

Pressure Measurement

Remote seals for pressure transmitters
SITRANS P300, P DS III, P410, P500

Diaphragm seals of flange design mounted directly and with capillary

1

Overview



Diaphragm seals of screwed design for pressure transmitters for differential pressure, fixed connection and with flexible capillary

Technical specifications

Diaphragm seals of screwed design for pressure transmitters for differential pressure, fixed connection and with flexible capillary

Nominal diameter	Nominal pressure
<ul style="list-style-type: none"> • DN 50 • DN 80 • DN 100 • 2 inch • 3 inch • 4 inch 	PN 10/16/25/40, PN 100 PN 10/16/25/40 PN 10/16, PN 25/40 Class 150, class 300, class 400/600, class 900/1500 Class 150, class 300 Class 150, class 300
Sealing surface	To EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA
<ul style="list-style-type: none"> • For stainless steel, mat. No. 1.4404/316L • For the other materials 	To EN 1092-1, form B2 or ASME B16.5 RFSF
Materials	
<ul style="list-style-type: none"> • Main body • Wetted parts 	Stainless steel mat. no. 1.4404/316L Stainless steel mat. no. 1.4404/316L <ul style="list-style-type: none"> • Without coating • PTFE coating • ECTFE coating (for vacuum on request) • PFA coating Monel 400, mat. No. 2.4360 Hastelloy C276, mat. No. 2.4819 Hastelloy C4, mat. No. 2.4602 Hastelloy C22, W.-Nr. 2.4602 Tantalum Titanium, W.-Nr. 3.7035 Nickel 201 Duplex 2205, mat. no. 1.4462 Stainless steel 316L, gold plated, thickness approx. 25 µm
<ul style="list-style-type: none"> • Capillary • Sheath 	Stainless steel, mat. No. 1.4571/316Ti Spiral protective tube made of stainless steel, mat. No. 1.4404/316L

Sealing material in the process flanges	
<ul style="list-style-type: none"> • For pressure transmitters, absolute pressure transmitters and low-pressure applications • For other applications 	Copper
Maximum pressure	Viton See above and the technical data of the pressure transmitter
Tube length	Without tube 50 mm (1.97 inch) 100 mm (3.94 inch) 150 mm (5.91 inch) 200 mm (7.87 inch)
Capillary	
<ul style="list-style-type: none"> • Length • Internal diameter • Minimum bending radius 	Max. 10 m (32.8 ft), longer lengths on request 2 mm (0.079 inch) 150 mm (5.9 inch)
Filling liquid	Silicone oil M5 Silicone oil M50 High-temperature oil Halocarbon oil (for measuring O ₂) Food oil (FDA listed)
Max. recommended process temperature	170 °C (338 °F)
Permissible ambient temperature	Dependent on the pressure transmitter and the filling liquid of the remote seal More information can be found in the technical data of the pressure transmitters and in the section "Technical data of filling liquid" in the Technical description to the remote seals
Weight	Approx. 4 kg (8.82 lb)

Certificate and approvals

Classification according to pressure equipment directive (DGRL 2014/68/EU)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)
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Selection and Ordering data		Article No. Ord. code	
Diaphragm seal		7MF4913 -	
<p>Mounting flange (with tube as option) for direct mounting to high-pressure side and flanged remote seal without tube, fitted by means of capillary to low-pressure side of SITRANS P for differential pressure; SITRANS P DS III series and P410 (7MF443-...) and SITRANS P500 (7MF54-...)</p> <p>Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</p>		1 ■■■■ - ■■ ■■	
Flange, connection to EN 1092-1			
Nominal diameter and nominal pressure			
• DN 25	PN 10/16/25/40	Z	J 0 A
	PN 63/100/160	Z	J 0 B
• DN 40	PN 10/16/25/40	Z	J 0 C
	PN 63/100	Z	J 0 D
	PN 160	Z	J 0 E
• DN 50	PN 10/16/25/40	A	
	PN 100	B	
• DN 80	PN 10/16/25/40	D	
• DN 100	PN 10/16	G	
	PN 25/40	H	
Flange, connection to ASME B16.5			
Nominal diameter and nominal pressure			
• 1 inch	Class 150	Z	J 6 A
	Class 300	Z	J 6 B
	Class 400/600	Z	J 6 C
	Class 900/1500	Z	J 6 D
• 1½ inch	Class 150	Z	J 6 E
	Class 300	Z	J 6 F
	Class 400/600	Z	J 6 G
	Class 900/1500	Z	J 6 H
• 2 inch	Class 150	L	
	Class 300	M	
	Class 400/600	N	
	Class 900/1500	P	
• 3 inch	Class 150	Q	
	Class 300	R	
• 4 inch	Class 150	T	
	Class 300	U	
Flange acc. to JIS			
Nominal diameter and nominal pressure			
• JIS DN 50	10 K 316L	Z	J 7 A
	20 K 316L	Z	J 7 B
• JIS DN 80	10 K 316L	Z	J 7 C
	20 K 316L	Z	J 7 D
Other version		Z	J 1 Y
Add Order code and plain text: Flange: ...; Nominal diameter: ...; Nominal pressure: ...			

