate catalogue sheet

Capillary length

Example: APC-2000ALW transmitter, nominal measuring range 0÷1 bar, flanged seal with extended diaphragm and direct diaphragm cleaning system, 6 m capillary

APC-2000ALW / 0 ÷ 1 bar / S-TK-P / K = 6 m