

Pressure Measurement

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Technical description

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Overview

In many cases the pressure transmitter and the measured 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 measured 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 volume in contact with the measured medium is terminated by a flat elastic diaphragm lying in a bed. Between the diaphragm and the pressure transmitter is the filling liquid.

In many cases, a capillary has to be connected between the remote seal and the pressure transmitter in order e.g. to minimize temperature effects on the latter when hot media are involved.

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

The remote seal can be optionally equipped with a projecting diaphragm (tube).

Remote seals of sandwich design are fitted with a dummy 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.



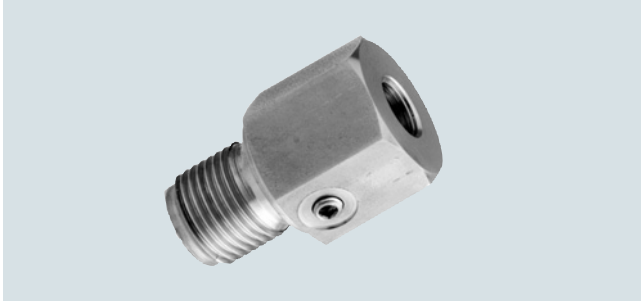
Diaphragm seal of flange design without (left) and with a projecting diaphragm (tube)

- 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

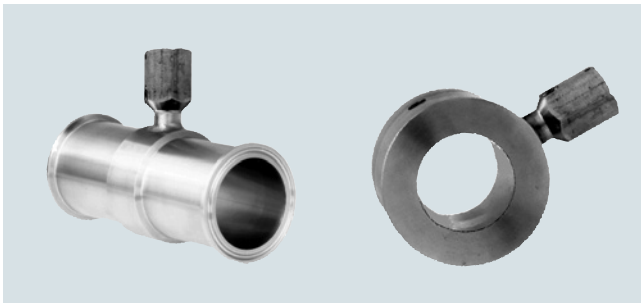


Miniature diaphragm seal with diaphragm flush with front

- Miniature diaphragm seals

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

Clamp-on seal



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

With clamp-on 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 clamp-on 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 clamp-on seal can be cleaned by a pig.

The following types of clamp-on seals exist:

- Quick-release clamp-on 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.
- Clamp-on seals for flanging to EN or ASME.
- Clamp-on 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 or below, including during commissioning (see ordering data).

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

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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 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/dm ³]	Viscosity at 20°C [mm ² /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".

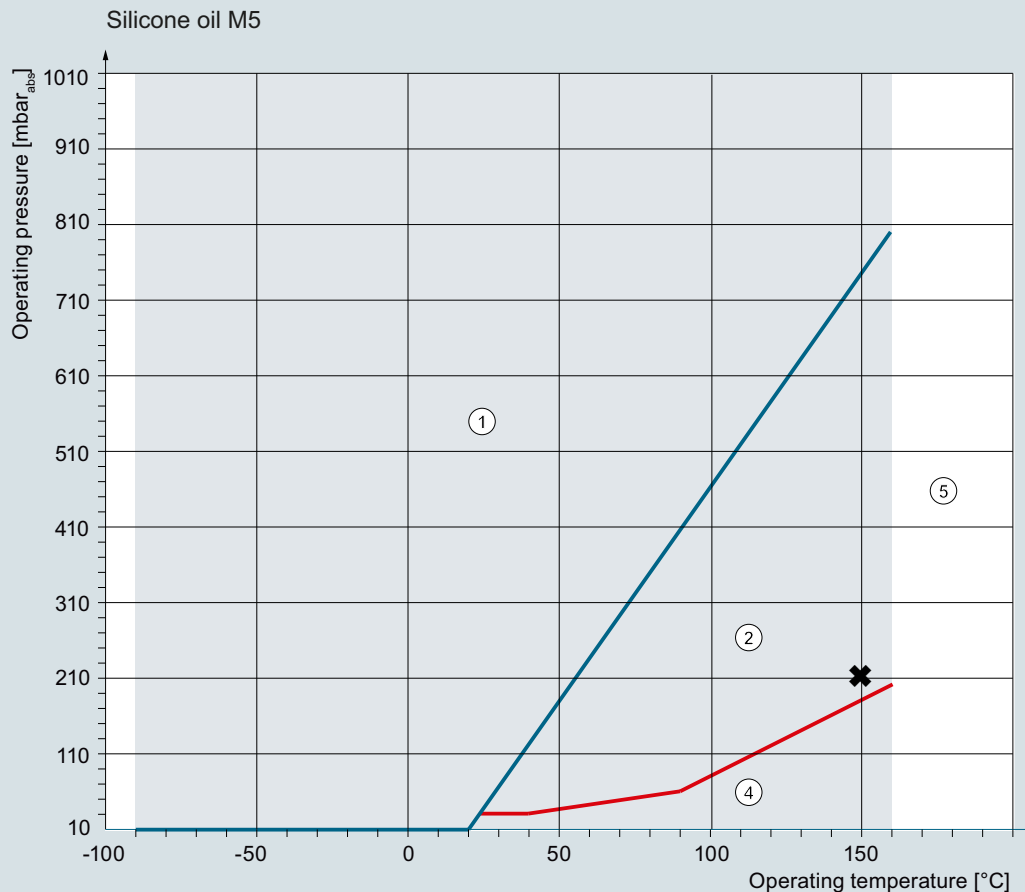
Selection of the required negative pressure service

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 1/364.



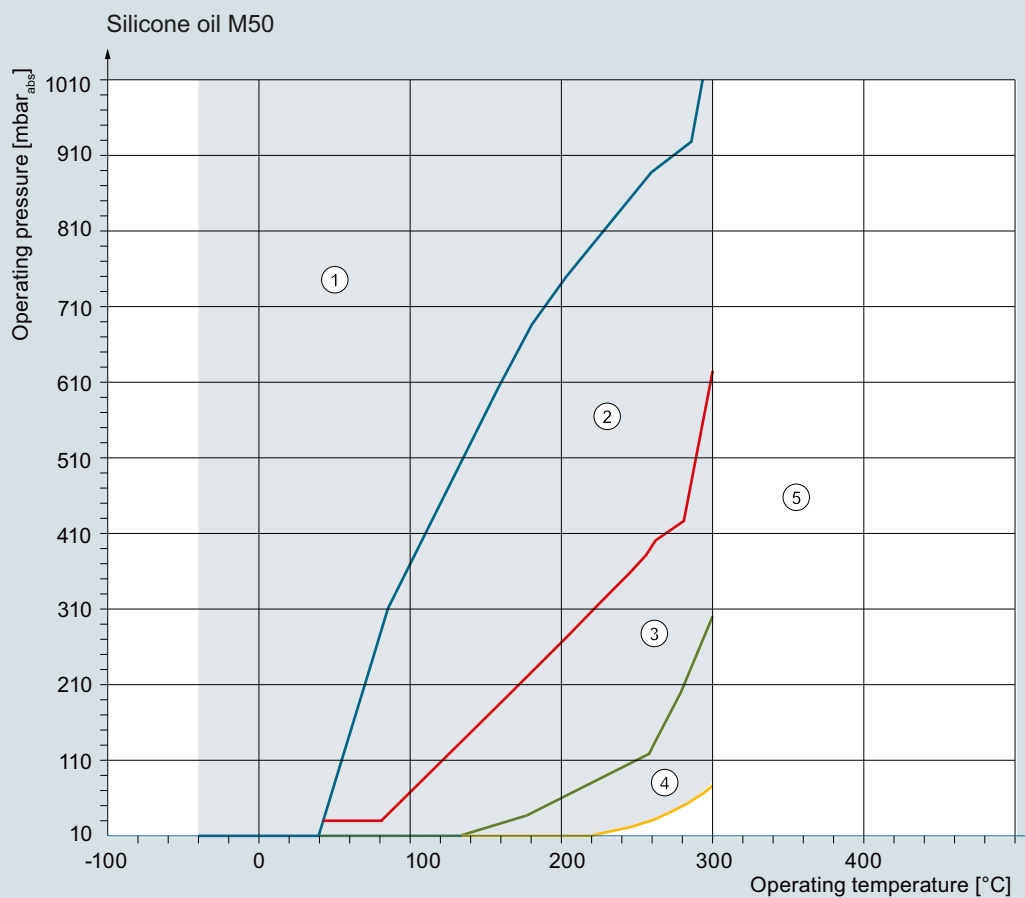
- ① Operating range of the standard remote seal design without special measures.
- ② Operating range for which the **negative pressure service D81 or D83** is required.
Note: An extended negative pressure service is **not** possible for this fill fluid.
- ④ Please contact Technical Support for applications 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

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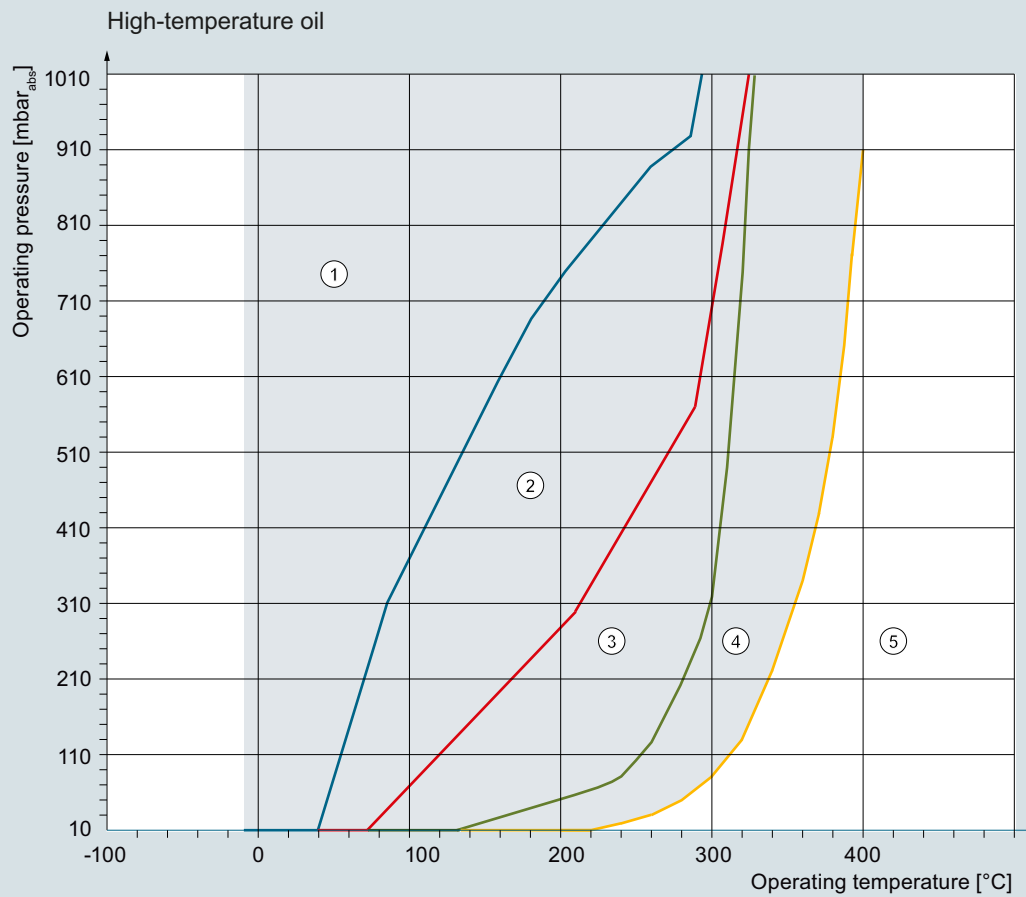
Technical description



- 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.

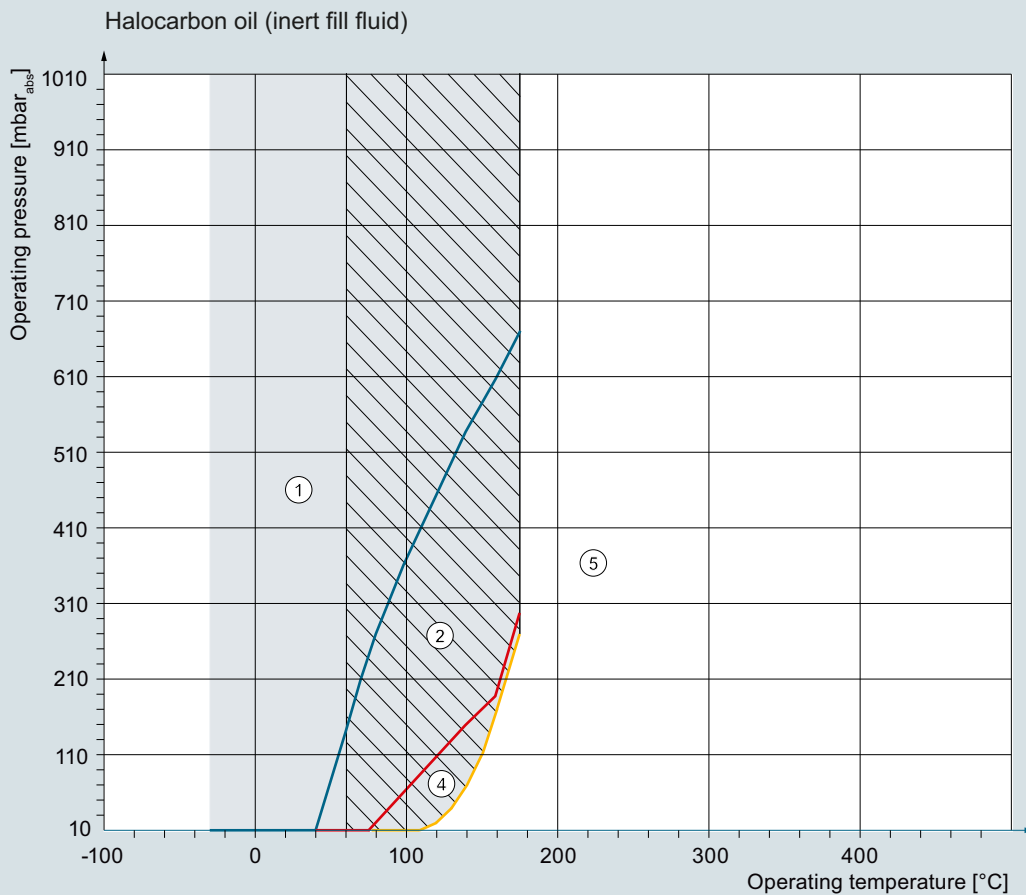
Permissible operating range:
Max. temperature limit: 400 °C
Min. temperature limit: -10 °C

Negative pressure applications with high-temperature oil

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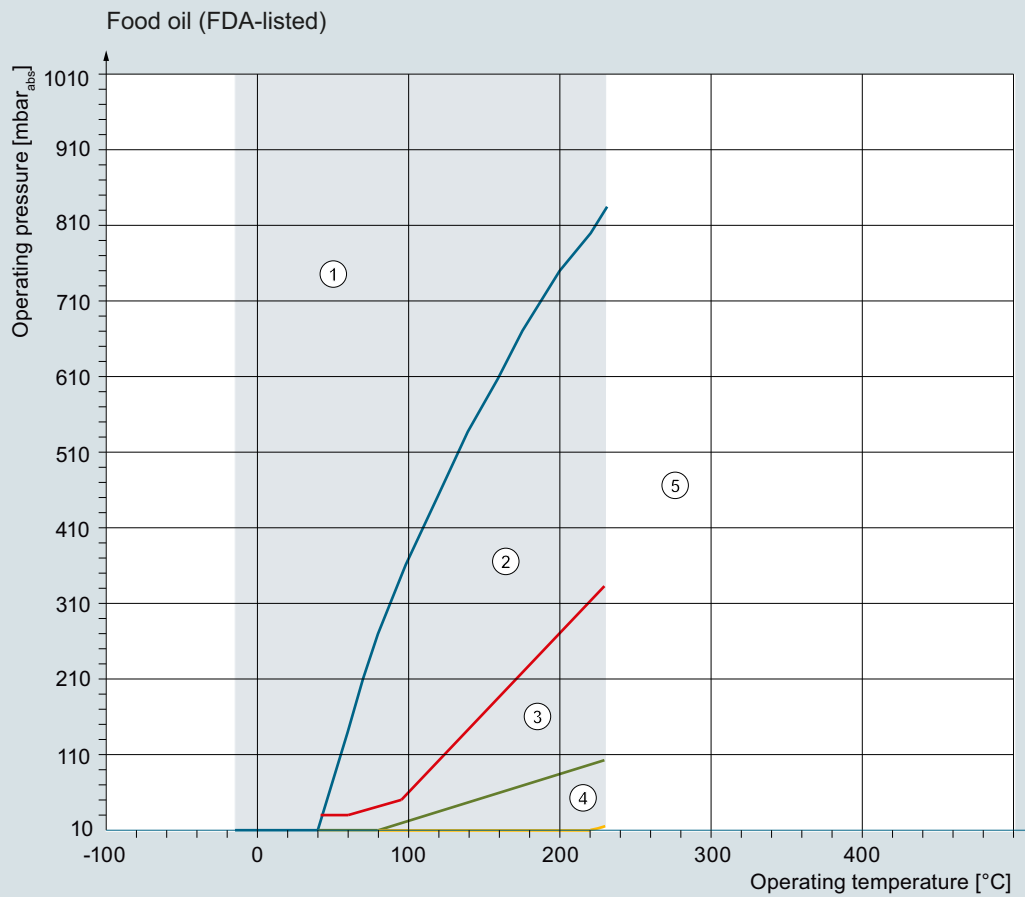
- ① Operating range of the standard remote seal design without special measures.
- ② Operating range for which the **negative pressure service D81 or D83** is required.
Note: An extended negative pressure service is **not** possible for this fill fluid.
- ④ Please contact Technical Support for applications 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)

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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/connec- tion spigot f_{PF}		Recommended min. spans (guid- ance 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 connec- tion	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 dia- phragm 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/connec- tion spigot f_{PF}		Recommended min. spans (guidance val- ues, 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 connec- tion	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.

Pressure Measurement

Remote seals for transmitters and pressure gauges
SITRANS P320/P420

Technical description

Temperature error Clamp-on seals

Temperature errors of clamp-on 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 pro- cess flange/connection spigot f_{PF}		Recommended min. 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 clamp-on 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 pro- cess flange/connection spigot f_{PF}		Recommended min. 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	$f_{RS} = 0.05 \text{ mbar}/10 \text{ K}$ (0.039 inH ₂ O/10 K)
Capillary length	$l_{Cap} = 6 \text{ m}$ (19.7 ft)
Capillaries fitted on both sides	$f_{Cap} = 0.07 \text{ mbar}/(10 \text{ K} \cdot m_{Cap})$ (0.028 inH ₂ O/(10 K · m _{Cap}))
Filling liquid silicone oil M5	$f_{PF} = 0.07 \text{ mbar}/10 \text{ K}$ (0.028 inH ₂ O/10 K)
Process temperature	$\vartheta_{RS} = 100 \text{ °C}$ (212 °F)
Temperature on the capillaries	$\vartheta_{Cap} = 50 \text{ °C}$ (122 °F)
Temperature on pressure transmitter	$\vartheta_{TR} = 50 \text{ °C}$ (122 °F)
Calibration temperature	$\vartheta_{Cal} = 20 \text{ °C}$ (68 °F)

Required:

Additional temperature error of remote seals: dp

Calculation:**in mbar**

$$dp = (100 \text{ °C} - 20 \text{ °C}) \cdot 0.05 \text{ mbar}/10 \text{ K} + (50 \text{ °C} - 20 \text{ °C}) \cdot 6 \text{ m} \cdot 0.07 \text{ mbar}/(10 \text{ K} \cdot \text{m}) + (50 \text{ °C} - 20 \text{ °C}) \cdot 0.07 \text{ mbar}/10 \text{ K}$$

$$dp = 0.4 \text{ mbar} + 1.26 \text{ mbar} + 0.21 \text{ mbar}$$

in inH₂O

$$dp = (212 \text{ °F} - 68 \text{ °F}) \cdot 0.039 \text{ inH}_2\text{O}/10 \text{ K} + (112 \text{ °F} - 68 \text{ °F}) \cdot 19.7 \text{ ft} \cdot 0.028 \text{ inH}_2\text{O}/(10 \text{ K} \cdot 3.28 \text{ ft}) + (112 \text{ °F} - 68 \text{ °F}) \cdot (0.028 \text{ inH}_2\text{O}/10 \text{ K})$$

$$dp = 0.16 \text{ inH}_2\text{O} + 0.51 \text{ inH}_2\text{O} + 0.08 \text{ inH}_2\text{O}$$

Result:

$$dp = 1.87 \text{ mbar} \text{ (0.75 inH}_2\text{O)}$$

(corresponds to 2.27% of set 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

Pressure Measurement

Remote seals for transmitters and pressure gauges
SITRANS P320/P420

Technical description

Maximum capillary length for diaphragm seals (guidance values)

Nom. diam.		Max. length of capillary			
		Diaphragm seal		Clamp-on 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 span.

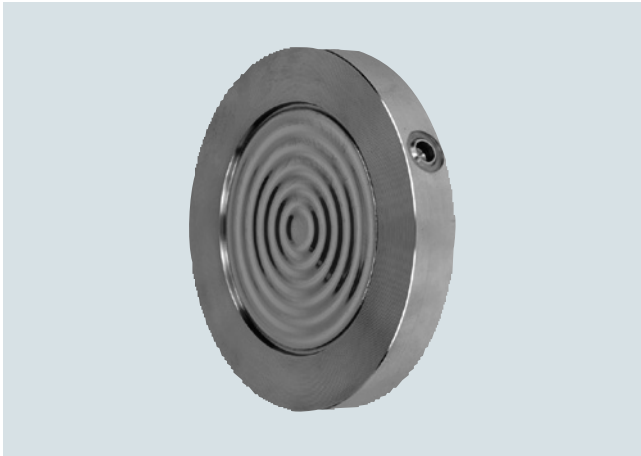
The listed values must be multiplied by the respective length of the capillary, or with transmitters for differential pressure and flow by the total length of both capillaries.

The response times are independent of the set span within the range of the respective transmitter. The response times are of insignificant importance for 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. span of pressure transmitter					
	kg/dm ³	(lb/in ³)	°C	(°F)	250 mbar	(101 inH ₂ O)	600 mbar	(241 inH ₂ O)	1600 mbar	(643 inH ₂ O)
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 1/355 ff.

Overview



Diaphragm seals of sandwich design

Technical specifications

Diaphragm seals of sandwich design

Nominal diameter	Nominal pressure
Connecting standard EN 1092-1	
<ul style="list-style-type: none"> • DN 25, DN 40, DN 50, DN 65, DN 80, DN 100, DN 125 	PN 16 ... PN 400
Connecting standard ASME B16.5	
<ul style="list-style-type: none"> • 1 inch, 1½ inch, 2 inch, 2½ inch, 3 inch, 4 inch, 5 inch 	Class 150 ... class 2500
Connecting standard J.I.S.	
<ul style="list-style-type: none"> • DN 25, DN 40, DN 50, DN 65, DN 80, DN 100, DN 125 	10K ... 63K
Sealing face	
<ul style="list-style-type: none"> • For stainless steel, mat. No. 1.4404/316L • For the other materials 	To EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA To EN 1092-1, form B2 or ASME B16.5 RFSF
Materials	
<ul style="list-style-type: none"> • Main body • Wetted parts 	Stainless steel mat. no. 1.4404/316L Stainless steel mat. no. 1.4404/316L <ul style="list-style-type: none"> • Without coating • PTFE coating • ECTFE coating (for vacuum on request) • PFA coating Monel 400, mat. No. 2.4360 Hastelloy C276, mat. No. 2.4819 Hastelloy C4, mat. No. 2.4602 Hastelloy C22, 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. 1.4301/304

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 O₂)
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)

Pressure Measurement

Remote seals for transmitters and pressure gauges

SITRANS P320/P420

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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
- SITRANS P320/P420 transmitter for absolute pressure, 7MF03../7MF04.. order separately, Scope of delivery: 1 off
- SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately, Scope of delivery: 2 off

7MF0800 -

7MF0801 -

7MF0802 -

➤ 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	0BQ
DN 40	PN 16 ... 400	0DQ
DN 50	PN 16 ... 400	0EQ
DN 65	PN 16 ... 400	0FQ
DN 80	PN 16 ... 400	0GQ
DN 100	PN 16 ... 400	0HQ
DN 125	PN 16 ... 400	0JQ

Connecting standard ASME B16.5

(1 inch, 1½ inch and 2 inch recommended only for pressure transmitters)

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

Connecting standard J.I.S.

(DN 25, DN 40 and DN 50 recommended only for pressure transmitters)

DN 25	10K ... 63K	2BW
DN 40	10K ... 63K	2DW
DN 50	10K ... 63K	2EW
DN 65	10K ... 63K	2FW
DN 80	10K ... 63K	2GW
DN 100	10K ... 63K	2HW
DN 125	10K ... 63K	2JW

Other version

Add Order code and plain text

9AA

H1Y

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

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
- SITRANS P320/P420 transmitter for absolute pressure, 7MF03../7MF04.. order separately, Scope of delivery: 1 off
- SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately, Scope of delivery: 2 off

7MF0800 -

7MF0801 -

7MF0802 -

11 m (only for 7MF0802)

12 m (only for 7MF0802)

13 m (only for 7MF0802)

14 m (only for 7MF0802)

15 m (only for 7MF0802)

Other version

Add Order code and plain text

23

24

25

26

27

98

L1Y

Filling liquid

Silicone oil M5

Silicone oil M50

High-temperature oil

Halocarbon oil

Food-grade oil (FDA listed)

Other version

Add Order code and plain text

A

B

C

D

E

Z

P1Y

Wetted parts materials

Stainless steel 316L

• Without coating

• With PFA coating

• With PTFE coating

• With ECTFE coating

Monel 400, 2.4360

Hastelloy C276, 2.4819

Tantalum

Titanium, 3.7035

Nickel 201

Diaphragm Duplex, 1.4462

Diaphragm plus flange Duplex, 1.4462

Stainless steel 316L with gold coating

Hastelloy C4, 2.4610

Hastelloy C22, 2.4602

Other version

Add Order code and plain text

A

D

E0

F

G

J

K

L0

M0

Q

R

S0

U0

V0

Z8

Q1Y

Extension length

• without

• 50 mm (2")

• 100 mm (4")

• 150 mm (6")

• 200 mm (8")

• 250 mm (10")

Other version

Add Order code and plain text

0

1

2

3

4

5

Z8

Q1Y

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			
<ul style="list-style-type: none"> 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 -	
<ul style="list-style-type: none"> SITRANS P320/P420 transmitter for absolute pressure, 7MF03../7MF04.. order separately, Scope of delivery: 1 off 		7MF0801 -	
<ul style="list-style-type: none"> SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately, Scope of delivery: 2 off 		7MF0802 -	
Customer-specific extension length			
<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> 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			
<ul style="list-style-type: none"> 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 -	
<ul style="list-style-type: none"> SITRANS P320/P420 transmitter for absolute pressure, 7MF03../7MF04.. order separately, Scope of delivery: 1 off 		7MF0801 -	
<ul style="list-style-type: none"> SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately, Scope of delivery: 2 off 		7MF0802 -	
<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> 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	

Pressure Measurement

Remote seals for transmitters and pressure gauges
SITRANS P320/P420

Diaphragm seals of sandwich design with flexible capillary

1

Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs		Further designs	
Add "-Z" to Article No. and specify Order code.		Add "-Z" to Article No. and specify Order code.	
Factory certificates		Sealing surface with recess to EN1092-1, form F (wetted parts 316L only)	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11	• DN 25	M82
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	C12	• DN 40	M83
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	• DN 50	M84
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	C15	• DN 80	M85
Certificate of FDA-approved fill oil (to EN10204-2.2)	C17	• DN 100	M86
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (Includes SIL conformity declaration)	C20	• DN 125	M87
Accessories		Capillary connection (only for 7MF0800)	
Spark arrestor (for gauge and absolute pressure transmitters)	D61	Single-side mounted at differential pressure transmitters at high-side	S03
Spark arrestor (for differential pressure and level transmitters)	D62	Single-side mounted at differential pressure transmitters at low-side	S04
Low-temperature version (for Silicon Oil M50 only)	D67	Capillary coating	
Negative pressure services		PE protective tube	
Negative pressure service (for gauge and absolute pressure transmitters)	D81	1 m	S10
Negative pressure service (for differential pressure transmitters)	D83	1,6 m	S11
Extended negative pressure service (for gauge and absolute pressure transmitters) (only 7MF0800)	D85	2 m	S12
Extended negative pressure service (for differential pressure transmitters)	D88	2,5 m	S13
General product approvals without explosion proof approvals		3 m	S14
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	4 m	S15
Oil-and grease-free cleaned version (not for O ₂ -appl. including certificate EN10204-2.2 (only with fill fluid Halocarbon oil)	E87	5 m	S16
Sealing surface		6 m	S17
Sealing surface smooth, form B2/EN1092-1 resp. RFSF/ANSI B16.5 (wetted parts 316L only)	M50	7 m	S18
Sealing surface groove to EN1092-1, form D (instead of sealing surface B1, wetted parts 316L only)	M54	8 m	S19
Sealing surface RJF (groove) to ASME B16.5 (instead of sealing surface RF 125...250AA, wetted parts 316L only)	M64	9 m	S20
Sealing surface with tongue to EN1092-1, form C (wetted parts 316L only)		10 m	S21
• DN 25	M70	11 m (only for 7MF0802)	S22
• DN 40	M71	12 m (only for 7MF0802)	S23
• DN 50	M72	13 m (only for 7MF0802)	S24
• DN 80	M73	14 m (only for 7MF0802)	S25
• DN 100	M74	15 m (only for 7MF0802)	S26
• DN 125	M75	PTFE protective tube	
Sealing surface with spigot to EN1092-1, form E (wetted parts 316L only)		1 m	S40
• DN 25	M76	1,6 m	S41
• DN 40	M77	2 m	S42
• DN 50	M78	2,5 m	S43
• DN 80	M79	3 m	S44
• DN 100	M80	4 m	S45
• DN 125	M81	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

1

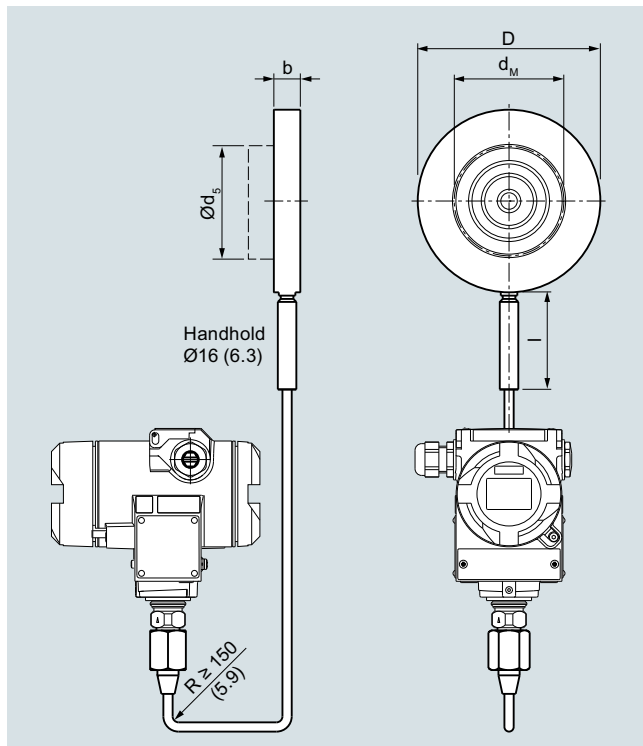
Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
<u>PVC protective tube</u>	
1 m	S70
1,6 m	S71
2 m	S72
2,5 m	S73
3 m	S74
4 m	S75
5 m	S76
6 m	S77
7 m	S78
8 m	S79
9 m	S80
10 m	S81
11 m (only for 7MF0802)	S82
12 m (only for 7MF0802)	S83
13 m (only for 7MF0802)	S84
14 m (only for 7MF0802)	S85
15 m (only for 7MF0802)	S86
Device settings	
Operating Temperature; Lower range value ... °C (°F), upper range value ... °C (°F)	Y10
Static pressure: ... bar (psi)	Y11
Customer specific extension length (enter required length in plain text)	Y44

Pressure Measurement

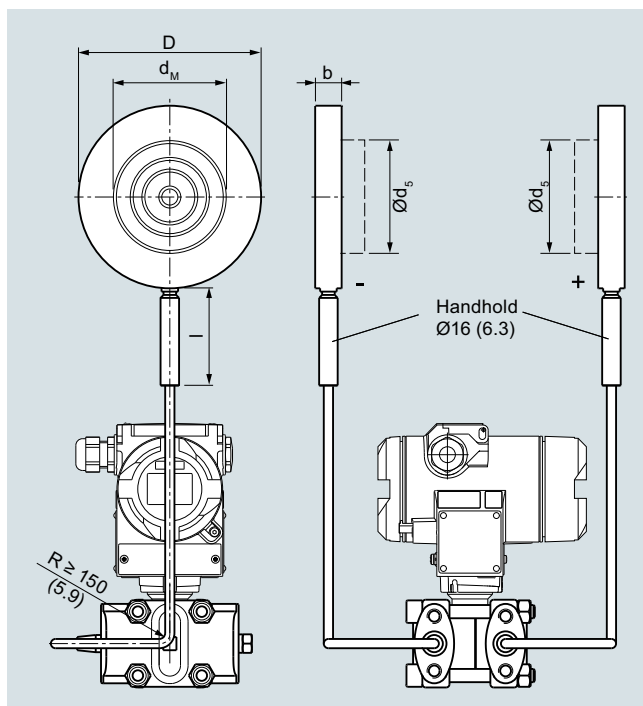
Remote seals for transmitters and pressure gauges
SITRANS P320/P420

Diaphragm seals of sandwich design with flexible capillary

Dimensional drawings



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



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

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
		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		d ₅	d _M with tube	d _M w/o tube	l
			10K, 20K	30K... 63K				
		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

Diaphragm seals of flange design with flexible capillary

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	
<ul style="list-style-type: none"> • DN 25 • DN 40 • DN 50 • DN 80 • DN 100 • DN 125 	PN 10/16/25/40/63/100/160/250 PN 10/16/25/40/63/100/160 PN 10/16/25/40/63/100 PN 10/16/25/40/100 PN 10/16/25/40 PN 16/40
Connecting standard ASME B16.5	
<ul style="list-style-type: none"> • 1 inch • 1½ inch • 2 inch • 3 inch • 4 inch • 5 inch 	Class 150/300/600/1500 Class 150/300/400/600/900/1500 Class 150/300/400/600/900/1500 Class 150/300/600/1500 Class 150/300/400/1500 Class 150/300/400
Connecting standard J.I.S.	
<ul style="list-style-type: none"> • DN 50 • DN 80 • DN 100 	10K 20K 40K
Sealing face	
<ul style="list-style-type: none"> • For stainless steel, mat. No. 1.4404/316L • For the other materials 	To EN 1092-1, form B1 or ASMR B16.5 RF 125 ... 250 AA To EN 1092-1, form B2 or ASME B16.5 RFSF

Materials

- Main body
- Wetted parts

Stainless steel
mat. no. 1.4404/316L
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. 1.4301/304

Sealing material in the process flanges

- For pressure transmitters, absolute pressure transmitters and low-pressure applications
- For other applications

Copper

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 O₂)

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)

Pressure Measurement

Remote seals for transmitters and pressure gauges

SITRANS P320/P420

Diaphragm seals of flange design with flexible capillary

1

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
- SITRANS P320/P420 transmitter for absolute pressure, 7MF03../7MF04.. order separately, Scope of delivery: 1 off
- SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately, Scope of delivery: 2 off

7MF0810 -

7MF0811 -

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)

Nominal diameter	Nominal pressure	Order code
DN 25	PN 10/16/25/40	0BD
	PN 63/100	0BF
	PN 160	0BG
DN 40	PN 250	0BH
	PN 10/16/25/40	0DD
	PN 63/100	0DF
DN 50	PN 160	0DG
	PN 10/16/25/40	0ED
	PN 63	0EE
DN 80	PN 100	0EF
	PN 10/16/25/40	0GD
	PN 100	0GF
DN 100	PN 10/16	0HB
	PN 25/40	0HD
	PN 16	0JB
DN 125	PN 40	0JD

Connecting standard ASME B16.5

(1 inch, 1½ inch and 2 inch recommended only for pressure transmitters)

Nominal diameter	Nominal pressure	Order code
1 inch	class 150	1KL
	class 300	1KM
	class 600	1KN
1½ inch	class 1500	1KP
	class 150	1LA
	class 300	1LB
2 inch	class 400/600	1LD
	class 900/1500	1LF
	class 150	1MA
3 inch	class 300	1MB
	class 400/600	1MD
	class 900/1500	1MF
4 inch	class 150	1PA
	class 300	1PB
	class 600	1PD
5 inch	class 1500	1PF
	class 150	1QA
	class 300	1QB
5 inch	class 400	1QC
	class 1500	1QF
	class 150	1RA
5 inch	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
- SITRANS P320/P420 transmitter for absolute pressure, 7MF03../7MF04.. order separately, Scope of delivery: 1 off
- SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately, Scope of delivery: 2 off

7MF0810 -

7MF0811 -

7MF0812 -

- 0

Connecting standard J.I.S.

