– Sealing, reflux valve	FKM (SHS FPM 70C3 GLT), EPDM (COG AP310)
Materials, non-wetted parts	
Mounting parts	
– Antenna cone, plastic horn antenna, compression flange	PBT-GF 30
– Mounting strap, fixing screws mounting strap	316L
– Fixing screws, adapter flange	304
Housing	
– Plastic housing	Plastic PBT (Polyester)
– Aluminium die-cast housing	Aluminium die-casting AlSi10Mg, powder-coated (Basis: Polyester)
– Stainless steel housing	316L
– Cable gland, blind plug cable gland	PA, stainless steel, brass
– Sealing, cable gland	NBR
– Inspection window housing cover	Polycarbonate (UL-746-C listed), glass [20]
– Ground terminal	316L
Weights	
– Instrument (depending on housing, process fitting and antenna)	approx. 2 … 17.2 kg (4.409 … 37.92 lbs)

Torques	
Max. torque, plastic horn antenna	
– Mounting screws, mounting strap on sensor housing	4 Nm (2.950 lbf ft)
– Flange screws, compression flange DN 80	5 Nm (3.689 lbf ft)
– Terminal screws, adapter flange - antenna	2.5 Nm (1.844 lbf ft)
– Flange screws, adapter flange DN 100	7 Nm (5.163 lbf ft)
Max. torque, thread with integrated antenna system	
– G¾	30 Nm (22.13 lbf ft)
– G1½	200 Nm (147.5 lbf ft)
– G1½ (with PTFE threaded adapter)	5 Nm (3.688 lbf ft)
Torque, flange with encapsulated antenna system	
– Required torque of the flange screws for standard flanges	60 Nm (44.25 lbf ft)
– Recommended torque for tightening the flange screws of standard flanges	60 … 100 Nm (44.25 … 73.76 lbf ft)
Max. torque, hygienic fittings	
– Flange screws DRD connection	20 Nm (14.75 lbf ft)

[20] Glass with Aluminium and stainless steel housing

Max. torque, version flange with lens antenna

– Terminal screws for swivelling holder	8 Nm (5.9 lbf ft)

Max. torque for NPT cable glands and Conduit tubes

– Plastic housing	10 Nm (7.376 lbf ft)
– Aluminium/Stainless steel housing	50 Nm (36.88 lbf ft)

Torque housing locking

– Recommended torque locking screw	1 Nm (1.475 lbf ft)
– Max. torque locking screw	2 Nm (0.738 lbf ft)

Input variable

Measured variable	The measured quantity is the distance between the end of the sensor antenna and the medium surface. The reference plane for the measurement and the usable measuring range are dependent on the antenna system.

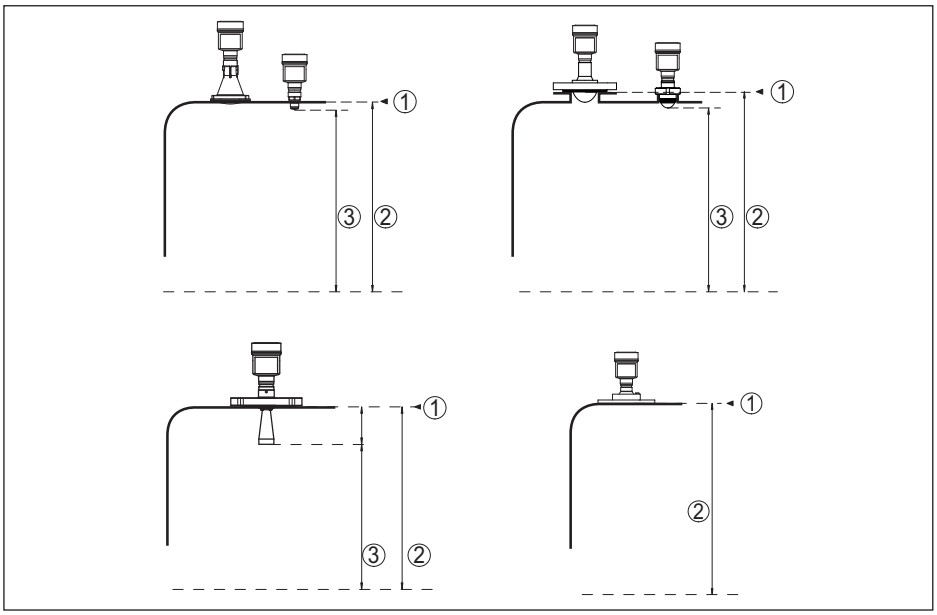


Fig. 68: Data of the input variable

1 Reference plane (depending on the antenna system)
2 Measured variable, max. measuring range
3 Utilisable measuring range (depending on the antenna version)

Max. measuring range	120 m (393.7 ft)

Recommended measuring range, depending on the antenna version and size [21)22)]

[21)] With good reflection conditions, larger measuring ranges are also possible.
[22)] The specified values correspond to the default values on delivery

Antenna version	Size	Recommended measuring range up to
Plastic horn antenna	DN 80	120 m (393.7 ft)
Thread with integrated antenna system Thread for hygienic adapter	G¾, ¾ NPT	10 m (32.81 ft)
	G1, 1 NPT	20 m (65.62 ft)
	G1½, 1½ NPT	30 m (98.42 ft)
Flange with encapsulated antenna system, hygienic fittings	≥ DN 25	20 m (65.62 ft)
	≥ DN 50, 2"	30 m (98.42 ft)
	≥ DN 80, 3"	120 m (393.7 ft)
Horn antenna	ø40 mm	10 m (32.81 ft)
	ø48 mm	30 m (98.42 ft)
	ø75 mm	120 m (393.7 ft)
Flange with lens antenna	≥ DN 80, 3"	120 m (393.7 ft)

blocking distance [23]

- Modes 1, 2, 4 — 0 mm (0 in)
- Mode 3 — ≥ 250 mm (9.843 in)

Switch-on phase

Run-up time t (U_B ≥ 24 V DC)	≤ 15 s [24]
Starting current for run-up time	≤ 3.6 mA

Output variable

Output signal	4 … 20 mA/HART
Range of the output signal	3.8 … 20.5 mA/HART (default setting)
Signal resolution	0.3 µA
Resolution, digital	1 mm (0.039 in)
Fault signal, current output (adjustable)	≤ 3.6 mA, ≥ 21 mA, last valid measured value
Max. output current	22 mA
Starting current	≤ 3.6 mA; ≤ 10 mA for 5 ms after switching on
Load	See load resistance under Power supply
Damping (63 % of the input variable), adjustable	0 … 999 s
HART output values according to HART 7.0 [25]	
– PV (Primary Value)	Lin. percent
– SV (Secondary Value)	Distance
– TV (Third Value)	Measurement reliability
– QV (Fourth Value)	Electronics temperature
Fulfilled HART specification	7.6

[23] Depending on the operating conditions
[24] Reference conditions: U_B = 24 V DC, ambient temperature 20 °C (68 °F)
[25] Default values can be assigned individually.

Further information on Manufacturer ID, Device ID, Device Revision	See website of FieldComm Group

Deviation (according to DIN EN 60770-1)

Process reference conditions according to DIN EN 61298-1	
– Temperature	+18 … +30 °C (+64 … +86 °F)
– Relative humidity	45 … 75 %
– Air pressure	860 … 1060 mbar/86 … 106 kPa (12.5 … 15.4 psig)
Installation reference conditions [26]	
– Min. distance to internal installations	> 200 mm (7.874 in)
– Reflector	Flat plate reflector
– False reflections	Biggest false signal, 20 dB smaller than the useful signal
Deviation with liquids	≤ 1 mm (meas. distance > 0.25 m/0.8202 ft)
Non-repeatability [27]	≤ 1 mm
Deviation with bulk solids	The values depend to a great extent on the application. Binding specifications are thus not possible.

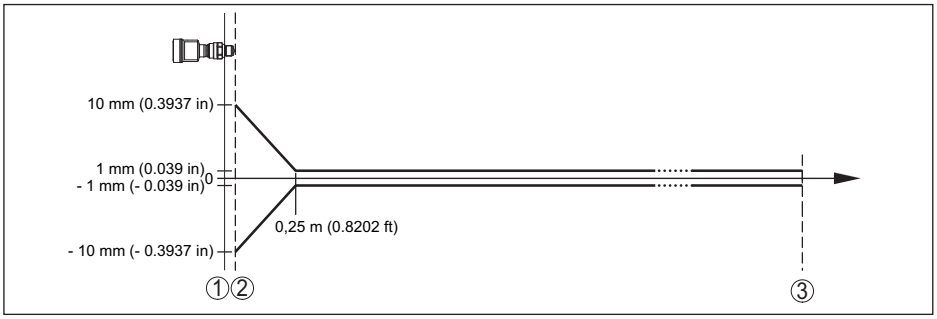


Fig. 69: Deviation under reference conditions (example: thread with integrated antenna system, applies accordingly to all versions)

1 Reference plane
2 Antenna edge
3 Recommended measuring range

Recommended min. distance for typical bulk solids applications [28]	
– Plastic horn antenna, flange with lens antenna	250 mm (9.843 in)
– Thread with integrated antenna system	500 mm (19.69 in)
blocking distance	150 mm (5.906 in)

[33] In case of deviations from reference conditions, the offset due to installation can be up to ± 4 mm. This offset can be compensated by the adjustment.
[27] Already included in the meas. deviation
[28] Depending of the reflective properties of the measured media.

Variables influencing measurement accuracy [29]

Specifications apply to the digital measured value

Temperature drift - Digital output	< 3 mm/10 K, max. 10 mm
– Additional deviation through electromagnetic interference	None

Specifications apply also to the current output

Temperature drift - Current output	< 0.03 %/10 K or max. 0.3 % relating to the 16.7 mA span
Deviation in the current output due to digital/analogue conversion	< 15 µA

Additional deviation through electromagnetic interference

– According to NAMUR NE 21	< 80 µA
– According to EN 61326-3-1	< 80 µA
– According to IACS E10 (shipbuilding)	< 80 µA

Characteristics and performance data

Measuring frequency	W-band (80 GHz technology)
Measuring cycle time [30]	approx. 200 ms
Step response time [31]	≤ 3 s

Beam angle [32]

Version	Larger antenna or process fitting	Beam angle	Liquid	Bulk solid
Plastic horn antenna	DN 80	3°	●	●
Thread with integrated antenna system Thread for hygienic adapter	G¾, ¾ NPT	14°	●	–
	G1, 1 NPT	10°	●	–
	G1½, 1½ NPT (+250 °C)	10°	●	O
	G1½, 1½ NPT (+150 °C)	7°	●	O
Flange with encapsulated antenna system, hygienic fittings	≥ DN 25	10°	●	–
	≥ DN 50, 2"	6°	●	O
	≥ DN 80, 3"	3°	●	O
Horn antenna	ø40 mm	7°	●	O
	ø48 mm	6°	●	O
	ø75 mm	3°	●	●
Flange with lens antenna	≥ DN 80, 3"	3°	O	●

● *Recommended, typical use*
O Possible but not typical use
– Unintended use

[30] With operating voltage U_B ≥ 24 V DC
[31] Time span after a sudden distance change from 1 m to 5 m until the output signal reaches 90 % of the final value for the first time (IEC 61298-2). Valid with operating voltage U_B ≥ 24 V DC
[32] Outside the specified beam angle, the energy level of the radar signal is 50% (-3 dB) less.

Emitted HF power (depending on the parameter setting) [33)]

- Average spectral transmission power density: -3 dBm/MHz EIRP
- Max. spectral transmission power density: +34 dBm/50 MHz EIRP
- Max. power density at a distance of 1 m: < 3 µW/cm²

Ambient conditions

Ambient, storage and transport temperature: -40 … +80 °C (-40 … +176 °F)

Process conditions - Temperature

For the process conditions, please also note the specifications on the type label. The lowest value (amount) always applies.

