# Joint Assembly NEURO HiSWING R+

This online tutorial shows the joint assembly of our system ankle joint:

- NEURO HiSWING R+

The NEURO HiSWING R+ is an electronic system ankle joint with microprocessor-controlled hydraulics which, besides its dynamic spring units, also provides an integrated stop damper.

You will find further information on the system ankle joint in the instructions for use.

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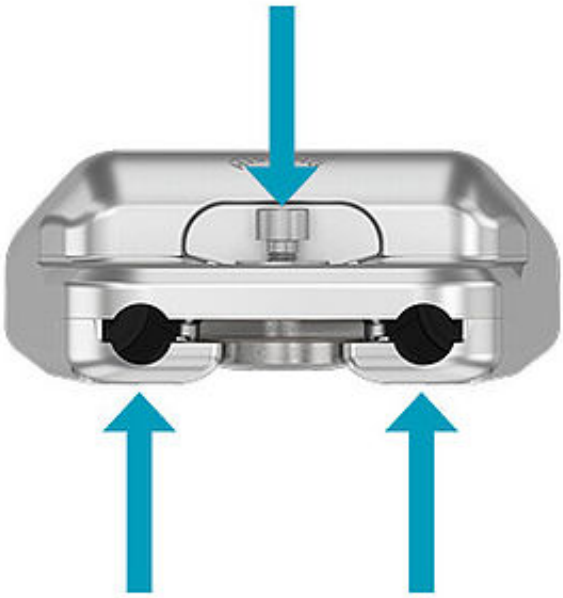

Disassemble the system joint.

- Unscrew both countersunk flat head screws out of the cover plate.
- Place the washer on the cover plate and screw the pressing screw, not entirely, into the thread of the first screw.
- Push the joint's upper part and the cover plate apart by exerting force on them (see arrows). This can be achieved by using a vice or by controlled knocks.
- Remove pressing screw and washer.

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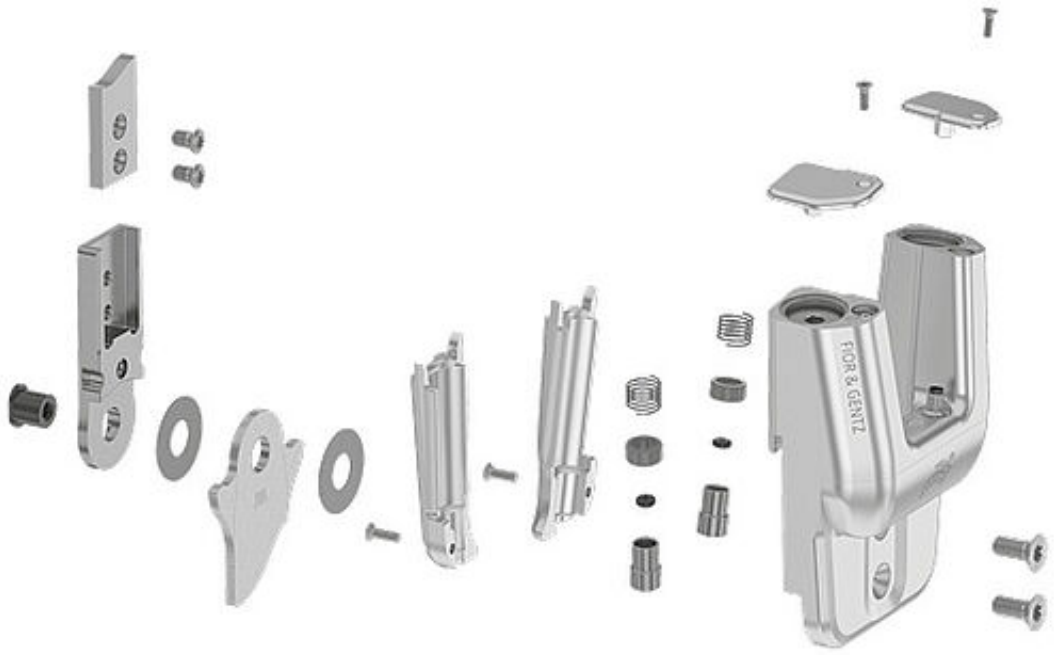
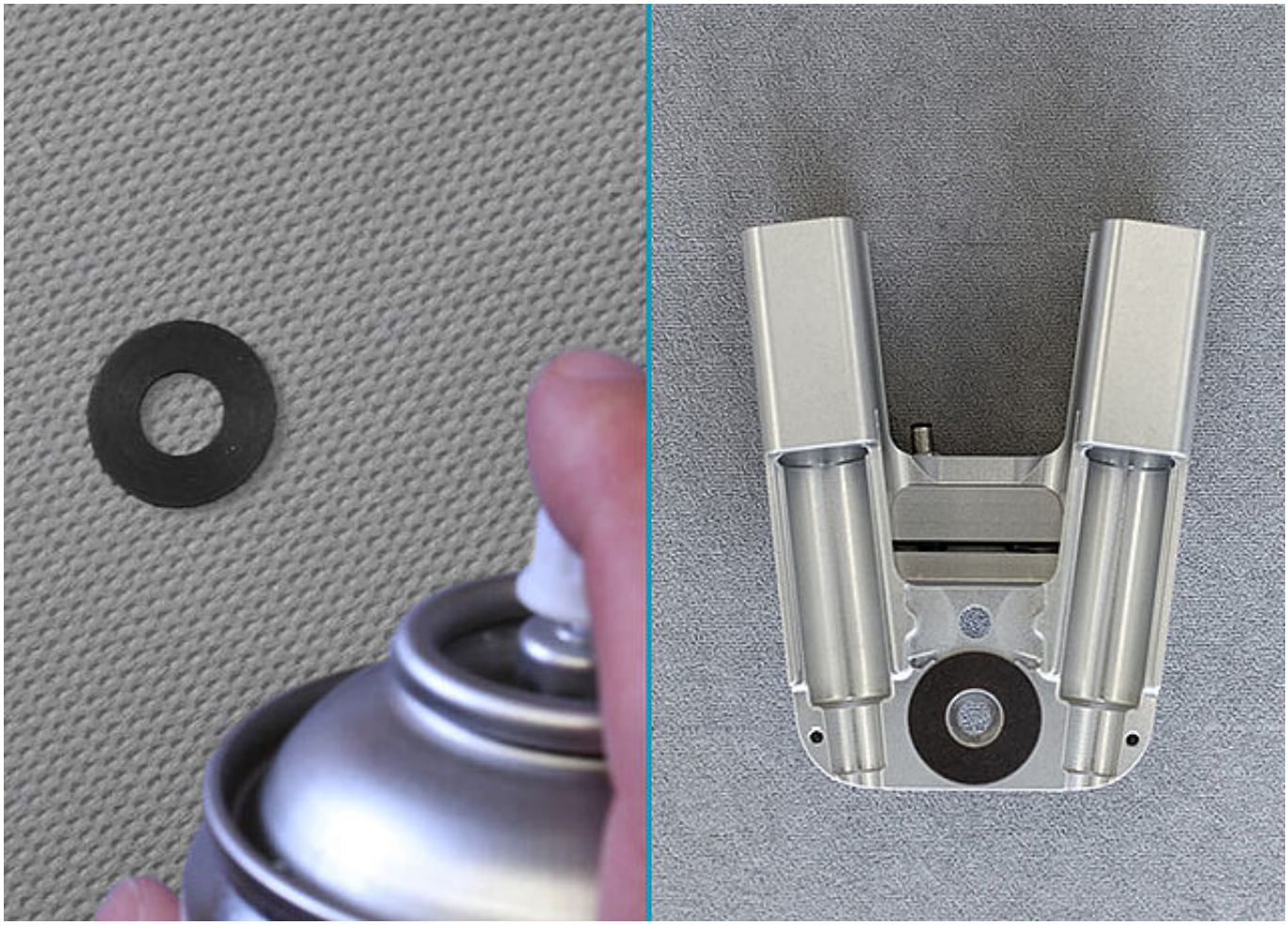