Selection and Ordering data		Article No. Ord. code	
Diaphragm seal		7MF4913 -	
<p>Mounting flange (with tube as option) for direct mounting to high-pressure side and flanged remote seal without tube, fitted by means of capillary to low-pressure side of SITRANS P for differential pressure; SITRANS P DS III series and P410 (7MF443-...) and SITRANS P500 (7MF54-...)</p>		1 ■■■■ - ■■ ■■	
Wetted parts materials			
Smooth sealing surface to EN 1092-1, form B1 or B2, or to ASME B16.5 RF 125 ... 250 AA or RFSF			
<ul style="list-style-type: none"> Stainless steel 316L <ul style="list-style-type: none"> - without coating - with PTFE coating - with ECTFE coating^{1) 2)} - with PFA coating²⁾ Monel 400, mat. No. 2.4360 Hastelloy C276, mat. No. 2.4819 Hastelloy C4, mat. No. 2.4602 Hastelloy C22, mat. No. 2.4602 Tantalum Titanium, mat. No. 3.7035 (max. 150 °C (302 °F)) Nickel 201 (max. 260 °C (500 °F)) Duplex, mat. no. 1.4462 Duplex, mat. no. 1.4462, incl. main body Stainless steel 316L, gold plated, thickness approx. 25 µm 	A E O F D G J U V O K L O M Q R S O		

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Selection and Ordering data

Article No. Ord. code

Diaphragm seal

7MF4913 -

Mounting flange (with tube as option) for direct mounting to high-pressure side **and flanged remote seal without tube**, fitted by means of capillary to low-pressure side of SITRANS P for differential pressure; SITRANS P DS III series and P410 (7MF443-...) and SITRANS P500 (7MF54-...)

1 ■ ■ ■ ■ - ■ B ■ ■ ■ ■

Tube length

(for mounting flange on high-pressure side)

- Without tube

0

Other version:

Add Order code and plain text:

Wetted parts materials:,

Tube length: ...

Z 8

K 1 Y

Customer-specific tubus length

Specify customer-specific length with Y44, see Order Code

- Wetted parts materials: Stainless steel without foil Range

Range	Standard length	
20 ... 50 mm (0.79 ... 1.97")	50 mm (1.97")	A 1
51 ... 100 mm (2.01 ... 3.94")	100 mm (3.94")	A 2
101 ... 150 mm (3.98 ... 5.91")	150 mm (5.91")	A 3
151 ... 200 mm (5.94 ... 7.87")	200 mm (7.87")	A 4
201 ... 250 mm (7.91 ... 9.84")	250 mm (9.84")	A 5

- Wetted parts materials: Stainless steel coated with ECTFE

Range	Standard length	
20 ... 50 mm (0.79 ... 1.97")	50 mm (1.97")	F 1
51 ... 100 mm (2.01 ... 3.94")	100 mm (3.94")	F 2
101 ... 150 mm (3.98 ... 5.91")	150 mm (5.91")	F 3
151 ... 200 mm (5.94 ... 7.87")	200 mm (7.87")	F 4
201 ... 250 mm (7.91 ... 9.84")	250 mm (9.84")	F 5

- Wetted parts materials: Stainless steel coated with PFA

Range	Standard length	
20 ... 50 mm (0.79 ... 1.97")	50 mm (1.97")	D 1
51 ... 100 mm (2.01 ... 3.94")	100 mm (3.94")	D 2
101 ... 150 mm (3.98 ... 5.91")	150 mm (5.91")	D 3
151 ... 200 mm (5.94 ... 7.87")	200 mm (7.87")	D 4
201 ... 250 mm (7.91 ... 9.84")	250 mm (9.84")	D 5

