1

Technical description

Overview

In many cases the pressure transmitter and the medium have to be physically separated. It is then necessary to use a remote seal.

The remote seals can be used with the SITRANS P320/420 pressure transmitter series:

- Pressure
- Absolute pressure
- Differential pressure and flow

Note

When configuring your remote seal, be sure to read the information about transmission response, temperature error and response time to be found in the sections "Function" and "Technical data". Only then will the remote seal work to optimum effect.

Benefits

- No direct contact between the pressure transmitter and the medium
- Individual configuration of the pressure transmitter for perfect adaptation to the operating conditions
- Available in many versions
- Specially designed for difficult operating conditions
- Quick-release versions available for the food industry

Application

Remote seal systems should be used if a separation between the medium and the measuring instrument is essential or appropriate.

Examples of such cases:

- The temperature of the medium is outside the limits specified for the pressure transmitter.
- The medium is corrosive and requires diaphragm materials which are not available for the pressure transmitter.
- The medium is highly viscous or contains solids which would block the measuring chambers of the pressure transmitter.
- The medium may freeze in the measuring chambers or pulse line.
- The medium is heterogeneous or fibrous.
- The medium tends towards polymerization or crystallization.
- The process requires quick-release remote seals, as necessary e.g. in the food industry for fast cleaning.
- The process requires cleaning of the measuring point, e.g. in a batch process.

Design

A remote seal system consists of the following components.

- Pressure transmitter
- One or two remote seals
- Filling liquid
- Connection between pressure transmitter and remote seal (direct mounting or by means of capillary)

The space for the medium is sealed off with a flat embedded elastic diaphragm. Between the diaphragm and the pressure transmitter is the filling liquid.

In many cases, a capillary must be connected between the remote seal and the pressure transmitter in order, for example, to reduce the temperature effects on the pressure transmitter when the measured medium is hot.

However, the capillary influences the activation time and the temperature response of the overall remote seal system. When capillaries are used to connect a remote seal to a pressure transmitter for differential pressure, two capillaries of equal length must always be used.

Optionally, the remote seal with diaphragm extension (tube) can be ordered.

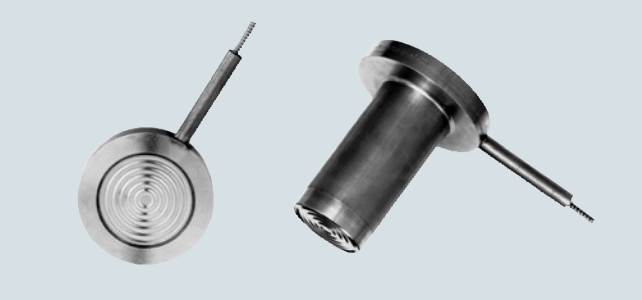
The remote seals in sandwich design are secured with a blank flange.

Designs

Diaphragm seal

With diaphragm seals, the pressure is measured by means of a flat diaphragm which rests in a bed.

The following types of diaphragm seals exist:



Diaphragm seal of sandwich design without (left) and with a projecting diaphragm (tube)

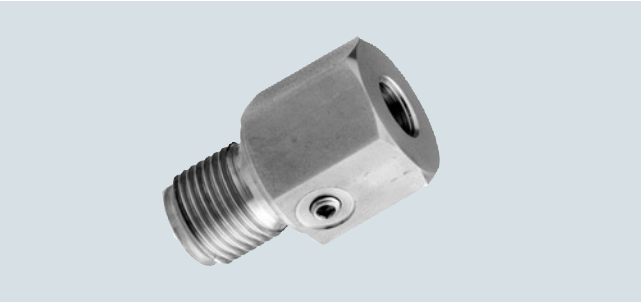
- Sandwich design
- Sandwich design with projecting diaphragm (tube) to DIN or ASME which are secured using a dummy flange.

Diaphragm seal of flange design without (left) and with a projecting diaphragm (tube)

- Flange design
- Flange design with projecting diaphragm (tube) to DIN or ASME, secured using holes in the flange.

Quick-release diaphragm seal

- Quick-release remote seals, e.g. to DIN 11851, SMS standard, IDF standard, APV RJF standard, clamp connection, etc.
- Miniature diaphragm seal with male thread for screwing into tapped holes
- Remote seals with customer-specific process connections

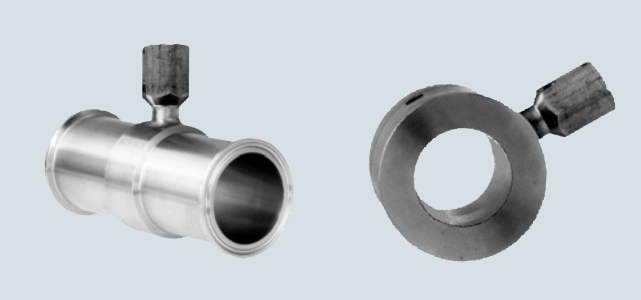


Miniature diaphragm seal with diaphragm flush with front

- Miniature diaphragm seals

The quick-release remote seals are used above all in the food industry. Their design means that the medium cannot accumulate in dead volumes. The quick-release clamp present on the remote seal means that quick dismounting is possible for cleaning.

Inline seal



Inline seal with quick-release design (left) and for flange mounting

With inline seals, the pressure is first measured using a cylindrical diaphragm positioned in a pipe, and then transmitted to the pressure transmitter by means of the filling liquid.

The inline seal is a special design for flowing media. It consists of a cylindrical pipe in which a cylindrical diaphragm is embedded. Since it is completely integrated in the process pipe, no turbulences, dead volumes or other obstructions to the flow occur. Furthermore, the inline seal can be cleaned by a pig.

The following types of inline seals exist:

- Quick-release inline seals, e.g. to DIN 11851, SMS standard, IDF standard, APV/RJF standard, clamp connection etc. The quick-release facility attached to the remote seal enables the seal to be removed quickly for cleaning purposes.
- Inline seals for flanging to EN or ASME.
- Inline seals with customer-specific process connections.

Note:

The pressure data on the transmitter and the remote seal must be observed with regard to pressure/temperature behavior.

Function

The measured pressure is transferred from the diaphragm to the filling liquid and passes 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 transmitter, are filled gas-free by the filling liquid.

Transmission response

The transmission response of a remote seal is characterized by the following variables:

- Temperature error
- Adjustment time

Temperature error

Temperature errors are caused by the change of volume of the filling liquid due to temperature variations. To select the right remote seal you must calculate the temperature error.

Below you will find an overview of the factors which influence the size of the temperature error, as well as information on how to calculate the temperature error.

The temperature error is dependent on the following variables:

- Rigidity of the diaphragm used
- Filling liquid used
- Influence of the filling liquid underneath the process flanges or in the connection shank of the pressure transmitter
- Internal diameter of the capillary: The bigger the internal diameter, the bigger the temperature error
- Length of the capillary: The longer the capillary, the bigger the temperature error

Diaphragm rigidity

The rigidity of the diaphragm is of decisive importance. The bigger the diameter of the diaphragm, the softer the diaphragm and the more sensitively it reacts to temperature-induced changes in volume of the filling liquid.

The result is that small measuring ranges are only possible with large diaphragm diameters.

Other factors apart from diaphragm rigidity which also play a role:

- Diaphragm thickness
- Diaphragm material
- Coatings if present

Filling liquid

Every filling liquid reacts to temperature variations with a change of volume. Temperature errors can be minimized by selecting a suitable filling liquid, but the filling liquid must also be appropriate for the temperature limits and operating pressure. Furthermore, the filling liquid must also be physiologically harmless.

Since the filling liquid is present under the diaphragm, in the capillary and under the process flange of the pressure transmitter (or in the connection shank), the temperature error must be calculated separately for each combination.

Note:

A vacuum-resistant remote seal is recommended for continuous low-pressure operation at 500 mbar a or below, including during commissioning (see ordering data).

An example of a temperature error calculation can be found in the section "Technical Specifications".

Response time

The response time is dependent on the following factors:

- Internal diameter of the capillary: The bigger the internal diameter, the shorter the response time
- Viscosity of the filling liquid The greater the viscosity, the longer the response time
- Length of the capillary: The longer the capillary, the longer the response time
- Pressure in the pressure measuring system: The higher the pressure, the shorter the response time

Recommendations

The following should be observed to obtain an optimum combination of transmitter and remote seal:

- Choose the biggest possible diameter for the remote seal. The effective diameter of the seal diaphragm is then bigger and the temperature error smaller.
- Choose the shortest possible capillary. The response time is then shorter and the temperature error smaller
- Choose the filling liquid with the least viscosity and the smallest coefficient of expansion. Make sure, however, that the filling liquid meets the process requirements with regard to pressure, vacuum and temperature. And ensure that the filling liquid and the medium are compatible with one another.
- Note the following points for use in the vacuum range:
  - The pressure transmitter must always be positioned below the lowest spigot.
  - The operating range of some filling liquids is very limited with regard to the permissible temperature of the medium.
  - A vacuum-proof seal is necessary for continuous operation in the low-pressure range.
- Recommendations for the minimum measuring span can be found in the section "Technical data".

Note

The remote seals listed here are a selection of the most common designs. On account of the large variety of process connections, certain remote seals which are not listed here may be available nevertheless.

Other versions can be:

- Other process connections, standards
- Aseptic or sterile connections
- Other dimensions
- Other nominal pressures
- Special diaphragm materials, including coatings
- Other sealing faces
- Other filling liquids
- Other capillary lengths
- Sheathing of capillaries with protective hose
- Calibration at higher/lower temperatures etc.

Please contact your local Siemens office for further information.

Negative pressure service

Liquids, such as silicone oils, inert or those suitable for food, are used in remote seal systems for transmission of the process pressure to the pressure transmitter.

In each liquid, particles have the tendency to leave the liquid compound with increasing temperature (transition from liquid to gaseous aggregate state). This means the vapor pressure increases with increasing temperature and is dependent on the substance or mixture being present.

The higher the temperature and the lower the associated process pressure in the liquid, the more difficult it gets to guarantee the desired transmission properties of the fill fluid and therefore the measuring arrangement.

Plus the sealing elements at the transmitter must be designed so that a diffusion of molecules from the atmosphere into the remote seal system is prevented due to the constantly occurring negative pressure.

In addition to the influencing variables process pressure and process temperature, the vapor pressure curve of the fill fluid at the remote seal end and the stiffness of the remote seal membrane impact the functionality of the remote seal in the negative pressure range.

This means you have to pay special attention to the physical properties of fill fluids with applications in the negative pressure range.

There are three stages for the negative pressure resistance:

- **Standard design** of the remote seal without additional protective measures, suitable for the overpressure range and low negative pressure range. This design is identified with (1) in the diagrams below in section 3.
- **Negative pressure service** with suitable seals and treated fill fluid, identified with (2) in the diagrams below in section 3. Here you select the order codes D81 or D83, depending on the mounting type.·
- **Extended negative pressure service** with more extended treatment of the fill fluid and the remote seals, identified in the diagrams below. Here you select the order codes D85 or D88, depending on the mounting type.

There are two more areas in the diagrams. The area (4) identifies an area that has to be clarified with Technical Support prior to placing the order. The area (5) describes the area in which the remote seal fill fluid is permanently destroyed and the entire remote seal is therefore without function.

Technical specifications of the remote seal filling liquids

Filling liquid	Number in the Article No.	Density at 20°C [kg/dm³]	Viscosity at 20°C [mm²/s]	Suitable for negative pressure service	Suitable for extended negative pressure service
Silicone oil M5	1	0.914	4	x	-
Silicone oil M50	2	0.966	50	x	x
High-temperature oil	3	1.070	57	x	x
Halocarbon oil	4	1.968	14	x	-
Food oil (FDA-listed)	7	0.920	10	x	x

The suitable negative pressure service is specified with the pressure/temperature curves of the respective liquids described below.

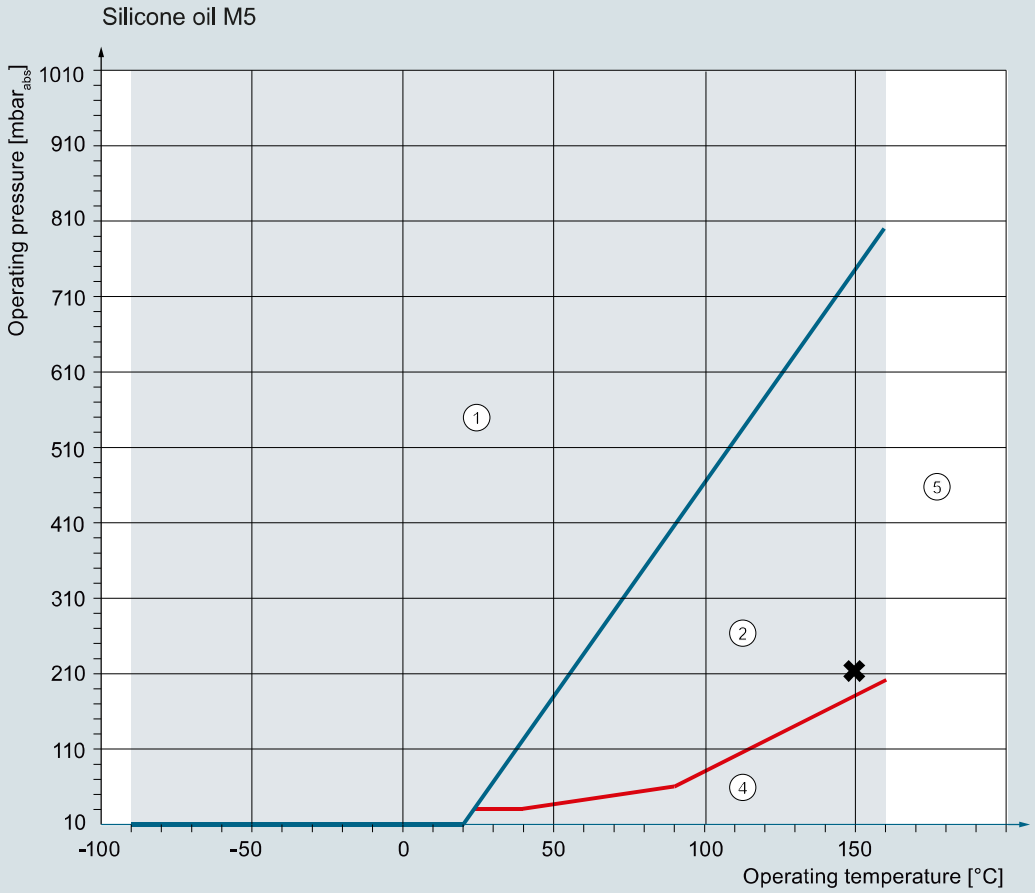
Note: For reasons of operational safety, the transmitter must not exceed the height of the remote seal - with differential pressure applications, the height of the bottom remote seal - for measurements in the negative pressure range. The associated installation types B, C1, C2 or H are described at the end of this section under the topic "Measuring arrangements".

Selection of the required negative pressure service

The procedure for determining the required negative pressure service is described below using the silicone oil M5 as fill fluid. The minimum existing process pressure of a fictitious process is 200 $mbar_{abs}$ (2.9 psi) (at a maximum process temperature of 150 °C (302 °F)). This intersection is identified by an "✖" in the diagram below. This means the negative pressure service D81 or D83 (depending on the application) is sufficient in this example.

The suitable negative pressure resistance is determined this way for all other fill fluids.

Note:
Note the response times according to the table on page 1/336.



(1) Operating range of the standard remote seal design without special measures.

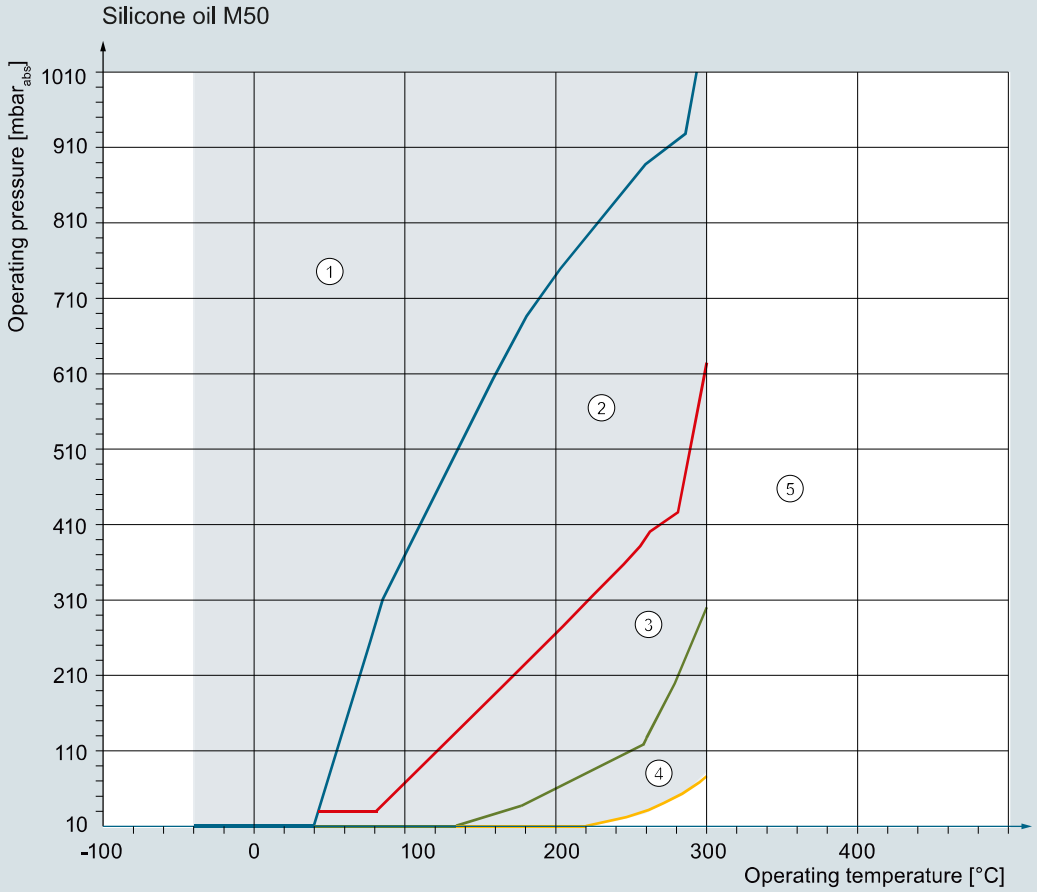
(2) Operating range for which the **negative pressure service D81 or D83** is required.
Note: An extended negative pressure service is **not** possible for this fill fluid.

(4) Please contact Technical Support for applications in this area.
Detailed information regarding application, process and ambient data are necessary.

(5) Area in which you have to expect the destruction of the fill fluid.
A function of the remote seal is not specified here.

Permissible operating range:
Max. temperature limit: 160 °C
Min. temperature limit: -90 °C

Negative pressure applications with silicone oil M5



(1) Operating range of the standard remote seal design without special measures.

(2) Operating range for which the **negative pressure service D81 or D83** is required.

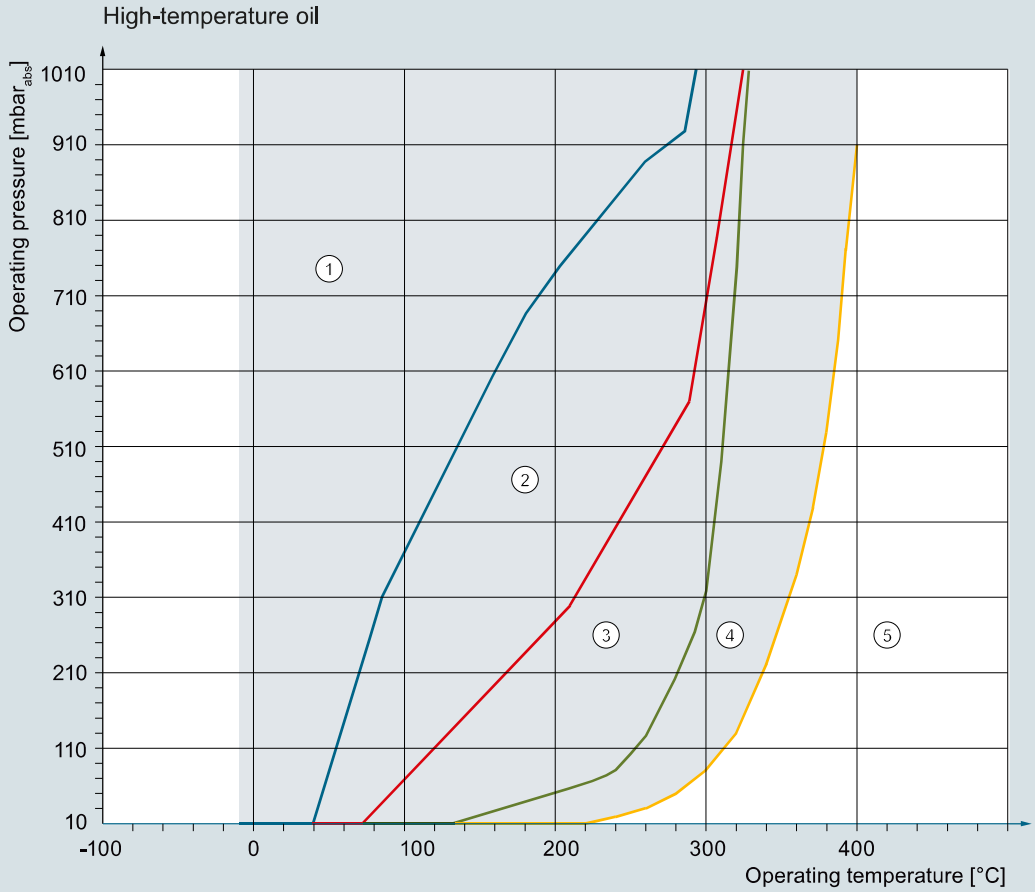
(3) Operating range for which the **extended negative pressure service D85 or D88** is required

(4) Please contact Technical Support for applications in this area.
Detailed information regarding application, process and ambient data are necessary.

(5) Area in which you have to expect the destruction of the fill fluid.
A function of the remote seal is not specified here.

Permissible operating range:
Max. temperature limit: 300 °C
Min. temperature limit: -40 °C

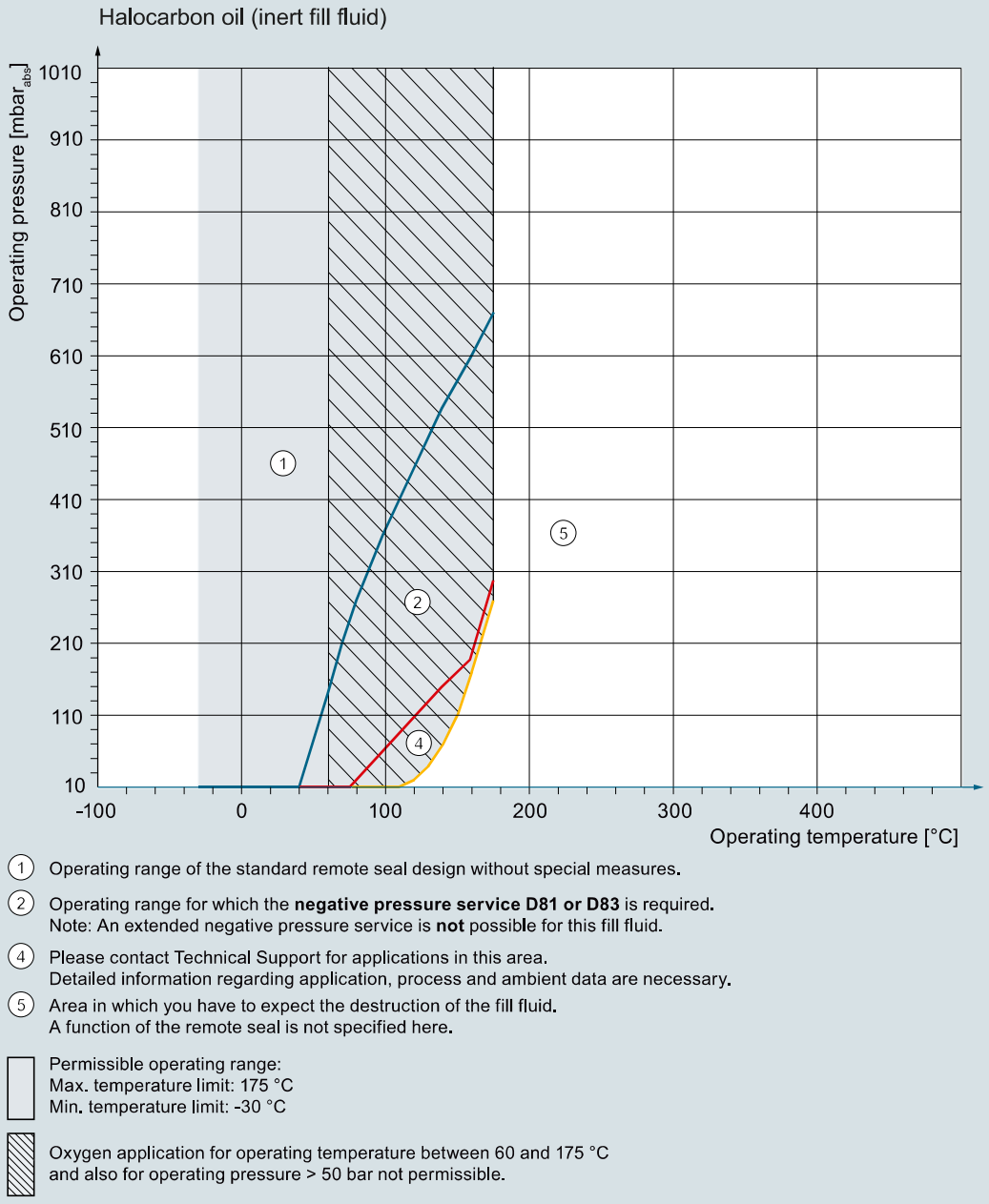
Negative pressure applications with silicone oil M50



1. Operating range of the standard remote seal design without special measures.
2. Operating range for which the **negative pressure service D81 or D83** is required.
3. Operating range for which the **extended negative pressure service D85 or D88** is required
4. Please contact Technical Support for applications in this area.
   Detailed information regarding application, process and ambient data are necessary.
5. Area in which you have to expect the destruction of the fill fluid.
   A function of the remote seal is not specified here.

Permissible operating range:
Max. temperature limit: 400 °C
Min. temperature limit: -10 °C

Negative pressure applications with high-temperature oil



(1) Operating range of the standard remote seal design without special measures.

(2) Operating range for which the **negative pressure service D81 or D83** is required.
Note: An extended negative pressure service is **not** possible for this fill fluid.

(4) Please contact Technical Support for applications in this area.
Detailed information regarding application, process and ambient data are necessary.

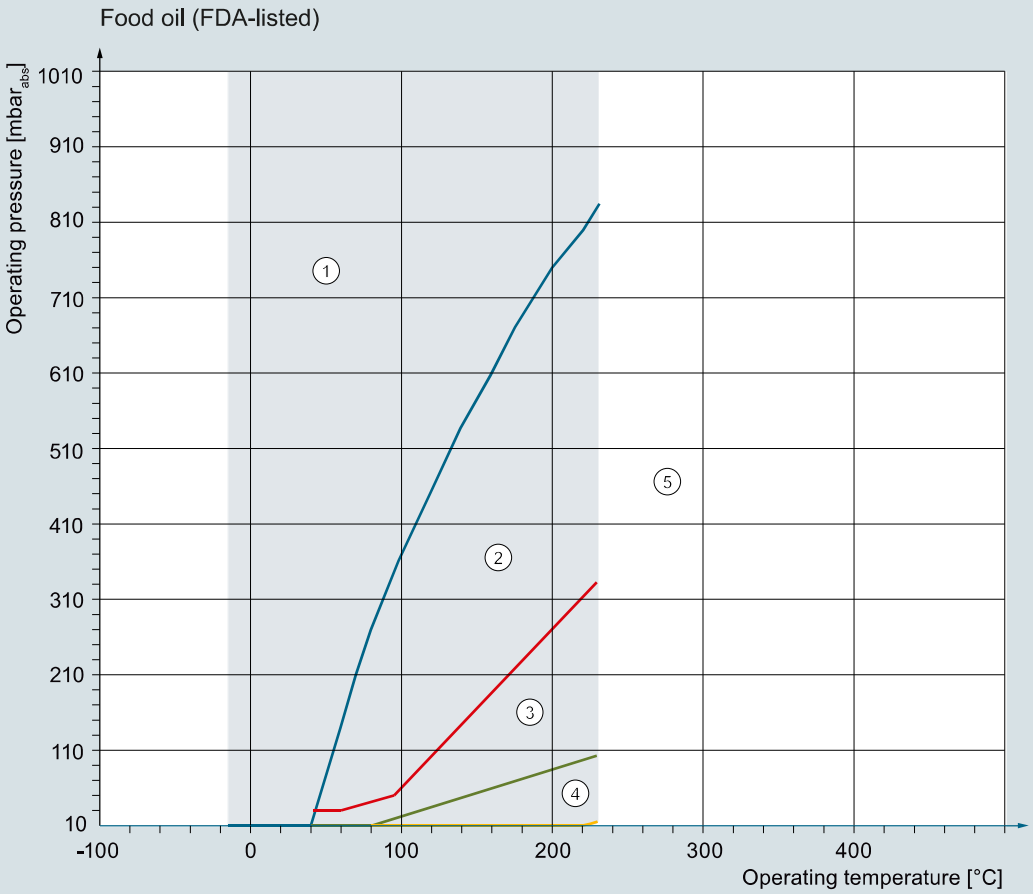
(5) Area in which you have to expect the destruction of the fill fluid.
A function of the remote seal is not specified here.

Permissible operating range:
Max. temperature limit: 175 °C
Min. temperature limit: -30 °C

Oxygen application for operating temperature between 60 and 175 °C
and also for operating pressure > 50 bar not permissible.

Negative pressure applications with halocarbon oil (inert filling liquid)

A BAM approval for process temperatures up to 60 °C (140 °F) and system pressures up to 50 bar (725 psi) is available for the oxygen application.



(1) Operating range of the standard remote seal design without special measures.

(2) Operating range for which the **negative pressure service D81 or D83** is required.

(3) Operating range for which the **extended negative pressure service D85 or D88** is required

(4) Please contact Technical Support for applications in this area.
Detailed information regarding application, process and ambient data are necessary.

(5) Area in which you have to expect the destruction of the fill fluid.
A function of the remote seal is not specified here.