Clean the system joint. Clean the bearing nut and the thread of the joint's upper part with LOCTITE® 7063 Super Clean, if required.

*Note: mind the* safety data sheet *when using Super Clean LOCTITE® 7063.*



Apply spray adhesive to one side of the first sliding washer and adhere it to the cover plate. Grease the other side of the sliding washer slightly with orthosis joint grease.

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Grease the contact surfaces of the cover plate and the joint's upper part with orthosis joint grease to prevent mechanical noises.

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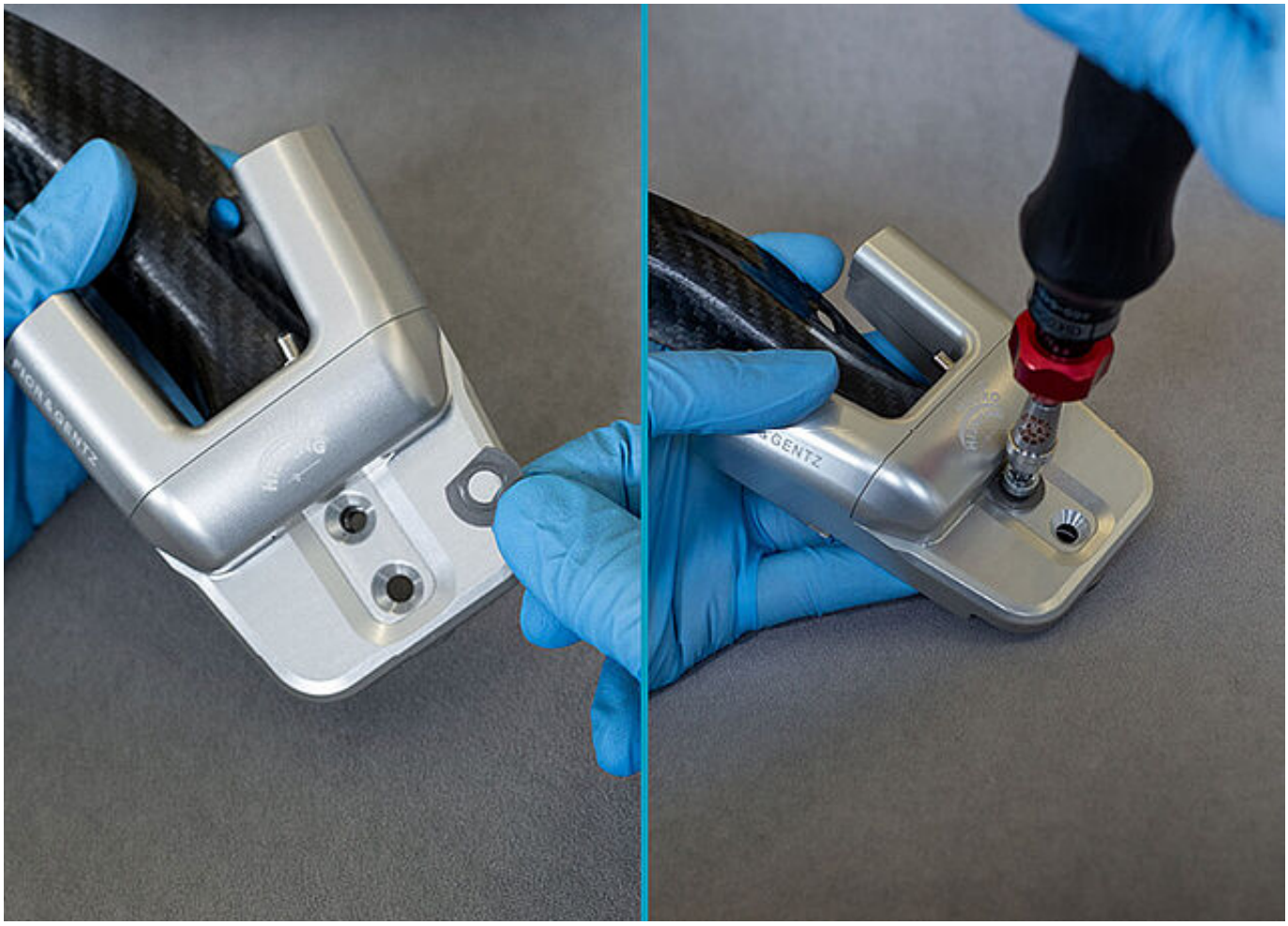

Use the delivered cover plate pressing aid to press the cover plate with the joint's upper part. Tighten the pressing screw with the corresponding torque.

