



Technical Instruction for the Installation and Maintenance

of the low-maintenance clamp lock (BFL)

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1 Requirements, Use

The low-maintenance clamp lock BFL can be used in any type of turnouts and points, with rails S49, S54 and UIC60.

The basic adjustment of the eccentric bushing in the switch rail has to be carried out as follows:

S 49/54 generally: narrow side (trench) towards running edge
UIC 60 generally: narrow side (trench) towards running edge

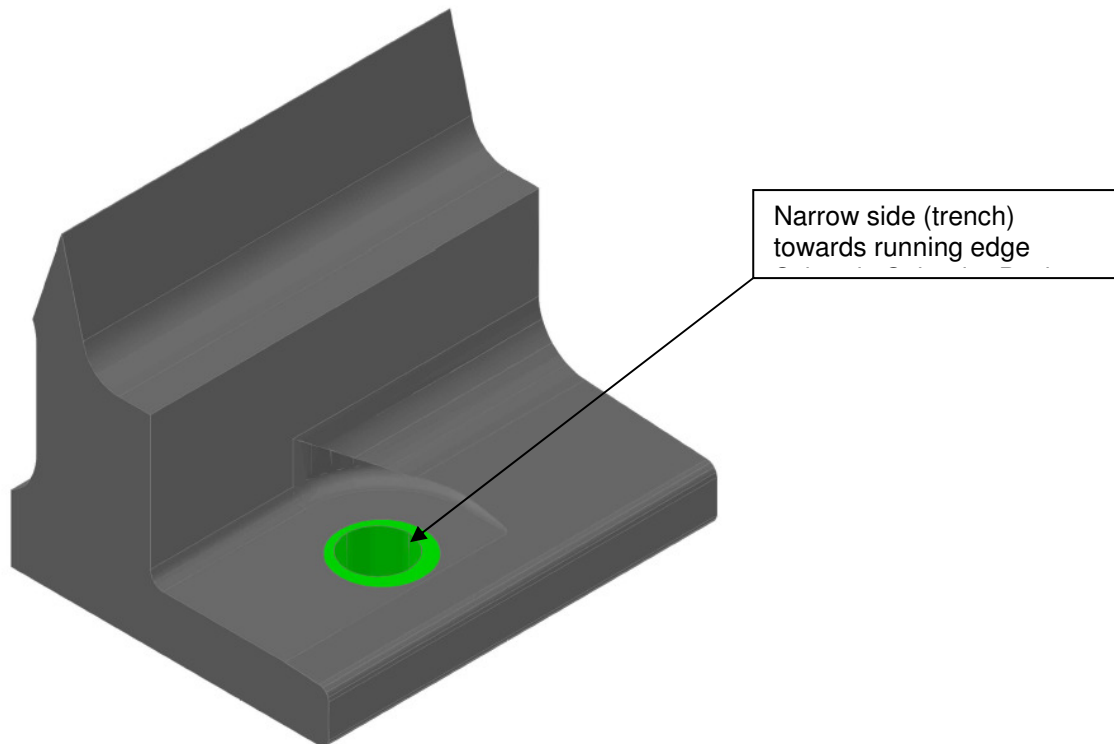


Fig. 1: Adjustment of the eccentric bushing



Required tools for installation

- Torque Wrench with a setting range of 8 to 45 Nm (Wrench insert 13)
- Torque Wrench with a setting range of 80 bis 400 Nm (Wrench inserts 24, 30 und 36)
- Flat wrench or Ring wrench with wrench sizes: 1x13, 2x24, 1x30 und 1x36 mm
- Feeler gauge (0.5 / 4 / 5 mm), Metal level gauge (300 mm)
- Nylon hammer, long straight edge

