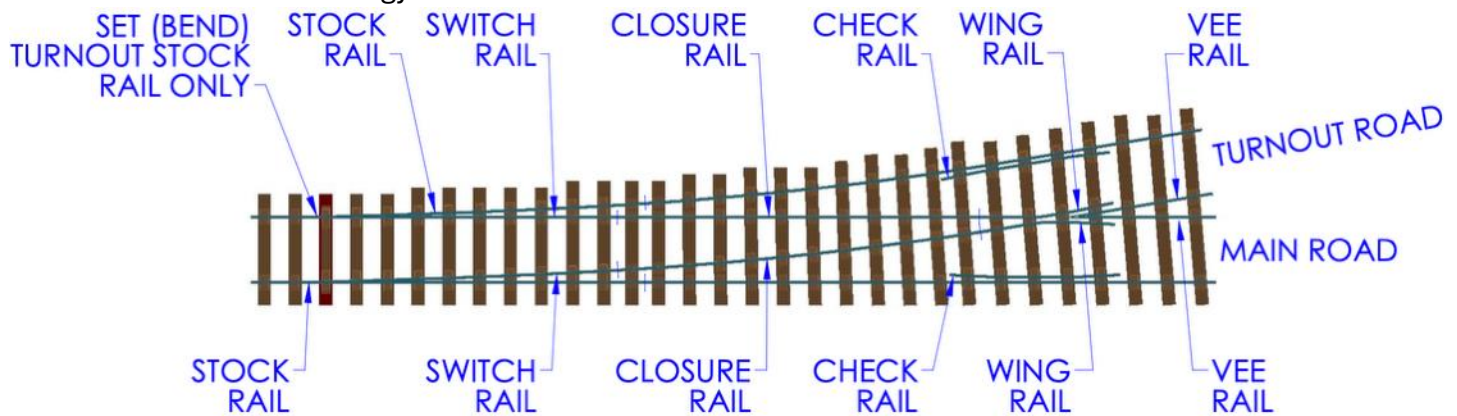


Example of a 4mm kit build, please feedback any suggestions to improve these instructions to terry@kosmik.co.uk

Turnout / Switch Terminology:



Prepare Rail Sections for assembly:

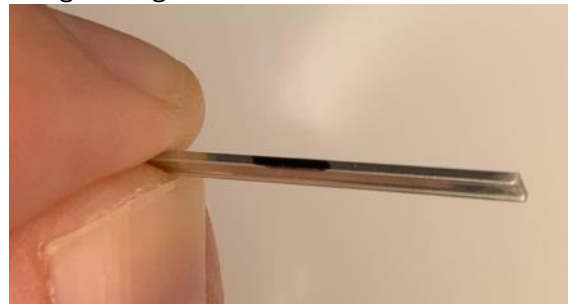
- Utilise 1:1 printed template to cut to length and bend/form all rail sections. Note: printed template does not show SPLIT chairs but does detail complete 1 part chairs.
- Ensure all rail ends are deburred
- Note: Bullhead Rail Head is thicker/higher than Rail Foot so, it's a good idea to mark the tops of rails with a marker pen to aid correct rail orientation when threading/sliding rail into chairs

Rail HEAD



Bullhead Rail Cross Section

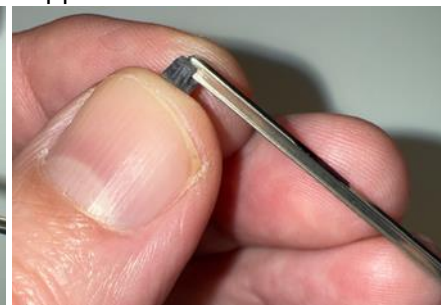
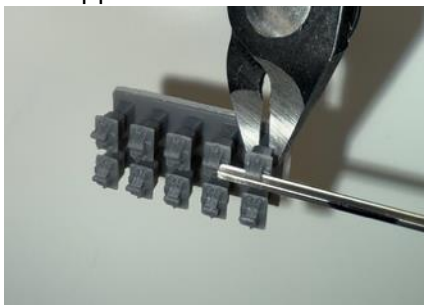
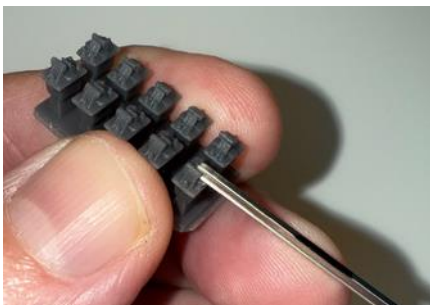
Rail FOOT



