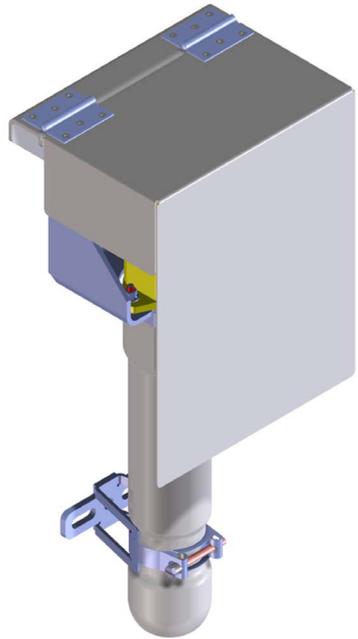


Supplementary instructions

Sun shade - PROTRAC

Passive sun shade for radiometric sensors



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1 Product description

1.1 Configuration

Application area

When radiometric sensors are permanently or temporarily subjected to direct sunlight, the sensor can heat up to impermissible temperatures. In direct sunlight the temperature on the sensor can increase by 20 K. Faulty measurements and, in the worst case, permanent damage to the sensor can result.

The best way to avoid the additional temperature increase through sunlight is to cover the sensor with a suitable roof structure. In cases where this is not possible or too expensive, the passive sun shade is a good solution. It reduces the increased sensor temperature due to sunlight by 10 K.

The passive sun shade is suitable for radiometric sensors type FIBERTRAC, SOLITRAC, MINITRAC and POINTRAC.

The housing sun shade protects the sensor housing with the electronics against direct solar radiation and prevents the electronics from overheating.

The passive sun shade for the sensor types FIBERTRAC and SOLITRAC consists of two modules, the housing sun shade and sun protection hose.

The additional housing protection hose is a reflective, aluminium coated hose to protect the scintillator against sun radiation or radiation heat.

Housing sun shade

The housing sun shade can be mounted above the instrument housing and protects the housing and the electronics against strong solar radiation.

Sun protection hose

The sun protection hose protects in addition the measurement active part of the sensor against sun radiation (in case of long probes of types FIBERTRAC, SOLITRAC).

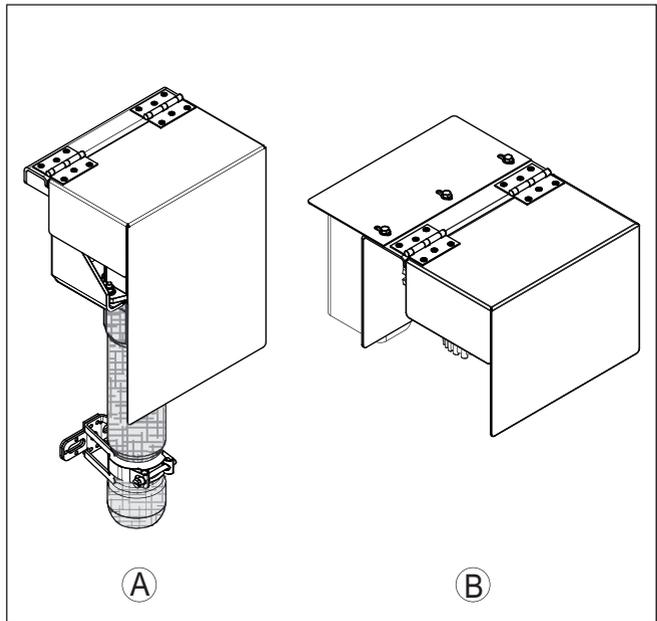


Fig. 1: Passive sun shade with mounted SOLITRAC sensor

- A Vertical sensor mounting: Housing sun shade and sun protection hose
 B Horizontal sensor mounting: housing sun shade

Scope of delivery

The following parts belong to the scope of delivery of the passive sun shade:

- Housing sun shade
- Sun protection hose, length: 152 ... 7000 mm (6 ... 276 in), optional for long measuring probes FIBERTRAC and SOLITRAC
- Pipe clamp \varnothing 96 ... 103 mm (3.8 ... 4.1 in), optional for long measuring probes FIBERTRAC and SOLITRAC

2 Mounting

2.1 Mounting preparations

Operating instructions

Take note of the operating instructions manuals of the corresponding radiometric sensors and the source holder.



Warning:

During all mounting and dismantling work, the source container must be in switch position "OFF" and secured by a lock.

Carry out all work within the shortest possible time and at the largest possible distance. Provide suitable shielding.

Avoid risk to other persons by taking suitable measures (e.g. safety fence, etc.).

Mounting may only be carried out by authorized, qualified personnel who are monitored for radiation exposure according to local laws or the handling permit. Take note of the specifications in the handling permit. Also take the local conditions into account.