2 Installation of the Clamp Lock BFL22

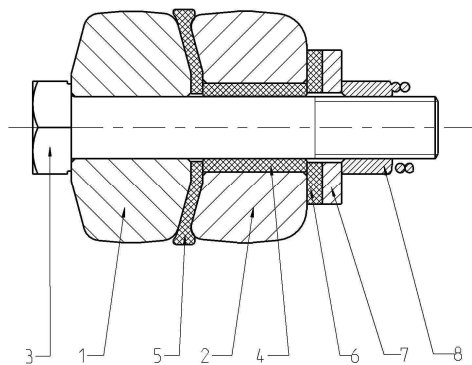
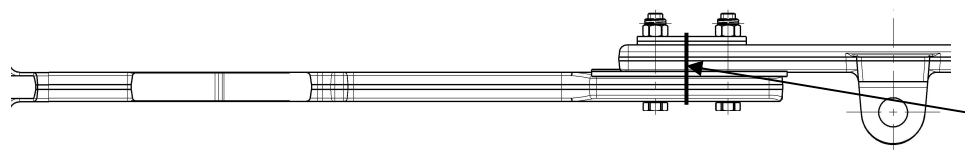
The low-maintenance clamp lock (WKV) is delivered partly assembled in a wooden crate. Installation of the individual components is described in the following.

2.1 Installation of the valve rod

- Bolting of the pushing rod parts and the fish plate, and the corresponding fixing and insulation materials. (Fig. 2)
- Positioning of the assembled valve rod within the sleeper bay

Hinweis:

- fish plate with contact eye for the centre contact surface:
→ All first locking devices except those for hollow bearers
- fish plate without contact eye for the centre contact surface:
→ All second locking devices
- Fish plates are always positioned in direction of the end of the switch
- Contact eyes of fish plates are always pointing in direction to the tip of the switch




1. Pushing rod part
2. Fish plate
3. Hexagon bolt M16 x 95 (SW24)
4. Insulating bushing UIB 1/1
5. Insulating plate ULP 1
6. Insulating plate ULP 2
7. Plain washer UUL 3
8. Gally nut M16

Important:


On installing the pushing rod, the marked points are linked with each other

Fig. 2 Assembly of valve rod

	Tightening torque	Tool
Gally nut M 16 (Fig. 2, Item 8)	100 Nm ± 10 Nm	Torque Wrench SW 24

2.2 Assembly of the locking boxes

- Screws (1) of the profile adjustment rod (2) to be loosened and the profile adjustment rod to be pushed inside
- Valve rod to be positioned into the locking boxes
- Locking boxes to be hinged at the outer sides of the rail feet
- Locking boxes to be positioned centralized to the holes of the tongue rails
- Hook bolts of the locking boxes (3) to be mounted and fixed with self-locking nuts (4) and to be tightened for achieving a contact to the rail foot (Fig. 3a)
- Fixing of the profile adjustment rod for achieving a contact between locking box and bottom side of the rail foot (Fig. 3b)
- Hook bolts of the locking boxes to be tightened

	Tightening torque	Tool
Self-locking nuts M 20 (Fig. 3b, Item 4) of the hook bolts	200 Nm ± 20 Nm	Torque Wrench SW 30
Screws M 8 (Fig. 3a, Item 1)	20 Nm ± 2 Nm	Torque Wrench SW 13

