Supplementary instructions

External housing

VEGAFLEX 80 series

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Contents

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1 About this document

1.1 Function

This supplementary instructions manual is valid in conjunction with the operating instructions of the instrument. It gives you all necessary information for a quick setup and safe operation of the instrument with accessory. Therefore read both instructions manuals before you start setup.

1.2 Target group

This operating instructions manual is directed to trained personnel. The contents of this manual must be made available to the qualified personnel and implemented.

1.3 Symbols used

Document ID
This symbol on the front page of this instruction refers to the Document ID. By entering the Document ID on www.vega.com you will reach the document download.

Information, note, tip: This symbol indicates helpful additional information and tips for successful work.

Note: This symbol indicates notes to prevent failures, malfunctions, damage to devices or plants.

Caution: Non-observance of the information marked with this symbol may result in personal injury.

Warning: Non-observance of the information marked with this symbol may result in serious or fatal personal injury.

Danger: Non-observance of the information marked with this symbol results in serious or fatal personal injury.

Ex applications
This symbol indicates special instructions for Ex applications.

• **List**
The dot set in front indicates a list with no implied sequence.

→ **Action**
This arrow indicates a single action.

1 **Sequence of actions**
Numbers set in front indicate successive steps in a procedure.

Battery disposal
This symbol indicates special information about the disposal of batteries and accumulators.

2 For your safety

2.1 Authorised personnel

All operations described in this operating instructions manual must be carried out only by trained qualified personnel authorised by the plant operator.

During work on and with the device, the required personal protective equipment must always be worn.

2.2 Appropriate use

An external housing is part of a sensor.

2.3 Safety instructions for Ex areas

Take note of the Ex specific safety instructions for Ex applications. These instructions are attached as documents to each instrument with Ex approval and are part of the operating instructions.

2.4 Environmental instructions

Protection of the environment is one of our most important duties. That is why we have introduced an environment management system with the goal of continuously improving company environmental protection. The environment management system is certified according to DIN EN ISO 14001.

Please help us fulfil this obligation by observing the environmental instructions in this manual:

- Chapter "*Storage and transport*"
- Chapter "*Disposal*"

46802-EN-200212

3 Product description

3.1 Configuration

Scope of delivery

The scope of delivery encompasses:

- Level sensor with external housing
- High frequency connection cable (HF)
- Documentation
  - A device operating instructions manual
  - This supplementary instructions manual
  - Ex specific safety instructions (with Ex versions), if necessary further certificates

Constituent parts

The instrument version "Cable outlet IP68, external housing" consists of a sensor housing, the instrument housing and an assembled HF connection cable.

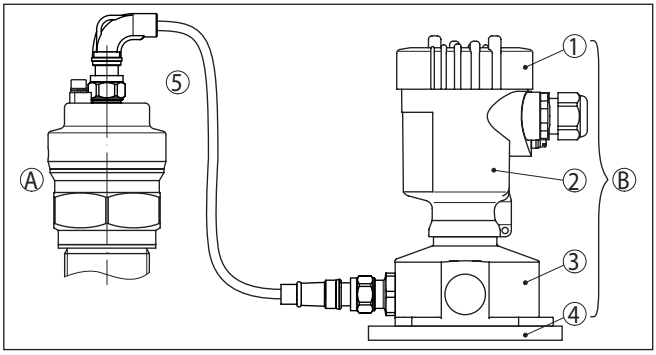

Fig. 1: Components of the external housing for plics® devices, N-plug

A Sensor housing
B Instrument housing
1 Screw-on cover
2 Base element
3 Housing base
4 Wall mounting plate
5 HF connection cable

The electrical connection must be carried out on the instrument housing.

The instrument housing consists of the base element, the screwed cover for the electronics or connection compartment and the housing base.

The housing base is produced in two different materials. The version depends on the selected material of the instrument housing.

- Instrument housing of plastic - housing base: plastic
- Instrument housing of aluminium - housing base: stainless steel
- Instrument housing of stainless steel - housing base: stainless steel

Depending on the order, the screwed cover of the instrument housing is available with or without inspection window for the display and adjustment module PLICSCOM.

The HF connection cable of the external housing can influence the measurement properties of VEGAFLEX. If the length of the sensor exceeds the length of the HF connection cable, the min. dielectric constant has to be $\varepsilon_r > 2$, independent of the instrument version. If the HF connection cable is longer, there are no limitations.

3.2 Principle of operation

Area of application

The external housing is suitable for the following plics® sensors:

- VEGAFLEX 81
- VEGAFLEX 82
- VEGAFLEX 83
- VEGAFLEX 86

The external housing cannot be retrofitted.

