

Radiometric Level Measurement Source container QG 200

Operating Instructions

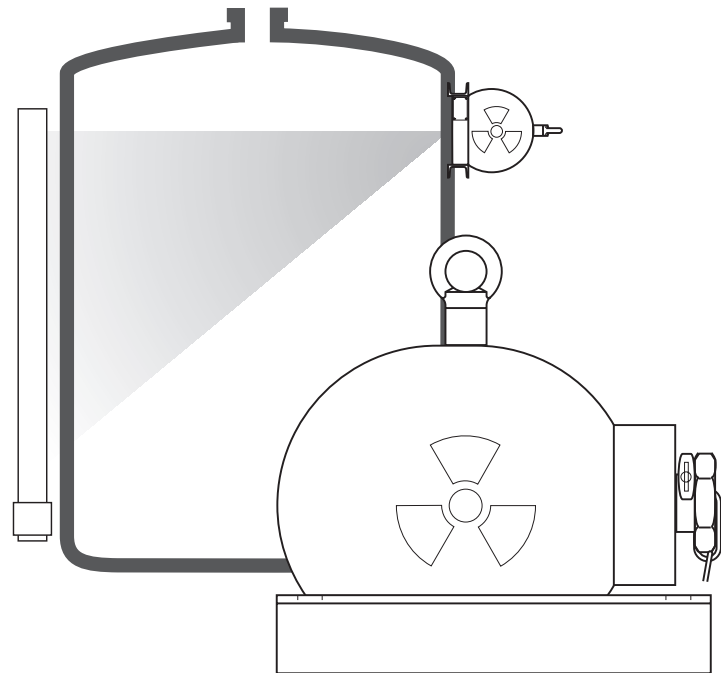


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Notes on Safety

These operating instructions describe the mounting, insertion and removal of the source capsule as well as the commissioning of the source container.

All activities such as mounting, dismantling and exchange of the source or detector must be done by specially trained staff or radiation protection officials only, under strict observance of the governing rules and regulations.

The radiation must be switched off:

- during installation of and maintenance work on the source container or its mounting
- during any maintenance work inside the vessel.

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Application

The radiation source for level measurement by gamma rays is a radioactive isotope. The radioactive material is sealed tightly in a double-walled, welded stainless steel capsule.

In Germany, the radiation protection regulations dated 12.07.89 govern the handling of these radiation sources. In other countries the national rules and regulations must be observed.

The radiation source emits gamma rays evenly in all directions. For level measurement the radiation is required in one direction only, i.e. through the vessel containing the material to be measured. Radiation in other directions has to be shielded off. The sources are placed into a source container which shields off all radiation except that travelling through the vessel.

The nameplate on the source container gives information on the isotope, the specific source activity and radiation exit angle.

Technical data

- Housing: steel, with yellow paint finish and black warning symbol
- Dimensions: see drawing
- Max. ambient temperature: +250°C
- Shielding material: lead
- Shielding effect: approx. 11 HVL for Co 60
approx. 15.8 HVL for Cs 137
- Radiation exit channel: 5°, primarily for level limit detection; 20° or 40°, primarily for continuous level measurement
- Attenuation of open radiation beam: ca. 0.3 HVL by means of steel plate.
- Weight: 160 kg