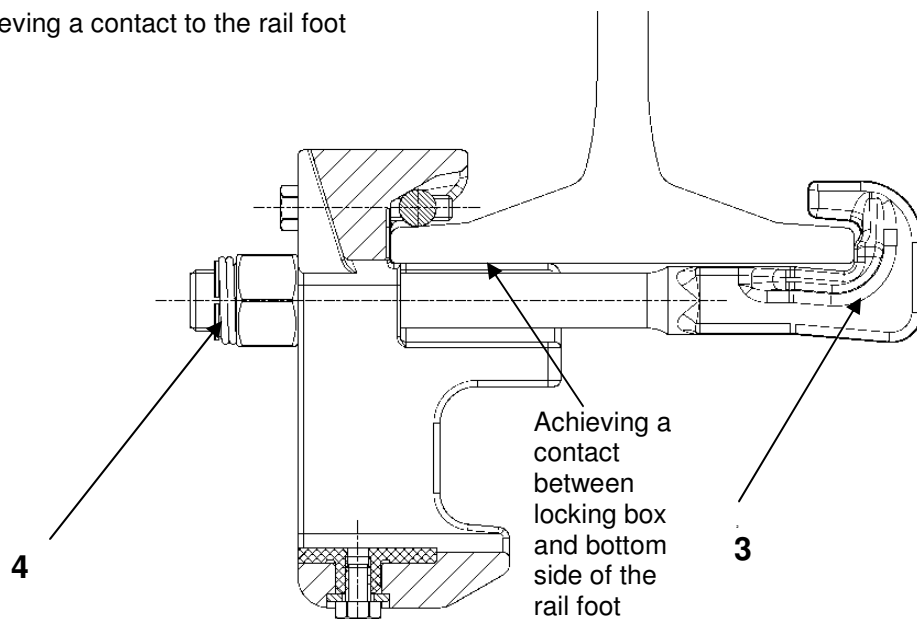
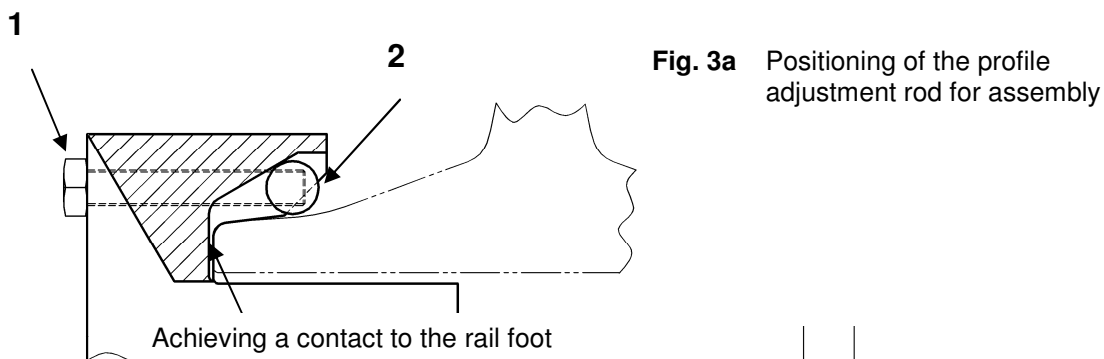


