Diaphragm seal

variable connections

Type series DD111.

Application area

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

Features

- Separating diaphragm of stainless steel or special material
- Volume optimised diaphragm base
- System fillings for different applications
- Various process connections; screw-in thread, flanges per EN and ASME
- 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 diaphragm seal for variable connections 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 (316L)
Diaphragm:	Flat diaphragm
Material wetted parts:	Diaphragm: See order details Basic body: Stainless steel mat.-no. 1.4404 (316L)

Process connection

Design:	See order details

Gasket

See order details.

In case of diaphragm with PTFE foil: gasket PTFE

Measuring device connection

See order details.

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

Pressure and temperature dependence

Pressure range PS 100	TS max. 150 °C
Pressure range PS 250	TS max. 200 °C

Further pressure and temperature ranges upon request.

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

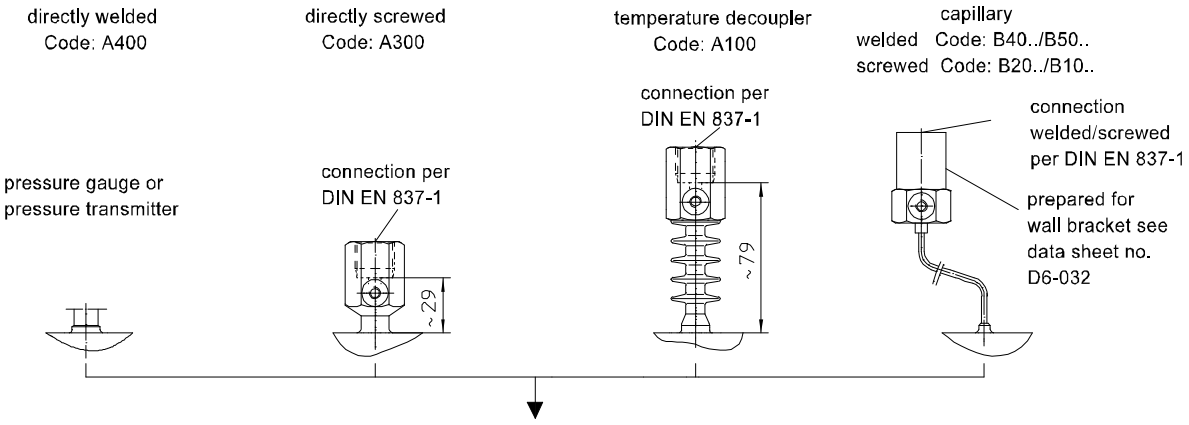
With measuring device connection G1/2:

G1/2 , PS 100:	approx. 1.5 kg
G1/2 , PS 250:	approx. 2.1 kg
DN 25, PN 10-40:	approx. 2.5 kg
DN 50, PN 10-40:	approx. 3.5 kg

Further weights upon request.

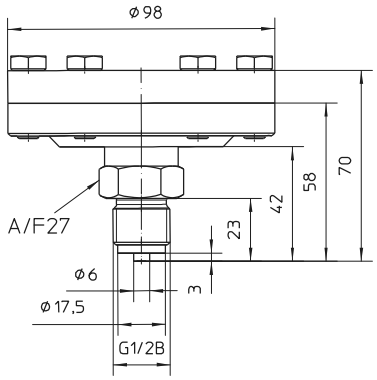
Flame arrester MF21xx for connection of measuring devices to zone 0 see data sheet D6-025.