General mounting instructions



Information:

The housing sun shade is already pre-assembled.

Take note of the following general mounting instructions:

- The sensor is very heavy, use a suitable lifting device for mounting, e.g. a hoisting sling
- When mounting, keep the necessary opening range in mind in order to be able to open the housing sun shade. You can find further information in chapter " *Dimensions*".

2.2 Horizontal sensor mounting

MINITRAC, POINTRAC

Horizontal mounting

The short sensors of type MINITRAC and POINTRAC do not need a sun protection hose. The housing sun shade for the horizontal mounting protects the sensor sufficiently against the sun.

The figures in brackets refer to the following illustrations.

Housing sun shade

1. Make sure that the source holder is switched off.
2. Dismount the sensor (4).
You can also find information on dismantling and mounting in the operating instructions manual of the sensor.
3. Mount the housing sun shade (1) on the existing clamp (3) according to the following illustration.
4. Place the housing sun shade (1) into the correct position by using the two screws (2).

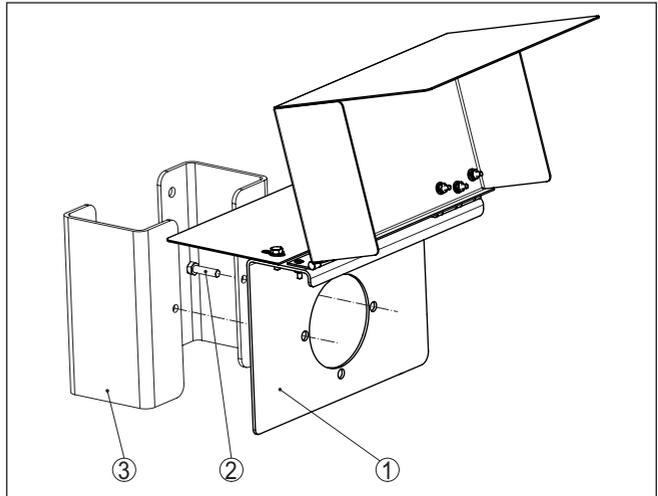


Fig. 2: Mounting of the housing sun shade

- 1 Housing sun shade
- 2 Fastening screws (provided by the customer)
- 3 Clamp (U-form)

5. Mount the sensor (4) according to the following illustration:

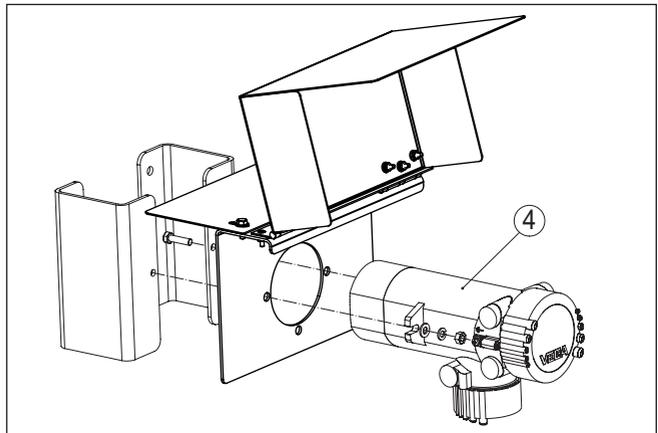


Fig. 3: Mounting the sensor (POINTRAC, MINITRAC)

- 4 Sensor (POINTRAC, MINITRAC)

6. Check if the housing sun shade can be closed correctly.

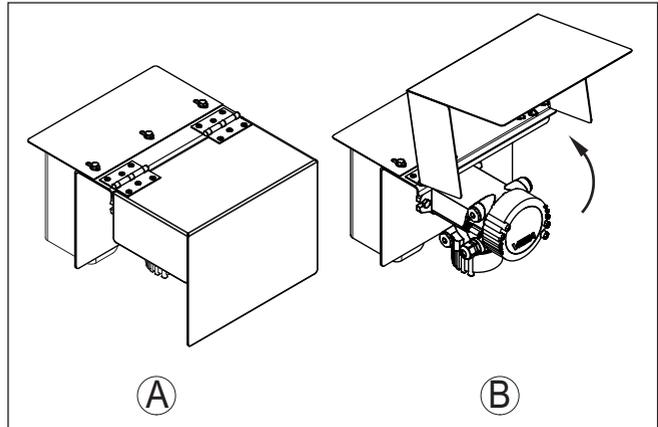


Fig. 4: Housing sun shade, closed/open

- A Housing sun shade, closed
- B Housing sun shade, open

2.3 Vertical sensor mounting

FIBERTRAC, SOLITRAC, POINTRAC, MINITRAC

Vertical mounting

The short sensors of type MINITRAC and POINTRAC do not need a sun protection hose. The housing sun shade for vertical mounting protects the sensor sufficiently against the sun.

