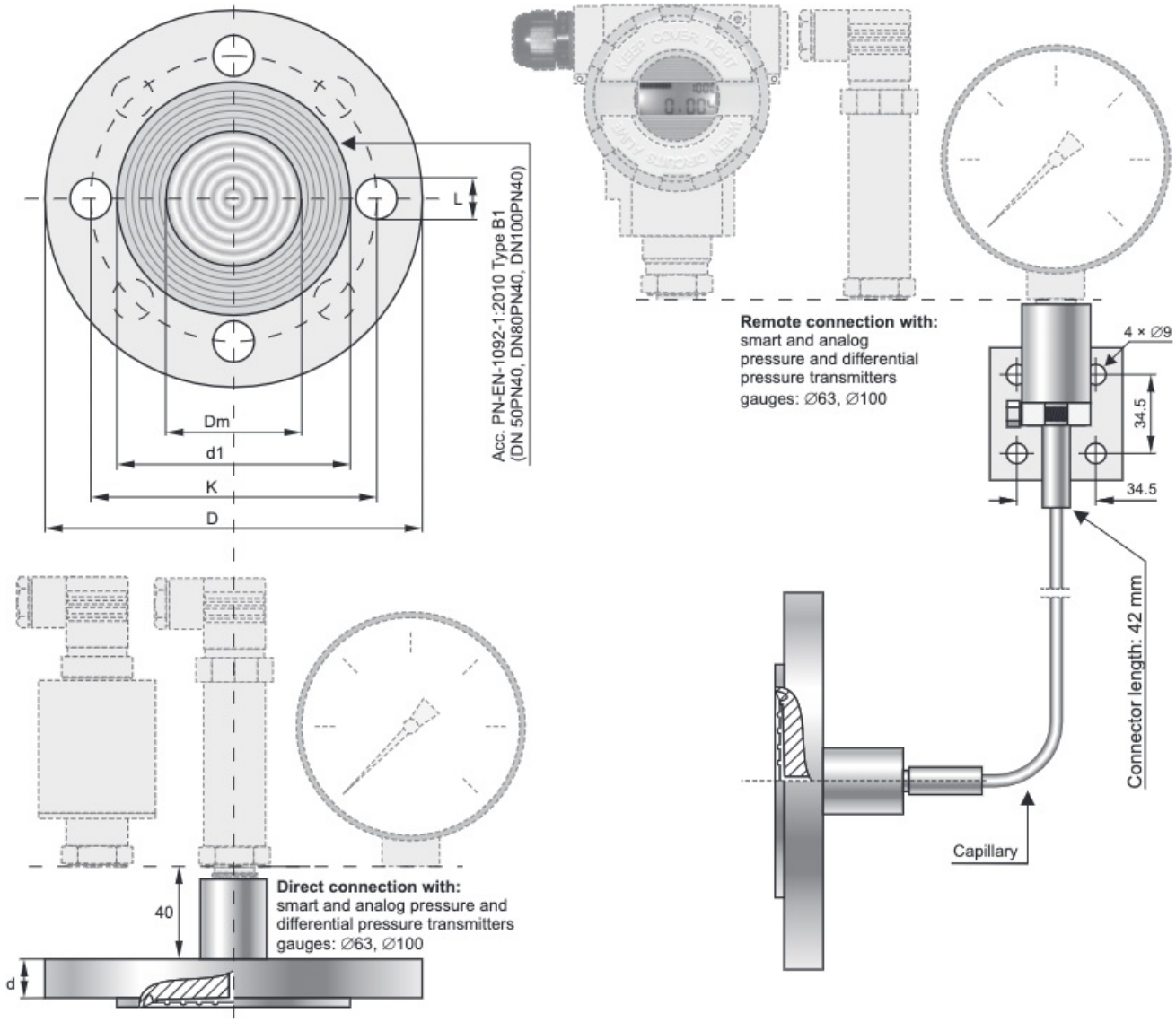
Product Datasheet for Process Instruments

- Flush Diaphragm Seal for Pressure Instruments FDS
- Extended Diaphragm Seal for Pressure Instruments EDS

Flush Diaphragm Seal for Pressure Instruments FDS



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

Applications

The diaphragm seal is a pressure-transmitting, diaphragm-type device. The pressure signal is sent to the cooperating pressure measuring device (Wireless Pressure Sensor, 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's role 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)

- Direct Diaphragm Seal: 0.1 bar for all sizes;
- Remote Diaphragm Seal (2m): 1 bar for DN50/2", 0.25 bar for DN80/3" and DN100/4"

Recommendations

The essential metrological problem at diaphragm seal 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 minimize this effect, it is advisable to:

- Use capillaries as short as possible, in this way the volume of manometer liquid will be reduced
- Maximum capillary length for DN50 / 2” is 10m;
- Use the greater diameter seals to maximize 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 < 0°C, heating of capillaries filled with DC or DH 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 is 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 Code

- Direct Diaphragm Seal: FDS-Flange Size-0M
- Remote Diaphragm Seal: FDS-Flange Size-Capillary Length-Mounting of Capillary-Type of Manometric Liquid

