

Diaphragm seal with flange connection High-temperature version to 450 °C [842 °F] Model 990.45, with internal diaphragm

WIKA data sheet DS 99.45

Applications

- For processes with particularly high medium temperatures from 360 °C [680 °F] to a maximum of 450 °C [842 °F]
- For gaseous and liquid aggressive media that are not highly viscous or crystallising, also in aggressive environments
- Process industry
- Oil and gas industry, chemical and petrochemical industries

Special features

- Common standards and nominal widths available
- When special materials are selected, all wetted parts are made of the selected material
- Version with integrated flushing connections available



High-temperature version, model 990.45

Description

Diaphragm seals are used for the protection of pressure measuring instruments in applications with difficult media. In diaphragm seal systems, the diaphragm of the diaphragm seal effects the separation of the instrument and the medium. The pressure is transmitted to the measuring instrument via the system fill fluid which is inside the diaphragm seal system.

For the implementation of demanding customer applications, there is a wide variety of designs, materials and system fill fluids available.

For further technical information on diaphragm seals and diaphragm seal systems, see IN 00.06 "Application, operating principle, designs".

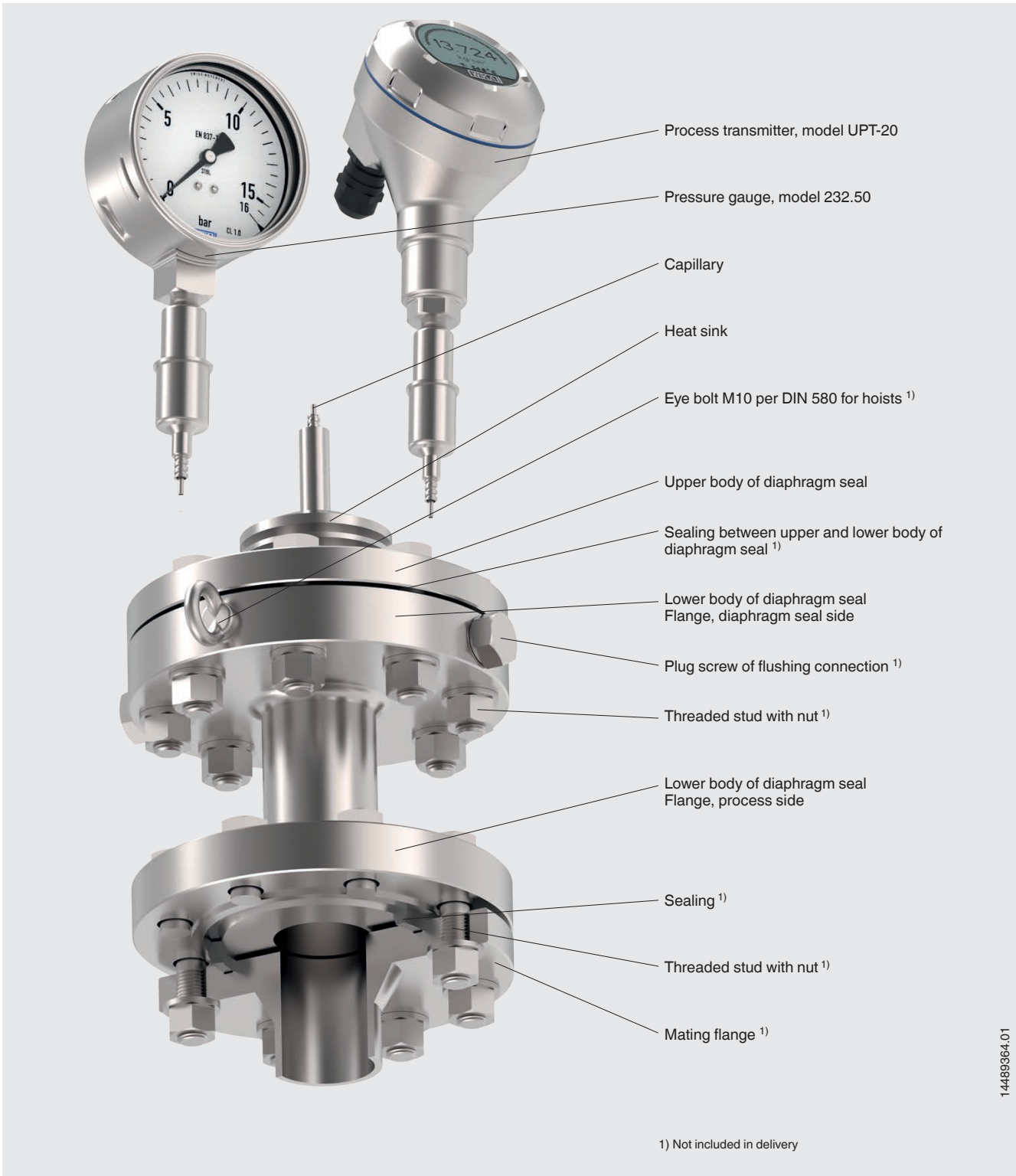
Model 990.45 is a high-temperature version consisting of the upper and lower body of a diaphragm seal. The lower body of the diaphragm seal can optionally be designed with flushing connections.