(DN 50 recommended only for pressure transmitters)

DN	Order code
DN 50	10 K
	20 K
	40 K
DN 80	10 K
	20 K
	40 K
DN 100	10 K
	20 K
	40 K

Other version
Add Order code and plain text

Transmitter connection

Connection via capillary tube
Length of capillary

Length of capillary	Order code
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	98
Add Order code and plain text	

Filling liquid

Silicone oil M5
Silicone oil M50
High-temperature oil
Halocarbon oil
Food-grade oil (FDA grade)
Other version
Add Order code and plain text

Order code	Order code
2ES	
2ET	
2EU	
2GS	
2GT	
2GU	
2HS	
2HT	
2HU	
9AA	H1Y

Order code	Order code
10	
11	
12	
13	
14	
15	
16	
17	
18	
20	
21	
22	
23	
24	
25	
26	
27	
98	L1Y

Order code	Order code
A	
B	
C	
D	
E	
Z	P1Y

Diaphragm seals of flange design with flexible capillary

Selection and Ordering data	Article No.	Order code	Selection and Ordering data	Article No.	Order code																																																																		
Diaphragm seal Flange type design, with flexible capillary tube, connected with flexible capillary tube to a <ul style="list-style-type: none"> • 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 • SITRANS P320/P420 transmitter for absolute pressure, 7MF03../7MF04.. order separately, Scope of delivery: 1 off • SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately, Scope of delivery: 2 off 	7MF0810 -		Diaphragm seal Flange type design, with flexible capillary tube, connected with flexible capillary tube to a <ul style="list-style-type: none"> • 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 • SITRANS P320/P420 transmitter for absolute pressure, 7MF03../7MF04.. order separately, Scope of delivery: 1 off • SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately, Scope of delivery: 2 off 	7MF0810 -																																																																			
Wetted parts materials Stainless steel 316L <ul style="list-style-type: none"> • Without coating • With PFA coating • With PTFE coating • With ECTFE coating Monel 400, 2.4360 Hastelloy C276, 2.4819 Tantalum Titanium, 3.7035 Nickel 201 Diaphragm Duplex, 1.4462 Diaphragm plus flange Duplex, 1.4462 Stainless steel 316L with gold coating Hastelloy C4, 2.4610 Hastelloy C22, 2.4602 Other version Add Order code and plain text		A D E 0 F G J K L 0 M 0 Q R S 0 U 0 V 0 Z 8 Q 1 Y	<ul style="list-style-type: none"> • Wetted parts stainless steel with ECTFE coating <table border="1"> <thead> <tr> <th>Range</th> <th>Standard length</th> <th></th> </tr> </thead> <tbody> <tr> <td>20 ... 50 mm (0.79 ... 1.97")</td> <td>50 mm (1.97")</td> <td>F 1</td> </tr> <tr> <td>51 ... 100 mm (2.01 ... 3.94")</td> <td>100 mm (3.94")</td> <td>F 2</td> </tr> <tr> <td>101 ... 150 mm (3.98 ... 5.91")</td> <td>150 mm (5.91")</td> <td>F 3</td> </tr> <tr> <td>151 ... 200 mm (5.94 ... 7.87")</td> <td>200 mm (7.87")</td> <td>F 4</td> </tr> <tr> <td>201 ... 250 mm (7.91 ... 9.84")</td> <td>250 mm (9.84")</td> <td>F 5</td> </tr> </tbody> </table> <ul style="list-style-type: none"> • Wetted parts stainless steel with PFA coating <table border="1"> <thead> <tr> <th>Range</th> <th>Standard length</th> <th></th> </tr> </thead> <tbody> <tr> <td>20 ... 50 mm (0.79 ... 1.97")</td> <td>50 mm (1.97")</td> <td>D 1</td> </tr> <tr> <td>51 ... 100 mm (2.01 ... 3.94")</td> <td>100 mm (3.94")</td> <td>D 2</td> </tr> <tr> <td>101 ... 150 mm (3.98 ... 5.91")</td> <td>150 mm (5.91")</td> <td>D 3</td> </tr> <tr> <td>151 ... 200 mm (5.94 ... 7.87")</td> <td>200 mm (7.87")</td> <td>D 4</td> </tr> <tr> <td>201 ... 250 mm (7.91 ... 9.84")</td> <td>250 mm (9.84")</td> <td>D 5</td> </tr> </tbody> </table> <ul style="list-style-type: none"> • Wetted parts Monel 400 <table border="1"> <thead> <tr> <th>Range</th> <th>Standard length</th> <th></th> </tr> </thead> <tbody> <tr> <td>20 ... 50 mm (0.79 ... 1.97")</td> <td>50 mm (1.97")</td> <td>G 1</td> </tr> <tr> <td>51 ... 100 mm (2.01 ... 3.94")</td> <td>100 mm (3.94")</td> <td>G 2</td> </tr> <tr> <td>101 ... 150 mm (3.98 ... 5.91")</td> <td>150 mm (5.91")</td> <td>G 3</td> </tr> <tr> <td>151 ... 200 mm (5.94 ... 7.87")</td> <td>200 mm (7.87")</td> <td>G 4</td> </tr> </tbody> </table> <ul style="list-style-type: none"> • Wetted parts Hastelloy C276 <table border="1"> <thead> <tr> <th>Range</th> <th>Standard length</th> <th></th> </tr> </thead> <tbody> <tr> <td>20 ... 50 mm (0.79 ... 1.97")</td> <td>50 mm (1.97")</td> <td>J 1</td> </tr> <tr> <td>51 ... 100 mm (2.01 ... 3.94")</td> <td>100 mm (3.94")</td> <td>J 2</td> </tr> <tr> <td>101 ... 150 mm (3.98 ... 5.91")</td> <td>150 mm (5.91")</td> <td>J 3</td> </tr> <tr> <td>151 ... 200 mm (5.94 ... 7.87")</td> <td>200 mm (7.87")</td> <td>J 4</td> </tr> </tbody> </table>	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	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	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	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		
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Extension length <ul style="list-style-type: none"> • without • 50 mm (2") • 100 mm (4") • 150 mm (6") • 200 mm (8") • 250 mm (10") Other version Add Order code and plain text		0 1 2 3 4 5 Z 8 Q 1 Y																																																																					
Customer-specific extension length <ul style="list-style-type: none"> • Wetted parts stainless steel without coating <table border="1"> <thead> <tr> <th>Range</th> <th>Standard length</th> <th></th> </tr> </thead> <tbody> <tr> <td>20 ... 50 mm (0.79 ... 1.97")</td> <td>50 mm (1.97")</td> <td>A 1</td> </tr> <tr> <td>51 ... 100 mm (2.01 ... 3.94")</td> <td>100 mm (3.94")</td> <td>A 2</td> </tr> <tr> <td>101 ... 150 mm (3.98 ... 5.91")</td> <td>150 mm (5.91")</td> <td>A 3</td> </tr> <tr> <td>151 ... 200 mm (5.94 ... 7.87")</td> <td>200 mm (7.87")</td> <td>A 4</td> </tr> <tr> <td>201 ... 250 mm (7.91 ... 9.84")</td> <td>250 mm (9.84")</td> <td>A 5</td> </tr> </tbody> </table>	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																																																					
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Pressure Measurement

Remote seals for transmitters and pressure gauges

SITRANS P320/P420

Diaphragm seals of flange design with flexible capillary

1

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
- SITRANS P320/P420 transmitter for absolute pressure, 7MF03../7MF04.. order separately, Scope of delivery: 1 off
- SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately, Scope of delivery: 2 off

7MF0810 -

7MF0811 -

7MF0812 -



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 |
| 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 |

Diaphragm seals of flange design with flexible capillary

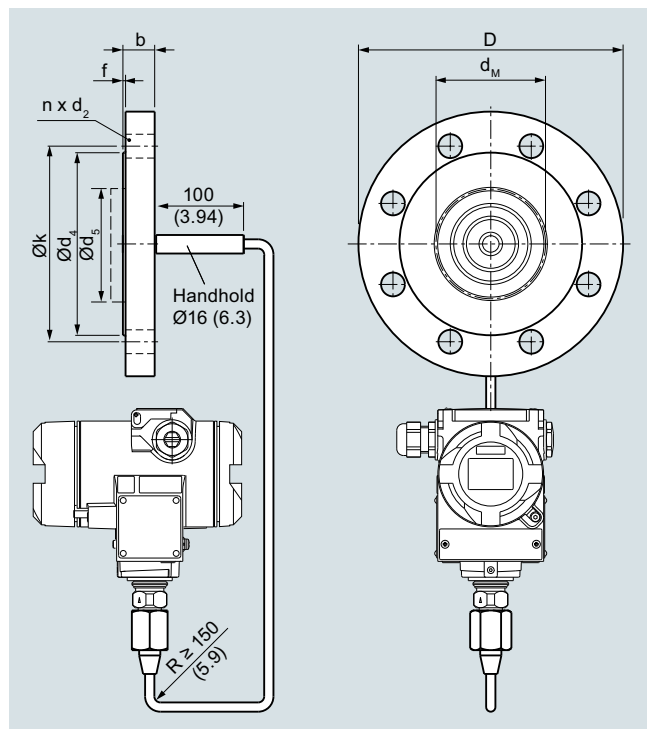
Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs		Further designs	
Add "-Z" to Article No. and specify Order code.		Add "-Z" to Article No. and specify Order code.	
Sealing surface with recess to EN1092-1, form F (wetted parts 316L only)		<u>PVC protective tube</u>	
• DN 25	M82	1 m	S70
• DN 40	M83	1,6 m	S71
• DN 50	M84	2 m	S72
• DN 80	M85	2,5 m	S73
• DN 100	M86	3 m	S74
• DN 125	M87	4 m	S75
		5 m	S76
Capillary connection		6 m	S77
<u>For 7MF0810</u>		7 m	S78
Radial capillary pipe outlet (for single-side mounting and capillary connection only)	S01	8 m	S79
Single-side mounted at differential pressure transmitters at high-side	S03	9 m	S80
Single-side mounted at differential pressure transmitters at low-side	S04	10 m	S81
Elongated pipe, 150 mm instead of 100 mm	S05	11 m (only for 7MF0802)	S82
Elongated pipe, 200 mm instead of 100 mm	S06	12 m (only for 7MF0802)	S83
Elongated pipe elbow, 200 mm instead of 130 mm cooling element	S07	13 m (only for 7MF0802)	S84
	S08	14 m (only for 7MF0802)	S85
<u>For 7MF0811</u>		15 m (only for 7MF0802)	S86
Radial capillary pipe outlet (for single-side mounting and capillary connection only)	S01	Device settings	
<u>For 7MF0812</u>		Operating Temperature; Lower range value ... °C (°F), upper range value ... °C (°F)	Y10
Radial capillary pipe outlet (for double-side mounting)	S02	Static pressure: ... bar (psi)	Y11
		Customer specific extension length (enter required length in plain text)	Y44
Capillary coating			
<u>PE protective tube</u>			
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		
<u>PTFE protective tube</u>			
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		

Pressure Measurement

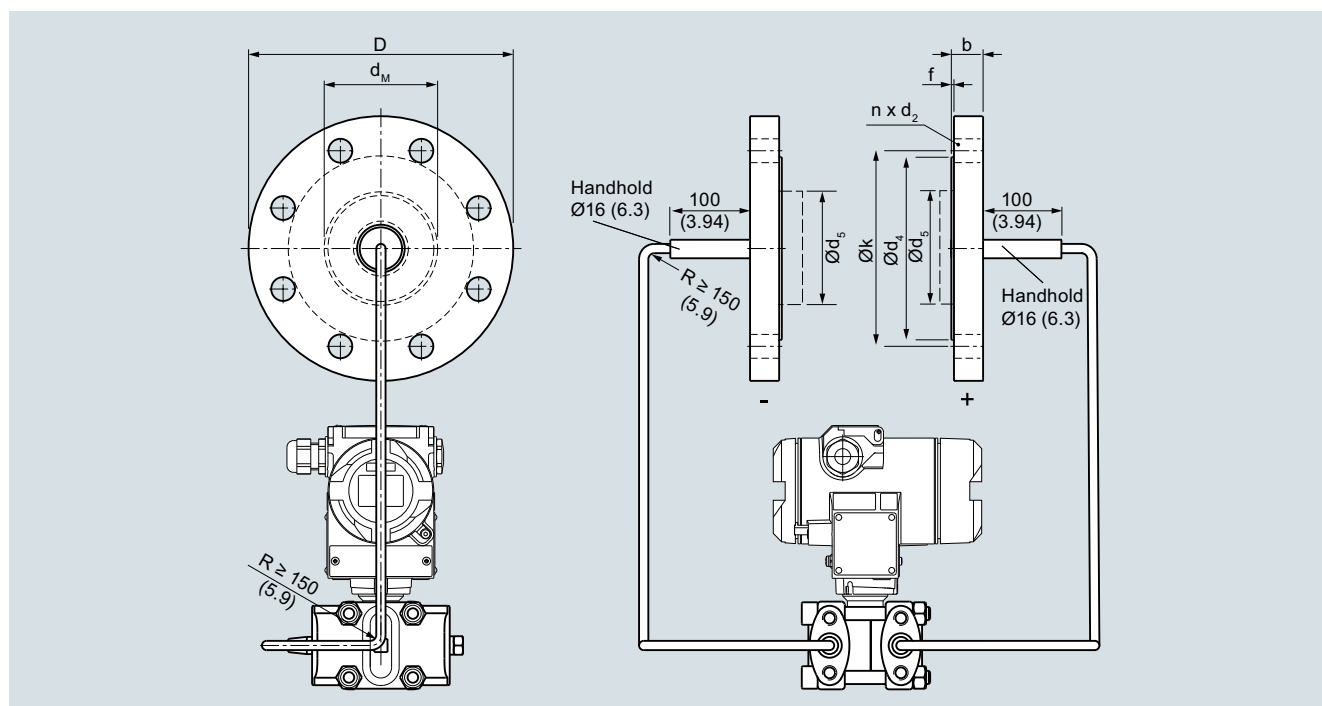
Remote seals for transmitters and pressure gauges
SITRANS P320/P420

Diaphragm seals of flange design with flexible capillary

Dimensional drawings



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



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

Diaphragm seals of flange design with flexible capillary

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 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)	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	

Pressure Measurement

Remote seals for transmitters and pressure gauges
SITRANS P320/P420

Diaphragm seals of flange design with flexible capillary

Connection to J.I.S

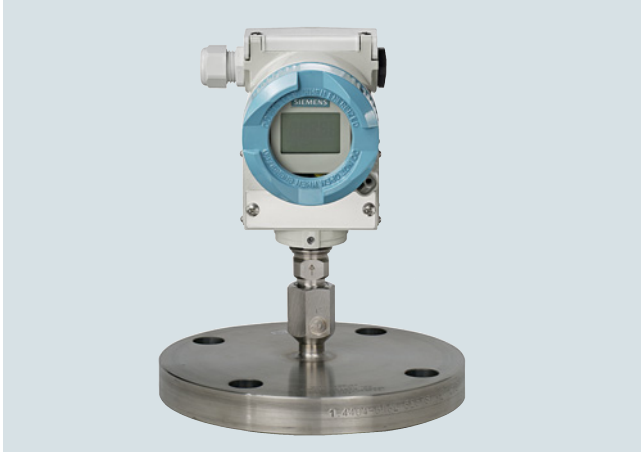
Nominal diameter	Nominal pressure	b	D	d ₂	d ₄	d ₅	d _M with extension	d _M without extension	f	k	n	L
		mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)
DN 50	10K	14 (0.55)	155 (6.10)	19 (0.75)	96 (3.78)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	120 (4.72)	4	0, 50, 100, 150 oder 200
	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	(0, 2, 3.94, 5.94 oder 7.87)
	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	7.87)
	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 directly fitted on transmitter

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	
<ul style="list-style-type: none"> • DN 25 • DN 40 • DN 50 • DN 80 • DN 100 • DN 125 	PN 10/16/25/40/63/100/160/250 PN 10/16/25/40/63/100/160 PN 10/16/25/40/63/100 PN 10/16/25/40/100 PN 10/16/25/40 PN 16/40
Connecting standard ASME B16.5	
<ul style="list-style-type: none"> • 1 inch • 1½ inch • 2 inch • 3 inch • 4 inch • 5 inch 	Class 150/300/600/1500 Class 150/300/400/600/900/1500 Class 150/300/400/600/900/1500 Class 150/300/600/1500 Class 150/300/400/1500 Class 150/300/400
Connecting standard J.I.S.	
<ul style="list-style-type: none"> • DN 50 • DN 80 • DN 100 	10K 20K 40K
Sealing face	
<ul style="list-style-type: none"> • For stainless steel, mat. No. 1.4404/316L • For the other materials 	To EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA Smooth to EN 1092-1, form B2 or ASME B16.5 RFSF

Materials

- Main body
- Wetted parts

Stainless steel, 1.4404/316L

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, 1.4571/316Ti

- 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 O₂)
- Food oil (FDA listed)

Max. recommended process temperature

170 °C (338 °F)

Permissible ambient temperature

Dependent on the pressure transmitter and the filling liquid of the remote seal.

More information can be found in the technical data of the pressure transmitters and in the section "Technical data of filling liquid" in the Technical description to the remote seals.

Weight

Approx. 4 kg (8.82 lb)

Certificate and approvals

Classification according to pressure equipment directive (DGRL 2014/68/EU)

For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)

Pressure Measurement

Remote seals for transmitters and pressure gauges

SITRANS P320/P420

Diaphragm seals of flange design directly fitted on transmitter

1

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
DN 50	PN 160	0DG
	PN 10/16/25/40	0ED
	PN 63	0EE
DN 80	PN 100	0EF
	PN 10/16/25/40	0GD
DN 100	PN 100	0GF
	PN 10/16	0HB
DN 125	PN 25/40	0HD
	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 M5
 - Silicone oil M50
 - High-temperature oil
 - Halocarbon oil
 - Food-grade oil (FDA listed)
 - Other version
- Add Order code and plain text

A
B
C
D
E
Z P1Y

Wetted parts materials

- Stainless steel 316L
 - Without coating
 - With PFA coating
 - With PTFE coating
 - With ECTFE coating
 - Monel 400, 2.4360
 - Hastelloy C276, 2.4819
 - Tantalum
 - Titanium, 3.7035
 - Nickel 201
 - Diaphragm Duplex, 1.4462
 - Diaphragm plus flange Duplex, 1.4462
 - Stainless steel 316L with gold coating
 - Hastelloy C4, 2.4610
 - Hastelloy C22, 2.4602
 - Other version
- Add Order code and plain text

A
D
E0
F
G
J
K
L0
M0
Q
R
S0
U0
V0
Z8 Q1Y



Extension length

- without
- 50 mm (2")
- 100 mm (4")
- 150 mm (6")
- 200 mm (8")
- 250 mm (10")

0
1
2
3
4
5
Z8 Q1Y

Other version
Add Order code and plain text

Diaphragm seals of flange design directly fitted on transmitter

Selection and Ordering data		Article No.	Order code	Selection and Ordering data		Article No.	Order code																																	
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Pressure Measurement

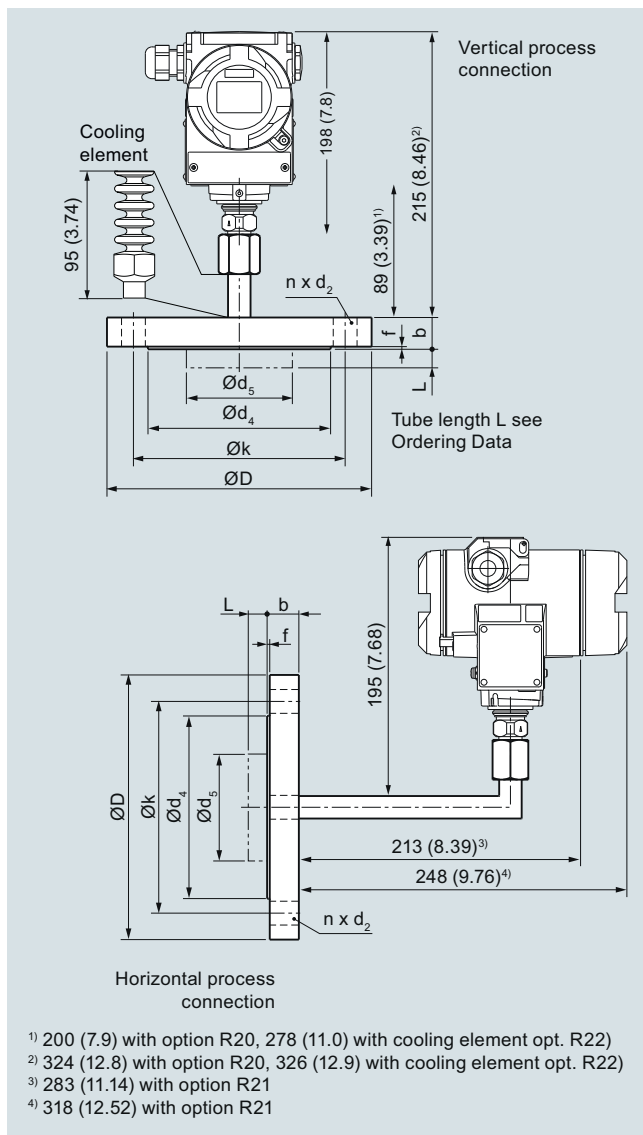
Remote seals for transmitters and pressure gauges
SITRANS P320/P420

Diaphragm seals of flange design directly fitted on transmitter

1

Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs		Further designs	
Add "-Z" to Article No. and specify Order code.		Add "-Z" to Article No. and specify Order code.	
Factory certificates		Sealing surface with recess to EN1092-1, form F (wetted parts 316L only)	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11	• DN 25	M82
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	C12	• DN 40	M83
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	• DN 50	M84
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	C15	• DN 80	M85
Certificate of FDA-approved fill oil (to EN10204-2.2)	C17	• DN 100	M86
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (Includes SIL conformity declaration)	C20	• DN 125	M87
Accessories		Device settings	
Spark arrestor (for gauge and absolute pressure transmitters)	D61	Operating Temperature; Lower range value ... °C (°F), upper range value ... °C (°F)	Y10
Low-temperature version (for Silicon Oil M50 only)	D67	Static pressure: ... bar (psi)	Y11
Negative pressure services		Customer specific extension length (enter required length in plain text)	Y44
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		

Dimensional drawings



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

Pressure Measurement

Remote seals for transmitters and pressure gauges
SITRANS P320/P420

Diaphragm seals of flange design directly fitted 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)	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 directly fitted on transmitter

Connection to J.I.S

Nominal diameter	Nominal pressure	b	D	d ₂	d ₄	d ₅	d _M with exten- sion	d _M without exten- sion	f	k	n	L
		mm (inch)	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
	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	(0, 2, 3.94, 5.94 oder 7.87)
	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	7.87)
	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

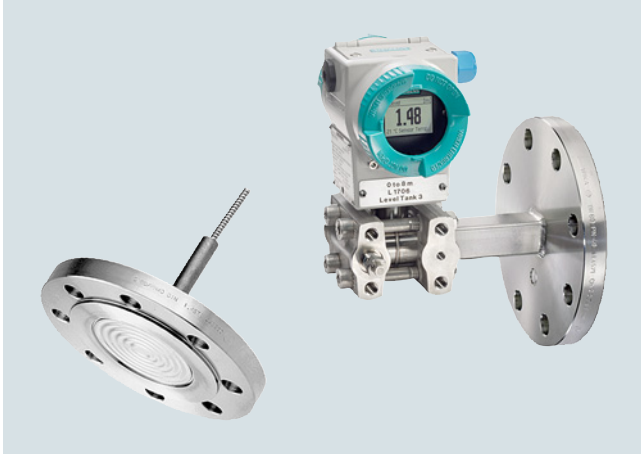
Pressure Measurement

Remote seals for transmitters and pressure gauges
SITRANS P320/P420

Diaphragm seals of flange design fixed connection and with capillary

1

Overview



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

Technical specifications

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

Nominal diameter	Nominal pressure
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 face	
• 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
- Wetted parts

Stainless steel, 1.4404/316L
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
Stainless steel, mat. No. 1.4571/316Ti
Spiral protective tube made of stainless steel, mat. No. 1.4301/304

- Capillary

- Sheath

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 O₂)

Food oil (FDA listed)

170 °C (338 °F)

Max. recommended process temperature

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)

Diaphragm seals of flange design fixed connection 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			
<ul style="list-style-type: none"> SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately Scope of delivery: 2 off 		7MF0813 -	
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.			
Nominal diameter	Nominal pressure		
<u>Connecting standard EN 1092-1</u>			
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	
<u>Connecting standard ASME B16.5</u>			
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	
<u>Connecting standard J.I.S.</u>			
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		9AA	H1Y
Add Order code and plain text			

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			
<ul style="list-style-type: none"> SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately Scope of delivery: 2 off 		7MF0813 -	
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.			
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		98	L1Y
Add Order code and plain text			
Filling liquid			
Silicone oil M5		A	
Silicone oil M50		B	
High-temperature oil		C	
Halocarbon oil		D	
Food-grade oil (FDA listed)		E	
Other version		Z	P1Y
Add Order code and plain text			

Pressure Measurement

Remote seals for transmitters and pressure gauges

SITRANS P320/P420

Diaphragm seals of flange design fixed connection and with capillary

1

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
- With PFA coating
- With PTFE coating
- With ECTFFE coating

Monel 400, 2.4360

Hastelloy C276, 2.4819

Tantalum

Titanium, 3.7035

Nickel 201

Diaphragm Duplex, 1.4462

Diaphragm plus flange Duplex, 1.4462

Stainless steel 316L with gold coating

Hastelloy C4, 2.4610

Hastelloy C22, 2.4602

Other version

Add Order code and plain text

A
D
E 0
F
G
J
K
L 0
M 0
Q
R
S 0
U 0
V 0
Z 8 Q 1 Y

Extension length

- without
- 50 mm (2")
- 100 mm (4")
- 150 mm (6")
- 200 mm (8")
- 250 mm (10")

0
1
2
3
4
5
Z 8 Q 1 Y

Other version

Add Order code and plain text

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 ECTFFE 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

Diaphragm seals of flange design fixed connection and with capillary

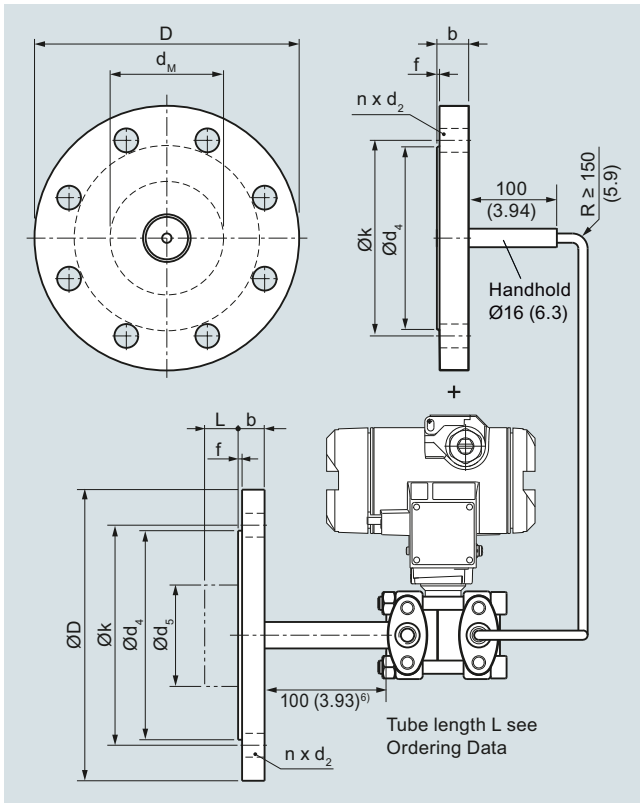
Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs		Further designs	
Add "-Z" to Article No. and specify Order code.		Add "-Z" to Article No. and specify Order code.	
Factory certificates		Capillary coating	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11	<u>PE protective tube</u>	
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	C12	1 m	S10
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	1,6 m	S11
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	C15	2 m	S12
Certificate of FDA-approved fill oil (to EN10204-2.2)	C17	2,5 m	S13
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (Includes SIL conformity declaration)	C20	3 m	S14
		4 m	S15
		5 m	S16
		6 m	S17
		7 m	S18
		8 m	S19
		9 m	S20
		10 m	S21
		<u>PTFE protective tube</u>	
		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
		<u>PVC protective tube</u>	
		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
		Device settings	
		Operating Temperature; Lower range value ... °C (°F), upper range value ... °C (°F)	Y10
		Static pressure: ... bar (psi)	Y11
		Customer specific extension length (enter required length in plain text)	Y44
Accessories			
Spark arrester (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		

Pressure Measurement

Remote seals for transmitters and pressure gauges
SITRANS P320/P420

Diaphragm seals of flange design fixed connection and with capillary

Dimensional drawings



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

Diaphragm seals of flange design fixed connection and with capillary

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)	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	