- Wetted parts materials: Monel 400

Range	Standard length	
20 ... 50 mm (0.79 ... 1.97")	50 mm (1.97")	G 1
51 ... 100 mm (2.01 ... 3.94")	100 mm (3.94")	G 2
101 ... 150 mm (3.98 ... 5.91")	150 mm (5.91")	G 3
151 ... 200 mm (5.94 ... 7.87")	200 mm (7.87")	G 4

- Wetted parts materials: Hastelloy C276

Range	Standard length	
20 ... 50 mm (0.79 ... 1.97")	50 mm (1.97")	J 1
51 ... 100 mm (2.01 ... 3.94")	100 mm (3.94")	J 2
101 ... 150 mm (3.98 ... 5.91")	150 mm (5.91")	J 3
151 ... 200 mm (5.94 ... 7.87")	200 mm (7.87")	J 4

- Wetted parts materials: Tantalum

Range	Standard length	
20 ... 50 mm (0.79 ... 1.97")	50 mm (1.97")	K 1
51 ... 100 mm (2.01 ... 3.94")	100 mm (3.94")	K 2
101 ... 150 mm (3.98 ... 5.91")	150 mm (5.91")	K 3
151 ... 200 mm (5.94 ... 7.87")	200 mm (7.87")	K 4

Selection and Ordering data

Article No. Ord. code

Diaphragm seal

7MF4913 -

Mounting flange (with tube as option) for direct mounting to high-pressure side **and flanged remote seal without tube**, fitted by means of capillary to low-pressure side of SITRANS P for differential pressure; SITRANS P DS III series and P410 (7MF443-...) and SITRANS P500 (7MF54-...)

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Filling liquid

- Silicone oil M5
- Silicone oil M50
- High-temperature oil
- Halocarbon oil (for measuring O₂)³⁾
- Food oil (FDA listed)

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Other version

Add Order code and plain text:

Filling liquid: ...

M 1 Y

Length of capillary⁴⁾

- 1.0 m (3.28 ft)
- 1.6 m (5.25 ft)
- 2.5 m (8.20 ft)
- 4.0 m (13.1 ft)
- 6.0 m (19.7 ft)
- 8.0 m (26.25 ft)
- 10.0 m (32.8 ft)

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Special lengths for capillaries

- 2.0 m (6.56 ft)
- 3.0 m (9.84 ft)
- 5.0 m (16.40 ft)
- 7.0 m (23.97 ft)
- 9.0 m (29.53 ft)

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¹⁾ For vacuum on request.

²⁾ Only for use in non-hazardous atmospheres.

³⁾ Oil- and grease- free cleaning to DIN 25410, level 2 and packaging included in the scope of delivery. Refer to "Further designs" C10 and E10.

⁴⁾ Max. capillary length, see section "Technical description".

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Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs		Further designs	
Please add "-Z" to Article No. and specify Order code.		Please add "-Z" to Article No. and specify Order code.	
Customer-specific tubus length	Y44	Sealing surface smooth, form B2 or RFSF (Stainless steel diaphragm)	J11
Select range, enter desired length in plain text (No entry = standard length)		previously DIN 2501, form E	
Spark arrestor	A02	Sealing surface groove, EN 1092-1, form D	J14
With spark arrestor for mounting on zone 0 (including documentation)		instead of sealing surface B1 (only for wetted parts made of stainless steel 316L)	
Remote seal nameplate	B20	Sealing surface with spring according to EN 1092-1, form C, (previously DIN 2512, form F) in stainless steel 316L	
Attached out of stainless steel, contains MLFB and order number of the remote seal		DN 25	J30
Oil- and grease-free cleaned version	C10	DN 40	J31
Oil- and grease-free cleaned and packed version, not for oxygen application, only in conjunction with halocarbon oil fill fluid, certified by certificate acc. to EN 10204-2.2		DN 50	J32
Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2	C11	DN 80	J33
Inspection certificate	C12	DN 100	J34
to EN 10204, section 3.1		DN 125	J35
2.2 Certificate of FDA approval of fill oil	C17	Sealing surface with male face according to EN 1092-1, form E (previously DIN 2512, form V13) in stainless steel 316L	
Only in conjunction with "Food-grade oil" fill liquid (FDA listed)"		DN 25	J40
Functional safety certificate ("SIL 2") to IEC 61508	C20	DN 40	J41
(Only in conjunction with the Order code "C20" in the case of SITRANS P DSIII transmitter)		DN 50	J42
Functional safety certificate ("SIL 2/3") to IEC 61508	C23	DN 80	J43
(Only in conjunction with the Order code "C23" in the case of SITRANS P DSIII transmitter)		DN 100	J44
Certification acc. to NACE MR-0175	D07	DN 125	J45
Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)		Sealing surface with female face according to EN 1092-1, form F (previously DIN 2512, form R13) in stainless steel 316L	
Certification acc. to NACE MR-0103	D08	DN 25	J50
Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)		DN 40	J51
Oil- and grease-free cleaned version	E10	DN 50	J52
Oil- and grease-free cleaned and packed version, only for oxygen application, only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certificate acc. to EN 10204-2.2		DN 80	J53
Epoxy painting	E15	DN 100	J54
Not possible with negative pressure service.		DN 125	J55
Color: transparent, coverage: front and rear of the remote seal, capillary(ies) or connecting tube, process connection of the transmitter.		Sealing surface B1 or ASME B16.5 RF 125 ... 250 AA	J12
With transmitters 7MF40.. and 7MF42.., only possible with process connection G½B according to EN 837-1.		Instead of sealing surface B2 and RFSF (Only for wetted parts in Hastelloy C276 (2.4819), Tantal and Duplex 2205 (1.4462) and for sizes 2", 3", DN 50 and DN 80)	
		Sealing surface RJF (groove, previously RTJ) ASME B16.5	J24
		instead of sealing surface ASME B16.5 RF 125 ... 250 AA (only for wetted parts made of stainless steel 316L)	

