Supplementary instructions

Rod and cable components

for VEGAFLEX series 80

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Contents

44968-EN-230228

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1 Product description

1.1 Extensions

General information

If VEGAFLEX sensors with rod or cable version are to be mounted in difficult installation situations, it can be helpful to use a segmented rod.

This is for example the case if there is not enough space above the vessel to insert a long rod probe or if you want to install the probe from the side.

If the probe can only be installed from the side, you can adapt the rod accordingly with an angled segment and rod extensions.

If the cable and rod components are parts of approved devices (e.g. with Ex approval), observe the technical data in the corresponding certificates and safety instructions. These may deviate from the data in this operating instruction manual.

Please note possible restrictions regarding cable and rod diameters as well as process conditions. You will find the relevant approval documents on our homepage.

Extension components with ø 8 mm (0.315 in), polished

Extensions with a diameter of 8 mm can be used with VEGAFLEX 83 sensors.

Basic and extension rods with ø 8 mm (0.315 in)
The rods can be combined in any way up to a total length of 4 m (13.12 ft). In the case of ø8 mm rods (VEGAFLEX 83), a basic rod and an end rod are always required. Depending on the total length there can be up to 7 extension rods.

The segmented probes with ø 8 mm (0.315 in) can be ordered Ex factory together with the sensor or separately as an accessory.

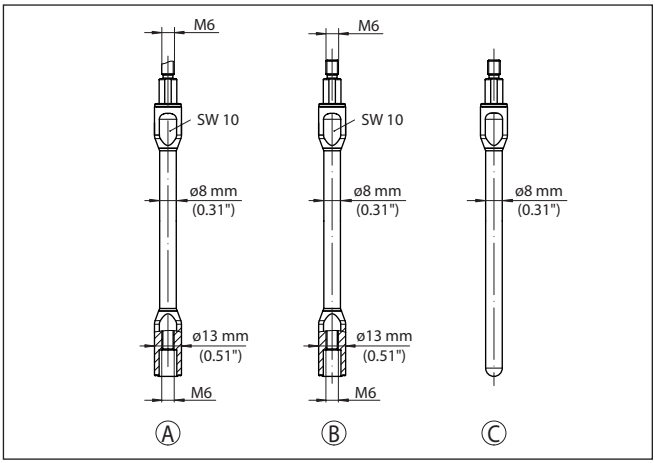

Fig. 1: Rod components with ø 8 mm (0.315 in), polished

A Basic rod with ø 8 mm (0.315 in)
B Extension rod with ø 8 mm (0.315 in)
C End rod with ø 8 mm (0.315 in)

Extension components with ø 12 mm (0.47 in)

Extensions with a diameter of 12 mm (0.47 in) can be used with VEGAFLEX 81 sensors.

Basic and extension rods with ø 12 mm (0.47 in)
The rods can be combined in any way up to a total length of 6 m (19.68 ft). In the case of ø12 mm rods (0.47 in), a basic rod and an end rod are always required.

Elbow segment with ø 12 mm (0.47 in)
If the probe can only be installed from the side, you can use an elbow segment.

The elbow segment with a diameter of 12 mm can only be used in combination with a basic rod.

Rods and elbow segments can be combined in any way up to a total length of 6 m (19.68 ft).

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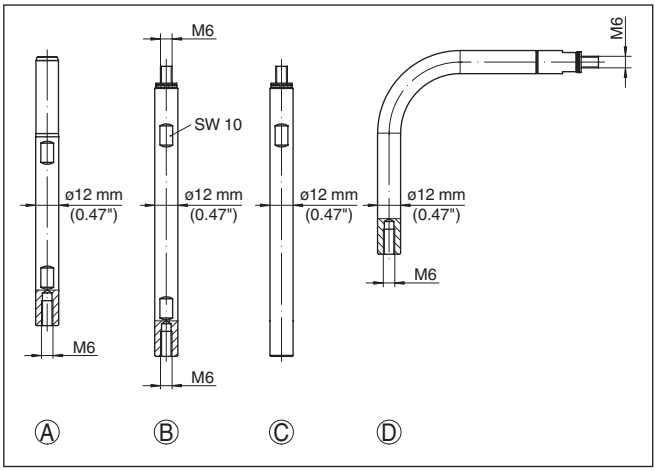

Fig. 2: Rod components with ø 12 mm (0.47 in)

A Basic rod with ø 12 mm (0.47 in)
B Extension rod with ø 12 mm (0.47 in)
C End rod with ø 12 mm (0.47 in)
D Elbow segment with ø 12 mm (0.47 in)

Rod and cable components with ø 16 mm (0.63 in)

Extension rods with a diameter of 16 mm (0.63 in) can be used with VEGAFLEX 82 and 86 sensors.

Extension rods with ø 16 mm (0.63 in)
You do not need a basic rod for 16 mm diameter rod probes (VEGAFLEX 82 and 86). Here you can also freely select the segmentation.

The rods can be combined in any way up to a total length of 6 m (19.68 ft).

Extension cable with ø 6 mm (0.24 in)
A special basic rod is not required for VEGAFLEX 82 and 86 sensors.

Rods, cables and elbow segment can be combined in any way up to a total length of 6 m (19.68 ft).

You can, for example, apply a cable extension directly after an elbow segment.

Elbow segment with ø 16 mm (0.63 in)
If the probe can only be installed from the side, you can adapt the rod accordingly with an elbow segment and rod or cable extensions.

Rods, cables and elbow segment can be combined in any way up to a total length of 6 m (19.68 ft).

