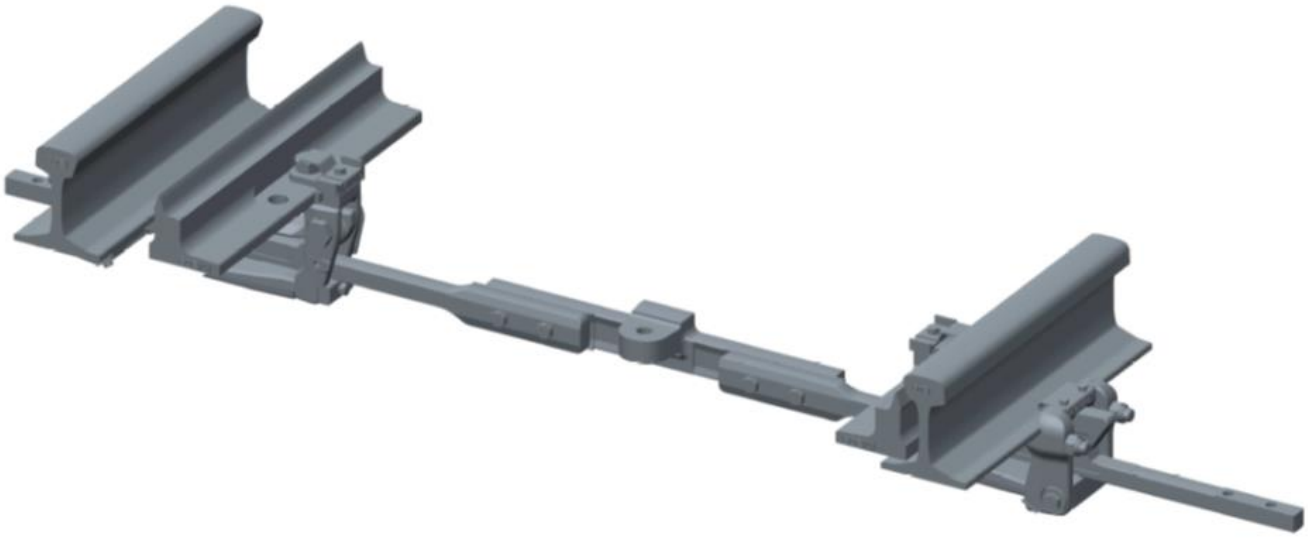
Schwihag SKV locking device
Version: 1:oo

P 0025893



Contents:

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Document
Schwihag SKV locking device

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1 General

1.1 Scope

This document is included with every locking device and may only be used in conjunction with the SKV locking device.

2 Product description

2.1 Product version

SKV locking device version in the space between sleepers or in the hollow sleeper.

2.2 Purpose

The locking device actuates the tongue rails during the changeover process. This ensures that they remain secure in their end positions:

- For the closed switch rail, this means that no wheel rim can pass between the stock rail and the not sufficiently closed switch rail.
- For the open switch rail, this means that the gap between the stock rail and the open switch rail is big enough to ensure the wheel rim passes without problems.
- The locking device forms a robust interlocking connection between the closed tongue rail and the stock rail. However, the equipment is designed in such a way that the switch assembly is trailable.

2.3 Area of use

- The SKV locking device is used in switch assemblies with timber, steel or concrete sleepers.
- The SKV locking device can be installed between two sleepers or in a locking hollow steel sleeper.
- The SKV locking device is used as an inside point locking and a middle lock.

2.4 Dimensions and weight

Length: Approx. 2370 mm Width: 183 mm Net weight: Approx. 67 kg

3 Safety during installation and maintenance work Requirements for assembly personnel Switch assembly requirements

Warning!

- The section of track must be closed off by trained safety personnel from the operating company for the duration of the assembly and maintenance work.
- Only people who are familiar with point operating systems and their associated risks may assemble the equipment. These people must be familiar with the area of application of the locking device and install the equipment in accordance with these assembly instructions. Assembly personnel must also be capable of recognising all hazards independently and be authorised to implement all safety measures.
- It is not permitted for people to remain in the vicinity of the switch rails during the switch assembly changeover process. There is a risk of injury from body parts becoming trapped between them or from the extending locking bar.
- Please observe the applicable provisions in the railway accident protection regulations.
- The manufacturer accepts no responsibility for failure to observe the safety regulations.

Please note: **Any company-specific legislative regulations, guidelines and instructions that go into more detail remain valid alongside these assembly instructions and must always be observed and followed.**

4 Preparatory work and prerequisites for assembly

4.1 Transport and storage

Please note: The product is packaged and delivered to the assembly site preassembled. After unpacking all components, check for potential transport damage and completeness in accordance with Figure 3. Take care not to damage the components by banging them together when removing the locking device from the packaging.