The figures in brackets refer to the following illustrations.

The following mounting procedure assumes that the sensor is already mounted and that the sun shade is be retrofitted.

First mount the housing sun shade and the sun protection hose.

Housing sun shade

The housing sun shade is mounted above the sensor housing.

1. Loosen the two upper screws (a) of the fastening bracket (1)
Make sure that the two lower screws (b) are tightened securely.
2. Mount the housing sun shade (2) on the fastening bracket (1) with the two screws.

For presentation reasons, the sensor is not shown.

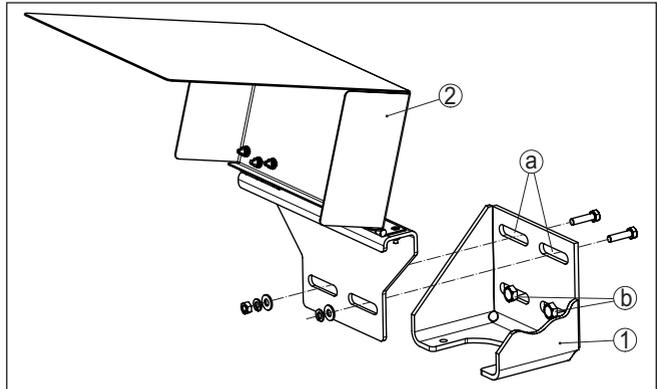


Fig. 5: Mounting of the housing sun shade

- 1 Fastening bracket
- 2 Housing sun shade
- a Upper fixing screws (loosen)
- b Lower fixing screws (do not loosen)

3. Tighten the two fixing screws.
4. Check if the housing sun shade can be closed correctly.

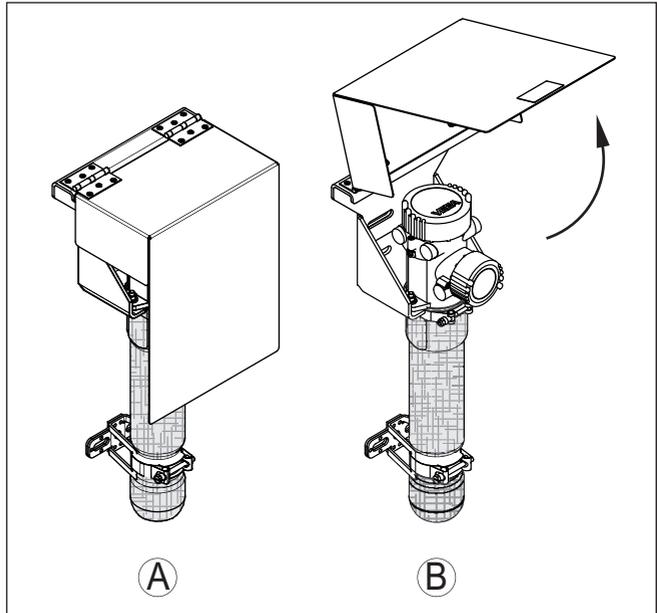


Fig. 6: Housing sun shade, closed/open

- A Housing sun shade, closed
- B Housing sun shade, open

Sun protection hose

The long sensor types FIBERTRAC and SOLITRAC require a sun protection hose in addition to the housing sun shade.

The easiest way is to mount the sun protection hose (5) when the sensor is already installed.

The following mounting procedure requires that the sensor be already mounted.



If you want to use the sun shade in an SIL-qualified application, you have to assess the SIL failure rates of the complete system.

**Note:**

The attached sun protection hose (5) is pre-confected in its length. One hose end is closed.

1. Open the housing sun shade (2).
2. Loosen all mounting clamps (6) of the sensor so that the long measurement part protrudes freely.
3. Pull the sun protection hose (5) over the measurement part of the sensor (3).

Pull the upper edge of the sun protection hose (5) up to the lateral fastening lugs (7) on the sensor housing.