Permissible operating range:
Max. temperature limit: 230 °C
Min. temperature limit: -15 °C

Negative pressure applications with food oil (FDA listed)

Technical specifications

Temperature error Diaphragm seals

Temperature errors of diaphragm seals when connected to pressure transmitters for pressure, absolute pressure, differential pressure (single-sided) and level

	Nominal diameter/ design	Diaphragm diameter		Temperature error of remote seal f_{RS}		Temperature error of capillary f_{Cap}		Temperature error of process flange/connection spigot f_{PF}		Recommended min. measuring spans (guidance values, observe temp. error)	
		mm	(inch)	mbar/ 10 K	(psi/ 10 K)	mbar/ (10 K · m_{Cap})	(psi/ (10 K · m_{Cap}))	mbar/ 10 K	(psi/ 10 K)	mbar	(psi)
Sandwich design or with flange to EN 1092-1	DN 50 without tube	59	(2.32)	1.5	(0.022)	2	(0.029)	2	(0.029)	200	(2.90)
	DN 50 with tube	45	(1.89)	5	(0.073)	10	(0.145)	10	(0.145)	500	(7.25)
	DN 80 without tube	89	(3.50)	0.2	(0.003)	0.2	(0.003)	0.2	(0.003)	100	(1.45)
	DN 80 with tube	72	(2.83)	1	(0.015)	1	(1.015)	1	(1.015)	250	(3.63)
	DN 100 without tube	89	(3.50)	0.2	(0.003)	0.4	(0.006)	0.4	(0.006)	100	(1.45)
	DN 100 with tube	89	(3.50)	0.4	(0.006)	0.4	(0.006)	0.4	(0.006)	100	(1.45)
	DN 125 without tube	124	(4.88)	0.2	(0.003)	0.1	(0.002)	0.1	(0.002)	20	(0.29)
	DN 125 with tube	124	(4.88)	0.2	(0.003)	0.1	(0.002)	0.1	(0.002)	20	(0.29)
Sandwich design or with flange to ASME B16.5	2 inch without tube	59	(2.32)	1.5	(0.022)	2	(0.029)	2	(0.029)	200	(2.90)
	2 inch with tube	45	(1.89)	5	(0.073)	10	(0.145)	10	(0.145)	500	(7.25)
	3 inch without tube	89	(3.50)	0.2	(0.003)	0.2	(0.003)	0.2	(0.003)	100	(1.45)
	3 inch with tube	72	(2.83)	1	(0.015)	1	(1.015)	1	(1.015)	250	(3.63)
	4 inch without tube	89	(3.50)	0.2	(0.003)	0.4	(0.006)	0.4	(0.006)	100	(1.45)
	4 inch with tube	89	(3.50)	0.4	(0.006)	0.4	(0.006)	0.4	(0.006)	100	(1.45)
	5 inch without tube	124	(4.88)	0.2	(0.003)	0.1	(0.002)	0.1	(0.002)	20	(0.29)
	5 inch with tube	124	(4.88)	0.2	(0.003)	0.1	(0.002)	0.1	(0.002)	20	(0.29)
Remote seal with union nut to DIN 11851	DN 25	25	(0.98)	20	(0.290)	60	(0.870)	60	(0.870)	6000	(87)
	DN 32	32	(1.26)	8	(0.116)	25	(0.363)	25	(0.363)	4000	(58)
	DN 40	40	(1.57)	4	(0.058)	10	(0.145)	10	(0.145)	2000	(29)
	DN 50	52	(2.05)	4	(0.058)	5	(0.073)	5	(0.073)	500	(7.25)
	DN 65	59	(2.32)	3	(0.044)	4	(0.058)	4	(0.058)	500	(7.25)
	DN 80	72	(2.83)	1	(0.015)	1	(0.015)	1	(0.015)	250	(3.63)
Remote seal, screwed gland design	DN 50	52	(2.05)	4	(0.058)	5	(0.073)	5	(0.073)	500	(7.25)
Remote seal with threaded socket to DIN 11851	DN 25	25	(0.98)	20	(0.290)	60	(0.870)	60	(0.870)	6000	(87)
	DN 32	32	(1.26)	8	(0.116)	25	(0.363)	25	(0.363)	4000	(58)
	DN 40	40	(1.57)	4	(0.058)	10	(0.145)	10	(0.145)	2000	(29)
	DN 50	52	(2.05)	4	(0.058)	5	(0.073)	5	(0.073)	500	(7.25)
	DN 65	59	(2.32)	3	(0.044)	4	(0.058)	4	(0.058)	500	(7.25)
	DN 80	72	(2.83)	1	(0.015)	1	(0.015)	1	(0.015)	250	(3.63)
Clamp connection	1½ inch	32	(1.26)	8	(0.116)	25	(0.363)	25	(0.363)	4000	(58)
	2 inch	40	(1.57)	4	(0.058)	10	(0.145)	10	(0.145)	2000	(29)
	2½ inch	59	(2.32)	3	(0.044)	5	(0.073)	5	(0.073)	500	(7.25)
	3 inch	72	(2.83)	1	(0.015)	1	(0.015)	1	(0.015)	250	(3.63)
Miniature diaphragm seal	G1B	25	(0.98)	20	(0.290)	60	(0.870)	60	(0.870)	6000	(87)
	G1½B	40	(1.57)	4	(0.058)	10	(0.145)	10	(0.145)	2000	(29)
	G2B	52	(2.05)	4	(0.058)	5	(0.073)	5	(0.073)	500	(7.25)

Remarks:

- Values apply for the filling liquids silicone oil M5, silicone oil M50, high-temperature oil, halocarbon oil and food oil (FDA listed).
- Values apply to stainless steel as the diaphragm material.

Temperature errors of diaphragm seals with connection to differential pressure transmitters (double-sided)

	Nominal diameter/ design	Diaphragm diameter		Temperature error of remote seal f_{RS}		Temperature error of capillary f_{Cap}		Temperature error of process flange/connection spigot f_{PF}		Recommended min. measuring spans (guidance values, observe temperature error)	
		mm	(inch)	mbar/ 10 K	(psi/ 10 K)	mbar/ (10 K · m_{Cap})	(psi/ (10 K · m_{Cap}))	mbar/ 10 K	(psi/ 10 K)	mbar	(psi)
Sandwich design or with flange to EN 1092-1	DN 50 without tube	59	(2.32)	0.3	(0.0043)	0.3	(0.0045)	0.3	(0.0045)	250	(3.626)
	DN 50 with tube	45	(1.89)	1.26	(0.018)	1.7	(0.025)	1.7	(0.025)	250	(3.626)
	DN 80 without tube	89	(3.50)	0.05	(0.001)	0.05	(0.001)	0.05	(0.0007)	50	(0.725)
	DN 80 with tube	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.45)
	DN 100 without tube	89	(3.50)	0.05	(0.001)	0.07	(0.001)	0.07	(0.001)	50	(0.725)
	DN 100 with tube	89	(3.50)	0.1	(0.002)	0.07	(0.001)	0.07	(0.001)	50	(0.725)
	DN 125 without tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)	0.03	(0.0004)	20	(0.29)
	DN 125 with tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)	0.03	(0.0004)	20	(0.29)
Sandwich design with flange to ASME B16.5	2 inch without tube	59	(2.32)	0.3	(0.0043)	0.3	(0.0043)	0.3	(0.0045)	250	(3.626)
	2 inch with tube	45	(1.89)	1.26	(0.018)	1.7	(0.025)	1.7	(0.025)	250	(3.626)
	3 inch without tube	89	(3.50)	0.05	(0.001)	0.05	(0.0007)	0.05	(0.0007)	50	(0.725)
	3 inch with tube	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.45)
	4 inch without tube	89	(3.50)	0.05	(0.001)	0.07	(0.001)	0.07	(0.001)	50	(0.725)
	4 inch with tube	89	(3.50)	0.1	(0.002)	0.07	(0.001)	0.07	(0.001)	50	(0.725)
	5 inch without tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)	0.03	(0.0004)	20	(0.29)
	5 inch with tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)	0.03	(0.0004)	20	(0.29)
Remote seal, screwed gland design	DN 50	52	(2.05)	1	(0.015)	0.83	(0.012)	0.83	(0.012)	250	(3.626)
Remote seal with union nut to DIN 11851	DN 50	52	(2.05)	1	(0.015)	0.83	(0.012)	0.83	(0.012)	250	(3.626)
	DN 65	59	(2.32)	0.7	(0.010)	0.67	(0.010)	0.67	(0.010)	250	(3.626)
	DN 80	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.450)
Remote seal with threaded socket to DIN 11851	DN 50	52	(2.05)	1	(0.015)	0.83	(0.012)	0.83	(0.012)	250	(3.626)
	DN 65	59	(2.32)	0.7	(0.010)	0.67	(0.010)	0.67	(0.010)	250	(3.626)
	DN 80	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.450)
Clamp connection	2 inch	40	(1.57)	1	(0.015)	2.5	(0.036)	2.5	(0.036)	2000	(29.01)
	2½ inch	59	(2.32)	0.7	(0.010)	0.67	(0.010)	0.67	(0.010)	250	(3.626)
	3 inch	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.450)

Remarks:

- Values apply for the filling liquids silicone oil M5, silicone oil M50, high-temperature oil, halocarbon oil and food oil (FDA listed).
- Values apply to stainless steel as the diaphragm material.

Technical description

Temperature error inline seals

Temperature errors of inline seals when connected to pressure transmitters for gauge pressure and absolute pressure, and with single-sided connection to pressure transmitters for differential pressure

Nominal diameter/ design	Temperature error of remote seal f_{RS}		Temperature error of capillary f_{Cap}		Temperature error of process flange/connection spigot f_{PF}		Recommended min. measuring spans (guidance values, observe temperature error)	
	mbar/10 K	(psi/10 K)	mbar/10 K	(psi/10 K)	mbar/10 K	(psi/10 K)	mbar	(psi)
DN 25 (1 inch)	6.0	(0.0870)	8.5	(0.123)	8.5	(0.123)	1000	(14.5)
DN 40 (1½ inch)	4.5	(0.065)	4.5	(0.065)	4.5	(0.065)	250	(3.63)
DN 50 (2 inch)	4.0	(0.058)	3.0	(0.044)	3.0	(0.044)	100	(1.45)
DN 80 (3 inch)	9.5	(0.138)	5.0	(0.073)	5.0	(0.073)	100	(1.45)
DN 100 (4 inch)	8.0	(0.012)	3.0	(0.044)	3.0	(0.044)	100	(1.45)

Temperature errors of inline seals with double-sided connection to pressure transmitters for differential pressure

Nominal diameter/ design	Temperature error of remote seal f_{RS}		Temperature error of capillary f_{Cap}		Temperature error of process flange/connection spigot f_{PF}		Recommended min. measuring spans (guidance values, observe temperature error)	
	mbar/10 K	(psi/10 K)	mbar/10 K	(psi/10 K)	mbar/10 K	(psi/10 K)	mbar	(psi)
DN 25 (1 inch)	2.3	(0.033)	1.8	(0.026)	1.8	(0.026)	1000	(14.5)
DN 40 (1½ inch)	0.8	(0.012)	0.3	(0.004)	0.3	(0.004)	250	(3.63)
DN 50 (2 inch)	0.3	(0.004)	0.1	(0.002)	0.1	(0.002)	100	(1.45)
DN 80 (3 inch)	3.0	(0.044)	0.5	(0.007)	0.5	(0.007)	100	(1.45)
DN 100 (4 inch)	1.0	(0.015)	0.1	(0.002)	0.1	(0.002)	100	(1.45)

Remarks:

- Values apply for the filling liquids silicone oil M5, silicone oil M50, high-temperature oil, halocarbon oil and food oil (FDA listed).
- Half the values apply to glycerin/water mixture as the filling liquid.
- Values apply to stainless steel as the diaphragm material.
- Diaphragm thickness 0.05 mm (0.002 inch) for DN 25/DN 40/DN 50 and 0.1 mm (0.004 inch) for DN 80/DN 100

Calculation of the temperature error

The following equation is used to calculate the temperature error:

$$dp = (\vartheta_{RS} - \vartheta_{Cal}) \cdot f_{RS} + (\vartheta_{Cap} - \vartheta_{Cal}) \cdot l_{Cap} \cdot f_{Cap} + (\vartheta_{TR} - \vartheta_{Cal}) \cdot f_{PF}$$

dp	Additional temperature error (mbar)
ϑ_{RS}	Temperature on remote seal diaphragm (generally corresponds to temperature of medium)
ϑ_{Cal}	Calibration (reference) temperature (20 °C (68 °F))
f_{RS}	Temperature error of remote seal
ϑ_{Cap}	Ambient temperature on the capillaries
l_{Cap}	Capillary length
f_{Cap}	Temperature error of capillaries
ϑ_{TR}	Ambient temperature on pressure transmitter
f_{PF}	Temperature error of the oil filling in the process flanges of the pressure transmitter

Example of temperature error calculation

Existing conditions:

SITRANS P pressure transmitter for differential pressure, 250 mbar, set to 0 ... 100 mbar, with DN 100 remote seal diaphragms without tube, diaphragm made of stainless steel, mat. No. 1.4404/316L	f_{RS} = 0.05 mbar/10 K (0.039 inH_2O/10 K)
Capillary length	l_{Cap} = 6 m (19.7 ft)
Capillaries fitted on both sides	f_{Cap} = 0.07 mbar/(10 K · m_{Cap}) (0.028 inH_2O/(10 K · m_{Cap}))
Filling liquid silicone oil M5	f_{PF} = 0.07 mbar/10 K (0.028 inH_2O/10 K)
Process temperature	ϑ_{RS} = 100 °C (212 °F)
Temperature on the capillaries	ϑ_{Cap} = 50 °C (122 °F)
Temperature on pressure transmitter	ϑ_{TR} = 50 °C (122 °F)
Calibration temperature	ϑ_{Cal} = 20 °C (68 °F)

Required:

Additional temperature error of remote seals: dp

Calculation:

in mbar

dp = (100 °C – 20 °C) · 0.05 mbar/10 K + (50 °C – 20 °C) · 6 m · 0.07 mbar/(10 K · m) + (50 °C – 20 °C) · 0.07 mbar/10 K

dp = 0.4 mbar + 1.26 mbar + 0.21 mbar

in inH_2O

dp = (212 °F - 68 °F) · 0.039 inH_2O/10 K + (112 °F - 68 °F) · 19.7 ft · 0.028 inH_2O/(10 K · 3.28 ft) + (112 °F - 68 °F) · (0.028 inH_2O/10 K)

dp = 0.16 inH_2O + 0.51 inH_2O + 0.08 inH_2O

Result:

dp = 1.87 mbar (0.75 inH_2O)
(corresponds to 2.27% of set measuring span)

Note

The determined temperature error only applies to the error resulting from connection of the remote seal.

The transmission response of the respective transmitter is not included in this consideration.
It must be calculated separately, and the resulting error added to the error determined above from connection of the remote seal.

Dependence of temperature error on diaphragm material

The temperature errors listed in the previous table are based on the use of stainless steel as the diaphragm material. If other diaphragm materials are used, the temperature errors change as follows:

Diaphragm material	Change in temperature error of remote seal
	Increase in values by
Stainless steel, Duplex, ...	See previous tables
Hastelloy C4, mat. No. 2.4602	50 %
Hastelloy C276, mat. No. 2.4819	50 %
Monel 400, mat. No. 2.4360	60 %
Tantalum	50 %
Titanium	50 %
PTFE coating on stainless steel diaphragm	80 %
ECTFE coating or PFA coating on stainless steel diaphragm	100 %
Gold coating on stainless steel diaphragm	40 %
Inconel	50 %
Incoloy	50 %

Maximum temperature of medium

Note:
When taking into account the maximum medium temperature, the application limits of the fill fluids and gaskets used as well as the pressure/temperature limits of the respective process connections must also be taken into consideration.

The following maximum temperatures of the medium apply depending on the material of the wetted parts.

Material	Max. temperature of medium	Min./max. pressure
Stainless steel, 316L	400 °C (752 °F)	No restriction
PTFE coating	200 °C (392 °F)	< 0 bar (0 psi); gauge pressure
	260 °C (500 °F)	0 bar (0 psi) ... 25 bar (363 psi); gauge pressure
	150 °C (302 °F)	25 bar (363 psi) ... 40 bar (580 psi); gauge pressure
	50 °C (302 °F)	40 bar (580 psi) ... 60 bar (870 psi); gauge pressure
ECTFE coating	150 °C (302 °F)	For pressures < 1 bar (14.5 psi) on request
PFA coating	200 °C (392 °F)	< 0 bar (0 psi); gauge pressure
	260 °C (500 °F)	25 bar (363 psi)/40 bar (580 psi); gauge pressure
	150 °C (302 °F)	40 bar (580 psi)/60 bar (870 psi); gauge pressure
	50 °C (302 °F)	For pressures < 1 bar (14.5 psi) on request
Hastelloy C4, mat. No. 2.4602	400 °C (752 °F)	No restriction
Hastelloy C276, mat. No. 2.4819	400 °C (752 °F)	No restriction
Hastelloy C22, mat. No. 2.4602	400 °C (752 °F)	No restriction
Monel 400, mat. No. 2.4360	400 °C (752 °F)	No restriction
Tantalum	300 °C (572 °F)	No restriction
Duplex, mat. No. 1.4462	250 °C (482 °F)	No restriction
Titanium	150 °C (302 °F)	No restriction
Inconel	400 °C (752 °F)	No restriction
Incoloy	400 °C (752 °F)	No restriction
Gold coating	400 °C (752 °F)	No restriction

Technical description

Maximum capillary length for diaphragm seals (guidance values)

Nom. diam.		Max. length of capillary			
		Diaphragm seal		inline seal	
		m	(ft)	m	(ft)
DN 25	(1 inch)	2.5	(8.2)	2.5	(8.2)
DN 32	(1¼ inch)	2.5	(8.2)	2.5	(8.2)
DN 40	(1½ inch)	4	(13.1)	6	(19.7)
DN 50	(2 inch)	6	(19.7)	10	(32.8)
DN 65	(2½ inch)	8	(26.2)	10	(32.8)
DN 80	(3 inch)	15	(49.1)	10	(32.8)
DN 100	(4 inch)	15	(49.1)	10	(32.8)
DN 125	(5 inch)	15	(49.1)	-	-

Response times

The values listed in the following table are the response times (in seconds per meter of capillary) for a change in pressure which corresponds to the set measuring span.

The listed values must be multiplied by the respective length of the capillary, or with transmitters for differential pressure and flow by the total length of both capillaries.

The response times are independent of the set measuring span within the range of the respective transmitter. The response times are of insignificant importance for measuring spans above 10 bar (145 psi). The response times of the pressure transmitters are not considered in the table.

Filling liquid	Density		Temperature on capillary		Response time in s/m (s/ft) with max. measuring span of pressure transmitter					
	kg/dm³	(lb/in³)	°C	(°F)	250 mbar	(101 inH_2O)	600 mbar	(241 inH_2O)	1600 mbar	(643 inH_2O)
Silicone oil M5	0.914	(0.033)	+60	(140)	0.06	(0.018)	0.02	(0.006)	0.01	(0.003)
			+20	(68)	0.11	(0.034)	0.02	(0.006)	0.02	(0.006)
			- 20	(-4)	0.3	(0.091)	0.12	(0.037)	0.05	(0.015)
Silicone oil M50	0.966	(0.035)	+60	(140)	0.6	(0.183)	0.25	(0.076)	0.09	(0.027)
			+20	(68)	0.61	(0.186)	0.26	(0.079)	0.1	(0.030)
			- 20	(-4)	1.69	(0.515)	0.71	(0.216)	0.27	(0.082)
High-temperature oil	1.070	(0.039)	+60	(140)	0.14	(0.043)	0.06	(0.018)	0.02	(0.006)
			+20	(68)	0.65	(0.198)	0.27	(0.082)	0.1	(0.030)
			-10	(14)	3.96	(1.207)	1.65	(0.503)	0.62	(0.189)
Halocarbon oil	1.968	(0.071)	+60	(140)	0.07	(0.021)	0.03	(0.009)	0.01	(0.003)
			+20	(68)	0.29	(0.088)	0.12	(0.037)	0.05	(0.015)
			- 20	(-4)	2.88	(0.878)	1.2	(0.366)	0.45	(0.137)
Food oil (FDA listed)	0.920	(0.033)	+60	(140)	0.75	(0.229)	0.33	(0.101)	0.17	(0.052)
			+20	(68)	4	(1.220)	1.75	(0.534)	0.67	(0.204)
			- 20	(-4)	20	(6.100)	8.5	(2.593)	3.25	(0.991)

Permissible data of filling liquids for pressure and temperature see diagrams on page 1/327 ff.

More information

Specification of process conditions for selection and ordering data

Ambient temperature range

As standard, the remote seal systems are optimized for an ambient temperature range of -10 to +50 ° C (14 to +122 ° F). Therefore, in the ordering options, the **order code "D66" is** preset.

If the range of the ambient temperature deviates from this, you have the possibility to choose other ambient temperature ranges:

- With the **order code D67**, a range from -40 to +50 °C (-40 to +122 °F)
- With the **order code D68**, a range from -10 to +85 °C (14 to +185 °F)

In the case of a **special version**, which you can select with the **order option Y99** in the device settings, it is possible to enter the ambient temperature as a numerical value.

Process temperature

The standard optimization for the process temperature depends on the filling liquid used:

Filling liquid	Code	Optimized temperature range as standard
Silicone M50	B	-10 ... +200 °C (14 ... +392 °F)
High-temperature oil	C	-10 ... +300 °C (14 ... +572 °F)
Silicone oil M5	A	-40 ... +140 °C (-40 ... +284 °F)
Food-grade oil (FDA grade)	E	-10 ... +140 °C (14 ... +284 °F)
Halocarbon oil	D	-20 ... +60 °C (-4 ... +140 °F)

- **If the process temperatures** deviate from the temperature ranges mentioned in the table above, we ask you to send the process temperature with the **order code Y50** along with the order.
- If the remote seal has a small diameter (< DN 50/2") or a long capillary (> 4 m), we also ask you to provide the process data with the **following order code** when ordering.

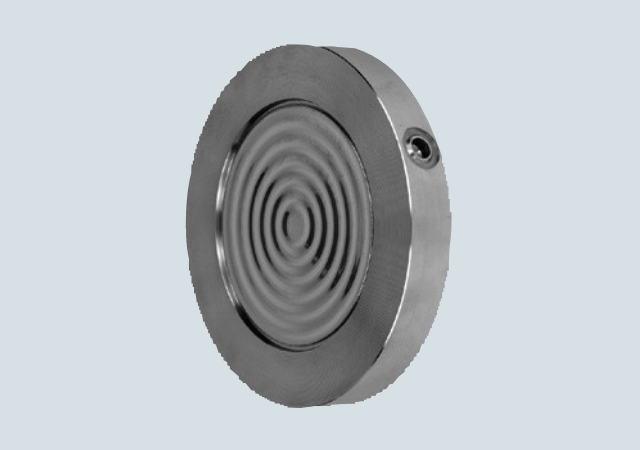
These entries are transmitted and ensure the correct functioning of the remote seal systems.

Ambient temperature range	Order code
• -10 ... +50 °C (14 ... +122 °F) preset	**D66**
• -40 ... +50 °C (-40 ... +122 °F)	**D67**
• -10 ... +85 °C (14 ... +185 °F)	**D68**
Process temperature min. ... °C/(°F)/max. ... °C/(°F)	**Y50**

1

Diaphragm seals of sandwich design with flexible capillary

Overview



Diaphragm seals of sandwich design

Technical specifications

Diaphragm seals of sandwich design	
Nominal diameter	Nominal pressure
Connecting standard EN 1092-1	
• DN 25, DN 40, DN 50, DN 65, DN 80, DN 100, DN 125	PN 16 ... PN 400
Connecting standard ASME B16.5	
• 1 inch, 1½ inch, 2 inch, 2½ inch, 3 inch, 4 inch, 5 inch	Class 150 ... class 2500
Connecting standard J.I.S.	
• DN 25, DN 40, DN 50, DN 65, DN 80, DN 100, DN 125	10K ... 63K
Sealing surface	
• For stainless steel, mat. No. 1.4404/316L	To EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA
• For the other materials	To EN 1092-1, form B2 or ASME B16.5 RFSF
Materials	
• Main body	Stainless steel mat. no. 1.4404/316L
• Wetted parts	Stainless steel mat. no. 1.4404/316L
	• 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, mat. no. 2.4602
	Tantalum
	Titanium, mat. no. 3.7035
	Nickel 201
	Duplex 2205, mat. no. 1.4462
	Stainless steel 316L, gold plated, thickness approx. 25 µm
• Capillary	Stainless steel, mat. No. 1.4571/316Ti
• Sheath	Spiral protective tube made of stainless steel, mat. No. 1.4404/316L
Sealing material in the process flanges	
• For pressure transmitters, absolute pressure transmitters and low-pressure applications	Copper
• For other applications	Viton
Maximum pressure	See above and the technical data of the pressure transmitters
Tube length	Without tube as standard (tube available on request)
Capillary	
• Length	Max. 10 m (32.8 ft), longer lengths on request
• Internal diameter	max. 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 (for measuring O_2)
	Food grade oil (FDA listed)
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)

Selection and Ordering data	Article No.	Order code
Diaphragm seal		
Sandwich type design, with flexible capillary tube, connected with flexible capillary tube to a		
• SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure service), 7MF03../7MF04.. order separately Scope of delivery: 1 off	7MF0800 -	
• SITRANS P320/P420 transmitter for absolute pressure, 7MF03../7MF04.. order separately, Scope of delivery: 1 off	7MF0801 -	
• SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately, Scope of delivery: 2 off	7MF0802 -	
	- 0	
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Nominal diameter **Nominal pressure**		
Connecting standard EN 1092-1		
(DN 25, DN 40 and DN 50 recommended only for pressure transmitters)		
DN 25 PN 16 ... 400	0 B Q	
DN 40 PN 16 ... 400	0 D Q	
DN 50 PN 16 ... 400	0 E Q	
DN 65 PN 16 ... 400	0 F Q	
DN 80 PN 16 ... 400	0 G Q	
DN 100 PN 16 ... 400	0 H Q	
DN 125 PN 16 ... 400	0 J Q	
Connecting standard ASME B16.5 (1 inch, 1½ inch and 2 inch recommended only for pressure transmitters)		
1 inch class 150 ... 2500	1 K X	
1½ inch class 150 ... 2500	1 L X	
2 inch class 150 ... 2500	1 M X	
2½ inch class 150 ... 2500	1 N X	
3 inch class 150 ... 2500	1 P X	
4 inch class 150 ... 2500	1 Q X	
5 inch class 150 ... 2500	1 R X	
Connecting standard J.I.S.		
(DN 25, DN 40 and DN 50 recommended only for pressure transmitters)		
DN 25 10K ... 63K	2 B W	
DN 40 10K ... 63K	2 D W	
DN 50 10K ... 63K	2 E W	
DN 65 10K ... 63K	2 F W	
DN 80 10K ... 63K	2 G W	
DN 100 10K ... 63K	2 H W	
DN 125 10K ... 63K	2 J W	
Other version Add Order code and plain text	9 A A	H 1 Y
Length of capillary		
1 m	1 0	
1,6 m	1 1	
2 m	1 2	
2,5 m	1 3	
3 m	1 4	
4 m	1 5	
5 m	1 6	
6 m	1 7	
7 m	1 8	
8 m	2 0	
9 m	2 1	
10 m	2 2	

Selection and Ordering data	Article No.	Order code
Diaphragm seal		
Sandwich type design, with flexible capillary tube, connected with flexible capillary tube to a		
• SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure service), 7MF03../7MF04.. order separately Scope of delivery: 1 off	7MF0800 -	
• SITRANS P320/P420 transmitter for absolute pressure, 7MF03../7MF04.. order separately, Scope of delivery: 1 off	7MF0801 -	
• SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately, Scope of delivery: 2 off	7MF0802 -	
	- 0	
11 m (only for 7MF0802)	2 3	
12 m (only for 7MF0802)	2 4	
13 m (only for 7MF0802)	2 5	
14 m (only for 7MF0802)	2 6	
15 m (only for 7MF0802)	2 7	
Other version Add Order code and plain text	9 8	L 1 Y
Filling liquid		
Silicone oil M50	B	
High-temperature oil	C	
Silicone oil M5	A	
Food-grade oil (FDA listed)	E	
Halocarbon oil	D	
Other version Add Order code and plain text	Z	P 1 Y
Wetted parts materials		
Stainless steel 316L		
• Without coating	A	
• With PFA coating	D	
• With PTFE coating	E 0	
• With ECTFE coating	F	
Monel 400, 2.4360	G	
Hastelloy C276, 2.4819	J	
Tantalum	K	
Titanium, 3.7035	L 0	
Nickel 201	M 0	
Diaphragm Duplex, 1.4462	Q	
Diaphragm plus flange Duplex, 1.4462	R	
Stainless steel 316L with gold coating	S 0	
Hastelloy C4, 2.4610	U 0	
Hastelloy C22, 2.4602	V 0	
Other version Add Order code and plain text	Z 8	Q 1 Y
Extension length		
• without	0	
• 50 mm (2")	1	
• 100 mm (4")	2	
• 150 mm (6")	3	
• 200 mm (8")	4	
• 250 mm (10")	5	
Other version Add Order code and plain text	Z 8	Q 1 Y

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Diaphragm seals of sandwich design with flexible capillary

Selection and Ordering data	Article No.	Order code
Diaphragm seal		
Sandwich type design, with flexible capillary tube, connected with flexible capillary tube to a		
• SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure service), 7MF03../7MF04.. order separately Scope of delivery: 1 off	**7MF0800-**	
• SITRANS P320/P420 transmitter for absolute pressure, 7MF03../7MF04.. order separately, Scope of delivery: 1 off	**7MF0801-**	
• SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately, Scope of delivery: 2 off	**7MF0802-**	
	-0	
Customer-specific extension length		
• Wetted parts stainless steel without coating		
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 stainless steel with ECTFE coating		
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 stainless steel with PFA coating		
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 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**

Selection and Ordering data	Article No.	Order code
Diaphragm seal		
Sandwich type design, with flexible capillary tube, connected with flexible capillary tube to a		
• SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure service), 7MF03../7MF04.. order separately Scope of delivery: 1 off	**7MF0800-**	
• SITRANS P320/P420 transmitter for absolute pressure, 7MF03../7MF04.. order separately, Scope of delivery: 1 off	**7MF0801-**	
• SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately, Scope of delivery: 2 off	**7MF0802-**	
	-0	
• Wetted parts 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 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	Order code
Further designs	
Add "**-Z**" to Article No. and specify Order code.	
Factory certificates	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	**C11**
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	**C12**
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009) (only together with seal diaphragm made of Hastelloy and stainless steel)	**C13**
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	**C15**
Certificate of FDA-approved fill oil (to EN10204-2.2)	**C17**
Factory certificate functional safety (SIL2/3), devices suitable for use according to IEC 61508 and IEC 61511 (includes SIL conformity declaration)	**C20**
Accessories	
Spark arrestor (for gauge and absolute pressure transmitters)	**D61**
Spark arrestor (for differential pressure and level transmitters)	**D62**
Low-temperature version (for Silicon Oil M50 only)	**D67**
Negative pressure services	
Negative pressure service (for gauge and absolute pressure transmitters)	**D81**
Negative pressure service (for differential pressure transmitters)	**D83**
Extended negative pressure service (for gauge and absolute pressure transmitters) (only 7MF0800)	**D85**
Extended negative pressure service (for differential pressure transmitters)	**D88**
General product approvals without explosion proof approvals	
Oil-and grease-free cleaned version (for O_2-appl. including certificate EN10204-2.2 (only with fill fluid Halocarbon oil max. temperature 60 °C and max. pressure 50 bar)	**E80**
Oil-and grease-free cleaned version (not for O_2-appl. including certificate EN10204-2.2 (only with fill fluid Halocarbon oil)	**E87**
Sealing surface	
Sealing surface smooth, form B2/EN1092-1 resp. RFSF/ANSI B16.5 (wetted parts 316L only)	**M50**
Sealing surface groove to EN1092-1, form D (instead of sealing surface B1, wetted parts 316L only)	**M54**
Sealing surface RJF (groove) to ASME B16.5 (instead of sealing surface RF 125...250AA, wetted parts 316L only)	**M64**
Sealing surface with tongue to EN1092-1, form C (wetted parts 316L only)	
• DN 25	**M70**
• DN 40	**M71**
• DN 50	**M72**
• DN 80	**M73**
• DN 100	**M74**
• DN 125	**M75**
Sealing surface with spigot to EN1092-1, form E (wetted parts 316L only)	
• DN 25	**M76**
• DN 40	**M77**
• DN 50	**M78**
• DN 80	**M79**
• DN 100	**M80**
• DN 125	**M81**

