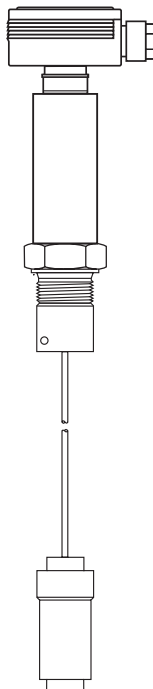


NRG 21-11



NRG 21-51

## Level Electrode

### NRG 21-11 NRG 21-51

#### Description

The level electrodes NRG 21-11, NRG 21-51 are level sensors for giving a continuous measurement of electrically conductive and non-conductive liquids in vessels.

The level electrode can be used in combination with the following level switches/controllers: NRS 2-50, NRS 2-51, NRR 2-50, NRR 2-51, NRR 2-52 and NRR 2-53.

#### Function

The level electrode and the electronic module NRV 2-31 work according to the capacitance measurement principle and translate the level changes into a level-dependent current signal, with the length of the electrode rod determining the measuring range.

The level electrode is installed inside the vessel or in an external level pot. If the equipment is installed inside the boiler or vessel, a protection tube provided on side ensures correct functioning.

The level electrode can be used in electrically conductive and non-conductive fluids.

#### Application in potentially explosive areas

The equipment must **not** be used in potentially explosive areas.

#### Technical data

##### Level electrode NRG 21-11

**Operating pressure**  
PN 6, 6 bar at 164°C

**Mechanical connection**  
Screwed G ¾ A, ISO 228

**Materials**  
Screw-in body: 1.4571, X6CrNiMoTi17-12-2  
Electrode rod insulation: PTFE

#### Technical data -continued-

##### Length of installation / measuring range

NRG 21-11	
Length of installation at 164° C	Measuring range
349	300
454	400
559	500
663	600
768	700
873	800
978	900
1083	1000
1196	1100
1293	1200
1395	1300
1498	1400
1607	1500
2130	2000

#### Weight

approx. 1.8 kg (L=1000 mm)

#### Level electrode NRG 21-51

**Operating pressure**  
PN 6, 6 bar at 164°C

**Mechanical connection**  
Screwed G 1½ A, ISO 228-1

#### Materials

Screw-in body 1.4571, X6CrNiMoTi17-12-2  
Insulating seal of electrode rope PTFE  
Earth wire (optional) 1.4401 X5 CrNiMo17-12-2  
O-ring system FKM, e. g. mineral oil, lye, dye baths up to 160 °C, water up to 100 °C.  
O-ring system EPDM, e. g. water up to 140 °C.

#### Length of installation / measuring range

Max. 15000 mm

#### Weight

approx. 2.1 kg

#### Preamplifier NRV 2-31

**Supply voltage**  
12 V DC

#### Sensitivity of response

Range 1: Water ≥ 20 µS/cm  
Range 2: Water ≥ 0.5 µS/cm  
Range 3: Fuel oil EL ε<sub>r</sub> 2,3

#### Output

≥ 0 – ≤ 7 V DC, level proportional

#### Adjustor

2 code switches for adjusting the measuring range

#### Enclosure

PA6 GF30 black / PSU grey transparent  
Elastomer gasket for cover: EPDM

#### Electrical connection

1 Screw-type terminal strip with 3 poles, cable gland with integrated cable clamp M 16

#### Protection

IP 65 to DIN EN 60529

#### Max. admissible ambient temperature

70 °C

# Level Electrode

## NRG 21-11

## NRG 21-51

### Important Notes

#### Installation

- Install level electrode only in a vertical position. A counter-electrode must be provided if the electrode is installed in non-conductive vessels such as plastic tanks, or in horizontal round tanks, spherical tanks or other asymmetrical tank shapes without on-site protection tube. In this case use an earth tube (NRG 21-11) or install the level electrode NRG 21-51 with earth wire.
- If installed outdoors the level electrode must be equipped with a GESTRA weather protection cover.
- Do not cut the electrode rod / electrode rope.

