

multicap T

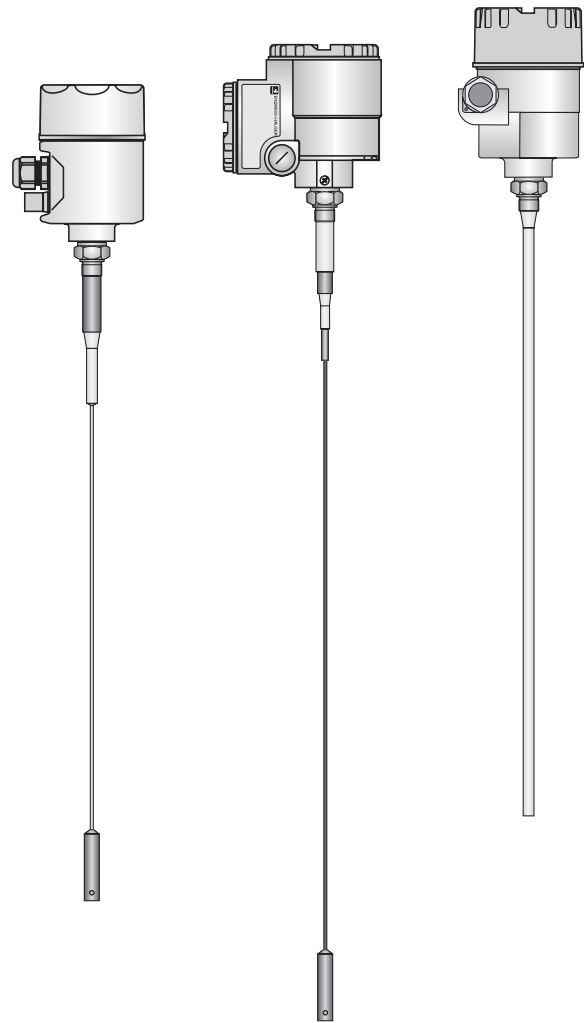
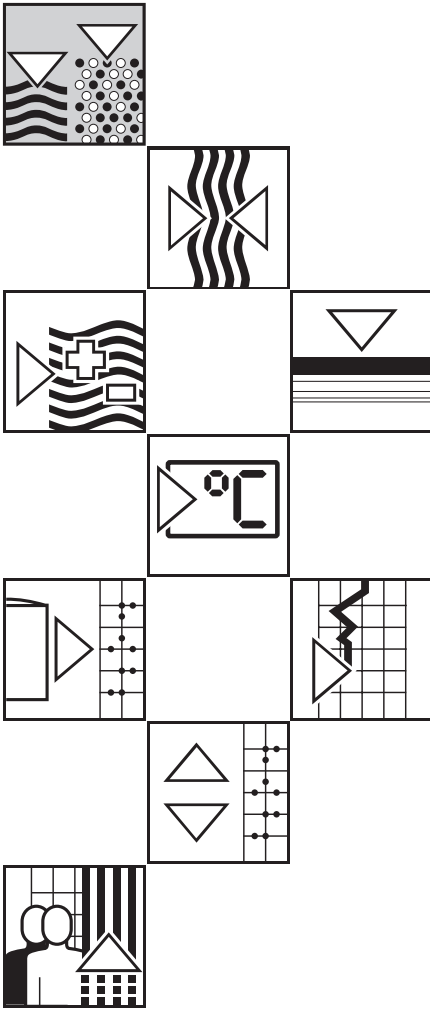
DC 12 TA

DC 11/16/21/26 TAN

DC 11/16/21/26 TAS

Level Probes

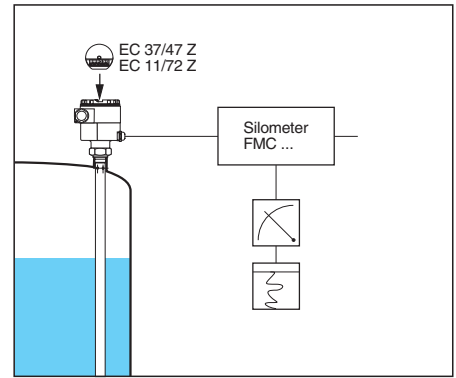
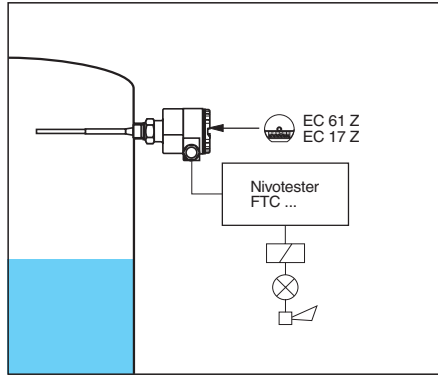
Operating Instructions



Measuring System

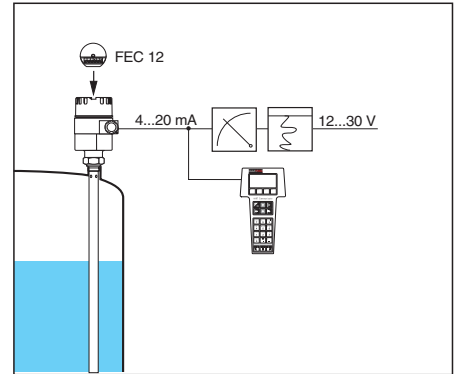
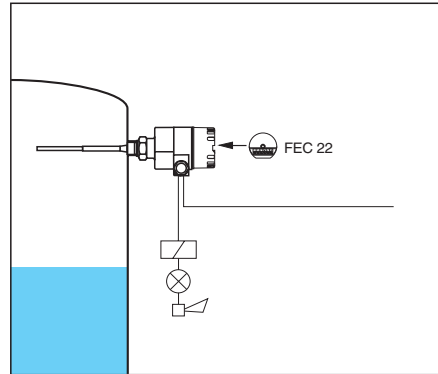
Left: Limit detection with separate Nivotester switching unit