4.2 Switch assembly requirements

- The holes and grooves in the switch rail must be appropriate for the corresponding switch assembly in accordance with P9078.
- The basic elements of the track superstructure (rail profile and switch assembly radius) must correspond with the switch assembly layout and type (the order basis for the required locking device).
- The point machine / angle lever must feature the stipulated positioning range and point detector range.

4.3 Installation tools

- Torque wrench for torques of 20 Nm (width across flats 13), 80 Nm (WAF 18), 100 Nm (WAF 24) 155 Nm (WAF 30) and 200 Nm (WAF 39)
- Open-end or ring spanner for widths across flats of 1x13, 1x18, 2x24,1x30 and 1x39 mm.
- Allen key (size 8)
- Feeler gauge (0.5 mm)

4.4 Securing the screws

Standard DIN 25 202-B, which applies to this system, covers bolted connections designed for screws of strength class 8.8 and 10.9 in accordance with DIN ISO 898 Part 1. A specific prestressing force is required to ensure the functionality of bolted connections with dynamic and static loads. The required prestressing force is achieved using screws and nuts with an adequate level of strength, if these are tightened with the calculated torque.

5 Switch assembly requirements

⚠ **The eccentric bushing in the switch rail must be set as follows by default (Figure *1*):**

Inside point locking / middle lock 60E1–1zu00 with thin walls, generally facing the running edge.

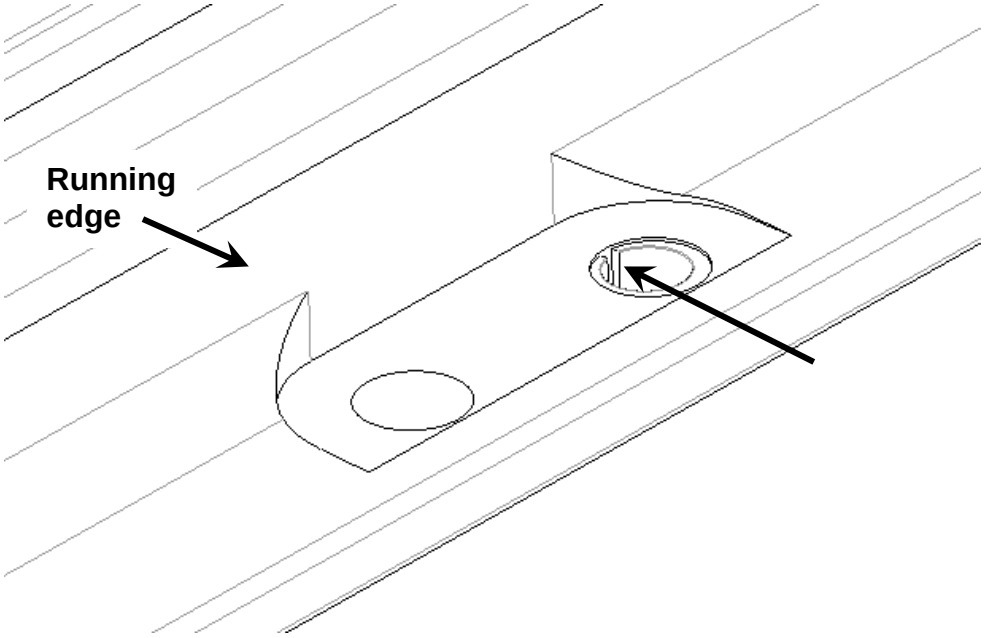
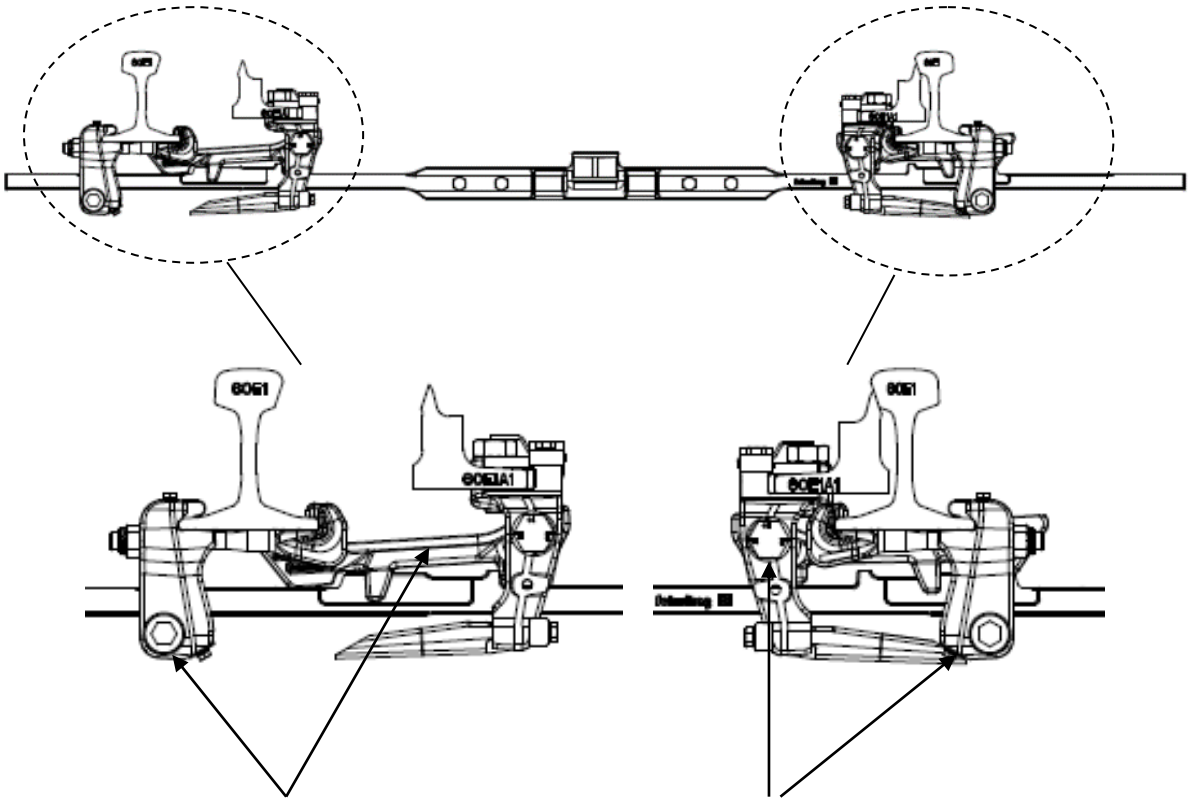