Measuring device connection

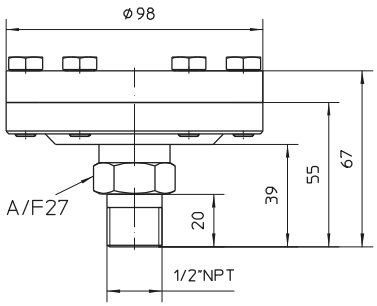


Dimensions

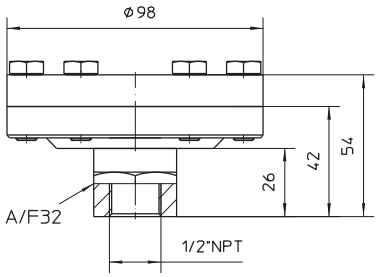
Threated connection per EN 837-1



G1/2 B

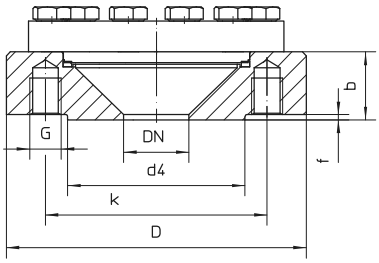


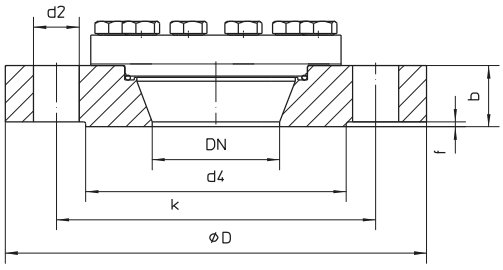
1/2" NPT - M

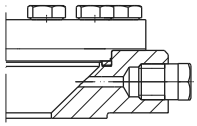


1/2" NPT - F

Open measuring flange per EN 1092-1 and ASME B16.5







Optional with flush boring

Dimensions (mm) open measuring flange per EN 1092-1									
DN	**PN**	**D**	**d4**	**k**	**G**	**d2**	**bore holes**	**b**	**f**
25	10/40	115	68	85	M12		4	26	2
50	10/40	165	102	125		18	4	24	2

Dimensions (mm) open measuring flange per ASME B16.5									
DN	**Class**	**D**	**d4**	**k**	**G**	**d2**	**bore holes**	**b**	**f**
1“	150	110	51	79.4	M12	-	4	32	2
1“	300	125	51	88.9	M16	-	4	32	2
2“	150	150	92	120.7	M16	-	4	24	2
2“	300	165	92	127	-	19	8	42	2
2"	400-600	165	92	127	-	19	8	45	7

Order details

Diaphragm seal, variable connections						
DD111 .	Diaphragm seal, variable connection					
0	design	standard				
2		connection to zone 0				
	process connection	lower flange[1]	threated connection per EN 837-1			
D10011			G1/2 B	PS 100		1.4404 (316L)
D10021				PS 250		1.4404 (316L)
D10013				PS 16		PVDF
D10012				PS 25		1.4404 (316L) PTFE coated
D10101			1/2" NPT-M	PS 100		1.4404 (316L)
D10111				PS 250		1.4404 (316L)
D10121			1/2" NPT-F	PS 100		1.4404 (316L)
D10131				PS 250		1.4404 (316L)
			open measuring flange per EN 1092-1			
D11201			DN 25	PN 10-40	model B1	1.4404 (316L)
D12203				PN 16	model B2	PVDF
D12202				PN 25		1.4404 (316L) PTFE coated
D11351			DN 50	PN 10-40	model B1	1.4404 (316L)
D12353				PN 16	model B2	PVDF
D12352				PN 25		1.4404 (316L) PTFE coated
			open measuring flange per ASME B16.5			
D51601			1"	Class 150	RF 125...250 AA	1.4404 (316L)
D50603					RFSF	PVDF
D50602						1.4404 (316L) PTFE coated
D51611				Class 300	RF 125...250 AA	1.4404 (316L)
D50612					RFSF	1.4404 (316L) PTFE coated
D51701			2"	Class 150	RF 125...250 AA	1.4404 (316L)
D50703					RFSF	PVDF
D50702						1.4404 (316L) PTFE coated
D51711				Class 300	RF 125...250 AA	1.4404 (316L)
D50712					RFSF	1.4404 (316L) PTFE coated
D51721				Class 400-600	RF 125...250 AA	1.4404 (316L)
D90		without lower flange	PS 100			
D91			PS 250			

S1	design	lower flange without flush boring	
S2		lower flange with flush boring 1/4" NPT, including plug	
S3		lower flange with flush boring 1/4" NPT, without plug	
S4		lower flange with flus boring 1/8" NPT, including plug	
S5		lower flange with flush boring 1/8" NPT, without plug	
G1	diaphragm material	stainless steel mat.-no. 1.4404 / 1.4435 (316L), standard	
G2		Tantal	
G3		Hastelloy C276	
G6		PTFE foil on stainless steel	
G9		as in writing	
H4	gasket to pressure chamber [2]	PTFE	temperature range -100...250 °C
H7		FKM (Viton)	temperature range -40...200 °C
H13		Inconel 718 (metal, silver coated)	temperature range -10...400 °C

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
	system filling [3]	pressure transmission fluid	temperature range of system filling [4]
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 [5]	-90...160 °C
L30		halocarbon oil FC	-50...190 °C [6]

Additional features (to be indicated in case of need, only)	
X1	negative pressure service [7]
X2	vacuum service [7]
W1020	material certificate per EN 10204-3.1, wetted parts
W4001	oxygen free of oil and grease

Order code (example): DD1110 - D10021 - S3 - G1 - ...

[1] Flange connection possible for ASME.

[2] Not possible for the process connection lower flange, PTFE coated.

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

[4] Max. media temperature for pressures > 0 bar rel. The temperature range of the used gasket and the maximum permissible temperature of the pressure range have to be observed.

[5] Not possible with vacuum service (order code X2).

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

[7] Temperature limits see Technical Information TA_038 (Pressure transmission fluids).