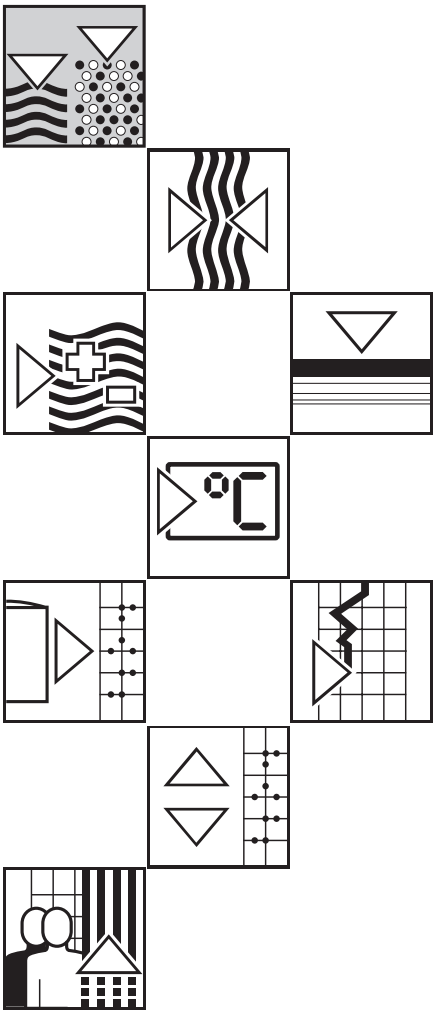
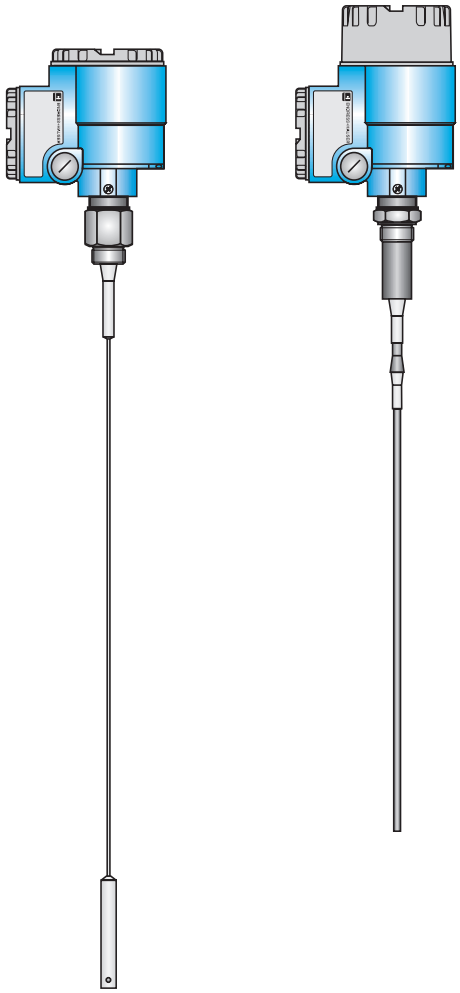
BA 155F/00/en/06.03
016959-1000

multicap
DC 11/16/21/26 EN
DC 11/16/21/26 ES
Level Probes

Operating Instructions





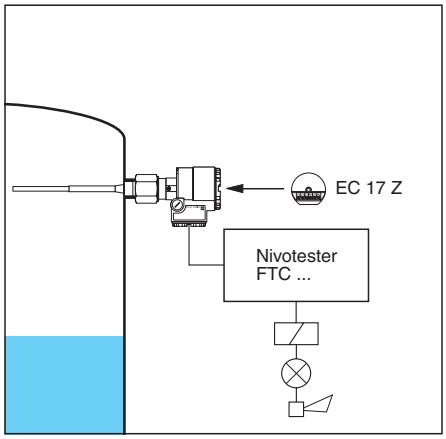
Endress+Hauser

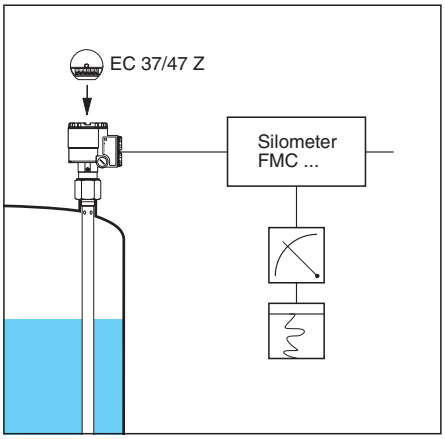
The Power of Know How

Measuring System

Left:
Limit detection with separate Nivotester switching unit

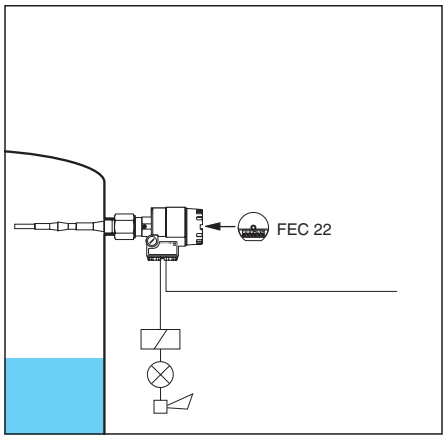
Right:
Level measurement with separate Silometer transmitter

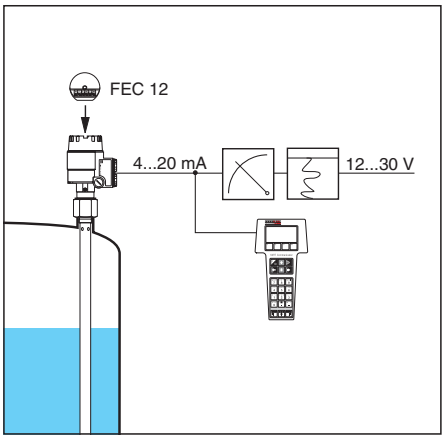




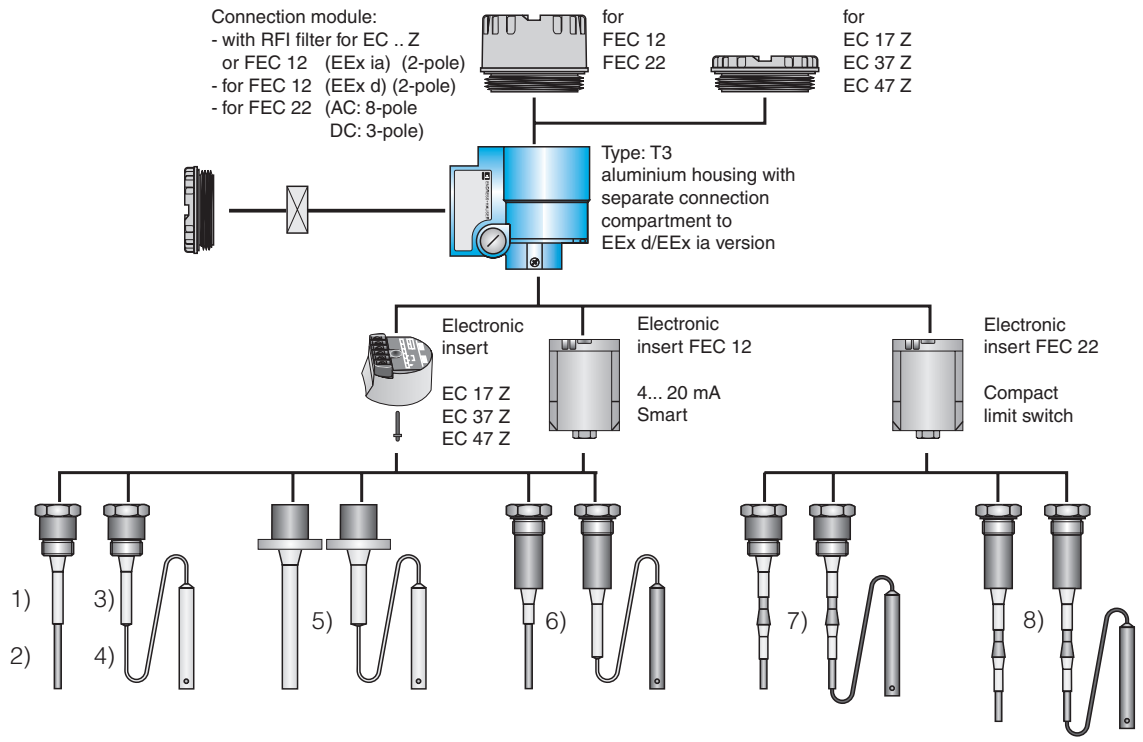
Left:
Compact level switch with relay or transistor output

Right:
Compact level measurement system with standard 4.20 mA current output and superimposed communications signal. The FEC 12 is a "Smart electronic insert" which allows remote calibration over two-wire cabling (HART protocol)





Probe Selection



1) DC 11 E**N** with fully insulated rod
2) DC 16 E**N** with partially insulated rod
3) DC 21 E**N** with fully insulated rope
4) DC 26 E**N** with partially insulated rope

5) DC 11, 21 E**S** with *fully insulated* screening against condensation or material build-up at the process connection

6) DC 11, 16, 21, 26 E**S** with *uninsulated* screening against condensation or material build-up at the process connection

7) DC 11, 16, 21, 26 E**S** with active compensation of conductive material build-up at the probe

8) DC 11, 16, 21, 26 E**S** uninsulated screening and active build-up compensation

Not shown: Rod probes DC 11, 16 EN and ES with ground tube; not for probes with active build-up compensation

Notes on Safety

Approved Usage
Multicap 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 ... 15 to ensure that the correct probe is mounted.
Check the probe length (for shortening see page 5).