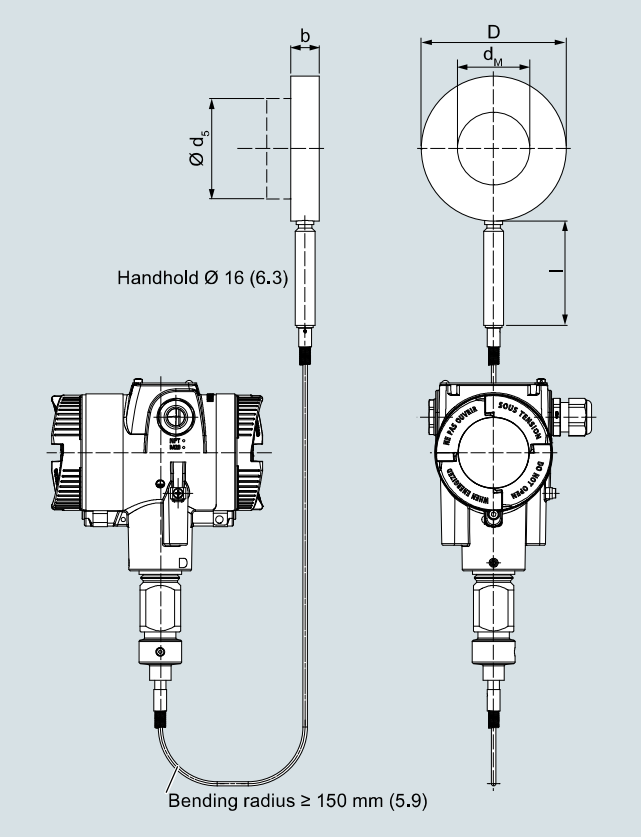
Selection and Ordering data	Order code
Further designs	
Add "**-Z**" to Article No. and specify Order code.	
Sealing surface with recess to EN1092-1, form F (wetted parts 316L only)	
• DN 25	**M82**
• DN 40	**M83**
• DN 50	**M84**
• DN 80	**M85**
• DN 100	**M86**
• DN 125	**M87**
Capillary connection (only for 7MF0800)	
Single-side mounted at differential pressure transmitters at high-side	**S03**
Single-side mounted at differential pressure transmitters at low-side	**S04**
Capillary coating	
PE protective tube	
1 m	**S10**
1,6 m	**S11**
2 m	**S12**
2,5 m	**S13**
3 m	**S14**
4 m	**S15**
5 m	**S16**
6 m	**S17**
7 m	**S18**
8 m	**S19**
9 m	**S20**
10 m	**S21**
11 m (only for 7MF0802)	**S22**
12 m (only for 7MF0802)	**S23**
13 m (only for 7MF0802)	**S24**
14 m (only for 7MF0802)	**S25**
15 m (only for 7MF0802)	**S26**
PTFE protective tube	
1 m	**S40**
1,6 m	**S41**
2 m	**S42**
2,5 m	**S43**
3 m	**S44**
4 m	**S45**
5 m	**S46**
6 m	**S47**
7 m	**S48**
8 m	**S49**
9 m	**S50**
10 m	**S51**
11 m (only for 7MF0802)	**S52**
12 m (only for 7MF0802)	**S53**
13 m (only for 7MF0802)	**S54**
14 m (only for 7MF0802)	**S55**
15 m (only for 7MF0802)	**S56**

Diaphragm seals of sandwich design with flexible capillary

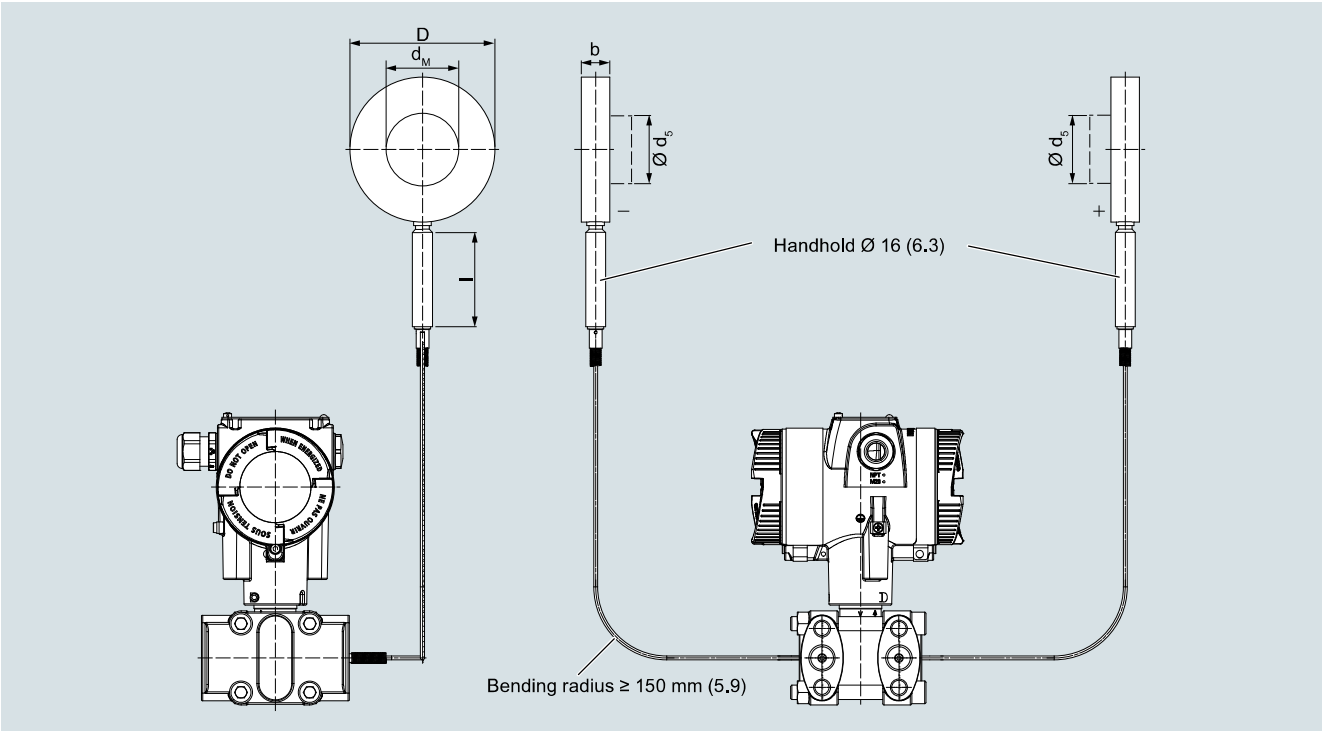
Selection and Ordering data	Order code
Further designs	
Add "**-Z**" to Article No. and specify Order code.	
PVC protective tube	
1 m	**S70**
1,6 m	**S71**
2 m	**S72**
2,5 m	**S73**
3 m	**S74**
4 m	**S75**
5 m	**S76**
6 m	**S77**
7 m	**S78**
8 m	**S79**
9 m	**S80**
10 m	**S81**
11 m (only for 7MF0802)	**S82**
12 m (only for 7MF0802)	**S83**
13 m (only for 7MF0802)	**S84**
14 m (only for 7MF0802)	**S85**
15 m (only for 7MF0802)	**S86**
Customer-specific tube length	
Customer-specific tube length (specify in plain text)	**Y44**
Specification of process conditions[1)]	
Ambient temperature range	
• -10 ... +50 °C (14 ... +122 °F) preset	**D66**
• -40 ... +50 °C (-40 ... +122 °F)	**D67**
• -10 ... +85 °C (14 ... +185 °F)	**D68**
Process temperature min. ... °C/(°F)/max. ... °C/(°F)	**Y50**

1) See also "Specification of process conditions for selection and ordering data", page 1/337.

Dimensional drawings



Diaphragm seals of sandwich design with flexible capillary for connection to SITRANS P320/420 pressure transmitters for pressure, dimensions in mm (inch)



Diaphragm seals of sandwich design (without flange) with flexible capillary for connection to SITRANS P320/420 pressure transmitters for absolute pressure or differential pressure and flow, dimensions in mm (inch)

Diaphragm seals of sandwich design with flexible capillary

Connection to EN 1092-1

Nom. diameter	Nom. pressure	b	D	d_5	d_M with tube	d_M w/o tube	l
		mm	mm	mm	mm	mm	mm
DN 25	PN 16 ... PN 400	20	68	24,5	22.6	27	100
DN 40		20	88	38	30	40	100
DN 50		20	102	48.3	40	51	100
DN 65		20	122	48,3	40	65	100
DN 80		20	138	76	65	85	100
DN 100		20	158	94	85	85	100
DN 125		22	188	125	16	116	100

Connection to ASME B16.5

Nom. diameter	Nom. pressure	b	D	d_5	d_M with tube	d_M w/o tube	l
	lb/sq.in.	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)
1 inch	150 ... 2500	20 (0.79)	51 (2.01)	24.5 (0,96)	22.6 (0.89)	30 (1.18)	100 (3.94)
1½ inch		20 (0.79)	73 ()	38 (1.5)	30 (1.18)	40 (1.57)	100 (3.94)
2 inch		20 (0.79)	100 (3.94)	48.3 (1.9)	40 (1.57)	51 (2.01)	100 (3.94)
2½ inch		20 (0.79)	105 (4.13)	48.3 (1.9)	40 (1.57)	65 (2.56)	100 (3.94)
3 inch		20 (0.79)	134 (5.28)	72 (3)	65 (2.56)	85 (3.35)	100 (3.94)
4 inch		20 (0.79)	158 (6.22)	94 (3.69)	85 (3.35)	85 (3.35)	100 (3.94)
5 inch		22 (0.87)	186 (7.32)	125 (4.92)	116 (4.57)	116 (4.57)	100 (3.94)

Connection to J.I.S.

Nom. diameter	Nom. pressure	b	D 10K, 20K	D 30K... 63K	d_5	d_M with tube	d_M w/o tube	l
		mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)
DN 25	10K ... 63K	20 (0.79)	67 (2.64)	70 (2.76)	24.5 (0.96)	22.6 (0.89)	30 (1.18)	100 (3.94)
DN 40		20 (0.79)	81 (3.19)	90 (3.54)	38 (1.5)	30 (1.18)	36 (1.42)	100 (3.94)
DN 50		20 (0.79)	96 (3.78)	105 (4.13)	48.3 (1.9)	40 (1.57)	51 (2.01)	100 (3.94)
DN 65		20 (0.79)	116 (4.57)	130 (5.12)	48.3 (1.9)	40 (1.57)	65 (2.56)	100 (3.94)
DN 80		20 (0.79)	132 (5.2)	140 (5.51)	76 (2.99)	65 (2.56)	85 (3.35)	100 (3.94)
DN 100		20 (0.79)	160 (6.3)	160 (6.3)	94 (3.69)	85 (3.35)	85 (3.35)	100 (3.94)
DN 125		20 (0.79)	195 (7.68)	195 (7.68)	125 (4.92)	116 (4.57)	116 (4.57)	100 (3.94)

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

d_M: Effective diaphragm diameter

Overview

Diaphragm seals of flange design

Technical specifications

Diaphragm seals of flange design with flexible capillary

Nominal diameter	Nominal pressure
Connecting standard EN 1092-1	
• DN 25	PN 10/16/25/40/63/100/160/250
• DN 40	PN 10/16/25/40/63/100/160
• DN 50	PN 10/16/25/40/63/100
• DN 80	PN 10/16/25/40/100
• DN 100	PN 10/16/25/40
• DN 125	PN 16/40
Connecting standard ASME B16.5	
• 1 inch	Class 150/300/600/1500
• 1½ inch	Class 150/300/400/600/900/1500
• 2 inch	Class 150/300/400/600/900/1500
• 3 inch	Class 150/300/600/1500
• 4 inch	Class 150/300/400/1500
• 5 inch	Class 150/300/400
Connecting standard J.I.S.	
• DN 50	10K
• DN 80	20K
• DN 100	40K
Sealing surface	
• For stainless steel, mat. No. 1.4404/316L	To EN 1092-1, form B1 or ASMR B16.5 RF 125 ... 250 AA
• For the other materials	To EN 1092-1, form B2 or ASME B16.5 RFSF

Materials	
• Main body	Stainless steel mat. no. 1.4404/316L
• Wetted parts	Stainless steel mat. no. 1.4404/316L • 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
• Capillary	Stainless steel, mat. No. 1.4571/316Ti
• Sheath	Spiral protective tube made of stainless steel, mat. no. 1.4404/316L
Sealing material in the process flanges	
• For pressure transmitters, absolute pressure transmitters and low-pressure applications	Copper
• For other applications	Viton
Maximum pressure	See above and the technical data of the pressure transmitter
Tube length	Without tube as standard (tube available on request)
Capillary	
• Length	Max. 10 m (32.8 ft), longer lengths on request
• Internal diameter	2 mm (0.079 inch)
• Minimum bending radius	150 mm (5.9 inch)
Filling liquid	
(for remote seals of sandwich and flange design)	Silicone oil M5 Silicone oil M50 High-temperature oil Halocarbon oil (for measuring O_2) Food oil (FDA listed)
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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Diaphragm seals of flange design with flexible capillary

Selection and Ordering data	Article No.	Order code
Diaphragm seal		
Flange type design, with flexible capillary tube, connected with flexible capillary tube to a		
• SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure service), 7MF03../7MF04.. order separately Scope of delivery: 1 off ↗	7MF0810-	
• SITRANS P320/P420 transmitter for absolute pressure from differential pressure, 7MF03../7MF04.. order separately, Scope of delivery: 1 off ↗	7MF0811-	
• SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately, Scope of delivery: 2 off ↗	7MF0812-	
	■■■■■-0■■	■■■
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Nominal diameter **Nominal pressure**		
Connecting standard EN 1092-1		
(DN 25, DN 40 and DN 50 recommended only for pressure transmitters)		
DN 25 PN 10/16/25/40	0BD	
PN 63/100	0BF	
PN 160	0BG	
PN 250	0BH	
DN 40 PN 10/16/25/40	0DD	
PN 63/100	0DF	
PN 160	0DG	
DN 50 PN 10/16/25/40	0ED	
PN 63	0EE	
PN 100	0EF	
DN 80 PN 10/16/25/40	0GD	
PN 100	0GF	
DN 100 PN 10/16	0HB	
PN 25/40	0HD	
DN 125 PN 16	0JB	
PN 40	0JD	
Connecting standard ASME B16.5		
(1 inch, 1½ inch and 2 inch recommended only for pressure transmitters)		
1 inch class 150	1KL	
class 300	1KM	
class 600	1KN	
class 1500	1KP	
1½ inch class 150	1LA	
class 300	1LB	
class 400/600	1LD	
class 900/1500	1LF	
2 inch class 150	1MA	
class 300	1MB	
class 400/600	1MD	
class 900/1500	1MF	
3 inch class 150	1PA	
class 300	1PB	
class 600	1PD	
class 1500	1PF	
4 inch class 150	1QA	
class 300	1QB	
class 400	1QC	
class 1500	1QF	
5 inch class 150	1RA	
class 300	1RB	
class 400	1RC	

Selection and Ordering data	Article No.	Order code
Diaphragm seal		
Flange type design, with flexible capillary tube, connected with flexible capillary tube to a		
• SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure service), 7MF03../7MF04.. order separately Scope of delivery: 1 off	7MF0810-	
• SITRANS P320/P420 transmitter for absolute pressure from differential pressure, 7MF03../7MF04.. order separately, Scope of delivery: 1 off	7MF0811-	
• SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately, Scope of delivery: 2 off	7MF0812-	
	■■■■■-0■■	■■■
Connecting standard J.I.S.		
(DN 50 recommended only for pressure transmitters)		
DN 50 10 K	2ES	
20 K	2ET	
40 K	2EU	
DN 80 10 K	2GS	
20 K	2GT	
40 K	2GU	
DN 100 10 K	2HS	
20 K	2HT	
40 K	2HU	
Other version Add Order code and plain text	9AA	H1Y
Transmitter connection		
Connection via capillary tube Length of capillary		
1 m	10	
1,6 m	11	
2 m	12	
2,5 m	13	
3 m	14	
4 m	15	
5 m	16	
6 m	17	
7 m	18	
8 m	20	
9 m	21	
10 m	22	
11 m (only for 7MF0812)	23	
12 m (only for 7MF0812)	24	
13 m (only for 7MF0812)	25	
14 m (only for 7MF0812)	26	
15 m (only for 7MF0812)	27	
Other version Add Order code and plain text	98	L1Y
Filling liquid		
Silicone oil M50	B	
High-temperature oil	C	
Silicone oil M5	A	
Food-grade oil (FDA listed)	E	
Halocarbon oil	D	
Other version Add Order code and plain text	Z	P1Y

Selection and Ordering data	Article No.	Order code
Diaphragm seal		
Flange type design, with flexible capillary tube, connected with flexible capillary tube to a		
• SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure service), 7MF03../7MF04.. order separately Scope of delivery: 1 off	**7MF0810-**	
• SITRANS P320/P420 transmitter for absolute pressure from differential pressure, 7MF03../7MF04.. order separately, Scope of delivery: 1 off	**7MF0811-**	
• SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately, Scope of delivery: 2 off	**7MF0812-**	
	-0	
Wetted parts materials		
Stainless steel 316L		
• Without coating		**A**
• With PFA coating		**D**
• With PTFE coating		**E 0**
• With ECTFE coating		**F**
Monel 400, 2.4360		**G**
Hastelloy C276, 2.4819		**J**
Tantalum		**K**
Titanium, 3.7035		**L 0**
Nickel 201		**M 0**
Diaphragm Duplex, 1.4462		**Q**
Diaphragm plus flange Duplex, 1.4462		**R**
Stainless steel 316L with gold coating		**S 0**
Hastelloy C4, 2.4610		**U 0**
Hastelloy C22, 2.4602		**V 0**
Other version Add Order code and plain text		**Z 8 Q 1 Y**
Extension length		
• without		**0**
• 50 mm (2")		**1**
• 100 mm (4")		**2**
• 150 mm (6")		**3**
• 200 mm (8")		**4**
• 250 mm (10")		**5**
Other version Add Order code and plain text		**Z 8 Q 1 Y**
Customer-specific extension length		
• Wetted parts stainless steel without coating		
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 stainless steel with ECTFE coating		
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 stainless steel with PFA coating		
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 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 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**

1

Diaphragm seals of flange design with flexible capillary

Selection and Ordering data	Article No.	Order code
Diaphragm seal		
Flange type design, with flexible capillary tube, connected with flexible capillary tube to a		
• SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure service), 7MF03../7MF04.. order separately Scope of delivery: 1 off	**7MF0810-**	
• SITRANS P320/P420 transmitter for absolute pressure from differential pressure, 7MF03../7MF04.. order separately, Scope of delivery: 1 off	**7MF0811-**	
• SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately, Scope of delivery: 2 off	**7MF0812-**	
	-0	
• Wetted parts 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	Order code
Further designs	
Add "**-Z**" to Article No. and specify Order code.	
Factory certificates	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	**C11**
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	**C12**
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009) (only together with seal diaphragm made of Hastelloy and stainless steel)	**C13**
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	**C15**
Certificate of FDA-approved fill oil (to EN10204-2.2)	**C17**
Factory certificate functional safety (SIL2/3), devices suitable for use according to IEC 61508 and IEC 61511 (includes SIL conformity declaration)	**C20**
Accessories	
Spark arrestor (for gauge and absolute pressure transmitters)	**D61**
Spark arrestor (for differential pressure and flow transmitters)	**D62**
Low-temperature version (for Silicon Oil M50 only)	**D67**
Negative pressure services	
Negative pressure service (for gauge and absolute pressure transmitters) (only for 7MF0810)	**D81**
Negative pressure service (for differential pressure transmitters)	**D83**
Extended negative pressure service (for gauge and absolute pressure transmitters) (only for 7MF0810)	**D85**
Extended negative pressure service (for differential pressure transmitters)	**D88**
General product approvals without explosion proof approvals	
Oil-and grease-free cleaned version (for O_2-appl. including certificate EN10204-2.2 (only with fill fluid Halocarbon oil max. temperature 60 °C and max. pressure 50 bar)	**E80**
Oil-and grease-free cleaned version (not for O_2-appl. including certificate EN10204-2.2 (only with fill fluid Halocarbon oil)	**E87**
Sealing surface	
Sealing surface smooth, form B2/EN1092-1 resp. RFSF/ANSI B16.5 (wetted parts 316L only)	**M50**
Sealing surface groove to EN1092-1, form D (instead of sealing surface B1, wetted parts 316L only)	**M54**
Sealing surface RJF (groove) to ASME B16.5 (instead of sealing surface RF 125...250AA, wetted parts 316L only)	**M64**
Sealing surface with tongue to EN1092-1, form C (wetted parts 316L only)	
• DN 25	**M70**
• DN 40	**M71**
• DN 50	**M72**
• DN 80	**M73**
• DN 100	**M74**
• DN 125	**M75**
Sealing surface with spigot to EN1092-1, form E (wetted parts 316L only)	
• DN 25	**M76**
• DN 40	**M77**
• DN 50	**M78**
• DN 80	**M79**
• DN 100	**M80**
• DN 125	**M81**

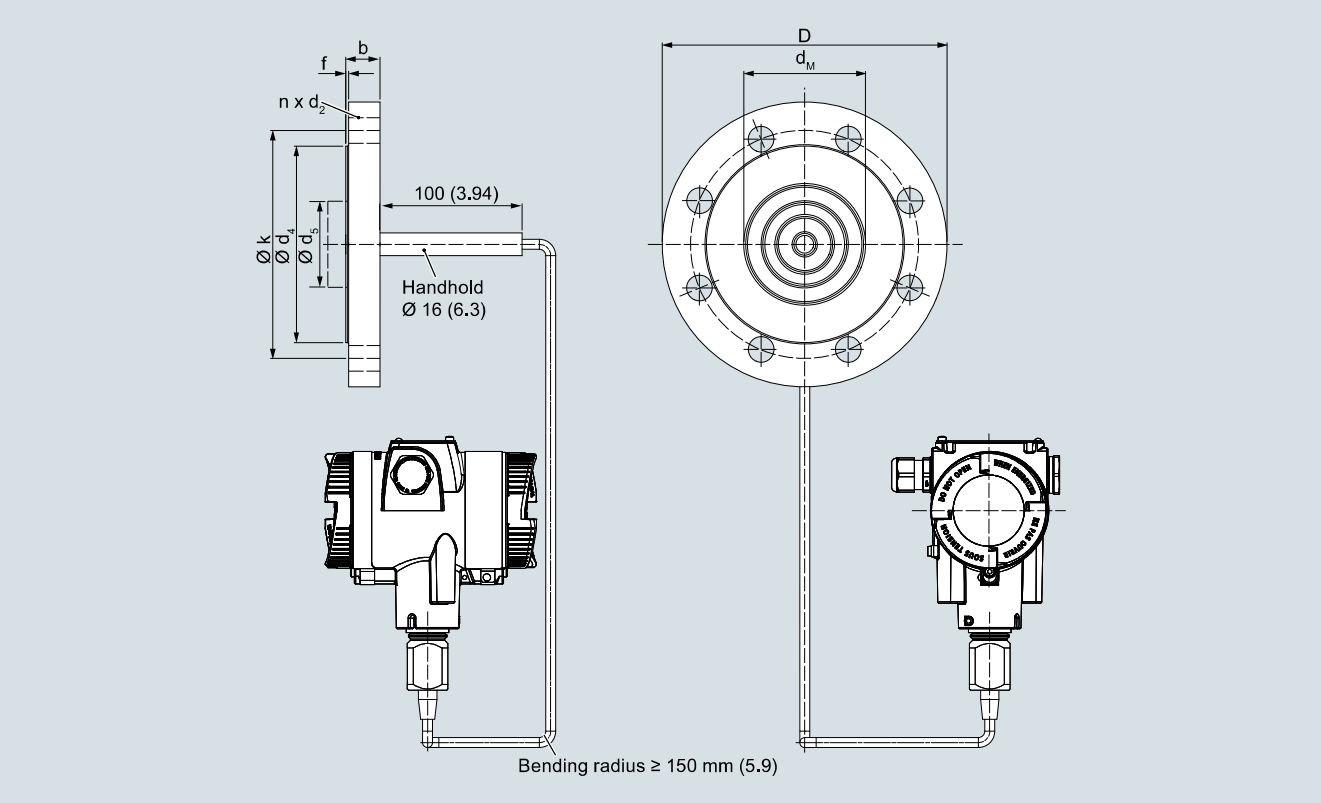
Selection and Ordering data	Order code
Further designs	
Add "**-Z**" to Article No. and specify Order code.	
Sealing surface with recess to EN1092-1, form F (wetted parts 316L only)	
• DN 25	**M82**
• DN 40	**M83**
• DN 50	**M84**
• DN 80	**M85**
• DN 100	**M86**
• DN 125	**M87**
Capillary connection	
For 7MF0810	
Radial capillary pipe outlet (for single-side mounting and capillary connection only)	**S01**
Single-side mounted at differential pressure transmitters at high-side	**S03**
Single-side mounted at differential pressure transmitters at low-side	**S04**
For 7MF0811	
Radial capillary pipe outlet (for single-side mounting and capillary connection only)	**S01**
For 7MF0812	
Radial capillary pipe outlet (for double-side mounting)	**S02**
Capillary coating	
PE protective tube	
1 m	**S10**
1,6 m	**S11**
2 m	**S12**
2,5 m	**S13**
3 m	**S14**
4 m	**S15**
5 m	**S16**
6 m	**S17**
7 m	**S18**
8 m	**S19**
9 m	**S20**
10 m	**S21**
11 m (only for 7MF0802)	**S22**
12 m (only for 7MF0802)	**S23**
13 m (only for 7MF0802)	**S24**
14 m (only for 7MF0802)	**S25**
15 m (only for 7MF0802)	**S26**
PTFE protective tube	
1 m	**S40**
1,6 m	**S41**
2 m	**S42**
2,5 m	**S43**
3 m	**S44**
4 m	**S45**
5 m	**S46**
6 m	**S47**
7 m	**S48**
8 m	**S49**
9 m	**S50**
10 m	**S51**
11 m (only for 7MF0802)	**S52**
12 m (only for 7MF0802)	**S53**
13 m (only for 7MF0802)	**S54**
14 m (only for 7MF0802)	**S55**
15 m (only for 7MF0802)	**S56**

Selection and Ordering data	Order code
Further designs	
Add "**-Z**" to Article No. and specify Order code.	
PVC protective tube	
1 m	**S70**
1,6 m	**S71**
2 m	**S72**
2,5 m	**S73**
3 m	**S74**
4 m	**S75**
5 m	**S76**
6 m	**S77**
7 m	**S78**
8 m	**S79**
9 m	**S80**
10 m	**S81**
11 m (only for 7MF0802)	**S82**
12 m (only for 7MF0802)	**S83**
13 m (only for 7MF0802)	**S84**
14 m (only for 7MF0802)	**S85**
15 m (only for 7MF0802)	**S86**
Customer-specific tube length	
Customer-specific tube length (specify in plain text)	**Y44**
Specification of process conditions[1)]	
Ambient temperature range	
• -10 ... +50 °C (14 ... +122 °F) preset	**D66**
• -40 ... +50 °C (-40 ... +122 °F)	**D67**
• -10 ... +85 °C (14 ... +185 °F)	**D68**
Process temperature min. ... °C/(°F)/max. ... °C/(°F)	**Y50**

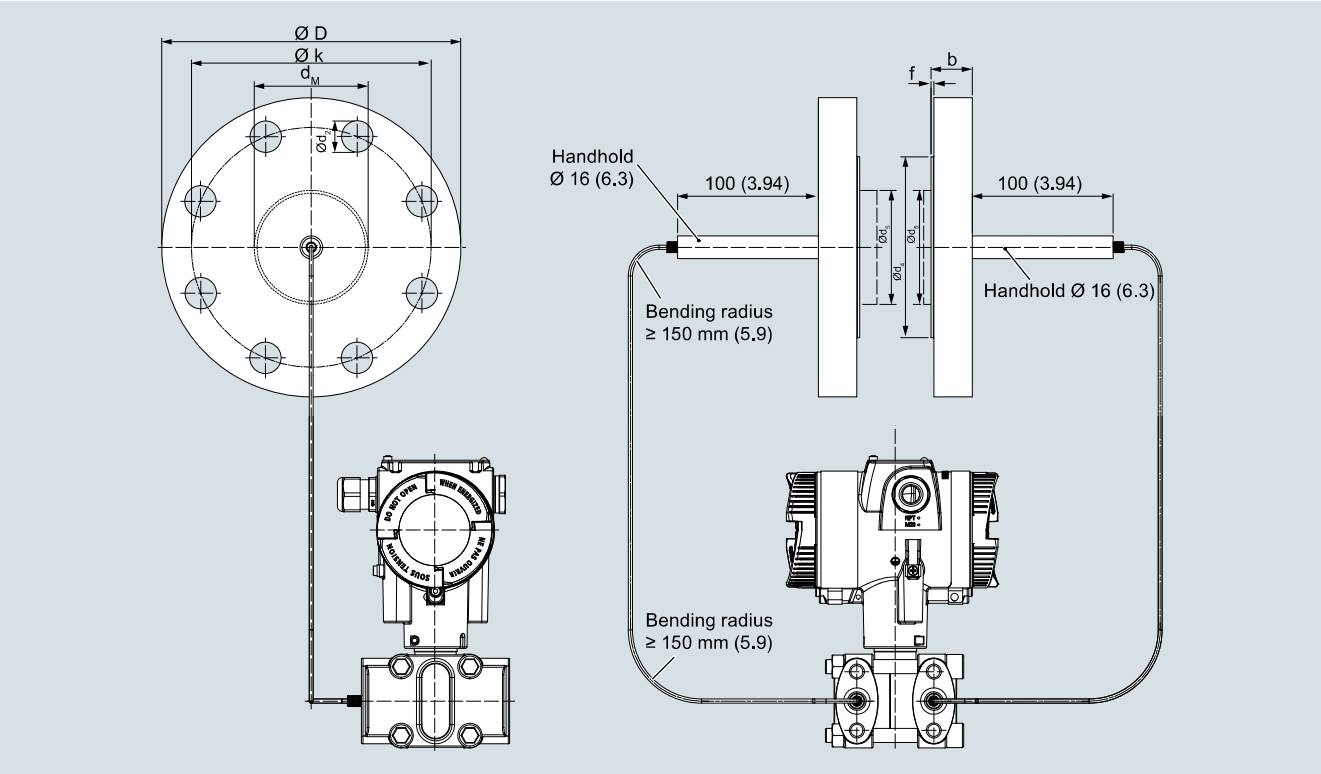
1) See also "Specification of process conditions for selection and ordering data", page 1/337.

