

Terminal Box Retrofit Instructions

for SECT 200-50 883230-60/65/70/75 (As of Sept. 2026)

General Information:

The person executing the work bears full responsibility for it. The work may only be carried out by trained and experienced qualified personnel. Work on the connection cables must be performed by qualified electricians.

Ensure that no contamination, dirt, or liquids can penetrate into the interior of the motor during the work.

Please note that with permanent magnet motors, a dangerous voltage can be induced at the terminals even when the motor is at a standstill if the shaft is turned. Therefore, secure the shaft against twisting and/or rotation.

Kit Contents:

- Complete terminal box including cover, screws, washers, and seals
- WFF stud terminals including mounting screws, washers, and identification labels
- Cover caps for stud terminals
- DIN rail with sensor terminals including spacers, screws, washers, and identification labels
- Copper grounding screw (M12x55) with washers
- Loctite 243 (5ml)
- For 883230-60/65 only – Retrofit kit for reinforced cable lugs consisting of:
 - o Copper busbars
 - o Cable lugs
 - o Brass screws with nuts and washers

Required Tools/Parts:

- Crimping tool for crimping the cable lugs
- Torque wrench
- Heat gun
- Suitable lifting equipment

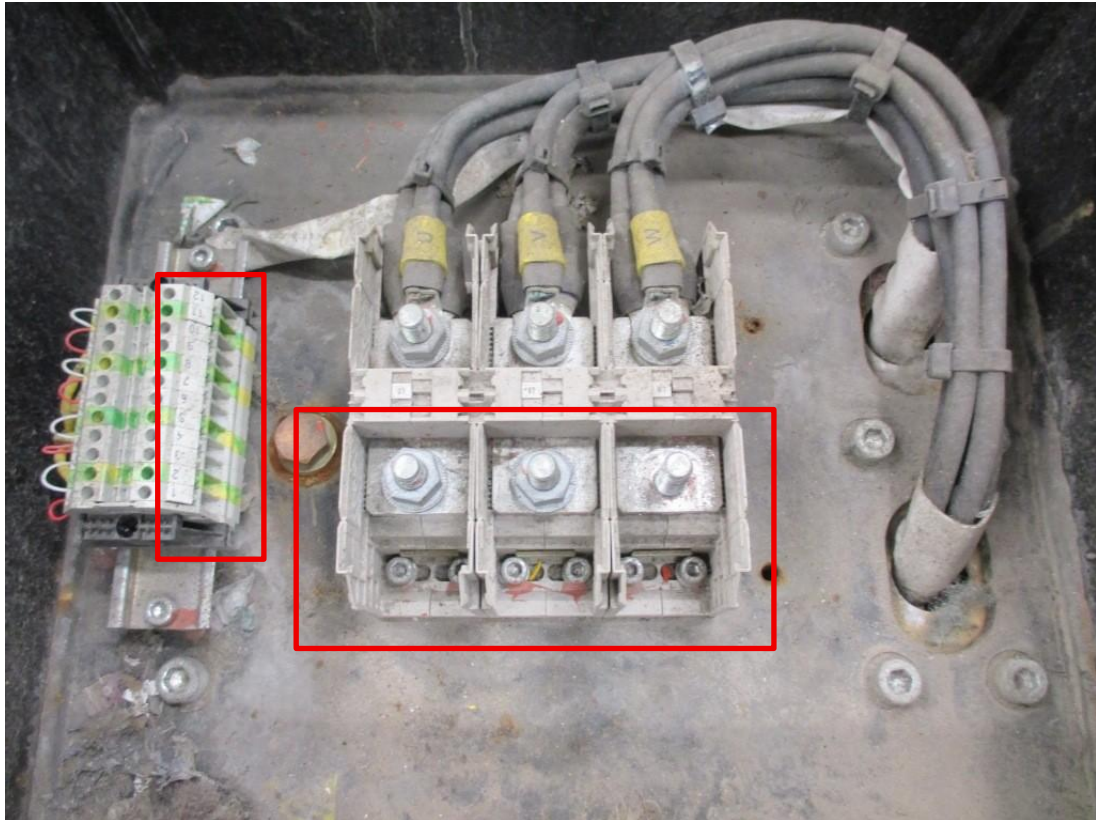
Work Steps:

1. Preparation

Ensure the system is completely de-energized and secure it against reconnection in accordance with applicable regulations. Follow the standard safety rules for working on and inside electrical installations. Since this is a permanent magnet synchronous motor (PMSM), the motor shaft must be strictly secured against rotation to prevent dangerous voltages from being induced at the open terminals.