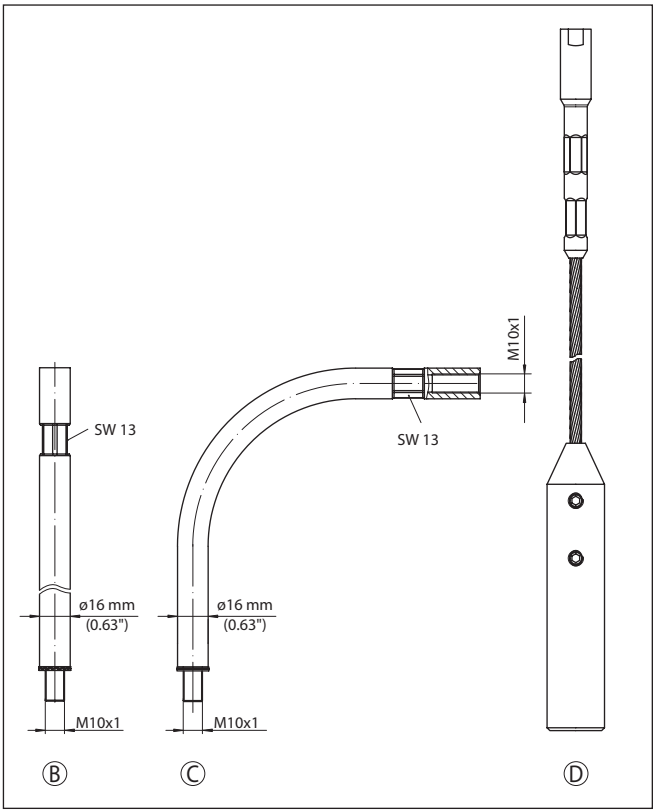

Fig. 3: Rod and cable components with ø 16 mm (0.63 in)

B Extension rod with ø 16 mm (0.63 in)
C Elbow segment with ø 16 mm (0.63 in)
D Extension cable with ø 6 mm (0.24 in)

2 Mounting

2.1 General instructions

Distance to the vessel wall

Make sure that the rod of the probe is at least 300 mm (11.811 in) away from the vessel wall.

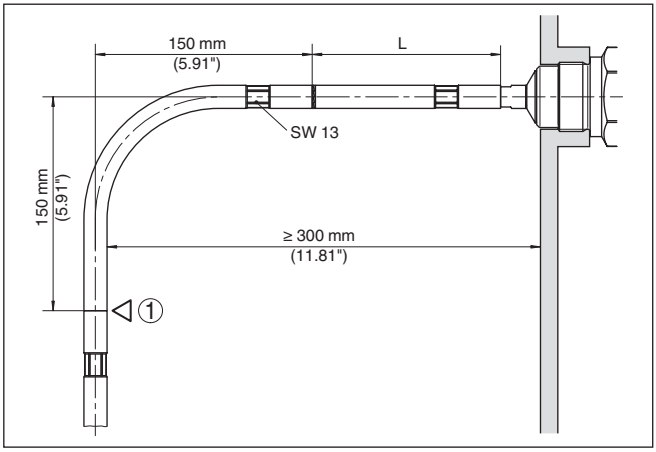

Fig. 4: Min. distance from the vessel wall

1 Upper measuring range end
L Length of the extension rod

Measurement lengh with elbow segment

When using an elbow segment, measurement is only possible on the vertical rods. The upper end of the measuring range must be set where the radius of the elbow segment begins.

Measurement is not possible above the upper measuring range end.

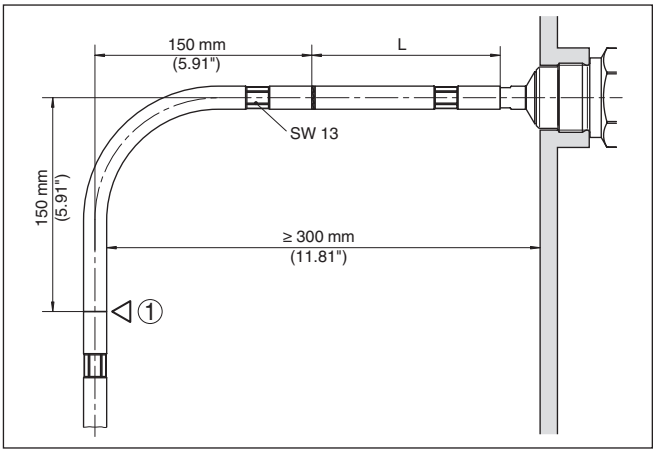

Fig. 5: Measuring range with elbow segment

1 Upper measuring range end
L Length of the extension rod

Fasten

When using a probe with an elbow segment: if there is a danger of the probe touching the vessel wall during operating due to product movement or instability caused by its own weight, you should secure the probe at additional points.

For this purpose, fasten the rod probe on the outer lower edge.

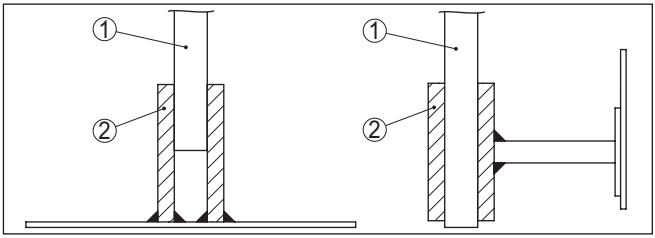

Fig. 6: Fasten the probe

1 Measuring probe
2 Retaining sleeve

2.2 Rod extension with ø 8 mm (0.315 in), polished

Basic rod with ø 8 mm (0.315 in)

The rod (meas. part) of the probe can be exchanged or extended, if necessary. To loosen the meas. rod you need a fork spanner with spanner width 10.

Probes shipped with segmented rods have the basic rod already premounted. In such cases we recommend not dismounting the basic

rod during installation. Start with mounting the extension rods and the end rod.

Caution:
Remember that the polished rod of the food version is very sensitive to damage and scratches. Use special tools to avoid damaging the surface. A protective attachment of plastic for the spanner is enclosed with the segmented rods.

