

# GESTRA Steam Systems

Product Range Group B

Level Limiter (Low Level Alarm)

**NRG 111-11**

**for Flanges PN 320**

**NRG 111-11**

## Description

### Water level limiter with one level electrode

The level electrode NRG 111-11 detects the min. liquid level (low level alarm) in a steam boiler. The operation of the electrode is based on the conductivity measuring principle using the electrical conductivity of water for signalling one liquid level:

■ Low level alarm

The NRG 111-11 is designed for use in conjunction with level switch NRS 1-7 as a self-monitoring low level limiter with periodic self-checking (SMART) feature.

Application in steam and pressurised hot water plants in accordance with TRD 604, sheet 1 and sheet 2 (24h/72h operation) as well as EN 12952 and 12953.

The electrical equipment meets the requirements of the Regulations on Protection Circuits DIN VDE 0116 (prEN 50156).

## Pressure / Temperature Range

NRS 111-11: 183 barg (2655 psig) / 400 °C (752 °F)

## Design

- NRG 111-11 screwed 1" BSP, ISO 228-1.

## Function

The water level limiter comprises a level electrode type NRG 111-11 and a level switch type NRS 1-7.

The level electrode NRG 111-11 consists of two concentrically arranged electrodes (measuring electrode and compensating electrode) which are isolated from each other by special insulating seals.

The level limiter operation is based on the conductive measuring principle using the electrical conductivity of water for signalling water level.

During normal, trouble-free operation the level electrode tip is immersed in boiler water and no low level alarm is given.

A low level alarm will only be raised if the electrode tip is exposed for more than 3 seconds.

A low level alarm will also be activated if the insulating seals placed between the electrodes and the body are no longer pressure tight, allowing water to penetrate into the cavities between the body, tube and stud.

However in this instance the alarm is caused by a malfunction of the electrode, and confirmation should always be done by checking if there is water in the gauge glass.

The equipment combination NRG 111-11 and NRS 1-7 provides fail safe protection against a first fault in accordance with TRD 604.

## Technical Data

### Type approval no.

TÜV-WB-01-354  
EG 01 202 931-B-01-0077-01

### Service pressure

NRG 111-11: 183 barg (2655 psig) / 400 °C (752 °F)

### Connection

1" BSP, ISO 228-1  
Flange PN 320, DN 50, DIN 2505-1 (optional)  
Flange PN 250, DN 80, DIN 2505-1 (optional)

### Materials

Body 3.2161 G AISi8Cu3  
Stem 1.4571 CrNiMoTi17-12 -2  
Measuring electrode 1.4571 CrNiMoTi17-12 -2  
Electrode insulation: Special ceramic material

### Lengths available

500 mm  
1000 mm  
1500 mm  
2000 mm  
2500 mm  
3000 mm

### pH value

Max. admissible 10

### Cell constant C

0.13 cm<sup>-1</sup> with measuring surface extension

### Response sensitivity

Min. 0.5 mS/cm

### Cable entry

Cable gland with integrated cable clamp  
M 20 (2) (PG 16)

### Protection

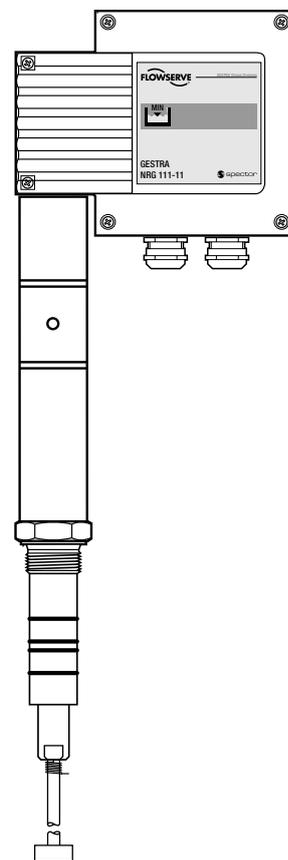
IP 65 to DIN EN 60529

### Max. admissible ambient temperature

70 °C

### Weight

Approx. 1.8 kg



# Level Limiter (Low Level Alarm) NRG 111-11 for Flanges PN 320

## Important Notes

Note that screened four-core cable, e.g. I-Y(St)Y 2 x 2 x 0.8 or LIYCY 4 x 0.5 mm<sup>2</sup> is required.

Max. cable length 30 m with water conductivity from 0.5 mS/cm.

Max. cable length 15 m with water conductivity from 0.5 mS/cm when used in conjunction with inverter URN 1 (24 V d.c.).

The level electrodes are suitable for installation directly inside the steam boiler.

The trouble-free interaction and correct operation of the steam boiler and the low level alarm must be approved by the competent Technical Supervisory Association (in Germany: TÜV).

The electrode shall be installed vertically or with a lateral inclination of 45°. Note: If the electrode is in an inclined position the length of the electrode must not exceed 1600 mm.

Installation directly inside the steam boiler is recommended as this provides operational and maintenance cost savings. In this case a protection tube (≥ DN 80 mm) is required.

If the electrode is installed in an external chamber, each electrode requires **one** level switch and **one** logic unit!