Version	Antenna material	Process seal	Process temperature (measured on the process fitting)
Plastic horn antenna	PP		-40 … +80 °C (-40 … +176 °F)
Thread with integrated antenna system 316L	PEEK	FKM (SHS FPM 70C3 GLT)	-40 … +150 °C (-40 … +302 °F)
			-40 … +200 °C (-40 … +392 °F)
		FFKM (Kalrez 6230)	-15 … +150 °C (5 … +302 °F)
			-15 … +250 °C (5 … +482 °F)
		FFKM (Kalrez 6375)	-20 … +150 °C (-4 … +302 °F)
			-20 … +250 °C (-4 … +482 °F)
		FFKM (Perlast G74S, G75B)	-15 … +150 °C (5 … +302 °F)
			-15 … +250 °C (5 … +482 °F)
		EPDM (A+P 70.10-02)	-55 … +150 °C (-67 … +302 °F)
Thread with integrated antenna system PVDF	PEEK	FKM	-40 … +80 °C (-40 … +176 °F)
Flange with encapsulated antenna system	PTFE, PTFE (8 mm)	PTFE	-60 … +150 °C (-76 … +302 °F)
			-196 … +200 °C (-320.8 … +392 °F)
	PFA (8 mm)	PFA	-60 … +150 °C (-76 … +302 °F)
			-60 … +200 °C (76 … +392 °F)

Version	Antenna material	Process seal	Process temperature (measured on the process fitting)
Hygienic fittings Thread for hygienic adapter	PEEK	PTFE (with Clamp connection)	-40 … +150 °C (-40 … +302 °F)
		FFKM (FFKM Kalrez 6230)	-15 … +150 °C (5 … +302 °F)
		FFKM (FFKM Perlast G74S)	-15 … +150 °C (5 … +302 °F)
		FKM (PPE V70SW)	-10 … +150 °C (-14 … +302 °F)
		EPDM (Freudenberg 291)	-20 … +150 °C (-4 … +302 °F)
Horn antenna	Antenna horn: 316L, impedance cone: PTFE	FFKM (FFKM Kalrez 6375)	-20 … +250 °C (-4 … +482 °F)
		FFKM (FFKM Perlast G75B)	-15 … +250 °C (5 … +482 °F)
		FKM (PPE V71C)	-40 … +150 °C (-40 … +302 °F)
		EPDM (A+P 70.10-02)	-55 … +150 °C (-67 … +302 °F)
Horn antenna - High temperature	Antenna horn: 316L, impedance cone: ceramic (99.7 % Al_2O_3)	Graphite	-196 … +450 °C (-321 … +842 °F)
Flange with lens antenna	PEEK	FKM (SHS FPM 70C3 GLT)	-40 … +150 °C (-40 … +302 °F)
			-40 … +200 °C (-40 … +392 °F)
		FFKM (Kalrez 6375)	-20 … +150 °C (-4 … +302 °F)
			-20 … +200 °C (-4 … +392 °F)
		FFKM (Perlast G75B)	-15 … +150 °C (5 … +302 °F)
			-15 … +250 °C (5 … +482 °F)
		EPDM (COG AP302)	-40 … +150 °C (-40 … +302 °F)

SIP process temperature (SIP = Sterilization in place)

Applies to steam-suitable device configuration, i.e. flange with encapsulated antenna system or hygienic fitting.

Vapour stratification up to 2 h +150 °C (+302 °F)

Derating, ambient temperature

Plastic horn antenna

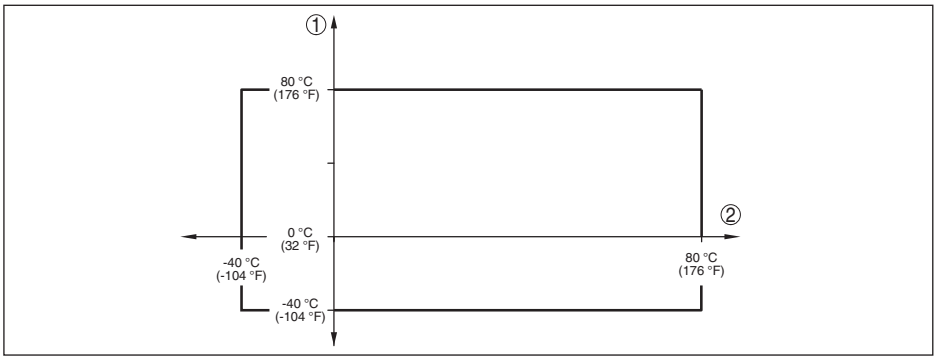


Fig. 70: Derating, ambient temperature, plastic horn antenna

1 Ambient temperature
2 Process temperature

Thread with integrated antenna system

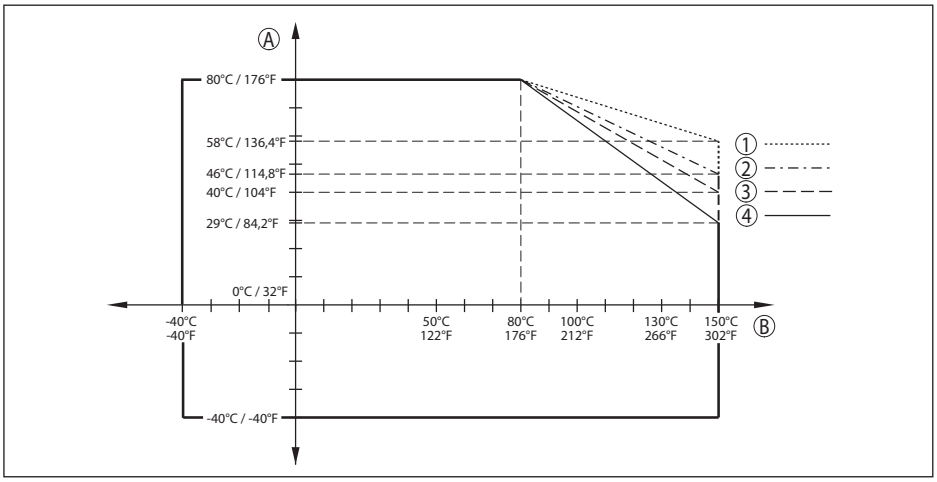


Fig. 71: Derating, ambient temperature, thread with integrated antenna system up to +150 °C (+302 °F)

A Ambient temperature
B Process temperature
1 Aluminium housing
2 Stainless steel housing (precision casting)
3 Plastic housing
4 Stainless steel housing (electropolished)

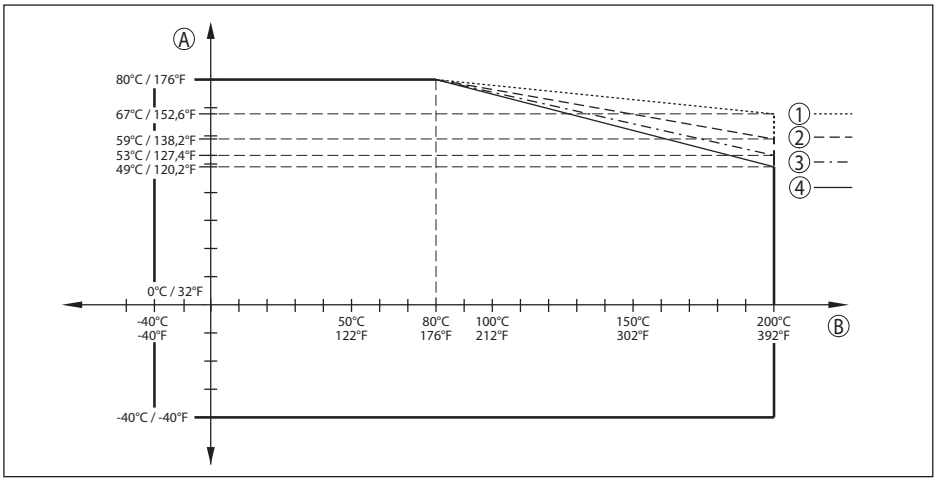


Fig. 72: Derating, ambient temperature, thread with integrated antenna system up to +200 °C (+392 °F)

A Ambient temperature
B Process temperature
1 Aluminium housing
2 Stainless steel housing (precision casting)
3 Plastic housing
4 Stainless steel housing (electropolished)

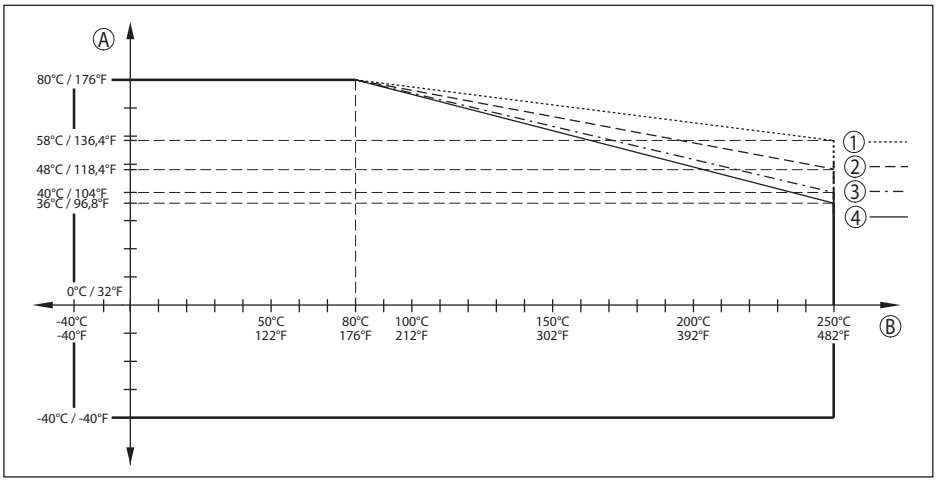


Fig. 73: Derating, ambient temperature, thread with integrated antenna system up to +250 °C (+482 °F)

A Ambient temperature
B Process temperature
1 Aluminium housing
2 Stainless steel housing (precision casting)
3 Plastic housing
4 Stainless steel housing (electropolished)

Flange with encapsulated antenna system, hygienic fitting

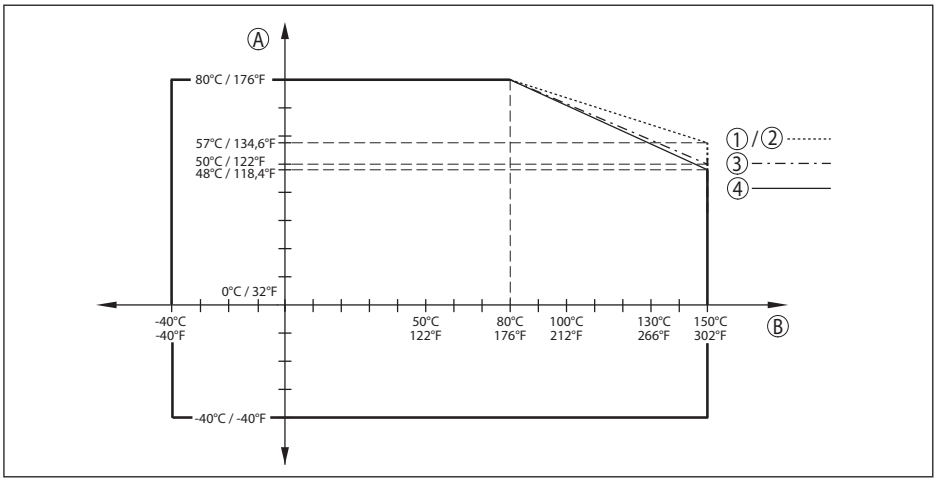


Fig. 74: Derating ambient temperature, flange with encapsulated antenna system, hygienic fitting up to +150 °C (+302 °F)

A Ambient temperature
B Process temperature
1 Aluminium housing
2 Stainless steel housing (precision casting)
3 Plastic housing
4 Stainless steel housing (electropolished)

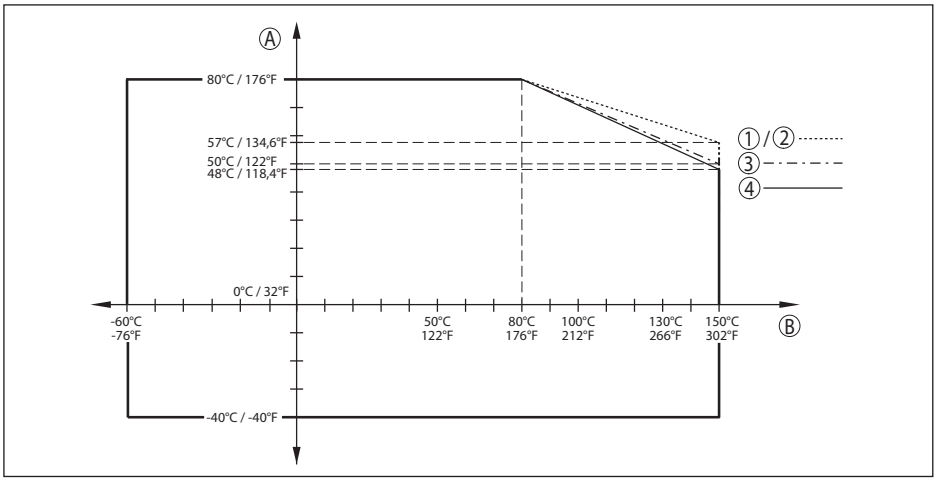


Fig. 75: Derating ambient temperature, flange with encapsulated antenna system -60 … +150 °C (-76 … +302 °F)

A Ambient temperature
B Process temperature
1 Aluminium housing
2 Stainless steel housing (precision casting)
3 Plastic housing
4 Stainless steel housing (electropolished)