Diaphragm seals of flange design with flexible capillary

Dimensional drawings



Diaphragm seals of flange design with flexible capillary for connection to SITRANS P320/420 pressure transmitters for pressure, dimensions in mm (inch)



Diaphragm seals of flange design with flexible capillary for connection to SITRANS P320/420 pressure transmitters for absolute pressure or for differential pressure and flow, dimensions in mm (inch)

Connection to EN 1092-1

Nominal diameter	Nominal pressure	b	D	d_2	d_4	d_5	d_M with extension	d_M without extension	f	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
DN 25	PN 10/16/25/40	18	115	14	68	24.5	22.6	27	2	85	4	0, 50, 100, 150 oder 200
	PN 63/100	24	140	18	68	24.5	22.6	27	2	100	4	
	PN 160	24	140	18	68	24.5	22.6	27	2	100	4	0, 50, 100, 150 oder 200
	PN 250	28	150	22	68	24.5	22.6	27	2	105	4	
DN 40	PN 10/16/25/40	16	150	18	88	38	30	42	2	110	4	
	PN 63/100	24	170	22	88	38	30	42	2	125	4	
	PN 160	26	170	22	88	38	30	42	2	125	4	
DN 50	PN 10/16/25/40	18	165	18	102	48.3	40	51	2	125	4	
	PN 63/100	26	195	26	102	48.3	40	51	2	145	4	
	PN 160	28	195	26	102	48.3	40	51	2	145	4	
DN 80	PN 10/16/25/40	22	200	18	138	76	65	85	2	160	8	
	PN 100	30	230	26	138	76	65	85	2	180	8	
DN 100	PN 10/16	18	220	18	158	94	85	85	2	180	8	
	PN 25/40	22	235	22	162	94	85	85	2	190	8	
DN 125	PN 16	20	250	18	188	127	85	116	2	210	8	
	PN 40	24	270	26	188	127	85	116	2	220	8	

Connection to ASME B16.5

Nominal diameter	Nominal pressure	b	D	d_2	d_4	d_5	d_M with extension	d_M without extension	f	k	n	L
	lb./sq.in	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)		inch (mm
1 inch	150	0.71 (18)	4.33 (110)	0.61 (15.6)	2 (50.8)	0.96 (24.5)	0.89 (22.6)	1.18 (30)	0.08 (2)	3.13 (79.4)	4	0, 2, 3.94, 5.94 oder 7.87 (0, 50, 100, 150 oder 200)
	300	0.77 (19.5)	4.92 (125)	0.75 (19.1)	2 (50.8)	0.96 (24.5)	0.89 (22.6)	1.18 (30)	0.08 (2)	3.5 (88.9)	4	
	600	0.96 (24.5)	4.92 (125)	0.75 (19.1)	2 (50.8)	0.96 (24.5)	0.89 (22.6)	1.18 (30)	0.28 (7)	3.5 (88.9)	4	
	1500	1.4 (35.6)	5.91 (150)	1 (25.4)	2 (50.8)	0.96 (24.5)	0.89 (22.6)	1.18 (30)	0.28 (7)	4 (101.6)	4	
1½ inch	150	0.63 (15.9)	4.92 (125)	0.63 (15.9)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.08 (2)	3.87 (98.4)	4	
	300	0.75 (19.1)	6.10 (155)	0.87 (22.2)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.08 (2)	4.5 (114.3)	4	
	400/600	0.88 (22.3)	6.10 (155)	0.87 (22.2)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.28 (7)	4.5 (114.3)	4	
	900/1500	1.25 (31.8)	7.09 (180)	1.13 (28.6)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.28 (7)	4.87 (123.8)	4	
2 inch	150	0.69 (17.5)	5.91 (150)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.08 (2)	4.75 (120.7)	4	
	300	0.81 (20.7)	6.5 (165)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.08 (2)	5 (127)	8	
	400/600	1.00 (25.4)	6.5 (165)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.28 (7)	5 (127)	8	
	900/1500	1.5 (38.1)	8.46 (215)	1.00 (25.4)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.28 (7)	6.5 (165.1)	8	
3 inch	150	0.88 (22.3)	7.48 (190)	0.75 (19.1)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.08 (2)	6 (152.4)	4	
	300	1.06 (27)	8.27 (210)	0.87 (22.2)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.08 (2)	6.63 (168.3)	8	
	600	1.23 (31.8)	8.27 (210)	0.87 (22.2)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.28 (7)	6.63 (168.3)	8	
	1500	1.88 (47.7)	10.43 (265)	1.25 (31.8)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.28 (7)	8 (203.2)	8	
4 inch	150	0.88 (22.3)	9.06 (230)	0.75 (19.1)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.08 (2)	7.5 (190.5)	8	
	300	1.19 (30.2)	10.04 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.08 (2)	7.87 (200)	8	
	400	1.38 (35)	10.04 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.28 (7)	7.87 (200)	8	
	1500	2.13 (54)	12.20 (310)	1.37 (34.9)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.28 (7)	9.5 (241.3)	8	
5 inch	150	0.88 (22.3)	10.04 (255)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.08 (2)	8.5 (215.9)	8	
	300	1.31 (33.4)	11.02 (280)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.08 (2)	9.25 (235)	8	
	400	1.50 (38.1)	11.02 (280)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.28 (7)	9.25 (235)	8	

Diaphragm seals of flange design with flexible capillary

Connection to J.I.S

Nominal diameter	Nominal pressure	b	D	d_2	d_4	d_5	d_M with extension	d_M without extension	f	k	n	L
		mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)		mm (inch)
DN 50	10K	14 (0.55)	155 (6.10)	19 (0.75)	96 (3.78)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	120 (4.72)	4	0, 50, 100, 150 oder 200 (0, 2, 3.94, 5.94 oder 7.87)
	20K	16 (0,63)	165 (6.50)	19 (0.75)	96 (3.78)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	120 (4.72)	8	
	40K	26 (1.02)	165 (6.50)	19 (0.75)	105 (4.13)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	130 (5.12)	8	
DN 80	10K	16 (0.63)	185 (7.28)	19 (0.75)	126 (4.96)	76 (2.99)	65 (2.56)	85 (3.35)	2	150 (5.91)	8	
	20K	20 (0.79)	200 (7.87)	23 (0.91)	132 (5.20)	76 (2.99)	65 (2.56)	85 (3.35)	2	160 (6.30)	8	
	40K	32 (1.26)	210 (8.27)	23 (0.91)	140 (5.51)	76 (2.99)	65 (2.56)	85 (3.35)	2	170 (6.30)	8	
DN 100	10K	16 (0.63)	210 (8.27)	19 (0.75)	151 (5.94)	94 (3.7)	85 (3.35)	85 (3.35)	2	175 (6.89)	8	
	20K	22 (0.87)	225 (8.86)	23 (0.91)	160 (6.30)	94 (3.7)	85 (3.35)	85 (3.35)	2	185 (7.28)	8	
	40K	36 (1.42)	250 (9.84)	25 (0.98)	165 (6.50)	94 (3.7)	85 (3.35)	85 (3.35)	2	205 (8.07)	8	

d: Internal diameter of gasket to DIN 2690
d_M: Effective diaphragm diameter

Overview

Diaphragm seals of flange design, directly fitted on a pressure transmitter for pressure

Technical specifications

Diaphragm seals (flange design) for pressure and absolute pressure, directly fitted on a transmitter

Nominal diameter	Nominal pressure
Connecting standard EN 1092-1	
• DN 25	PN 10/16/25/40/63/100/160/250
• DN 40	PN 10/16/25/40/63/100/160
• DN 50	PN 10/16/25/40/63/100
• DN 80	PN 10/16/25/40/100
• DN 100	PN 10/16/25/40
• DN 125	PN 16/40
Connecting standard ASME B16.5	
• 1 inch	Class 150/300/600/1500
• 1½ inch	Class 150/300/400/600/900/1500
• 2 inch	Class 150/300/400/600/900/1500
• 3 inch	Class 150/300/600/1500
• 4 inch	Class 150/300/400/1500
• 5 inch	Class 150/300/400
Connecting standard J.I.S.	
• DN 50	10K
• DN 80	20K
• DN 100	40K
Sealing surface	
• For stainless steel, mat. No. 1.4404/316L	To EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA
• For the other materials	Smooth to EN 1092-1, form B2 or ASME B16.5 RFSF

Materials	
• Main body	Stainless steel, 1.4404/316L
• Wetted parts	Stainless steel, 1.4404/316L • 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, mat No. 2.4602 Tantalum Titanium, mat. No. 3.7035 Nickel 201 Duplex 2205, mat. no. 1.4462 Stainless steel 316L, gold plated, thickness approx. 25 µm
• Capillary	Stainless steel, 1.4404/316L
• Sealing material at the transmitter connection	Copper
Maximum pressure	See above and the technical data of the 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	
• Length	Max. 10 m (32.8 ft), longer lengths on request
• 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 (for measuring O_2) • Food oil (FDA listed)
Max. recommended temperature of medium	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)

1

Diaphragm seals of flange design mounted directly on transmitter

Selection and Ordering data	Article No.	Order code
Diaphragm seal		
Flange type design, directly mounted to a		
• SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure service), 7MF03../7MF04.. order separately Scope of delivery: 1 off	7MF0810-	
	-0	
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Nominal diameter **Nominal pressure**		
Connecting standard EN 1092-1		
DN 25 PN 10/16/25/40	0BD	
PN 63/100	0BF	
PN 160	0BG	
PN 250	0BH	
DN 40 PN 10/16/25/40	0DD	
PN 63/100	0DF	
PN 160	0DG	
DN 50 PN 10/16/25/40	0ED	
PN 63	0EE	
PN 100	0EF	
DN 80 PN 10/16/25/40	0GD	
PN 100	0GF	
DN 100 PN 10/16	0HB	
PN 25/40	0HD	
DN 125 PN 16	0JB	
PN 40	0JD	
Connecting standard ASME B16.5		
1 inch class 150	1KL	
class 300	1KM	
class 600	1KN	
class 1500	1KP	
1½ inch class 150	1LA	
class 300	1LB	
class 400/600	1LD	
class 900/1500	1LF	
2 inch class 150	1MA	
class 300	1MB	
class 400/600	1MD	
class 900/1500	1MF	
3 inch class 150	1PA	
class 300	1PB	
class 600	1PD	
class 1500	1PF	
4 inch class 150	1QA	
class 300	1QB	
class 400	1QC	
class 1500	1QF	
5 inch class 150	1RA	
class 300	1RB	
class 400	1RC	
Connecting standard J.I.S.		
DN 50 10K	2ES	
20K	2ET	
40K	2EU	
DN 80 10K	2GS	
20K	2GT	
40K	2GU	
DN 100 10K	2HS	
20K	2HT	
40K	2HU	
Other version Add Order code and plain text	9AA	H1Y

Selection and Ordering data	Article No.	Order code
Diaphragm seal		
Flange type design, directly mounted to a		
• SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure service), 7MF03../7MF04.. order separately Scope of delivery: 1 off	7MF0810-	
	-0	
Transmitter connection		
Without capillary tube, direct mount straight connection (for gauge pressure)	00	
Without capillary tube, direct mount connection via 90°-bow (for gauge pressure)	01	
Filling liquid		
Silicone oil M50	B	
High-temperature oil	C	
Silicone oil M5	A	
Food-grade oil (FDA listed)	E	
Halocarbon oil	D	
Other version Add Order code and plain text	Z	P1Y
Wetted parts materials		
Stainless steel 316L		
• Without coating	A	
• With PFA coating	D	
• With PTFE coating	E0	
• With ECTFE coating	F	
Monel 400, 2.4360	G	
Hastelloy C276, 2.4819	J	
Tantalum	K	
Titanium, 3.7035	L0	
Nickel 201	M0	
Diaphragm Duplex, 1.4462	Q	
Diaphragm plus flange Duplex, 1.4462	R	
Stainless steel 316L with gold coating	S0	
Hastelloy C4, 2.4610	U0	
Hastelloy C22, 2.4602	V0	
Other version Add Order code and plain text	Z8	Q1Y
Extension length		
• without	0	
• 50 mm (2")	1	
• 100 mm (4")	2	
• 150 mm (6")	3	
• 200 mm (8")	4	
• 250 mm (10")	5	
Other version Add Order code and plain text	Z8	Q1Y

Selection and Ordering data	Article No.	Order code
Diaphragm seal		
Flange type design, directly mounted to a		
• SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure service), 7MF03../7MF04.. order separately Scope of delivery: 1 off	**7MF0810-**	
	- 0	
Customer-specific extension length		
• Wetted parts stainless steel without coating		
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 stainless steel with ECTFE coating		
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 stainless steel with PFA coating		
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 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**

Selection and Ordering data	Article No.	Order code
Diaphragm seal		
Flange type design, directly mounted to a		
• SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure service), 7MF03../7MF04.. order separately Scope of delivery: 1 off	**7MF0810-**	
	- 0	
• Wetted parts 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 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**

1

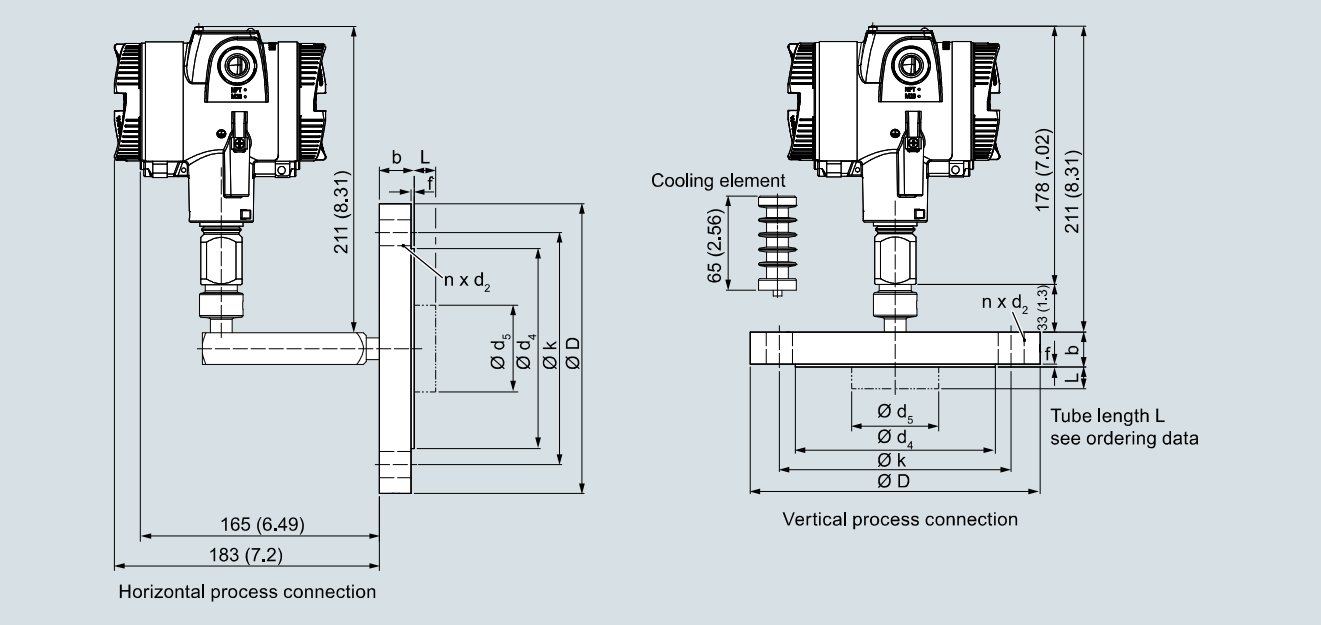
Diaphragm seals of flange design mounted directly on transmitter

Selection and Ordering data	Order code
Further designs	
Add "**-Z**" to Article No. and specify Order code.	
Factory certificates	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	**C11**
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	**C12**
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009) (only together with seal diaphragm made of Hastelloy and stainless steel)	**C13**
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	**C15**
Certificate of FDA-approved fill oil (to EN10204-2.2)	**C17**
Factory certificate functional safety (SIL2/3), devices suitable for use according to IEC 61508 and IEC 61511 (includes SIL conformity declaration)	**C20**
Accessories	
Spark arrestor (for gauge and absolute pressure transmitters)	**D61**
Low-temperature version (for Silicon Oil M50 only)	**D67**
Negative pressure services	
Negative pressure service (for gauge and absolute pressure transmitters)	**D81**
Extended negative pressure service (for gauge and absolute pressure transmitters) (only for 7MF0810)	**D85**
General product approvals without explosion proof approvals	
Oil-and grease-free cleaned version (for O_2-appl. including certificate EN10204-2.2 (only with fill fluid Halocarbon oil max. temperature 60 °C and max. pressure 50 bar)	**E80**
Oil-and grease-free cleaned version (not for O_2-appl. including certificate EN10204-2.2 (only with fill fluid Halocarbon oil)	**E87**
Sealing surface	
Sealing surface smooth, form B2/EN1092-1 resp. RFSF/ANSI B16.5 (wetted parts 316L only)	**M50**
Sealing surface groove to EN1092-1, form D (instead of sealing surface B1, wetted parts 316L only)	**M54**
Sealing surface RJF (groove) to ASME B16.5 (instead of sealing surface RF 125...250AA, wetted parts 316L only)	**M64**
Sealing surface with tongue to EN1092-1, form C (wetted parts 316L only)	
• DN 25	**M70**
• DN 40	**M71**
• DN 50	**M72**
• DN 80	**M73**
• DN 100	**M74**
• DN 125	**M75**
Sealing surface with spigot to EN1092-1, form E (wetted parts 316L only)	
• DN 25	**M76**
• DN 40	**M77**
• DN 50	**M78**
• DN 80	**M79**
• DN 100	**M80**
• DN 125	**M81**

Selection and Ordering data	Order code
Further designs	
Add "**-Z**" to Article No. and specify Order code.	
Sealing surface with recess to EN1092-1, form F (wetted parts 316L only)	
• DN 25	**M82**
• DN 40	**M83**
• DN 50	**M84**
• DN 80	**M85**
• DN 100	**M86**
• DN 125	**M87**
Capillary connection	
Elongated pipe, 150 mm instead of 100 mm, max. medium temperature 300 °C (572 °F), observe the max. permissible media temperature of the fill liquid.	**S05**
Elongated pipe, 200 mm instead of 100 mm, max. medium temperature 300 °C (572 °F), observe the max. permissible media temperature of the fill liquid.	**S06**
Elongated pipe elbow, 200 mm instead of 130 mm, max. medium temperature 300 °C (572 °F), observe the max. permissible media temperature of the fill liquid.	**S07**
Cooling element, max. medium temperature 300 °C (572 °F), observe the max. permissible media temperature of the fill liquid.	**S08**
Customer-specific tube length	
Customer-specific tube length (specify in plain text)	**Y44**
Specification of process conditions[1)]	
Ambient temperature range	
• -10 ... +50 °C (14 ... +122 °F) preset	**D66**
• -40 ... +50 °C (-40 ... +122 °F)	**D67**
• -10 ... +85 °C (14 ... +185 °F)	**D68**
Process temperature min. ... °C/(°F)/max. ... °C/(°F)	**Y50**

1) See also "Specification of process conditions for selection and ordering data", page 1/337.

Dimensional drawings



Diaphragm seals of flange design, direct connection to a SITRANS P320/420 pressure transmitter (process connection vertical (top) and horizontal (bottom)), dimensions in mm (inch)

1

Diaphragm seals of flange design mounted directly on transmitter

Connection to EN 1092-1

Nominal diameter	Nominal pressure	b	D	d_2	d_4	d_5	d_M with extension	d_M without extension	f	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
DN 25	PN 10/16/25/40	18	115	14	68	24.5	22.6	27	2	85	4	0, 50, 100, 150 oder 200
	PN 63/100	24	140	18	68	24.5	22.6	27	2	100	4	
	PN 160	24	140	18	68	24.5	22.6	27	2	100	4	
	PN 250	28	150	22	68	24.5	22.6	27	2	105	4	
DN 40	PN 10/16/25/40	16	150	18	88	38	30	42	2	110	4	
	PN 63/100	24	170	22	88	38	30	42	2	125	4	
	PN 160	26	170	22	88	38	30	42	2	125	4	
DN 50	PN 10/16/25/40	18	165	18	102	48.3	40	51	2	125	4	
	PN 63/100	26	195	26	102	48.3	40	51	2	145	4	
	PN 160	28	195	26	102	48.3	40	51	2	145	4	
DN 80	PN 10/16/25/40	22	200	18	138	76	65	85	2	160	8	
	PN 100	30	230	26	138	76	65	85	2	180	8	
DN 100	PN 10/16	18	220	18	158	94	85	85	2	180	8	
	PN 25/40	22	235	22	162	94	85	85	2	190	8	
DN 125	PN 16	20	250	18	188	127	85	116	2	210	8	
	PN 40	24	270	26	188	127	85	116	2	220	8	

Connection to ASME B16.5

Nominal diameter	Nominal pressure	b	D	d_2	d_4	d_5	d_M with extension	d_M without extension	f	k	n	L
	lb./sq.in	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)		inch (mm)
1 inch	150	0.71 (18)	4.33 (110)	0.61 (15.6)	2 (50.8)	0.96 (24.5)	0.89 (22.6)	1.18 (30)	0.08 (2)	3.13 (79.4)	4	0, 2, 3.94, 5.94 oder 7.87 (0, 50, 100, 150 oder 200)
	300	0.77 (19.5)	4.92 (125)	0.75 (19.1)	2 (50.8)	0.96 (24.5)	0.89 (22.6)	1.18 (30)	0.08 (2)	3.5 (88.9)	4	
	600	0.96 (24.5)	4.92 (125)	0.75 (19.1)	2 (50.8)	0.96 (24.5)	0.89 (22.6)	1.18 (30)	0.28 (7)	3.5 (88.9)	4	
	1500	1.4 (35.6)	5.91 (150)	1 (25.4)	2 (50.8)	0.96 (24.5)	0.89 (22.6)	1.18 (30)	0.28 (7)	4 (101.6)	4	
1½ inch	150	0.63 (15.9)	4.92 (125)	0.63 (15.9)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.08 (2)	3.87 (98.4)	4	
	300	0.75 (19.1)	6.10 (155)	0.87 (22.2)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.08 (2)	4.5 (114.3)	4	
	400/600	0.88 (22.3)	6.10 (155)	0.87 (22.2)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.28 (7)	4.5 (114.3)	4	
	900/1500	1.25 (31.8)	7.09 (180)	1.13 (28.6)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.28 (7)	4.87 (123.8)	4	
2 inch	150	0.69 (17.5)	5.91 (150)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.08 (2)	4.75 (120.7)	4	
	300	0.81 (20.7)	6.5 (165)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.08 (2)	5 (127)	8	
	400/600	1.00 (25.4)	6.5 (165)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.28 (7)	5 (127)	8	
	900/1500	1.5 (38.1)	8.46 (215)	1.00 (25.4)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.28 (7)	6.5 (165.1)	8	
3 inch	150	0.88 (22.3)	7.48 (190)	0.75 (19.1)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.08 (2)	6 (152.4)	4	
	300	1.06 (27)	8.27 (210)	0.87 (22.2)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.08 (2)	6.63 (168.3)	8	
	600	1.23 (31.8)	8.27 (210)	0.87 (22.2)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.28 (7)	6.63 (168.3)	8	
	1500	1.88 (47.7)	10.43 (265)	1.25 (31.8)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.28 (7)	8 (203.2)	8	
4 inch	150	0.88 (22.3)	9.06 (230)	0.75 (19.1)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.08 (2)	7.5 (190.5)	8	
	300	1.19 (30.2)	10.04 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.08 (2)	7.87 (200)	8	
	400	1.38 (35)	10.04 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.28 (7)	7.87 (200)	8	
	1500	2.13 (54)	12.20 (310)	1.37 (34.9)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.28 (7)	9.5 (241.3)	8	
5 inch	150	0.88 (22.3)	10.04 (255)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.08 (2)	8.5 (215.9)	8	
	300	1.31 (33.4)	11.02 (280)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.08 (2)	9.25 (235)	8	
	400	1.50 (38.1)	11.02 (280)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.28 (7)	9.25 (235)	8	

Connection to J.I.S

Nominal diameter	Nominal pressure	b	D	d_2	d_4	d_5	d_M with extension	d_M without extension	f	k	n	L
		mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)		mm (inch)
DN 50	10K	14 (0.55)	155 (6.10)	19 (0.75)	96 (3.78)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	120 (4.72)	4	0, 50, 100, 150 oder 200 (0, 2, 3.94, 5.94 oder 7.87)
	20K	16 (0,63)	165 (6.50)	19 (0.75)	96 (3.78)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	120 (4.72)	8	
	40K	26 (1.02)	165 (6.50)	19 (0.75)	105 (4.13)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	130 (5.12)	8	
DN 80	10K	16 (0.63)	185 (7.28)	19 (0.75)	126 (4.96)	76 (2.99)	65 (2.56)	85 (3.35)	2	150 (5.91)	8	
	20K	20 (0.79)	200 (7.87)	23 (0.91)	132 (5.20)	76 (2.99)	65 (2.56)	85 (3.35)	2	160 (6.30)	8	
	40K	32 (1.26)	210 (8.27)	23 (0.91)	140 (5.51)	76 (2.99)	65 (2.56)	85 (3.35)	2	170 (6.30)	8	
DN 100	10K	16 (0.63)	210 (8.27)	19 (0.75)	151 (5.94)	94 (3.7)	85 (3.35)	85 (3.35)	2	175 (6.89)	8	
	20K	22 (0.87)	225 (8.86)	23 (0.91)	160 (6.30)	94 (3.7)	85 (3.35)	85 (3.35)	2	185 (7.28)	8	
	40K	36 (1.42)	250 (9.84)	25 (0.98)	165 (6.50)	94 (3.7)	85 (3.35)	85 (3.35)	2	205 (8.07)	8	

d: Internal diameter of gasket to DIN 2690
d_M: Effective diaphragm diameter

Diaphragm seals of flange design mounted directly and with capillary

Overview

Diaphragm seal of flange 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
Connecting standard EN 1092-1	
• DN 40	PN 10/16/25/40/63/100/160
• DN 50	PN 10/16/25/40/63/100
• DN 80	PN 10/16/25/40/100
• DN 100	PN 10/16/25/40
• DN 125	PN 16/40
Connecting standard ASME B16.5	
• 1½ inch	Class 150/300/400/600/900/1500
• 2 inch	Class 150/300/400/600/900/1500
• 3 inch	Class 150/300/600/1500
• 4 inch	Class 150/300/400/1500
• 5 inch	Class 150/300/400
Connecting standard J.I.S.	
• DN 50	10K
• DN 80	20K
• DN 100	40K
Sealing surface	
• For stainless steel, mat. No. 1.4404/316L	To EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA
• For the other materials	To EN 1092-1, form B2 or ASME B16.5 RFSF

Materials	
• Main body	Stainless steel, 1.4404/316L
• Wetted parts	Stainless steel, 1.4404/316L • 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
• Capillary	Stainless steel, mat. No. 1.4571/316Ti
• Sheath	Spiral protective tube made of stainless steel, mat. No. 1.4404/316L
Sealing material in the process flanges	
• For pressure transmitters, absolute pressure transmitters and low-pressure applications	Copper
• For other applications	Viton
Maximum pressure	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	
• Length	Max. 10 m (32.8 ft), longer lengths on request
• 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 (for measuring O_2) Food oil (FDA listed)
Max. recommended temperature of medium	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)

Selection and Ordering data		Article No.	Order code
Diaphragm seal			
Flange type design, direct connected at high-side and with flexible capillary tube at low-side to			
• SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately Scope of delivery: 2 off		7MF0813-	
		-0	
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.			
Nominal diameter	**Nominal pressure**		
Connecting standard EN 1092-1			
DN 40	PN 10/16/25/40	0DD	
	PN 63/100	0DF	
	PN 160	0DG	
DN 50	PN 10/16/25/40	0ED	
	PN 63	0EE	
	PN 100	0EF	
DN 80	PN 10/16/25/40	0GD	
	PN 100	0GF	
DN 100	PN 10/16	0HB	
	PN 25/40	0HD	
DN 125	PN 16	0JB	
	PN 40	0JD	
Connecting standard ASME B16.5			
1½ inch	class 150	1LA	
	class 300	1LB	
	class 400/600	1LD	
	class 900/1500	1LF	
2 inch	class 150	1MA	
	class 300	1MB	
	class 400/600	1MD	
	class 900/1500	1MF	
3 inch	class 150	1PA	
	class 300	1PB	
	class 600	1PD	
	class 1500	1PF	
4 inch	class 150	1QA	
	class 300	1QB	
	class 400	1QC	
	class 1500	1QF	
5 inch	class 150	1RA	
	class 300	1RB	
	class 400	1RC	
Connecting standard J.I.S.			
DN 50	10K	2ES	
	20K	2ET	
	40K	2EU	
DN 80	10K	2GS	
	20K	2GT	
	40K	2GU	
DN 100	10K	2HS	
	20K	2HT	
	40K	2HU	
Other version Add Order code and plain text		9AA	H1Y

Selection and Ordering data	Article No.	Order code
Diaphragm seal		
Flange type design, direct connected at high-side and with flexible capillary tube at low-side to		
• SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately Scope of delivery: 2 off	7MF0813-	
	-0	
Length of capillary tube at low-side		
1 m	10	
1,6 m	11	
2 m	12	
2,5 m	13	
3 m	14	
4 m	15	
5 m	16	
6 m	17	
7 m	18	
8 m	20	
9 m	21	
10 m	22	
Other version Add Order code and plain text	98	L1Y
Filling liquid		
Silicone oil M50	B	
High-temperature oil	C	
Silicone oil M5	A	
Food-grade oil (FDA listed)	E	
Halocarbon oil	D	
Other version Add Order code and plain text	Z	P1Y

1

Diaphragm seals of flange design mounted directly and with capillary

Selection and Ordering data	Article No.	Order code
Diaphragm seal		
Flange type design, direct connected at high-side and with flexible capillary tube at low-side to		
• SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately Scope of delivery: 2 off	7MF0813-	
	-0	
Wetted parts materials		
Stainless steel 316L		
• Without coating		A
• With PFA coating		D
• With PTFE coating		E 0
• With ECTFFE coating		F
Monel 400, 2.4360		G
Hastelloy C276, 2.4819		J
Tantalum		K
Titanium, 3.7035		L 0
Nickel 201		M 0
Diaphragm Duplex, 1.4462		Q
Diaphragm plus flange Duplex, 1.4462		R
Stainless steel 316L with gold coating		S 0
Hastelloy C4, 2.4610		U 0
Hastelloy C22, 2.4602		V 0
Other version Add Order code and plain text		Z 8 Q 1 Y
Extension length		
• without		0
• 50 mm (2")		1
• 100 mm (4")		2
• 150 mm (6")		3
• 200 mm (8")		4
• 250 mm (10")		5
Other version Add Order code and plain text		Z 8 Q 1 Y
Customer-specific extension length		
• Wetted parts stainless steel without coating		
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 stainless steel with ECTFE coating		
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

Selection and Ordering data	Article No.	Order code
Diaphragm seal		
Flange type design, direct connected at high-side and with flexible capillary tube at low-side to		
• SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately Scope of delivery: 2 off	7MF0813-	
	-0	
• Wetted parts stainless steel with PFA coating		
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 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 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 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