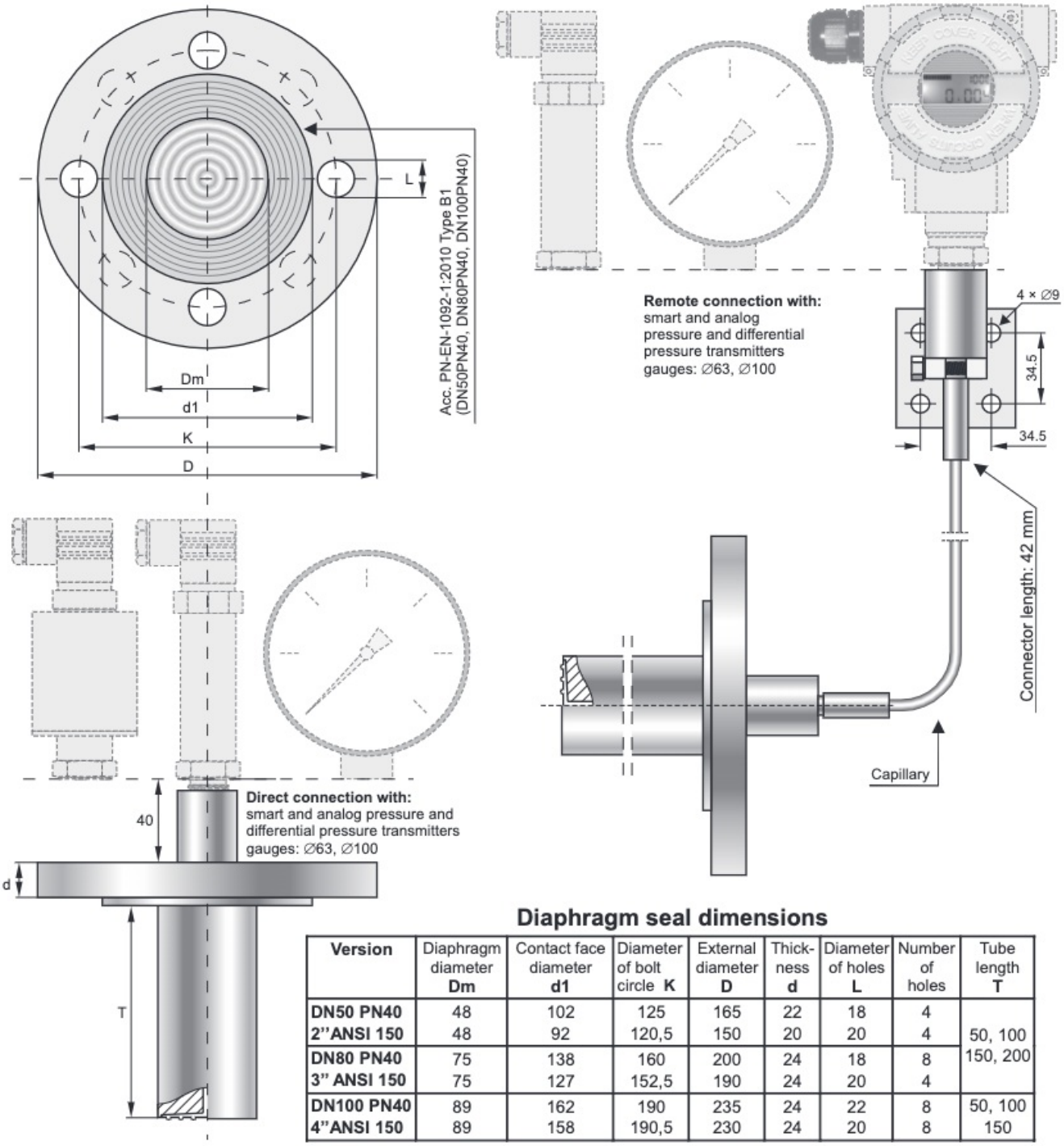
  Flange Size: select DN50, DN80, DN100 or 2", 3", 4"

  Capillary Length: 2M, 3M, 4M

  Mounting of Capillary: AX (Axial, standard), RD (Radial, option)

  Type of Manometric Liquid: DH or DC or AK

Extended Diaphragm Seal for Pressure Instruments EDS



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	89	162	190	235	24	22	8	50, 100 150
4''ANSI 150	89	158	190,5	230	24	20	8	

Applications

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 crystallization 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)

- Direct Diaphragm Seal: 0.1 bar for all sizes;
- Remote Diaphragm Seal (2m): 2 bar for DN50/2", 0.5 bar for DN80/3", 2.5 bar for DN100/4"

Recommendations

The essential metrological problem at diaphragm seal 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 minimize this effect, it is advisable to:

- Use capillaries as short as possible, in this way the volume of manometer liquid will be reduced
- Maximum capillary length for DN50 / 2” is 5m;
- Use the greater diameter seals to maximize 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 < 0°C, heating of capillaries filled with DC or DH 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 is 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 Code

- Direct Diaphragm Seal: EDS-Flange Size-Tube Length-0M
- Remote Diaphragm Seal: EDS-Flange Size-Tube Length-Capillary Length-Mounting of Capillary-Type of Manometric Liquid

  Flange Size: select DN50, DN80, DN100 or 2", 3", 4"

  Tube Length: in mm (Please check available length in Table 1)

  Capillary Length: 2M, 3M, 4M

  Mounting of Capillary: AX (Axial, standard), RD (Radial, option)

  Type of Manometric Liquid: DH or DC or AK