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# Metal Hood Joint LKM 171

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## Assembly Guide (English)



Keep this guide in a safe place for later reference.  
Translation of the original German assembly guide

## Basic Information



### Notes on the Assembly Guide and on how to handle the Assembly Guide.

This Assembly Guide informs skilled workers about correct mounting of LKM 171 metal hood joint. This includes mounting work at ground wire overhead wires with tubes, grounding cables and splice trays.

The assembly guide is part of the scope of delivery.

Read the assembly guide carefully and thoroughly. Observe the proper sequence of the operation steps.

Moreover, local work safety provisions, accident prevention regulations, environmental protection rules and general safety regulations, as applicable at the place where the metal hood joint is used.

### Terms and Abbreviations

The following terms and abbreviations are used in this assembly guide:

Term/ abbrevia- tion	Description
Optical fibre	Fibre optic cable
OPGW	Optical Ground Wire (ground wire overhead wire)
GFK	Fibreglass
SC	Single Circuit
SE	Single Element
Separate	Disconnect cables, OPGW tubes or optical fibre strands
Manage	Insert glass fibres into a tray and arrange
Thicken	Enlarge cable diameter with tape or shrink-on sleeve
Splicing works	Weld glass fibres
SW	Wrench size

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## 1 Safety

All safety-relevant information about assembling the hood joint is stated in this chapter.

### 1.1 Intended Use

The bullet proof metal hood joint LKM 171 serves as line connector for similar cables at medium- and high-voltage masts.

The hood joint protects the glass fibres from environmental impact.

The hood joint is approved exclusively for grounding wires and ground wire overhead wires with a diameter of 10 mm up to 28 mm. The cables must be prequalified by the power company.

The hood joint may only be fitted by trained and qualified skilled workers.

Unauthorized reconstruction of and changes in the system that may hamper the safety are not allowed.

Any other use or extension of use is regarded as improper use. In the case of damage arising from improper use, the liability claim will be lost.

### 1.2 Foreseeable misuse

Reasonably foreseeable misuse in terms of assembling the hood joint includes:

- faulty installation
- unauthorized changes to the hood joint
- Use of spare parts and cable types that are not approved by KTK.

### 1.3 Safety instructions for mounting on the mast



**Danger to life and limb by an electric shock!**

When working on the mast, contact with a high-voltage line may occur.

- Maintain safe clearances to high-voltage lines! Take into consideration that the high-voltage line swings out in windy conditions.

### 1.4 Environmental protection

Make sure that water-hazardous agents, such as lubricating grease and oils or solvent-containing cleaning agents do not affect the soil during mounting works. Collect, store, transport and dispose of water-hazardous agents only in containers that are approved for such content. Storing water-hazardous agents in food containers is prohibited.

Dispose of packaging material, cleaning agents and residues of consumables in an environmentally safe manner. Comply with environmental protection regulations applicable at the place of use.

## 2 Description

### 2.1 Scope of delivery

The standard scope of delivery includes the following parts:

- Hood joint with all catch devices for 6 cables, pre-assembled.
- 1 tray frame
- SC splice trays for 48 glass fibres
- 1 set of cable glands for grounding cable
- 2 sets of cable glands for OPGW
- 4 blind plugs
- Desiccant
- Maximum of 3 pairs of spacing sleeves for cable catch

**Further extra equipment is optionally available:**

- Spacing sleeve for cable catch
- Extension module for tray frame
- SE or SC splice trays
- Mast mounting

### 2.2 Hood joint



- [1] Joint hood
- [2] Joint body
- [3] Cable catch devices for 6 cables
- [4] Eyelet

Seal ring and screws are greased by the manufacturer.