- o **Cleaning:** Remove the terminal box cover. In case of heavy contamination, thoroughly clean the terminal box beforehand to prevent foreign objects from entering the interior of the motor (Recommendation: use an industrial vacuum cleaner).
- o **Identification:** Check the factory markings of the motor-side phases (U1, V1, W1). If they are not clearly legible, permanently mark the stranded wires before removing any existing cable ties or fixings.

- **Sensors:** Mark all sensor cables (temperature sensors) according to their current terminal assignment.
- **Disassembly:** Disconnect all inverter-side power and signal cables and lead them out of the terminal box housing.



2. Measuring the Insulation Resistance

Protection of the sensor system: Short-circuit all sensor cables (e.g., using jumper wires or terminal connectors) to prevent damage to the sensitive sensor elements caused by the test voltage.

Then measure the insulation resistance with a DC test voltage of 500 V, winding to earth.

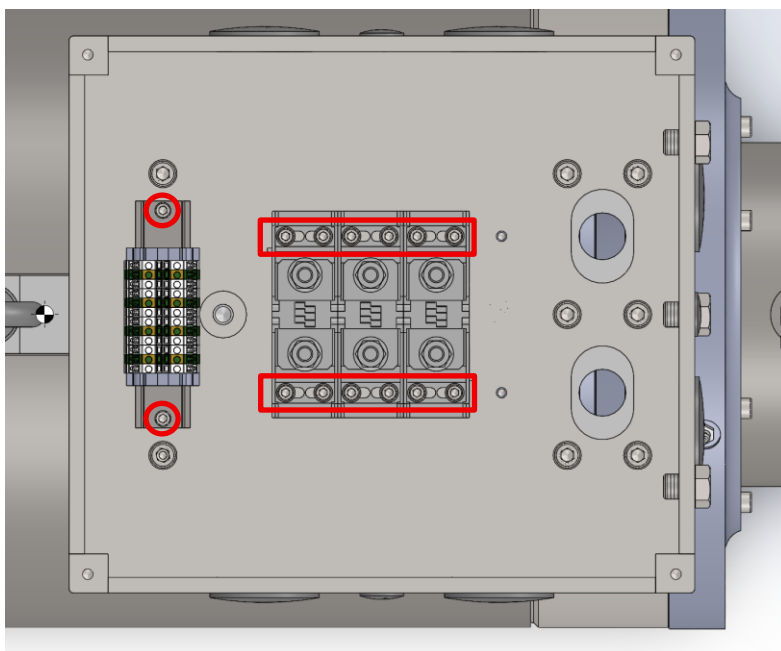
Caution: Higher test voltages can cause irreversible damage to the winding insulation!

If the insulation resistance was not measured at a winding temperature of 40 °C, convert it to the reference temperature in accordance with IEC 60034-27-4.

$R_C = K_T \cdot R_T$	R_C	Insulation resistance at 40°C reference temperature
	K_T	Temperature coefficient
	R_T	Measured insulation resistance at winding temperature T in °C
$K_T = \left(\frac{1}{2}\right)^{\frac{40-T}{10}}$	40	Reference temperature 40°C
	10	The insulation resistance halves/doubles per 10 K
	T	Winding temperature during measurement

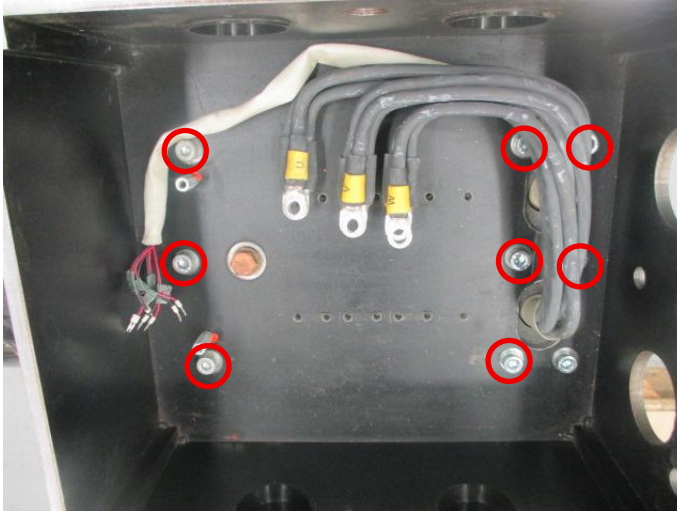
If the calculated value falls below **1 MΩ**, this may already indicate damage to the winding. If the value falls below **370 kΩ**, a winding fault must be assumed.

