

Diaphragm Seal

990.10 male threaded connection
with pressure gauge

E 06.01.01

Ed.17.01

Design	Diaphragm Seal with male threaded for process With pressure gauge in stainless steel
Type	990.10
Pressure rating	PN 100 for pressure range 0-1 bar to 0-100 bar PN 250 for pressure range 0-160 bar and 0-250 bar
Material standard	Upper body of stainless steel 1.4404 (316L) Lower body and connection of stainless steel 1.4404 (316L) Diaphragm of stainless steel 1.4435 (316L) Retainer flange and bolts of stainless steel 1.4404 (316L) Sealing PTFE (max +260°C) Special material see page 2
Level of cleanliness	Oil and grease free per ASTM G93-03 level E (< 550 mg/m ²)
Process connection	G1/2" male or 1/2"NPT male or G1/2" female Option G3/8", G3/4" or G1" male or female Option 1/2"NPT, 3/4"NPT or 1"NPT female Option with drilled connection Ø 9 mm
Working Pressure	90% of full scale range by fluctuating pressure full scale value by short time pressure
Process temperature	Process temperature standard max +200°C Option lowest temperature to max -90°C Option highest temperature to max +400°C Max temperature depending on material and filling media
Ambient temperature	Ambient temperature standard +10+40°C Option lowest temperature to max -40°C Option highest temperature to max +60°C
Cooling/capillary	The pressure instrument must be protected in process temperatures over +200°C with cooling tower or capillary
Filling media	KN 2 silicone oil (standard) temperature -45+300°C KN 17 silicone oil for low temperatures -90+200°C KN 32 silicone oil for high temperatures -25+400°C KN 21 halocarbhone for oxygen and chlorine -60+175°C KN 70 silicone free filling -20+200°C KN 59 Neobee M-20 FDA (Food & Pharma) -35+260°C KN 92 white mineral oil FDA (Food & Pharma) -15+260°C
Certificate (option)	EN 10204-3.1 Certificate wetted parts incl. chemical analysis EN 10204-3.1 Certification of class and accuracy EN 10204-3.1 Accuracy calibration values listed EN 10204-3.1 Pressure and stability test EN 10204-3.1 Helium leak test
More options	Mounted TAG-schild with customer numbers Design according to NACE MR 0175 or MR 0103 Origen of wetted parts from EU, Schweiz or USA Sealing Metal C spring, stainless steel +260+400°C Retainer flange and bolts in steel, highly heat-resistant +400°C

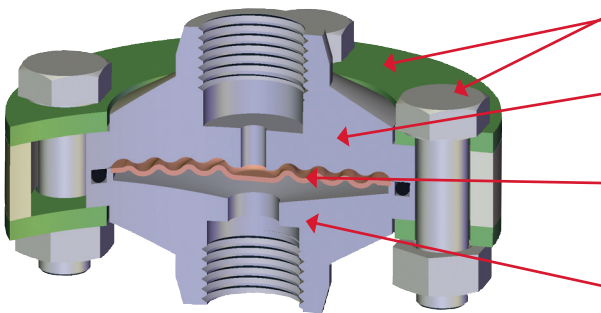


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Material for upper body and wetted parts



Retainer flange and bolts

Standard = stainless steel 1.4404 (316L)

Upper body

Standard = stainless steel 1.4404 (316L)

Diaphragm

Standard = stainless steel 1.4435 (316L)

Lower body and connection

Standard = stainless steel 1.4404 (316L)

Lower body stainless steel 1.4404 (316L) Material membran	Temperature
Stainless steel 1.4435 (316 L) standard	max +400°C
Stainless steel 1.4541 (321)	max +400°C
Stainless steel 1.4571 (316Ti)	max +400°C
Stainless steel with ECFTE-coating	max +150°C
Stainless steel with PFA-coating	max +260°C
Stainless steel with Gold-plating	max +400°C
Hastelloy C22 (2.4602)	max +260°C
Hastelloy C276 (2.4819)	max +400°C
Monel 400 (2.4360)	max +400°C

