Generic Turnout Assembly Instructions

Thank you for purchasing this Easy Build Finescale Turnout kit. Prior to beginning assembly, please read through these instructions thoroughly, ensuring that all components of the kit are present and that, prior to assembly, you have the appropriate tools required.

If in the event that any parts are missing please contact British Finescale directly at sales@britishfinescale.com

Parts Included

- Turnout Base
- Crossing 'V's (frog) Point and Splice Rails
- Bullhead Rail for Stock Rails and rail for Check, Closure and Wing Rails
- 4 pre machined Switch Blades
- 2 Tie Bars

Tools and Materials Required

Although the components are largely preformed and gauges are not required, a few simple tools and facilities will be required to facilitate construction including:

- Super Glue
- Track Cutters, Fine Razor Saw or Hobby Drill with disc cutter
- Flat Nose Pliers
- File
- Tweezers
- A suitably sized flat surface.
- A soldering iron with a small tip and suitable solder and flux to attach additional wires to switch rails, etc.
- Electrical Feed Wires (decoder wire is recommended)

Anatomy of a Turnout

To aid assembly, please familiarise yourself with the names of the key parts that make up a turnout by watching this YouTube video below:

Please use this link: https://www.youtube.com/watch?v=e-lkBl7QmfQ

Or

Scan the QR code:

Rail Orientation

The bullhead rail used in this kit has a top and a bottom which differs in thickness/width (the top is wider).

It is VERY important to insert the rail into the chairs in the correct orientation. Otherwise difficulty will be experienced in sliding the stock, check and crossing V rails into the chairs and doing so may cause damage to the chairs of the track base. Please familiarise yourself with the rail orientation and, if necessary, mark the top of the rail with a felt tip pen to aid correct assembly. The switch blades have a lug on the bottom which is located into the tie bar so incorrect orientation should be obvious.

Turnout Templates

To aid layout construction, full size PDF templates for all FinetraX turnout kits are available on the web site.

Assembly

Having familiarised yourself with these instructions, let assembly begin..!

Filing and Cleaning Rail Ends

Once the rails are cut to the required length, it is VERY important that the rail ends are cleaned up with a small file (a needle file is ideal for this). To allow free and easy insertion of the rail into the chairs, both the foot and web of the rail must be slightly 'chamfered'. Failure to properly clean and chamfer the rail may result in difficulty threading the rail into the chairs, causing breakage of the chairs.

Cutting and Bending Check Rails

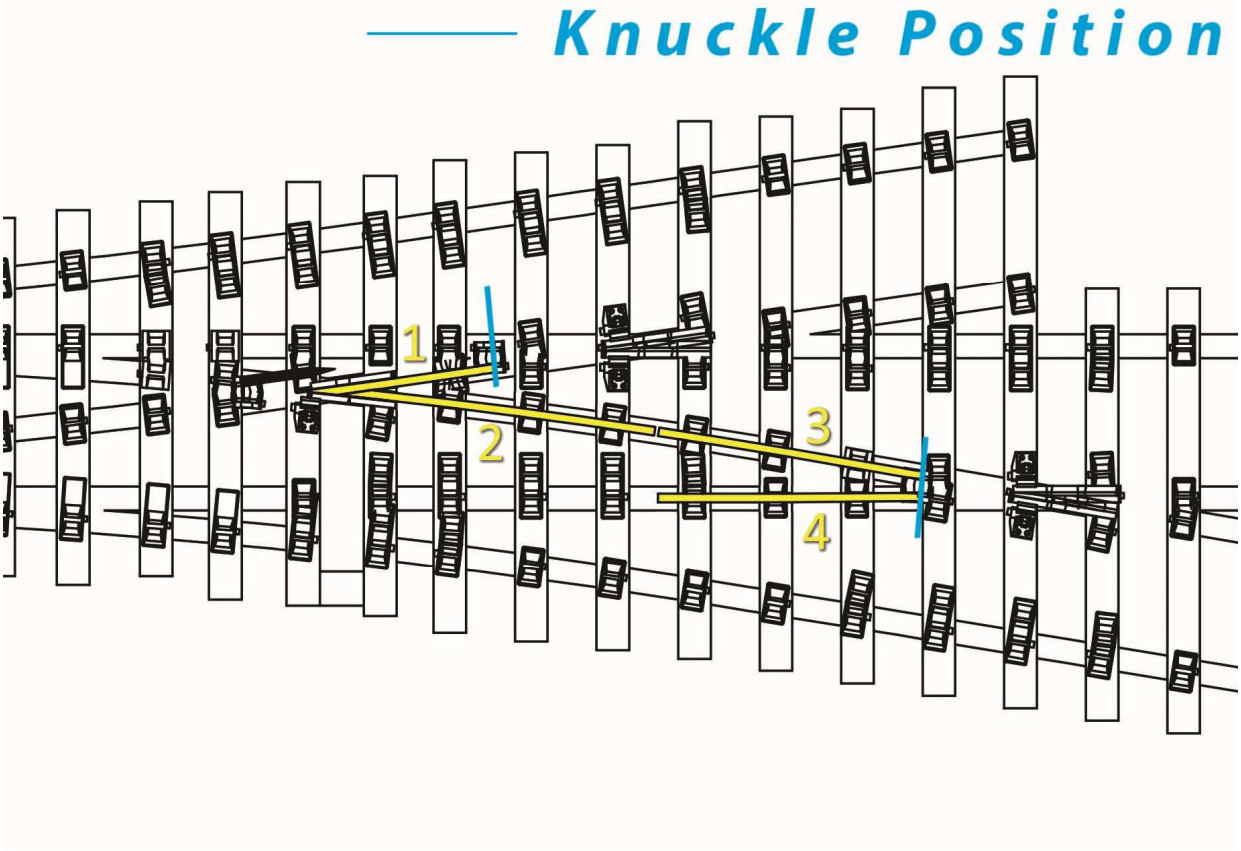
Check Rails must be cut to length and a small bend (flare) put on each end. The bends can be easily put onto each Check Rail using a pair of small pliers. The appropriate full size template for your kit should be downloaded, printed and used to ensure correct length and bends for the Check Rails. Downloadable templates for each kit are available at www.britishfinescale.com.

Cutting and Bending Wing Rails

Wing Rails must be cut to length and a small bend (flare) made to in each. The bends can be easily made to each Wing Rail using a pair of small pliers. The appropriate full size template for your kit should be downloaded, printed and used to ensure correct length and bend for each Wing Rail. Downloadable templates for each kit are available at www.britishfinescale.com.