Note:
Instruments with 3A manufacturer declaration have to be specially sealed. Such instruments must therefore be returned to the factory when a seal replacement is necessary.

1. Loosen the rod by applying a fork spanner to the flat surfaces (SW 10), provide counterforce manually on the process fitting.
2. Screw out the loosened measuring rod by hand.
3. Push the enclosed new seal ring onto the thread.
4. Screw the new rod carefully by hand onto the thread on the process fitting.
5. Exert counterforce manually and tighten the rod on the flat surfaces with a torque of max. 4.5 Nm (3.32 lbf ft).

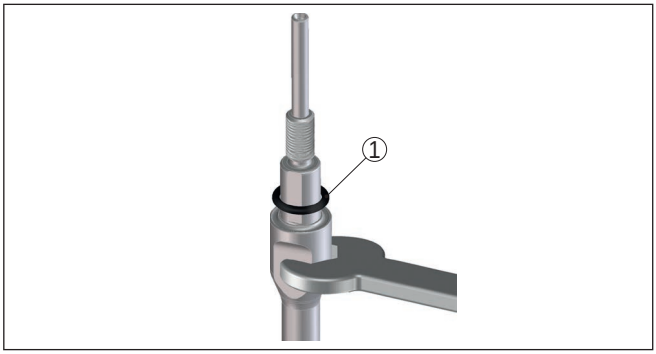

Fig. 7: Screw the basic rod onto the process fitting

1 Seal ring

Information:
Please maintain the specified torque so that the max. tensile strength of the connection remains.

Extension and end rod with ø 8 mm (0.315 in)

Caution:
Remember that the polished rod of the food version is very sensitive to damage and scratches. Use special tools to avoid damaging the surface. A protective attachment of plastic for the spanner is enclosed with the segmented rods.

1. Push the enclosed new seal ring onto the thread.

2. Screw the new rod carefully by hand onto the thread of the basic rod.
3. Exert counterforce on the basic rod and tighten the rod on the flat surfaces with a torque of max. 4.5 Nm (3.32 lbf ft).

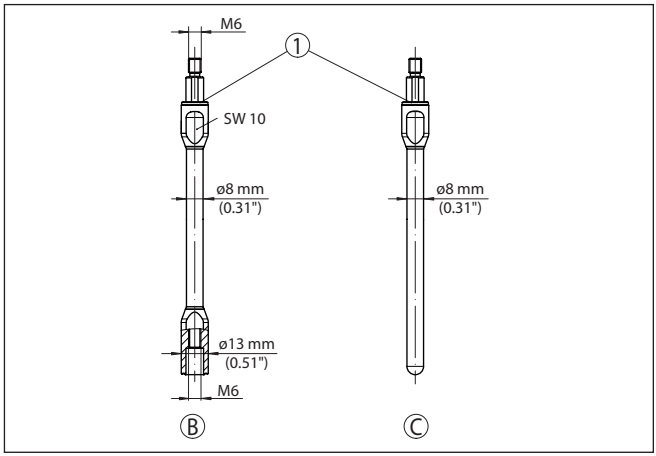

Fig. 8: Rod components with ø 8 mm (0.315 in)

B Extension rod with ø 8 mm (0.315 in)
C End rod with ø 8 mm (0.315 in)
1 Seal ring

Information:
Please maintain the specified torque so that the max. tensile strength of the connection remains.

4. Enter new probe length and if necessary the new probe type and then carry out a fresh adjustment (see " *Setup procedure, Carrying out min. adjustment - Carrying out max. adjustment*").

2.3 Rod extension with ø 12 mm (0.47 in)

Measuring length - Extensions with ø 12 mm (0.47 in)

Please note that the order length of the probe extension deviates from the actual length. You can see the order length of the probe in the following illustration.

With a flange version, the probe length refers to the sealing surface of the flange, with threaded fittings to the sealing edge of the thread.

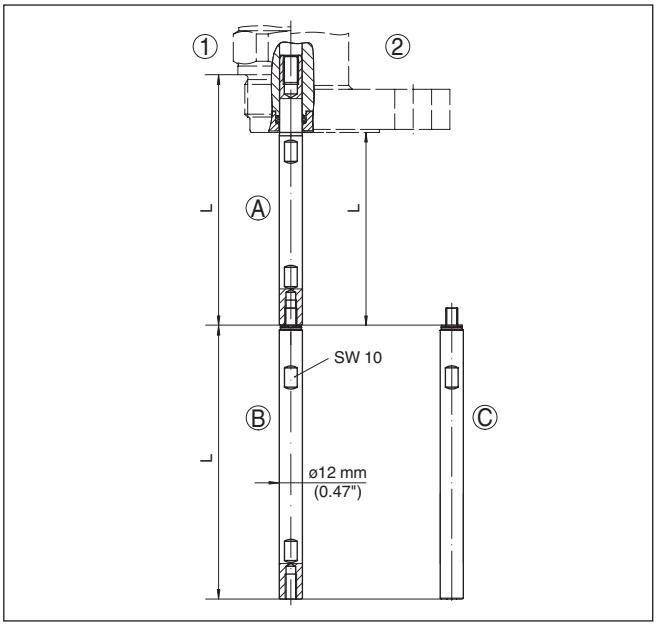

Fig. 9: Extension rods with ø 12 mm (0.47 in) - order length of the probe

1 Version with threaded fitting
2 Version with flange connection
A Basic rod with ø 12 mm (0.47 in)
B Extension rod with ø 12 mm (0.47 in)
C End rod with ø 12 mm (0.47 in)
L Length of the extension rod

