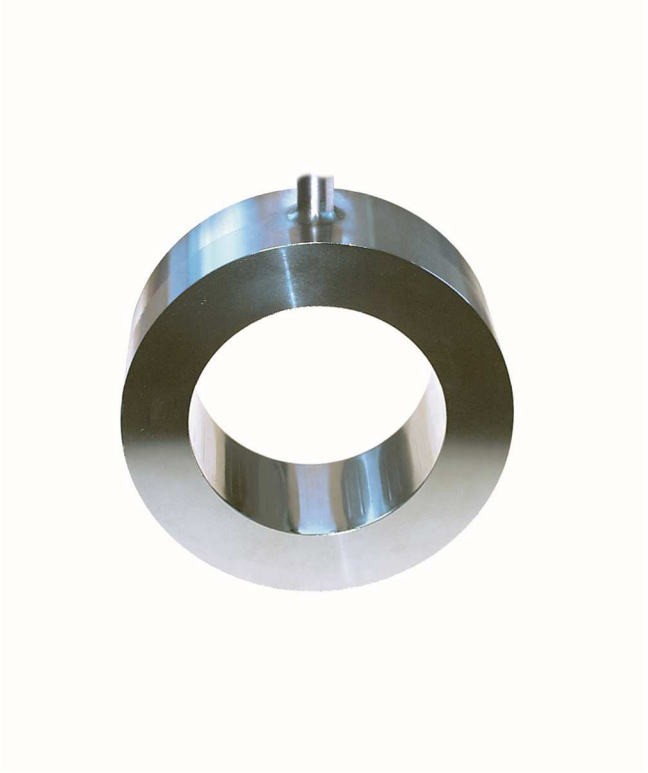
Inline diaphragm seal

flange connection cell design

Type series DP….



Features

- Circular diaphragm of stainless steel, slightly grooved, laser welded
- Volume optimised diaphragm base
- Self-draining
- System fillings for different applications
- Measuring device connection:
  - directly welded
  - directly screwed
  - with temperature decoupler
  - with capillary

Options

- Labom REconnect quick coupling device for easy and safe separation and connection of diaphragm seal systems. Available with a wide range of pressure gauges and pressure transmitters; Type series MK1000, see data sheet DB_D6-022
- Certificates
  - Material certificate acc. to EN 10204-3.1
- Special materials upon request
- Oxygen free of oil and grease
- Negative pressure and vacuum service

Application area

- Machinery construction
- Chemical and petrochemical industry
- General process technology

Application

Suitable for mounting to bourdon tube pressure gauges and pressure transmitters. The inline diaphragm seal with flange connection in cell design is suited for measuring aggressive, highly viscous media and for high process temperatures.

Technical data

Constructional design

Basic body:	Volume reduced diaphragm base Material: stainless steel mat.-no. 1.4404/1.4435 (316L)
Diaphragm:	Inline diaphragm
Material wetted parts:	Diaphragm: See order details Basic body: Stainless steel mat.-no. 1.4404/1.4435 (316L)

Process connection

Design:	Flange connection per EN 1092-1 and ASME B16.5 Further designs upon request.
Nominal pressure/Nominal width:	See table

Sealing are not included in the scope of delivery.

Sealing surfaces

per:

- EN 1092-1, model B1, B2, D, E
- ASME B 16.5, RFSF

With special material surface upon request.

Measuring device connection

See order details.

Material stainless steel mat.-no. 1.4301 (304)

System filling

See order details; further upon request.

Further details about pressure transmission fluids see general technical information TA_038.

Negative pressure and vacuum service

Labom pressure transmission fluids can be used in vacuum conditions at room temperature if the diaphragm seal is installed correctly. Special treatment during manufacturing is necessary, if the system will be exposed to higher temperatures later during operation.
A differentiation is made between negative pressure service and vacuum service. Which treatment is required (standard, negative pressure service or vacuum service) depends on the critical process condition, when the system is exposed to min. pressure at max. temperature.

Upon request, we provide an optimised design of the system.

For further details on pressure transmission fluids and negative pressure and vacuum service, see general technical information TA_038.

Temperature error

In order to optimise the system we provide a detailed error calculation upon request.

Weight

With measuring device connection G1/2:

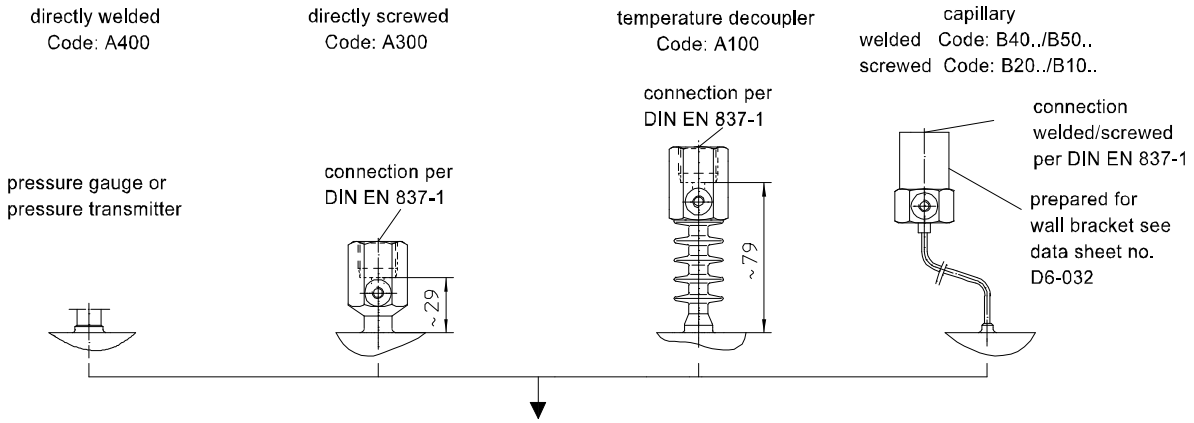
EN connection/ASME connection

DN 25	DN 1"	approx. 3,2 kg
DN 40	DN 1 1/2"	approx. 4.8 kg
DN 50	DN 2"	approx. 6.0 kg
DN 65	DN 2 1/2"	approx. 7.6 kg
DN 80	DN 3"	approx. 5.9 kg
DN 100	DN 4"	approx. 7.2 kg
DN 125	DN 5"	approx. 8.3 kg
DN 150	DN 6"	approx. 10.2 kg

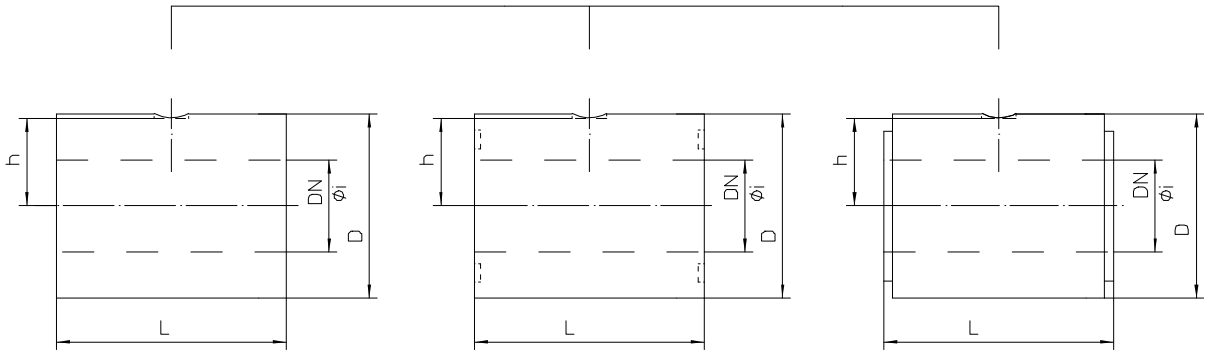
Further information about diaphragm seals see general technical information TA_031.

Flame arrester MF21xx for connection of measuring devices to zone 0 see data sheet D6-025.

Measuring device connection



Dimensions

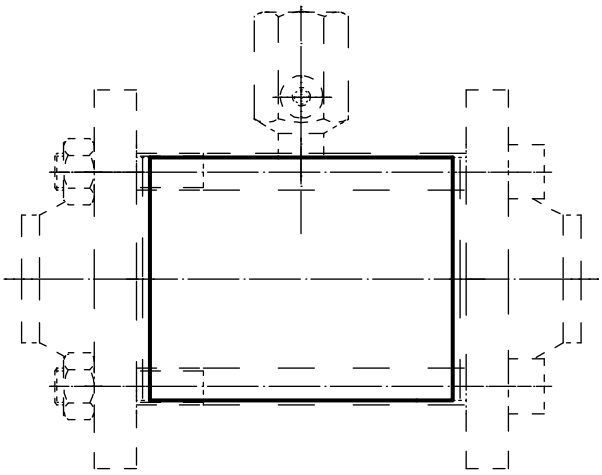


flange connection per DIN
or ASME plain raised face
nominal pressure max. 400bar

flange connection per DIN
with nut, model D
nominal pressure max. 10-100bar

flange connection per DIN
with projection, model D
nominal pressure max. 10-100bar

Mounting example



Dimensions (mm)			EN 1092-1		
DN	Ø i	D	L standard	L* optional	h
25	28.5	68	100	60	32.0
40	43.1	88	100	60	42.0
50	54.5	100	100	60	48.0
65	70.3	120	100	60	58.0
80	82.5	138	60	100	67.0
100	107.1	160	60	100	78.0
125	127.0	188	60	100	92.0
150	153.9	216	60	100	106.0

Dimensions (mm)			ASME B 16.5		
DN	Ø i	D	L standard	L* optional	h
1“	28.5	50	100	60	23
1 1/2“	43.1	73.2	100	60	34.6
2“	54.5	91.9	100	60	44.0
2 1/2“	70.3	104.6	100	60	50.3
3“	82.5	127.0	60	100	61.5
4“	107.1	157.2	60	100	76.6
5“	127.0	188.0	60	100	92.0
6“	153.9	216.0	60	100	106.0

* L = 120 mm available, special lengths upon request

Order details

Inline diaphragm seal, flange connection cell design			
DP21 . .	nominal width	flange per EN 1092-1	DN 25
DP23 . .			DN 40
DP24 . .			DN 50
DP25 . .			DN 65
DP26 . .			DN 80
DP27 . .			DN 100
DP28 . .			DN 125
DP29 . .			DN 150
			further nominal widths upon request
DP61 . .		flange per ASME B16.5	DN 1"
DP62 . .			DN 1 1/2"
DP63 . .			DN 2"
DP64 . .			DN 2 1/2"
DP65 . .			DN 3"
DP66 . .			DN 4"
DP67 . .			DN 5"
DP68 . .			DN 6"
			further nominal widths upon request
	sealing surface[1]	**EN 1092-1**	**ASME B 16.5**
80		model B2	RFSF, 2500 lbs
60		model D	Large Groove 2500 lbs
70		model E	Large Male 2500 lbs
40		model B1	RF 125...250 AA

A400 .	measuring device connection	directly	welded
A300 .			screwed G1/2
A100 .		with temperature decoupler	screwed G1/2
B40 . .		with capillary	welded
B20 . .			screwed G1/2
B50 . .		with capillary and stainless steel protective tube	welded
B10 . .			screwed G1/2
11		capillary length	1 m
12			1.6 m
13			2.5 m
14			4 m
21			5 m
15			6 m
23			7 m
16			8 m
17			10 m
9			others
7	material wetted parts	stainless steel mat.-no. 1.4435 (316L), sealing surface stainless steel mat.-no. 1.4404 (316L)	
3		Hastelloy C 276	
8		Hastelloy C 4	
9		as in writing	

F1	insertion length L	60 mm, standard at ≥ DN 80 (3")	
F2		100 mm, standard at ≤ DN 65 (2 1/2")	
F3		120 mm	
F9		as in writing	
	system filling [2]	pressure transmission fluid	temperature range[3]
L22		synthetic oil, free of silicone FD1, standard	-10…140 °C
L23		synthetic oil, free of silicone FD1, pls. specify max. temperature	-40…230 °C
L34		vacuum oil FV4	-25...260 °C
L35		high temperature oil FH	-20...400 °C
L10		low temperature oil FM5 [4]	-90...160 °C
L30		halocarbon oil FC	-50...190 °C [5]

Additional features (to be indicated in case of need, only)	
W1020	material certificate per EN 10204-3.1, wetted parts
W4001	oxygen free of oil and grease
X1	negative pressure service[6]
X2	vacuum service[6]

Order code (example): DP2580 - A4007 - F2 - L22 - ...

[1] with plain sealing surface, roughness according to DIN 4768 : R_z = 1,5

[2] for more detailed information about pressure transmission fluids see TA_038.
Please state temperature range to allow an accurate calculation of the system.

[3] max. media temperature for pressures > 0 bar rel.

[4] not possible with vacuum service (order code X2)

[5] for oxygen applications (in combination with order code W4001), a temperature range of -50...60 °C applies

[6] temperature limits see Technical Information TA_038 (Pressure transmission fluids)