

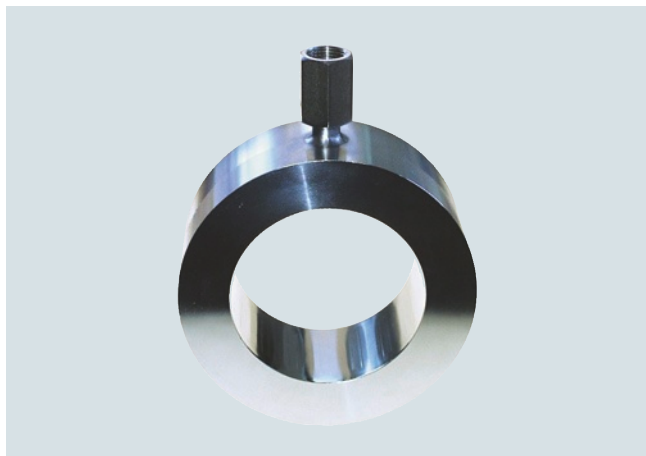
Pressure Measurement

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

Inline seals in sandwich design

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Overview



Inline seals for flange-mounting

The inline seal is completely integrated in the process line. It is particularly suitable for flowing and highly viscous media.

The inline remote seal consists of a cylindrical jacket into which a thin-walled pipe is welded. It is clamped directly between two flanges in the pipeline.

Design

- Inline seals for flange-mounting (flange design) to EN/ASME for SITRANS P pressure transmitters
 - For pressure: P300, DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus
 - For differential pressure and flow: DS III with HART, DS III with PROFIBUS PA, DS III with FOUNDATION Fieldbus and P500
- Sealing surface to EN 1092-1 or ASME B16.5
- Connection to the transmitter directly or by means of a flexible capillary (max. 10 m long)
- See Technical data for details of materials used for the wetted parts
- Material used for the capillary, the guard sleeve, the seal's main body and the measuring cell: Stainless steel, mat.-No. 1.4571
- Filling liquid: Silicone oil, high-temperature oil, halocarbon oil, food oil (FDA listed) or glycerin/water (not suitable for uses in low-pressure range)

Function

The measured pressure is transferred from the diaphragm to the filling liquid and passes either directly or through the capillary to the measuring chamber of the pressure transmitter. The interior of the diaphragm seal and of the capillary, as well as the measuring chamber of the pressure transmitter, are filled gas-free by the filling liquid.

Note:

When operating in the low-pressure range, also during commissioning, it is recommended to use a vacuum-proof remote seal (see Selection and Ordering data).

Technical specifications

Inline seals for flange-mounting

Nominal diameter	Nominal pressure
• DN 25	PN 6 ... PN 100
• DN 40	PN 6 ... PN 100
• DN 50	PN 6 ... PN 100
• DN 80	PN 6 ... PN 100
• DN 100	PN 6 ... PN 100
• 1 inch	Class 150 ... class 2500
• 1½ inch	Class 150 ... class 2500
• 2 inch	Class 150 ... class 2500
• 3 inch	Class 150 ... class 2500
• 4 inch	Class 150 ... class 2500
Process connection	Flange to EN 1092-1 or ASME B 16.5
Sealing surface	<ul style="list-style-type: none"> • for stainless steel mat. no. 1.4404/316L according to EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA • for all other materials according to EN 1092-1, form B2 or ASME B16.5 RFSF
Materials	
• Main body	Stainless steel 1.4404/316L
• Diaphragm	Stainless steel 1.4404/316L
• Wetted parts	Stainless steel 1.4404/316L <ul style="list-style-type: none"> • Without 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
	Tantalum
• Capillary	Stainless steel, mat. No. 1.4571/316Ti
• Sheath	Spiral protective tube made of stainless steel, mat. No. 1.4404/316L
Capillary	
• Length	Max. 10 m (32.8 ft)
• Internal diameter	2 mm (0.079 inch)
• Minimum bending radius	150 mm (5.9 inch)
Filling liquid	Silicone oil M5
	Silicone oil M50
	High-temperature oil
	Halocarbon oil
	Food oil (FDA listed)
Permissible ambient temperature	See pressure transmitters, see filling liquid
Weight	Approx. 4 kg (8.82 lb)
Certificates 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 the requirements of article 4, paragraph 1 (appendix 1); assigned to category III, conformity evaluation module H by the TÜV Nord