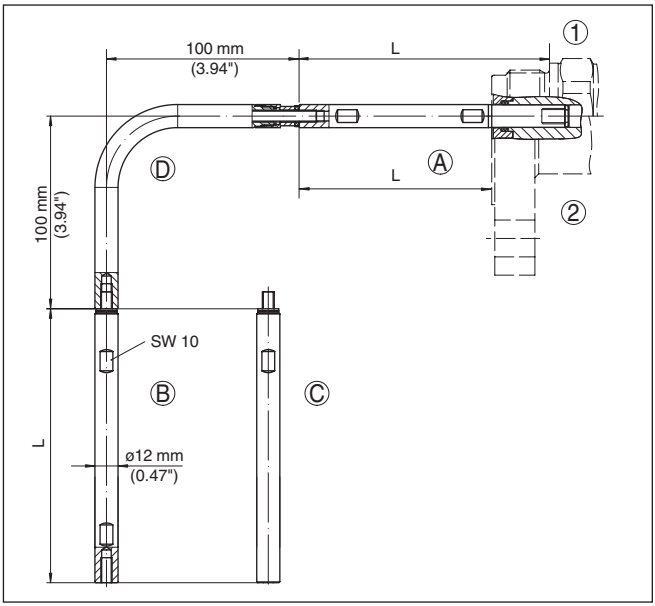

Fig. 10: Extension rods (elbow) with ø 12 mm (0.47 in)

1 Version with threaded fitting
2 Version with flange connection
A Basic rod with ø 12 mm (0.47 in)
B Extension rod with ø 12 mm (0.47 in)
C End rod with ø 12 mm (0.47 in)
D Elbow segment with ø 12 mm (0.47 in)
L Length of the extension rod

Basic rod with ø 12 mm (0.47 in)

To mount the measuring rod, you need a size 10 wrench.

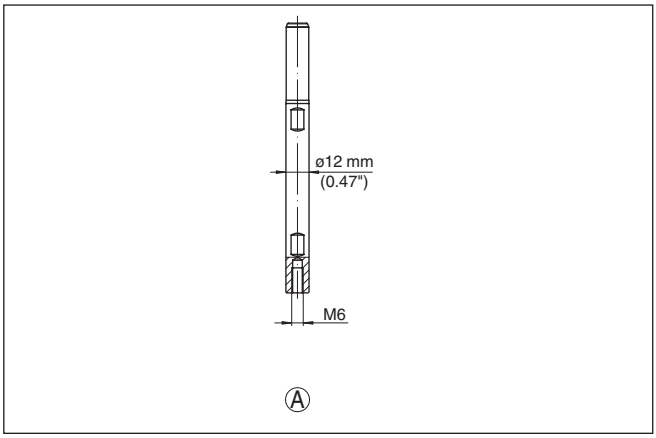

Fig. 11: Rod components with ø 12 mm (0.47 in) - basic rod

A Basic rod with ø 12 mm (0.47 in)

1. Loosen the rod with a fork wrench applied to the flat surface, provide counterforce with another fork wrench.
2. Screw out the loosened measuring rod by hand.
3. Insert the new measuring rod carefully by hand with a screwing motion into the opening of the process fitting.
4. Continue screwing in the rod manually into the opening of the process fitting.
5. Exert counterforce with a fork spanner on the hexagon of the process fitting and tighten the rod on the flat surfaces with a second fork spanner (SW 10) with a torque of 10 Nm (7.37 lbf ft).

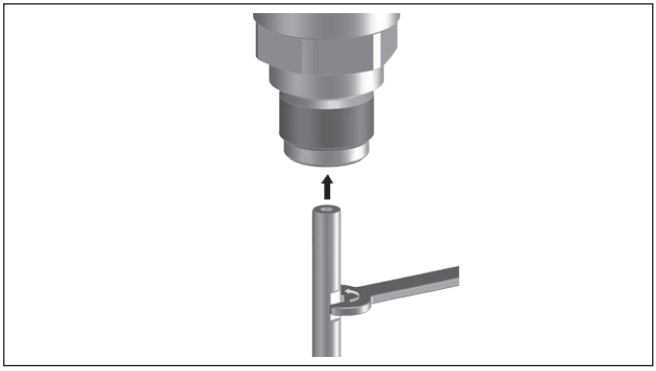

Fig. 12: Measuring rod

Tip:
Please maintain the specified torque so that the max. tensile strength of the connection remains.

Elbow segment with ø 12 mm (0.47 in)

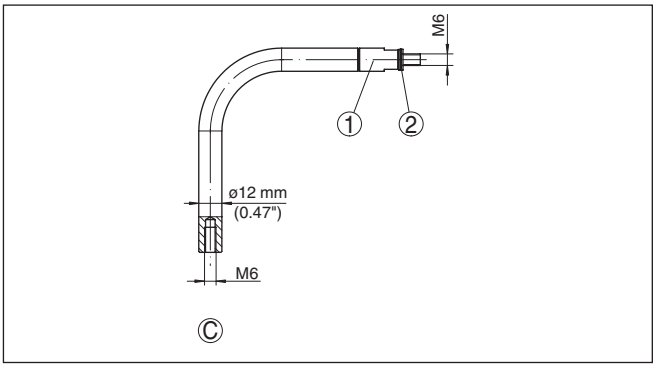

Fig. 13: Rod components with ø 12 mm (0.47 in) - elbow segment

C Elbow segment with ø 12 mm (0.47 in)
1 Counter nut
2 Retaining washer

1. Slip one of the double lock washers (Nordlock) onto the thread of the elbow segment.
2. Screw the elbow segment onto the base rod by hand.
3. After screwing it on, check the position of the elbow segment.

   Turn the elbow segment in the thread until it points correctly downward.
4. Screw the counter nut of the elbow segment against the base rod. Exert counterforce with a second fork spanner (SW 10) and tighten with a torque of 10 Nm (7.37 lbf ft).

Tip:
Please maintain the specified torque so that the max. tensile strength of the connection remains.