3. Disconnecting the Cables and Preparation for Terminal Box
Disconnect the power cables, grounding cables, and, if not already done, the sensor cables. Subsequently, loosen the screws marked in the image below to remove the power terminals and the terminal strip with the sensor terminal block.



4. Disassembly of the Terminal Box

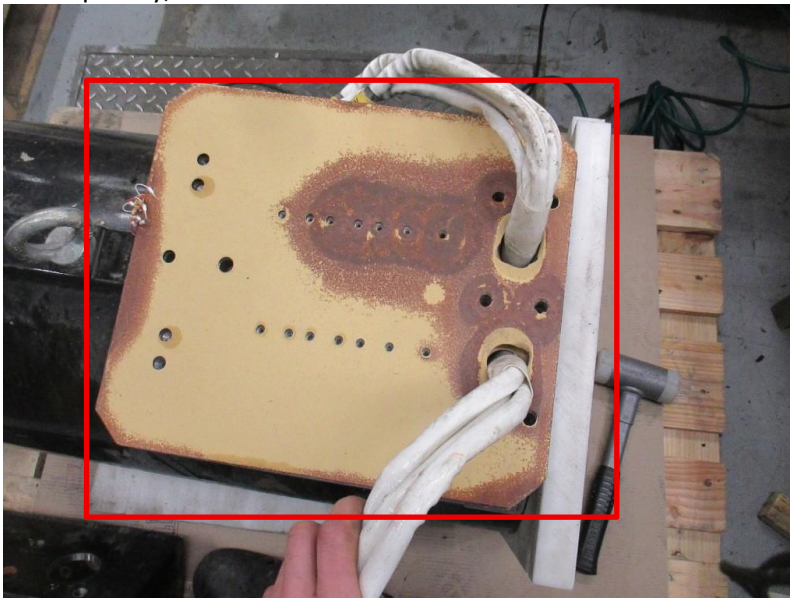
Remove the screws marked in the image below (**9 pieces**) and the cable ties. Carefully pull the terminal box upwards and off. Strictly ensure that the sharp edges of the feedthroughs do not damage the cable insulation.



CAUTION: High Component Weight

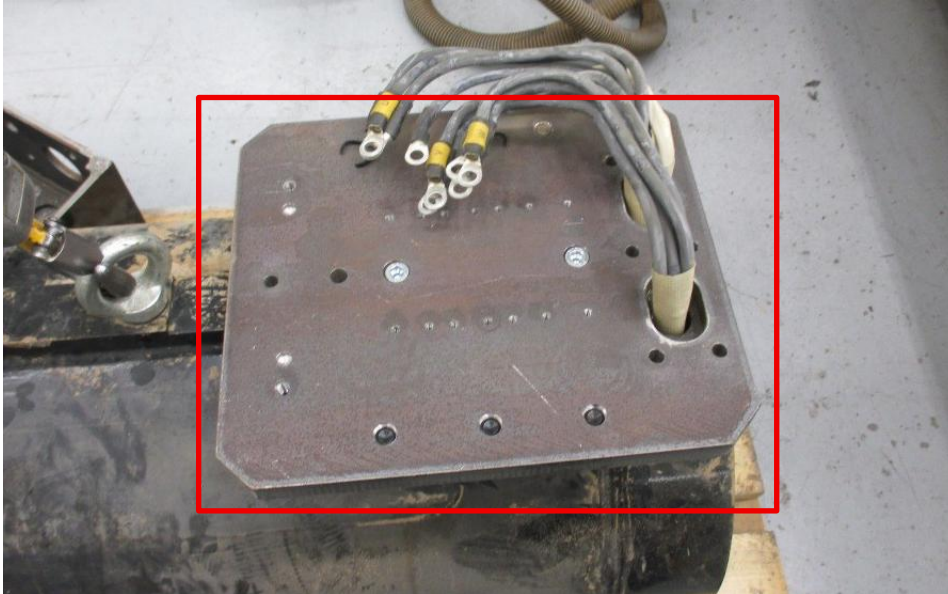
The weight of the terminal box housing is approx. 30 kg. To prevent injuries from lifting heavy loads or crushing, use suitable lifting equipment or carry out this work step with a second qualified person.