Fig. 3b Assembly of the locking box

2.3 Assembly of the tongue attachment

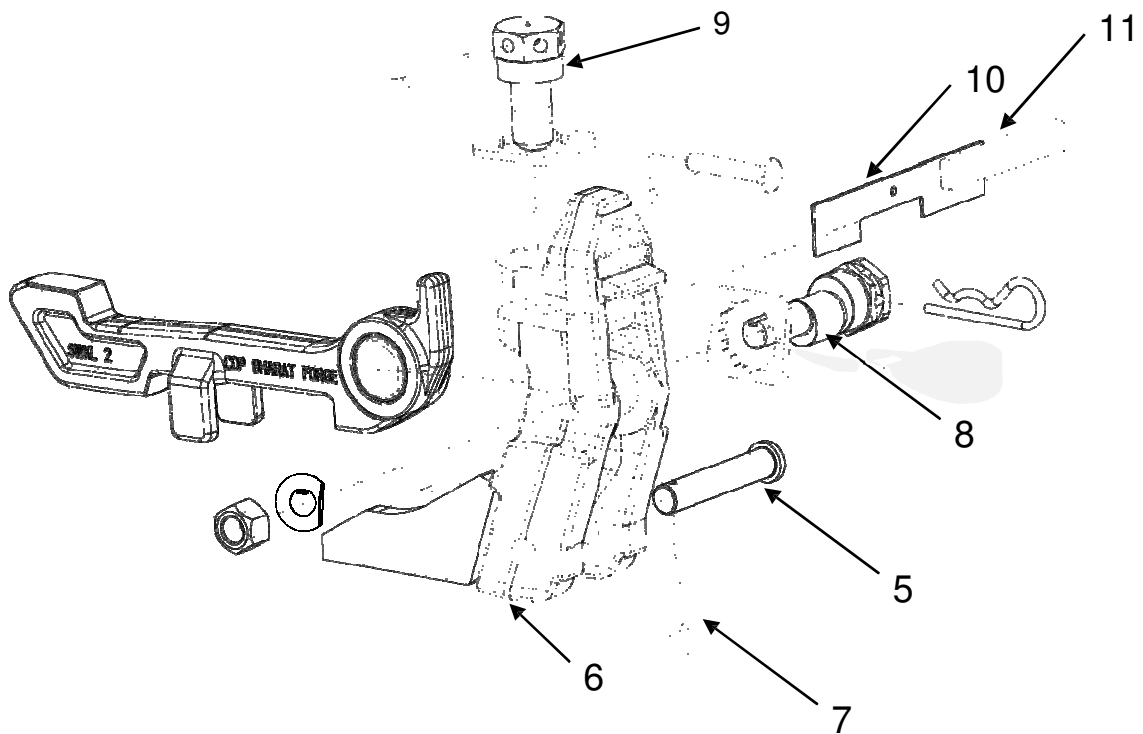


Fig. 4 Exploded view of the tongue attachment

- The lower safety bolt (5) of the tongue attachment (6) has to be removed after removal of the safety spring (7).
- Both tongue attachments have to be positioned on the switch rail and fixed slightly by using the locking clamp screw VKs 5 (respectively VKs 5a in case of second / middle claw lock) after insertion of the safety shim Sib 8a (10)
- Wedge (11) to be hammered in
- The locking clamp screw to be fixed
- The lower safety bolt (5) to be installed and secured by the safety spring (7)

Important:

It is necessary to ensure that the clamp lies on the contact surface "a" of the pushing rod, so that it can be pushed underneath the foot of the stock rail.

In closed position of the switch blade, the locking surface of the clamp must lie against the contact surface "b" of the locking box (see Fig. 5).

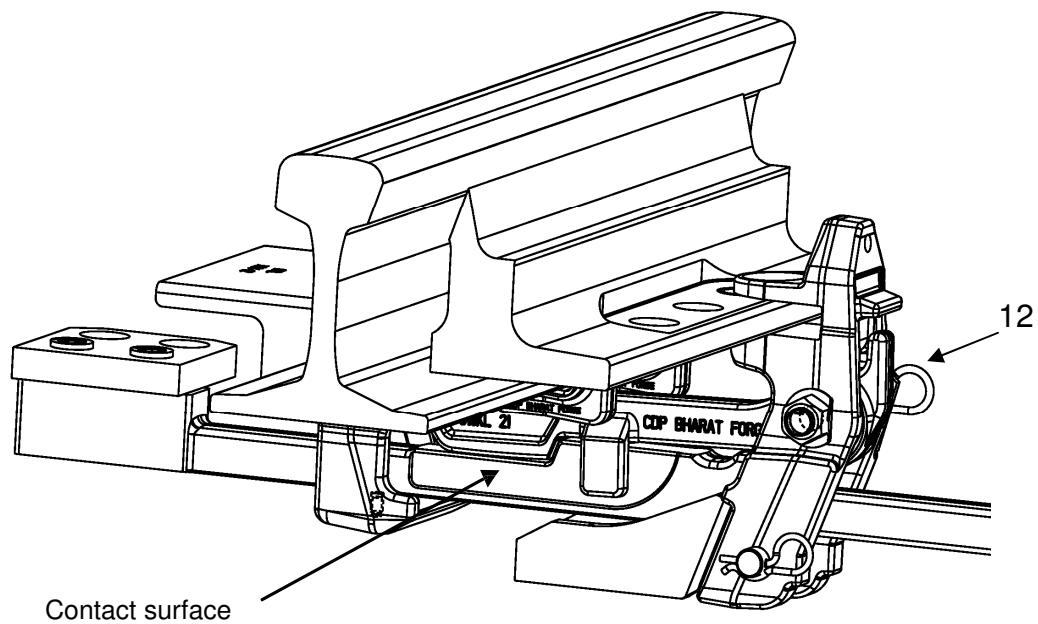


Fig. 5 Assembly of the tongue attachment

3 Adjustment of the claw lock

- Spring connector (12) of the eccentric bolt (8) to be loosened and safety shim Sib9a (13) to be removed from the head of the eccentric bolt
- Valve rod to be moved in the end position
- Adjustment of the longitudinal position of the clamp by turning the eccentric bolt

