

# Mounting instructions - Ship- building

## VEGAPULS 63

Cargo tank

(chemical, oil, multi-product, LPG, LNG  
tanks)



Document ID: 45562



# VEGA

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# 1 General information

## 1.1 General instructions

This mounting instructions manual provides the necessary guidelines for correct mounting of radar sensors VEGAPULS 63 on ships.

The VEGAPULS 63 is suitable for the following applications:

- Cargo tanker (chemical, oil, multi-product, LPG, LNG tanks)

The mounting instructions manual applies to the following sensors with ship approval:

- VEGAPULS 63

Take note of the type label of the sensor. Only the abovementioned versions meet the special requirements for use on ships. The type label is located on the instrument housing.

To ensure proper functioning of the instrument, take careful note of all the information in this mounting instructions manual.

Mount the VEGAPULS 63 exactly according to the instructions in this manual.

Read this manual before selecting the mounting position. Take note of existing installations and discuss the mounting with the shipyard technicians.

Make all necessary information on the mounting position and installation conditions available to the shipyard.

You can find further information on technical data or setup in the operating instructions of VEGAPULS 63. This manual comes with the instrument.



When using in hazardous areas take note of all relevant technical data and special regulations of the Ex-specific safety instructions of VEGAPULS 63 as well as possible devices that supply power. The approval documents are part of the scope of delivery for instruments with Ex approval.

## 1.2 Type plate

The nameplate contains the most important data for identification and use of the instrument:

### Type plate

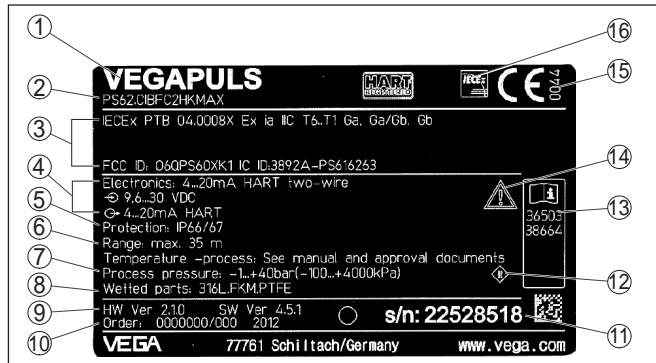


Fig. 1: Layout of the type label (example)

- 1 Instrument type
- 2 Product code
- 3 Approvals
- 4 Power supply and signal output, electronics
- 5 Protection rating
- 6 Measuring range
- 7 Process and ambient temperature, process pressure
- 8 Material, wetted parts
- 9 Hardware and software version
- 10 Order number
- 11 Serial number of the instrument
- 12 Symbol of the device protection class
- 13 ID numbers, instrument documentation
- 14 Reminder to observe the instrument documentation
- 15 Notified authority for CE marking
- 16 Approval directive

## 2 Mounting, in general

### 2.1 Suitable housing versions

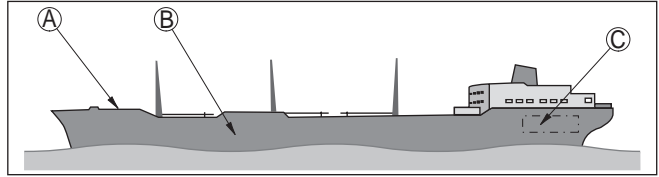


Fig. 2: Areas on a ship - side view

- A On deck
- B Below deck
- C Engine room

	Plastic housing	Aluminium housing	Stainless steel housing (precision casting)
On deck	No	No	Yes
Below deck	Yes	No	Yes
Engine room	Yes	No	Yes

Tab. 1: Suitable housings for different areas of the ship

### 2.2 Installation on deck with protective cover

	Housing	Protective cover closed	Protective cover vented
Plastic			
Aluminium die-casting			
Stainless steel housing 316L (IP 68, 0.2 bar)			

Cable gland for cable diameters of 7 ... 12 mm. An additional seal for cable diameters of 10 ... 14 mm is attached.