Right: Level measurement with separate Silometer transmitter



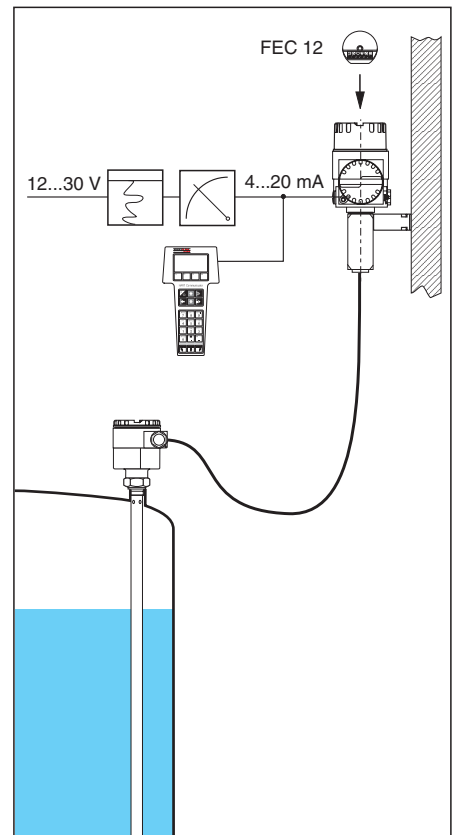
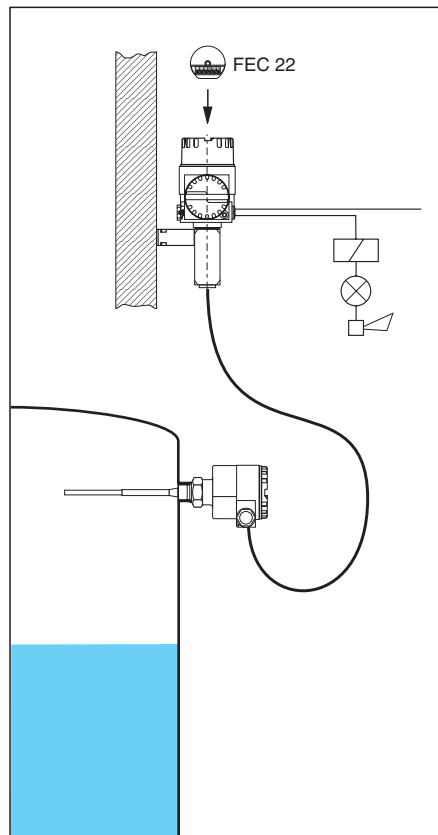
Left: Compact level switch with relay or transistor output (in preparation)

Right: Compact loop-powered level measurement system with standard 4.20 mA current output. The FEC 12 is a smart electronic insert which allows remote calibration over the 4.20 mA output (HART protocol)