Pressure Measurement

Remote seals for transmitters and pressure gauges
SITRANS P320/P420

Diaphragm seals of flange design fixed connection 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)	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
	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	(0, 2, 3.94, 5.94 oder 7.87)
	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
<ul style="list-style-type: none"> Open flange EN1092-1 <ul style="list-style-type: none"> DN 15 DN 20 DN 25 Open flange ASME B16.5 <ul style="list-style-type: none"> 1/2 inch, 3/4 inch, 1 inch Thread to EN 837-1 <ul style="list-style-type: none"> G 1/4"B, G 1/2"B, G 3/4"B, G 1"B Thread ASME B1.20.1 <ul style="list-style-type: none"> 1/4" NPT-M, 1/4" NPT-F 1/2" NPT-M, 1/2" NPT-F 3/4" NPT-M, 3/4" NPT-F 1" NPT-M, 1" NPT-F 	PN 10/16/25/40/63/100/160/250 PN 10/16/25/40 PN 10/16/25/40/63/100/160/250 Class 150/300/600/1500 PN 100/250 Class 1500/3675 Class 1500/3675 Class 1500/3675 Class 1500/3675
Sealing face for open measurement flange	
<ul style="list-style-type: none"> For stainless steel, mat. no. 1.4404/316L 	To EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA
Materials	
<ul style="list-style-type: none"> Lower section (in the case of process connection thread) Diaphragm 	Stainless steel, Mat. no. 1.4404/316L Stainless steel, Mat. no. 1.4404/316L <ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Top section (process connection in the case of an open measurement flange) Capillary Sealing material on the process connection Sealing material between top and bottom section 	Stainless steel, mat. no. 1.4404/316L Stainless steel 1.4571/316Ti Viton or copper (in the case of vacuum-free version) Viton (FKM) (standard) Teflon (PTFE) metal spring ring (silver-coated)

Capillary	
<ul style="list-style-type: none"> Length Internal diameter Minimum bending radius Sheath 	Max. 10 m (32.8 ft) 2 mm (0.079 inch) 150 mm (5.9 inch) Stainless steel protective tube, mat. No. 1.4301/304
Filling liquid	<ul style="list-style-type: none"> Silicone oil M5 Silicone oil M50 High-temperature oil Halocarbon oil (for measuring O₂) Food oil (FDA listed)
Max. recommended process temperature	170 °C (338 °F)
Permissible ambient temperature	Dependent on the pressure transmitter and the filling liquid of the remote seal More information can be found in the technical 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)

Pressure Measurement

Remote seals for transmitters and pressure gauges

SITRANS P320/P420

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

1

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			
<ul style="list-style-type: none"> 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 -		
<ul style="list-style-type: none"> 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 <u>ASME B16.5</u>			
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		9AA	H1Y
Add Order code and plain text			

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			
<ul style="list-style-type: none"> 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 -		
<ul style="list-style-type: none"> 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	98		L1Y
Add Order code and plain text			
Filling liquid			
Silicone oil M5		A	
Silicone oil M50		B	
High-temperature oil		C	
Halocarbon oil		D	
Food-grade oil (FDA listed)		E	
Other version		Z	P1Y
Add Order code and plain text			
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		Z	Q1Y
Add Order code and plain text			

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

Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs		Further designs	
Add "-Z" to Article No. and specify Order code.		Add "-Z" to Article No. and specify Order code.	
Factory certificates		Capillary coating	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11	<u>PE protective tube</u>	
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	C12	1 m	S10
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	1,6 m	S11
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	C15	2 m	S12
Certificate of FDA-approved fill oil (to EN10204-2.2)	C17	2,5 m	S13
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (Includes SIL conformity declaration)	C20	3 m	S14
		4 m	S15
		5 m	S16
		6 m	S17
		7 m	S18
		8 m	S19
		9 m	S20
		10 m	S21
		<u>PTFE protective tube</u>	
		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
		<u>PVC protective tube</u>	
		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
		Device settings	
		Operating Temperature; Lower range value ... °C (°F), upper range value ... °C (°F)	Y10
		Static pressure: ... bar (psi) (only for 7MF0842)	Y11
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 housing PTFE (instead of FKM viton)	D75		
Sealing material between upper and lower housing metal C-circlip (instead of FKM viton)	D76		
PTFE coating for lower housing (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		

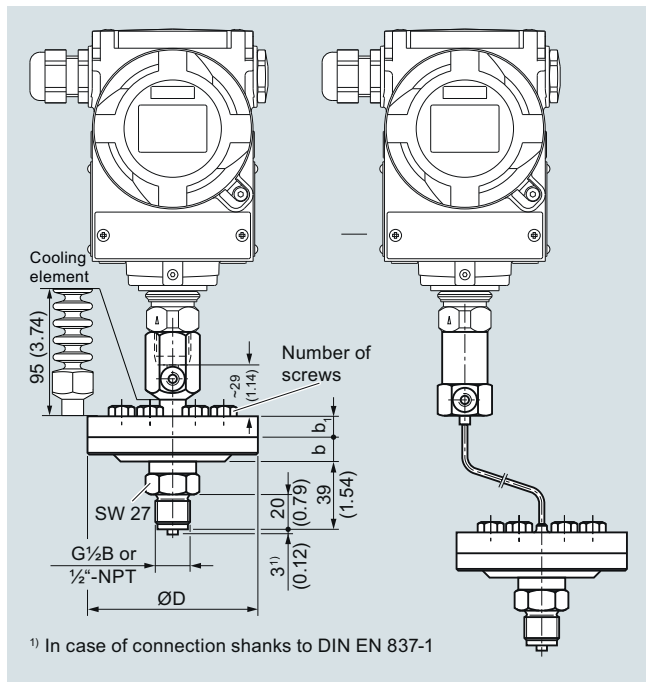
Pressure Measurement

Remote seals for transmitters and pressure gauges
SITRANS P320/P420

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

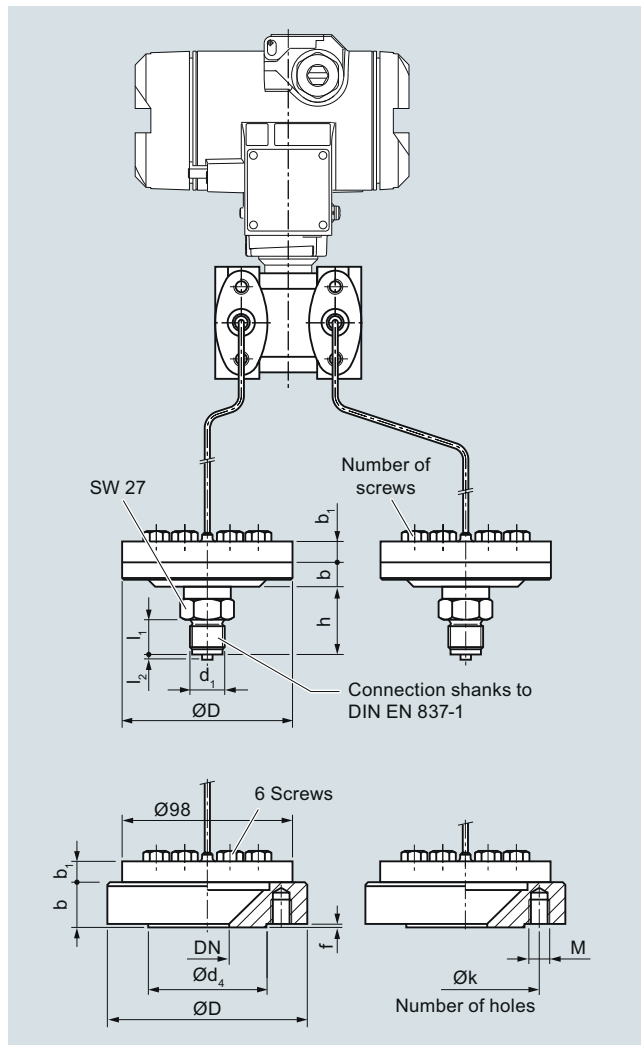
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Dimensional drawings



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)

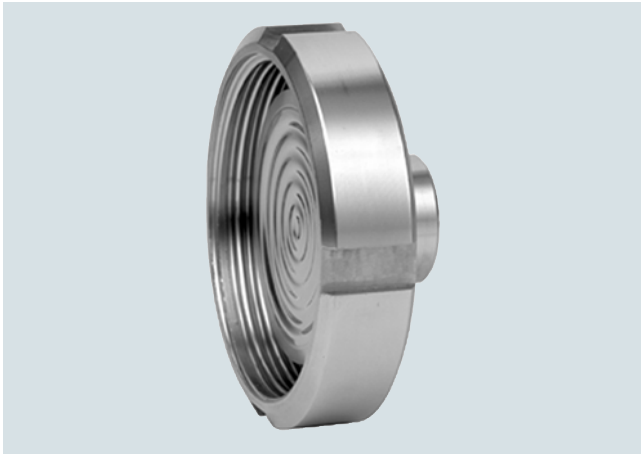
Range	D mm	b mm	b ₁ mm	Number of screws
up to 100 bar	98	14	16	6
up to 250 bar	98	14	20	12



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

Nomi- nal diam- eter	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

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 measured medium cannot accumulate in dead volumes. The quick-release clamp present on the remote seal means that quick dismantling 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
 - 2 inch, 2½ inch
 - 3 inch

PN 25
PN 16
PN 10

- Standard clamp DIN 32676, row A metric
 - DN 25/32/40
 - DN 50
 - DN 65

PN 25
PN 16
PN 10

- Varivent
 - DN 25/32/40/50

PN 25

- DRD-flange
 - DN 50

PN 40

Sealing face

- 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
- Wetted parts
- Capillary

Stainless steel 316L

Stainless steel 316L

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. 1.4301/316

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

Pressure Measurement

Remote seals for transmitters and pressure gauges

SITRANS P320/P420

1

Quick-release diaphragm seals

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
- SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately
Scope of delivery: 1 off

7MF0830 -

7MF0832 -

- 0 A 0

➤ 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
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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
- SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately
Scope of delivery: 1 off

7MF0830 -

7MF0832 -

- 0 A 0

Transmitter connection

Without capillary tube, direct mount straight connection (for gauge pressure)

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

00

10

11

12

13

14

15

16

17

18

20

21

22

98

L1Y

Filling liquid

Food-grade oil (FDA listed)

Other version

Add Order code and plain text

E

Z

P1Y

Pressure Measurement

Remote seals for transmitters and pressure gauges

SITRANS P320/P420

Quick-release diaphragm seals

1

Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs		Further designs	
Add "-Z" to Article No. and specify Order code.		Add "-Z" to Article No. and specify Order code.	
Factory certificates		<u>PVC protective tube</u>	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11	1 m	S70
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	C12	1,6 m	S71
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	C15	2 m	S72
Certificate of FDA-approved fill oil (to EN10204-2.2)	C17	2,5 m	S73
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (Includes SIL conformity declaration)	C20	3 m	S74
		4 m	S75
		5 m	S76
		6 m	S77
		7 m	S78
		8 m	S79
		9 m	S80
		10 m	S81
Negative pressure services		Device settings	
Negative pressure service (for gauge and absolute pressure transmitters)	D81	Operating Temperature; Lower range value ... °C (°F), upper range value ... °C (°F)	Y10
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			
<u>PE protective tube</u>			
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		
<u>PTFE protective tube</u>			
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		

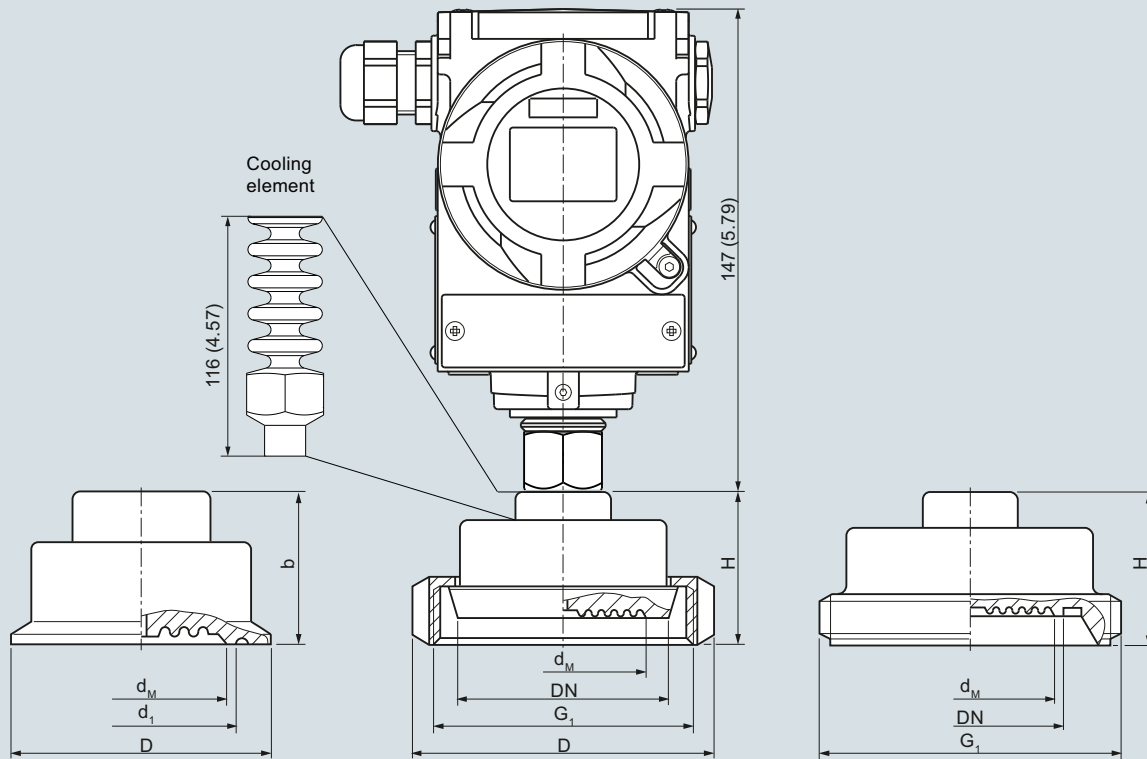
Pressure Measurement

Remote seals for transmitters and pressure gauges

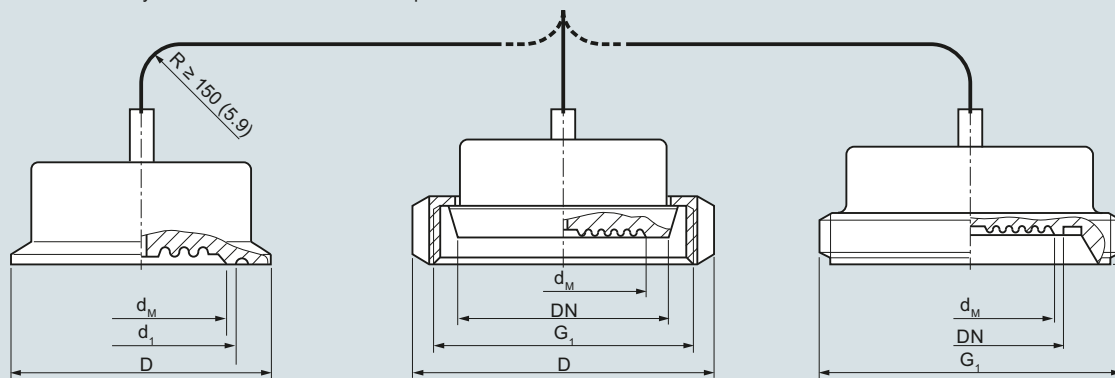
SITRANS P320/P420

Quick-release diaphragm seals

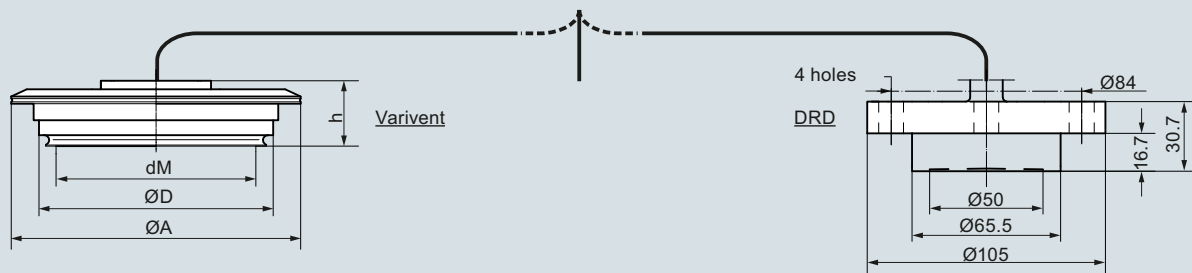
Dimensional drawings



Mounted directly on SITRANS P transmitter for pressure



Mounted on SITRANS P transmitter for pressure or differential pressure and flow



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 mm	Ø D mm	H mm	G ₁ 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 mm	H mm	G ₁ 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 mm	d ₁ mm	b mm	D 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 mm (inch)	d ₁ mm (inch)	b mm (inch)	D 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 mm	d ₁ mm	b mm	D 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 mm (inch)	A mm (inch)	D mm (inch)	h 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)

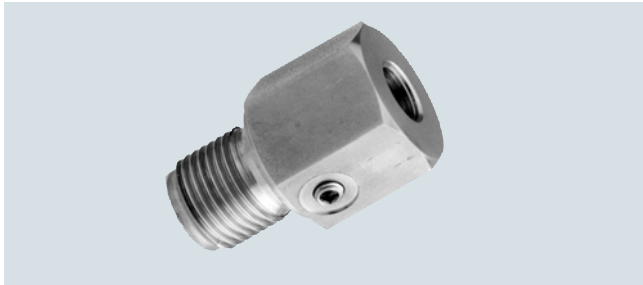
d_M Effective diaphragm diameter

Pressure Measurement

Remote seals for transmitters and pressure gauges
SITRANS P320/P420

Miniature diaphragm seals

Overview



Miniature diaphragm seals

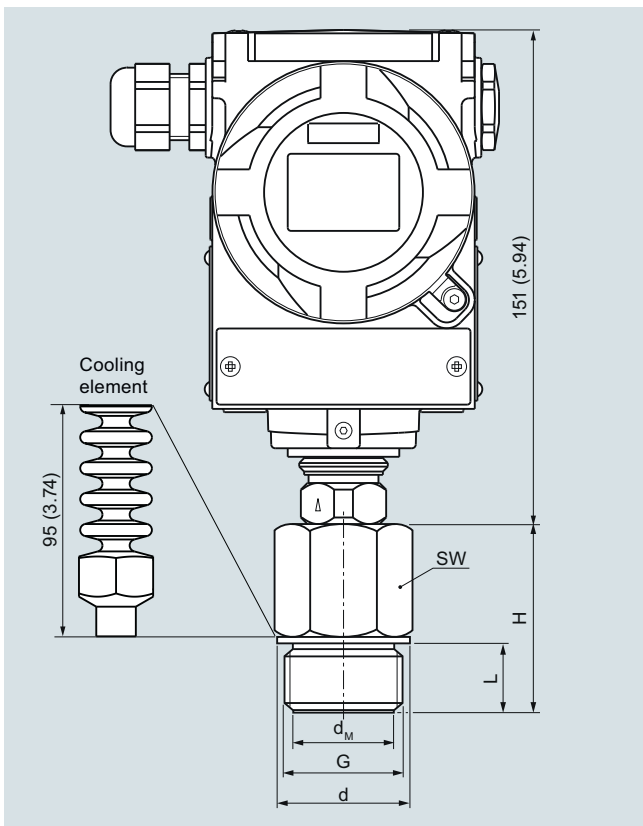
The miniature diaphragm seals are available for the SITRANS P320/420 pressure transmitter series.

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

Span with

- G1B and 1"-NPT
- G1½B and 1½"-NPT
- G2B and 2"-NPT

> 6 bar (> 87 psi)
> 2 bar (> 29 psi)
> 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 process temperature

150 °C (302 °F)

Weight

- G1B and 1"-NPT
- G1½B and 1½"-NPT
- G2B and 2"-NPT

Approx. 0.3 kg (approx. 0.66 lb)
Approx. 0.5 kg (approx. 1.10 lb)
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)

Selection and Ordering data	Article No.	Order code	Selection and Ordering data	Order code
Miniature diaphragm seal directly connected to a <ul style="list-style-type: none"> 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 	7MF0850 -		Further designs Add "-Z" to Article No. and specify Order code.	
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	00 - 00	0	Factory certificates Quality inspection certificate (Five-step factory calibration) to IEC 60770-2 Inspection certificate to EN 10204-3.1 - material of body and wetted parts Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009) (only together with seal diaphragm made of Hastelloy and stainless steel) Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts Certificate of FDA-approved fill oil (to EN10204-2.2) Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (Includes SIL conformity declaration)	C11 C12 C13 C15 C17 C20
Process connection Connection standard DIN 3852 G ½" PN 400 G ¾" PN 400 G 1" PN 400 G 1½" PN 400 G 2" PN 400 Connection standard ASME B1.20.1 ½"-NPT-M class 5800 ¾"-NPT-M class 5800 1"-NPT-M class 5800 1½"-NPT-M class 5800 2"-NPT-M class 5800 Other version Add Order code and plain text	4ST 4SU 4SV 4SW 4SX 5TS 5TT 5TU 5TV 5TW 9AA		Negative pressure services Negative pressure service Extended negative pressure service (for gauge and absolute pressure transmitters)	D81 D85
Filling liquid Silicone oil M5 Food-grade oil (FDA listed) Other version Add Order code and plain text			Capillary connection Cooling element between transmitter and remote seal	S08
Wetted parts material Stainless steel 316L without coating Hastelloy C276, 2.4819			Device settings Operating Temperature; Lower range value ... °C (°F), upper range value ... °C (°F)	Y10
				H1Y P1Y A E Z A J

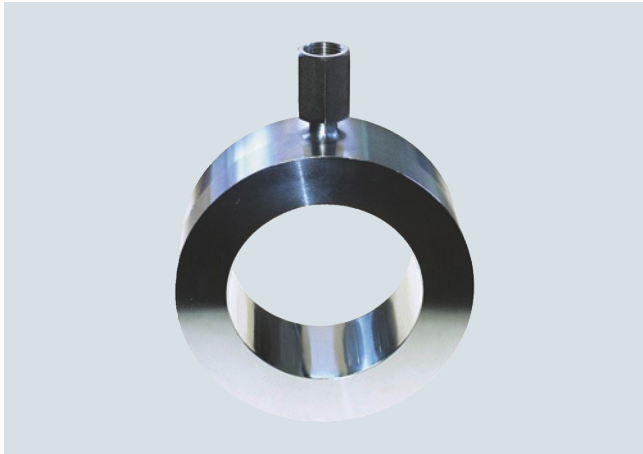
Pressure Measurement

Remote seals for transmitters and pressure gauges
SITRANS P320/P420

Clamp-on seals of flange design

1

Overview



Inline seals for flange-mounting

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

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

Design

- Inline seals for flange-mounting (flange design) to EN/ASME for SITRANS P pressure transmitters
 - For pressure: P300, DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus
 - For differential pressure and flow: DS III with HART, DS III with PROFIBUS PA, DS III with FOUNDATION Fieldbus and P500
- Sealing face 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	PN 6 ... PN 100
• DN 25/40/50/65/80/100/125	
Connecting standard ASME B16.5	Class 150 ... class 2500
• 1, 1½, 2, 2½, 3, 4, 5 inch	Flange to EN 1092-1 or ASME B 16.5
Process connection	<ul style="list-style-type: none"> • for stainless steel mat. no. 1.4404/316L according to EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA • for all other materials according to EN 1092-1, form B2 or ASME B16.5 RFSF
Sealing face	
Materials	
• Main body	Stainless steel 1.4404/316L
• Diaphragm	Stainless steel 1.4404/316L
• Wetted parts	Stainless steel 1.4404/316L
	<ul style="list-style-type: none"> • Without coating • ECTFE coating (for vacuum on request) • PFA coating
	Monel 400, mat. No. 2.4360
	Hastelloy C276, mat. No. 2.4819
	Hastelloy C4, mat. No. 2.4602
	Tantalum
• Capillary	Stainless steel, mat. No. 1.4571/316Ti
• Sheath	Spiral protective tube made of stainless steel, mat. No. 1.4301/316
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
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Selection and Ordering data	Article No.	Order code
Inline-diaphragm seal		
Sandwich type design, directly connected or connected with flexible capillary tube to a		
<ul style="list-style-type: none"> 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 SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately, Scope of delivery: 2 off 	7MF0900 -	
	7MF0902 -	
➤ 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-diaphragm seal		
Sandwich type design, directly connected or connected with flexible capillary tube to a		
<ul style="list-style-type: none"> 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 SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03../7MF04.. order separately, Scope of delivery: 2 off 	7MF0900 -	
	7MF0902 -	
Filling liquid		
Silicone oil M5	A	
Silicone oil M50	B	
High-temperature oil	C	
Halocarbon oil	D	
Food-grade oil (FDA listed)	E	
Other version Add Order code and plain text	Z	P1Y
Wetted parts materials		
Stainless steel 316L		
<ul style="list-style-type: none"> Without coating With PFA coating With ECTFFE coating 	A	
Monel 400, 2.4360	D	
Hastelloy C276, 2.4819	F	
Tantalum	G	
Hastelloy C4, 2.4610	J	
Other version Add Order code and plain text	K	
	U	
	Z	Q1Y

Pressure Measurement

Remote seals for transmitters and pressure gauges
SITRANS P320/P420

Clamp-on seals of flange design

1

Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs		Further designs	
Add "-Z" to Article No. and specify Order code.		Add "-Z" to Article No. and specify Order code.	
Factory certificates		Sealing surface with recess to EN1092-1, form F (wetted parts 316L only)	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11	• DN 25	M82
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	C12	• DN 40	M83
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	• DN 50	M84
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	C15	• DN 80	M85
Certificate of FDA-approved fill oil (to EN10204-2.2)	C17	• DN 100	M86
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (Includes SIL conformity declaration)	C20	• DN 125	M87
Accessories		Capillary connection	
Spark arrester (for gauge and absolute pressure transmitters)	D61	For 7MF0900	
Spark arrester (for differential pressure and level transmitters)	D62	Single-side mounted at differential pressure transmitters at high-side	S03
Low-temperature version (for Silicon Oil M50 only)	D67	Single-side mounted at differential pressure transmitters at low-side	S04
Negative pressure services		cooling element	S08
Negative pressure service (for gauge and absolute pressure transmitters)	D81	Capillary coating	
Negative pressure service (for differential pressure transmitters)	D83	<u>PE protective tube</u>	
Extended negative pressure service (for gauge and absolute pressure transmitters)	D85	1 m	S10
Extended negative pressure service (for differential pressure transmitters)	D88	1,6 m	S11
General product approvals without explosion proof approvals		2 m	S12
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	2,5 m	S13
Oil-and grease-free cleaned version (not for O ₂ -appl. including certificate EN10204-2.2 (only with fill fluid Halocarbon oil)	E87	3 m	S14
Sealing surface		4 m	S15
Sealing surface smooth, form B2/EN1092-1 resp. RFSF/ANSI B16.5 (wetted parts 316L only)	M50	5 m	S16
Sealing surface groove to EN1092-1, form D (instead of sealing surface B1, wetted parts 316L only)	M54	6 m	S17
Sealing surface RJF (groove) to ASME B16.5 (instead of sealing surface RF 125...250AA, wetted parts 316L only)	M64	7 m	S18
Sealing surface with tongue to EN1092-1, form C (wetted parts 316L only)		8 m	S19
• DN 25	M70	9 m	S20
• DN 40	M71	10 m	S21
• DN 50	M72	11 m (only for 7MF0902)	S22
• DN 80	M73	12 m (only for 7MF0902)	S23
• DN 100	M74	13 m (only for 7MF0902)	S24
• DN 125	M75	14 m (only for 7MF0902)	S25
Sealing surface with spigot to EN1092-1, form E (wetted parts 316L only)		15 m (only for 7MF0902)	S26
• DN 25	M76	<u>PTFE protective tube</u>	
• DN 40	M77	1 m	S40
• DN 50	M78	1,6 m	S41
• DN 80	M79	2 m	S42
• DN 100	M80	2,5 m	S43
• DN 125	M81	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

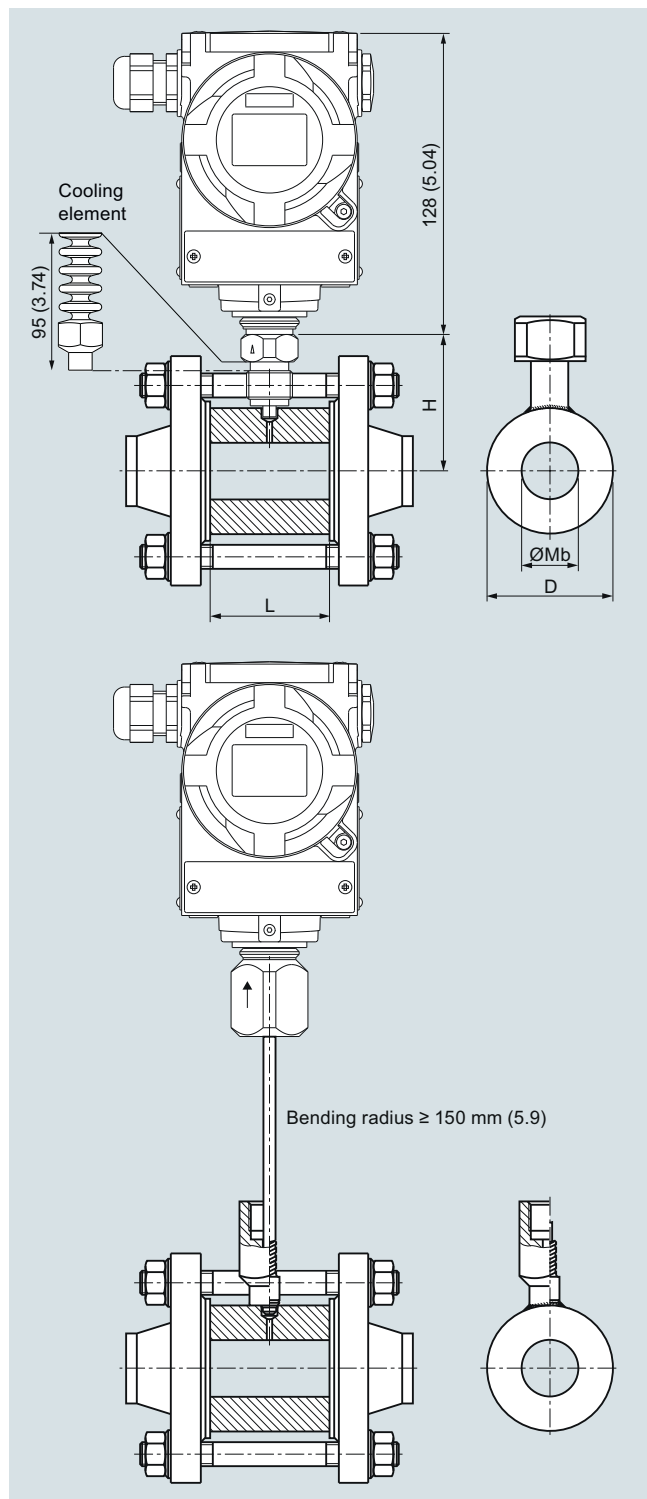
Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
<u>PVC protective tube</u>	
1 m	S70
1,6 m	S71
2 m	S72
2,5 m	S73
3 m	S74
4 m	S75
5 m	S76
6 m	S77
7 m	S78
8 m	S79
9 m	S80
10 m	S81
11 m (only for 7MF0902)	S82
12 m (only for 7MF0902)	S83
13 m (only for 7MF0902)	S84
14 m (only for 7MF0902)	S85
15 m (only for 7MF0902)	S86
Device settings	
Operating Temperature; Lower range value ... °C (°F), upper range value ... °C (°F)	Y10
Static pressure: ... bar (psi) (only for 7MF0902)	Y11

Pressure Measurement

Remote seals for transmitters and pressure gauges
SITRANS P320/P420

Clamp-on seals of flange design

Dimensional drawings



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

Connection to EN 1092-1

DN mm	PN bar	D mm	Mb mm	L mm	H mm
25	6 ... 100	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 (inch)	Class	D mm (inch)	Mb mm (inch)	L mm (inch)	H 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 media and high-viscosity media. Since it is completely integrated in the process pipe, no turbulences, dead volumes or other obstructions to the flow occur. The measured medium flows unhindered through the inline seal and results in self-cleaning of the measuring chamber. Furthermore, the inline seal can be cleaned by a pig.