### Adapter for protective hose

## 2.3 Installation on deck without protective cover

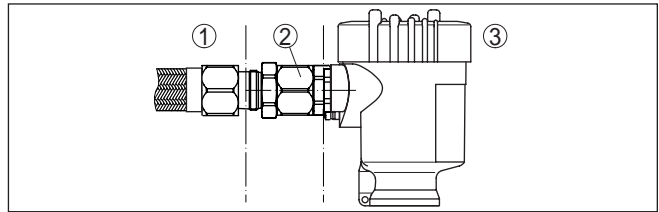


Fig. 12: Adapter for protective hose

- 1 Installation by shipyard
- 2 Adapter for protective hose - M20 x 1.5 to M24 x 1.5
- 3 Housing stainless steel, precision casting 316L, 0.2 bar with adapter for protective hose

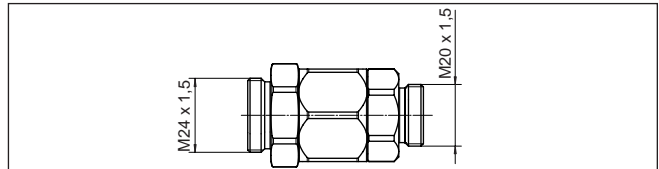


Fig. 13: Adapter for protective hose - M20 x 1.5 to M24 x 1.5

Cable gland for cable diameters of 13 mm, additional seal for cable diameters of 9 ... 11 mm is attached.

### Stainless steel housing IP 68, 1 bar

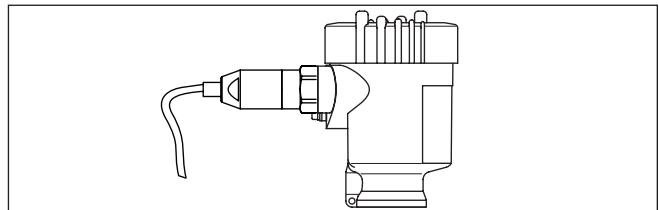


Fig. 14: Housing stainless steel, precision casting 316L IP 68, 1 bar with VEGA cable outlet

Stainless steel housing IP 68, 1 bar with cable outlet (PUR) and capillaries for pressure transmitters.

### 3 Mounting on a chemical tanker (free radiating)

#### 3.1 General information

The antenna of the free-radiating radar level gauge VEGAPULS 63 emits short radar pulses that are reflected by the product surface and picked up again by the antenna. Since not only the product surface, but also any other surface within the radar beam reflects the microwaves, the mounting socket in particular, as well as any built-in fixtures on the sides and bottom of the tank, must be taken into account during installation on board.

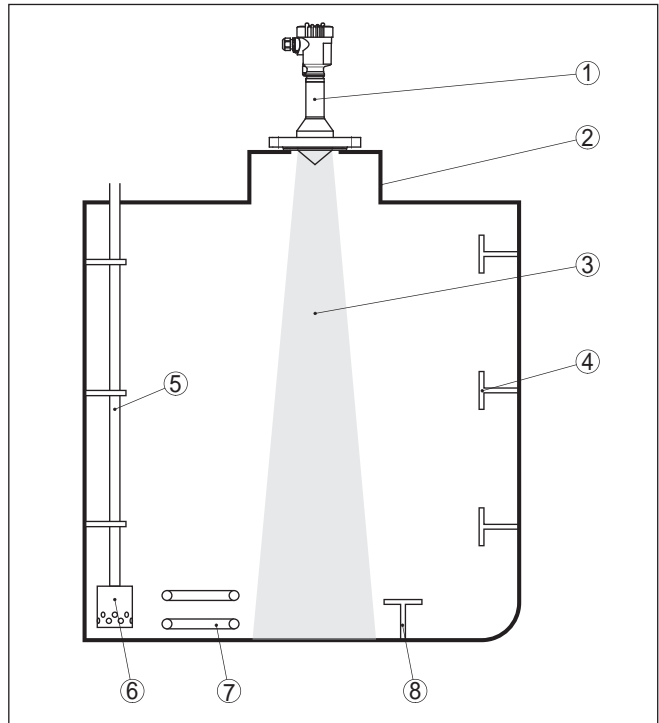


Fig. 15: Typical installation on a cargo tank

- 1 Radar sensor
- 2 VEGAPULS 63 socket
- 3 Radar beam
- 4 Bulkheads
- 5 Conveyor pipeline
- 6 Conveyor pump
- 7 Heating cables
- 8 Bulkheads

### 3.2 Socket

Internal weld joints cause strong reflections. This impairs the measurement, hence the socket must only be welded from the outside.