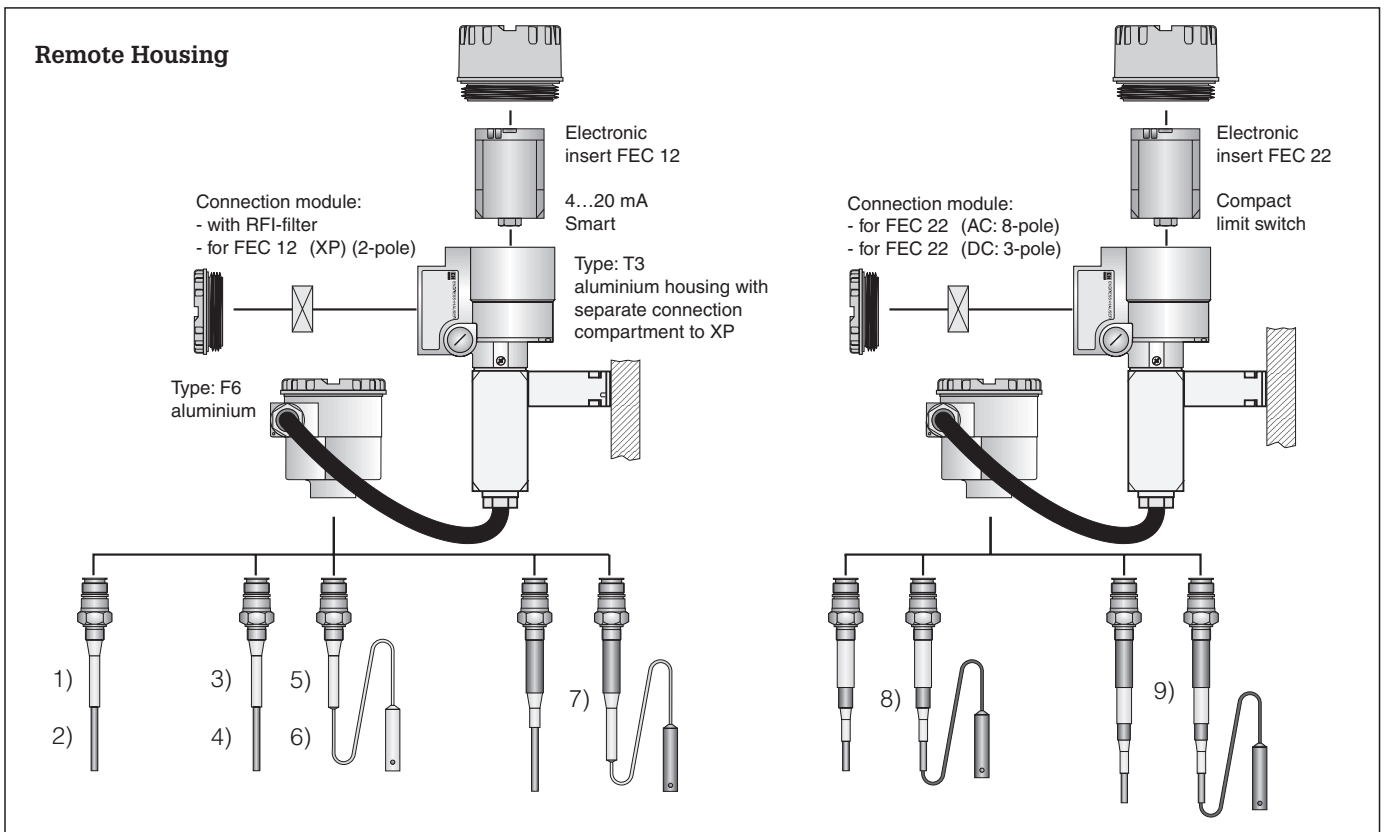
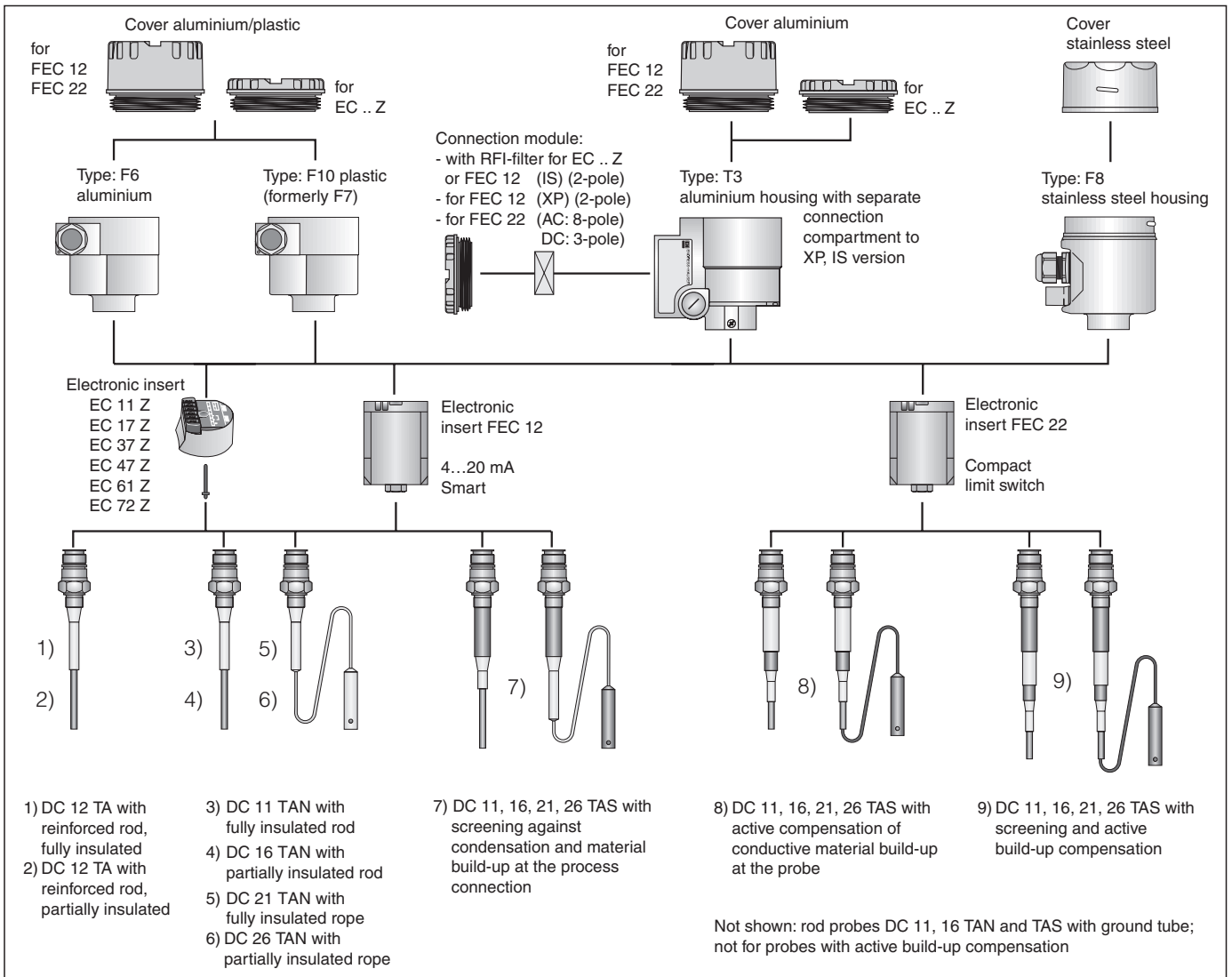


Left: Remote housing with electronic insert FEC 22

Right: Remote housing with electronic insert FEC 12



Probe Selection



Notes on Installation

Approved Usage

Multicap T capacitance probes are designed for level measurement or limit detection in tanks containing liquids or small silos containing light bulk solids. They have been designed to operate safely in accordance with current technical and safety standards, and must be installed by qualified personnel in accordance with the instructions which follow.

The manufacturer accepts no responsibility for any damage arising from incorrect use, installation or operation of the equipment. Changes or modifications not expressly approved in the following instructions or by the bodies responsible for compliance may make the user's authority to operate the equipment null and void.

Personnel

The equipment may be installed, commissioned and maintained by authorised personnel only. The instructions which follow must have been read and understood before the equipment is installed.

Explosion Hazardous Areas

When installing equipment in explosion hazardous areas the instructions included in the accompanying certification as well as any local standards must be observed. Please note that where the quoted technical data differs from that in the certificate, the certificate applies.

Operating Conditions

Before installing the probe, check that it is suitable for the operating conditions to be encountered, in particular:

- the chemical resistance of all probe materials
- the permitted operating temperature and pressure
- the approvals for use in explosion hazardous areas.

Unpacking

To avoid damage to the probe, remove the packaging on-site just before mounting.

Compare the code on the nameplate of the probe with the product designation on Page 14 ... 17 to ensure that the correct probe is mounted. Check the probe length (for shortening see page 5).

Preparation for Installation

When installing in explosion hazardous areas observe all national and local regulations as well as the specifications in the certificate.

When the electronic insert is not installed, connect the probe terminal in the housing to the ground terminal.

Possibilities for connection:
Insert plug or wire jumper in both sockets - to be found adjacent to the central thread.