**2.3 Tray frame and splice trays**



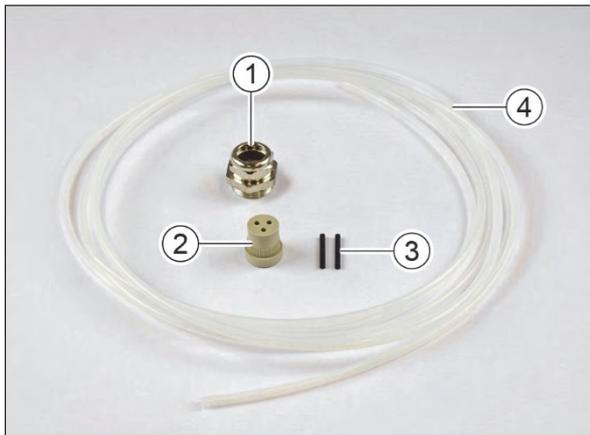
1 tray frame with SC trays for 48 glass fibres

**2.4 Cable gland for grounding wire**



1 cable gland for grounding wire

**2.5 Cable gland for OPGW**



- [1] 1 cable gland
- [2] 1 sealing insert
- [3] 2 blind plugs
- [4] 2 plastic tubes

**2.6 Blind plug**



4 blind plugs

**2.7 Spacing sleeve for cable catch**



Maximum 3 pairs of spacer sleeves (size of spacer sleeve according to customer specification)

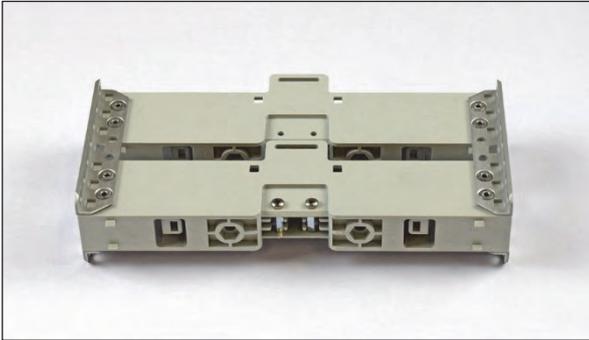
Spacing sleeves are available for the following cable diameters:

- 12-15 mm
- 16-19 mm
- 20-23 mm
- 24-26 mm

Example: A cable diameter of 12 mm requires a spacing sleeve size 12-15 mm.

## 2.8 Extension module for tray frame (optional)

The possible number of fibres in the hood joint can be augmented by using the extension module.



Tray block for single-fibre management SC and tray block for 12 fibres SE

## 2.9 Mast mounting (optional)



Mast bracket

## 3 Tools

In addition to the common tools used for optical fibre cable installation, you will need the following tools:

- Metal saw
- Steel tube cutter
- Allen wrench, size 4 mm and 10 mm
- Open-end wrench, size 10, 13, 17, 19, 24, 28, 30
- Meter scale
- Cleaning cloths, degreaser
- Splice unit
- Measuring device
- Stripper

## 4 Assembly

### 4.1 Instructions for mounting

- Working with glass fibres in a careful and cautious manner.
- Protect the hood joint from rain and dust during mounting.
- Cables may twist during mounting and thus cause damage to the glass fibres. Mount all cables torsion-less.
- Handle OPGW tubes only with the appropriate special tools.

### 4.2 Preparatory work

#### Mounting works on the ground

- Verify scope of delivery in terms of completeness before mounting. Order missing spare parts from KTK.
- Set up a tent for protection against rain and dust.

#### Mounting works at the mast

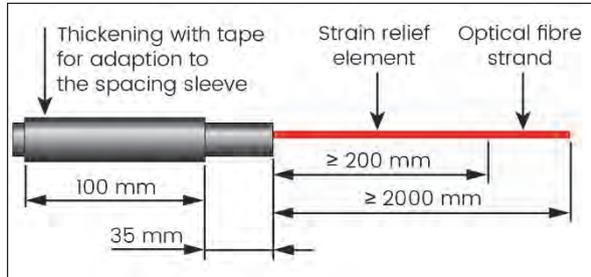
If the ground wire is too short the hood joint is mounted on the mast.

- Verify scope of delivery in terms of completeness before mounting. Order missing spare parts from KTK.
- Use step guard.
- Build a pedestal of appropriate height in the mast for mounting works.
- Maintain safe clearances to high-voltage lines.

