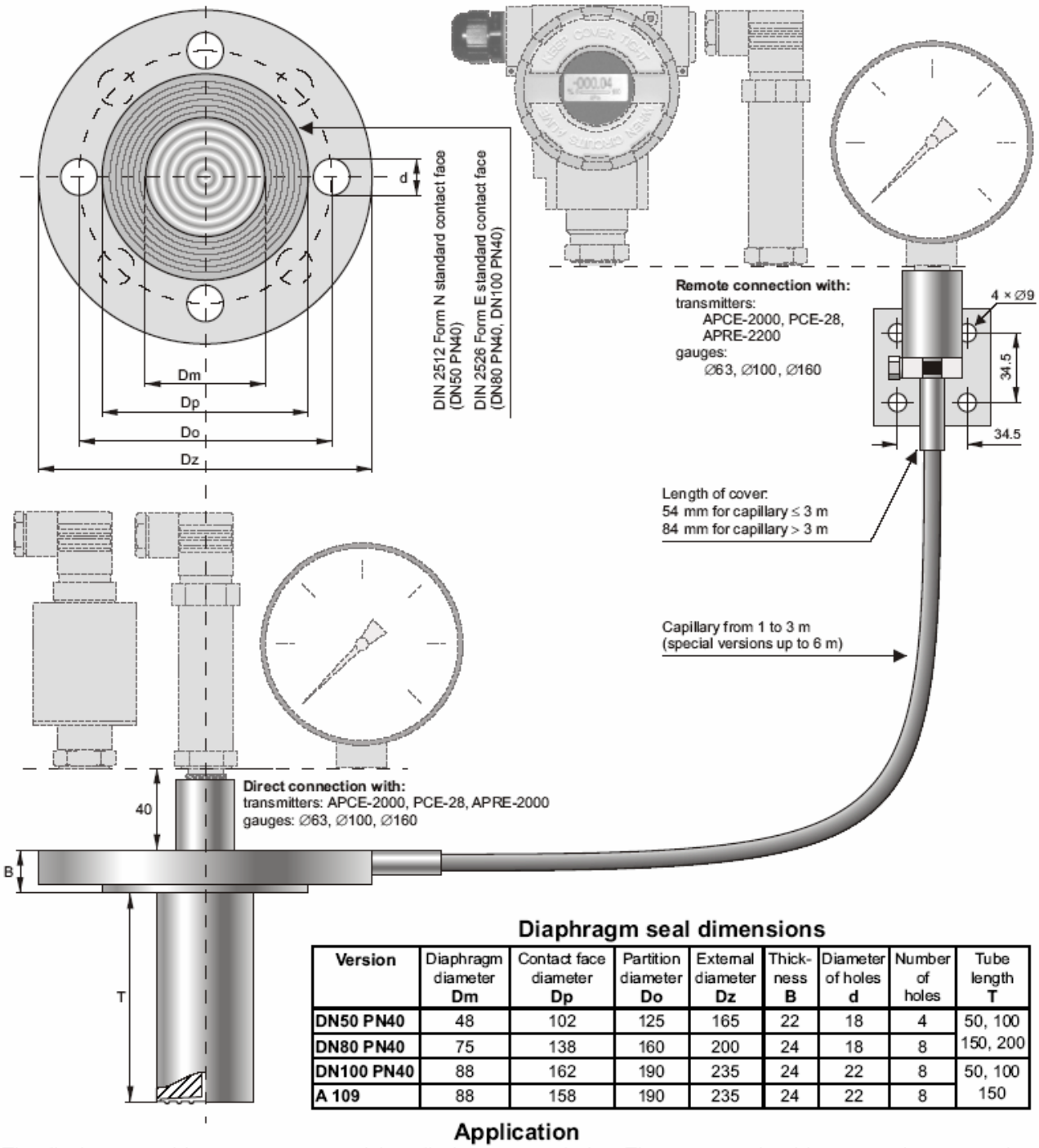
Flanged seals with extended diaphragm S-T



Diaphragm seal dimensions

Version	Diaphragm diameter Dm	Contact face diameter Dp	Partition diameter Do	External diameter Dz	Thick-ness B	Diameter of holes d	Number of holes	Tube length T
DN50 PN40	48	102	125	165	22	18	4	50, 100
DN80 PN40	75	138	160	200	24	18	8	150, 200
DN100 PN40	88	162	190	235	24	22	8	50, 100
A 109	88	158	190	235	24	22	8	150

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 PN40	DN80 PN40	DN100 PN40, A 109
APCE-2000*	direct	2	0.2	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
PC-50	direct	0.1	0.1	0.1
	remote (2 m)	2	0.5	2.5
∅63 manometer	direct	2.5	1	1
	remote (2 m)	6	2.5	1
∅100 manometer	direct	6	1	1
	remote (2 m)	6	2.5	1
∅160 manometer	direct	6	1	1
	remote (2 m)	6	2.5	1

* The ranges given in the table for the smart APCE-2000 transmitter 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.

Additional absolute zero error resulting from ambient temperature fluctuations, depending on the type of the set: pressure transmitter - diaphragm seal with a 100 mm of tube

Diaphragm seal type	Absolute zero error per 10°C for the diaphragm seal		
	DN50	DN80	DN100
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	
high-temperature (DC)	-10...150°C	-10...315°C	-30...150°C
low-temperature (AK)	not recommended for measurement of pressures < 0.5 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

Material of diaphragm, tube and flange 316Lss

Special versions

Diaphragm seal for pressures up to 100 bar (PN100)
Diaphragm seal meeting ANSI standards
Capillary outlet at the axis of the diaphragm seal
Direct diaphragm seal for medium temp. over 150°C
Others

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

APCE-2000AL / 0 ÷ 25 bar / S-TK – DN50 / T = 100 mm / K = 2 m

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