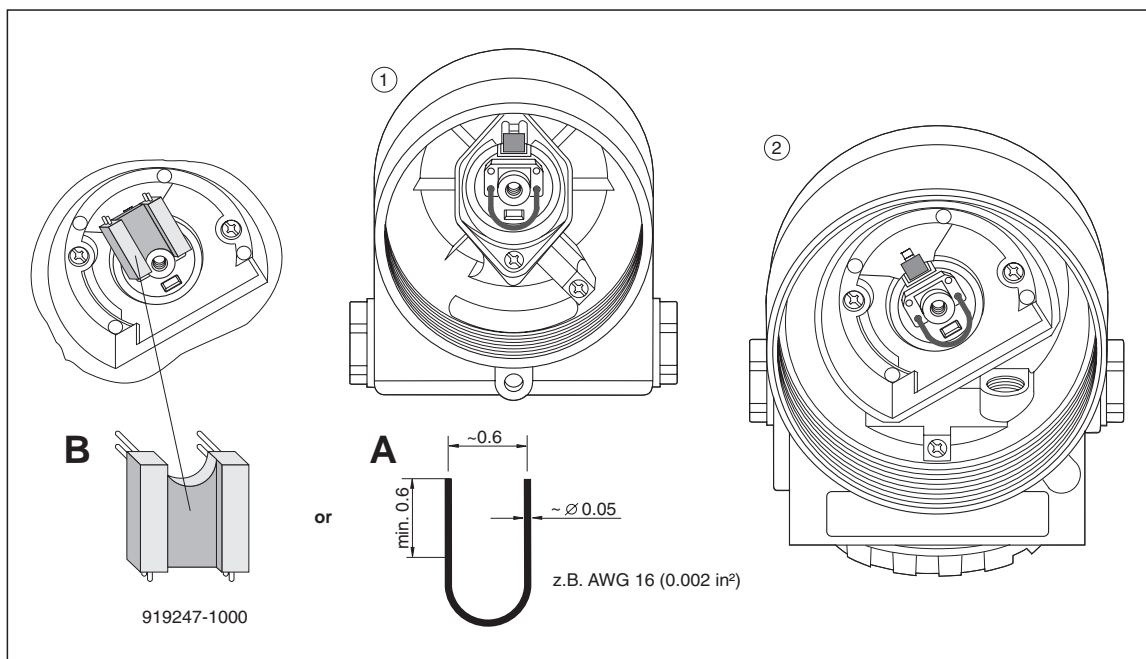
Before the electronic insert is installed, remove the plug or jumper.

Grounding the probe rod or rope in the housing:

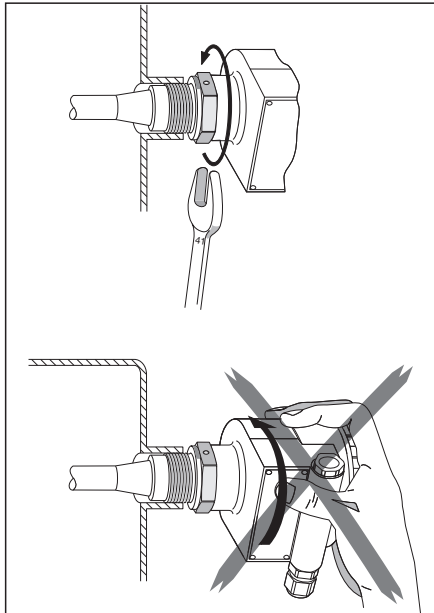
- 1) type F6 / F8 / F10
- 2) type T3

A Jumper, e.g. made from bare wire, AWG 16 (0.002 in²)

B Plug: supplied with probes without electronic insert



Mounting



Probe with thread $\frac{3}{4}$ - 14 NPT and with sealing ring: Tighten at the hexagonal nut

Do not tighten by rotating the housing!

Mounting the probe

Protect the insulation

Ensure that the insulation of the probe is not damaged when inserting the probe through the process connection of the vessel.

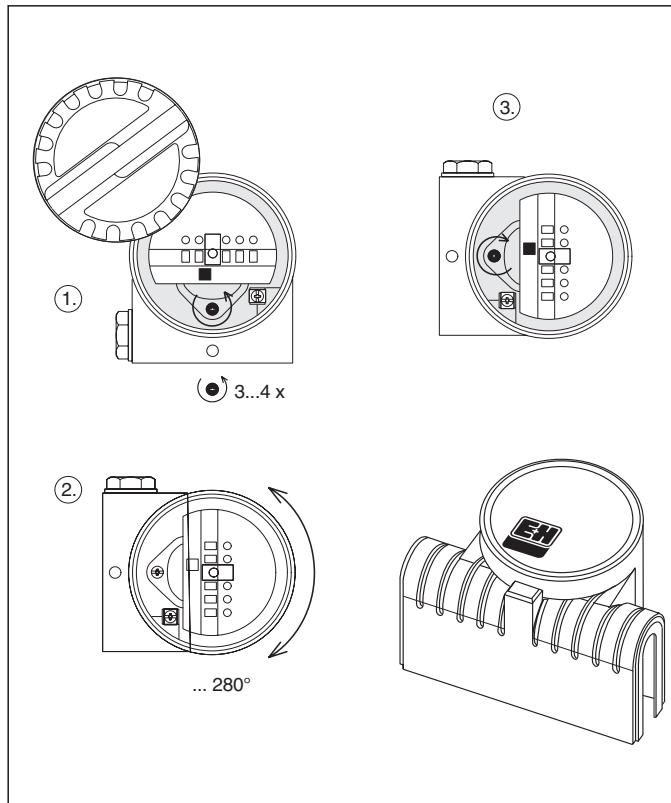
Probe with Triclamp or flange

Use a sealing material suitable for the application.

If the flange is PTFE-cladded, then this is generally a suitable seal up to the permitted operating pressure.

Probe with thread $\frac{3}{4}$ - 14 NPT (tapered)

- Wrap suitable sealing material around the thread.
- When tightening, rotate the probe at the hexagonal nut only, not at the housing!



Rotating the small housing (type F6, F8, F10)
1. - 2. - 3.

Below right: Protective cover for the small housing (type F6, F10).

Always to be used when the probe is mounted outdoors

Rotating the Housing

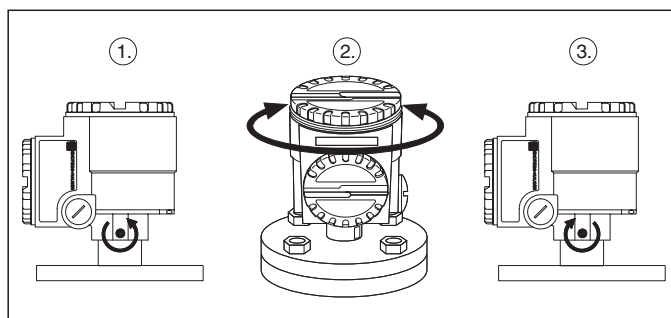
The housing can be rotated to reposition the cable entry.