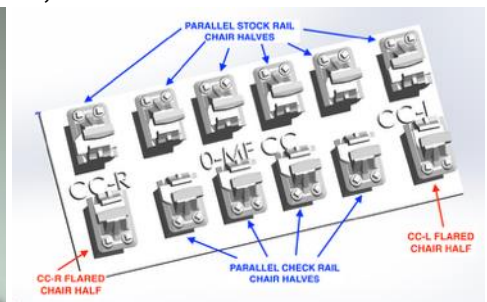
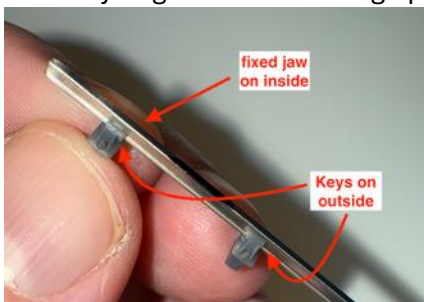
- Ensure all rail ends are deburred. It's a good idea to file a tiny lead in chamfer to both ends of rail to enable chairs to be easily threaded onto rail.

Stock Rail Assembly:

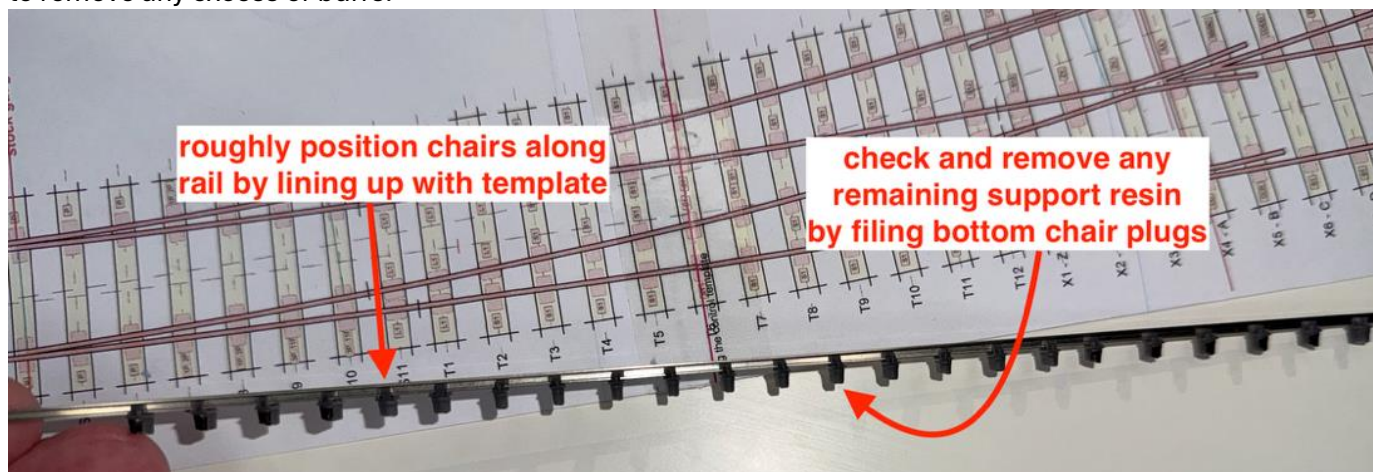
- Thread chairs onto Stock rail in order as per the printed template.
- Chairs can be threaded either on their supports or after removal from support.



