

GESTRA Steam Systems

Capacitance Level Probe Type NRG 211

Product Range B1

NRG 211

Purpose and Application

In combination with GESTRA level switch type NRS 2-4 for indication of high water level and level switch type NRS 2-5 for indication of low water level, at very high pressures and temperatures (up to PN 320, 550 °C).

Application in draining systems of conventional power stations and high pressure steam boilers.

Design

The probe works without any moving parts. The probe rod, which is insulated by a ceramic tube, is inserted through a hole in the probe flange such that pressure-tight sealing is ensured. The ceramic tube is closed at the lower end and covered by a protection tube to obtain constant measuring conditions and protect the ceramic tube.

The electronic control unit is housed in the terminal box. The wiring is effected via a 6 pole connector with crimp connection.

Operation

The principle of capacitance measurement is applied to determine level. The probe rod and the protection tube from a capacitor, with air or the particular liquid being the dielectric. In electrically conductive liquids the probe insulation serves as the dielectric. As the level rises or falls, the capacitance of this assembly changes, is converted in the integral measuring transducer into a signal, and is then fed to the associated electronic control unit.

Technical Data

Max. service pressure

Probe flange / welding standpipe (1.5415)
320 bar (4642 psig) at 120°C
200 bar (2901 psig) at 450°C

Probe flange/welding standpipe (1.7380)
320 bar (4642 psig) at 120°C
200 bar (2901 psig) at 500°C

Probe flange/welding standpipe (1.4922)
320 bar (4642 psig) at 120°C
230 bar (3336 psig) at 550°C

*) The indicated ratings are approximate values and for guidance when selecting materials. For an exact specification consider pressure/temperature ratings of the particular plant.

Connection

Probe flange PN 320 with welding standpipe for pipes DN ≤ 100 with tee piece or for pipes DN > 100 with lateral penetration.

Dimensions

See overleaf for drawings

Materials

Probe flange/welding standpipe refer to "Max. service pressure"

Joint ring 1.4541/silver, with serrated faces and silver coating on both ends.

Terminal box: aluminium, enamel finish

Technical Data – continued –

Max. ambient temperature at terminal box
70 °C

Wiring

via 6 pole connector with crimp connection or cable gland Pg 11 to terminals.

Max. admissible pH value
≤ 10

Probe voltage
12 V DC 30 mA

Protection
IP 54

Weight
Probe approx. 5.6 kg
Welding standpipe approx. 4.5 kg

Important Notes

Required cable for wiring: Screened cable, 3 x 0.5 mm², max. cable length 500 m.

When welding the standpipe into position it should be inclined downwards by at least 5° to ensure that the standpipe can completely empty if the level falls.

We recommend full-penetration butt welding (e.g. type 22 to DIN 2559) for the connection to pipes (tee pieces) DN ≤ 100.

With larger pipes the welding standpipe can be introduced through a lateral penetration and then be welded.

In case of plants which are subject to surveillance the corresponding regulations must be observed.

For connections provided on site see "Installation Instructions" and "Technical Data".

Order and Enquiry Specifications

Capacitance level probe type NRG 211

Probe flange with welding standpipe for pipes (DN)

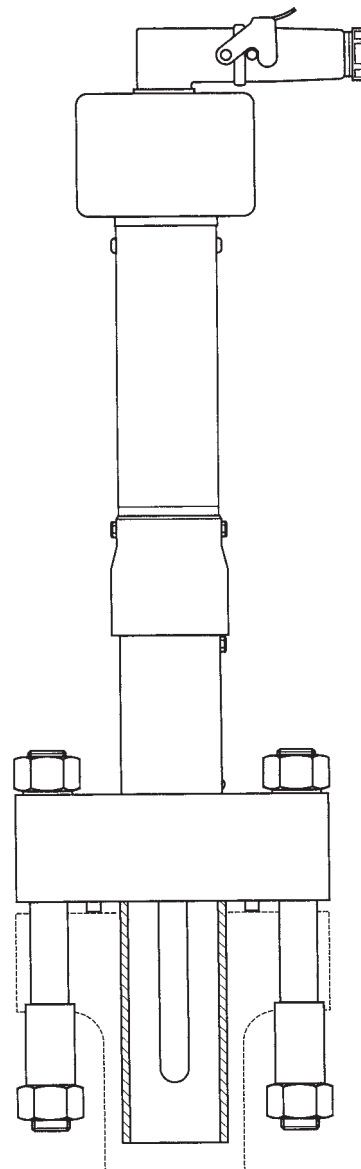
Material
Max. service pressure
Max. service temperature
Fluid

When ordering please state:

The following test certificates can be issued on request, at extra cost: In accordance with DIN EN 10204-2.1, -2.2 and -3.1B, 3.1A2.

All inspection requirements have to be stated with the order. After supply of the equipment certificates can no longer be established. Charges and extent of the above mentioned certificates as well as the different tests confirmed therein are listed in our price list "Test and Inspection Charges for Standard Equipment".

For other tests and inspections then those listed above, please consult us.



