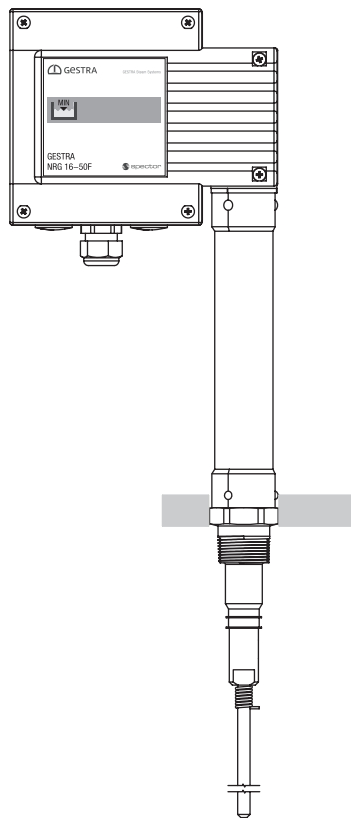


NRG 1...-50 with four-pole connector



NRG 1...-50F with terminal box

## Water Level Limiter

### Level Electrode

### NRG 16-50, NRG 17-50, NRG 19-50

#### Description

NRG 1...-50 level electrodes are used in conjunction with the NRS 1-50 level switch as water level limiters for steam boilers and hot water installations.

Water level limiters switch off the heating when the water drops below the set minimum low water level (LW).

#### Function

When the water falls below the minimum level, the level electrode is exposed and an alarm is triggered in the NRS 1-50 level switch. This "Low water (LW)" switchpoint is determined by the length of the electrode extension.

The level electrode uses the conductivity of the water to measure the water level, and is self-monitoring, i.e. an alarm is also triggered if the electrode insulator is leaking or contaminated and/or there is a fault in the electrical connection.

The level electrode is installed inside steam boilers, tanks or feed lines of hot water installations. A protective tube provided on site ensures reliable function.

One NRG 1...-50 level electrode can be installed in a single protective tube or level pot together with a GESTRA level electrode and a level switch or transmitter for water level control and low water alarm.

If the level electrode is installed in a level pot outside the boiler, make sure the connection pipes are sufficiently large.

The manufacturer recommends connection pipes of  $\geq 1.57$  in (40 mm) for steam and  $\geq 3.94$  in (100 mm) for water. If smaller connection pipes and fittings are used, these shall not be smaller than 1-inch NPS. The level pot must have a suitable flushing device at its lowest point. This device flushes the connection pipes to the boiler and enables the function of the water level limiter to be tested. No shut-off valve of any type shall be placed in the piping between the boiler and the low water cutoff.

#### Directives and standards

The equipment has been tested and approved for use in the scope governed by the following directives and standards:

##### Standards:

- UL 60730-1 and CAN/CSA E60730-1  
General Requirements for Automatic Electrical Controls
- UL 60730-2-15 and CAN/CSA E60730-2-15  
Requirements for Automatic Electrical Water Level Sensing Controls

#### Improper use

There is a danger of death due to explosion if the equipment is used in potentially explosive atmospheres.  
Do not use the equipment in potentially explosive atmospheres.

#### Technical data

##### Service pressure

NRG 16-50, 464 psi at 460 °F (32 bar at 238 °C)  
NRG 17-50, 870 psi at 527 °F (60 bar at 275 °C)  
NRG 19-50, 1450 psi at 592 °F (100 bar at 311 °C)

##### Mechanical connection

Thread 1" - 11.5 NPT

##### Materials

Cover tube 1.4301 X5 CrNi18-10  
Screw-in body 1.4404 / F316L  
Measuring electrode 1.4571 X6 CrNiMoTi 17-12 -2  
Electrode extension 1.4401 X5 CrNiMo 17-12-2  
Electrode insulation Gylon®  
NRG 1...-50: Four-pole connector, polyamide (PA)  
NRG 1...-50F: Terminal box 3.2161 G AISi8Cu3

##### Lengths supplied

19.68 in (500 mm), 39.37 in (1000 mm),  
59.05 in (1500 mm), 78.74 in (2000 mm),  
98.42 in (2500 mm), 118.11 in (3000 mm)

##### Electrical connection

NRG 1...-50: Four-pole connector, cable gland M16  
NRG 1...-50F: Aluminum terminal box, cable gland M20

##### Protection

IP 65 according to DIN EN 60529  
NRG 1...-50: NEMA type 1 according to NEMA 250  
NRG 1...-50F: NEMA type 4 according to NEMA 250

