

Type MD 28 / MD 38

General Description

Diaphragm seals are used to isolate pressure / differential pressure measuring instruments such as gauges, transmitters, or sensors, from the media to be measured. This becomes necessary in unfavourable operating conditions such as

- high media temperature
- corrosive media
- difficult measuring locations

Important Features

- corrosion resistant materials
- easy installation
- maintenance free

Principles of Operation

Diaphragm seals are added to pressure / differential pressure measuring devices to protect these from corrosive media, high media temperatures, and other difficult measuring conditions. A diaphragm seal provides a fluid-filled isolation stage between the pressure medium (5) and sensitive parts of the measuring device (4). A flexible diaphragm (1) of suitable material (generally stainless steel) is the primary barrier between the pressure media and the measuring device. The space between the isolating diaphragm and the sensing surface of the measuring device is filled with special liquid (3), e.g., silicone oil. Media pressure (P) is transferred to the measuring device through the flexible diaphragm and filling liquid.

As a rule, pressure seals and pressure gauge are assembled together, pre-charged with filling fluid, and supplied as one unit. The pressure measuring device is directly fastened to the diaphragm seal assembly, or connected to a remote diaphragm seal assembly by means of a capillary tube. The capillary tube versions are used to isolate high media temperatures from pressure measuring devices.

Selection criteria

To select a suitable diaphragm seal for a particular application, several factors need to be considered:

- chemical and physical properties of the pressure medium
- pressure displacement volume
- media temperature
- pressure measuring range

The manufacturer's recommendations on this subject should be considered. Regarding diaphragm seal size, the following guideline should be generally followed. Small displacement volume seals (Model MD 38) should be used for higher pressure and differential pressure



ranges, particularly with electronic sensors / transmitters. Large displacement volume seals (Model MD 28) should be used for low pressure and differential pressure applications, particularly when mechanical gauges are used.

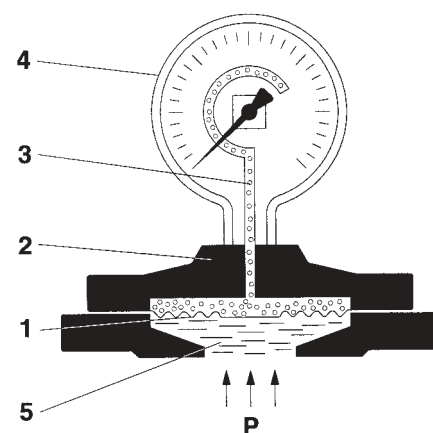
Lined system

For particularly aggressive media, all components coming into contact with the medium can be given a protective lining of pure PTFE. The lining is about 0.5 mm thick for the diaphragm, and about 2 mm thick for other media contact parts of the seal. O-rings used in such applications are FEP coated.

An economical alternative to PTFE is ECTFE lining, which has the same chemical resistance properties. The chemical resistance however, must be tested for each application before use.

A note regarding connections:

For diaphragm seals with PTFE / ECTFE lining, suitable sealing material (PTFE) must also be used for the process connections.