3.3 Storage and transport

Packaging

Your instrument was protected by packaging during transport. Its capacity to handle normal loads during transport is assured by a test based on ISO 4180.

The outer packaging of standard instruments consists of environment-friendly, recyclable cardboard. PE foam or PE foil is also used for packing the instrument. Dispose of the packaging material via specialised recycling companies.

Storage and transport temperature

- Storage and transport temperature see chapter "*Supplement - Technical data - Ambient conditions*"
- Relative humidity 20 … 85 %

4 Mounting

4.1 General instructions

In the following cases, we recommend using an instrument version with external housing:

- if the standard housing is too big
- if strong vibrations can damage the electronics

In Ex applications, only housings with appropriate Ex approval may be used.

4.2 Mounting preparations

Tools

The following tools are required for mounting the external housing.

Instrument housing:

- Hexagon socket wrench, size 4
- Fork wrench, wrench size 19

Sensor housing:

- Fork wrench, wrench size 8
- Fork wrench, wrench size 19

Mounting material

We recommend using additional materials when mounting the wall mounting plate.

- 4 screws, depending on the mounting surface

4.3 Mounting steps - instrument housing

Wall mounting - External housing

1. Mark the holes according to the following drilling template
2. Depending on the mounting surface, fasten the wall mounting plate with 4 screws

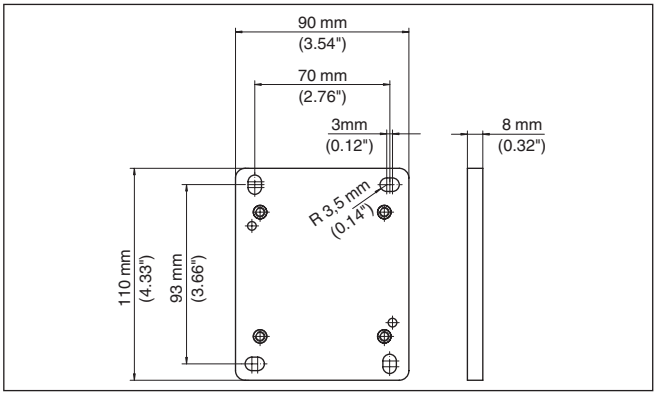

Fig. 2: Hole pattern - wall mounting plate (external housing)

Tip:
Mount the wall mounting plate in such a way that the cable gland of the base points downward. Rain and condensation water can thus drain off.

The base of stainless steel can be displaced in 90° increments on the wall mounting plate, the base of plastic by 180°.

Turn the cable gland of the electronics housing downward. The housing can be turned by 330° without the use of any tools.

Warning:
With the plastic housing, the four screws of the base may only be screwed in hand tight. Exceeding the max. torque specified in chapter "*Technical data*" can damage the wall mounting plate.

4.4 Mounting - sensor housing

→ Mount the sensor to the bottom, depending on the process fitting

Note:
When mounting the sensor, note the instructions in the operating instructions manual of the sensor.

5 Connect the sensor to the external housing

5.1 Preparing the connection

Follow the instructions in the operating instructions manual of the sensor.

5.2 Connection procedure

Note:
Only use the corresponding HF connection cable in the correct length.

Make sure that the markings (serial no.) correspond on the individual parts (sensor housing, instrument housing and HF connection cable).

The assembled HF connection cable has a straight N-plug on one end and an N-angled plug on the other. Both plugs can be connected to any side.

1. Remove the protective cover on the plug connector of the sensor housing.
2. Insert the plug (straight plug or angle plug) of the HF connection cable into the sensor housing and hand-screw the hexagon nut.
3. Tighten the hexagon nut of the plug with the fork wrench (SW 19) with max. 3 Nm (2.212 lbf ft).
4. Secure the hexagon nut of the plug with the securing strap. For this purpose, place the securing strap on one surface of the hexagon nut and tighten it with an Allen key (size 4).

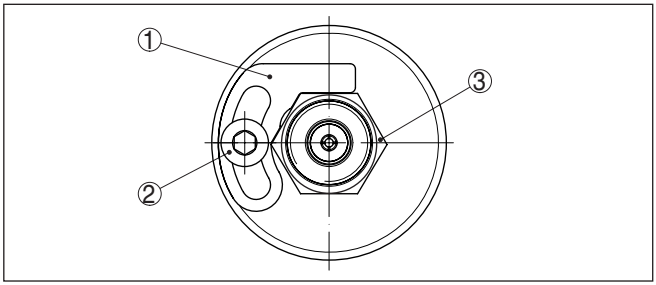

Fig. 3: Place the securing strap on the sensor housing and tighten it

1 Securing strap
2 Locking screw
3 Hexagon nut of the plug

5. Remove the protective cover on the plug connector of the instrument housing.
6. Insert the plug (straight plug or angle plug) of the HF connection cable into the instrument housing and hand-screw the hexagon nut.
7. Tighten the hexagon nut of the plug with the fork wrench (SW 19) with max. 3 Nm (2.212 lbf ft).

