Remote seals for transmitters and pressure gauges SITRANS P320/P420

Technical description

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) $% \left(\left(\frac{1}{2}\right) \right) =0$

- 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

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- 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 dismounting 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 a or below, including during commissioning (see ordering data).

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

Technical description

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.

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Technical specifications of the remote seal filling liquids

Filling liquid	Num- ber in the Article No.	Density at 20°C [kg/dm ³]	ity Visco- Suit: °C sity at for n [m ³] 20°C tive [mm ² /s] sure serv		Suitable for exten- ded nega- tive pressure service
Silicone oil M5	1	0.914	4	х	-
Silicone oil M50	2	0.966	50	х	х
High-tempera- ture oil	3	1.070	57	х	х
Halocarbon oil	4	1.968	14	х	-
Food oil (FDA-listed)	7	0.920	10	х	х

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.



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Negative pressure applications with silicone oil M50

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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.

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Technical description



Negative pressure applications with food oil (FDA listed)

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Technical description

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	Diaph diame	iragm eter	Tempe error o seal f _R	rature of remote s	Temperature o capillary f _{Cap}	error of	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	DN 50 without tube	59	(2.32)	1.5	(0.022)	2	(0.029)	2	(0.029)	200	(2.90)
design or with flange to	DN 50 with tube	45	(1.89)	5	(0.073)	10	(0.145)	10	(0.145)	500	(7.25)
EN 1092-1	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	2 inch without tube	59	(2.32)	1.5	(0.022)	2	(0.029)	2	(0.029)	200	(2.90)
design or with	2 inch with tube	45	(1.89)	5	(0.073)	10	(0.145)	10	(0.145)	500	(7.25)
ASME B16.5	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	DN 25	25	(0.98)	20	(0.290)	60	(0.870)	60	(0.870)	6000	(87)
DIN 11851	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	DN 25	25	(0.98)	20	(0.290)	60	(0.870)	60	(0.870)	6000	(87)
socket to	DN 32	32	(1.26)	8	(0.116)	25	(0.363)	25	(0.363)	4000	(58)
DIN 11851	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-	1½ inch	32	(1.26)	8	(0.116)	25	(0.363)	25	(0.363)	4000	(58)
tion	2 inch	40	(1.57)	4	(0.058)	10	(0.145)	10	(0.145)	2000	(29)
	21/2 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-	G1B	25	(0.98)	20	(0.290)	60	(0.870)	60	(0.870)	6000	(87)
pnragm seal	G11/2B	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.

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Temperature er	Temperature errors of diaphragm seals with connection to differential pressure transmitters (double-sided)										
	Nominal diameter/ design	Diaphragm Temperatur diameter of remote se		ture error e seal f _{RS}	reerror Temperature error of seal f _{RS} 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	DN 50 without tube	59	(2.32)	0.3	(0.0043)	0.3	(0.0045)	0.3	(0.0045)	250	(3.626)
design or with flange to EN 1092-1	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	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)
ASME B16.5	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	DN 50	52	(2.05)	1	(0.015)	0.83	(0.012)	0.83	(0.012)	250	(3.626)
DIN 11851	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	DN 50	52	(2.05)	1	(0.015)	0.83	(0.012)	0.83	(0.012)	250	(3.626)
socket to	DN 65	59	(2.32)	0.7	(0.010)	0.67	(0.010)	0.67	(0.010)	250	(3.626)
DIN 11851	DN 80	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.450)
Clamp connec-	2 inch	40	(1.57)	1	(0.015)	2.5	(0.036)	2.5	(0.036)	2000	(29.01)
UUH	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.

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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 ${\rm f}_{\rm RS}$		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

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Technical description

Calculation of the temperature error

The following equation is used to calculate the temperature error:

dp = (ϑ _{RS} – ϑ	Cal) · 1	f _{RS} + ((ϑCap [_]	ϑ _{Cal}) ·	I _{Cap} ·1	f _{Cap} + ((ϑ TR – 1	⁹ Cal)	f _{PF}
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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
I _{Cap}	Capillary length
f _{Cap}	Temperature error of capillaries
ϑ_{TR}	Ambient temperature on pressure transmitter
f _{PF}	Temperature error of the oil filling in the process flanges of the pressure transmitter

Example of temperature error calculation

Existing conditions:

SITRANS P pressure transmitter for differential pressure, 250 mbar, set to 0 100 mbar, with DN 100 remote seal diaphragms without tube, diaphragm made of stainless steel, mat. No. 1.4404/316L	f _{RS} = 0.05 mbar/10 K (0.039 inH ₂ O/10 K)
Capillary length	l _{Cap} = 6 m (19.7 ft)
Capillaries fitted on both sides	f _{Cap} = 0.07 mbar/(10 K ⋅ m _{Cap}) (0.028 inH ₂ O/(10 K ⋅ m _{Cap}))
Filling liquid silicone oil M5	f _{PF} = 0.07 mbar/10 K (0.028 inH ₂ O/10 K)
Process temperature	ϑ _{RS} = 100 °C (212 °F)
Temperature on the capillaries	ϑ _{Cap} = 50 °C (122 °F)
Temperature on pressure transmitter	ϑ _{TR} = 50 °C (122 °F)
Calibration temperature	ϑ _{Cal} = 20 °C (68 °F)

Required:

Additional temperature error of remote seals: dp

Calculation:

in mbar

 $\begin{array}{l} dp = (100\ ^{\circ}C - 20\ ^{\circ}C) \cdot 0.05\ mbar/10\ K + (50\ ^{\circ}C - 20\ ^{\circ}C) \cdot 6\ m \cdot \\ 0.07\ mbar/(10\ K \cdot m) + (50\ ^{\circ}C - 20\ ^{\circ}C) \cdot 0.07\ mbar/10\ K \end{array}$

dp = 0.4 mbar + 1.26 mbar + 0.21 mbar

in inH₂O

Result:

dp = 1.87 mbar (0.75 inH₂O)

(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 <u>not</u> 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

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							
		Diaphrag	m 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		Tempe on cap	rature illary	ure 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.

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Diaphragm seals of sandwich design with flexible capillary

Overview



Diaphragm seals of sandwich design

Technical specifications			
Diaphragm seals of sandwich de	esign	Sealing material in the process	
Nominal diameter	Nominal pressure	flanges	
Connecting standard EN 1092-1	onnecting standard EN 1092-1		Copper
 DN 25, DN 40, DN 50, DN 65, DN 80, DN 100, DN 125 	PN 16 PN 400	Iow-pressure applications	Viton
Connecting standard ASME B16.5			VION
• 1 inch, 1½ inch, 2 inch, 2½ inch, 3 inch, 4 inch, 5 inch	Class 150 class 2500	Maximum pressure	See above and the technical data of the pressure transmitters
Connecting standard J.I.S.		Tube length	Without tube as standard (tube available on request)
• DN 25, DN 40, DN 50, DN 65, DN 80, DN 100, DN 125	10K 63K	Capillary	
Sealing face		• Length	Max. 10 m (32.8 ft), longer lengths on request
• For stainless steel, mat. No.	To EN 1092-1, form B1 or	 Internal diameter 	max. 2 mm (0.079 inch)
	ASIME B10.5 RF 125 250 AA	 Minimum bending radius 	150 mm (5.9 inch)
• For the other materials	ASME B16.5 RFSF		Silicone oil M5
Materials	rerials		Silicone oil M50
Main body	Stainless steel mat. no. 1.4404/316L		High-temperature oil
Wetted parts	Stainless steel mat. no. 1.4404/316L		Halocarbon oil (for measuring O_2)
·	Without coating		Food grade oil (FDA listed)
	PTFE coating ECTFE coating (for vacuum on re-	Permissible ambient temperature	Dependent on the pressure trans- mitter and the filling liquid of the remote seal
	 PFA coating Monel 400, mat. No. 2.4360 Hastelloy C276, mat. No. 2.4819 Hastelloy C4, mat. No. 2.4602 		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
	Hastelloy C22, mat. no. 2.4602	Weight	Approx. 4 kg (8.82 lb)
	Tantalum Titanium, mat. no. 3.7035 Nickel 201 Duplex 2205, mat. no. 1.4462 Stainless steel 316L, gold plated, thickness approx. 25 um	Certificate and approvals Classification according to pres- sure equipment directive (DGRL 2014/68/EU)	For gases of fluid group 1 and liq- uids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)
Capillary	Stainless steel, mat. No. 1.4571/316Ti		
Sheath	Spiral protective tube made of stain- less steel, mat. No. 1.4301/304		

Remote seals for transmitters and pressure gauges SITRANS P320/P420

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onnecting standard ASME B16.5 inch. IKX Verted parts materials X F inch. class 1502500 1 IXX Wetted parts materials X Ad Order code and plain text Ad without class 1502500 1 X Without coating A Concernsion A inch. class 1502500 1 X Without coating D D without coating With PFA coating E0 With PFA coating E0 C inch. class 1502500 10X With PFE coating E0 C C onnecting standard J.I.S. With PFE coating E0 C C C C onnecting standard J.I.S. N 25. DN 40 and DN 50 recommended N N C	N 125	PN 16 400	0 1 Q		Food-grade oil (FDA listed)		Е			
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nch class 1502500 1 KX Stainless steel 316L. nch class 1502500 1 MX Without coating A nch class 1502500 1 NX Without coating E0 nch class 1502500 1 NX Without coating E0 nch class 1502500 1 NX With PFA coating E0 nch class 1502500 1 NX With PFE coating E0 nch class 1502500 1 NX With PFE coating E0 nch class 1502500 1 NX With PFE coating E0 nch class 1502500 1 NX With PFE coating E0 nmecting standard JL.S. N With DTFE coating K V25, DN 40 and DN 50 recommended V Tartatium K V35 10K 63K 2 BW Diaphragm Duplex, 1.4462 R V40 10K 63K 2 BW Diaphragm Duplex, 1.4462 R V40 10K 63K 2 BW Other version Z 8 Z 8 V100 10K 63K 2 BW Other ver	ly for pressure tran	ismitters)			Wetted parts materials					
2 Inch class 150 2500 1 LX • Without coating A 6 inch class 150 2500 1 NX • With PTE coating E0 inch class 150 2500 1 PX • With PTE coating E0 inch class 150 2500 1 PX • With PTE coating E0 inch class 150 2500 1 PX • With PTE coating E0 inch class 150 2500 1 PX • With PTE coating E0 inch class 150 2500 1 PX • With PTE coating E0 inch class 150 2500 1 PX • With PTE coating E0 inch class 150 2500 1 PX • With PTE coating E0 inch class 150 2500 1 RX • With PTE coating G inch class 150 2500 1 RX • With PTE coating G inch class 150 2500 1 RX • With PTE coating G visitor fastelloy C276, 2.4819 J J G ido toth 63K	nch	class 150 2500	1 K X		Stainless steel 316L					
chn class 1502500 1MX • With PFA coating E0 inch class 1502500 1NX • With PFA coating E0 inch class 1502500 10X • With PFA coating E0 inch class 1502500 10X • With PFA coating E0 inch class 1502500 10X • With PFA coating E0 necting standard J1.S. • With PFA coating With PFA coating E0 v25, DN 40 and DN 50 recommended • With PFA coating K K v25, DN 40 and DN 50 recommended • With PFA coating K K v25, DN 40 and DN 50 recommended • With PFA coating K K v10K 63K 2 BW Diaphragm plus flange Duplex, 1.4462 R 50 10K 63K 2 FW Hastelloy C2; 2, 2.4602 V0 100 10K 63K 2 FW Hastelloy C2; 2, 2.4602 V0 125 10K 63K 2 JW Add Order code and plain text 0 reversion 11 10 • 100 mm (4') 2 2 11 12 200 mm (6'	inch	class 150 2500	1 L X		Without coating		Α			
Pinch class 1502500 1 PX • With PTFE coating E 0 nch class 1502500 1 0X • With PTFE coating F nnecting standard J.I.S. • With PTFE coating F F nmecting standard J.I.S. • With PTFE coating G G nmecting standard J.I.S. • With PTFE coating G G v25, DN 40 and DN 50 recommended • With PTFE coating K G v25, DN 40 and DN 50 recommended 2 BW Nakelloy C276, 2.4819 J 125 10K 63K 2 BW Diaphragm Duplex, 1.4462 Q 140 10K 63K 2 EW Stainless steel 316. with gold coating S0 150 10K 63K 2 FW Stainless steel 316. with gold coating S0 140 10K 63K 2 HW Other version Z 8 Z 110 10K 63K 2 HW Other version Z 8 Z ngth of capillary 10 10 100 mm (4') 2 3 n 11 115 100 mm (6') 3 3 n 12	1Ch	class 150 2500	1 M X		With PFA coating		D			
Inch class 150 2000 1 PX • With ECTFE coating F nnch class 150 2500 1 QX Monel 400, 2.4360 G nnch class 150 2500 1 RX Hastelloy C276, 2.4819 J nnecting standard J.I.S. Tantalum K K N 25, DN 40 and DN 50 recommended ly for pressure transmitters) Nickel 201 Mole 400, 2.4360 G V 25 10K 63K 2 BW Diaphragm Duplex, 1.4462 Q A 140 10K 63K 2 EW Stainless stel 316Lt462 Q V0 145 10K 63K 2 FW Hastelloy C22, 2.4602 V0 V0 180 10K 63K 2 FW Hastelloy C22, 2.4602 V0 V0 140 10K 63K 2 JW Other version Z 8 C 125 10K 63K 2 JW Other version Z 8 C 125 10K 63K 2 JW Other version Z 8 C 131 12 -200 mm (8') 3 -200 mm (8') 3 16 17 15 Ot		Class 150 2500	1 N X		With PTFE coating		E 0)		
Inch Class 150 2500 1 RX Monel 400, 2.4360 G inch class 150 2500 1 RX Hastelloy C276, 2.4819 J inch class 150 2500 1 RX Hastelloy C276, 2.4819 J inch class 150 2500 1 RX K K inth 25, DN 40 and DN 50 recommended Titanium, 37:035 L0 Mo V 25 10K 63K 2 BW Diaphragm Duplex, 1.4462 Q V 40 10K 63K 2 EW Stainless steel 316L with gold coating S0 V 80 10K 63K 2 HW Hastelloy C2, 2.4602 V0 V0 V 100 10K 63K 2 HW Other version Z8 C id Order code and plain text 9 AA H1Y Extension length • without 0 id Order code and plain text	inch	Class 150 2500	101		With ECTFE coating		F			
Intell Lists 150	inch	class 150 2500	107		Monel 400, 2.4360		G			
onnecting standard J.I.S. Tantalum K N 25, DN 40 and DN 50 recommended hy for pressure transmitters) Itanium, 3,7035 L0 N 25 10K 63K 2BW Diaphragm Duplex, 1.4462 Q N 40 10K 63K 2DW Diaphragm Duplex, 1.4462 Q N 50 10K 63K 2EW Stainless steel 316L with gold coating S0 N 80 10K 63K 2EW Stainless steel 316L with gold coating S0 N 80 10K 63K 2EW Stainless steel 316L with gold coating S0 N 100 10K 63K 2HW Other version Z2 V0 dd Order code and plain text 9AA H1Y Extension length V0 V0 ength of capillary 10 100 mm (4') 2 3 3 250 mm (2') 1 m 12 200 mm (8') 24 5 3 3 250 mm (10') 3 m 15 13 250 mm (10') 28 0 0 m 16		01855 100 2000	10.4		Hastelloy C276, 2.4819		J			
DN 25, DN 40 and DN 50 recommended nly for pressure transmitters) NN 25 10K 63K 2BW NN 40 10K 63K 2DW NN 50 10K 63K 2FW NN 65 10K 63K 2FW NN 80 10K 63K 2FW NN 100 10K 63K 2HW Diaphragm Duplex, 1.4462 R Stainless steel 316L with gold coating S0 Hastelloy C4, 2.4610 U0 Hastelloy C22, 2.4602 V0 Other version Add Order code and plain text ength of capillary m 5m m 10 5m m 11 5m m 11 63K 22 63K 2FW Diaphragm Duplex, 1.4462 R Diaphragm Duplex, 1.4462 R 40 Order code and plain text 40 Order code and plain text 4	connecting standard	I J.I.S.			Tantalum		К			
NN 25 10K 63K 2 BW Diaphragm Duplex, 1.4462 Q NN 40 10K 63K 2 EW Diaphragm Duplex, 1.4462 R NN 50 10K 63K 2 EW Stainless steel 316L with gold coating S 0 NN 65 10K 63K 2 FW Hatelloy C4, 2.4610 U 0 NN 80 10K 63K 2 GW Hatelloy C2, 2.4602 V 0 NN 125 10K 63K 2 JW Other version Z 8 Z NM d0 Order code and plain text 9 A A H1 Y Extension length 0 0 Md Order code and plain text 9 A A H1 Y Extension length 0 0 6 m 11 6 S 2 JW 6 S 3 3 6 m 12 6 S 6 S 6 S 3 3 6 m 12 6 S 6 S 6 S 6 S 6 S 6 S 6 S 6 S 6 S 6 S 6 S 6 S 6 S 6 S 6 S 6 S 6 S 6 S 6 S <td>JN 25, DN 40 and D</td> <td>N 50 recommended</td> <td></td> <td></td> <td>Litanium, 3.7035</td> <td></td> <td>LO</td> <td>)</td> <td></td> <td></td>	JN 25, DN 40 and D	N 50 recommended			Litanium, 3.7035		LO)		
N40 10K 63K 2 DW Diaphragm Duplex, 1.4462 R N 40 10K 63K 2 DW Diaphragm Duplex, 1.4462 R N 50 10K 63K 2 EW Stainless steel 316L with gold coating U0 N 65 10K 63K 2 GW Hastelloy C4, 2.4610 U0 N 80 10K 63K 2 GW Hastelloy C2, 2.4602 V0 N 100 10K 63K 2 JW Other version Z 8 Z dd Order code and plain text 9 AA H1 Y Extension length • without 0 ength of capillary 10 10 · 50 mm (2°) 1 1 m 12 · 200 mm (8°) 2 2 200 mm (8°) 4 ,5 m 13 · 250 mm (10°) 5 3 m 15 Other version Add Order code and plain text 2 4 m 12 · 200 mm (8°) 4 5 5 5 5 5 m 14 0ther version Add Order code and plain text 2 4 5 5 5	iny for pressure traff	10K 63K	2 BW		Nickel 201		MO	נ		
Diaprragm plus hange Duplex, 1.4462 H N 50 10K 63K 2 EW N 65 10K 63K 2 FW N 80 10K 63K 2 GW N 100 10K 63K 2 HW N 100 10K 63K 2 JW Pastelloy C4, 2.4610 U0 Hastelloy C4, 2.4602 V0 Other version Add Order code and plain text Z 8 Other version 9AA H1 Y dd Order code and plain text 9 Fatemological and plain text 0 m 10 11 150 mm (6") 1 nm 12 200 mm (8") 250 mm (10") 3 nm 16 17 Add Order code and plain text 2 m 18 20 Add Order code and plain text 2	N 40	10K 63K	2 DW		Diaphragm Duplex, 1.4462		Q			
N 65 10K 63K 2 FW Starness steel 3 lob with gold coating \$0 N 85 10K 63K 2 GW Hastelloy C4, 2.4610 U0 N 100 10K 63K 2 HW Other version Z 8 V0 N 125 10K 63K 2 JW AA H1Y H1Y Hastelloy C2, 2.4602 V0 N 125 10K 63K 2 JW 9AA H1Y Extension length Add Order code and plain text 0 ength of capillary 9AA H1Y Extension length • without 0 n 10 11 • 50 mm (2') 1 1 .6 m 11 • 50 mm (2') 1 1 .5 m 13 • 220 mm (8') 250 mm (10'') 3 .5 m 16 Other version Add Order code and plain text Z 8 C m 16 12 <t< td=""><td>N 50</td><td>10K 63K</td><td>2 E W</td><td></td><td>Diaphragm plus flange Duplex, 1.4462</td><td></td><td>H</td><td></td><td></td><td></td></t<>	N 50	10K 63K	2 E W		Diaphragm plus flange Duplex, 1.4462		H			
N 80 10K 63K 2 GW 2 HW 2 HW 4 Hastelloy C22, 2.4602 V0 N 125 10K 63K 2 JW Hastelloy C22, 2.4602 Other version Z 8 C ther version 9 AA 9 AA H1Y Hastelloy C22, 2.4602 Other version Z 8 C ength of capillary 9 AA 10 Add Order code and plain text 0 0 0 m 10 10 10 50 mm (2*) 1 0	N 65	10K 63K	2 F W		Hastellov CA 2 4610		50	Ś		
N 100 10K 63K 2HW 2JW Other version Add Order code and plain text Z 8 Z 8 G N 125 10K 63K 2JW 9AA H1Y Extension length Add Order code and plain text 0 ength of capillary 10 10 .50 mm (2°) 1 0 ,6 m 11 .12 .200 mm (8°) .200 mm (8°) .200 mm (8°) .200 mm (8°) .200 mm (2°)	N 80	10K 63K	2 G W		Hastellov C22 2 1602		V	Ś		
N 125 10K 63K 2 JW Other version Add Order code and plain text ength of capillary 9 AA H1 Y Extension length 0 m 10 50 mm (2") 1 0 m 11 100 mm (4") 2 3 m 12 150 mm (6") 3 m 12 250 mm (10") 4 m 15 Add Order code and plain text 4 m 12 250 mm (10") 3 m 14 Other version 28 0 m 15 Add Order code and plain text 4 m 12 250 mm (10") 5 m 16 0 4 m 16 0 0 m 20 0 0 0 m 20 0 0 0 m 20 0 0 0 0 m 20 0 0 0 0 m 20 0 0 0 0 <	N 100	10K 63K	2 HW		1 IA31EIIUY UZZ, Z.400Z		V U			
Med Order code and plain text PAA H1Y ength of capillary 10 •without 0 m 10 •50 mm (2") 1 6 m 11 •100 mm (4") 2 5 m 12 •200 mm (8") 4 5 m 14 •250 mm (10") 5 m 15 Add Order code and plain text 0 Mm 12 •200 mm (8") 4 •250 mm (10") 5 5 6 m 16 6 7 7 m 18 7 7 7 m 20 18 7 7 m 21 22 7 7	N 125	10K 63K	2 J W		Other version		Z 8	3 0	11	
ength of capillary 10 • without 0 m 10 • 50 mm (2") 1 6 m 11 • 100 mm (4") 2 6 m 11 • 150 mm (6") 3 m 12 • 200 mm (8") 4 5 m 13 • 250 mm (10") 5 m 14 Other version 2 8 m 16 Add Order code and plain text 7 m 18 20 1 m 20 21 20	ther version dd Order code and	plain text	9 A A	H 1 Y	Extension length					
*50 mm (2") 1 m 10 100 mm (4") 2 6 m 11 100 mm (4") 3 6 m 12 150 mm (6") 3 5 m 13 200 mm (8") 4 5 m 14 Other version 28 m 16 Add Order code and plain text 78 m 18 17 18 m 20 21 100 mm (2") 100 mm (2")					• without		0)		
10 100 mm (4") 2 6 m 11 150 mm (4") 3 m 12 150 mm (6") 3 5 m 13 200 mm (8") 4 5 m 14 0ther version 5 m 16 Add Order code and plain text 7 m 18 20 18 m 20 21 0	m capillary		1.0		• 50 mm (2")		1			
12 • 150 mm (6") 3 5m 12 • 200 mm (8") 4 5m 13 • 250 mm (10") 5 m 14 Other version 28 m 16 Add Order code and plain text 7 m 18 18 m 20 21 0m 21	nn 6 m		1 1		• 100 mm (4")		2	2		
	,0 m		12		• 150 mm (6")		3	5		
m 14 Other version 28 m 15 Add Order code and plain text m 16 m 17 m 18 m 20 m 21 0m 22	5 m		1.3		• ∠∪∪ mm (8°)		4	•		
M 15 Other version 28 m 15 Add Order code and plain text m 16 m 17 m 18 m 20 m 21 0m 22	m		14		 ≥50 mm (10) 		7 0		.	Ι,
m 16 m 17 m 18 m 20 m 21 0m 22	m		1 5		Other version		2.8		<i>x</i> 1	
5 m 17 18 m 18 20 m 21 21 0 m 22	m		16		Aud Urder code and plain text					
m 18 20 m 20 m 21 0m 22	m		17							
3 m 20 20 0 m 21 20 0 m 22	'm		18							
0 m 21 22	m		2 0							
0 m 2 2	m		2 1							
	.0 m		2 2							