Figure 1

The bushing is included in the preassembled stretcher bar bracket module (Figure 3).

6 Assembling the locking device



The hexagon heads for the axles and adjusting cam must face the centre of the sleepers.

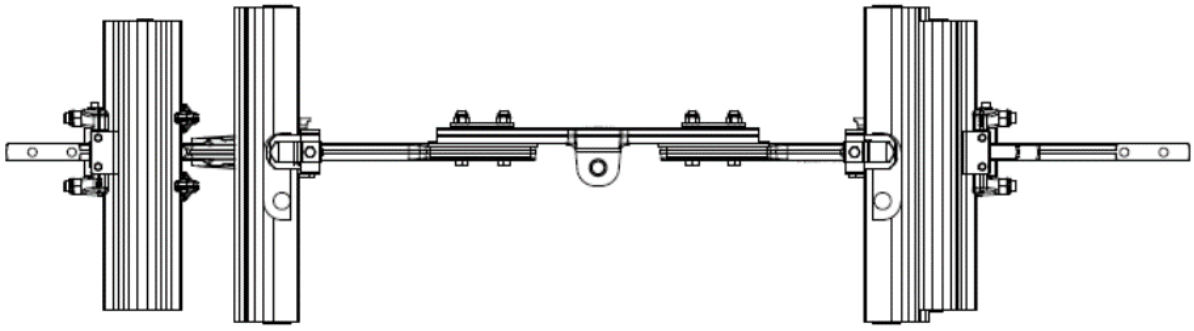


Figure 2

7 Preassembled modules and assembly groups

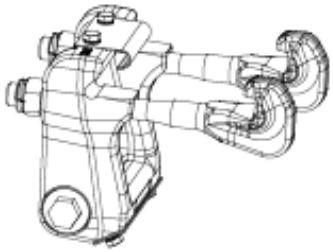
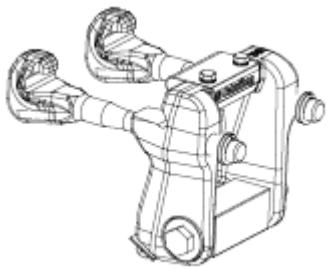
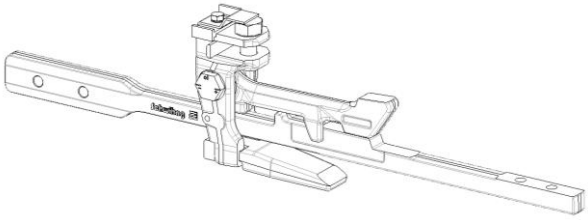
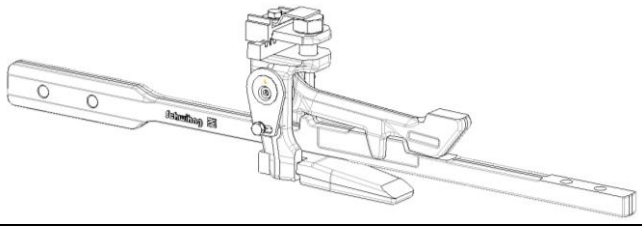
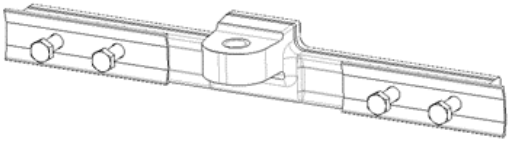
Module	Designation	Illustration
1	Left locking part	
1	Right locking part	
1	Right stretcher bar bracket	
1	Left stretcher bar bracket	
1	Fishplate	

