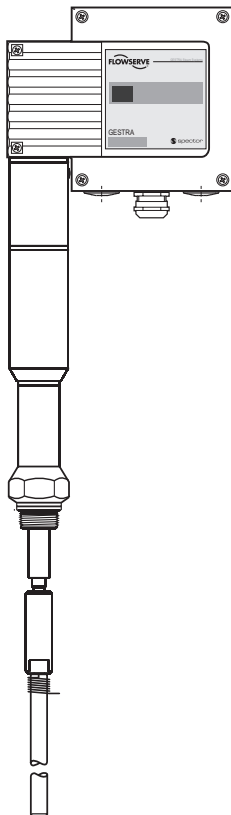

*NRG 1...-51 with four-pole connector*

*NRG 19-51F with aluminium terminal box*

## High-Level Alarm

### Level Electrode

#### NRG 16-51, NRG 17-51, NRG 19-51

### Description

The level electrodes NRG 1...-51 are used in conjunction with level switch NRS 1-51 as high level alarm for steam boiler plants and (pressurized) hot water installations.

A high level alarm prevents the water level from exceeding the preset max. water level (HW) and for this purpose switches off e.g. the feedwater supply.

### Function

When the level exceeds the max. water level, the level electrode enters the liquid and an alarm is triggered in the level switch NRS 1-51. The switchpoint "High level (HW) exceeded" is dictated by the length of the electrode rod.

The self-monitoring function ensures that an alarm will also be triggered if the electrode insulation is contaminated or has developed a leak or if there is a malfunction in the electrical connection.

The level electrode is installed inside steam boilers, vessels or inlet lines of hot-water systems. The protection tube provided on site ensures the function.

One level electrode NRG 1...-51 can be installed together with one GESTRA water level limiting electrode in a single protection tube or external level pot.

If the level electrode is installed in a level pot outside the boiler, make sure that the connecting lines are rinsed regularly. In addition, the logic unit SRL is required to monitor the purging times and the purging sequence.

### Directives and Standards

#### Pressure Equipment Directive (PED) 97/23/EC

The level electrode NRG 1...-51 in conjunction with level switch NRS 1-51 is EC type approved according to EN 12952/EN 12953. These Directives state, among other things, the requirements made on limiting systems and equipment for steam boiler plants and (pressurized) hot-water installations.

#### Functional Safety acc. to IEC 61508

The level electrode NRG 1...-51 is certified acc. to IEC 61508 only if used in combination with level switch NRS 1-51. This standard describes the functional safety of safety-related electrical/electronic/programmable electronic systems.

#### VdTÜV Bulletin "Wasserstand 100" (= Water Level 100)

The level electrodes NRG 1-51, NRG 1...-12 in conjunction with the level switch NRS 1-51 are type approved according to the VdTÜV Bulletin "Water Level 100".

#### ATEX (Atmosphère Explosible)

The level electrodes NRG 1...-51, NRG 1...-12 are simple items of electrical equipment as specified in EN 60079-11 section 5.7. According to the European Directive 94/9/EC the equipment must be equipped with approved Zener barriers if used in potentially explosive areas. Applicable in Ex zones 1, 2 (1999/92/EC).

The equipment does not bear an Ex marking. The suitability of the Zener barriers is certified in a separate document. Note that the requirements of the IEC 61508 are not met if the NRG 1...-51, NRG 1...-12 + Zener barriers + NRS 1-51 are interconnected!

### Technical Data

#### Service pressure

NRG 16-51, PN 40, 32 bar at 238 °C

NRG 17-51, PN 63, 46 bar at 260 °C

NRG 19-51, PN 160, 100 bar at 311 °C

#### Mechanical connection

Screwed ¾" to EN ISO 228-1

#### Materials

Sheath 1.4301 X5 CrNi18-10

Screw-in housing: 1.4571 X6 CrNiMoTi 17-12-2

Measuring electrode 1.4571 X6 CrNiMoTi 17-12-2

Electrode rod 1.4401 X5 CrNiMo 17-12-2

Electrode insulation PEEK

NRG 1...-51: Four-pole connector: polyamid (PA)

NRG 1...-51F: Terminal box 3.2161 G AISi8Cu3

#### Lengths supplied

500 mm, 1000 mm, 1500 mm

#### Electrical connection

NRG 1...-51: Four-pole connector, cable gland M16

NRG 1...-51F: Aluminium terminal box, cable gland M20

#### Protection

IP 65 to DIN EN 60529

#### Max. admissible ambient temperature

70 °C

#### Weight

Approx. 1.2 kg (without extension)

(NRG 16-51, NRG 17-51, NRG 19-51)

Approx. 2.1 kg (without extension)

(NRG 16-51F, NRG 17-51F, NRG 19-51F)

### Important Notes

#### 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 with an electrical conductivity of the boiler water > 10 µS/cm at 25 °C.

Max. length 30 m with an electrical conductivity of the boiler water < 10 µS/cm at 25 °C.

#### Installation

- One level electrode NRG 1...-51 can be installed together with one GESTRA water level limiting electrode in a single protection tube or external level pot (inside diameter 100 mm).
- The angle of inclination of the electrode must not exceed 45°, with the length of the electrode rod being limited to 1000 mm.
- For outdoor installations please use level electrode NRG 1...-51 F. Level electrodes with this suffix (F) feature a terminal box made from aluminium.