Remote seals for transmitters and pressure gauges SITRANS P320/P420

				Diaphragm seals of	f sandwich design v	vith flexible	capillary
Selection and Orderin	ng data	Article No.	Order code	Selection and Orderi	ing data	Article No.	Order code
Diaphragm seal				Diaphragm seal			
Sandwich type design, with flexible capillary tube, connected with flexible capillary tube to a				Sandwich type desigr tube, connected with to a	n, with flexible capillary flexible capillary tube		
 SITRANS P320/P420 pressure or absolute (only together with ne vice), 7MF03/7MF0- Scope of delivery: 1 	transmitter for gauge pressure egative pressure ser- 4 order separately off	7 M F 0 8 0 0 -		 SITRANS P320/P420 pressure or absolute (only together with n vice), 7MF03/7MF0 Scope of delivery: 1 	D transmitter for gauge e pressure negative pressure ser- 04 order separately off	7 M F 0 8 0 0 -	
 SITRANS P320/P420 lute pressure, 7MF03 rately, Scope of deliv 	transmitter for abso- 3/7MF04 order sepa- ery: 1 off	7 M F 0 8 0 1 -		 SITRANS P320/P420 lute pressure, 7MF00 rately, Scope of deliv 	0 transmitter for abso- 3/7MF04 order sepa- very: 1 off	7 M F 0 8 0 1 -	
SITRANS P320/P420 ential pressure and fl order separately, Sco	transmitter for differ- low, 7MF03/7MF04 ope of delivery: 2 off	7 M F 0 8 0 2 -		 SITRANS P320/P420 ential pressure and order separately, Sc 	0 transmitter for differ- flow, 7MF03/7MF04 ope of delivery: 2 off	7 M F 0 8 0 2 -	
		- 0				- 0	
Customer-specific ex	tension length			Wetted parts Hastel	loy C276		
• Wetted parts stainles	s steel without coating			Range	Standard length		
Range	Standard length			20 50 mm (0.79 1.97")	50 mm (1.97")		J 1
20 50 mm (0.79 1.97")	50 mm (1.97")	4	A 1	51 100 mm (2 01 3 94")	100 mm (3.94")		J 2
51 100 mm (2.01 3.94")	100 mm (3.94")	4	A 2	101 150 mm (3.98 5.91")	150 mm (5.91")		J 3
101 150 mm (3.98 5.91")	150 mm (5.91")	4	A 3	151 200 mm (5.94 7.87")	200 mm (7.87")		J 4
151 200 mm (5.94 7.87")	200 mm (7.87")	4	A 4	Wetted parts Tantalu	um		
201 250 mm (7.91 9.84")	250 mm (9.84")	4	A 5	Range	Standard length		K 1
Wetted parts stainles coating	s steel with ECTFE			(0.79 1.97")	100 mm (2.04")		K 2
Range	Standard length			(2.01 3.94")	100 mm (3.94)		κ 2
20 50 mm (0.79 1.97")	50 mm (1.97")	1	F 1	101 150 mm (3.98 5.91")	150 mm (5.91")		К 3
51 100 mm (2.01 3.94")	100 mm (3.94")	1	F 2	151 200 mm (5.94 7.87")	200 mm (7.87")		K 4
101 150 mm (3.98 5.91")	150 mm (5.91")	1	F 3		1		
151 200 mm (5.94 7.87")	200 mm (7.87")		F 4				
201 250 mm (7.91 9.84")	250 mm (9.84")		F 5				
Wetted parts stainles	s steel with PFA coat-						
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")	1	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")	1	D 5				
Wetted parts Monel	400						
Kange	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				

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Diaphragm seals of sandwich design with flexible capillary

Onlandian and Ondering data	Ovelex e e ele
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 trans- mitters)	D61
Spark arrestor (for differential pressure and level trans- mitters)	D62
Low-temperature version (for Silicon Oil M50 only)	D67
Negative pressure services	
Negative pressure service (for gauge and absolute pressure transmitters)	D81
Negative pressure service (for differential pressure transmitters)	D83
Extended negative pressure service (for gauge and absolute pressure transmitters) (only 7MF0800)	D85
Extended negative pressure service (for differential pressure transmitters)	D88
General product approvals without explosion proof approvals	
Oil-and grease-free cleaned version (for O ₂ -appl. including certificate EN10204-2.2 (only with fill fluid Halocarbon oil max. temperature	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.	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 125250AA, wetted parts 316L only)	M64
Sealing surface with tongue to EN1092-1, form C (wetted parts 316L only)	
• DN 25 • DN 40	M70 M71
• DN 50	M72
• DN 80	M73
• DN 100 • DN 125	M74 M75
Sealing surface with spigot to EN1092-1, form E (wetted parts 316L only)	
• DN 25	M76
• DN 40	M77
• DN 50	M78
• DN 100	M80
• DN 125	M81

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

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Dianhragm coal	le of eandw	uch deelan w	ith tlavible ca	anillary
Diapinagin Sea	13 01 341141	ICH GCSIGH W		

Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
PVC protective tube	
1 m	S70
1,6 m	S71
2 m	S72
2,5 m	S73
3 m	S74
4 m	S75
5 m	S76
6 m	S77
7 m	S78
8 m	S79
9 m	S80
10 m	S81
11 m (only for 7MF0802)	S82
12 m (only for 7MF0802)	S83
13 m (only for 7MF0802)	S84
14 m (only for 7MF0802)	S85
15 m (only for 7MF0802)	S86
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	Y44

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. pres- sure	b	D	d ₅	d _M with tube	d _M w/o tube	I
		mm	mm	mm	mm	mm	mm
DN 25	PN 16	20	68	24,5	22.6	27	100
DN 40	PN 400	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. pres- sure	b	D	d ₅	d _M with tube	d _M w/o tube	1
	lb/sq.in.	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)
1 inch	150 2500	20 (0.79)	51 (2.01)	24.5 (0,96)	22.6 (0.89)	30 (1.18)	100 (3.94)
1½ inch		20 (0.79)	73 ()	38 (1.5)	30 (1.18)	40 (1.57)	100 (3.94)
2 inch		20 (0.79)	100 (3.94)	48.3 (1.9)	40 (1.57)	51 (2.01)	100 (3.94)
2½ inch		20 (0.79)	105 (4.13)	48.3 (1.9)	40 (1.57)	65 (2.56)	100 (3.94)
3 inch		20 (0.79)	134 (5.28)	72 (3)	65 (2.56)	85 (3.35)	100 (3.94)
4 inch		20 (0.79)	158 (6.22)	94 (3.69)	85 (3.35)	85 (3.35)	100 (3.94)
5 inch		22 (0.87)	186 (7.32)	125 (4.92)	116 (4.57)	116 (4.57)	100 (3.94)

Connection to J.I.S.

Nom. diame- ter	Nom. pres- sure	b	D 10K, 20K	D 30K 63K	d ₅	d _M with tube	d _M w/o tube	I
		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 $\rm d_{M}$: Effective diaphragm diameter

Remote seals for transmitters and pressure gauges SITRANS P320/P420

		Diaphragm seals of flange of	design with flexible capillary
Overview		Materials	
		• Main body	Stainless steel
	2	Wetted parts	 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, WNr. 2.4602 Tantalum
			Titanium, WNr. 3.7035
			Nickel 201
			Duplex 2205, mat. no. 1.4462
Diaphragm seals of flange design			Stainless steel 316L, gold plated, thickness approx. 25 µm
Technical specifications Diaphragm seals of flange design	with flexible capillary	Capillary	Stainless steel, mat. No. 1.4571/316Ti
Nominal diameter	Nominal pressure	• Sheath	Spiral protective tube made of stainless steel, mat.
Connecting standard EN 1092-1	DN 10/16/05/40/62/100/160/050	Sealing material in the process	10. 1.400 1/004
• DN 23 • DN 40	PN 10/16/25/40/63/100/160/250 PN 10/16/25/40/63/100/160	flanges	
• DN 50 • DN 80 • DN 100	PN 10/16/25/40/63/100 PN 10/16/25/40/100 PN 10/16/25/40	 For pressure transmitters, absolute pressure transmitters and low- pressure applications 	Copper
• DN 100	PN 16/40	 For other applications 	Viton
Connecting standard ASME B16.5		Maximum pressure	See above and the technical data of the pressure transmitter
• 1 inch • 1½ inch • 2 inch	Class 150/300/600/1500 Class 150/300/400/600/900/1500 Class 150/300/400/600/900/1500	Tube length	Without tube as standard (tube available on request)
• 3 inch	Class 150/300/600/1500	Capillary	
• 4 inch • 5 inch	Class 150/300/400/1500 Class 150/300/400	Length	Max. 10 m (32.8 ft), longer lengths on request
Connecting standard J.I.S.		 Internal diameter 	2 mm (0.079 inch)
• DN 50	10K	 Minimum bending radius 	150 mm (5.9 inch)
• DN 80 • DN 100	20K 40K	Filling liquid	
Sealing face		(for remote seals of sandwich and flange design)	Silicone oil M5
• For stainless steel, mat.	To EN 1092-1, form B1 or		Silicone oil M50
No. 1.4404/316L	ASMR B16.5 RF 125 250 AA		High-temperature oil
	ASME B16.5 RFSF		Halocarbon oil (for measuring O_2)
			Food oil (FDA listed)
		Permissible ambient temperature	Dependent on the pressure trans- mitter 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)

Remote seals for transmitters and pressure gauges SITRANS P320/P420

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Diaphragm seals of flange design with flexible capillary								
Selection and Order	ing data	Article No.	Order code	Selection and Ordering data	Article No).	Ord cod	er e
Diaphragm seal				Diaphragm seal				
Flange type design, w connected with flexible	ith flexible capillary tube, e capillary tube to a			Flange type design, with flexible capillary tube, connected with flexible capillary tube to a				
 SITRANS P320/P42 pressure or absolut (only together with vice), 7MF03/7MFI Scope of delivery: 	0 transmitter for gauge e pressure negative pressure ser- 04 order separately 1 off	7 M F 0 8 1 0 -		• SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure ser- vice), 7MF03/7MF04 order separately Scope of delivery: 1 off	7 M F 0 8 1	0 -		
 SITRANS P320/P42 lute pressure, 7MFC rately, Scope of del 	0 transmitter for abso-)3/7MF04 order sepa- ivery: 1 off	7 M F 0 8 1 1 -		SITRANS P320/P420 transmitter for abso- lute pressure, 7MF03/7MF04 order sepa- rately, Scope of delivery: 1 off	7 M F 0 8 1 1 -			
 SITRANS P320/P42 ential pressure and order separately, So 	0 transmitter for differ- flow, 7MF03/7MF04 cope of delivery: 2 off	7 M F 0 8 1 2 -		 SITRANS P320/P420 transmitter for differ- ential pressure and flow, 7MF03/7MF04 order separately, Scope of delivery: 2 off 	7 M F 0 8 1 2 -			
		- 0				• 0	- 14	
Click on the Article figuration in the PL	e No. for the online con- A Life Cycle Portal.			Connecting standard J.I.S. (DN 50 recommended only for pressure				
Nominal diameter	Nominal pressure			transmitters)				
Connecting standard	FN 1092-1			DN 50 10 K	2 E S			
(DN 25, DN 40 and D	N 50 recommended			20 K	2 E T			
only for pressure tran	smitters)			40 K	2 E U			
DN 25	PN 10/16/25/40	0 B D			265			
	PN 63/100	0 B F		20 K	2 G II			
	PN 160	OBG		DN 100 10 K	2 H S			
	PN 250	088		20 K	2 H T			
DIN 40	PN 10/16/25/40			40 K	2 H U			
	PN 03/100 PN 160			Other version	9 A A		H	1 Y
DN 50	PN 10/16/25/40	0 E D		Add Order code and plain text				
51100	PN 63	0 E E		Transmitter connection				
	PN 100	0 E F		Connection via capillary tube				
DN 80	PN 10/16/25/40	0 G D		Length of capillary	1.0			
	PN 100	0 G F		1 m	11			
DN 100	PN 10/16	0 H B		1,0111 2 m	12			
	PN 25/40	0 H D		25 m	13			
DN 125	PN 16	0 J B		3 m	14			
	PN 40	010		4 m	1 5			
Connecting standard	ASME B16.5			5 m	16			
(1 inch, 11/2 inch and	2 inch recommended			6 m	17			
only for pressure tran	smitters)	1 1 1		7 m	18			
T INCH	class 150			8 m	20			
	class 600	1 K N		9 m 10 m	21			
	class 1500	1 K P		10 m (only for 7ME0812)	22			
1½ inch	class 150	1LA		12 m (only for 7MF0812)	2 4			
	class 300	1LB		13 m (only for 7MF0812)	2 5			
	class 400/600	1 L D		14 m (only for 7MF0812)	2 6			
	class 900/1500	1LF		15 m (only for 7MF0812)	2 7			
2 inch	class 150	1 M A		Other version	98		L	1 Y
	class 300	1 M B		Add Order code and plain text				
	class 400/600	1 M E		Filling liquid				
3 inch	class 150	1 P A		Silicone oil M5		Α		
	class 300	1 P B		Silicone oil M50		B		
	class 600	1 P D		High-temperature oli Halocarbon oli		C		
	class 1500	1 P F		Food-grade oil (FDA grade)		F		
4 inch	class 150	1QA		Other version		7	P	1 Y
	class 300	1QB		Add Order code and plain text				
	class 400	1QC						
	class 1500	1QF						
5 inch	class 150	184						
	class 300	TRB						
	CIASS 400	TRC						

Pressure Measurement

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Diaphragm seals of flange design with flexible ca									capillary	
Selection and Orderi	ng data	Article No.	0	rder ode		Selection and Ordering	ng data	Article No.	Order code	
Diaphragm seal						Diaphragm seal				
Flange type design, wit connected with flexible	th flexible capillary tube, capillary tube to a					Flange type design, wit connected with flexible	h flexible capillary tube, capillary tube to a			
 SITRANS P320/P420 pressure or absolute (only together with n vice), 7MF03/7MF0 Scope of delivery: 1) transmitter for gauge pressure legative pressure ser- 14 order separately off	7MF0810-				 SITRANS P320/P420 pressure or absolute (only together with n vice), 7MF03/7MF0 Scope of delivery: 1 	7MF0810-			
 SITRANS P320/P420 lute pressure, 7MF03 rately, Scope of deliv) transmitter for abso- 3/7MF04 order sepa- very: 1 off	7MF0811-				 SITRANS P320/P420 lute pressure, 7MF03 rately, Scope of deliv 	transmitter for abso- 3./7MF04 order sepa- very: 1 off	7 M F 0 8 1 1 -		
 SITRANS P320/P420 ential pressure and order separately, Sc) transmitter for differ- flow, 7MF03/7MF04 ope of delivery: 2 off	7 M F 0 8 1 2 -				 SITRANS P320/P420 ential pressure and f order separately, Sco 	transmitter for differ- low, 7MF03/7MF04 ope of delivery: 2 off	7 M F 0 8 1 2 -		
		- 0						- 0		
Wetted parts materia	ls					Wetted parts stainles	s steel with ECTFE			
Stainless steel 316L						coating	Standard length			
Without coating		A					50 mm (1 07")		E 1	
With PFA coating With PTFE coating		D	0			(0.79 1.97")	50 mm (1.97)		F 1	
With ECTFE coating Monel 400, 2,4360		F	Ū			51 100 mm (2.01 3.94")	100 mm (3.94")		F 2	
Hastelloy C276, 2.481	9	J				101 150 mm (3.98 5.91")	150 mm (5.91")		F 3	
Tantalum Titanium, 3.7035		K L	0			151 200 mm (5.94 7.87")	200 mm (7.87")		F 4	
Nickel 201 Diaphragm Duplex, 1.4462		M Q	0			201 250 mm (7.91 9.84")	250 mm (9.84")		F 5	
Diaphragm plus flang	e Duplex, 1.4462	R				Wetted parts stainless	s steel with PFA coating			
Stainless steel 316L w Hastellov C4 2 4610	with gold coating	S	0			Range	Standard length			
Hastelloy C22, 2.4602	2	v	0			20 50 mm (0.79 1.97")	50 mm (1.97")		D 1	
Other version Add Order code and	plain text	Z	8	Q1Y		51 100 mm (2.01 3.94")	100 mm (3.94")		D 2	
Extension length • without			0			101 150 mm (3.98 5.91")	150 mm (5.91")		D 3	
• 50 mm (2")			1			151 200 mm (5.94 7.87")	200 mm (7.87")		D 4	
• 100 mm (4') • 150 mm (6")			3			201 250 mm (7.91 9.84")	250 mm (9.84")		D 5	
• 250 mm (10")			5			Wetted parts Monel 4	00			
Other version		Z	8	Q 1 Y		Range	Standard length			
Add Order code and	plain text	_				20 50 mm (0.79 1.97")	50 mm (1.97")		G 1	
Customer-specific ex	ctension length					51 100 mm	100 mm (3.94")		G 2	
wetted parts stainles Range	ss steel without coating Standard length					101 150 mm (3.98 5 91")	150 mm (5.91")		G 3	
20 50 mm (0.79 1.97")	50 mm (1.97")	Α	1			151 200 mm (5.94 7.87")	200 mm (7.87")		G 4	
51 100 mm (2.01 3.94")	100 mm (3.94")	A	2			Wetted parts Hastello	by C276			
101 150 mm (3.98 5.91")	150 mm (5.91")	A	3			Range	Standard length			
151 200 mm (5.94 7.87")	200 mm (7.87")	A	4			∠0 50 mm (0.79 1.97")	50 mm (1.9/")		J 1	
201 250 mm (7.91 9.84")	250 mm (9.84")	A	5			(2.01 3.94")	150 mm (5.94")		12	
、 -····································						(3.98 5.91")	150 MM (5.91.)		0.0	
						151 200 mm (5.94 7.87")	200 mm (7.87")		J 4	

Remote seals for transmitters and pressure gauges SITRANS P320/P420

7MF0811-

7MF0812-

- 0

Diaphragm seals of flange design with flexible capillary Selection and Ordering data Article No. Order code

- vice), 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

Wetted parts Tantalum

• Welleu parts Taritalui		
Range	Standard length	
20 50 mm (0.79 1.97")	50 mm (1.97")	К 1
51 100 mm (2.01 3.94")	100 mm (3.94")	К 2
101 150 mm (3.98 5.91")	150 mm (5.91")	К 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 trans- mittare)	D61
Spark arrestor (for differential pressure and flow trans- mitters)	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
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	E80
(only with fill fluid Halocarbon oil max, temperature 60 °C and max, pressure 50 bar)	F87
(only with fill fluid Halocarbon oil)	207
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 125250AA, 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 • DN 125	M74 M75
Sealing surface with spigot to EN1092-1, form E	into
(wetted parts 316L only)	MZC
• DN 20 • DN 40	M77
• DN 50	M78
• DN 80	M79
• DN 100	M80

M81

• DN 125

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Selection and Ordering data	Order code	Selection and Orderin
Further designs		Further designs
Add "-Z" to Article No. and specify Order code.		Add "-Z" to Article No. a
Sealing surface with recess to EN1092-1, form F (wetted parts 316L only)		PVC protective tube
• DN 25	M82	16m
• DN 40	M83	2 m
• DN 50	M84	2,5 m
• DN 80	M85	3 m
• DN 100	M86	4 m
• DN 125	M87	5 m
Capillary connection		6 m 7 m
For 7MF0810		7 111 8 m
Radial capillary pipe outlet (for single-side mounting and capillary connection only)	S01	9 m 10 m
Single-side mounted at differential pressure transmit- ters at high-side	S03	11 m (only for 7MF0802
Single-side mounted at differential pressure transmitters at low-side	S04	13 m (only for 7MF0802 14 m (only for 7MF0802
Elongated pipe, 150 mm instead of 100 mm	S05	15 m (only for 7MF0802
Elongated pipe, 200 mm instead of 100 mm	S06	
Elongated pipe elbow, 200 mm instead of 130 mm	S07	Device settings
cooling element	508	Uperating lemperature
For 7MF0811 Radial capillary pipe outlet (for single-side mounting	S01	Static pressure: bar (
and capillary connection only)		Customer specific exte length in plain text)
Padial capillary pipe outlet (for double side mounting	602	
) 302	
PE protective tube	S10	
16m	S10 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 10 m	520	
11 m (only for 7ME0802)	S21	
12 m (only for 7MF0802)	S23	
13 m (only for 7MF0802)	S24	
14 m (only for 7MF0802)	S25	
15 m (only for 7MF0802)	S26	
PTFE protective tube	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 /MF0802)	S52	
12 III (UIIIY IUI / IVIFU8U2) $13 m (only for 7ME0802)$	503 854	
14 m (only for 7ME0802)	S55	
15 m (only for 7ME0802)	S56	

Diaphragm seals of flange design with flex	kible capillary
Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
PVC protective tube	
1 m	S70
1,6 m	S71
2 m	S72
2,5 m	S73
3 m	S74
4 m	S75
5 m	S76
6 m	S77
7 m	S78
8 m	S79
9 m	S80
10 m	S81
11 m (only for 7MF0802)	S82
12 m (only for 7MF0802)	S83
13 m (only for 7MF0802)	S84
14 m (only for 7MF0802)	S85
15 m (only for 7MF0802)	S86
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	Y44