#### Mounting on DN80 or 3" socket

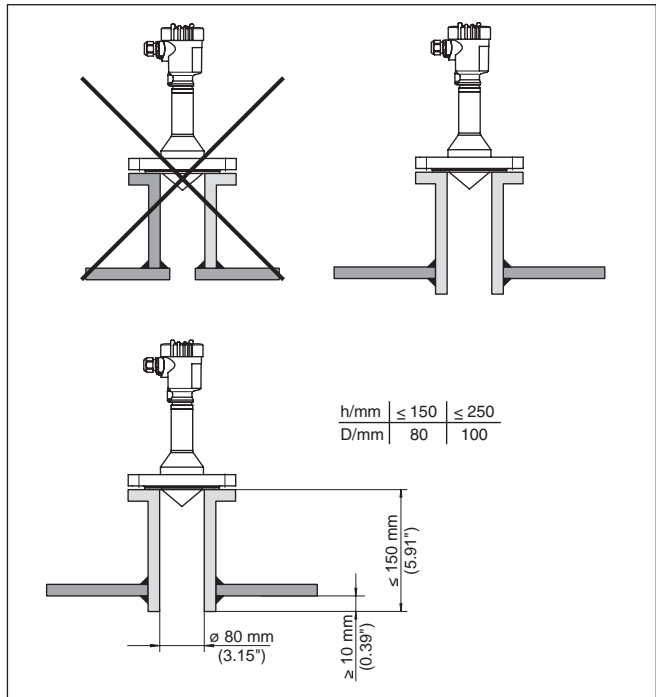


Fig. 16: Mounting on DN80 or 3" socket



Mounting on a dome

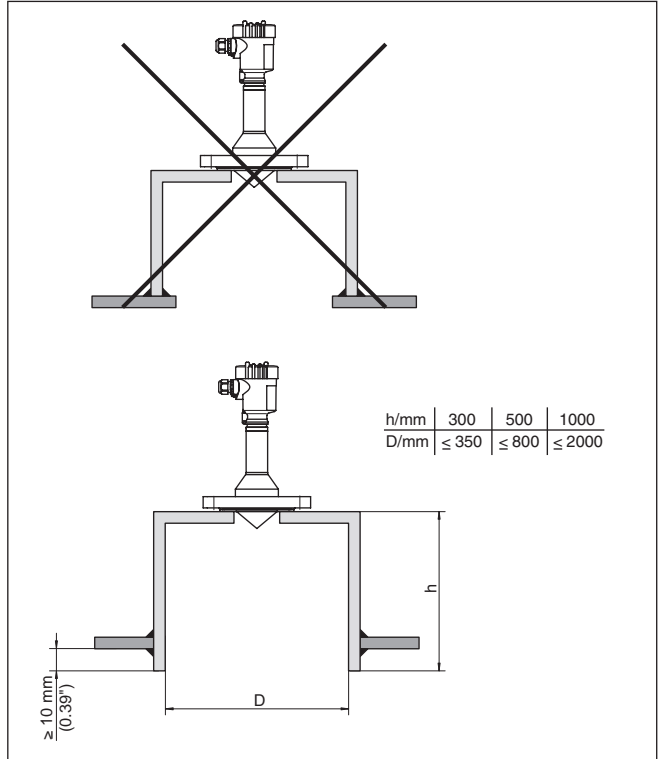


Fig. 17: Mounting on a dome

**3.3 Lateral distance**

To avoid measurement interference, maintain a minimum distance to internal vessel fixtures or the vessel wall.