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Selection and Ordering data	Article No.	Ord. code
Inline seal for flange-mounting for SITRANS P pressure transmitters		
for gauge pressure 7MF2033-...; 7MF403-... and 7MF423-... together with Order code "V01" (Negative pressure service) and 7MF802-... ¹⁾ ; must be ordered separately, scope of delivery: 1 off	7MF4980-	
for differential pressure and flow 7MF243-...; 7MF4433 or 7MF54-...; order separately, scope of delivery: 1 pair (set); Material: Completely of stainless steel, mat. No. 1.4404/316L; Process connection to EN 1092-1 or ASME B16.5; sealing surface to EN 1092-1, form B1, or to ASME B16.5 RF 125 ... 250 AA	7MF4983-	
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	1	0 - B
Nominal diameter and nominal pressure		
• DN 25 PN 6 ... 100	B	
• DN 40 PN 6 ... 100	D	
• DN 50 PN 6 ... 100	E	
• DN 80 PN 6 ... 100	G	
• DN 100 PN 6 ... 100	H	
• 1 inch Class 150 ... 2500	L	
• 1½ inch Class 150 ... 2500	M	
• 2 inch Class 150 ... 2500	N	
• 3 inch Class 150 ... 2500	P	
• 4 inch Class 150 ... 2500	Q	
Other version	Z	J 1 Y
Add Order code and plain text: Nominal diameter: ...; Nominal pressure: ...		
Wetted parts materials		
• Stainless steel 316L		
- Without coating	A	
- With PFA coating ²⁾	D	
- With ECTFE coating ^{2) 3)}	F	
• Monel 400, mat. No. 2.4360	G	
• Hastelloy C276, mat. No. 2.4819	J	
• Hastelloy C4, mat. No. 2.4602	U	
• Tantalum	K	
Other version	Z	K 1 Y
Add Order code and plain text: Wetted parts materials: ...		
Filling liquid		
• Silicone oil M5	1	
• Silicone oil M50	2	
• High-temperature oil	3	
• Halocarbon oil (for measuring O ₂) ⁴⁾	4	
• Food oil (FDA listed)	7	
Other version	9	M 1 Y
Add Order code and plain text: Filling liquid: ...		

Selection and Ordering data	Article No.	Ord. code
Inline seal for flange-mounting for SITRANS P pressure transmitters		
for gauge pressure 7MF2033-...; 7MF403-... and 7MF423-... together with Order code "V01" (Negative pressure service) and 7MF802-... ¹⁾ ; must be ordered separately, scope of delivery: 1 off	7MF4980-	
for differential pressure and flow 7MF243-...; 7MF4433 or 7MF54-...; order separately, scope of delivery: 1 pair (set); Material: Completely of stainless steel, mat. No. 1.4404/316L; Process connection to EN 1092-1 or ASME B16.5; sealing surface to EN 1092-1, form B1, or to ASME B16.5 RF 125 ... 250 AA	7MF4983-	
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	1	0 - B
Connection to transmitter		
• direct (only for 7MF4980) through capillary, length: ⁵⁾	0	
• 1.0 m (3.28 ft)	2	
• 1.6 m (5.25 ft)	3	
• 2.5 m (8.20 ft)	4	
• 4.0 m (13.1 ft)	5	
• 6.0 m (19.7 ft)	6	
• 8.0 m (26.25 ft)	7	
• 10.0 m (32.8 ft)	8	
Special lengths for capillaries		
• 2.0 m (6.56 ft)	9	N 1 C
• 3.0 m (9.84 ft)	9	N 1 E
• 5.0 m (16.40 ft)	9	N 1 G
• 7.0 m (23.97 ft)	9	N 1 J
• 9.0 m (29.53 ft)	9	N 1 L
only for 7MF4983-...		
• 11.0 m (36.09 ft)	9	N 1 N
• 12.0 m (39.37 ft)	9	N 1 P
• 13.0 m (42.65 ft)	9	N 1 Q
• 14.0 m (45.93 ft)	9	N 1 R
• 15.0 m (49.21 ft)	9	N 1 S