The electrical connection of the electronics module is described in the operating instructions manual of the sensor.

46802-EN-200212

6 Setup

6.1 Setup

Setup is carried out according to the operating instructions manual of the respective sensor.

46802-EN-200212

7 Maintenance

7.1 How to proceed if a repair is necessary

You can find an instrument return form as well as detailed information about the procedure in the download area of our homepage: www.vega.com

By doing this you help us carry out the repair quickly and without having to call back for needed information.

If a repair is necessary, please proceed as follows:

- Print and fill out one form per instrument
- Clean the instrument and pack it damage-proof
- Attach the completed form and, if need be, also a safety data sheet outside on the packaging
- Please contact the agency serving you to get the address for the return shipment. You can find the agency on our home page www.vega.com.

8 Dismount

8.1 Dismounting steps

Take note of chapters "*Mounting*" and "*Connect sensor to the external housing*" and carry out the listed steps in reverse order.

8.2 Disposal

The instrument consists of materials which can be recycled by specialised recycling companies. We use recyclable materials and have designed the electronics to be easily separable.

Correct disposal avoids negative effects on humans and the environment and ensures recycling of useful raw materials.

Materials: see chapter "*Technical data*"

If you have no way to dispose of the old instrument properly, please contact us concerning return and disposal.

WEEE directive 2002/96/EG

This instrument is not subject to the WEEE directive 2002/96/EG and the respective national laws. Pass the instrument directly on to a specialised recycling company and do not use the municipal collecting points. These may be used only for privately used products according to the WEEE directive.

9 Supplement

9.1 Technical data

Technical data

Following you find all data deviating from the standard instrument. All other technical data are specified in the operating instruction of the respective sensor.

General data

Material 316L corresponds to 1.4404 or 1.4435	
Materials, non-wetted parts	
– Sensor housing (metal housing)	316L
– Plastic instrument housing (external housing)	Plastic PBT (Polyester)
– Stainless steel instrument housing - electropolished (external housing)	316L
– Stainless steel instrument housing - precision casting (external housing)	316L, precision casting
– Aluminium instrument housing - die-casting (external housing)	Aluminium die-casting AlSi10Mg, powder-coated - Basis: Polyester
– Housing base	Plastic PBT (Polyester), 316L
– Wall mounting plate	Plastic PBT (Polyester)
– Seal between housing socket and wall mounting plate	TPE (fixed connected)
– Seal between housing and housing cover (instrument version)	Silicone
– Ground terminal	316L
– HF connection cable	PE
– Connection plug (HF connection cable)	Cu alloy (nickle-plated)
Weight	
– External instrument housing	approx. 660 g (23 oz)
– Sensor	0.4 … 2 kg (0.882 … 4.41 lbs) depending on the process fitting
Sensor length (L)	
– VEGAFLEX 81, 83, 86	see operating instructions manual of the respective sensor
– VEGAFLEX 82	1 … 45 m (3.281 … 147.6 ft)
Length, HF connection cable to external housing	2 m, 5 m, 10 m (6.562 ft, 16.4 ft, 32.81 ft)
Length, HF connection cable to external housing	15 m (49.2 ft) – only with VEGAFLEX 81 – only up to 40 m probe length – only from $\varepsilon_r > 10$

Min. bending radius of the HF connection cable to the external housing	25 mm (0.98 in)
Min. dielectric constant of the medium	
– VEGAFLEX 81, 82, 83, 86	$\varepsilon_r > 1.6$
– if sensor length L > cable length, HF connection cable	$\varepsilon_r > 2$

Process conditions

Process pressure	depending on the process fitting
Ambient temperature - HF connection cable	-40 … +85 °C (-40 … +185 °F)
Ambient, storage and transport temperature on the instrument housing	
– without display and adjustment module	-40 … +80 °C (-40 … +176 °F)
– With display and adjustment module	-20 … +70 °C (-4 … +158 °F)

Electromechanical data

Cable entry/plug[1)]	
– Instrument housing	– 1 x cable gland M20 x 1.5 (cable: ø 6 … 12 mm), 2 x blind plug M20 x 1.5 or: – 1 x closing cap ½ NPT, 2 x blind plug ½ NPT or: – 1 x plug (depending on the version), 2 x blind plugs M20 x 1.5
– Housing base	– 1 x N-socket
– Sensor housing	– 1 x N-socket
Spring-loaded terminals	for wire cross-section up to 2.5 mm² (AWG 14)

Electrical protective measures

Protection rating	
– Sensor housing	IP66/IP68 (1 bar) acc. to NEMA Type 6P
– Instrument housing - Instrument socket	IP66/IP67 acc. to NEMA Type 4X

1) Depending on the version M12 x 1, according to ISO 4400, Harting, 7/8" FF.