In order to provide optimal protection from the entry of moisture, particular when the probe is mounted outdoors, we strongly recommend:

- A probe mounted laterally in the tank with one cable entry, should have the cable entry pointing downwards
- A probe mounted laterally in the tank with two cable entries, should have both cable entries positioned horizontally
- When mounted with protective cover the cable entries should always be positioned horizontally

Small housing (type F6, F8, F10)

- Unscrew cover
- Loosen the Phillips screw in the base of the housing by 3 or 4 turns
- The housing can now be rotated through 280° from one stop to the other
- Retighten the Phillips screw in the base of the housing.



Rotating the large housing (type T3)
1. - 2. - 3.

Large housing (type T3)

- Loosen the Phillips screw on the housing collar
- The housing can now be rotated through 280° from one stop to the other
- Retighten the Phillips screw at the housing collar.

Sealing the Probe Housing

It is important that no moisture enters the probe housing when mounting the probe, connecting the electronic insert or when operating the probe.

The housing cover and the cable entries must, therefore, always be screwed tight.

The O-ring seal at the housing cover and the thread of the aluminium cover

are both smeared with a lubricant when delivered.

If the lubricant has been removed, it must be replaced e.g. with silicone or graphite, so that the cover is an air-tight seal and the aluminium thread does not seize when screwed down.

Under no circumstances should an oil-based lubricant be used as this would destroy the O-ring.

A fully insulated rod probe cannot be shortened or lengthened.

Shortening a rope probe

See instructions supplied with the rope shortening kit.

Shortening a partly insulated rod probe

- Clamp the probe by the bare rod, not by the insulation and not by the process connection so that the rod connection is not under strain and cannot be damaged.
Saw off the rod and deburr.
If the uninsulated rod is less than 4 in, shorten the insulation accordingly
- Change the length specification stated on the nameplate.

Lengthening a partially insulated rod probe

- Remove the electronic insert from the probe housing
- Weld on a section of rod or tube (use AISI 316L stainless steel)
Note:
 - Do not damage or overheat the insulation
 - The weld must be as rugged and corrosion-resistant as the probe rod itself
 - A longer or thicker probe rod is subjected to higher loads by the movement of material, the maximum lateral load will be reduced
 - Do not exceed the permitted probe length. See appropriate certificate
- Change the length specification stated on the nameplate
- Replace the electronic insert.

Altering the Probe Length

Connection

Refer to the appropriate Technical Information for connecting the electronic insert EC or FEC in the probe housing.

For T3 housing, the connection designations in the separate connection compartment are the same as those on the built-in electronic insert.

Insulated mounting of the probe in a metal container: Connect the ground terminal of the probe to the container with the aid of a short cable.

Mounting in a plastic container: Connect the ground terminal of the probe to the counterelectrode with the aid of a short cable.

Ensure that the probe housing is tightly sealed.

Calibration

Refer to the operating manual for the transmitter connected or the electronic insert FEC 12 or FEC 22 which is installed.

Replacing components

Mounting without electronic insert Exchange of electronic inserts

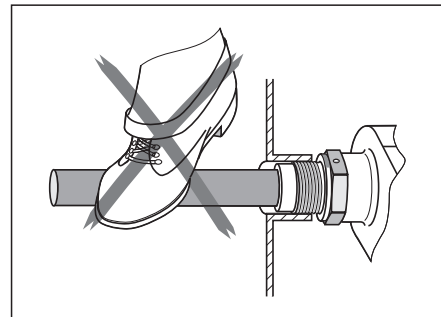
- After the defective electronic insert has been removed and the replacement properly installed, the instrument must be recalibrated and checked for correct function.
- If fully insulated multicap probes are mounted in explosion hazardous areas without the electronic insert, and there is a risk of dangerous electronic discharges, then the probe terminal in the housing must be short-circuited with the ground terminal.

Maintenance

- Cleaning and inspecting the vessel:
- Check the probe insulation for damage
 - Remove material build-up especially at the process connection
 - Check the housing cover and the cable entry for tightness.

Caution!

The probe can be damaged if used as a grip or support when inspecting the container.



Return of Goods

If a probe is to be returned to Endress+Hauser for repair or disposal, then all residue must be removed from it. This is especially important if the product measured can impair health.

Please do not return goods if the last traces of dangerous products cannot be removed, e.g. product has penetrated into fissures or diffused into plastic parts.

Disposal

Packaging

All sales and transportation packaging from Endress+Hauser is produced in conformance to the regulations governing packaging for reuse and recycling.

Instruments

For a small charge, Endress+Hauser will accept and recycle any instruments manufactured in its own E+H production program. These will then be disposed of according to the German regulations covering the disposal of electronics. Delivery to Endress+Hauser, Hauptstraße 1, 79689 Maulburg, Germany.

Accessories

- Protective cover for the small probe housing (type F6, F10) see Technical Information "Probe accessories"
The protective cover shields the probe from excessive heat and prevents condensation from forming in the housing when temperatures vary over a wide range.
- Slip-on plate for partially insulated probe DC 12 TA for increasing the switching safety for limit detection
- Rope shortening kit for fully insulated probes
- Rope shortening kit for partially insulated probes

Supplementary Documentation

Technical Information

- Probe accessories
Technical Information TI 229F/00/en
- Electronic insert FEC 12
Technical Information TI 250F/00/en
- Electronic insert FEC 22
Technical Information TI 251F/00/en
- Electronic insert EC 17 Z
Technical Information TI 268F/00/en
- Electronic insert EC 61
Technical Information TI 267F/00/en
- Electronic insert EC 37 Z, EC 47 Z
Technical Information TI 271F/00/en
- Electronic insert EC 11, EC 72
Technical Information TI 270F/00/en
- Transmitters for limit detection and continuous level measurement on request

Certificates

See product structure on page 14/16.