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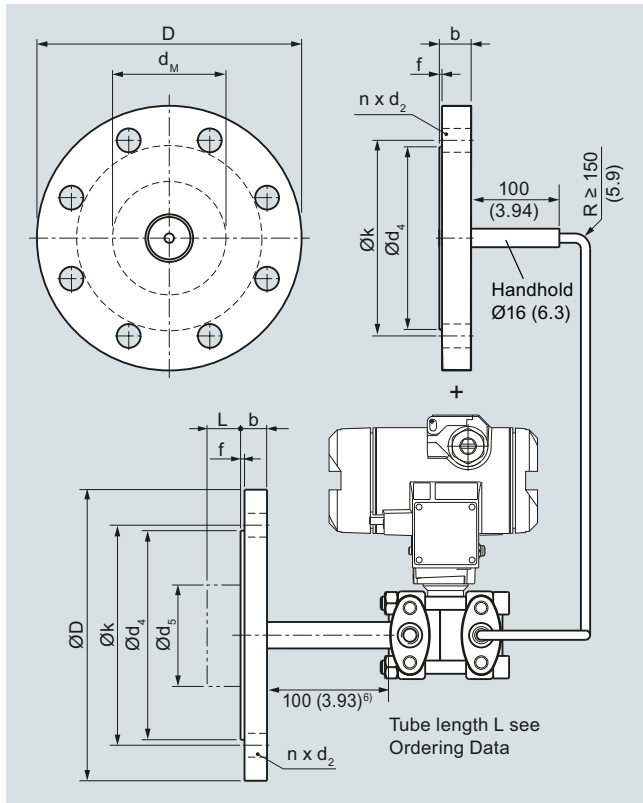
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Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs		Further designs	
Please add "-Z" to Article No. and specify Order code.		Please add "-Z" to Article No. and specify Order code.	
Radial capillary pipe outlet for one-sided mounting	K01	PVC protective tube over the spiral protective tube of the capillaries (color: black)	
PE protective tube over the spiral protective tube of the capillaries (color: white)		1.0 m (3.28 ft)	N60
1.0 m (3.28 ft)	N20	1.6 m (5.25 ft)	N61
1.6 m (5.25 ft)	N21	2.0 m (6.56 ft)	N62
2.0 m (6.56 ft)	N22	2.5 m (8.20 ft)	N63
2.5 m (8.20 ft)	N23	3.0 m (9.84 ft)	N64
3.0 m (9.84 ft)	N24	4.0 m (13.12 ft)	N65
4.0 m (13.12 ft)	N25	5.0 m (16.40 ft)	N66
5.0 m (16.40 ft)	N26	6.0 m (19.69 ft)	N67
6.0 m (19.69 ft)	N27	7.0 m (22.97 ft)	N68
7.0 m (22.97 ft)	N28	8.0 m (26.25 ft)	N69
8.0 m (26.25 ft)	N29	9.0 m (29.53 ft)	N70
9.0 m (29.53 ft)	N30	10.0 m (32.81 ft)	N71
10.0 m (32.81 ft)	N31	Elongated pipe, distance from transmitter process flange to flange is 150 mm instead of 100 mm, max. medium temperature 250 °C, observe the maximum permissible media temperature of the filling liquid.	R15
PTFE protective tube over the spiral protective tube of the capillaries (color: transparent)		Elongated pipe, distance from transmitter process flange to flange is 100 mm instead of 100 mm, max. medium temperature 300 °C, observe the maximum permissible media temperature of the filling liquid.	R20
1.0 m (3.28 ft)	N40	Negative pressure service for use in low-pressure range for transmitters for • differential pressure	V03
1.6 m (5.25 ft)	N41	Extended negative pressure service for use in low-pressure range for transmitters for • differential pressure	V53
2.0 m (6.56 ft)	N42		
2.5 m (8.20 ft)	N43		
3.0 m (9.84 ft)	N44		
4.0 m (13.12 ft)	N45		
5.0 m (16.40 ft)	N46		
6.0 m (19.69 ft)	N47		
7.0 m (22.97 ft)	N48		
8.0 m (26.25 ft)	N49		
9.0 m (29.53 ft)	N50		
10.0 m (32.81 ft)	N51		