9.2 Dimensions

Housing versions - instrument housing

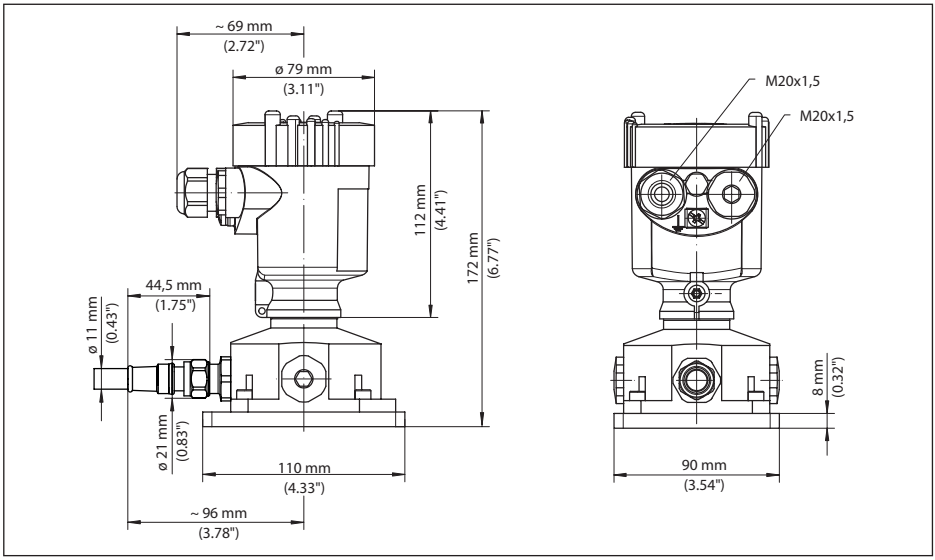

Fig. 4: Housing versions - Instrument housing - plastic or stainless steel (with integrated PLICSCOM the housing is 9 mm/0.35 in higher)

Externes Gehäuse, housing versions

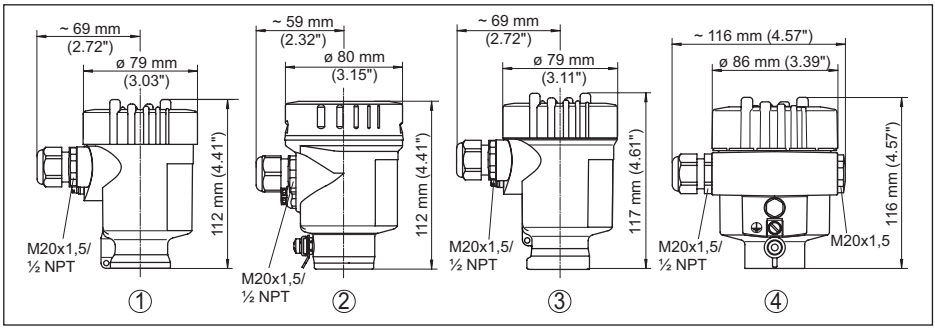

Fig. 5: Versions of the instrument housing

1 *Instrument housing - plastic*
2 *Instrument housing - stainless steel, electropolished*
3 *Instrument housing - stainless steel, precision casting*
4 *Instrument housing - Aluminium*