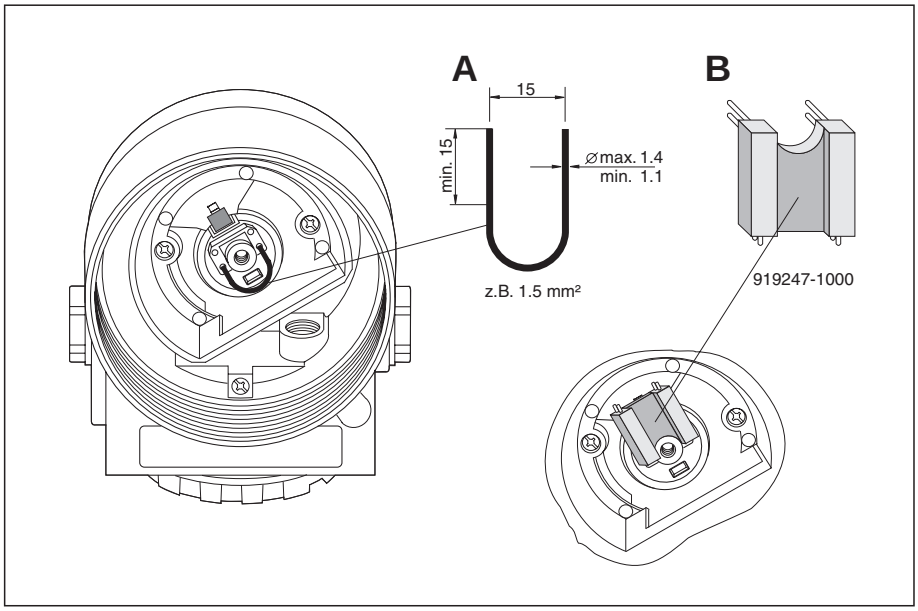
Preparations for Installation

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:
A Jumper, e.g. made of uninsulated wire, 1.5 mm^2
B Plug: supplied with probes without electronic insert

Mounting

Mounting the probe

Protect the insulation

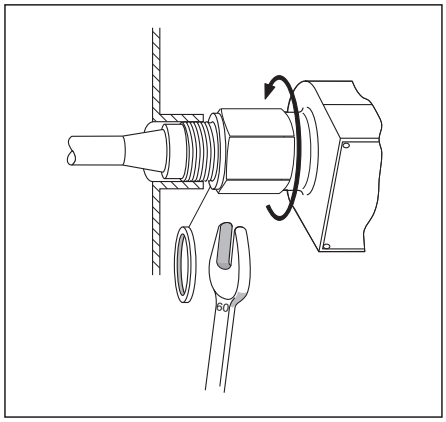
Ensure that the insulation of the probe is not damaged when inserting the probe through the process connection of the vessel.

Probe with Triclamp, sanitary coupling 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

– G 1½ A (parallel):
  Use the elastomer/fibre seal provided or any other chemically resistant seal which can withstand temperatures up to 300°C.
– 1½ - 11½ NPT (tapered):
  Wrap suitable sealing material around the thread.
– When tightening, rotate the probe at the hexagonal nut only, not at the housing!
– For probes with a parallel thread and seal:
  a torque of 300 Nm is sufficient for a tight seal against pressures in the vessel up to 50 bar. Maximum permissible torque 600 Nm.



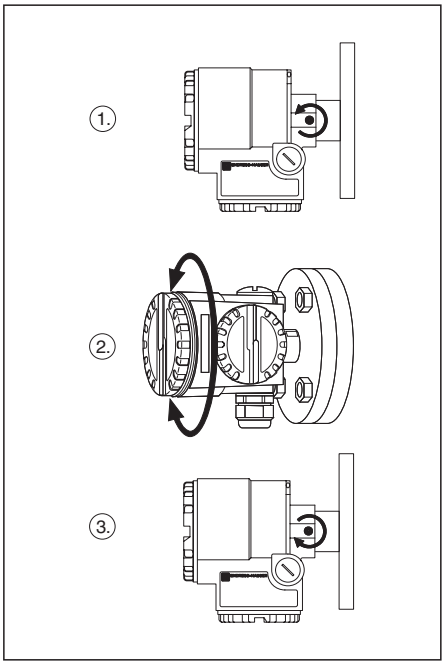
Probe with parallel thread G 1½ A and with sealing ring
Tighten at the hexagonal nut to max. 600 N

Do not tighten by rotating the housing!

Rotating the housing

The housing can be rotated to reposition the cable entry.
In order to provide optimal protection from the entry of moisture, particularly 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



Procedure:

1) Loosen the Phillips screw in the base of the housing
2) The housing can now be rotated 280° from one stop to the other
3) Retighten the Phillips screw in the base of the housing.

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 seals and the thread of the housing cover are both smeared with 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.

Altering the Probe Length

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 uninsulated 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 rod and deburr
- If the uninsulated rod is less than 100 mm, shorten the insulation accordingly.
- Change the length specification stated on the nameplate

Lengthening a partially insulated rod probe
- First remove the electronic insert!
- Weld on a section of rod or tube of the same material.

Note:
– Do not damage or overheat
– The weld must be as rugged and corrosion-resistant as the probe rod itself
– A longer or thicker probe rod is subjected to higher mechanical loads by the movement of material, the maximum lateral load will be reduced
– Do not exceed the permitted length of the probe. See appropriate certificate

- Change the length specification stated on the nameplate
- Replace the electronic insert

Connection

Refer to the appropriate Technical Information for connecting the electronic insert EC or FEC in the probe housing (supplementary documentation see page 6).

The designation of the terminals in the separate connection compartment of the housing is the same as that on the built-in electronic insert.

If the process connection of the probe is insulated against the metal container (e.g. sealing material):
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 counter-electrode 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

Replacing the electronic insert
Only electronic inserts of the same type can be interchanged.
– Switch off all power to the probe
– Remove connections on the electronic insert
– Loosen the central screw or slotted nut in the electronic insert
– Remove the electronic insert from the housing*

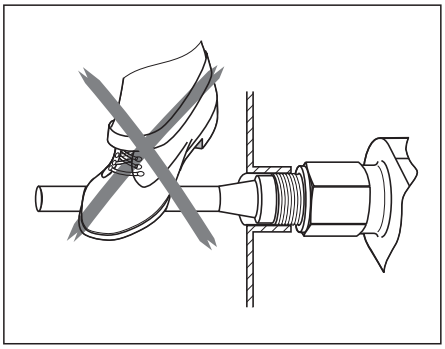
– Install the electronic insert
– Connect cables
– Switch on the power supplies again
– Recalibrate the measuring system

* If the electronic insert is not to be re-installed immediately, connect probe terminal in housing to ground terminal.
See diagram on page 3 for details.