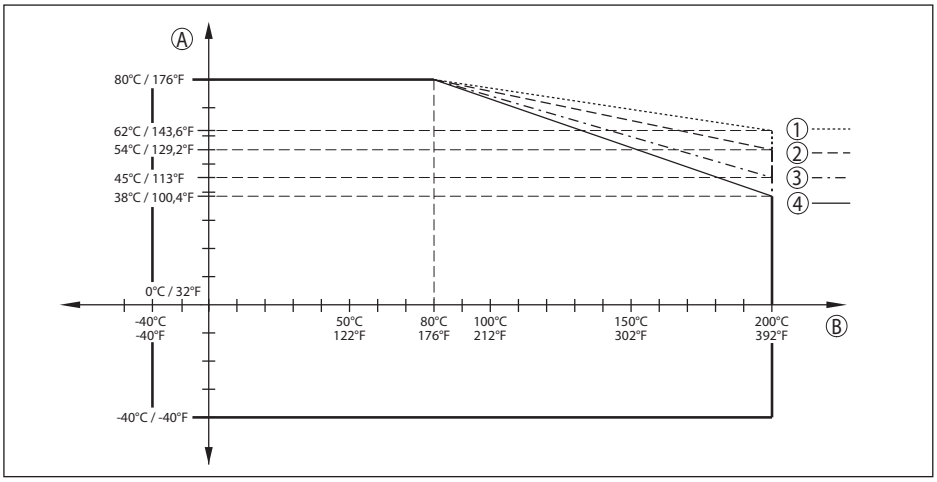


Fig. 76: Derating, ambient temperature, flange with encapsulated antenna system up to +200 °C (+392 °F)

A Ambient temperature
B Process temperature
1 Aluminium housing
2 Stainless steel housing (precision casting)
3 Plastic housing
4 Stainless steel housing (electropolished)

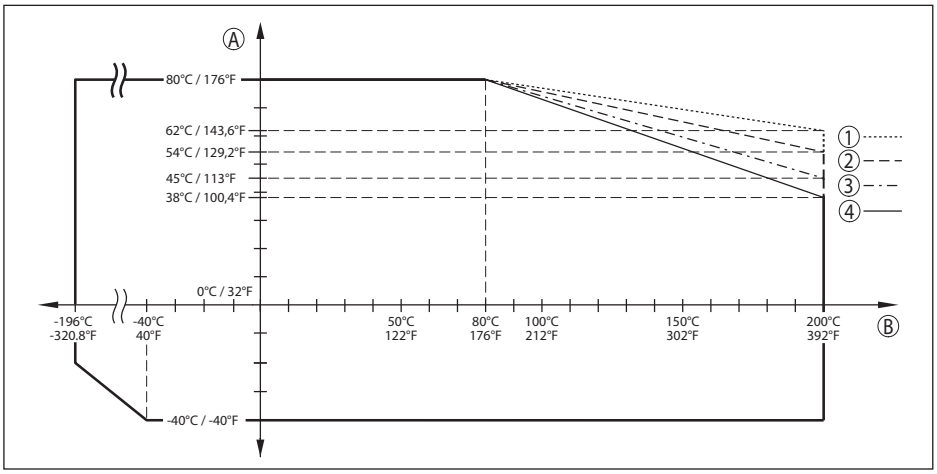


Fig. 77: Derating ambient temperature, flange with encapsulated antenna system -196 … +200 °C (-320.8 … +392 °F)

A Ambient temperature
B Process temperature
1 Aluminium housing
2 Stainless steel housing (precision casting)
3 Plastic housing
4 Stainless steel housing (electropolished)

Flange with lens antenna

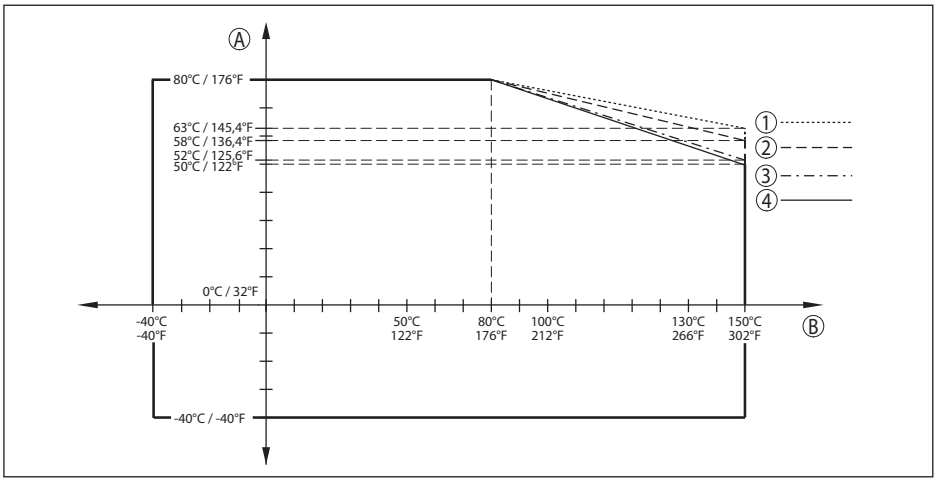


Fig. 78: Derating, ambient temperature, flange with lens antenna up to +150 °C (+302 °F)

A Ambient temperature
B Process temperature
1 Aluminium housing
2 Stainless steel housing (precision casting)
3 Plastic housing
4 Stainless steel housing (electropolished)

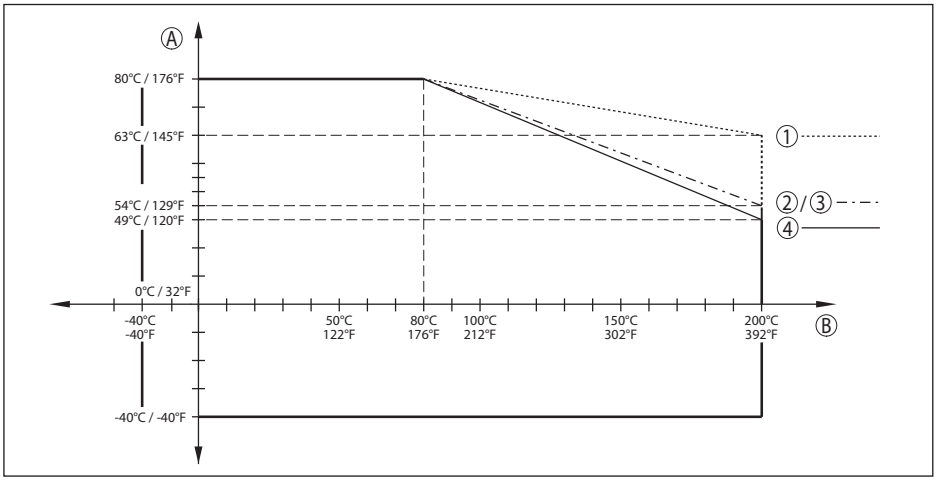


Fig. 79: Derating, ambient temperature, flange with lens antenna up to +200 °C (+392 °F)

A Ambient temperature
B Process temperature
1 Aluminium housing
2 Stainless steel housing (precision casting)
3 Plastic housing
4 Stainless steel housing (electropolished)

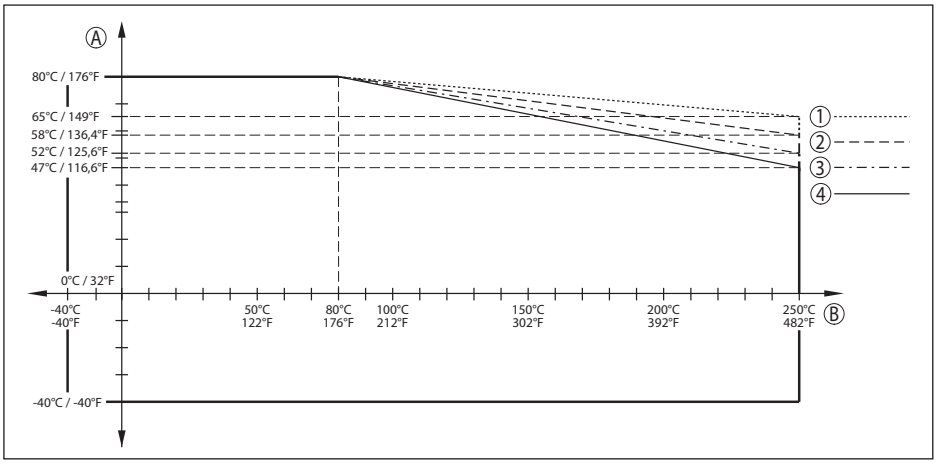


Fig. 80: Derating, ambient temperature, flange with lens antenna up to +250 °C (+482 °F)

A Ambient temperature
B Process temperature
1 Aluminium housing
2 Stainless steel housing (precision casting)
3 Plastic housing
4 Stainless steel housing (electropolished)

Process conditions - Pressure

For the process conditions, please also note the specifications on the type label. The lowest value (amount) always applies.

Process fitting	Version	Process pressure
Plastic horn antenna	Compression flange	-1 … 2 bar (-100 … 200 kPa/-14.5 … 29.1 psig)
	Adapter flange	-1 … 1 bar (-100 … 100 kPa/-14.5 … 14.5 psig)
Thread with integrated antenna system	316L	-1 … 40 bar (-100 … 4000 kPa/-14.5 … 580.2 psig)
	PVDF	-1 … 3 bar (-100 … 300 kPa/-14.5 … 43.51 psig)

Process fitting	Version	Process pressure
Flange with encapsulated antenna system	PN 6	-1 … 6 bar (-100 … 600 kPa/-14.5 … 87 psig)
	PN 16 (300 lb)	-1 … 16 bar (-100 … 1600 kPa/-14.5 … 232 psig)
	PN 40 (600 lb)	-1 … 25 bar (-100 … 2500 kPa/-14.5 … 362.6 psig)
	PN 64 (900 lb)	
	PN 40 (600 lb) Version -196 … +200 °C (-320.8 … +392 °F)	
	PN 64 (900 lb) Version -196 … +200 °C (-320.8 … +392 °F)	
Thread for hygienic adapter		
Hygienic fitting	SMS	-1 … 6 bar (-100 … 600 kPa/-14.5 … 87 psig)
	Varivent Clamp 3", 3½", 4"	-1 … 10 bar (-100 … 1000 kPa/-14.5 … 145 psig)
	Remaining hygienic fittings	-1 … 16 bar (-100 … 1600 kPa/-14.5 … 232 psig)
Horn antenna	Standard	-1 … 100 bar (-100 … 10000 kPa/-14.5 … 1450 psig)
	High temperature	-1 … 160 bar (-100 … 16000 kPa/-14.5 … 2320 psig)
Flange with lens antenna		-1 … 3 bar (-100 … 300 kPa/-14.5 … 43.5 psig)

Vessel pressure relating to the flange nominal pressure stage — see supplementary instructions manual " *Flanges according to DIN-EN-ASME-JIS-GOST*"

Mechanical environmental conditions

Vibration resistance[34)]

Antenna version	Housing	Vibration resistance
Plastic horn antenna	Plastic housing	4M6 (5 g), with mounting strap: 4M5 (1 g)
	Aluminium housing	
	Stainless steel housing	4M5 (1 g)
Thread with integrated antenna system Thread for hygienic adapter	Plastic housing	4M8 (5 g)
	Aluminium housing	
	Stainless steel housing	4M6 (2 g)
Flange with encapsulated antenna system	Plastic housing	4M8 (5 g)
	Aluminium housing	
	Stainless steel housing	4M6 (2 g)

[35] Test sequence acc. to IEC 60068-2-6 (5 … 200 Hz), classification acc. to IEC 60721-3-4

Antenna version	Housing	Vibration resistance
Hygienic fitting	Plastic housing	4M8 (5 g) [35]
	Aluminium housing	
	Stainless steel housing	
Flange with lens antenna	Plastic housing	4M8 (5 g)
	Aluminium housing	
	Stainless steel housing	4M6 (2 g)

Schock resistance[36]

Antenna version	Housing	Shock resistance
Plastic horn antenna	Plastic housing	6M4 (10 g/11 ms, 30 g/6 ms, 50 g/2.3 ms)
	Aluminium housing	
	Stainless steel housing	6M1 (5 g/11 ms, 10 g/11 ms)
Thread with integrated antenna system Flange with encapsulated antenna system Thread for hygienic adapter Hygienic fitting Horn antenna Flange with lens antenna	Plastic housing	6M4 (10 g/11 ms, 30 g/6 ms, 50 g/2.3 ms) [37]
	Aluminium housing	
	Stainless steel housing	

Data on rinsing air connection

Recommended max. pressure with continuous rinsing	1 bar (14.50 psig)
Max. permissible pressure	6 bar (87.02 psig)
Air quality	Filtered

Air volume, depending on pressure

Plastic horn antenna	Air volume	
Pressure	**Without reflux valve**	**With reflux valve**
0.2 bar (2.9 psig)	3.3 m³/h	-
0.4 bar (5.8 psig)	5 m³/h	-
0.6 bar (8.7 psig)	6 m³/h	1 m³/h
0.8 bar (11.6 psig)	-	2.1 m³/h
1 bar (14.5 psig)	-	3 m³/h
1.2 bar (17.4 psig)	-	3.5 m³/h
1.4 bar (20.3 psig)	-	4.2 m³/h
1.6 bar (23.2 psig)	-	4.4 m³/h

[36] Tested acc. to IEC 60068-2-27, classification acc. to IEC 60721-3-6
[37] For hygienic fittings with clamp connection, use suitable, stable tension clamps.