Lower body stainless steel 1.4404 (316L) Material membran	Temperature
Inconel 600 (2.4816)	max +400°C
Inconel 625 (2.4856)	max +400°C
Incoloy 825 (2.4858)	max +400°C
Duplex 2205 (1.4462)	max +300°C
Superduplex 2507 (1.4410)	max +300°C
Titanium (3.7035)	max +150°C
Titanium (3.7235)	max +150°C
Tantalum	max +150°C
Nickel	max +260°C

Lower body and diaphragm = material wetted parts	Temperature
Stainless steel 1.4571 (316Ti)	max +400°C
Stainless steel with ECFTE-coating	max +150°C
Stainless steel with PFA-coating	max +260°C
Duplex 2205 (1.4462)	max +300°C
Superduplex 2507 (1.4410)	max +300°C
Hastelloy C22 (2.4602)	max +260°C

Lower body and diaphragm = material wetted parts	Temperature
Hastelloy C276 (2.4819)	max +400°C
Monel 400 (2.4360)	max +400°C
Incoloy 825 (2.4858)	max +400°C
Titanium (3.7035)	max +400°C
Titanium (3.7235)	max +260°C
Nickel	max +400°C

Upper body, lower body and diaphragm = upper body + wetted parts	Temperature
Stainless steel 1.4571 (316Ti)	max +400°C
Duplex 2205 (1.4462)	max +300°C
Superduplex 2507 (1.4410)	max +300°C

Upper body, lower body and diaphragm = upper body + wetted parts	Temperature
Hastelloy C276 (2.4819)	max +400°C
Incoloy 825 (2.4858)	max +400°C
Titanium (3.7035)	max +400°C

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Pressure gauges for mounting with diaphragm seal 990.10



Stainless steel version

Case of stainless steel dim 100 mm, wetted parts of stainless steel
Accuracy Cl.1,0%, pressure range max 250 bar
Ingress protection IP 65 EN 60529/IEC 529

Pressure limitation 90% of full scale value by fluctuating pressure

2840 = standard without case filling

2940 = with liquid filled case (glycerine)

2880 = with vibration damped movement



Stainless steel safety version

Case of stainless steel dim 100 mm, wetted parts of stainless steel
Safety version EN 837-1 (S3) with safety wall behind the scale

Accuracy Cl.1,0%, pressure range max 250 bar

Ingress protection IP 65 EN 60529/IEC 529

Pressure limitation 90% of full scale value by fluctuating pressure

232.30 = standard without case filling

233.30 = with liquid filled case (glycerine)



With electrical switch

Case of stainless steel dim 100 mm, wetted parts of stainless steel
Safety version EN 837-1 (S3) with safety wall behind the scale

Accuracy Cl.1,0%, pressure range max 250 bar

Ingress protection IP 65 EN 60529/IEC 529

Pressure limitation 90% of full scale value by fluctuating pressure

Magnet spring switch 821 or inductive switch 831

Single switch with function max or min

Double switch with function max-min, min-max, 2x max or 2x min

PGS23.100 = case with or without liquid filled case

Options for pressure gauges





- Dial with unit bar/Pa, bar/psi, kPa, MPa, psi
- ATEX protection c with device cat 2G/2D
- Design acc.to NACE Sour Gas Service
- Design Oxygen Oil- and Grease free
- Silicone free version
- Dial with colored fields or customer logo
- Ingress protection IP 66 or IP 67
- Case in stainless steel 316 Ti
- Case polished
- Case epoxy-coated
- Case PTFE-coated
- Liquid filled case silicone M50 for low ambient temperatures

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Standard types for 990.10 PN 100