These components have been developed explicitly for applications with very hot media. The process connection is available in the established dimensions in line with the usual standards for this market.

Mounting of the diaphragm seal to a measuring instrument is usually made via a flexible capillary.

Installation example

Diaphragm seal systems with model 990.45



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Specifications

Diaphragm seal	
Version	Diaphragm seal with flange connection to lower body of diaphragm seal
Mounting type	Diaphragm seal mounted to pressure measuring instrument via capillary
Level of cleanliness of wetted parts	Oil- and grease-free per ASTM G93-03 level F (< 1,000 mg/m ²)
Origin of wetted parts	<ul style="list-style-type: none"> ■ International ■ EU, CH, USA
System fill fluid	KN32, high-temperature silicone oil
Flushing connection	
Integrated in lower body of diaphragm seal	<ul style="list-style-type: none"> ■ Without ■ Flushing bore on both sides (e.g. G ¼ or G ½) ■ Flushing bore on one side (e.g. G ¼ or G ½) ■ Flange version
Separate flushing ring	→ See "Accessories"
Design per NACE ¹⁾	<ul style="list-style-type: none"> ■ Without ■ MR 0175 (ISO 15156-3) ■ MR 0103 (ISO 17945)
Vacuum service (see IN 00.25)	<ul style="list-style-type: none"> ■ Basic service ■ Advanced service ■ Premium service

1) Observe pressure and temperature limits

Flange connections

The connection between the lower and upper body of the diaphragm seal is designed with size DN 80 or 3" flanges. The size of the flange to the process side can be selected from the table below in order to enable an optimal adaptation to the process. The effects on the assembly parts of the flange mounting must be taken into account.

→ See "Additional operating instructions for diaphragm seals, high-temperature version, model 990.45" for the scope of delivery.

Flange, process side	
Standard	<ul style="list-style-type: none"> ■ In line with DIN EN 1092-1 ■ In line with ASME B16.5
Size	
In line with DIN EN 1092-1 Sealing face: Form B1	<ul style="list-style-type: none"> ■ DN 25 ■ DN 50 ■ DN 80
In line with ASME B16.5 Sealing face: RJF groove	<ul style="list-style-type: none"> ■ 1" ■ 1 ½" ■ 2" ■ 3"

Other flanges on request

Material	
Material (wetted)	
Lower body of diaphragm seal	Stainless steel 1.4878 (321H)
Diaphragm	<ul style="list-style-type: none"> ■ Stainless steel 1.4435 (316L) ■ Stainless steel 1.4435 (316L) with gold plating
Material (in contact with the environment)	
Upper body of diaphragm seal	Stainless steel 1.4404 (316L)