Assembly Order

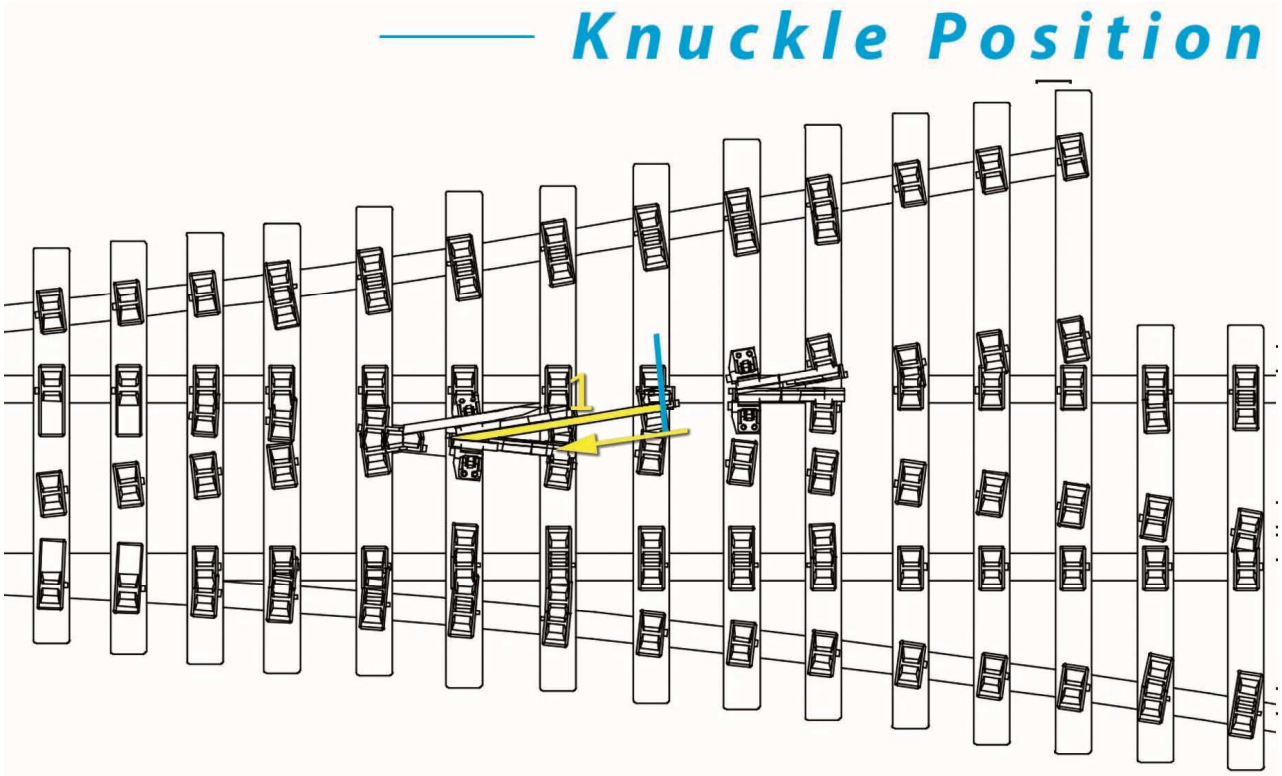
There are 4 pieces of rail that must first be inserted in the correct order before any other pieces of rail. This is because, due to the layout of the chairs, the plastic base must be slightly bent to allow the rails to slide into position. If other rails were inserted first, this would prevent the base from bending and these 4 pieces of rail couldn't then slide into place. Please follow the correct order, below:

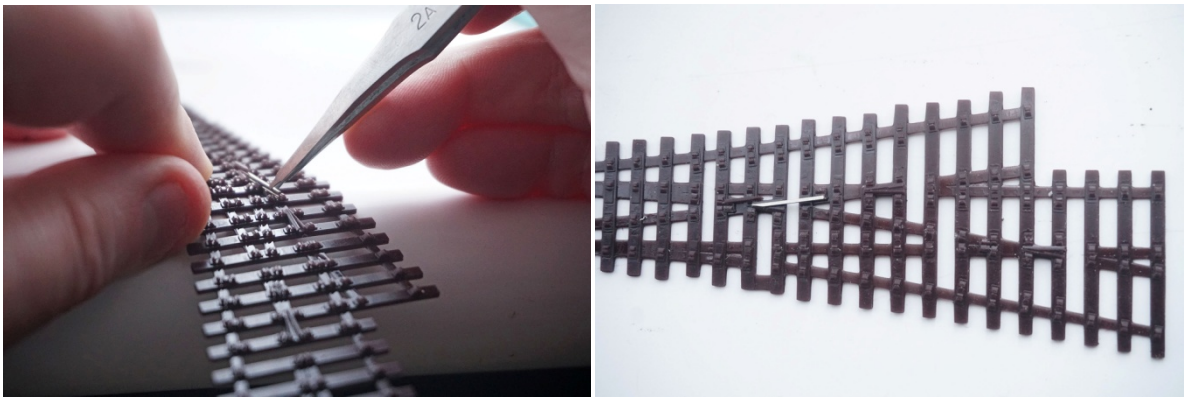


Rail 1

The first Rail to be inserted is the Point Rail of the 1in4 crossing V (labelled 1in4 Crossing Vs in the kit). This must be cut to length using the appropriate full size template for your kit. Thread the Point Rail in from the 'knuckle' (see Anatomy of a turnout and downloadable template) and towards the Tie Bar end of the turnout. You will need to bend the plastic turnout base **slightly** and **carefully** in order to make clearance for the rail, otherwise the chairs around the Crossing 'V' (frog) will be in the way of the rail. This is easily done on the edge of the desk/work-top you are assembling on. WARNING – DO NOT over-bend the plastic turnout base, otherwise there is a risk of snapping the base! Only bend just enough to allow the rail to slide in.

IMPORTANT: The Point Rail must be cut and filed to length so that the blunt end sits exactly on the 'Knuckle' position.

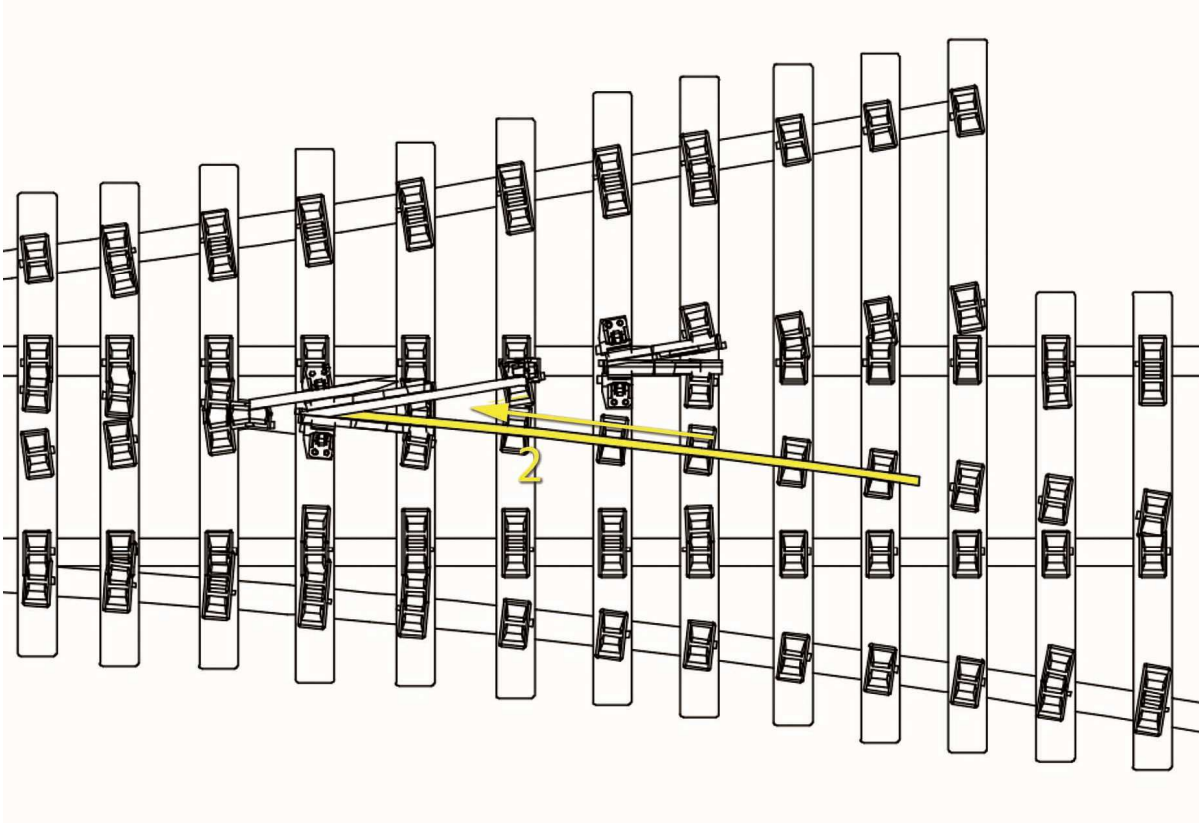


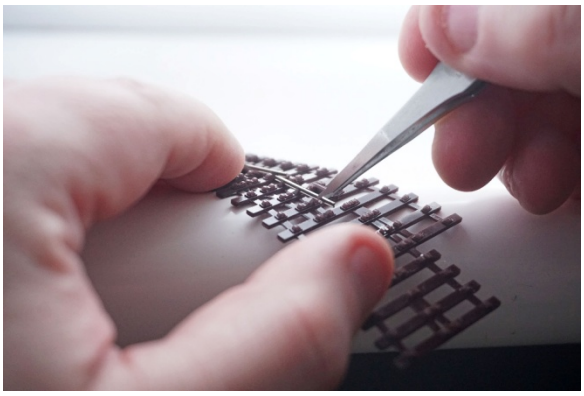


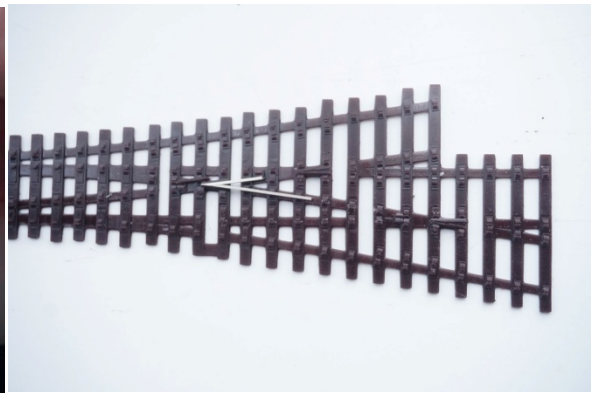
Above: Slightly bend the plastic base to insert rail.