Male thread 990.10 Pressure rate PN 100 process temperature +200°C filling KN 2 silicone Pressure gauge 2940.100 case filling stainless steel version				
	Stainless steel	Stainless steel	Stainless + ECTFE*	Stainless + ECTFE*
	G1/2" male	1/2"NPT male	G1/2" male	1/2"NPT male
Pressure range	Code	Code	Code	Code
0-1,6 bar	40265403	40265623	40265003	40265023
0-2,5 bar	40265404	40265624	40265004	40265024
0-4 bar	40265406	40265626	40265006	40264026
0-6 bar	40265407	40265627	40265007	40265027
0-10 bar	40265408	40265628	40265008	40265028
0-16 bar	40265411	40265631	40265011	40265031
0-25 bar	40265413	40265633	40265013	40265033
0-40 bar	40265415	40265635	40265015	40265035
0-60 bar	40265417	40265637	40265017	40265037
0-100 bar	40265419	40265639	40265019	40265039
-1/0 bar	40265440	40265650	40265040	40265050
-1/+1,5 bar	40265466	40265686	40265066	40265086
-1/+3 bar	40265467	40265687	40265067	40265087
-1/+5 bar	40265468	40265688	40265068	40265088
-1/+9 bar	40265469	40265689	40265069	40265089

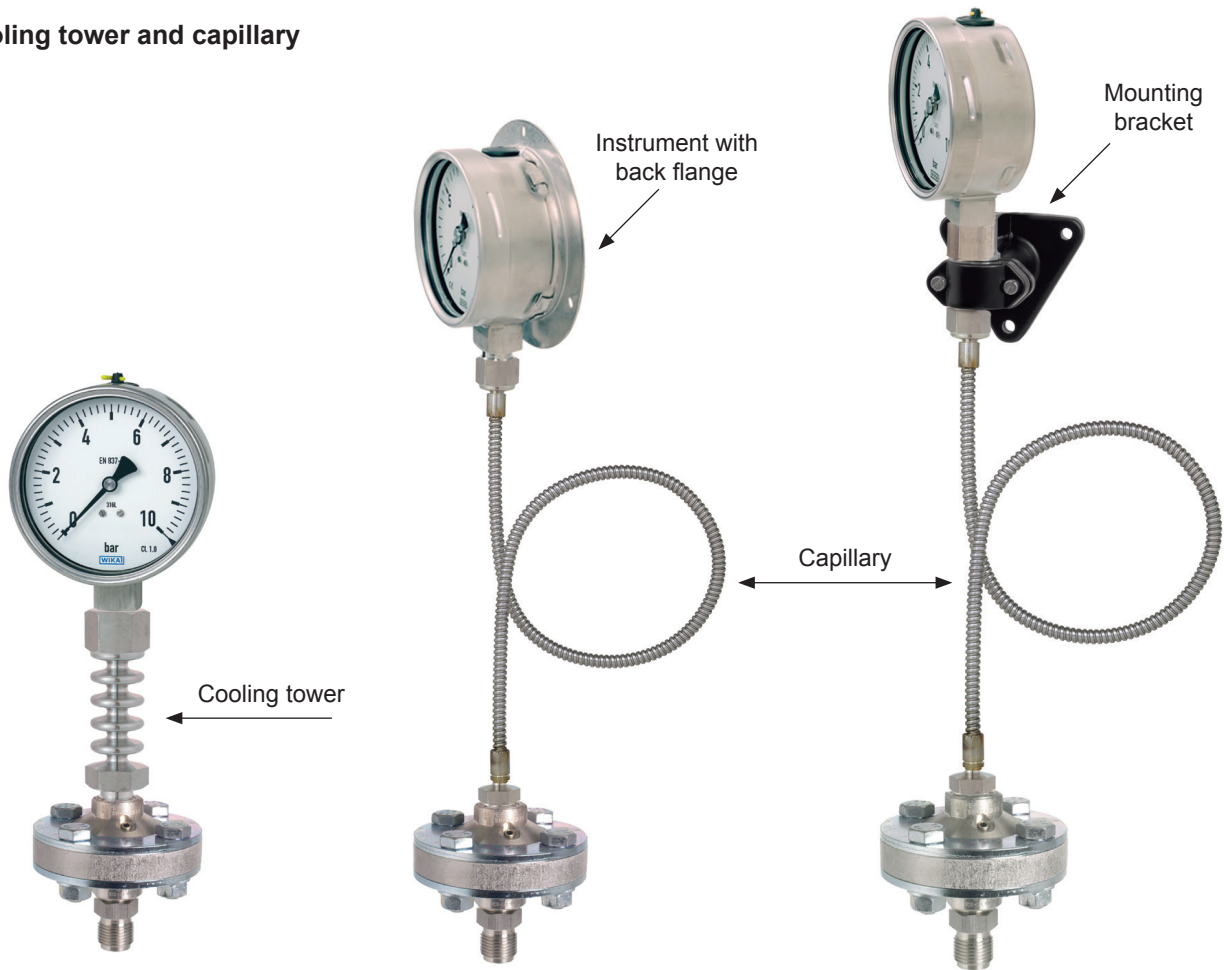
* Stainless steel diaphragm with ECFTE-coating