*Note: you will find information about the torque (Nm) on the system joint's cover plate or in the* instructions for use*.*

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Make sure that there is no contact between the laminate and the cover plate to prevent developing noises under dynamic load.
If required, rework the laminate edges.

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Make sure there is no apparent space left between the cover plate and the joint's upper part.

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Remove pressing screw and washer.
In order to secure the cover plate for the next work steps, screw in the first countersunk flat head screw with the corresponding torque.

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If the sliding bushing fell out in the previous steps, grease it slightly and place it into the bore at the system stirrup again.

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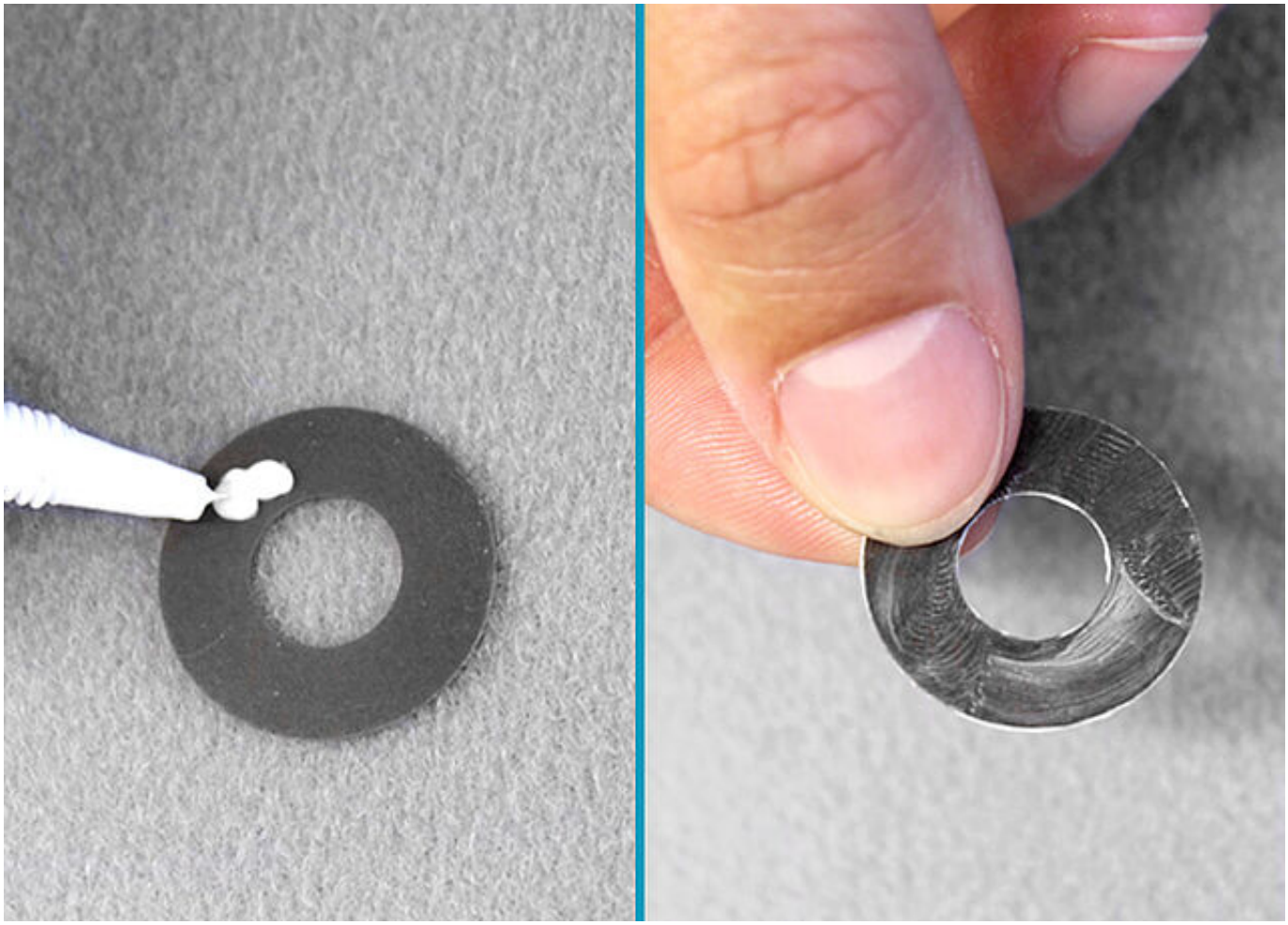

Grease the second sliding washer slightly with orthosis joint grease.