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

Inline seals of quick-release design for pressure

Connection	Nominal diameter	Nominal pressure	
<ul style="list-style-type: none"> • Standard to DIN 11851 with thread 	DN 25/32/40	PN 40	
	DN 50/65/80	PN 25	
<ul style="list-style-type: none"> • Standard Clamp ISO 2852 	DN 25/38/51	PN 16	
	DN 63.5/76.1	PN 10	
	1, 1½ inch	PN 25	
<ul style="list-style-type: none"> • Standard Clamp DIN 32676, row C Tri-clamp 	2, 2½ inch	PN 16	
	3 inch	PN 10	
	<ul style="list-style-type: none"> • Standard Clamp DIN 32676, row A metric 	DN 25/32/40	PN 25
		DN 50	PN 16
	DN 65	PN 10	
Material			
<ul style="list-style-type: none"> • Main body 		Stainless steel 1.4404/316L	
<ul style="list-style-type: none"> • Diaphragm 		Stainless steel 1.4404/316L	
Capillary			
<ul style="list-style-type: none"> • Length 		Max. 10 m (32.8 ft)	
<ul style="list-style-type: none"> • Internal diameter 		2 mm (0.079 inch)	
<ul style="list-style-type: none"> • Minimum bending radius 		150 mm (5.9 inch)	
<ul style="list-style-type: none"> • Sheath 		Spiral protective tube made of stainless steel, mat. No. 1.4301/316	
Filling liquid		<ul style="list-style-type: none"> • 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	

Pressure Measurement

Remote seals for transmitters and pressure gauges

SITRANS P320/P420

Quick-release inline seals

1

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 A 0

➤ 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	1 BM
DN 32	PN 40	1 CD
DN 40	PN 40	1 DM
DN 50	PN 25	1 EK
DN 65	PN 25	1 FL
DN 80	PN 25	1 GK

Connection standard Clamp ISO 2852

DN 25	PN 16	2 BK
DN 38	PN 16	2 CQ
DN 51	PN 16	2 FH
DN 63,5	PN 10	2 FJ
DN 76,1	PN 10	2 GJ

Connection standard Clamp DIN 32676, row C Tri-clamp

DN 1"	PN 25	3 KV
DN 1½"	PN 25	3 LV
DN 2"	PN 16	3 MV
DN 2½"	PN 16	3 NV
DN 3"	PN 10	3 PV

Connection standard Clamp DIN 32676, row A metric

DN 25	PN 25	4 BL
DN 32	PN 25	4 CC
DN 40	PN 25	4 DL
DN 50	PN 16	4 EJ
DN 65	PN 10	4 FK

Other version
Add Order code and plain text

9 AA H 1 Y

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 A 0

Transmitter connection

Without capillary tube, direct mount straight connection (for gauge pressure)

Connection via capillary tube

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

Other version
Add Order code and plain text

9 8 L 1 Y

Filling liquid

Food-grade oil (FDA listed)

Other version

Add Order code and plain text

E Z P 1 Y

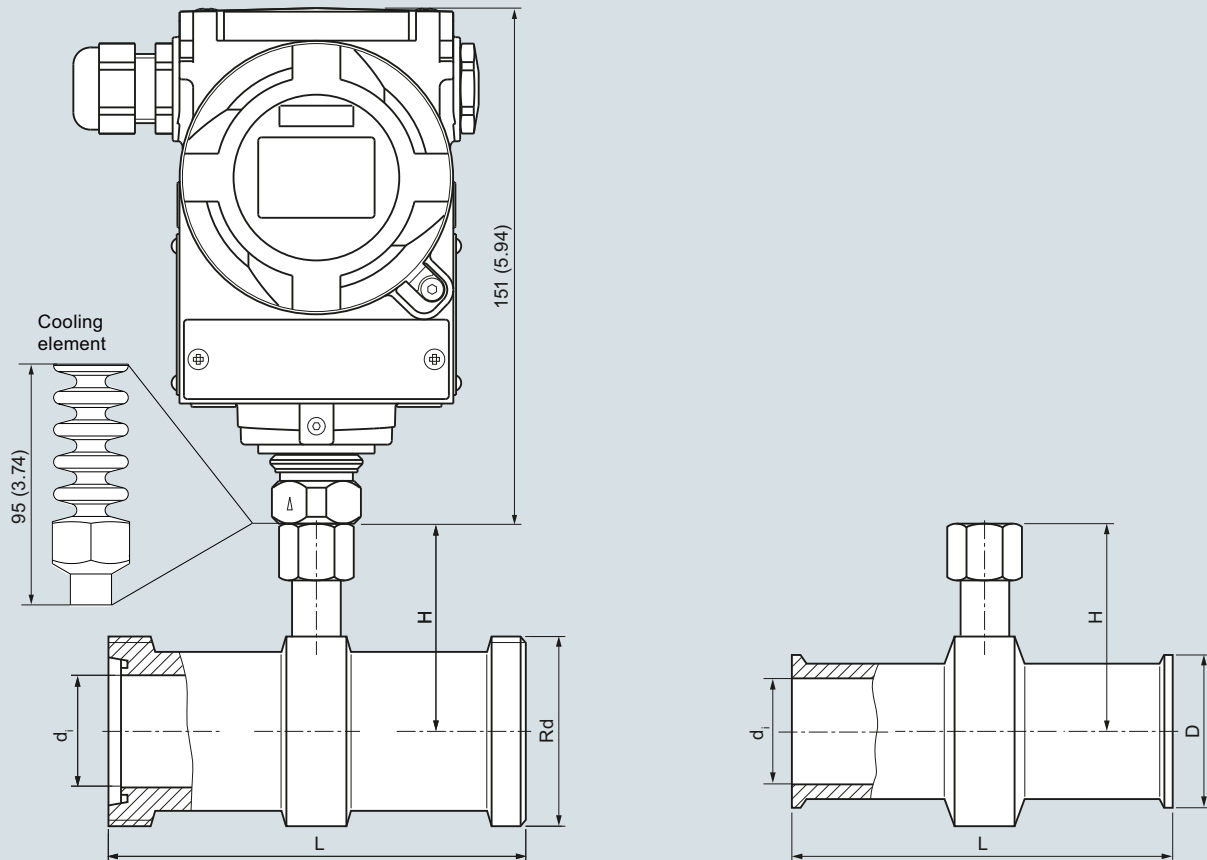
Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs		Further designs	
Add "-Z" to Article No. and specify Order code.		Add "-Z" to Article No. and specify Order code.	
Factory certificates		Device settings	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11	Operating Temperature; Lower range value ... °C (°F), upper range value ... °C (°F)	Y10
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		
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			
<u>PE protective tube</u>			
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		
<u>PTFE protective tube</u>			
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		
<u>PVC protective tube</u>			
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		

Pressure Measurement

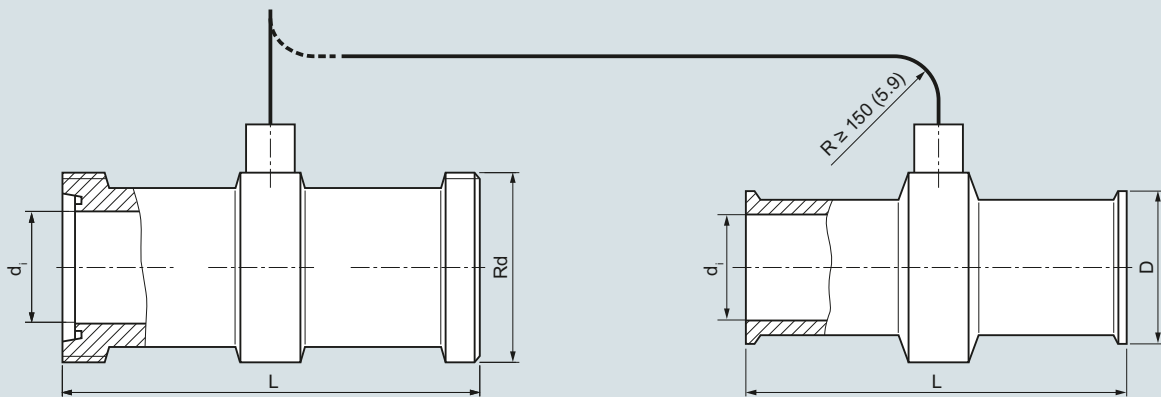
Remote seals for transmitters and pressure gauges
SITRANS P320/P420

Quick-release inline seals

Dimensional drawings



Mounted directly on SITRANS P transmitter for pressure



Mounted on SITRANS P transmitter for pressure or differential pressure and flow

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

Clamp-on seals for pipes 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

Clamp-on seals for pipes to BS 4825 Part 3 and O.D. Tube (suited for pipes 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 3.175	PN 10	119

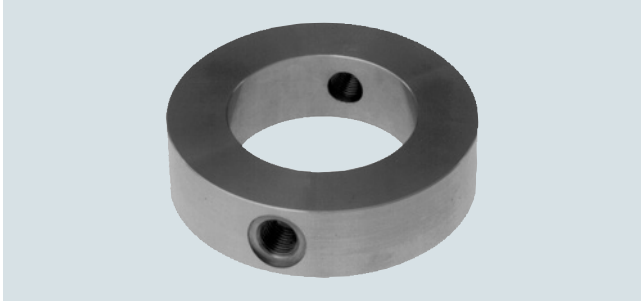
Pressure Measurement

Remote seals for transmitters and pressure gauges
SITRANS P320/P420

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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

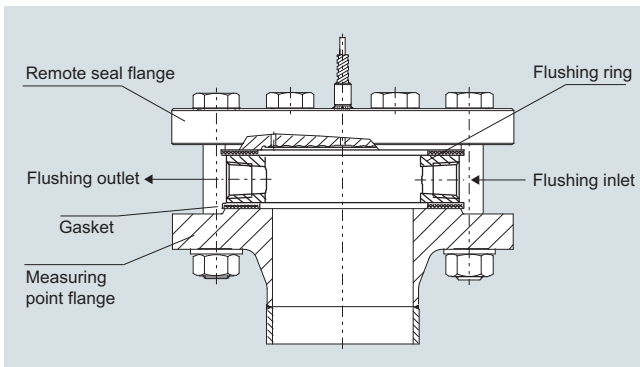
Material: CrNi-Stahl, mat. No. 1.4404/316L
Sealing faces and flushing holes: See Selection and Ordering data

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 face	
• 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	• G $\frac{1}{4}$
	• G $\frac{1}{2}$
	• $\frac{1}{4}$ -18 NPT
	• $\frac{1}{2}$ -14 NPT
Material	Stainless steel 1.4404/316L

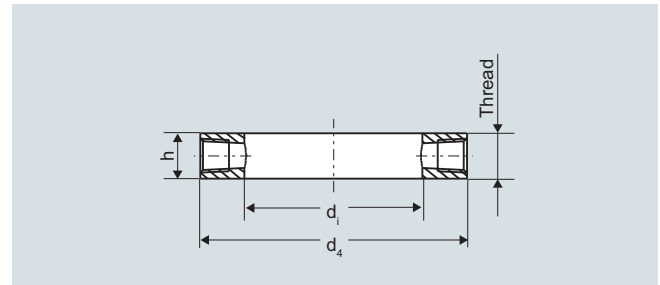
Design



Installation example

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.	Nom. press.		
• 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	
Other version		Z	J 1 Y
Add Order code and plain text: Nominal diameter: ...; Nominal pressure: ...			
Sealing face			
• EN 1092-1		A	
- Form B1		C	
- Form B2		D	
- Form C/Form C		E	
- Form D/Form C		F	
- Form D/Form D		G	
- Form E		H	
- Form F			
• ASME B16.5		M	
- RF 125 ... 250 AA		Q	
- RFSF		R	
- RJF ring groove		Z	K 1 Y
Other version			
Add Order code and plain text: Sealing face: ...			
Flushing holes (2 off)			
• Female thread G $\frac{1}{4}$		1	
• Female thread G $\frac{1}{2}$		2	
• Female thread $\frac{1}{4}$ -18 NPT		3	
• Female thread $\frac{1}{2}$ -14 NPT		4	
Material			
• Stainless steel 316L		0	
Other version		9	M 1 Y
Add Order code and plain text: Material: ...			
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



Flushing ring, dimension drawing

Connection to EN 1092-1

DN (mm)	PN (bar)	d ₄ (mm)	d ₁ (mm)	h (mm)	Weight (kg)
50	16 ... 100	102	62	30	1.10
80	16 ... 100	138	92	30	1.90
100	16 ... 100	162	92	30	3.15
125	16 ... 100	188	126	30	3.50

Connection to ASME B 16.5

DN inch	Class	d ₄ mm (in.)	d ₁ mm (in.)	h mm (in.)	Weight kg (lb)
2	150 ... 600	92 (3.62)	62 (2.44)	30 (1.18)	0.60 (1.32)
3	150 ... 600	127 (5)	92 (3.62)	30 (1.18)	1.05 (2.31)
4	150 ... 600	157 (6.18)	92 (3.62)	30 (1.18)	2.85 (6.28)
5	150 ... 600	185.5 (7.3)	126 (4.96)	30 (1.18)	3.30 (7.28)

Pressure Measurement

Remote seals for transmitters and pressure gauges
SITRANS P320/P420

Measuring setups

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Overview

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

Equations for calculating start of scale and full scale 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 start-of-scale and full-scale values 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

Installation type A

Start-of-scale: $p_{MA} = \rho_{FL} \cdot g \cdot H_U - \rho_{Oil} \cdot g \cdot H_1$

Full-scale: $p_{ME} = \rho_{FL} \cdot g \cdot H_O - \rho_{Oil} \cdot g \cdot H_1$

Installation type B

Start-of-scale: $p_{MA} = \rho_{FL} \cdot g \cdot H_U + \rho_{Oil} \cdot g \cdot H_1$

Full-scale: $p_{ME} = \rho_{FL} \cdot g \cdot H_O + \rho_{Oil} \cdot g \cdot H_1$

Legend

p_{MA}	Start-of-scale value to be set
p_{ME}	Full-scale 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	Start-of-scale value
H_O	Full-scale value
H_1	Distance between vessel flange and pressure trans.

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

Types of installation for absolute level measurements (closed vessels)

Installation type C₁

Installation type C₂

Installation type C₁ and C₂

Start-of-scale: $p_{MA} = p_{START} + \rho_{Oil} \cdot g \cdot H_1$

Full-scale: $p_{ME} = p_{END} + \rho_{Oil} \cdot g \cdot H_1$

Legend

p_{MA}	Start-of-scale value to be set
p_{ME}	Full-scale value to be set
p_{START}	Start-of-scale value
p_{END}	Full-scale 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.

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

Type of installation for differential pressure and flow measurements

Installation type D Filter monitoring

Installation type D

Start-of-scale: $p_{MA} = p_{START} - \rho_{Oil} \cdot g \cdot H_V$

Full-scale: $p_{ME} = p_{END} - \rho_{Oil} \cdot g \cdot H_V$

Legend

p_{MA}	Start-of-scale value to be set
p_{ME}	Full-scale value to be set
p_{START}	Start-of-scale value
p_{END}	Full-scale 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)

Pressure Measurement

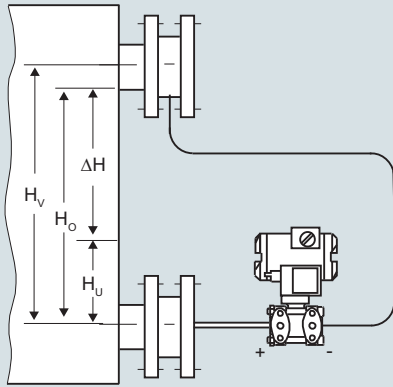
Remote seals for transmitters and pressure gauges
SITRANS P320/P420

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Measuring setups with remote seals

Types of installation for level measurements (closed vessels)

Installation type E



Installation type E

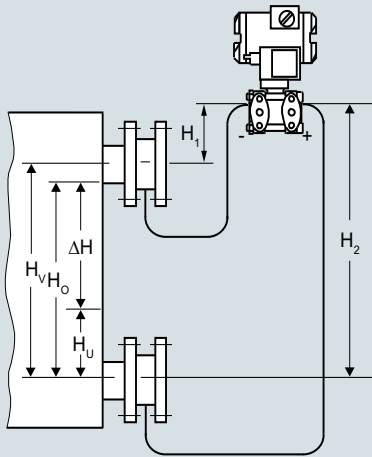
Start-of-scale: $p_{MA} = \rho_{FL} \cdot g \cdot H_U - \rho_{Oil} \cdot g \cdot H_V$

Full-scale: $p_{ME} = \rho_{FL} \cdot g \cdot H_O - \rho_{Oil} \cdot g \cdot H_V$

Legend

- p_{MA} Start-of-scale value to be set
- p_{ME} Full-scale 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 Start-of-scale value
- H_O Full-scale value
- H_V Distance between the measuring points (spigots)

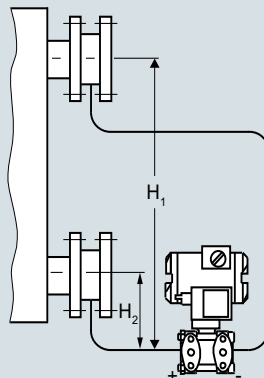
Installation type G



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)

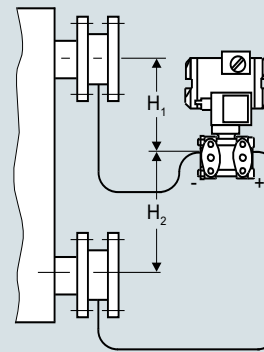
Installation type H



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

Start-of-scale: $p_{MA} = \rho_{FL} \cdot g \cdot H_U - \rho_{Oil} \cdot g \cdot H_V$

Full-scale: $p_{ME} = \rho_{FL} \cdot g \cdot H_O - \rho_{Oil} \cdot g \cdot H_V$

Legend

- p_{MA} Start-of-scale value to be set
- p_{ME} Full-scale 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 Start-of-scale value
- H_O Full-scale value
- H_V Distance between the measuring points (spigots)

Overview

Notes

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

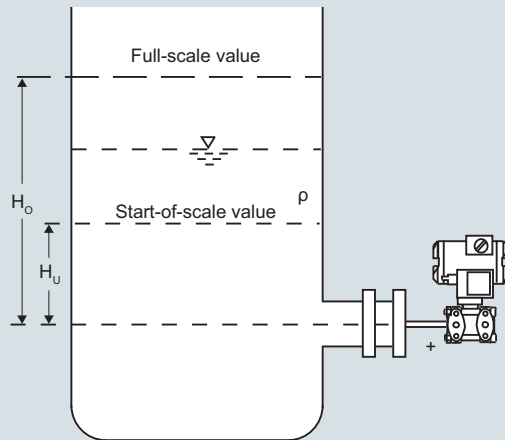
Also you must make sure that the level in the container is always above the top spigot.

- 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



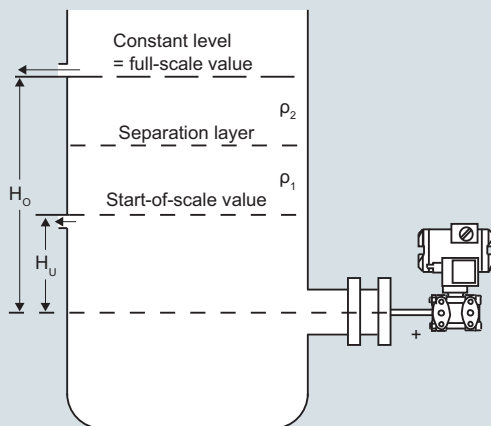
Level measurement

$$\text{Start-of-scale: } p_{MA} = \rho \cdot g \cdot H_U$$

$$\text{Full-scale: } p_{ME} = \rho \cdot g \cdot H_O$$

Legend

p_{MA}	Start-of-scale value to be set
p_{ME}	Full-scale value to be set
ρ	Density of medium in vessel
g	Local acceleration due to gravity
H_U	Start-of-scale value
H_O	Full-scale value



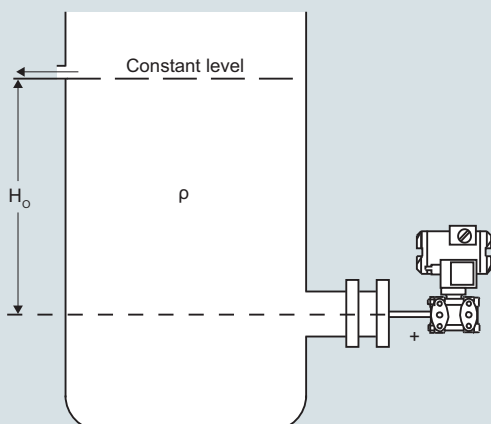
Separation layer measurement

$$\text{Start-of-scale: } p_{MA} = g \cdot (H_U \cdot \rho_1 + (H_O - H_U) \cdot \rho_2)$$

$$\text{Full-scale: } p_{ME} = \rho_1 \cdot g \cdot H_O$$

Legend

p_{MA}	Start-of-scale value to be set
p_{ME}	Full-scale value to be set
ρ_1	Density of heavier liquid
ρ_2	Density of lighter liquid
g	Local acceleration due to gravity
H_U	Start-of-scale value
H_O	Full-scale value



Density measurement

$$\text{Start-of-scale: } p_{MA} = \rho_{MIN} \cdot g \cdot H_O$$

$$\text{Full-scale: } p_{ME} = \rho_{MAX} \cdot g \cdot H_O$$

Legende

p_{MA}	Start-of-scale value to be set
p_{ME}	Full-scale 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	Full-scale value in m

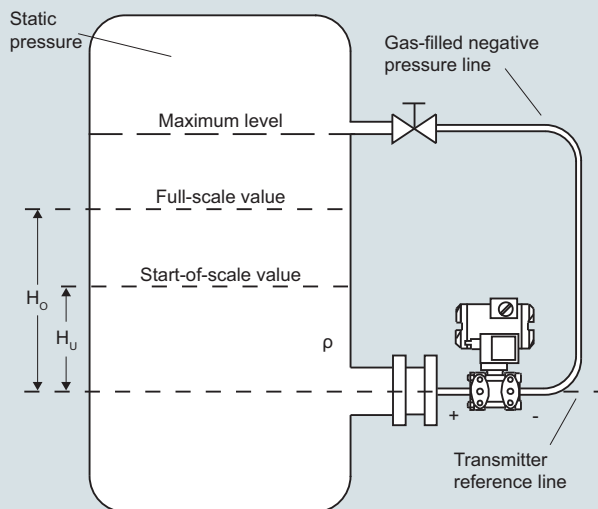
Pressure Measurement

Remote seals for transmitters and pressure gauges
SITRANS P320/P420

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Measuring setups without remote seals

Measuring setups for closed containers



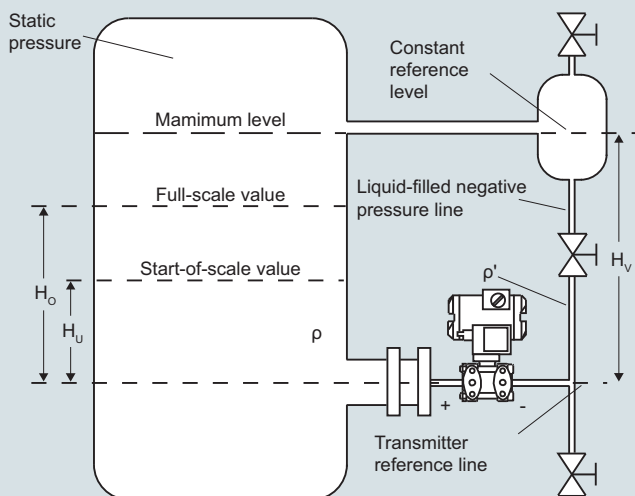
Level measurement, Version 1

$$\text{Start-of-scale: } \Delta p_{MA} = \rho \cdot g \cdot H_U$$

$$\text{Full-scale: } \Delta p_{ME} = \rho \cdot g \cdot H_O$$

Legend

Δp_{MA}	Start-of-scale value to be set
Δp_{ME}	Full-scale value to be set
ρ	Density of medium in vessel
g	Local acceleration due to gravity
H_U	Start-of-scale value
H_O	Full-scale value



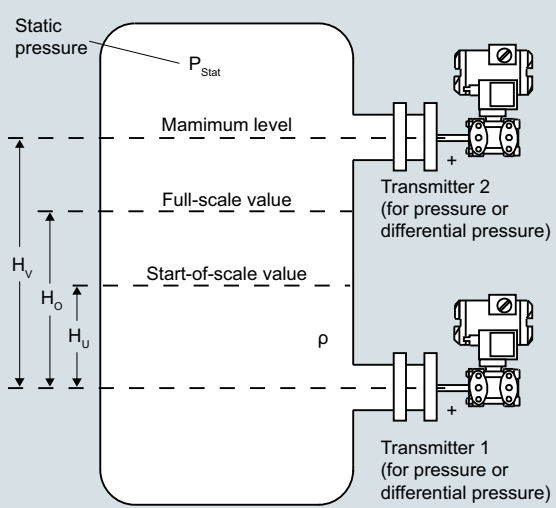
Level measurement, Version 2

$$\text{Start-of-scale: } \Delta p_{MA} = g \cdot (H_U \cdot \rho - H_V \cdot \rho')$$

$$\text{Full-scale: } \Delta p_{ME} = g \cdot (H_O \cdot \rho - H_V \cdot \rho')$$

Legend

Δp_{MA}	Start-of-scale value to be set
Δp_{ME}	Full-scale 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	Start-of-scale value
H_O	Full-scale value
H_V	Distance between the measuring points (spigots)



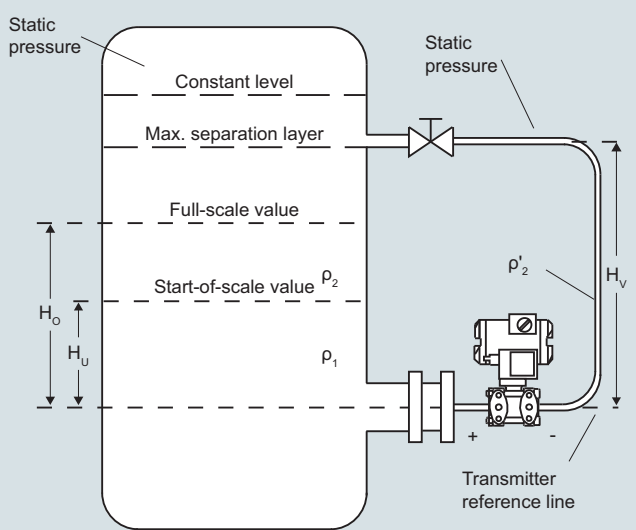
Level measurement, Version 3

Start-of-scale:
$$\Delta p_{MA} = \underbrace{P_{Stat} + \rho \cdot g \cdot H_U}_{\text{Transmitter 1}} - \underbrace{P_{Stat}}_{\text{Transmitter 2}}$$

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

- Legend
- Δp_{MA} Start-of-scale value to be set
 - Δp_{ME} Full-scale value to be set
 - ρ Density of medium in vessel
 - g Local acceleration due to gravity
 - H_U Start-of-scale value
 - H_O Full-scale value
 - H_V Distance between the measuring points (spigots)

The pressure measuring range (\pm 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

Start-of-scale:
$$\Delta p_{MA} = g \cdot (H_U \cdot \rho_1 + (H_O - H_U) \cdot \rho_2 - H_V \cdot \rho'_2)$$

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

- Legend
- Δp_{MA} Start-of-scale value to be set
 - Δp_{ME} Full-scale 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 Start-of-scale value
 - H_O Full-scale value
 - H_V Distance between the measuring points (spigots)

Pressure Measurement

Remote seals for transmitters and pressure gauges

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Technical description

Application

The remote seals 7MF48.. can be fitted to SITRANS P transmitters for

- **pressure** (SITRANS P300, P310, DSIII and P410),
- **absolute pressure** (SITRANS P300 and DSIII) and
- **differential pressure and flow** (SITRANS P310, DSIII, P410 and P500).

Design and mode of operation

A remote seal system consists of a transmitter, one or two remote seals, an appropriate transmission liquid, and a connection between the transmitter and remote seal (direct mounting or capillary).

The volume in contact with the measured medium is defined by an flexible diaphragm. The volume between this diaphragm and the pressure transmitter is completely filled with a transmission fluid. If a pressure is now applied to the remote seal, this is transmitted via the flexible diaphragm and the fill fluid to the pressure transmitter.

In many cases, a capillary is located between the remote seal and the pressure transmitter in order e.g. to minimize temperature effects from the hot medium on the latter. However, the capillary line influences the response time and the temperature response of the complete remote seal system. When fitting remote seals to differential pressure transmitters, two capillaries of the same length must always be used.

Fields of use

Remote seal systems should be used if a separation between the measured medium and the measuring instrument is appropriate or essential for the following reasons:

- The **temperature of the medium** is outside the limits specified for the transmitter.
- The medium is **corrosive** and requires diaphragm materials in the transmitter which are not available.
- The medium is **highly viscous** or **contains solids** which would block the measuring chambers of the transmitter.
- The medium may freeze in the measuring chambers or impulse line.
- The medium is **heterogeneous** and **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 site, e.g. in a batch process.

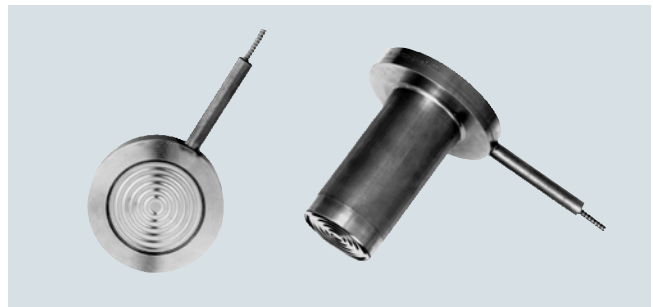
Constructional designs

A differentiation is made between diaphragm seals and inline seals.

With the diaphragm seals, the pressure is measured via a flat convoluted diaphragm welded to a convoluted backup.

With the inline seals, the pressure is measured via a cylindrical diaphragm positioned in a pipe, and transmitted to the transmitter via the filling liquid.

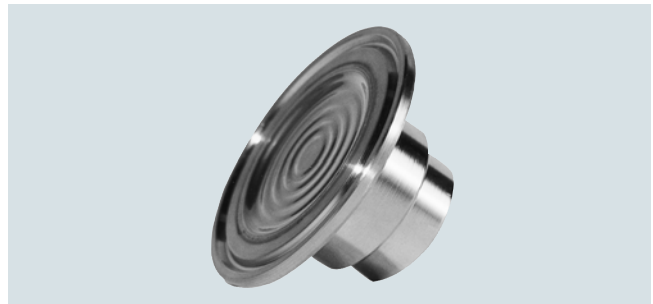
The inline seal is a special design for flowing media. It consists of a cylindrical pipe in which a cylindrical diaphragm is embedded. Since it is completely integrated in the process pipe, no turbulences, dead volumes or other obstructions to the flow occur.



Diaphragm seal of pancake design, and also with extended diaphragm (extension)



Diaphragm seal of flush flange design, and also with extended diaphragm (extension)



Tri-Clamp sanitary remote seal

Diaphragm seals

The following types of diaphragm seals exist:

- Pancake design, and pancake design with extended diaphragm (extension) to DIN or ANSI which are secured using a backup blind flange.
- Flush flange design, and flange design with extended diaphragm (extension) to DIN or ANSI which are installed by using holes in the flange.
- Sanitary remote seals, e.g. to DIN 11851, Cherry Burrell, APC connection, Tri-clamp connection, etc.

The sanitary remote seals are common designs in the food industry. Their design means that the measured medium cannot accumulate in dead volumes. The sanitary clamp present on the remote seal means that quick dismantling is possible for cleaning.

- Button diaphragm seal with male thread for screwing into tapped holes.
- Remote seals with customer-specific process connections.

Clamp-on seals

The following types of clamp-on seals exist:

- Sanitary inline seals, e.g. to DIN 11851, Cherry Burrell, tri-clamp connection etc.
The sanitary facility enables the seal to be removed quickly for cleaning purposes.
- Inline seals for positioning between DIN or ANSI flanges.
- Inline seals with customer-specific process connections.

Transmission response

Temperature errors occur if the fill fluid in the remote seal and in the capillaries expands or contracts as a result of temperature effects. The temperature error depends on the diaphragm characteristic, the influence of the fill fluid, and the influence of the fill fluid under the process flanges or in the flanges on the transmitter (volume minimized for remote seals).

Diaphragm characteristic

The characteristic of the remote seal is of great importance. The larger the diaphragm diameter, the softer it is. In comparison to a smaller diaphragm, this means that it can respond far easier to temperature-based expansions of the filling liquid. The result is that low measuring ranges are only possible with large diaphragm diameters. In addition, the diaphragm thickness, its material, and any coatings which may be present must also be considered.

Fill fluid

All fill fluids expand or contract when the temperature varies. Temperature-independent errors can be minimized by selecting a suitable filling liquid, but it must also be ensured that the filling liquid is appropriate for the temperature limits and operating pressure. For food and beverage as well as pharmaceutical applications see reference for FDA approved fill fluids.

Since the fill fluid is present under the remote seal diaphragm, in the capillaries and under the process flanges of the transmitter, the temperature error must be calculated separately for each combination.

Response time

The response time depends on the internal diameter of the capillaries, the viscosity of the filling liquid, the capillary extension length, and the pressure in the measuring system:

Internal diameter:

The response time decreases as the internal diameter increases, but the temperature error increases due to increased oil volume.

Viscosity:

The response time increases as the viscosity increases.

Capillary length:

The capillary length has a proportional effect on the response time and the temperature error.

Measuring system pressure:

The response time decreases as the pressure in the measuring system increases.

Recommendations

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

- The remote seal diameter, and thus the effective diameter of the diaphragm, should be selected as large as possible in order to keep the temperature-dependent errors as low as possible.
- The capillaries should be selected as short as possible in order to keep the response time and the temperature-dependent errors as low as possible.