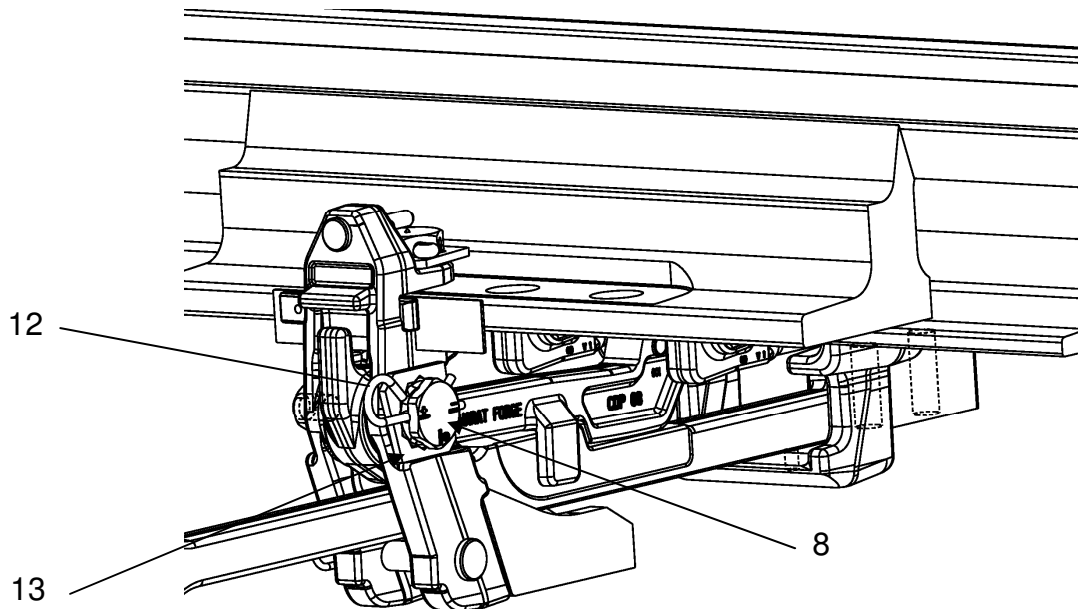


Fig. 6 Adjustment of the claw lock

Note:

The correct longitudinal position of the clamp is achieved, as soon as the clamp pushes against the locking box (noticeable resistance of the eccentric bolt) during a given gap of 0.5 mm between stock and tongue rail.

- Accurate adjustment and fixation of the eccentric bolt by moving the safety shim Sib9a (13).