Figure 3

8 Assembling the locking part

⚠ **Be aware of the installation position of the locking part. The position of the hex head of the axis must face the centre line of the sleeper and the start of the switch assembly. (Figure 2)**

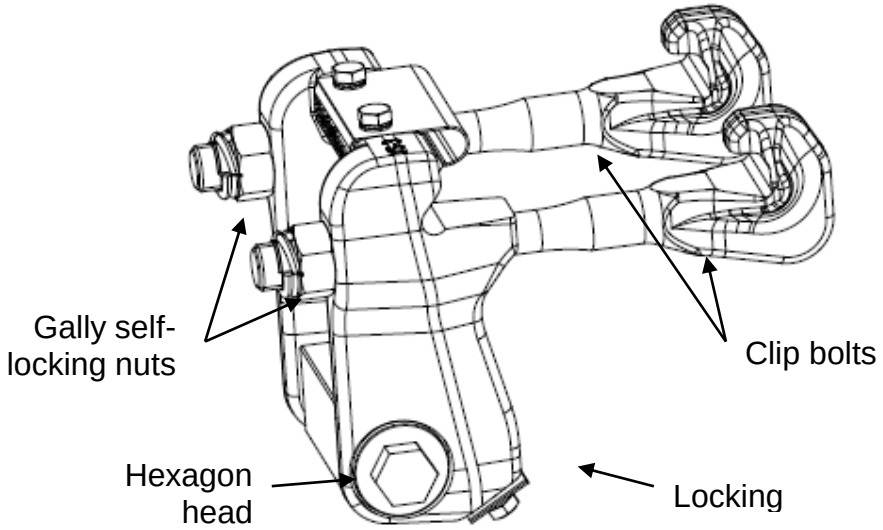


Figure 4

8.1 Preassembling the locking part

Mount the locking part on the base of the rail. Align it in the centre of the switch hole for the stretcher bar bracket. **Be aware of the installation position of the locking part / hexagonal axis. (Figure 2)**.

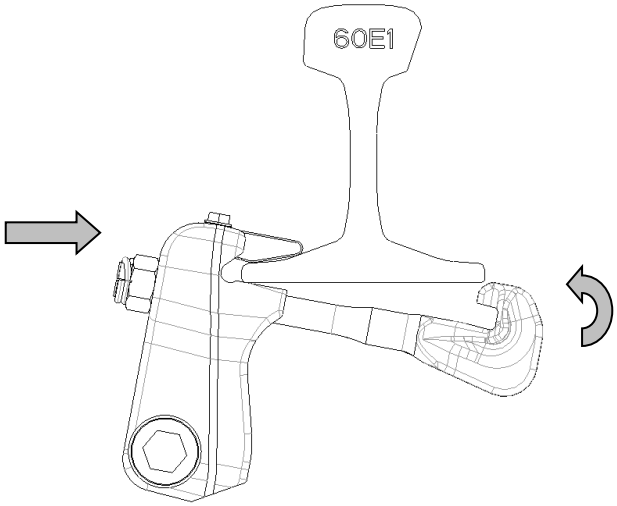


Figure 5

8.2 Aligning and securing the locking part

Tighten the nut on the clip bolt. Ensure that the stock rail foot lies in the wedge of the locking part. There must be no air gap between the bottom of the stock rail and the locking part. After aligning the locking part in the middle of the locking clamp, **(Figure** 12**)** tighten the nuts to a torque of 155 ± 10 Nm without lubricant.

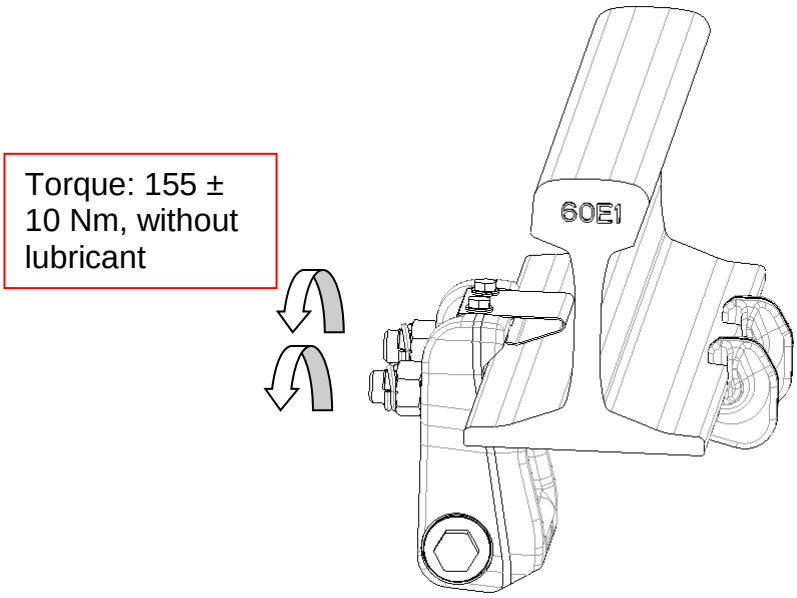


Figure 6

8.3 Assembling the second locking part

Repeat steps 8.1 and 8.2 for the oppositestock rail. Once again, be aware of the installation position of the locking part / hexagonal axis **(Figure 3)**.