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)

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Diaphragm seals of flange design with flexible capillary

Connectio	n to EN 1092	2-1										
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	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
	PN 63/100	24	140	18	68	24.5	22.6	27	2	100	4	200
	PN 160	24	140	18	68	24.5	22.6	27	2	100	4	150 oder
	PN 250	28	150	22	68	24.5	22.6	27	2	105	4	200
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

diameter	pressure			2	-4	-5	with exten-	without exten- sion				-
	lb./sq.in	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,
	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	3.94, 5.94
	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	oder
	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	(0,
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	50, 100
	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	150
	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	oder 200)
	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	

Remote seals for transmitters and pressure gauges SITRANS P320/P420

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)
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,
	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	100, 150
	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	oder
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	- 200
	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	3.94,
	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	5.94 oder
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	

Materials

Pressure Measurement

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Dia	nhragm sea	is of fland	ne desio	in directly	v fitted on	transmitter
210	pinayin sea	15 OF Harry	je ucsig	in an eeu	y mucu on	uansinuei



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

	connection	
Technical specifications		Maximum pressure
Diaphragm seals (flange design) f sure, directly fitted on a transmitte	or pressure and absolute pres- er	Tube length
Nominal diameter	Nominal pressure	lassingth
Connecting standard EN 1092-1		
 DN 25 DN 40 DN 50 DN 80 DN 100 DN 125 Connecting standard ASME B16.5 1 inch 1½ inch 2 inch 3 inch 4 inch 5 inch 	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 Class 150/300/600/1500 Class 150/300/400/600/900/1500 Class 150/300/400/600/900/1500 Class 150/300/400/1500 Class 150/300/400	Capillary • Length • Internal diameter • Minimum bending r Filling liquid
Connecting standard J.I.S.		
 DN 50 DN 80 DN 100 Sealing face For stainless steel, mat. No. 1.4404/316L For the other materials 	10K 20K 40K 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	Max. recommended temperature Permissible ambient
		Weight

Main body	Stainless steel, 1.4404/316L
Wetted parts	Stainless steel, 1.4404/316L
	 Without coating
	 PTFE coating
	 ECTFE coating (for vacuum on request)
	 PFA coating
	Monel 400, mat. No. 2.4360
	Hastelloy C276, mat. No. 2.4819
	Hastelloy C4, mat. No. 2.4602
	Tastelloy C22, mat INO. 2.4602
	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)
	• 200 mm (7.87 inch)
Copillon	
	May 10 m (20.0 ft) langer
• Length	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 trans- mitter 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 liq- uids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Diaphragm seals of flange design directly fitted on transmitter

Selection and Order	ing data	Article No.	Order code	Selection and Ordering data	Article No.		Ord cod	er e
Diaphragm seal				Diaphragm seal				-
Flance type design di	irectly mounted to a			Elange 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		7 M F 0 8 1 0 -		 SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure ser- vice), 7MF03/7MF04 order separately Scope of delivery: 1 off 	7 M F 0 8 1 0	•		
		- 0			- 0			
Click on the Article figuration in the PL	e No. for the online con- A Life Cycle Portal.			Transmitter connection Without capillary tube, direct mount straight	0 0			
Nominal diameter	Nominal pressure			connection (for gauge pressure)	0.1			
Connecting standard	EN 1092-1			tion via 90°-bow (for gauge pressure)	01			
DN 25	PN 10/16/25/40 PN 63/100 PN 160	0 B D 0 B F 0 B G		Filling liquid Silicone oil M5		A		
	PN 250	0 B H		Silicone oil M50		В		
DN 40	PN 10/16/25/40	0 D D		High-temperature on Halocarbon oil		D D		
	PN 63/100	0 D F		Food-grade oil (FDA listed)		E		
	PN 160	0 D G		Other version		z	P	1 Y
DIN 50	PN 10/16/25/40 PN 63			Add Order code and plain text				
	PN 100	OEF		Wetted parts materials				
DN 80	PN 10/16/25/40	0 G D		Stainless steel 316L				
	PN 100	0 G F		 Without coating 		Α		
DN 100	PN 10/16	0 H B		With PFA coating		D		
DN 405	PN 25/40	OHD		With PIFE coating		EO		
DN 125	PN 16 PN 40	018		With ECTFE coating Monol 400, 2,4360		F		
Connecting stondard		000		Hastellov C276. 2.4819		J		
1 inch	class 150	1 K I		Tantalum		к		
1 IIIOII	class 300	1 KM		Titanium, 3.7035		L 0		
	class 600	1 K N		Nickel 201		M O		
	class 1500	1 K P		Diaphragm Duplex, 1.4462		Q		
1½ inch	class 150	1LA		Stainless steel 316L with gold coating		S O		
	class 300	1LB		Hastellov C4, 2,4610		UO		
	class 900/1500	11 F		Hastelloy C22, 2.4602		V 0		
2 inch	class 150	1 M A		Other version		Z 8	Q	1 Y
	class 300	1 M B		Add Order code and plain text				
	class 400/600	1 M D		Extension length				
0	class 900/1500	1MF		• without		0		
3 INCN	CIASS 150	1 P B		• 50 mm (2")		1		
	class 600	1 P D		• 150 mm (6")		2		
	class 1500	1 P F		• 200 mm (8")		4		
4 inch	class 150	1QA		• 250 mm (10")		5		
	class 300	1 Q B		Other version		Z 8	Q	1 Y
	class 400	100		Add Order code and plain text				
5 inch	class 1500	10F						
	class 300	188						
	class 400	1 RC						
Connecting standard	J.I.S.							
DN 50	10K	2 E S						
	20K	2 E T						
DILOG	40K	2 E U						
UN 80	10K	2 G S						
	ZUN 40K	261						
DN 100	10K	2 H S						
	20K	2 H T						

Other version

Add Order code and plain text

20K 40K

2 H U

9 A A

H 1 Y

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Diaphragm seals of flange design directly fitted on transmitte									
Selection and Ordering	Article No.	C	ode	:	Selection and Ordering	ng data	Article No.	Order code	
Diaphragm seal					Ē	Diaphragm seal			
Flange type design, directly mounted to a					F	Flange type design, dir	ectly 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-			•	 SITRANS P320/P420 pressure or absolute (only together with n vice), 7MF03/7MF0 Scope of delivery: 1 	7 M F 0 8 1 0 -		
<u> </u>		- 0			-		0.070	- 0	
Customer-specific ex	tension length				•	 Wetted parts Hastello Bange 	by C276 I Standard length		
 Wetted parts stainles Pango 	ss steel without coating				-	20 50 mm	50 mm (1.97")		14
	50 mm (1 07")		A 1		((0.79 1.97")	50 mm (1.97)		51
(0.79 1.97")	50 mm (1.97)		AI		Ę	51 100 mm	100 mm (3.94")		J 2
51 100 mm (2.01 3.94")	100 mm (3.94")		A 2		((2.01 3.94") 101 150 mm (2.08 5.01")	150 mm (5.91")		J 3
101 150 mm	150 mm (5.91")		A 3			151 200 mm	200 mm (7.87")		J 4
151 200 mm	200 mm (7.87")		A 4		((5.94 7.87")			
(5.94 7.87")						• Wetted parts Tantalur	n		
201 250 mm (7 91 9 84")	250 mm (9.84")		A 5		-	Range	Standard length		
Wetted parts stainles coating	l s steel with ECTFE				(20 50 mm (0.79 1.97")	50 mm (1.97")		K 1
Range	Standard length				((2.01 3.94")	100 mm (3.94)		N 2
20 50 mm	50 mm (1.97")		F 1			101 150 mm	150 mm (5.91")		К 3
(0.79 1.97") 51 100 mm	100 mm (3.94")		F 2			(3.98 5.91) 151 200 mm (5.94 7.87")	200 mm (7.87")		К 4
(2.01 3.94") 101 150 mm (2.08 5.01")	150 mm (5.91")		F 3			(0.04 1.01)			
(5.96 200 mm (5.94 7.87")	200 mm (7.87")		F 4						
201 250 mm (7.91 9.84")	250 mm (9.84")		F 5						
Wetted parts stainless	s 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 4	100								
Range	Standard length								
20 50 mm (0.79 1.97")	50 mm (1.97")		G1						
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						

Pressure Measurement

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Diaphragm seals of flange design directly fitted on transmitter

Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
Factory certificates	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	C12
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009) (only together with seal diaphragm made of Hastelloy and stainless steel)	C13
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	C15
Certificate of FDA-approved fill oil (to EN10204-2.2)	C17
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (Includes SIL conformity declaration)	C20
Accessories	
Spark arrestor (for gauge and absolute pressure transmitters)	D61
Low-temperature version (for Silicon Oil M50 only)	D67
Negative pressure services	
Negative pressure service (for gauge and absolute pressure transmitters)	D81
Extended negative pressure service (for gauge and absolute pressure transmitters) (only for 7MF0810)	D85
General product approvals without explosion proof	
approvals	
Oil-and grease-free cleaned version (for O ₂ -appl. including certificate EN10204-2.2 (only with fill fluid Halocarbon oil max. temperature	E80
Oil-and grease-free cleaned version (not for O_2 -appl. including certificate EN10204-2.2	E87
Sealing surface	1450
RFSF/ANSI B16.5 (wetted parts 316L only)	IVI50
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 125250AA, wetted parts 316L only)	M64
Sealing surface with tongue to EN1092-1, form C (wetted parts 316L only)	
• DN 25	M70
• DN 40	M71 M72
• DN 80	M73
• DN 100	M74
• DN 125	M75
Sealing surface with spigot to EN1092-1, form E	
• DN 25	M76
• DN 40	M77
• DN 50	M78
• DN 80	M79
DN 100 DN 125	M80 M81

Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
Sealing surface with recess to EN1092-1, form F (wetted parts 316L only) • DN 25 • DN 40 • DN 50 • DN 80 • DN 100 • DN 125	M82 M83 M84 M85 M86 M87
Device settings	
Operating Temperature; Lower range value °C (°F), upper range value °C (°F) Static pressure: bar (psi)	Y10 Y11
Customer specific extension length (enter required length in plain text)	Y44

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Diaphragm seals of flange design directly fitted on transmitter

Dimensional drawings



Horizontal process connection

¹⁾ 200 (7.9) with option R20, 278 (11.0) with cooling element opt. R22)

²⁾ 324 (12.8) with option R20, 326 (12.9) with cooling element opt. R22) ³⁾ 283 (11.14) with option R21

⁴⁾ 318 (12.52) with option R21

(bottom)), dimensions in mm (inch)

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

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 exten- sion	d _M without exten- sion	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
	PN 63/100	24	140	18	68	24.5	22.6	27	2	100	4	200
	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 exten- sion	d _M without exten- sion	f	k	n	L
	lb./sq.in	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)		inch (mm)
1 inch	150	0.71 (18)	4.33 (110)	0.61 (15.6)	2 (50.8)	0.96 (24.5)	0.89 (22.6)	1.18 (30)	0.08 (2)	3.13 (79.4)	4	0, 2,
	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	3.94, 5.94
	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	oder
	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	(0,
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	50, 100
	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	150
	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	oder 200)
	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	

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Diaphragm seals of flange design directly fitted on transmitter

Connection	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)
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,
	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	100, 150
	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	oder
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
	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	3.94,
	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	5.94 oder
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 $d_{M} : \mbox{Effective diaphragm diameter}$

Materials

Main body

Pressure Measurement

Remote seals for transmitters and pressure gauges SITRANS P320/P420

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 • DN 50 • DN 80 • DN 100 • DN 125	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								
 1½ inch 2 inch 3 inch 4 inch 5 inch Connecting standard J.I.S. 	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							
• DN 50 • DN 80 • DN 100	10К 20К 40К							
Sealing faceFor stainless steel, mat. No. 1.4404/316LFor 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							

 Wetted parts Capillary Sheath 	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, WNr. 2.4602 Tantalum Titanium, WNr. 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
Sealing material in the process flanges	
 For pressure transmitters, absolute pressure transmitters and low- pressure applications 	Copper
 For other applications 	Viton
Maximum pressure	See above and the technical data of the pressure transmitter
Tube length	Without tube
	50 mm (1.97 inch)
	100 mm (3.94 inch)
	150 mm (5.91 inch)
	200 mm (7.87 inch)
Capillary	
• Length	Max. 10 m (32.8 ft), longer lengths on request
Internal diameter	2 mm (0.079 inch)
 Minimum bending radius 	150 mm (5.9 inch)
Filling liquid	Silicone oil M5
	Silicone oil M50
	High-temperature oil
	Halocarbon oil (for measuring O_2)
	Food oil (FDA listed)
Max. recommended process temperature	170 °C (338 °F)
Permissible ambient temperature	Dependent on the pressure trans- mitter 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 liq- uids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)

Stainless steel, 1.4404/316L

Remote seals for transmitters and pressure gauges SITRANS P320/P420

			1	Diaphragr	n seals of flange design fixed connect	on and witl	h capillary
Selection	n and Order	ring data	Article No.	Order code	Selection and Ordering data	Article No.	Order code
Diaphrag	ım seal				Diaphragm seal		
Flange ty high-side low-side t	Flange type design, direct connected at high-side and with flexible capillary tube at low-side to				Flange type design, direct connected at high-side and with flexible capillary tube at low-side to		
 SITRAN ential pr 7MF03 Scope of 	IS P320/P42 ressure and ./7MF04 or	20 transmitter for differ- flow, rder separately 2 off	7 M F 0 8 1 3 -		 SITRANS P320/P420 transmitter for differ- ential pressure and flow, 7MF03/7MF04 order separately Scope of delivery: 2 off 	7 M F 0 8 1 3	•
000000	on donvory. I		- 0			- 0	
↗ Click c figurat	on the Article ion in the PI	e No. for the online con- A Life Cycle Portal.			Length of capillary tube at low-side 1 m	1 0	
Nominal	diameter	Nominal pressure			1,6 m	11	
Connectir	ng standard	I EN 1092-1			2 m	12	
DN 40	0	PN 10/16/25/40	0 D D		2,5 m	13	
		PN 63/100	0 D F		3 m 4 m	14	
		PN 160	0 D G		4 III 5 m	15	
DN 50		PN 10/16/25/40	0 E D		6 m	17	
		PN 63	0 E E		7 m	18	
		PN 100	0 E F		8 m	2.0	
DN 80		PN 10/16/25/40	OGD		9 m	21	
		PN 100	OGF		10 m	2 2	
DN 100		PN 10/16	0 H B		Other version	98	L1Y
		PN 25/40			Add Order code and plain text		
DIN 125			0 1 0		Filling liguid	-	
			030		Silicone oil M5		Α
Connectir	ng standard	ASME B16.5			Silicone oil M50		в
1½ inch		class 150	1 L A		High-temperature oil		С
		class 300	1LB		Halocarbon oil		D
		class 400/600	110		Food-grade oil (FDA listed)		E
Qinah		class 900/1500			Other version		Z P1Y
2 Inch		class 150			Add Order code and plain text		
		class 400/000	1 M E				
3 inch		class 300/1300	1 P A				
0 11011		class 300	1 P B				
		class 600	1 P D				
		class 1500	1 P F				
4 inch		class 150	1 Q A				
		class 300	1 Q B				
		class 400	1QC				
		class 1500	1QF				
5 inch		class 150	1 R A				
		class 300	1 R B				
		class 400	1 R C				
Connectir	ng standard	I J.I.S.					
DN 50		10K	2 E S				
		20K	2 E T				
		40K	2 E U				
DN 80		10K	2 G S				
		20K	2 G T				
		40K	2 G U				
DN 100		10K	2 H S				
		20K	2 H T				
		40K	2 H U				
Other ver Add Orde	sion er code and	plain text	9 A A	H 1 Y			

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Remote seals for transmitters and pressure gauges SITRANS P320/P420

Diaphragm seals of flange design fixed connection and with capillary

Selection and Orderin	ng data	Article No.	Order code	Selection	Selection and Ordering data			Order code	
Diaphragm seal				Diaphragr	n seal				
Flange type design, di high-side and with flex low-side to	rect connected at ible capillary tube at			Flange typ high-side a low-side to	e design, di and with flex	rect connected at ible capillary tube at			
 SITRANS P320/P420 transmitter for differ- ential pressure and flow, 7MF03/7MF04 order separately Scope of delivery: 2 off 		7 M F 0 8 1 3 -		 SITRANS ential pre 7MF03/ Scope of 	 SITRANS P320/P420 transmitter for differ- ential pressure and flow, 7MF03/7MF04 order separately Scope of delivery: 2 off 			7MF0813-	
		- 0					- 0		
Wetted parts materia	ls			Wetted p	arts stainless	steel with PFA coating			
Stainless steel 316L				Range		Standard length			
Without coating		A		20 50 m	m יידג)	50 mm (1.97")	D	1	
With PFA coating With PTFE coating With ECTEEE coating	1	E O E		51 100 r (2.01 3.9	nm 94")	100 mm (3.94")	D	2	
With ECTFFE coating Monel 400, 2.4360 Hastellov C276, 2.4819		G		101 150 (3.98 5.9	mm ∂1")	150 mm (5.91")	D	3	
Tantalum	5	K		151 200 (5.94 7.8	mm 37")	200 mm (7.87")	D	4	
Nickel 201	1462	MO		201 250 (7.91 9.8	mm 34")	250 mm (9.84")	D	5	
Diaphragm plus flange	e Duplex, 1.4462	R		Wetted p	arts Monel 4	00			
Stainless steel 316L w	ith gold coating	S 0		Range					
Hastelloy C4, 2.4610		U O		20 50 m (0.79 1.9	m 97")	50 mm (1.97")	G	1	
Other version		Z 8	Q 1 Y	51 100 r (2.01 3.9	nm 94")	100 mm (3.94")	G	2	
Add Order code and p	blain text			101 150	mm 21")	150 mm (5.91")	G	3	
• without • E0 mm (0")		0		151 200 (5.94 7.8	mm 37")	200 mm (7.87")	G	4	
• 100 mm (4")		2		Wetted p	arts Hastello	y C276			
• 150 mm (6")		3		Range		Standard length			
• 200 mm (8") • 250 mm (10")		4 5		20 50 m (0.79 1.9	m 97")	50 mm (1.97")	J	1	
Other version Add Order code and p	olain text	Z 8	Q1Y	51 100 r (2.01 3.9	nm 94")	100 mm (3.94")	J	2	
Customer-specific ex	tension length			101 150	mm 91")	150 mm (5.91")	J	3	
Wetted parts stainles Range	s steel without coating Standard length			151 200 (5.94 7.8	mm 37")	200 mm (7.87")	J	4	
 20 50 mm	50 mm (1.97")	A 1		Wetted p	arts Tantalun	n			
(0.79 1.97")				Range		Standard length			
51 100 mm (2.01 3.94")	100 mm (3.94")	A 2		20 50 m (0.79 1.9	m 97")	50 mm (1.97")	к	1	
(3.98 5.91")	150 mm (5.91)	А 3		51 100 r	mm 94")	100 mm (3.94")	к	2	
151 200 mm (5.94 7.87")	200 mm (7.87")	A 4		101 150	mm 91")	150 mm (5.91")	к	3	
201 250 mm (7.91 9.84")	250 mm (9.84")	A 5		151 200 (5.94 7.8	mm 37")	200 mm (7.87")	к	4	
Wetted parts stainles coating	s steel with ECTFE				I				
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							

F 3

F 4

F 5

150 mm (5.91")

200 mm (7.87")

250 mm (9.84")

101 ... 150 mm (3.98 ... 5.91")

151 ... 200 mm (5.94 ... 7.87")

201 ... 250 mm (7.91 ... 9.84")

Remote seals for transmitters and pressure gauges SITRANS P320/P420

	Diaphrag	m 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	PE protective tube 1 m	S10
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	C12	1,6 m 2 m	S11 S12
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	2,5 m 3 m 4 m	S13 S14 S15 S16
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	C15	6 m 7 m	S10 S17 S18
Certificate of FDA-approved fill oil (to EN10204-2.2)	C17	8 m	S19
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (Includes SIL conformity declaration)	C20	9 m 10 m PTEE protective tube	S20 S21
		1 m	S40
Spark arrestor (for differential pressure and level transmit- ters)	D62	1,6 m 2 m	S41 S42
Low-temperature version (for Silicon Oil M50 only)	D67	2,5 m	S43
Negative pressure services		3 m	S44
Negative pressure service (for differential pressure	D83	4 m	S45
transmitters) Extended pegative pressure service (for differential	D88	6 m	S40 S47
pressure transmitters)	200	7 m	S48
General product approvals without explosion proof		8 m	S49
approvals		9 m	S50
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) Oil-and grease-free cleaned version (not for O_2 -appl. including certificate EN10204-2.2	E80 E87	PVC protective tube 1 m 1,6 m 2 m 2.5 m	S70 S71 S72 S73
		3 m	S74
		4 m	S75
RESE/ANSI B16.5 (wetted parts 316L only)	M50	5 m	S76
Sealing surface groove to EN1092-1, form D	M54	7 m	S78
(instead of sealing surface B1, wetted parts 316L only)		8 m	S79
Sealing surface RJF (groove) to ASME B16.5 (instead of sealing surface RF 125250AA, wetted	M64	9 m 10 m	S80 S81
Sealing surface with tongue to EN1002.1. form C		Device settings	
(wetted parts 316L only) • DN 25	M70	Operating Temperature; Lower range value °C (°F), upper range value °C (°F)	Y10
• DN 40	M71	Static pressure: bar (psi)	Y11
• DN 50	M72	Customer specific extension length (enter required	Y44
• DN 80	M73	length in plain text)	
• DN 100	M74 M75		
 DN 123 Sealing surface with spigot to EN1092-1, form E (wetted parts 316L only) DN 25 DN 40 DN 50 DN 80 DN 100 DN 125 	M76 M77 M78 M79 M80 M81		
Sealing surface with recess to EN1092-1, form F (wetted parts 316L only) • DN 25 • DN 40 • DN 50 • DN 80 • DN 100	M82 M83 M84 M85 M86		

M87

• DN 125

Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
Capillary coating	
PE protective tube	
1 m	S10
1,6 m	S11
2 m	S12
2,5 m	S13
3 m	S14
4 m	S15
5 m	S16
6 m	S17
7 m	S18
8 m	S19
9 m	S20
10 m	S21
PTFE protective tube	
1 m	S40
1,6 m	S41
2 m	S42
2,5 m	S43
3 m	S44
4 m	S45
5 m	S46
6 m	S47
/ m	S48
8 m	S49
9 m 10 m	550
10 m	551
PVC protective tube	070
1 m 1 0 m	570
1,6 m	5/1
2 III 2 E m	5/2
2,5 III 2 m	573
4 m	S75
5 m	S76
6 m	S77
7 m	S78
8 m	S79
9 m	S80
10 m	S81
Device settings	
	V10
upper range value °C (°F)	110
Static pressure: bar (psi)	Y11
Customer specific extension length (enter required	Y44
length in plain text)	144