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Installation of welding standpipe

Weld the standpipe according to the **Fig. 1** or **Fig. 2** to the pipe. Take note of the marking "TOP". During the welding process and post weld heat treatment of the standpipe the temperature of the flange seating surface must not exceed 350 °C.

Note:

Do not cover the sheath and the terminal box with insulating material (danger of overheating).

Wiring

When connector is provided connect the probe according to wiring diagram. Use cable 3 x 0.5 mm² for wiring. Connect screen only to the corresponding terminal of the electronic control unit but not to the probe. Standard voltage: 24 V DC

Associated level switch

NRS 2-4 and NRS 2-5 with one relay and one optocoupler output each for "Malfunction" and "Alarm". To ensure redundancy two level switches are required.

Additional equipment

- Cycling timer type PRS 9 with max.-min. limit switch for the control of a drain valve.
- Power supply unit type URN 2 at 115/230 V, 50 Hz, voltage supply
- Casing for accessories

Dimensions

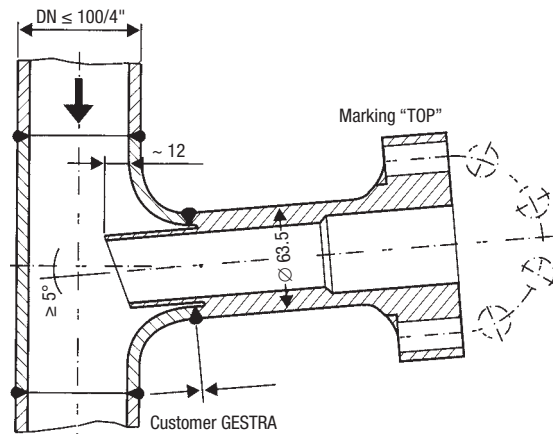
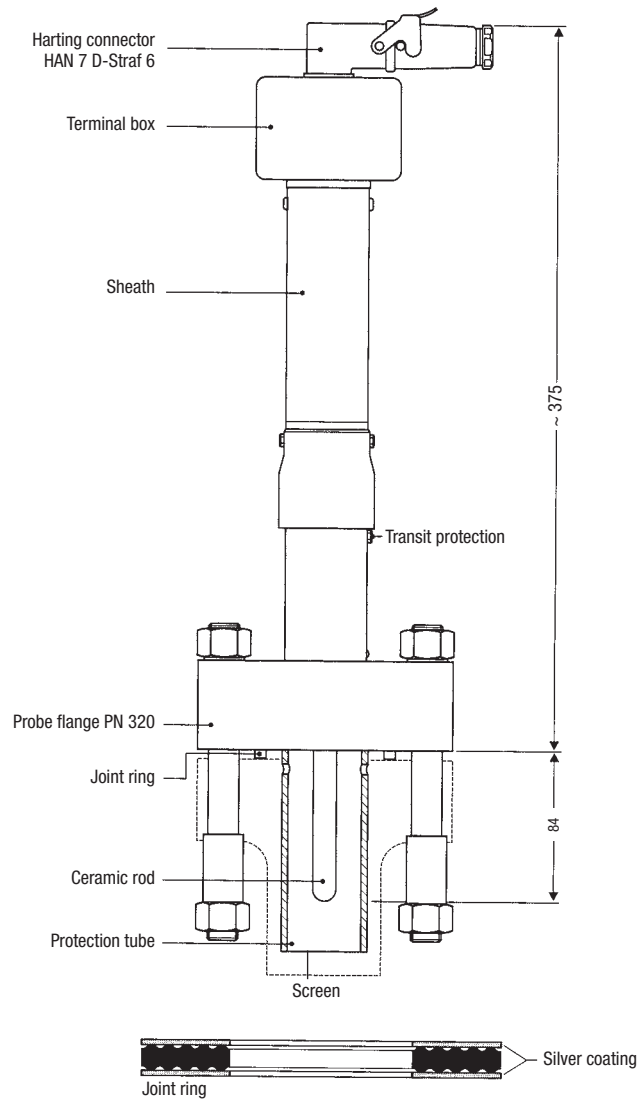


Fig. 1 Welding of standpipe to pipes (tee pieces) DN ≤ 100

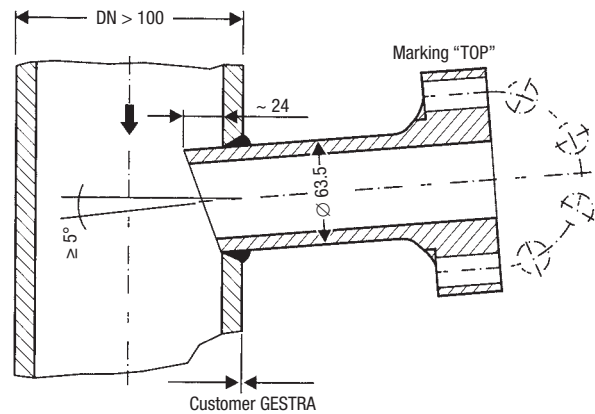


Fig. 2 Welding of standpipe to pipes (tee pieces) DN > 100

Supply in accordance with our general terms of business.

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