9 Assembling the stretcher bar bracket

⚠ **Be aware of the installation position of the stretcher bar bracket. The position of the adjusting cam must face the centre line of the sleeper and the start of the switch assembly. (Figure 2)**

9.1 Mounting the stretcher bar bracket

Slide the preassembled unit – comprising the stretcher bar bracket complete with catch and sliding rod component – onto the switch profile.
Be aware of the installation position of the stretcher bar bracket / adjusting cam. (Figure 2)

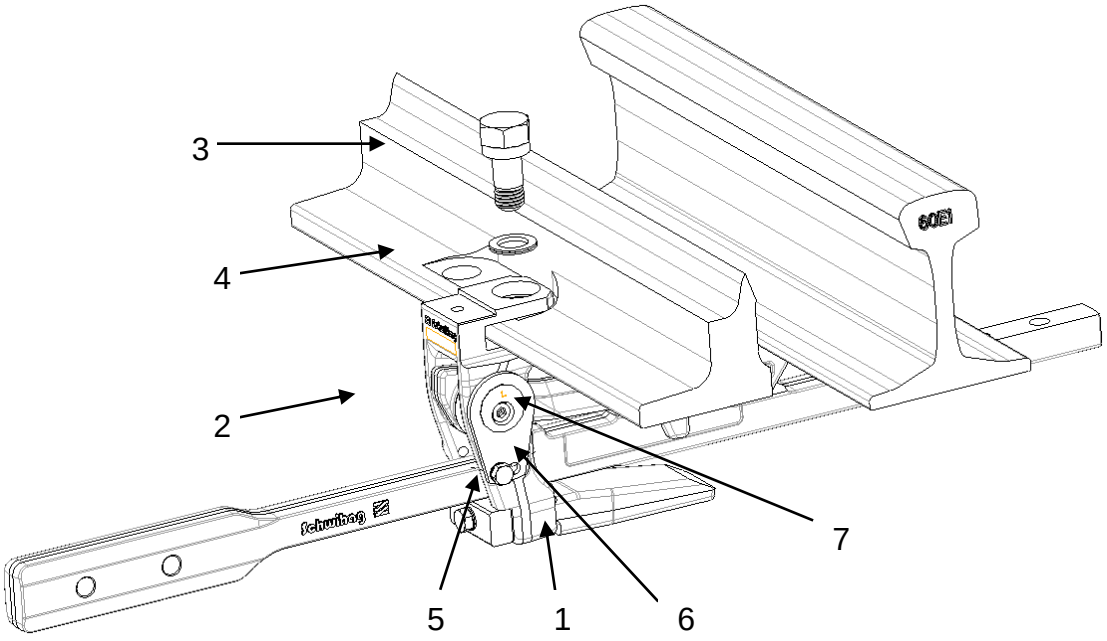


Figure 7

1	Stretch bar bracket	5	Locking screw
2	Locking clamp	6	Eccentric locking plate
3	Locking clamp screw VKS 5	7	Adjusting cam
4	Nord-Lock washer		

Insert the Nord-Lock washer into the VKS hole and screw into place until the screw head reaches the NL washer. Then unscrew the VKS again by roughly one revolution **(Figure 7)**.

9.2 Aligning the stretcher bar bracket

Insert the wedge between the base of the switch blade and the stretcher bar bracket towards the start of the switch assembly. To do so, gently shake the stretcher bar bracket so that it aligns in the most suitable position (**Figure 8**).

⚠ **Do <u>not</u> use a hammer or other similar object to force the wedge into place. This would cause the VKS to become jammed in the stretcher bar bracket.**

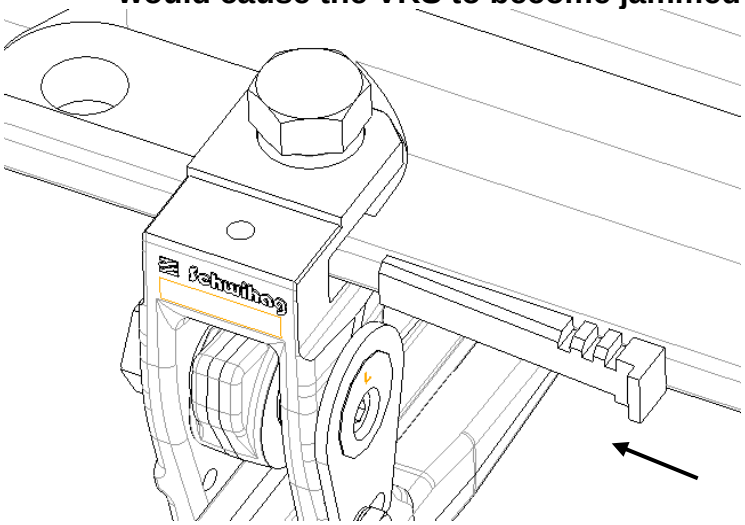


Figure 8

9.3 Torque

Tighten the VKS to a torque of 200 Nm. Do not lubricate the thread **(Figure 9)**.