## Order & Enquiry Specification

GESTRA Level Electrode NRG 111-11  
Connecting flange (optional) PN ..... DN.....  
Level electrode with external measuring pot  
..... (yes/no)

## Associated Equipment

- Level switch NRS 1-7
- Logic unit type SRL 6 for monitoring purging cycle (electrode installed in external measuring pot)

① Lengths available: see "Technical Data"

Ⓐ Flange PN 320, DN 50, DIN 2505-1  
Flange PN 250, DN 80, DIN 2505-1

Ⓑ For the approval of the boiler standpipe with connecting flange the relevant regulations must be considered.

Ⓒ Vent hole

Ⓓ High water (HW)

Ⓔ Electrode rod d = 5 mm

Ⓕ Protection tube ≥ DN 100

Ⓖ Electrode distance

Ⓗ Low water (LW)

Ⓘ Reducer DIN 2616, part 2  
K-88.9 x 3.2 - 42.4 x 2.6 W

Supply in accordance with our general terms of business.

## Dimensions

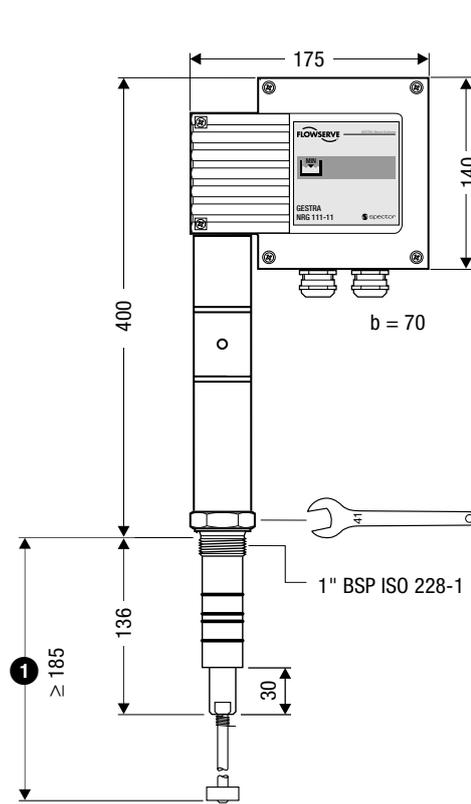


Fig. 1 NRG 111-11

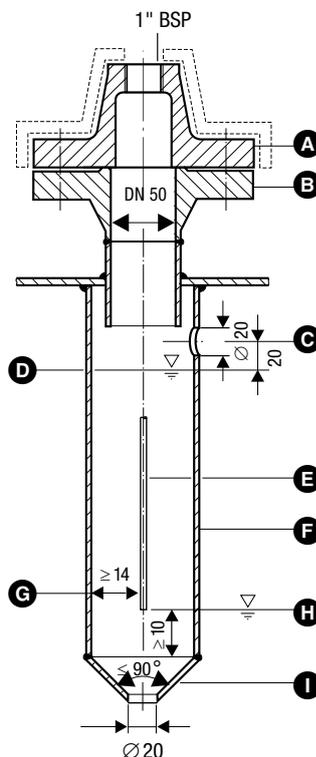


Fig. 3 Protection tube for installation of electrode inside the boiler

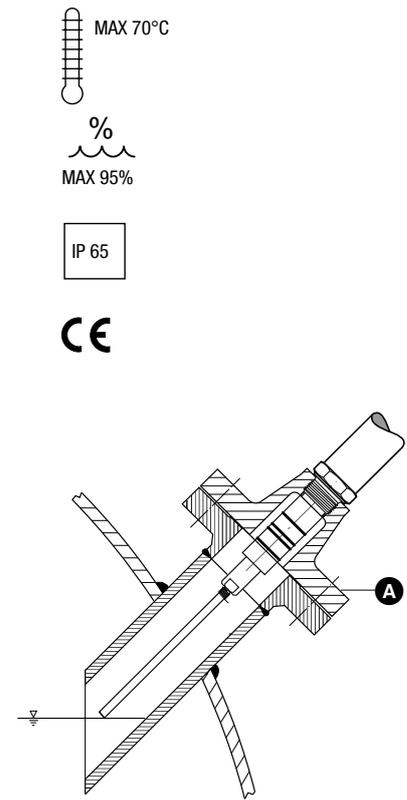


Fig. 2 Laterally inclined installation

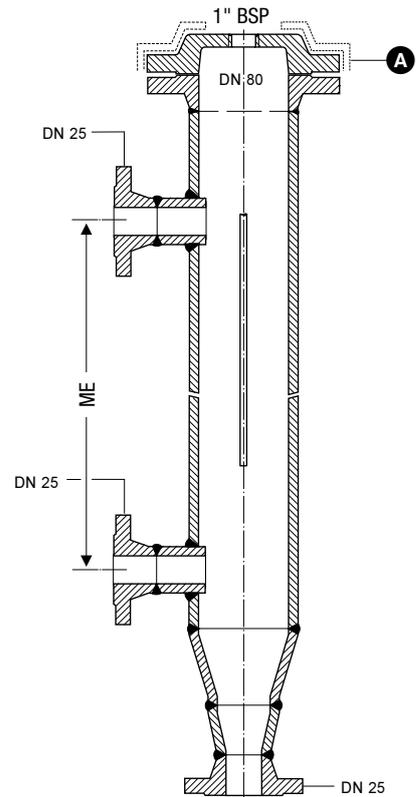


Fig. 4 External measuring pot

MAX 70°C  
%  
MAX 95%  
IP 65  
CE

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