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

- ❑ Slip-on sheet for partially insulated probes for increasing the switching safety for limit detection see Technical Information "Probe accessories"
- ❑ 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 37 Z, EC 47 Z Technical Information TI 271F/00/en
- ❑ Transmitters for limit detection and continuous level measurement on request

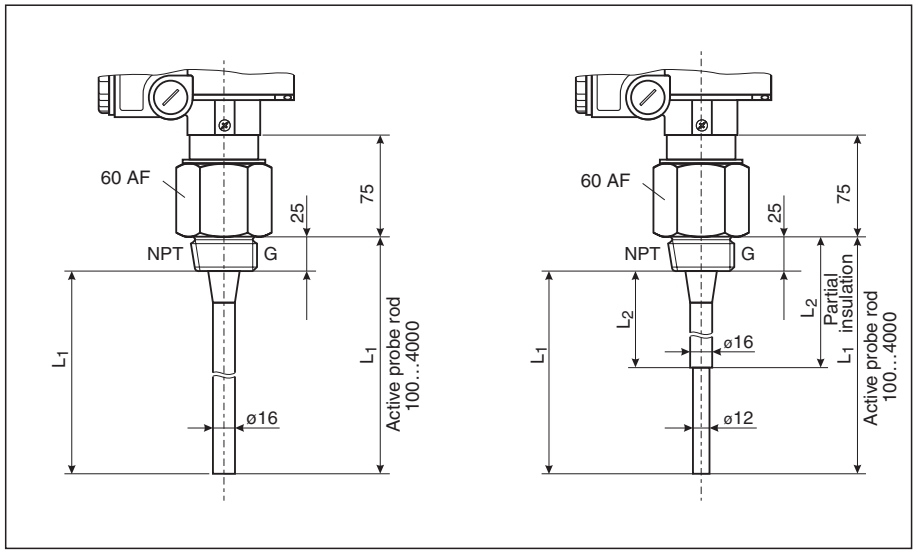
Certificates
See product structure on page 14.

Dimensions

DC 11/16/21/26 EN

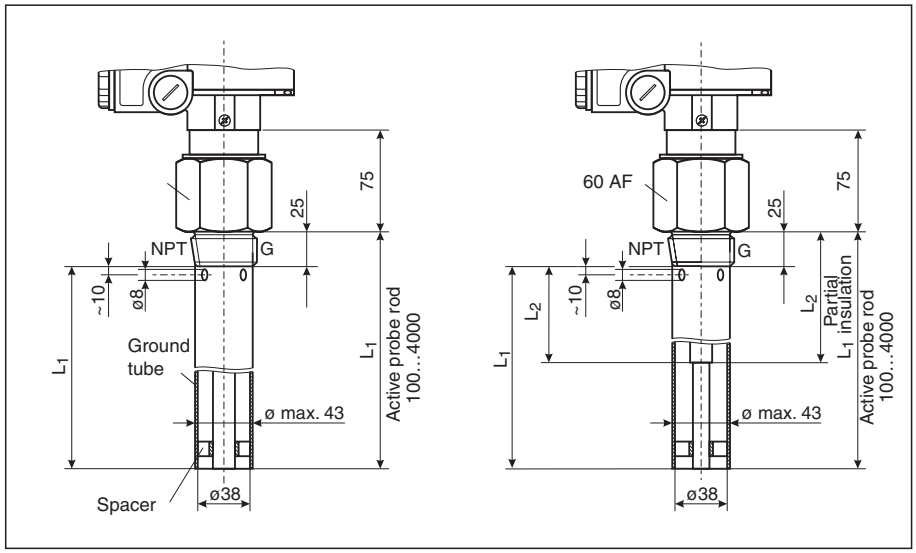
For all probes on this page:
Those on the left have threads 1½ - 11½ NPT and those on the right threads G 1½ A;
see Page 10 for other process connections and housing dimensions

L1 = Length of active probe rod or probe rope
L2 = Length of partial insulation
minimum: 75 mm,
maximum: length L1 minus 50 mm



Left:
DC 11 EN,
fully insulated rod probe

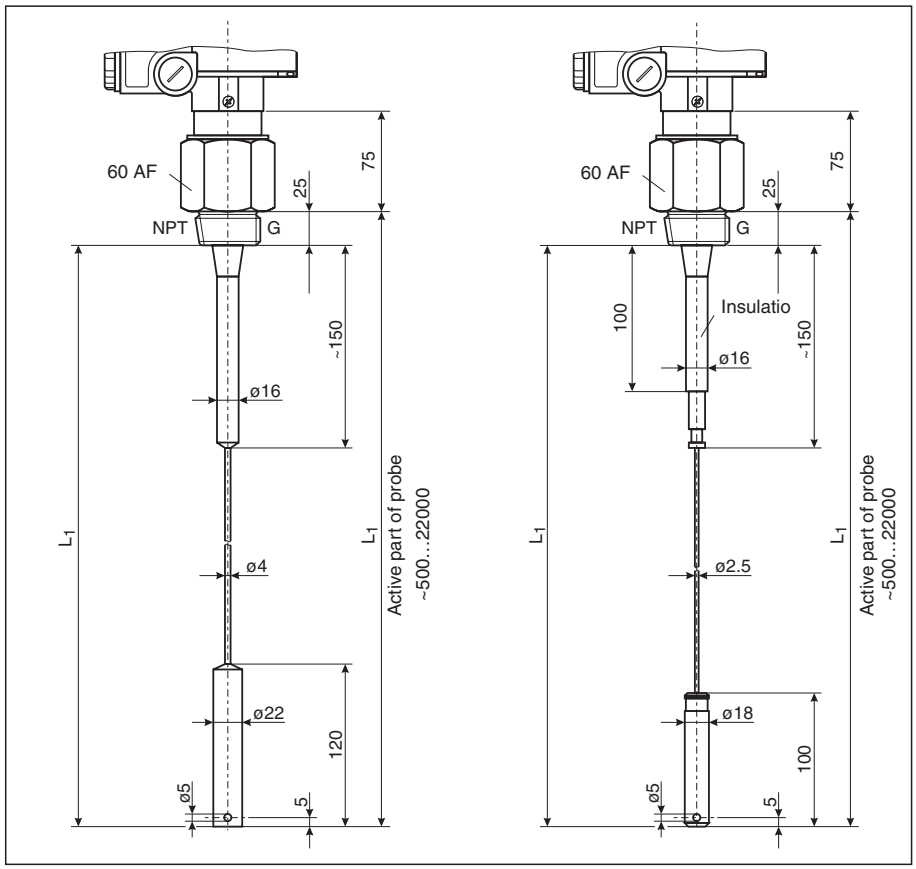
Right:
DC 16 EN,
partially insulated rod probe



Left:
DC 11 EN,
fully insulated rod probe
with ground tube

Right:
DC 16 EN,
partially insulated rod probe
with ground tube

Spacers
all 1000 mm, of PFA



Left:
DC 21 EN,
fully insulated rope probe

Right:
DC 26 EN,
partially insulated rope probe

Tensioning weight always with anchor hole

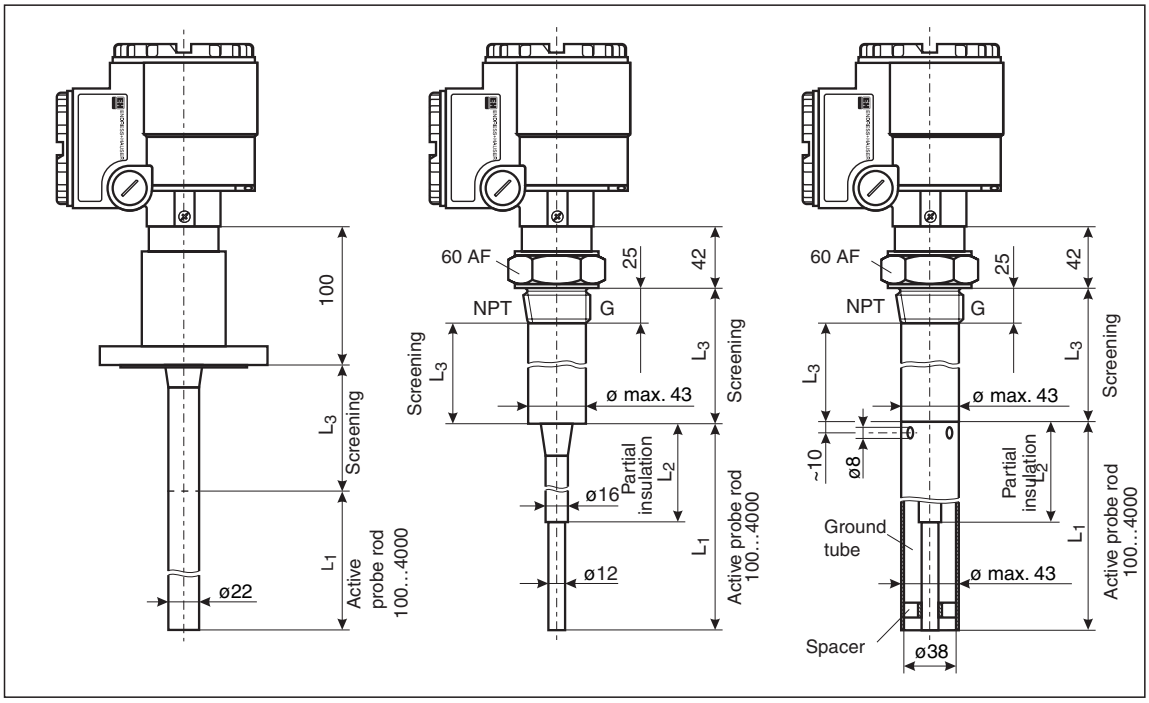
Dimensions

DC 11/16/21/26 ES

Probe with screening L3 against condensation and material build-up at the process connection
(inactive section)

