

Installation Instructions

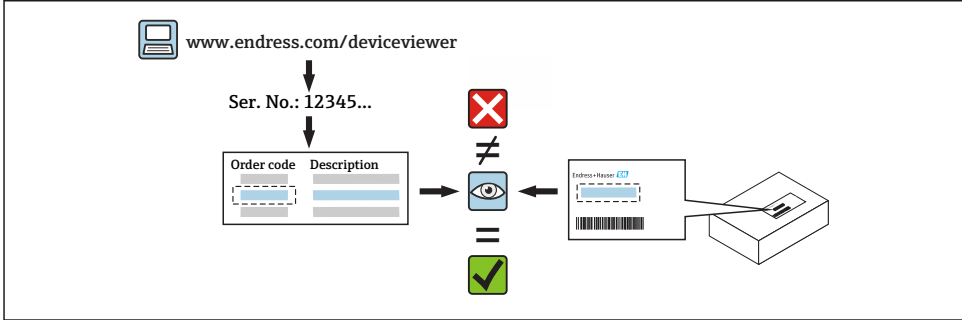
Photomultiplier FMG50

Gammapilot FMG50

1 Intended use

- A defective unit can only be replaced with a functioning unit of the same type.
- Only use original parts from Endress+Hauser.
- Check in the W@M Device Viewer if the spare part is suitable for the existing measuring device.

i A spare parts overview is located in the interior of some measuring devices. If the spare parts kit is specified on this list, no inspection is required.



2 Personnel authorized to carry out repairs

Technical staff must comply with the following requirements for repair, mounting, electrical installation and commissioning of the measuring devices:

- Specialized technical staff must be trained in instrument safety.
- They must be familiar with the individual operating conditions of the devices.
- In the case of Ex-certified measuring devices, they must also be trained in explosion protection.

i Technical staff carrying out work are responsible for ensuring that the work is carried out safely and to the required quality standard. They must also guarantee the safety of the device following repair.

3 Safety instructions

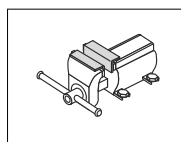
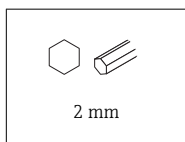
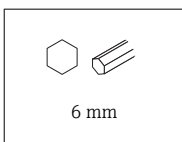
- Comply with national regulations governing mounting, electrical installation, commissioning, maintenance and repair procedures.
- The device is energized! Risk of fatal injury from electric shock. Open the device only when the device is de-energized.
- For devices intended for use in hazardous locations, please observe the guidelines in the Ex documentation (XA).

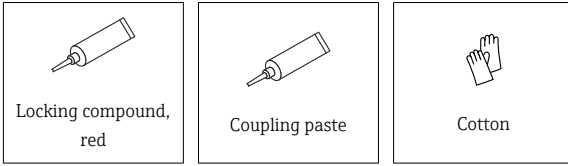
- In the case of devices in safety-related applications in accordance with IEC 61508 or IEC 61511: Commission in accordance with Operating Instructions after repair. Document the repair procedure.
- Before removing the device: set the process to a safe state and purge the pipe of dangerous process substances.
- Hot surfaces! Risk of injury! Before commencing work: allow the system and device to cool down to a touchable temperature.
- In the case of devices in custody transfer, the custody transfer status no longer applies once the seal has been removed.
- Follow the Operating Instructions for the device.
- Risk of damaging the electronic components! Ensure you have a working environment protected from electrostatic discharge.
- After removing the electronics compartment cover: risk of electrical shock due to missing touch protection!
Turn the device off before removing internal covers.
- Modifications to the device are not permitted.
- Only open the housing for a brief period. Avoid the penetration of foreign bodies, moisture or contaminants.
- Replace defective seals only with original seals from Endress+Hauser.
- If threads are damaged or defective, the device must be repaired.
- Do not lubricate threads (e.g. of electronics compartment cover or connection compartment cover).
- If spacing is reduced or the dielectric strength of the device is not guaranteed during repair work, perform a test on completion of the work (e.g. high-voltage test in accordance with the manufacturer's instructions).
- Service plug:
 - Do not connect in explosive atmospheres.
 - Only connect to Endress+Hauser service devices.
- Observe the instructions for transporting and returning the device outlined in the Operating Instructions.



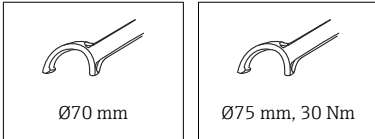
In case of questions, please contact the local [Endress+Hauser service organization](#).