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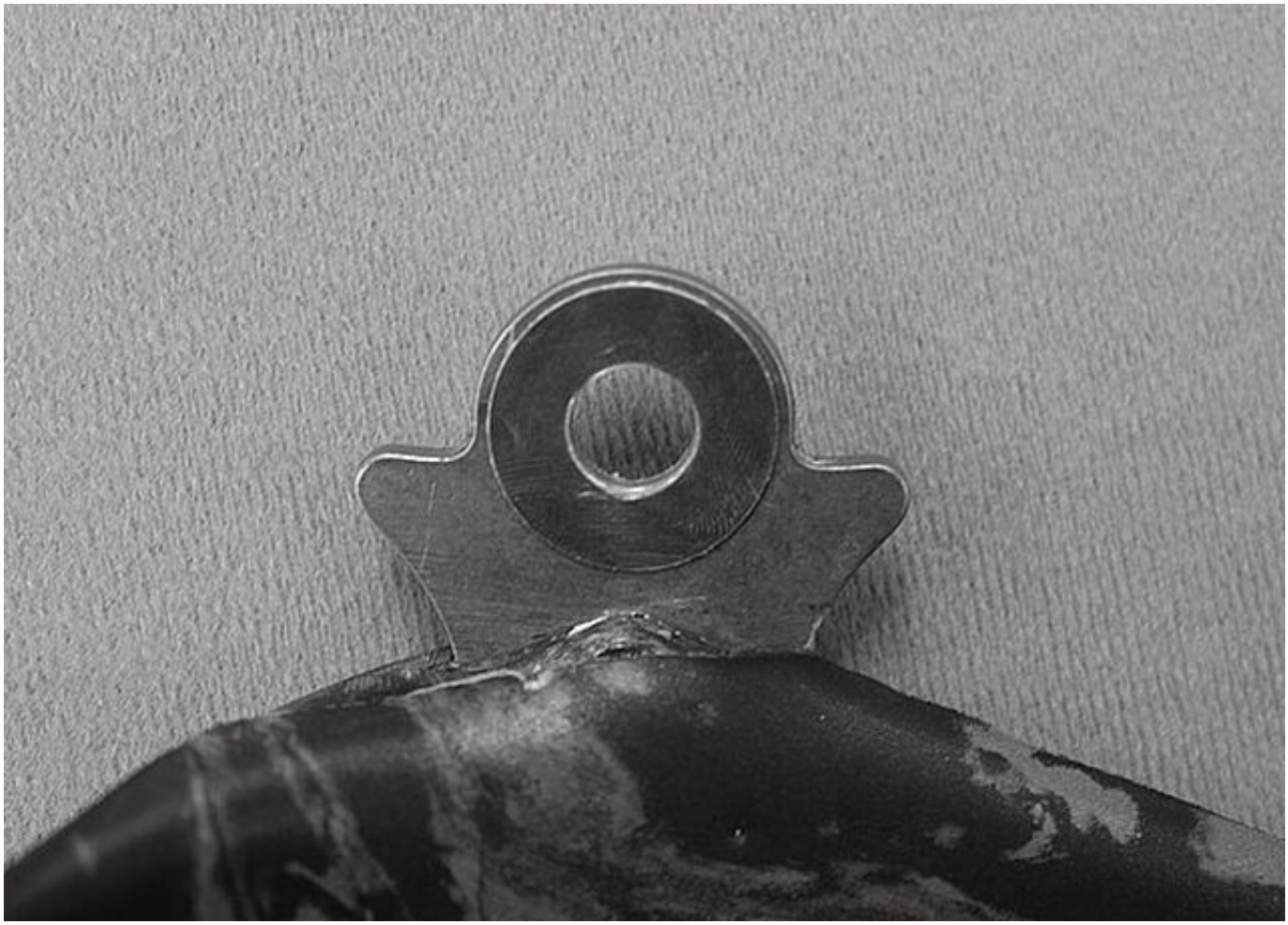

Grease the contact surfaces of the spring units at the system stirrup with orthosis joint grease. Place the second sliding washer onto the medial side of the system stirrup.

*Note: greasing the contact surfaces of the system stirrup is important in order to prevent wear of the system stirrup.*

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Slide the system stirrup from below between the cover plate and the joint's upper part. Make sure that the sliding washer remains in the correct position.

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Check the position of the sliding washer.

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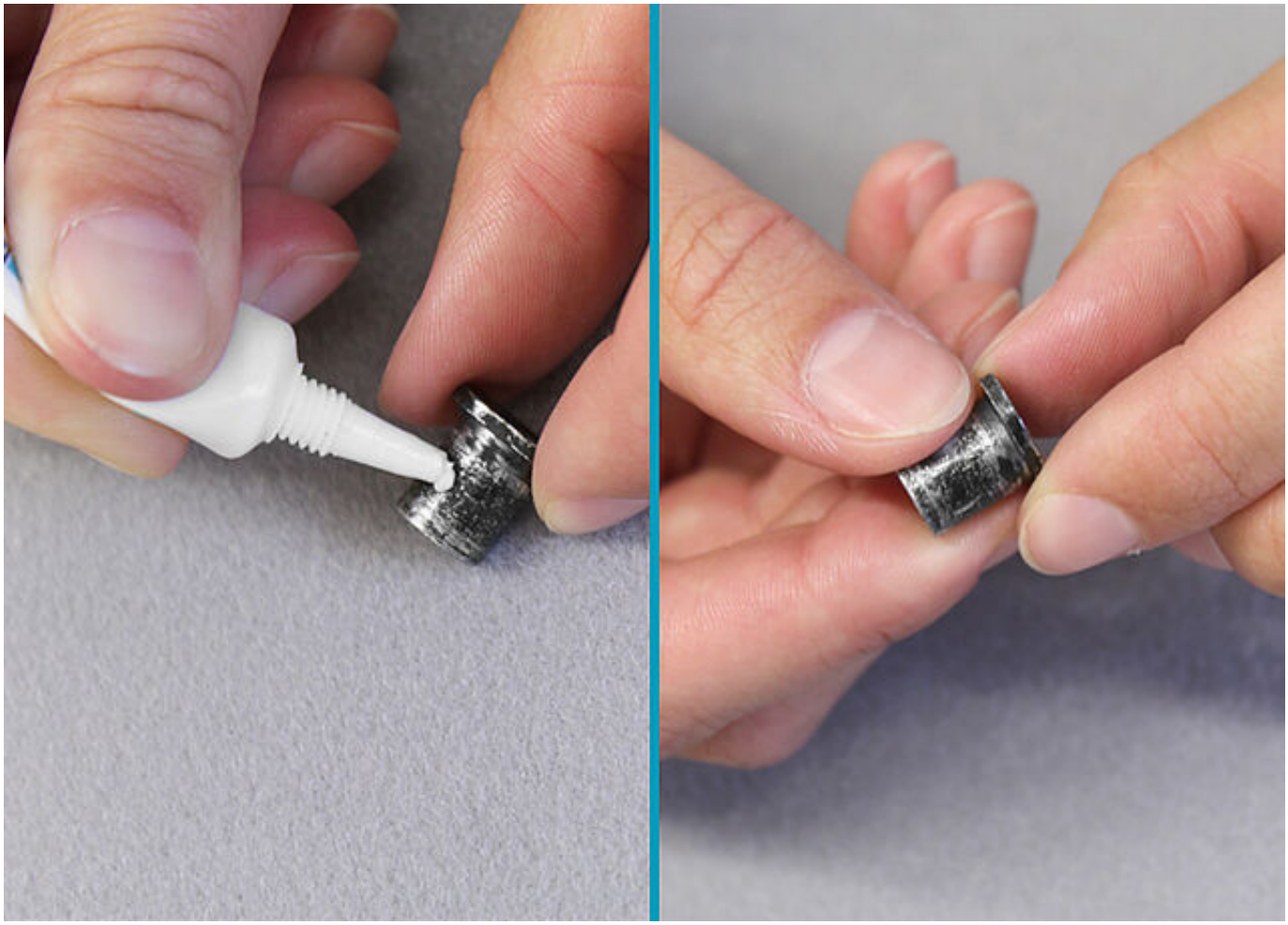

Slightly grease the sliding surfaces of the bearing nut with orthosis joint grease.