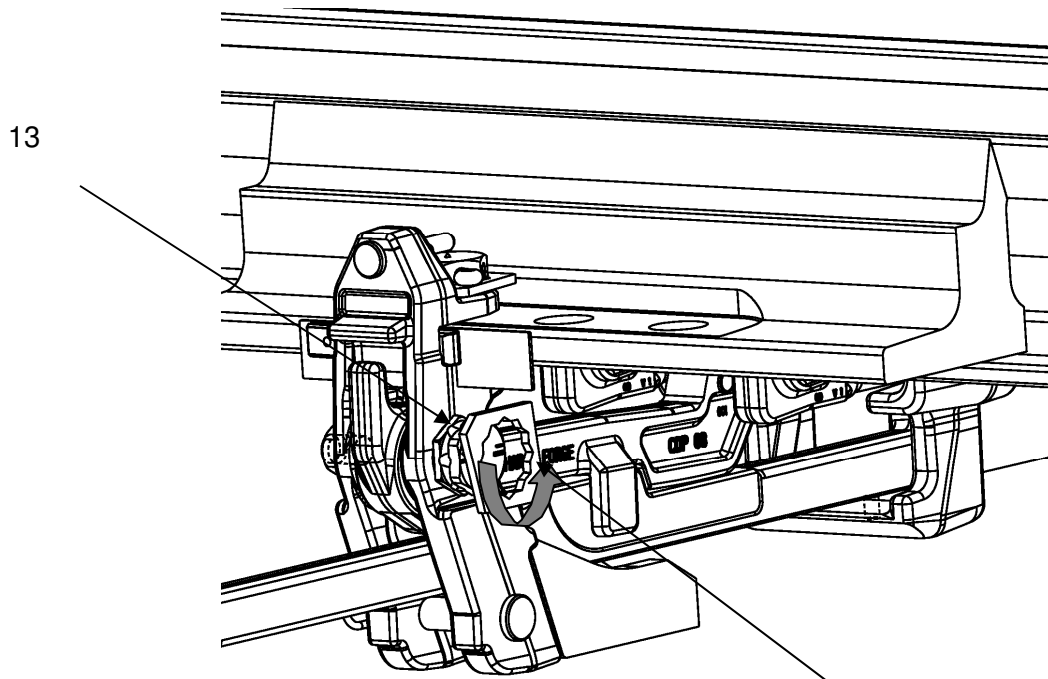


Fig. 7 Moving the safety shim Sib9a

*The eccentric bolt with hexagonal head is three times marked: with „+“, „0“ and „-“. The assembly in the works is done at the position marked with „0“, (lowest position).
By moving the eccentric bolt, the length of the clamp can be adjusted. („+“ means elongated; „-“ means shortened).
Important:
The eccentric bolt must not be moved more than +/- 90 degrees from position „0“. Otherwise the clamp could get stuck under the rail foot.*

- Verification of the symmetrical tongue opening by operation of the turnout (if necessary, the length of the pushing rod needs to be adjusted)

4 mm test: With positioning of a 4 mm thick obstacle between stock and switch rail, the locking device must not achieve the locked end position after operation. (If necessary, the longitudinal position of the clamp needs to be shortened.)

3.1 Verification of overlap and idle stroke

Verification of the overlap and idle stroke measure will be executed by using a measuring gauge according to DB-drawing S414.09 BI.2.

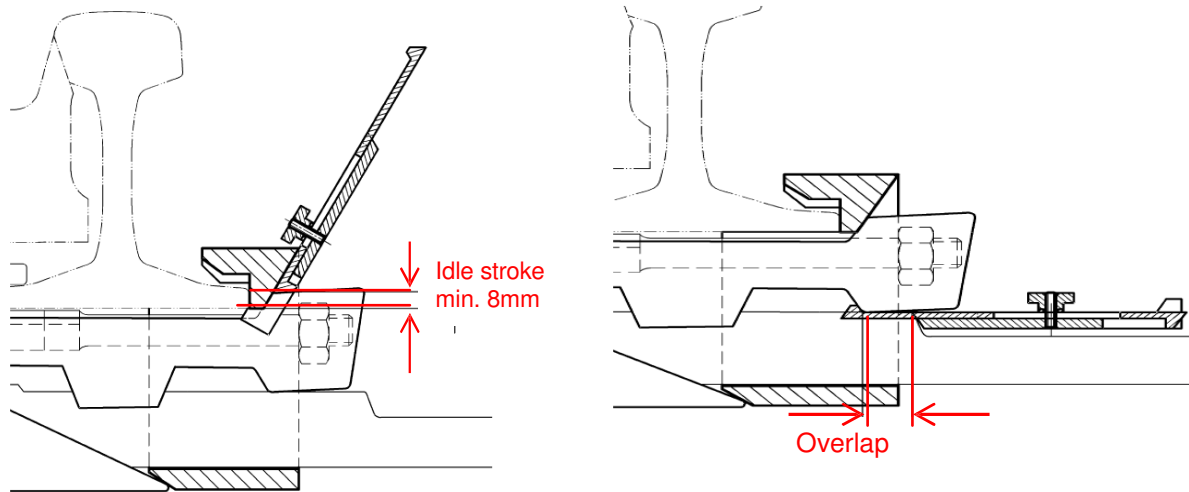


Fig. 8: verification of overlap **U** and idle stroke **K**

Measures and tolerances according to inspection sheet for turnouts with claw locks BFL22 and the sheet for verification of the overlap and idle stroke of claw locks BFL.