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Remote seals for transmitters and pressure gauges SITRANS P320/P420

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)

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Diaphragm seals of flange design fixed connection and with capillary

Nominal diameter	Nominal pressure	b	D	d ₂	d ₄	d ₅	d _M with exten-	d _M without exten-	f	k	n	L
							sion	sion				
		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
	PN 63/100	24	170	22	88	38	30	42	2	125	4	200
	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 exten- sion	d _M without exten- sion	f	k	n	L
	lb./sq.in	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)		inch (mm)
1½ inch	150	0.63 (15.9)	4.92 (125)	0.63 (15.9)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.08 (2)	3.87 (98.4)	4	0, 2,
	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	3.94, 5.94
	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	oder
	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	(0, 50,
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	100,
	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	oder
	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	200)
	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	

160 (6.30) 94 (3.7) 85 (3.35) 85 (3.35) 2

165 (6.50) 94 (3.7) 85 (3.35) 85 (3.35) 2

n L

4

8 150 8 oder

8

8

8

8

8

8

185 (7.28)

205 (8.07)

mm (inch)

0, 50, 100, 150

200

(0, 2, 3.94, 5.94

oder

7.87)

Pressure Measurement

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Diaphragm seals of flange design fixed connection and with capillary

22 (0.87) 225 (8.86) 23 (0.91)

36 (1.42) 250 (9.84) 25 (0.98)

<u>Connectio</u>	n 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
		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)
	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)
	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)
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)
	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)
	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)
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)

d: Internal diameter of gasket to DIN 2690

d_M: Effective diaphragm diameter

20K

40K

Remote seals for transmitters and pressure gauges SITRANS P320/P420

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

Overview



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

Technical specifications

Diaphragm seal, screwed gland w	Diaphragm seal, screwed gland with inside diaphragm							
Process connection	Nominal pressure	• Leng						
• Open flange EN1092-1		 Inter 						
- DN 15 - DN 20 - DN 25	PN 10/16/25/40/63/100/160/250 PN 10/16/25/40 PN 10/16/25/40/63/100/160/250	• Mini • Shea						
Open flange ASME B16.5		Filling						
- ½ inch, ¾ inch, 1 inch	Class 150/300/600/1500							
Thread to EN 837-1								
- G¼"B, G½"B, G¾"B, G1"B	PN 100/250							
Thread ASME B1.20.1								
- 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	Class 1500/3675 Class 1500/3675 Class 1500/3675 Class 1500/3675	Max. r peratu Permis						
Sealing face for open measurement flange								
 For stainless steel, mat. no. 1.4404/316L 	To EN 1092-1, form B1 or ASME B16.5 RF 125 250 AA							
Materials								
• Lower section (in the case of pro- cess connection thread)	Stainless steel, Mat. no. 1.4404/316L	Weigh						
Diaphragm	Stainless steel, Mat. no. 1.4404/316L	Certif						
	 No coating 	Dress						
	 With PTFE coating 	(PED 2						
	Monel 400, mat. no. 2.4360							
	Hastelloy C276, mat. no. 2.4819							
	Hastelloy C4, mat. no. 2.4602							
	Tantal							
	Stainless steel 316L, gold plated, thickness approx. 25 μm							
• Top section (process connection in the case of an open measure- ment flange)	Stainless steel, mat. no. 1.4404/316L							
• Capillary	Stainless steel 1.4571/316Ti							
 Sealing material on the process connection 	Viton or copper (in the case of vacuum-free version)							
Sealing material between top and bottom section	Viton (FKM) (standard) Teflon (PTFE) metal spring ring (silver-coated)							



Process connection, open measuring flange

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
Silicone oil M5
 Silicone oil M50
 High-temperature oil
 Halocarbon oil (for measuring O₂)
 Food oil (FDA listed)
170 °C (338 °F)
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
Approx. 1.5 kg (3.3 lb)
For gases of fluid group 1 and liq- uids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Diap

Diaphragm se	eal, screwed design dire	ectly moun	ted or/and	i with capillary			
Selection and O	rdering data	Article No.	Order code	Selection and Ordering data	Article No.		Order code
Diaphragm seal	threaded design			Diaphragm seal threaded design			
With inside diaphi connected via flex	ragm, directly connected or kible capillary tube to a			With inside diaphragm, directly connected or connected via flexible capillary tube to a			
 SITRANS P320, pressure or abs er with negative 7MF03/7MF04 Scope of delive 	/P420 transmitter for gauge solute pressure (only togeth- pressure service), order separately ery: 1 off	7 M F 0 8 4 0 ·		 SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only togeth- er with negative pressure service), 7MF03/7MF04 order separately Scope of delivery: 1 off 	7 M F 0 8 4	0 -	
SITRANS P320, ential pressure 7MF03/7MF04 Scope of delive	/P420 transmitter for differ- and flow, L. order separately, rry: 2 off	7 M F 0 8 4 2 ·		 SITRANS P320/P420 transmitter for differ- ential pressure and flow, 7MF03/7MF04 order separately, Scope of delivery: 2 off 	7 M F 0 8 4	2 -	
		- 0	0			0 🔳 0	
Click on the A figuration in the A	rticle No. for the online con- e PIA Life Cycle Portal.			Transmitter connection Without capillary tube, direct mount straight	0 0		
Nominal diamet	er Nominal pressure			connection (for gauge pressure)			
Open flange, con	necting standard EN 1092-1			Connection via capillary tube			
DN 15	PN 10/16/25/40	0 A D		Length of capillary	1.0		
	PN 63/100	0 A F		1 m 1 6 m	11		
	PN 160	0 A G		2 m	1 2		
	PN 250	0 A H		2 m	12		
DN 20	PN 10/16/25/40	0 A M		2,5 m	14		
DN 25	PN 10/16/25/40	0 B D		4 m	15		
	PN 63/100	0 B F		5 m	16		
	PN 160	0 B G		6 m	17		
	PN 250	0 B H		7 m	1.8		
Open flange, cor	nnecting standard			8 m	2.0		
ASME B16.5	1			9 m	21		
1/2 Inch	class 150	1 K A		10 m	22		
	class 300	1 K B		Other version	9.8		117
	class 600	1 KC		Add Order code and plain text			
0	class 1500	1 K D		Filling liquid	-		
34 Inch	class 150	1 K F					
	class 300	1 KG					
	class 600	1 K H		High temporature oil		C	
	class 1500	1 K J		Halocarbon oil		D D	
1 Inch	class 150	1 K L		Food grade oil (EDA listed)		E	
		1 KM		Other version		7	D 1 V
				Add Order code and plain text		-	
	Class 1500	IKP		Wattad parts materials	-		
C14"B		2 S B		wetten parts materials			
G1/4"B	PN 250	350		Stainless steel 316L without coating		A	
G ¹ /4"B	PN 100	3 S E		Stainless steel 316L with PTFE-coating		E	
G1/2 D	PN 250	350		Monel 400, 2.4360		G	
G3/"B	PN 100	3 S K		Hastelloy C2/6, 2.4819		J	
G3/4 B	PN 250	351		lantalum		K	
G1"B	PN 100	3 S P		Stainless steel 316L with gold coating		S	
G1"B	PN 250	350		Hastelloy C4, 2.4610		U	
Process connect	ion thread ASME B1.20.1			Other version		Z	Q 1 Y
¹ / ₄ "-NPT-M	Class 1500	5 T A		Add Order code and plain text			
¹ ⁄4"-NPT-M	Class 3675	5 T B					
¹ ⁄4"-NPT-F	Class 1500	5 T C					
1⁄4"-NPT-F	Class 3675	5 T D					
1⁄2"-NPT-M	Class 1500	5 T E					
1⁄2"-NPT-M	Class 3675	5 T F					
1⁄2"-NPT-F	Class 1500	5 T G					
1⁄2"-NPT-F	Class 3675	5 T H					
3/4"-NPT-M	Class 1500	5 T J					
34"-NPT-M	Class 3675	5 T K					
34"-NPT-F	Class 1500	5 T L					

Other version Add Order code and plain text

Class 3675

Class 1500

Class 3675

Class 1500

Class 3675

5 T M

5 T N

5 T P

5 T Q

5 T R

9 A A

H 1 Y

¾"-NPT-F

1"-NPT-M

1"-NPT-M

1"-NPT-F

1"-NPT-F

Order code

Remote seals for transmitters and pressure gauges SITRANS P320/P420

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

Selection and Ordering data	Order code	Selection and Ordering data	Orde
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	PE protective tube	S10
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	C12	1,6 m 2 m	S11 S12
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	2,5 m 3 m 4 m 5 m	S13 S14 S15 S16
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	C15	6 m 7 m	S17 S18
Certificate of FDA-approved fill oil (to EN10204-2.2)	C17	8 m	S19
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (Includes SIL conformity declaration)	C20	9 m 10 m PTFE protective tube	S20 S21
Accessories		1 m	S40
Low-temperature version (for Silicon Oil M50 only)	D67	1,6 m	S41
Flushing port 1/4"-18 NPT unsealed	D70	2.5 m	S42
Flushing port 1/4"-18 NPT sealed with stainless steel plug	D71	3 m	S44
Sealing material between upper and lower housing PTFE (instead of FKM viton)	D75	4 m 5 m	S45 S46
Sealing material between upper and lower housing metal C-circlip (instead of FKM viton)	D76	6 m 7 m	S47 S48
PTFE coating for lower housing (only for G½B PN 100, DN 25 PN 10 40, 1 inch Class 150/300)	D77	8 m 9 m 10 m	S49 S50
Negative pressure services			
Negative pressure service (for gauge and absolute pressure transmitters)	D81	1 m	S70
Negative pressure service (for differential pressure transmitters)	D83	2 m	S72
Extended negative pressure service (for gauge and absolute pressure transmitters)	D85	2,5 m 3 m	S74
Extended negative pressure service (for differential pressure transmitters)	D88	5 m	S76
General product approvals without explosion proof approvals		om 7 m	S78
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) Oil-and grease-free cleaned version (not for O_2 -appl. including certificate EN10204-2.2	E80 E87	8 m 9 m 10 m Device settings Operating Temperature; Lower range value °C (°I	579 580 581 =), Y10
(only with fill fluid Halocarbon oil)		upper range value °C (°F) Static pressure: bar (psi) (oply for 7ME0842)	¥11
Capillary connection (only for 7MF0840)			
Single-side mounted at differential pressure transmit- ters at high-side	S03		
Single-side mounted at differential pressure transmit- ters at low-side	504		
Cooling element	508		

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Remote seals for transmitters and pressure gauges SITRANS P320/P420

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	Μ	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 Ib/sq.in	110	50.8	79.4	M12	4	32	12	2
1 inch	300 Ib/sq.in	125	50.8	88.9	M16	4	32	12	2

Remote seals for transmitters and pressure gauges SITRANS P320/P420

		Quick-release diaphragm seals
Overview	 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	
and the second sec	• 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
Quick-release diaphragm seals, to DIN 11851 with slotted union nut		ASME B16.5 RFSF
	Materials	
	 Main body 	Stainless steel 316L
	 Wetted parts 	Stainless steel 316L

2-1. form B1 or 3.5RF 125 ... 250 AA 2-1, form B2 or .5 RFSF teel 316L teel 316L Stainless steel, mat. Capillary 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 For gases of fluid group 1 and liq-Classification according to pressure uids of fluid group 1; complies with requirements of article 4, equipment directive (DGRL 2014/68/EU)

EHEDG

Technical specifications

possible for cleaning.

Quick-release diaphragm seal	
Connection, nominal diameter	Nominal pressure
 Standard to DIN 11851 with nut DN 25/32/40 DN 50/65/80 	PN 40 PN 25
 Standard to DIN 11851 with thread DN 25/32/40 DN 50/65/80 	PN 40 PN 25
 Standard clamp ISO 2852 DN 25/38/51 DN 63.5/76.1 	PN 16 PN 10

Quick-release diaphragm seals, with clamp connection

PA and DS III with FOUNDATION Fieldbus

SITRANS P pressure transmitter series:

Quick-release diaphragm seals are available for the following

• For pressure: P300, DS III with HART, DS III with PROFIBUS

• The quick-release remote seals are common designs in the

DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus

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 dismounting is

For differential pressure and flow: P500, DS III with HART,

paragraph 3 (sound engineering

Complies with EHEDG recom-

practice)

mendations

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Quick-release	se diaphragm seals					
Selection and	Ordering data	Article No.	Order code	Selection and Ordering data	Article No.	Order code
Quick release	diaphragm seal			Quick release diaphragm seal		
Flange type des	sign, with flexible capillary tube ected to a			Flange type design, with flexible capillary tube or directly connected to a		
 SITRANS P32 pressure or a er with negati 7MF03/7MF0 Scope of delir 	20/P420 transmitter for gauge bsolute pressure (only togeth- ve pressure service), 04 order separately very: 1 off	7 M F 0 8 3 0 -		 SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only togeth- er with negative pressure service), 7MF03/7MF04 order separately Scope of delivery: 1 off 	7 M F 0 8 3 0 -	
 SITRANS P32 ential pressur 7MF03/7MF0 Scope of delir 	20/P420 transmitter for differ- e and flow, 04 order separately very: 1 off	7 M F 0 8 3 2 -		 SITRANS P320/P420 transmitter for differ- ential pressure and flow, 7MF03/7MF04 order separately Scope of delivery: 1 off 	7 M F 0 8 3 2 -	
		- 0	A 0		- 0	A 0
Click on the figuration in	Article No. for the online con- the PIA Life Cycle Portal.			Transmitter connection Without capillary tube, direct mount straight	0 0	
Nominal diam	eter Nominal pressure			connection (for gauge pressure)		
Connection star	ndard DIN 11851 with nut			Length of capillary		
DN 25	PN 40	0 B M		1 m	10	
DN 32	PN 40	0 C D		1.6m	11	
DN 40	PN 40	0 D M		2 m	12	
DN 50	PN 25	0 E K		2.5 m	12	
DN 65	PN 25	0 F L		2,011 2 m	1.4	
DN 80	PN 25	0 G K		4 m	15	
Connection star	ndard DIN 11851 with thread			4 III 5 m	15	
DN 25	PN 40	1 B M		6 m	17	
DN 32	PN 40	1 C D		7 m	10	
DN 40	PN 40	1 D M		/ III 0.mm	10	
DN 50	PN 25	1 F K		8 111	20	
DN 65	PN 25	1 5 1		9 m	21	
	DN 25	104		10 m	2 2	
DIN OU	FIN 25	IGK		Other version	98	L 1 Y
Connection star	ndard Clamp ISO 2852			Add Order code and plain text		
DN 25	PN 16	2 B K		Filling liquid		
DN 38	PN 16	2 C Q		Food-grade oil (FDA listed)	F	
DN 51	PN 16	2 F H				
DN 63.5	PN 10	2 F J		Uther version	2	2 P 1 Y
DN 76.1	PN 10	2 G J		Aud Order code and plain lext		
Connection star row C Tri-clamp	ndard Clamp DIN 32676,					
DN 1"	PN 25	3 K V				
DN 11/2"	PN 25	3 L V				
DN 2"	PN 16	3 M V				
DN 21/2"	PN 16	3 N V				

H 1 Y

- SITRANS P320/P420 transm pressure or absolute press er with negative pressure se 7MF03../7MF04.. order sep Scope of delivery: 1 off
- SITRANS P320/P420 transm ential pressure and flow, 7MF03../7MF04.. order sep Scope of delivery: 1 off

7	Click on the	Article No.	for the or	line con-
	figuration in	the PIA Life	e Cycle Po	ortal.

figuration in the P	A Life Cycle Portal.	
Nominal diameter	Nominal pressure	
Connection standard	DIN 11851 with nut	
DN 25	PN 40	0 B M
DN 32	PN 40	0 C D
DN 40	PN 40	0 D M
DN 50	PN 25	0 E K
DN 65	PN 25	0 F L
DN 80	PN 25	0 G K
Connection standard	DIN 11851 with thread	
DN 25	PN 40	1 B M
DN 32	PN 40	1 C D
DN 40	PN 40	1 D M
DN 50	PN 25	1 E K
DN 65	PN 25	1FL
DN 80	PN 25	1 G K
Connection standard	Clamp ISO 2852	
DN 25	PN 16	2 B K
DN 38	PN 16	200
DN 51	PN 16	2 F H
DN 63.5	PN 10	2 F J
DN 76.1	PN 10	2 G J
Connection standard	Clamp DIN 32676	
row C Tri-clamp	Clamp Din 32070,	
DN 1"	PN 25	зки
DN 11/2"	PN 25	3 L V
DN 2"	PN 16	3 M V
DN 21/2"	PN 16	3 N V
DN 3"	PN 10	3 P V
Connection standard	Clamp DIN 32676	
row A metric	Olamp Diri 02070,	
DN 25	PN 25	4 B L
DN 32	PN 25	4 C C
DN 40	PN 25	4 D L
DN 50	PN 16	4 E J
DN 65	PN 10	4 F K
Varivent		
DN 25/32	PN 25	501
DN 40/50	PN 25	5 D K
	11120	U D N
DN 50		
DD 20	PIN 40	6 E M
Other version Add Order code and	plain text	9 A A

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Quick-release diaphragm seals

Further designs Add '-Z' to Article No. and specify Order code. Factory certificates Quality inspection certificate (Five-step factory calibration) to IEC 60770-2 Inspection certificate (EN 10204-3.1 - material of body and wetted parts Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts Curtificate of FDA-approved fill oil (to EN10204-2.2) C17 Functional safety (SIL_2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (Includes SIL conformity declaration) D81 Negative pressure services D83 Negative pressure service (for differential pressure transmitters) D83 Negative pressure service (for differential pressure transmitters) D85 Extended negative pressure service (for differential pressure transmitters) D84 Single-side mounted at differential pressure transmitters at high-side S03 Single-side mounted at differential pressure transmitters at 10%-side S04 Cooling element S08 Capillary coating S11 2 m S12 2.5 m S13 3 m S13 3 m S14 4 m S15 5 m S16 6 m <td< th=""><th>Selection and Ordering data</th><th>Order code</th></td<>	Selection and Ordering data	Order code
Add *-Z* to Article No. and specify Order code. Factory certificates C11 Factory certificates C11 Ouality 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 C13 Certificate of FDA-approved fill oil (to EN10204-2.2) C17 Functional safet (SL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (Includes SIL conformity declaration) D81 Negative pressure services Negative pressure service for gauge and absolute pressure transmitters) D83 Negative pressure service (for differential pressure transmitters) D85 D85 Extended negative pressure service (for differential pressure transmitters) S03 S04 Single-side mounted at differential pressure transmitters at high-side S04 S04 Cooling element S08 S04 S04 Capillary coating S11 S11 S11 PE protective tube S15 S13 S14 1 m S10 S16 S16 S16 1 m S12 S25 S13 S14 S15 S16 S10 S16 S17	Further designs	
Factory certificatesC11Quality inspection certificate (Five-step factory calibration) to IEC 60770-2C11Inspection certificate to EN 10204-3.1 - material of body and wetted partsC12Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted partsC15Certificate of FDA-approved fill oil (to EN10204-2.2)C17Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (Includes SIL conformity declaration)D81Negative pressure servicesD83Negative pressure service (for gauge and absolute pressure transmitters)D85Negative pressure service (for differential pressure transmitters)D85Stended negative pressure service (for differential pressure transmitters)D85Capillary connection (only for 7MF0830)S03Single-side mounted at differential pressure transmit- ters at low-sideS08Capillary coating PE protective tubeS08PE protective tube 1 mS101,6 mS112,5 mS133 mS144 mS155 mS166 mS177 mS188 mS199 mS2010 mS21PTFE protective tube1 mS401,6 mS112 mS219 mS2010 mS412 mS433 mS444 mS455 mS436 mS447 mS48<	Add "-Z" to Article No. and specify Order code.	
CharterC11Calibration) to IEC 60770-2C11Inspection certificate to EN 10204-3.1 - material of body and wetted partsC12Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted partsC15Certificate of FDA-approved fill oil (to EN10204-2.2)C17Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (Includes SIL conformity declaration)D81Negative pressure service (for gauge and absolute pressure transmitters)D81Negative pressure service (for differential pressure transmitters)D83Extended negative pressure service (for differential pressure transmitters)D85SoldS03Capillary connection (only for 7MF0830)S04Single-side mounted at differential pressure transmit- ters at low-sideS08Capillary coating PE protective tubeS111 m 1.6 mS112.5 mS133 mS144 mS155 mS166 mS177 mS188 mS199 mS2010 mS21PTFE protective tubeS111 m 1.6 mS412.5 mS188 mS199 mS2010 mS412.5 mS425 mS166 mS437 mS488 mS499 mS449 mS449 mS449 mS44	Factory certificates	
Characteristicate to EN 10204-3.1 - material of body and wetted partsC12Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted partsC15Certificate of FDA-approved fill oil (to EN10204-2.2)C17Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (Includes SIL conformity declaration)D81Negative pressure servicesD83Negative pressure service (for gauge and absolute pressure transmitters)D83Negative pressure service (for differential pressure transmitters)D85Extended negative pressure service (for differential pressure transmitters)D85Stingle-side mounted at differential pressure transmit- ters at low-sideS03Capillary connection (only for 7MF0830)S04Single-side mounted at differential pressure transmit- ters at low-sideS10Cooling elementS10Capillary coating PE protective tubeS111 (n mS101,6 mS142,5 mS188 mS199 mS2010 mS112 mS21PTFE protective tubeS161 mS401,6 mS412,5 mS433 mS444 mS455 mS435 mS435 mS425 mS436 mS417 mS488 mS499 mS499 mS499 mS499 m<	Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11
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) Negative pressure services Negative pressure service (for gauge and absolute pressure transmitters) Negative pressure service (for differential pressure transmitters) Extended negative pressure service (for differential pressure transmitters) Single-side mounted at differential pressure transmit- ters at high-side Single-side mounted at differential pressure transmit- ters at high-side Solar extended Capillary context at differential pressure transmit- ters at low-side Cooling element Sola Capillary coating PE protective tube 1 m 1,6 m 2,5 m 3 m 4 4 m 5 15 5 m 6 m 1,6 m 2 21 PTFE protective tube 1 m 2 30 2 30 3 3 3 m 3 m 3 m 3 m 3 m 3 m 3 m 3 m 3 m	Inspection certificate to EN 10204-3.1 - material of body and wetted parts	C12
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6 m 547 7 m 548 8 m 549 9 m 550	5 m	546
7 m \$48 8 m \$49 9 m \$50	6 M	547
8 m S49 9 m S50	/ m	548
9 m S50	8 m	549
	9 m 10 m	550

Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
PVC protective tube	
1 m	S70
1,6 m	S71
2 m	S72
2,5 m	S73
3 m	S74
4 m	S75
5 m	S76
6 m	S77
7 m	S78
8 m	S79
9 m	S80
10 m	S81
Device settings	

Operating Temperature; Lower range value ... °C (°F), **Y10** upper range value ... °C (°F)

SITRANS P320/P420

Quick-release diaphragm seals

Dimensional drawings



Ø105

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

Quick-release diaphragm seals

Remote seals for transmitters and pressure gauges SITRANS P320/P420

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Connection to DIN 11851 with slotted union nut						
Nominal	Ød _M	ØD	н	G ₁		
diameter	mm	mm	mm	mm		
DN 25	25	63	36	Rd 52x1/6		
DN 32	32	70	36	Rd 52x1/6		
DN 40	40	78	36	Rd 65x1/6		
DN 50	52	112	36	Rd 78x1/6		
DN 65	65	112	36	Rd 95x1/6		
DN 80	72	127	36	Rd 110x1/6		

Connection to DIN 11851 with threaded socket

Nominal	Ød _M	Н	G ₁
diameter	mm	mm	mm
DN 25	25	36	Rd 52x1/6
DN 32	32	36	Rd 52x1/6
DN 40	40	36	Rd 65x1/6
DN 50	52	36	Rd 78x1/6
DN 65	65	36	Rd 95x1/6
DN 80	72	36	Rd 110x1/6

Clamp connection to ISO 2852 for pipes to ISO 2037

Nominal diameter	Nominal pressure	d _M	d ₁	b	D
		mm	mm	mm	mm
DN 25	PN 16	22.6	43.5	14	50.5
DN 38	PN 16	34	43.5	12	50.5
DN 51	PN 16	46	56.5	14	64
DN 63.5	PN 10	51	70.5	14	77.5
DN 76.1	PN 10	65	83.5	14	91

Clamp connection to DIN 32676 row C (Tri-Clamp) for pipes to ASME BPE							
Nominal	Nominal	d _M	d ₁	b	D		
diameter	pressure	mm (inch)	mm (inch)	mm (inch)	mm (inch)		
1"	PN 25	22.6 (0.89)	43.5 (1.71)	14 (0.55)	50.5 (1.99)		
11⁄2"	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)		
21⁄2"	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	Nominal pressure	Ød _M	d ₁	b	D
diameter		mm	mm	mm	mm
DN 25	PN 25	22.6	43.5	14	50.5
DN 32	PN 25	27	43.5	12	50.5
DN 40	PN 25	34	43.5	12	50.5
DN 50	PN 16	46	56.5	14	64
DN 65	PN 16	65	83.5	14	91

Varivent

Nominal diameter	d _M	Α	D	h
	mm	mm	mm	mm
	(inch)	(inch)	(inch)	(inch)
DN 25, DN 32, 1", 11/4"	40	66	50	19
	(1.57)	(2.6)	(1.97)	(0.75)
DN 40 125, 1 ½" 6"	58	84	68	19
	(2.28)	(3.331)	(2.68)	(0.75)

d_M Effective diaphragm diameter

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Remote seals for transmitters and pressure gauges SITRANS P320/P420

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	(ðd		L		н
	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)
G11⁄2B	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		S	W		L		I	4
G	mm	Ø d _M (inch	i) r	S mm (W inch)	mm	L (inc	h) m	I Im (H (inch)
G 1"-NPT	mm 27	Ø d _M (inch (1.06	i <mark>) r</mark>) ∠	5 nm (41 (W inch) 1.61)	mm 25	L (inc (0.9	h) m 8) 40	im () C	H (inch) (1.57)
G 1"-NPT 1½"-NPT	mm 27 34	Ø d _M (inch (1.06 (1.34	i <mark>) r</mark>) ∠) 5	5 mm (41 (55 (W inch) 1.61) 2.17)	mm 25 26	L (inc (0.9 (1.0	h) m 8) 4(2) 4;	l im () (5 (H (inch) (1.57) (1.77)
G 1"-NPT 1½"-NPT 2"-NPT	mm 27 34 46	Ø d _M (inch) (1.06) (1.34) (1.81)	1) 1 1) 2 1) 5 1) 6	S mm (41 (55 (65 (W inch) 1.61) 2.17) 2.56)	mm 25 26 26	L (0.9 (1.0 (1.0	h) m 8) 40 2) 45 2) 45	l im (5 (5 ((inch) (1.57) (1.77) (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 • Diaphragm	Stainl. steel mat No. 1.4404/ 316L or Hastelloy C276, mat No. 2.4819 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)

Pressure Measurement

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Miniature diaphragm seals

					p
Selection and Ordering data	Article No.	Or	der	Selection and Ordering data	Order code
		CO	de	Further designs	
Miniature diaphragm seal				Add "-Z" to Article No. and specify Order code.	
directly connected to a				Factory certificates	
 SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only togeth- er with negative pressure service), 7ME03. (7ME04, order separately.) 	7 M F 0 8 5 0 -			Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11
Scope of delivery: 1 off				body and wetted parts	012
Click on the Article No. for the online con- figuration in the PIA Life Cycle Portal.	00-0	0		Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009)	C13
Process connection				and stainless steel)	
Connection standard DIN 3852 G ½" PN 400 G ¾" PN 400	4 S T 4 S U			Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	C15
G 1" PN 400	4 S V			Certificate of FDA-approved fill oil (to EN10204-2.2)	C17
G 1½" PN 400 G 2" PN 400 Connection standard ASME B1 20 1	4 S W 4 S X			Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (Includes SIL conformity declaration)	C20
1/2"-NPT-M class 5800	5 T S			Negative pressure services	
³ / ₄ "-NPT-M class 5800	5 T T			Negative pressure services	Det
1"-NPT-M class 5800	5 T U			Negative pressure service	D81
11/2"-NPT-M class 5800	5 T V			Extended negative pressure service (for gauge and absolute pressure transmitters)	D85
2"-NPT-M class 5800	5 T W				
Other version	9 A A	H	1 1 Y	Capillary connection	
Add Order code and plain text				Cooling element between transmitter and remote seal	S08
Filling liquid				Device settings	
Silicone oil M5		A		Operating Temperature: Lower range value °C (°F).	Y10
Food-grade oil (FDA listed)		E		upper range value °C (°F)	
Other version Add Order code and plain text		ZF	9 1 Y		
Wetted parts material					
Stainless steel 316L without coating Hastelloy C276, 2.4819		A J			

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Technical specifications

Remote seals for transmitters and pressure gauges SITRANS P320/P420

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).

Inline seals for flange-mounting	
Nominal diameter	Nominal proceurs
	Nominal pressure
Connecting standard EN 1092-1	
• DN 25/40/50/65/80/100/125	PN 6 PN 100
Connecting standard ASME B16.5	
• 1, 11/2, 2, 21/2, 3, 4, 5 inch	Class 150 class 2500
Process connection	Flange to EN 1092-1 or ASME B 16.5
Sealing face	• for stainless steel mat. no. 1.4404/316L according to EN 1092-1, form B1 or ASME B16.5 RF 125 250 AA
	 for all other materials according to EN 1092-1, form B2 or ASME B16.5 RFSF
Materials	
• Main body	Stainless steel 1.4404/316L
• Diaphragm	Stainless steel 1.4404/316L
Wetted parts	Stainless steel 1.4404/316L
	 Without coating
	 ECTFE coating (for vacuum on request)
	 PFA coating
	Monel 400, mat. No. 2.4360
	Hastelloy C276, mat. No. 2.4819
	Hastelloy C4, mat. No. 2.4602
	Tantalum
Capillary	Stainless steel, mat. No. 1.4571/316Ti
• 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 fill- ing 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 liq- uids of fluid group 1; complies with the requirements of article 4, paragraph 1 (appendix 1); assigned to category III, confor- mity evaluation module H by the TÜV Nord

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Selection and Ordering data Article N	lo. Order			
	code	Selection and Ordering data	Article No.	Order code
Inline-diaphragm seal		Inline-diaphragm seal		
Sandwich type design, directly connected or connected with flexible capillary tube to a		Sandwich type design, directly connected or connected with flexible capillary tube to a		
• SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure service), 7MF03/7MF04 order separately Scope of delivery: 1 off	00-	• SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure ser- vice), 7MF03/7MF04 order separately Scope of delivery: 1 off	7 M F 0 9 0 0 -	
• SITRANS P320/P420 transmitter for differ- ential pressure and flow, 7MF03/7MF04 order separately, Scope of delivery: 2 off	02-	 SITRANS P320/P420 transmitter for differ- ential pressure and flow, 7MF03/7MF04 order separately, Scope of delivery: 2 off 	7 M F 0 9 0 2 -	
	- 0 = 0		- 0 = 0	
Click on the Article No. for the online con- figuration in the PIA Life Cycle Portal.		Filling liquid Silicone oil M5	Α	
Inguration in the PIA Life Cycle Portal. Nominal diameter Nominal pressure Connecting standard EN 1092-1 0 BP DN 25 PN 6 100 0 BP DN 40 PN 6 100 0 EP DN 50 PN 6 100 0 EP DN 65 PN 6 100 0 GP DN 80 PN 6 100 0 GP DN 100 PN 6 100 0 JP DN 125 PN 6 100 0 JP Connecting standard ASME B16.5 1 1 kX 1 inch class 150 2500 1 LX 2 inch class 150 2500 1 MX 2½ inch class 150 2500 1 NX 3 inch class 150 2500 1 QX 4 inch class 150 2500 1 QX 5 inch class 150 2500 1 RX Other version Add Order code and plain text 9 AA Transmitter connection 0 0 0 0 Without capillary tube, direct mount connection via 90°-bow (for gauge pressure) 0 1 Connection via capillary	H1Y	Silicone oil M5 Silicone oil M50 High-temperature oil Halocarbon oil Food-grade oil (FDA listed) Other version Add Order code and plain text Wetted parts materials Stainless steel 316L • Without coating • With PFA coating Monel 400, 2.4360 Hastelloy C276, 2.4819 Tantalum Hastelloy C4, 2.4610 Other version Add Order code and plain text	A B C D E Z A D F G J K U Z	P1Y Q1Y
12 m (only for 7MF0900) 2 4 13 m (only for 7MF0900) 2 5 14 m (only for 7MF0900) 2 6 15 m (only for 7MF0900) 2 7 Other version 9 8 Add Order code and plain text 9 8	L 1 Y			

Remote seals for transmitters and pressure gauges SITRANS P320/P420

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 transmit- ters)	D61
Spark arrestor (for differential pressure and level transmit- ters)	D62
Low-temperature version (for Silicon Oil M50 only)	D67
Negative pressure services	
Negative pressure service (for gauge and absolute pressure transmitters)	D81
Negative pressure service (for differential pressure transmitters)	D83
Extended negative pressure service (for gauge and absolute pressure transmitters)	D85
Extended negative pressure service (for differential pressure transmitters)	D88
General product approvals without explosion proof	
approvals	
Oil-and grease-free cleaned version (for O ₂ -appl. including certificate EN10204-2.2 (only with fill fluid Halocarbon oil max. temperature 60 °C and max. pressure 50 bar)	E80
(only with fill fluid Halocarbon oil)	207
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 125250AA, wetted parts 316L only)	M64
Sealing surface with tongue to EN1092-1, form C (wetted parts 316L only)	
• DN 25 • DN 40 • DN 50	M70 M71 M72
• DN 80	M73
• DN 100 • DN 125	M74 M75
Sealing surface with spigot to EN1092-1, form E (wetted parts 316L only)	
• DN 25	M76
• DN 40	M77
• DN 50 • DN 80	M78 M79
• DN 100	M80
• DN 125	M81

٠	DN	125

Selection and Ordering data	Order code
Add "-7" to Article No. and specify Order code	
Sealing surface with recess to EN1092-1 form E	
(wetted parts 316L only)	
• DN 25	M82
• DN 40	M83
• DN 50	M84
• DN 80	M85
• DN 100	M86
• DN 125	M87
Capillary connection	
For 7MF0900	
Single-side mounted at differential pressure transmit-	S03
Single-side mounted at differential pressure transmit-	S04
ters at low-side	
cooling element	S08
Capillary coating	
PE protective tube	
1 m	S10
1,6 m	511
2 m 9 F m	512
2,5 III 2 m	513
3 m	S14 S15
5 m	S16
6 m	S17
7 m	S18
8 m	S19
9 m	S20
10 m	S21
11 m (only for 7MF0902)	S22
12 m (only for 7MF0902)	S23
13 m (only for 7MF0902)	S24
14 m (only for 7MF0902)	S25
15 m (only for 7MF0902)	S26
PTFE protective tube	640
16m	540 6 <i>4</i> 1
1,0111 2 m	541
2 m	542 S/13
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)	\$55
15 m (only for /MFU9U2)	556

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Clamp-on seals of flange design

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

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Dimensional drawings



Connection to EN 1092-1

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

Connection to ASME B16.5

DN	Class	D	Mb	L	Н
(inch)		mm (inch)	mm (inch)	mm (inch)	mm (inch)
1	150 2500	50 (1.97)	28.5 (1.12)	60 (2.36)	72 (2.83)
1½	150 2500	73.5 (2.89)	43.1 (1.70)	60 (2.36)	84 (3.31)
2	150 2500	91.9 (3.62)	54.5 (2.15)	60 (2.36)	93 (3.66)
21/2	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)

Inline seal for flange-mounting, connected to SITRANS ${\sf P}$ pressure transmitter, dimensions in mm (inch)

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Quick-release inline seals

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 desi	gn for pressure				
Connection	Nominal diameter	Nominal pressure			
Standard to DIN 11851 with	DN 25/32/40	PN 40			
thread	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,	1, 1½ inch	PN 25			
row C In-clamp	2, 21/2 inch	PN 16			
	3 inch	PN 10			
Standard Clamp DIN 32676,	DN 25/32/40	PN 25			
row A metric	DN 50	PN 16			
	DN 65	PN 10			
Material					
• Main body	Stainless steel 1.4	4404/316L			
Diaphragm	Stainless steel 1.4	4404/316L			
Capillary					
• Length	Max. 10 m (32.8 ft)				
 Internal diameter 	2 mm (0.079 inch)			
 Minimum bending radius 	150 mm (5.9 inch)				
Sheath	Spiral protective tube made of stainless steel, mat. No. 1.4301/316				
Filling liquid	 Food oil (FDA listed) 				
Permissible ambient temperature	Dependent on the pressure trans- mitter 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 (app	orox. 8.82 lb)			
Certificate and approvals					
Classification according to pres- sure equipment directive (DGRL 2014/68/EU)	For gases of fluid group 1 and lic uids of fluid group 1; complies wi the requirements of article 4, paragraph 1 (appendix 1); assigned to category III, confor- mity evaluation module H by the TÜV Nord				
EHEDG	Complies with EHEDG recommen- dations				

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Quick-release inline seals					
Selection and Ordering data	Article No.	Order code	Selection and Ordering data	Article No.	Order code
Quick release inline-seal			Quick release inline-seal		
Flange type design, with flexible capillary tube or directly connected to a			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	7 M F 0 9 3 0 -		• SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure ser- vice), 7MF03/7MF04 order separately Scope of delivery: 1 off	7 M F 0 9 3 () -
	- 0	A 0			0 A 0
↗ Click on the Article No. for the online con-			Transmitter connection		
figuration in the PIA Life Cycle Portal.			Without capillary tube, direct mount straight	0 0	
Nominal diameter Nominal pressure			connection (for gauge pressure)		
Connection standard DIN 11851 with thread			Length of capillary		
DN 25 PN 40	1 B M		1 m	10	
DN 32 PN 40 DN 40 PN 40	100		1,6 m	11	
DN 50 PN 25	1 E K		2 m	1 2	
DN 65 PN 25	1 F L		2,5 m	13	
DN 80 PN 25	1 G K		3 m	14	
Connection standard Clamp ISO 2852			4 m 5 m	15	
DN 25 PN 16	2 B K		5 m 6 m	17	
DN 38 PN 16	2 C Q		7 m	1.8	
DN 51 PN 16	2 F H		8 m	2 0	
DN 63,5 PN 10	2 F J		9 m	2 1	
DN 76,1 PN 10	2 G J		10 m	2 2	
Connection standard Clamp DIN 32676,			Other version	98	L1'
row C Tri-clamp			Add Order code and plain text		
DN 1" PN 25	3 K V		Filling liquid		
DN 1/2 PN 25	3 L V 2 M V		Food-grade oil (FDA listed)		E
DN 21/2" PN 16	3 N V		Other version		Z P 1 '
DN 3" PN 10	3 P V		Add Order code and plain text		
Connection standard Clamp DIN 22676	•				
row A metric					
DN 25 PN 25	4 B L				
DN 32 PN 25	4 C C				
DN 40 PN 25	4 D L				
DN 50 PN 16	4 E J				
DN 65 PN 10	4 F K				
Other version Add Order code and plain text	9 A A	H1Y			

1

Remote seals for transmitters and pressure gauges SITRANS P320/P420

		Quick-releas	e inline seals
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 transmit- ters at high-side	S03		
Single-side mounted at differential pressure transmit- ters at low-side	S04		
cooling element	S08		
Capillary coating			
PE protective tube	040		
1 m 1 6 m	S10		
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 S20		
9 III 10 m	S20 S21		
	521		
	\$40		
16m	S41		
2 m	S42		
2,5 m	S43		
3 m	S44		
4 m	S45		
5 m	S46		
6 m 7 m	547		
8 m	S40		
9 m	S50		
10 m	S51		
PVC protective tube	-		
1 m	S70		
1,6 m	S71		
2 m	S72		
2,5 m	\$73		
3 m 4 m	S74		
4 (f) 5 m	3/5 \$76		
6 m	S77		
7 m	S78		
8 m	S79		
9 m	S80		
10 m	S81		

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Dimensional drawings



Mounted directly on SITRANS P transmitter for pressure





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





Remote seals for transmitters and pressure gauges SITRANS P320/P420

Quick-release inline seals

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

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Overview



Flushing ring

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

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

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

Process connection

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

Standard design

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

Design



Installation example

Technical specifications

Flushing ring for remote seals of	sandwich and flange design
Nominal diameter	Nominal pressure
• DN 50	PN 16 PN 100
• DN 80	PN 16 PN 100
• DN 100	PN 16 PN 100
• DN 125	PN 16 PN 100
• 2 inch	Class 150 class 600
• 3 inch	Class 150 class 600
• 4 inch	Class 150 class 600
• 5 inch	Class 150 class 600
Sealing 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	• G1⁄4
thread	• G1⁄2
	• 1⁄4-18 NPT
	• 1⁄2-14 NPT
Material	Stainless steel 1.4404/316L

1

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Flushing rings for diaphragm seals

Weight

(kg) 1.10 1.90 3.15 3.50

Weight

(lb)

(1.32)

(2.31)

(6.28)

(7.28)

Selection and Ordering data		Article No.Ord. code Dimensional drawings										
Flushing ring		7 M F 4 9 2	5 -				5					
for remote seals 7MF0800 to 7MF0814		1										
Click on the Article No. ration in the PIA Life C	for the online configu- ycle Portal.										hread	
Nom. diam. N • DN 50 F • DN 80 F • DN 100 F • DN 125 F • 2 inch C • 3 inch C	Nom. press. PN 16 PN 100 PN 16 PN 100 PN 16 PN 100 PN 16 PN 100 Class 150 600 Class 150 600	A B C D G H						c				-
• 4 inch	Class 150 600	J		Flush	ning ring,	dimensio	n drawi	ng				
• 5 inch (Class 150 600	к		Con	nection	to EN 1	092-1					
Other version Add Order code and plair	n text:	Z	J 1 Y	DN	P	N	d ₄		d _i		h	۷
	minai pressure:	-		(mm	i) (b	ar)	(mm)		(mm)		(mm)	(
• FN 1092-1				50	16	5 100	102		62		30	1
- Form B1		A		80	16	5 100	138		92		30	1
- Form B2		С		100	16	5 100	162		92		30	3
- Form C/Form C		D		125	16	5 100	188		126		30	3
- Form D/Form C - Form D/Form D		F		Con	nection	to ASN	IE B 16	5.5				
- Form F		G		DN	Class	d_4		di		h		Weig
- Form F		H		inch		mm	(in.)	mm	(in.)	mm	(in.)	kg
• ASME B16.5				2	150 60	0 92	(3.62)	62	(2.44)	30	(1.18)	0.60
- RFSF		Q		3	150 60	00 127	(5)	92	(3.62)	30	(1.18)	1.05
- RJF ring groove		R		4	150 60	0 157	(6.18)	92	(3.62)	30	(1.18)	2.85
Other version Add Order code and plair Sealing face:	n text:	z	К 1 Ү	5	150 60	0 185.5	6 (7.3)	126	(4.96)	30	(1.18)	3.30
Flushing holes (2 off) • Female thread G ¹ / ₂ • Female thread G ¹ / ₂ • Female thread ¹ / ₄ -18 NP • Female thread ¹ / ₂ -14 NP	T	1 2 3 4										
Material • Stainless steel 316L Other version Add Order code and plair Material:	n text:	0 9	M 1 Y									
Further designs Please add "-Z" to Article I code.	No. and specify Order	Order cod	e									
Inspection certificate		C12										
to EN 10204, section 3.1												



Remote seals for transmitters and pressure gauges SITRANS P320/P420

Measuring setups

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 <u>must</u> 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 r	emote
seals	

Type of installation	Pressure trans- mitters	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

Pressure Measurement

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Measuring setups with remote seals

Dimensional drawings

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





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

Installation types	pe A
Start-of-scale	$:p_{MA} = \rho_{FL} \cdot g \cdot H_{U} - \rho_{OII} \cdot g \cdot H_{1}$
Full-scale:	$\mathbf{p}_{ME} = \mathbf{\rho}_{FL} \cdot \mathbf{g} \cdot \mathbf{H}_{O} - \mathbf{\rho}_{Oil} \cdot \mathbf{g} \cdot \mathbf{H}_{I}$
Installation types	pe B
Start-of-scale	$:p_{MA} = \rho_{FL} \cdot g \cdot H_{U} + \rho_{Oil} \cdot g \cdot H_{1}$
Full-scale:	$p_{\text{ME}} = \rho_{\text{FL}} \cdot g \cdot H_{\text{o}} + \rho_{\text{oil}} \cdot g \cdot H_{\text{1}}$
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
Η _υ	Start-of-scale value
H _o	Full-scale value
H ₁	Distance between vessel flange and pressure trans.