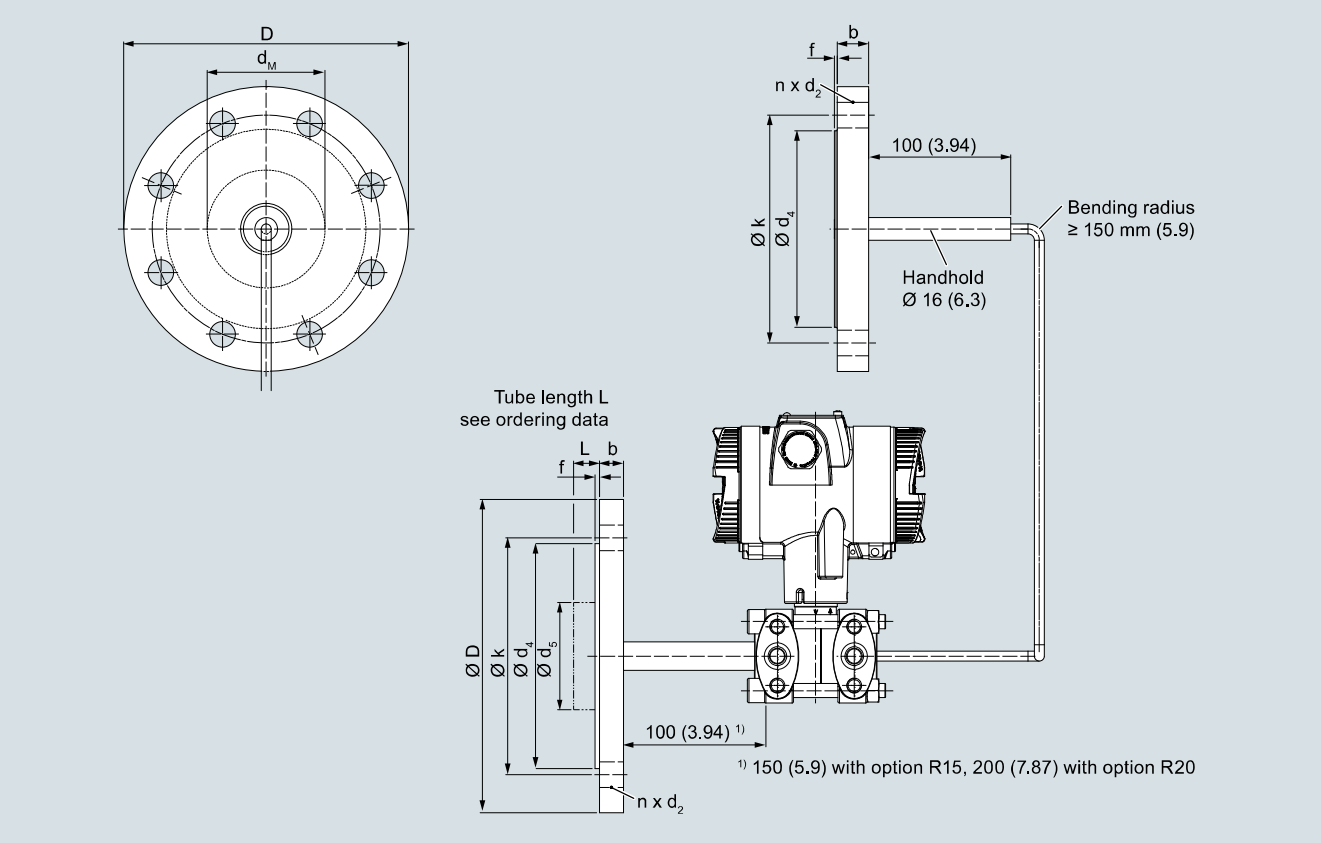
Selection and Ordering data	Order code
Further designs	
Add "**-Z**" to Article No. and specify Order code.	
Factory certificates	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	**C11**
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	**C12**
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009) (only together with seal diaphragm made of Hastelloy and stainless steel)	**C13**
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	**C15**
Certificate of FDA-approved fill oil (to EN10204-2.2)	**C17**
Factory certificate functional safety (SIL2/3), devices suitable for use according to IEC 61508 and IEC 61511 (includes SIL conformity declaration)	**C20**
Accessories	
Spark arrestor (for differential pressure and level transmitters)	**D62**
Low-temperature version (for Silicon Oil M50 only)	**D67**
Negative pressure services	
Negative pressure service (for differential pressure transmitters)	**D83**
Extended negative pressure service (for differential pressure transmitters)	**D88**
General product approvals without explosion proof approvals	
Oil-and grease-free cleaned version (for O_2-appl. including certificate EN10204-2.2 (only with fill fluid Halocarbon oil max. temperature 60 °C and max. pressure 50 bar)	**E80**
Oil-and grease-free cleaned version (not for O_2-appl. including certificate EN10204-2.2 (only with fill fluid Halocarbon oil)	**E87**
Sealing surface	
Sealing surface smooth, form B2/EN1092-1 resp. RFSF/ANSI B16.5 (wetted parts 316L only)	**M50**
Sealing surface groove to EN1092-1, form D (instead of sealing surface B1, wetted parts 316L only)	**M54**
Sealing surface RJF (groove) to ASME B16.5 (instead of sealing surface RF 125...250AA, wetted parts 316L only)	**M64**
Sealing surface with tongue to EN1092-1, form C (wetted parts 316L only)	
• DN 25	**M70**
• DN 40	**M71**
• DN 50	**M72**
• DN 80	**M73**
• DN 100	**M74**
• DN 125	**M75**
Sealing surface with spigot to EN1092-1, form E (wetted parts 316L only)	
• DN 25	**M76**
• DN 40	**M77**
• DN 50	**M78**
• DN 80	**M79**
• DN 100	**M80**
• DN 125	**M81**
Sealing surface with recess to EN1092-1, form F (wetted parts 316L only)	
• DN 25	**M82**
• DN 40	**M83**
• DN 50	**M84**
• DN 80	**M85**
• DN 100	**M86**
• DN 125	**M87**

Selection and Ordering data	Order code
Further designs	
Add "**-Z**" to Article No. and specify Order code.	
Capillary coating	
PE protective tube	
1 m	**S10**
1,6 m	**S11**
2 m	**S12**
2,5 m	**S13**
3 m	**S14**
4 m	**S15**
5 m	**S16**
6 m	**S17**
7 m	**S18**
8 m	**S19**
9 m	**S20**
10 m	**S21**
PTFE protective tube	
1 m	**S40**
1,6 m	**S41**
2 m	**S42**
2,5 m	**S43**
3 m	**S44**
4 m	**S45**
5 m	**S46**
6 m	**S47**
7 m	**S48**
8 m	**S49**
9 m	**S50**
10 m	**S51**
PVC protective tube	
1 m	**S70**
1,6 m	**S71**
2 m	**S72**
2,5 m	**S73**
3 m	**S74**
4 m	**S75**
5 m	**S76**
6 m	**S77**
7 m	**S78**
8 m	**S79**
9 m	**S80**
10 m	**S81**
Customer-specific tube length	
Customer-specific tube length (specify in plain text)	**Y44**
Specification of process conditions[1]	
Ambient temperature range	
• -10 ... +50 °C (14 ... +122 °F) preset	**D66**
• -40 ... +50 °C (-40 ... +122 °F)	**D67**
• -10 ... +85 °C (14 ... +185 °F)	**D68**
Process temperature min. ... °C/(°F)/max. ... °C/(°F)	**Y50**

[1] See also "Specification of process conditions for selection and ordering data", page 1/337.

Diaphragm seals of flange design mounted directly and with capillary

Dimensional drawings



Diaphragm seals of screwed design with flexible capillary, fixed connection, for connection to a SITRANS P320/420 pressure transmitter for differential pressure, dimensions in mm (inch)

Connection to EN 1092-1

Nominal diameter	Nominal pressure	b	D	d_2	d_4	d_5	d_M with extension	d_M without extension	f	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
DN 40	PN 10/16/25/40	16	150	18	88	38	30	42	2	110	4	0, 50, 100, 150 oder 200
	PN 63/100	24	170	22	88	38	30	42	2	125	4	
	PN 160	26	170	22	88	38	30	42	2	125	4	
DN 50	PN 10/16/25/40	18	165	18	102	48.3	40	51	2	125	4	
	PN 63/100	26	195	26	102	48.3	40	51	2	145	4	
	PN 160	28	195	26	102	48.3	40	51	2	145	4	
DN 80	PN 10/16/25/40	22	200	18	138	76	65	85	2	160	8	
	PN 100	30	230	26	138	76	65	85	2	180	8	
DN 100	PN 10/16	18	220	18	158	94	85	85	2	180	8	
	PN 25/40	22	235	22	162	94	85	85	2	190	8	
DN 125	PN 16	20	250	18	188	127	85	116	2	210	8	
	PN 40	24	270	26	188	127	85	116	2	220	8	

Connection to ASME B16.5

Nominal diameter	Nominal pressure	b	D	d_2	d_4	d_5	d_M with extension	d_M without extension	f	k	n	L
	lb./sq.in	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)		inch (mm)
1½ inch	150	0.63 (15.9)	4.92 (125)	0.63 (15.9)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.08 (2)	3.87 (98.4)	4	0, 2, 3.94, 5.94 oder 7.87 (0, 50, 100, 150 oder 200)
	300	0.75 (19.1)	6.10 (155)	0.87 (22.2)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.08 (2)	4.5 (114.3)	4	
	400/600	0.88 (22.3)	6.10 (155)	0.87 (22.2)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.28 (7)	4.5 (114.3)	4	
	900/1500	1.25 (31.8)	7.09 (180)	1.13 (28.6)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.28 (7)	4.87 (123.8)	4	
2 inch	150	0.69 (17.5)	5.91 (150)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.08 (2)	4.75 (120.7)	4	
	300	0.81 (20.7)	6.5 (165)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.08 (2)	5 (127)	8	
	400/600	1.00 (25.4)	6.5 (165)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.28 (7)	5 (127)	8	
	900/1500	1.5 (38.1)	8.46 (215)	1.00 (25.4)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.28 (7)	6.5 (165.1)	8	
3 inch	150	0.88 (22.3)	7.48 (190)	0.75 (19.1)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.08 (2)	6 (152.4)	4	
	300	1.06 (27)	8.27 (210)	0.87 (22.2)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.08 (2)	6.63 (168.3)	8	
	600	1.23 (31.8)	8.27 (210)	0.87 (22.2)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.28 (7)	6.63 (168.3)	8	
	1500	1.88 (47.7)	10.43 (265)	1.25 (31.8)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.28 (7)	8 (203.2)	8	
4 inch	150	0.88 (22.3)	9.06 (230)	0.75 (19.1)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.08 (2)	7.5 (190.5)	8	
	300	1.19 (30.2)	10.04 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.08 (2)	7.87 (200)	8	
	400	1.38 (35)	10.04 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.28 (7)	7.87 (200)	8	
	1500	2.13 (54)	12.20 (310)	1.37 (34.9)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.28 (7)	9.5 (241.3)	8	
5 inch	150	0.88 (22.3)	10.04 (255)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.08 (2)	8.5 (215.9)	8	
	300	1.31 (33.4)	11.02 (280)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.08 (2)	9.25 (235)	8	
	400	1.50 (38.1)	11.02 (280)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.28 (7)	9.25 (235)	8	

Diaphragm seals of flange design mounted directly and with capillary

Connection to J.I.S

Nominal diameter	Nominal pressure	b	D	d_2	d_4	d_5	d_M with extension	d_M without extension	f	k	n	L
		mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)		mm (inch)
DN 50	10K	14 (0.55)	155 (6.10)	19 (0.75)	96 (3.78)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	120 (4.72)	4	0, 50, 100, 150 oder 200 (0, 2, 3.94, 5.94 oder 7.87)
	20K	16 (0,63)	165 (6.50)	19 (0.75)	96 (3.78)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	120 (4.72)	8	
	40K	26 (1.02)	165 (6.50)	19 (0.75)	105 (4.13)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	130 (5.12)	8	
DN 80	10K	16 (0.63)	185 (7.28)	19 (0.75)	126 (4.96)	76 (2.99)	65 (2.56)	85 (3.35)	2	150 (5.91)	8	
	20K	20 (0.79)	200 (7.87)	23 (0.91)	132 (5.20)	76 (2.99)	65 (2.56)	85 (3.35)	2	160 (6.30)	8	
	40K	32 (1.26)	210 (8.27)	23 (0.91)	140 (5.51)	76 (2.99)	65 (2.56)	85 (3.35)	2	170 (6.30)	8	
DN 100	10K	16 (0.63)	210 (8.27)	19 (0.75)	151 (5.94)	94 (3.7)	85 (3.35)	85 (3.35)	2	175 (6.89)	8	
	20K	22 (0.87)	225 (8.86)	23 (0.91)	160 (6.30)	94 (3.7)	85 (3.35)	85 (3.35)	2	185 (7.28)	8	
	40K	36 (1.42)	250 (9.84)	25 (0.98)	165 (6.50)	94 (3.7)	85 (3.35)	85 (3.35)	2	205 (8.07)	8	

d: Internal diameter of gasket to DIN 2690
d_M: Effective diaphragm diameter

Overview

Diaphragm seal, screwed gland design with inside diaphragm for gauge, absolute and differential pressure for direct mounting

Process connection, open measuring flange

Technical specifications

Diaphragm seal, screwed gland with inside diaphragm

Process connection	Nominal pressure
• Open flange EN1092-1	
- DN 15	PN 10/16/25/40/63/100/160/250
- DN 20	PN 10/16/25/40
- DN 25	PN 10/16/25/40/63/100/160/250
• Open flange ASME B16.5	
- ½ inch, ¾ inch, 1 inch	Class 150/300/600/1500
• Thread to EN 837-1	
- G¼"B, G½"B, G¾"B, G1"B	PN 100/250
• Thread ASME B1.20.1	
- ¼" NPT-M, ¼" NPT-F	Class 1500/3675
- ½" NPT-M, ½" NPT-F	Class 1500/3675
- ¾" NPT-M, ¾" NPT-F	Class 1500/3675
- 1" NPT-M, 1" NPT-F	Class 1500/3675
Sealing surface for open measurement flange	
• For stainless steel, mat. no. 1.4404/316L	To EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA
Materials	
• Lower section (in the case of process connection thread)	Stainless steel, Mat. no. 1.4404/316L
• Diaphragm	Stainless steel, Mat. no. 1.4404/316L
	• No coating
	• With PTFE coating
	Monel 400, mat. no. 2.4360
	Hastelloy C276, mat. no. 2.4819
	Hastelloy C4, mat. no. 2.4602
	Tantal
	Stainless steel 316L, gold plated, thickness approx. 25 µm
• Top section (process connection in the case of an open measurement flange)	Stainless steel, mat. no. 1.4404/316L
• Capillary	Stainless steel 1.4404/316L
• Sealing material on the process connection	Viton or copper (in the case of vacuum-free version)
• Sealing material between top and bottom section	Viton (FKM) (standard) Teflon (PTFE) metal spring ring (silver-coated)
Capillary	
• Length	Max. 10 m (32.8 ft)
• Internal diameter	2 mm (0.079 inch)
• Minimum bending radius	150 mm (5.9 inch)
• Sheath	Stainless steel protective tube, mat. No. 1.4301/304
Filling liquid	• Silicone oil M5
	• Silicone oil M50
	• High-temperature oil
	• Halocarbon oil (for measuring O_2)
	• Food oil (FDA listed)
Max. recommended temperature of medium	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 specifications of the pressure transmitters and in the section "Technical data of filling liquid" in the introduction to the remote seals
Weight	Approx. 1.5 kg (3.3 lb)
Certificates and approvals	
Classification according to pressure equipment directive (PED 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)

1

Diaphragm seal, screwed design, directly mounted or/and with capillary

Selection and Ordering data	Article No.	Order code
Diaphragm seal threaded design		
With inside diaphragm, directly connected or connected via flexible capillary tube to a		
• SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure service), 7MF03../7MF04.. order separately Scope of delivery: 1 off	7MF0840-	
• SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately, Scope of delivery: 2 off	7MF0842-	
	-0 0	
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Nominal diameter **Nominal pressure**		
Open flange, connecting standard EN 1092-1		
DN 15 PN 10/16/25/40	0AD	
PN 63/100	0AF	
PN 160	0AG	
PN 250	0AH	
DN 20 PN 10/16/25/40	0AM	
DN 25 PN 10/16/25/40	0BD	
PN 63/100	0BF	
PN 160	0BG	
PN 250	0BH	
Open flange, connecting standard ASME B16.5		
½ inch class 150	1KA	
class 300	1KB	
class 600	1KC	
class 1500	1KD	
¾ inch class 150	1KF	
class 300	1KG	
class 600	1KH	
class 1500	1KJ	
1 inch class 150	1KL	
class 300	1KM	
class 600	1KN	
class 1500	1KP	
Process connection thread EN 837-1		
G¼"B PN 100	3SB	
G¼"B PN 250	3SC	
G½"B PN 100	3SF	
G½"B PN 250	3SG	
G¾"B PN 100	3SK	
G¾"B PN 250	3SL	
G1"B PN 100	3SP	
G1"B PN 250	3SQ	
Process connection thread ASME B1.20.1		
¼"-NPT-M Class 1500	5TA	
¼"-NPT-M Class 3675	5TB	
¼"-NPT-F Class 1500	5TC	
¼"-NPT-F Class 3675	5TD	
½"-NPT-M Class 1500	5TE	
½"-NPT-M Class 3675	5TF	
½"-NPT-F Class 1500	5TG	
½"-NPT-F Class 3675	5TH	
¾"-NPT-M Class 1500	5TJ	
¾"-NPT-M Class 3675	5TK	
¾"-NPT-F Class 1500	5TL	
¾"-NPT-F Class 3675	5TM	
1"-NPT-M Class 1500	5TN	
1"-NPT-M Class 3675	5TP	
1"-NPT-F Class 1500	5TQ	
1"-NPT-F Class 3675	5TR	
Other version Add Order code and plain text	9AA	H1Y

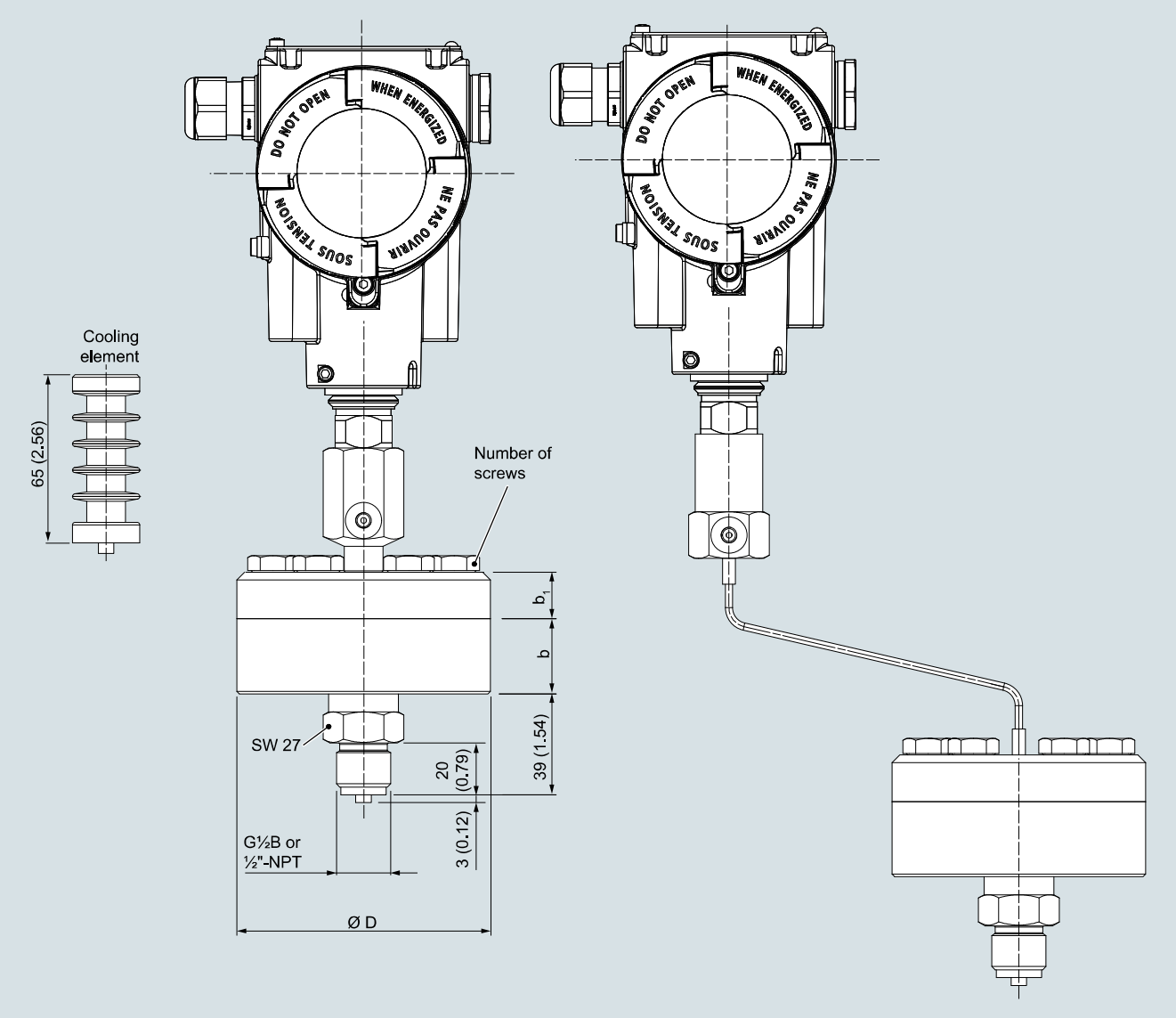
Selection and Ordering data	Article No.	Order code
Diaphragm seal threaded design		
With inside diaphragm, directly connected or connected via flexible capillary tube to a		
• SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure service), 7MF03../7MF04.. order separately Scope of delivery: 1 off	7MF0840-	
• SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately, Scope of delivery: 2 off	7MF0842-	
	-0 0	
Transmitter connection		
Without capillary tube, direct mount straight connection (for gauge pressure)	00	
Connection via capillary tube Length of capillary		
1 m	10	
1,6 m	11	
2 m	12	
2,5 m	13	
3 m	14	
4 m	15	
5 m	16	
6 m	17	
7 m	18	
8 m	20	
9 m	21	
10 m	22	
Other version Add Order code and plain text	98	L1Y
Filling liquid		
Silicone oil M50	B	
High-temperature oil	C	
Silicone oil M5	A	
Food-grade oil (FDA listed)	E	
Halocarbon oil	D	
Other version Add Order code and plain text	Z	P1Y
Wetted parts materials		
Stainless steel 316L without coating	A	
Stainless steel 316L with PTFE-coating	E	
Monel 400, 2.4360	G	
Hastelloy C276, 2.4819	J	
Tantalum	K	
Stainless steel 316L with gold coating	S	
Hastelloy C4, 2.4610	U	
Other version Add Order code and plain text	Z	Q1Y

Selection and Ordering data	Order code
Further designs	
Add "**-Z**" to Article No. and specify Order code.	
Factory certificates	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	**C11**
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	**C12**
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009) (only together with seal diaphragm made of Hastelloy and stainless steel)	**C13**
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	**C15**
Certificate of FDA-approved fill oil (to EN10204-2.2)	**C17**
Factory certificate functional safety (SIL2/3), devices suitable for use according to IEC 61508 and IEC 61511 (includes SIL conformity declaration)	**C20**
Accessories	
Low-temperature version (for Silicon Oil M50 only)	**D67**
Flushing port ¼"-18 NPT unsealed	**D70**
Flushing port ¼"-18 NPT sealed with stainless steel plug	**D71**
Sealing material between upper and lower enclosure PTFE (instead of FKM viton)	**D75**
Sealing material between upper and lower enclosure metal C-circlip (instead of FKM viton)	**D76**
PTFE coating for lower enclosure (only for G½B PN 100, DN 25 PN 10 ... 40, 1 inch Class 150/300)	**D77**
Negative pressure services	
Negative pressure service (for gauge and absolute pressure transmitters)	**D81**
Negative pressure service (for differential pressure transmitters)	**D83**
Extended negative pressure service (for gauge and absolute pressure transmitters)	**D85**
Extended negative pressure service (for differential pressure transmitters)	**D88**
General product approvals without explosion proof approvals	
Oil-and grease-free cleaned version (for O_2-appl. including certificate EN10204-2.2 (only with fill fluid Halocarbon oil max. temperature 60 °C and max. pressure 50 bar)	**E80**
Oil-and grease-free cleaned version (not for O_2-appl. including certificate EN10204-2.2 (only with fill fluid Halocarbon oil)	**E87**
Capillary connection (only for 7MF0840)	
Single-side mounted at differential pressure transmitters at high-side	**S03**
Single-side mounted at differential pressure transmitters at low-side	**S04**
Cooling element	**S08**

Selection and Ordering data	Order code
Further designs	
Add "**-Z**" to Article No. and specify Order code.	
Capillary coating	
PE protective tube	
1 m	**S10**
1,6 m	**S11**
2 m	**S12**
2,5 m	**S13**
3 m	**S14**
4 m	**S15**
5 m	**S16**
6 m	**S17**
7 m	**S18**
8 m	**S19**
9 m	**S20**
10 m	**S21**
PTFE protective tube	
1 m	**S40**
1,6 m	**S41**
2 m	**S42**
2,5 m	**S43**
3 m	**S44**
4 m	**S45**
5 m	**S46**
6 m	**S47**
7 m	**S48**
8 m	**S49**
9 m	**S50**
10 m	**S51**
PVC protective tube	
1 m	**S70**
1,6 m	**S71**
2 m	**S72**
2,5 m	**S73**
3 m	**S74**
4 m	**S75**
5 m	**S76**
6 m	**S77**
7 m	**S78**
8 m	**S79**
9 m	**S80**
10 m	**S81**
Customer-specific tube length	
Customer-specific tube length (specify in plain text)	**Y44**
Specification of process conditions[1)]	
Ambient temperature range	
• -10 ... +50 °C (14 ... +122 °F) preset	**D66**
• -40 ... +50 °C (-40 ... +122 °F)	**D67**
• -10 ... +85 °C (14 ... +185 °F)	**D68**
Process temperature min. ... °C/(°F)/max. ... °C/(°F)	**Y50**

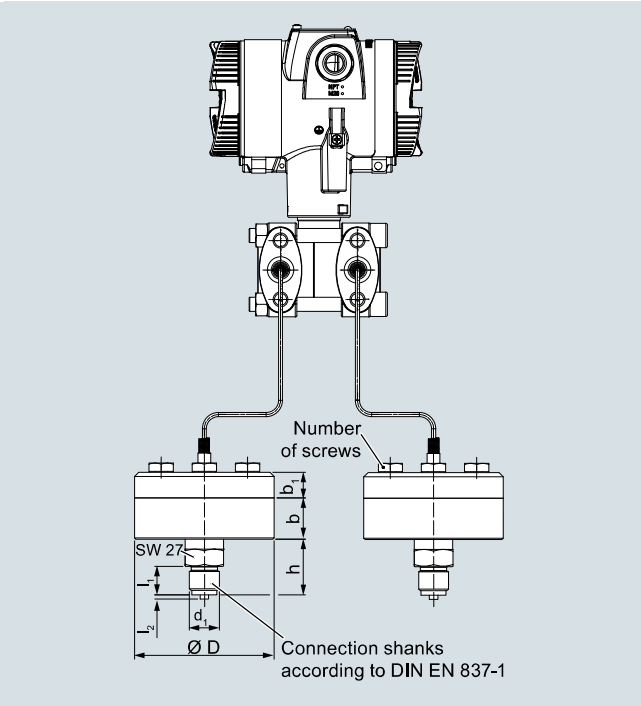
1) See also "Specification of process conditions for selection and ordering data", page 1/337.

Dimensional drawings



Diaphragm seal, screwed gland with inside diaphragm, for gauge and absolute pressure, direct and attached directly to the transmitter with with capillaries, dimensions in mm (inch)

Range	D mm	b mm	b_1 mm	Number of screws
up to 100 bar	98	14	16	6
up to 250 bar	98	14	20	12

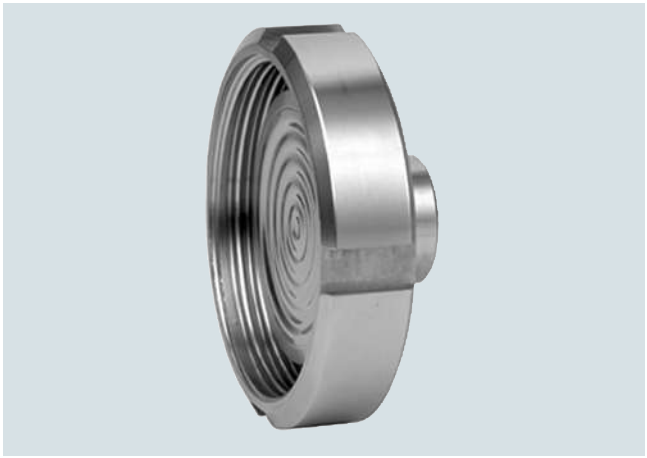


Diaphragm seal, screwed gland with inside diaphragm, for differential pressure, direct and attached directly to the transmitter with with capillaries, dimensions in mm (inch)

Nominal diameter	Nominal pressure	D mm	d_4 mm	k mm	M	Number of holes	b mm	b_1 mm	f mm
DN 25	PN 10/16/25/40	115	68	85	M12	4	26	12	2
1 inch	150 lb/sq.in	110	50.8	79.4	M12	4	32	12	2
1 inch	300 lb/sq.in	125	50.8	88.9	M16	4	32	12	2

Quick-release diaphragm seals

Overview



Quick-release diaphragm seals, to DIN 11851 with slotted union nut

Quick-release diaphragm seals, with clamp connection

Quick-release diaphragm seals are available for the following SITRANS P pressure transmitter series:

- For pressure: P300, DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus
- For differential pressure and flow: P500, DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus
- The quick-release remote seals are common designs in the food industry. Their design means that the medium cannot accumulate in dead volumes. The quick-release clamp present on the remote seal means that quick dismounting is possible for cleaning.

