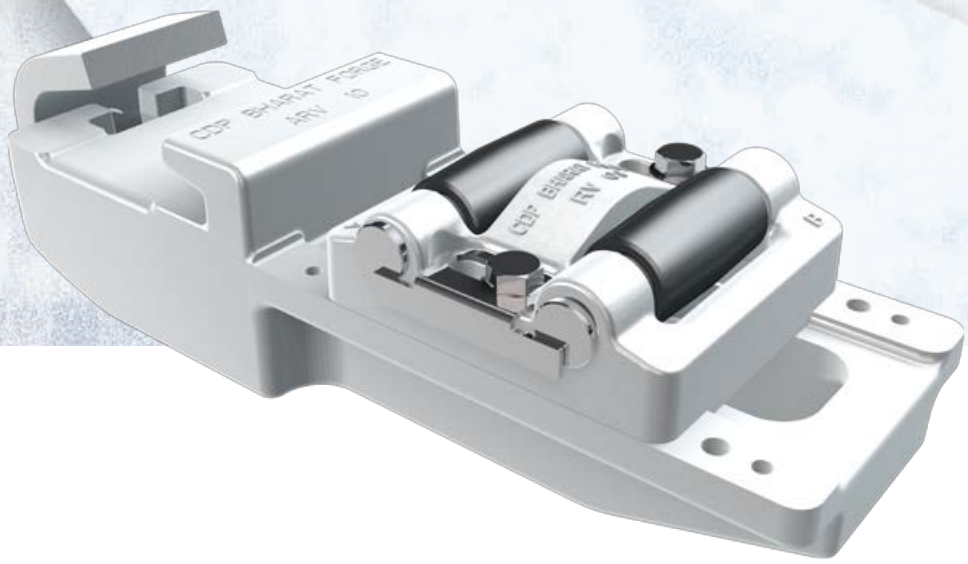
CDP BHARAT FORGE

DRIVING INNOVATION

Installation and Maintenance Manual

for CDP - Retrofit Switch Roller „ARV“ – System CDP Bharat Forge



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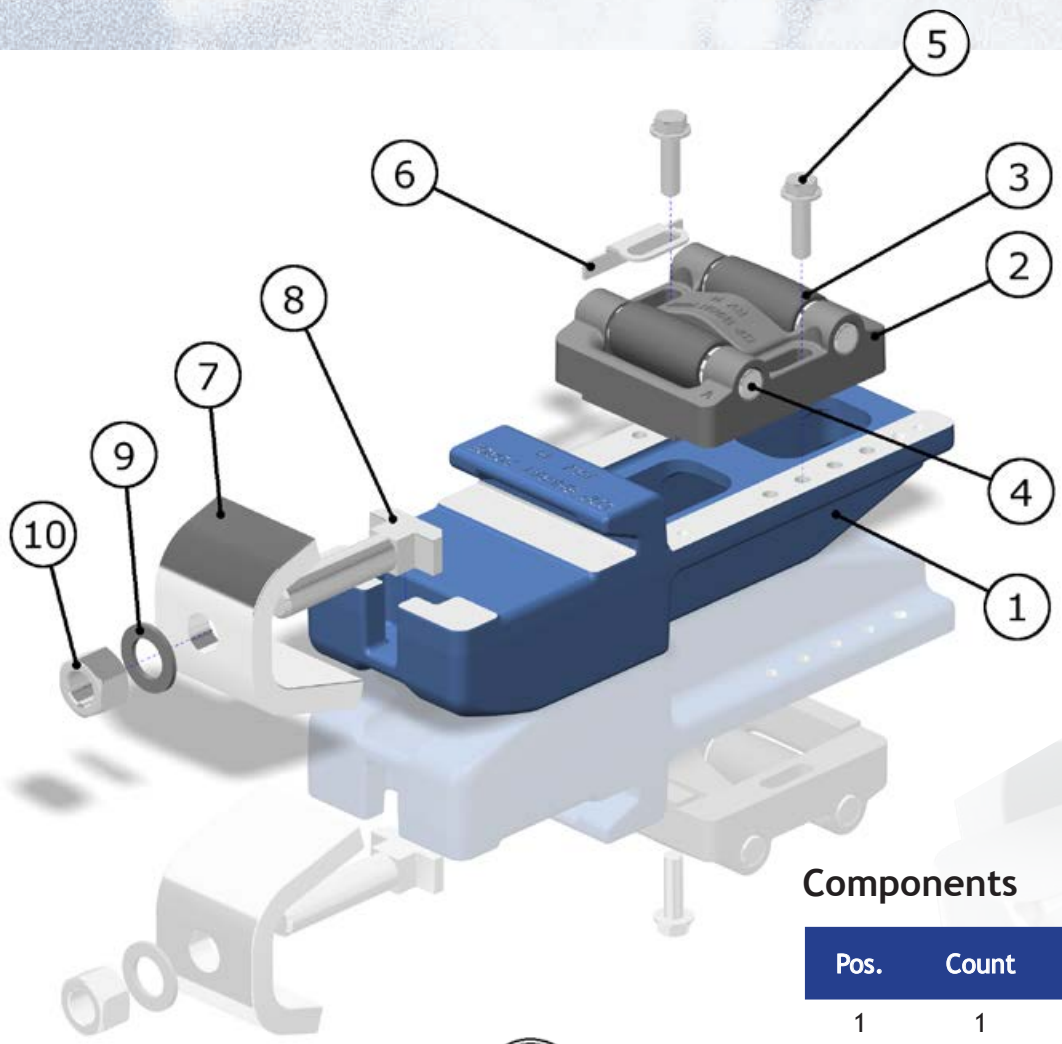
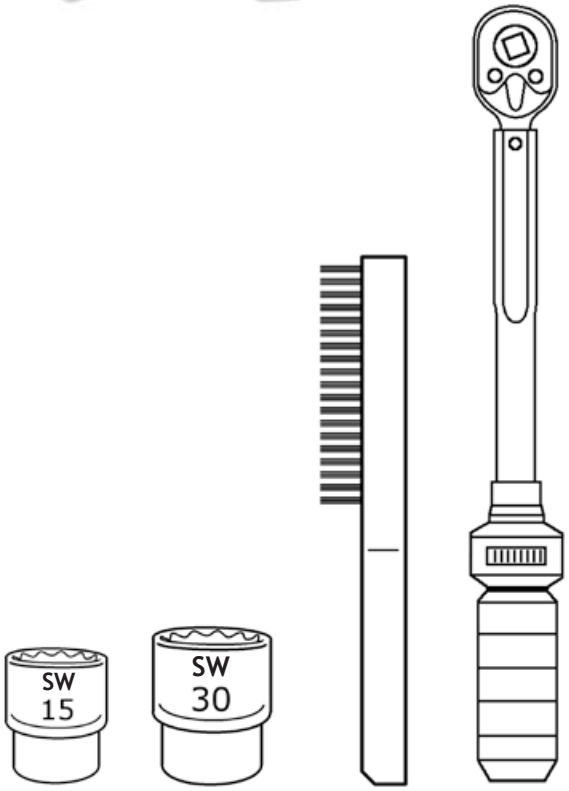


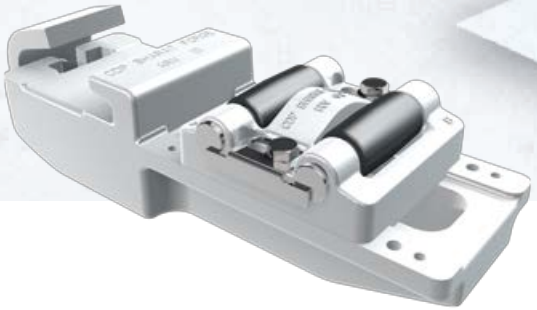
Components

Pos.	Count	Designation
1	1	Body
2	1	Roller Frame
3	2	Roller
4	2	Bolt
5	2	Self-locking screw M10 x 50
6	1	Safety shim
7	1	Clamping piece
8	1	T-headed bolt
9	1	Washer
10	1	Safety nut M20



Required tools

Tool	Specification
Wire brush	
Torque wrench	at least 200 Nm
Wrench socket	SW 15 mm
Wrench socket	SW 30 mm



Product description

By using the CDP – Retrofit switch roller system (ARV), the lubrication of slide chair plates, for reducing friction, can be avoided. Therefore, by using the ARV system, a lubrication free movement of the switch blade is possible.