Rail 2

The second Rail to be inserted is the Splice Rail of the 1in4 crossing V. This must be cut to length using the appropriate full size template for your kit. Thread the Splice Rail in by again carefully bending the plastic base.





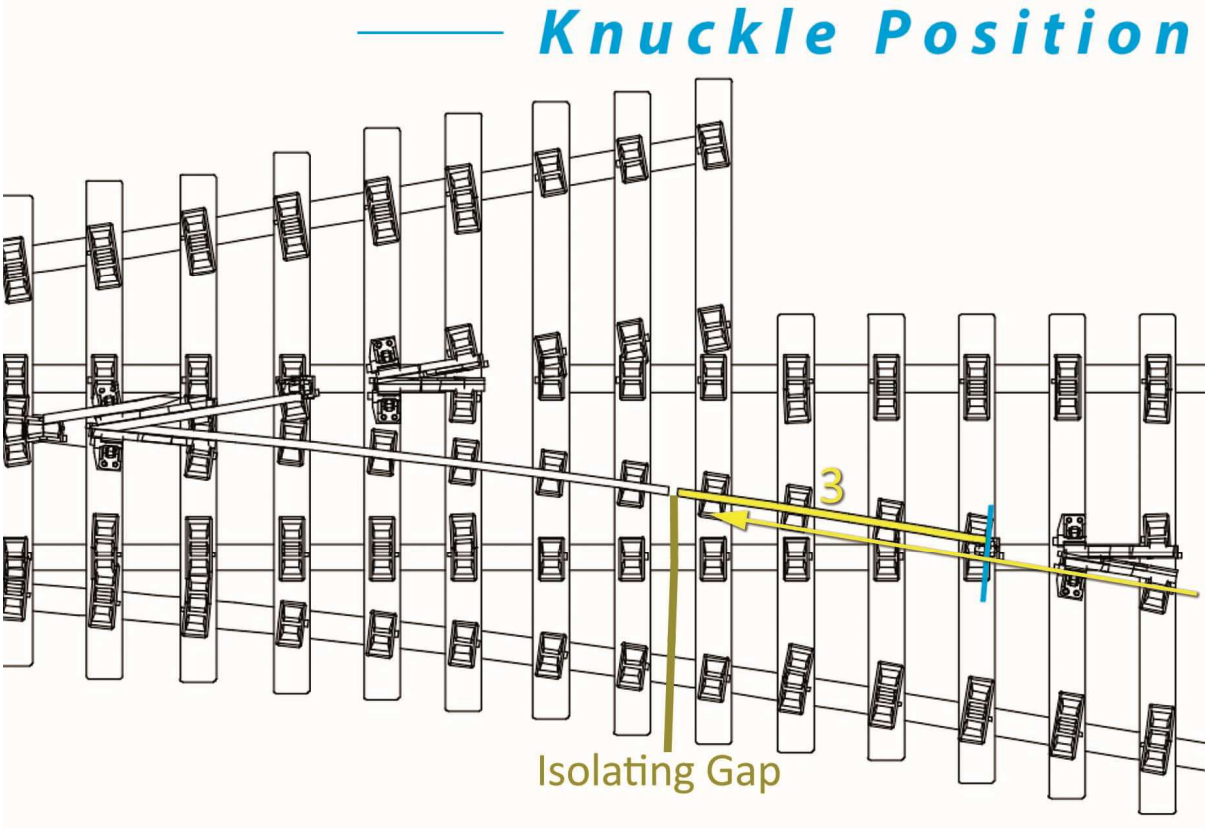


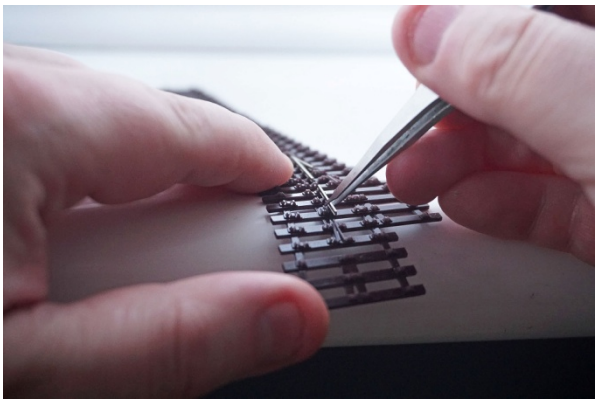
Above: Slightly bend the plastic base to insert rail.

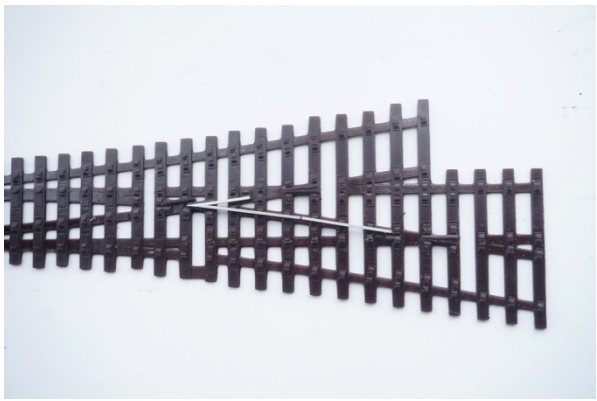
Rail 3

The third Rail to be inserted is one of two Closure Rails of the 1in6 crossing. This must be cut to length using the appropriate full size template for your kit. Thread the Closure Rail in by again carefully bending the plastic base.

IMPORTANT: The Closure Rail must be cut and filed to length so that one end sits exactly on the 'Knuckle' position. The other end must have an isolating gap between Rail 2, as shown in the diagram below.