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Cooling tower and capillary



Cooling tower

Cooling tower is mounted to protect the pressure instrument from high process temperature. Air circulation through the perforated capillary protector reduces the temperature of the filling liquid. Material stainless steel. Length: 116,5 mm

Capillary

Stainless steel capillary with stainless steel spiral armour provides connection between chemical seal and pressure instrument to enable distant reading or remote control. Capillary lengths from 0,5 meter to max 10 meter.

Mounting of pressure gauge

Alternative 1 = Pressure gauge with back flange for wall mounting

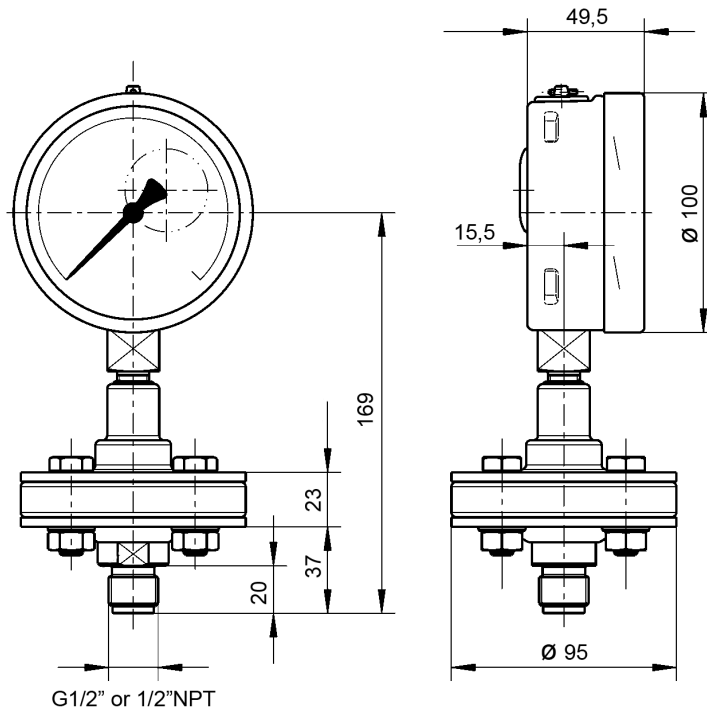
Alternative 2 = Mounting bracket in aluminium or stainless steel for wall mounting

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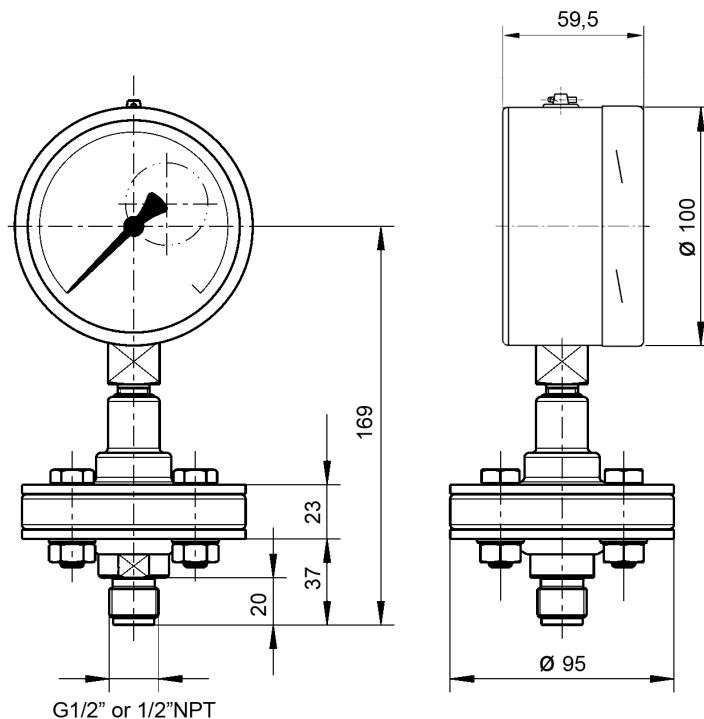
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Pressure gauge type 2840.100, 2880.100 or 2940.100