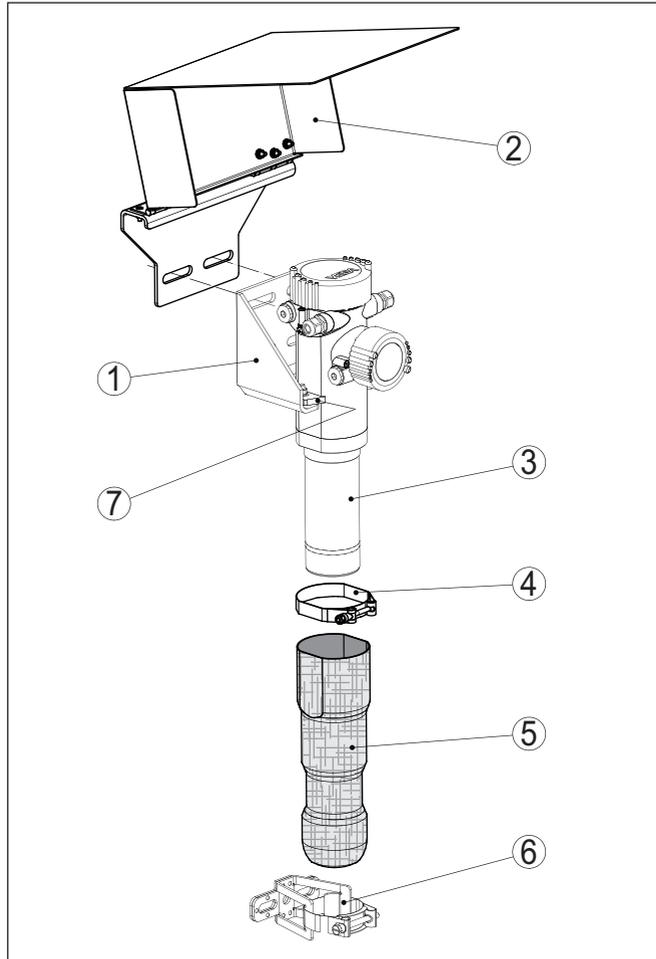


Fig. 7: Mounting the sun protection hose

- 1 Fastening bracket
- 2 Housing sun shade
- 3 Sensor
- 4 Hose clamp
- 5 Sun protection hose
- 6 Mounting clamp
- 7 Fastening lugs

4. Shift the attached hose clamp (4) over the sun protection hose (5) up to the lateral fastening lugs (7) on the sensor housing. Fold the excessive cloth of the sun protection hose and make sure that there are not pleats underneath the hose clamp (3). Thus you prevent moisture penetration into the sun protection hose (5)

- Tighten the hose clamps (4) with a torque of 8.5 Nm (6.3 lbf ft).

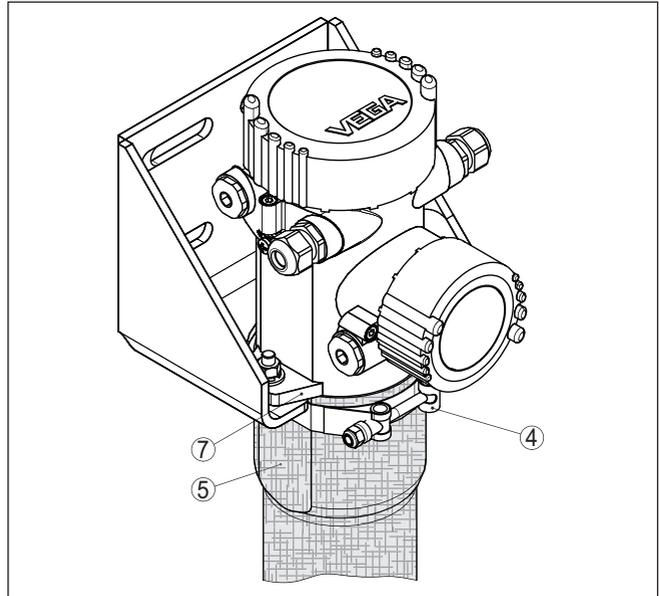


Fig. 8: Mounting the sun protection hose

- 4 Hose clamp
- 5 Sun protection hose
- 7 Fastening lugs

- The long measurement part of the sensor (3) must be inserted together with the sun protection hose (5) into the mounting clamps (6).

Fold the excess cloth of the sun protection hose together and place it in the recess of the mounting clamp (6) according to the following illustrations.

Make sure that there are no pleats underneath the mounting clamp (6).

The FIBERTRAC and SOLITRAC sensors have different mounting clamps.

**Mounting clamp:
FIBERTRAC**

Remove the rubber insulation (x) of the mounting clamp (6)

The sun protection hose (5) must be inserted together with the flexible sensor into the mounting clamps (6).

Fold the excess cloth of the sun protection hose (5) together and place it in the recess of the mounting clamp (6).

Make sure that there are no pleats underneath the mounting clamp.

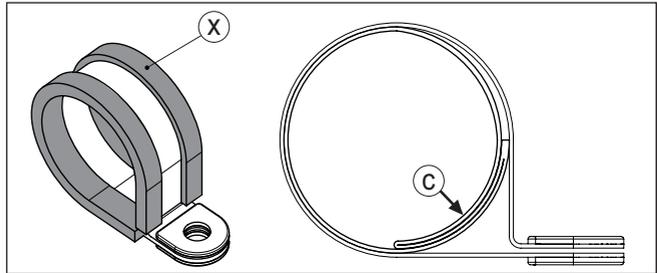


Fig. 9: Mounting clamp (6) for FIBERTRAC sensors. Remove rubber insulation (x) of the mounting clamp.