Extension and end rod with ø 12 mm (0.47 in)

To mount the measuring rod, you need a size 10 wrench.

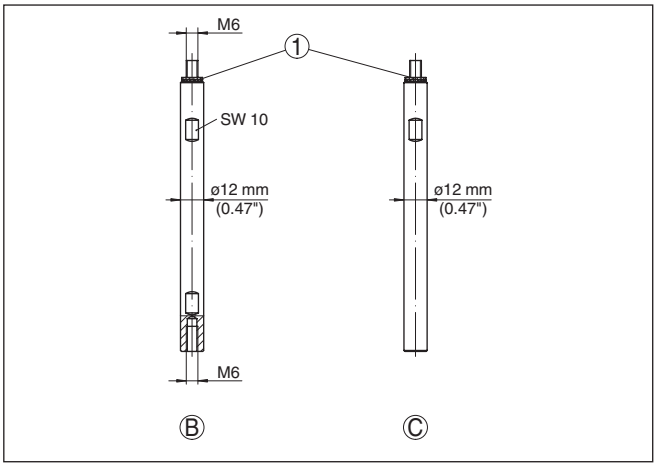

Fig. 14: Rod components with ø 12 mm (0.47 in)

B Extension rod with ø 12 mm (0.47 in)
C End rod with ø 12 mm (0.47 in)
1 Retaining washer

1. Slip one of the double lock washers (Nordlock) onto the thread of the elbow segment.
2. Screw the rod extension onto the basic rod or elbow segment or onto the extension rod.
3. Exert counterforce with a second fork spanner (SW 10) and tighten the rod on the flat surfaces with a torque of 10 Nm (7.37 lbf ft).

Tip:
Please maintain the specified torque so that the max. tensile strength of the connection remains.

2.4 Rod extension with ø 16 mm (0.63 in)

Elbow segment with ø 16 mm (0.63 in)

To mount the measuring rod, you need a size 13 wrench.

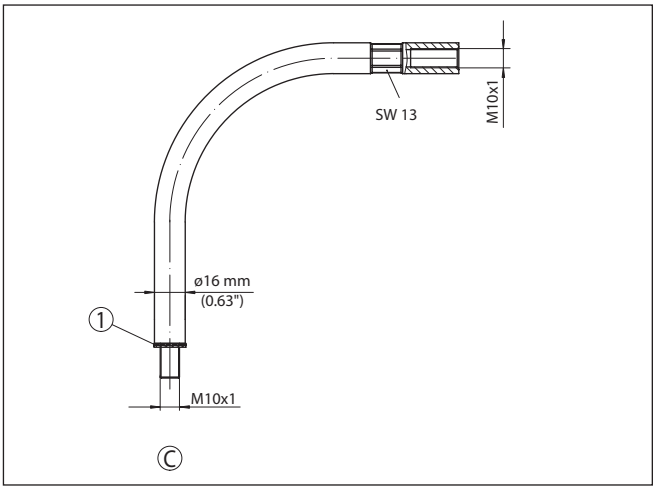

Fig. 15: Rod and cable components with ø 16 mm (0.63 in)

C Elbow segment with ø 16 mm (0.63 in)
1 Retaining washer

1. Slip one of the double lock washers (Nordlock) onto the thread of the elbow segment.
2. Screw the rod extension onto the neck of the probe or the following rod.
3. Exert counterforce with a second fork spanner (SW 13) and tighten the elbow segment on the flat surfaces with a torque of 20 Nm (14.75 lbf ft).

Tip:
Please maintain the specified torque so that the max. tensile strength of the connection remains.

4. Direct the elbow segment correctly downward. The connection on the sensor can be rotated.

Rod extension with ø 16 mm (0.63 in)

To mount the measuring rod, you need a size 13 wrench.

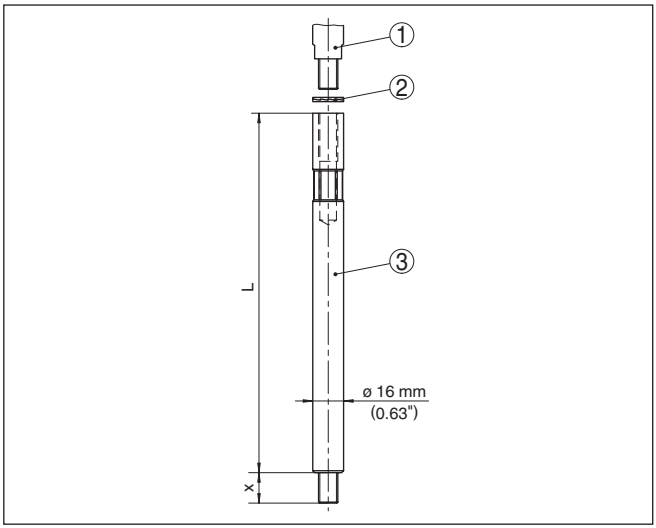

Fig. 16: Mounting of the extension rod

1 Extension rod
2 Retaining washer
3 Extension rod
L Order length
x Thread length

1. Slip one of the double lock washers (Nordlock) onto the thread of the elbow segment.
2. Screw the rod extension onto the elbow segment or the extension rod.
3. Exert counterforce with a second fork spanner (SW 13) and tighten the rod on the flat surfaces with a torque of 20 Nm (14.75 lbf ft).

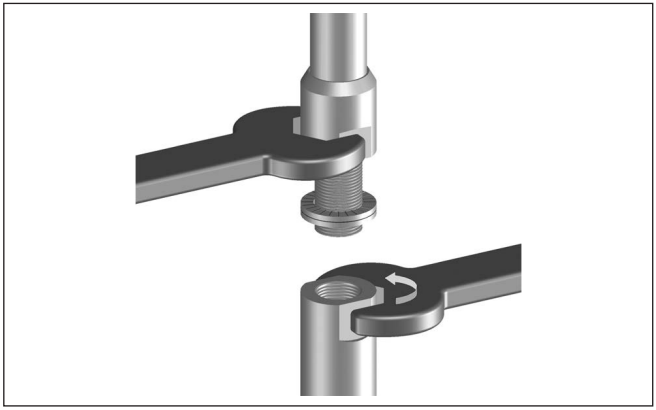

Fig. 17: Measuring rod

Tip:
Please maintain the specified torque so that the max. tensile strength of the connection remains.