Diaphragm seals of flange design mounted directly and with capillary

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Dimensional drawings



Diaphragm seals of screwed design with flexible capillary, fixed connection, for connection to a SITRANS P pressure transmitter for differential pressure, dimensions in mm (inch)

Connection to EN 1092-1

Nom. diam.	Nom. press.	b	D	d ₂	d ₄	d ₅	d _M	f	k	n
		mm	mm	mm	mm	mm	mm	mm	mm	
DN 50	PN 10/16/25/40	20	165	18	102	48.3	45 ¹⁾	2	125	4
	PN 100	28	195	26	102	48.3	45 ¹⁾	2	145	4
DN 80	PN 10/16/25/40	24	200	18	138	76	72 ²⁾	2	160	8
	PN 100	32	230	26	138	76	72 ²⁾	2	180	8
DN 100	PN 10/16	20	220	18	158	94	89	2	180	8
	PN 25/40	24	235	22	162	94	89	2	190	8

Connection to ASME B16.5

Nom. diam.	Nom. press.	b	D	d ₂	d ₄	d ₅	d _M	f	k	n
	lb/sq.in.	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	
2 inch	150	19.5 (0.77)	150 (5.91)	20 (0.79)	92 (3.62)	48.3 (1.9)	45 ¹⁾ (1.77) ¹⁾	2 (0.08)	120.5 (4.74)	4
	300	22.7 (0.89)	165 (6.5)	20 (0.79)	92 (3.62)	48.3 (1.9)	45 ¹⁾ (1.77) ¹⁾	2 (0.08)	127 (5)	8
	400/600	32.4 (1.28)	165 (6.5)	20 (0.79)	92 (3.62)	48.3 (1.9)	45 ¹⁾ (1.77) ¹⁾	7 (0.28)	127 (5)	8
	900/1500	45.1 (1.78)	215 (8.46)	26 (1.02)	92 (3.62)	48.3 (1.9)	45 ¹⁾ (1.77) ¹⁾	7 (0.28)	165 (6.5)	8
3 inch	150	24.3 (0.96)	190 (7.48)	20 (0.79)	127 (5)	76 (3)	72 ²⁾ (2.83) ²⁾	2 (0.08)	152.5 (6)	4
	300	29 (1.14)	210 (8.27)	22 (0.87)	127 (5)	76 (3)	72 ²⁾ (2.83) ²⁾	2 (0.08)	168.5 (6.63)	8
4 inch	150	24.3 (0.96)	230 (9.06)	20 (0.79)	158 (6.22)	94 (3.69)	89 (3.50)	2 (0.08)	190.5 (7.5)	8
	300	32.2 (1.27)	255 (10.04)	22 (0.79)	158 (6.22)	94 (3.69)	89 (3.50)	2 (0.08)	200 (7.87)	8

d: Inside diameter of gasket according to EN 1092-1 / ASME B16.5

d_M: Effective diaphragm diameter

¹⁾ 59 mm = 2.32 inch with tube length L = 0

²⁾ 89 mm = 3½ inch with tube length L = 0