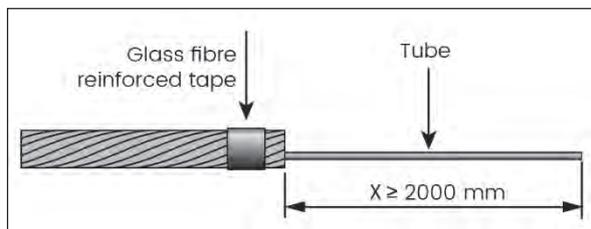
### 4.3 Separating cable

Separate cable according to dimensions indicated below:

#### Grounding cable



#### OPGW - ground wire overhead wire



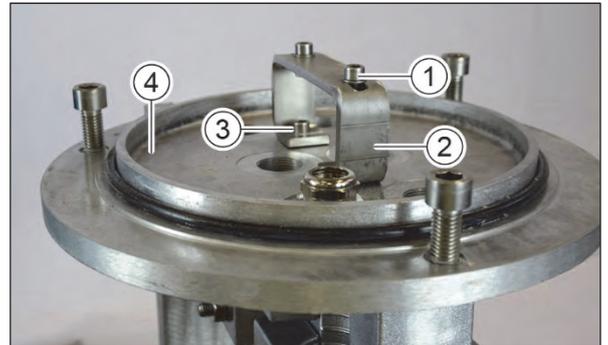
### 4.4 Removing hood



1. Loosen 3 screws [1] (Allen wrench, size 10). Do not unscrew screws.
2. Turn hood [2] left to the stop and take it off the joint body [3].

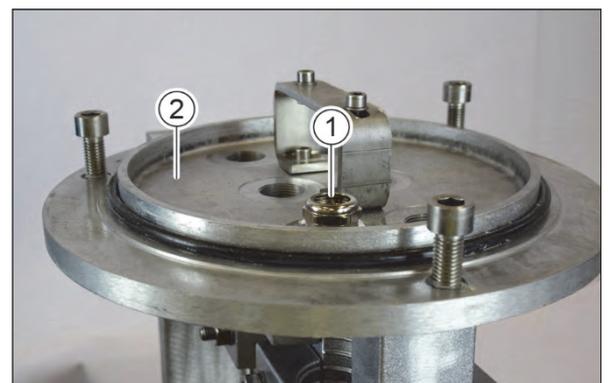
### 4.5 Unscrewing tray frame

1. Remove the Velcro tape from the tray frame.

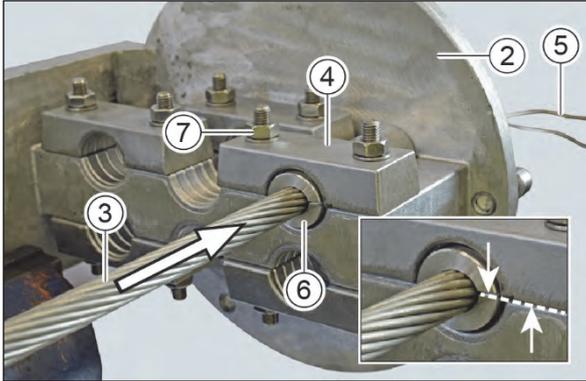


2. Loosen 2 screws [1] at the tray bracket [2] (screw driver).
3. Remove tray frame and carefully set aside.
4. The tray bracket [2] for the tray frame can be unscrewed and removed in order to make more space for separating the steel tubes. The tray bracket [2] is grooved for attaching to the joint body [4]. Unscrew 2 screws [3] at the joint body [4]. Do not unscrew screws.

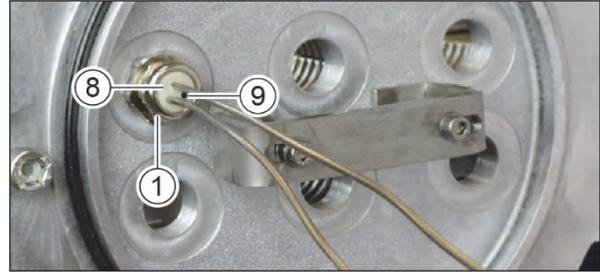
### 4.6 Mounting OPGW in the hood joint



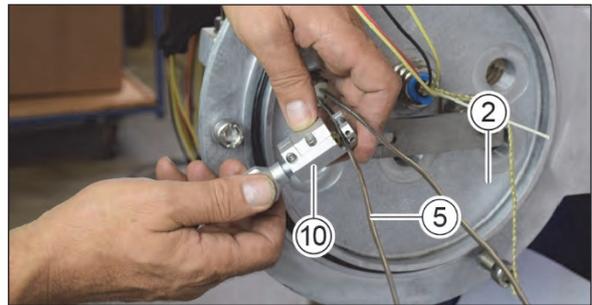
1. Screw cable gland [1] into a thread borehole of the joint body [2] and tighten (open-end wrench, size 28, torque: 16 Nm). Any free thread borehole can be used.