Subsequently, the seal underneath the terminal box can be removed.



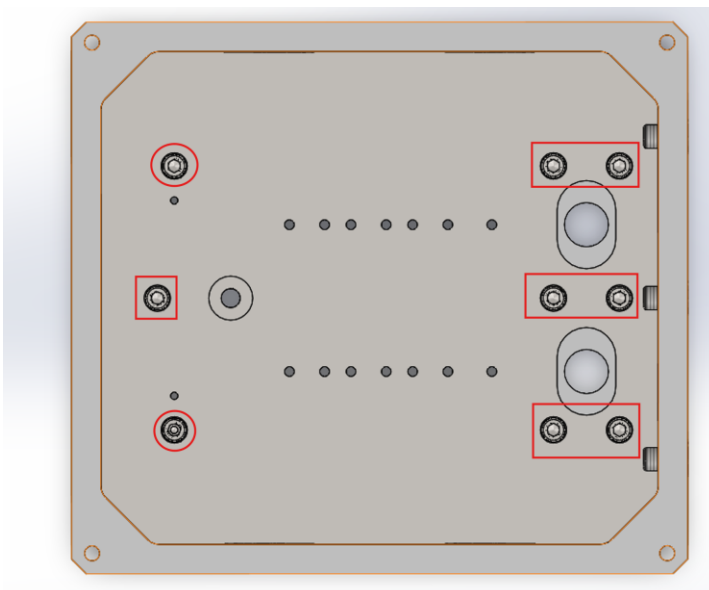
5. Installation of the New Terminal Box

Clean the intermediate plate to remove any dirt and corrosion. Ensure that nothing can penetrate into the interior of the motor!



Subsequently, place the new seal on the intermediate plate. While doing so, carefully guide the cables through the designated openings. Afterwards, the new terminal box can be positioned. Ensure that the insulation is not damaged when routing the cables and that the holes in the intermediate plate, seal, and terminal box are aligned with each other.

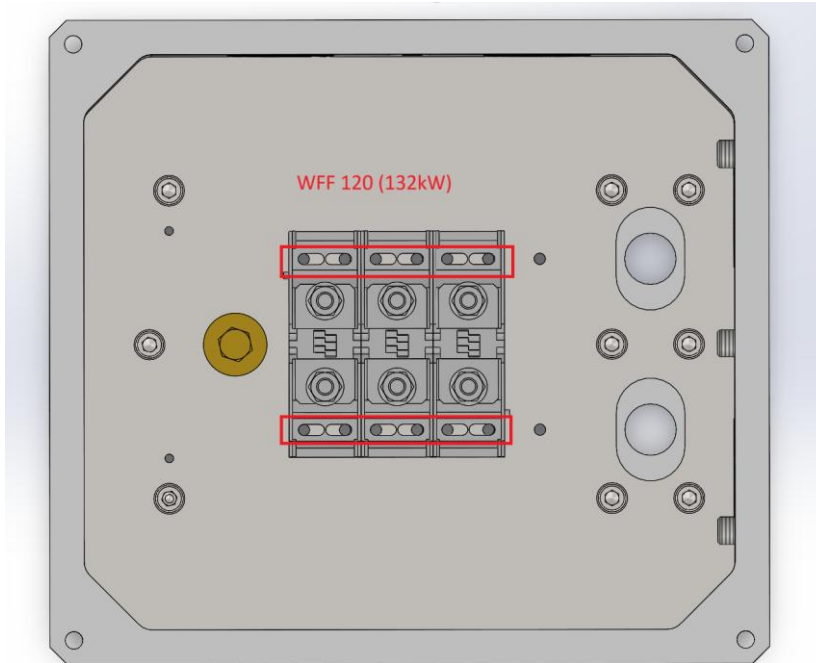
Use socket head cap screws to bolt down the terminal box: **two M10x25 screws with U-seal washers** and **seven M10x50 screws with Schnorr washers**. Use the two short screws with U-seal washers in the holes marked with circles below (critical for the IP protection rating). Use the longer screws with Schnorr washers for the holes marked with rectangles below. Apply Loctite to all screws as an additional threadlocker and tighten the screws to **44 Nm**.