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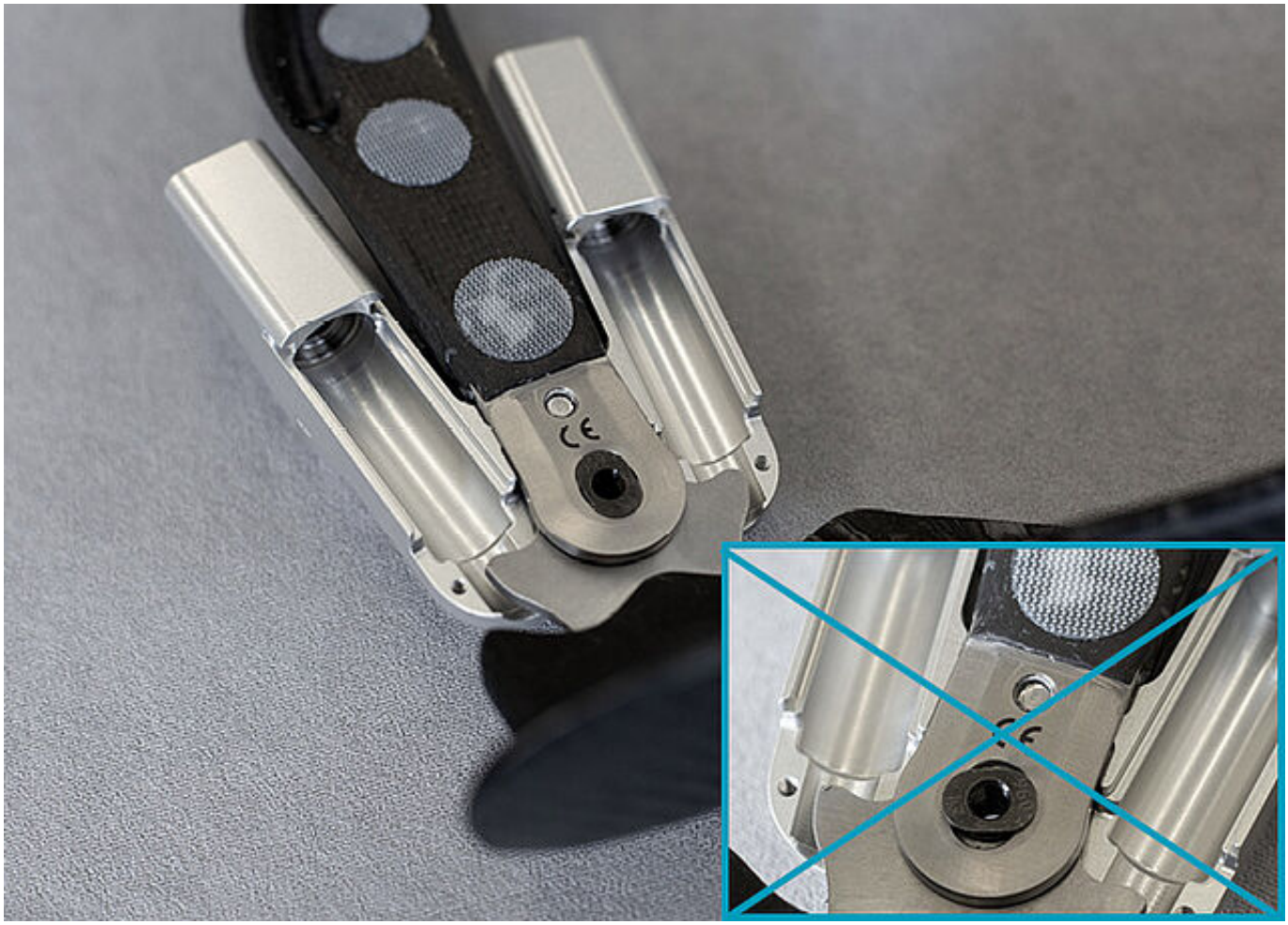

Put the bearing nut into the intended opening of the joint's upper part and make sure it is in the correct position. Secure the bearing nut with one finger.

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Turn in the second countersunk flat head screw (axle screw) with a torque corresponding to the system width. Still secure the bearing nut with one finger.

If a sliding washer should be damaged during the assembly of the cover plate (it is jammed), remove the washer particles and place a new sliding washer.

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Bring the system joint in plantar flexion/dorsiflexion. If system joint does not move freely, mount the next thinner sliding washer, repeat all steps from step 10 onwards and check again.

*Note: check if the joint moves freely before mounting the spring units. At a bilateral orthosis, only check one system joint at a time.*