Sensor housing VEGAFLEX 81

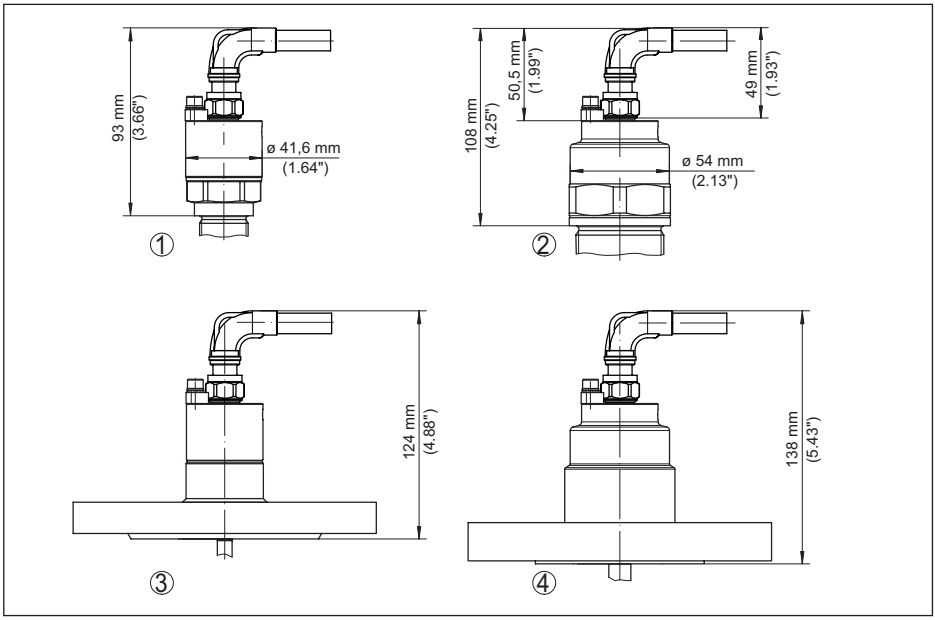

Fig. 6: Sensor housing VEGAFLEX 81

1 *Sensor housing - VEGAFLEX 81 - threaded version with cable ø 2, 4 mm (0.079, 0.157 in) or rod ø 8 mm (0.315 in)*
2 *Sensor housing - VEGAFLEX 81 - threaded version with rod ø 12 mm (0.472 in)*
3 *Sensor housing - VEGAFLEX 81 - flange version with cable ø 2, 4 mm (0.079, 0.157 in) or rod ø 8 mm (0.315 in)*
4 *Sensor housing - VEGAFLEX 81 - flange version with rod ø 12 mm (0.472 in)*

Sensor housing VEGAFLEX 82

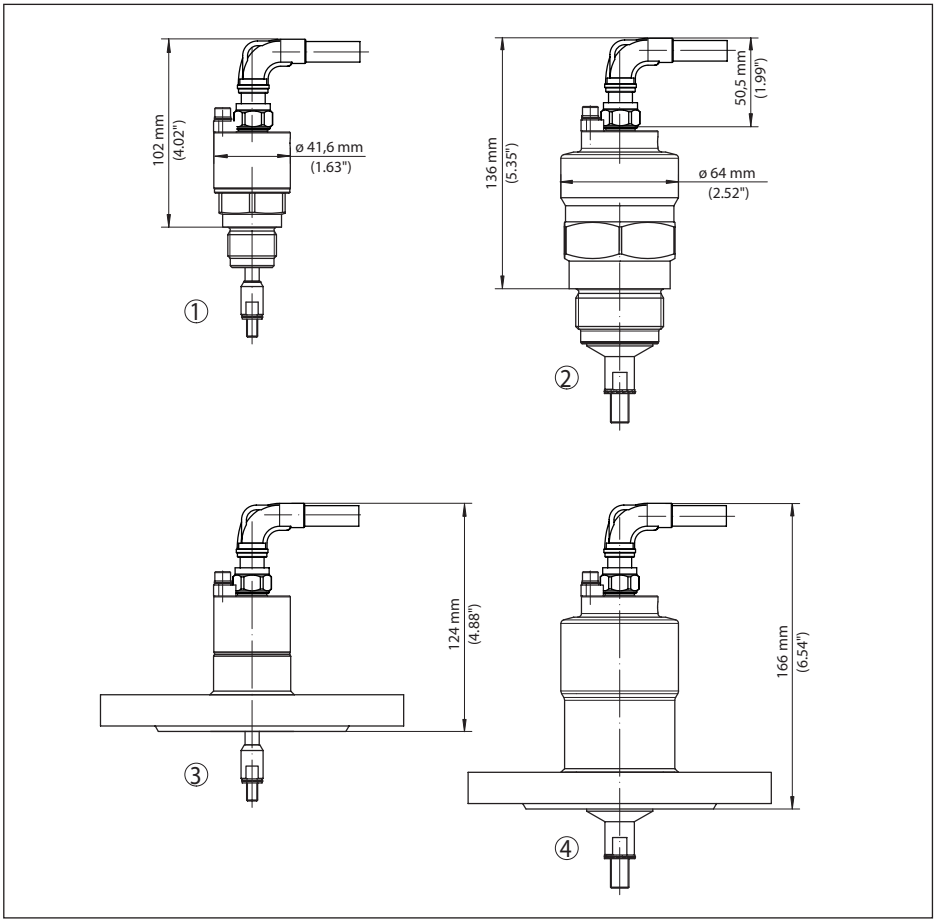

Fig. 7: Sensor housing VEGAFLEX 82

1 *Sensor housing - VEGAFLEX 82 - threaded version with cable ø 4, 6 mm (0.157, 0.236 in)*
2 *Sensor housing - VEGAFLEX 82 - threaded version with cable ø 6, 11 mm (0.236, 0.433 in) or rod ø 16 mm (0.63 in)*
3 *Sensor housing - VEGAFLEX 82 - flange version with cable ø 4 mm (0.157 in)*
4 *Sensor housing - VEGAFLEX 82 - flange version with cable ø 6, 11 mm (0.236, 0.433 in) or rod ø 16 mm (0.63 in)*

