



Rail transition
joints



Insulated
joints

Transition joints and insulated joints as per customer specifications

Technical Datasheet

vossloh
enabling green mobility

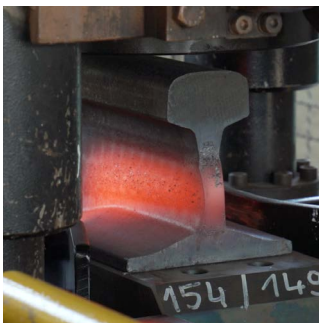


Benefits

- / Manufactured in various versions according to customer specifications
- / Various approvals for all track categories
- / Automatic rail joint alignment
- / Computer-controlled monitoring and documentation of welding process
- / Carried out as per EN16273:2014 and EN14587-1:2018

Applications

- / Factory profile transition joints for all common rail profiles
- / Manufactured using controlled compression and flash-butt welding
- / Integrated into the rail section or as a customized length fitted rail
- / Vossloh is the only accredited supplier of flash butt welded transition joints for SNCF



Transition joints made to the highest standards of quality

We produce transition joints in our welding plants in a range of different profiles and grades. These transition joints are the standard way to connect rails of different web heights, head heights and head widths. At the customer's request, the joint can be flash-butt welded with the gauge corner on the left or the right. We can integrate transition joints into the rail section or as a customized length fitted rail, and we also have various methods of making transition joints to connect grooved and flange rails.

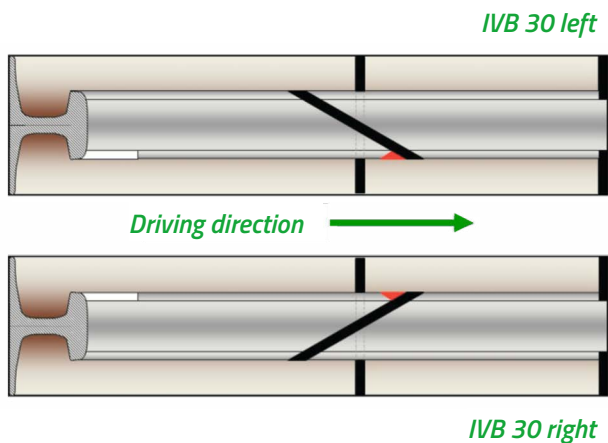


Benefits

- / Manufactured according to customer requirements in various configurations
- / Optimal longitudinal load transfer thanks to full-adhesion technique
- / Wheels traverse angular joints impact-free, which reduces noise, improves passenger comfort and reduces the strain on the track superstructure

Applications

- / Joints in long rails (up to 180 meters)
- / As part of the rail section or prefabricated
- / Common rail profiles (head-hardened or reinforced) with just-in-time availability
- / 4-hole or 6-hole
- / Differently angled joints (90° and 30°) and prefabricated rail contacts, e.g. Cembre, are available
- / Approved for use by Deutsche Bahn, Network Rail, FTIA, Banedanmark and RATP



Insulated joints: optimal longitudinal load transfer and improved resistance to wear

Glued insulated joints are essential for reliable signaling. Using the full-adhesion principle we achieve optimal longitudinal load transfer despite the extreme compressive and tensile forces at play in continuous welded track and the stresses and strains of rolling wheel contact.

At our Rail Centers, besides classical S-joints, we also manufacture 30° angular joints (IVB 30) integrated into long rails, rail sections or as customized length fitted rails. These angular joints are always oriented towards the direction of travel. And of course, we also offer on-site MT insulated joints and we weld customized length insulated joints into the track.

Transition joints and glued insulated joints

Technical Data

Transition joints / Transition rails

The following transition customized length are manufactured in all our plants (Leipzig, Hamburg, Nuremberg and Kaipiainen in Finland):

54E4 to 49E5, 60E2 to 54E4 (Germany)

60E2 to 45E2 (Denmark)

50 E3 to SJ 43 (Sweden)

60 E1 to 54 E1 (Finland)

60 E1 rail to 50 E6 rail (France)

55 E1 rail to 50 E6 rail (France)

50 E6 rail to 46 E2 rail (France)

60E1 rail to 55 E1 rail (France)

In steel grades R260, R260 sogenox and R350

Insulated joints

90° insulated S-joint and 30° IVB joint

Insulated joints are electrically insulated rail joints serving to interrupt signal transmission. They can be manufactured for all common German/Finnish rail profiles and also for other countries under a framework agreement

Possible combinations for large quantities or framework agreements:

60 E1/E2

54 E1/E4

49 E1/E5

Manufacturing transition rails



- / Larger rail is heated to 800°C – 910°C
- / The rail web and rail base are heated in order to achieve the height of the smaller profile through compression
- / Process monitored by measuring temperature



- / Rail web compressed successfully
- / Larger rail is adapted to the height of the smaller rail
- / If intended for France, the compressed profile is milled



- / The web height is measured
- / The lip is sawn off and the piece is made ready for welding
- / The piece is then flash-butt welded to the desired profile



- / Excess metal is trimmed off mechanically using the shearing blade
- / Burn-off is cleaned off with a brush
- / Precise machining and finishing work on the gauge corner
- / The rail is then aligned correctly

Manufacturing 90° insulated S-joints

- / Preparation of the insulated joint
- / The contact surface is sand-blasted to remove rust and grease
- / The rail ends are insulated from each other using a synthetic spacer that is glued in place
- / Two holes are drilled in each rail to attach the insulating fishplates one on each side
- / Intermediate layers of fleece and cardboard are used during this process, and each layer is glued on individually
- / The rails and fishplates are then bolted together
- / More heat is applied to speed up the curing of the adhesive
- / The adhesive between the fishplates must dry for 24 hours before the finishing work can commence
- / Following the verification measurements and finishing work, an electrical conductivity test must return a negative result
- / The bolts are tightened using 1,000 kN