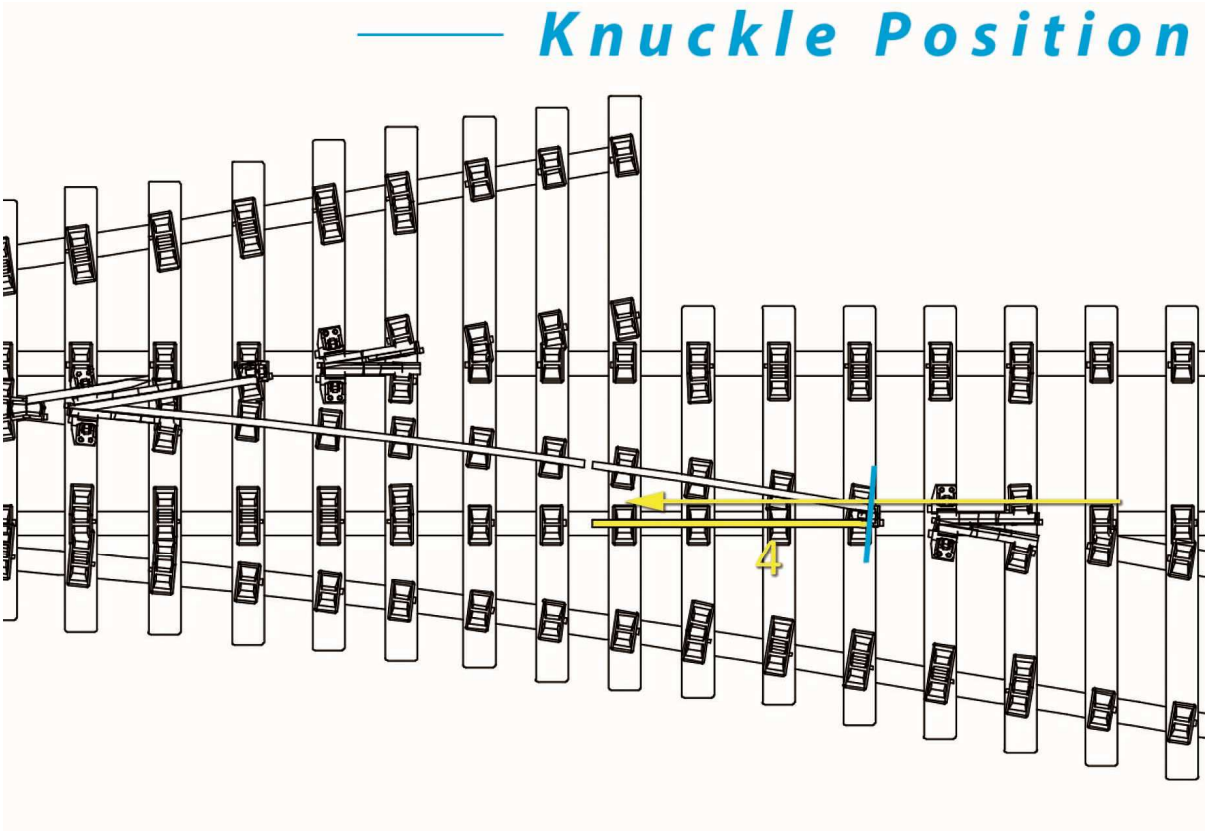


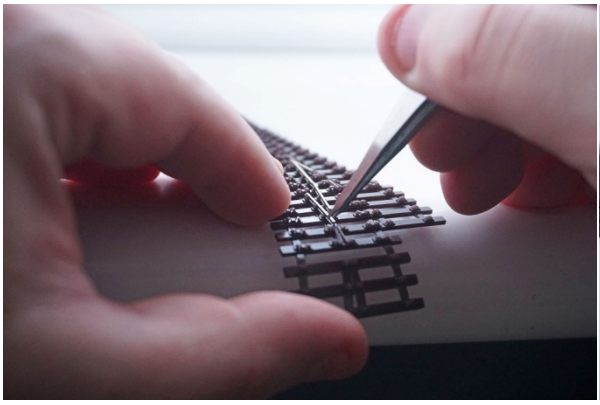
Above: Slightly bend the plastic base to insert rail.

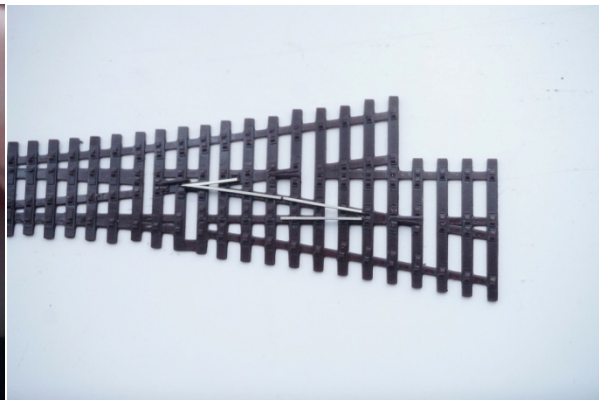
Rail 4

The forth Rail to be inserted is the other Closure Rails of the 1in6 crossing. This must be cut to length using the appropriate full size template for your kit. Thread the Closure Rail in by again carefully bending the plastic base.

IMPORTANT: The Closure Rail must be cut and filed to length so that one end sits exactly on the 'Knuckle' position.





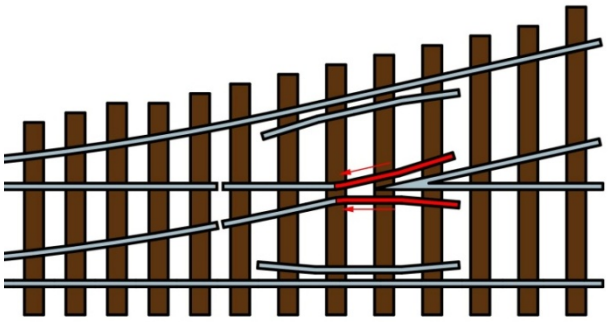


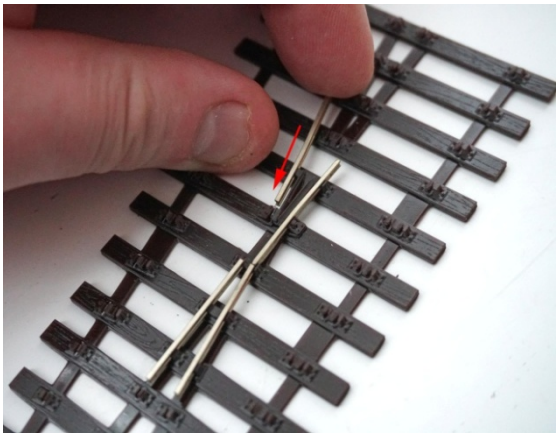
Above: Slightly bend the plastic base to insert rail.

NOTE: Now that these four pieces of rail are in position, all other pieces of rail can be inserted without the need for bending the base, following the downloadable template. The following instructions show a standard turnout for illustration purposes only, but the procedure is the same for the 3 Way kit. Just follow the downloadable template for the remaining rail positions.

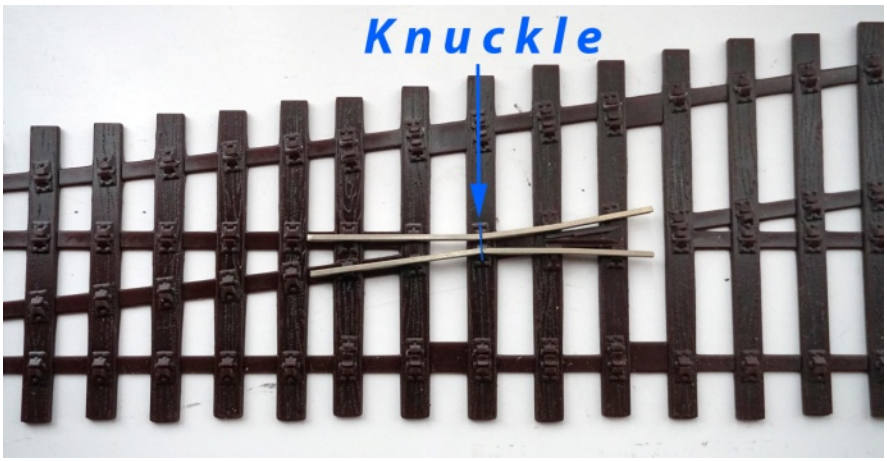
Fitting Wing Rails

Wing Rails can be threaded in towards the Closure Rails as shown below.





IMPORTANT! The join between the Wing Rails and the Closure Rails MUST be located exactly at the 'Knuckle' position. This position will be different for each kit, so you MUST refer to your kits downloadable template which will show the exact position of the knuckle. There is also a small indentation on the plastic base indicating the precise position of the 'Knuckle' join.