2.5 Application examples

Lateral mounting

If it is not possible to mount the probe from above, you can also install the probe from the side with an elbow segment.

Depending on the vessel and installation conditions, side mounting can be done in several different ways.

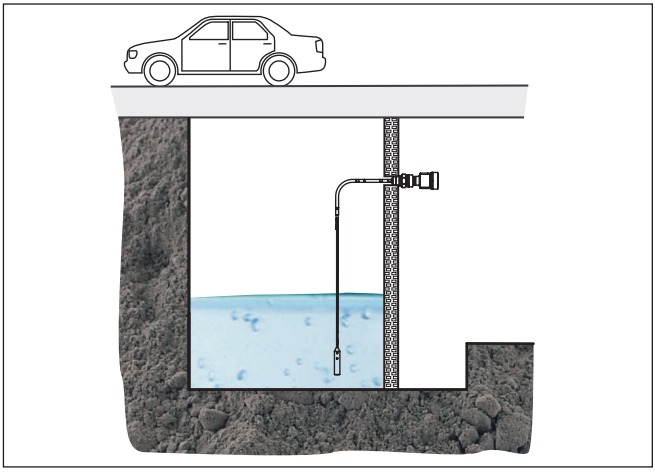

Fig. 18: Mounting of the probe from the side

Length of the probe
If the probe is longer than 3 m, the rod must be supported inside the vessel due to its weight.

Provide an appropriate support.

Rod probe
If there is enough space next to the vessel, you can also insert a completely or partly assembled rod probe into the vessel from the side.

Nozzle
If your vessel has a long and/or thin mounting socket, it is possible that the elbow segment cannot be inserted from the outside.

In such a case, you have to get inside the vessel to mount the elbow segment.

Manhole
If you can get inside the vessel through a manhole, this will facilitate installation. You can then easily mount or secure the probe.

Mounting from above

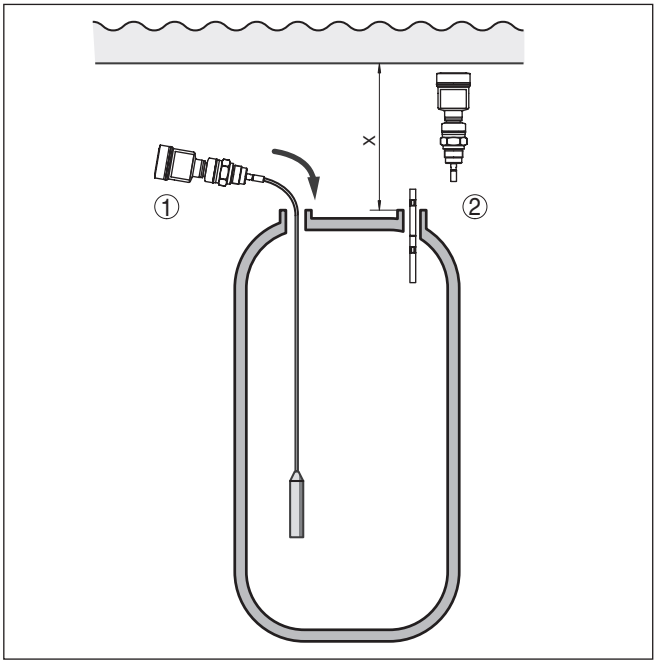

Fig. 19: Mounting of the probe from above

1 Inserting the cable probe
2 Inserting the rod probe
x Distance to installations or to the ceiling of the building, for screwing the sensor onto the rod

Narrow space
If there is not enough space above the vessel for mounting, you can also screw the segments on one at a time when inserting the probe into the vessel.

Make sure that no segments, lock washers or tools fall into the vessel.

Rod or cable probe
If there are no problems with stability, you can also use a cable probe.

Rod probes can only be used up to max. 6 m.

Length of the probe
If the probe is longer than 3 m, the rod must be supported inside the vessel due to its weight.

Provide an appropriate support.

Manhole
If you can get inside the vessel through a manhole, this will facilitate installation. You can then easily mount or secure the probe.

3 Supplement

3.1 Technical data

Rod components with ø 8 mm (0.315 in), polished

316L corresponds to 1.4404 or 1.4435	
Material	
– Basic rod	316L (1.4435)
– Extension and end rod	316L (1.4435)
– Seal ring	EPDM, FFKM or FEPM
– Protective attachment of plastic for fork spanners (2 pcs.)	PEEK
Surface quality	
– Polished (Basel Standard)	R_a < 0.76 µm (3^{-5} in)
– Electropolished (Basel Standard)	R_a < 0.38 µm (1.5^{-5} in)
Total length (Basic, extension and end rod)	0.3 … 4 m (0.98 … 13.12 ft)
Length of the basic rod	450 mm (17.72 in)
Length of the extension rods (max. 7 pieces)	450 … 480 mm (17.72 … 18.9 in)
Length of the end rod	26 … 480 mm (1.02 … 18.9 in)
Shortening accuracy	± 1 mm
Thread size	M6
Wrench size	SW 10
Weight	approx. 400 g/m (4.3 oz/ft)
Lateral load	max. 10 Nm (7.38 lbf ft)
Torque - Rod components	max. 4.5 Nm (3.32 lbf ft)

Rod components with ø 12 mm (0.47 in)