Button diaphragm seal with diaphragm flush with front



Sanitary tri-clamp seal and for flange pancake mounting

- A filling liquid should be selected which has the lowest viscosity and the lowest coefficient of expansion, and which simultaneously fulfills the process requirements with respect to pressure/vacuum and temperature. The filling liquid must also be compatible with the process medium.
- When installing the equipment for vacuum applications, the transmitter must always be located below the lowest tap.
- It should also be noted that some of the filling liquids are very limited with respect to the permissible temperature of the medium for vacuum applications.
- When operating permanently at a vacuum, the remote seal must be designed in the version resistant to those vacuum applications.
- Recommendations on the minimum span can be found in the tables on pages 1/424 and 1/425.

Note

The remote seals listed in this catalog are a selection of the most common designs. As a result of the large variety of process connections, it may nevertheless be the case that certain remote seals which are not listed in the catalog are still available.

Other versions could be:

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

Please contact your Siemens Regional Office for more information.

Pressure Measurement

Remote seals for transmitters and pressure gauges

Technical description

Technical specifications

Nominal diameter, nominal pressure, pressure connection	See Ordering data	Sealing material in the transmitter pressure flanges	
Sealing face (only for pancake and flanged remote seals)	To ANSI B16.5 RF 250 RMS for stainless steel or solid materials or ANSI B16.5 RF5F (smooth finish) for other materials	<ul style="list-style-type: none"> For absolute pressure transmitters and vacuum applications For other applications 	Copper Viton
Materials		Max. pressure	See nominal pressure of remote seal and transmitter
<ul style="list-style-type: none"> Main body for pancake and flange remote seals Wetted parts materials Housing and diaphragm for Inline seals 	Stainless steel, mat. No. 1.4435/316L See Ordering data Stainless steel, mat. No. 1.4435/316L or stainless steel, 7MF4880-... and 7MF4883-...	Capillary	
<ul style="list-style-type: none"> Capillary 	Stainless steel, mat. No. 1.4571/316Ti	<ul style="list-style-type: none"> Length 	Max. 30 ft. longer lengths on inquiry
<ul style="list-style-type: none"> Armor 	Spiral sheath made of stainless steel, mat. No. 304	<ul style="list-style-type: none"> Internal bore Smallest bending radius 	0.079 inch 6.0 inch
		Fill fluid	
		<ul style="list-style-type: none"> For pancake and flange remote seals For sanitary remote seals 	See Ordering data Neobee M20 (food oil)
		Ambient temperature	See transmitter and filling liquid
		Certificates and approvals	
		Classification according to pressure equipment directive (DGRL 97/23/EC)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)

Measuring errors based on physical properties always result when using remote seals

Temperature errors of diaphragm seals when connected to pressure, absolute pressure or level transmitters, and with single-sided connection to differential pressure transmitters

	Nominal diameter/ design	Effective diaphragm diameter [in]	Temperature error of remote seal [inH ₂ O/25 °F]	Temperature error of capillary [inH ₂ O/25 °F/3 ft]	Temperature error of transmitter flange connection [inH ₂ O/25 °F]	Recommended values, min. spans (observe tempera- ture error) [psi]
Flange to ANSI B16.5	2" flush flanged	2.32	1.69	2.04	2.04	7.5
	2" with extension	1.89	2.81	5.1	5.1	7.5
	3" flush flanged	3.5	0.23	0.21	0.21	1.5
	3" with extension	2.83	0.58	0.53	0.53	3.5
	4" flush flanged	3.5	0.23	0.21	0.21	1.5
	4" with extension	3.5	0.23	0.21	0.21	1.5
	5" flush flanged	4.88	0.12	0.07	0.07	0.3
	5" with extension	4.88	0.12	0.07	0.07	0.3
Flange to DIN 2501	DN 50 flush flanged	2.32	1.69	2.04	2.04	7.5
	DN 50 with extension	1.89	2.81	5.1	5.1	7.5
	DN 80 flush flanged	3.5	0.23	0.21	0.21	1.5
	DN 80 with extension	2.83	0.58	0.53	0.53	3.5
	DN 100 flush flanged	3.5	0.23	0.21	0.21	1.5
	DN 100 with extension	3.5	0.23	0.21	0.21	1.5
	DN 125 flush flanged	4.88	0.12	0.07	0.07	0.3
	DN 125 with extension	4.88	0.12	0.07	0.07	0.3
Sanitary Tri-Clamp	1 1/2"	1.26	9.51	35.73	35.73	60
	2"	1.57	3.93	7.67	7.67	30
	2 1/2"	2.32	1.69	2.57	2.57	7.5
	3"	2.83	0.58	0.53	0.53	3.5
	4"	3.5	0.23	0.21	0.21	1.5
Button Seal	1 NPT-male	0.98	13.97	81.7	81.7	90
	1 1/2 NPT-male	1.57	3.93	7.67	7.67	30
	2" NPT-male	2.05	2.23	2.57	2.57	7.5

Temperature errors of diaphragm seals (part 1)

Remarks:

- Values apply to fill fluid: silicone oil DC 200, high-temperature oil, halocarbon oil and Neobee M20.
- Values apply to stainless steel as the diaphragm material.

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

	Nominal diameter/ design	Effective diaphragm diameter [in]	Temperature error of remote seal [inH ₂ O/25 °F]	Temperature error of capillary [inH ₂ O/25 °F/3 ft]	Temperature error of transmitter flange connection [inH ₂ O/25 °F]	Recommended values, min. spans (observe tempera- ture error) [psi]
Flange to ANSI B16.5	2" flush flanged	2.32	0.384	0.42	0.42	3.5
	2" with extension	1.89	0.692	1.051	1.051	3.5
	3" flush flanged	3.5	0.077	0.042	0.042	1
	3" with extension	2.83	0.154	0.126	0.126	1.5
	4" flush flanged	3.5	0.077	0.042	0.042	1
	4" with extension	3.5	0.077	0.042	0.042	1
	5" flush flanged	4.88	0.038	0.017	0.017	0.3
	5" with extension	4.88	0.038	0.017	0.017	0.3
Flange to DIN 2501	DN 50 flush flanged	2.32	0.384	0.42	0.42	3.5
	DN 50 with extension	1.89	0.692	1.051	1.051	3.5
	DN 80 flush flanged	3.5	0.077	0.042	0.042	1
	DN 80 with extension	2.83	0.154	0.126	0.126	1.5
	DN 100 flush flanged	3.5	0.077	0.042	0.042	1
	DN 100 with extension	3.5	0.077	0.042	0.042	1
	DN 125 flush flanged	4.88	0.038	0.017	0.017	0.3
	DN 125 with extension	4.88	0.038	0.017	0.017	0.3
Sanitary Tri-Clamp	2"	1.57	0.961	1.849	1.849	30
	2 ½"	2.32	0.384	0.42	0.42	3.5
	3"	2.83	0.154	0.126	0.126	1.5
	4"	3.5	0.077	0.042	0.042	1

Temperature errors of diaphragm seals (part 2)

Remarks:

- Values apply to fill fluids: silicone oil DC 200, high-temperature oil, halocarbon oil and Neobee M20.
- Values apply to stainless steel as the diaphragm material.

Temperature errors of clamp-on seals when connected to pressure or absolute pressure transmitters, and with single-sided connection to differential pressure transmitters

Nominal diameter/design	Temperature error of remote seal [inH ₂ O/25 °F]	Temperature error of cap- illary [inH ₂ O/25 °F/3 ft]	Temperature error of transmitter flange con- nection [inH ₂ O/25 °F]	Recommended values, min. spans (observe tem- perature error) [psi]
1 inch	3.345	5.17	5.17	14.5
1 ½ inch	2.499	2.732	2.732	3.5
2 inch	2.23	1.849	1.849	1.5
3 inch	5.305	3.068	3.068	1.5
4 inch	0.461	1.849	1.849	1.5

Temperature errors of clamp-on seals with double-sided connection to differential pressure transmitters

Nominal diameter/design	Temperature error of remote seal [inH ₂ O/25 °F]	Temperature error of cap- illary [inH ₂ O/25 °F/3 ft]	Temperature error of transmitter flange con- nection [inH ₂ O/25 °F]	Recommended values, min. spans (observe tem- perature error) [psi]
1 inch	1.269	1.093	1.093	14.5
1 ½ inch	0.461	0.168	0.168	3.5
2 inch	0.154	0.084	0.084	1.5
3 inch	1.692	0.294	0.294	1.5
4 inch	0.577	0.084	0.084	1.5

Temperature errors of clamp-on seals

Remarks:

- Values apply to fill fluids: silicone oil DC 200, high-temperature oil, halocarbon oil and Neobee M20.
- Values apply to stainless steel as the diaphragm material.
- Diaphragm thickness: 1" & 1 ½" & 2": 0.002 inch
3" & 4": 0.004 inch

Pressure Measurement

Remote seals for transmitters and pressure gauges

1

Technical description

Calculation of temperature error for remote seals

The following equation is used to calculate the temperature error for remote seals:

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

dp	Additional temperature error (inH ₂ O)
t _{RS}	Temperature on remote seal diaphragm (generally corresponds to temperature of medium)
t _{Cal}	Reference (calibration) temperature 68 °F
f _{RS}	Temperature error of remote seal (see tables on pages 1/424 and 1/425)
t _{Cap}	Ambient temperature on the capillaries
l _{Cap}	Capillary extension length (error given per 3 ft)
f _{Cap}	Temperature error of capillaries (see tables on pages 1/424 and 1/425)
t _{TR}	Ambient temperature on transmitter
f _{PF}	Temperature error of oil filling in process flanges of transmitter (see tables on pages 1/424 and 1/425)

Example of calculation of temperature error for remote seals

Existing conditions:

SITRANS P transmitter for differential pressure, 100 inH ₂ O, set to 0 to 40 inH ₂ O with 3 in flush flanged remote seal, diaphragm made of stainless steel, mat. No. 1.4535/316L	f _{RS} = 0.054 inH ₂ O/25 °F
Capillary 2 x 15 ft	l _{Cap} = 2 x 15 ft
Capillaries fitted on both sides	f _{Cap} = 0.042 inH ₂ O/25 °F/3 ft
Filled with silicone oil DC 200-10	f _{PF} = 0.042 inH ₂ O/25 °F
Temperature of medium 212 °F	t _{RS} = 212 °F
Temperature on capillaries 122 °F	t _{Cap} = 122 °F
Temperature on transmitter 122 °F	t _{TR} = 122 °F

Required:

Additional temperature error of remote seal: dp

Calculation:

$$dp = (212 \text{ °F} - 68 \text{ °F}) \cdot 0.077 \text{ inH}_2\text{O}/25 \text{ °F} + (122 \text{ °F} - 68 \text{ °F}) \cdot 15 \text{ ft} \cdot 2 \cdot 0.042 \text{ inH}_2\text{O}/25 \text{ °F} / 3 \text{ ft} + (122 \text{ °F} - 68 \text{ °F}) \cdot 0.042 \text{ inH}_2\text{O}/25 \text{ °F}$$

$$dp = 0.444 \text{ inH}_2\text{O} + 0.907 \text{ inH}_2\text{O} + 0.091 \text{ inH}_2\text{O}$$

Result:

dp = 1.442 inH₂O (corresponds to 3.605 % of set span)

Note:

The temperature error determined above 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 errors listed in the tables on pages 1/424 and 1/425 refer to the use of stainless steel as the diaphragm material. If a different material is used, the listed values change by the amount shown in the following table.

Diaphragm material	Change in temperature error of remote seal
Stainless steel	Values as specified in tables on pages 1/424 and 1/425
Hastelloy C4, mat. No. 2.4610	Increase in values by 50%
Hastelloy C276, mat. No. 2.4819	Increase in values by 50%
Monel 400, mat. No. 2.4360	Increase in values by 60%
Tantalum	Increase in values by 50%
Titanium	Increase in values by 50%
Gold coating on stainless steel diaphragm	Increase in values by 40%

Response times (approximate)

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

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

The response times are independent of the set span within the range of the respective transmitter. The response times are of insignificant importance for spans above 145 psi (10 bar). The response time of the transmitter has not been considered.

Pressure Measurement

Remote seals for transmitters and pressure gauges

Technical description

1

Filling liquid	Density		Temperature on capillary		Response time in s/m (s/ft) with max. span of transmitter					
	kg/dm ³	(lb/in ³)	°C	(°F)	250 mbar	(3.63 psi)	600 mbar	(8.7 psi)	1600 mbar	(23.2 psi)
Silicone oil DC 200-10	0.934	(0.033)	+60 +20 -20	(140) (68) (-4)	0.06 0.11 0.3	(0.018) (0.034) (0.091)	0.02 0.02 0.12	(0.006) (0.006) (0.037)	0.01 0.02 0.05	(0.003) (0.006) (0.015)
Silicone oil DC 200-50	0.966	(0.035)	+60 +20 -20	(140) (68) (-4)	0.6 0.61 1.69	(0.183) (0.186) (0.515)	0.25 0.26 0.71	(0.076) (0.079) (0.216)	0.09 0.1 0.27	(0.027) (0.030) (0.082)
Syltherm 800	0.935	(0.034)	+60 +20 -20	(140) (68) (-4)	0.06 0.11 0.3	(0.018) (0.034) (0.091)	0.02 0.02 0.12	(0.006) (0.006) (0.37)	0.01 0.02 0.05	(0.003) (0.006) (0.015)
Silicone oil DC704	1.07	(0.039)	+60 +20 -10	(140) (68) (14)	0.14 0.65 3.96	(0.043) (0.198) (1.207)	0.06 0.27 1.65	(0.018) (0.082) (0.503)	0.02 0.1 0.62	(0.006) (0.030) (0.189)
Halocarbon oil	1.968	(0.071)	+60 +20 -20	(140) (68) (68)	0.07 0.29 2.88	(0.021) (0.088) (0.878)	0.03 0.12 1.2	(0.009) (0.037) (0.366)	0.01 0.05 0.45	(0.003) (0.015) (0.137)
Fluorolube	1.866	(0.068)	+60 +20 -20	(140) (68) (68)	0.07 0.29 2.88	(0.021) (0.088) (0.878)	0.03 0.12 1.2	(0.009) (0.037) (0.366)	0.01 0.05 0.45	(0.003) (0.015) (0.137)
Neobee M20	0.917	(0.033)	+60 +20 -20	(140) (68) (68)	0.18 0.43 1.19	(0.055) (0.131) (0.363)	0.08 0.18 0.5	(0.024) (0.055) (0.152)	0.03 0.07 0.18	(0.009) (0.021) (0.055)
Glycerine/water	1.22	(0.044)	+60 +20 0	(140) (68) (32)	0.13 0.76 9.72	(0.040) (0.232) (2.963)	0.05 0.32 4.05	(0.015) (0.098) (12.34)	0.02 0.12 1.51	(0.006) (0.037) (0.460)

Technical specifications of filling liquid

When selecting the filling liquid, check that it is suitable with respect to the permissible temperature of the medium and the process pressure. Also check the compatibility with the measured medium. For example, only food grade filling liquids may be used in the food industry. A special case are oxygen and chlorine as the measured media; the fill fluid must not react with them, otherwise an explosion or fire may occur if there is a leak in the remote seal.

Filling liquid	Permissible temperature of medium				Density at 20 °C (68 °F)		Viscosity at 20 °C (68 °F)		Expansion coefficient	
	$p_{abs} < 1 \text{ bar}$	$(p_{abs} < 14.5 \text{ psi})$	$p_{abs} > 1 \text{ bar}$	$(p_{abs} > 14.5 \text{ psi})$	kg/dm ³	(lb/in ³)	m ² /s·10 ⁶	(ft ² /s·10 ⁶)	1/°C	(1/°F)
	°C	(°F)	°C	(°F)						
Silicone oil DC200-10	-40 to +121	(-40 to +248)	-40 to +200	(-40 to +392)	0.934	(0.03)	10	(107.6)	0.00108	(0.00060)
Silicone oil DC 200-50	-20 to +150	(-4 to +302)	-20 to +250	(-4 to +482)	0.96	(0.03)	50	(538)	0.00104	(0.00058)
Syltherm 800	-40 to +121	(-40 to +250)	-40 to +205	(-40 to +400)	0.935	(0.034)	10.03	(107.9)	0.00109	(0.00061)
Silicone oil DC704	-10 to +200	(+14 to +392)	-10 to +350	(+14 to +662)	1.07	(0.04)	39	(420)	0.0008	(0.00044)
Halocarbon oil	-40 to +80	(-40 to +176)	-40 to +175	(-40 to +347)	1.968	(0.07)	14	(151)	0.00086	(0.00048)
Fluorolube	Not possible	Not possible	-40 to +175	(-40 to +347)	1.866	(0.068)	15.5	(167)	0.000864	(0.00048)
Neobee M20	10 to +90	(+14 to +195)	-10 to +200	(+14 to +392)	0.917	(0.03)	9.8	(105)	0.00082	(0.00045)
Glycerine/water	Not possible	Not possible	-10 to +120	(+14 to +248)	1.22	(0.04)	88	(947)	0.0005	(0.00028)

Maximum temperature of medium

The following maximum temperatures of the medium apply depending on the wetted parts materials:

Material	$p_{abs} < 1 \text{ bar}$ (14.5 psi)		$p_{abs} > 1 \text{ bar}$ (14.5 psi)	
	°C	(°F)	°C	(°F)
Stainless steel, mat. No. 1.4571/316Ti	200	(392)	350	(662)
Hastelloy C4, mat. No. 2.4610	200	(392)	350	(662)
Hastelloy C276, mat. No. 2.4819	200	(392)	350	(662)
Monel 400, mat. No. 2.4360	200	(392)	350	(662)
Tantalum	200	(392)	300	(572)

Maximum capillary length (guidance values for diaphragm seals and inline seals)

Nominal diameter	Max. length of capillary	Diaphragm seal		Inline seal	
DN 25 (1 inch)	2.5 m (8.2 ft)	2.5 m	(8.2 ft)	2.5 m	(8.2 ft)
DN 32 (1¼ inch)	2.5 m (4.9 ft)	2.5 m	(4.9 ft)	2.5 m	(8.2 ft)
DN 40 (1½ inch)	4 m (13.1 ft)	6 m	(19.7 ft)	6 m	(19.7 ft)
DN 50 (2 inch)	6 m (19.7 ft)	10 m	(32.8 ft)	10 m	(32.8 ft)
DN 65 (2½ inch)	8 m (26.2 ft)	10 m	(32.8 ft)	10 m	(32.8 ft)
DN 80 (3 inch)	10 m (32.8 ft)	10 m	(32.8 ft)	10 m	(32.8 ft)
Size 4 inch			(30.0 ft)	–	–
Size 5 inch			(30.0 ft)	–	–

Pressure Measurement

Remote seals for transmitters and pressure gauges

Pancake type diaphragm seal with flexible capillary tube

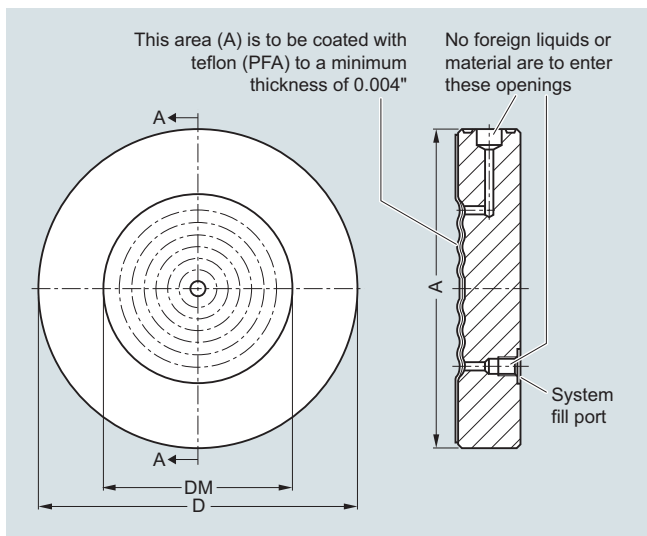
1

Overview



Pancake type diaphragm seal

Dimensions (Connection to ASME B16.5)



Pancake type diaphragm seal, dimensions

Size	Class	D	DM	F	A [in ²]
2"	150 - 2500	3.94	2.32	0.79	12.2
3"		5.28	3.50	0.79	21.9
4"		6.22	3.50	0.79	30.4
5"		7.32	4.80	0.87	42.1

Size = Nominal pipe size
 DM = Effective diaphragm diameter
 Class = Flange rating per ASME B16.5
 All dimensions in inches unless otherwise noted

Selection and Ordering data

Article No. Order code

Pancake type diaphragm seal

with flexible capillary extension, connected to a SITRANS P transmitter (order separately)

for pressure 7MF40 ■■ or 7MF42 ■■

7 M F 4 8 0 0 -

for absolute pressure 7MF43 ■■

7 M F 4 8 0 1 -

for differential pressure 7MF44 ■■

7 M F 4 8 0 3 -

• dual seals for DP

1 ■■ ■■ - ■■ ■■

Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

- 2 inch class 150 ... 2500
- 3 inch class 150 ... 2500
- 4 inch class 150 ... 2500
- 5 inch class 150 ... 2500

E
H
L
N
Z

Special design, customer information to be supplied

J 1 Y

Materials and wetted parts

- SST 316L
- Monel 400, mat. No. 2.4360
- Hastelloy C276, mat. No. 2.4819
- Tantal

A
G
J
K
Z

Special design, customer information to be supplied

K 1 J

Extension length (316SS standard)

Without extension (standard version)

0

Special design, customer information to be supplied for extension

9 L 1 Y

System fill

- Silicone oil DC 200-10
- Silicone oil DC 200-50
- Halocarbon (for O₂-application)
- Silicone oil M5
- Syltherm 800
- DC704 silicone oil
- Fluorolube

1
2
4
5
6
7
8
9

Special design, customer inform. to be supplied

M 1 Y

Length of capillary

- 3 ft
- 5 ft
- 10 ft
- 15 ft
- 20 ft
- 25 ft
- 30 ft

2
3
4
5
6
7
8
9

Special design, customer inform. to be supplied

N 1 Y

Further designs

Please add „-Z“ to Article No. and specify Order code

for 7MF4800

- Integrated flame path restriction
- Certificate of calibration N.I.S.T. (20% steps)
- Material conformance certificate
- Vacuum service (must be specified with HT oil)
- Calculation of span of transmitter (completed questionnaire to be attached)

A 0 1
C 1 1
C 1 2
V 0 1
Y 0 5

for 7MF4801

- Integrated flame path restriction
- Certificate of calibration N.I.S.T. (20% steps)
- Material conformance certificate
- Calculation of span of transmitter (completed questionnaire to be attached)

A 0 1
C 1 1
C 1 2
Y 0 5

for 7MF4803

- Integrated flame path restriction
- Certificate of calibration N.I.S.T. (20% steps)
- Material conformance certificate
- Vacuum service (must be specified with HT oil)
- Calculation of span of transmitter (completed questionnaire to be attached)

A 0 2
C 1 1
C 1 2
V 0 3
Y 0 5

Pressure Measurement

Remote seals for transmitters and pressure gauges

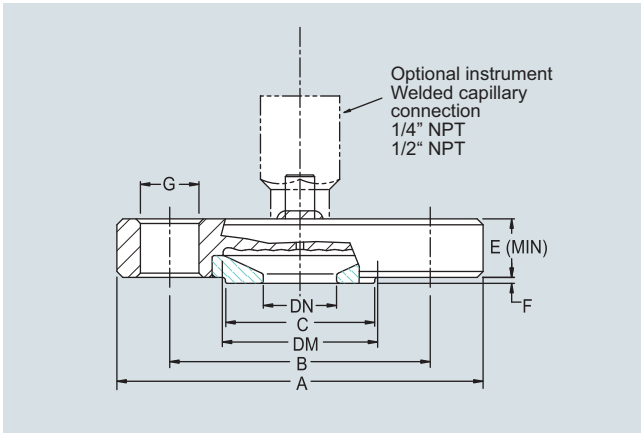
Flange-type diaphragm seal directly connected

Overview

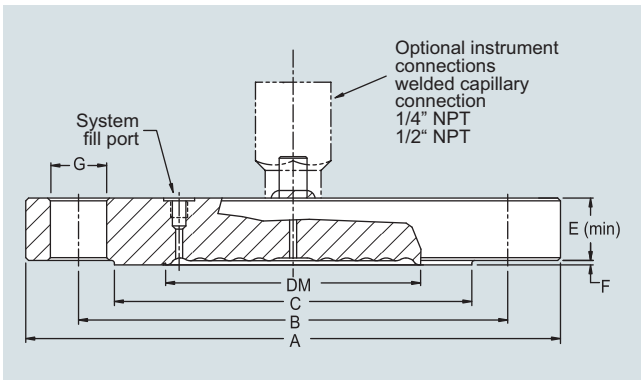


Flange-type diaphragm seal, without extension

Dimensions (connection to ASME B16.5)



Flange-type diaphragm seal without extension for flanges ≤ 1"



Flange-type diaphragm seal without extension for flanges ≥ 1.5"

Size DN	Class	A	B	C	DM	E	F	G	X	Weight lbs
1/2"	150	3.50	2.38	1.38	1.3	0.85	0.06	0.62	4	2.2
	300	3.75	2.62	1.38	1.6	0.85	0.06	0.62	4	2.2
3/4"	150	3.88	2.75	1.69	1.6	0.85	0.06	0.62	4	2.4
	300	4.62	3.25	1.69	1.6	0.85	0.06	0.75	4	3.5
1"	150	4.25	3.12	2.00	2.1	0.85	0.06	0.62	4	3.1
	300	4.88	3.50	2.00	2.1	0.85	0.06	0.75	4	3.7
1.5"	150	5.00	3.55	2.88	1.9	0.69	0.06	0.62	4	3.5
	300	6.12	4.50	2.88	1.9	0.81	0.06	0.88	4	5.5
	600	6.12	4.50	2.88	1.9	1.13	0.25	0.88	4	7.3
	1500	7.00	4.88	2.88	1.9	1.50	0.25	1.12	4	13.0
2"	2500	8.00	5.75	2.88	1.9	2.00	0.25	1.25	4	22.9
	150	6.00	4.75	3.62	2.4	0.75	0.06	0.75	4	5.9
	300	6.50	5.00	3.62	2.4	0.88	0.06	0.75	8	8.1
	600	6.50	5.00	3.62	2.4	1.25	0.25	0.75	8	12.5
3"	1500	8.50	6.50	3.62	2.4	1.75	0.25	1.00	8	29.0
	2500	9.25	6.75	3.62	2.4	2.25	0.25	1.12	8	43.6
	150	7.50	6.00	5.00	3.5	0.94	0.06	0.75	4	11.7
	300	8.25	6.62	5.00	3.5	1.12	0.06	0.88	8	17.2
4"	600	8.25	6.62	5.00	3.5	1.50	0.25	0.88	8	24.2
	900	9.50	7.50	5.00	3.5	1.75	0.25	1.00	8	36.7
	1500	10.53	8.00	5.00	3.5	2.13	0.25	1.25	8	53.9
	2500	12.01	9.00	5.00	3.5	2.87	0.25	1.38	8	93.9
6"	150	9.00	7.50	6.19	3.5	0.94	0.06	0.75	8	16.9
	300	10.04	7.88	6.19	3.5	1.25	0.06	0.88	8	27.9
	400	10.4	7.88	6.19	3.5	1.63	0.25	1.00	8	38.3
	600	10.83	8.50	6.19	3.5	1.75	0.25	1.00	8	47.3
8"	900	11.51	9.25	6.19	3.5	2.00	0.25	1.25	8	60.9
	1500	12.30	9.50	6.19	3.5	2.37	0.25	1.38	8	81.4
10"	2500	14.00	10.75	6.19	3.5	3.25	0.25	1.62	8	144.5

DN = Nominal pipe size

DM = Effective diaphragm diameter

Class = Flange rating per ASME B16.5

X = Number of bolt holes

All dimensions in inches unless otherwise noted

Flange-type diaphragm seal, without extension, dimensions

Pressure Measurement

Remote seals for transmitters and pressure gauges

Flange-type diaphragm seal with extension

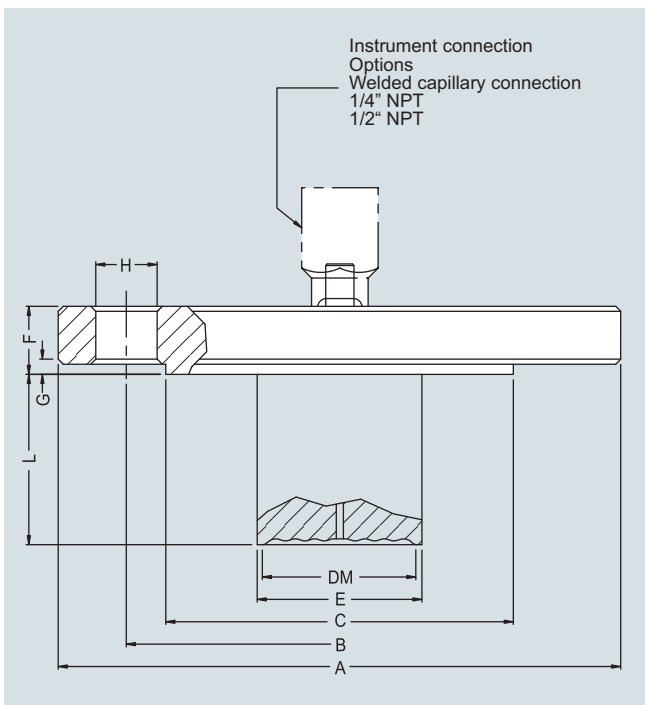
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Overview



Flange-type diaphragm seal, with extension

Dimensions



Size	Class	A	B	C	DM	E ¹⁾	F	G	H	X	L					
DN																
2"	150	6.00	4.75	3.62	1.8	1.90	0.75	0.06	0.75	4	2.0	3.0	4.0	6.0		
	300	6.50	5.00				0.88									
3"	150	7.50	6.00	5.00	2.8	2.99	0.94	0.06	0.75	4	2.0	3.0	4.0	6.0		
	300	8.25	6.62				1.12									
4"	150	9.00	7.50	6.19	3.5	3.70	0.94	0.06	0.75	8	2.0	3.0	4.0	6.0		
	300	10.04	7.88				1.25									

¹⁾ based on schedule 40

DN = Nominal pipe size
 DM = Effective diaphragm diameter
 Class = Flange rating per ASME B16.5
 X = Number of bolt holes
 All dimensions in inches unless otherwise noted

Flange-type diaphragm seal, with extension, dimensions

Selection and Ordering data

Article No. Order code

Flange-type diaphragm seal

directly connected to a
 SITRANS P 7MF40 ■■ or 7MF42 ■■
 (order separately)

7 M F 4 8 1 0 -

Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Process connection

vertical (transmitter upright)
 horizontal

0
2

Size and class

- 2 inch class 150
- 2 inch class 300
- 2 inch class 600
- 2 inch class 1500
- 3 inch class 150
- 3 inch class 300
- 3 inch class 600
- 4 inch class 150
- 4 inch class 300
- 4 inch class 400

L
M
N
P
Q
R
S
T
U
V
Z

Special design, customer information to be supplied

J 1 Y

Materials and wetted parts

- SST 316L
- Monel 400, mat. No. 2.4360
- Hastelloy C276, mat. No. 2.4819
- Tantal

Special design, customer information to be supplied

A
G
J
K
Z

K 1 Y

Extension length (316SS standard)

Without extension (standard version)
 2"
 4"
 6"
 8"

0
1
2
3
4

Special design, customer information to be supplied for extension

9 L 1 Y

System fill

- Silicone oil DC 200-10
- Silicone oil DC 200-50
- Halocarbon (for O₂-application)
- Silicone oil M5
- Syltherm 800
- DC704 silicone oil
- Fluorolube

Special design, customer information to be supplied

1
2
4
5
6
7
8
9

M 1 Y

Further designs

Please add „-Z“ to Article No. and specify Order code

Integrated flame path restriction

A 0 1

Rotatable Flange

B 0 1

Certification of calibration N.I.S.T. (20% steps)

C 1 1

Material conformance certificate

C 1 2

Vacuum service (must be specified with HT oil)

V 0 1

Calculation of span of transmitter (completed questionnaire to be attached)

Y 0 5

Pressure Measurement

Remote seals for transmitters and pressure gauges

Flange-type diaphragm seal with extension

1

Selection and Ordering data			Article No.	Order code
Mounting flange			7 M F 4 8 1 2 -	3
directly mounted at SITRANS P for Level 7MF46 ■■ (order separately)				
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.				
Flange	Size	Class	L M Q R T U Z	J 1 Y
ANSI B16.5	2 inch	150 300		
	3 inch	150 300		
	4 inch	150 300		
Special design, customer information to be supplied				
Materials and wetted parts			A G J K Z	K 1 Y
<ul style="list-style-type: none"> SST 316L Monel 400, mat. No. 2.4360 Hastelloy C276, mat. No. 2.4819 Tantal 				
Special design, customer information to be supplied				
Extension length (316SS standard)				
Without extension (standard version, 0 mm)			0	L 1 Y
2"	50 mm		1	
4"	100 mm		2	
6"	150 mm		3	
8"	200 mm		4	
Special design, customer information to be supplied for extension			9	
System fill			1 2 4 5 6 7 8 9	M 1 Y
<ul style="list-style-type: none"> Silicone oil DC 200-10 Silicone oil DC 200-50 Halocarbon (for O₂-application) Silicone oil M5 Syltherm 800 DC704 silicone oil Fluorolube 				
Special design, customer information to be supplied				
Further designs				
Please add „-Z“ to Article No. and specify Order code				
Integrated flame path restriction		A 0 1		
Rotatable Flange		B 0 1		
Certificates:				
Certification of calibration N.I.S.T. (20% steps)		C 1 1		
Material conformance certificate		C 1 2		
Vacuum service (must be specified with HT oil)		V 0 4		
Calculation of span of transmitter (completed questionnaire to be attached)		Y 0 5		