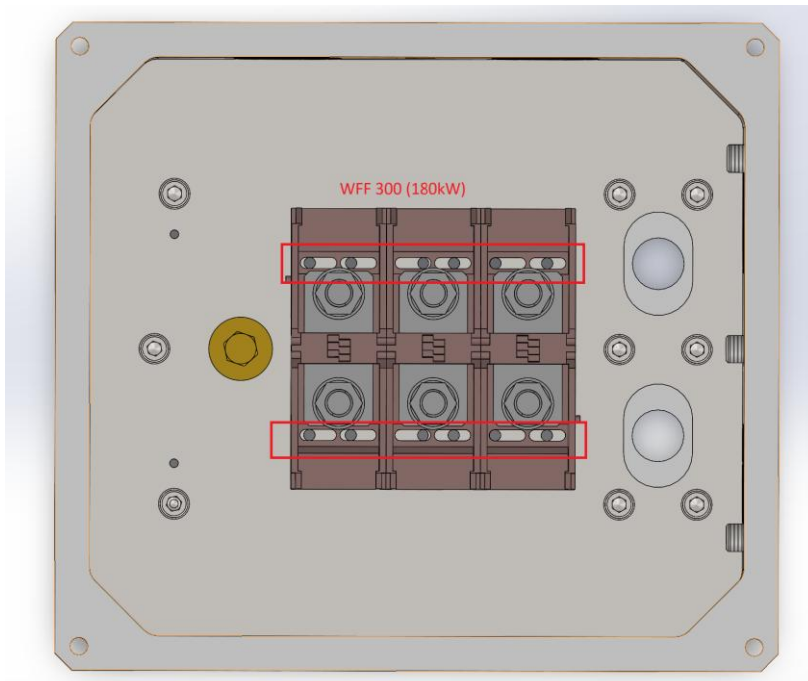
6. Assembly of the Terminals

To mount the WFF terminals (power terminals), use the M6 holes marked below.

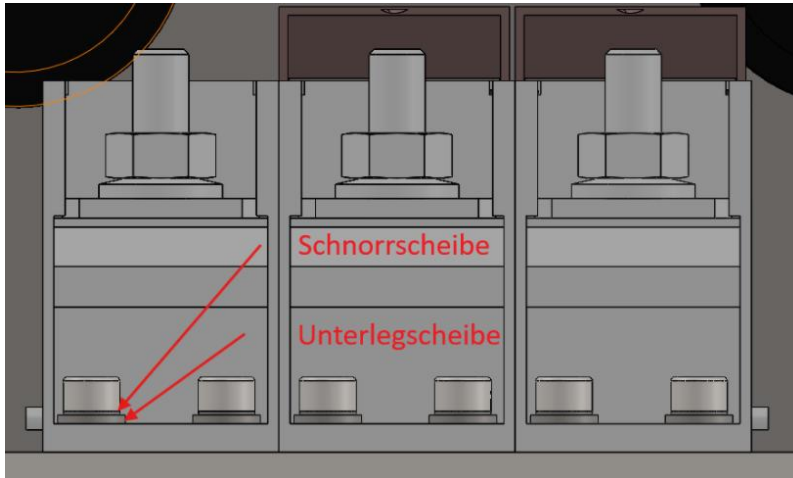
132 kW motors with WFF 120 terminals:



180kW motors with WFF 300 terminals:

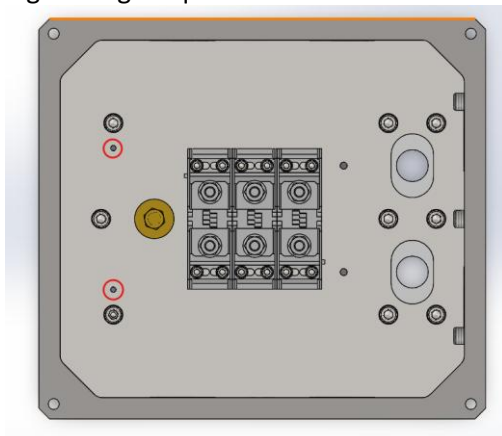


First, position all three terminals and align them with the holes. Use M6x25 socket head cap screws with washers and Schnorr washers. The Schnorr washers must be positioned between the screw head and the washer.