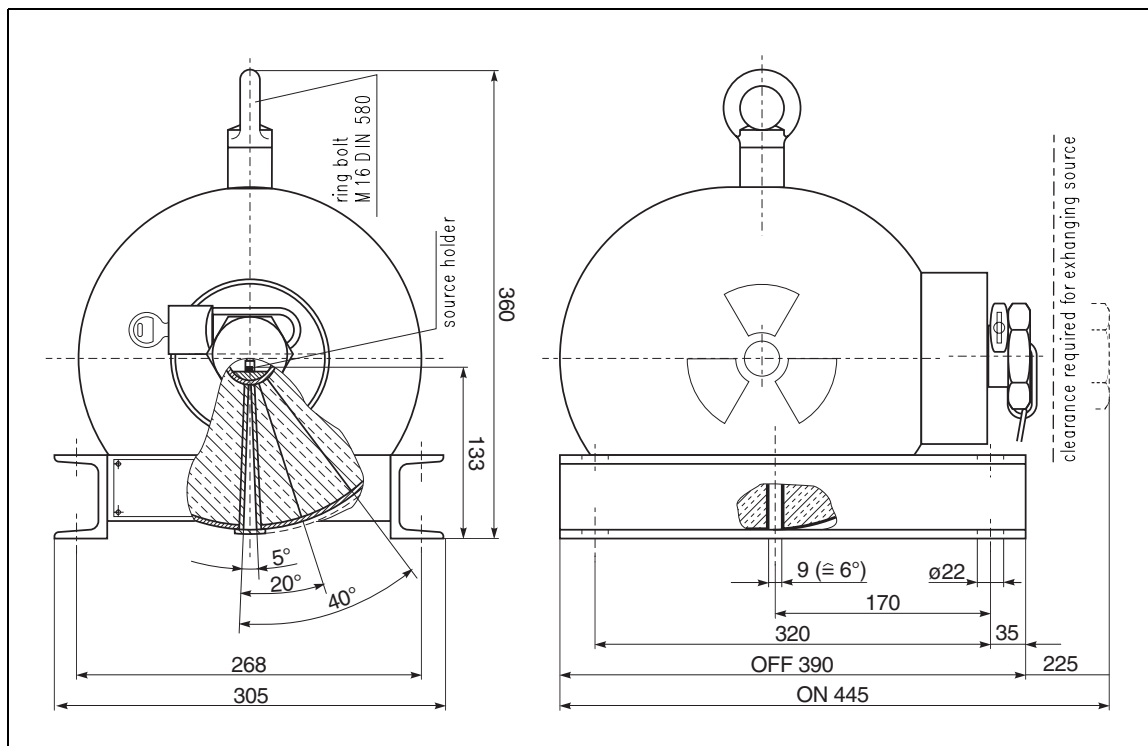
Construction

The lead shielding is enclosed in a welded steel housing. The housing is designed such that if the source container is heated above the melting point of lead, 327°C, neither the radioactive source nor the molten lead is lost.

The position of the radiation channel is marked on the source container flange. Note this when the container is being mounted. The exit angle 5°, 20° or 40° of the slit is determined on ordering.

The source container is provided with switch-off mechanism so that the vessel containing the product can be checked and cleaned without danger to personnel.

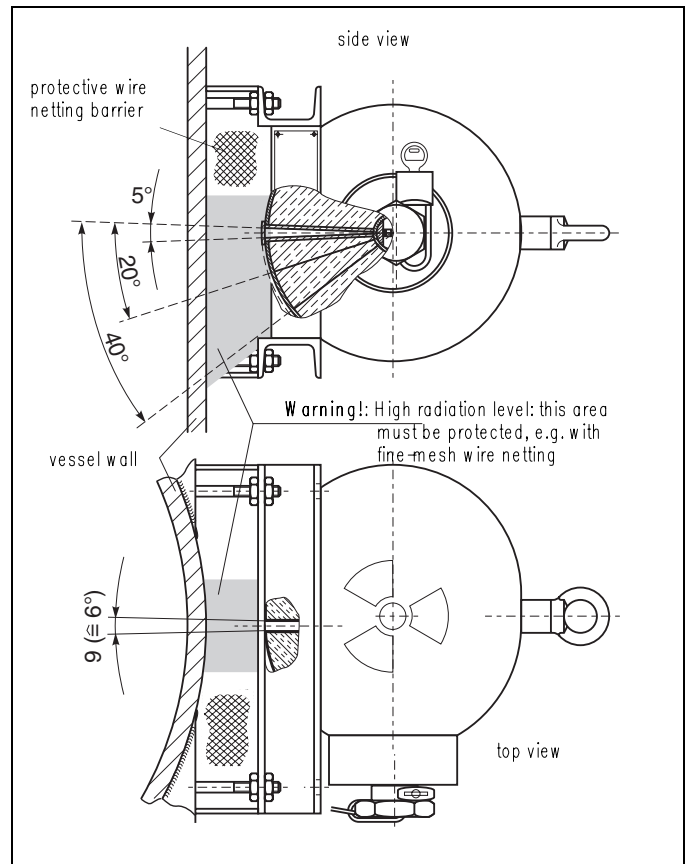
Dimensions in mm
of QG 200 source
container
1" = 25,4 mm



Installation

The source container can be welded or bolted to the vessel wall.

The area between container and wall must be protected, e.g. with fine-mesh wire netting, to prevent accidental exposure to the beam.