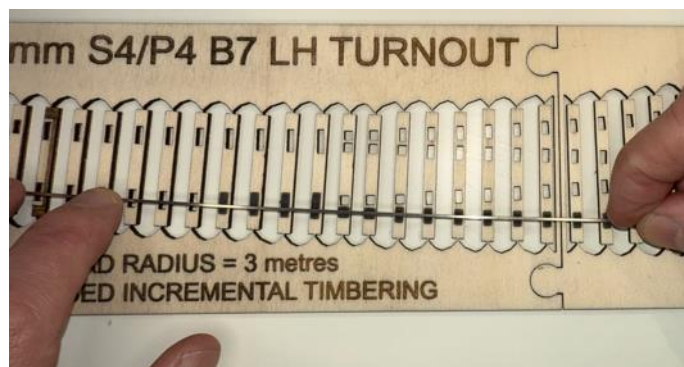
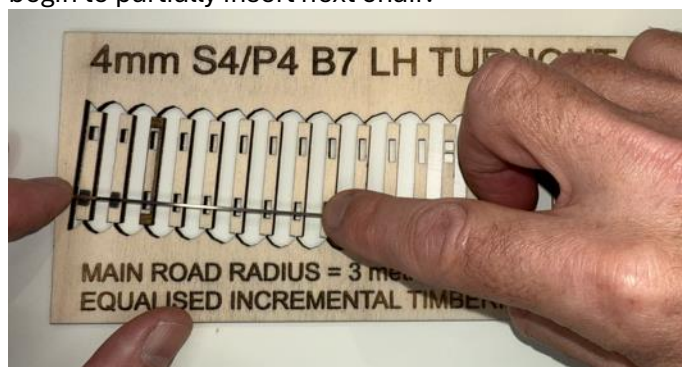
- Before removing CC check rail chairs from supports it's a good idea to mark the stock rail chair plugs. Remove and fit individual check rail split chairs 'as you go' to avoid mixing up CC, CC-L and CC-R chairs.



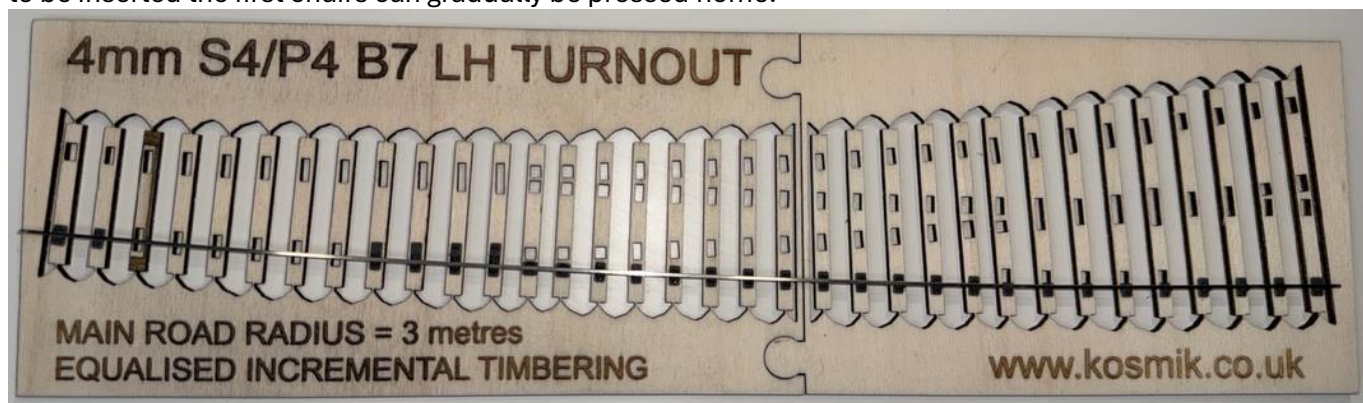
- As chairs are threaded onto rail ensure all keys are fitted on the outside of the rail. Key direction along the rail should be random apart from chairs adjacent to a gap/fishplate/joint where keys would prototypically be fitted facing away from rail joint. *(I need to check / confirm this?)*
- Before removing HEEL chairs from supports it's a good idea to mark the stock rail chair plugs to ensure they are fitted correctly onto rail. Remove and fit HEEL chairs 'as you go' to avoid mixing up the correct order etc.
- Note: P slide chairs are NOT fitted to rails but, are inserted into timber sockets and glued to stock rails later in the build.
- When the rail has a full compliment of chairs fitted. Check all are fitted the same way around e.g. all keys on non-running rail face / outside. Also check that no extra resin material is present below the chair plugs as this will prevent the chairs from sitting down flush on the ply timbers. Run a file along the bottom edge of the plugs to remove any excess or burrs.