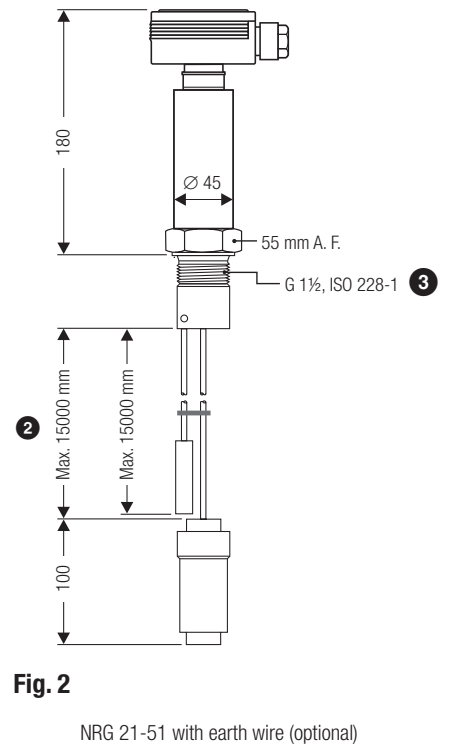
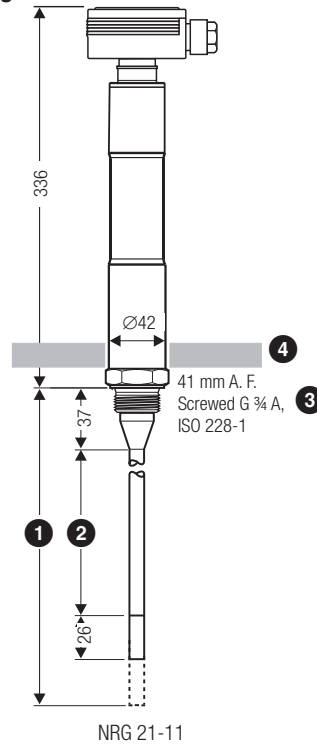
#### Electrical connection

- To connect the level electrode use screened multi-core control cable with a min. conductor size 0.5 mm<sup>2</sup>, e. g. LiYCY 4 x 0.5 mm<sup>2</sup>, max. length: 100 m.
- A maximum of 3 switches / controllers NRS /NRR 2-5.. can be connected to one level electrode.
- Connect the screen only once to the central earthing point (CEP) in the control cabinet.
- Make sure that the connecting cable is segregated and runs separately from power cables.

### Key

- 1 Max. length of installation at 164 °C
- 2 Measuring range
- 3 Electrode thread G ¾ A, ISO 228-1 or G 1½ A, ISO 228-1
- 4 Thermal insulation, provided on site, d = 20 mm (outside of thermal insulation of steam boiler)
- 5 Wiring connecting terminals NRG 21-11, NRG 21-51
- 6 Wiring terminal strip of level switch/controller NRS 2-5.. / NRR 2-5..

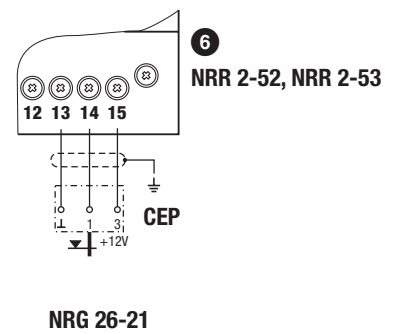
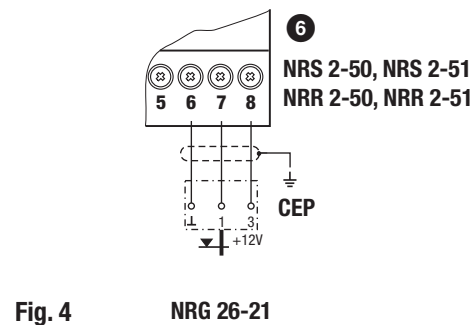
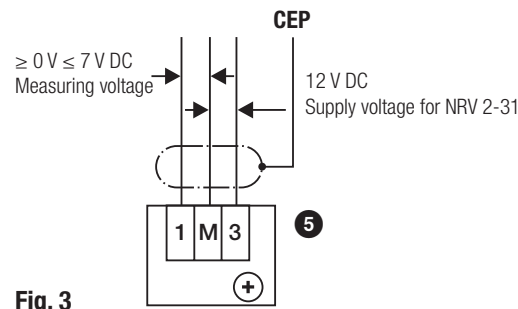
### Dimensions



NRG 21-11								
Length of installation at 164° C 1	349	454	559	663	768	873	978	1083
Measuring range 2	300	400	500	600	700	800	900	1000

NRG 21-11						
Length of installation at 164° C 1	1196	1293	1395	1498	1607	2130
Measuring range 2	1100	1200	1300	1400	1500	2000

### Electrical connection



## Level Electrode

### NRG 21-11

### NRG 21-51

#### Order & Enquiry Specification

GESTRA Level electrode NRG 21-11  
 PN 6, connection G 3/4  
 Measuring range .....mm  
 Fluid.....  
 Earth tube YES / NO

GESTRA Level electrode NRG 21-51  
 PN 6, connection G 1 1/2  
 Measuring range .....mm  
 Fluid.....  
 Earth wire YES / NO