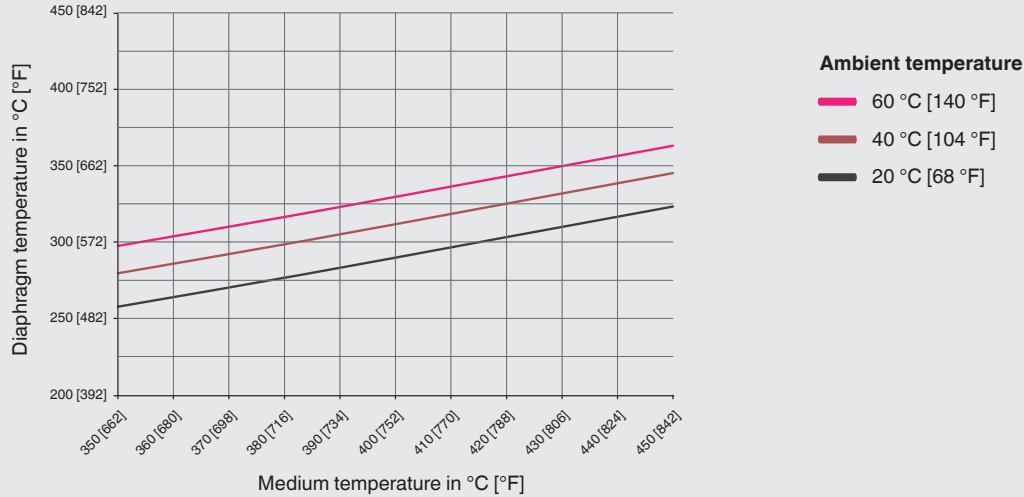
Other materials on request

Operating conditions

Medium temperature range ^{1) 2)}	-20 ... +450 °C [-4 ... +842 °F]
Ambient temperature range	-20 ... +60 °C [-4 ... +140 °F]

- 1) To ensure the desired cooling effect, the radiant heat must be able to be emitted unhindered to the environment.
 2) The maximum permissible medium temperature of the diaphragm seal system is limited by the joining method, by the system fill fluid and by the pressure measuring instrument.

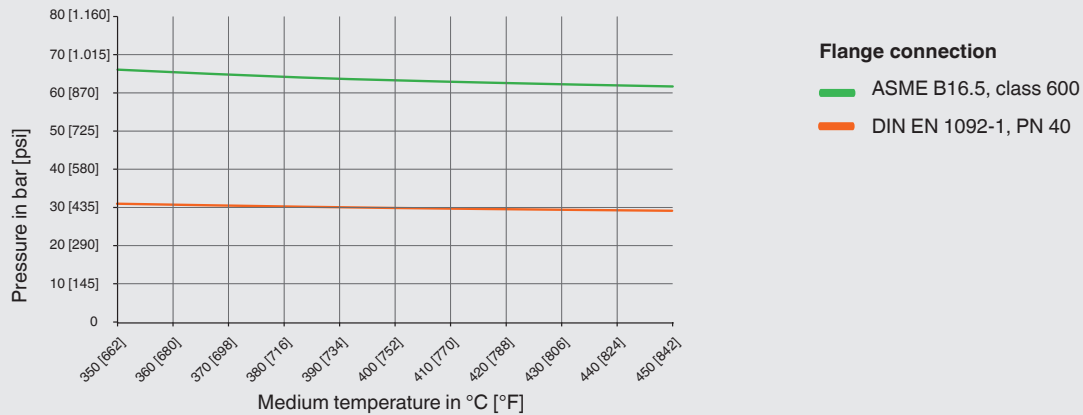
Diaphragm temperature/medium temperature diagram



Operating conditions of diaphragm seal systems

For the operation of each diaphragm seal system, it must be ensured that the permissible pressure/temperature rating is maintained depending on the components used, their materials and the system fill fluid. For this purpose, the specifications of the applicable standards and Technical information IN 00.25, with respect to the system fill fluid, must be observed.

Pressure/temperature diagram



Diaphragm seal systems with model 990.45 are able to measure the pressure of very hot processes with high accuracy. This can lead to hot surfaces that may, if necessary, need to be provided with contact protection. The components of the diaphragm seal system must not be provided with thermal insulation.

Certificates (option)