46802-EN-200212

Sensor housing VEGAFLEX 83 - PFA plated

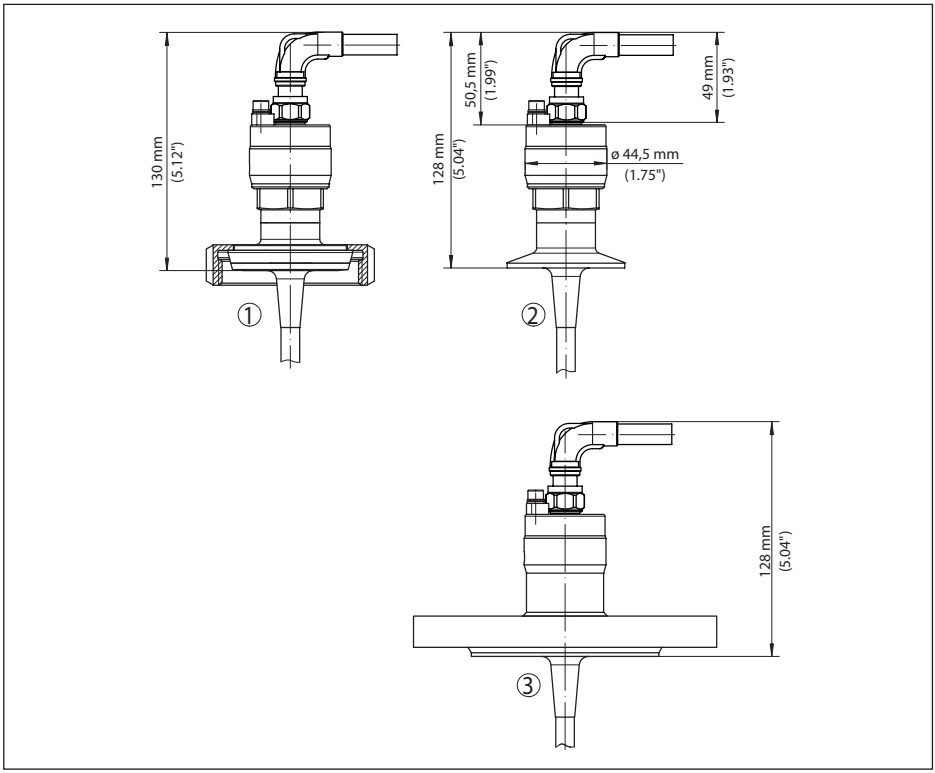

Fig. 8: Sensor housing VEGAFLEX 83 - PFA plated

1 Sensor housing - VEGAFLEX 83 - slotted nut
2 Sensor housing - VEGAFLEX 83 - Clamp version
3 Sensor housing - VEGAFLEX 83 flange version