**Min. distances to the vessel wall**

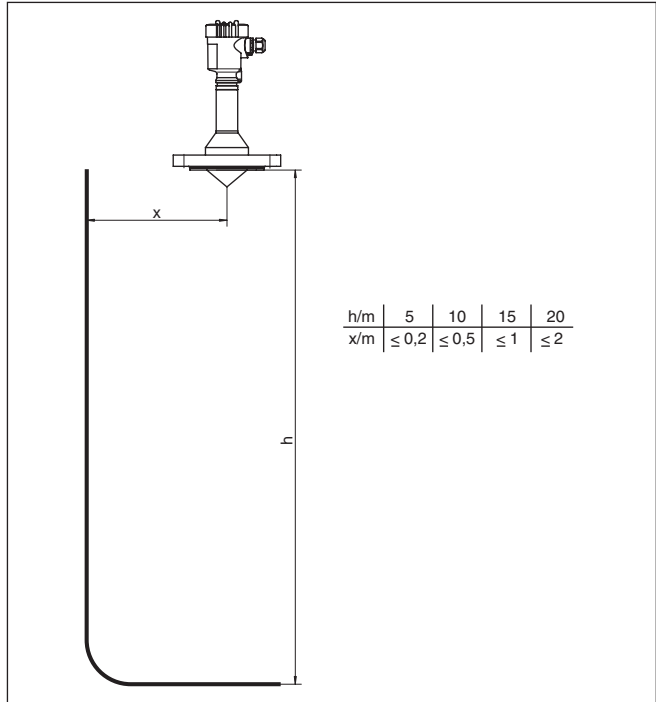


Fig. 18: Required min. distance to vessel wall depending on height

**Min. distance to lateral built-in fixtures**

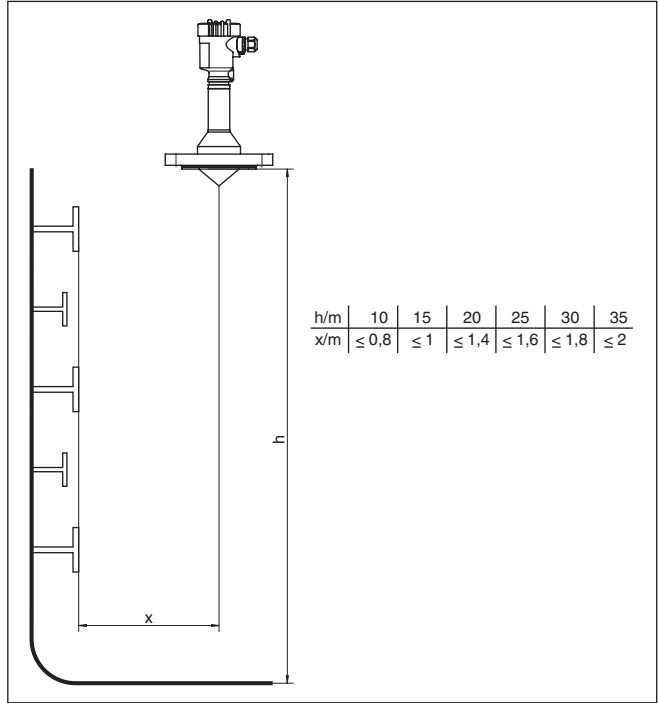


Fig. 19: Avoid interference from lateral installations

**3.4 Bottom installations**

To avoid measurement interference, make sure there are no fixtures or heating spirals within the range of the radar beam at the vessel bottom. If this is not possible, the sensor must be oriented as shown in the following examples.

**Required free space at tank bottom**

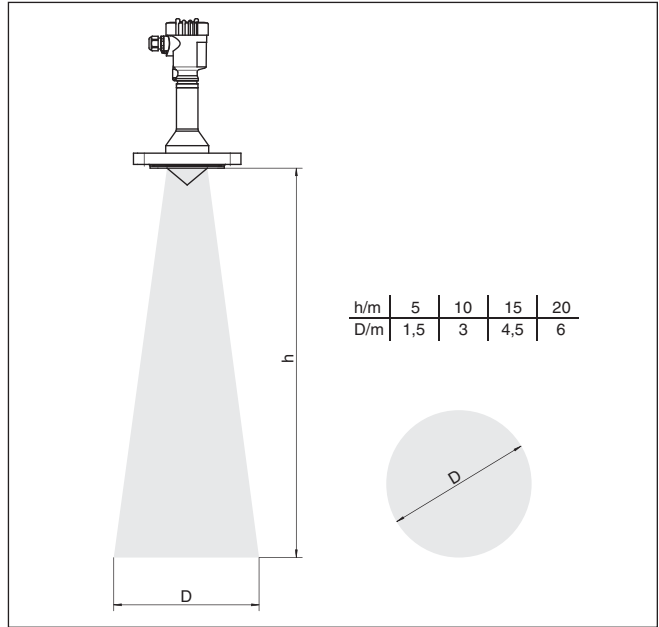


Fig. 20: Radar beam: Required free space at tank bottom depending on vessel height