Types of installation for absolute level measurements (closed vessels)



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			
р _{ма}	Start-of-scale value to be set		
р _{мЕ}	Full-scale value to be set		
P _{START}	Start-of-scale value		
P _{END}	Full-scale value		
ρ _{οii}	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: $H_1 \ge 200 \text{ mm} (7.9 \text{ inch})$

Type of installation for differential pressure and flow measurements



Installation type D			
Start-of-scale	$p_{MA} = p_{START} - \rho_{OII} \cdot g \cdot H_V$		
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)		

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Remote seals for transmitters and pressure gauges SITRANS P320/P420

Types of installation for level measurements (closed vessels)



Installation type G



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

 $\rm H_{2} \leq 7~m$ (23 ft), with halocarbon oil as filling liquid only $\rm H_{1} \leq 4~m$ (13.1 ft)

Installation type G, H and J	
Start-of-scale	$\mathbf{p}_{MA} = \boldsymbol{\rho}_{FL} \cdot \mathbf{g} \cdot \mathbf{H}_{U} - \boldsymbol{\rho}_{Oil} \cdot \mathbf{g} \cdot \mathbf{H}_{V}$
Full-scale:	$\boldsymbol{p}_{_{ME}} = \boldsymbol{\rho}_{_{FL}} \cdot \boldsymbol{g} \cdot \boldsymbol{H}_{_{O}} \textbf{-} \boldsymbol{\rho}_{_{Oil}} \cdot \boldsymbol{g} \cdot \boldsymbol{H}_{_{V}}$

Legend

ρ_{MA} ρ_{ME} ρ_{FL}

 ρ_{Oil}

Start-of-scale value to be set
Full-scale value to be set
Density of medium in vessel
Density of filling oil in the capillary to the remote seal

Installation type E

Start-of-scale:	$p_{_{MA}} = \rho_{_{FL}} \cdot g \cdot H_{_{U}} - \rho_{_{Oil}} \cdot g \cdot H_{_{V}}$
Full-scale:	$p_{\rm ME} = \rho_{\rm FL} \cdot g \cdot H_{\rm O} - \rho_{\rm Oil} \cdot g \cdot H_{\rm V}$
Legend	
р _{ма}	Start-of-scale value to be set
р _{ме}	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 H

below the lower measuring point

Installation type for vacuum applications

Installation type J

between the measuring points, no vacuum

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

g	Local acceleration due to gravity
Η _υ	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 SITRANS P320/P420

Measuring setups without remote seals

Overview

Notes

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

Dimensional drawings

Pressure transmitters for differential pressure, for flanging

Measuring setups for open containers







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

evel measurement	
Start-of-scale: $p_{MA} = \rho \cdot g \cdot H_{U}$	
ull-scale:	$p_{ME} = \rho \cdot g \cdot H_{O}$
.egend	
MA	Start-of-scale value to be set
ME	Full-scale value to be set
)	Density of medium in vessel
I	Local acceleration due to gravity
H _U	Start-of-scale value
H _o	Full-scale value

<u>∢</u> =	Constant level	
H _o	ρ ₂ Separation layerStart-of-scale value	

Separation layer measurement

Start-of-scale:	$\mathbf{p}_{MA} = \mathbf{g} \cdot (\mathbf{H}_{U} \cdot \mathbf{\rho}_{1} + (\mathbf{H}_{O} - \mathbf{H}_{U}) \cdot \mathbf{\rho}_{2})$
Full-scale:	$p_{ME} = \rho_1 \cdot g \cdot H_0$
Legend	
р _{ма}	Start-of-scale value to be set
р _{ме}	Full-scale value to be set
ρ ₁	Density of heavier liquid
ρ ₂	Density of lighter liquid
g	Local acceleration due to gravity
Η _υ	Start-of-scale value
H _o	Full-scale value

Density measurement

Start-of-scale:	$\boldsymbol{p}_{\text{MA}} = \boldsymbol{\rho}_{\text{MIN}} \cdot \boldsymbol{g} \cdot \boldsymbol{H}_{\text{O}}$
Full-scale:	$\boldsymbol{p}_{\text{ME}} = \boldsymbol{\rho}_{\text{MAX}} \cdot \boldsymbol{g} \cdot \boldsymbol{H}_{\text{O}}$
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

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Measuring setups without remote seals

Start-of-scale value

ρ

Transmitter reference line

H_o

<u>+</u> +

H.

Measuring setups for closed containers



┨н

line (corresponding to the temperature

Distance between the measuring points

Local acceleration due to gravity

existing there)

Start-of-scale value

Full-scale value

(spigots)

g

Η_υ Η_ο

 H_{v}

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Measuring setups without remote seals



Level measurement, Version 3	
Start-of-scale	$\Delta p_{MA} = \underbrace{P_{Stat} + \rho \cdot g \cdot H_{U}}_{Transmitter 1} - \underbrace{P_{Stat}}_{Transmitter 2}$
Full-scale:	$\Delta p_{ME} = \underbrace{P_{Stat} + \rho \cdot g \cdot H_{o}}_{Transmitter 1} - \underbrace{P_{Stat}}_{Transmitter 2}$
Legend	
Δp_{MA}	Start-of-scale value to be set
$\Delta p_{\rm ME}$	Full-scale value to be set
ρ	Density of medium in vessel
g	Local acceleration due to gravity
Η _υ	Start-of-scale value
H _o	Full-scale value
H _v	Distance between the measuring points (spigots)

The pressure measuring range (\triangleq 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	Density of heavier liquid with separation layer in vessel
ρ	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
Η _υ	Start-of-scale value
H _o	Full-scale value
H _v	Distance between the measuring points (spigots)

Remote seals for transmitters and pressure gauges

Technical description

Application

The remote seals 7MF48.. can be fitted to SITRANS $\ensuremath{\mathsf{P}}\xspace$ 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 dismounting is possible for cleaning.

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

Remote seals for transmitters and pressure gauges

Technical description

Clamp-on seals

The following types of clamp-on seals exist:

- Sanitary inline seals, e.g. to DIN 11851, Cherry Burrell, triclamp 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 charateristic, 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 charateristic 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-dependents 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 <u>below</u> 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 applicaton.
- 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.
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 RFSF (smooth finish) for other materials	 For absolute pressure transmitters and vacuum applications For other applications Max. pressure 	Copper Viton See nominal pressure of remote seal and transmitter
 Materials Main body for pancake and flange remote seals Wetted parts materials Housing and diaphragm for Inline seals Capillary Armor 	Stainless steel, mat. No. 1.4435/316L See Ordering data Stainless steel, mat. No. 1.4435/ 316L or stainless steel, 7MF4880 and 7MF4883 Stainless steel, mat. No. 1.4571/316Ti Spiral sheath made of stainless steel, mat. No. 304	Capillary Length Internal bore Smallest bending radius Fill fluid For pancake and flange remote seals For sanitary remote seals Ambient temperature Certificates and approvals Classification according to pressure equipment directive (DGPL a7(202 CO)) 	Max. 30 ft. longer lengths on inquiry 0.079 inch 6.0 inch See Ordering data Neobee M20 (food oil) See transmitter and filling liquid For gases of fluid group 1 and liq uids of fluid group 1; complies with roquirements of article 3
		(DGRL 97/23/EC)	with requirements paragraph 3 (sour 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" with extension 3" flush flanged 3" with extension 4" flush flanged 4" with extension 5" flush flanged 5" with extension	2.32 1.89 3.5 2.83 3.5 3.5 4.88 4.88	1.69 2.81 0.23 0.23 0.23 0.23 0.23 0.12 0.12	2.04 5.1 0.21 0.21 0.21 0.21 0.21 0.07 0.07	2.04 5.1 0.21 0.53 0.21 0.21 0.21 0.07 0.07	7.5 7.5 1.5 3.5 1.5 1.5 0.3 0.3
Flange to DIN 2501	DN 50 flush flanged DN 50 with extension DN 80 flush flanged DN 80 with extension DN 100 flush flanged DN 100 with extension DN 125 flush flanged DN 125 with extension	2.32 1.89 3.5 2.83 3.5 3.5 4.88 4.88	1.69 2.81 0.23 0.23 0.23 0.23 0.12 0.12	2.04 5.1 0.21 0.21 0.21 0.21 0.21 0.07 0.07	2.04 5.1 0.21 0.53 0.21 0.21 0.07 0.07	7.5 7.5 1.5 3.5 1.5 1.5 0.3 0.3
Sanitary Tri-Clamp	1 ½" 2" 2 ½" 3" 4"	1.26 1.57 2.32 2.83 3.5	9.51 3.93 1.69 0.58 0.23	35.73 7.67 2.57 0.53 0.21	35.73 7.67 2.57 0.53 0.21	60 30 7.5 3.5 1.5
Button Seal	1 NPT-male 1 ½ NPT-male 2" NPT-male	0.98 1.57 2.05	13.97 3.93 2.23	81.7 7.67 2.57	81.7 7.67 2.57	90 30 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

Pressure Measurement

Remote seals for transmitters and pressure gauges

Technical description

	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" with extension 3" flush flanged 3" with extension 4" flush flanged 4" with extension 5" flush flanged 5" with extension	2.32 1.89 3.5 2.83 3.5 3.5 4.88 4.88	0.384 0.692 0.077 0.154 0.077 0.077 0.038 0.038	0.42 1.051 0.042 0.126 0.042 0.042 0.042 0.017 0.017	0.42 1.051 0.042 0.126 0.042 0.042 0.042 0.017 0.017	3.5 3.5 1 1.5 1 1 0.3 0.3
Flange to DIN 2501	DN 50 flush flanged DN 50 with extension DN 80 flush flanged DN 80 with extension DN 100 flush flanged DN 100 with extension DN 125 flush flanged DN 125 with extension	2.32 1.89 3.5 2.83 3.5 3.5 4.88 4.88	0.384 0.692 0.077 0.154 0.077 0.077 0.038 0.038	0.42 1.051 0.042 0.126 0.042 0.042 0.017 0.017	0.42 1.051 0.042 0.126 0.042 0.042 0.042 0.017 0.017	3.5 3.5 1 1.5 1 1 0.3 0.3
Sanitary Tri-Clamp	2" 2 ½" 3" 4"	1.57 2.32 2.83 3.5	0.961 0.384 0.154 0.077	1.849 0.42 0.126 0.042	1.849 0.42 0.126 0.042	30 3.5 1.5 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	Temperature error of cap-	Temperature error of	Recommended values,
	remote seal	illary	transmitter flange con-	min. spans (observe tem-
	[inH ₂ O/25 °F]	[inH ₂ O/25 °F/3 ft]	nection [inH ₂ O/25 °F]	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

Remote seals for transmitters and pressure gauges

Calculation of temperature error for remote seals

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

$\mathbf{op} = (\mathbf{t}_{RS} - \mathbf{t}_{Cal}) \cdot \mathbf{t}_{RS} + (\mathbf{t}_{Cap} - \mathbf{t}_{Cal}) \cdot \mathbf{t}_{Cap} \cdot \mathbf{t}_{Cap} + (\mathbf{t}_{TR} - \mathbf{t}_{Cal}) \cdot \mathbf{t}_{Pf}$

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
I _{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	I _{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	$f_{PF} = 0.042 \text{ inH}_2\text{O}/25 ^\circ\text{F}$
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:

 $\begin{array}{l} dp = (212\ ^\circ\text{F} - 68\ ^\circ\text{F}) \cdot 0.077\ \text{in}H_2\text{O}/25\ ^\circ\text{F} + (122\ ^\circ\text{F} - 68\ ^\circ\text{F}) \cdot 15\ \text{ft} \\ \cdot 2 \cdot 0.042\ \text{in}H_2\text{O}/25\ ^\circ\text{F} /\ 3\text{ft} + (122\ ^\circ\text{F} - 68\ ^\circ\text{F}) \cdot 0.042\ \text{in}H_2\text{O}/25\ ^\circ\text{F} \\ dp = 0.444\ \text{in}H_2\text{O} + 0.907\ \text{in}H_2\text{O} + 0.091\ \text{in}H_2\text{O} \end{array}$

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.

Remote seals for transmitters and pressure gauges

Technical description

Filling liquid	Density		Temperature	on capillary	illary 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 bar	(p _{abs} <14.5 psi)	p _{abs} >1 bar	(p _{abs} >14.5 psi)	kg/dm ³	(lb/in ³)	m²/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} < (14.5 p	1 bar si)	p _{abs} > 1 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 d	iameter	Max. lengt	h of capilla	ry	
		Diaphragm seal		Inline seal	
DN 25	(1 inch)	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	(8.2 ft)
DN 40	(1½ inch)	4 m	(13.1 ft)	6 m	(19.7 ft)
DN 50	(2 inch)	6 m	(19.7 ft)	10 m	(32.8 ft)
DN 65	(2½ inch)	8 m	(26.2 ft)	10 m	(32.8 ft)
DN 80	(3 inch)	10 m	(32.8 ft)	10 m	(32.8 ft)
Size	4 inch		(30.0 ft)	-	
Size	5 inch		(30.0 ft)	-	-

Remote seals for transmitters and pressure gauges

Pancake type diaphragm seal with flexible capillary tube

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"		3.94	2.32	0.79	12.2
3"	150 2500	5.28	3.50	0.79	21.9
4"	150 - 2500	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 Orderi	ng data	Articl	e No	. (Order	С	DC	le
Pancake type diaphr	agm seal							
with flexible capillary a SITRANS P transmit	extension, connected to ter (order separately)							
for pressure 7MF40	or 7MF42	7 M F	48) (-			
for absolute pressure	e 7MF43	7 M F	48) 1	-			
for differential press	ure 7MF44	7 M F	48) 3	-			
 dual seals for DP 		1			в			
Click on the Article guration in the PIA	No. for the online confi- Life Cycle Portal.							
 2 inch 3 inch 4 inch 5 inch Special design, custor supplied 	class 150 2500 class 150 2500 class 150 2500 class 150 2500 mer information to be	E H L N Z				J	1	Y
Materials and wetted	parts							
 SST 316L Monel 400, mat. No. Hastelloy C276, mat Tantal 	2.4360 . No. 2.4819	A G J K						
Special design, custor supplied	mer information to be	z				K	1	J
Extension length (31	6SS standard)							
Without extension (sta	ndard version)		0					
Special design, custor supplied for extension	mer information to be		9			L	1	Y
System fill								
 Silicone oil DC 200- Silicone oil DC 200- Halocarbon (for O₂-i Silicone oil M5 Syltherm 800 DC704 silicone oil Fluorolube Special desian, custo 	10 50 application) mer inform, to be supplied		1 2 4 5 6 7 8 9			м	1	Y
Length of canillary			•					
• 3 ft				2				
• 5 ft				3				
• 10 ft • 15 ft				4				
• 20 ft				6				
• 25 ft				7				
• 30 ft Special design custo	mer inform to be supplied			8		N	1	v
Further designs				3		IN	•	•
Please add "-Z" to Ar Order code	ticle No. and specifiy							
for 7MF4800								
Integrated flame path	restriction					A	0	1
Certificate of calibratio	on N.I.S.I. (20% steps)					C	1	1 າ
Vacuum service (must	be specified with HT oil)					v	0	2
Calculation of span of questionnaire to be at	transmitter (completed tached)					Ŷ	0	5
for 7MF4801								
Integrated flame path	restriction					A	0	1
Certificate of calibratio	on N.I.S.I. (20% steps)					C	1	1
Calculation of span of questionnaire to be at	transmitter (completed tached)					Y	0	5
for 7MF4803								
Integrated flame path	restriction					A	0	2
Certificate of calibratio	on N.I.S.T. (20% steps)					C	1	1
viaterial conformance	certificate					C	1	2
Calculation of span of	transmitter (completed					v Y	0	5
questionnaire to be at	tached)						Ĵ	-

Remote seals for transmitters and pressure gauges

Flange-type diaphragm seal directly connected



Flange-type diaphragm seal, without extension





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



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

Size	Class	Α	в	С	DM	Е	F	G	Х	Weight
DN										lbs
16"	150	3.50	2.38	1.38	1.3	0.85	0.06	0.62	4	2.2
72	300	3.75	2.62	1.38	1.6	0.85	0.06	0.62	4	2.2
34"	150	3.88	2.75	1.69	1.6	0.85	0.06	0.62	4	2.4
74	300	4.62	3.25	1.69	1.6	0.85	0.06	0.75	4	3.5
-	150	4.25	3.12	2.00	2.1	0.85	0.06	0.62	4	3.1
I	300	4.88	3.50	2.00	2.1	0.85	0.06	0.75	4	3.7
	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
1.5"	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
	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
2"	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
	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
3 "	600	8.25	6.62	5.00	3.5	1.50	0.25	0.88	8	24.2
5	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
	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
4"	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, without extension, dimensions

Remote seals for transmitters and pressure gauges

Overview



Flange-type diaphragm seal, with extension

Dimensions



Size	Class	Α	В	С	DM	E ¹⁾	F	G	Н	X		L	_	
DN														
2"	150	6.00	4.75	262	10	1 00	0.75		0.75	4				
	300	6.50	5.00	3.02	1.0	1.90	0.88		0.75	8				
3"	150	7.50	6.00	E 00	<u> </u>	2 00	0.94	0.06	0.75	4	20	20	10	6 0
	300	8.25	6.62	5.00	2.0	2.99	1.12	0.00	0.88	8	2.0	3.0	4.0	0.0
4"	150	9.00	7.50	6 10	2 E	2 70	0.94		0.75	8				
	300	10.04	7.88	0.19	3.5	3.70	1.25		0.88	8				
-							l							

¹⁾ based on schedule 40

DN = Nominal pipe size

DM = Effective diaphragm diameterClass = 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 Orderi	ng data	Arti	cle N	٧o.	Order	coc	de
Flange-type diaphrag	ym seal						
directly connected to a SITRANS P 7MF40 (order separately)	a or 7MF42	7 M	F 4	8 1	0 -		
Click on the Article guration in the PIA	No. for the online confi- Life Cycle Portal.						
Process connection vertical (transmitter up horizontal	pright)	0 2					
Size and class							
2 inch2 inch2 inch2 inch	class 150 class 300 class 600 class 1500	L M N P					
3 inch3 inch3 inch	class 150 class 300 class 600	Q R S					
 4 inch 4 inch 4 inch Special design, custor 	class 150 class 300 class 400 mer information to be	T U V Z				.1.1	v
supplied		-				JI	I
Materials and wetted	parts						
 SST 316L Monel 400, mat. No. Hastelloy C276, mat Tantal Special design, custor supplied 	2.4360 . No. 2.4819 mer information to be		A G J K Z			K 1	Y
Extension length (31	6SS standard)						
Without extension (sta	ndard version)		0				
2" 4"			1				
6"			3				
8° Special design custor	mer information to be		4			11	v
supplied for extension			Ŭ			- ·	
System fill							
 Silicone oil DC 200-1 Silicone oil DC 200-5 Halocarbon (for O₂-a Silicone oil M5 Syltherm 800 DC704 silicone oil Fluorolube 	10 50 application)			1 2 4 5 6 7 8			
Special design, custor supplied	mer information to be			9		M 1	Y
Further designs Please add "- Z " to Art Order code	icle No. and specifiy						
Integrated flame path	restriction					A 0	1
Rotatable Flange						B 0	1
Certification of calibra	tion N.I.S.T. (20% steps)					C1	1
Material conformance	certificate					C 1	2
Vacuum service (must					V O	1	
questionnaire to be at	transmitter (completed ached)					ΥÜ	5

Pressure Measurement

Remote seals for transmitters and pressure gauges

Flange-type diaphragm seal with extension

Selection and	Ordering data		Article No.	Order code	Selection and	d Ordering da	ata	Article No.	Orde	er code
Mounting flang directly mounte 7MF46	ge ed at SITRANS I er separately)	P for Level	7 M F 4 8 1 3	2 -	Mounting flar Seal, w/o exte capillary exte extension	nge at High-S ension Flang ension on Iow	Side, Flange-Type e-type seal via /-side without			
Click on the guration in the state	Article No. for t he PIA Life Cyc	the online confi- le Portal.			for SITRANS F 7MF44 ■ ■ (or	ofor differentian der separately	al pressure)	7 M F 4 8 1	3 - B	
Flange ANSI B16.5	Size 2 inch	Class 150	L		Click on the guration in	e Article No. f the PIA Life C	or the online confi- Cycle Portal.			
	2 inch	300 150	M Q		Flange	Size	Class			
Special design	4 inch , customer info	300 150 300 rmation to be	R T U Z	J 1 Y	ANSI B16.5	2 inch 3 inch	150 300 150 300 150	L M Q R T		
• SST 316L	wetted parts		A		Special desig	n, customer ir	300 nformation to be	Ŭ Z		J 1 Y
 Monel 400, m Hastelloy C27 Tantal Special design supplied 	at. No. 2.4360 76, mat. No. 2.4 , customer infol	819 rmation to be	J K Z	K 1 Y	Materials and • SST 316L • Monel 400, r • Hastelloy C2	I wetted parts mat. No. 2.436 276, mat. No.	s 60 2.4819	A G J		
Extension leng Without extensi 2" 4" 6" 8" Special design supplied for exi	gth (316SS sta on (standard ve 50 mm 100 mm 150 mm 200 mm , customer infor tension	ndard) ersion, 0 mm) rmation to be	0 1 2 3 4 9	L1Y	Tantal Special design, customer information to be supplied Extension length (316SS standard) Without extension (standard version, 0 mm) 2" 50 mm 4" 100 mm 6" 150 mm			C Z 0 1 2 3		K 1 Y
System fill • Silicone oil DC • Silicone oil DC • Halocarbon (1 • Silicone oil M: • Syltherm 800 • DC704 silicor • Fluorolube	C 200-10 C 200-50 for O ₂ -applicati 5 ne oil	on)	1 2 4 5 6 7 8		8" Special desig supplied for e System fill • Silicone oil E • Halocarbon • Silicone oil N • Sulthorm 800	200 mm n, customer ir xtension DC 200-10 DC 200-50 (for O ₂ -applic	nformation to be	4 9 1 2 4 5 6		L1Y
Special design supplied Further design Please add "-Z	, customer intol	and specifiy	9		DC704 silico Fluorolube Special design supplied	one oil n, customer ir	nformation to be	7 8 9		M 1 Y
Order code		1 3				ath at low aid	10	_		
Integrated flam	e path restriction	on		A 0 1	• 3 ft	gui al iow-sic	ie		2	
Rotatable Flang	ge			B 0 1	• 5 ft				3	
Certificates: Certification of	calibration N.I.S	S.T. (20% steps)		C 1 1	• 10 ft • 15 ft				4 5	
Material confor	mance certifica	ite		C 1 2	• 20 ft • 25 ft				6 7	
Vacuum service	e (must be spe	cified with HT oil)		V 0 4	• 30 ft				8	
Calculation of s questionnaire to	pan of transmit b be attached)	ter (completed		Y 0 5	Special design supplied	n, customer ir	nformation to be		9	
					Further design Please add "-	ns Z" to Article N	lo. and specifiy			