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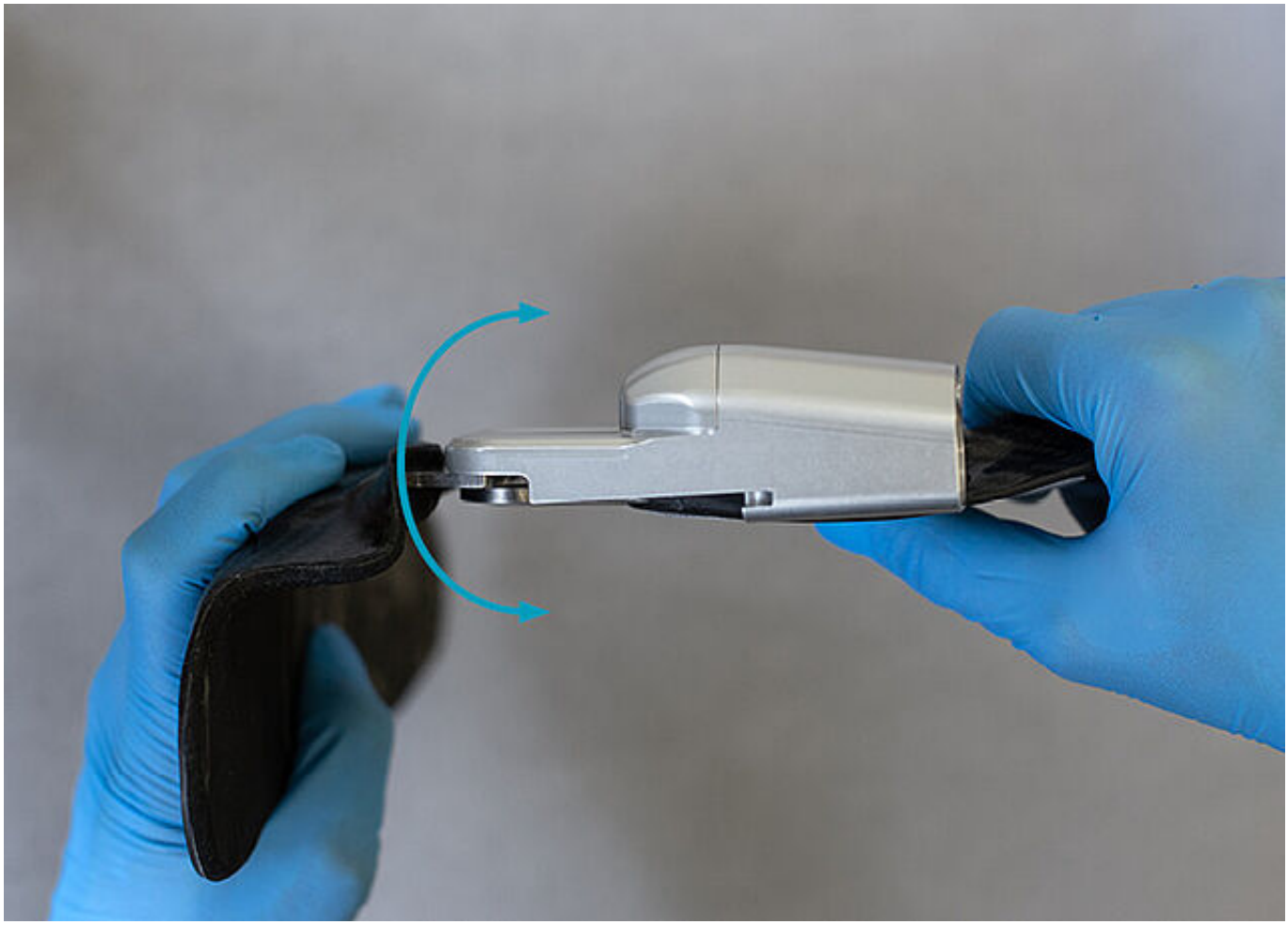

Hold the lower leg shell and try to move the foot piece in pronation-supination direction. If the system joint has lateral play, mount the next thicker sliding washer, repeat all steps from step 10 onwards and check again.

*Note: check if the joint runs with lateral play before mounting the spring units. At a bilateral orthosis, only check one system joint at a time.*

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Secure both screws with LOCTITE® 243 medium strength and the torque corresponding to the system width. Let the adhesive harden (final strength after approx. 24 hours).

*Note: mind the* safety data sheet *when using LOCTITE® 243 medium strength.*

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Place the spring units. For that, loosen the alignment screws as far as possible. Then, slide the O-ring damper and the coil spring onto the plunger of the spring unit and insert it into the spring duct from below. Let the damper touch down to the system stirrup. The spring unit is secured.

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Mount the spring unit cover in order to seal the spring ducts and secure it by tightening the screw.

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While mounting the spring units, adjust the play with the adjustment screws of the system ankle joint.

At a bilateral orthosis with supporting joint, the range of motion of the NEURO HiSWING R+ system joint should be limited without being restricted by the supporting joint. You might need to file off the stops of the supporting joint's system stirrup.

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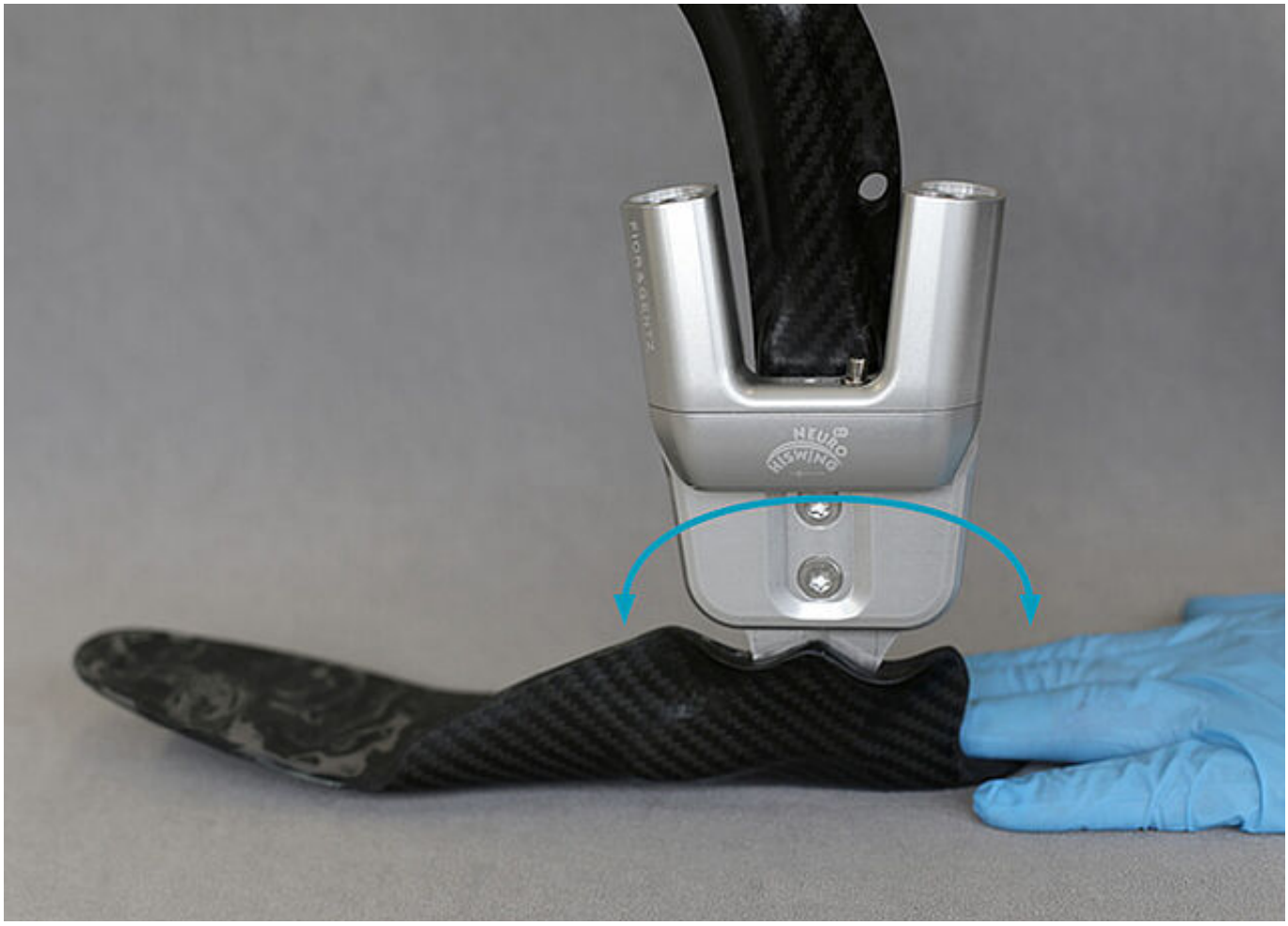