- x Rubber insulation of the mounting clamp
- c Recess for protruding sun protection hose

Mounting clamp: SOLITRAC

The sun protection hose (5) must be inserted together with the sensor tube into the mounting clamps (6).

Fold the excess cloth of the sun protection hose (5) together and place it in the recess of the mounting clamp (6).

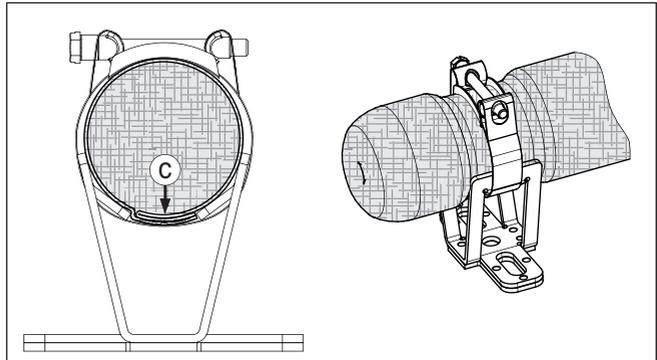


Fig. 10: Mounting clamp (6) for SOLITRAC sensors

- c Recess for protruding sun protection hose

Install a protective grid

Take note of the operating instructions manuals of the corresponding radiometric sensors and the source holder.

When handling radioactive substances, unnecessary radiation exposure must be avoided.

If there are gaps or intervening spaces after mounting the passive sun shade, provide protective fences or grids to keep hands away from the dangerous area. Such areas must be marked accordingly.

Install a safety barrier on both sides. A sheet metal cover or an appropriately shaped plastic sheet can also be used.

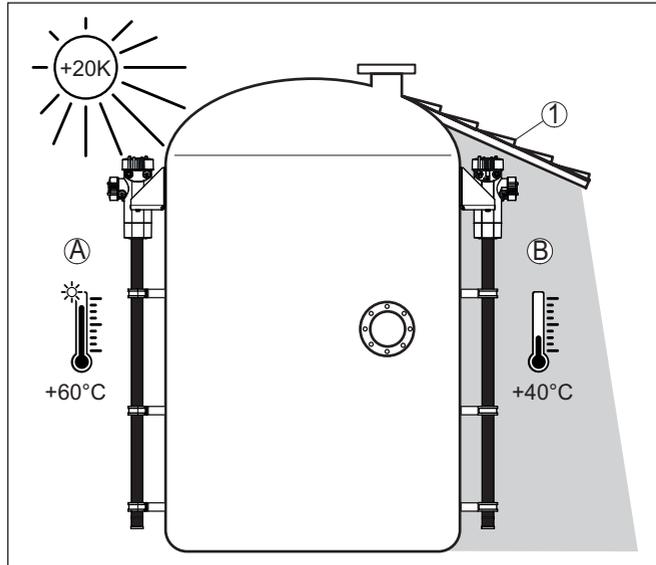


Fig. 11: Temperatures on the example of a FIBERTRAC

- A Temperature in the sun without sun shade
 B Temperature in the shadow
 1 Sun shade

Example: FIBERTRAC

- Permissible ambient temperature -20 ... +50 °C (-4 ... +122 °F)
- Outdoor temperature in the shadow +40 °C (+104 °F)
- Sensor temperature in the sun +40 °C + 20 K = +60 °C (+140 °F)

The expected temperature of +60 °C (+140 °F) is too high for the sensor.

- Sensor temperature in the sun with sun shade +40 °C + 20 K, 10 K = +50 °C (+122 °F)

With the sun shade, the max. temperature of +50 °C (+122 °F) on the sensor can be maintained.

Approvals

The sun shade can be also used in hazardous areas. The respective approvals of the sensor are also valid when using the sun shade.

3.2 Dimensions

Passive sun shade, horizontal sensor mounting (MINITRAC, POINTRAC)

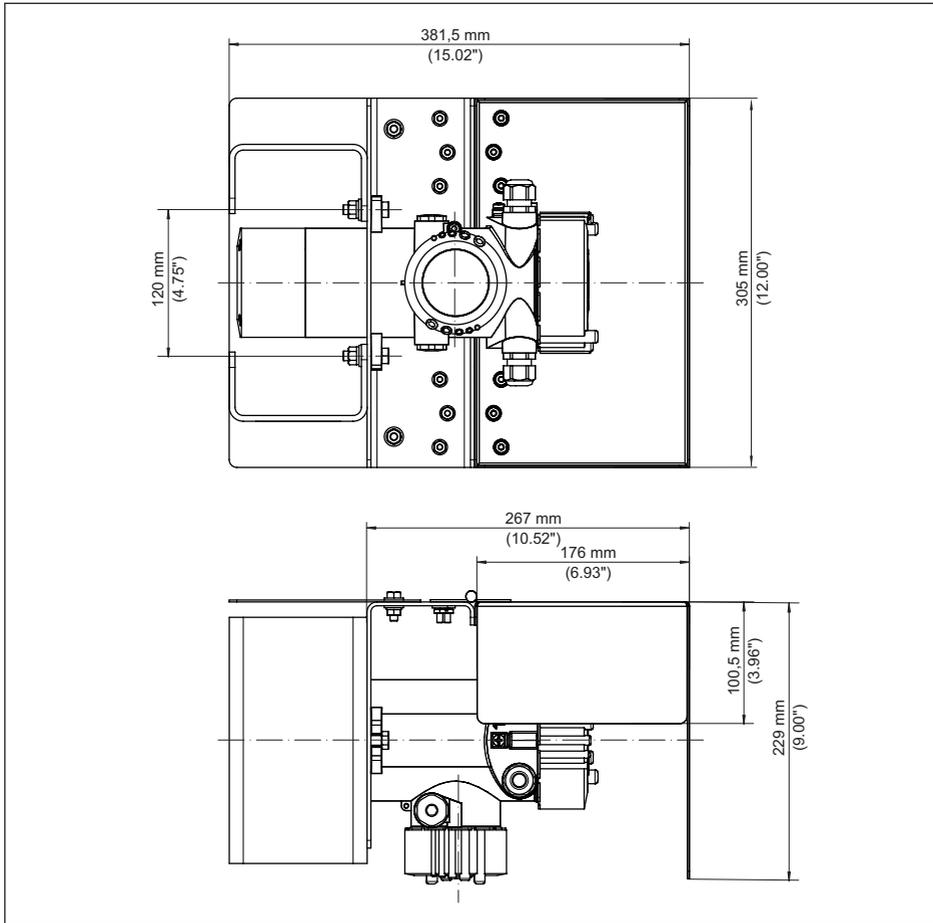


Fig. 12: Passive sun shade with horizontally mounted sensor (housing sun shade)

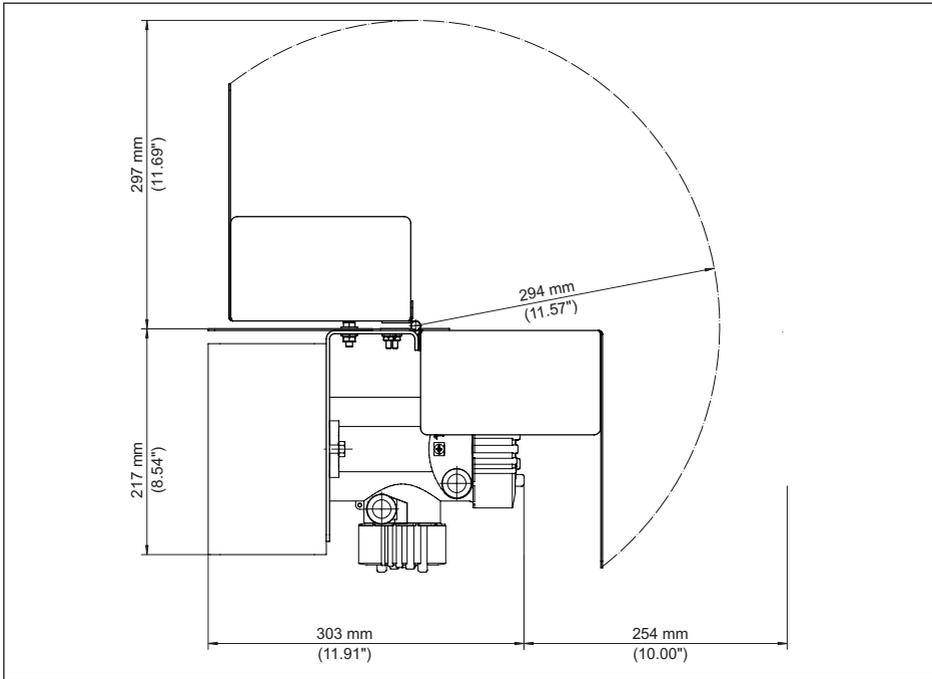
Horizontal sensor mounting, opening area

Fig. 13: Passive sun shade with horizontally mounted sensor (opening and service area)

Passive sun shade, vertical sensor mounting (MINITRAC, POINTRAC, SOLITRAC, FIBERTRAC)