**Examples of fixtures at bottom of tank**

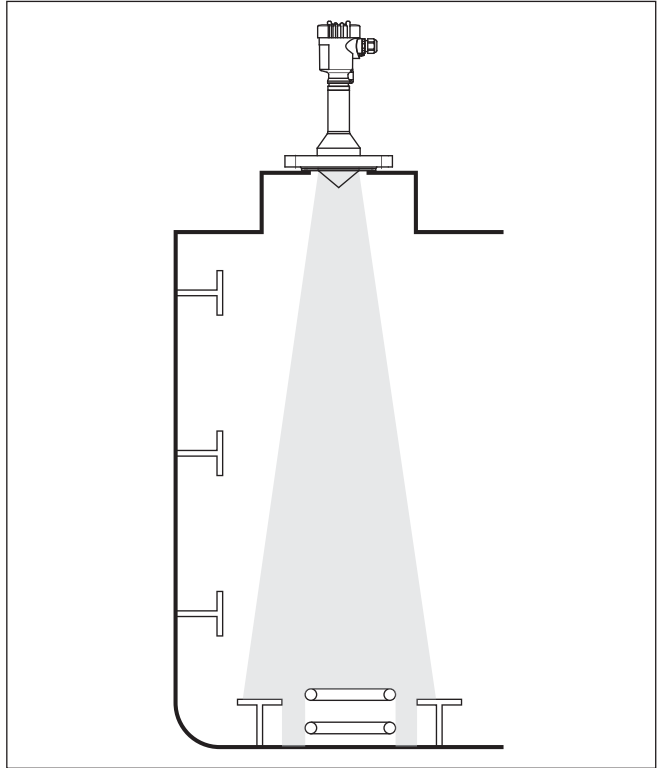


Fig. 21: Interfering tank bottom installations such as heating coils or bulkheads

**Heating coils**

Direct the radar beam to a spot without heating coils. Modify the heating spirals in such a way that the required free space is created. If this is not possible, direct the sensor in such a way that the centre of the radar beam does not strike a heating coil.

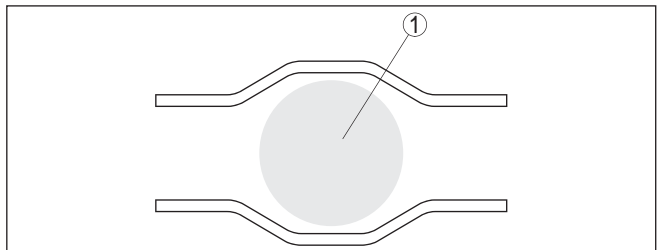


Fig. 22: Modification of the heating coils

1 Radar beam

## Orientation

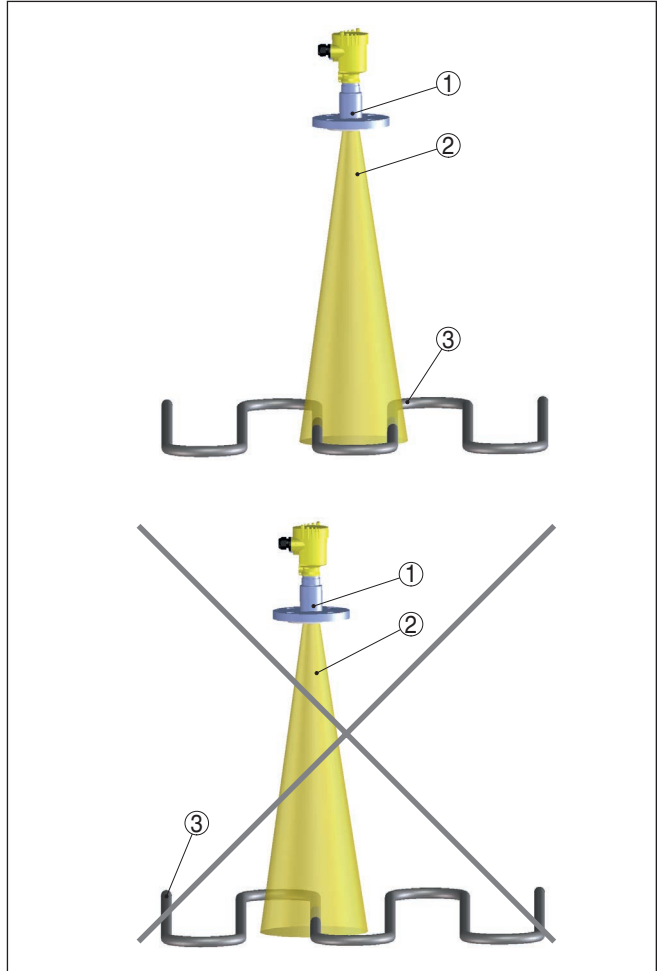


Fig. 23: Orientation: There must be no heating coils in the centre of the radar beam

- 1 VEGAPULS 63
- 2 Radar beam
- 3 Heating coils

**Note:**

Additional false echoes can result if the mounts of the heating coils are within the range of the radar beam. In such case, direct the radar beam to a spot without mounts.