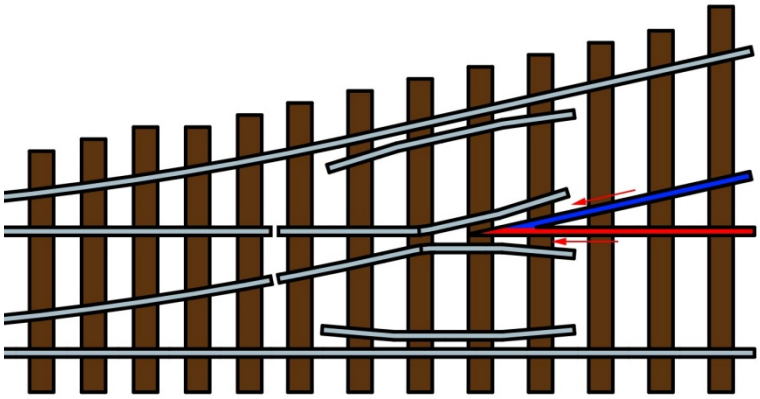


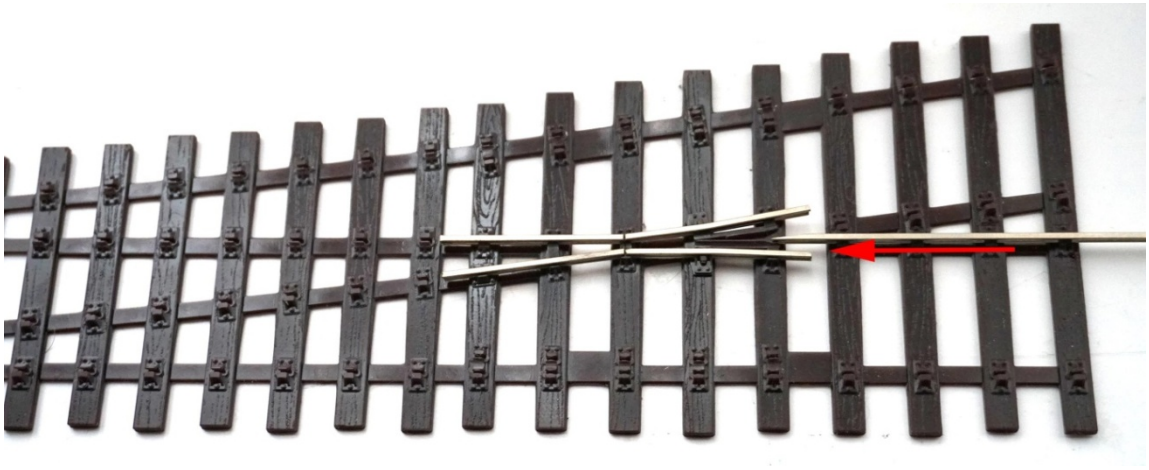
Fitting Crossing 'V' (Frog) Point and Splice Rails

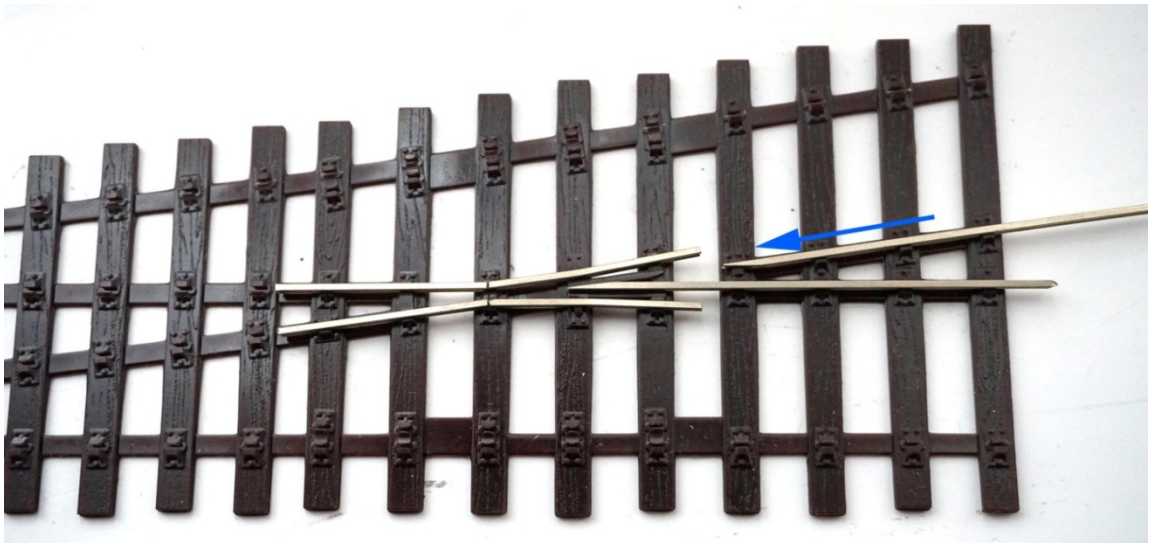
The crossing 'V' (Frog) is made of two pieces of rail called the **Point** and **Splice** rails. These have the ends of the rail machined to a point at the correct angle, and come pre machined in the kit. These are 'handed' one left and one right; please ensure you instead them in the correct orientation (see 'Rail Orientation').

The Point Rail is located on the 'main route' and is inserted first and pushed all the way until it stops (it will wedge in). You should find the point of the V on 2 thirds over that sleeper/timber.

The Splice Rail that is on the diverging route is then inserted and pushed-in until it butts up to the first Point Rail.

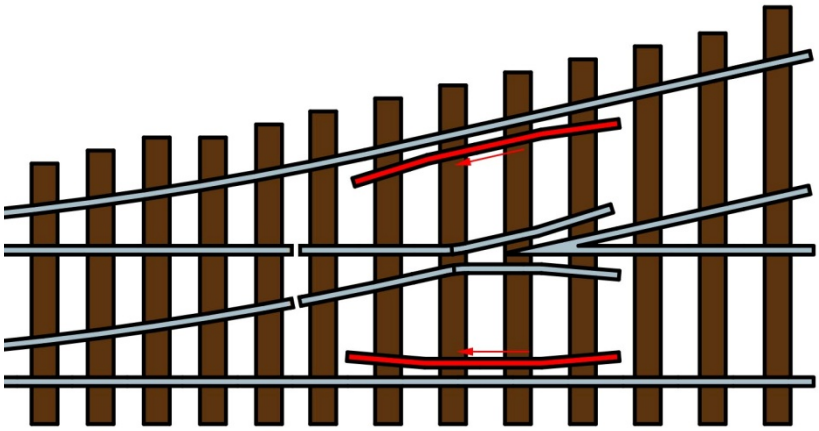


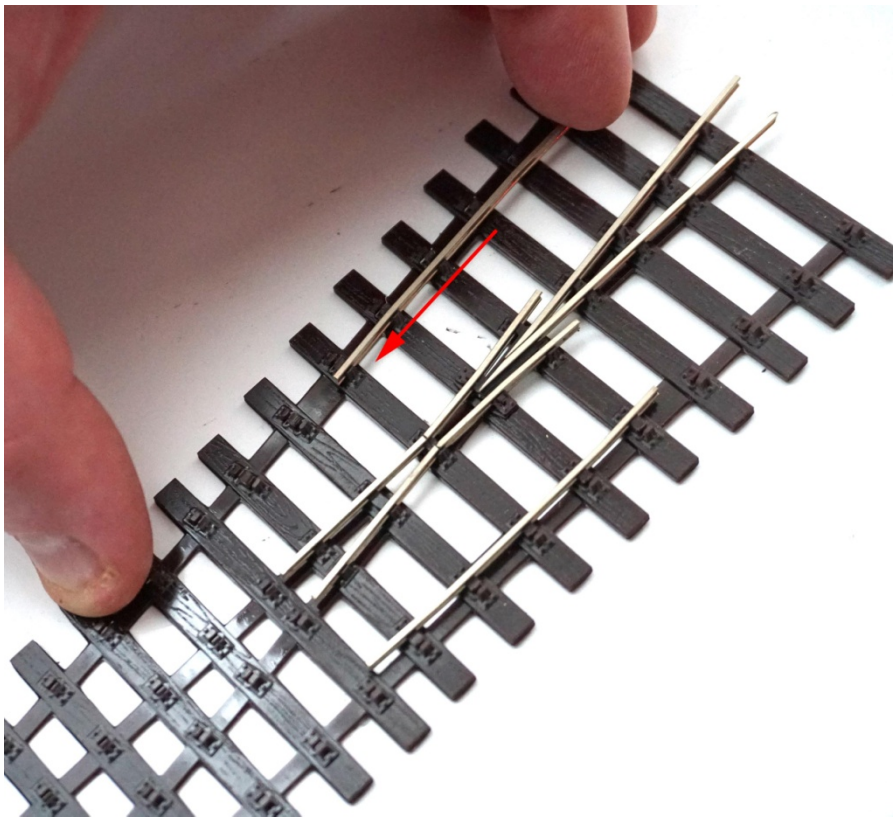




Fitting Check Rails

The Check Rails can be threaded-in one at a time, taking care to guide the end of the Check Rails through the slots in the chairs. Check against the downloadable template for correct alignment.