316L corresponds to 1.4404 or 1.4435	
Material	
– Basic rod	316L or Alloy 400 (2.4360)
– Extension and end rod	316L or Alloy 400 (2.4360)
– Elbow segment	316L or Alloy 400 (2.4360)
– Retaining rings - Nordlock®	316L
Total length (Basic, extension and end rod)	up to 6 m (19.69 ft)
Shortening accuracy	± 1 mm
Thread size	M6
Wrench size	SW 10
Weight	approx. 900 g/m (9.68 oz/ft)
Lateral load, e.g. when using an elbow segment	max. 30 Nm (22.13 lbf ft)

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Torque - Rod components	10 Nm (7.38 lbf ft)

Rod and cable components with ø 16 mm (0.63 in)

316L corresponds to 1.4404 or 1.4435

Material	
– Extension rod	316L or Alloy C22 (2.4602)
– Extension cable	316
– Elbow segment	316L or Alloy C22 (2.4602)
– Retaining rings - Nordlock®	316L
Total length	
– Extension rod	up to 6 m (19.69 ft)
– Extension cable	up to 6 m (19.69 ft)
Shortening accuracy	
– Rod	± 1 mm
– Cable	± 0.05 %
Thread size	M10
Wrench size	SW 13
Weight	approx. 1580 g/m (17 oz/ft)
Lateral load, e.g. when using an elbow segment	max. 30 Nm (22.13 lbf ft)
Torque - Rod and cable components	20 Nm (14.75 lbf ft)

3.2 Dimensions

Extension components - rod extension with ø 8 mm (0.315 in), polished

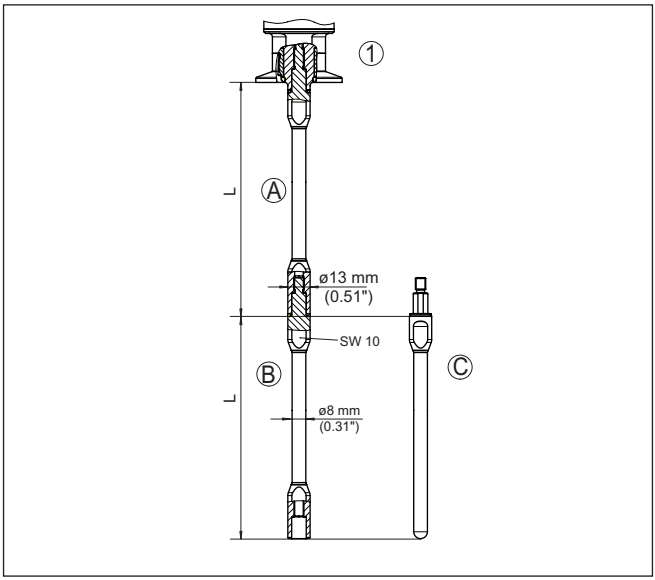

Fig. 20: Extension rods with ø 8 mm (0.315 in)

1 Version with process fitting Clamp
A Basic rod with ø 8 mm (0.315 in)
B Extension rod with ø 8 mm (0.315 in)
C End rod with ø 8 mm (0.315 in)
L Length (order length)

Extension components - rod extension with ø 12 mm (0.47 in)

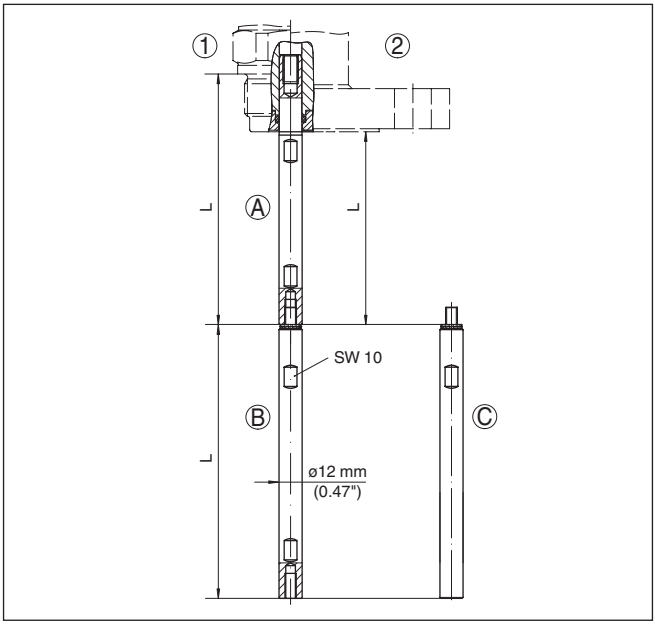

Fig. 21: Extension rods with ø 12 mm (0.47 in)

1 Version with threaded fitting
2 Version with flange connection
A Basic rod with ø 12 mm (0.47 in)
B Extension rod with ø 12 mm (0.47 in)
C End rod with ø 12 mm (0.47 in)
L Length (order length)

Extension components - elbow segment with ø 12 mm (0.47 in)

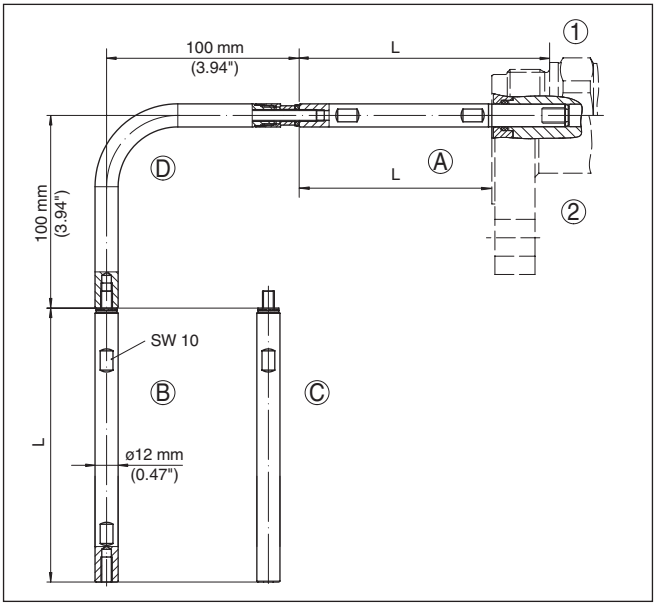

Fig. 22: Extension rods (elbow) with ø 12 mm (0.47 in)