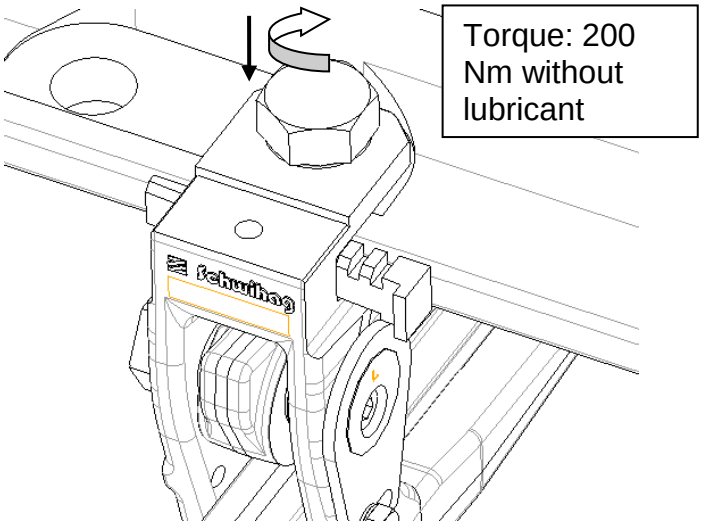


Figure 9

9.4 Assembling the locking piece

Place the locking piece on top of the stretcher bar bracket and slide it forwards and backwards until the cams slot into one of the wedge recesses.
If this is not possible, turn the locking piece around and try again (**Figure 0**).

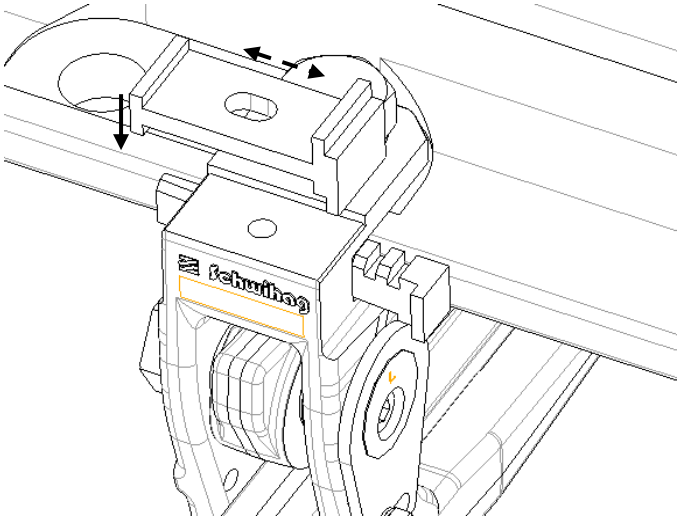


Figure 10

Screw the locking piece to the stretcher bar bracket with an M12 hexagon screw and a Nord-Lock washer (**Figure 1**)

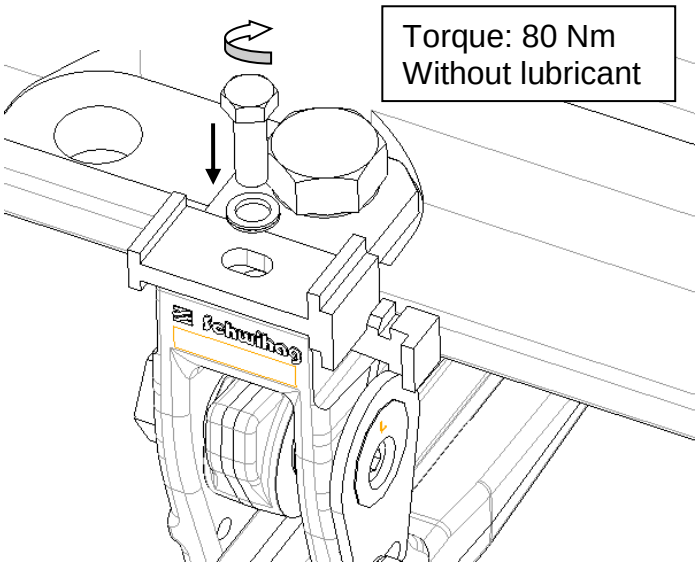


Figure 11

9.5 Assembling the second stretcher bar bracket

Repeat the same steps as described above for the opposite switch rail.
Once again, be aware of the installation position of the stretcher bar bracket / adjusting cam. (Figure 3)

9.6 Aligning the locking part

Align the locking part in the centre of the cam bar and locking clamp and tighten to the required torque of 155±10 Nm without lubricant
(Figure 2**)**.