Pressure gauge type 232.30.100 or 233.30.100 safety version



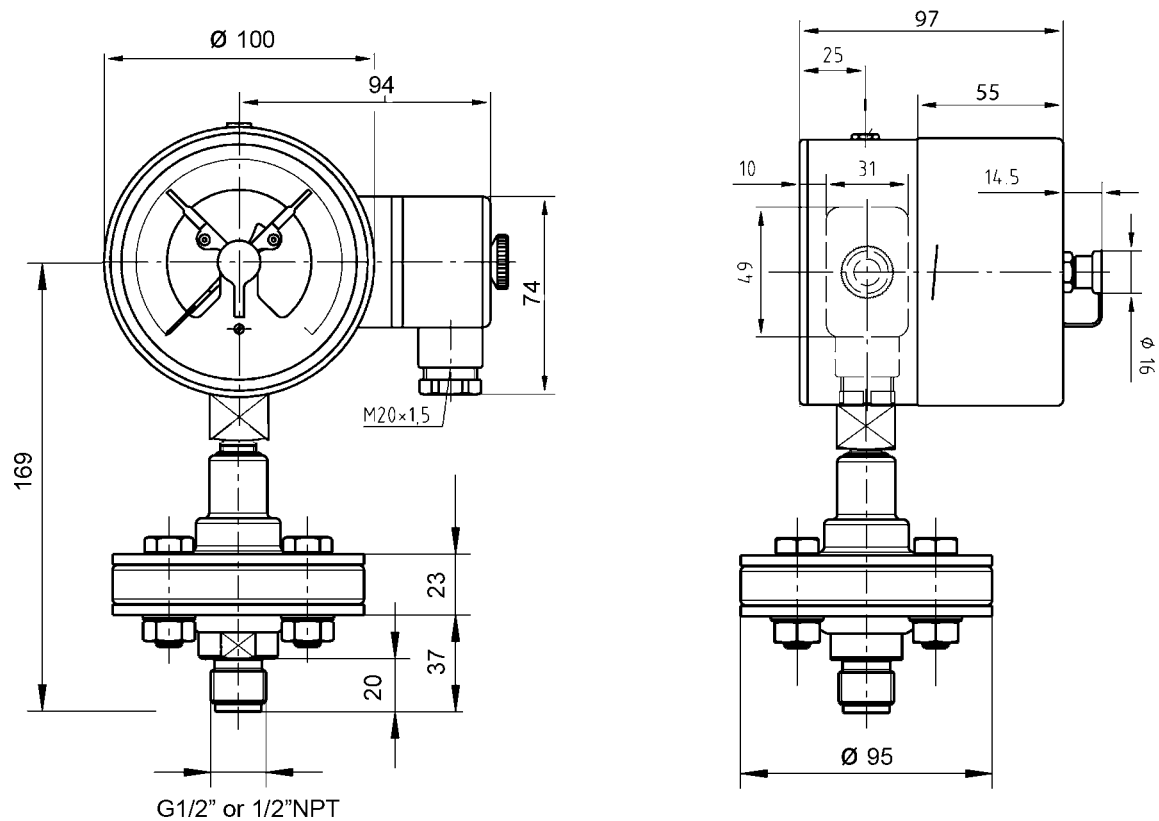
Dimensions refers to 990.10 with pressure rate PN 100 and in material stainless steel
Specified dimensions may be different in other materials or with pressure rate PN 250

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Pressure gauge with electrical switch type PGS23.100



Dimensions refers to 990.10 with pressure rate PN 100 and in material stainless steel
Specified dimensions may be different in other materials or with pressure rate PN 250