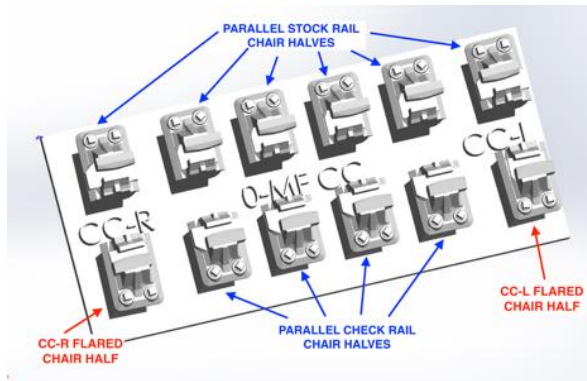
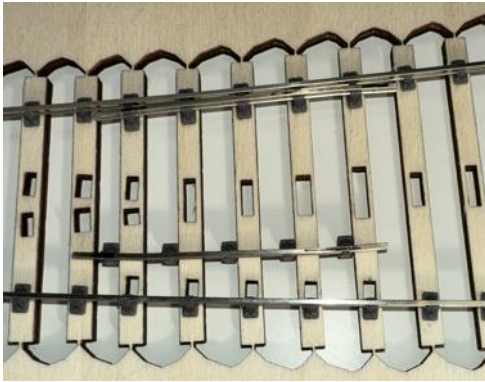
- Starting at one end, align and partially insert first chair into respective timber socket. Hold rail in place at partially inserted first chair and slide next chair into place and with a gentle wiggle, slide and twist of the chair begin to partially insert next chair.



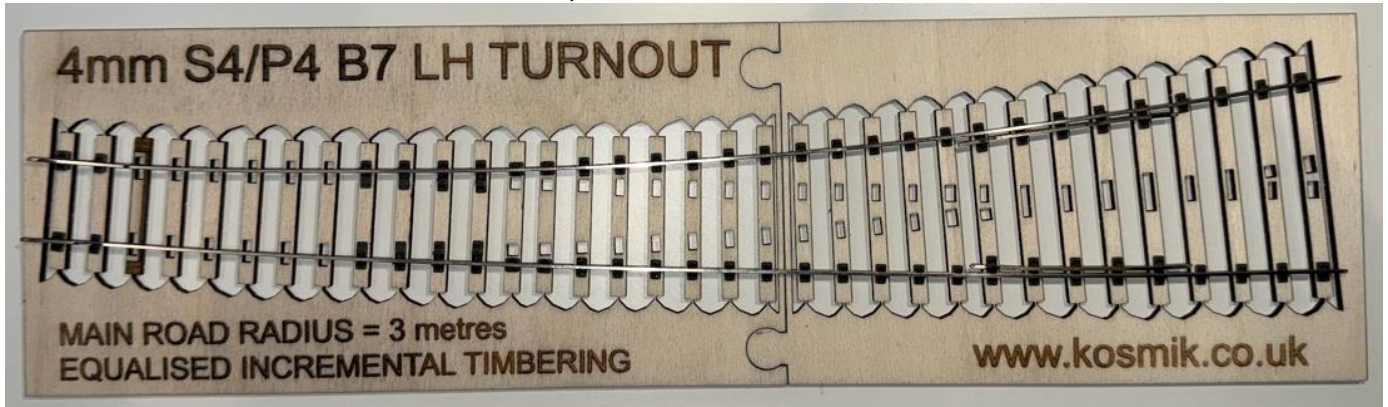
- Whilst holding down rail and first inserted chair repeat the slide/wiggle/twist routine to partially insert remaining chairs. The fit of the chairs is almost size for size so minimal force is required. As more chairs begin to be inserted the first chairs can gradually be pressed home.



- Note: P Slide chairs are NOT fitted at this time. This is to aid insertion of Switch / closure rails. Rail chair assemblies can be easily removed at any time using a small screwdriver as a lever beneath the rail and gently lifting and moving along from one end to the other.
- Thread SPLIT Check Rail Chairs onto check rail taking care to thread the flared chair halves at correct ends as shown below.