Technical specifications

Quick-release diaphragm seal	
Connection, nominal diameter	Nominal pressure
• Standard to DIN 11851 with nut	
- DN 25/32/40	PN 40
- DN 50/65/80	PN 25
• Standard to DIN 11851 with thread	
- DN 25/32/40	PN 40
- DN 50/65/80	PN 25
• Standard clamp ISO 2852	
- DN 25/38/51	PN 16
- DN 63.5/76.1	PN 10
• Standard clamp DIN 32676, row C Tri-clamp	
- 1 inch, 1½ inch	PN 25
- 2 inch, 2½ inch	PN 16
- 3 inch	PN 10
• Standard clamp DIN 32676, row A metric	
- DN 25/32/40	PN 25
- DN 50	PN 16
- DN 65	PN 10
• Varivent	
- DN 25/32/40/50	PN 25
• DRD-flange	
- DN 50	PN 40
Sealing surface	
• For stainless steel, mat. No. 1.4404/316L	To EN 1092-1, form B1 or ASME B 16.5RF 125 ... 250 AA
• For the other materials	To EN 1092-1, form B2 or ASME B16.5 RFSF
Materials	
• Main body	Stainless steel 316L
• Wetted parts	Stainless steel 316L
• Capillary	Stainless steel, mat. No. 1.4571/316Ti
• Sheath	Spiral protective tube made of stainless steel, mat. No. 1.4301/316
Maximum pressure	See above and the technical data of the pressure transmitter
Tube length	Without tube
Capillary	
• Length	Max. 10 m (32.8 ft), longer lengths on request
• Internal diameter	2 mm (0.079 inch)
• Minimum bending radius	150 mm (5.9 inch)
• Sheath	Spiral protective tube made of stainless steel, mat. No. 1.4404/316L
Filling liquid	Food oil (FDA listed)
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)
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 requirements of article 4, paragraph 3 (sound engineering practice)
EHEDG	Complies with EHEDG recommendations

Selection and Ordering data	Article No.	Order code
Quick release diaphragm seal		
Flange type design, with flexible capillary tube or directly connected to a		
• SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure service), 7MF03../7MF04.. order separately Scope of delivery: 1 off	7MF0830-	
• SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately Scope of delivery: 1 off	7MF0832-	
	-0A0	
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Nominal diameter **Nominal pressure**		
Connection standard DIN 11851 with nut		
DN 25 PN 40	0BM	
DN 32 PN 40	0CD	
DN 40 PN 40	0DM	
DN 50 PN 25	0EK	
DN 65 PN 25	0FL	
DN 80 PN 25	0GK	
Connection standard DIN 11851 with thread		
DN 25 PN 40	1BM	
DN 32 PN 40	1CD	
DN 40 PN 40	1DM	
DN 50 PN 25	1EK	
DN 65 PN 25	1FL	
DN 80 PN 25	1GK	
Connection standard Clamp ISO 2852		
DN 25 PN 16	2BK	
DN 38 PN 16	2CQ	
DN 51 PN 16	2FH	
DN 63.5 PN 10	2FJ	
DN 76.1 PN 10	2GJ	
Connection standard Clamp DIN 32676, row C Tri-clamp		
DN 1" PN 25	3KV	
DN 1½" PN 25	3LV	
DN 2" PN 16	3MV	
DN 2½" PN 16	3NV	
DN 3" PN 10	3PV	
Connection standard Clamp DIN 32676, row A metric		
DN 25 PN 25	4BL	
DN 32 PN 25	4CC	
DN 40 PN 25	4DL	
DN 50 PN 16	4EJ	
DN 65 PN 10	4FK	
Varivent		
DN 25/32 PN 25	5CL	
DN 40/50 PN 25	5DK	
DRD-flange		
DN 50 PN 40	6EM	
Other version Add Order code and plain text	9AA	H1Y

Selection and Ordering data	Article No.	Order code
Quick release diaphragm seal		
Flange type design, with flexible capillary tube or directly connected to a		
• SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure service), 7MF03../7MF04.. order separately Scope of delivery: 1 off	7MF0830-	
• SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately Scope of delivery: 1 off	7MF0832-	
	-0A0	
Transmitter connection		
Without capillary tube, direct mount straight connection (for gauge pressure)	00	
Connection via capillary tube Length of capillary		
1 m	10	
1,6 m	11	
2 m	12	
2,5 m	13	
3 m	14	
4 m	15	
5 m	16	
6 m	17	
7 m	18	
8 m	20	
9 m	21	
10 m	22	
Other version Add Order code and plain text	98	L1Y
Filling liquid		
Food-grade oil (FDA listed)	E	
Other version Add Order code and plain text	Z	P1Y

1

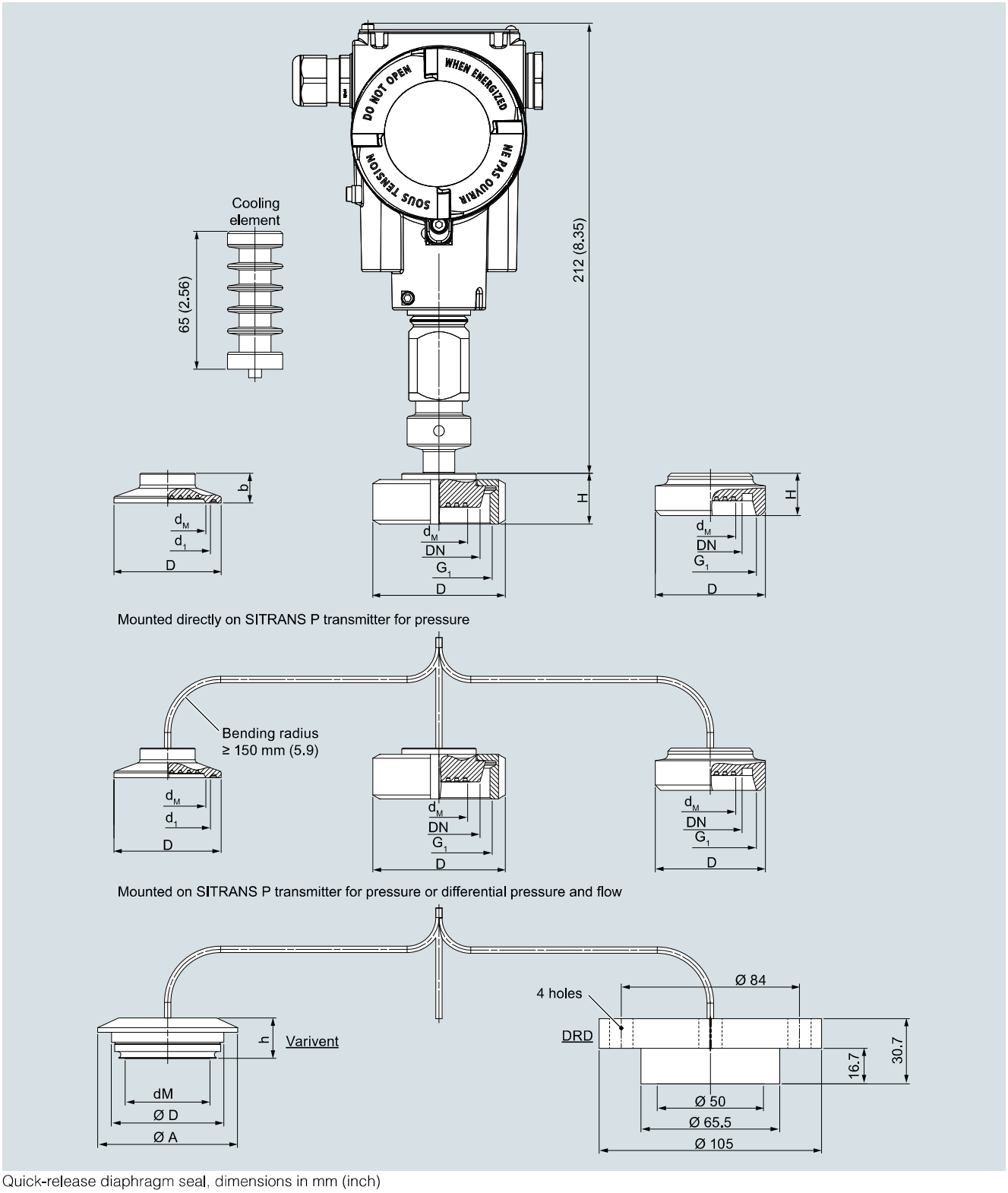
Quick-release diaphragm seals

Selection and Ordering data	Order code
Further designs	
Add "**-Z**" to Article No. and specify Order code.	
Factory certificates	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	**C11**
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	**C12**
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	**C15**
Certificate of FDA-approved fill oil (to EN10204-2.2)	**C17**
Factory certificate functional safety (SIL2/3), devices suitable for use according to IEC 61508 and IEC 61511 (includes SIL conformity declaration)	**C20**
Negative pressure services	
Negative pressure service (for gauge and absolute pressure transmitters)	**D81**
Negative pressure service (for differential pressure transmitters)	**D83**
Extended negative pressure service (for gauge and absolute pressure transmitters)	**D85**
Extended negative pressure service (for differential pressure transmitters)	**D88**
Capillary connection (only for 7MF0830)	
Single-side mounted at differential pressure transmitters at high-side	**S03**
Single-side mounted at differential pressure transmitters at low-side	**S04**
Cooling element	**S08**
Capillary coating	
PE protective tube	
1 m	**S10**
1,6 m	**S11**
2 m	**S12**
2,5 m	**S13**
3 m	**S14**
4 m	**S15**
5 m	**S16**
6 m	**S17**
7 m	**S18**
8 m	**S19**
9 m	**S20**
10 m	**S21**
PTFE protective tube	
1 m	**S40**
1,6 m	**S41**
2 m	**S42**
2,5 m	**S43**
3 m	**S44**
4 m	**S45**
5 m	**S46**
6 m	**S47**
7 m	**S48**
8 m	**S49**
9 m	**S50**
10 m	**S51**

Selection and Ordering data	Order code
Further designs	
Add "**-Z**" to Article No. and specify Order code.	
PVC protective tube	
1 m	**S70**
1,6 m	**S71**
2 m	**S72**
2,5 m	**S73**
3 m	**S74**
4 m	**S75**
5 m	**S76**
6 m	**S77**
7 m	**S78**
8 m	**S79**
9 m	**S80**
10 m	**S81**
Customer-specific tube length	
Customer-specific tube length (specify in plain text)	**Y44**
Specification of process conditions[1)]	
Ambient temperature range	
• -10 ... +50 °C (14 ... +122 °F) preset	**D66**
• -40 ... +50 °C (-40 ... +122 °F)	**D67**
• -10 ... +85 °C (14 ... +185 °F)	**D68**
Process temperature min. ... °C/(°F)/max. ... °C/(°F)	**Y50**

1) See also "Specification of process conditions for selection and ordering data", page 1/337.

Dimensional drawings



Quick-release diaphragm seal, dimensions in mm (inch)

Quick-release diaphragm seals

Connection to DIN 11851 with slotted union nut

Nominal diameter	Ø d_M	Ø D	H	G_1
	mm	mm	mm	mm
DN 25	25	63	36	Rd 52x1/6
DN 32	32	70	36	Rd 52x1/6
DN 40	40	78	36	Rd 65x1/6
DN 50	52	112	36	Rd 78x1/6
DN 65	65	112	36	Rd 95x1/6
DN 80	72	127	36	Rd 110x1/6

Connection to DIN 11851 with threaded socket

Nominal diameter	Ø d_M	H	G_1
	mm	mm	mm
DN 25	25	36	Rd 52x1/6
DN 32	32	36	Rd 52x1/6
DN 40	40	36	Rd 65x1/6
DN 50	52	36	Rd 78x1/6
DN 65	65	36	Rd 95x1/6
DN 80	72	36	Rd 110x1/6

Clamp connection to ISO 2852 for pipes to ISO 2037

Nominal diameter	Nominal pressure	d_M	d_1	b	D
		mm	mm	mm	mm
DN 25	PN 16	22.6	43.5	14	50.5
DN 38	PN 16	34	43.5	12	50.5
DN 51	PN 16	46	56.5	14	64
DN 63.5	PN 10	51	70.5	14	77.5
DN 76.1	PN 10	65	83.5	14	91

Clamp connection to DIN 32676 row C (Tri-Clamp) for pipes to ASME BPE

Nominal diameter	Nominal pressure	d_M	d_1	b	D
		mm (inch)	mm (inch)	mm (inch)	mm (inch)
1"	PN 25	22.6 (0.89)	43.5 (1.71)	14 (0.55)	50.5 (1.99)
1½"	PN 25	34 (1.34)	43.5 (1.71)	12 (0.47)	50.5 (1.99)
2"	PN 16	46 (1.81)	56.5 (2.22)	14 (0.55)	64 (2.52)
2½"	PN 16	51 (2.01)	70.5 (2.78)	14 (0.55)	77.5 (3.05)
3"	PN 16	65 (2.56)	83.5 (3.29)	14 (0.55)	91 (3.58)

Clamp connection to DIN 32676 row A (metric) for pipes to EN 10357 (DIN 11850)

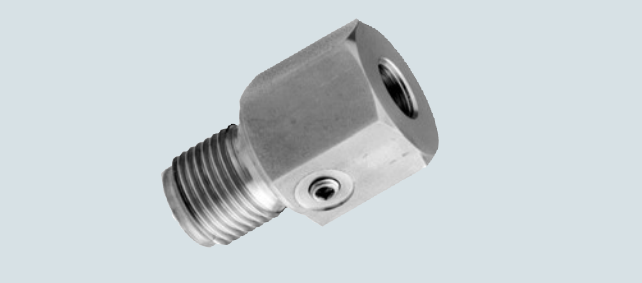
Nominal diameter	Nominal pressure	Ø d_M	d_1	b	D
		mm	mm	mm	mm
DN 25	PN 25	22.6	43.5	14	50.5
DN 32	PN 25	27	43.5	12	50.5
DN 40	PN 25	34	43.5	12	50.5
DN 50	PN 16	46	56.5	14	64
DN 65	PN 16	65	83.5	14	91

Varivent

Nominal diameter	d_M	A	D	h
	mm (inch)	mm (inch)	mm (inch)	mm (inch)
DN 25, DN 32, 1", 1¼"	40 (1.57)	66 (2.6)	50 (1.97)	19 (0.75)
DN 40 ... 125, 1 ½" ... 6"	58 (2.28)	84 (3.331)	68 (2.68)	19 (0.75)

d_M Effective diaphragm diameter

Overview



Miniature diaphragm seals

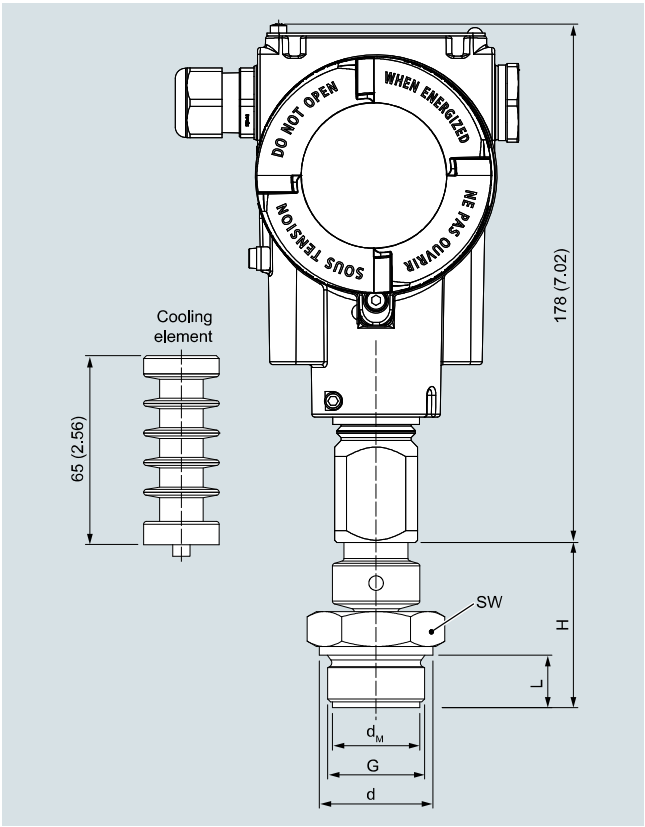
The miniature diaphragm seals are available for the SITRANS P320/420 pressure transmitter series.

Suitable for high pressures, contaminated, fibrous and viscous media in the chemical, paper, food and drink industries.

Design

- Flush-mounted diaphragm
- No dead spaces
- Fixed threaded stems

Dimensional drawings



Miniature diaphragm seal, dimensions in mm (inch)

G	Ø d_M		SW		Ø d		L		H	
	mm	(inch)	mm	(inch)	mm	(inch)	mm	(inch)	mm	(inch)
G1B	25	(0.98)	41	(1.61)	39	(1.53)	28	(1.1)	56	(2.21)
G1½B	40	(1.57)	55	(2.17)	60	(2.36)	30	(1.18)	50	(1.97)
G2B	50	(1.97)	60	(2.36)	70	(2.76)	30	(1.18)	63	(2.48)

G	Ø d_M		SW		L		H	
	mm	(inch)	mm	(inch)	mm	(inch)	mm	(inch)
1"-NPT	27	(1.06)	41	(1.61)	25	(0.98)	40	(1.57)
1½"-NPT	34	(1.34)	55	(2.17)	26	(1.02)	45	(1.77)
2"-NPT	46	(1.81)	65	(2.56)	26	(1.02)	45	(1.77)

d_M: Effective diaphragm diameter

Technical specifications

Miniature diaphragm seals	
Measuring span when	
• G1B and 1"-NPT	> 6 bar (> 87 psi)
• G1½B and 1½"-NPT	> 2 bar (> 29 psi)
• G2B and 2"-NPT	> 600 mbar (> 8.7 psi)
Filling liquid	Silicone oil M5 or food oil (FDA listed)
Material	
• Main body	Stainl. steel mat No. 1.4404/ 316L or Hastelloy C276, mat No. 2.4819
• Diaphragm	Stainl. steel mat No. 1.4404 / 316L or Hastelloy C276, mat. No. 2.4819
Maximum pressure	100% of nominal pressure of pressure transmitter, up to maximum of PN 400 (5802 psi) (depending on the seal used)
Temperature of use	Same as pressure transmitter
Temperature range of medium	Same as pressure transmitter
Max. recommended temperature of medium	150 °C (302 °F)
Weight	
• G1B and 1"-NPT	Approx. 0.3 kg (approx. 0.66 lb)
• G1½B and 1½"-NPT	Approx. 0.5 kg (approx. 1.10 lb)
• G2B and 2"-NPT	Approx. 0.8 kg (approx. 1.76 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)

1

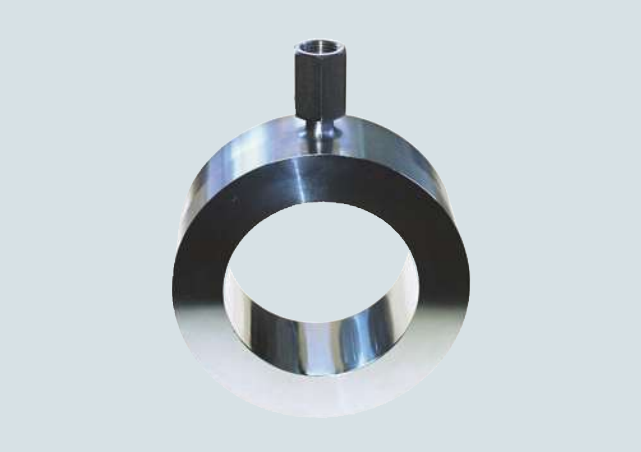
Miniature diaphragm seals

Selection and Ordering data		Article No.						Order code	
Miniature diaphragm seal									
directly connected to a									
• SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure service), 7MF03../7MF04.. order separately Scope of delivery: 1 off		7	M	F	0	8	5	0 -	
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.					0	0 - 0		0	
Process connection									
Connection standard DIN 3852									
G ½"	PN 400			4	S	T			
G ¾"	PN 400			4	S	U			
G 1"	PN 400			4	S	V			
G 1½"	PN 400			4	S	W			
G 2"	PN 400			4	S	X			
Connection standard ASME B1.20.1									
½"-NPT-M	class 5800			5	T	S			
¾"-NPT-M	class 5800			5	T	T			
1"-NPT-M	class 5800			5	T	U			
1½"-NPT-M	class 5800			5	T	V			
2"-NPT-M	class 5800			5	T	W			
Other version Add Order code and plain text				9	A	A		H	1 Y
Filling liquid									
Silicone oil M5						A			
Food-grade oil (FDA listed)						E			
Other version Add Order code and plain text						Z		P	1 Y
Wetted parts material									
Stainless steel 316L without coating							A		
Hastelloy C276, 2.4819							J		

Selection and Ordering data	Order code
Further designs	
Add "**-Z**" to Article No. and specify Order code.	
Factory certificates	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	**C11**
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	**C12**
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009) (only together with seal diaphragm made of Hastelloy and stainless steel)	**C13**
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	**C15**
Certificate of FDA-approved fill oil (to EN10204-2.2)	**C17**
Factory certificate functional safety (SIL2/3), devices suitable for use according to IEC 61508 and IEC 61511 (includes SIL conformity declaration)	**C20**
Negative pressure services	
Negative pressure service	**D81**
Extended negative pressure service (for gauge and absolute pressure transmitters)	**D85**
Capillary connection	
Cooling element between transmitter and remote seal	**S08**
Customer-specific tube length	
Customer-specific tube length (specify in plain text)	**Y44**
Specification of process conditions[1)]	
Ambient temperature range	
• -10 ... +50 °C (14 ... +122 °F) preset	**D66**
• -40 ... +50 °C (-40 ... +122 °F)	**D67**
• -10 ... +85 °C (14 ... +185 °F)	**D68**
Process temperature min. ... °C/(°F)/max. ... °C/(°F)	**Y50**

1) See also "Specification of process conditions for selection and ordering data", page 1/337.

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 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
Connecting standard EN 1092-1	
• DN 25/40/50/65/80/100/125	PN 6 ... PN 100
Connecting standard ASME B16.5	
• 1, 1½, 2, 2½, 3, 4, 5 inch	Class 150 ... class 2500
Process connection	Flange to EN 1092-1 or ASME B 16.5
Sealing surface	• 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
	• 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. 1.4404/316L
• Sheath	Spiral protective tube made of stainless steel, mat. No. 1.4301/316
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

1

Inline seals in sandwich design

Selection and Ordering data	Article No.	Order code
Inline seal		
Sandwich type design, directly connected or connected with flexible capillary tube to a		
• SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure service), 7MF03../7MF04.. order separately Scope of delivery: 1 off ↗	7MF0900-	
• SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately, Scope of delivery: 2 off ↗	7MF0902-	
	-0 0	
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Nominal diameter **Nominal pressure**		
Connecting standard EN 1092-1		
DN 25 PN 6 ... 100	0BP	
DN 40 PN 6 ... 100	0DP	
DN 50 PN 6 ... 100	0EP	
DN 65 PN 6 ... 100	0FP	
DN 80 PN 6 ... 100	0GP	
DN 100 PN 6 ... 100	0HP	
DN 125 PN 6 ... 100	0JP	
Connecting standard ASME B16.5		
1 inch class 150 ... 2500	1KX	
1½ inch class 150 ... 2500	1LX	
2 inch class 150 ... 2500	1MX	
2½ inch class 150 ... 2500	1NX	
3 inch class 150 ... 2500	1PX	
4 inch class 150 ... 2500	1QX	
5 inch class 150 ... 2500	1RX	
Other version Add Order code and plain text	9AA	H1Y
Transmitter connection		
Without capillary tube, direct mount straight connection (for gauge pressure)	00	
Without capillary tube, direct mount connection via 90°-bow (for gauge pressure)	01	
Connection via capillary tube Length of capillary		
1 m	10	
1,6 m	11	
2 m	12	
2,5 m	13	
3 m	14	
4 m	15	
5 m	16	
6 m	17	
7 m	18	
8 m	20	
9 m	21	
10 m	22	
11 m (only for 7MF0900)	23	
12 m (only for 7MF0900)	24	
13 m (only for 7MF0900)	25	
14 m (only for 7MF0900)	26	
15 m (only for 7MF0900)	27	
Other version Add Order code and plain text	98	L1Y

Selection and Ordering data	Article No.	Order code
Inline seal		
Sandwich type design, directly connected or connected with flexible capillary tube to a		
• SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure service), 7MF03../7MF04.. order separately Scope of delivery: 1 off	7MF0900-	
• SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately, Scope of delivery: 2 off	7MF0902-	
	-0 0	
Filling liquid		
Silicone oil M50	B	
High-temperature oil	C	
Silicone oil M5	A	
Food-grade oil (FDA listed)	E	
Halocarbon oil	D	
Other version Add Order code and plain text	Z	P1Y
Wetted parts materials		
Stainless steel 316L		
• Without coating	A	
• With PFA coating	D	
• With ECTFFE coating	F	
Monel 400, 2.4360	G	
Hastelloy C276, 2.4819	J	
Tantalum	K	
Hastelloy C4, 2.4610	U	
Other version Add Order code and plain text	Z	Q1Y

Selection and Ordering data	Order code
Further designs	
Add "**-Z**" to Article No. and specify Order code.	
Factory certificates	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	**C11**
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	**C12**
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009) (only together with seal diaphragm made of Hastelloy and stainless steel)	**C13**
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	**C15**
Certificate of FDA-approved fill oil (to EN10204-2.2)	**C17**
Factory certificate functional safety (SIL2/3), devices suitable for use according to IEC 61508 and IEC 61511 (includes SIL conformity declaration)	**C20**
Accessories	
Spark arrestor (for gauge and absolute pressure transmitters)	**D61**
Spark arrestor (for differential pressure and level transmitters)	**D62**
Low-temperature version (for Silicon Oil M50 only)	**D67**
Negative pressure services	
Negative pressure service (for gauge and absolute pressure transmitters)	**D81**
Negative pressure service (for differential pressure transmitters)	**D83**
Extended negative pressure service (for gauge and absolute pressure transmitters)	**D85**
Extended negative pressure service (for differential pressure transmitters)	**D88**
General product approvals without explosion proof approvals	
Oil-and grease-free cleaned version (for O_2-appl. including certificate EN10204-2.2 (only with fill fluid Halocarbon oil max. temperature 60 °C and max. pressure 50 bar)	**E80**
Oil-and grease-free cleaned version (not for O_2-appl. including certificate EN10204-2.2 (only with fill fluid Halocarbon oil)	**E87**
Sealing surface	
Sealing surface smooth, form B2/EN1092-1 resp. RFSF/ANSI B16.5 (wetted parts 316L only)	**M50**
Sealing surface groove to EN1092-1, form D (instead of sealing surface B1, wetted parts 316L only)	**M54**
Sealing surface RJF (groove) to ASME B16.5 (instead of sealing surface RF 125...250AA, wetted parts 316L only)	**M64**
Sealing surface with tongue to EN1092-1, form C (wetted parts 316L only)	
• DN 25	**M70**
• DN 40	**M71**
• DN 50	**M72**
• DN 80	**M73**
• DN 100	**M74**
• DN 125	**M75**
Sealing surface with spigot to EN1092-1, form E (wetted parts 316L only)	
• DN 25	**M76**
• DN 40	**M77**
• DN 50	**M78**
• DN 80	**M79**
• DN 100	**M80**
• DN 125	**M81**

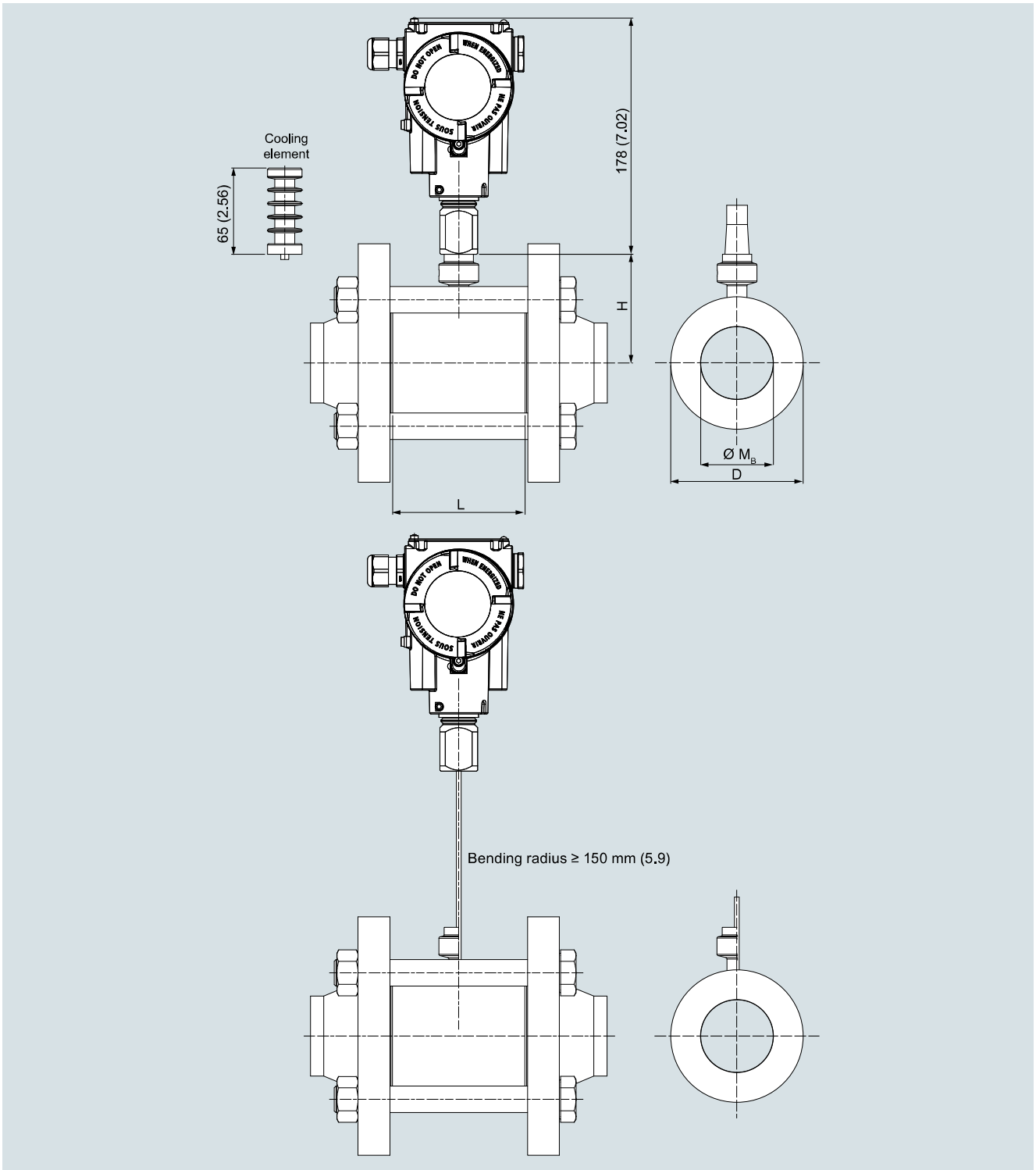
Selection and Ordering data	Order code
Further designs	
Add "**-Z**" to Article No. and specify Order code.	
Sealing surface with recess to EN1092-1, form F (wetted parts 316L only)	
• DN 25	**M82**
• DN 40	**M83**
• DN 50	**M84**
• DN 80	**M85**
• DN 100	**M86**
• DN 125	**M87**
Capillary connection	
For 7MF0900	
Single-side mounted at differential pressure transmitters at high-side	**S03**
Single-side mounted at differential pressure transmitters at low-side	**S04**
cooling element	**S08**
Capillary coating	
PE protective tube	
1 m	**S10**
1,6 m	**S11**
2 m	**S12**
2,5 m	**S13**
3 m	**S14**
4 m	**S15**
5 m	**S16**
6 m	**S17**
7 m	**S18**
8 m	**S19**
9 m	**S20**
10 m	**S21**
11 m (only for 7MF0902)	**S22**
12 m (only for 7MF0902)	**S23**
13 m (only for 7MF0902)	**S24**
14 m (only for 7MF0902)	**S25**
15 m (only for 7MF0902)	**S26**
PTFE protective tube	
1 m	**S40**
1,6 m	**S41**
2 m	**S42**
2,5 m	**S43**
3 m	**S44**
4 m	**S45**
5 m	**S46**
6 m	**S47**
7 m	**S48**
8 m	**S49**
9 m	**S50**
10 m	**S51**
11 m (only for 7MF0902)	**S52**
12 m (only for 7MF0902)	**S53**
13 m (only for 7MF0902)	**S54**
14 m (only for 7MF0902)	**S55**
15 m (only for 7MF0902)	**S56**

Inline seals in sandwich design

Selection and Ordering data	Order code
Further designs	
Add "**-Z**" to Article No. and specify Order code.	
PVC protective tube	
1 m	**S70**
1,6 m	**S71**
2 m	**S72**
2,5 m	**S73**
3 m	**S74**
4 m	**S75**
5 m	**S76**
6 m	**S77**
7 m	**S78**
8 m	**S79**
9 m	**S80**
10 m	**S81**
11 m (only for 7MF0902)	**S82**
12 m (only for 7MF0902)	**S83**
13 m (only for 7MF0902)	**S84**
14 m (only for 7MF0902)	**S85**
15 m (only for 7MF0902)	**S86**
Customer-specific tube length	
Customer-specific tube length (specify in plain text)	**Y44**
Specification of process conditions[1)]	
Ambient temperature range	
• -10 ... +50 °C (14 ... +122 °F) preset	**D66**
• -40 ... +50 °C (-40 ... +122 °F)	**D67**
• -10 ... +85 °C (14 ... +185 °F)	**D68**
Process temperature min. ... °C/(°F)/max. ... °C/(°F)	**Y50**

1) See also "Specification of process conditions for selection and ordering data", page 1/337.

