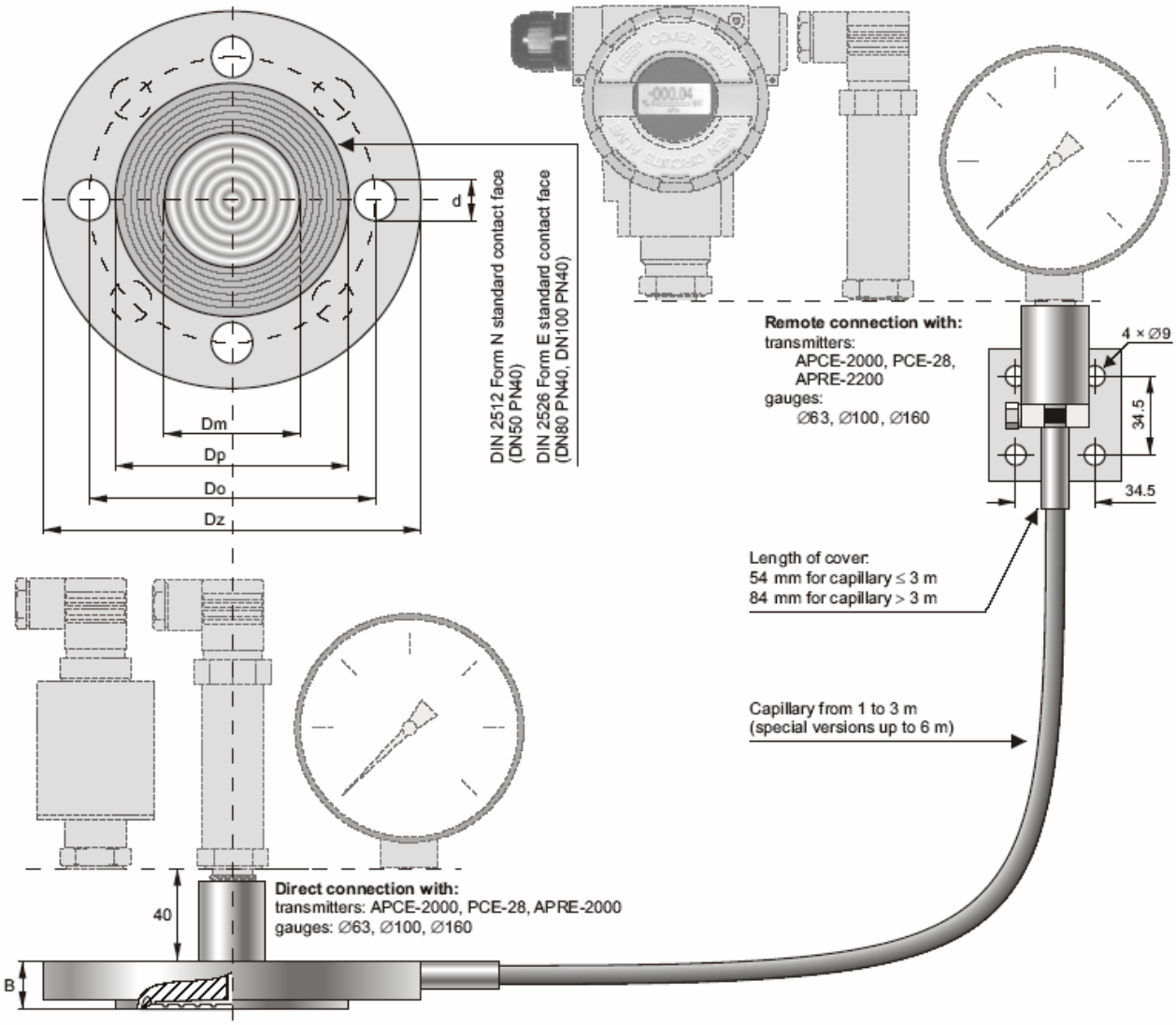
Flanged seals with flush diaphragm S-P



Diaphragm seal dimensions

Version	Diaphragm diameter **Dm**	Contact face diameter **Dp**	Partition diameter **Do**	External diameter **Dz**	Thickness **B**	Diameter of holes **d**	Number of holes
DN50 PN40	59	102	125	165	22	18	4
DN80 PN40	88	138	160	200	24	18	8
DN100 PN40	88	162	190	235	24	22	8
A 109	88	158	190	235	24	22	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 PN40	DN80 PN40	DN100 PN40, A 109
APCE-2000*	direct	0.25	0.1	0.1
	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
PC-50	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	6	1	1
	remote (2 m)	6	1	1
∅160 gauge	direct	6	1	1
	remote (2 m)	6	1	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

Diaphragm seal type	Absolute zero error per 10°C for the diaphragm seal		
	DN50	DN80	DN100
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	
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 and flange 316Lss

Special versions

DN25 and DN40 diaphragm seals
Diaphragm seal for pressure up to 100 bar (PN100)
Diaphragm seal meeting ANSI standards
Filled with edible oil (medium temp. -10...150°C)
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-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, EEx version, measuring range 0 ÷ 1 bar, cable connection, direct flanged seal with flush diaphragm

PCE-28 / EEx / 0 ÷ 1 bar / PK / S-P – DN50