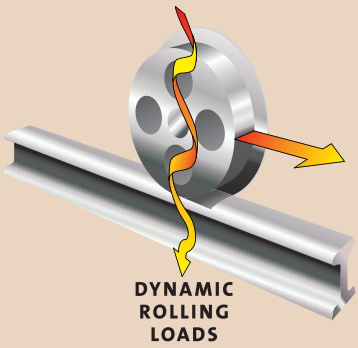
Problem 3

Grouting crane rails

There is no generally accepted international specification for the installation of rails and their bearings. Installation procedures are usually recommended by the manufacturers of the rail and plate systems.

The bearing grout should provide:
- Flat, uniform and void-free bearing surface.
- Resistance to dynamic loads into the base material.
- Adequate absorption of imposed loads.
- Transmission of bearing loads into the base material.

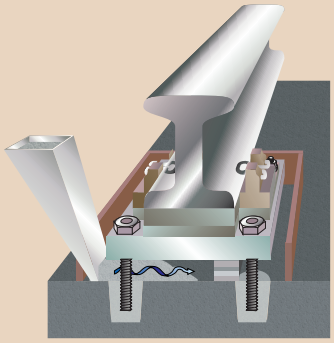
1 Choosing the right grout



The selection of a suitable rail bearing grout depends on the engineer's calculations of loading, the size and type of bearing, gap size and grouting method.

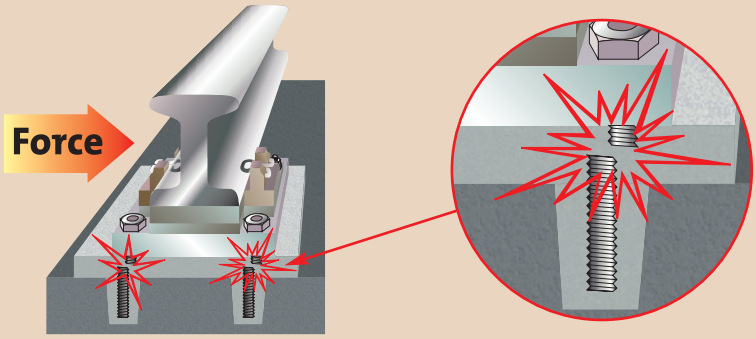
Using inferior grouts can have serious repercussions on safety and the cost of remediation can considerably outweigh the initial short-term cost benefits.

2 Slow flow of grout under the baseplate



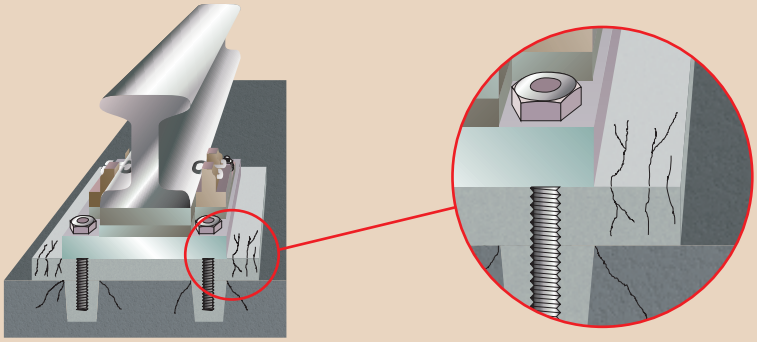
Rail operators need to replace equipment quickly and contractors rely on speed of installation. A grout with poor flow will slow down the process. Some inferior epoxy grouts are cut back with diluents to improve flow but this can lead to excess shrinkage and loss of EBA. **Weber** grouts have been developed to give faster flow even in colder weather without any undesirable side-effects.

3 Loss of bond/adhesion to the baseplate



Bolts can shear if the grout loses contact with the underside of the bearing plate or the base, and the bearing is allowed to slide. Bolt shear can also be caused by the bolt not being strong enough, by flexure of the grout or by inadequate design for all types of imposed load.

4 Cracks in the grout around the baseplate



Cement grouts rely on expansion to provide the non-shrink properties required of a precision bearing grout. This cracking is often seen where a cement grout has not been finished flush to the sides of the bearing. Epoxy grouts are not affected as much as they have low inherent shrinkage. However, all types of grout can be affected by premature stressing of the holding down bolts before the grout has had time to cure. This is especially so in colder weather, cracks can then be seen emanating from corners around the bolt area.

