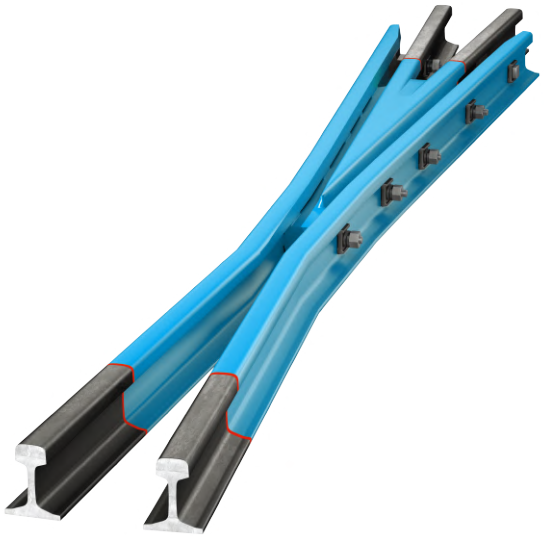
COMMON BUILT-UP CROSSING WITH WHEEL-OVERRUN AREA MADE OF MANGANESE STEEL

Common Built-up Crossing “EHZ COMPOUND Mn13”

Description

In this design, the wheel-overrun area of the crossing is made of high manganese steel Mn13. The crossing vee (point) is cast from high manganese steel and is mechanically machined (milled).

The closure rails are flash-butt welded to the cast crossing vee. The two wing rails, usually made of rolled high manganese steel rails in the overflow area, are machined and flash-butt welded to rails made of standard rail steel. The wing rails and the welded crossing vee are bolted together via distance blocks.



Added value

- Excellent elastic behaviour due to the bolted design – fits perfectly into the elastic behaviour of the track
- Excellent wear resistance due to work hardening process of the high manganese steel in operation
- Extension of the service life due to regeneration by means of deposit welding in track
- Deposit welding and repair welding of the manganese parts without preheating
- “Bending” of the crossings possible, therefore perfectly suitable for all types of curved turnouts
- Guaranteed interchangeability
- Can be thermite welded into track
- Suitable for all types of rail fasteners
- Reduction of maintenance, particularly in case of high loads due to the possibility of pre-hardening of the running surfaces

COMMON BUILT-UP CROSSING “EHZ COMPOUND Mn13”

General

The crossing vee (point) and its baseplate support area is cast from high manganese steel, the fitting surfaces for the wing rails and the entire running surface areas are milled. The length of the crossing vee depends on the rail profile and the geometry of the crossing.

The closure rails are machined from rolled rail profiles. Depending on the design, the two closure rails are either welded individually to the crossing vee or the machined closure rails are welded together beforehand by means of submerged arc welding in the head and foot area and only then welded together with the crossing vee. All welds between standard rail steel and high manganese steel are carried out by means of flash-butt welding (with an intermediate piece).

The wing rails are usually made from rolled rail profiles in high manganese steel, but at their front end a piece of standard rail steel is flash-butt welded. The finished crossing can therefore be welded directly into track.

In an alternative design of the crossing, however, the wing rails are made entirely of standard rail steel.

The wing rails are machined and bolted to the welded crossing vee by means of fitted distance blocks. The bolting process either uses double spring washers or the high-tensile method.

All distance blocks are machined and adjusted to the support areas of the closure rails and wing rails during final assembly. This guarantees on the one hand an exact position of the distance blocks and on the other hand adherence to the required flangeway tolerances

Materials and technical data

- Closure rails: Rail grade R260 or R350HT or R400HT (special grades on request)
- Crossing vee: high manganese steel (13% Mn) according to EN 15689
- Wing rails: high manganese steel (13% Mn) or alternatively completely made of standard rail steel
- Mn13 casting according to EN 15689
- Bolting: optionally high-tensile or with double spring washers

“High-tensile” bolting of the crossing

This method is used to durably connect the main components (wing rail, crossing vee, closure rail, guard rail and knuckle rail) of common, obtuse and multiple built-up crossings.

The components are connected to each other by means of high-tensile metric bolts (strength class 8.8 or 10.9) and hexagon nuts. Special shims are used to ensure that the bolt head and the hexagon nut are supported evenly. These shims are shaped accordingly in the contact area with the rail web in order to achieve the best possible contact surface.

Possible loss of the preloading can therefore be kept to a minimum. To achieve the rectangular contact of the head of the bolt and the nut, hardened spherical washers and ball sockets are used. They ensure a 100% rectangular contact surface of head of the bolt and the nut. Self-locking nuts are used to prevent loosening.