Bring the system joint in plantar flexion/dorsiflexion. Mounted spring units should move by compression only. At a high spring force, it is impossible to cause any movement manually. If the system joint still runs idle, carefully screw the posterior alignment screw further in.

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Then, mount the adjusting screw cover and secure it by tightening the screw.

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Plug the connection cable into the port of the controller. Tighten the knurled threaded bushing by hand until only a small slit remains visible. Do not use pliers to tighten the threaded bushing.

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Secure the controller to the orthosis shell using the accompanying countersunk flat head screws.

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Guide the connection cable through the bore.

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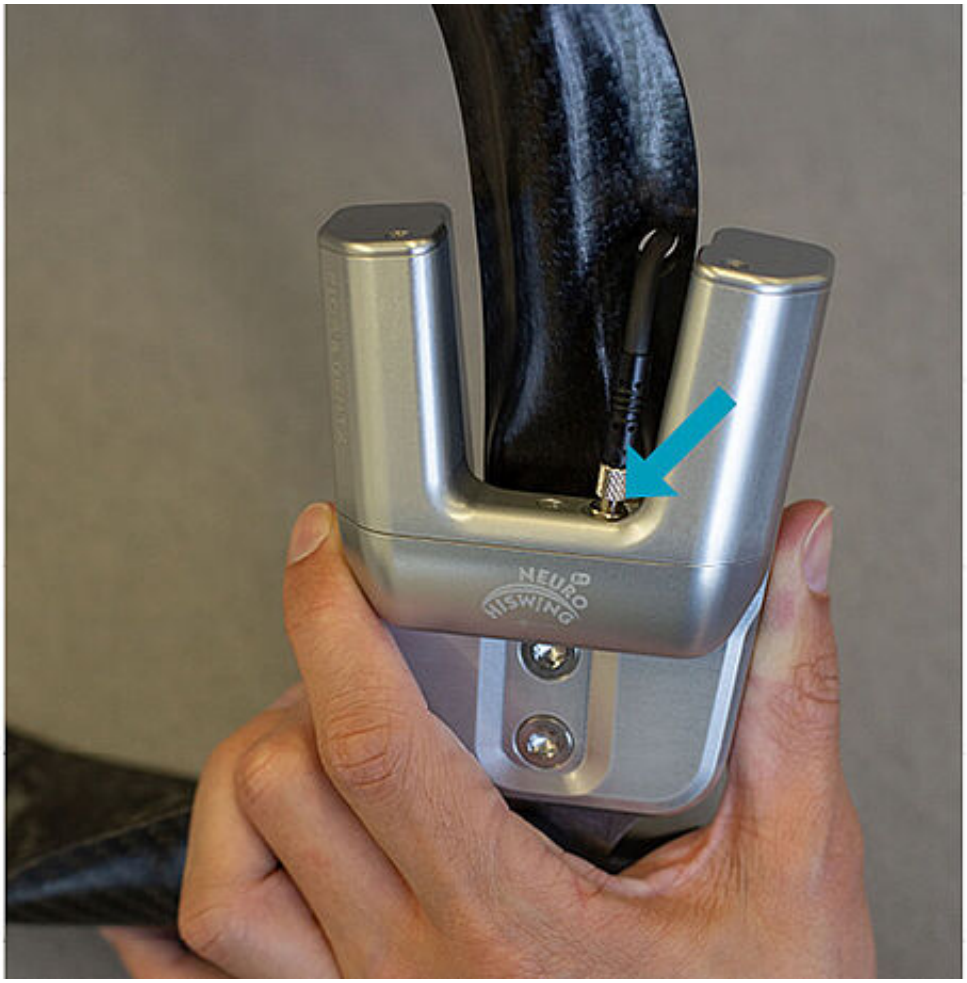


Plug the connection cable into the port of the functional unit. Tighten the knurled threaded bushing by hand.