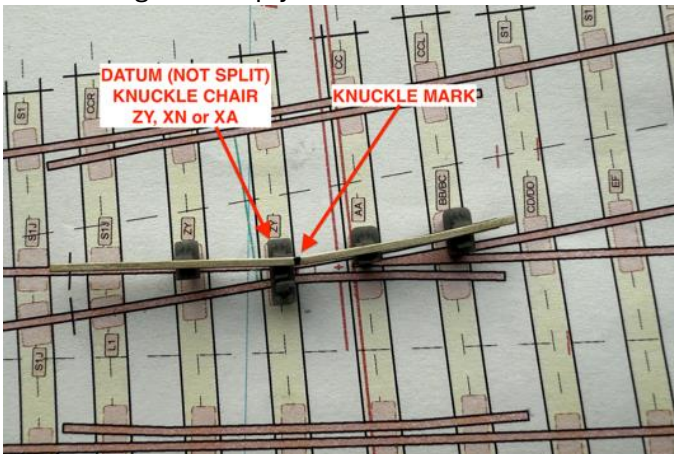


- Insert check rails into shared sockets to complete both stock rail assemblies.

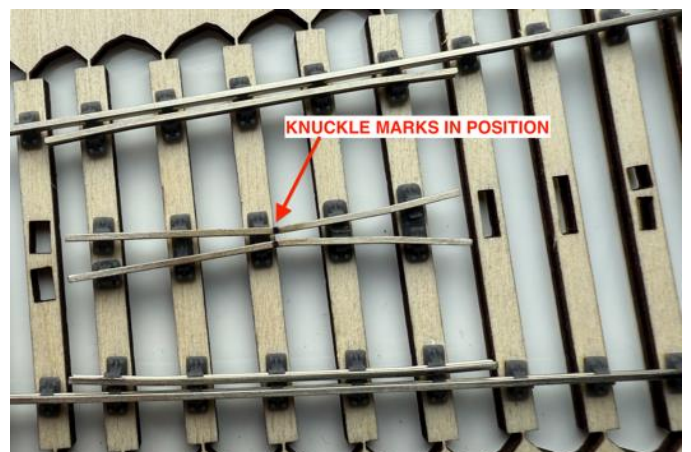
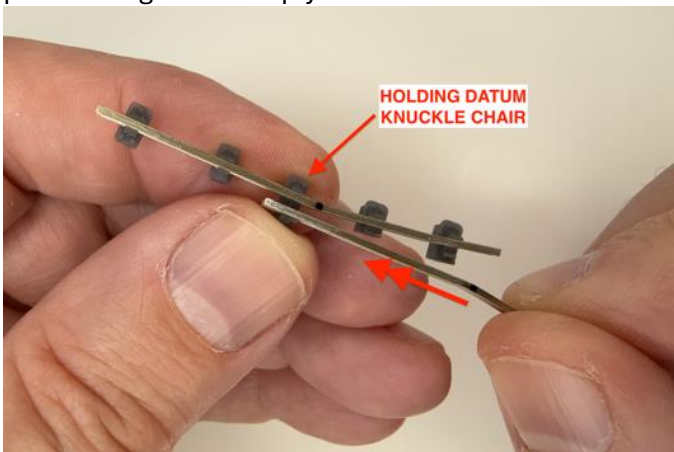


Wing Rail Assembly:

- Thread wing rail chairs onto pre-prepared rail. Ensure 'knuckle' (bend location) is marked on the top of rail and slide datum chair (chair closest to knuckle) along rail as per the template. Thread half chairs on to rail and position whilst ensuring correct orientation e.g. all keys on outside and angles diverging as per template. Test fit first wing rail into ply timbers.

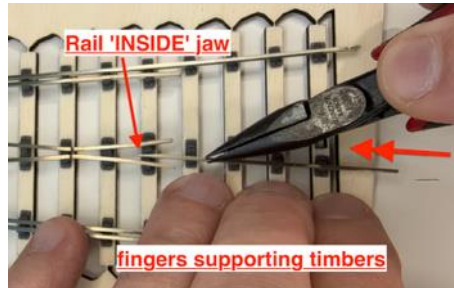


- Thread 2nd Wing Rail through datum knuckle chair. Thread remaining split wing chairs onto 2nd wing rail. Test fit pair of Wing Rails into ply timbers.