Correct grout selection and application

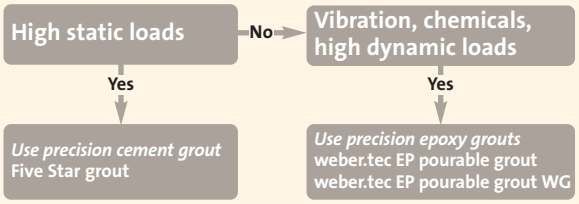
Typical problems during application can be attributed to poor design, inadequate mixing of grout, ambient temperature, placing procedures, slow pouring/pumping,inadequate curing. After application, there may be challenges due to lack of Effective Bearing Area (EBA), shrinkage of grout, too high strengths leading to brittleness, inadequate HDT and water sensitivity.

Products required

Cement: **Five Star grout**

Epoxy: **weber.tec EP pourable grout**
weber.tec EP pourable grout WG

1 Grout selection

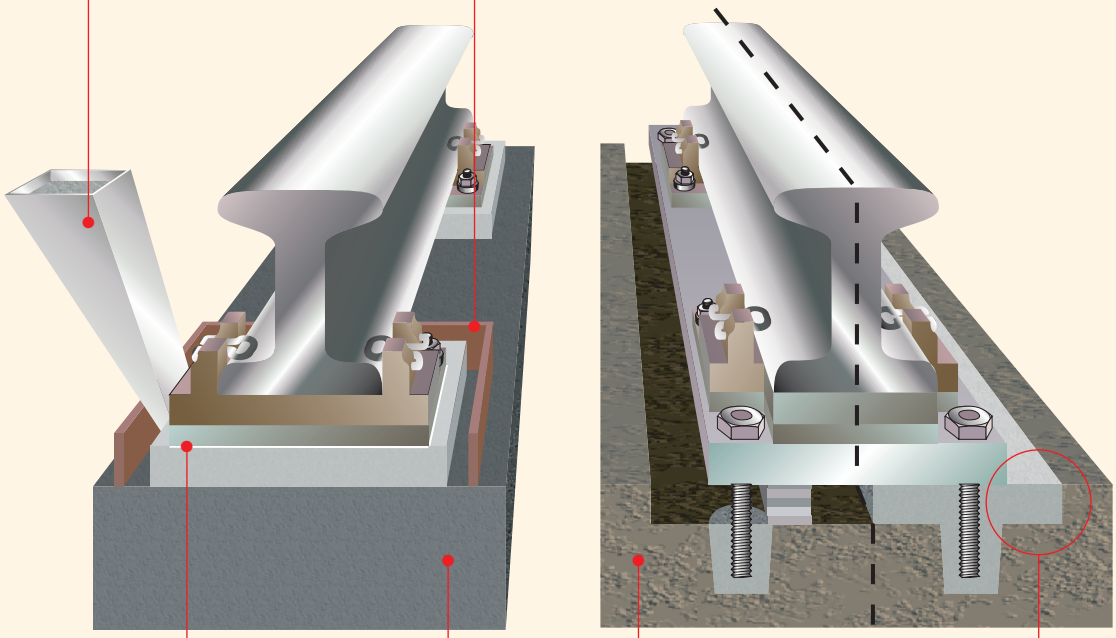


2 Hopper feed

When pouring the grout into shutters from one side of a baseplate, use a removable hopper to provide an adequate head of grout.

Shuttering

Ensure the shuttering is made of durable material, grout-tight, well-sealed to the base and coated with a suitable release agent.



Discrete soleplate

Continuous railplate

3 Epoxy bond to baseplate

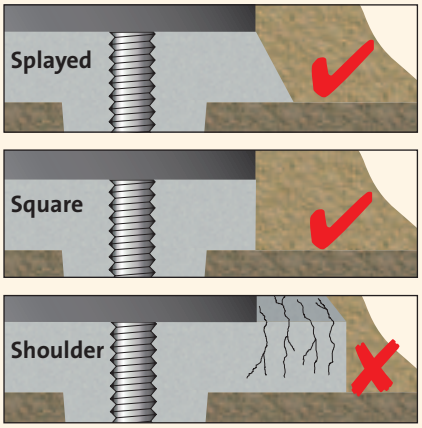
weber.tec EP pourable grout

Substrate preparation

The surface of the concrete base must be free of any loose, friable material, be dry and free of dust and laitance and be sufficiently mature not to interfere physically or chemically with the bearing grout.

4 Edges of grout

Cement grouts should be finished flush to the edge of the steel bearing plate and chamfered at a slope. This is to prevent cracking where the grout is unrestrained. Resin grouts can be left proud of the bearing plates.



For detailed instructions, please refer to the relevant product data sheet. For further information, please contact our Technical Helpline on 01525 722110.