## High-Level Alarm

### Level Electrode

**NRG 16-51, NRG 17-51, NRG 19-51**

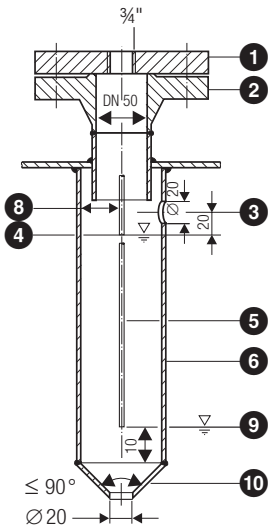
### Order & Enquiry Specification

GESTRA Level electrode NRG 1...-51  
 PN....., connection....., inspection.....  
 Length supplied .....mm

### Key

- 1 Flange PN 40, PN 63, PN 160, DN 50 or DN 100, DIN 2501-1 (NRG 16-51, NRG 17-51, NRG 19-51)
- 2 For the approval of the boiler standpipe with connecting flange the relevant regulations must be considered.
- 3 Vent hole
- 4 High water (HW)
- 5 Electrode rod  $d = 8$  mm
- 6 Protection tube DN 80, DN 100
- 8 Electrode distance  $\geq 14$  mm
- 9 Low water (LW)
- 10 Reducer DIN 2616-2, K-88.9 x 3.2 - 42.4 x 2.6 W

### Examples of Installation

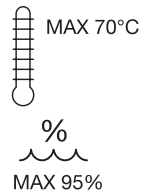


**Fig. 3** Protection tube (provided on site) if electrode is used as internal high level alarm.

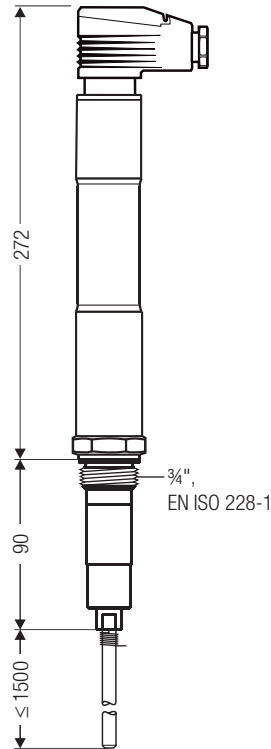
**Fig. 5** Protection tube (provided on site) if electrode is used as internal water level limiter combined with water level control or high water level alarm

Supply in accordance with our general terms of business.

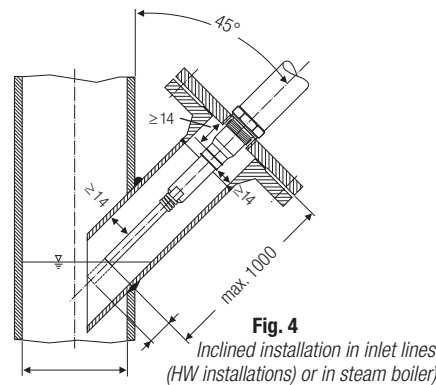
### Dimensions



IP 65

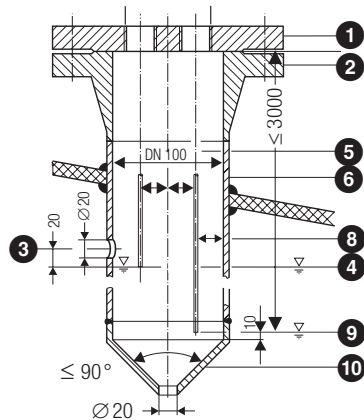


**Fig. 1** NRG 16-51, NRG 17-51 with four-pole connector

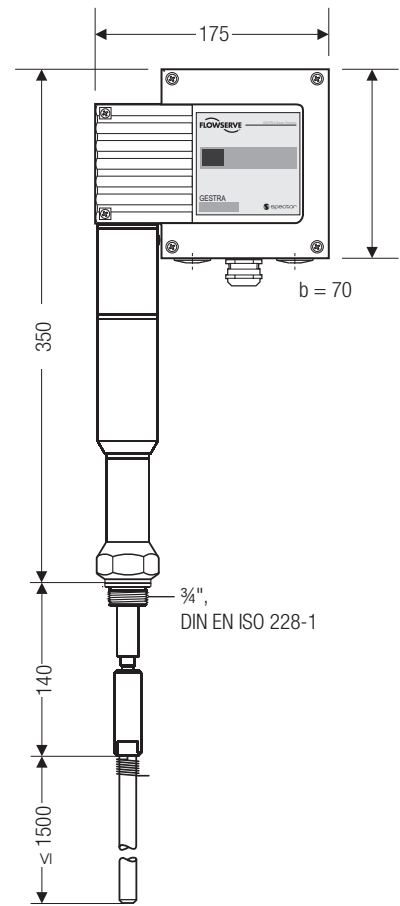


**Fig. 4**

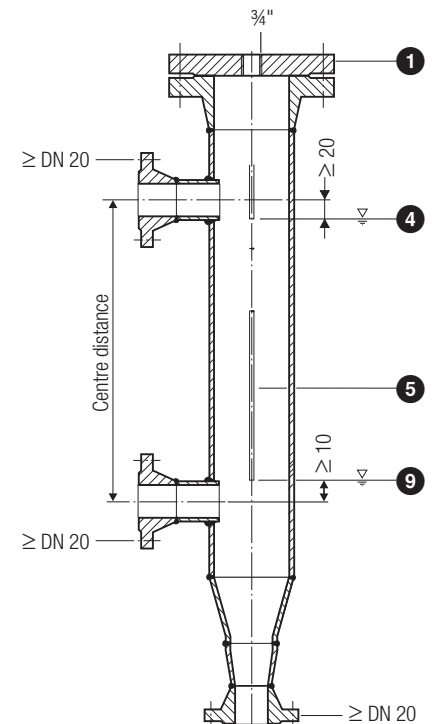
Inclined installation in inlet lines (HW installations) or in steam boiler



**Fig. 5**



**Fig. 2** NRG 19-51F with terminal box made from aluminium



**Fig. 6** Level pot DN 80 if high level alarm electrode is installed outside the boiler

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