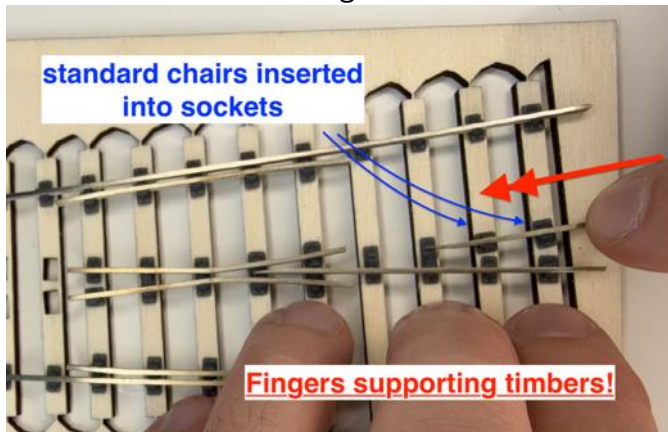


Vee Rail Assembly:

- Both Vee rails need to be machined or filed to the correct geometry before assembly to ensure smooth running of fine scale stock. Appropriate filing jigs are available from my website along with free downloadable instructions.
- Thread crossing Vee Chairs onto Main Road Vee Rail.
- Position chairs close to Vee point and fit into ply timbers as shown below.
- Carefully slide/push main road Vee Rail into Wing Rail Chair ensuring rail tip is 'inside' vee guide jaws.
- Slide Rail until Tip reaches its final position as indicated on the printed template.