For probes with threaded boss on this page:
Those on the left with thread 1½ - 11½ NPT and on the right with thread G 1½ A;
see Page 10 for other process connections

L1 = Length of active probe rod or probe rope
L2 = Length of partial insulation
min.: 75 mm,
max.: length L1 minus 50 mm

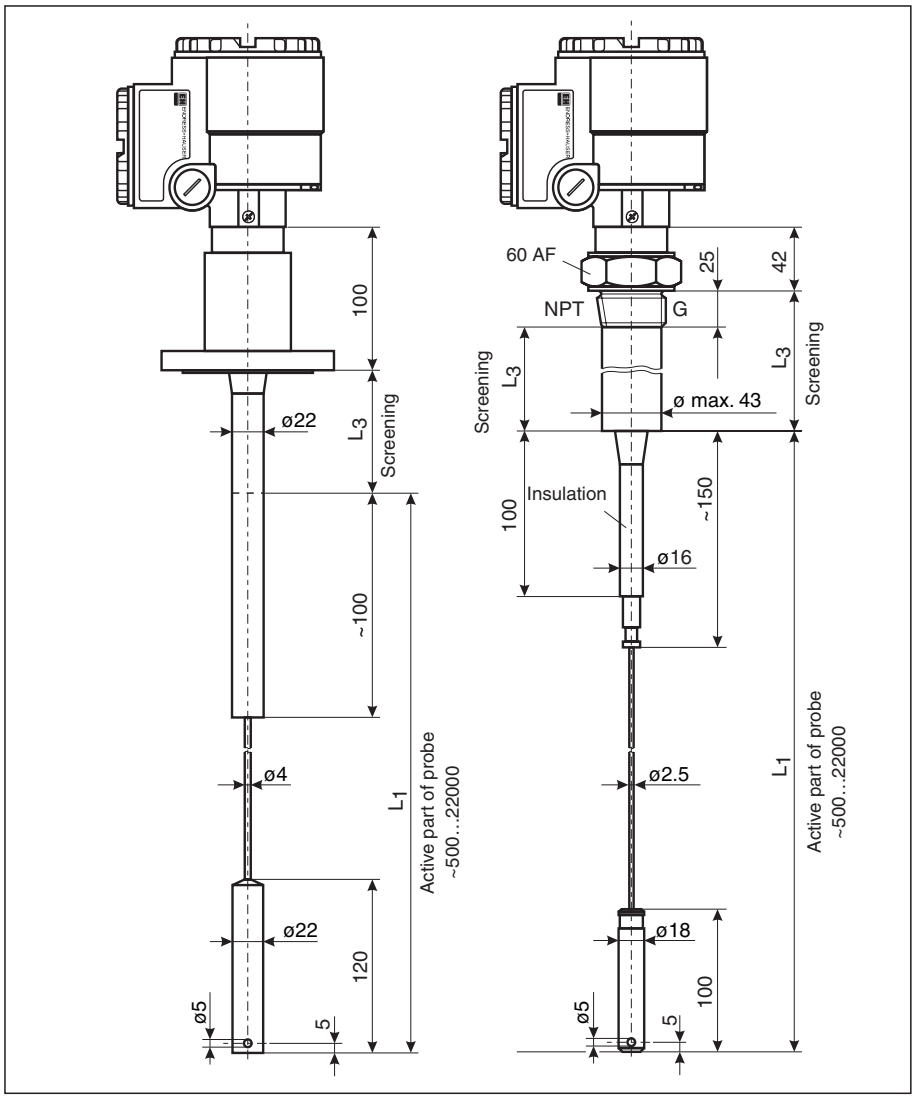


Above left:
DC 11 ES,
fully insulated rod probe with **fully** insulated screening and plastic coated flange

Above, centre and right:
rod probes with uninsulated screening,with partially insulated rod with full insulation also available:

DC 11 ES, fully insulated
DC 16 ES, partially

With ground tube
DC 11 ES, fully insulated
DC 16 ES, partially insulated



Left:
DC 21 ES,
fully insulated rope probe with **fully** insulated screening and plastic coated flange

Right:
DC 26 ES,
partially insulated rope probe with uninsulated screening, uninsulated rope and uninsulated tensioning weight (as shown)

With fully insulated active section this probe is designated DC 21 ES

L3
The screening (protection against condensation) is available in three standard lengths:
L3 = 150 mm
L3 = 250 mm
L3 = 500 mm

Other lengths on request
L3 min. 100 mm
L3 max. 4000 mm
(uninsulated screening)
L3 max. 2000 mm
(fully insulated screening)

Dimensions

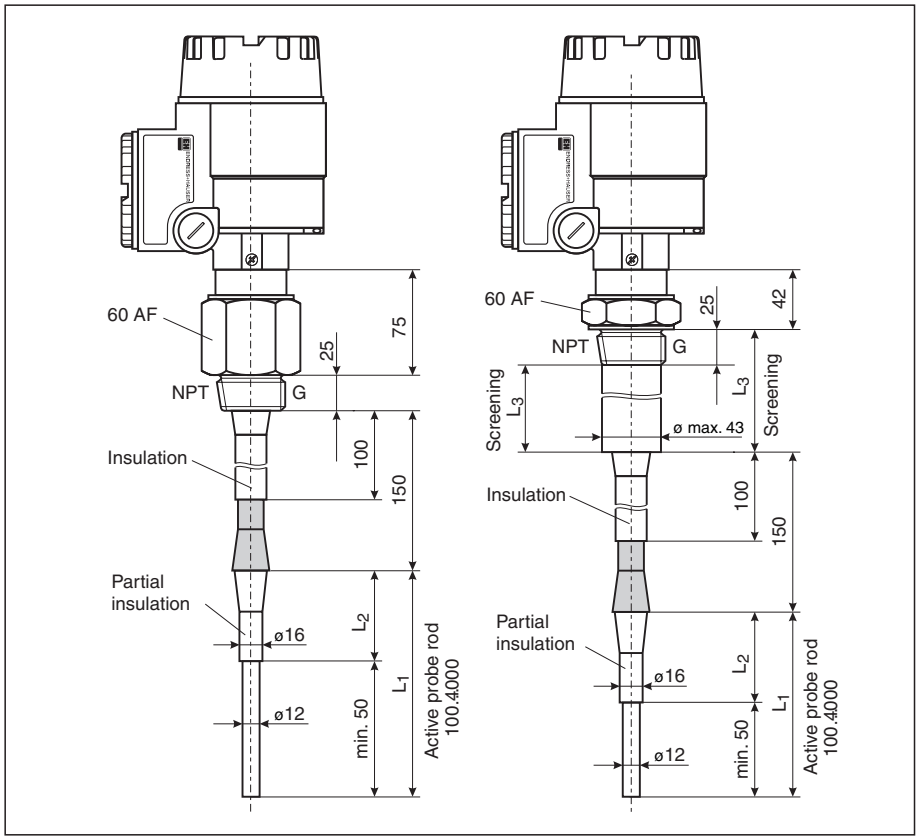
DC 11/16/21/26 ES (Continued)

Probes with active build-up compensation (active guard)
(for limit detection, length always 150 mm)

Left:

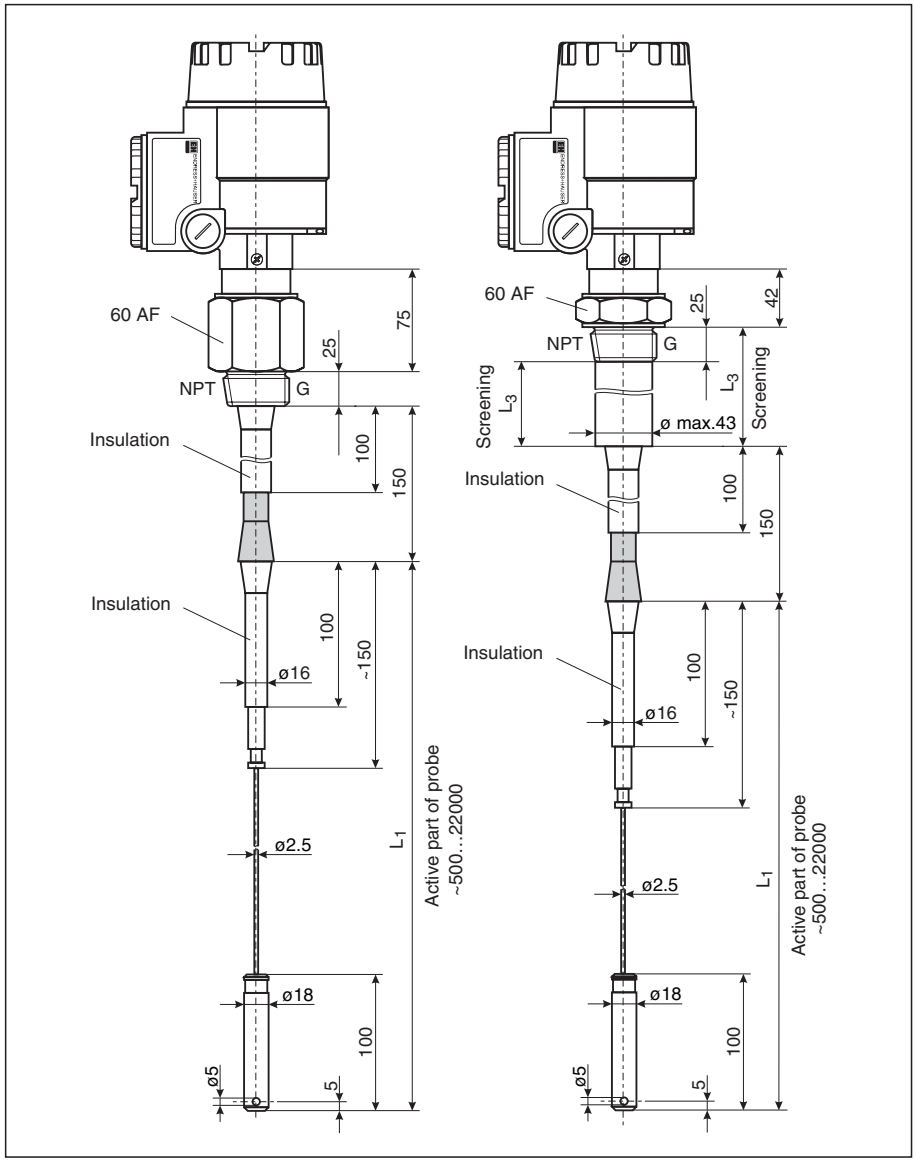
Partially insulated probes shown but fully insulated probes also available where the active part of build-up compensation is always uninsulated. Not available with ground tube.

Threaded versions: G 1½ A
1½ - 11½ NPT



Left:
rod probe DC 11 ES
(fully insulated)
or DC 16 ES
(partially insulated)

Right:
active build-up
compensation combined
with screening L3



Left:
rope probe DC 21 ES
(fully insulated)
or DC 26 ES
(partially insulated)

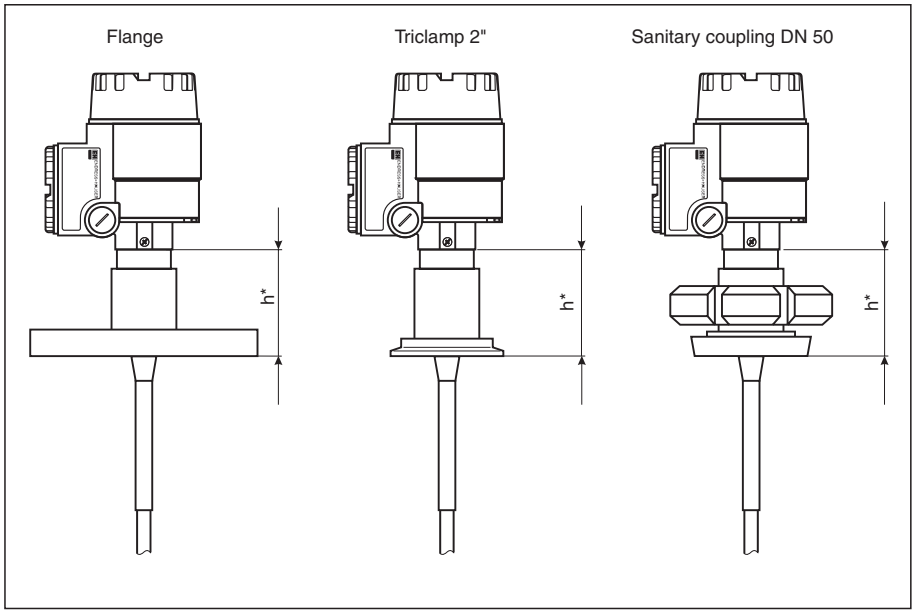
Right:
active build-up
compensation combined
with screening L3

L3
The screening
(protection against
condensation) is
available in three
standard lengths:
L3 = 150 mm
L3 = 250 mm
L3 = 500 mm

Other lengths on
request
L3 min. 100 mm
L3 max. 4000 mm

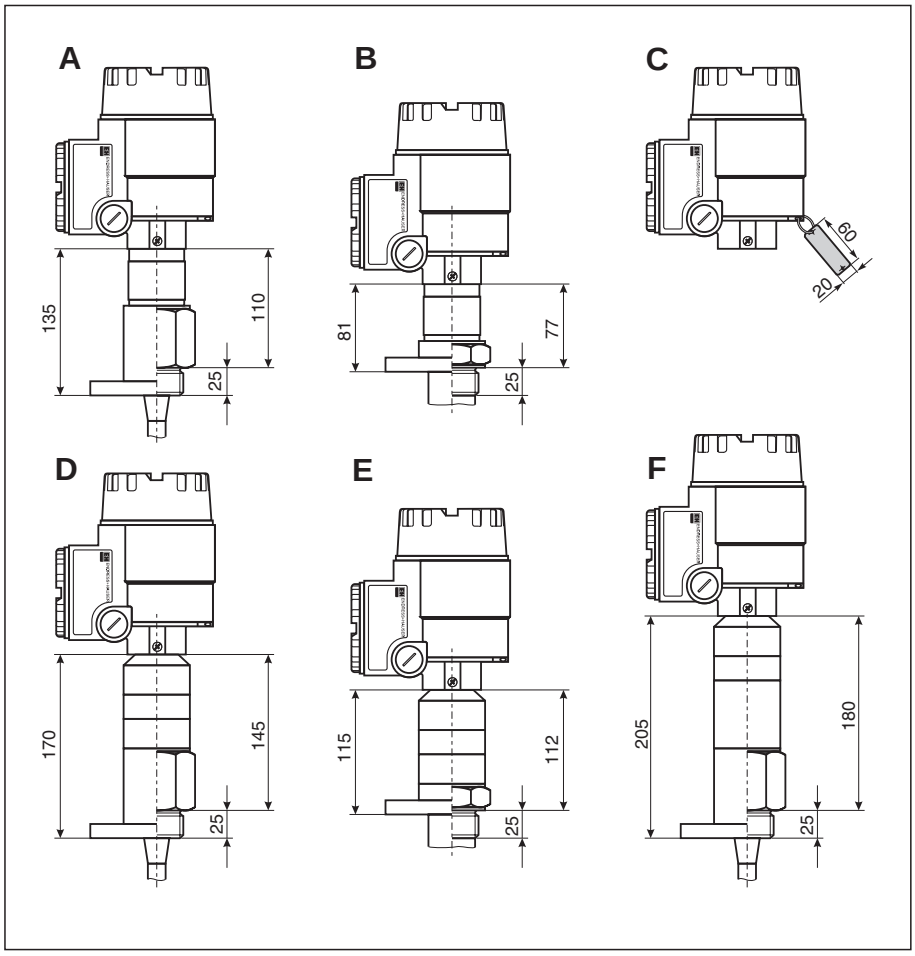
Additional Process Connections and Accessories

Other process connections:
- Flange
- Triclamp 2"
- Sanitary coupling DN 50



*h = 100 mm for probes
- DC…EN
- DC…ES with fully insulated screening (protection against condensation)
- DC…ES with active build-up compensation

*h = 47 mm for probes
- DC…ES with uninsulated screening (protection against condensation)
- DC…ES with uninsulated screening and active build-up compensation



Additional equipment:

A Temperature spacer for probes
- DC…EN
- DC…ES with fully insulated screening (protection against condensation)
- DC…ES with active build-up compensation

B Temperature spacer for probes
- DC…ES with uninsulated screening (protection against condensation)
- DC…ES with uninsulated screening and active build-up compensation

C Corrosion-resistant steel tag

D Gas-tight gland for probes
- DC…EN
- DC…ES with active build-up compensation

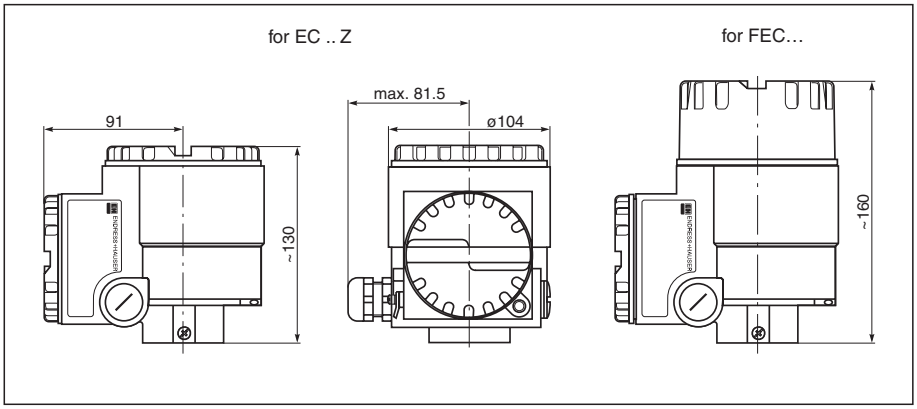
E Gas-tight gland for probes
- DC…ES with uninsulated screening (protection against condensation)
- DC…ES with uninsulated screening and active build-up compensation

F Gas-tight gland for probes
- DC…ES with fully insulated screening (protection against condensation)

Housing Dimensions

Housings in aluminium (Type T3) with separate connection compartment;
- RFI filter with small electronic inserts EC 17 Z, EC 37 Z, EC 47 Z and FEC 12 (EEx ia),
- safety barriers with FEC 12 (EEx d),
- terminal connection module for FEC 22

With low cover for small electronic inserts EC .. Z, with raised cover for electronic inserts FEC 12, FEC 22; with two cable entries, one sealed with a blind plug



Technical Data

General Information

Manufacturer	Endress+Hauser GmbH+Co. D-79689 Maulburg
Instrument family	Multicap
Instrument types	DC 11, 16, 21, 26 EN / ES

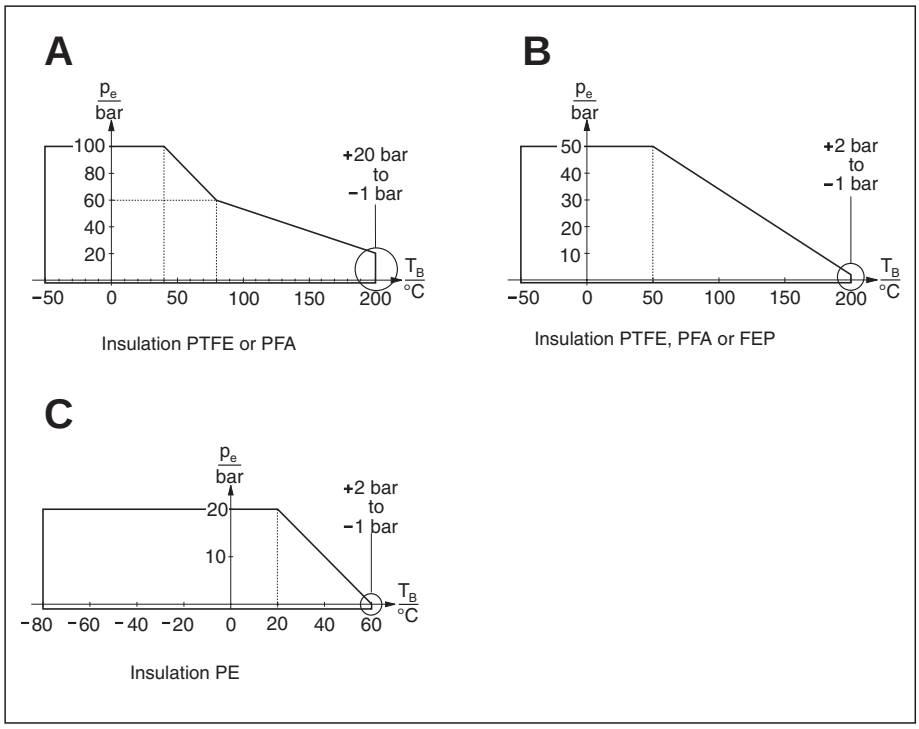
Operating Data

Operating pressure	to 100 bar, depending on material – see below
Operating temperature	to 200 °C, depending on material – see below

Permitted operating pressures p_e and temperatures T_B

The graph **A do not** applys to:
- DC 21 EN / DC 21 ES,
- DC 26 EN / DC 26 ES,
- probes with active build-up compensation,
- probes with fully insulated screening.

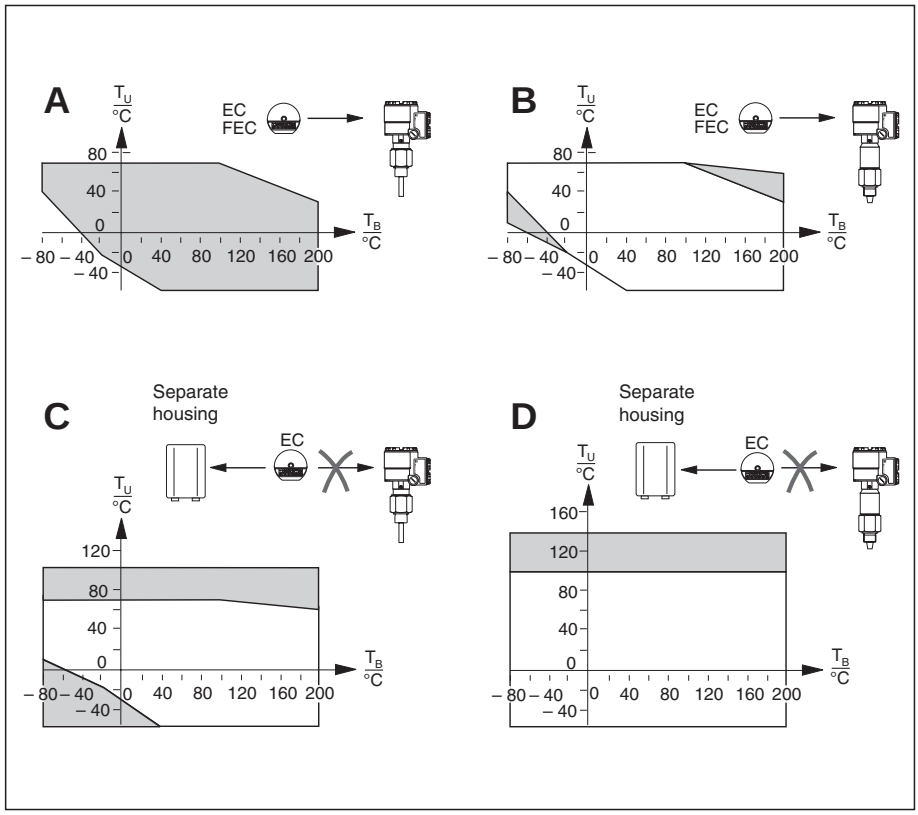
The graph **B** applys to:
- DC 21 EN / DC 21 ES,
- DC 26 EN / DC 26 ES,
- probes with active build-up compensation,
- probes with fully insulated screening.