Maintenance efforts can be reduced significantly as well as labor costs and costs for material.

CDP switch roller systems are designed for different applications. The ARV system is designed for an installation in the sleeper bay.
The ARV will be installed at the stock rail foot and is therefore suitable especially for turnouts and switches already lying in the track.

CDP switch roller system ARV is available in two alternatives:
The first alternative is mounted with two rollers (ARV 2), which is needed in the front area of the switch with the highest tongue opening (> 80 mm).
The second alternative is mounted with one roller (ARV 1), which is suitable for the rear area of the switch with lower tongue openings (20 – 80 mm).

Due to the simple but sturdy design, the ARV is also suitable for highly polluted track areas and areas with severe environmental conditions.

By using CDP switch rollers, the bottom side of the switch rail foot will not slide over the lubricated slide chairs anymore, but will move tangentially over the convex rollers, which leads to a smooth-running movement of the switches, also under extreme conditions.

The rollers are made of high-strength stainless steel and are therefore optimally protected against climatic influences as well as wear and tear.

Functionality

The CDP roller system is designed, that the closed switch blade rests firmly on the slide chair plate to avoid any vertical movement of the rail. The opened switch blade is lifted by the rollers. The roller system consists of a roller frame, with one or two integrated rollers for bearing the switch blade, which is fixed with two self-locking screws crosswise to the driving direction.

To reduce the throw forces and to enable a lubrication free operation of the switch, the rollers lift the switch blade to achieve a rolling movement.

At the start of the switch movement, the switch blade rolls up on the first roller, will be lifted from the slide chair and will be pulled to its final position on the second roller.

In opposite direction, the opened switch blade will be pulled to the stock rail also by a rolling movement until the rail foot lies firmly on the slide chair and the rail head of the switch blade touches the side of the stock rail head.

The rollers are designed for a double-stage movement. That means the first roller lifts the switch rail by 2 mm, the second roller by 3.5 mm.

A marginal sliding of the switch blade at the tip of the rail does not affect the functionality of the roller system and does not require any lubrication of the according slide chair

The installation location of the single ARV rollers is mentioned on the attached installation drawing. The mentioned locations have to be considered as a proposal and can be adapted according to existing, individual conditions.

Installation

Ballast has to be removed within the sleeper bay, so that the ARV has enough space without contacting the ballast (Fig. 3).

Inner side of the stock rail foot should be cleaned from any dirt using the wire brush (Fig. 4).

Safety nut, shim and clamping piece have to be disassembled from the t-headed bolt of the preassembled ARV (Fig. 5).

Self-locking screws have to be loosened from the roller frame, to fix the roller frame at the outer side. Alternatively, the complete roller frame can be removed for installation (Fig. 6).

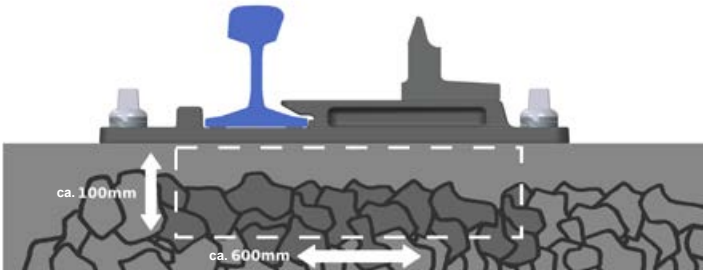


Fig. 3: Removing of ballast

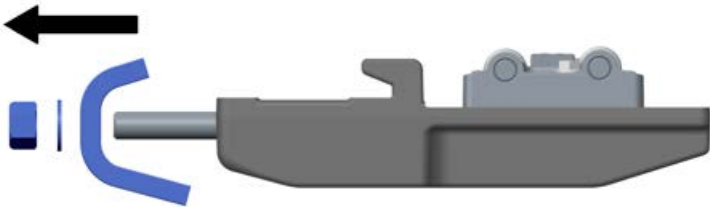


Fig. 5: Preparation of the ARV; disassembly of clamping piece

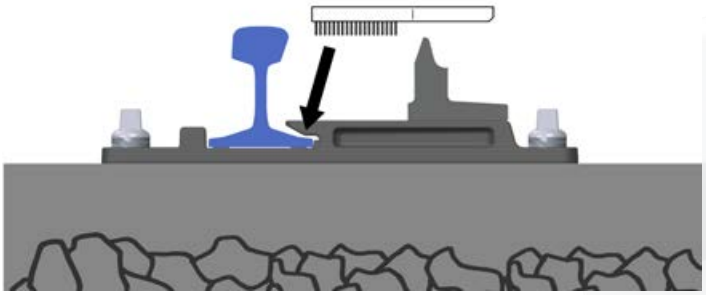


Fig. 4: Cleaning of stock rail foot

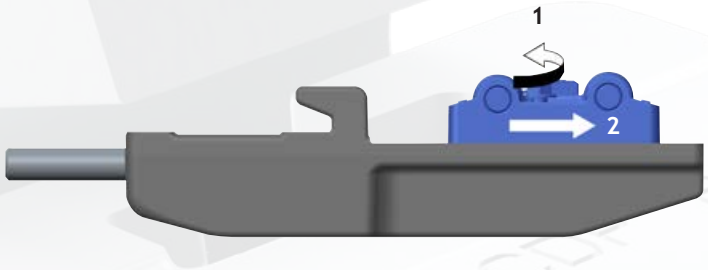
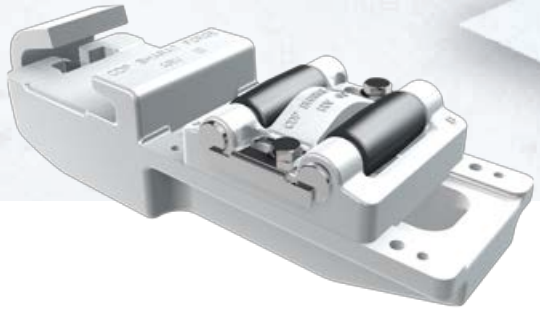


Fig. 6: Preparation of the ARV; Adjustment of the roller frame



At the side where the ARV will be installed, the switch point has to be placed in the position that the switch rail is closed. This avoids, that the switch blade rests on the rollers during installation (Fig. 7).

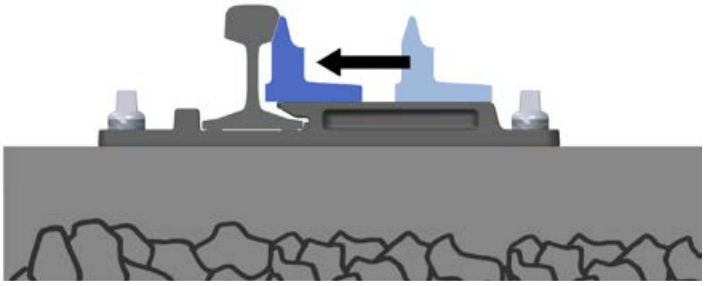


Fig. 7: Closed switch rail

The ARV will be placed at the stock rail foot. The clamping piece, shim and safety nut have to be mounted but not yet fixed (Fig. 8 and 9).

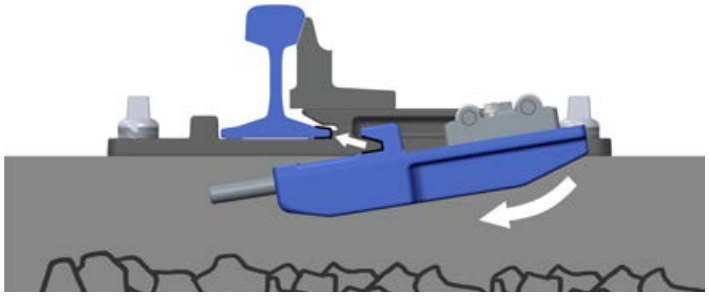


Fig. 8: Placing ARV at the stock rail foot

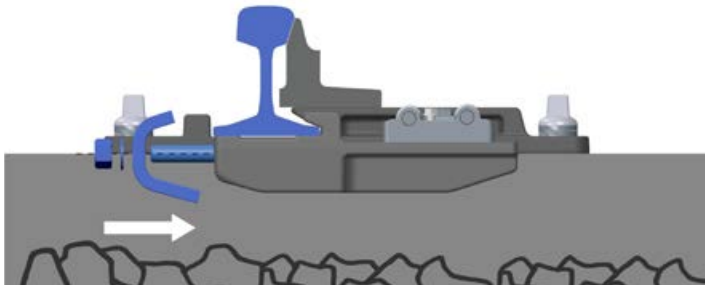


Fig. 9: Mounting of the clamping piece

The ARV has to be placed approximately in the middle of two sleepers. Afterwards the clamping piece can be fixed with the safety nut of the t-headed bolt at 200Nm (SW 30 mm) (Fig. 10 and 11).

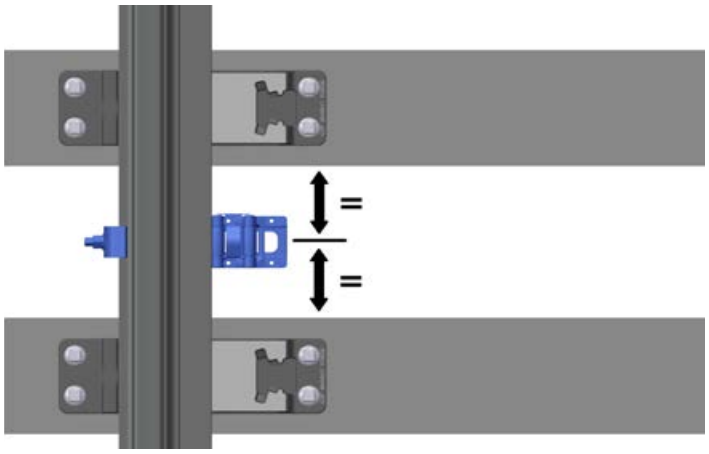


Fig. 10: Positioning of the ARV

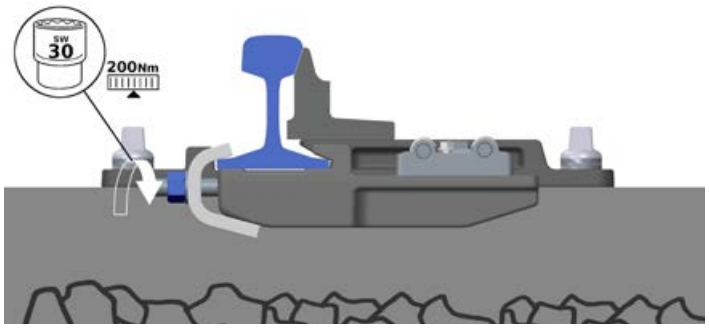


Fig. 11: Fixation of the clamping piece

The roller frame will be mounted, that the „A“-marked side is in direction to the rail foot and that the first roller is positioned approx. 1 mm from the edge of the switch rail foot. This can be checked with a 1 mm slip gauge. Afterwards, the self-locking screws can be fixed at 80Nm (SW 15mm) (Fig. 12 and 13).

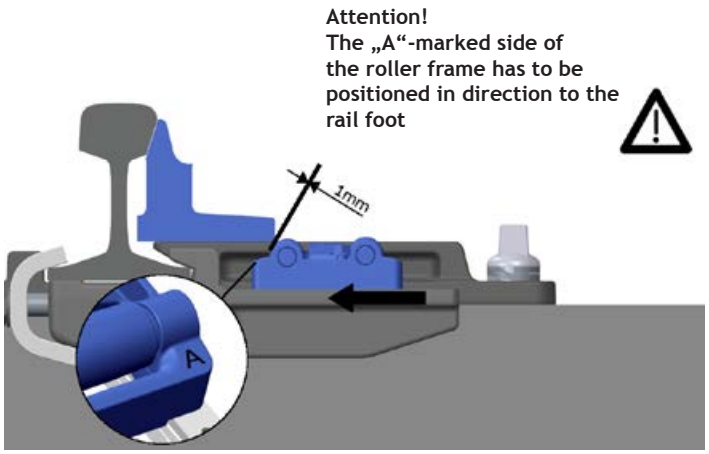


Fig. 12: Mounting of the roller frame

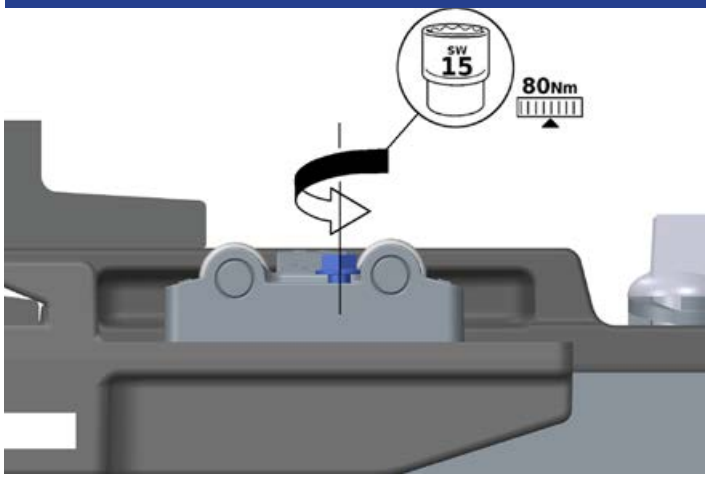


Fig. 13: Fixation of the roller frame

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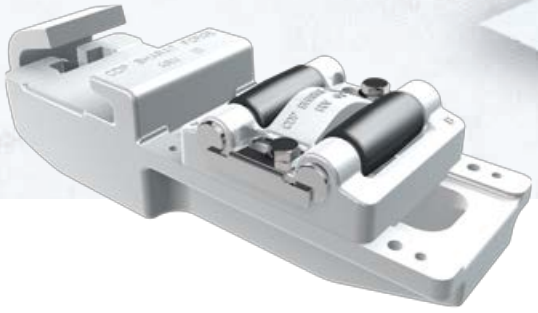

Maintenance:

Maintenance is not necessary as CDP switch roller systems are extensively maintenance free and do not have to be lubricated.

Inspektion:

To inspect the roller systems, following points have be executed:

- **Control of the height level of the opened and lifted switch rail**
- **Control of the distance of the first roller to the edge of the switch rail foot**
- **Control of the fastening screws**
- **Rotatability of the rollers**
- **Visual inspection, if any stress marks are visible on the slide chairs**

Should any divergences appear during inspection, the ARV has to be re-adjusted in accordance with the aforementioned installation method. Optionally, the height level can be adjusted with a height adjustment shim (Fig. 14).

Therefore, the two self-locking screws of the roller frame have to be loosened, the roller frame has to be removed and the shim to be placed under the roller frame.

Afterwards the roller frame can be positioned, adjusted and fixed (Steps from Fig. 12 and 13).

Remark:
Stucked or damaged rollers, which impair the functionality, have to be exchanged.

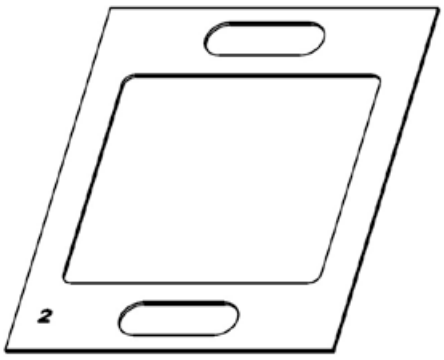

Fig. 14: Height adjustment shim

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