Order code

Rotatable Flange

Integrated flame path restriction

Material conformance certificate

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

Vacuum service (must be specified with HT oil)

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

V 0 4

Y 0 5

Remote seals for transmitters and pressure gauges

Overview



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

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

Dimensions (Connection to ASME B16.5)



(G2	G3	х	Α	в	С	DM	Е
Size	Class							
1/2"	150#	1⁄2"-13UNC	4	5.91		0.06		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	5.91	0.06	3.5	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#	34"-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

Remote seals for transmitters and pressure gauges

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

Selection and Ordering data	Article N	o. Orde	er co	de
Diaphragm seal "flanged off-line low-pres- sure type"				
direct mount to transmitter, 316 stainless steel upper housing SITRANS P for 7MF44 ■ ■ or 7MF46 ■ ■ (order separately)	7 M F 4 8	14-		
Click on the Article No. for the online confi- guration in the PIA Life Cycle Portal.				
Size and class				
 ½ inch class 150#RF ½ inch class 300#RF ½ inch class 600#RF ¾ inch class 150#RF ¾ inch class 150#RF ¾ inch class 300#RF ¾ inch class 300#RF ¾ inch class 150#RF 1 inch class 150#RF 1 inch class 300#RF 1 inch class 300#RF 1 ½ inch class 300#RF 1 ½ inch class 300#RF 1 ½ inch class 300#RF 2 inch class 150#RF 2 inch class 300#RF 2 inch class 300#RF 2 inch class 300#RF 2 inch class 300#RF 2 inch class 600#RF 2 inch class 600#RF 2 inch class 300#RF 2 inch class 600#RF 2 inch class 600#RF 2 inch class 600#RF 2 inch class 600#RF 2 inch class 900#RF 	ABCEFGJKLZPQSTJ Z		J1	Ŷ
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	A G J K Z		K 1	Y
Supplied	-			
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				
 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 9		M 1	Y
<i>Further designs</i> Please add "-Z" to Article No. and specifiy Order code				
Integrated flame path restriction Certification of calibration N.I.S.T. (20 % steps)			A 0 C 1	1 (
Material conformance certificate			C 1	2
Vacuum service (must be specified with HT oil)			V O	1
Calculation of span of transmitter (completed questionnaire to be attached)			YO	5

1

Remote seals for transmitters and pressure gauges

Flange-type diaphragm seal with flexible capillary tube

1



Flange-type diaphragm seal with flexible capillary extension

Dimensions (Connection to ASME B16.5)



Flange-type diaphragm seal for flanges \leq 1"



Flange-type diaphragm seal for flanges ≥ 1.5 "

Con	nectio	n to A	SME	B16.5	5					
Size	Class	Α	В	С	DM	Е	F	G	Х	Weight
DN										lbs
14.	150	3.50	2.38	1.38	1.3	0.85	0.06	0.62	4	2.2
72	300	3.75	2.62	1.38	1.6	0.85	0.06	0.62	4	2.2
37"	150	3.88	2.75	1.69	1.6	0.85	0.06	0.62	4	2.4
9/4	300	4.62	3.25	1.69	1.6	0.85	0.06	0.75	4	3.5
4.	150	4.25	3.12	2.00	2.1	0.85	0.06	0.62	4	3.1
I	300	4.88	3.50	2.00	2.1	0.85	0.06	0.75	4	3.7
	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
1.5"	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
	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
2"	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
	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
01	600	8.25	6.62	5.00	3.5	1.50	0.25	0.88	8	24.2
3	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
	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
4"	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

Remote seals for transmitters and pressure gauges

Selection and C	Prdering data	Artic	e No	Orc	ler code
Flange-type dia	phragm seal				
with flexible capi a SITRANS P tra	illary extension, connected to nsmitter (order separately)				
for pressure 7M	IF40	7 M F	482	20-	
for absolute pre	essure 7MF43	7 M F	482	21-	
for differential p	oressure 7MF44	7 M F	482	23-	
dual seals for [OP	1	-	В	
Click on the A guration in the	Article No. for the online confi- e PIA Life Cycle Portal.				
Size and class					
• 2 inch	class 150	L			
 2 inch 2 inch 	class 300	M			
• 2 inch	class 000	D			
• 3 inch	class 150	à			
• 3 inch	class 300	R			
 3 inch 	class 600	S			
• 4 inch	class 150	T			
• 4 inch	class 300	U			
• 4 Inch • 5 inch	class 400	w			
• 5 inch	class 300	X			
• 5 inch	class 400	Ŷ			
Special design, supplied	customer information to be	z			J 1 Y
Materials and w	etted parts				
• SST 316L		A			
 Monel 400, ma 	t. No. 2.4360	G	i		
 Hastelloy C276 Tantal 	6, mat. No. 2.4819	J			
Tarilai Special decign	austamar information to be				K 1)
supplied	cusioner information to be	4			K I I
Extension lengt	h (316SS standard)				
Without extensio	n (standard version)		0		
Special design,	customer information to be		9		L1)
supplied for exte	ension				
System fill					
 Silicone oil DC 	200-10		1		
 Silicone oil DC 	200-50		2		
 Halocarbori (lo Silicono oil M5 	O_2 -application)		4		
Syltherm 800			6		
 DC704 silicone 	e oil		7		
Fluorolube			8		
Special design,	customer information to be		9		M 1 \
supplied					
Length of capill	ary				
• 3 ft				2	
• 5 ft • 10 ft				3	
• 10 IL • 15 ft				5	
• 20 ft				6	
• 25 ft				7	
• 30 ft				8	
Special design,	customer information to be			9	N 1 Y
supplied					

Flange-type diaphragm seal with flexible capillary tube

Selection and Ordering data	Order code
Further designs Please add "-Z" to Article No. and specifiy Order code	
for 7MF4820 Integrated flame path restriction Rotatable Flange DP "H" flange service 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 B 0 1 B 0 2 C 1 1 C 1 2 V 0 1 Y 0 5
for 7MF4821 Integrated flame path restriction Rotatable Flange 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 B 0 1 C 1 1 C 1 2 Y 0 5
for 7MF4823 Integrated flame path restriction Rotatable Flange 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 B 0 1 C 1 1 C 1 2 V 0 3 Y 0 5

Pressure Measurement

Remote seals for transmitters and pressure gauges

Overview



Diaphragm seal "flanged off-line type"

Dimensions (Connection to ASME B16.5)



G1	(G2	G3	Α	в	С	DM	Е
	1/2"	150#	4 x 1⁄2"-13UNC	3.75	2.38			
	1/2"	300#	4 x 1/2"-13UNC	3.75	2.62	1.38		
	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		2.1	274
1/4"-NPT	1"	600#	4 x ⁵ / ₈ "-11UNC	4.88	3.50			
1/2"-NPT	1 ½"	150#	4 x 1⁄2"-13UNC	5.00	3.88		2.1	3.74
	1 ½"	300#	4 x ¾"-10UNC	6.12	4.50	2.88		
	1 1⁄2"	600#	4 x ¾"-10UNC	6.12	4.50			
	2"	150#	4 x ⁵ / ₈ "-11UNC	6.00	4.75			
	2"	300#	8 x 0.75	6.50	5.00	3.62		
	2"	600#	8 x 0.75	6.50	5.00			

G1	G2		G3	F	н	J	Weight
							lbs
	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
1/4"-NPT	1"	600#	4 x ⁵ / ₈ "-11UNC	1.26	0.25	2.36	8.5
1⁄₂"-NPT	1 1⁄2"	150#	4 x 1⁄2"-13UNC	0.87	0.06	1.97	5.0
	1 1⁄2"	300#	4 x ¾"-10UNC	0.87	0.06	1.97	6.6
	1 1⁄2"	600#	4 x ¾"-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

 $\begin{array}{l} \mathsf{DM} = \mathsf{Effective} \ \text{diaphragm} \ \text{diameter} \\ \mathsf{G1} = \mathsf{Instrument} \ \text{connection} \\ \mathsf{G2} = \mathsf{Process} \ \text{connection} \end{array}$

G3 = Threaded bolt hole

All dimensions in inches unless otherwise noted

Diaphragm seal "flanged off-line type", dimensions

Remote seals for transmitters and pressure gauges

Diaphragm seal "flanged off-line type"

Selection and Ordering data	Article No.	Order co	de	Selection and Ordering data	Article No. Orde	r code
Diaphragm seal "flanged off-line type" MAWP depends on flange				Further designs Please add "-Z" to Article No. and specifiy		
 with flexible armored capillary, 316 stainless steel upper housing SITRANS P for 7MF40 ■ and 7MF42 ■ (order separately) ✓ Click on the Article No. for the online configuration in the PIA Life Cycle Portal. 	7 M F 4 8 2	6 -	•	Integrated flame path restriction DP "H" flange service Certification of calibration N.I.S.T. (20 % steps)		A 0 1 B 0 2 C 1 1
Seal design Stud mount All-welded stud mount Through-hole flange mount	1 2 3			Vacuum service (must be specified with HT oil) Calculation of span of transmitter (completed questionnaire to be attached)		V 0 1 Y 0 5
Size and class 5/2 inch class 150#RF 1/2 inch class 300#RF 1/2 inch class 300#RF 1/2 inch class 600#RF 3/4 inch class 150#RF 3/4 inch class 300#RF 3/4 inch class 300#RF 3/4 inch class 300#RF 1/4 inch class 300#RF 1 inch class 300#RF 1 inch class 300#RF 1 inch class 300#RF 1 1/2 inch class 300#RF 1 1/2 inch class 300#RF 2 inch class 150#RF 2 inch class 300#RF 3 pecial design, customer information to be supplied Materials and wetted parts • SST 316L • Monel 400, mat. No. 2.4360 • Hastelloy C276, mat. No. 2.4819 • Tantal Special design, cust	A B C E F G J K L N P Q S T U Z Z	J 1 K 1	ΙY			
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	ΙY			
System fill Silicone oil DC 200-10 Silicone oil DC 200-50 Halocarbon (for O ₂ -application) Silicone oil M5 Syltherm 800 DC704 silicone oil Fluorolube 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 Special design, customer information to be supplied	1 2 4 5 6 7 8 9	M 1 2 3 4 5 6 7 8 9 N 1	ΙY			

1

Remote seals for transmitters and pressure gauges

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

Overview



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

Dimensions (Connection to ASME B16.5)



(G2	G3	Х	Α	в	С	DM	Е
Size	Class							
1/2"	150#	1⁄2"-13UNC	4	5.91		0.06		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	5.91	0.06	3.5	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#	34"-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 connectionG3 = 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

Remote seals for transmitters and pressure gauges

			Diaphragm seal "flanged off-line	low-pres	sure	e typ	e"
Selection and Ordering data	Article No.	Order code	Selection and Ordering data	Article No	. Ord	er coo	de
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	7 M F 4 8 2	7 - B	with flexible armored capillary, 316 stainless steel upper housing SITRANS P for 7MF44	7 M F 4 8	28- B		
↗ Click on the Article No. for the online confi- guration in the PIA Life Cycle Portal.			Click on the Article No. for the online confi- guration in the PIA Life Cycle Portal.				
Size and class			Size and class				
 ½ inch class 150#RF ½ inch class 300#RF ½ inch class 600#RF ¾ inch class 150#RF ¾ inch class 150#RF ¾ inch class 150#RF ¼ inch class 150#RF 1 inch class 150#RF 1 inch class 300#RF 1 inch class 300#RF 1 inch class 150#RF 1 ½ inch class 150#RF 1 ½ inch class 300#RF 1 ½ inch class 300#RF 2 inch class 150#RF 2 inch class 300#RF 2 inch class 600#RF 300#RF 300#RF 4 inch class 600#RF 50 inch class 600#RF 50 inch class 150#RF 50 inch class 600#RF 2 inch class 600#RF 2 inch class 600#RF 2 inch class 600#RF 300#RF 4 inch class 600#RF 50 inch class 150#RF 50 inch class 150#RF 50 inch class 150#RF 50 inch class 600#RF 50 inch class 150#RF 50 inch class 150#RF 50 inch class 600#RF 50 inch class 60#RF 50 inch cla	A B C E F G J K L N P Q S T U Z	J1Y	 ½ inch class 150#RF ½ inch class 300#RF ½ inch class 600#RF ¾ inch class 150#RF ¾ inch class 150#RF ¾ inch class 300#RF ¾ inch class 150#RF 1 inch class 150#RF 1 inch class 300#RF 1 inch class 300#RF 1 inch class 300#RF 1 inch class 150#RF 1 ½ inch class 150#RF 1 ½ inch class 150#RF 2 inch class 150#RF 2 inch class 300#RF 2 inch class 300#RF 2 inch class 300#RF 2 inch class 600#RF 2 inch class 600#RF 2 inch class 600#RF 2 inch class 600#RF 2 inch class 150#RF 2 inch class 600#RF 2 inch class 150#RF 	A B C E F G J K L N P Q S T U Z		J 1	Ŷ
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	К 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		К 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	L1Y	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 • Silicone oil DC 200-10 • Silicone oil DC 200-50 • Halocarbon (for O ₂ -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	System fill • Silicone oil DC 200-10 • Silicone oil DC 200-50 • Halocarbon (for O ₂ -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		0 2 3 4 5 6 7 8	Length of capillary • 3 ft • 5 ft • 10 ft • 15 ft • 20 ft • 25 ft • 30 ft • Special design, suptomor information to be		2 3 4 5 6 7 8	N 1	V
Special design, customer information to be supplied		9 N 1 Y	supplied		5		_
Further designs Please add "-Z" to Article No. and specifiy Order code			Please add "-Z" to Article No. and specifiy Order code				
Integrated flame path restriction		A 0 1	Integrated flame path restriction			A O	2
DP "H" flange service		B 0 2	Material conformance certificate			C1	1
Certification of calibration N.I.S.T. (20 % steps)		C 1 1	Vacuum service (must be specified with HT oil)			VO	1
Material conformance certificate		C 1 2	Calculation of span of transmitter (completed			Y O	5
Vacuum service (must be specified with HT oil)		V 0 1	questionnaire to be attached)				
Calculation of span of transmitter (completed questionnaire to be attached)		Y 0 5					

Flushing rings

Remote seals for transmitters and pressure gauges



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. • DN 50 • DN 80 • DN 100 • DN 125	Nom. press. PN 16 PN 100 PN 16 PN 100 PN 16 PN 100 PN 16 PN 100
 2 inch 3 inch 4 inch 5 inch 	Class 150 class 600 Class 150 class 600 Class 150 class 600 Class 150 class 600
• 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 ¹ ⁄4 • G ¹ ⁄2 • 1⁄4-18 NPT • 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		di		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

Remote seals for transmitters and pressure gauges

Flushing rings

Selection and Or	dering data	Article No. Ord. cod				
Flushing ring		7 M F 4 8	325-			
for remote seals 7	MF4900 to 7MF4923	1				
Click on the Art ration in the PIA	icle No. for the online configu- A Life Cycle Portal.					
Nom. diam.	Nom. press.					
 2 inch 3 inch 4 inch 5 inch 	Class 150 600 Class 150 600 Class 150 600 Class 150 600	G H J K				
Other version Add Order code a Nominal diameter	nd plain text: ; Nominal pressure:	Z	J 1			
ASME B16.5 - RF 125 250 - RFSF - RJT ring groov Other version Add Order code a Sealing face:	AA e nd plain text:	M Q R Z	K 1			
Flushing holes (2 • Female thread G • Female thread G • Female thread 1/ • Female thread 1/	e off) ¹ ¹ / ₄ ¹ / ₂ ¹ -18 NPT ² -14 NPT	1 2 3 4				
Material • Stainless steel 3 Other version Add Order code a Material:	16L nd plain text:	0)) M 1			
Further designs Please add "-Z" to Order code	o Article No. and specifiy					
Acceptance test	certificate B					

Remote seals for transmitters and pressure gauges

Overview



Diaphragm seal with quick connection, with slotted union nut

Dimensions (connection to ASME B16.5)



DN [mm]	MAWP [psi]	A [mm]	В	С	DM	Е	G1	Weight [lbs]
25	600	Rd 52 x ¹ / ₆	2.48	0.83	1.0	2.36	14"-NPT	1.3
32	600	Rd 58 x ¹ / ₆	2.76	0.83	1.3	2.72	Or	1.6
40	600	Rd 65 x ¹ / ₆	3.07	0.83	1.6	2.17	1⁄2"-NPT	2.5
50	360	Rd 78 x ¹ / ₆	3.62	0.87	2.1	2.32	temale	2.8

Diaphragm seal with quick connection, with slotted union nut



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

Overview



Diaphragm seal with quick connection, Tri-Clamp connection

Dimensions (connection to ASME B16.5)



Size [in]	MAWP [psi]	Α	В	С	DM	E	G1	Weight [lbs]
1.5	600	1.50	1.97	1.71	1.0			1.3
2	550	1.50	2.52	2.22	1.6		1⁄4"-NPT	1.7
2.5	450	2.52	3.05	2.78	2.0	1.38	0r 1⁄2"-NPT	2.0
3	350	2.31	3.58	3.28	2.8		female	2.4
4	250	2.31	4.68	4.34	3.5			2.7

 $\rm DM$ = Effective diaphragm diameter $\rm MAWP$ = 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

Remote seals for transmitters and pressure gauges

Inline diaphragm seal with quick connection



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

Dimensions (connection to ASME B16.5)



Size	MAWP	Α	в	С	DM	E	F	G1	Weight
[in]	[psi]								[lbs]
1.5	500		1.18	2.00	1.3	1.74	1.38	1⁄4"-NPT	1.3
2	450	1.42	1.18	2.64	1.8	2.24	1.44	Or 16" NDT	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

Disphragm cool	Article No. Order code
unaphragm seal	7 M E 4 0 4 0
with quick connection for gage pressure transmitter SITRANS P 7MF40 ■ and 7MF42 ■ (order separately) made of 316 SS	A 0 - B
A 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 DIN 11 851 with screw necks DN 25/PN 40	1 B 1 C 1 D 1 E 1 F 1 G 2 B
DN 32/PN 40 DN 40/PN 40 DN 50/PN 25 DN 65/PN 25 DN 80/PN 25 Tri-Clamp Connection	2 D 2 E 2 F 2 G
1 ½" 600 psi 2" 550 psi 2 ½" 450 psi 3" 350 psi Varivent (Tuchenhagen)	4 L 4 M 4 N 4 P
Size 25132 Size 40150 Sanitary (4" Tank Spud)	5 C 5 E
2" extension 6" extension "I"-Line (Cherry Burrell - male)	6 B 6 D
1 ½" 500 psi 2" 450 psi 3" 350 psi Special design, customer information to be supplied	5 U 5 V 5 W 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 M1Y
Length of capillary	
 Direct Mount 3 ft 5 ft 10 ft 15 ft 20 ft 25 ft 	0 2 3 4 5 6 7
 30 ft Special design, customer information to be supplied 	8 9 N 1 Y
Further designs Please add "-Z" to Article No. and specifiy Order code	
Certification of calibration N.I.S.T. (20 % steps)	C11
Material conformance certificate	C 1 2
Vacuum service (must be specified with vege- table 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.)	P10
Sanitary Tank Spud U-ring (1 pc.) Sanitary Tank Spud Weldolet 2" extension	P 1 1 P 1 2
Sanitary Tank Spud Weldolet 6" extension (1 pc.)	P 1 3

Remote seals for transmitters and pressure gauges

Inline diaphragm seal with quick connection

Selection and Ordering data	Ar	tic	le	No	. (Ord	er	СС	bd	е
Diaphragm seal										
with quick connection for differential trans-	7	MF	= 4	8 4	13	•				
(order separately) made of 316 SS		ŀ	٥ ۱	•		в				
↗ Click on the Article No. for the online confi- guration in the PIA Life Cycle Portal.										
Process connection										
DIN 11 851 with slotted union nut DN 50/PN 25	1	E								
DN 65/PN 25 DN 80/PN 25	1 1	F G								
DIN 11 851 with screw necks	2	E								
DN 65/PN 25 DN 65/PN 25 DN 80/PN 25	2	F G								
Tri-Clamp Connection	4	м								
2 550 psi 2 ½" 450 psi	4	N								
3" 350 psi 4" 250 psi	4	P Q								
"I"-Line (Cherry Burrell - male)										
3" 350 psi 4" 200 psi	5 5	N X								
Sanitary (4" Tank Spud)	6	B								
6" extension	6	D								
Special design, customer information to be supplied	9	Z					+	H J	1 1	Y Y
System fill										
Vegetable oil Glycerin/Water 86.5/13.5 %				1						
Neobee M20 Mineral oil				3 ⊿						
Special design, customer information to be				9			I	М	1	Y
supplied										
Length of capillary					2					
• 5 ft					3					
• 10 ft • 15 ft					4					
• 20 ft					6					
• 25 ft					8					
Special design, customer information to be supplied					9		l	N	1	Y
Further designs Please add -7" to Article No. and specifiv								I		
Order code										
Certification of calibration N.I.S.T. (20 % steps)							(С	1	1
Material conformance certificate							(C	1	2
Vacuum service (must be specified with vege- table oil)	Vacuum service (must be specified with vege- table 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)								Р	1	0
Sanitary Tank Spud O-ring (1 pc., two required)								Р	1	1
Sanitary Tank Spud Weldolet 2" extension (1 pc., two required)								Ρ	1	2
Sanitary Tank Spud Weldolet 6" extension (1 pc., two required)								Ρ	1	3

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

Remote seals for transmitters and pressure gauges

Inline diaphragm seal with quick connection



Inline diaphragm seal with quick connector, DIN 11851 with thread

Dimensions (connection to ASME B16.5)



В		E	G	н	J	L	MB
1/8 1.10	1.57	0.71	0.12	0.16	0.47	4.1	0.63
1/6 1.50	2.05	1.18	0.14	0.28	0.55	5.0	1.02
1/6 2.17	2.56	1.65	0.14	0.28	0.55	6.3	1.50
1/6 2.68	3.07	2.13	0.14	0.28	0.55	6.7	1.97
1/6 3.35	3.74	2.80	0.14	0.31	0.63	7.2	2.60
(1/4 4.33	4.33	3.35	0.14	0.31	0.79	7.2	3.19
(1/4 5.12	5.12	4.09	0.16	0.39	0.79	7.2	3.94
	I/8 1.10 1/6 1.50 1/6 2.17 1/6 2.68 1/6 3.35 <1/4	B C 1/8 1.10 1.57 1/6 1.50 2.05 1/6 2.17 2.56 1/6 2.68 3.07 1/6 3.35 3.74 <1/4	B C E 1/8 1.10 1.57 0.71 1/6 1.50 2.05 1.18 1/6 2.17 2.56 1.65 1/6 2.68 3.07 2.13 1/6 3.35 3.74 2.80 (1/4 4.33 4.33 3.35 (1/4 5.12 5.12 4.09	B C E G 1/8 1.10 1.57 0.71 0.12 1/6 1.50 2.05 1.18 0.14 1/6 2.17 2.56 1.65 0.14 1/6 2.68 3.07 2.13 0.14 1/6 3.35 3.74 2.80 0.14 1/6 3.35 3.74 2.80 0.14 1/4 4.33 4.33 3.35 0.14	B C E G I 1/8 1.10 1.57 0.71 0.12 0.16 1/6 1.50 2.05 1.18 0.14 0.28 1/6 2.17 2.56 1.65 0.14 0.28 1/6 2.68 3.07 2.13 0.14 0.28 1/6 3.35 3.74 2.80 0.14 0.31 (1/4 4.33 4.33 3.35 0.14 0.31 (1/4 5.12 5.12 4.09 0.16 0.39	B C E G F G F G F G F G F G F G F G F G F G F G F G F G F G F G	B C E G F G