Mounting of the electronic insert as a function of operating temperature T_B and ambient temperature T_U:
A Probe without temperature spacer
B Probe with temperature spacer or gas-tight gland
C Electronic insert in separate housing
D Probe with temperature spacer or gas-tight gland and electronic insert in separate housing

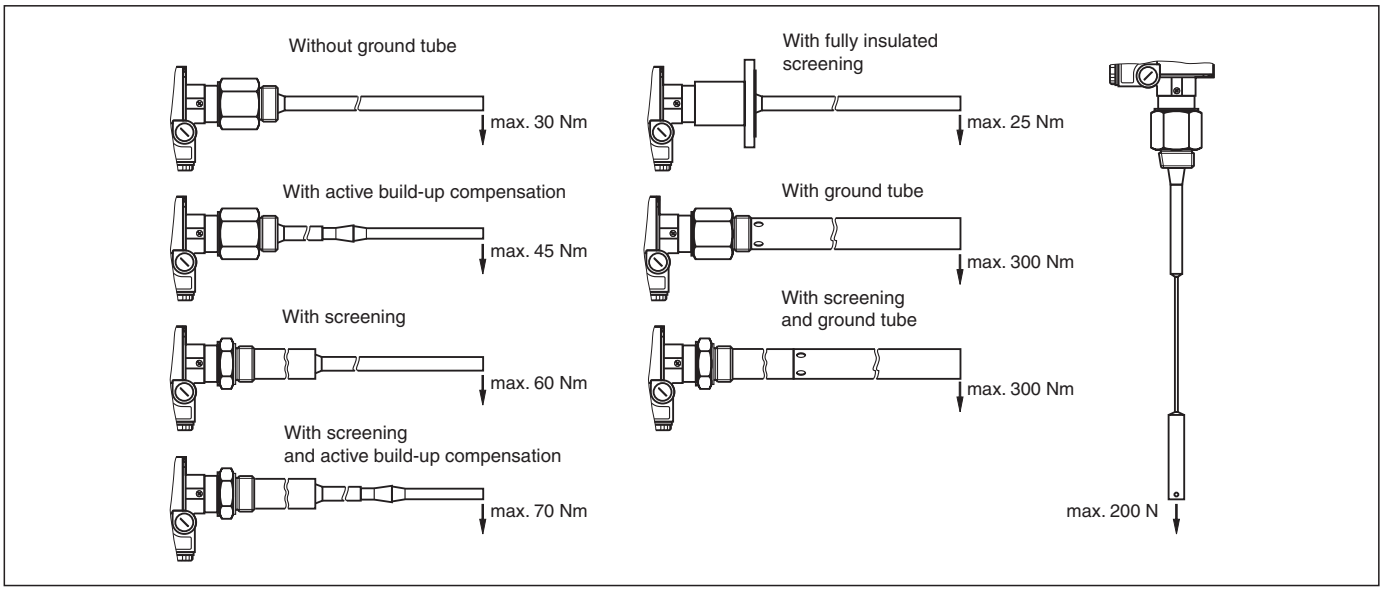
The graphs A and B apply to **all** electronic inserts.

The graphs C and D apply to the small electronic inserts EC 17 Z, EC 37 Z, EC 47 Z



Other Operating Data

Lateral load on the probe rod	see below
Strain on the probe rope	200 N at 20 °C, static



Permissible lateral load
on the probes

Probe lengths

Total length of a rod probe	min. 100 mm, max. 6000 mm, see dimensions
Total length of a rope probe	min. 500 mm, max. 26000 mm, see dimensions

Capacitance values of the probe

Basic capacitance:	approx. 30 pF
Temperature spacer:	approx. 20 pF
Air-tight entry:	approx. 20 pF
Active build-up compensation:	approx. 10 pF

Additional capacitances

Probe 250 mm from a conductive vessel wall	insulated probe rod	in air approx. 1.3 pF/100 mm, in water approx. 38 pF/100 mm
	uninsulated probe rod	in air approx. 1.3 pF/100 mm
	insulated probe rope	in air approx. 1.0 pF/100 mm, in water approx. 20 pF/100 mm
	uninsulated probe rope	in air approx. 1.0 pF/100 mm
	insulated tensioning weight	in air approx. 2 pF in water approx. 60 pF
	uninsulated tensioning weight	in air approx. 2 pF
Rod probe with ground tube	insulated probe rod	in air approx. 5.5 pF/100 mm, in water approx. 35 pF/100 mm
	uninsulated probe rod	in air approx. 5.0 pF/100 mm
Uninsulated screening	approx. 3 pF/100 mm	
Fully insulated screening	approx. 6 pF/100 mm	

Probe lengths for continuous measurement in conducting liquids

EC with $C_{max.}$ = 2000 pF (EC 47 Z, FEC 12)	Rope probe up to 8000 mm (up to 26000 mm in non-conducting liquids) rod probe up to 6000 mm
EC with $C_{max.}$ = 4000 pF (EC 37 Z)	Rope probe up to 20000 mm (up to 26000 mm in non-conducting liquids) rod probe up to 6000 mm

Other Operating Data

Accuracy

Length tolerances	up to 1 m: + 0 mm, -5 mm rod probe, -10 mm rope probe up to 3 m: + 0 mm, -10 mm rod probe, -20 mm rope probe up to 6 m: + 0 mm, -20 mm rod probe, -30 mm rope probe up to 26 m: + 0 mm, -40 mm rope probe
The following specifications only apply to the capacitance of fully insulated probes when used in conductive liquids. **The deviation is insignificant for applications in non-conductive materials.**	
Linearity error in water	< 1 % at 1m length
Temperature dependence of the probe rod	< 0,1 % per K
Pressure dependence of the probe rod	approx. 0,2 % per bar
Temperature dependence of the probe rope	< 0.1 % per K
Pressure dependence of the probe rope	< 0.1 % per bar

Process connections

Parallel thread G 1½ A	DIN ISO 228/I, with sealing ring 48x55
Tapered thread 1½ - 11½ NPT	ANSI B 1.20.1
DIN flanges without raised face	DIN 2527, Form B
DIN flanges with tongue	DIN 2512, Form F
DIN flanges with groove	DIN 2512, Form N
ANSI flanges	ANSI B 16.5
Sanitary coupling	DIN 11 851
Triclamp coupling	ISO 2852

Materials

Aluminium housing (Type T3)	GD-Al Si 10 Mg, DIN 1725, plastic coated (blue / grey)
Seal for housing cover	O-ring in EPDM (elastomer)
Sealing ring for process connection G $1^1/_2$ A	Elastomer-fibre, asbestos-free, resistant to oils, solvents, steam, weak acids and alkalis; up to 300 °C, and 100 bar
Temperature spacer	Stainless steel 1.4301 or similar
Gas-tight gland	Stainless steel 1.4301
Further material specifications	see Product Structure on Page 14…15

Product Structure

DC 11 EN-	**MULTICAP DC 11 EN** Fully insulated rod probe for standard applications	Basic weight including G 1½ A process connection and housing, for rope probes with tensioning weight	3,0 kg
DC 16 EN-	**MULTICAP DC 16 EN** Partially insulated rod probe for standard applications		3,0 kg
DC 21 EN-	**MULTICAP DC 21 EN** Fully insulated rope probe for standard applications		3,3 kg
DC 26 EN-	**MULTICAP DC 26 EN** Partially insulated rope probe for standard applications		3,2 kg
DC 11 ES-	**MULTICAP DC 11 ES** Fully insulated rod probe with protection features		3,0 kg
DC 16 ES-	**MULTICAP DC 16 ES** Partially insulated rod probe with protection features		3,0 kg
DC 21 ES-	**MULTICAP DC 21 ES** Fully insulated rope probe with protection features		3,3 kg
DC 26 ES-	**MULTICAP DC 26 ES** Partially insulated rope probe with protection features		3,2 kg

Certificate

A	For non-hazardous areas	
B	ATEX II 1/2 G,	EEx ia IIC T6
D	For non-hazardous areas,	Overspill protection to WHG
E	ATEX II 2 G,	EEx d [ia] IIC T6
F	ATEX II 1/2 G,	EEx ia IIC T6, Overspill protection to WHG
H	ATEX II 3 G,	EEx nA II T6
Y	Special version	
1	ATEX II 2 G,	EEx d [ia] IIB T6
2	ATEX II 1/2 G,	EEx ia IIB T6, Overspill protection to WHG
3	ATEX II 1/2 G,	EEx ia IIB T6
4	ATEX II 2 G,	EEx d [ia] IIC T6*
5	ATEX II 1/2 G,	EEx ia IIC T6*, Overspill protection to WHG
6	ATEX II 1/2 G,	EEx ia IIC T6*
7	ATEX II 3 G,	EEx nA II T6*

* Note: “Avoid electrostatic charge!”