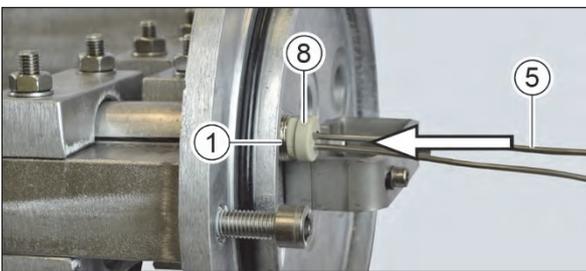
2. Insert separated OPGW with tube [3] through cable catch [4], joint body [2] and cable gland [1] until the separated tubes [5] are pulled through.
3. Insert spacing sleeve [6] into cable catch, ending flush at the joint body [2]. The grooves of spacing sleeve and cable catch [4] must be aligned in a straight line (see image, white dotted line).
4. Tighten 2 nuts [7] at the cable catch (open-end wrench size 17, torque of 16 Nm). Check OPGW for tight fit in the spacing sleeve.



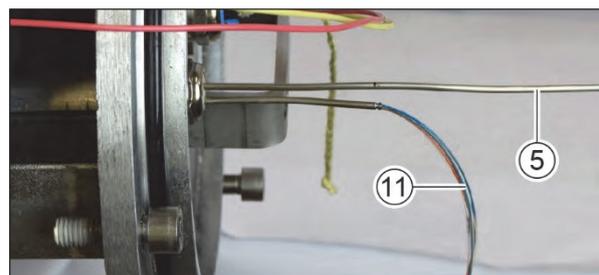
6. Seal free holes with blind plugs [9].
7. Left-over plastic blind plugs (red) can be inserted in unused openings from outside to protect the thread.
8. Attach sealing insert [8] in the cable gland [1] (open-end wrench, size 24). Tighten cable gland until sealing insert slightly protrudes from the cable gland.



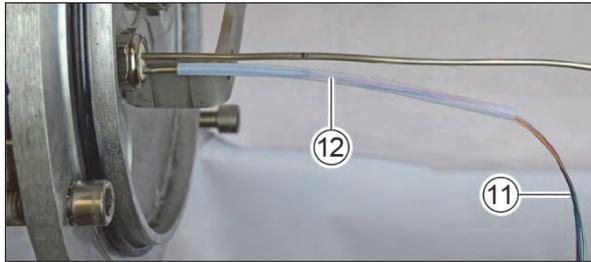
9. Use a marker to mark a length of 7 cm on the tubes [5]. Measure from the joint body [2].
10. Separate the tube (steel tube cutter [10]).



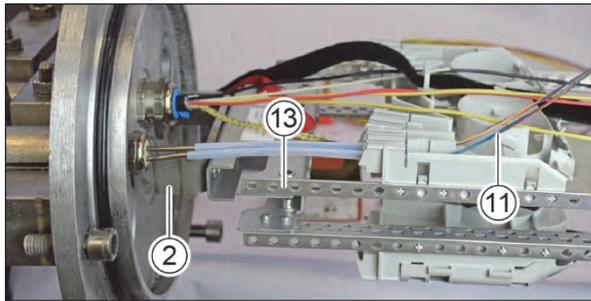
5. Lubricate the tube [5] with slide grease. Slide sealing insert [8] over the tubes and push into the cable gland [1]. Sealing insert and cable gland end flush at the opening.



11. Carefully remove the separated tube [5] from the glass fibres [11].
12. Degrease glass fibres with a dust-free cloth.
13. Cut plastic sleeve into pieces of 14 cm in length.