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



Inline diaphragm seal with quick connection, Tri-clamp

Dimensions (connection to ASME B16.5)



Size MAWP		Α	В	С	E	L	MB
	[psi]						
3⁄4"	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 $^\circ\text{F}$, 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

Remote seals for transmitters and pressure gauges

Inline diaphragm seal with quick connection

Overview

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

Dimensions (connection to ASME B16.5)



Size	MAWP	Α	в	С	E	н	L	MB
	[psi]							
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	Arti	cle	No	. (Drde	r c	00	de
Inline diaphragm seal								
with quick connection for transmitter SITRANS P for 7MF40 and 7MF42 (order separately) made of 316 SS	7 M	F 4 A 0	8 5	50	- В			
Click on the Article No. for the online confi- guration 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 DN 100/PN 25 Tri-Clamp Connection 1" 600 psi 2" 550 psi 2" 550 psi 2" 350 psi 3" 350 psi 1"2" 500 psi 1"2" 500 psi 2" 450 psi 3" 350 psi	2 B 2 D 2 E 2 C 2 C 2 C 2 C 4 C 4 L 4 M 4 P 5 C 5 V 5 V 5 V							
Special design, customer information to be supplied	9 Z				-	H J	1 1	Y 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			м	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
<i>Further designs</i> Please add "- Z" to Article No. and specifiy Order code								
Certification of calibration N.I.S.T. (20 % steps)						С	1	1
Material conformance certificate						С	1	2
Vacuum service (must be specified with vege- table oil)						۷	0	3
Calculation of span of transmitter (completed questionnaire to be attached)						Y	0	5

Remote seals for transmitters and pressure gauges

Diaphragm seal "threaded design"

Overview	

Diaphragm seal "threaded design"

Dimensions (Connection to ASME B16.5)



G1	G2	Α	В	DM	E	F	Weight [lbs]
1/4"-NPT	1/4"-NPT or 1/2"-NPT	0.74	1.18	2.1	2.20	0.63	3.0
Or 1⁄2"-NPT	3/4"-NPT	3.74	1.41	2.1	2.36	0.79	3.4
72 INI I	1"-NPT		1.77	2.1	3.46	1.89	3.6

 $\begin{array}{l} G1 = Instrument \ connection, \ G2 = Process \ connection \\ DM = Effective \ diaphragm \ diameter \\ All \ dimensions \ in \ inches \ unless \ otherwise \ noted \end{array}$

Diaphragm seal "threaded design"

Selection and Ordering data	Article No. Order code
Diaphragm seal "threaded design" MAWP 3675 psi	
with flexible armored capillary, 316 stainless steel upper housing SITRANS P for 7MF40	7 M F 4 8 6 1 -
 Click on the Article No. for the online configuration in the PIA Life Cycle Portal. 	
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 J1Y
Materials and wetted parts	
 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 inform, to be supplied 	A F D G J K Z K1Y
Flushing port(s)	
None 1 x ¼"NPT-female 2 x ¼"NPT-female Special design customer inform to be supplied	0 2 4 9 1 1 X
System fill	
 System mi Silicone oil DC 200-10 Silicone oil DC 200-50 Halocarbon (for O₂-application) Silicone oil M5 Syltherm 800 DC704 silicone oil Fluorolube Spacial design, curatementiaform, to be supplied 	1 2 4 5 6 7 8
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 inform. to be supplied	9 N 1 Y
Further designs Please add "-Z" to Article No. and specify Order code	
Integrated flame path restriction DP "H" flange service 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 B 0 2 C 1 1 C 1 2 V 0 1 Y 0 5

Remote seals for transmitters and pressure gauges

Diaphragm seal "threaded, low-pressure design"

Overview



Diaphragm seal "threaded, low-pressure design"





Diaphragm seal "threaded, low-pressure design, dimensions

G2	Α	в	С	DM	E	F	Weight
							[lbs]
1⁄4"-NPT	5.91	4.92	1.25	3.5	3.00	0.90	14.0
1⁄2"-NPT			1.25		3.00	0.90	14.0
34"-NPT			1.38		3.20	1.10	14.2
1"-NPT			1.75		3.50	1.40	14.5
	G2 1/4"-NPT 1/2"-NPT 3/4"-NPT 1"-NPT	G2 A 1/4"-NPT //2"-NPT 3/4"-NPT 5.91 1"-NPT //2"-NPT	G2 A B ½"-NPT 5.91 4.92 ¾"-NPT 5.91 4.92	G2 A B C 1¼"-NPT 1.25 1.25 ½"-NPT 5.91 4.92 1.25 ¾"-NPT 1.125 1.38 1.75	G2 A B C DM 1/4"-NPT 1.25 1.25 1.25 1.38 3/4"-NPT 5.91 4.92 1.38 3.5 1"-NPT 1.75 1.75 1.75	G2 A B C DM E 1/4"-NPT	G2 A B C DM E F 1/4"-NPT 1/2"-NPT 1.25 3.00 0.90 3/4"-NPT 5.91 4.92 1.25 3.5 3.00 0.90 3/4"-NPT 5.91 4.92 1.25 3.5 3.00 0.90 3/4"-NPT 5.91 1.38 1.38 3.50 1.40

G1 = Instrument connection

G2 = Process connectionDM = Effective diaphragm diameter

All dimensions in inches unless otherwise noted

Selection and Ordering data	Article No.	Orde	r code
Diaphragm seal "threaded, low-pressure design" MAWP 1,500 psi			
with flexible armored capillary, 316 stainless steel upper housing SITRANS P for 7MF40	7 M F 4 8 6	62- ■B	
Click on the Article No. for the online confi- guration in the PIA Life Cycle Portal.			
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		К 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		L1Y
System fill			
Silicone oil DC 200-10 Silicone oil DC 200-50 Halocarbon (for O_2 -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		M1Y
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 specifiy 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

Remote seals for transmitters and pressure gauges

Diaphragm seal "threaded, low-pressure design"

Selection and Ordering data	Article N	lo. Ora	der cod
Diaphragm seal "threaded, low-pressure design" MAWP 1,500 psi			
with flexible armored capillary, 316 stainless steel upper housing SITRANS P for 7MF44	7 M F 4 8	363- - B	
Click on the Article No. for the online confi- guration in the PIA Life Cycle Portal.			
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
Neteriale and wetted parts			
SST 316	Δ		
SST 316L with Hastelloy C276 diaphragm	Ē		
 SST 316L with PFA coated diaphragm (good upto 500 °F) 	D		
Monel 400, mat. No. 2.4360 Hastelloy C276, mat. No. 2.4819 Hastelloy C276 lower beueing with Tantalum	GJ		
diaphragm	n		
Special design, customer information to be supplied	z		K 1
Flushing port(s)			
None 1 x ¹ / ₄ "NPT-female	0		
2 x ¼"NPT-female	4		
Special design, customer information to be supplied	9		L 1
System fill			
Silicone oil DC 200-10 Silicone oil DC 200 50	1		
 Halocarbon (for O₂-application) 	4	4	
Silicone oil M5	Ę	5	
 Syltherm 800 DC704 silicone oil 	t d	5 7	
• Fluorolube	8	3	
Special design, customer information to be supplied	ę)	M 1
Length of capillary			
• 3 tt • 5 ft		2	
• 10 ft		4	
• 15 ft		5	
• 20 IL • 25 ft		6 7	
• 30 ft		8	
Special design, customer information to be supplied		9	N 1
Further designs Please add "-Z" to Article No. and specifiy Order code			
Integrated flame path restriction			A 0
Certification of calibration N.I.S.T. (20 % steps)			C 1
Material conformance certificate			C 1
Vacuum service (must be specified with HT oil)			V 0
Calculation of span of transmitter (completed questionnaire to be attached)			Y 0

Pressure Measurement

Remote seals for transmitters and pressure gauges

Overview



Inline diaphragm seal, wafer for pressure

Dimensions (Connection to ASME B16.5)



Size	Class	Α	МВ	L	Weight [lbs]
1"		2.4	1.12		3.1
1.5"		3.3	1.69		4.8
2"		3.7	2.15		5.5
3"	150# - 2500#	5.1	3.25	2.36	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	Artic	le l	No.	Orde	r cc	de
Inline diaphragm seals wafer assembled to						
SITRANS P for 7MF40 and 7MF42	7 M 1	F 4	88	0 -		
Click on the Article No. for the online confi- guration 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 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 Special design, customer information to be	L M P Q Z	AD GJKZ			۲.	1 Y
supplied System fill • Silicone oil DC 200-10 • Silicone oil DC 200-50 • Halocarbon (for O_2 -application) • Silicone oil M5 • DC704 silicone oil • Fluorolube Special design, customer information to be supplied			1 2 4 5 7 8 9		M ·	1 Y
Length of capillary • Direct mount • 3 ft • 5 ft • 10 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 specifiy 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 (C ⁻ C ⁻ V (Y () 1 1 1 1 2) 1) 5

Remote seals for transmitters and pressure gauges

Inline diaphragm seal, wafer for pressure

Selection and Ordering data	Article	No.	Ord	der c	ode
Inline diaphragm seals wafer assembled to					
SITRANS P for 7MF44	7 M F 4	88	3 -		
Click on the Article No. for the online confi- guration in the PIA Life Cycle Portal.	1 0	-	B		
Size and class					
1 inch class 150 to 2500 1 ½ inch class 150 to 2500 2 inch class 150 to 2500 3 inch class 150 to 2500 4 inch class 150 to 2500 Special design, customer information to be supplied	L M P Q Z			J	1 Y
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 Special design, customer information to be supplied 	A D J K Z			к	1 Y
System fill	_				
 Silicone oil DC 200-10 Silicone oil DC 200-50 Halocarbon (for O₂-application) Silicone oil M5 DC704 silicone oil Fluorolube Special design, customer information to be supplied 		1 2 4 5 7 8 9		М	1 Y
Length of capillary	-				
 3 ft 5 ft 10 ft 15 ft 20 ft 25 ft 30 ft Special design, customer information to be 			2 3 4 5 6 7 8 9	N	1 Y
Further designs Please add "-Z" to Article No. and specifiy Order code					
Integrated flame path restriction				A	0 2
Certification of calibration N.I.S.T. (20 % steps)				С	11
Material conformance certificate				С	12
Vacuum service (must be specified with HT oil)				V	03
Calculation of span of transmitter (completed questionnaire to be attached)				Y	05

Diaphragm seal, saddle

Overview

Remote seals for transmitters and pressure gauges

_					
	Dimonolono	(Connortion	+~ /	ACME.	D16 E)
	Dimensions	Connection	IO A	ADIVIE	D 10.31
					,

Radius R	To fit Pipe size	Pipe O.D.	G1
1.49	2.5	3.00	
1.77	3.0	3.50	
2.24	4.0	4.50	
2.76	5.0	5.50	1⁄4"-NPT
3.35	6.0	6.63	or 1⁄2"-NPT
4.311	8.0	8.625	female
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



Remote seals for transmitters and pressure gauges

Diaphragm seal, saddle

Selection and Ordering data
Diaphragm seal, saddle, MAWP 1,500 psi
with flexible armored capillary or direct mount, 316 stainless steel upper housing and assemply hardware SITRANS P for 7MF40 or 7MF42 (order separately)
Click on the Article No. for the online confi- guration in the PIA Life Cycle Portal.
Nominal pipe size • 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) • Retrofit 4" M&G style (8 bolt pattern) • Retrofit 4" M&G style (8 bolt pattern) • Diaphragm material • 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 Special design, customer information to be supplied
Saddle Material None (Retrofit order) Carbon steel, Ni plated SST 316L Hastelloy C276, mat. No. 2.4819 Special design, customer information to be supplied
System fill • Silicone oil DC 200-10 • Silicone oil DC 200-50 • Halocarbon (for O ₂ -application) • Silicone oil M5 • DC704 silicone oil • Fluorolube 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 Special design, customer information to be supplied
Further designs Please add "-Z" to Article No. and specifiy
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)

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.
- <u>Questionnaires</u>

Checking of combination between transmitter and remote seal

- Setups for transmitters without remote seals, with associated equations for calculation
- <u>Questionnaires</u> 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-ofscale 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 7MF4033 and 7MF4800, A/B 7MF4034 7MF4810. 7MF4820, 7MF4826. 7MF4827 7MF4840. 7MF4850. 7MF4861, 7MF4862 7MF4880 and 7MF4890 C1/C2 7MF4233 and 7MF4800, 7MF4234 7MF4810, (vacuum-proof design 7MF4820 7MF4826 required) 7MF4827. 7MF4840 7MF4850, 7MF4861, 7MF4862 7MF4880 and 7MF4890 7MF4333 and 7MF4801 and 7MF4334 7MF4821 D 7MF4433, 7MF4803, 7MF4434, 7MF4823, 7MF5403 and 7MF4828, 7MF5413 7MF4843, 7MF4863 and 7MF4883 Ε 7MF4433, 7MF4813 7MF4434 7MF5403 and 7MF5413 G/H/J 7MF4433. 7MF4803. 7MF4823, 7MF4828, 7MF4434, 7MF5403 and 7MF5413 7MF4843, 7MF4863 and 7MF4883

Pressure Measurement

Remote seals for transmitters and pressure gauges

Measuring setups with remote seals

Dimensional drawings

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





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

Installation type A				
Start-of-scale	$:p_{MA} = \rho_{FL} \cdot g \cdot H_{U} - \rho_{Oil} \cdot g \cdot H_{1}$			
Full-scale:	$p_{\rm ME} = \rho_{\rm FL} \cdot g \cdot H_{\rm o} - \rho_{\rm oil} \cdot g \cdot H_{\rm 1}$			
Installation ty	pe B			
Start-of-scale	$: p_{MA} = \rho_{FL} \cdot g \cdot H_{U} + \rho_{Oil} \cdot g \cdot H_{1}$			
Full-scale:	$p_{\text{ME}} = \rho_{\text{FL}} \cdot g \cdot H_{\text{O}} + \rho_{\text{Oil}} \cdot g \cdot H_{\text{1}}$			
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			
Η _υ	Start-of-scale value			
H _o	Full-scale value			
H ₁	Distance between vessel flange and pressure trans.			

Types of installation for absolute level measurements (closed vessels)



Installation type C₁ and C₂

Start-of-scale:	$p_{MA} = p_{START} + p_{Oil} \cdot g \cdot H_1$
Full-scale:	$p_{\rm ME} = p_{\rm END} + \rho_{\rm Oil} \cdot g \cdot H_1$
Legend	
р _{мА}	Start-of-scale value to be set
р _{ме}	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: $H_1 \ge 200 \text{ mm} (7.9 \text{ inch})$

Type of installation for differential pressure and flow measurements



Installation type D				
Start-of-scale	$p: p_{MA} = p_{START} - p_{OII} \cdot g \cdot H_V$			
Full-scale:	$p_{_{ME}} = p_{_{END}} - \rho_{_{Oil}} \cdot g \cdot H_{_{V}}$			
Legend				
р _{ма}	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			
$ ho_{\text{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)			

Remote seals for transmitters and pressure gauges

Measuring setups with remote seals

Types of installation for level measurements (closed vessels)



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)

н

Installation type H

below the lower measuring point

Installation type for vacuum applications

between the measuring points, no vacuum

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

Installation typ	be G, H and J	Legend
Start-of-scale:	$p_{MA} = \rho_{FL} \cdot g \cdot H_{U} - \rho_{Oil} \cdot g \cdot H_{V}$	P _{MA}
Full-scale:	$p_{ME} = \rho_{EI} \cdot g \cdot H_{0} - \rho_{OII} \cdot g \cdot H_{V}$	р _{ме}
		ρ_{FL}
		ρ_{oil}

-	
	Start-of-scale value to be set
	Full-scale value to be set
	Density of medium in vessel
	Density of filling oil in the capillary to the remote seal

g	Local acceleration due to gravity
H_{U}	Start-of-scale value
Н _о	Full-scale value
H_v	Distance between the measuring points (spigots)

Installation type J

Installation type E

Full-scale:

Legend

 p_{MA}

 p_{ME} ρ_{FL}

 ρ_{Oil}

g H_u

 H_{o}

 H_v

Start-of-scale: $p_{MA} = \rho_{FL} \cdot g \cdot H_{U} - \rho_{Oil} \cdot g \cdot H_{V}$

the remote seal

Full-scale value

points (spigots)

Start-of-scale value

 $\boldsymbol{p}_{\text{ME}} = \boldsymbol{\rho}_{\text{FL}} \cdot \boldsymbol{g} \cdot \boldsymbol{H}_{\text{O}} \text{-} \boldsymbol{\rho}_{\text{Oil}} \cdot \boldsymbol{g} \cdot \boldsymbol{H}_{\text{V}}$

Start-of-scale value to be set

Density of medium in vessel

Density of filling oil in the capillary to

Local acceleration due to gravity

Distance between the measuring

Full-scale value to be set



Remote seals for transmitters and pressure gauges

Measuring setups without remote seals

Overview

Notes

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

Dimensional drawings

Pressure transmitters for differential pressure, for flanging

Measuring setups for open containers







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

evel measurement		
Start-of-scale:	$p_{MA} = \boldsymbol{\rho} \cdot \mathbf{g} \cdot H_{U}$	
ull-scale:	$p_{ME} = \boldsymbol{\rho} \cdot \mathbf{g} \cdot \mathbf{H}_{O}$	
.egend		
MA	Start-of-scale value to be set	
ME	Full-scale value to be set	
)	Density of medium in vessel	
I	Local acceleration due to gravity	
H _U	Start-of-scale value	
۹ ₀	Full-scale value	

Separation	layer	measurement

Start-of-scale:	$\boldsymbol{p}_{MA} = \boldsymbol{g} \cdot (\boldsymbol{H}_{U} \cdot \boldsymbol{\rho}_{1} + (\boldsymbol{H}_{O} - \boldsymbol{H}_{U}) \cdot \boldsymbol{\rho}_{2})$
Full-scale:	$p_{ME} = \rho_1 \cdot g \cdot H_0$
Legend	
р _{мА}	Start-of-scale value to be set
p _{ME}	Full-scale value to be set
ρ ₁	Density of heavier liquid
ρ2	Density of lighter liquid
g	Local acceleration due to gravity
Η _υ	Start-of-scale value
H _o	Full-scale value

Density measurement

Start-of-scale:	$\boldsymbol{p}_{\text{MA}} = \boldsymbol{\rho}_{\text{MIN}} \cdot \boldsymbol{g} \cdot \boldsymbol{H}_{\text{O}}$
Full-scale:	$\boldsymbol{p}_{\text{ME}} = \boldsymbol{\rho}_{\text{MAX}} \cdot \boldsymbol{g} \cdot \boldsymbol{H}_{\text{O}}$
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

Remote seals for transmitters and pressure gauges

Measuring setups without remote seals

Measuring setups for closed containers





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
$\Delta p_{\rm ME}$	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
Η _υ	Start-of-scale value
H _o	Full-scale value
H _v	Distance between the measuring points (spigots)



Separation layer measurement

Start-of-scale: $\Delta p_{MA} = g \cdot (H_{U} \cdot \rho_{1} + (H_{O} - H_{U}) \cdot \rho_{2} - H_{V} \cdot \rho'_{2})$

-ull-scale:	$\Delta p_{ME} = g \cdot (H_{O} \cdot \boldsymbol{\rho}_{1} - H_{V} \cdot \boldsymbol{\rho}_{2}')$
_egend	
∆p _{MA}	Start-of-scale value to be set
∆p _{ME}	Full-scale value to be set
D ₁	Density of heavier liquid with separation layer in vessel
D ₂	Density of lighter liquid with separation layer
0' ₂	Density of liquid in the negative pressure line
	(corresponding to the temperature existing there)
9	Local acceleration due to gravity
Hu	Start-of-scale value
H _o	Full-scale value
H _v	Distance between the measuring points (spigots)

SIEMENS

Questionnaire

for hydrostatic level measurements

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H.

ΛH . H₀

Order date:
Processing date:
Ordering code (customer):
Ordering code (supplier):
Customer reference:
Measuring point:
Position:
Dimensions:
Pressure: bar Temperature: K °C Measuring range: cm m (please mark with cross) m
Article No. of transmitter SITRANS P DS III/P300/P310/P410 ¹⁾ :
7 M F 4

The different pressures and tem- peratures (densities) in the vessel and in the reference column result in an offset in the start-of-scale and full-scale values. The calibration data are deter- mined in addition. It is also checked whether – as a result of the range offset – the ordered transmitter is suitable for this measurement.	

Please supply the following characteristic data so that we can calculate the measuring range, start-of-scale value, full-scale value and calibration data:

Open or not under pres	sure ²⁾	
		bar
Lowest		bar
Normal ³⁾		bar
Highest		bar
1		K
mension according to sket	tch) H _V =	m
e to full-scale value		
Start-of-scale value	H _U =	m
Full-scale value	H _O =	m
om measuring		m
l with a cross: No Yes ^{4,}		
	Open or not under pres Lowest Normal ³⁾ Highest mension according to ske e to full-scale value Start-of-scale value Full-scale value om measuring	Open or not under pressure ²⁾ Lowest Normal ³⁾ Highest mension according to sketch) $H_V =$ e to full-scale value $H_U =$ Start-of-scale value $H_O =$ om measuring

Reference line filled with condensation! Falling differential pressure with increasing level.
 Reference line without gas or filled with gas (air). Rising differential pressure with increasing level.
 If not specified otherwise, this value is assumed as the calculation pressure of the level meter.

The input signal (differential pressure) depends on the density (pressure and temperature). The influence is practically negligible for a lowest liquid level of 20 to 30% of the distance between the measuring

- 4) If a pressure correction of the level is required, the measuring range must be the same as the distance between the measuring points, and the transmitter is designed for the calculation pressure of 1 bar (absolute). Pressure correction means: the static pressure and the temperature are measured separately and calculated by a correction computer or measured-value computer.