Selection and Ordering data			Article No.	Order code
Mounting flange at High-Side, Flange-Type Seal, w/o extension Flange-type seal via capillary extension on low-side without extension			7 M F 4 8 1 3 -	1
for SITRANS P for differential pressure 7MF44 ■■ (order separately)				
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.				
Flange	Size	Class	L M Q R T U Z	J 1 Y
ANSI B16.5	2 inch	150 300		
	3 inch	150 300		
	4 inch	150 300		
Special design, customer information to be supplied				
Materials and wetted parts			A G J K Z	K 1 Y
<ul style="list-style-type: none"> SST 316L Monel 400, mat. No. 2.4360 Hastelloy C276, mat. No. 2.4819 Tantal 				
Special design, customer information to be supplied				
Extension length (316SS standard)				
Without extension (standard version, 0 mm)			0	L 1 Y
2"	50 mm		1	
4"	100 mm		2	
6"	150 mm		3	
8"	200 mm		4	
Special design, customer information to be supplied for extension			9	
System fill			1 2 4 5 6 7 8 9	M 1 Y
<ul style="list-style-type: none"> Silicone oil DC 200-10 Silicone oil DC 200-50 Halocarbon (for O₂-application) Silicone oil M5 Syltherm 800 DC704 silicone oil Fluorolube 				
Special design, customer information to be supplied				
Capillary length at low-side				
<ul style="list-style-type: none"> 3 ft 5 ft 10 ft 15 ft 20 ft 25 ft 30 ft 				
Special design, customer information to be supplied				
Further designs				
Please add „-Z“ to Article No. and specify Order code				
Integrated flame path restriction		A 0 2		
Rotatable Flange		B 0 1		
Certification of calibration N.I.S.T. (20% steps)		C 1 1		
Material conformance certificate		C 1 2		
Vacuum service (must be specified with HT oil)		V 0 4		
Calculation of span of transmitter (completed questionnaire to be attached)		Y 0 5		

Pressure Measurement

Remote seals for transmitters and pressure gauges

Diaphragm seal "flanged off-line low-pressure type", directly connected

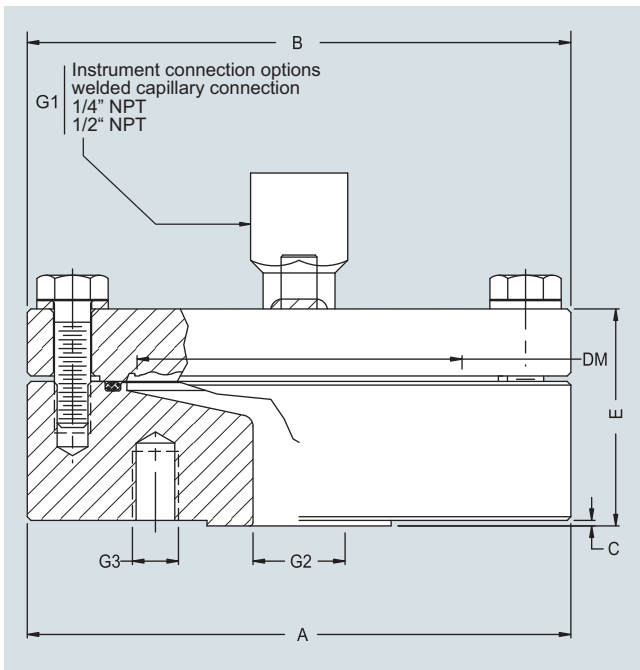
Overview



Diaphragm seal "flanges off-line low-pressure type"

DM = Effective diaphragm diameter
 G1 = Instrument connection
 G2 = Process connection
 G3 = Threaded bolt hole
 X = Number of bolt holes
 Class = Flange rating per ASME B16.5
 Size = Nominal pipe size
 All dimensions in inches unless otherwise noted

Dimensions (Connection to ASME B16.5)



G2		G3	X	A	B	C	DM	E
Size	Class							
1/2"	150#	1/2"-13UNC	4	5.91	5.91	0.06	3.5	2.36
1/2"	300#	1/2"-13UNC	4	5.91		0.06		2.36
1/2"	600#	1/2"-13UNC	4	5.91		0.25		2.55
3/4"	150#	1/2"-13UNC	4	5.91		0.06		2.36
3/4"	300#	5/8"-11UNC	4	5.91		0.06		2.36
3/4"	600#	5/8"-11UNC	4	5.91		0.25		2.55
1"	150#	1/2"-13UNC	4	5.91		0.06		2.36
1"	300#	5/8"-11UNC	4	5.91		0.06		2.36
1"	600#	5/8"-11UNC	4	5.91		0.25		2.55
1 1/2"	150#	1/2"-13UNC	4	5.91		0.06		2.36
1 1/2"	300#	3/4"-10UNC	4	6.12		0.06		2.46
1 1/2"	600#	3/4"-10UNC	4	6.12		0.25		2.65
2"	150#	5/8"-11UNC	4	6.00	0.06	2.36		
2"	300#	5/8"-11UNC	8	6.50	0.06	2.36		
2"	600#	5/8"-11UNC	8	6.50	0.25	2.55		

Selection and Ordering data	Article No.	Order code
Diaphragm seal "flanged off-line low-pressure type" direct mount to transmitter, 316 stainless steel upper housing SITRANS P for 7MF44 ■ ■ or 7MF46 ■ ■ (order separately) ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7 M F 4 8 1 4 - 3	
Size and class <ul style="list-style-type: none"> • ½ inch class 150#RF • ½ inch class 300#RF • ½ inch class 600#RF • ¾ inch class 150#RF • ¾ inch class 300#RF • ¾ inch class 600#RF • 1 inch class 150#RF • 1 inch class 300#RF • 1 inch class 600#RF • 1 ½ inch class 150#RF • 1 ½ inch class 300#RF • 1 ½ inch class 600#RF • 2 inch class 150#RF • 2 inch class 300#RF • 2 inch class 600#RF Special design, customer information to be supplied	A B C E F G J K L N P Q S T U Z	J 1 Y
Materials and wetted parts <ul style="list-style-type: none"> • SST 316L • Monel 400, mat. No. 2.4360 • Hastelloy C276, mat. No. 2.4819 • Tantal Special design, customer information to be supplied	A G J K Z	K 1 Y
Flushing port(s) None 1 x ¼"NPT-female (available w/ SS, HC or MO) 2 x ¼"NPT-female (available w/ SS, HC or MO) Special design, customer information to be supplied	0 2 4 9	L 1 Y
System fill <ul style="list-style-type: none"> • Silicone oil DC 200-10 • Silicone oil DC 200-50 • Halocarbon (for O₂-application) • Silicone oil M5 • Syltherm 800 • DC704 silicone oil • Fluorolube Special design, customer information to be supplied	1 2 4 5 6 7 8 9	M 1 Y
Further designs Please add „-Z“ to Article No. and specify Order code		
Integrated flame path restriction		A 0 1
Certification of calibration N.I.S.T. (20 % steps)		C 1 1
Material conformance certificate		C 1 2
Vacuum service (must be specified with HT oil)		V 0 1
Calculation of span of transmitter (completed questionnaire to be attached)		Y 0 5

Pressure Measurement

Remote seals for transmitters and pressure gauges

Flange-type diaphragm seal with flexible capillary tube

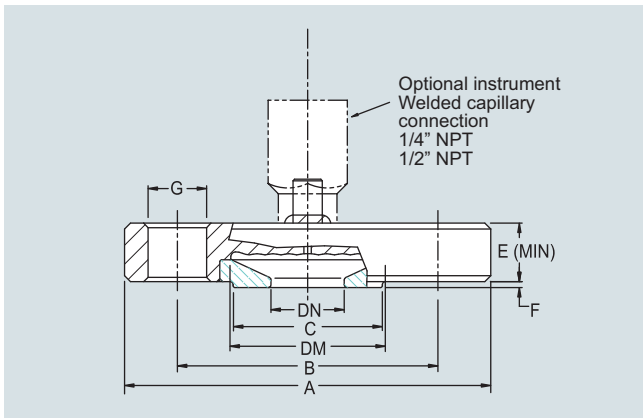
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Overview

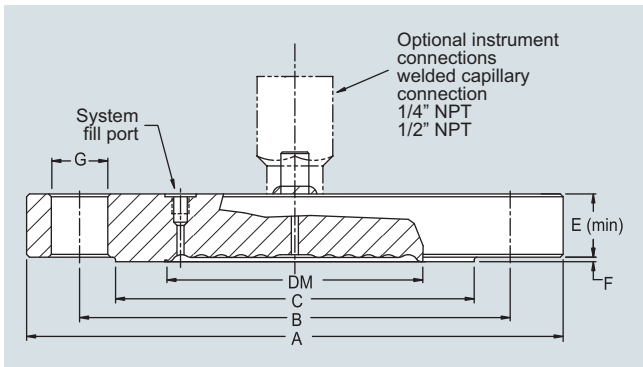


Flange-type diaphragm seal with flexible capillary extension

Dimensions (Connection to ASME B16.5)



Flange-type diaphragm seal for flanges ≤ 1"



Flange-type diaphragm seal for flanges ≥ 1.5"

Connection to ASME B16.5

Size DN	Class	A	B	C	DM	E	F	G	X	Weight lbs
1/2"	150	3.50	2.38	1.38	1.3	0.85	0.06	0.62	4	2.2
	300	3.75	2.62	1.38	1.6	0.85	0.06	0.62	4	2.2
3/4"	150	3.88	2.75	1.69	1.6	0.85	0.06	0.62	4	2.4
	300	4.62	3.25	1.69	1.6	0.85	0.06	0.75	4	3.5
1"	150	4.25	3.12	2.00	2.1	0.85	0.06	0.62	4	3.1
	300	4.88	3.50	2.00	2.1	0.85	0.06	0.75	4	3.7
1.5"	150	5.00	3.55	2.88	1.9	0.69	0.06	0.62	4	3.5
	300	6.12	4.50	2.88	1.9	0.81	0.06	0.88	4	5.5
	600	6.12	4.50	2.88	1.9	1.13	0.25	0.88	4	7.3
	1500	7.00	4.88	2.88	1.9	1.50	0.25	1.12	4	13.0
	2500	8.00	5.75	2.88	1.9	2.00	0.25	1.25	4	22.9
2"	150	6.00	4.75	3.62	2.4	0.75	0.06	0.75	4	5.9
	300	6.50	5.00	3.62	2.4	0.88	0.06	0.75	8	8.1
	600	6.50	5.00	3.62	2.4	1.25	0.25	0.75	8	12.5
	1500	8.50	6.50	3.62	2.4	1.75	0.25	1.00	8	29.0
	2500	9.25	6.75	3.62	2.4	2.25	0.25	1.12	8	43.6
3"	150	7.50	6.00	5.00	3.5	0.94	0.06	0.75	4	11.7
	300	8.25	6.62	5.00	3.5	1.12	0.06	0.88	8	17.2
	600	8.25	6.62	5.00	3.5	1.50	0.25	0.88	8	24.2
	900	9.50	7.50	5.00	3.5	1.75	0.25	1.00	8	36.7
	1500	10.53	8.00	5.00	3.5	2.13	0.25	1.25	8	53.9
2500	12.01	9.00	5.00	3.5	2.87	0.25	1.38	8	93.9	
4"	150	9.00	7.50	6.19	3.5	0.94	0.06	0.75	8	16.9
	300	10.04	7.88	6.19	3.5	1.25	0.06	0.88	8	27.9
	400	10.4	7.88	6.19	3.5	1.63	0.25	1.00	8	38.3
	600	10.83	8.50	6.19	3.5	1.75	0.25	1.00	8	47.3
	900	11.51	9.25	6.19	3.5	2.00	0.25	1.25	8	60.9
1500	12.30	9.50	6.19	3.5	2.37	0.25	1.38	8	81.4	
2500	14.00	10.75	6.19	3.5	3.25	0.25	1.62	8	144.5	

DN = Nominal pipe size
 DM = Effective diaphragm diameter
 Class = Flange rating per ASME B16.5
 X = Number of bolt holes
 All dimensions in inches unless otherwise noted

Flange-type diaphragm seal with flexible capillary tube

Selection and Ordering data	Article No.	Order code
Flange-type diaphragm seal		
with flexible capillary extension, connected to a SITRANS P transmitter (order separately)		
for pressure 7MF40 ■■ or 7MF42 ■■	7 M F 4 8 2 0 -	
for absolute pressure 7MF43 ■■	7 M F 4 8 2 1 -	
for differential pressure 7MF44 ■■	7 M F 4 8 2 3 -	
• dual seals for DP	1 ■■ ■■ - B ■■ ■■	
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Size and class		
• 2 inch class 150	L	
• 2 inch class 300	M	
• 2 inch class 600	N	
• 2 inch class 1500	P	
• 3 inch class 150	Q	
• 3 inch class 300	R	
• 3 inch class 600	S	
• 4 inch class 150	T	
• 4 inch class 300	U	
• 4 inch class 400	V	
• 5 inch class 150	W	
• 5 inch class 300	X	
• 5 inch class 400	Y	
Special design, customer information to be supplied	Z	J 1 Y
Materials and wetted parts		
• SST 316L	A	
• Monel 400, mat. No. 2.4360	G	
• Hastelloy C276, mat. No. 2.4819	J	
• Tantal	K	
Special design, customer information to be supplied	Z	K 1 Y
Extension length (316SS standard)		
Without extension (standard version)	0	
Special design, customer information to be supplied for extension	9	L 1 Y
System fill		
• Silicone oil DC 200-10	1	
• Silicone oil DC 200-50	2	
• Halocarbon (for O ₂ -application)	4	
• Silicone oil M5	5	
• Syltherm 800	6	
• DC704 silicone oil	7	
• Fluorolube	8	
Special design, customer information to be supplied	9	M 1 Y
Length of capillary		
• 3 ft	2	
• 5 ft	3	
• 10 ft	4	
• 15 ft	5	
• 20 ft	6	
• 25 ft	7	
• 30 ft	8	
Special design, customer information to be supplied	9	N 1 Y

Selection and Ordering data	Order code
Further designs	
Please add „-Z“ to Article No. and specify Order code	
for 7MF4820	
Integrated flame path restriction	A 0 1
Rotatable Flange	B 0 1
DP "H" flange service	B 0 2
Certificate of calibration N.I.S.T. (20 % steps)	C 1 1
Material conformance certificate	C 1 2
Vacuum service (must be specified with HT oil)	V 0 1
Calculation of span of transmitter (completed questionnaire to be attached)	Y 0 5
for 7MF4821	
Integrated flame path restriction	A 0 1
Rotatable Flange	B 0 1
Certificate of calibration N.I.S.T. (20 % steps)	C 1 1
Material conformance certificate	C 1 2
Calculation of span of transmitter (completed questionnaire to be attached)	Y 0 5
for 7MF4823	
Integrated flame path restriction	A 0 2
Rotatable Flange	B 0 1
Certificate of calibration N.I.S.T. (20 % steps)	C 1 1
Material conformance certificate	C 1 2
Vacuum service (must be specified with HT oil)	V 0 3
Calculation of span of transmitter (completed questionnaire to be attached)	Y 0 5

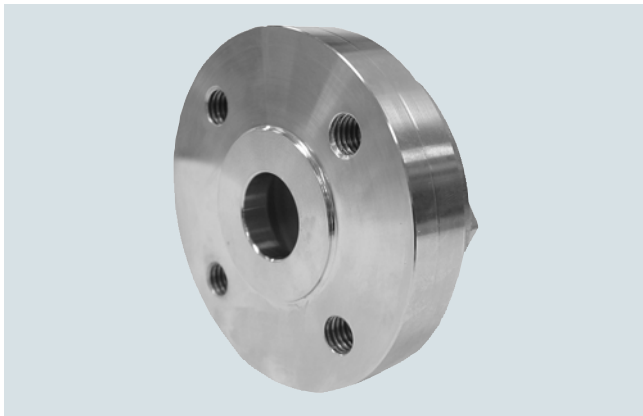
Pressure Measurement

Remote seals for transmitters and pressure gauges

Diaphragm seal "flanged off-line type"

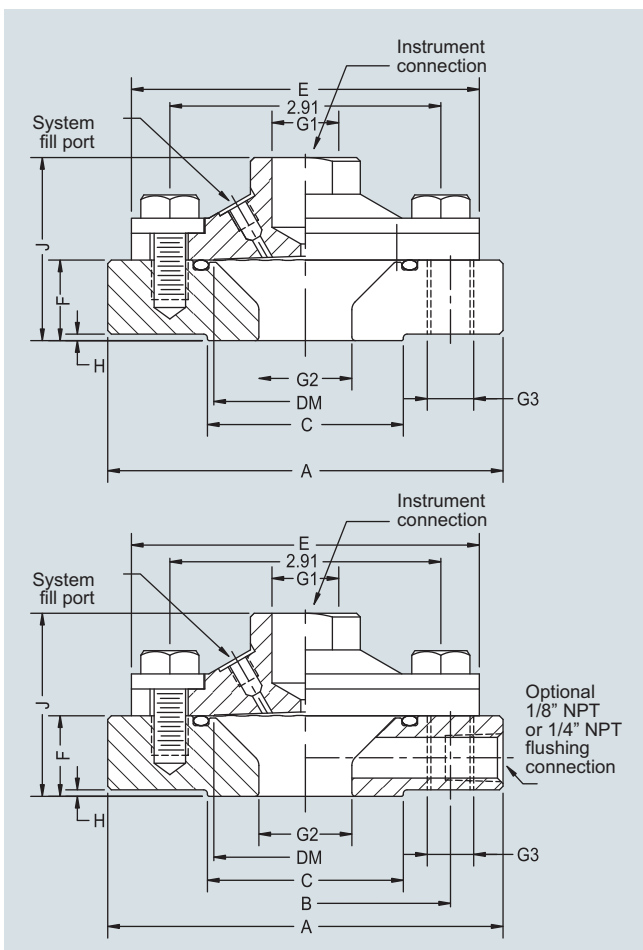
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Overview



Diaphragm seal "flanged off-line type"

Dimensions (Connection to ASME B16.5)



G1	G2	G3	A	B	C	DM	E
1/4"-NPT or 1/2"-NPT	1/2" 150#	4 x 1/2"-13UNC	3.75	2.38	1.38	2.1	3.74
	1/2" 300#	4 x 1/2"-13UNC	3.75	2.62			
	1/2" 600#	4 x 1/2"-13UNC	3.75	2.62			
	1" 150#	4 x 1/2"-13UNC	4.25	3.12	2.00		
	1" 300#	4 x 5/8"-11UNC	4.88	3.50			
	1" 600#	4 x 5/8"-11UNC	4.88	3.50			
	1 1/2" 150#	4 x 1/2"-13UNC	5.00	3.88	2.88		
	1 1/2" 300#	4 x 3/4"-10UNC	6.12	4.50			
	1 1/2" 600#	4 x 3/4"-10UNC	6.12	4.50			
	2" 150#	4 x 5/8"-11UNC	6.00	4.75	3.62		
	2" 300#	8 x 0.75	6.50	5.00			
	2" 600#	8 x 0.75	6.50	5.00			

G1	G2	G3	F	H	J	Weight lbs
1/4"-NPT or 1/2"-NPT	1/2" 150#	4 x 1/2"-13UNC	1.10	0.06	2.20	4.3
	1/2" 300#	4 x 1/2"-13UNC	1.10	0.06	2.20	4.3
	1/2" 600#	4 x 1/2"-13UNC	1.26	0.25	2.36	4.4
	1" 150#	4 x 1/2"-13UNC	0.87	0.06	1.97	4.4
	1" 300#	4 x 5/8"-11UNC	0.87	0.06	1.97	8.5
	1" 600#	4 x 5/8"-11UNC	1.26	0.25	2.36	8.5
	1 1/2" 150#	4 x 1/2"-13UNC	0.87	0.06	1.97	5.0
	1 1/2" 300#	4 x 3/4"-10UNC	0.87	0.06	1.97	6.6
	1 1/2" 600#	4 x 3/4"-10UNC	1.26	0.25	2.36	9.1
	2" 150#	4 x 5/8"-11UNC	0.87	0.06	1.97	6.1
	2" 300#	8 x 0.75	0.89	0.06	1.99	8.5
	2" 600#	8 x 0.75	1.28	0.25	2.38	10.0

DM = Effective diaphragm diameter

G1 = Instrument connection

G2 = Process connection

G3 = Threaded bolt hole

All dimensions in inches unless otherwise noted

Diaphragm seal "flanged off-line type", dimensions

Selection and Ordering data	Article No.	Order code
Diaphragm seal "flanged off-line type" MAWP depends on flange		
with flexible armored capillary, 316 stainless steel upper housing SITRANS P for 7MF40 ■■ and 7MF42 ■■ (order separately)	7 M F 4 8 2 6 -	
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Seal design		
Stud mount	1	
All-welded stud mount	2	
Through-hole flange mount	3	
Size and class		
• ½ inch class 150#RF	A	
• ½ inch class 300#RF	B	
• ½ inch class 600#RF	C	
• ¾ inch class 150#RF	E	
• ¾ inch class 300#RF	F	
• ¾ inch class 600#RF	G	
• 1 inch class 150#RF	J	
• 1 inch class 300#RF	K	
• 1 inch class 600#RF	L	
• 1 ½ inch class 150#RF	N	
• 1 ½ inch class 300#RF	P	
• 1 ½ inch class 600#RF	Q	
• 2 inch class 150#RF	S	
• 2 inch class 300#RF	T	
• 2 inch class 600#RF	U	
Special design, customer information to be supplied	Z	J 1 Y
Materials and wetted parts		
• SST 316L	A	
• Monel 400, mat. No. 2.4360	G	
• Hastelloy C276, mat. No. 2.4819	J	
• Tantal	K	
Special design, customer information to be supplied	Z	K 1 Y
Flushing port(s)		
None	0	
1 x ¼"NPT-female (available w/ SS, HC or MO)	2	
2 x ¼"NPT-female (available w/ SS, HC or MO)	4	
Special design, customer information to be supplied	9	L 1 Y
System fill		
• Silicone oil DC 200-10	1	
• Silicone oil DC 200-50	2	
• Halocarbon (for O ₂ -application)	4	
• Silicone oil M5	5	
• Syltherm 800	6	
• DC704 silicone oil	7	
• Fluorolube	8	
Special design, customer information to be supplied	9	M 1 Y
Length of capillary		
• Direct mount	0	
• 3 ft	2	
• 5 ft	3	
• 10 ft	4	
• 15 ft	5	
• 20 ft	6	
• 25 ft	7	
• 30 ft	8	
Special design, customer information to be supplied	9	N 1 Y

Selection and Ordering data	Article No.	Order code
Further designs		
Please add „-Z“ to Article No. and specify Order code		
Integrated flame path restriction		A 0 1
DP "H" flange service		B 0 2
Certification of calibration N.I.S.T. (20 % steps)		C 1 1
Material conformance certificate		C 1 2
Vacuum service (must be specified with HT oil)		V 0 1
Calculation of span of transmitter (completed questionnaire to be attached)		Y 0 5

Pressure Measurement

Remote seals for transmitters and pressure gauges

Diaphragm seal "flanged off-line low-pressure type"

1

Overview



Diaphragm seal "flanged off-line low-pressure type"

G2		G3	X	A	B	C	DM	E
Size	Class							
1/2"	150#	1/2"-13UNC	4	5.91	5.91	0.06	3.5	2.36
1/2"	300#	1/2"-13UNC	4	5.91		0.06		2.36
1/2"	600#	1/2"-13UNC	4	5.91		0.25		2.55
3/4"	150#	1/2"-13UNC	4	5.91		0.06		2.36
3/4"	300#	5/8"-11UNC	4	5.91		0.06		2.36
3/4"	600#	5/8"-11UNC	4	5.91		0.25		2.55
1"	150#	1/2"-13UNC	4	5.91		0.06		2.36
1"	300#	5/8"-11UNC	4	5.91		0.06		2.36
1"	600#	5/8"-11UNC	4	5.91		0.25		2.55
1 1/2"	150#	1/2"-13UNC	4	5.91		0.06		2.36
1 1/2"	300#	3/4"-10UNC	4	6.12		0.06		2.46
1 1/2"	600#	3/4"-10UNC	4	6.12		0.25		2.65
2"	150#	5/8"-11UNC	4	6.00	0.06	2.36		
2"	300#	5/8"-11UNC	8	6.50	0.06	2.36		
2"	600#	5/8"-11UNC	8	6.50	0.25	2.55		

DM = Effective diaphragm diameter

G2 = Process connection

G3 = Threaded bolt hole

X = Number of bolt holes

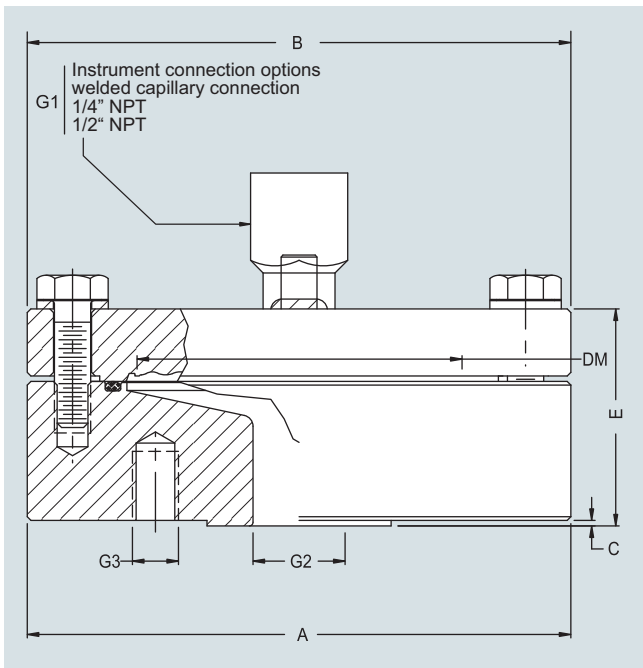
Class = Flange rating per ASME B16.5

Size = Nominal pipe size

All dimensions in inches unless otherwise noted

Diaphragm seal "flanged off-line low-pressure type", dimensions

Dimensions (Connection to ASME B16.5)



Diaphragm seal "flanged off-line low-pressure type"

1

Selection and Ordering data	Article No.	Order code	Selection and Ordering data	Article No.	Order code
Diaphragm seal "flanged off-line low-pressure type"			Diaphragm seal "flanged off-line low-pressure type"		
with flexible armored capillary, 316 stainless steel upper housing SITRANS P for 7MF40 ■■■ and 7MF42 ■■■ (order separately)	7 M F 4 8 2 7 -		with flexible armored capillary, 316 stainless steel upper housing SITRANS P for 7MF44 ■■■ (order separately)	7 M F 4 8 2 8 -	
➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	1 ■■■■ - ■■ ■■ ■■		➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	1 ■■■■ - ■■ ■■ ■■	
Size and class			Size and class		
<ul style="list-style-type: none"> • ½ inch class 150#RF • ½ inch class 300#RF • ½ inch class 600#RF • ¾ inch class 150#RF • ¾ inch class 300#RF • ¾ inch class 600#RF • 1 inch class 150#RF • 1 inch class 300#RF • 1 inch class 600#RF • 1 ½ inch class 150#RF • 1 ½ inch class 300#RF • 1 ½ inch class 600#RF • 2 inch class 150#RF • 2 inch class 300#RF • 2 inch class 600#RF 	A B C E F G J K L N P Q S T U Z		<ul style="list-style-type: none"> • ½ inch class 150#RF • ½ inch class 300#RF • ½ inch class 600#RF • ¾ inch class 150#RF • ¾ inch class 300#RF • ¾ inch class 600#RF • 1 inch class 150#RF • 1 inch class 300#RF • 1 inch class 600#RF • 1 ½ inch class 150#RF • 1 ½ inch class 300#RF • 1 ½ inch class 600#RF • 2 inch class 150#RF • 2 inch class 300#RF • 2 inch class 600#RF 	A B C E F G J K L N P Q S T U Z	
Special design, customer information to be supplied		J 1 Y	Special design, customer information to be supplied		J 1 Y
Materials and wetted parts			Materials and wetted parts		
<ul style="list-style-type: none"> • SST 316L • Monel 400, mat. No. 2.4360 • Hastelloy C276, mat. No. 2.4819 • Tantal 	A G J K Z		<ul style="list-style-type: none"> • SST 316L • Monel 400, mat. No. 2.4360 • Hastelloy C276, mat. No. 2.4819 • Tantal 	A G J K Z	
Special design, customer information to be supplied		K 1 Y	Special design, customer information to be supplied		K 1 Y
Flushing port(s)			Flushing port(s)		
None	0		None	0	
1 x ¼"NPT-female (available w/ SS, HC or MO)	2		1 x ¼"NPT-female (available w/ SS, HC or MO)	2	
2 x ¼"NPT-female (available w/ SS, HC or MO)	4		2 x ¼"NPT-female (available w/ SS, HC or MO)	4	
Special design, customer information to be supplied	9	L 1 Y	Special design, customer information to be supplied	9	L 1 Y
System fill			System fill		
<ul style="list-style-type: none"> • Silicone oil DC 200-10 • Silicone oil DC 200-50 • Halocarbon (for O₂-application) • Silicone oil M5 • Syltherm 800 • DC704 silicone oil • Fluorolube 	1 2 4 5 6 7 8 9		<ul style="list-style-type: none"> • Silicone oil DC 200-10 • Silicone oil DC 200-50 • Halocarbon (for O₂-application) • Silicone oil M5 • Syltherm 800 • DC704 silicone oil • Fluorolube 	1 2 4 5 6 7 8 9	
Special design, customer information to be supplied		M 1 Y	Special design, customer information to be supplied		M 1 Y
Length of capillary			Length of capillary		
<ul style="list-style-type: none"> • Direct mount • 3 ft • 5 ft • 10 ft • 15 ft • 20 ft • 25 ft • 30 ft 	0 2 3 4 5 6 7 8 9		<ul style="list-style-type: none"> • 3 ft • 5 ft • 10 ft • 15 ft • 20 ft • 25 ft • 30 ft 	2 3 4 5 6 7 8 9	
Special design, customer information to be supplied		N 1 Y	Special design, customer information to be supplied		N 1 Y
Further designs			Further designs		
Please add „-Z“ to Article No. and specify Order code			Please add „-Z“ to Article No. and specify Order code		
Integrated flame path restriction		A 0 1	Integrated flame path restriction		A 0 2
DP "H" flange service		B 0 2	Certification of calibration N.I.S.T. (20 % steps)		C 1 1
Certification of calibration N.I.S.T. (20 % steps)		C 1 1	Material conformance certificate		C 1 2
Material conformance certificate		C 1 2	Vacuum service (must be specified with HT oil)		V 0 1
Vacuum service (must be specified with HT oil)		V 0 1	Calculation of span of transmitter (completed questionnaire to be attached)		Y 0 5
Calculation of span of transmitter (completed questionnaire to be attached)		Y 0 5			

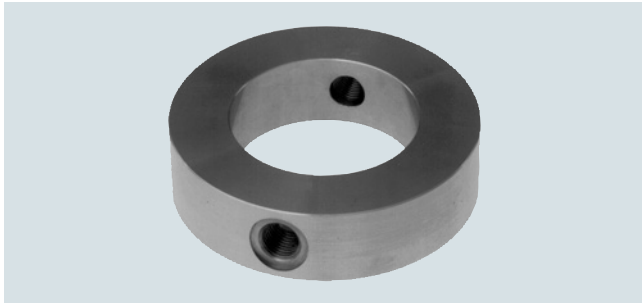
Pressure Measurement

Remote seals for transmitters and pressure gauges

Flushing rings

1

Overview



Flushing ring

Flushing rings are required for flange-mounted and pancake type remote seals (Article No. 7MF4800 ... 7MF4823) if the danger exists that the process conditions and the geometry of the connection could cause the process 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.