Dimensions

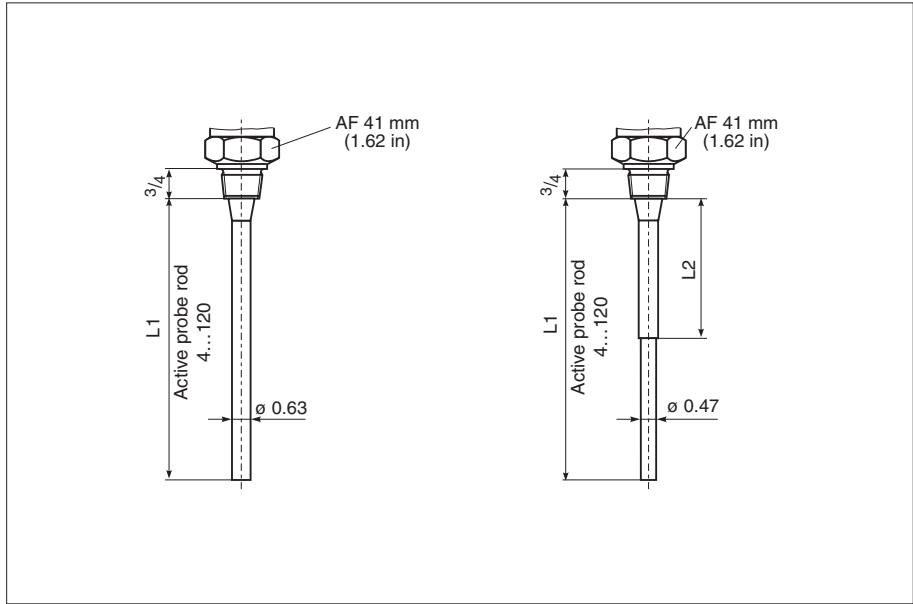
DC 12 TA

All dimensions in inches

L1 = Length of active probe rod
 L2 = Length of partial insulation
 minimum: 3 in
 maximum: length L1 minus 2 in

Thread: 3/4 - 14 NPT

DC 12 TA
 Rod probe with reinforced rod for high lateral load
 Left: fully insulated
 Right: partially insulated



Dimensions

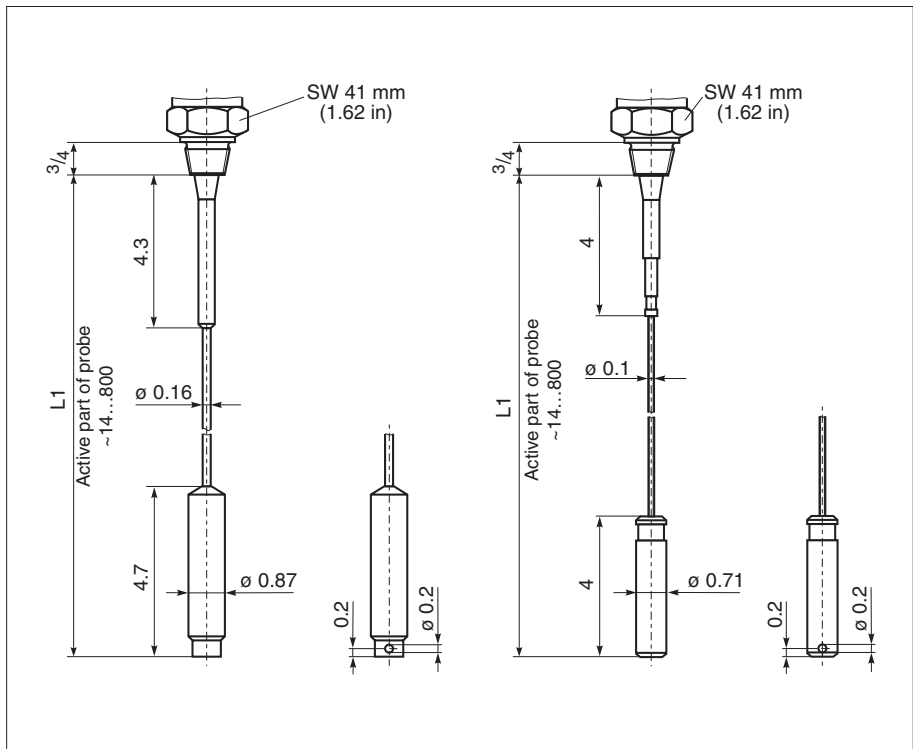
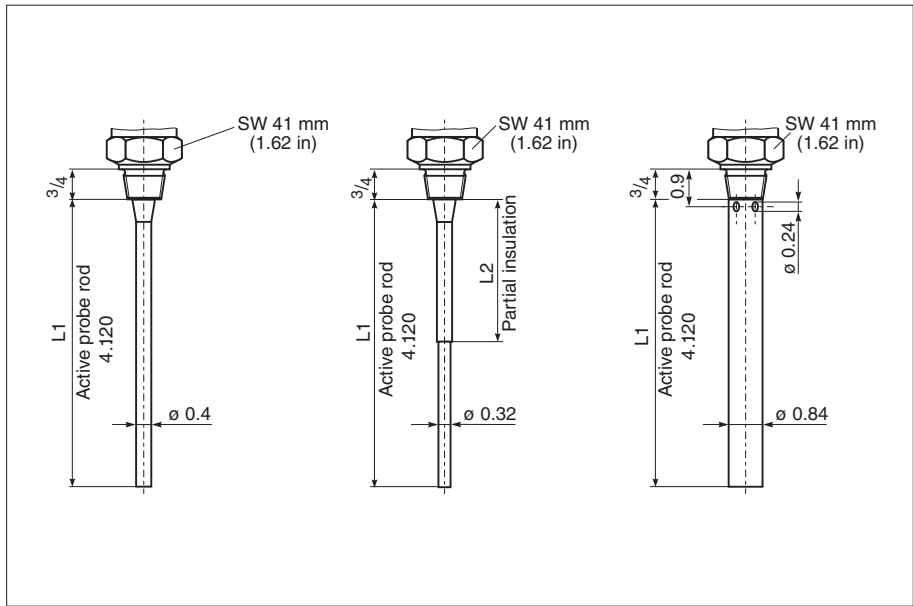
DC 11/16/21/26 TAN

All dimensions in inches

L1 = Length of active probe rod or probe rope
 L2 = Length of partial insulation
 minimum: 3 in
 maximum: length L1 minus 2 in

Thread: 3/4 - 14 NPT

Left: DC 11 TAN
 Fully insulated rod probe
 Centre: DC 16 TAN
 Partially insulated rod probe
 Right: DC 11, 16 TAN
 with ground tube
 (fully or partially insulated probe rod)