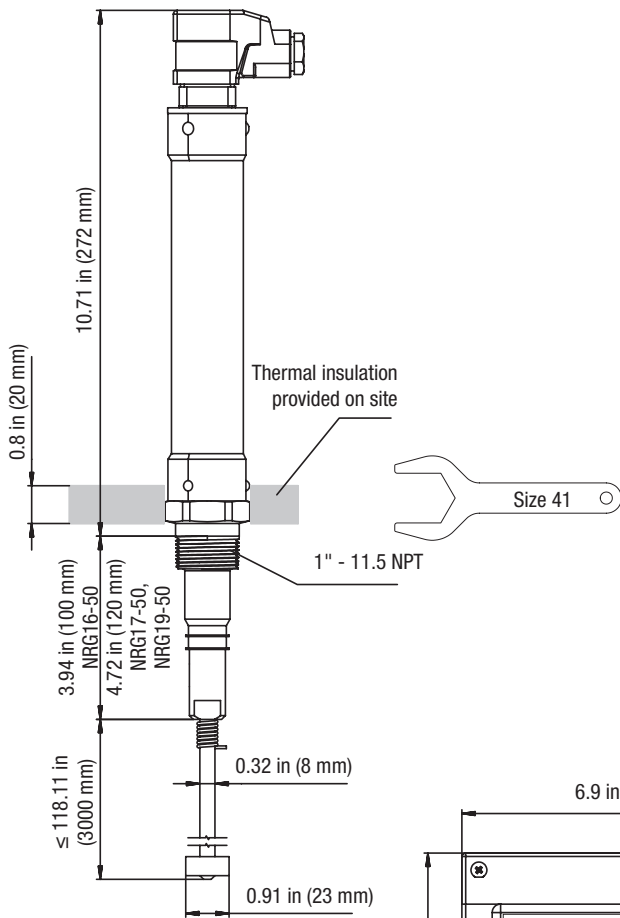
##### Admissible ambient temperature

Max. 158 °F (70 °C)

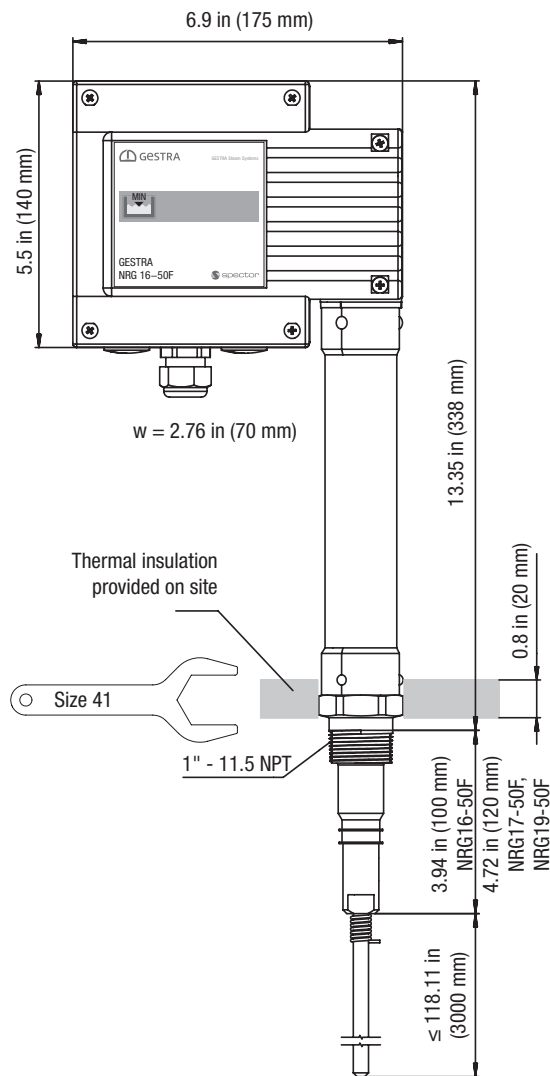
##### Weight

Approx. 2.65 lb (1.2 kg) (without extension)  
(NRG 16-50)  
Approx. 3.31 lb (1.5 kg) (without extension)  
(NRG 17-50, NRG 19-50)  
Approx. 4.63 lb (2.1 kg) (without extension)  
(NRG 16-50F)  
Approx. 5.3 lb (2.4 kg) (without extension)  
(NRG 17-50F, NRG 19-50F)

## Dimensions



**Fig. 1** NRG 16-50, NRG 17-50, NRG 19-50 with four-pole connector and enlarged measuring surface



**Fig. 3** NRG 16-50F, NRG 17-50F, NRG 19-50F with aluminum terminal box

## Important notes

### Installation

- One NRG 1...-50 level electrode can be installed in a single protective tube or level pot [inside diameter 3.94 in (100 mm)] together with a GESTRA level electrode and a level switch or transmitter for water level control and low water alarm. If the NRG 1...-50 is installed inside the vessel, it must be at least 1.57 in (40 mm) away from the upper pressure relief hole.
- The installation of two (water level limiter) NRG 1...-50 level electrodes in one standpipe is not permitted!
- The level electrode must not be at an incline of more than 45°, and the length of the electrode rod is limited to 39.37 in (1000 mm).
- For outdoor installations, please use the NRG 1...-50F level electrode. Type F level electrodes have an aluminum terminal box.