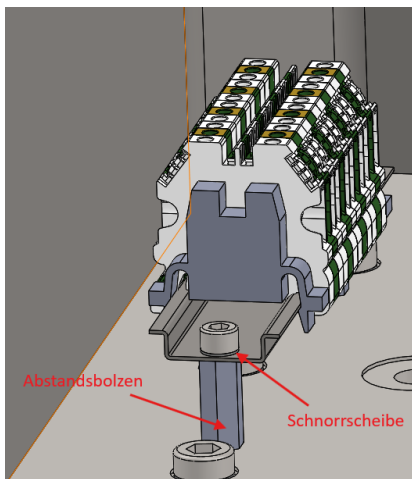


Apply Loctite as an additional threadlocker and tighten the screws to a **reduced torque of 7 Nm**, otherwise the terminals may be damaged.

Subsequently, screw the hexagonal spacer bolts into the M6 holes using Loctite threadlocker. Tightening torque: **9 Nm**.



Mount the pre-assembled sensor terminal strip on top using two **M6x12 socket head cap screws** with Schnorr washers and Loctite threadlocker. Tightening torque is also **9 Nm**.



7. Modification for Reinforced Cable Lugs

This paragraph is only relevant for **132 kW motors** that are still equipped with **3 single conductors per phase** and fitted with **crimp cable lugs (DIN 46234)**. Otherwise, this paragraph can be skipped.

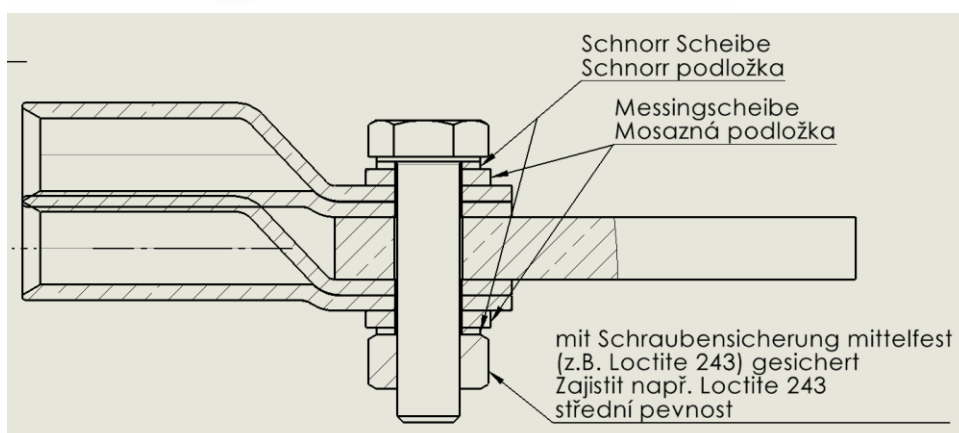
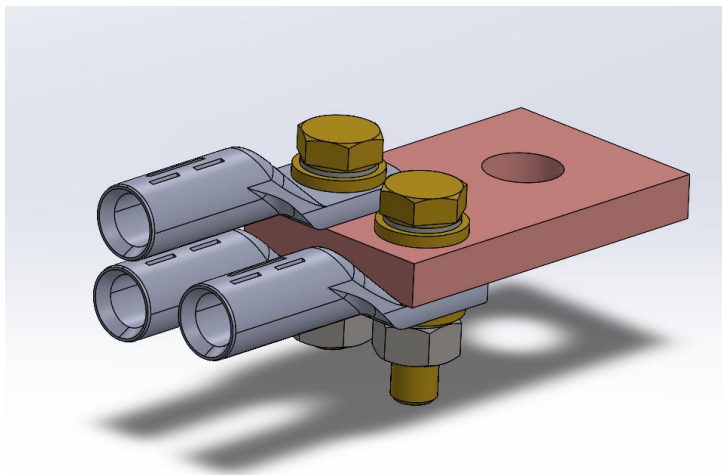
Attention: Before cutting the cables to size, check if the lengths are sufficient!

Remove the heat-shrink tubing from the cable lugs. Ensure that the markings on the stranded wires remain intact or re-label the cables.