Plastic horn antenna	Air volume	
Pressure	**Without reflux valve**	**With reflux valve**
1.8 bar (20.3 psig)	-	4.8 m³/h
2 bar (23.2 psig)	-	5.1 m³/h

Flange with lens antenna	Air volume	
Pressure	**Without reflux valve**	**With reflux valve**
0.2 bar (2.9 psig)	1.7 m³/h	-
0.4 bar (5.8 psig)	2.5 m³/h	-
0.6 bar (8.7 psig)	2.9 m³/h	0.8 m³/h
0.8 bar (11.6 psig)	3.3 m³/h	1.5 m³/h
1 bar (14.5 psig)	3.6 m³/h	2 m³/h
1.2 bar (17.4 psig)	3.9 m³/h	2.3 m³/h
1.4 bar (20.3 psig)	4 m³/h	2.7 m³/h
1.6 bar (23.2 psig)	4.3 m³/h	3 m³/h
1.8 bar (20.3 psig)	4.5 m³/h	3.5 m³/h
2 bar (23.2 psig)	4.6 m³/h	4 m³/h

Connection

- Thread — G⅛
- Seal at flange with lens antenna — Threaded plug of 316Ti

Reflux valve (optional)

- Material — 316Ti
- Thread — G⅛
- Seal — FKM (SHS FPM 70C3 GLT), EPDM (COG AP310)
- For connection — G⅛
- Opening pressure — 0.5 bar (7.25 psig)
- Nominal pressure stage — PN 250

Electromechanical data - version IP66/IP67 and IP66/IP68 (0.2 bar)

Options of the cable entry

- Cable entry — M20 x 1.5; ½ NPT
- Cable gland — M20 x 1.5; ½ NPT (cable ø see below table)
- Blind plug — M20 x 1.5; ½ NPT
- Closing cap — ½ NPT

Material cable gland	Material seal insert	Cable diameter				
		4.5 … 8.5 mm	**5 … 9 mm**	**6 … 12 mm**	**7 … 12 mm**	**10 … 14 mm**
PA	NBR	-	●	●	-	●
Brass, nickel-plated	NBR	●	●	●	-	-

Material cable gland	Material seal insert	Cable diameter				
		4.5 … 8.5 mm	5 … 9 mm	6 … 12 mm	7 … 12 mm	10 … 14 mm
Stainless steel	NBR	-	●	●	-	●

Wire cross-section (spring-loaded terminals)

- Massive wire, stranded wire: 0.2 … 2.5 mm² (AWG 24 … 14)
- Stranded wire with end sleeve: 0.2 … 1.5 mm² (AWG 24 … 16)

Electromechanical data - version IP66/IP68 (1 bar)

Options of the cable entry

- Cable gland with integrated connection cable: M20 x 1.5 (cable ø 5 … 9 mm)
- Cable entry: ½ NPT
- Blind plug: M20 x 1.5; ½ NPT

Connection cable

- Wire cross-section: 0.5 mm² (AWG 20)
- Wire resistance: < 0.036 Ω/m
- Tensile strength: < 1200 N (270 lbf)
- Standard length: 5 m (16.4 ft)
- Max. length: 180 m (590.6 ft)
- Min. bending radius (at 25 °C/77 °F): 25 mm (0.984 in)
- Diameter: approx. 8 mm (0.315 in)
- Colour - Non-Ex version: Black
- Colour - Ex-version: Blue

Interface to the external display and adjustment unit

Data transmission: Digital (I²C-Bus)

Connection cable: Four-wire

Sensor version	Configuration, connection cable	
	Max. cable length	Shielded
4 … 20 mA/HART	50 m	●

Integrated clock

Date format	Day.Month.Year
Time format	12 h/24 h
Time zone, factory setting	CET
Max. rate deviation	10.5 min/year

Additional output parameter - Electronics temperature

Range	-40 … +85 °C (-40 … +185 °F)
Resolution	< 0.1 K

Deviation	± 3 K
Availability of the temperature values	
– Indication	Via the display and adjustment module
– Output	Via the respective output signal

Voltage supply, sensor

Operating voltage U_B	12 … 35 V DC
Operating voltage U_B with lighting switched on	18 … 35 V DC
Reverse voltage protection	Integrated
Permissible residual ripple	
– for 12 V < U_B < 18 V	≤ 0.7 V_{eff} (16 … 400 Hz)
– for 18 V < U_B < 35 V	≤ 1 V_{eff} (16 … 400 Hz)
Load resistor	
– Calculation	(U_B - U_{min})/0.022 A
– Example - U_B= 24 V DC	(24 V - 12 V)/0.022 A = 545 Ω

Electrical protective measures

Housing material	Version	Protection acc. to IEC 60529	Protection acc. to NEMA
Plastic	Single chamber	IP66/IP67	Type 4X
	Double chamber	IP66/IP67	Type 4X
Aluminium	Single chamber	IP66/IP68 (0.2 bar) IP66/IP68 (1 bar)	Type 6P Type 6P
	Double chamber	IP66/IP68 (0.2 bar) IP66/IP68 (1 bar)	Type 6P Type 6P
Stainless steel (electro-polished)	Single chamber	IP66/IP68 (0.2 bar)	Type 6P
		IP66/IP68 (0,2 bar)/IP69	Type 6P
Stainless steel (precision casting)	Single chamber	IP66/IP68 (0.2 bar) IP66/IP68 (1 bar)	Type 6P Type 6P
	Double chamber	IP66/IP68 (0.2 bar)	Type 6P

Connection of the feeding power supply unit	Networks of overvoltage category III
Altitude above sea level	
– by default	up to 2000 m (6562 ft)
– with connected overvoltage protection	up to 5000 m (16404 ft)
Pollution degree (with fulfilled housing protection)	4
Protection rating (IEC 61010-1)	III

17.2 Radio astronomy stations

Certain restrictions on the use of VEGAPULS 6X outside closed vessels result from the radio license. You can find these restrictions in chapter " *Radio license for Europe*". Some of these restrictions have to do radio astronomy stations. The following table states the geographic positions of radio astronomy stations in Europe:

Country	Name of the Station	Geographic Latitude	Geographic Longitude
Finland	Metsähovi	60°13'04" N	24°23'37" E
France	Plateau de Bure	44°38'01" N	05°54'26" E
Germany	Effelsberg	50°31'32" N	06°53'00" E
Italy	Sardinia	39°29'50" N	09°14'40" E
Spain	Yebes	40°31'27" N	03°05'22" W
	Pico Veleta	37°03'58" N	03°23'34" W
Sweden	Onsala	57°23'45" N	11°55'35" E

17.3 Dimensions

The listed drawings represent only an excerpt of the available process fittings. You can find more drawings at www.vega.com via the configurator of VEGAPULS 6X.

Plastic housing

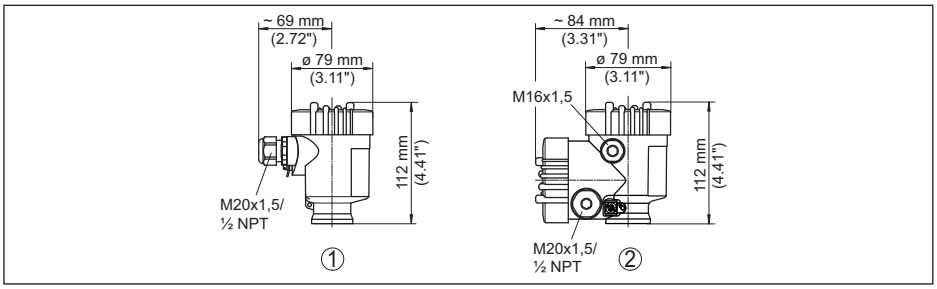


Fig. 81: Housing versions in protection IP66/IP67 (with integrated display and adjustment module the housing is 9 mm/0.35 in higher)

1 Plastic single chamber
2 Plastic double chamber

Aluminium housing

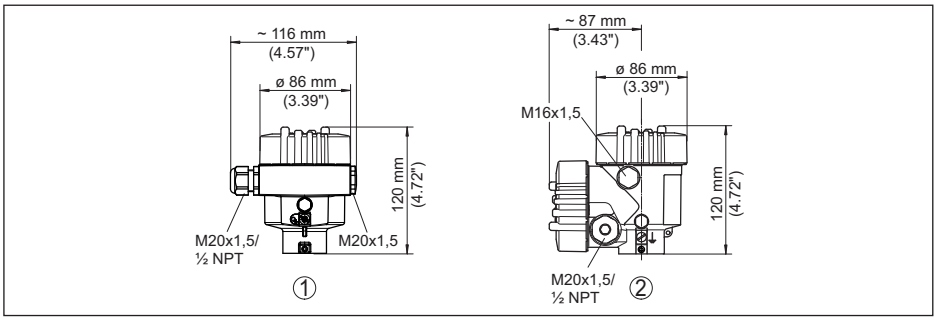


Fig. 82: Housing versions with protection rating IP66/IP68 (0.2 bar), (with integrated display and adjustment module the housing is 18 mm/0.71 in higher)

1 Aluminium - single chamber
2 Aluminium - double chamber

Aluminium housing with protection rating IP66/IP68, 1 bar

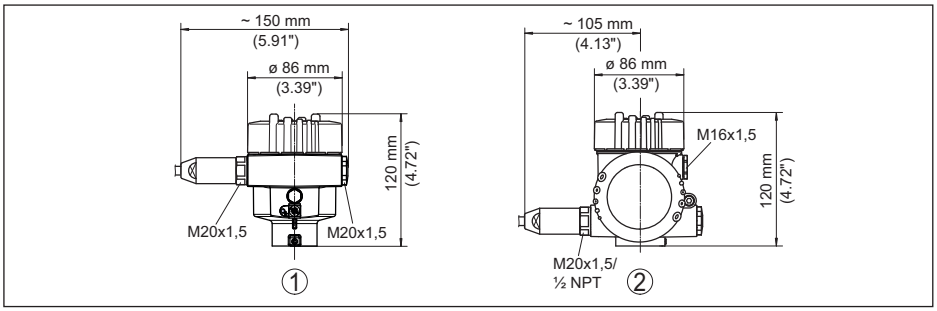


Fig. 83: Housing version with protection rating IP66/IP68 (1 bar), (with integrated display and adjustment module the housing is 18 mm/0.71 in higher)

1 Aluminium - single chamber

Stainless steel housing

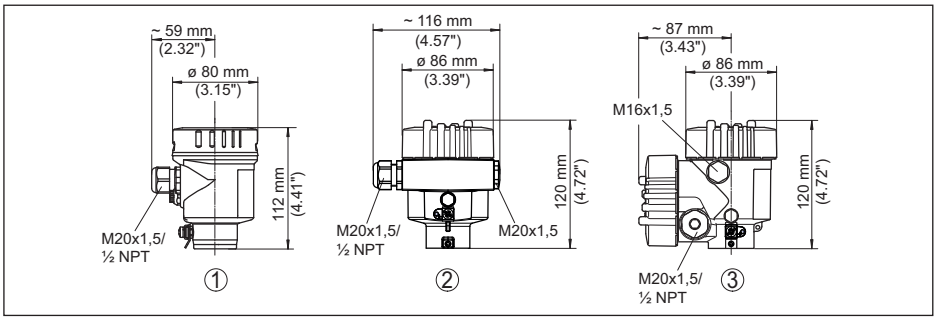


Fig. 84: Housing versions with protection rating IP66/IP68 (0.2 bar), (with integrated display and adjustment module the housing is 18 mm/0.71 in higher)

1 Stainless steel single chamber (electropolished)
2 Stainless steel single chamber (precision casting)
3 Stainless steel double chamber housing (precision casting)

Stainless steel housing with protection rating IP66/IP68, 1 bar

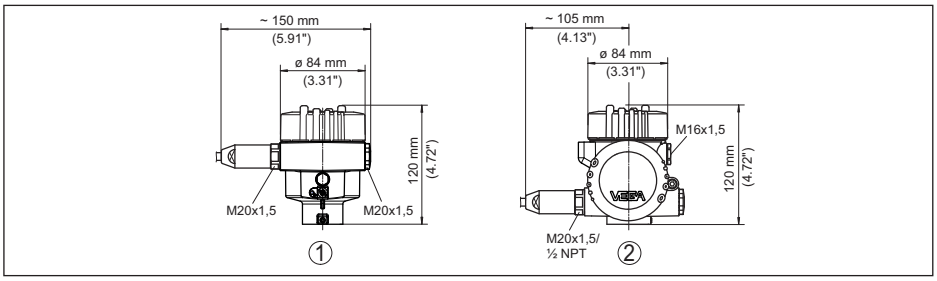


Fig. 85: Housing version with protection rating IP66/IP68 (1 bar), (with integrated display and adjustment module the housing is 18 mm/0.71 in higher)

1 Stainless steel single chamber (precision casting)
2 Stainless steel double chamber housing (precision casting)

VEGAPULS 6X, plastic horn antenna with compression flange

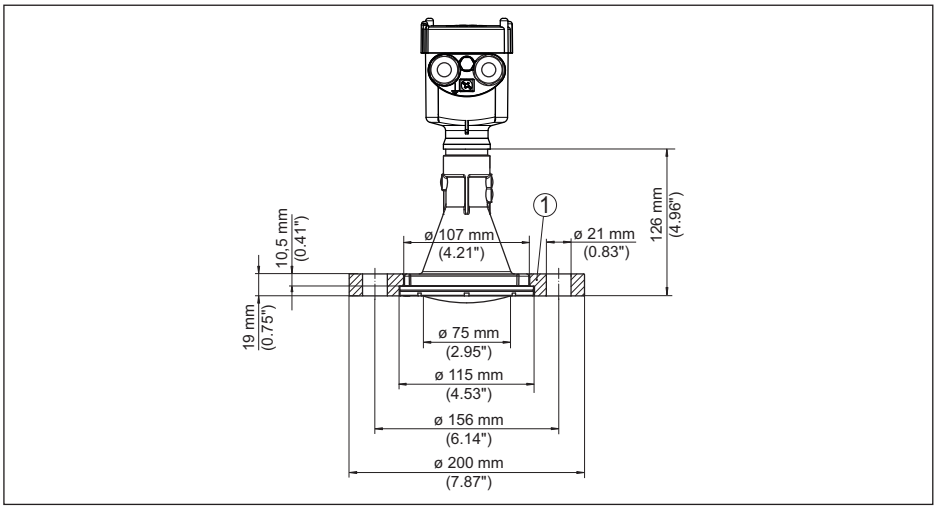


Fig. 86: Radar sensor with compression flange suitable for 3" 150 lbs, DN 80 PN 16

1 Compression flange

VEGAPULS 6X, plastic horn antenna with compression flange and purging air connection

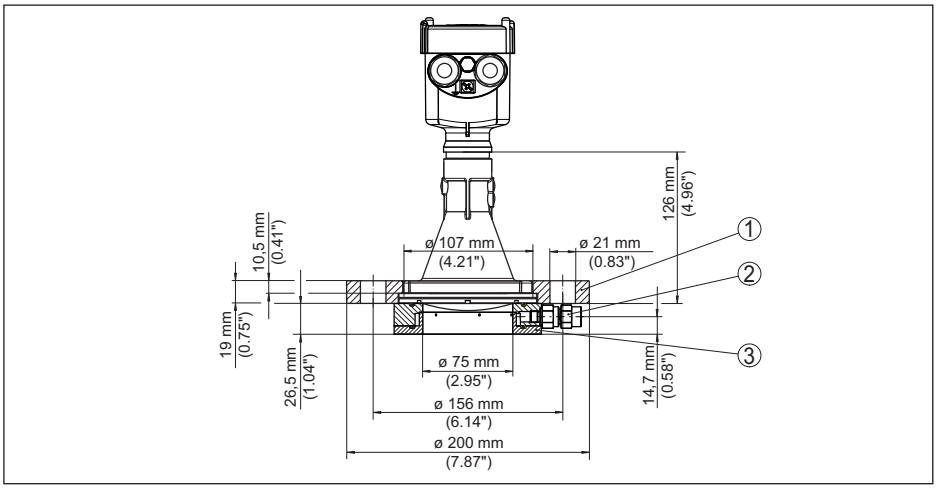


Fig. 87: Radar sensor with compression flange and purging air connection suitable for 3" 150 lbs, DN 80 PN 16

1 Compression flange
2 Reflux valve
3 Rinsing air connection

VEGAPULS 6X, plastic horn antenna with adapter flange

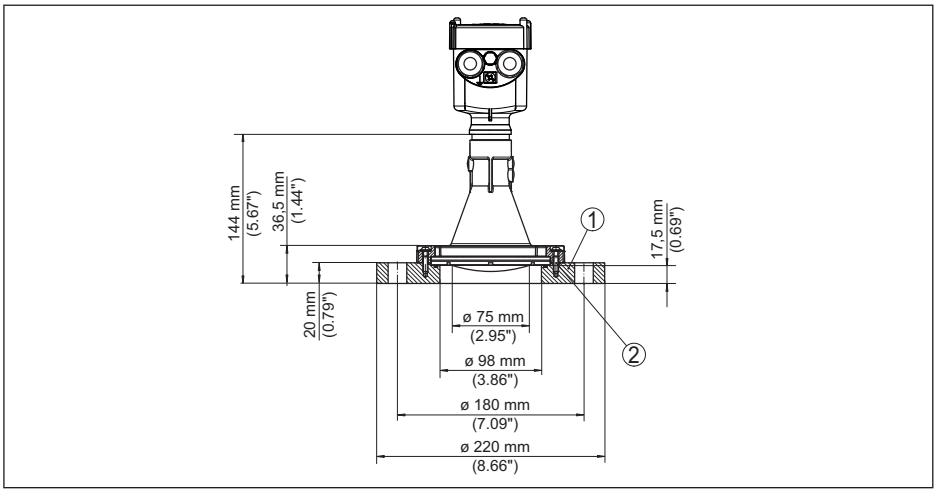


Fig. 88: Radar sensor with adapter flange DN 100 PN 6

1 Adapter flange
2 Process seal

VEGAPULS 6X, plastic horn antenna mit adapter flange und purging air connection

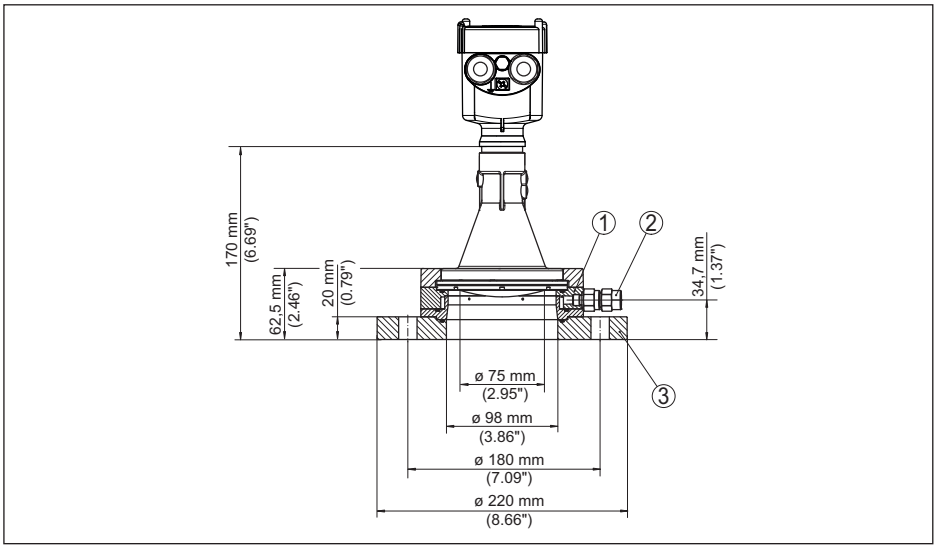


Fig. 89: VEGAPULS 6X, adapter flange and purging air connection DN 100 PN 6

1 Rinsing air connection
2 Reflux valve
3 Adapter flange

VEGAPULS 6X, plastic horn antenna with mounting strap

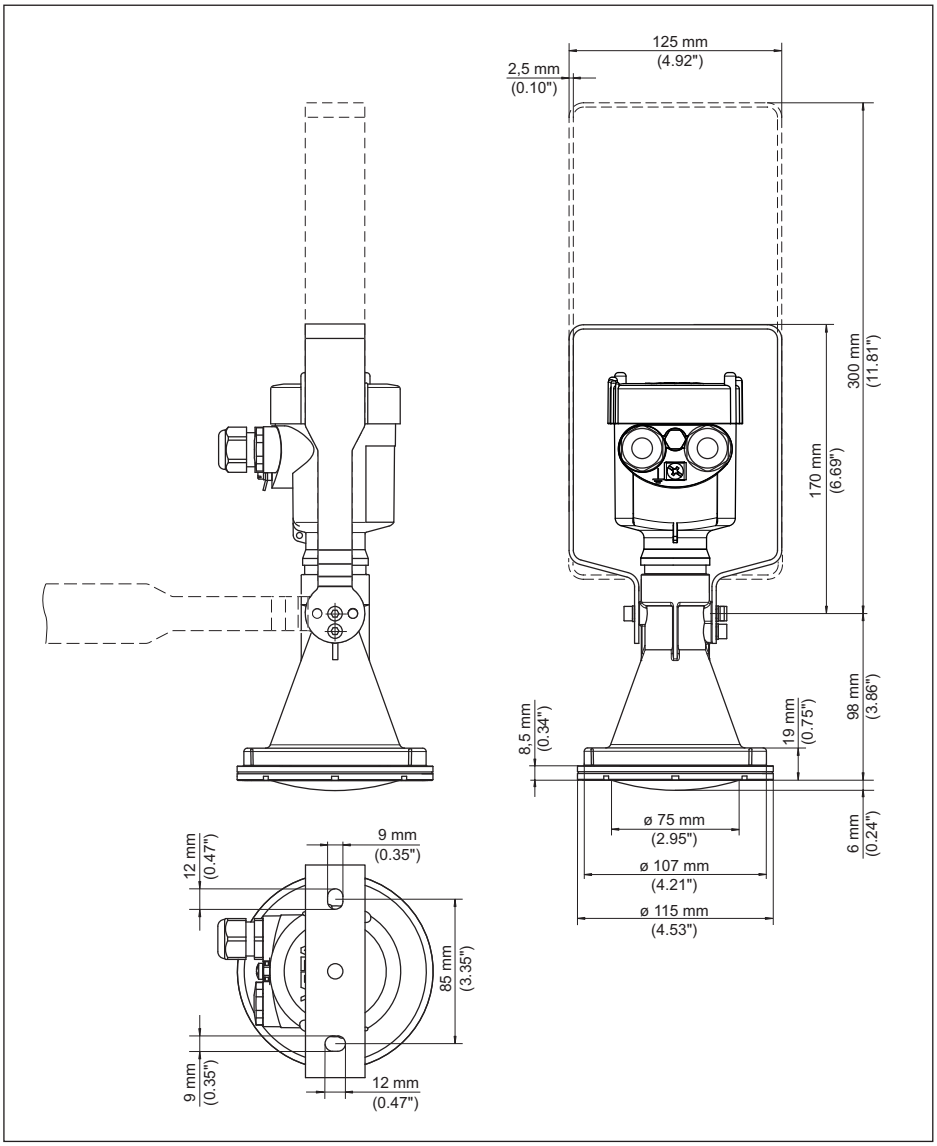


Fig. 90: VEGAPULS 6X, plastic horn antenna, mounting strap in 170 or 300 mm length

VEGAPULS 6X, thread with integrated antenna system up to +80 °C (+176 °F)

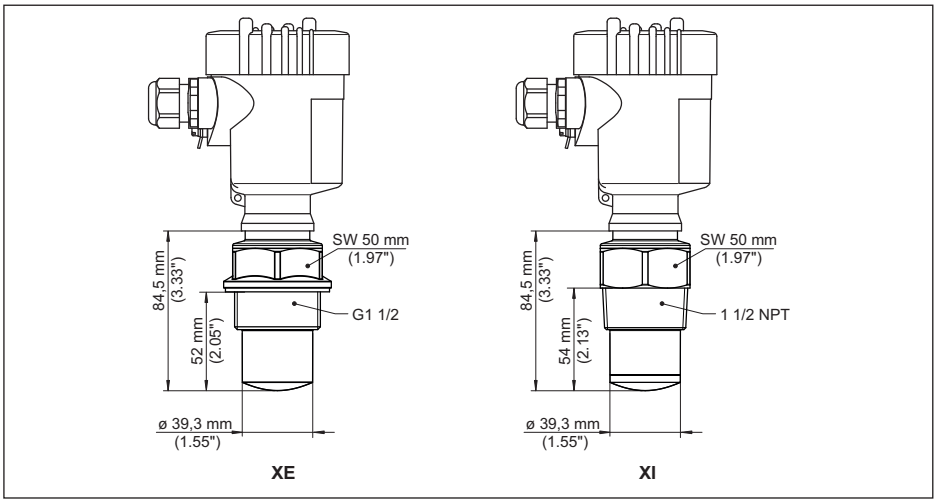


Fig. 91: VEGAPULS 6X, thread with integrated antenna system up to +80 °C (+176 °F)

XE G1½ (DIN 3852-A) PVDF
XI 1½NPT (ASME B1.20.1) PVDF

VEGAPULS 6X, thread with integrated antenna system up to +150 °C (+302 °F)

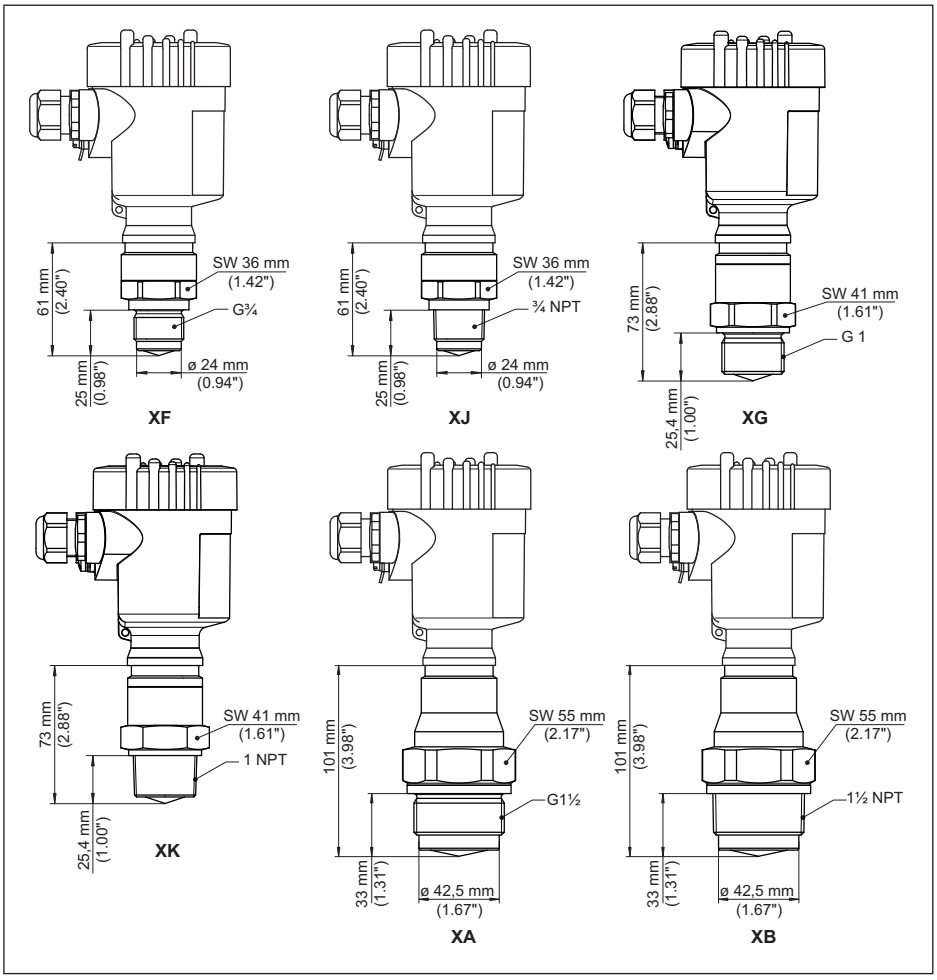


Fig. 92: VEGAPULS 6X, thread with integrated antenna system up to +150 °C (+302 °F)

XF G¾ (DIN 3852-A)
XJ ¾ NPT (ASME B1.20.1)
XG G1 (DIN 3852-A)
XK 1 NPT (ASME B1.20.1)
XA G1½ (DIN 3852-A)
XB 1½ NPT (ASME B1.20.1)

VEGAPULS 6X, thread with integrated antenna system up to +200 °C (+392 °F)/+250 °C (+482 °F)

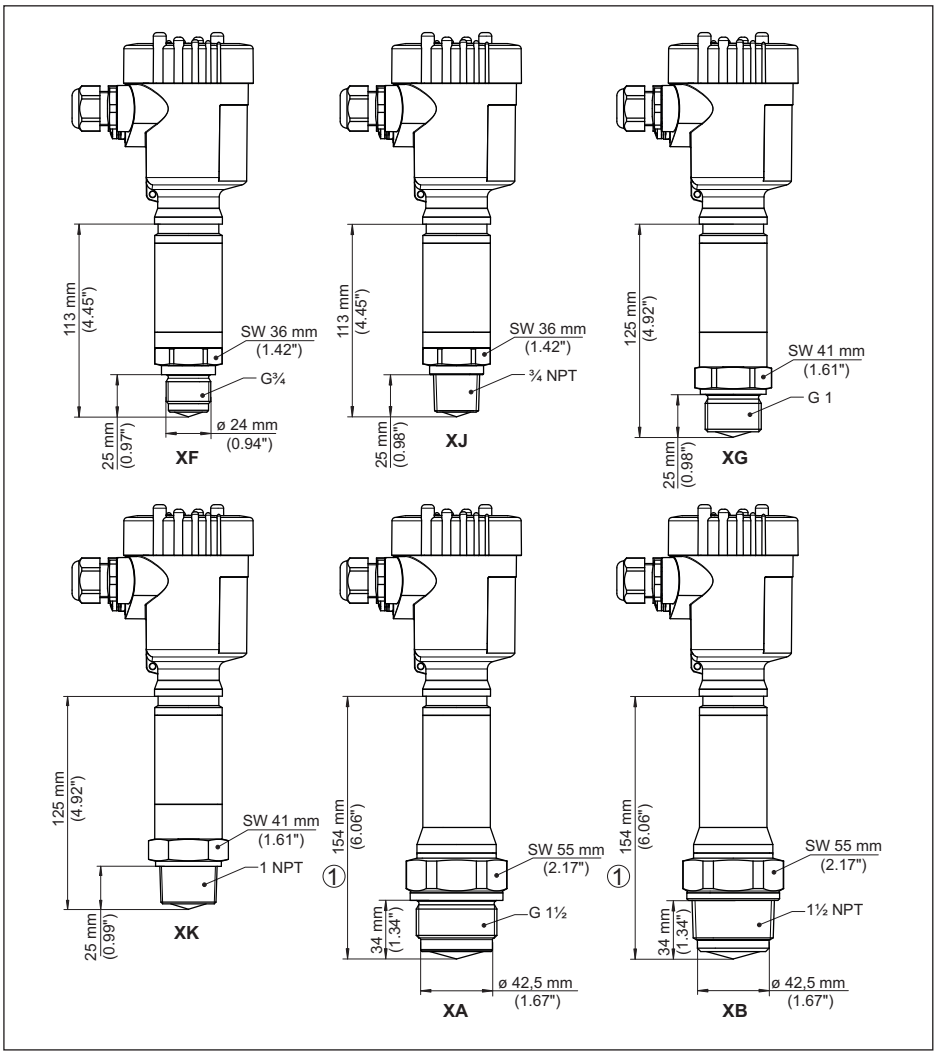
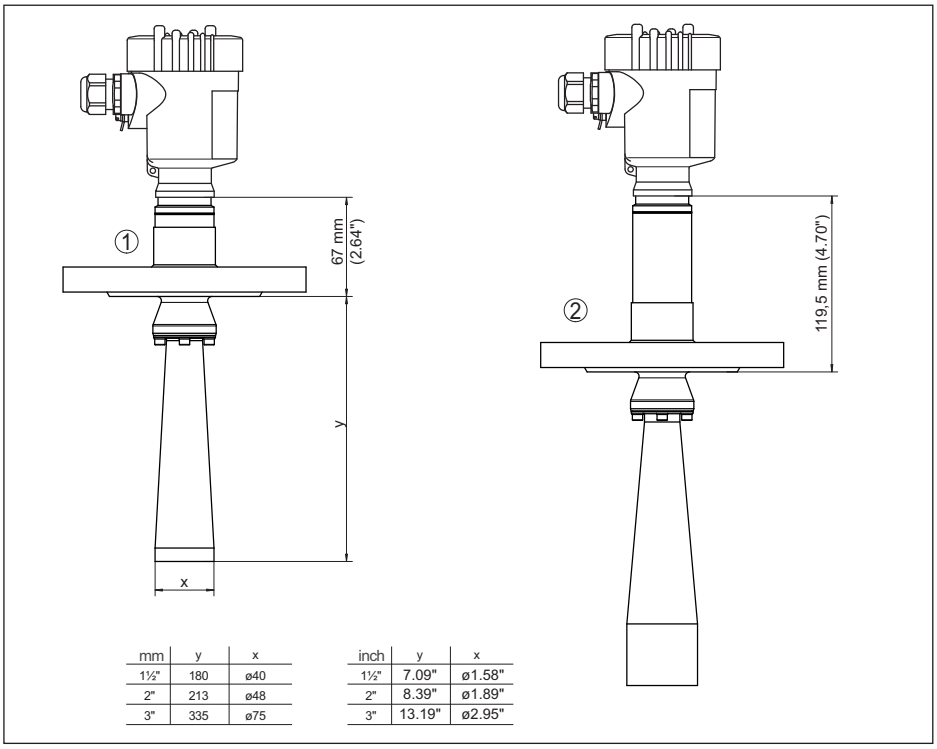


Fig. 93: VEGAPULS 6X, thread with integrated antenna system up to +200 °C (+392 °F)/+250 °C (+482 °F)

1 With version up to +250 °C (+482 °F): 125 mm (4.92")
XF G¾ (DIN 3852-A)
XJ ¾ NPT (ASME B1.20.1)
XG G1 (DIN 3852-A)
XK 1 NPT (ASME B1.20.1)
XA G1½ (DIN 3852-A)
XB 1½ NPT (ASME B1.20.1)

VEGAPULS 6X, flange with horn antenna up to +150 °C (+302 °F)/+250 °C (+482 °F)



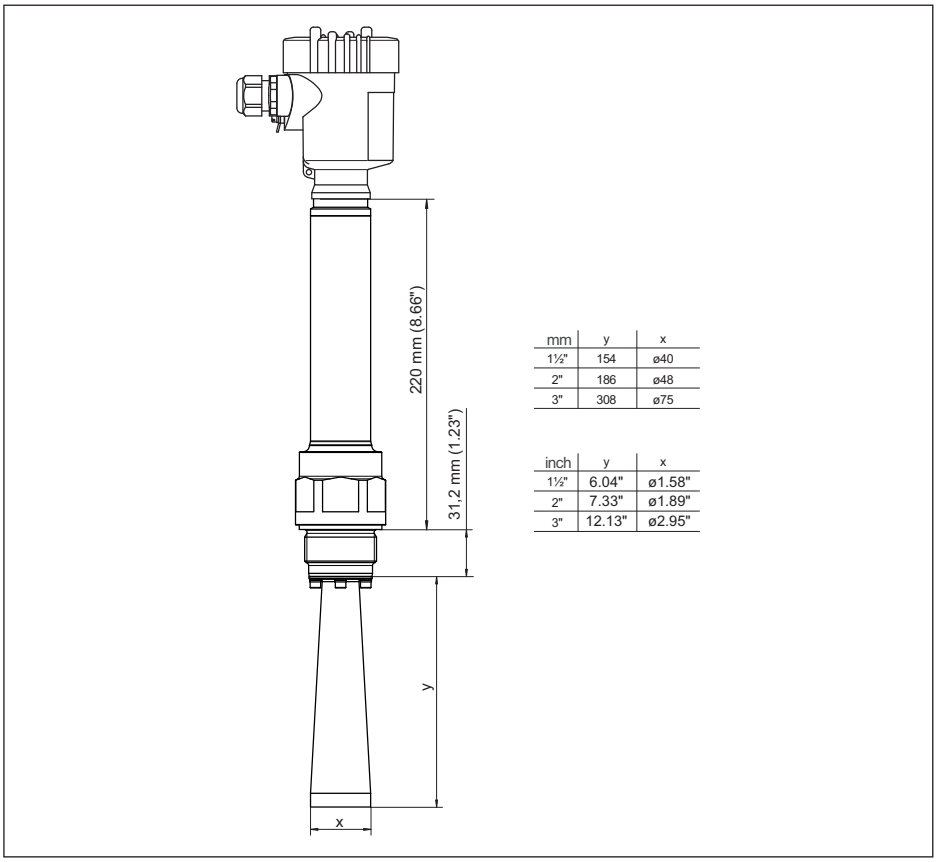
mm	y	x
1½"	180	ø40
2"	213	ø48
3"	335	ø75

inch	y	x
1½"	7.09"	ø1.58"
2"	8.39"	ø1.89"
3"	13.19"	ø2.95"

Fig. 94: VEGAPULS 6X, flange with horn antenna up to +150 °C (+302 °F)/+250 °C (+482 °F)

1 Version up to +150 °C (+302 °F)
2 Version up to +250 °C (+482 °F)

VEGAPULS 6X, thread with horn antenna 450 °C version

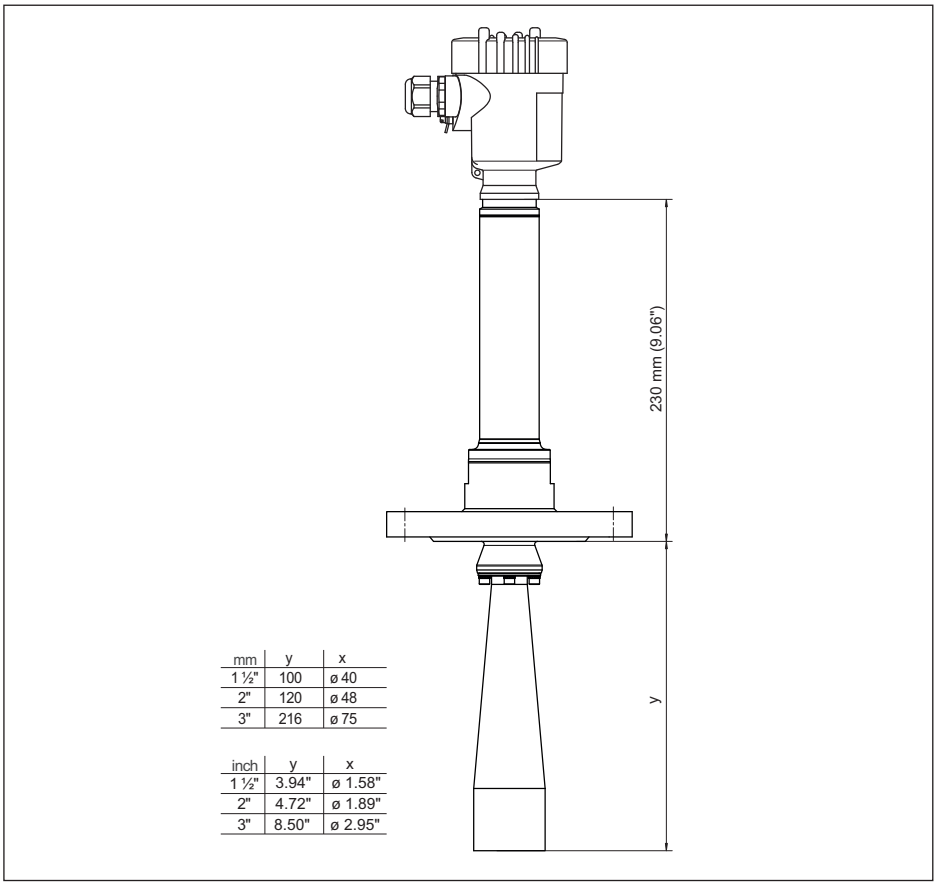


mm	y	x
1½"	154	ø40
2"	186	ø48
3"	308	ø75

inch	y	x
1½"	6.04"	ø1.58"
2"	7.33"	ø1.89"
3"	12.13"	ø2.95"

Fig. 95: VEGAPULS 6X, thread with horn antenna 450 °C version

VEGAPULS 6X, flange with horn antenna 450 °C version



mm	y	x
1 ½"	100	ø 40
2"	120	ø 48
3"	216	ø 75

inch	y	x
1 ½"	3.94"	ø 1.58"
2"	4.72"	ø 1.89"
3"	8.50"	ø 2.95"

Fig. 96: VEGAPULS 6X, flange with horn antenna 450 °C version

VEGAPULS 6X, flange with encapsulated antenna system

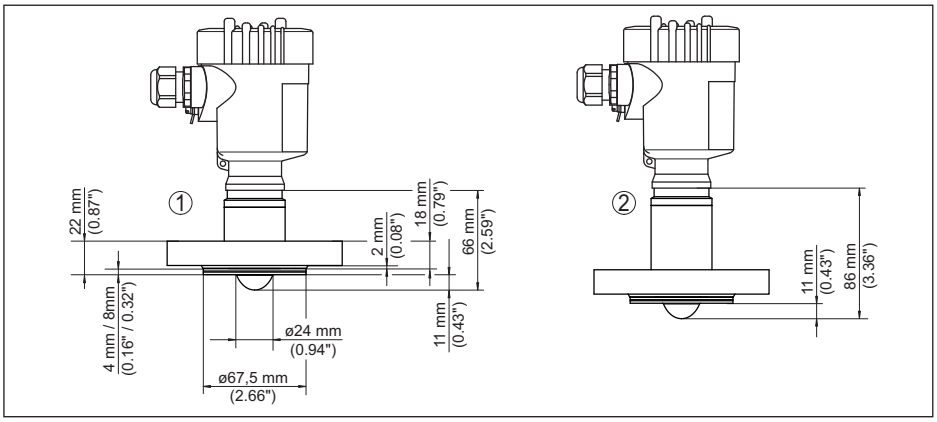


Fig. 97: VEGAPULS 6X, encapsulated antenna system DN 25 PN 40

1 Version up to +150 °C (+302 °F)
2 Version up to +200 °C (+392 °F)

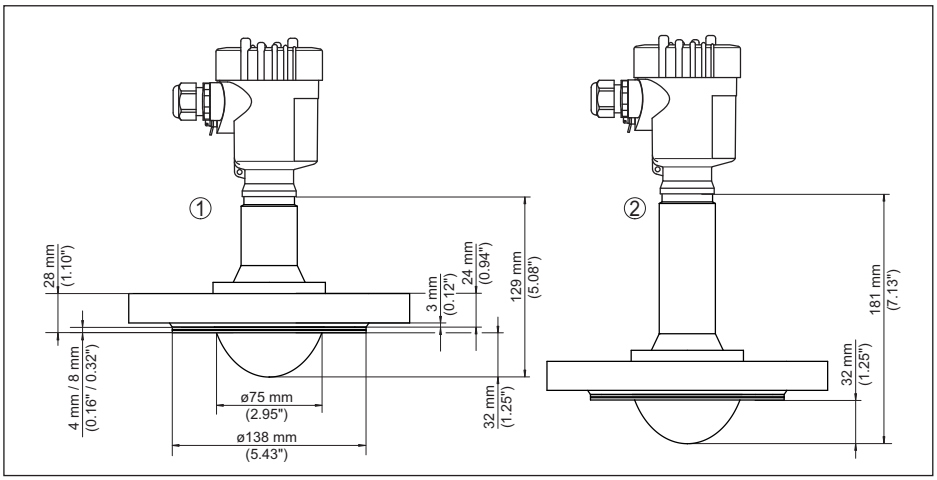


Fig. 98: VEGAPULS 6X, encapsulated antenna system DN 80 PN 40

1 Version up to +150 °C (+302 °F)
2 Version up to +200 °C (+392 °F)

VEGAPULS 6X, thread for hygienic adapter

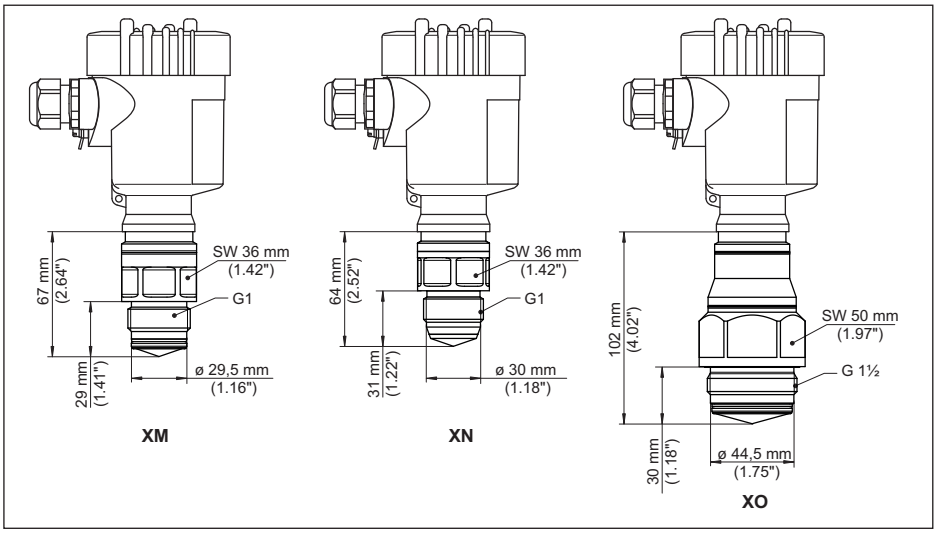


Fig. 99: VEGAPULS 6X, thread for hygienic adapter

XM G1 (ISO 228-1) for hygienic adapter sealing with O-ring
XN G1 (ISO 228-1), cone 40° for hyygienic adapter metallically sealing
XO G1½ (ISO 228-1) for hygienic adapter sealing with O-ring

VEGAPULS 6X, hygienic fitting 1

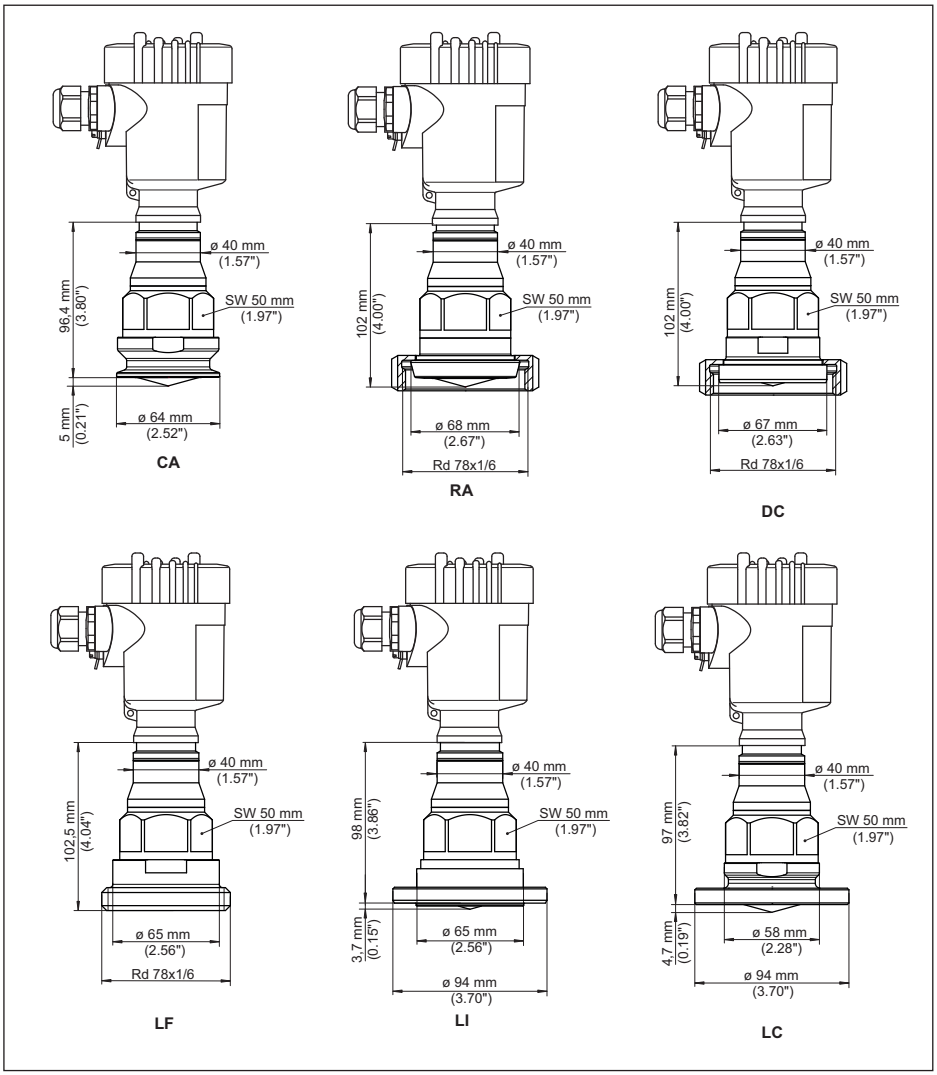


Fig. 100: VEGAPULS 6X, hygienic fitting

CA Clamp 2" (DIN 32676, ISO 2852)
RA Slotted nut DN 50 (DIN 11851)
DC Collar socket DN 50 Form A for tube 53 x 1.5 (DIN 11864-1)
LF Threaded socket DN 50 Form A for tube 53 x 1.5 (DIN 11864-1)
LI Grooved flange DN 50 Form A for tube 53 x 1.5 (DIN 11864-2)
LC Collar flange DN 50 Form A for tube 53 x 1.5 (DIN 11864-2)