Left: DC 21 TAN
 Fully insulated rope probe
 Right: DC 26 TAN
 Partially insulated rope probe
 Tensioning weight with anchor hole

Dimensions

DC 11/16/21/26 TAS

All dimensions in inches.
 All probes on this page are shown with partial insulation.
 All versions are available with full insulation

L1 = Length of active probe rod or probe rope
 L2 = Length of partial insulation see page 3

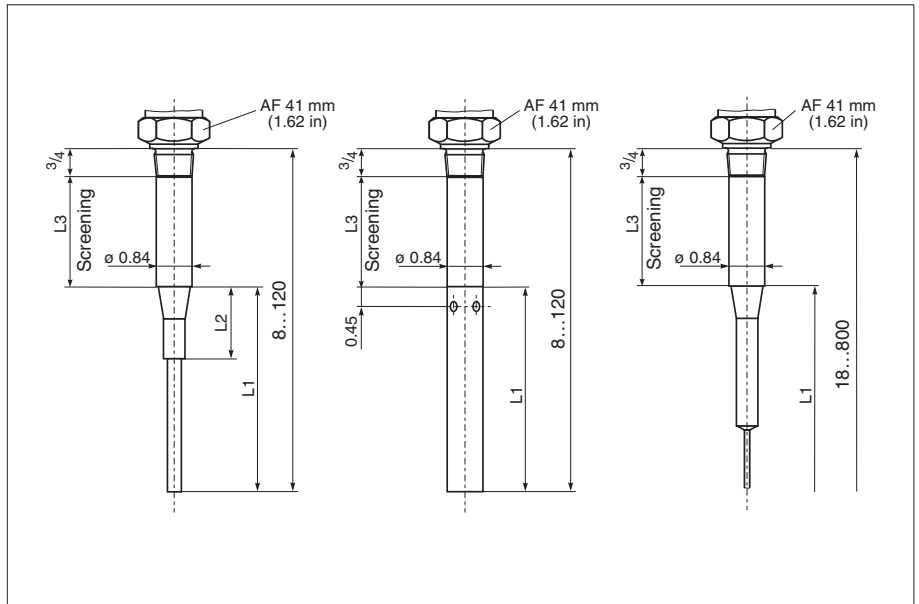
Thread: 3/4 - 14 NPT

Probes with screening
 L3 against condensation
 and material build-up on
 the process connection

Left: Rod probe
 DC 11 TAS or DC 16 TAS

Centre: Rod probe
 DC 11 TAS or DC 16 TAS
 with ground tube

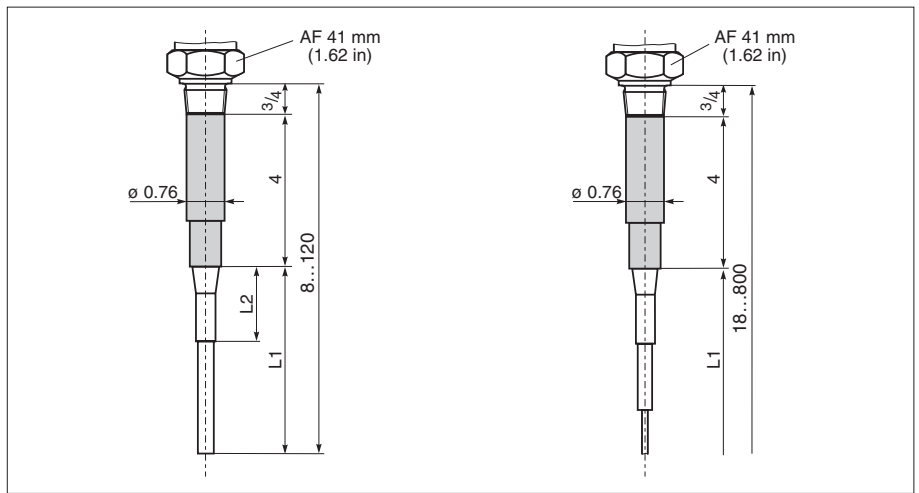
Right: Rope probe
 DC 21 TAS or DC 26 TAS



Probes with **active build-up compensation**
 (always 4 in)