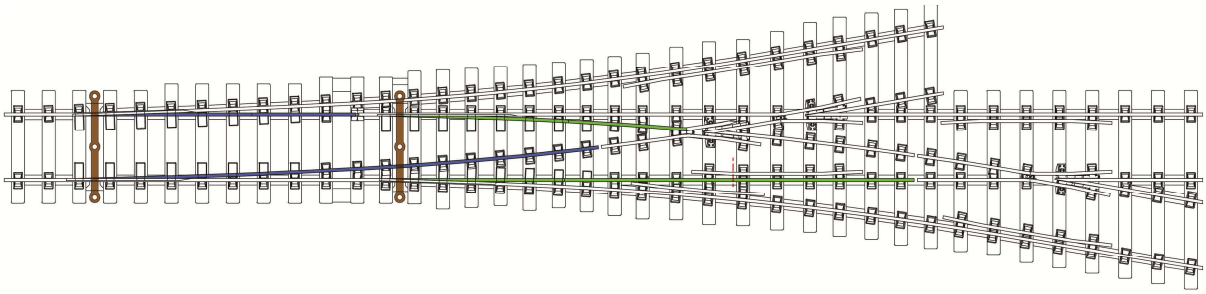




Fitting Switch Blades and Tie Bars

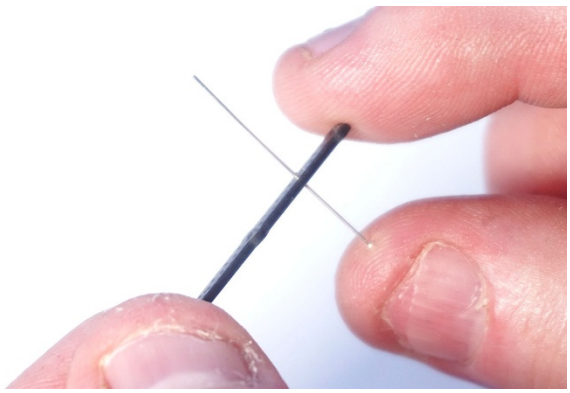
There are 2 Tie Bars in the 3 way kit, as shown in the below diagram. The Tie Bars should be placed into position between the timbers on the base between the last 2 Slide Chairs (see diagram).

Also, it is recommended to first insert and the two central Switch Blades (highlighted in green) and solder them to their tie bar **before** you add in the two outer Switch Blades (highlighted in blue), otherwise one of the outer (blue) Switch Blades makes it very difficult to get at and solder the inner tie bar to solder the central (green) Switch Blade.

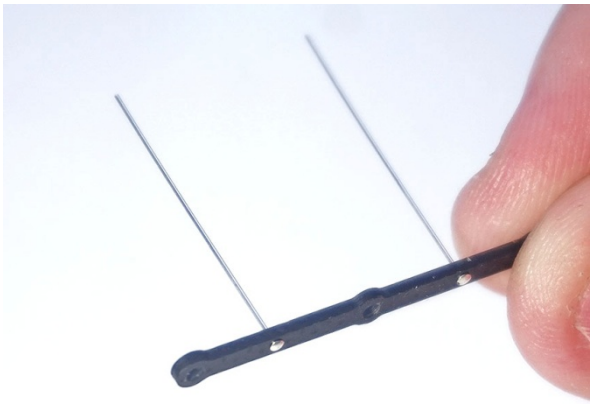


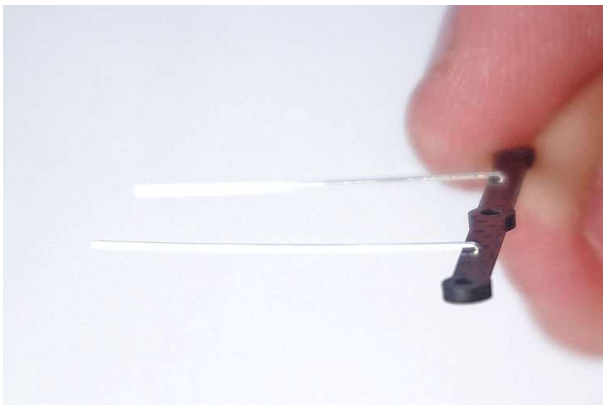
Tie Bar Assembly

The kit contains a small bag that includes the main Tie Bar, 2 metal 'headed' pins and a Switch Blade 'Spacer'. The 'Spacer' is used to maintain the correct gap between Switch Blade and Stock Rail when soldering the Switch Blades to the pins.

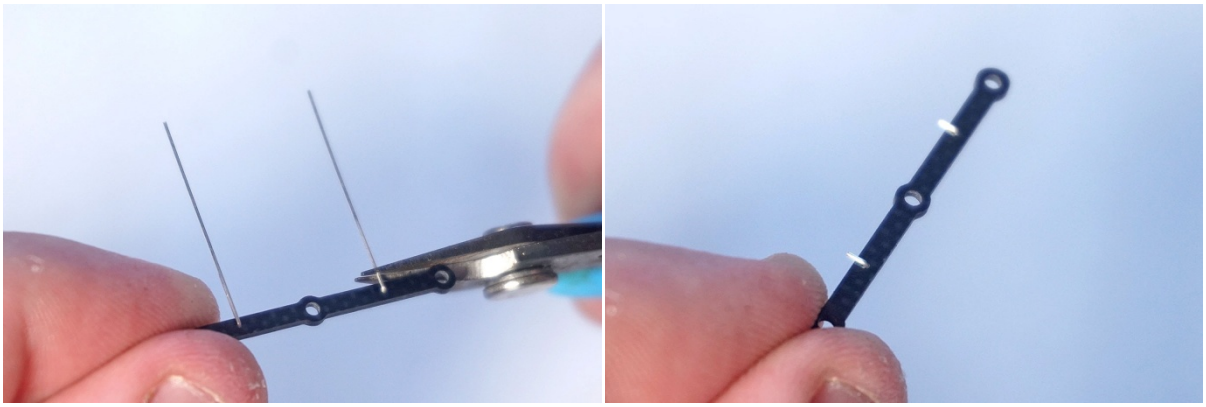


The 2 metal pins are inserted through the pre drilled 0.4mm holes in the tie base.





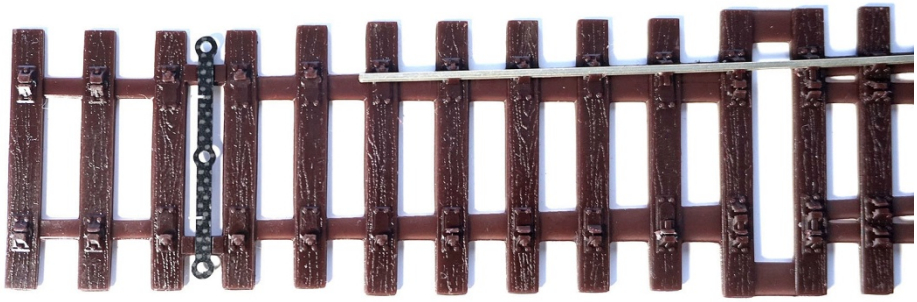
Make sure that the 2 headed pins are pushed all the way through until the heads of the pins are flush with the bottom of the tie bar. Then bend both pins by 90 degrees so that they face forward as shown above.



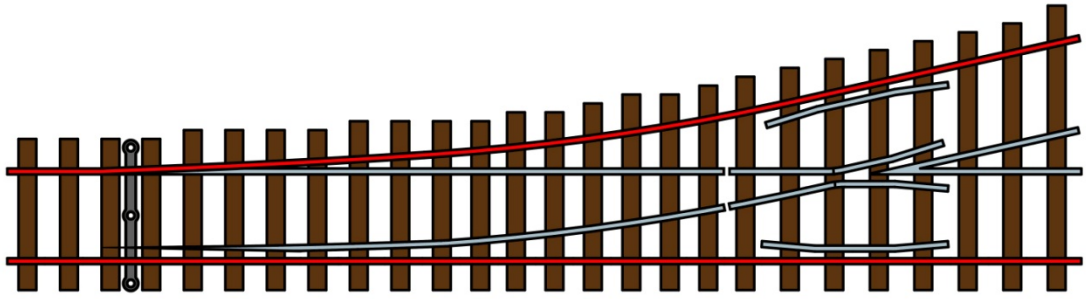
The pins can then be cut short leaving about 2 – 3mm of length as shown above.