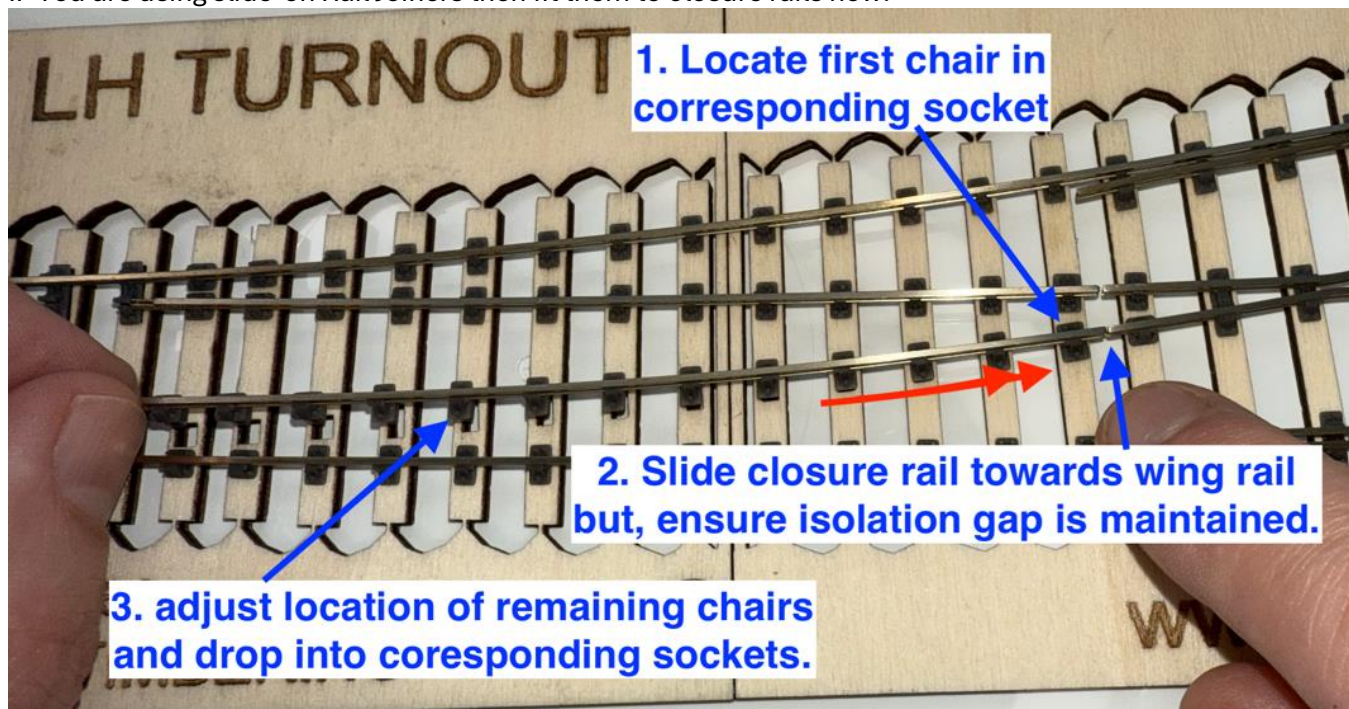


- Thread standard chairs onto Turnout Vee Rail and fit into respective timber sockets.
- Carefully slide / push Turnout Vee Rail through installed Wing/Vee Chairs whilst supporting timbers to avoid timbers breaking.

Closure Rail Assembly:

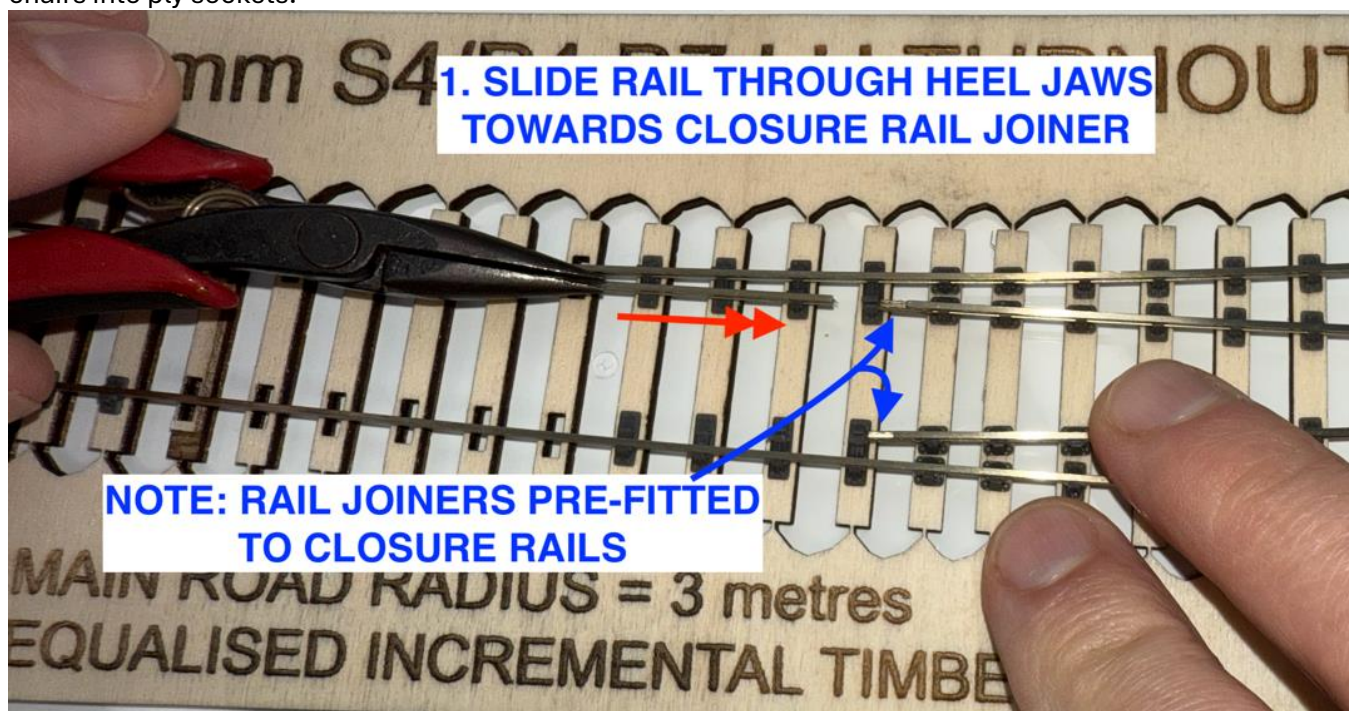
- Please note: Closure and switch rails can be assembled as a single piece or as two separate rails, its your choice.
- Thread Closure Rail Chairs onto pre-prepared rail as per the template whilst ensuring correct orientation e.g. all keys on outside. Fit first Chair adjacent to Wing Rail into socket and slide closure rail towards Wing Rail. Ensure a sufficient isolation gap is maintained between closure rail and wing rail.