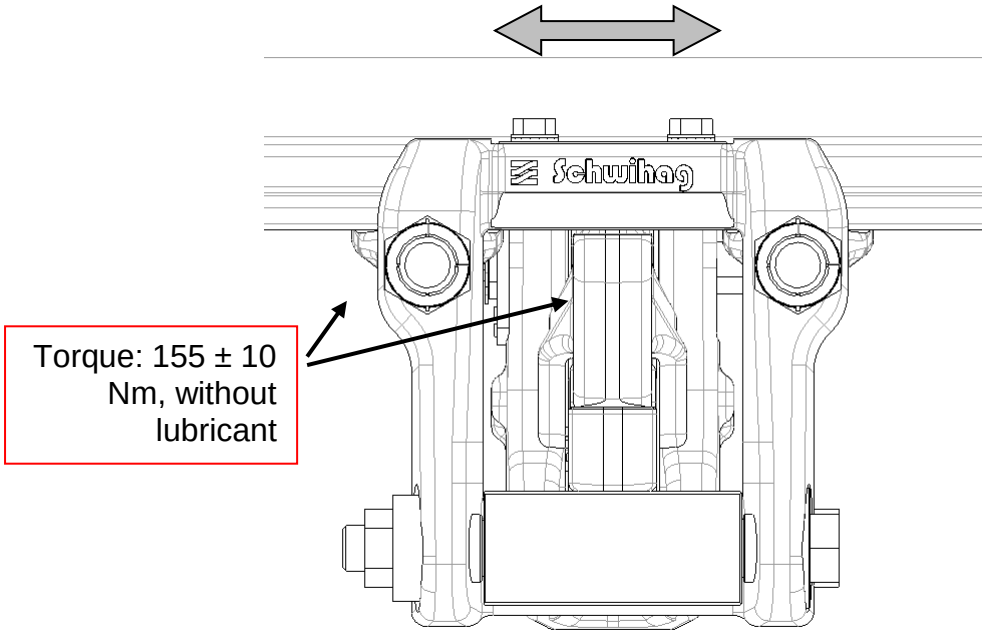


Figure 12

10 Connecting the sliding rod components

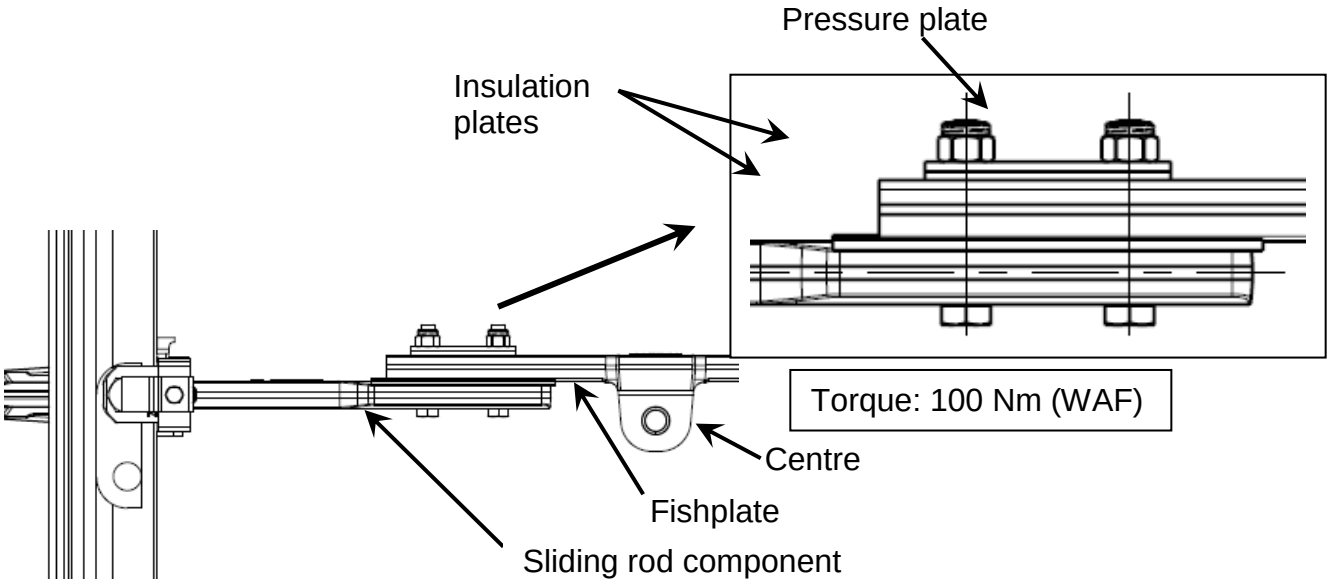


Figure 13

Connect the two sliding rod components for the preassembled units using the fishplate and the intervening insulation plate.