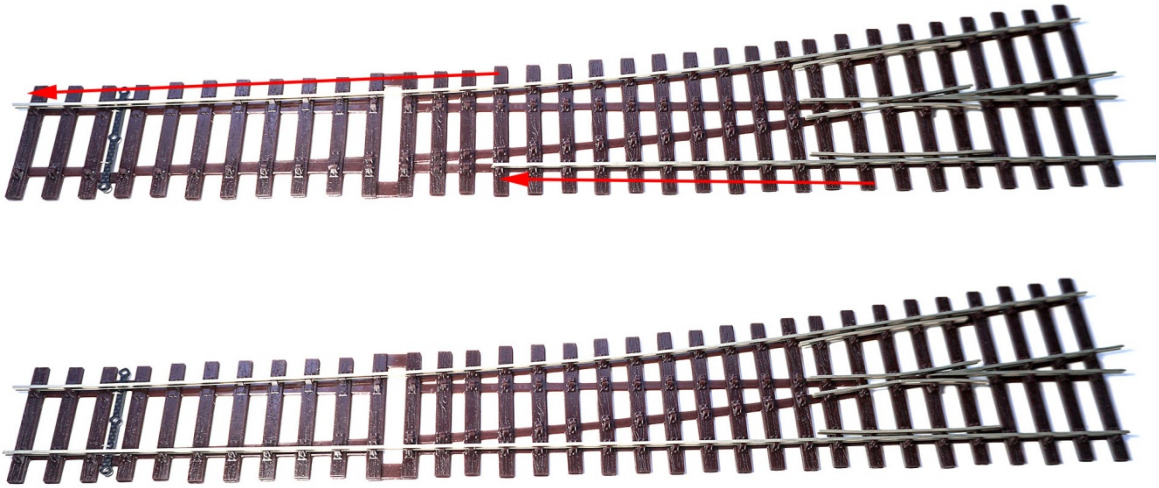
Fitting Tie Bar and Stock Rails

The assembled Tie Bar can now be placed on the Turnout Base between the last 2 Slide Chairs. It will locate into the slots as shown in the picture below:



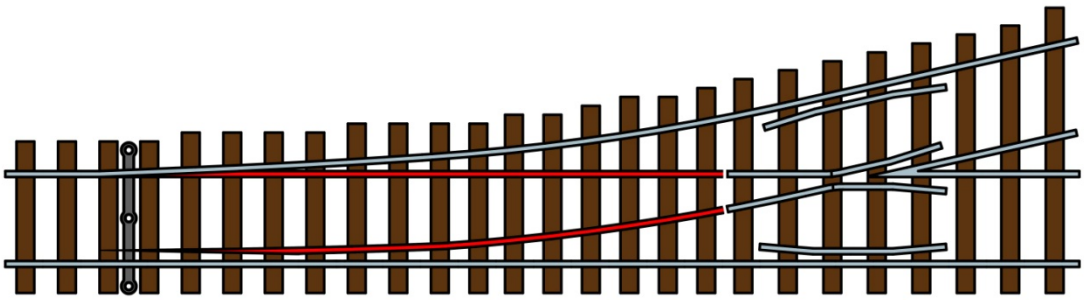
Once the Tie Bar is in place, both Stock Rails can then be inserted from either end of the turnout. Care must be taken so each Stock Rail slides over the Tie Bar. The Tie Bar must be free to slide under the Stock Rails when operating the Switch Blades.



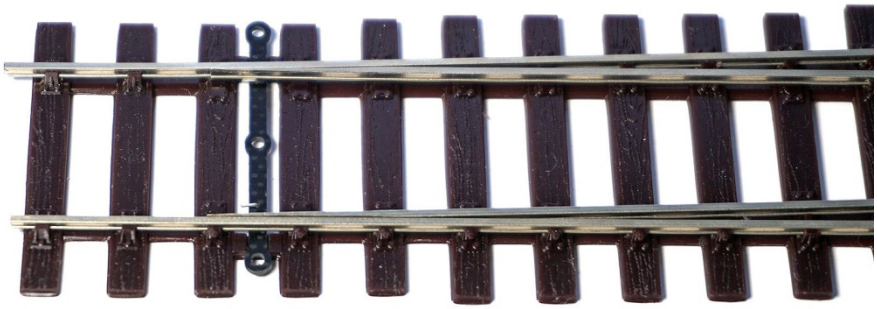


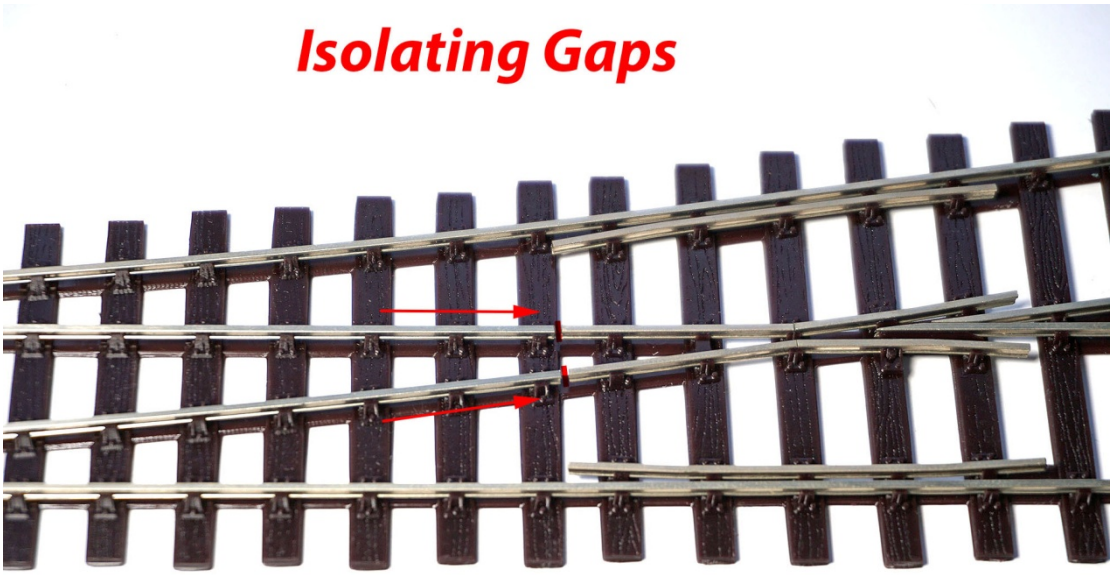
Fitting Switch Blades

The Switch Blades are packaged with a plastic protector fitted to the end to prevent damage to the fine edges at each tip. Carefully slide each Switch Blade out of the protective clip.



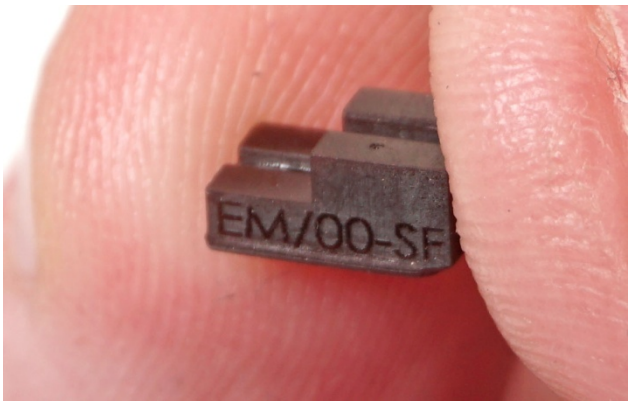
Each Switch Blade can be offered-up to the base and cut to length. When the tip of the Switch Blade is lined up over the last Slide Chair, there needs to be an 'isolating gap' between the Switch Blade Rail and the Closure Rail. Once cut to size and the rail end filed and chamfered, each Switch Blade can be slid into the chairs and into place.