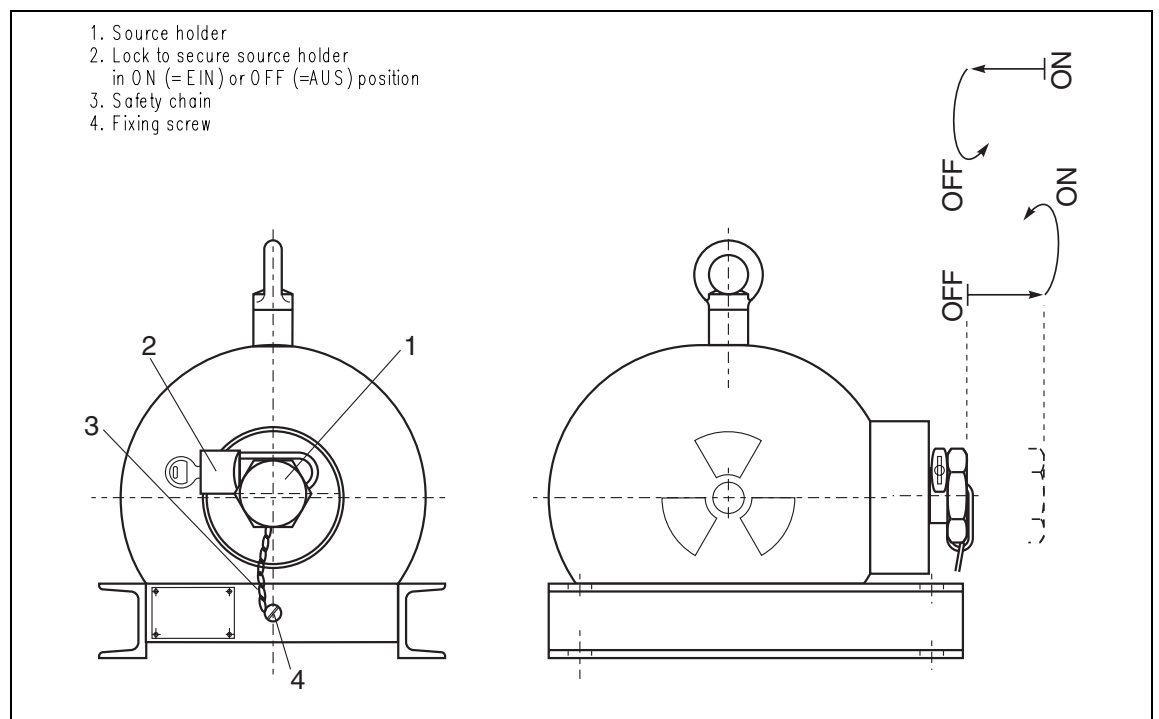
Switching on and off

Switching on the radiation

- Check that the source container is correctly mounted and that all safety precautions have been taken.
- Make sure that the fixing screw of the safety chain is screwed tight.
- Unlock the source holder.
- Pull the source holder outwards and turn through 180° to the EIN position
- Lock the source holder in the EIN = ON position

Switching off the radiation

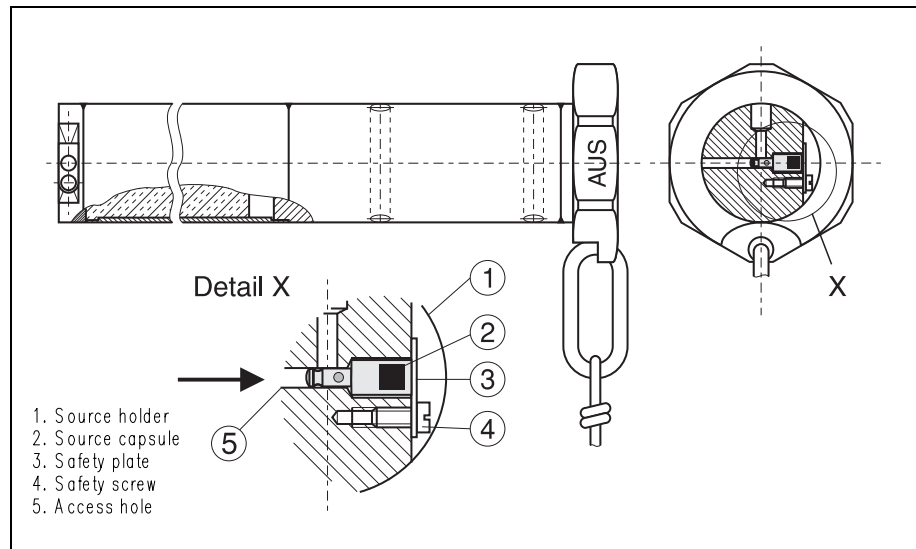
- Make sure that the fixing screw of the safety chain is screwed tight.
- Unlock the source holder.
- Push the source holder inwards and turn through 180° to the AUS position
- Lock the source holder in the AUS = OFF position



Operating elements for switching the gamma radiation on and off

Exchanging the source

Source holder with components



All activities such as mounting, dismounting and exchange of the source or detector must be done by specially trained staff or radiation protection officials only, under strict observance of the governing rules and regulations.

Advice on exchanging sources is obtainable from Endress+Hauser, Dept MVS, 79689 Maulburg, Germany. Please note that we also provide a service for exchanging sources.

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