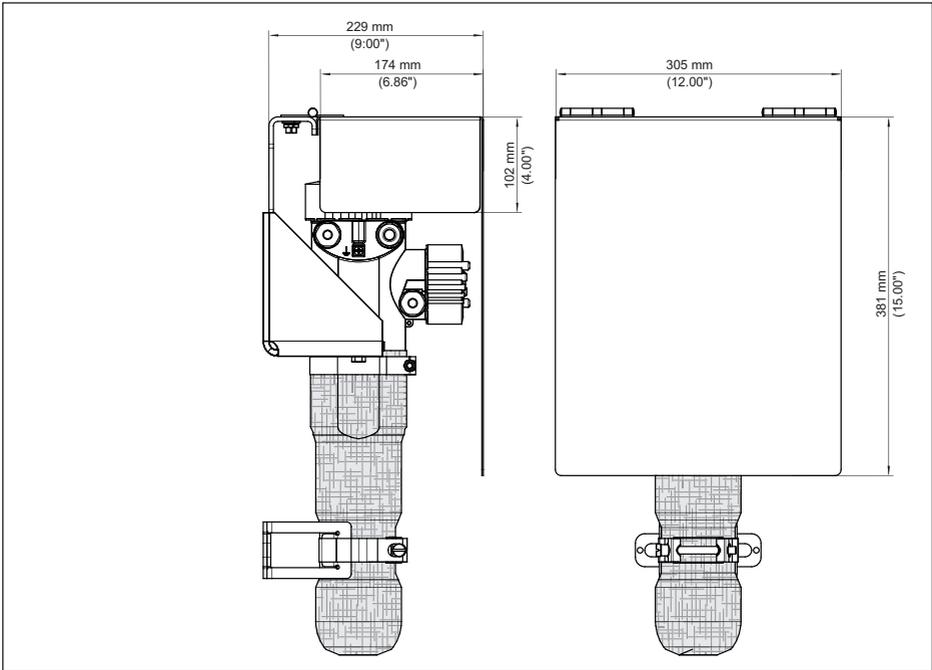


Fig. 14: Passive sun shade with vertically mounted sensor (housing sun shade and sun protection hose)