Build-up protection

			additional weights
DC 11, 16, 21, 26 EN			
A	Build-up protection not selected		
DC 11, 16, 21, 26 ES			
B	150 mm active guard,	316Ti	0,5 kg
C	150 mm L3 screening,	316Ti	0,3 kg
D	250 mm L3 screening,	316Ti	0,5 kg
E	500 mm L3 screening,	316Ti	1,0 kg
F	.....mm (75 mm...4000 mm), L3 screening,	316Ti	2 kg/m
G	150 mm L3 screening and 150 mm active guard,	316Ti	0,8 kg
H	250 mm L3 screening and 150 mm active guard,	316Ti	1,0 kg
K	500 mm L3 screening and 150 mm, active guard,	316Ti	1,5 kg
L	.....mm (75 mm...4000 mm), L3 screening and 150 mm active guard,	316Ti	2 kg/m + 0,5 kg
1	150 mm active guard,	Alloy C	0,5 kg
3	.....mm (75 mm...4000 mm), L3 screening,	Alloy C	2 kg/m
5	.....mm (75 mm...4000 mm), L3 screening and 150 mm active guard,	Alloy C	2 kg/m + 0,5 kg
7	.....mm (75 mm...4000 mm), L3 screening,	fully insulated	1 kg/m
Y	Special version		

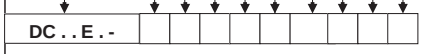
Probe insulation

DC 11, 21 EN/ES			
1	Fully insulated probe		
DC 16 EN/ES			
A	.....mm (20 mm...4000 mm), L2,	PTFE insulated	0,1 kg/m
B	.....mm (20 mm...4000 mm), L2,	PFA insulated	0,1 kg/m
C	.....mm (20 mm...4000 mm), L2,	PE insulated	0,1 kg/m
DC 26 EN/ES			
D	Rope type: 2.5mm diameter		
Y	Special version		

Active length L1, Material

DC 11 EN/ES				
A	.....mm (50 mm...22000 mm),	316Ti+PTFE		1 kg/m
B	.....mm (50 mm...22000 mm),	steel+PE		1 kg/m
C	.....mm (50 mm...22000 mm),	steel+PTFE		1 kg/m
D	.....mm (50 mm...22000 mm),	316Ti+PFA		1 kg/m
E	.....mm (100 mm...22000 mm),	Alloy C+PTFE		1 kg/m
F	.....mm (100 mm...22000 mm),	Alloy C+PFA		1 kg/m
G	.....mm (100 mm...22000 mm),	316Ti+PTFE	with ground tube	3 kg/m
H	.....mm (100 mm...22000 mm),	316Ti+PFA	with ground tube	3 kg/m
K	.....mm (100 mm...22000 mm),	steel+PE	with ground tube	3 kg/m
L	.....mm (100 mm...22000 mm),	Alloy C+PTFE	with ground tube	3 kg/m
M	.....mm (100 mm...22000 mm),	Alloy C+PFA	with ground tube	3 kg/m

Continued Page 15



Product designation (first part)

Product Structure (Continued)

Active length L1, Material (Continued) — additional weights

DC 16 EN/ES

N	.....mm (100 mm...22000 mm),	Rod, 316Ti		0,9 kg/m
P	.....mm (100 mm...22000 mm),	Rod, steel		0,9 kg/m
R	.....mm (100 mm...22000 mm),	Rod, Alloy C		0,9 kg/m
S	.....mm (100 mm...22000 mm),	316Ti	with ground tube	2,9 kg/m
T	.....mm (100 mm...22000 mm),	steel	with ground tube	2,9 kg/m
U	.....mm (100 mm...22000 mm),	Alloy C	with ground tube	2,9 kg/m

DC 21 EN/ES

1	.....mm (100 mm...22000 mm), tensioning weight with anchor hole	Rope, 316, PE insulated	0,04 kg/m
2	.....mm (100 mm...22000 mm), tensioning weight with anchor hole	Rope, 316, FEP insulated	0,04 kg/m
3	.....mm (100 mm...22000 mm), tensioning weight with anchor hole	Rope, 316, PFA insulated	0,04 kg/m

DC 26 EN/ES

4	.....mm (100 mm...22000 mm), tensioning weight with anchor hole	Rope, 316	0,03 kg/m
5	.....mm (100 mm...22000 mm), tensioning weight with anchor hole	Rope, Alloy C	0,03 kg/m

9 Special version

Process connection, Material

E	DN 50 PN 40, DIN 11851, Hygienic connection	304	0,5 kg
F	DN 40-51 (2"), ISO 2852, Tri-Clamp connection	304	0,5 kg
G	G 1½ A, Thread ISO 228,	steel	
H	G 1½ A, Thread ISO 228,	316Ti	
K	G 1½ A, Thread ISO 228,	Alloy C	
M	1½" NPT, Thread ANSI,	steel	
N	1½" NPT, Thread ANSI,	316Ti	
P	1½" NPT, Thread ANSI,	Alloy C	
Y	Special version		
5	Flanged process connection		

Flange type, Material

AE2	2" 150 lbs, RF, ANSI B16.5,	316Ti	1,6 kg
AE3	2" 150 lbs, RF, ANSI B16.5,	PTFE >316Ti	1,6 kg
AG2	2" 300 lbs, RF, ANSI B16.5,	316Ti	3,0 kg
AL2	3" 150 lbs, RF, ANSI B16.5,	316Ti	3,2 kg
AL3	3" 150 lbs, RF, ANSI B16.5,	PTFE >316Ti	3,2 kg
AN2	3" 300 lbs, RF, ANSI B16.5,	316Ti	5,6 kg
AP2	4" 150 lbs, RF, ANSI B16.5,	316Ti	5,4 kg
AP3	4" 150 lbs, RF, ANSI B16.5,	PTFE >316Ti	5,4 kg
AR2	4" 300 lbs, RF, ANSI B16.5,	316Ti	7,3 kg
AV2	6" 150 lbs, RF, ANSI B16.5,	316Ti	
A12	6" 150 lbs, RF, ANSI B16.5,	316Ti	
BG1	DN 50 PN 25/40 B, DIN 2527,	steel	3,0 kg
BG2	DN 50 PN 25/40 B, DIN 2527,	316Ti	3,0 kg
BG3	DN 50 PN 25/40, DIN 2527,	PTFE >316Ti	3,0 kg
BM3	DN 80 PN 10/16, DIN 2527,	PTFE >316Ti	4,5 kg
BQ3	DN 100 PN 10/16, DIN 2527,	PTFE >316Ti	5,4 kg
CG2	DN 50 PN 25/40 C, DIN 2527,	316Ti	3,0 kg
CM2	DN 80 PN 10/16 C, DIN 2527,	316Ti	4,5 kg
CQ2	DN 100 PN 10/16 C, DIN 2527,	316Ti	5,4 kg

Nur DC 11, 16 EN/ES, DC 21 EN

KE2	10K 50A, RF, JIS B2210,	316Ti	
KE3	10K 50A, RF, JIS B2210,	PTFE >316Ti	
KF1	20K 50A, RF, JIS B2210,	steel	2,6 kg
KF2	20K 50A, RF, JIS B2210,	316 Ti	2,6 kg

Nur DC 11, 16 EN/ES, DC 21 EN

KL2	10K 80A, RF, JIS B2210,	316Ti	
KL3	10K 80A, JIS B2210,	PTFE >316Ti	
KP2	10K 100A, RF, JIS B2210,	316Ti	
KP3	10K 100A, JIS B2210,	PTFE >316Ti	

YYY Special version
1BB without process flange connection

Electronic insert

E	with EC 17 Z, 2-wire PFM	0,2 kg
G	with EC 37 Z, 2-wire PFM, 33 kHz	0,2 kg
H	with EC 47 Z, 2-wire PFM, 1 MHz	0,2 kg
K	with FEC 12, 2-wire 4…20 mA HART	0,3 kg* +0,3 kg
M	with FEC 22, 90…253 V AC, DPDT relay	0,3 kg* +0,3 kg
N	with FEC 22, 10… 55 V DC, 3-wire PNP	0,3 kg* +0,3 kg
P	with FEC 14, PROFIBUS PA	
V	with FEC 14, local operation FHB 20 and PROFIBUS PA	
Y	Special version	

Housing

G	Aluminium, T3 Housing, HNA24x1,5,	IP66
M	Aluminium, T3 Housing, gland M20x1,5,	IP66
P	Aluminium, T3 Housing, PA-plug M12,	IP66
S	Aluminium, T3 Housing, Nema 4x, NPT ¾"	
T	Aluminium, T3 Housing, entry G ½ A,	IP66
Y	Special version	

Option

1	Basic version	
3	with temperature spacer	0,5 kg
5	with gas-tight probe seal	0,5 kg
9	Special version	

* Addtional weight for raised cover

Basic type — Certificate — Build-up protection — Probe insulation

DC . . E . - Complete product designation for DC . . EN, DC . . ES

Please don't forget:

Length of

Screening	L3	☐☐☐☐	mm
Partial insulation	L2	☐☐☐☐	mm
Active probe length	L1	☐☐☐☐☐	mm

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