Dimensional drawings



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

Inline seals in sandwich design

Connection to EN 1092-1

DN	PN	D	Mb	L	H
mm	bar	mm	mm	mm	mm
25	6 ... 100	68	28.5	60	81
40		88	43.1	60	91
50		100	54.5	60	93
65		120	70.3	60	107
80		138	82.5	60	116
100		160	107.1	60	127
125		188	127	60	141

Connection to ASME B16.5

DN	Class	D	Mb	L	H
(inch)		mm (inch)	mm (inch)	mm (inch)	mm (inch)
1	150 ... 2500	50 (1.97)	28.5 (1.12)	60 (2.36)	72 (2.83)
1½	150 ... 2500	73.5 (2.89)	43.1 (1.70)	60 (2.36)	84 (3.31)
2	150 ... 2500	91.9 (3.62)	54.5 (2.15)	60 (2.36)	93 (3.66)
2½	150 ... 2500	104.6 (4.12)	70.3 (2.77)	60 (2.36)	99 (3.9)
3	150 ... 2500	127 (5)	82.5 (3.25)	60 (2.36)	110 (4.33)
4	150 ... 2500	157.2 (6.19)	107.1 (4.22)	60 (2.36)	125 (4.92)
5	150 ... 2500	188 (7.4)	127 (5)	60 (2.36)	141 (5.55)

Overview

Quick-release inline seals, to DIN 11851 with threaded socket

Quick-release inline seals, with clamp connection

Quick-release inline seals for pressure are available for the following SITRANS P pressure transmitter series:

- P300
- DS III with HART
- DS III with PROFIBUS PA
- DS III with FOUNDATION Fieldbus

Application

The quick-release inline seal is a special design for flowing and high-viscosity media. Because it is completely integrated in the process line, there are no turbulences, dead spaces or other obstacles in the flow direction. The medium flows almost unhindered through the inline seal and causes self-cleaning of the sample chamber. The inline seal is also piggable.

Design

The quick-release clamp is available in two versions:

- DIN 11851 with threaded socket
- Clamp connection

The inline seal is connected to the pressure transmitter either directly or by way of a capillary.

Function

The measured pressure is transferred from the diaphragm, mounted on the inner circumference of the inline seal, to the filling liquid and then passes through the capillary to the measuring chamber of the pressure transmitter. The interior of the inline 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 pressure transmitter (see Selection and Ordering data).

Technical specifications

Quick-release inline seals for gauge pressure		
Connection	Nominal diameter	Nominal pressure
• Standard to DIN 11851 with thread	DN 25/32/40	PN 40
	DN 50/65/80	PN 25
• Standard Clamp ISO 2852	DN 25/38/51	PN 16
	DN 63.5/76.1	PN 10
• Standard Clamp DIN 32676, row C Tri-clamp	1, 1½ inch	PN 25
	2, 2½ inch	PN 16
	3 inch	PN 10
• Standard Clamp DIN 32676, row A metric	DN 25/32/40	PN 25
	DN 50	PN 16
	DN 65	PN 10
Material		
• Main body	Stainless steel 1.4404/316L	
• Diaphragm	Stainless steel 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)	
• Sheath	Spiral protective tube made of stainless steel, mat. No. 1.4404/316L	
Filling liquid	• Food oil (FDA listed)	
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 (approx. 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 the requirements of article 4, paragraph 1 (appendix 1); assigned to category III, conformity evaluation module H by the TÜV Nord	
EHEDG	Complies with EHEDG recommendations	

1

Quick-release inline seals

Selection and Ordering data	Article No.	Order code
Quick release inline-seal		
Flange type design, with flexible capillary tube or directly connected to a		
• SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure service), 7MF03../7MF04.. order separately Scope of delivery: 1 off	7MF0930-	
	■■■■■-0■A0	■■■
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Nominal diameter **Nominal pressure**		
Connection standard DIN 11851 with thread		
DN 25 PN 40	1BM	
DN 32 PN 40	1CD	
DN 40 PN 40	1DM	
DN 50 PN 25	1EK	
DN 65 PN 25	1FL	
DN 80 PN 25	1GK	
Connection standard Clamp ISO 2852		
DN 25 PN 16	2BK	
DN 38 PN 16	2CQ	
DN 51 PN 16	2FH	
DN 63,5 PN 10	2FJ	
DN 76,1 PN 10	2GJ	
Connection standard Clamp DIN 32676, row C Tri-clamp		
DN 1" PN 25	3KV	
DN 1½" PN 25	3LV	
DN 2" PN 16	3MV	
DN 2½" PN 16	3NV	
DN 3" PN 10	3PV	
Connection standard Clamp DIN 32676, row A metric		
DN 25 PN 25	4BL	
DN 32 PN 25	4CC	
DN 40 PN 25	4DL	
DN 50 PN 16	4EJ	
DN 65 PN 10	4FK	
Other version Add Order code and plain text	9AA	H1Y

Selection and Ordering data	Article No.	Order code
Quick release inline-seal		
Flange type design, with flexible capillary tube or directly connected to a		
• SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure service), 7MF03../7MF04.. order separately Scope of delivery: 1 off	7MF0930-	
	■■■■■-0■A0	■■■
Transmitter connection		
Without capillary tube, direct mount straight connection (for gauge pressure)	00	
Connection via capillary tube Length of capillary		
1 m	10	
1,6 m	11	
2 m	12	
2,5 m	13	
3 m	14	
4 m	15	
5 m	16	
6 m	17	
7 m	18	
8 m	20	
9 m	21	
10 m	22	
Other version Add Order code and plain text	98	L1Y
Filling liquid		
Food-grade oil (FDA listed)	E	
Other version Add Order code and plain text	Z	P1Y

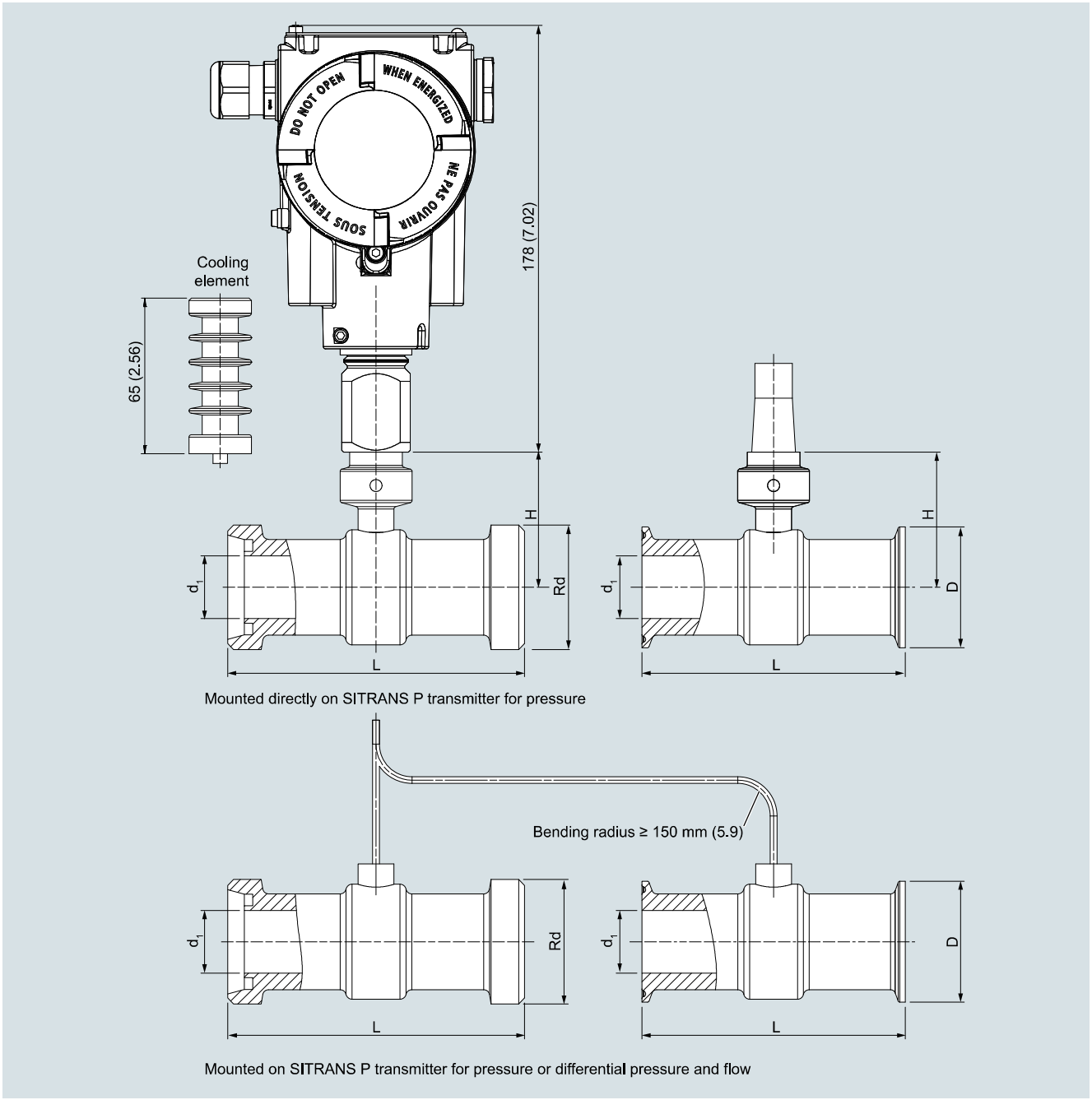
Selection and Ordering data	Order code
Further designs	
Add "**-Z**" to Article No. and specify Order code.	
Factory certificates	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	**C11**
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	**C12**
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	**C15**
Certificate of FDA-approved fill oil (to EN10204-2.2)	**C17**
Factory certificate functional safety (SIL2/3), devices suitable for use according to IEC 61508 and IEC 61511 (includes SIL conformity declaration)	**C20**
Negative pressure services	
Negative pressure service (for gauge and absolute pressure transmitters)	**D81**
Extended negative pressure service (for gauge and absolute pressure transmitters)	**D85**
Capillary connection	
Single-side mounted at differential pressure transmitters at high-side	**S03**
Single-side mounted at differential pressure transmitters at low-side	**S04**
cooling element	**S08**
Capillary coating	
PE protective tube	
1 m	**S10**
1,6 m	**S11**
2 m	**S12**
2,5 m	**S13**
3 m	**S14**
4 m	**S15**
5 m	**S16**
6 m	**S17**
7 m	**S18**
8 m	**S19**
9 m	**S20**
10 m	**S21**
PTFE protective tube	
1 m	**S40**
1,6 m	**S41**
2 m	**S42**
2,5 m	**S43**
3 m	**S44**
4 m	**S45**
5 m	**S46**
6 m	**S47**
7 m	**S48**
8 m	**S49**
9 m	**S50**
10 m	**S51**

Selection and Ordering data	Order code
Further designs	
Add "**-Z**" to Article No. and specify Order code.	
PVC protective tube	
1 m	**S70**
1,6 m	**S71**
2 m	**S72**
2,5 m	**S73**
3 m	**S74**
4 m	**S75**
5 m	**S76**
6 m	**S77**
7 m	**S78**
8 m	**S79**
9 m	**S80**
10 m	**S81**
Customer-specific tube length	
Customer-specific tube length (specify in plain text)	**Y44**
Specification of process conditions[1)]	
Ambient temperature range	
• -10 ... +50 °C (14 ... +122 °F) preset	**D66**
• -40 ... +50 °C (-40 ... +122 °F)	**D67**
• -10 ... +85 °C (14 ... +185 °F)	**D68**
Process temperature min. ... °C/(°F)/max. ... °C/(°F)	**Y50**

1) See also "Specification of process conditions for selection and ordering data", page 1/337.

Quick-release inline seals

Dimensional drawings



Quick-release inline seal, dimensions in mm (inch)

Inline seals for pipes according to EN 10357 (DIN 11851)

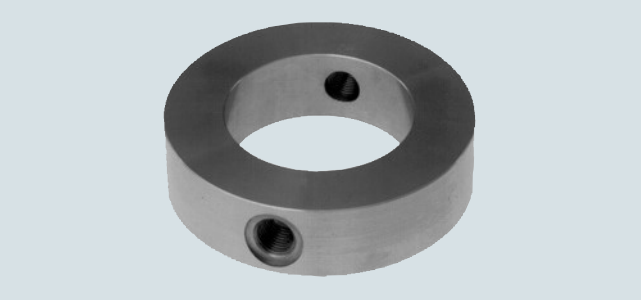
				Food connections			
				DIN 11851		DIN 32676	
	Length	Inner diameter	Connection height	Nominal pressure	Round thread connection to DIN 11851	Nominal pressure	Clamp connection to DIN 32676
Nominal diameter	L (mm)	di (mm)	h (mm)		Thread Rd		D (mm)
DN 10	96	10	27.5	PN 40	28 x 1/8"	PN 16	34
DN 15	150	16	12	PN 40	34 x 1/8"	PN 16	34
DN 25	110	26	21	PN 40	52 x 1/6"	PN 16	50.5
DN 32	110	32	26	PN 40	58 x 1/6"	PN 16	50.5
DN 40	110	38	28.5	PN 40	65 x 1/6"	PN 16	50.5
DN 50	110	50	34	PN 25	78 x 1/6"	PN 16	64
DN 65	110	66	42	PN 25	95 x 1/6"	PN 10	91
DN 80	60	81	47.5	PN 25	110 x 1/4"	PN 10	106
DN 100	60	100	60	PN 25	130 x 1/4"	PN 10	119

Inline seals for pipes according to BS 4825 Part 3 and O.D. Tube (suitable for pipes according to ASME-BPE)

					Food connection			
					IDF to ISO 2853		Clamp connection to ISO 2852	
		Length	Inner diameter	Connection height	Nominal pressure	IDF-Thread to ISO 2853	Nominal pressure	Clamp connection to ISO 2852
Nominal diameter		L (mm)	di (mm)	h (mm)		IDF-thread (Tr)		D (mm)
1 inch	25.4 mm	110	22.2	21	PN 40	37 x 3.175	PN 16	50.5
1½ inch	38 mm	110	34.8	28.5	PN 40	50 x 3.175	PN 16	50.5
2 inch	51 mm	110	47.8	34	PN 25	64 x 3.175	PN 16	64
1½ inch	63.5 mm	110	60.3	38	PN 25	77.5 x 3.175	PN 16	77.5
3 inch	76.1 mm	60	72.9	44.5	PN 25	91 x 3.175	PN 10	91
4 inch	101.6 mm	60	97.6	59.5	PN 25	118 x 3175	PN 10	119

Flushing rings for diaphragm seals

Overview



Flushing ring

Flushing rings are required for flange-mounted and sandwich-type remote seals (Article No. 7MF0800 ... 7MF0814) if the danger exists that the process conditions and the geometry of the connection could cause the medium to form deposits or blockages.

The flushing ring is clamped between the process flange and the remote seal.

Deposits can be flushed away from the diaphragm through the holes in the side, or the pressure volume can be vented. Different nominal diameters and forms permit adaptation to the respective process flange.

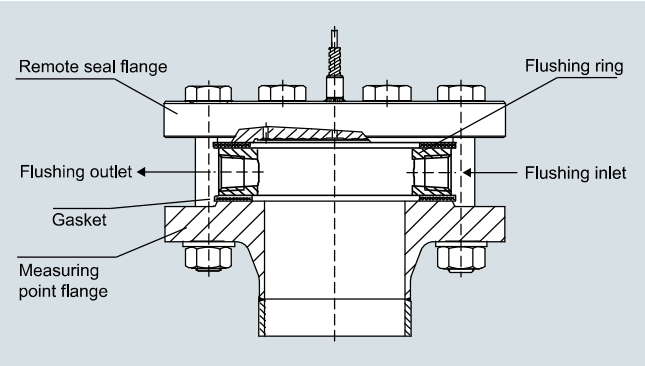
Process connection

For flanges to EN and ASME:
DN 50, 80, 100, 125; PN 16 ... 100 or
DN 2 inch, 3 inch, 4 inch, 5 inch; Class 150 ... 600

Standard design

Material: CrNi-Stahl, mat. No. 1.4404/316L
Sealing faces and flushing holes: See Selection and Ordering data

Design



Installation example

Technical specifications

Flushing ring for remote seals of sandwich and flange design	
Nominal diameter	Nominal pressure
• DN 50	PN 16 ... PN 100
• DN 80	PN 16 ... PN 100
• DN 100	PN 16 ... PN 100
• DN 125	PN 16 ... PN 100
• 2 inch	Class 150 ... class 600
• 3 inch	Class 150 ... class 600
• 4 inch	Class 150 ... class 600
• 5 inch	Class 150 ... class 600
Sealing surface	
• To EN 1092-1	Form B1
	Form B2
	Form D/Form D
	Form C/Form C
	Form C/Form C
	Form E
	Form F
• To ASME B16.5	RF 125 ... 250 AA
	RFSF
	RJF ring groove
Flushing holes (2 off), female thread	• G¼
	• G½
	• ¼-18 NPT
	• ½-14 NPT
Material	Stainless steel 1.4404/316L

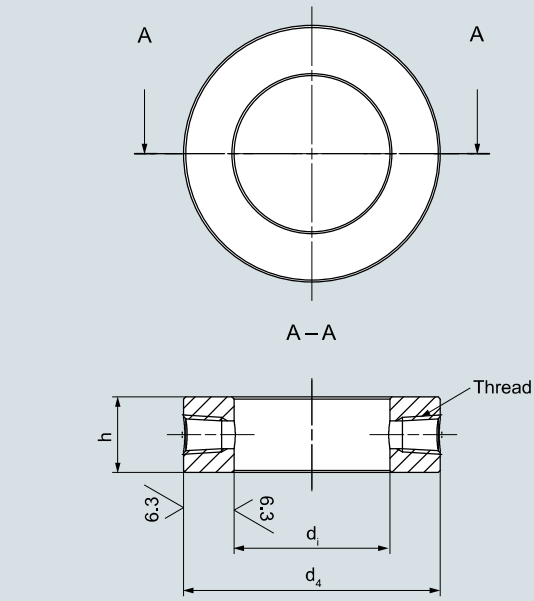
Selection and Ordering data

		Article No.Ord. code
Flushing ring		7MF4925-
for remote seals 7MF0800 to 7MF0814		1
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Nom. diam.	**Nominal pressure**	
• DN 50	PN 16 ... PN 100	A
• DN 80	PN 16 ... PN 100	B
• DN 100	PN 16 ... PN 100	C
• DN 125	PN 16 ... PN 100	D
• 2 inch	Class 150 ... 600	G
• 3 inch	Class 150 ... 600	H
• 4 inch	Class 150 ... 600	J
• 5 inch	Class 150 ... 600	K
Only for RJF ring groove, 7MF4925-1*R....:		
• 2 inch	Class 150	NR
• 3 inch	Class 150	PR
• 4 inch	Class 150	QR
• 5 inch	Class 150	RR
• 2 inch	Class 300 ... 600	UR
• 3 inch	Class 300 ... 600	VR
• 4 inch	Class 300 ... 600	WR
• 5 inch	Class 300 ... 600	XR
Other version Add Order code and plain text: Nominal diameter: ...; Nominal pressure: ...		Z J1Y
Sealing surface		
• EN 1092-1		
- Form B1		A
- Form B2		C
- Form C/Form C		D
- Form D/Form C		E
- Form D/Form D		F
- Form E		G
- Form F		H
• ASME B16.5		
- RF 125 ... 250 AA		M
- RFSF		Q
- RJF ring groove		R
Other version Add Order code and plain text: Sealing surface: ...		Z K1Y
Flushing holes (2 off)		
• Female thread G¼		1
• Female thread G½		2
• Female thread ¼-18 NPT		3
• Female thread ½-14 NPT		4
Material		
• Stainless steel 316L		0
Other version Add Order code and plain text: Material: ...		9 M1Y
Further designs Please add "**-Z**" to Article No. and specify Order code.		Order code
Inspection certificate to EN 10204, section 3.1		C12

Dimensional drawings

Connection according to EN 1092-1

Form B1 and form B2

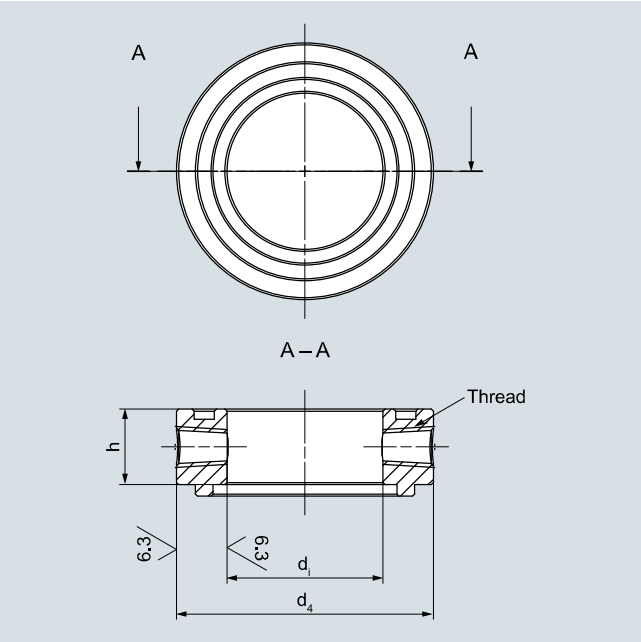


Flushing ring; sealing surface (EN 1092-1), form B1 and form B2

DN	PN	Thread	d_4	d_i	h	Weight
mm	bar		Ø in mm (inch)	Ø in mm (inch)	Ø in mm (inch)	kg (lb)
50	16 ... 100	¼ NPT	102 (4.02)	62 (2.44)	30 (1.18)	1.24 (2.73)
80	16 ... 100	¼ NPT	138 (5.43)	92 (3.62)	30 (1.18)	1.99 (4.39)
100	16 ... 100	¼ NPT	162 (6.38)	92 (3.62)	30 (1.18)	3.35 (7.39)
125	16 ... 100	¼ NPT	188 (7.40)	132 (5.2)	30 (1.18)	3.38 (7.45)
50	16 ... 100	½ NPT	102 (4.02)	62 (2.44)	30 (1.18)	1.24 (2.73)
80	16 ... 100	½ NPT	138 (5.43)	92 (3.62)	30 (1.18)	1.99 (4.39)
100	16 ... 100	½ NPT	162 (6.38)	92 (3.62)	30 (1.18)	3.35 (7.39)
125	16 ... 100	½ NPT	188 (7.40)	132 (5.2)	30 (1.18)	3.38 (7.45)

Flushing rings for diaphragm seals

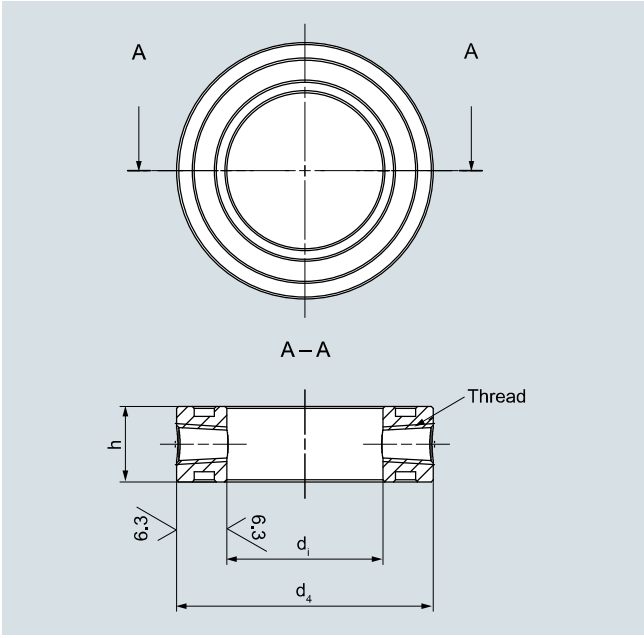
Form D/form C



Flushing ring; sealing surface (EN 1092-1), form D/form C

DN	PN	Thread	d_4	d_i	h	Weight
mm	bar		Ø in mm (inch)	Ø in mm (inch)	Ø in mm (inch)	kg (lb)
50	16 … 100	¼ NPT	102 (4.02)	62 (2.44)	35.5 (1.40)	1.46 (3.22)
80	16 … 100	¼ NPT	138 (5.43)	92 (3.62)	35.5 (1.40)	2.36 (5.2)
100	16 … 100	¼ NPT	162 (6.38)	92 (3.62)	35.5 (1.40)	3.96 (8.73)
125	16 … 100	¼ NPT	188 (7.40)	132 (5.2)	35.5 (1.40)	4.00 (8.82)
50	16 … 100	½ NPT	102 (4.02)	62 (2.44)	40.5 (1.595)	1.67 (3.68)
80	16 … 100	½ NPT	138 (5.43)	92 (3.62)	40.5 (1.595)	2.69 (5.93)
100	16 … 100	½ NPT	162 (6.38)	92 (3.62)	40.5 (1.595)	4.52 (9.97)
125	16 … 100	½ NPT	188 (7.40)	132 (5.2)	40.5 (1.595)	4.56 (10.05)

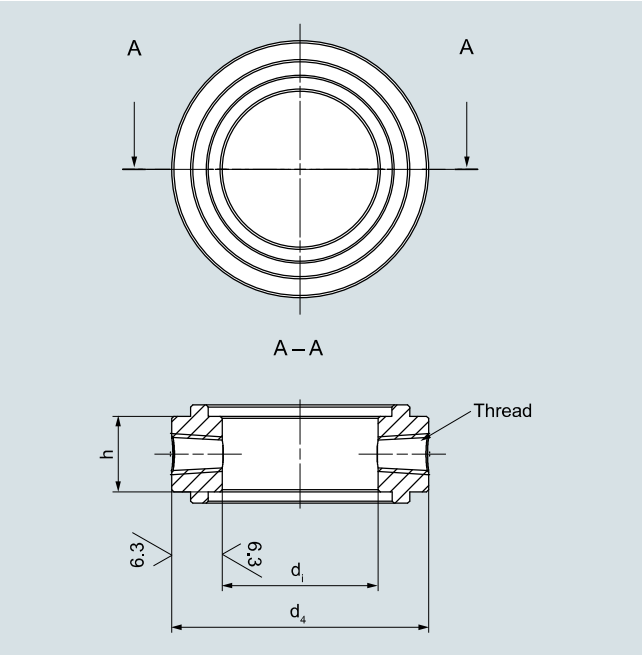
Form D/form D



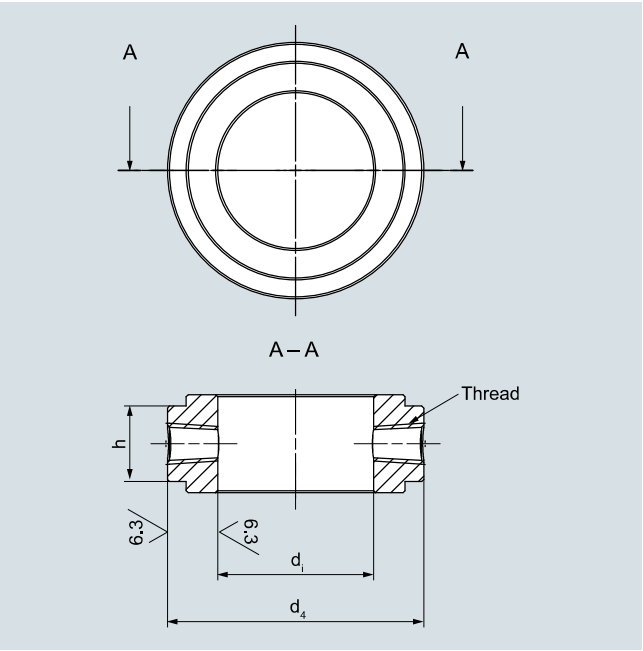
Flushing ring; sealing surface (EN 1092-1), form D/form D

DN	PN	Thread	d_4	d_i	h	Weight
mm	bar		Ø in mm (inch)	Ø in mm (inch)	Ø in mm (inch)	kg lb)
50	16 … 100	¼ NPT	102 (4.02)	62 (2.44)	40 (1.58)	1.65 (3.64)
80	16 … 100	¼ NPT	138 (5.43)	92 (3.62)	40 (1.58)	2.66 (5.86)
100	16 … 100	¼ NPT	162 (6.38)	92 (3.62)	40 (1.58)	4.47 (9.86)
125	16 … 100	¼ NPT	188 (7.40)	132 (5.2)	40 (1.58)	4.50 (9.92)
50	16 … 100	½ NPT	102 (4.02)	62 (2.44)	40 (1.58)	1.65 (3.64)
80	16 … 100	½ NPT	138 (5.43)	92 (3.62)	40 (1.58)	2.66 (5.86)
100	16 … 100	½ NPT	162 (6.38)	92 (3.62)	40 (1.58)	4.47 (9.86)
125	16 … 100	½ NPT	188 (7.40)	132 (5.2)	40 (1.58)	4.50 (9.92)

Form C/form C and form E



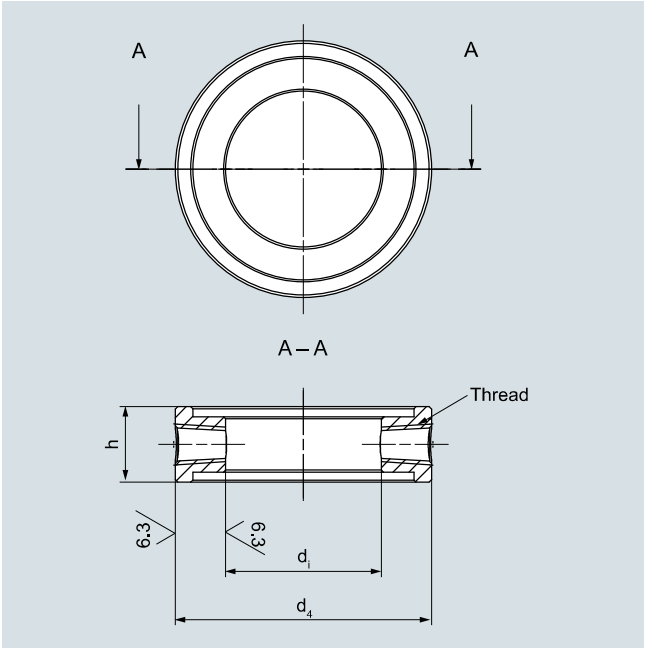
Flushing ring; sealing surface (EN 1092-1), form C/form C