Vertical sensor mounting, opening area

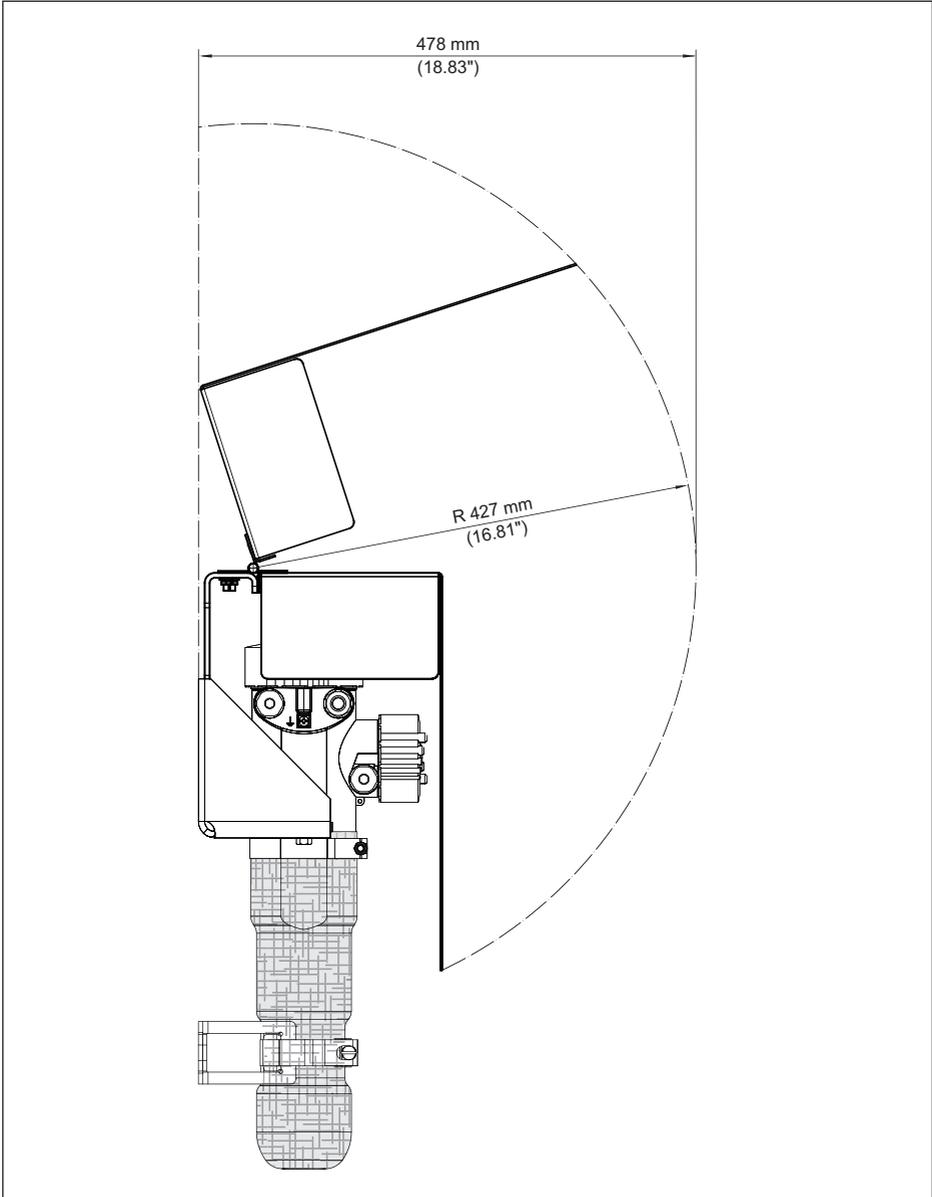
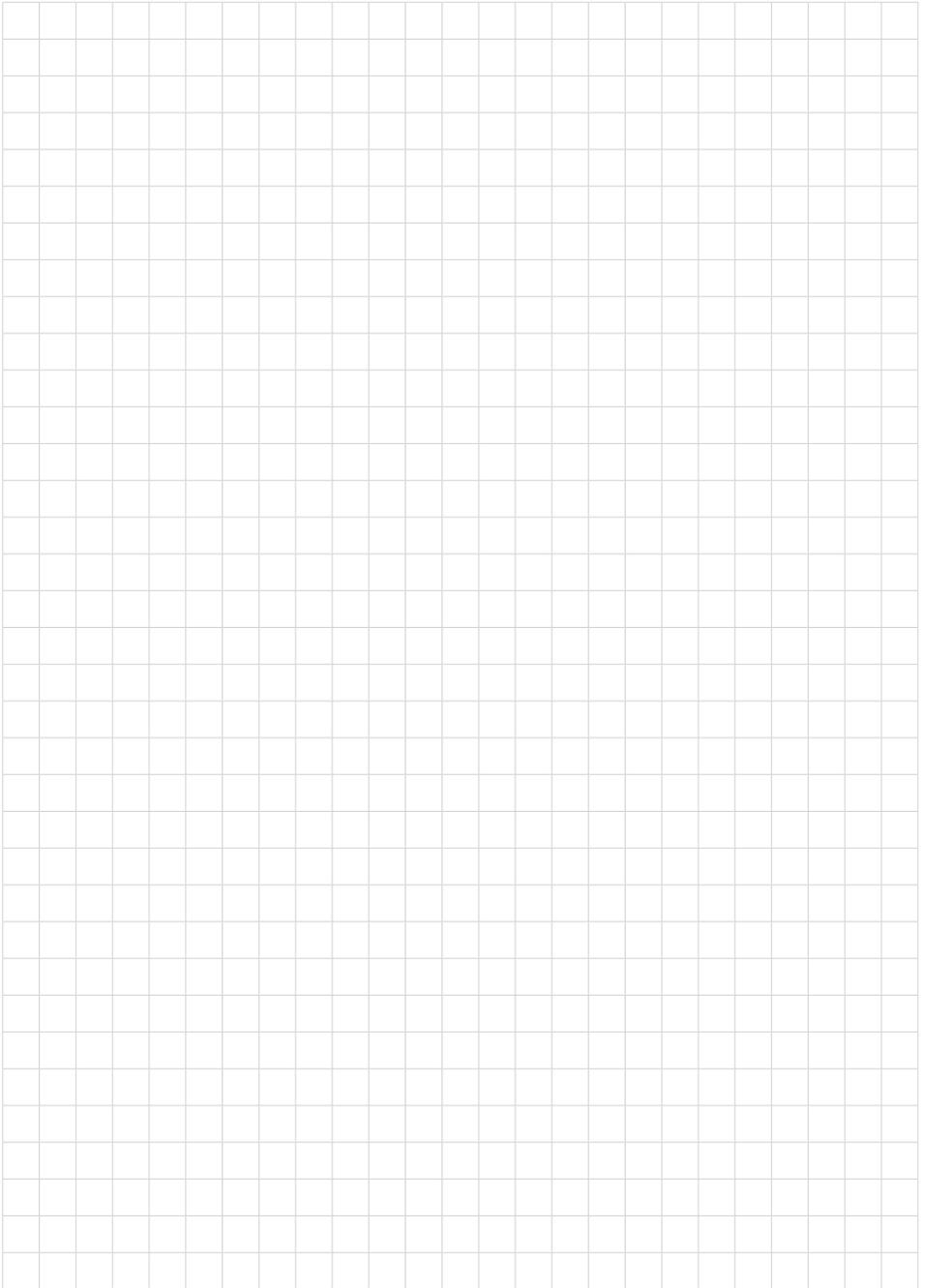


Fig. 15: Passive sun shade with vertically mounted sensor (opening and servicing area)

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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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