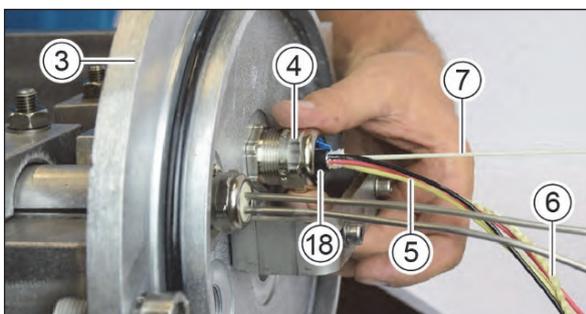
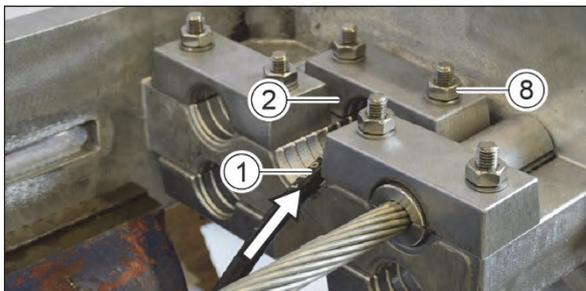


14. Carefully guide plastic sleeve [12] over the glass fibres [11].



15. Mount tray frame [13] on the tray bracket [2] with 2 screws.
16. Insert glass fibres [11] into the guides and manage in the trays.

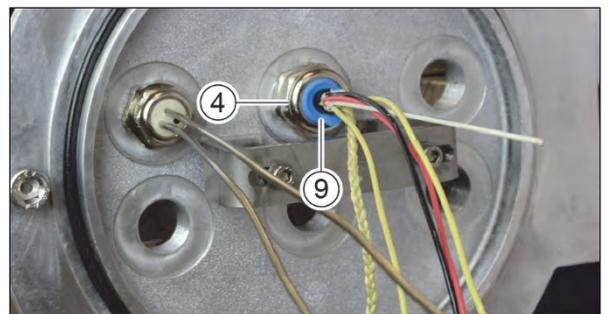
#### 4.7 Fitting ground wire in the hood joint



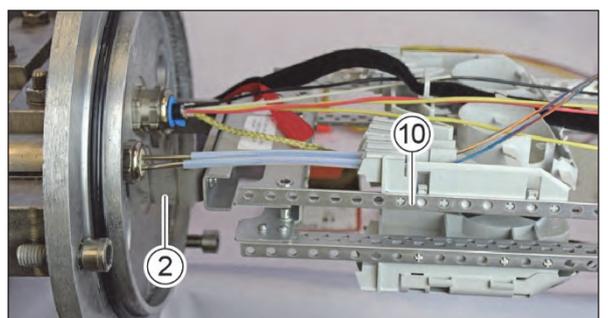
1. Guide separated ground wire [1] through a cable catch [2], the joint body [3] and a cable gland [4] until strands [5], woven tape [6] and GFK wand [7] are pulled through completely. In doing so, the cable coating [18] should protrude

from the cable gland by at least 10 mm. You can use any free cable gland.

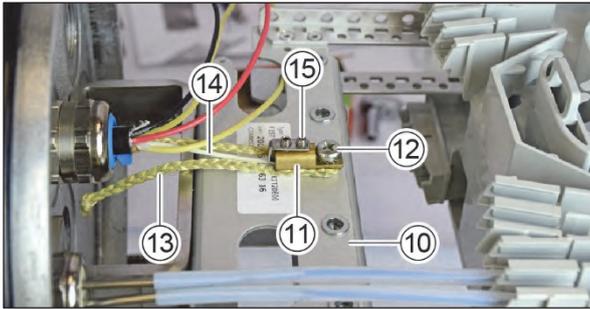
2. Insert spacing sleeve into the cable gland and have it end flush at the joint body. The splits of spacing sleeve and cable catch must be aligned in a straight line (see step 3 in chapter 4.6).
3. Check ground wire for tight fit in the spacing sleeve. If the ground wire is not clamped tightly enough, thicken the ground wire with tape or shrink-on sleeve. Take the length of the thickened section according to chapter 4.3.
4. Tighten nut [8] at the cable catch [2] (torque 16 Nm). Check ground wire for tight fit in the spacing sleeve. If necessary, thicken ground wire again with tape or shrink-on sleeve.