Flushing ring; sealing surface (EN 1092-1), form E

DN	PN	Thread	d_4	d_i	h	x	f3	Weight
mm	bar		Ø in mm (inch)	Ø in mm (inch)	Ø in mm (inch)	Ø in mm (inch)	Ø in mm (inch)	kg (lb)
50	16 … 100	¼ NPT	102 (4.02)	62 (2.44)	31 (1.22)	87 (3.43)	4.5 (0.18)	1.49 (3.28)
80	16 … 100	¼ NPT	138 (5.43)	92 (3.62)	31 (1.22)	120 (4.72)	4.5 (0.18)	2.40 (5.29)
100	16 … 100	¼ NPT	162 (6.38)	92 (3.62)	30 (1.18)	149 (5.87)	5 (0.2)	4.21 (9.28)
125	16 … 100	¼ NPT	188 (7.40)	132 (5.2)	30 (1.18)	175 (6.89)	5 (0.2)	4.21 (9.28)
50	16 … 100	½ NPT	102 (4.02)	62 (2.44)	31 (1.22)	87 (3.43)	4.5 (0.18)	1.49 (3.28)
80	16 … 100	½ NPT	138 (5.43)	92 (3.62)	31 (1.22)	120 (4.72)	4.5 (0.18)	2.40 (5.29)
100	16 … 100	½ NPT	162 (6.38)	92 (3.62)	30 (1.18)	149 (5.87)	5 (0.2)	4.21 (9.28)
125	16 … 100	½ NPT	188 (7.40)	132 (5.2)	30 (1.18)	175 (6.89)	5 (0.2)	3.38 (7.45)

Form F



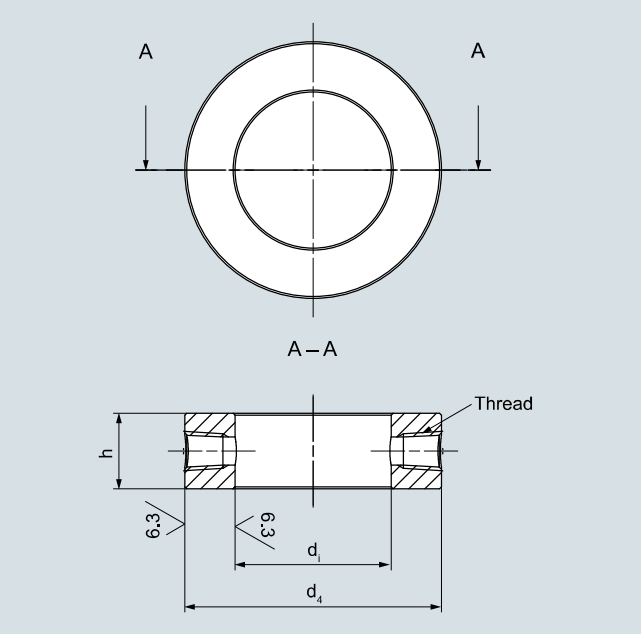
Flushing ring; sealing surface (EN 1092-1), form F

DN	PN	Thread	d_4	d_i	h	x	f3	Weight
mm	bar		Ø in mm (inch)	Ø in mm (inch)	Ø in mm (inch)	Ø in mm (inch)	Ø in mm (inch)	kg lb)
50	16 … 100	¼ NPT	102 (4.02)	62 (2.44)	35 (1.38)	88 (3.46)	4 (0.16)	1.25 (2.76)
80	16 … 100	¼ NPT	138 (5.43)	92 (3.62)	35 (1.38)	121 (4.76)	4 (0.16)	2.02 (4.45)
100	16 … 100	¼ NPT	162 (6.38)	92 (3.62)	35 (1.38)	150 (5.91)	4.5 (0.18)	3.11 (6.86)
125	16 … 100	¼ NPT	188 (7.40)	132 (5.2)	35 (1.38)	175 (6.89)	4.5 (0.18)	3.19 (7.03)
50	16 … 100	½ NPT	102 (4.02)	62 (2.44)	40 (1.58)	88 (3.46)	4 (0.16)	1.45 (3.2)
80	16 … 100	½ NPT	138 (5.43)	92 (3.62)	40 (1.58)	121 (4.76)	4 (0.16)	2.35 (5.18)
100	16 … 100	½ NPT	162 (6.38)	92 (3.62)	40 (1.58)	150 (5.91)	4.5 (0.18)	3.67 (8.09)
125	16 … 100	½ NPT	188 (7.40)	132 (5.2)	40 (1.58)	175 (6.89)	4.5 (0.18)	3.76 (8.29)

Flushing rings for diaphragm seals

Connection according to ASME B 16.5

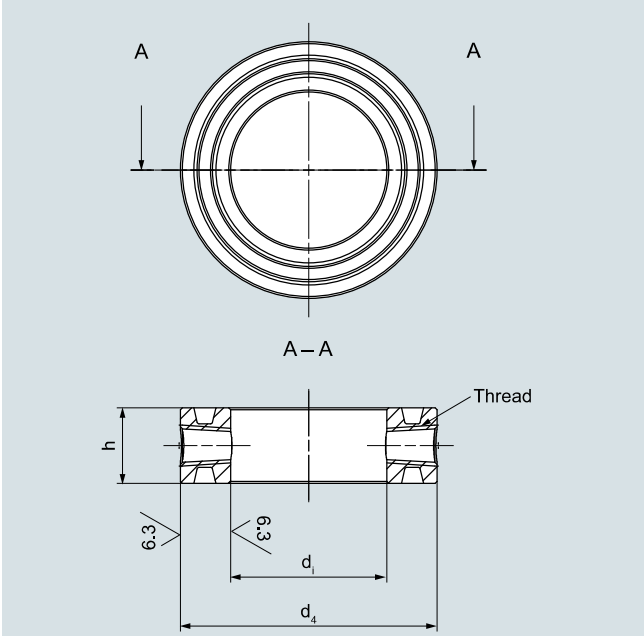
RFSF and RF 125 ... 250 AA



Flushing ring; sealing surface (ASME B 16.5), RFSF and RF 125 to 250 AA

DN	Class	Thread	d_4	d_i	h	Weight
inch			Ø in mm (inch)	Ø in mm (inch)	Ø in mm (inch)	kg lb)
2	150 ... 600	¼ NPT	92 (3.62)	62 (2.44)	30 (1.18)	0.87 (1.92)
3	150 ... 600	¼ NPT	127 (5)	92 (3.62)	30 (1.18)	1.44 (3.17)
4	150 ... 600	¼ NPT	157 (6.18)	92 (3.62)	30 (1.18)	3.05 (6.72)
5	150 ... 600	¼ NPT	186 (7.32)	141 (5.55)	30 (1.18)	2.77 (6.11)
2	150 ... 600	½ NPT	92 (3.62)	62 (2.44)	30 (1.18)	0.87 (1.92)
3	150 ... 600	½ NPT	127 (5)	92 (3.62)	30 (1.18)	1.44 (3.17)
4	150 ... 600	½ NPT	157 (6.18)	92 (3.62)	30 (1.18)	3.05 (6.72)
5	150 ... 600	½ NPT	186 (7.32)	141 (5.55)	30 (1.18)	2.77 (6.11)

RJF ring groove



Flushing ring; sealing surface (ASME B 16.5), RJF ring groove

DN	Class	Thread	d_4	d_i	h	Weight
inch			Ø in mm (inch)	Ø in mm (inch)	Ø in mm (inch)	kg lb)
2	150	¼ NPT	102 (4.02)	62 (2.44)	40 (1.58)	1.65 (3.64)
3	150	¼ NPT	133 (5.24)	92 (3.62)	40 (1.58)	2.32 (5.12)
4	150	¼ NPT	171 (6.73)	92 (3.62)	40 (1.58)	5.22 (11.51)
5	150	¼ NPT	194 (7.64)	141 (5.55)	40 (1.58)	4.46 (9.83)
2	150	½ NPT	102 (4.02)	62 (2.44)	46 (1.81)	1.90 (4.19)
3	150	½ NPT	133 (5.24)	92 (3.62)	46 (1.81)	2.66 (5.86)
4	150	½ NPT	171 (6.73)	92 (3.62)	46 (1.81)	6.00 (13.23)
5	150	½ NPT	194 (7.64)	141 (5.55)	46 (1.81)	5.13 (11.31)
2	300 ... 600	¼ NPT	108 (4.25)	62 (2.44)	40 (1.58)	1.96 (4.32)
3	300 ... 600	¼ NPT	146 (5.75)	92 (3.62)	40 (1.58)	3.23 (7.12)
4	300 ... 600	¼ NPT	175 (6.89)	92 (3.62)	40 (1.58)	5.57 (12.28)
5	300 ... 600	¼ NPT	210 (8.27)	141 (5.55)	40 (1.58)	6.08 (13.4)
2	300 ... 600	½ NPT	108 (4.25)	62 (2.44)	46 (1.81)	2.26 (4.98)
3	300 ... 600	½ NPT	146 (5.75)	92 (3.62)	46 (1.81)	3.71 (8.18)
4	300 ... 600	½ NPT	175 (6.89)	92 (3.62)	46 (1.81)	6.4 (14.11)
5	300 ... 600	½ NPT	210 (8.27)	141 (5.55)	46 (1.81)	7 (15.43)

Overview

This section shows examples of typical measuring setups for using SITRANS P pressure transmitters with and without remote seals.

Equations for calculating lower range value and upper range value are provided for each example.

Questionnaires are included to help you select the right combination of remote seal and pressure transmitter.

Installation

Remote seals of sandwich design are fitted between the connection flange of the measuring point and a dummy flange. Remote seals of flange design are fitted directly on the connection flange of the measuring point. The respective pressure rating of the dummy flange or the flanged remote seal must be observed.

The pressure transmitter should be installed below the connection flange (and below the lower connection flange in the case of differential pressure transmitters). This arrangement must be used in the low-pressure range.

When measuring at pressures above atmospheric, the pressure transmitter can also be installed above the connection flange.

The capillaries between the remote seal and the pressure transmitter should be as short as possible to obtain a good transmission response.

Offset of measuring range

If there is a difference in height between the two connection flanges when measuring with two remote seals, an additional differential pressure will result from the oil filling of the remote seal capillaries. This results in a measuring range offset which has to be taken into account when you set the pressure transmitter.

An offset in the measuring range also occurs when combining a remote seal with a transmitter if the remote seal is not installed at the same height as the transmitter.

Pressure transmitter output

If the level, separation layer or density increase in closed vessels, the differential pressure and hence the output signal of the pressure transmitter also increase.

For an inverted relationship between the differential pressure and the output signal, the lower range value and upper range value of the SITRANS P must be interchanged.

With open vessels, a rising pressure is usually assigned to an increasing level, separation layer or density.

Influence of ambient temperature

Temperature differences between the individual capillaries and between the individual remote seals should be avoided.

Temperature variations in the area of the measuring setup cause a change in volume of the filling liquid and hence measuring errors.

Notes

- For the separation layer measurement, the separation layer has to be positioned between the two spigots. Also you must make sure that the level in the container is always above the top spigot.
- When measuring density, make sure that the level of the medium remains constant. The level should be above the top spigot.

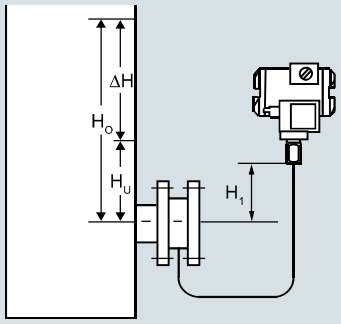
Possible combinations of pressure transmitters and remote seals

Type of installation	Pressure transmitters	Remote seals
A/B	7MF030.-... 7MF031.-... 7MF040.-... 7MF041.-...	7MF0800-... 7MF0810-...
C_1 and C_2	7MF032.-... 7MF042.-...	7MF0800-... 7MF0810-... (negative pressure service in each case)
	7MF033.-... 7MF043.-...	7MF0801-... 7MF0811-...
D	7MF034.-... 7MF035.-... 7MF044.-... 7MF045.-...	7MF0802-... 7MF0812-...
E	7MF034.-... 7MF035.-... 7MF044.-... 7MF045.-...	7MF0813-...
G, H and J	7MF034.-... 7MF035.-... 7MF044.-... 7MF045.-...	7MF0802-... 7MF0812-...

Dimensional drawings

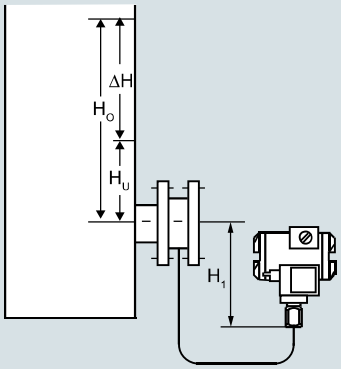
Types of installation for pressure and level measurements (open vessels)

Installation type A



Pressure transmitter
above the measuring point

Installation type B



Pressure transmitter
below the measuring point

$H_1 \leq 7$ m (23 ft), with halocarbon oil as filling liquid only $H_1 \leq 4$ m (13.1 ft)

Installation type A

Lower range value: $p_{MA} = \rho_{FL} \cdot g \cdot H_U - \rho_{Oil} \cdot g \cdot H_1$

Upper range value: $p_{ME} = \rho_{FL} \cdot g \cdot H_O - \rho_{Oil} \cdot g \cdot H_1$

Installation type B

Lower range value: $p_{MA} = \rho_{FL} \cdot g \cdot H_U + \rho_{Oil} \cdot g \cdot H_1$

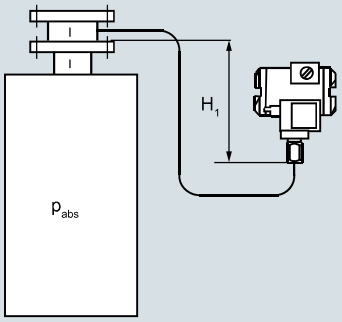
Upper range value: $p_{ME} = \rho_{FL} \cdot g \cdot H_O + \rho_{Oil} \cdot g \cdot H_1$

Legend

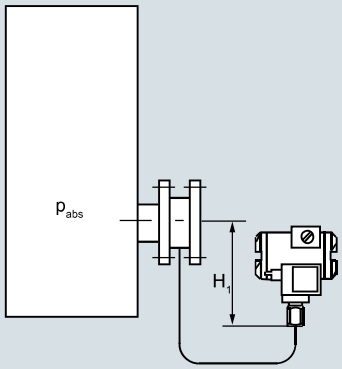
p_{MA}	Lower range value to be set
p_{ME}	Upper range value to be set
ρ_{FL}	Density of medium in vessel
ρ_{Oil}	Density of filling oil in the capillary to the remote seal
g	Local acceleration due to gravity
H_U	Lower range value
H_O	Upper range value
H_1	Distance between vessel flange and pressure trans.

Types of installation for absolute level measurements (closed vessels)

Installation type C_1



Installation type C_2



Pressure transmitter for absolute pressure always below the measuring point: $H_1 \geq 200$ mm (7.9 inch)

Installation type C_1 and C_2

Lower range value: $p_{MA} = p_{START} + \rho_{Oil} \cdot g \cdot H_1$

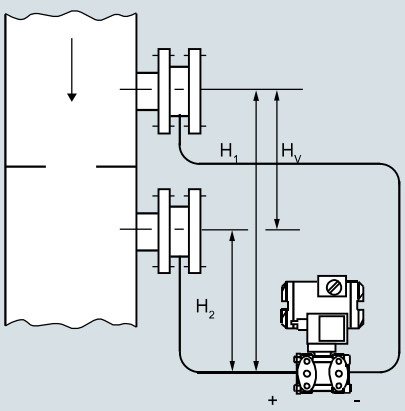
Upper range value: $p_{ME} = p_{END} + \rho_{Oil} \cdot g \cdot H_1$

Legend

p_{MA}	Lower range value to be set
p_{ME}	Upper range value to be set
p_{START}	Lower range value
p_{END}	Upper range value
ρ_{Oil}	Density of filling oil in the capillary to the remote seal
g	Local acceleration due to gravity
H_1	Distance between vessel flange and pressure trans.

Type of installation for differential pressure and flow measurements

Installation type D Filter monitoring



Installation type D

Lower range value: $p_{MA} = p_{START} - \rho_{Oil} \cdot g \cdot H_V$

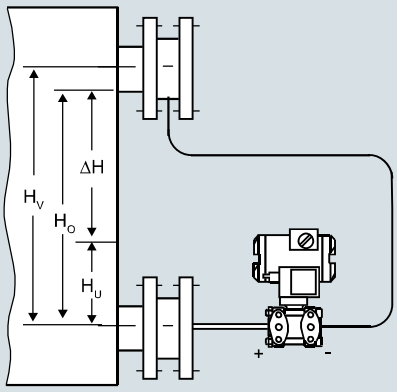
Upper range value: $p_{ME} = p_{END} - \rho_{Oil} \cdot g \cdot H_V$

Legend

p_{MA}	Lower range value to be set
p_{ME}	Upper range value to be set
p_{START}	Lower range value
p_{END}	Upper range value
ρ_{Oil}	Density of filling oil in the capillary to the remote seal
g	Local acceleration due to gravity
H_V	Distance between the measuring points (spigots)

Types of installation for level measurements (closed vessels)

Installation type E



Installation type E

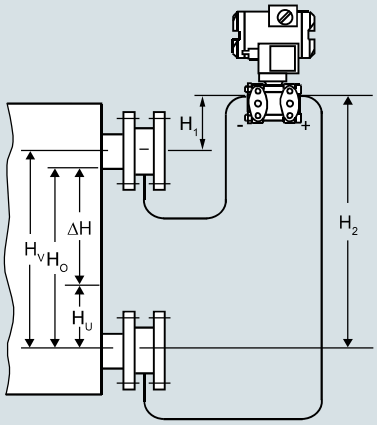
Lower range value: $p_{MA} = \rho_{FL} \cdot g \cdot H_U - \rho_{Oil} \cdot g \cdot H_V$

Upper range value: $p_{ME} = \rho_{FL} \cdot g \cdot H_O - \rho_{Oil} \cdot g \cdot H_V$

Legend

p_{MA}	Lower range value to be set
p_{ME}	Upper range value to be set
ρ_{FL}	Density of medium in vessel
ρ_{Oil}	Density of filling oil in the capillary to the remote seal
g	Local acceleration due to gravity
H_U	Lower range value
H_O	Upper range value
H_V	Distance between the measuring points (spigots)

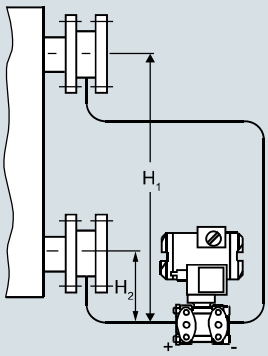
Installation type G



Pressure transmitter for differential pressure above the upper measuring point, no vacuum

$H_2 \leq 7$ m (23 ft), with halocarbon oil as filling liquid only $H_1 \leq 4$ m (13.1 ft)

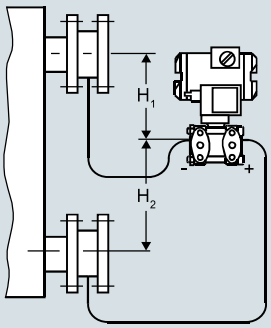
Installation type H



below the lower measuring point

Installation type for vacuum applications

Installation type J



between the measuring points, no vacuum

$H_2 \leq 7$ m (23 ft), with halocarbon oil as filling liquid only $H_2 \leq 4$ m (13.1 ft)

Installation type G, H and J

Lower range value:
$p_{MA} = \rho_{FL} \cdot g \cdot H_U - \rho_{Oil} \cdot g \cdot H_V$

Upper range value:
$p_{ME} = \rho_{FL} \cdot g \cdot H_O - \rho_{Oil} \cdot g \cdot H_V$

Legend

p_{MA}	Lower range value to be set
p_{ME}	Upper range value to be set
ρ_{FL}	Density of medium in vessel
ρ_{Oil}	Density of filling oil in the capillary to the remote seal
g	Local acceleration due to gravity
H_U	Lower range value
H_O	Upper range value
H_V	Distance between the measuring points (spigots)

Measuring setups without remote seals

Overview

Notes

- For the separation layer measurement, the separation layer has to be positioned between the two spigots.

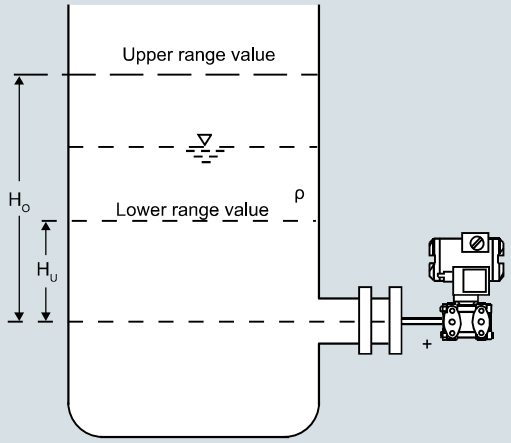
Also you must make sure that the level in the container is always above the top spigot.

- When measuring density, make sure that the level of the medium remains constant. The level should be above the top spigot

Dimensional drawings

Pressure transmitters for differential pressure, for flanging

Measuring setups for open containers



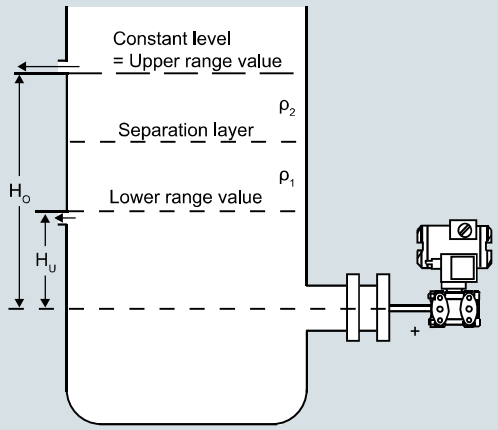
Level measurement

Lower range value: $p_{MA} = \rho \cdot g \cdot H_U$

Upper range value: $p_{ME} = \rho \cdot g \cdot H_O$

Legend

p_{MA}	Lower range value to be set
p_{ME}	Upper range value to be set
ρ	Density of medium in vessel
g	Local acceleration due to gravity
H_U	Lower range value
H_O	Upper range value



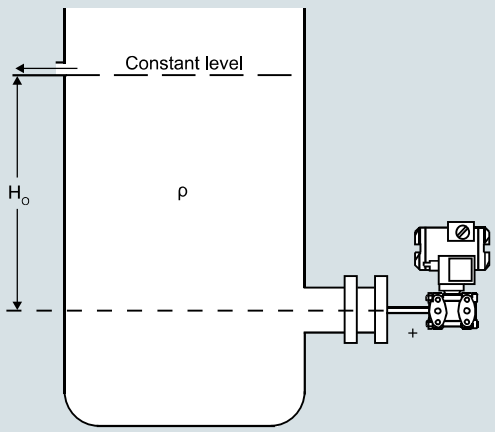
Separation layer measurement

Lower range value: $p_{MA} = g \cdot (H_U \cdot \rho_1 + (H_O - H_U) \cdot \rho_2)$

Upper range value: $p_{ME} = \rho_1 \cdot g \cdot H_O$

Legend

p_{MA}	Lower range value to be set
p_{ME}	Upper range value to be set
ρ_1	Density of heavier liquid
ρ_2	Density of lighter liquid
g	Local acceleration due to gravity
H_U	Lower range value
H_O	Upper range value



Density measurement

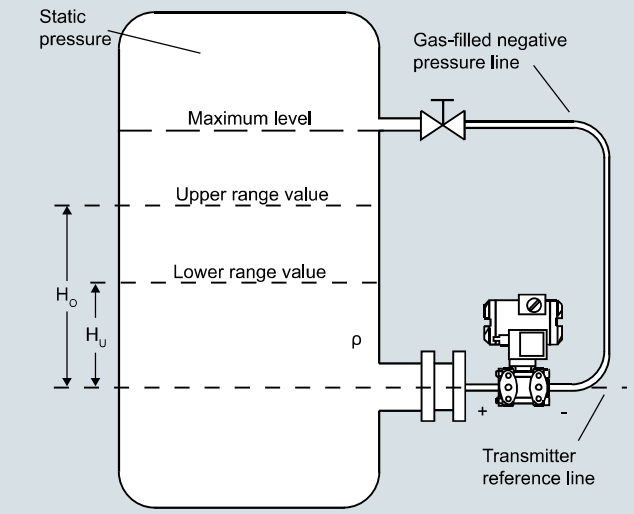
Lower range value: $p_{MA} = \rho_{MIN} \cdot g \cdot H_O$

Upper range value: $p_{ME} = \rho_{MAX} \cdot g \cdot H_O$

Legend

p_{MA}	Lower range value to be set
p_{ME}	Upper range value to be set
ρ_{MIN}	Minimum density of medium in vessel
ρ_{MAX}	Maximum density of medium in vessel
g	Local acceleration due to gravity
H_O	Upper range value in m

Measuring setups for closed containers



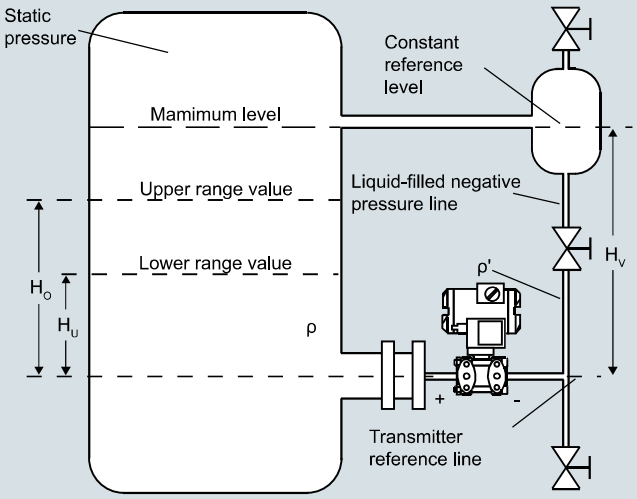
Level measurement, Version 1

Lower range value: $\Delta p_{MA} = \rho \cdot g \cdot H_U$

Upper range value: $\Delta pME = \rho \cdot g \cdot H_O$

Legend

Δp_{MA}	Lower range value to be set
Δp_{ME}	Upper range value to be set
ρ	Density of medium in vessel
g	Local acceleration due to gravity
H_U	Lower range value
H_O	Upper range value



Level measurement, Version 2

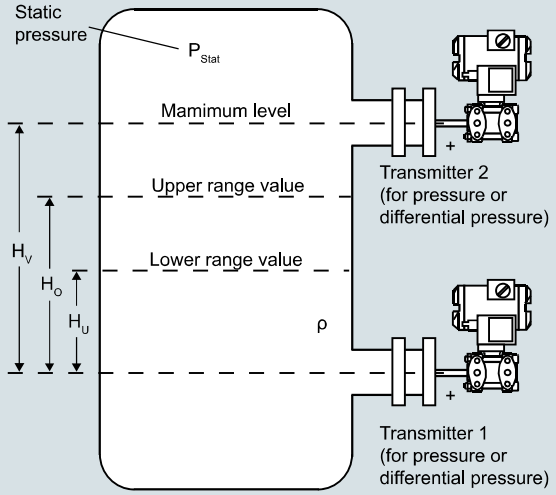
Lower range value: $\Delta p_{MA} = g \cdot (H_U \cdot \rho - H_V \cdot \rho')$

Upper range value: $\Delta p_{ME} = g \cdot (H_O \cdot \rho - H_V \cdot \rho')$

Legend

Δp_{MA}	Lower range value to be set
Δp_{ME}	Upper range value to be set
ρ	Density of medium in vessel
ρ'	Density of liquid in the negative pressure line (corresponding to the temperature existing there)
g	Local acceleration due to gravity
H_U	Lower range value
H_O	Upper range value
H_V	Distance between the measuring points (spigots)

Measuring setups without remote seals



Level measurement, Version 3

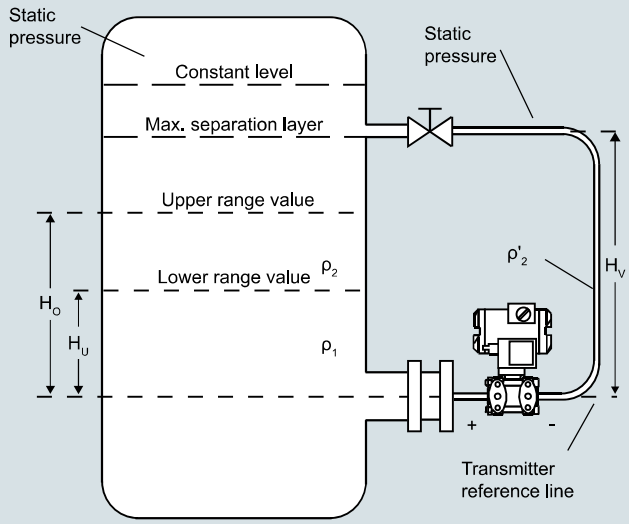
Lower range value: $\Delta p_{MA} = \underbrace{P_{Stat} + \rho \cdot g \cdot H_U}_{\text{Transmitter 1}} - \underbrace{P_{Stat}}_{\text{Transmitter 2}}$

Upper range value: $\Delta p_{ME} = \underbrace{P_{Stat} + \rho \cdot g \cdot H_O}_{\text{Transmitter 1}} - \underbrace{P_{Stat}}_{\text{Transmitter 2}}$

Legend

Δp_{MA}	Lower range value to be set
Δp_{ME}	Upper range value to be set
ρ	Density of medium in vessel
g	Local acceleration due to gravity
H_U	Lower range value
H_O	Upper range value
H_V	Distance between the measuring points (spigots)

The pressure measuring range (≙ level) will be calculated by subtraction of measuring range of transmitter 1 minus measuring range of transmitter 2 in the process control system.



Separation layer measurement

Lower range value: $\Delta p_{MA} = g \cdot (H_U \cdot \rho_1 + (H_O - H_U) \cdot \rho_2 - H_V \cdot \rho'_2)$

Upper range value: $\Delta p_{ME} = g \cdot (H_O \cdot \rho_1 - H_V \cdot \rho'_2)$

Legend

Δp_{MA}	Lower range value to be set
Δp_{ME}	Upper range value to be set
ρ_1	Density of heavier liquid with separation layer in vessel
ρ_2	Density of lighter liquid with separation layer
ρ'_2	Density of liquid in the negative pressure line (corresponding to the temperature existing there)
g	Local acceleration due to gravity
H_U	Lower range value
H_O	Upper range value
H_V	Distance between the measuring points (spigots)

Siemens Ltd.
Digital Industries
Process Automation
R&D Technology Centre
Thane Belapur Road
Kalwa, Thane – 400 601

For more information call us on 1800 209 1800

For new enquiries, life cycle support for products, systems and solutions, call us at 1800 208 3000 or email us at pisupport.in@siemens.com

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