4 Special feature for curved switches

The offset of the switch blade hole in curved switches must be compensated for by packing 3 mm thick intermediate plates in the valve rod. The clamp and valve rod must be aligned with each other.

If using intermediate plates (shims) the standard M16x95 bolts must be replaced with M16x100 bolts. The equalisation kits are supplied by the turnout manufacturer together with the points, according to the information on the layout drawing and are to be taken into account when installing the guide rods.

In general, two intermediate plates maximum must be used, the overhang of the thread (at least 1.5 thread turns) must be met.

Up to 5 shim plates may be used for adjustment; in this case, M16x115 bolts must be used.

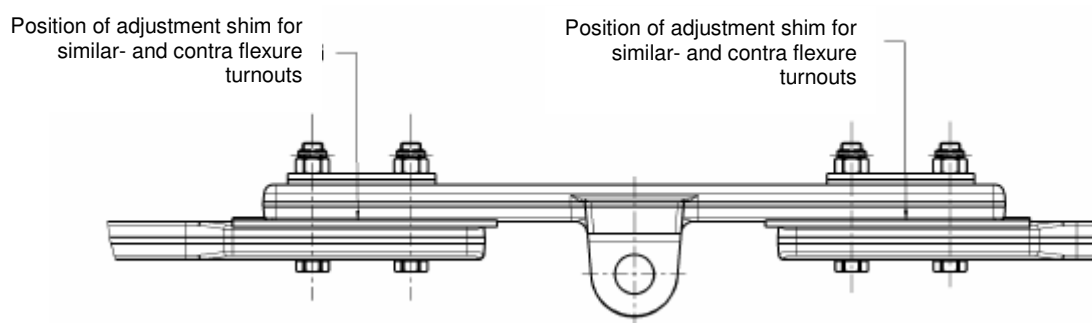


Fig. 9 Adjustment of the offset of the tongue holes in curved switches

Turnout geometry	Radius of main track	Adjustment height
Contra flexure turnout ABW 54-190	$1410 \text{ m} \geq r_s \geq 705 \text{ m}$ $705 \text{ m} \geq r_s > 470 \text{ m}$	3 mm 6 mm
Similar flexure turnout IBW...-300	$1500 \text{ m} \geq r_s \geq 840 \text{ m}$ $840 \text{ m} \geq r_s > 560 \text{ m}$	3 mm 6 mm
Similar flexure turnout IBW...-500	$1500 \text{ m} \geq r_s \geq 968 \text{ m}$ $968 \text{ m} \geq r_s > 645 \text{ m}$	3 mm 6 mm
Similar flexure turnout IBW...-760	$1500 \text{ m} \geq r_s \geq 1178 \text{ m}$ $1178 \text{ m} \geq r_s > 785 \text{ m}$	3 mm 6 mm
Similar flexure turnout IBW...-1200	$1500 \text{ m} \geq r_s \geq 1155 \text{ m}$ $1155 \text{ m} \geq r_s > 770 \text{ m}$	3 mm 6 mm

5 Assembly of the side attachments for pushing rods

For achieving the connection sizes to transmission parts (position of connection holes in the valve rod of the claw lock) the first and second locks need to be equipped with according side attachments (22 Fig. 10) Also mentioned on drawings for other rail sections.