VEGAPULS 6X, hygienic fitting 2

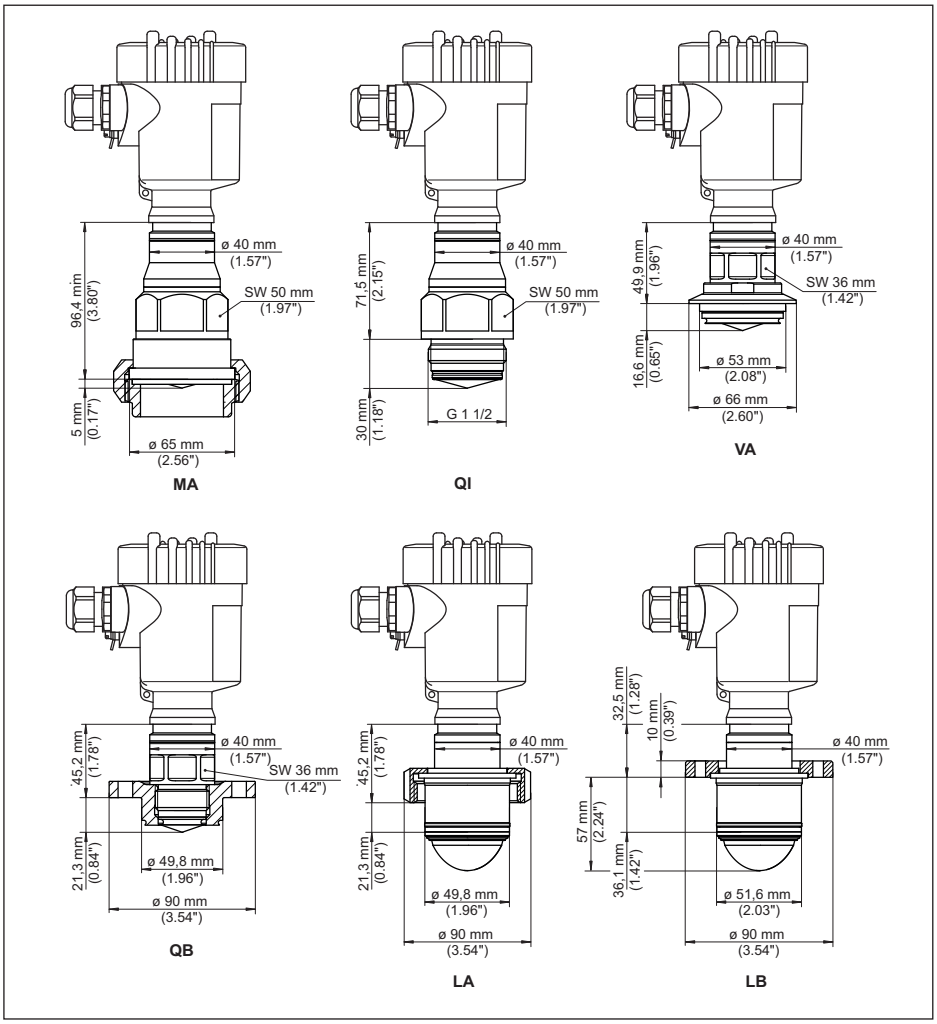


Fig. 101: VEGAPULS 6X, hygienic fitting

VA For Varinline Form F (1") D = 50 mm
MA SMS 1145 DN 51
Q1 DRD connection ø 65 mm
SA SMS DN 51
QB For Neumo Biocontrol D50
LA Hygienic connection with compression nut F40
LB Hygienic fitting with tension flange DN 32

VEGAPULS 6X, flange with lens antenna

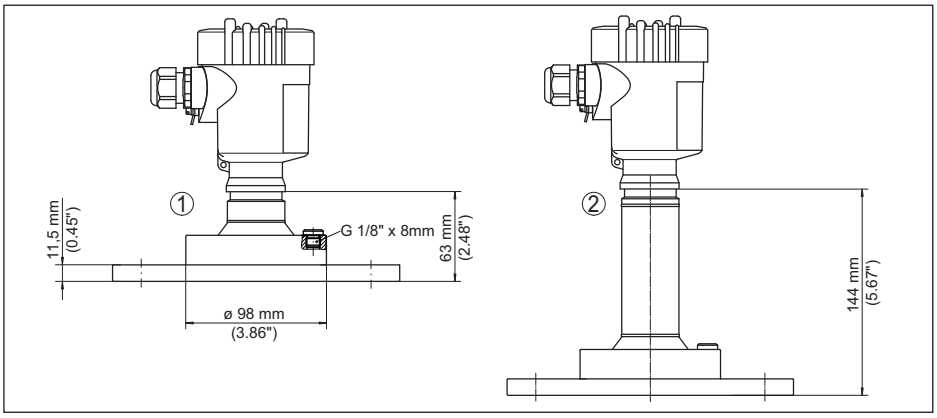


Fig. 102: VEGAPULS 6X, flange with lens antenna (flange thickness acc. to drawing, flange dimensions acc. to DIN, ASME, JIS)

1 Version up to +150 °C (+302 °F)
2 Version up to +250 °C (+482 °F)

VEGAPULS 6X, flange with lens antenna and purging air connection

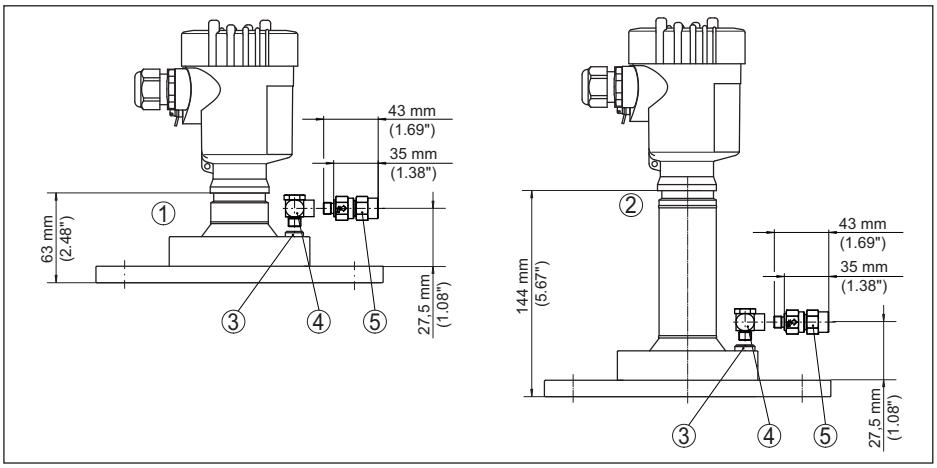


Fig. 103: VEGAPULS 6X, flange with lens antenna and purging air connection

1 Version up to +150 °C (+302 °F)
2 Version up to +250 °C (+482 °F)
3 Blind plug
4 90° angle joint
5 Reflux valve

VEGAPULS 6X, flange with lens antenna and swivelling holder

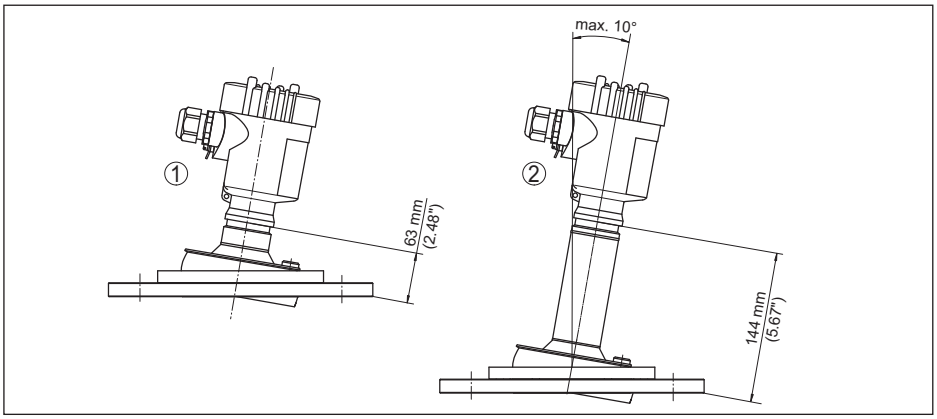


Fig. 104: VEGAPULS 6X, flange with lens antenna and swivelling holder

1 Version up to +150 °C (+302 °F)
2 Version up to +250 °C (+482 °F)

VEGAPULS 6X, flange with lens antenna, swivelling holder and purging air connection

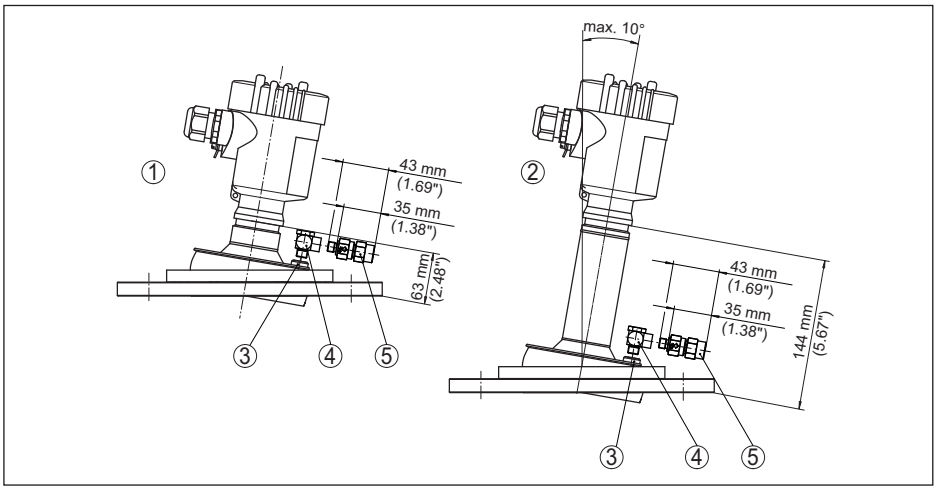


Fig. 105: VEGAPULS 6X, flange with lens antenna, swivelling holder and purging air connection

1 Version up to +150 °C (+302 °F)
2 Version up to +250 °C (+482 °F)
3 Blind plug
4 90° angle joint
5 Reflux valve

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17.6 Trademark

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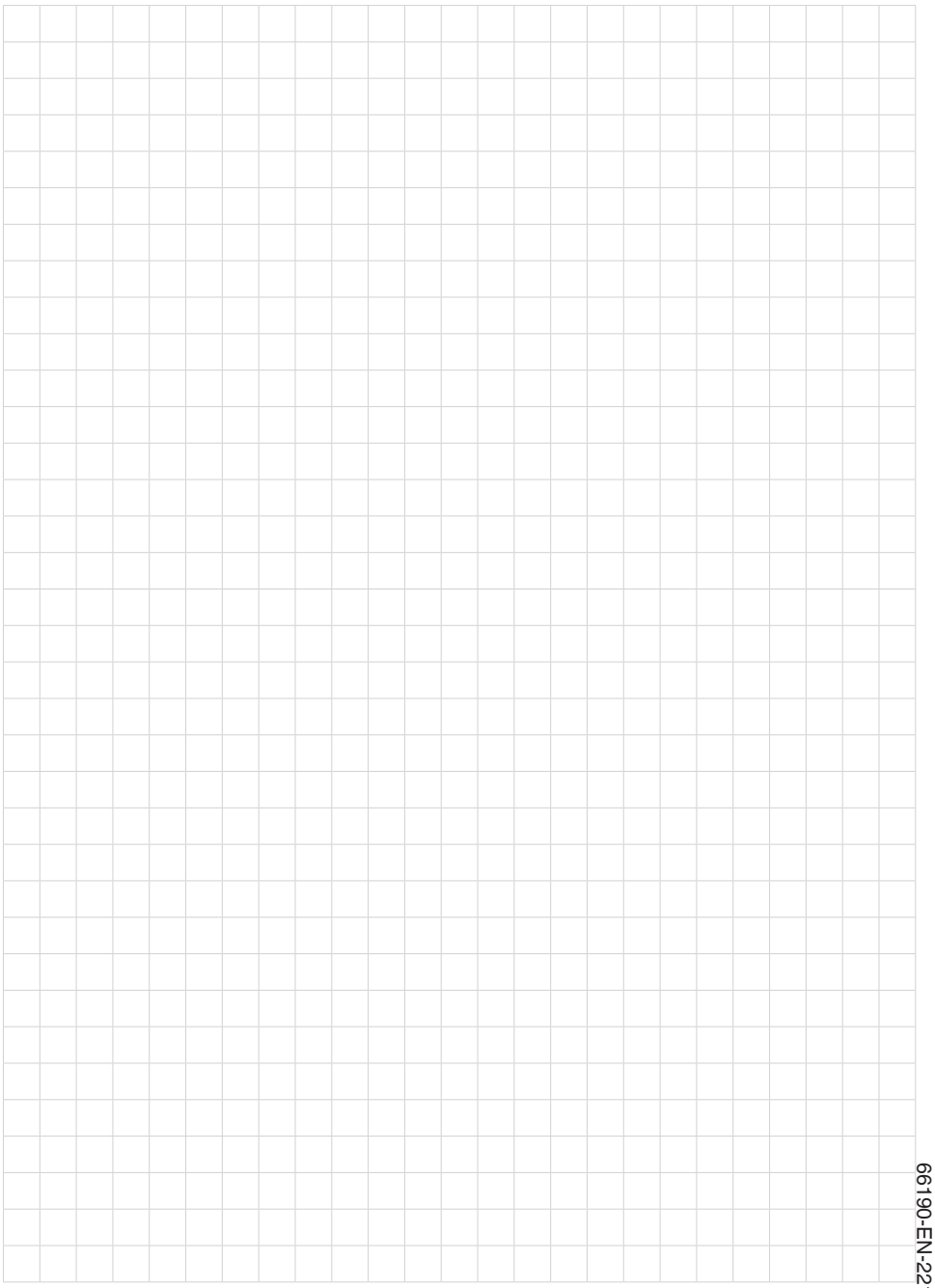

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