4 Tools list






Also required for FMG50 with PVT scintillator:



5 Removing the photomultiplier

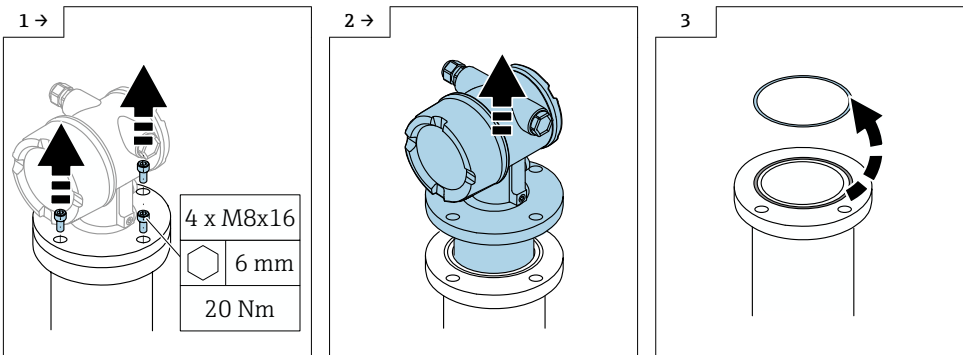
The removal procedure varies depending on whether a PVT scintillator or NaI scintillator is used.

-  Gloves must be worn when handling the scintillator!
- Ensure that the environment is dust-free.

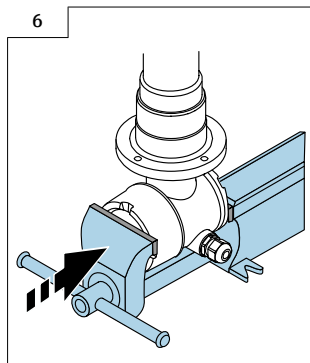
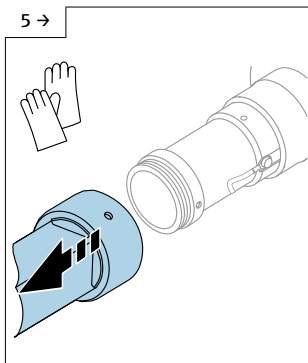
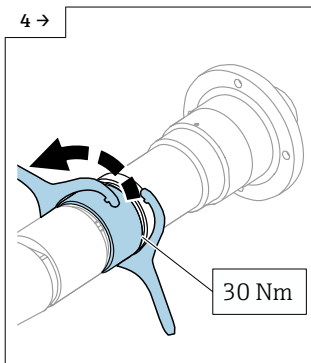
NOTICE

The use of incorrect screws on the thermowell will cause the device to leak.

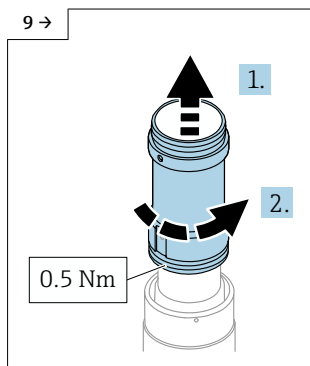
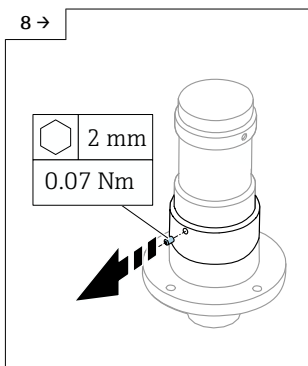
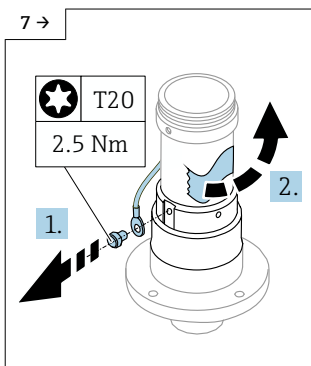
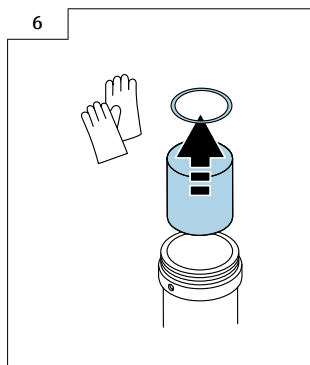
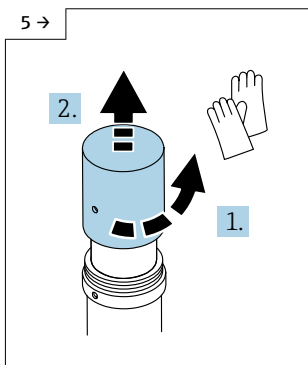
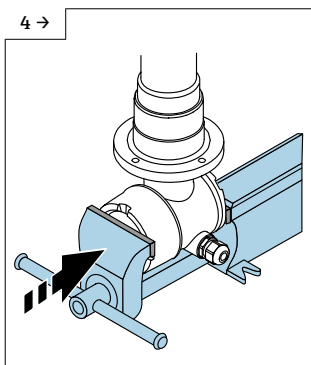
- Use only original screws: DIN912/DIN EN ISO 4762 M8x16 material: A4-70