Sensor housing VEGAFLEX 83 - polished

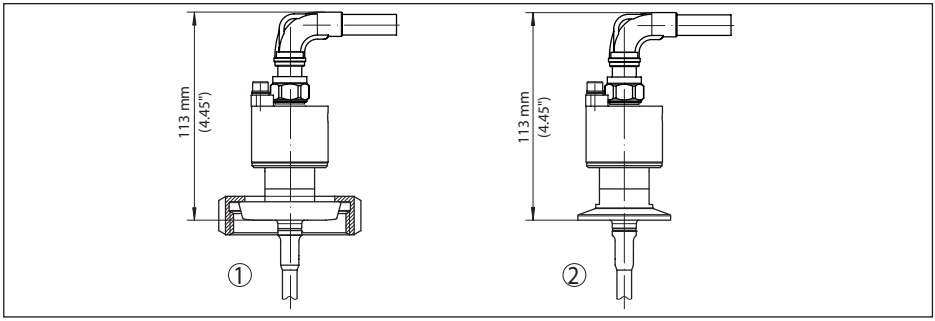

Fig. 9: Sensor housing VEGAFLEX 83 - polished

1 Sensor housing - VEGAFLEX 83 - slotted nut
2 Sensor housing - VEGAFLEX 83 - Clamp version

Sensor housing VEGAFLEX 86, 250 °C

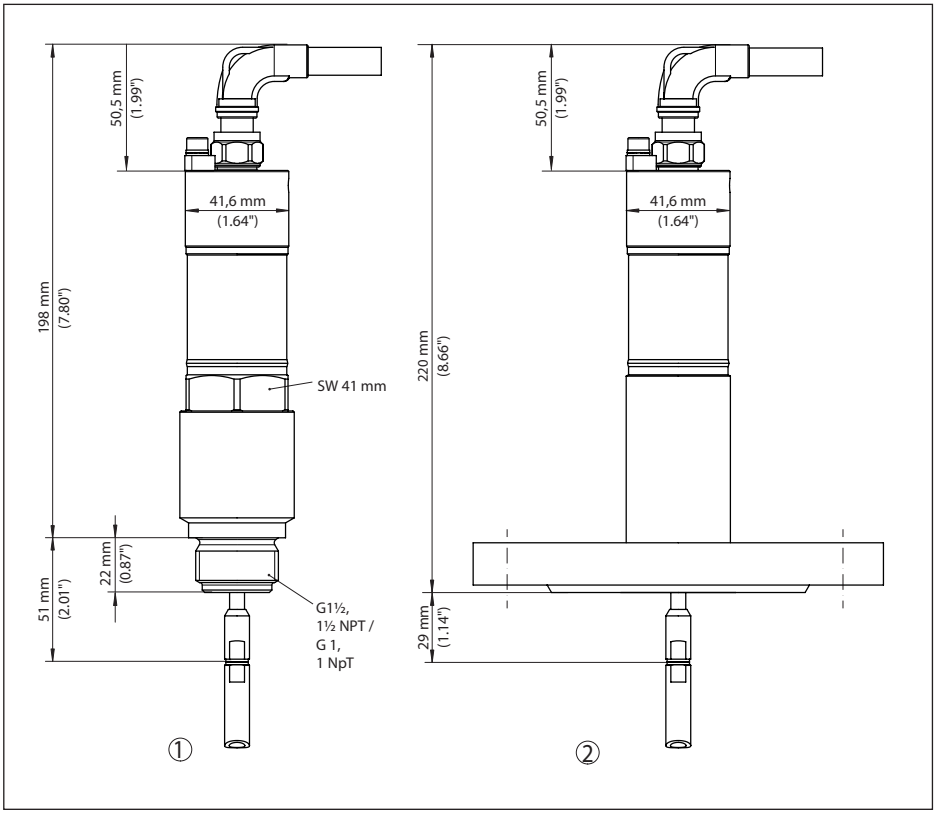

Fig. 10: Sensor housing VEGAFLEX 86, 250 °C

1 Sensor housing - VEGAFLEX 86 - threaded version
2 Sensor housing - VEGAFLEX 86 - flange version
x Max. height of the vessel insulation