The centre ear faces the centre of the sleeper. Insert the screws and position the insulation and pressure plates in the specified order.

Screw the entire unit together.

11 Adjusting the lock

11.1 Clamp height

The default settings for the sliding rod supports in the locking parts mean that the open clamp has an air gap on the bottom of the stock rail on the sliding rod.

11.2 Adjusting the end of the rail

See figures 7 and 14

The configuration of the switch rail on the stock rail is adjusted using the eccentric bolt with the hexagon head in the stretcher bar bracket.
This involves loosening the locking screw (not removing it completely!!) until the locking plate can be removed from the hexagon. The eccentric bolt can now be rotated with a spanner according to the required setting.
Hold the 0.5 mm feeler gauge in the area around the lock between the switch rail and stock rail. By rotating the eccentric, turn the locking clamp in the direction of the locking part until clear resistance can be felt and the switch rail on the stock rail is approximately 0.5 mm away from the plant.
Then replace the locking plate and secure with a locking screw.

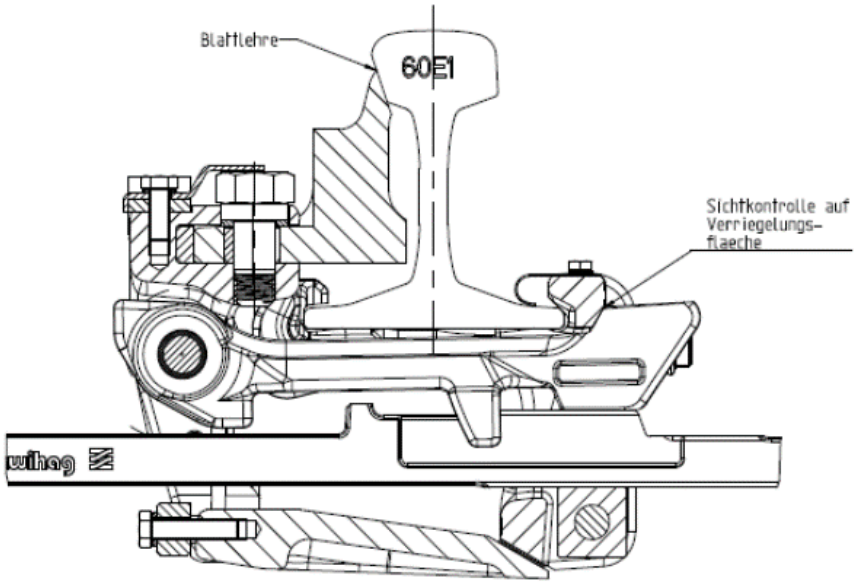


Figure 14

The positioning range for the eccentric bolt is **+/- 4.5 mm**. The eccentric bolt is secured against overtightening.

⚠ **Test:** When inserting a 4 mm obstruction between the switch rail and stock rail, the lock must not reach the closed position when changing the switch assembly. The clamp locking surface must cover at least 10 mm of the locking part contact surface.

11.3 Testing

Testing the cover. The cover (46±5 mm) of the catch with the sliding rod is measured using a scale on the bottom of the catch.

12 Servicing and maintenance

12.1 Servicing

The movable components such as bearing bolts and eccentric bolts are made of stainless steel and tempered for wear resistance. It is not necessary to lubricate the bearing positions.

Servicing work for the SKV locking device is limited to:

- Lubricating the locking parts on the sliding surfaces with conventional rail lubricant as part of the initial installation process.
- Periodic checks in accordance with Chapter 11.2 with appropriate corrections in the case of any differences.

12.2 Maintenance

The potential relative movement of the switch rail towards the stock rail (the temperature range of the switch rail) is +/- 30 mm (self-regulating) depending on the lock.

Checks on whether the safety elements are present and securely in place are carried out in accordance with the customer's specific inspection intervals. The inspection results are to be documented appropriately.

Check the end of the rail in accordance with step 11.2.

The square can be readjusted in the event of any deterioration.

13 Inspection and test sheet for the SKV locking device

Railway: ……

Station: ……

Inspector: ……

Switch assembly type: …….. Switch assembly no: ……..

Lock	**Switch opening in mm**			**Cover in mm**			**4 or 5 mm sample tested**			**Lock hub**		**Assembly Acceptance Inspection**	**Completed work**	**Date**	**Name**
	Nom. value	Act. L	Act. R	Nom. value	Act. L	Act. R	Nom. value	Act. L	Act. R	Act. L	Act. R				
Inside point locking															
Middle lock 1															
Middle lock 2															
Middle lock 3															
Travel groove															

Comments	**Sliding force**	
	L	R

Notes: