

Diaphragm seal

flange-type with diaphragm extension

Type series DB....



Application area

- Plant and mechanical engineering
- Chemical and petrochemical industry
- General process technology

Features

- Flush-mounted separating diaphragm of stainless steel or special material
- Volume optimised diaphragm base
- Dead-zone free design
- Extension length 50, 100, 150, 200 mm or special lengths
- 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
- Oxygen free of oil and grease
- Negative pressure and vacuum service

Application

Suitable for mounting to bourdon tube pressure gauges and pressure transmitters. The flange-type diaphragm seal with diaphragm extension 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:	Flat diaphragm
Material wetted parts:	Diaphragm: See order details
	Basic body: Stainless steel mat.-no. 1.4404/1.4435 (316L)

Process connection

Design:	Flange-type with diaphragm extension
	Flange connections per EN 1092-1 and ASME B 16.5, welded with the extension
Extension length (standard):	50, 100, 150, 200 mm
	Special lengths 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, C, D
- ASME B 16.5, RFSF, RF 125-250AA, RJF

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:

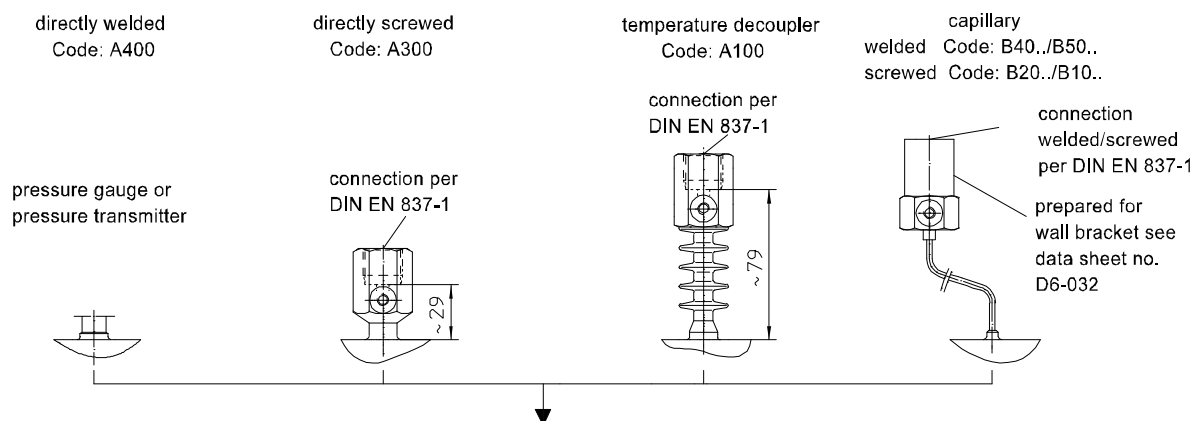
DN 80:	approx. 6.5 kg
DN 1" (150 psi):	approx. 1.8 kg
DN 2" (300 psi):	approx. 5.1 kg

Further weights upon request.

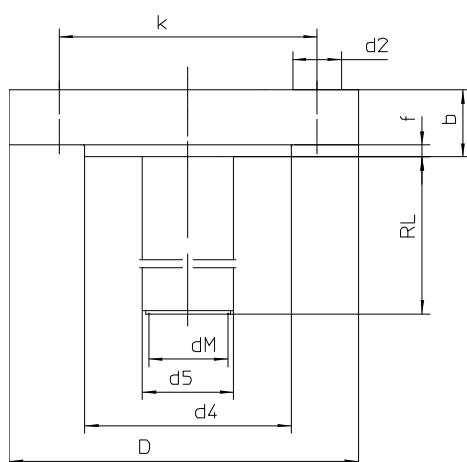
Further information about diaphragm seals see general technical information TA_031.

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

Measuring device connection



Dimensions



Dimensions (mm) EN 1092-1											
DN	PN	D	dM	d4	k	d2	no. bore holes	b	f	d5	RL
50	10/40	165	40	102	125	18	4	20	2	48.3	specify with order
80	10/40	200	65	138	160	18	8	24	2	76	
100	10/16	220	86	158	180	18	8	20	2	94	
100	25/40	235	86	162	190	22	8	24	2	94	
125	10/16	250	86	188	210	18	8	22	2	125	
125	25/40	270	86	188	220	26	8	26	2	125	

Dimensions (mm) ASME B16.5											
DN	Class	D	dM	d4	k	d2	no. bore holes	b	f	d5	RL
1"	150	110	21	51	79.4	16	4	14.7	2	24.5	specify with order
1"	300	125	21	51	88.9	19	4	17.9	2	24.5	
2"	150	150	40	92	120.7	19	4	19.5	2	48.3	
2"	300	165	40	92	127	19	8	22.7	2	48.3	
3"	150	190	65	127	152.4	19	4	24.3	2	76	
3"	300	210	65	127	168.3	22	8	29	2	76	
4"	150	230	86	158	190.5	19	8	24.3	2	94	
4"	300	255	86	158	200	22	8	32.2	2	94	

Order details

Diaphragm seal flange-type with diaphragm extension			
DB1 ...	design per EN 1092-1	sealing surface	model B1
DB2 ...			model B2 ¹
DB4 ...			model C
DB3 ...			model D
420		nominal width	DN 50, PN 10-40
620			DN 80, PN 10-40
710			DN 100, PN 10-16
720			DN 100, PN 25-40
810			DN 125, PN 10-16
820			DN 125, PN 25-40
DB5 ...	design per ASME B16.5	sealing surface	RF5F ¹
DB51 ..			RF125-250 AA
DB6 ...			RJF
120		nominal width	DN 1" Class 300
320			DN 2" Class 300
510			DN 3" Class 150
520			DN 3" Class 300
610			DN 4" Class 150
620			DN 4" Class 300
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
1	diaphragm material	stainless steel mat.-no. 1.4404/1.4435 (316 L), standard	
3		Hastelloy C276	
8		Hastelloy C4	
F1	extension length	RL = 50 mm	
F2		RL = 100 mm	
F3		RL = 150 mm	
F4		RL = 200 mm	
F9		RL (mm): special length	
K1	material sealing surface / extension	stainless steel mat.-no. 1.4404 (316L), standard	
K3		Hastelloy C276	
K8		Hastelloy C4	
K9		variant upon request	
	system filling ²	<u>pressure transmission fluid</u>	<u>temperature range</u> 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): DB1420 - A4001 - F1 - K1 - L22 - ...

¹ necessary in case of special materials. Diaphragms made of special materials cover the complete sealing surface area. The use of metallic seals is not permissible in this case. The maximum pressure level then depends on the design and properties of the sealing material.

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 pressure > 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)