Sensor housing VEGAFLEX 86, 280 °C

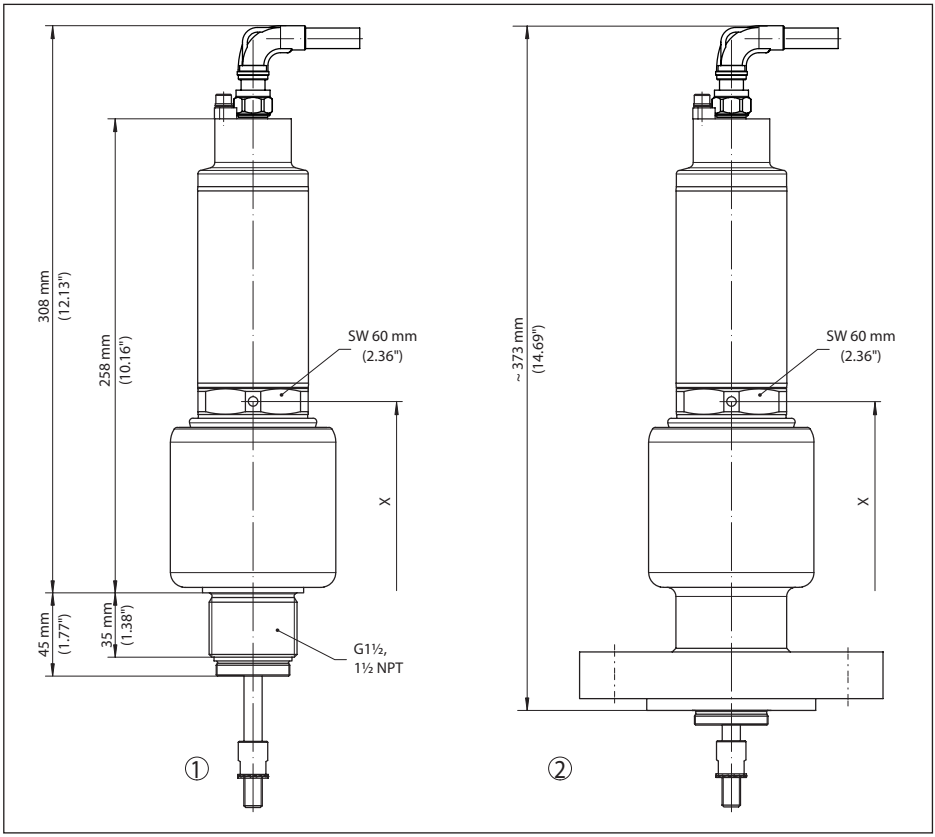

Fig. 11: Sensor housing VEGAFLEX 86, 280 °C

1 Sensor housing - VEGAFLEX 86 - threaded version
2 Sensor housing - VEGAFLEX 86 - flange version
x Max. height of the vessel insulation

Sensor housing VEGAFLEX 86, 450 °C

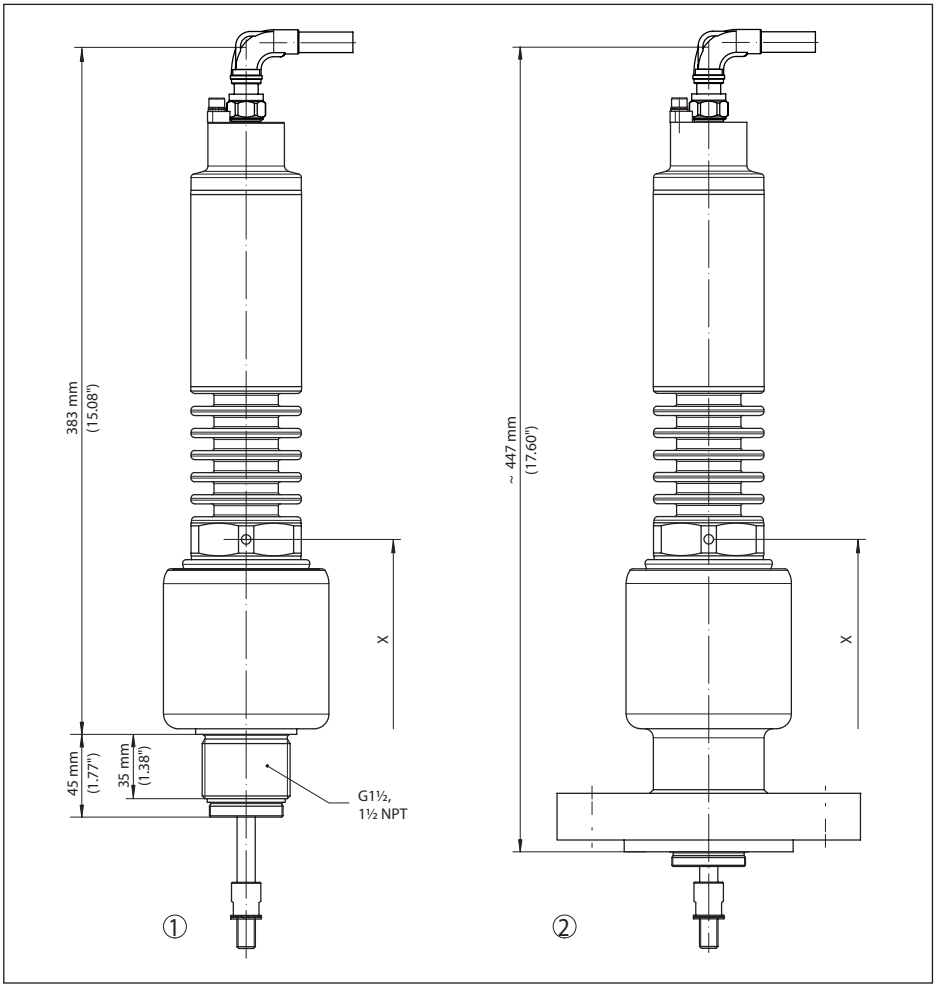

Fig. 12: Sensor housing VEGAFLEX 86, 450 °C

1 Sensor housing - VEGAFLEX 86 - threaded version
2 Sensor housing - VEGAFLEX 86 - flange version
x Max. height of the vessel insulation

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