Certificates

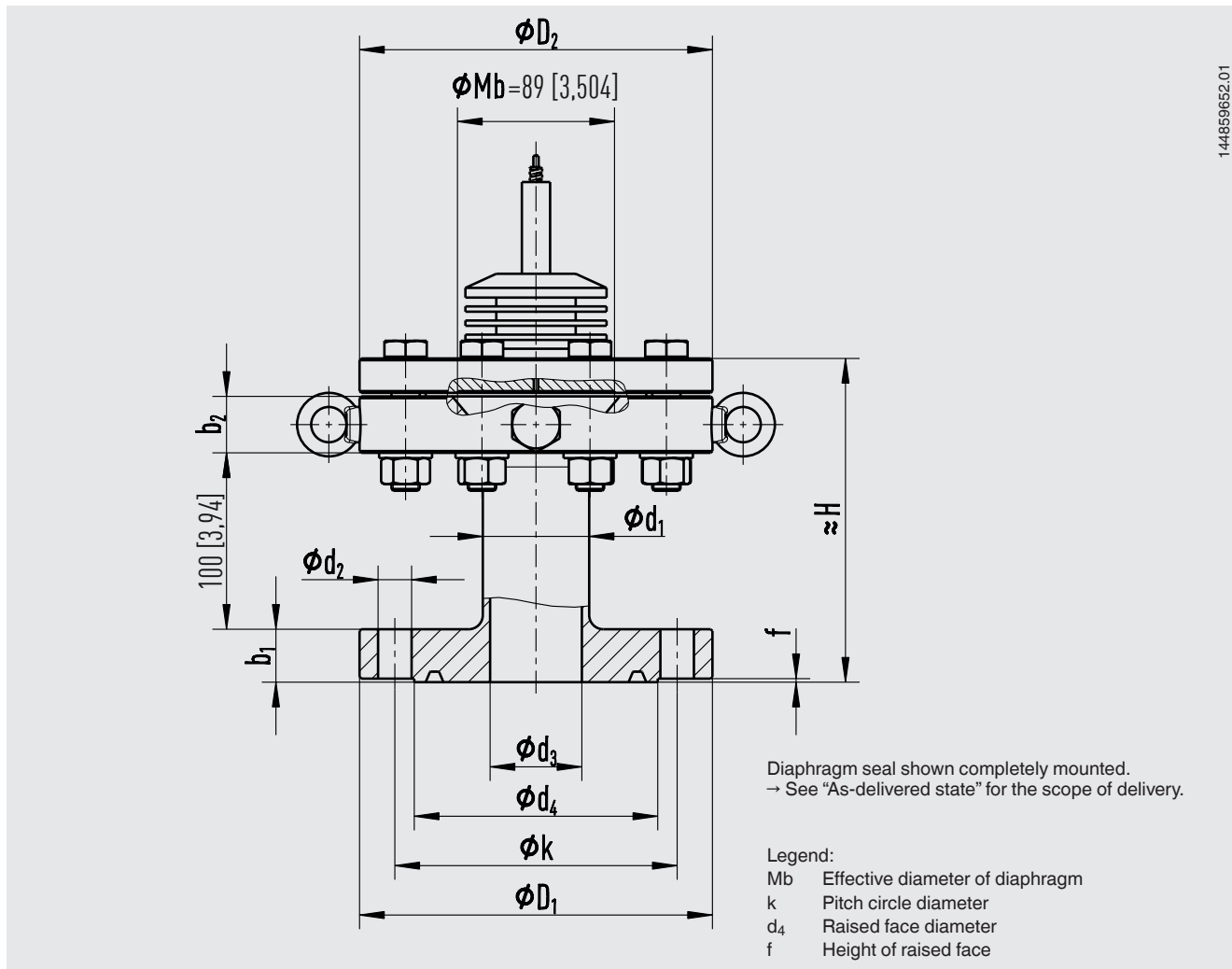
Certificates

- 2.2 test report per EN 10204 (e.g. state-of-the-art manufacturing, material proof, indication accuracy for diaphragm seal systems)
- 3.1 inspection certificate per EN 10204 (e.g. material proof for wetted metal parts, indication accuracy for diaphragm seal systems)

→ For approvals and certificates, see website

Dimensions in mm [in]