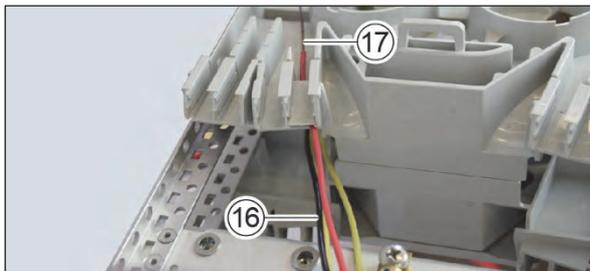
5. Tighten cable gland [4] until the sealing insert [9] slightly protrudes from the cable gland (open-end wrench size 24).



6. Mount tray frame [10] on the tray bracket [2] with 2 screws.

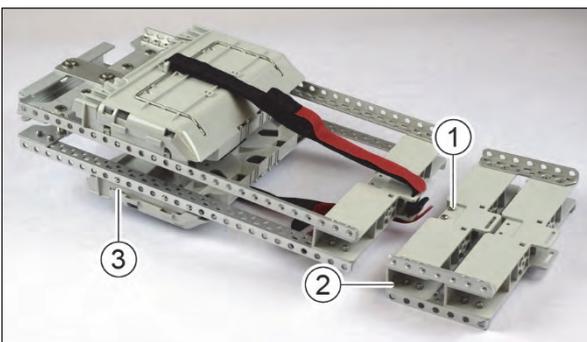


7. Fit catch [11] with screw [12] on the tray frame [10] (Allen wrench, size 3). Tighten the screw.
8. Fit catch [11] with screw [12] on the tray frame [10] (Allen wrench, size 3). Tighten the screw Shorten GFK wand [14] until it fits into the catch. Insert GFK wand into the catch and attach with both screws [15] (screw driver).



9. Measure the length of the strands [16] and carefully separate with a stripper (for dimensions, see chapter 4.3).
10. Carefully remove separated coating from the glass fibres [17].
11. Degrease glass fibres with a dust-free cloth.
12. Insert glass fibres into the guides and manage in the tray.

#### 4.8 Mounting extension module (optional)



1. Remove 2 screws [1] from the extension frame [2].
2. Attach extension frame to tray frame [3] with the 2 screws [1].

#### 4.9 Closing hood joint

After splicing, close the hood joint:

1. Secure the trays to the tray frame with the Velcro tape.
2. Check all seals as to whether these are fitting properly and greased.



3. Place hood [2] on the joint body [3] and turn right to the stop.
4. Tighten 3 screws [1] at the hood [2] (Allen wrench, size 10, torque with 24 Nm).

#### 4.10 Attaching hood joint

Attach the hood joint to the mast with the eyelet or the mast mounting (optional).

## 5 Technical Data

Maximum content of glass fibres	SE system up to 1152 glass fibres SC system up to 192 glass fibres
Tensile load at the catch	2 kN
Torsion load	up to 20 Nm
Admissible cable sizes	10 mm up to 28 mm
Cable entry	Cable entries for six ground wire overhead wire or ground wire
Joint hood material	Stainless steel with aluminium alloy, completely rustproof, resistant to weathering and seawater
Protection class	IP 67 (waterproof and pressure-tight)
Ballistics test	bullet proof according to specification from KTK
Weight	16 kg
Temperature range for mounting	-5 °C to +50 °C

For more information, contact KTK.

Manufacturer:       KommunikationsTechnische Komponenten GmbH  
Siemensstraße 28  
70825 Korntal-Münchingen  
Germany  
Phone:   +49 7150. 9430-300  
Telefax: +49 7150. 6430-260  
www.gmbh-ktk.de  
info@gmbh-ktk.de

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KommunikationsTechnische Komponenten GmbH  
Siemensstraße 28  
70825 Korntal-Münchingen  
Germany

[www.gmbh-ktk.de](http://www.gmbh-ktk.de)