### Electrical connection

Please use the following to connect the level electrode:

- A shielded, multi-core TC-ER control cable with a minimum wire size of AWG 18, e.g., OELFLEX CONTROL TM CY 5G1, max. length 328 ft (100 m).

### How to order/specify

GESTRA Level Electrode NRG 1...-50  
 Class ....., Connection....., Inspection.....  
 Length supplied .....

# Low Water Alarm

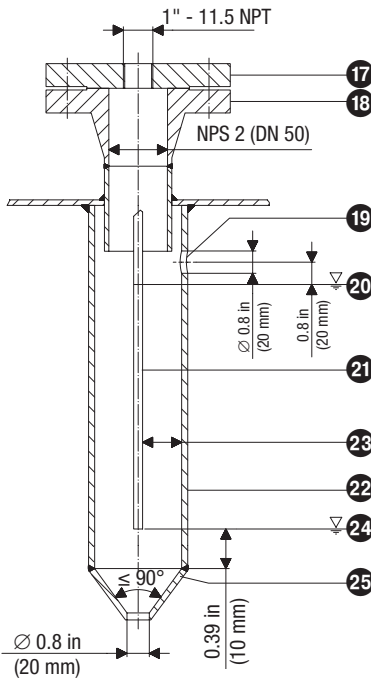
Level Electrode

NRG 16-50, NRG 17-50, NRG 19-50

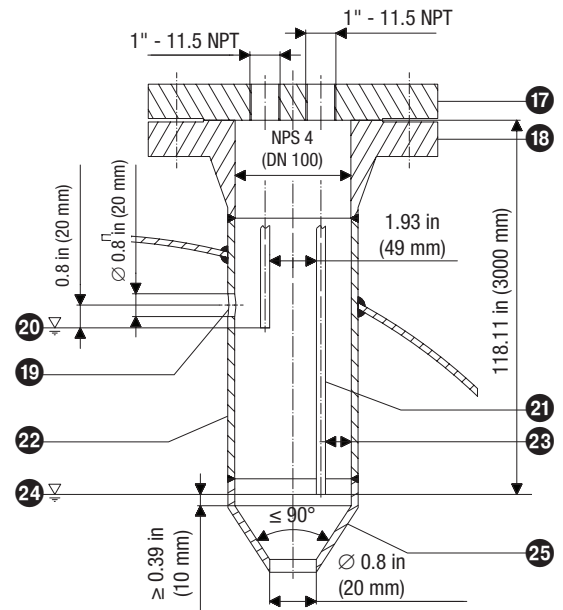
## Key

- 17 Flange (for 1 electrode)
- 18 Flange (for 2 electrodes)
- 19 Perform preliminary inspection of standpipe and flange during the boiler inspection.
- 20 Pressure relief hole
- 21 High water HW
- 22 Electrode rod  $d = 0.32$  in (8 mm)
- 23 Protective foam tube/level pot
- 24 Electrode spacing  $\geq 0.55$  in (14 mm) (air gaps and creepage paths)
- 25 Low water LW
- 26 Reducer
- CD Center distance

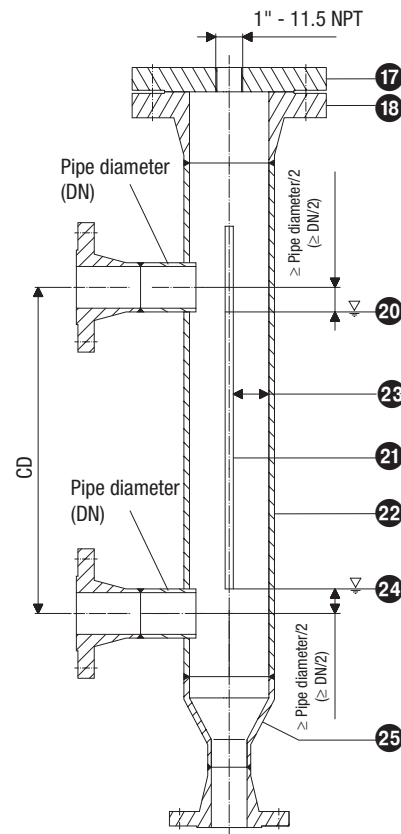
## Installation examples



**Fig. 3**  
Protective tube (provided on site) if electrode is used as an internal water level limiter



**Fig. 4**  
Protective tube (provided on site) if electrode is used as an internal water level limiter in combination with level control or low water alarm



**Fig. 5**  
Level pot  $\geq$  NPS 3 (DN 80) if electrode is used as an external water level limiter

Please note our general terms of business.

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