Model 990.45 with flange connection in line with DIN EN 1092-1

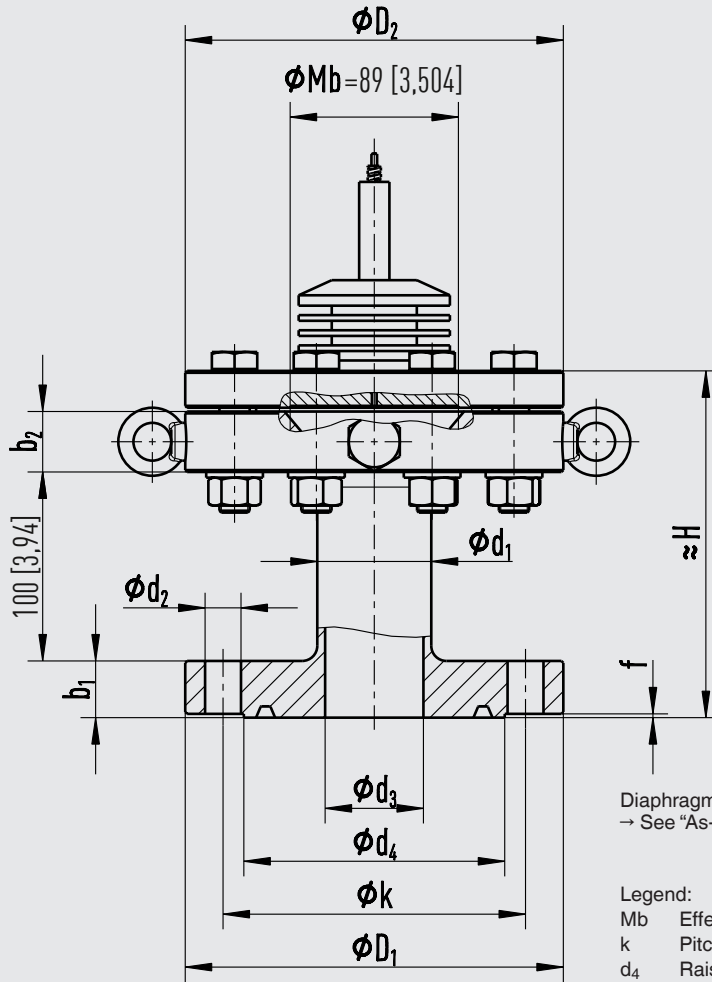


Sealing face: Form B1

DN	PN	Dimensions in mm [in]										
		D ₁	D ₂	k	H	d ₁	d ₂	d ₃	d ₄	b ₁	b ₂	f
25	40	115 [4.528]	200 [7.874]	85 [3.346]	180 [7.087]	43 [1.693]	4 x 14 [4 x 0.551]	34.5 [1.358]	68 [2.677]	18 [0.709]	34 [1.339]	2 [0.079]
50	40	165 [6.496]	200 [7.874]	125 [4.921]	182 [7.165]	78 [3.071]	4 x 18 [4 x 0.709]	62 [2.441]	102 [4.016]	20 [0.787]	34 [1.339]	2 [0.079]
80	40	200 [7.874]	200 [7.874]	160 [6.299]	186 [7.323]	112 [4.409]	8 x 18 [8 x 0.709]	95 [3.74]	138 [5.433]	24 [0.945]	34 [1.339]	2 [0.079]

Model 990.45 with flange connection in line with ASME B16.5

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Diaphragm seal shown completely mounted.
→ See "As-delivered state" for the scope of delivery.

- Legend:
- Mb Effective diameter of diaphragm
 - k Pitch circle diameter
 - d₄ Raised face diameter
 - f Height of raised face

Sealing face: RJF groove

DN	Class	Dimensions in mm [in]										
		D ₁	D ₂	k	H	d ₁	d ₂	d ₃	d ₄	b ₁	b ₂	f
1"	400 / 600	125 [4.921]	210 [8.268]	88.9 [3.50]	209 [8.228]	48 [1.890]	4 x 19 [4 x 0.748]	26.5 [1.043]	70 [2.756]	23.9 [0.941]	40 [1.575]	6.4 [0.252]
1 1/2"	400 / 600	155 [6.102]	210 [8.268]	114.3 [4.500]	214 [8.425]	64 [2.520]	4 x 22 [4 x 0.866]	40.9 [1.61]	90.5 [3.563]	28.7 [1.130]	40 [1.575]	6.4 [0.252]
2"	400 / 600	165 [6.496]	210 [8.268]	127 [5.000]	218 [8.583]	78 [3.071]	8 x 19 [8 x 0.748]	52.5 [2.067]	108 [4.252]	33.4 [1.315]	40 [1.575]	8 [0.315]
3"	400 / 600	210 [8.268]	210 [8.268]	168.3 [6.626]	225 [8.74]	101 [3.976]	8 x 22 [8 x 0.866]	78 [3.071]	146 [5.748]	39.8 [1.567]	40 [1.575]	8 [0.315]

Accessories and spare parts

Model	Description	Order number
	910.27 Flushing ring for flange-connection diaphragm seals → See data sheet AC 09.05	On request
	IVM Monoflange, process and instrument version → See data sheet AC 09.17	On request
	IBF2, IBF3 Monoblock with flange connection → See data sheet AC 09.25	On request
	910.16 Instrument mounting bracket form H per DIN 16281, 100 mm, aluminium, black	9091858
	Instrument mounting bracket form H per DIN 16281, 100 mm, stainless steel	9091882
	→ See data sheet AC 09.05	On request

Ordering information

Pressure measuring instrument model (per data sheet) / Mounting (heat sink, capillary) / Materials (upper body, sealing face, diaphragm) / Min. and max. medium temperature / Min. and max. ambient temperature / System fill fluid / Certificates / Level of cleanliness of wetted parts / Origin of wetted parts / Design per NACE / Instrument mounting bracket / Process connection (standard, nominal width, nominal pressure, sealing face) / Flushing connection

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