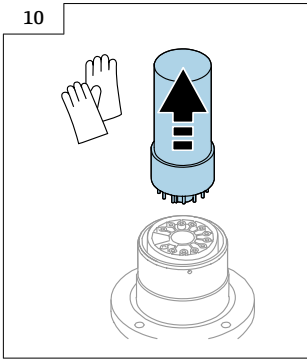


PVT scintillator



NaI scintillator



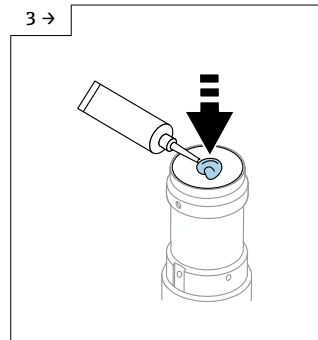
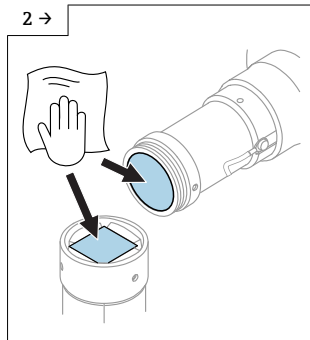
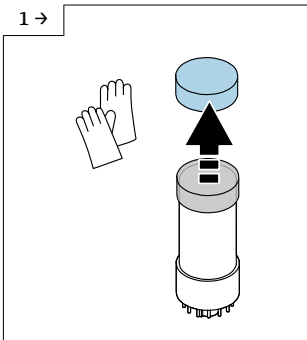


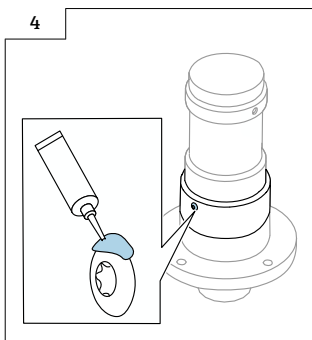
6 Installing the photomultiplier

Installation is performed by following the removal procedure in reverse order.

Note the following:

1. Prior to installation, remove the light protection cap from the photomultiplier.
2. Clean contact surfaces with a soft, lint-free cloth.
3. Apply coupling paste (1 to 1.5 ml), but do not distribute across the surface! The coupling paste will independently distribute itself across the entire end face as you continue with assembly.
4. Secure the set screw using locking compound.





7 Final inspection

Once the spare part has been replaced, carry out a high-voltage test.

This requires the use of a high-voltage testing device with the following characteristics:

- Output voltage depending on the device version:
 - Devices without overvoltage protection: 500 V_{AC} or 707 V_{DC}
 - Devices with overvoltage protection: 410 V_{DC}
- Tripping current: 2.5 mA; discharge time: 1.5 seconds
- Rise time of test voltage: 2 seconds
- Hold time of test voltage: 60 seconds

7.1 Preparation

Prior to performing the high-voltage test, use an ohmmeter to verify that there is minimum contact resistance ($\leq 0.1 \Omega$) between the PAL connectors and the housing. At the terminals of the FMG50, use a wire jumper to short-circuit the signal circuits as illustrated in the diagrams.

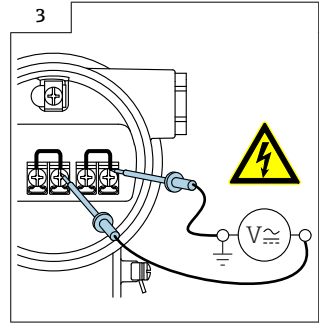
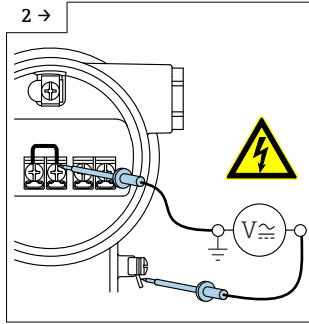
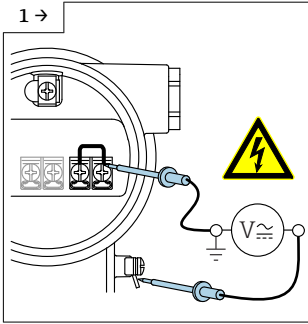


High voltage - Danger!

- ▶ During the test, place the device on an insulated surface, without ground connection.

Test steps

- 2-wire electronics module: step 1
- 4-wire electronics module: steps 1 - 3



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