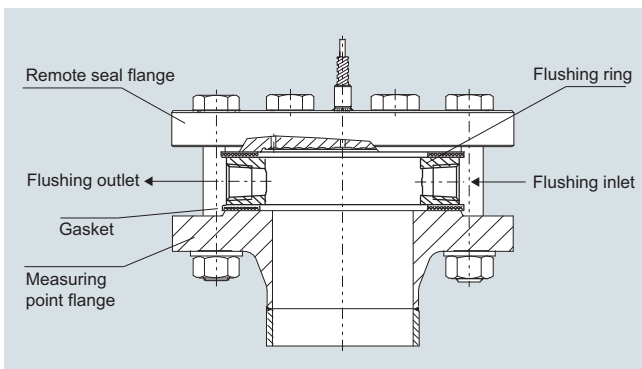
Process connection

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 Ordering data

Design



Installation example

Technical specifications

Flushing ring for remote seals of pancake and flange design

Nom. diam.	Nom. press.
• 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 face	
• 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 RJT ring groove

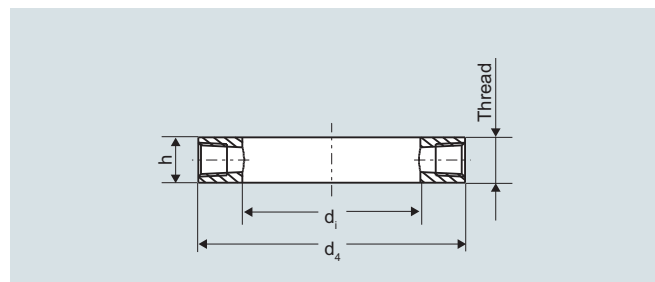
Flushing holes (2 off), female thread:

- G $\frac{1}{4}$
- G $\frac{1}{2}$
- $\frac{1}{4}$ -18 NPT
- $\frac{1}{2}$ -14 NPT

Material

Stainless steel 1.4404/316L

Dimensional drawings



Connection to EN 1092-1

DN	PN	d ₄	d _i	h	Weight
(mm)	(bar)	(mm)	(mm)	(mm)	(kg)
50	16 ... 100	102	62	30	1.10
80	16 ... 100	138	92	30	1.90
100	16 ... 100	162	92	30	3.15
125	16 ... 100	188	126	30	3.50

Connection to ASME B 16.5

DN	Class	d ₄		d _i		h		Weight	
inch		mm	(inch)	mm	(inch)	mm	(inch)	kg	(lb)
2	150 ... 600	92	(3.62)	62	(2.44)	30	(1.18)	0.60	(1.32)
3	150 ... 600	127	(5)	92	(3.62)	30	(1.18)	1.05	(2.31)
4	150 ... 600	157	(6.18)	92	(3.62)	30	(1.18)	2.85	(6.28)
5	150 ... 600	185.5	(7.3)	126	(4.96)	30	(1.18)	3.30	(7.28)

Flushing ring, dimension drawing

Selection and Ordering data		Article No.	Ord. code
Flushing ring		7 M F 4 8 2 5 -	
for remote seals 7MF4900 to 7MF4923		1	
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.			
Nom. diam.	Nom. press.		
• 2 inch	Class 150 ... 600	G	
• 3 inch	Class 150 ... 600	H	
• 4 inch	Class 150 ... 600	J	
• 5 inch	Class 150 ... 600	K	
Other version		Z	J 1 Y
Add Order code and plain text: Nominal diameter: ...; Nominal pressure: ...			
Sealing face			
• ASME B16.5			
- RF 125 ... 250 AA		M	
- RFSF		Q	
- RJT ring groove		R	
Other version		Z	K 1 Y
Add Order code and plain text: Sealing face: ...			
Flushing holes (2 off)			
• Female thread G $\frac{1}{4}$		1	
• Female thread G $\frac{1}{2}$		2	
• Female thread $\frac{1}{4}$ -18 NPT		3	
• Female thread $\frac{1}{2}$ -14 NPT		4	
Material			
• Stainless steel 316L		0	
Other version		9	M 1 Y
Add Order code and plain text: Material: ...			
Further designs			
Please add „-Z“ to Article No. and specify Order code			
Acceptance test certificate B			
to EN 10204, section 3.1.B			C 1 2

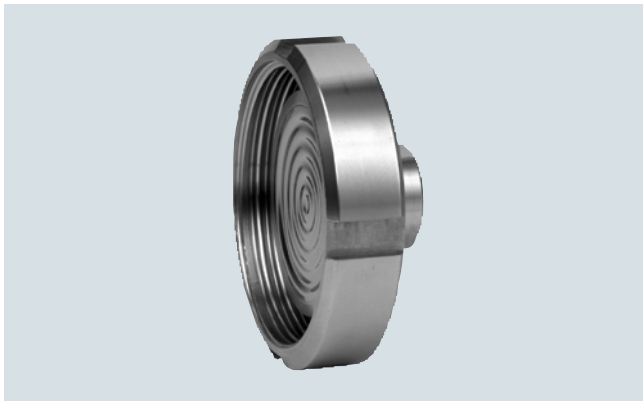
Pressure Measurement

Remote seals for transmitters and pressure gauges

Diaphragm seal with quick connection

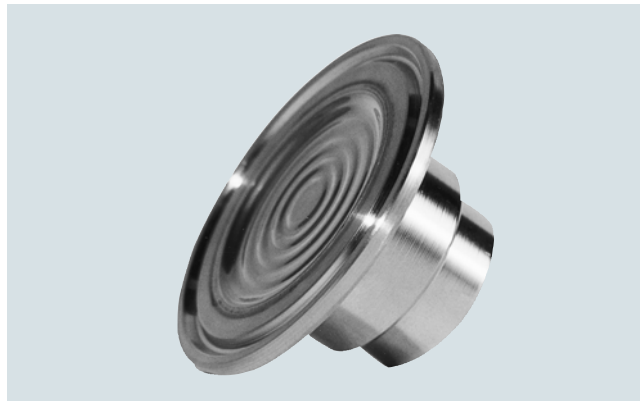
1

Overview



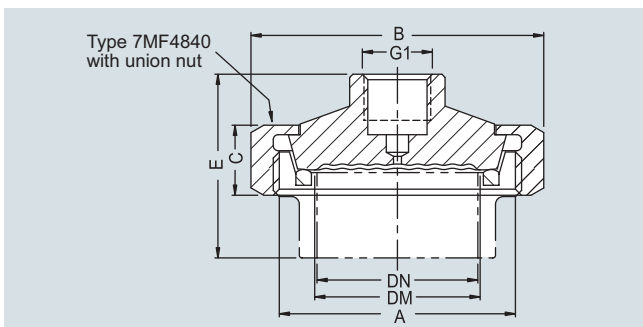
Diaphragm seal with quick connection, with slotted union nut

Overview



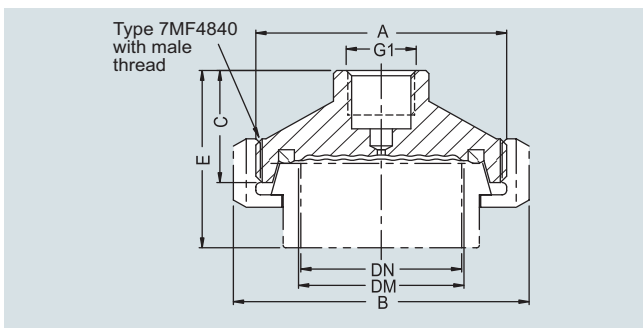
Diaphragm seal with quick connection, Tri-Clamp connection

Dimensions (connection to ASME B16.5)



DN [mm]	MAWP [psi]	A [mm]	B	C	DM	E	G1	Weight [lbs]
25	600	Rd 52 x 1/6	2.48	0.83	1.0	2.36	1/4"-NPT or 1/2"-NPT female	1.3
32	600	Rd 58 x 1/6	2.76	0.83	1.3	2.72		1.6
40	600	Rd 65 x 1/6	3.07	0.83	1.6	2.17		2.5
50	360	Rd 78 x 1/6	3.62	0.87	2.1	2.32		2.8

Diaphragm seal with quick connection, with slotted union nut

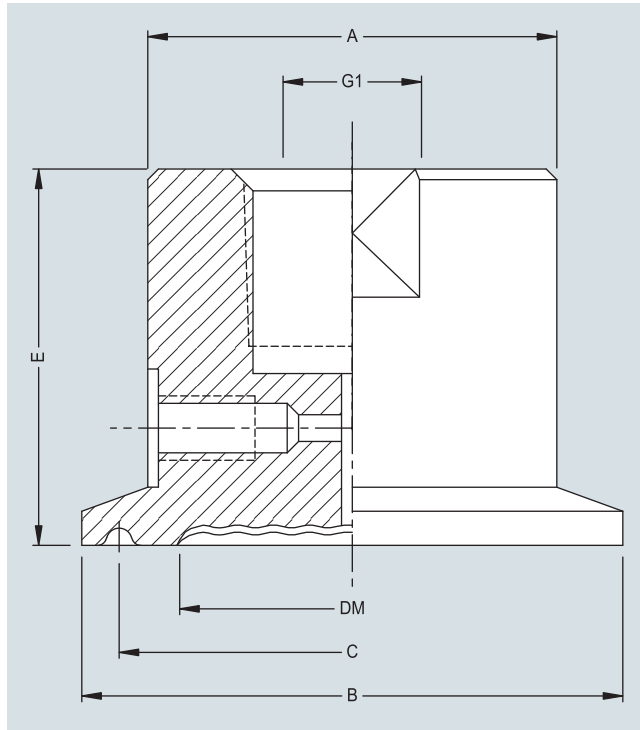


DN [mm]	MAWP [psi]	A [mm]	B	C	DM	E	G1	Weight [lbs]
40	600	Rd 65 x 1/6	3.07	1.12	1.6	2.17	1/4"-NPT or 1/2"-NPT female	2.8
50	360	Rd 78 x 1/6	3.62	1.42	2.1	2.24		3.0

DM = Effective diaphragm diameter
 MAWP = Maximum Working Pressure @ 250 °F
 G1 = Instrument connection
 DN = Nominal pipe size
 All dimensions in inches unless otherwise noted

Diaphragm seal with quick connection, with male thread, dimensions

Dimensions (connection to ASME B16.5)

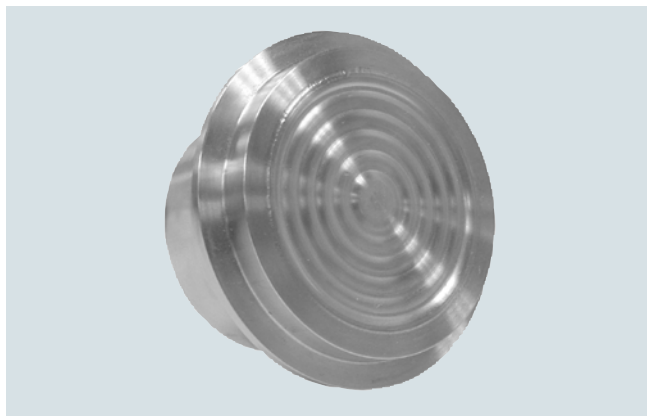


Size [in]	MAWP [psi]	A	B	C	DM	E	G1	Weight [lbs]
1.5	600	1.50	1.97	1.71	1.0	1.38	1/4"-NPT or 1/2"-NPT female	1.3
2	550	1.50	2.52	2.22	1.6			1.7
2.5	450	2.52	3.05	2.78	2.0			2.0
3	350	2.31	3.58	3.28	2.8			2.4
4	250	2.31	4.68	4.34	3.5	2.7		

DM = Effective diaphragm diameter
 MAWP = Maximum Working Pressure @ 250 °F, higher rating with appropriate clamping device
 G1 = Instrument connection
 Size = Nominal pipe size
 All dimensions in inches unless otherwise noted

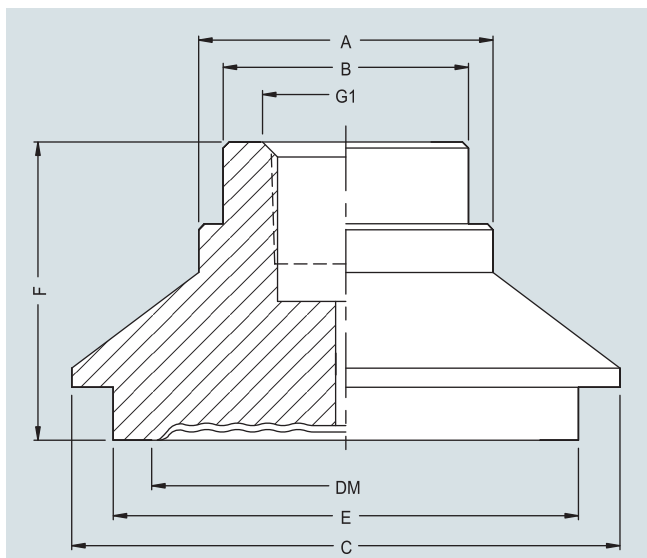
Diaphragm seal with quick connection, Tri-Clamp connection, dimensions

Overview



Diaphragm seal with quick connection, "i"-line (Cherry Burrel - male)

Dimensions (connection to ASME B16.5)



Size [in]	MAWP [psi]	A	B	C	DM	E	F	G1	Weight [lbs]
1.5	500	1.42	1.18	2.00	1.3	1.74	1.38	1/4"-NPT	1.3
2	450		1.18	2.64	1.8	2.24	1.44	or 1/2"-NPT	1.7
3	350		1.30	3.87	2.8	3.30	1.59	female	2.4

DM = Effective diaphragm diameter
 MAWP = Maximum Working Pressure @ 250 °F, higher rating with appropriate clamping device
 G1 = Instrument connection
 Size = Nominal pipe size
 All dimensions in inches unless otherwise noted

Diaphragm seal with quick connection, "i"-line (Cherry Burrel - male), dimensions

Selection and Ordering data

Article No. Order code

Diaphragm seal

with quick connection for gage pressure transmitter SITRANS P 7MF40 ■■ and 7MF42 ■■ (order separately) made of 316 SS

7 M F 4 8 4 0 -
 ■ A 0 - ■ B ■■

Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Process connection

DIN 11 851 with slotted union nut
 DN 25/PN 40
 DN 32/PN 40
 DN 40/PN 40
 DN 50/PN 25
 DN 65/PN 25
 DN 80/PN 25

1 B
 1 C
 1 D
 1 E
 1 F
 1 G

DIN 11 851 with screw necks
 DN 25/PN 40
 DN 32/PN 40
 DN 40/PN 40
 DN 50/PN 25
 DN 65/PN 25
 DN 80/PN 25

2 B
 2 C
 2 D
 2 E
 2 F
 2 G

Tri-Clamp Connection

1 1/2" 600 psi
 2" 550 psi
 2 1/2" 450 psi
 3" 350 psi

4 L
 4 M
 4 N
 4 P

Varivent (Tuchenhagen)

Size 25132
 Size 40150

5 C
 5 E

Sanitary (4" Tank Spud)

2" extension
 6" extension

6 B
 6 D

"I"-Line (Cherry Burrel - male)

1 1/2" 500 psi
 2" 450 psi
 3" 350 psi

5 U
 5 V
 5 W

Special design, customer information to be supplied

9 Z H 1 Y
 + J 1 Y

System fill

- Vegetable oil
- Glycerin/Water 86.5/13.5 %
- Neobee M20
- Mineral oil

1
 2
 3
 4

Special design, customer information to be supplied

9 M 1 Y

Length of capillary

- Direct Mount
- 3 ft
- 5 ft
- 10 ft
- 15 ft
- 20 ft
- 25 ft
- 30 ft

0
 2
 3
 4
 5
 6
 7
 8

Special design, customer information to be supplied

9 N 1 Y

Further designs

Please add „-Z“ to Article No. and specify Order code

- Certification of calibration N.I.S.T. (20 % steps) C 1 1
- Material conformance certificate C 1 2
- Vacuum service (must be specified with vegetable oil) V 0 1
- Calculation of span of transmitter (completed questionnaire to be attached) Y 0 5

Tank Spud accessories

- Sanitary Tank Spud Clamp (1 pc.) P 1 0
- Sanitary Tank Spud O-ring (1 pc.) P 1 1
- Sanitary Tank Spud Weldolet 2" extension (1 pc.) P 1 2
- Sanitary Tank Spud Weldolet 6" extension (1 pc.) P 1 3

Pressure Measurement

Remote seals for transmitters and pressure gauges

Inline diaphragm seal with quick connection

1

Selection and Ordering data

Article No. Order code

Diaphragm seal

with quick connection for differential transmitter SITRANS P 7MF44 ■ ■
(order separately) made of 316 SS

7 M F 4 8 4 3 -

■ A 0 ■ - ■ B ■ ■ ■ ■

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Process connection

DIN 11 851 with slotted union nut
DN 50/PN 25
DN 65/PN 25
DN 80/PN 25

1 E

1 F

1 G

DIN 11 851 with screw necks

DN 50/PN 25

DN 65/PN 25

DN 80/PN 25

2 E

2 F

2 G

Tri-Clamp Connection

2" 550 psi

2 1/2" 450 psi

3" 350 psi

4" 250 psi

4 M

4 N

4 P

4 Q

"I"-Line (Cherry Burrell - male)

3" 350 psi

4" 200 psi

5 W

5 X

Sanitary (4" Tank Spud)

2" extension

6" extension

6 B

6 D

Special design, customer information to be supplied

9 Z

H 1 Y

+ J 1 Y

System fill

- Vegetable oil
- Glycerin/Water 86.5/13.5 %
- Neobee M20
- Mineral oil

1

2

3

4

Special design, customer information to be supplied

9

M 1 Y

Length of capillary

- 3 ft
- 5 ft
- 10 ft
- 15 ft
- 20 ft
- 25 ft
- 30 ft

2

3

4

5

6

7

8

Special design, customer information to be supplied

9

N 1 Y

Further designs

Please add „-Z“ to Article No. and specify Order code

Certification of calibration N.I.S.T. (20 % steps)

C 1 1

Material conformance certificate

C 1 2

Vacuum service (must be specified with vegetable oil)

V 0 3

Calculation of span of transmitter (completed questionnaire to be attached)

Y 0 5

Tank Spud accessories

Sanitary Tank Spud Clamp (1 pc., two required)

P 1 0

Sanitary Tank Spud O-ring (1 pc., two required)

P 1 1

Sanitary Tank Spud Weldolet 2" extension (1 pc., two required)

P 1 2

Sanitary Tank Spud Weldolet 6" extension (1 pc., two required)

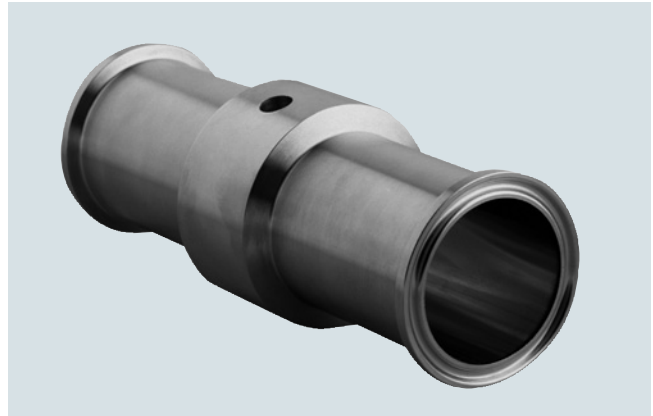
P 1 3

Overview



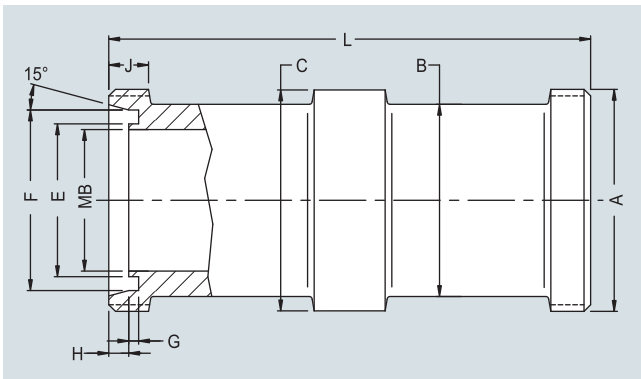
Inline diaphragm seal with quick connector, DIN 11851 with thread

Overview



Inline diaphragm seal with quick connection, Tri-clamp

Dimensions (connection to ASME B16.5)



DN [mm]	MAWP [psi]	A	B	C	E	G	H	J	L	MB
15	600	Rd34x1/8	1.10	1.57	0.71	0.12	0.16	0.47	4.1	0.63
25	600	Rd52x1/6	1.50	2.05	1.18	0.14	0.28	0.55	5.0	1.02
40	600	Rd65x1/6	2.17	2.56	1.65	0.14	0.28	0.55	6.3	1.50
50	360	Rd78x1/6	2.68	3.07	2.13	0.14	0.28	0.55	6.7	1.97
65	360	Rd95x1/6	3.35	3.74	2.80	0.14	0.31	0.63	7.2	2.60
80	360	Rd110x1/4	4.33	4.33	3.35	0.14	0.31	0.79	7.2	3.19
100	360	Rd130x1/4	5.12	5.12	4.09	0.16	0.39	0.79	7.2	3.94

MB = Internal diameter

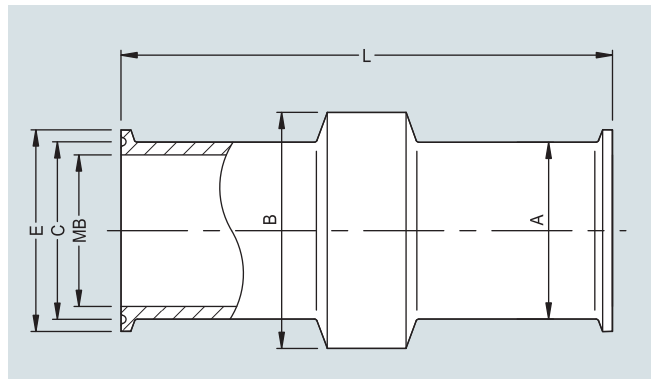
MAWP = Maximum Working Pressure @ 250 °F, higher rating with appropriate clamping device

DN = Nominal pipe size

All dimensions in inches unless otherwise noted

Inline diaphragm seal with quick connector, DIN 11851 with thread, dimensions

Dimensions (connection to ASME B16.5)



Size	MAWP [psi]	A	B	C	E	L	MB
¾"	600	0.7	1.34	0.8	0.98	3.8	0.6
1"	600	1.4	1.97	1.7	1.97	4.5	1.0
1.5"	600	1.7	1.97	1.7	1.97	5.7	1.5
2"	550	2.2	2.50	2.2	2.50	6.1	1.9
2.5"	450	2.7	3.10	2.8	3.10	6.1	2.4
3"	350	3.2	3.60	3.3	3.60	6.1	2.9
3.5"	350	3.7	4.20	3.8	4.20	6.1	3.3
4"	250	4.3	4.70	4.3	4.70	6.1	3.8

MB = Internal diameter

MAWP = Maximum Working Pressure @ 250 °F, higher rating with appropriate clamping device

Size = Nominal pipe size

All dimensions in inches unless otherwise noted

Inline diaphragm seal with quick connection, Tri-clamp, dimensions

Pressure Measurement

Remote seals for transmitters and pressure gauges

Inline diaphragm seal with quick connection

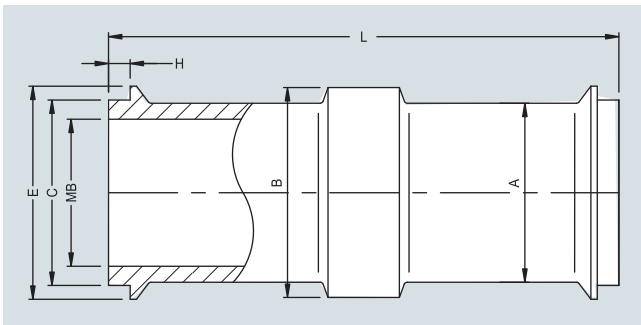
1

Overview



Inline diaphragm seal with quick connection, "I"-Line (Cherry Burrell - male/male)

Dimensions (connection to ASME B16.5)



Size	MAWP [psi]	A	B	C	E	H	L	MB
1.5"	500	1.68	1.97	1.74	2.00	0.203	4.79	1.38
2"	450	2.25	2.50	2.24	2.64	0.258	5.54	1.88
2.5"	350	2.75	3.10	2.74	3.31	0.312	6.38	2.37

MB = Internal diameter

MAWP = Maximum Working Pressure @ 250 °F, higher rating with appropriate clamping device

Size = Nominal pipe size

All dimensions in inches unless otherwise noted

Inline diaphragm seal with quick connection, "I"-Line (Cherry Burrell - male/male), dimensions

Selection and Ordering data

Article No. Order code

Inline diaphragm seal

with quick connection for transmitter
SITRANS P for 7MF40 ■■ and 7MF42 ■■
(order separately) made of 316 SS

7 M F 4 8 5 0 -

■ A 0 ■ - ■ B ■■ ■■

Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Process connection

DIN 11 851 with thread [C]

DN 25/PN 40

DN 40/PN 40

DN 50/PN 25

DN 65/PN 25

DN 80/PN 25

DN100/PN 25

2 B

2 D

2 E

2 F

2 G

2 H

Tri-Clamp Connection

1" 600 psi

1 1/2" 600 psi

2" 550 psi

2 1/2" 450 psi

3" 350 psi

4 K

4 L

4 M

4 N

4 P

"I"-Line (Cherry Burrell - male/male)

1" 500 psi

1 1/2" 500 psi

2" 450 psi

3" 350 psi

5 R

5 U

5 V

5 W

Special design, customer information to be supplied

9 Z

H 1 Y

+ J 1 Y

System fill

- Vegetable oil
- Glycerin/Water 86.5/13.5 %
- Neobee M20
- Mineral oil

Special design, customer information to be supplied

1

2

3

4

9

M 1 Y

Length of capillary

- Direct mount
- 3 ft
- 5 ft
- 10 ft
- 15 ft
- 20 ft
- 25 ft
- 30 ft

Special design, customer information to be supplied

0

2

3

4

5

6

7

8

9

N 1 Y

Further designs

Please add „-Z“ to Article No. and specify Order code

Certification of calibration N.I.S.T. (20 % steps)

C 1 1

Material conformance certificate

C 1 2

Vacuum service (must be specified with vegetable oil)

V 0 3

Calculation of span of transmitter (completed questionnaire to be attached)

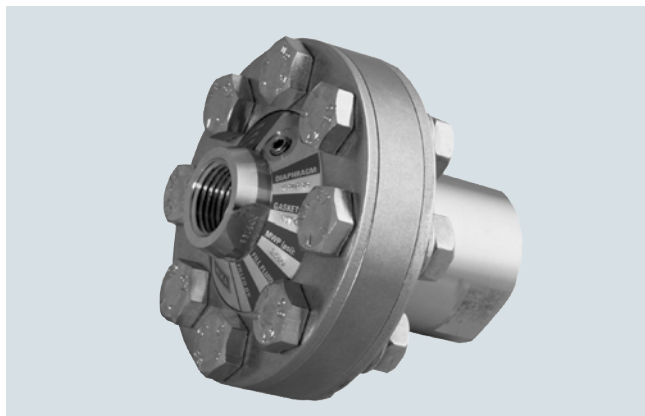
Y 0 5

Pressure Measurement

Remote seals for transmitters and pressure gauges

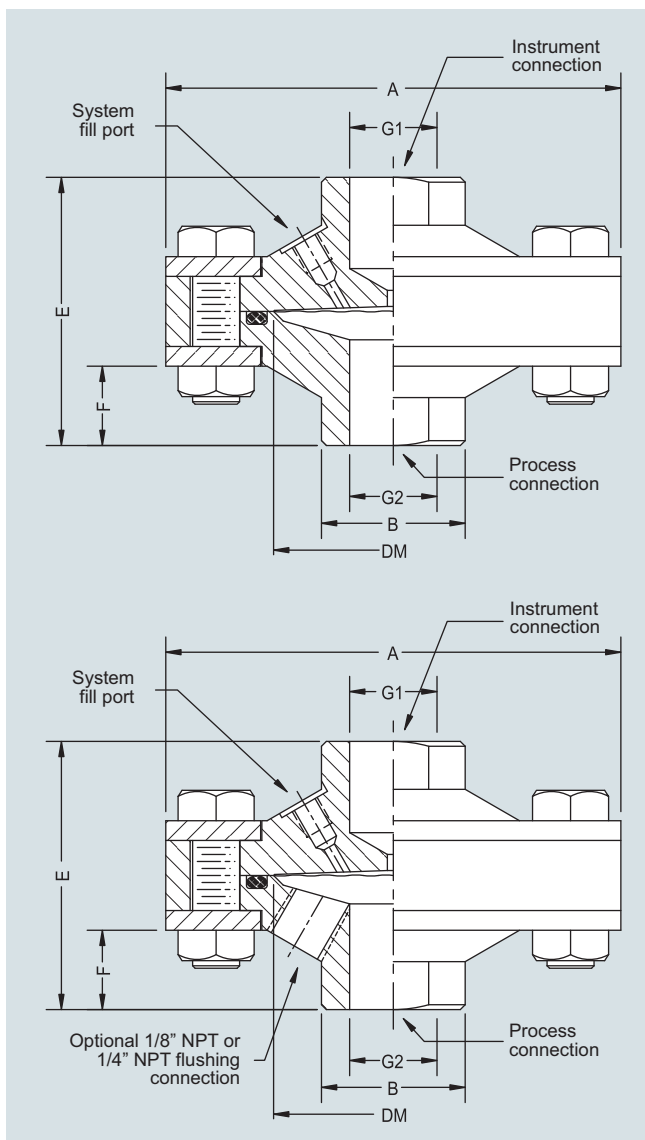
Diaphragm seal "threaded design"

Overview



Diaphragm seal "threaded design"

Dimensions (Connection to ASME B16.5)



G1	G2	A	B	DM	E	F	Weight [lbs]
1/4"-NPT or 1/2"-NPT	1/4"-NPT or 1/2"-NPT	3.74	1.18	2.1	2.20	0.63	3.0
	3/4"-NPT		1.41	2.1	2.36	0.79	3.4
	1"-NPT		1.77	2.1	3.46	1.89	3.6

G1 = Instrument connection, G2 = Process connection
DM = Effective diaphragm diameter
All dimensions in inches unless otherwise noted

Diaphragm seal "threaded design"

Selection and Ordering data Article No. Order code

Diaphragm seal "threaded design" MAWP 3675 psi		7 M F 4 8 6 1 -	
with flexible armored capillary, 316 stainless steel upper housing SITRANS P for 7MF40 and 7MF42 pressure (order separately)		1	B
<p>Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</p>			
Size and class		A	
<ul style="list-style-type: none"> 1/4"NPT-female 1/2"NPT-female 3/4"NPT-female 1"NPT-female 		B	
Special design, customer information to be supplied		C	
Materials and wetted parts		D	
<ul style="list-style-type: none"> SST 316L SST 316L with Hastelloy C276 diaphragm SST 316L with PFA coated diaphragm (good upto 500 °F) Monel 400, mat. No. 2.4360 Hastelloy C276, mat. No. 2.4819 Hastelloy C276 lower housing with Tantalum diaphragm 		Z	J 1 Y
Special design, customer inform. to be supplied			
Flushing port(s)			
None		0	
1 x 1/4"NPT-female		2	
2 x 1/4"NPT-female		4	
Special design, customer inform. to be supplied		9	L 1 Y
System fill			
<ul style="list-style-type: none"> Silicone oil DC 200-10 Silicone oil DC 200-50 Halocarbon (for O₂-application) Silicone oil M5 Syltherm 800 DC704 silicone oil Fluorolube 		1	
Special design, customer inform. to be supplied		2	
Length of capillary		4	
<ul style="list-style-type: none"> Direct mount 3 ft 5 ft 10 ft 15 ft 20 ft 25 ft 30 ft 		5	
Special design, customer inform. to be supplied		6	
Further designs		7	
Please add „-Z“ to Article No. and specify Order code		8	
Integrated flame path restriction		9	M 1 Y
DP "H" flange service			
Certification of calibration N.I.S.T. (20 % steps)			A 0 1
Material conformance certificate			B 0 2
Vacuum service (must be specified with HT oil)			C 1 1
Calculation of span of transmitter (completed questionnaire to be attached)			C 1 2
			V 0 1
			Y 0 5

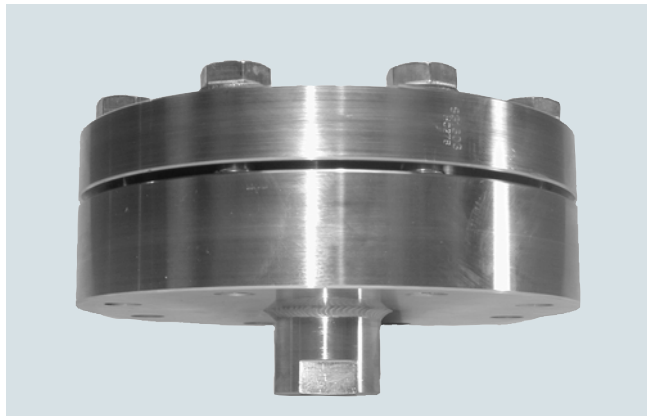
Pressure Measurement

Remote seals for transmitters and pressure gauges

Diaphragm seal "threaded, low-pressure design"