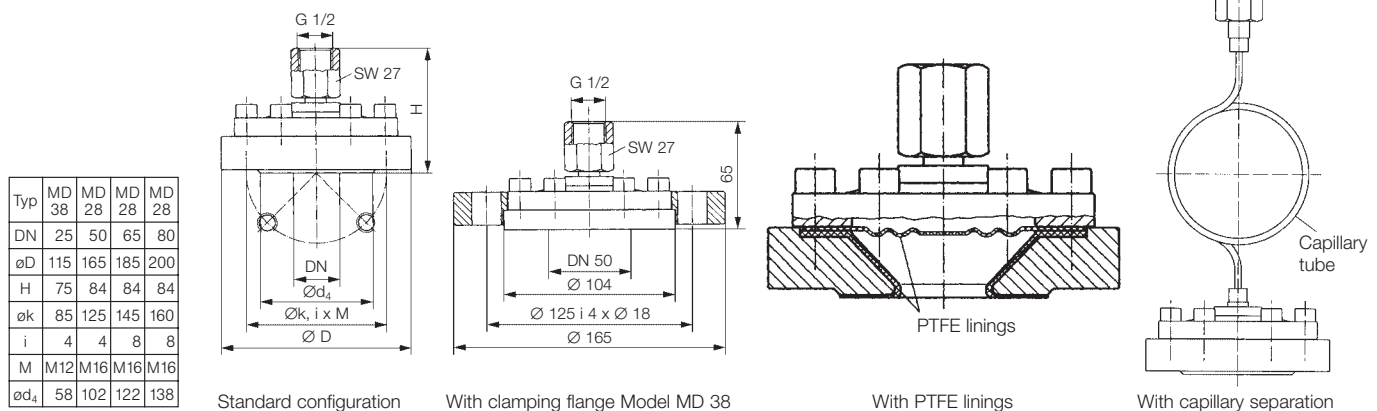
1. Diaphragm
2. Diaphragm seal casing
3. Filling liquid
4. Pressure measuring device
5. Pressure medium

Specifications

Type _____	MD 28	MD 38
Pressure rating _____	PN 40	PN 40
Effective diaphragm diameter _____	115 mm	60 mm
Displacement volume _____	6.2 cm ³	1.2 cm ³
Pressure connection: process side _____	DIN flange DN 50, DN 65, DN 80	DIN flange DN 25, open connecting flange with clamping flange DN 50
Pressure connection: instrument side _____	DIN 16288-Z-G½	DIN 16288-Z-G½
Liquid filling _____	Silicone oil	Silicone oil
Operating temperature _____	- 20 °C to + 200 °C	- 20 °C to + 200 °C

Materials

Diaphragm seal housing _____	Stainless steel 1.4571
Diaphragm _____	Stainless steel 1.4571
Screws _____	A 2
O-rings _____	FPM
Capillary tube _____	Stainless steel 1.4571



Ordering Code

Diaphragm seals Type MD

Diaphragm diameter

130 mm	.....▷	2	8
75 mm	.....▷	3	8

Process connection

Connecting flange DN 25, PN 40, 75 mm	▷	F	2
Connecting flange DN 50, PN 40, 130 mm	▷	F	5
Open flange with clamping attachment			
DN 50, PN 40, 75 mm	.....▷	F	L
Connecting flange DN 65, PN 40, 130 mm	▷	F	6
Connecting flange DN 80, PN 40, 130 mm	▷	F	8

Pressure rating

40 bar

Materials

Stainless steel	.....▷	V
Stainless steel with ECTFE coating	.....▷	T
Stainless steel with PTFE coating	.....▷	U

Instrument connection

Threaded socket G½ (F)	.....▷	O 30
1 m capillary tube with coupling G½ (F)	.....▷	K 31
2,5 m capillary tube with coupling G½ (F)	.....▷	K 32
5 m capillary tube with coupling G½ (F)	.....▷	K 33
10 m capillary tube with coupling G½ (F)	.....▷	K 34
1 m capillary tube with protective hose and coupling G½ (F)	.....▷	S 31
2,5 m capillary tube with protective hose and coupling G½ (F)	.....▷	S 32
5 m capillary tube with protective hose and coupling G½ (F)	.....▷	S 33
10 m capillary tube with protective hose and coupling G½ (F)	.....▷	S 34

Assembly

Diaphragm seal only	.....▷	0
Diaphragm seal assembled with pressure gauge/transmitter	.....▷	1

The following pressure instruments are compatible with diaphragm seal Models **MD 28/MD 38**:

MD 28

DA 03 (bar)
DS 11 (bar/mbar)
DA 12 (bar/mbar)
DS 13 (bar/mbar)
DE 16 (bar/mbar)
DA 09 (bar)
DA 04 (bar/mbar)

MD 38

DE 03 (bar/mbar)
MA 03 (bar/mbar)
MA 01 (bar/mbar)
ME 40 (bar/mbar)