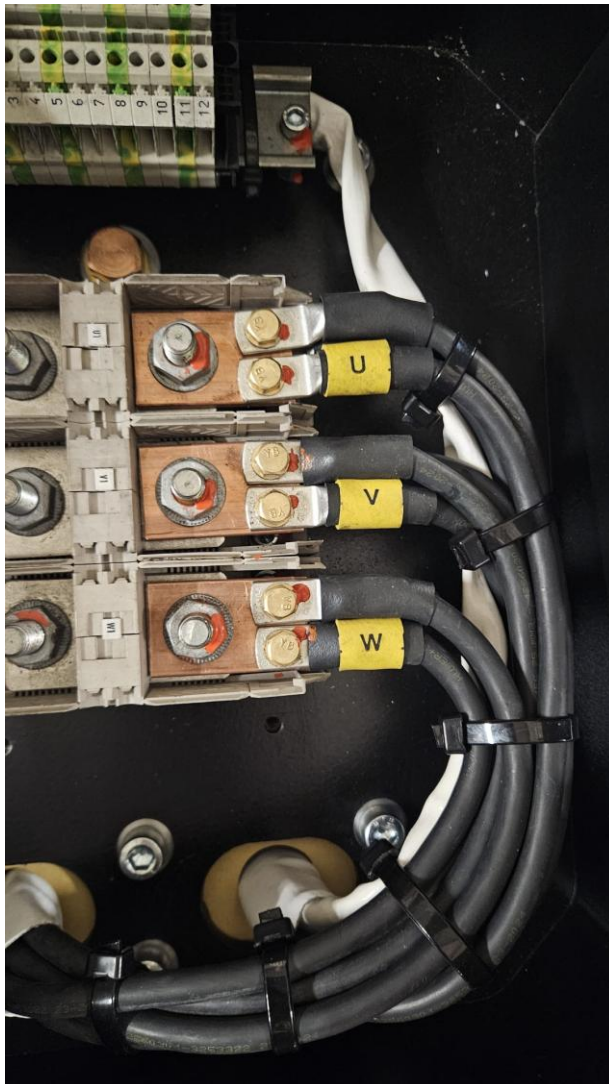
Cut the motor-side power cables just behind the cable lugs and strip the stranded wires to the correct length required for the **compression cable lugs (DIN 46235)**. Slide the heat-shrink tubing and identification sleeves onto the stranded wires, then insert the compression cable lugs and crimp them correctly onto the stranded wires according to the specifications of your crimping tool.

Position the heat-shrink tubing over the crimped cable lug and heat it evenly from one end to the other using a **heat gun**. Ensure that you keep the heat gun constantly in motion to avoid localized overheating or damage to the stranded wire insulation. The process is complete as soon as the tubing is wrinkle-free and tightly conformed to the contours of the cable lug and stranded wire. Repeat this procedure for the identification sleeves as well.

Now, screw the cables with the cable lugs phase by phase onto the **copper busbars** as shown in the image below. Ensure the correct sequence of the washers (washers, Schnorr washers) and use Loctite to additionally secure the nut. **Strictly ensure that no adhesive gets onto the contact surfaces.** Tighten the nut to **3 Nm**.



Place the busbars onto the WFF 120 stud terminals and screw them down tightly to **17 Nm**.



8. Connecting the Motor Cables

If the prerequisites from paragraph 7 do not apply, proceed with connecting the motor-side cables:

- Connect the motor-side phases to the stud terminals. Strictly ensure the correct assignment (U, V, W) to prevent incorrect rotation or damage to the inverter.
- Tighten the stud connections using a torque tool according to the following specifications:
 - 132 kW motors (type 883230-60/65) with WFF 120 terminals: 17 Nm
 - 180 kW motors (type 883230-70/75) with WFF 300 terminals: 40 Nm

Subsequently, connect the sensor cables to the terminal strip according to their original sequence.

9. Connecting the Inverter-Side Cables

Remove the blanking plugs at the required positions and install the corresponding cable glands properly in the housing.

Lead the inverter-side power, grounding, and sensor cables through the glands into the terminal box.

Connect the wires according to your wiring diagram and ensure the correct phase sequence.

After completing the internal wiring, firmly tighten the dome nuts of the cable glands to ensure strain relief and IP protection.

To prevent loosening due to operational vibrations, the remaining blanking plugs must be glued in and tightened securely.

10. Installation of the Terminal Box Cover

Place the cover onto the terminal box and tighten the screws to **60 Nm**.