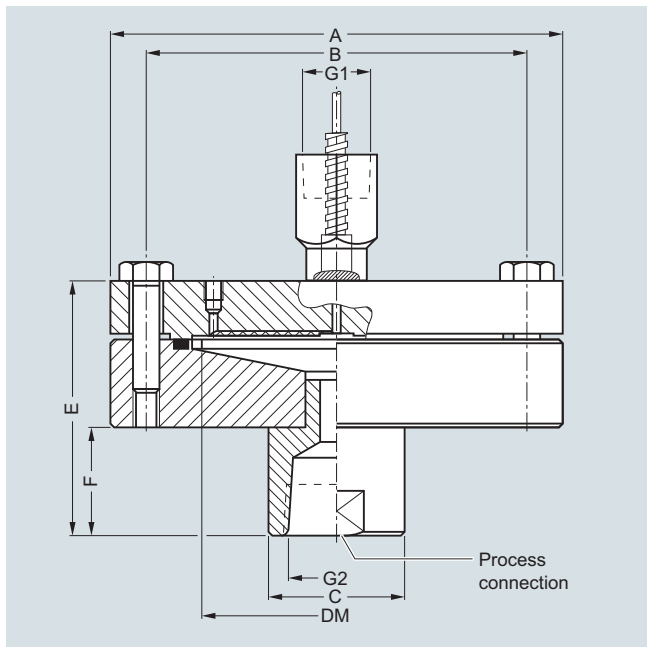
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Overview



Diaphragm seal "threaded, low-pressure design"

Dimensions (Connection to ASME B16.5)



Diaphragm seal "threaded, low-pressure design, dimensions

G1	G2	A	B	C	DM	E	F	Weight [lbs]
¼"-NPT or ½"-NPT	¼"-NPT	5.91	4.92	1.25	3.5	3.00	0.90	14.0
	½"-NPT			1.25		3.00	0.90	14.0
	¾"-NPT			1.38		3.20	1.10	14.2
	1"-NPT			1.75		3.50	1.40	14.5

G1 = Instrument connection
 G2 = Process connection
 DM = Effective diaphragm diameter
 All dimensions in inches unless otherwise noted

Selection and Ordering data

Article No. Order code

Diaphragm seal "threaded, low-pressure design" MAWP 1,500 psi

with flexible armored capillary, 316 stainless steel upper housing SITRANS P for 7MF40 and 7MF42 pressure (order separately)

Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

7 M F 4 8 6 2 -
1 - - B

Size and class

- ¼"NPT-female
- ½"NPT-female
- ¾"NPT-female
- 1"NPT-female

Special design, customer information to be supplied

A
B
C
D
Z J 1 Y

Materials and wetted parts

- SST 316L
- SST 316L with Hastelloy C276 diaphragm
- SST 316L with PFA coated diaphragm
- Monel 400, mat. No. 2.4360
- Hastelloy C276, mat. No. 2.4819
- Hastelloy C276 lower housing with Tantalum diaphragm

Special design, customer information to be supplied

A
F
D
G
J
K
Z K 1 Y

Flushing port(s)

- None
- 1 x ¼"NPT-female
- 2 x ¼"NPT-female

Special design, customer information to be supplied

0
2
4
9 L 1 Y

System fill

- Silicone oil DC 200-10
- Silicone oil DC 200-50
- Halocarbon (for O₂-application)
- Silicone oil M5
- Syltherm 800
- DC704 silicone oil
- Fluorolube

Special design, customer information to be supplied

1
2
4
5
6
7
8
9 M 1 Y

Length of capillary

- Direct mount
- 3 ft
- 5 ft
- 10 ft
- 15 ft
- 20 ft
- 25 ft
- 30 ft

Special design, customer information to be supplied

0
2
3
4
5
6
7
8
9 N 1 Y

Further designs

Please add „-Z“ to Article No. and specify Order code

- Integrated flame path restriction
- Certification of calibration N.I.S.T. (20 % steps)
- Material conformance certificate
- Vacuum service (must be specified with HT oil)
- Calculation of span of transmitter (completed questionnaire to be attached)

A 0 1
C 1 1
C 1 2
V 0 1
Y 0 5

Selection and Ordering data	Article No.	Order code
Diaphragm seal "threaded, low-pressure design" MAWP 1,500 psi with flexible armored capillary, 316 stainless steel upper housing SITRANS P for 7MF44 (order separately) ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7 M F 4 8 6 3 - 1	- B
Size and class <ul style="list-style-type: none"> • ¼"NPT-female • ½"NPT-female • ¾"NPT-female • 1"NPT-female Special design, customer information to be supplied	A B C D Z	J 1 Y
Materials and wetted parts <ul style="list-style-type: none"> • SST 316L • SST 316L with Hastelloy C276 diaphragm • SST 316L with PFA coated diaphragm (good upto 500 °F) • Monel 400, mat. No. 2.4360 • Hastelloy C276, mat. No. 2.4819 • Hastelloy C276 lower housing with Tantalum diaphragm Special design, customer information to be supplied	A F D G J K Z	K 1 Y
Flushing port(s) None 1 x ¼"NPT-female 2 x ¼"NPT-female Special design, customer information to be supplied	0 2 4 9	L 1 Y
System fill <ul style="list-style-type: none"> • Silicone oil DC 200-10 • Silicone oil DC 200-50 • Halocarbon (for O₂-application) • Silicone oil M5 • Syltherm 800 • DC704 silicone oil • Fluorolube Special design, customer information to be supplied	1 2 4 5 6 7 8 9	M 1 Y
Length of capillary <ul style="list-style-type: none"> • 3 ft • 5 ft • 10 ft • 15 ft • 20 ft • 25 ft • 30 ft Special design, customer information to be supplied	2 3 4 5 6 7 8 9	N 1 Y
Further designs Please add „-Z“ to Article No. and specify Order code		
Integrated flame path restriction		A 0 2
Certification of calibration N.I.S.T. (20 % steps)		C 1 1
Material conformance certificate		C 1 2
Vacuum service (must be specified with HT oil)		V 0 3
Calculation of span of transmitter (completed questionnaire to be attached)		Y 0 5

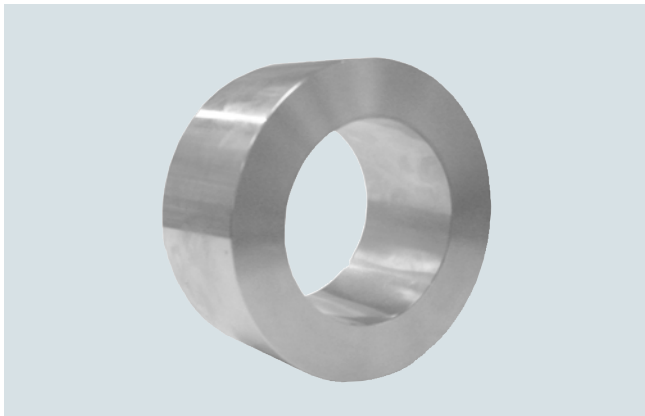
Pressure Measurement

Remote seals for transmitters and pressure gauges

Inline diaphragm seal, wafer for pressure

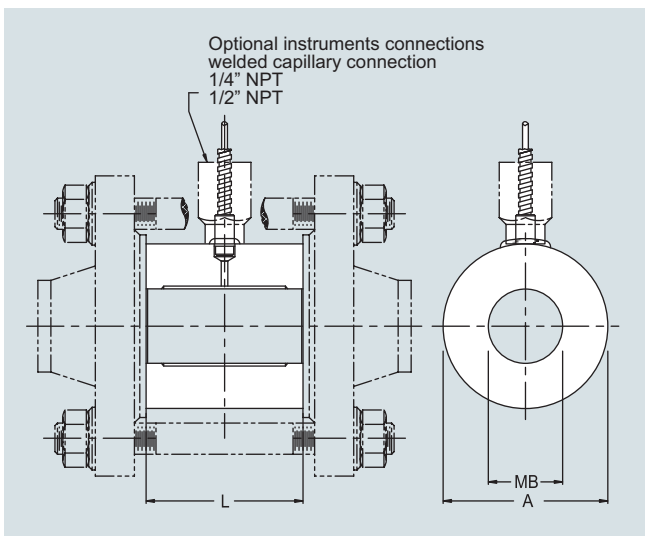
1

Overview



Inline diaphragm seal, wafer for pressure

Dimensions (Connection to ASME B16.5)



Size	Class	A	MB	L	Weight [lbs]
1"	150# - 2500#	2.4	1.12	2.36	3.1
1.5"		3.3	1.69		4.8
2"		3.7	2.15		5.5
3"		5.1	3.25		8.8
4"		5.9	4.21		10.3
5"		7.3	5.20		15.0
6"		8.5	6.26		20.9

MB = Effective internal diameter
 Class = Flange rating per ASME B16.5
 Size = Nominal pipe size
 All dimensions in inches unless otherwise noted

Inline diaphragm seal, wafer for pressure, dimensions

Selection and Ordering data

Article No. Order code

Inline diaphragm seals wafer assembled to

SITRANS P for 7MF40 and 7MF42 (order separately)

7 M F 4 8 8 0 -
1 0 - B

Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Size and class

- 1 inch class 150 to 2500
- 1 1/2 inch class 150 to 2500
- 2 inch class 150 to 2500
- 3 inch class 150 to 2500
- 4 inch class 150 to 2500

L
M
N
P
Q
Z J 1 Y

Special design, customer information to be supplied

Materials and wetted parts

- SST 316L
- SST 316L with PFA-Coating (good up to 500 °F)
- Monel 400, mat. No. 2.4360
- Hastelloy C276, mat. No. 2.4819
- Tantal

A
D
G
J
K
Z K 1 Y

Special design, customer information to be supplied

System fill

- Silicone oil DC 200-10
- Silicone oil DC 200-50
- Halocarbon (for O₂-application)
- Silicone oil M5
- DC704 silicone oil
- Fluorolube

1
2
4
5
7
8
9 M 1 Y

Special design, customer information to be supplied

Length of capillary

- Direct mount
- 3 ft
- 5 ft
- 10 ft
- 15 ft
- 20 ft
- 25 ft
- 30 ft

0
2
3
4
5
6
7
8
9 N 1 Y

Special design, customer information to be supplied

Further designs

Please add „-Z“ to Article No. and specify Order code

Integrated flame path restriction	A 0 1
Certification of calibration N.I.S.T. (20 % steps)	C 1 1
Material conformance certificate	C 1 2
Vacuum service (must be specified with HT oil)	V 0 1
Calculation of span of transmitter (completed questionnaire to be attached)	Y 0 5

Selection and Ordering data	Article No.	Order code
Inline diaphragm seals wafer assembled to		
SITRANS P for 7MF44 ■ ■ (order separately)	7 M F 4 8 8 3 -	
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	1 ■ ■ 0 ■ - ■ B ■ ■ ■ ■	
Size and class		
• 1 inch class 150 to 2500	L	
• 1 ½ inch class 150 to 2500	M	
• 2 inch class 150 to 2500	N	
• 3 inch class 150 to 2500	P	
• 4 inch class 150 to 2500	Q	
Special design, customer information to be supplied	Z	J 1 Y
Materials and wetted parts		
• SST 316L	A	
• SST 316L with PFA-Coating (good up to 500 °F)	D	
• Monel 400, mat. No. 2.4360	G	
• Hastelloy C276, mat. No. 2.4819	J	
• Tantal	K	
Special design, customer information to be supplied	Z	K 1 Y
System fill		
• Silicone oil DC 200-10	1	
• Silicone oil DC 200-50	2	
• Halocarbon (for O ₂ -application)	4	
• Silicone oil M5	5	
• DC704 silicone oil	7	
• Fluorolube	8	
Special design, customer information to be supplied	9	M 1 Y
Length of capillary		
• 3 ft	2	
• 5 ft	3	
• 10 ft	4	
• 15 ft	5	
• 20 ft	6	
• 25 ft	7	
• 30 ft	8	
Special design, customer information to be supplied	9	N 1 Y
Further designs		
Please add „-Z“ to Article No. and specify Order code		
Integrated flame path restriction		A 0 2
Certification of calibration N.I.S.T. (20 % steps)		C 1 1
Material conformance certificate		C 1 2
Vacuum service (must be specified with HT oil)		V 0 3
Calculation of span of transmitter (completed questionnaire to be attached)		Y 0 5

Pressure Measurement

Remote seals for transmitters and pressure gauges

Diaphragm seal, saddle

1

Overview



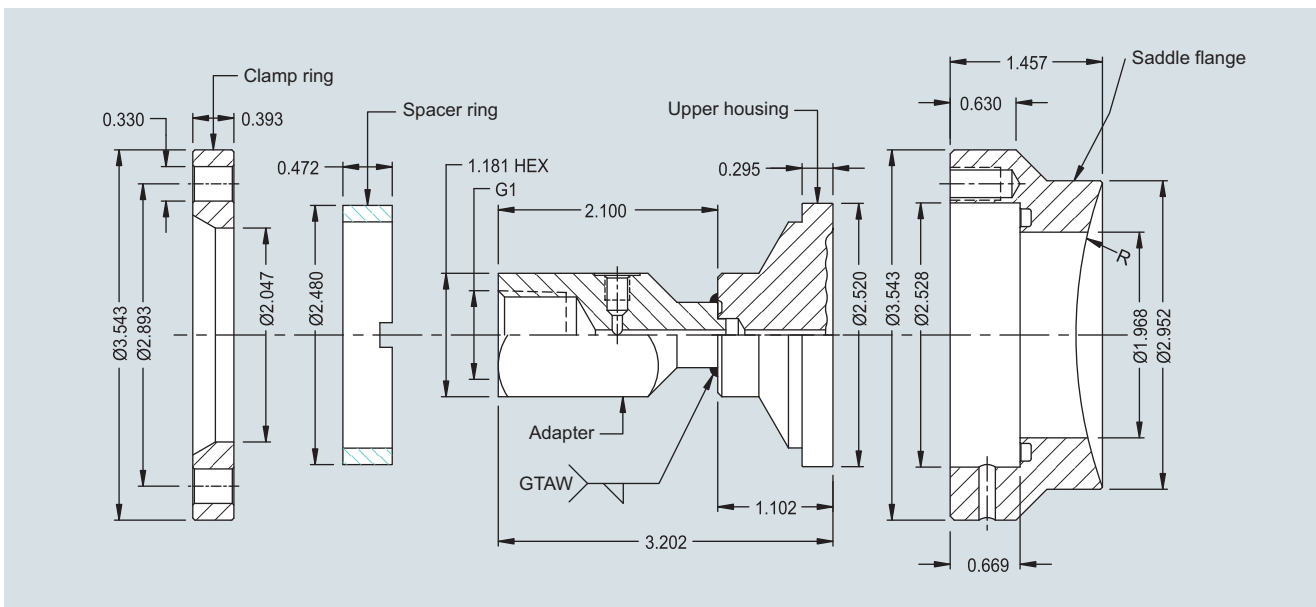
Dimensions (Connection to ASME B16.5)

Radius R	To fit Pipe size	Pipe O.D.	G1
1.49	2.5	3.00	¼"-NPT or ½"-NPT female
1.77	3.0	3.50	
2.24	4.0	4.50	
2.76	5.0	5.50	
3.35	6.0	6.63	
4.311	8.0	8.625	
5.374	10.0	10.75	
6.378	12.0	12.75	
7.0	14.0	14.75	

G1 = Instrument connection
All dimensions in inches unless otherwise noted

Diaphragm seal, saddle, dimensions

Diaphragm seal, saddle



Selection and Ordering data	Article No.	Order code
<p>Diaphragm seal, saddle, MAWP 1,500 psi</p> <p>with flexible armored capillary or direct mount, 316 stainless steel upper housing and assembly hardware SITRANS P for 7MF40 ■■■ or 7MF42 ■■■ (order separately)</p> <p>➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</p>	7 M F 4 8 9 0 -	1 ■■■■ - ■ B ■■■■
<p>Nominal pipe size</p> <ul style="list-style-type: none"> • Not applicable (Retrofit for existing 7MF48 ■■■) • 2.5" • 3" • 4" • 5" • 6" • 8" • Retrofit 3" Conoflow (6 bolt pattern) • Retrofit 3" M&G style (8 bolt pattern) • Retrofit 4" Conoflow (6 bolt pattern) • Retrofit 4" M&G style (8 bolt pattern) <p>Special design, customer information to be supplied</p>	N A B C D E G P Q R S Z	J 1 Y
<p>Diaphragm material</p> <ul style="list-style-type: none"> • SST 316L • SST 316L with PFA coated diaphragm (good upto 500 °F) • Monel 400, mat. No. 2.4360 • Hastelloy C276, mat. No. 2.4819 • Tantal <p>Special design, customer information to be supplied</p>	A D G J K Z	K 1 Y
<p>Saddle Material</p> <ul style="list-style-type: none"> None (Retrofit order) Carbon steel, Ni plated SST 316L Hastelloy C276, mat. No. 2.4819 <p>Special design, customer information to be supplied</p>	0 1 2 4 9	L 1 Y
<p>System fill</p> <ul style="list-style-type: none"> • Silicone oil DC 200-10 • Silicone oil DC 200-50 • Halocarbon (for O₂-application) • Silicone oil M5 • DC704 silicone oil • Fluorolube <p>Special design, customer information to be supplied</p>	1 2 4 5 7 8 9	M 1 Y
<p>Length of capillary</p> <ul style="list-style-type: none"> • Direct mount • 3 ft • 5 ft • 10 ft • 15 ft • 20 ft • 25 ft • 30 ft <p>Special design, customer information to be supplied</p>	0 2 3 4 5 6 7 8 9	N 1 Y
<p>Further designs</p> <p>Please add „-Z“ to Article No. and specify Order code</p>		
Integrated flame path restriction		A 0 1
Certification of calibration N.I.S.T. (20 % steps)		C 1 1
Material conformance certificate		C 1 2
Vacuum service (must be specified with HT oil)		V 0 1
Calculation of span of transmitter (completed questionnaire to be attached)		Y 0 5

Pressure Measurement

Remote seals for transmitters and pressure gauges

Measuring setups

Measuring setups

The following pages show examples of typical measuring setups for use of SITRANS P transmitters with and without remote seals, such as:

- Setups for transmitters with connection of remote seals, with associated equations for calculation.
- [Questionnaires](#)
Checking of combination between transmitter and remote seal
- Setups for transmitters without remote seals, with associated equations for calculation
- [Questionnaires](#)
For hydrostatic level measurements

Installation

Remote seals of pancake design are fitted between the connection flange of the measuring point and a blind flange. Remote seals of flanged design are fitted directly on the connection flange of the measuring point. The respective pressure rating of the blind flange or the flanged remote seal must be observed. The transmitter should always be installed below the connection flange, and below the lower connection flange in the case of differential pressure transmitters. When measuring at pressures above atmospheric, the transmitter can also be installed above the connection flange. When measuring at pressures below atmospheric, the transmitter must always be installed below the connection flange, and below the lower connection flange in the case of differential pressure transmitters.

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 results from the oil filling of the remote seal capillaries. This results in an offset of the actual measuring range and must be taken into account when adjusting the transmitter. An offset in the measuring range also occurs when combining a remote seal with a transmitter if the latter is not installed at the same height as the former.

Transmitter output

If the level, separation layer or density increase in closed vessels, the differential pressure and the output signal of the transmitter also increase. If an inverted relationship is desired between the differential pressure and the output signal, the start-of-scale and full-scale values of the SITRANS P must be interchanged.

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

Influence of ambient temperature

The capillaries between the remote seal and the transmitter should be kept as short as possible to obtain the good transmission response. Temperature differences between the individual capillaries or between the individual remote seals should be avoided.

If the complete setup is exposed to temperature variations, errors result from the thermal expansion of the filling liquid in the capillaries, in the remote seals and in the connection units of the transmitters.

Notes

- When measuring separation layers, ensure that the layer is positioned between the two spigots. Also ensure that the level in the vessel is always above the top spigot.
- When measuring density, make sure that the level of the medium remains constant. The level is usually above the top spigot.

Possible combinations of transmitter and remote seal

Installation type	Transmitter	Remote seal	
A/B	7MF4033 and 7MF4034	7MF4800, 7MF4810, 7MF4820, 7MF4826, 7MF4827, 7MF4840, 7MF4850, 7MF4861, 7MF4862, 7MF4880 and 7MF4890	
C1/C2	7MF4233 and 7MF4234	7MF4800, 7MF4810, 7MF4820, 7MF4826, 7MF4827, 7MF4840, 7MF4850, 7MF4861, 7MF4862, 7MF4880 and 7MF4890	(vacuum-proof design required)
	7MF4333 and 7MF4334	7MF4801 and 7MF4821	
D	7MF4433, 7MF4434, 7MF5403 and 7MF5413	7MF4803, 7MF4823, 7MF4828, 7MF4843, 7MF4863 and 7MF4883	
E	7MF4433, 7MF4434, 7MF5403 and 7MF5413	7MF4813	
G/H/J	7MF4433, 7MF4434, 7MF5403 and 7MF5413	7MF4803, 7MF4823, 7MF4828, 7MF4843, 7MF4863 and 7MF4883	

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

Installation type A

Start-of-scale: $p_{MA} = \rho_{FL} \cdot g \cdot H_U - \rho_{Oil} \cdot g \cdot H_1$

Full-scale: $p_{ME} = \rho_{FL} \cdot g \cdot H_O - \rho_{Oil} \cdot g \cdot H_1$

Installation type B

Start-of-scale: $p_{MA} = \rho_{FL} \cdot g \cdot H_U + \rho_{Oil} \cdot g \cdot H_1$

Full-scale: $p_{ME} = \rho_{FL} \cdot g \cdot H_O + \rho_{Oil} \cdot g \cdot H_1$

Legend

p_{MA} Start-of-scale value to be set

p_{ME} Full-scale 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 Start-of-scale value

H_O Full-scale value

H_1 Distance between vessel flange and pressure trans.

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

Types of installation for absolute level measurements (closed vessels)

Installation type C₁

Installation type C₂

Installation type C₁ and C₂

Start-of-scale: $p_{MA} = p_{START} + \rho_{Oil} \cdot g \cdot H_1$

Full-scale: $p_{ME} = p_{END} + \rho_{Oil} \cdot g \cdot H_1$

Legend

p_{MA} Start-of-scale value to be set

p_{ME} Full-scale value to be set

p_{START} Start-of-scale value

p_{END} Full-scale 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.

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

Type of installation for differential pressure and flow measurements

Installation type D Filter monitoring

Installation type D

Start-of-scale: $p_{MA} = p_{START} - \rho_{Oil} \cdot g \cdot H_V$

Full-scale: $p_{ME} = p_{END} - \rho_{Oil} \cdot g \cdot H_V$

Legend

p_{MA} Start-of-scale value to be set

p_{ME} Full-scale value to be set

p_{START} Start-of-scale value

p_{END} Full-scale 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)

Pressure Measurement

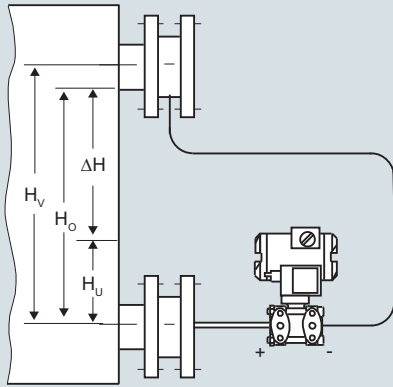
Remote seals for transmitters and pressure gauges

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Measuring setups with remote seals

Types of installation for level measurements (closed vessels)

Installation type E



Installation type E

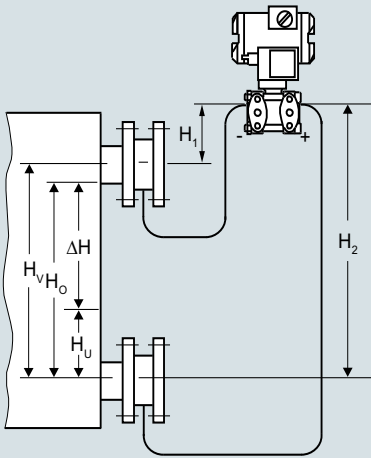
Start-of-scale: $p_{MA} = \rho_{FL} \cdot g \cdot H_U - \rho_{OIL} \cdot g \cdot H_V$

Full-scale: $p_{ME} = \rho_{FL} \cdot g \cdot H_O - \rho_{OIL} \cdot g \cdot H_V$

Legend

- p_{MA} Start-of-scale value to be set
- p_{ME} Full-scale 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 Start-of-scale value
- H_O Full-scale value
- H_V Distance between the measuring points (spigots)

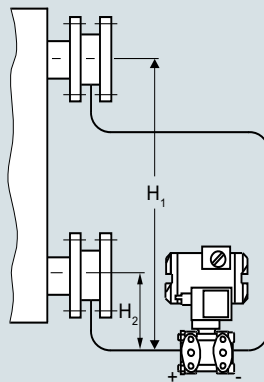
Installation type G



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

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

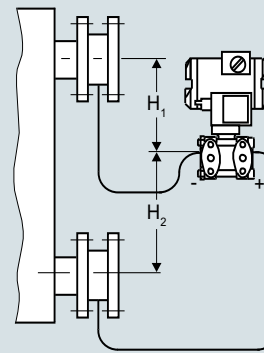
Installation type H



below the lower measuring point

Installation type for vacuum applications

Installation type J



between the measuring points, no vacuum

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

Installation type G, H and J

Start-of-scale: $p_{MA} = \rho_{FL} \cdot g \cdot H_U - \rho_{OIL} \cdot g \cdot H_V$

Full-scale: $p_{ME} = \rho_{FL} \cdot g \cdot H_O - \rho_{OIL} \cdot g \cdot H_V$

Legend

- p_{MA} Start-of-scale value to be set
- p_{ME} Full-scale 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 Start-of-scale value
- H_O Full-scale value
- H_V Distance between the measuring points (spigots)

Overview

Notes

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

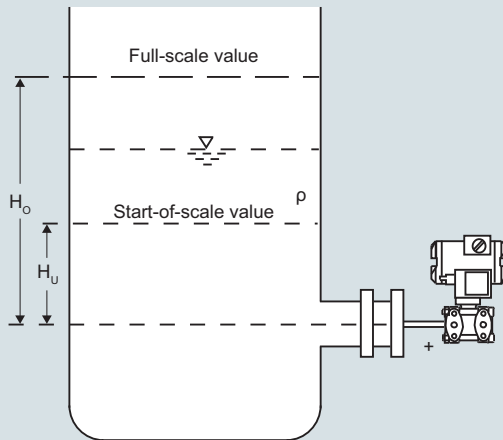
Also you must make sure that the level in the container is always above the top spigot.

- 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



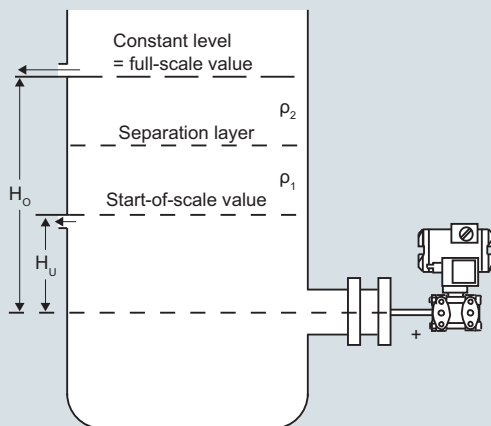
Level measurement

$$\text{Start-of-scale: } p_{MA} = \rho \cdot g \cdot H_U$$

$$\text{Full-scale: } p_{ME} = \rho \cdot g \cdot H_O$$

Legend

p_{MA}	Start-of-scale value to be set
p_{ME}	Full-scale value to be set
ρ	Density of medium in vessel
g	Local acceleration due to gravity
H_U	Start-of-scale value
H_O	Full-scale value



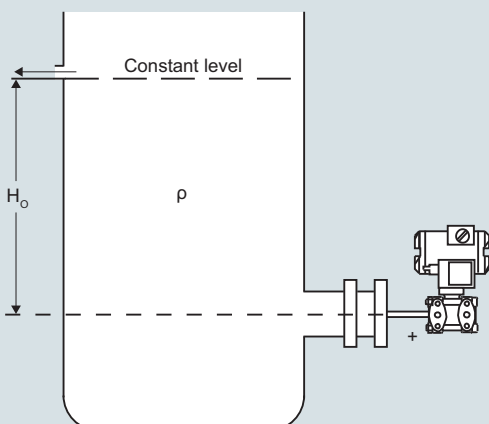
Separation layer measurement

$$\text{Start-of-scale: } p_{MA} = g \cdot (H_U \cdot \rho_1 + (H_O - H_U) \cdot \rho_2)$$

$$\text{Full-scale: } p_{ME} = \rho_1 \cdot g \cdot H_O$$

Legend

p_{MA}	Start-of-scale value to be set
p_{ME}	Full-scale value to be set
ρ_1	Density of heavier liquid
ρ_2	Density of lighter liquid
g	Local acceleration due to gravity
H_U	Start-of-scale value
H_O	Full-scale value



Density measurement

$$\text{Start-of-scale: } p_{MA} = \rho_{MIN} \cdot g \cdot H_O$$

$$\text{Full-scale: } p_{ME} = \rho_{MAX} \cdot g \cdot H_O$$

Legende

p_{MA}	Start-of-scale value to be set
p_{ME}	Full-scale 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	Full-scale value in m

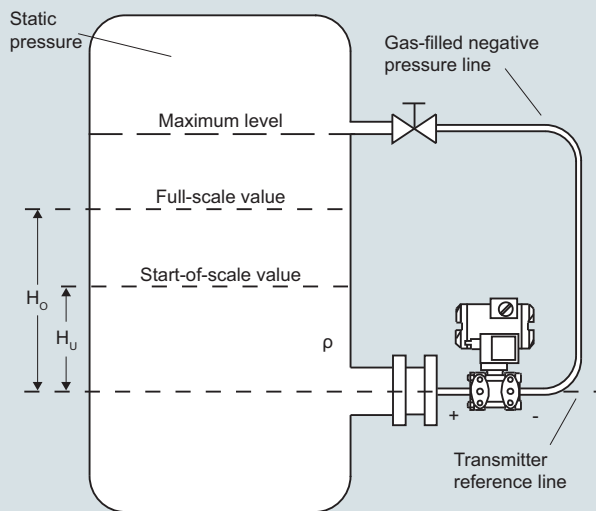
Pressure Measurement

Remote seals for transmitters and pressure gauges

Measuring setups without remote seals

Measuring setups for closed containers

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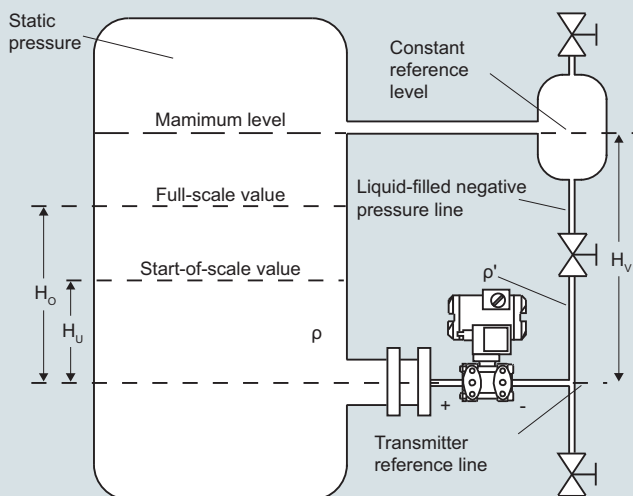
Level measurement, Version 1

Start-of-scale: $\Delta p_{MA} = \rho \cdot g \cdot H_U$

Full-scale: $\Delta p_{ME} = \rho \cdot g \cdot H_O$

Legend

- Δp_{MA} Start-of-scale value to be set
- Δp_{ME} Full-scale value to be set
- ρ Density of medium in vessel
- g Local acceleration due to gravity
- H_U Start-of-scale value
- H_O Full-scale value



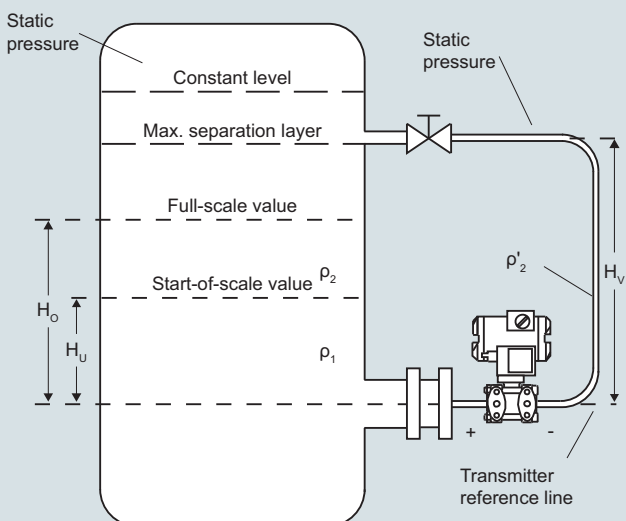
Level measurement, Version 2

Start-of-scale: $\Delta p_{MA} = g \cdot (H_U \cdot \rho - H_V \cdot \rho')$

Full-scale: $\Delta p_{ME} = g \cdot (H_O \cdot \rho - H_V \cdot \rho')$

Legend

- Δp_{MA} Start-of-scale value to be set
- Δp_{ME} Full-scale 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 Start-of-scale value
- H_O Full-scale value
- H_V Distance between the measuring points (spigots)



Separation layer measurement

Start-of-scale: $\Delta p_{MA} = g \cdot (H_U \cdot \rho_1 + (H_O - H_U) \cdot \rho_2 - H_V \cdot \rho'_2)$

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

Legend

- Δp_{MA} Start-of-scale value to be set
- Δp_{ME} Full-scale 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 Start-of-scale value
- H_O Full-scale value
- H_V Distance between the measuring points (spigots)