**Polarisation**

The emitted radar impulses are electromagnetic waves. The polarisation plane is the direction of the electrical component of the waves. By rotating the instrument by 90°, the polarisation can be used to reduce

the effect of false echoes. The direction of the polarisation plane is marked on the process fitting of the instrument.

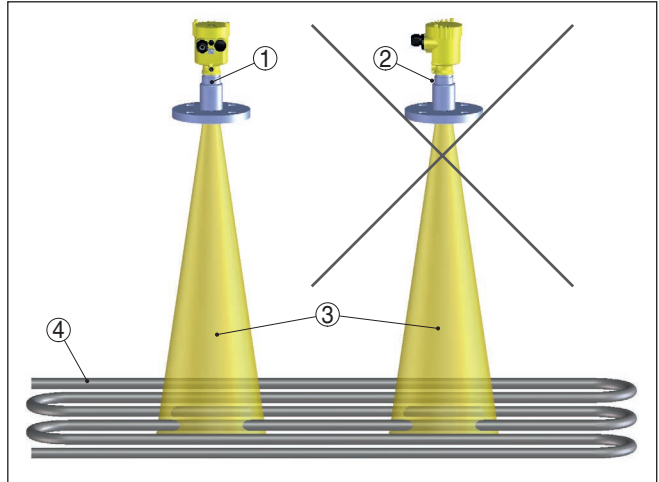


Fig. 24: Polarisation - Orientation in case of heating coils

- 1 Polarisation marking in front
- 2 Polarisation marking on the side
- 3 Radar beam
- 4 Heating coils

**Bulkheads**

Direct the radar beam to a spot without bulkheads. If this is not possible, the bulkheads should be covered with angle plates. These ensure that the radar signals are deflected to the side instead of reflected straight back to the sensor.

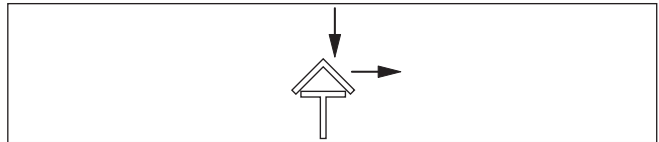


Fig. 25: Bulkheads in the radar beam: Deflection of the radar beam by angle plates

## 4 Mounting on LNG/LPG tanker (standpipe)

### Standpipe

If a standpipe is extended, the inner surfaces must be aligned and the gaps between segments very small.

