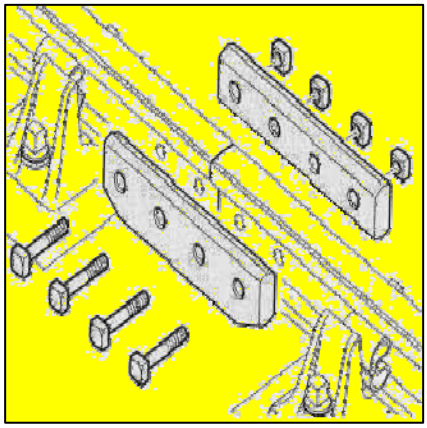
Track Work Instruction 2C001

How to change fishplates

Introduction



This Track Work Instruction covers how to change fishplates on a plain joint.

See also separate instructions:

TWI 2C027 How to maintain insulated joints
TWI 2C045 How to maintain tight joints
TWI 2P003 How to lubricate fishplates
TWI 2P040 How to shim a joint
TWI 3P024 How to recognise and order fishplates

Competence

You must be competent to carry out this work.
See TWI 2G086 - Competence requirements.

Risks

As you remove the fishplates mind your fingers - just in case the joint closes up.

Read and understand any COSHH information on the lubricants you may be using.

The fishplate is intended to provide sliding support to the rail. Overtightening the bolts beyond the correct torque will restrict the sliding action leading to potential misalignment.

Materials and Spares

The correct pair of new fishplates and a corresponding set of new fishbolts.
Track fastenings and Lubricant.

Tools and Equipment

Bars
Thermometer
Cross level
Fishbolt spanner

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Tools and Equipment continued

Running off spanner.
Torque spanner.
Jacks.
Shovels.
Brushes.
Scrapers.
Set of temporary bonds if you are working in an OLE area.

Just in case

A couple of 'thin' bolts.
Track fastenings.
Shims.

These bolt holes have been drilled incorrectly

Method

Caution!

You must not start work if the rail temperature is greater than or likely to rise above 32^{o}C.

Before you start

Check that you have the correct fishplates for the joint. Don't just look at the existing plates - they may be wrong! See TWI 3P024 'How to recognize and order fishplates'.

Look at the types of bolts in the existing joint. Are they correct? See TWI 2C021 'How to recognise fishbolt types'.

Beware! If the existing bolts are wrong you may have a problem fitting the correct bolts.

Note! Before you touch the joint have some thin bolts to hand - just in case you can't put it back together again with the correct bolts.

You may find that the boltholes are drilled incorrectly.

Look to see whether the joint is shimmed.

This joint has been shimmed. Look for the small tabs just above the fishbolts.

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Method continued

Look at the condition of the track to see if:

- The fastenings are secure;
- The chairs or baseplates are damaged;
- The joint sleepers are in good condition;
- The sleepers around the joint are voided;
- The joint gaps on either side are correct i.e. wide or tight? If they are wrong for the ambient temperature then you may have a problem when you release the plates.

If there is a problem with any part of the track then you will need to repair this as well as replacing the fishplates.

Changing the plates

Note! This work must only be undertaken when the movement of trains has been stopped in agreement with the Signaller.

If you are in an OLE area you must bond round the joint before you loosen the fishplates if there is no permanent OLE bond. (A signal bond wire is not sufficient.)

Undo the nuts and remove the fishbolts.

If there are any damaged fishbolts or nuts then these will need to be replaced.

Remove the fishplates. You may need to tap them with a hammer or use a pinch bar to free them.

Beware! As the fishplates are removed the joint may pull apart or drop.

Recover any shims.

Clean the rail ends with a scraper.

Examine the rail ends and the boltholes for visible signs of cracking and report back immediately if you find anything incorrect.

Check that the boltholes are at the correct centres.

Offer up the new plates making sure that they are the right way up and the right way round. Any identification markings must be the right way up.
See TWI 2C023 How to recognise fishplate types

Lubricate both the fishplates and the fishing surfaces of the rail.

Keep the lubricant away from the railhead and any cables.

If the joint is shimmed make sure that the original shims are still in good order and are the correct size. If they are not the correct size then fit new shims.

Fit the shims as you insert the fishbolts.

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Method continued

Tighten the bolts evenly & progressively – do not tighten one bolt completely before the others are fully assembled.

If using an impact or torque wrench then the torque setting should be set to 350 lbft (475Nm) for black fishbolts and 650 lbft (880Nm) for 1” high tensile bolts.

Should it be required then pack the joint.

Check the tightness of the bolts once again.

Remove the temporary OLE bond.

Inform the Signaller that you have completed your work.

If possible, once you have finished, watch a train over the joint to see if all is in order.

Clear away the remains of the old fishplates, shims and fishbolts.

If you have had to disturb the ballast to insert a jack, make sure that you box in the bay and re-instate the ballast shoulder profile.

Before you leave the site

Check top, line and crosslevel.

Do a final check on the tightness of the fishbolts.

Problem solving

What if the joint pulls apart and you can't get the bolts in?

The joints on either side will need to be regulated – see TWI 3P067. If this cannot be done immediately then as a temporary measure insert at least two bolts in the joint and arrange for trains to be passed at caution. Take action in accordance with the Network Rail Company Standard.

What if the joint drops?

You will need to jack the rail up to get the plates on. Make sure that you pack the joint before you allow trains to pass or you may end up with broken plates.

What if the bolthole centres are wrong?

You may have to replace one of the bolts with a 'thin' bolt - but this is only a temporary measure. Report back that you have a problem.

What if the fishplate only fits with the identification markings upside down?

Report back immediately - there may be a manufacturing defect.