1) With 7MF802-... and the measuring cells Q, S, T and U also order the vacuum-tight version.
2) Only for use in non-hazardous atmospheres.
3) For vacuum on request.
4) 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.
5) 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.	
Spark arrester With spark arrester for mounting on zone 0 (including documentation)		PE protective tube over the spiral protective tube of the capillaries (color: white)	
• Pressure and absolute pressure	A01	1.0 m (3.28 ft)	N20
• for differential pressure transmitters	A02	1.6 m (5.25 ft)	N21
Remote seal nameplate	B20	2.0 m (6.56 ft)	N22
Attached out of stainless steel, contains MLFB and order number of the remote seal		2.5 m (8.20 ft)	N23
Oil- and grease-free cleaned version	C10	3.0 m (9.84 ft)	N24
Oil- and grease-free cleaned and packed version, <u>not for oxygen application</u> , only in conjunction with halocarbon oil fill fluid, certified by certificate acc. to EN 10204-2.2		4.0 m (13.12 ft)	N25
Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2	C11	5.0 m (16.40 ft)	N26
Inspection certificate	C12	6.0 m (19.69 ft)	N27
to EN 10204, section 3.1		7.0 m (22.97 ft)	N28
2.2 Certificate of FDA approval of fill oil	C17	8.0 m (26.25 ft)	N29
Only in conjunction with "Food-grade oil" fill liquid (FDA listed)"		9.0 m (29.53 ft)	N30
Functional safety certificate ("SIL 2") to IEC 61508	C20	10.0 m (32.81 ft)	N31
(Only in conjunction with the Order code "C20" in the case of SITRANS P DSIII transmitter)		<u>only for 7MF4983-...</u>	
Functional safety certificate ("SIL 2/3") to IEC 61508	C23	11.0 m (36.09 ft)	N32
Certification acc. to NACE MR-0175	D07	12.0 m (39.37 ft)	N33
Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)		13.0 m (42.65 ft)	N34
Certification acc. to NACE MR-0103	D08	14.0 m (45.93 ft)	N35
Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)		15.0 m (49.21 ft)	N36
Oil- and grease-free cleaned version	E10	PTFE protective tube over the spiral protective tube of the capillaries (color: transparent)	
Oil- and grease-free cleaned and packed version, <u>only for oxygen application</u> , 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		1.0 m (3.28 ft)	N40
One-sided mounting on differential pressure transmitters		1.6 m (5.25 ft)	N41
(only for 7MF4980-...)		2.0 m (6.56 ft)	N42
on high-pressure side	H10	2.5 m (8.20 ft)	N43
on low-pressure side	H11	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
		<u>only for 7MF4983-...</u>	
		11.0 m (36.09 ft)	N52
		12.0 m (39.37 ft)	N53
		13.0 m (42.65 ft)	N54
		14.0 m (45.93 ft)	N55
		15.0 m (49.21 ft)	N56