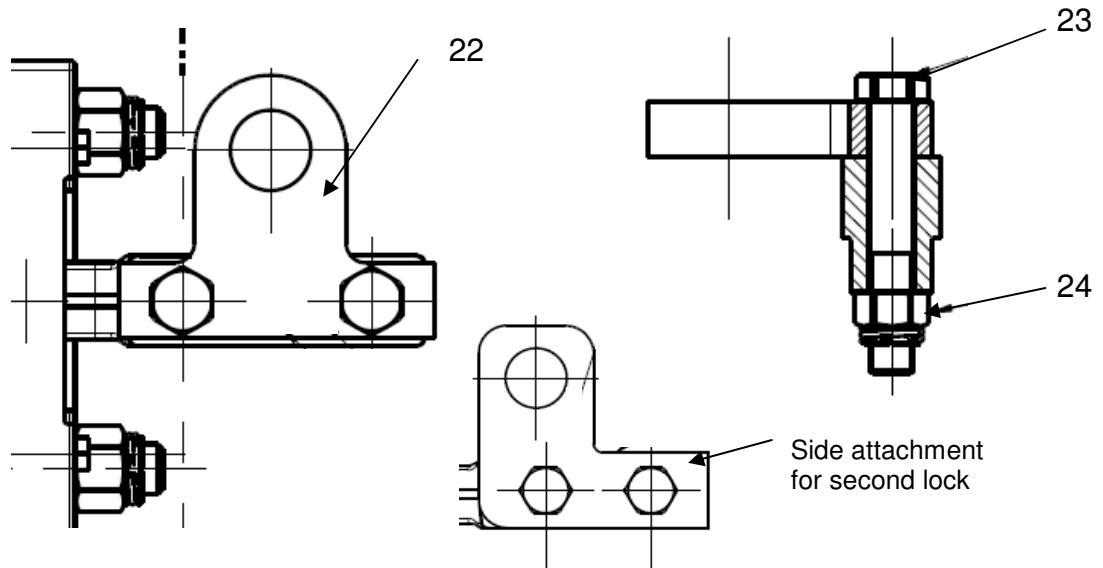



Bild 10 Assembly of side attachments

The side attachments will be fixed in the according position with hexagonal bolts M16x100 (23) and self-locking nuts M16 (24).

	Anzugsdrehmoment	Werkzeug
Sicherungsmuttern M 16 (Bild 10, Pos.24)	100 Nm ± 10 Nm	Drehmomentschlüssel SW 24

6 Maintenance and Repair

6.1 Maintenance

The locking device is designed to achieve low maintenance and low lubrication. The lubrication of sliding surfaces is necessary only during standard inspection interval.

6.2 Inspection

Inspection needs to be executed according to the inspection sheet for turnouts with claw locks BFL22 (No. 089943). Measurements and tolerances are mentioned in according drawing.

Inspection results need to be kept recorded in inspection sheet (No. 089942).

6.3 Repair

Any repair services need to be executed according to the inspection sheet for turnouts with claw locks BFL22.

In case of wear and tear of the sliding insert (25) within the locking box, this can be easily removed by bolting (26, 27 Fig. 11).

Therefore the valve rod needs to be removed and new bolts (plastic-coated) to be used.

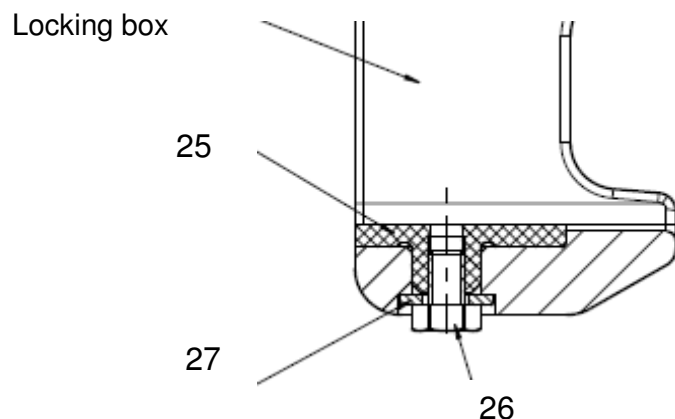



Fig. 11 Replacement of sliding insert in case of wear and tear

	Tightening torque	Tool
Safety bolt M 8 (Fig. 11, Item 26)	20 Nm ± 2 Nm	Torque Wrench SW 13

7 Disassembly of the claw lock

The disassembly of the claw lock has to be executed in reverse order of this manual.