Soldering Switch Blades to Tie Bar Pins

A small Switch Blade 'Spacer' is provided. This 'Spacer' is used to maintain the correct gap between Switch Blade and Stock Rail when soldering the Switch Blades to the pins. It has a slot in the middle which clips onto the Stock Rail. One end is raised to give clearance for the Slide Chair (the 'Spacer' pictured is for EM/00-SF).

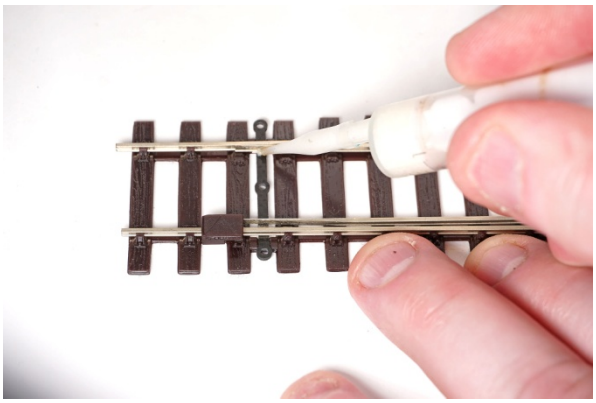


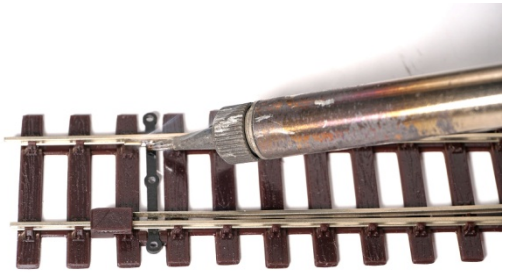
The Spacer can be clipped onto one stock rail while its adjacent Switch Blade is held open.

Once in position, the Spacer holds the Switch Blade open at the correct gap. The other Switch Blade remains against its Stock Rail.

Soldering is done while the Switch Blade sits flush against the Stock Rail as this ensures best alignment. If you notice a gap between Switch Blade and Stock Rail, this can be taken up by squeezing them together at the top of the rail head with a small pair of tweezers, whilst soldering.

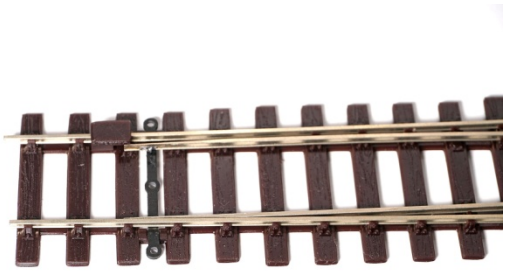
A small amount of Soldering Flux can then be applied to the Pin and Switch Blade. With a small amount of solder applied to the tip of the soldering iron, touch the pin with the tip of the iron and then up against the Switch Blade. The solder will flow with the help of the flux and a soldered joint with be created.

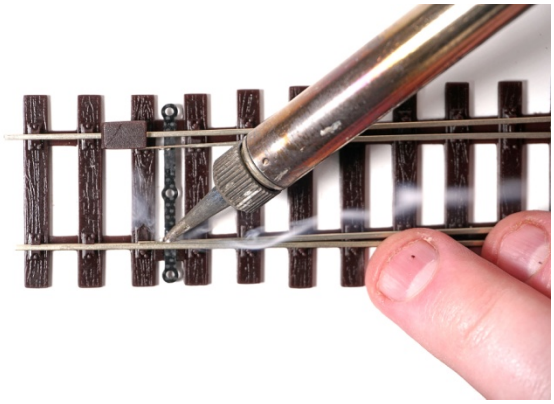


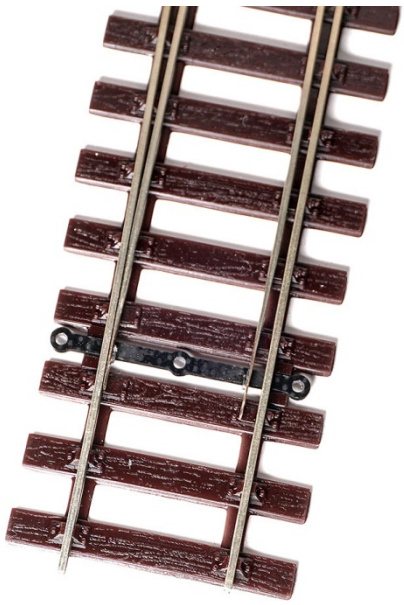


NOTE: Please only use a small amount of solder, otherwise there is a risk of solder flowing under the Switch Blade and bonding the Switch Blade to the Stock Rail.

The same can then be repeated for the other Switch Blade. Move the 'Spacer' to the other Stock Rail which will hold the Switch Blade you just soldered open at the correct gap.

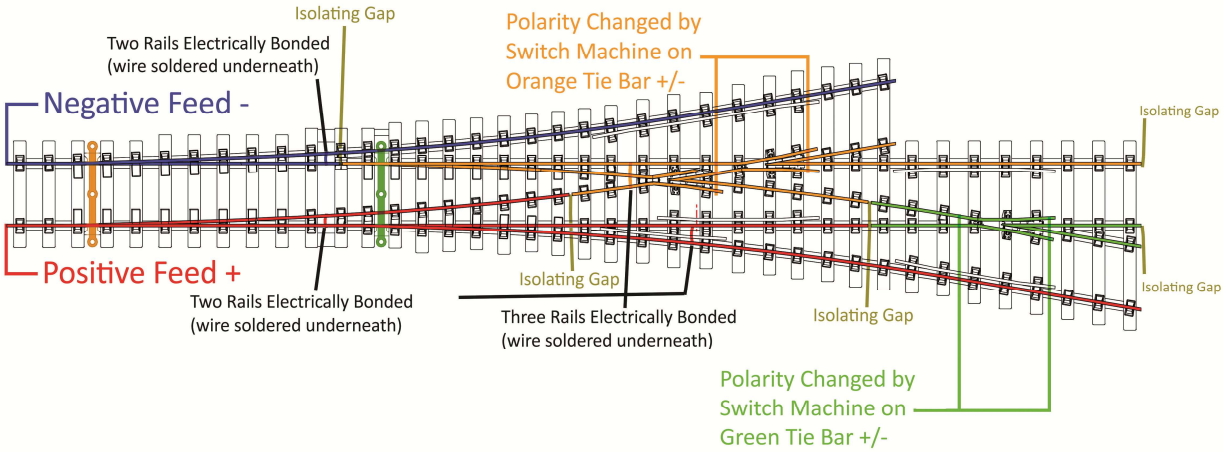






Electrical Wiring

Please refer to the diagram for suggested electrical connection. A positive feed wire should be soldered to one Stock Rail, and negative feed wire to the other Stock Rail.



Each Switch Blade should be electrically bonded to its adjacent Stock Rail by soldering a small piece of wire between them under the rails at the points shown in the diagram.

The polarity of the crossing V rails (represented in green) is changed by the switch machine that operates the 'green' tie bar.

The polarity of the other crossing rails (represented in orange) is changed by the switch machine that operates the 'orange' tie bar.

One wire should also be soldered to the bottom of the Crossing V 'Frog' Rails and Wing Rails and another wire soldered to the bottom of the Closure Rails, as indicated in green and orange:

Fixing the Rails in Place

Once happy with all of the rail positions (checking especially the 'knuckle' location), the rails can be permanently fixed in-place using a small amount of super-glue on one or 2 chairs for each piece of rail.

Laying the completed Turnout

The completed turnout can be installed into the layout and fixed into place using PVA glue or Copydex. Please ensure that no glue gets into the Switch Blade or Tie Bar area, otherwise this will restrict movement or create unnecessary friction.

Ensuring the Plastic Base is Flat

Depending on environmental temperature, slight curving of the plastic base may be experienced. To guarantee smooth running of trains, it is important to ensure that the completed turnout lay absolutely flat on the baseboard surface. This can be accomplished by use of weights or temporary 'pins' to ensure flatness while the turnout is being glued in position.