1 Version with threaded fitting
2 Version with flange connection
A Basic rod with ø 12 mm (0.47 in)
B Extension rod with ø 12 mm (0.47 in)
C End rod with ø 12 mm (0.47 in)
D Elbow segment with ø 12 mm (0.47 in)
L Length (order length)

Extension components - rod extension with ø 16 mm (0.63 in)

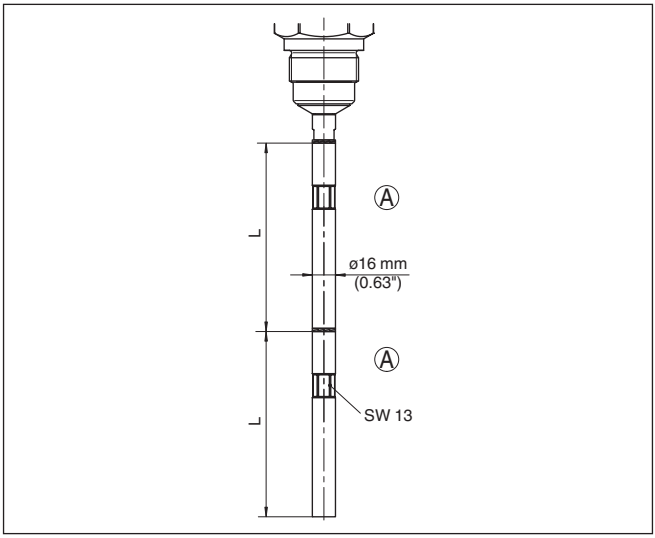

Fig. 23: Extension rods with ø 16 mm (0.63 in)

A Extension rod with ø 16 mm (0.63 in)
L Length (order length)

Extension components - elbow segment with ø 16 mm (0.63 in)

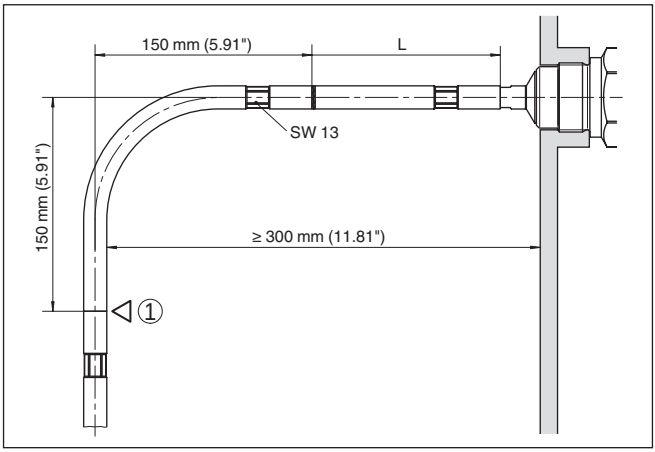

Fig. 24: Extension rods with ø 16 mm (0.63 in)

1 Upper measuring range end
L Length of the extension rod

Extension components - elbow segment with ø 16 mm (0.63 in) with cable extension with ø 6 mm (0.24 in)

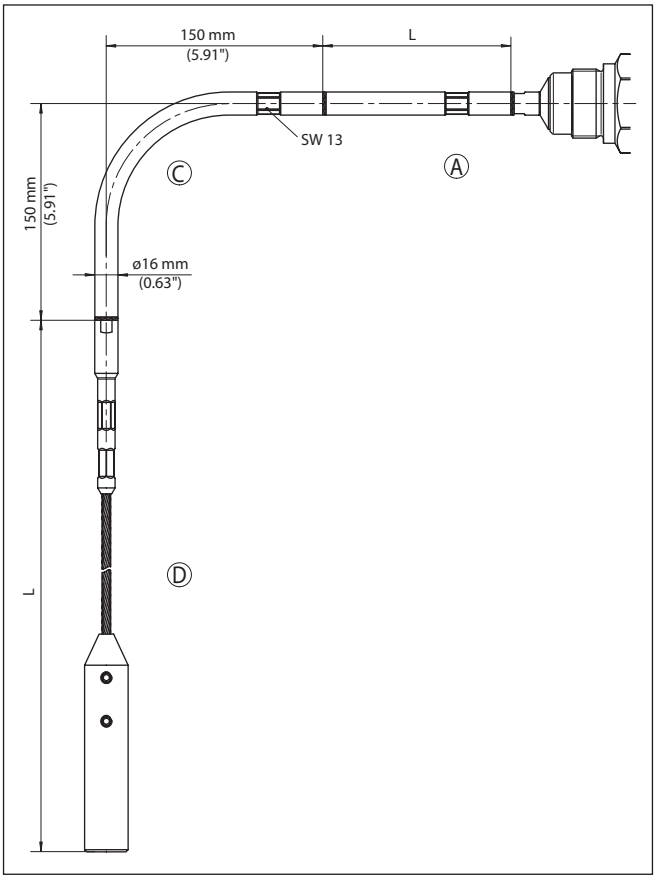

Fig. 25: Elbow segment with ø 16 mm (0.63 in) with extension cable with ø 6 mm (0.24 in)

A Extension rod with ø 16 mm (0.63 in)
C Elbow segment with ø 16 mm (0.63 in)
D Extension cable with ø 6 mm (0.24 in)
L Length (order length)

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