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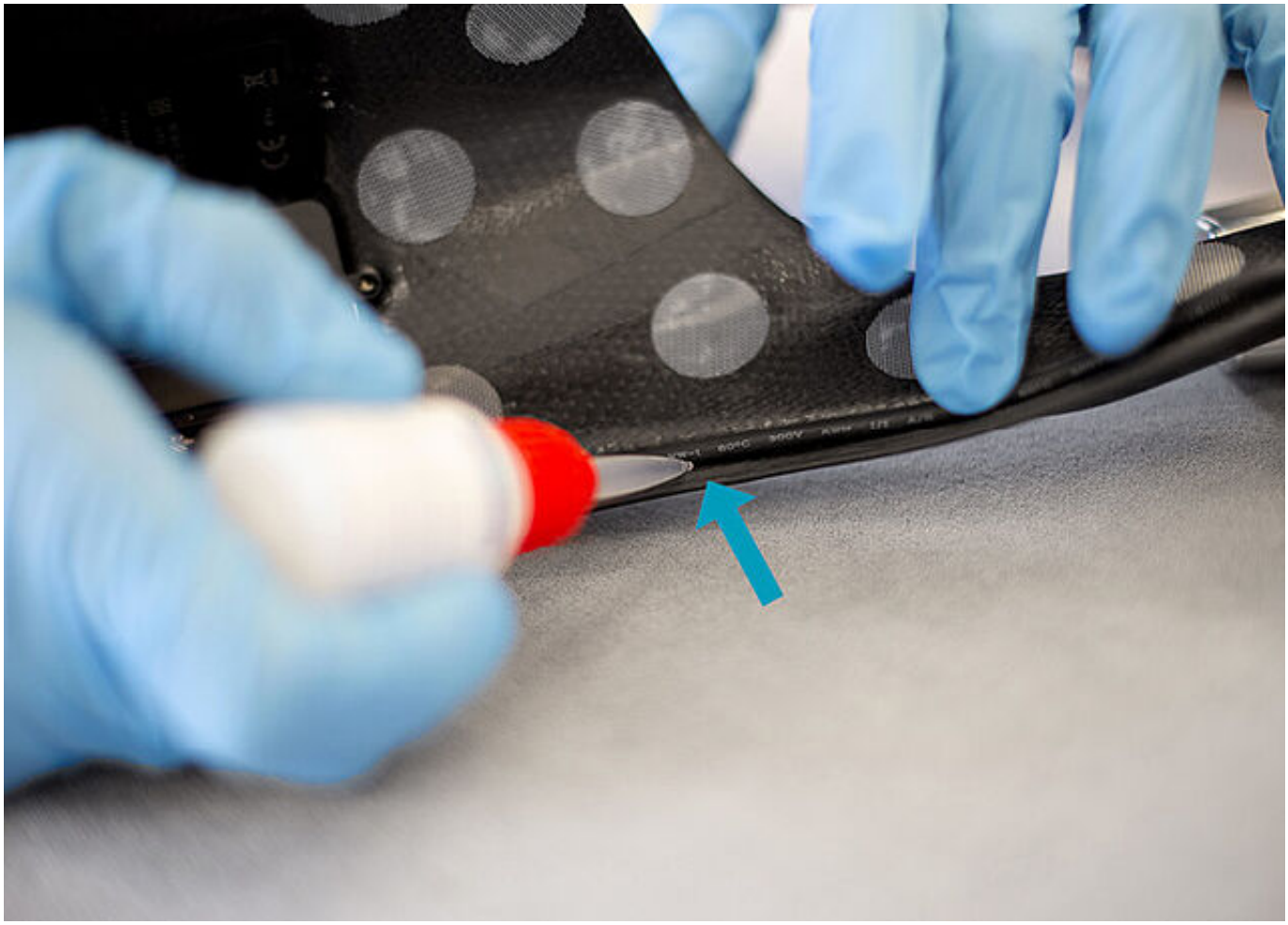

Adhere the connection cable with a small amount of medium-viscous fast-acting adhesive to the area on the lower leg shell created by the lamination dummy for the connection cable and the lamination dummy for the cable length compensation.

*Note: mind the* safety data sheet *when using fast-acting adhesive.*

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In order to adjust the orthosis alignment with a NEURO HiSWING R+, place the orthosis in the orthosis shoe that your patient will use later. Establish the correct orthosis alignment with the help of a plumb bob. Later, the basic position will be saved in the Expert app once.

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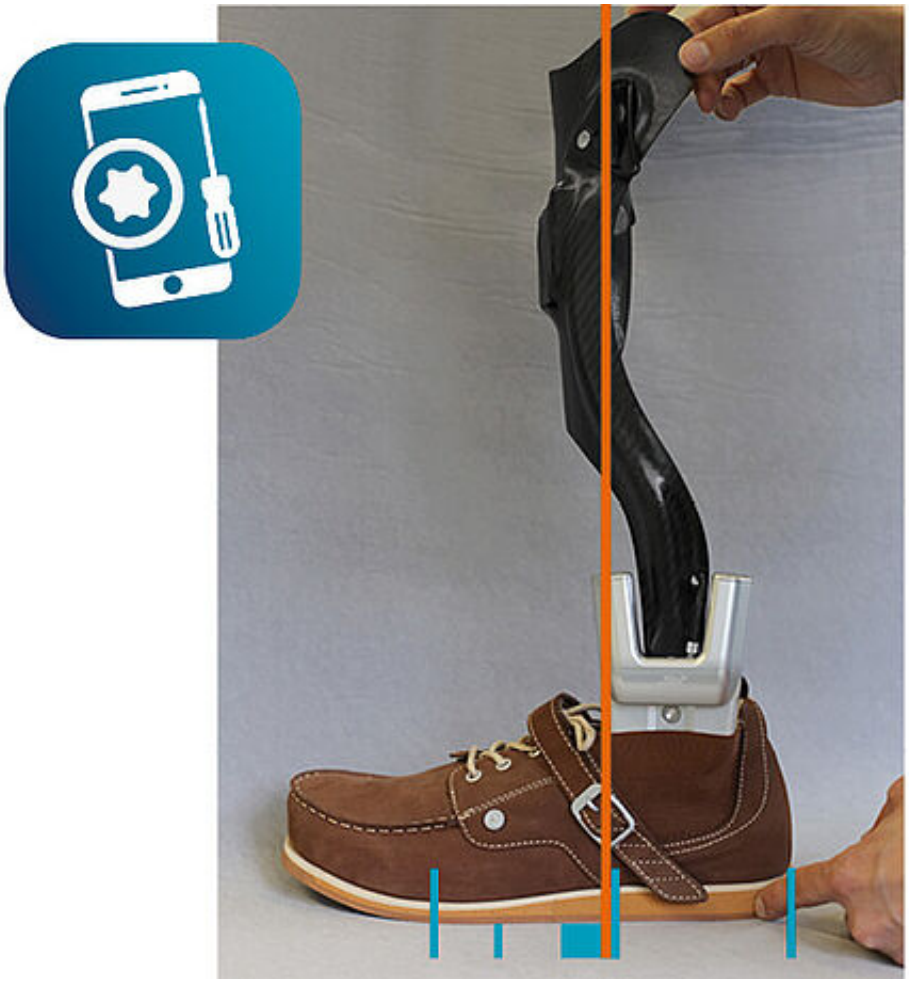

Realign the tibia inclination so that the plumb line falls through the centre of the ap measurement into the rear third of the front half of the supportive area. Save the basic position in the Expert app once.

Further information on the alignment of the orthosis can be found here.

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