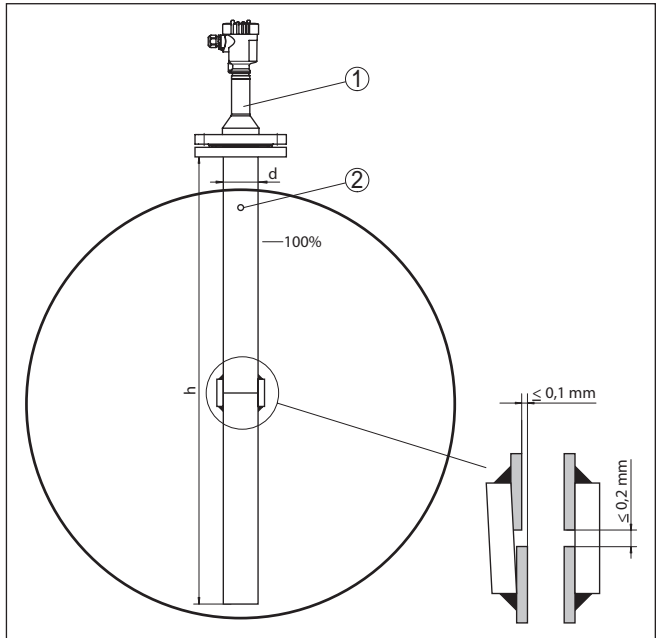
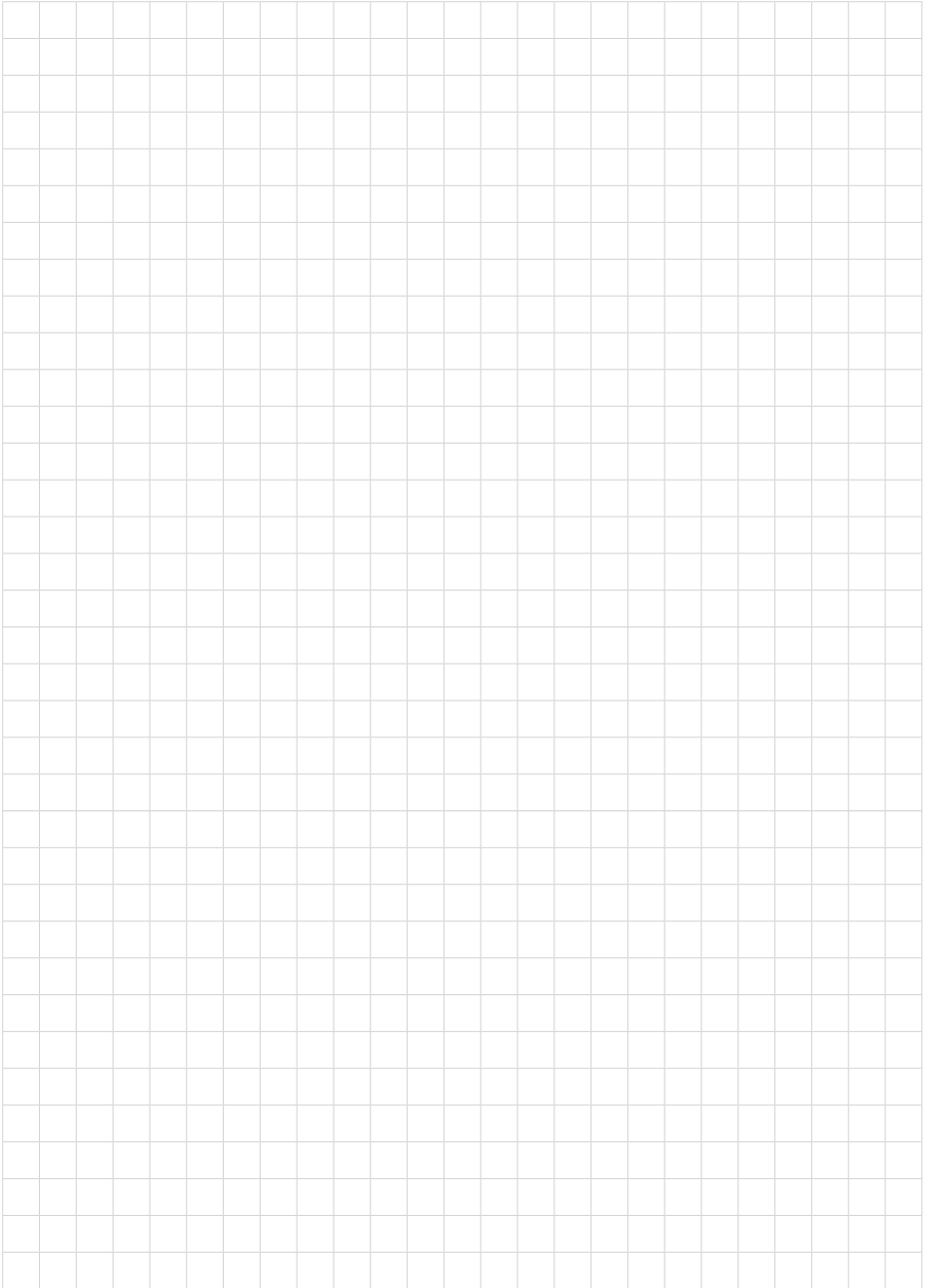


Fig. 26: Standpipe

1 VEGAPULS 63

2 Standpipe



A large rectangular area filled with a fine grid of lines, typical of graph paper, intended for taking notes. The grid consists of approximately 25 columns and 45 rows of small squares.





Printing date:

# VEGA

All statements concerning scope of delivery, application, practical use and operating conditions of the sensors and processing systems correspond to the information available at the time of printing.

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