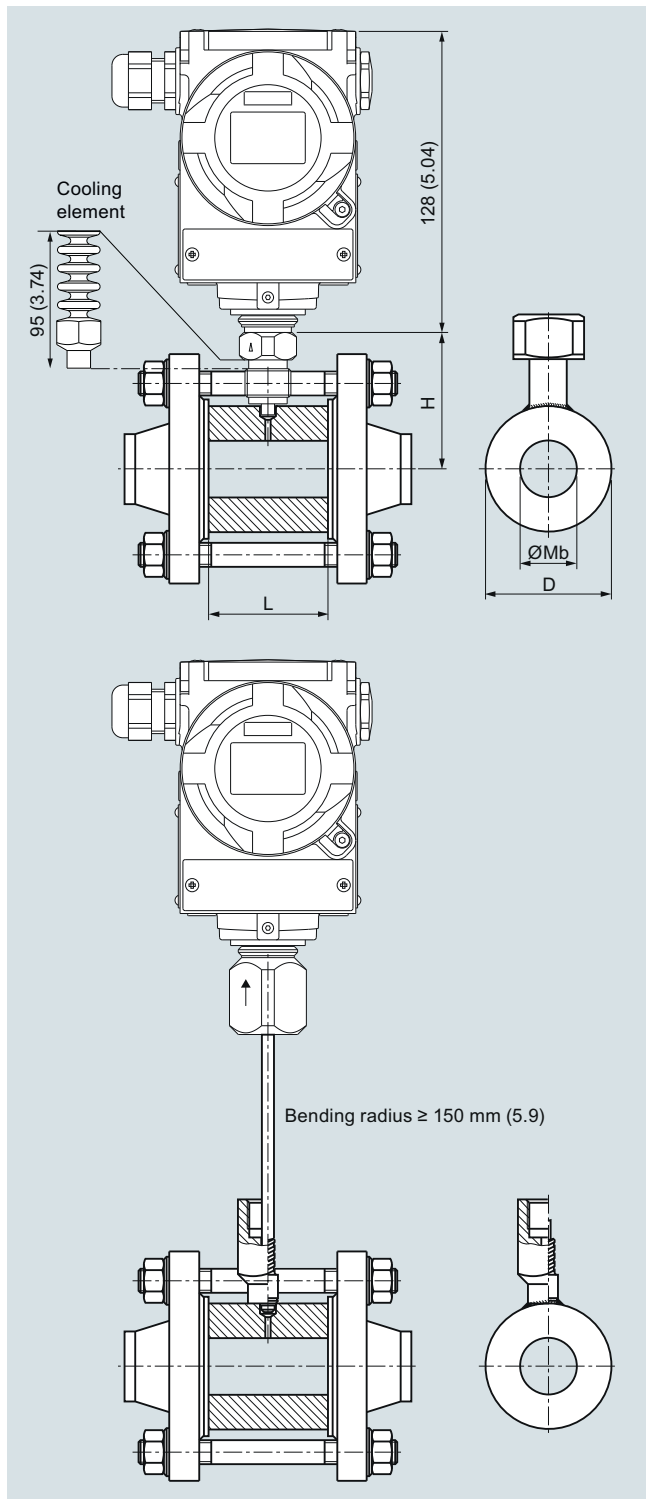
Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Article No. and specify Order code.	
PVC protective tube over the spiral protective tube of the capillaries (color: black)	
1.0 m (3.28 ft)	N60
1.6 m (5.25 ft)	N61
2.0 m (6.56 ft)	N62
2.5 m (8.20 ft)	N63
3.0 m (9.84 ft)	N64
4.0 m (13.12 ft)	N65
5.0 m (16.40 ft)	N66
6.0 m (19.69 ft)	N67
7.0 m (22.97 ft)	N68
8.0 m (26.25 ft)	N69
9.0 m (29.53 ft)	N70
10.0 m (32.81 ft)	N71
<u>only for 7MF4983-...</u>	
11.0 m (36.09 ft)	N72
12.0 m (39.37 ft)	N73
13.0 m (42.65 ft)	N74
14.0 m (45.93 ft)	N75
15.0 m (49.21 ft)	N76
Cooling element max. medium temperature 300 °C, observe the maximum permissible media temperature of the filling liquid.	R22
Negative pressure service for use in low-pressure range for transmitters for	
• gauge and absolute pressure from the pressure series	V01
• differential pressure	V03
Note: Suffix "Y01" required with pressure transmitter	
Extended negative pressure service for use in low-pressure range for transmitters for	
• gauge and absolute pressure from the pressure series	V51
• differential pressure	V53
Note: Suffix "Y01" required with pressure transmitter	

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Dimensional drawings



Inline seal for flange-mounting, connected to SITRANS P pressure transmitter, dimensions in mm (inch)

Connection to EN 1092-1

DN mm	PN bar	D mm	Mb mm	L mm	H mm
25	6 ... 100	63	28.5	60	78.5
40	6 ... 100	85	43	60	89.5
50	6 ... 100	95	54.5	60	92.5
80	6 ... 100	130	82.5	60	112
100	6 ... 100	150	107	60	122

Connection to ASME B16.5

DN (inch)	Class	D mm (inch)	Mb mm (inch)	L mm (inch)	H mm (inch)
1	150 ... 2500	63 (2.48)	28.5 (1.12)	60 (2.36)	78.5 (3.1)
1½	150 ... 2500	85 (3.35)	43 (1.69)	60 (2.36)	86 (3.4)
2	150 ... 2500	95 (3.74)	54.5 (2.15)	60 (2.36)	94.5 (3.72)
3	150 ... 2500	130 (5.12)	82.5 (3.25)	60 (2.36)	112 (4.4)
4	150 ... 2500	150 (5.9)	107 (4.21)	60 (2.36)	122 (4.8)