Left: Rod probe
 DC 11 TAS or DC 16 TAS

Right: Rope probe
 DC 21 TAS or DC 26 TAS

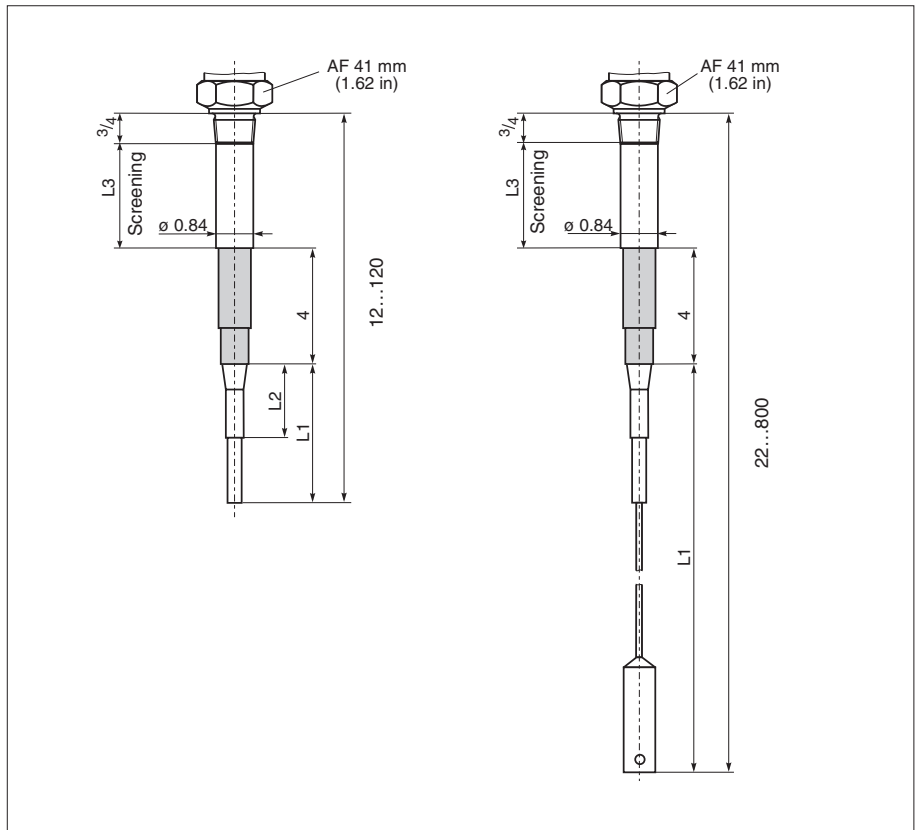


Probes with **screening L3** and with **active build-up compensation**

Left: Rod probe
 DC 11 TAS or DC 16 TAS

Right: Rope probe
 DC 21 TAS or DC 26 TAS

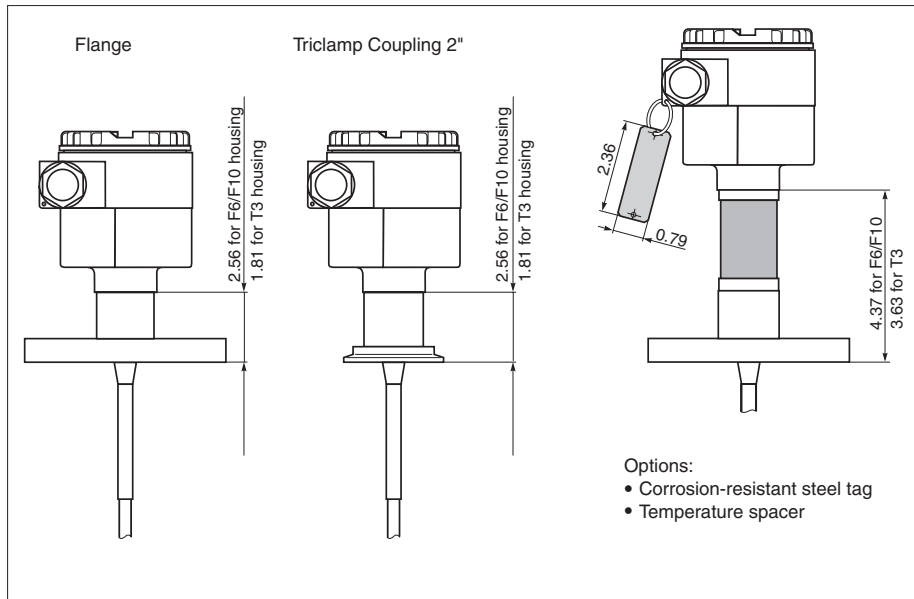
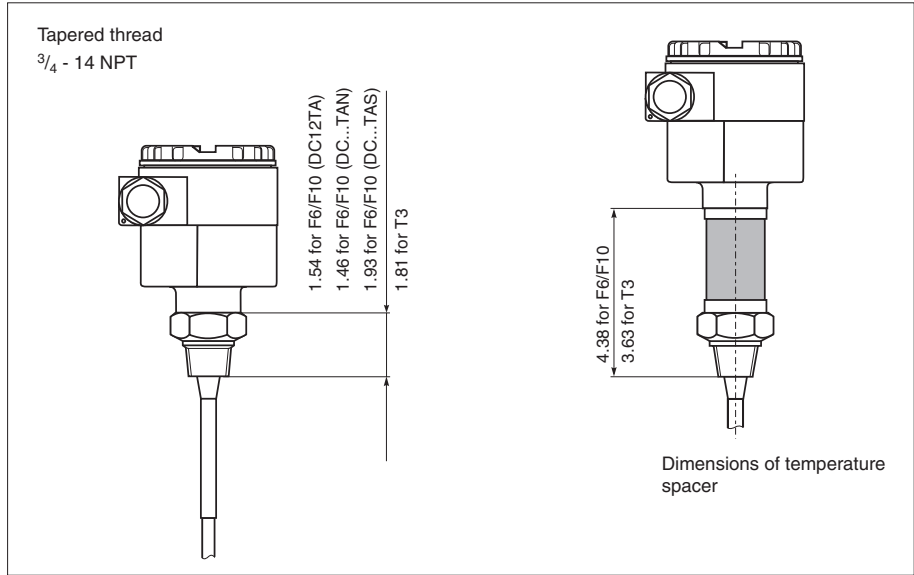
L3
 The screening is available in three standard lengths:
 L3 = 6 in,
 L3 = 9 in,
 L3 = 20 in
 Special lengths on demand
 L3 min. 4 in
 L3 max. 60 in



Dimensions Continued / Additional Process Connections

All dimensions in inches

All probes shown with type F6/F10 housing
Dimensions for type T3 housing are also shown



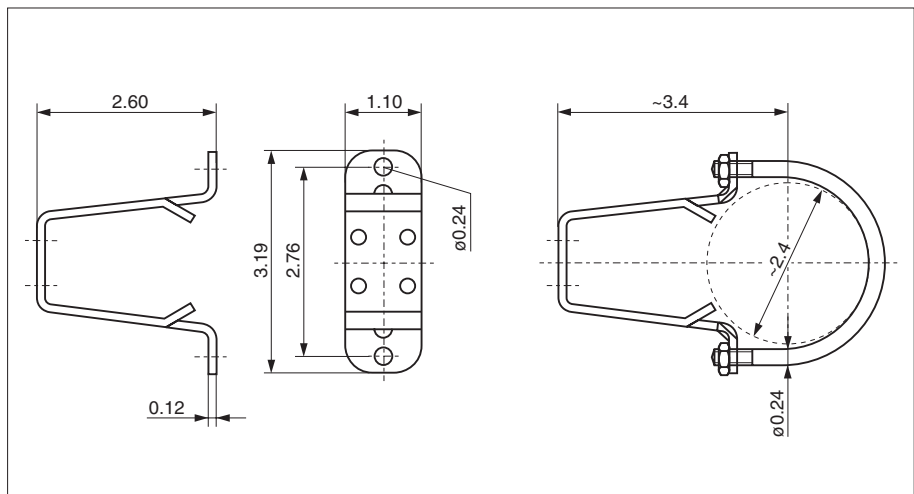
Mounting Accessories

All dimensions in inches.

Mounting accessories for remote housing T3.

Left: Bracket for wall mounting

Right: Clamp for mounting on a 2" pipe



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