#### Associated switch / controller, associated PSU

- Level switch NRS 2-50, NRS 2-51
- Level controller NRR 2-50, NRR 2-51
- Level controller NRR 2-52, NRR 2-53
- Power supply unit SITOP PSU100C 24V/0,6A

#### Key

- 12 Flange PN 40, DN 50, EN 1092-1 (for one electrode)  
Flange PN 40, DN 100, EN 1092-1 (for electrode combination)
- 13 For the approval of the boiler standpipe with connecting flange the relevant regulations must be considered
- 14 Vent hole  
Provide vent hole as close to the boiler wall as possible!
- 15 High water HW
- 16 Electrode rod
- 17 Protection tube DN 80 (in France according to AFAQ ≥ DN 100)
- 18 Protection tube DN 100
- 19 Distance between electrode rod and protection tube ≥ 14 mm
- 20 Distance between electrode tip (NRG 1...-50 or NRG 1...-51) ≥ 14 mm (creepage distances and clearances)
- 21 Low water LW
- 22 Reducer DIN 2616-2, K-88.9 x 3.2-42.4 x 2.6 W
- 23 Reducer DIN 2616-2, K-114.3 x 3.6-48.3 x 2.9 W
- 24 Level pot ≥ DN 80

#### Directives and standards

You can find details on the conformity of the equipment and the applicable standards and directives in our Declaration of Conformity and the relevant certificates or approvals.

Supply in accordance with our general terms of business.

#### Examples of installation

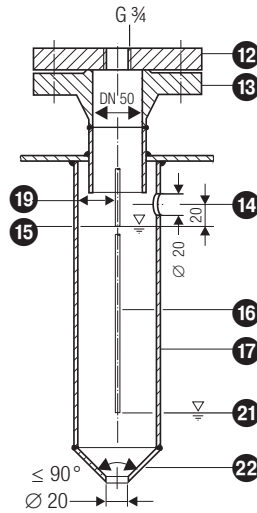


Fig. 5 Protection tube (provided on site) for installation inside the boiler

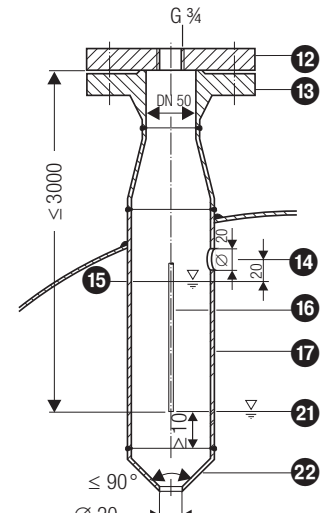


Fig. 6 Protection tube (provided on site) for installation inside the boiler

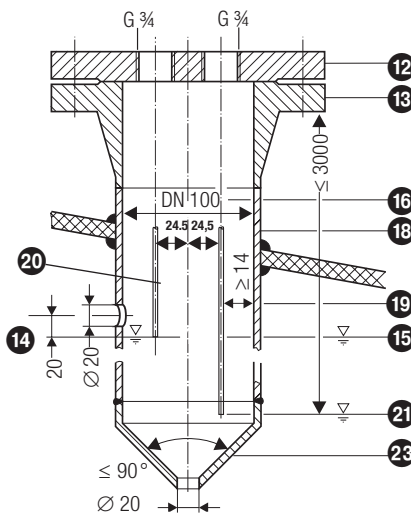


Fig. 7 Protection tube (provided on site) for installation inside the boiler and in combination with other GESTRA equipment

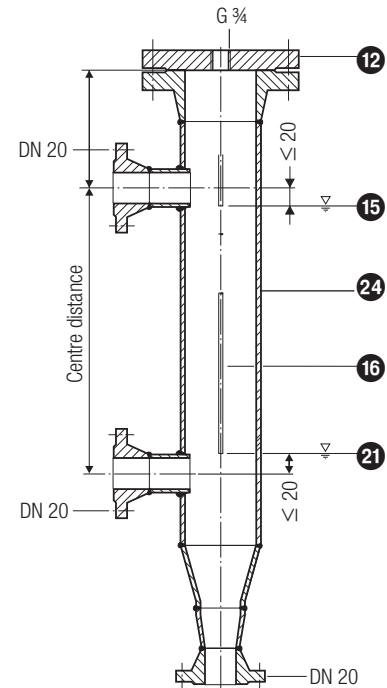


Fig. 8 External level pot

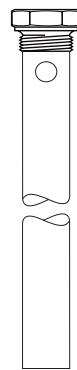


Fig. 9 Earth wire G 3/4 to G 1 1/2

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