- IF You are using slide-on Rail Joiners then fit them to closure rails now.

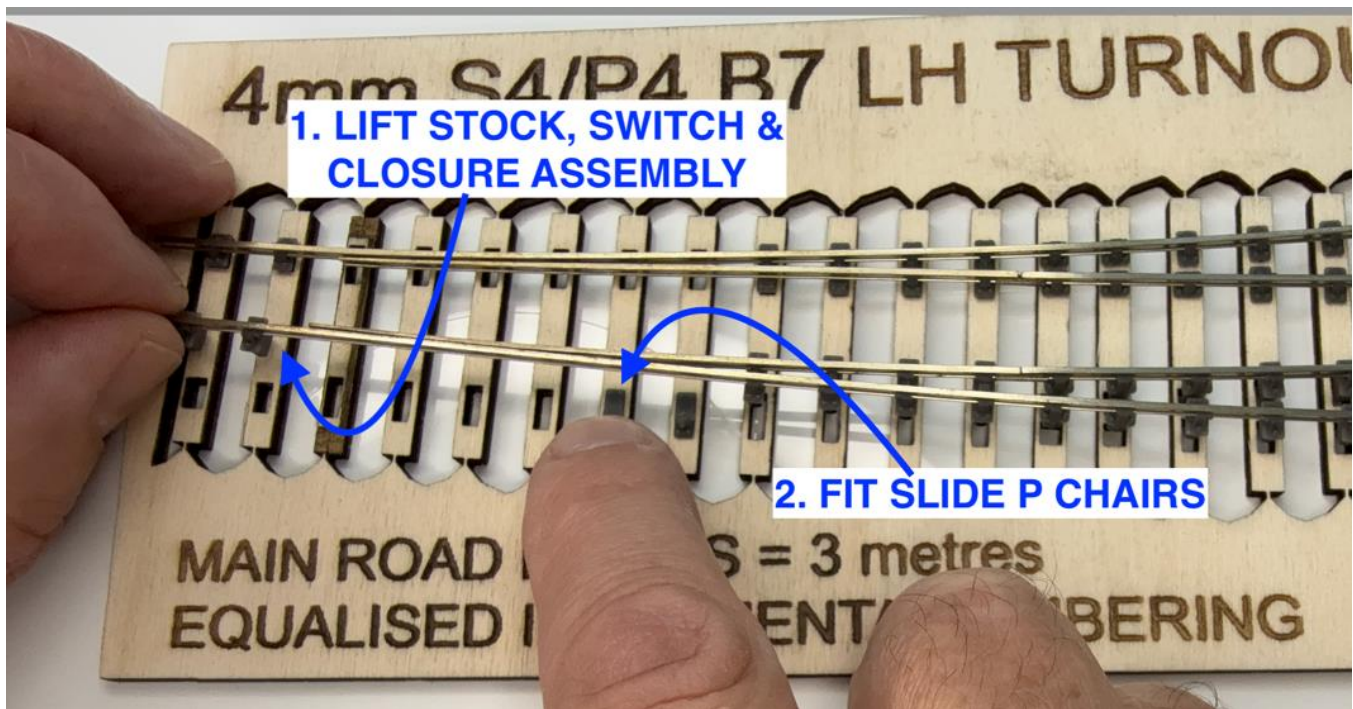


Switch Rail Assembly:

- Both Switch rails need to be machined or filed to the correct geometry before assembly to ensure smooth running of fine scale stock. Appropriate filing jigs are available from my website along with free downloadable instructions.
- Thread the Switch Rail through the solid jaws of the last two Heel Chairs towards the installed Closure Rail.
- IF slide-on Rail Joiners are pre-fitted then it's sometimes difficult to align or slide the switch rail into the Rail Joiner. This can be made easier by gently lifting and removing the closure rail from the ply base. Then, gently lift the assembled stock & switch rail chair assemblies and fit the rail joiner of the closure rail prior to refitting all chairs into ply sockets.



- Carefully lift Stock Chair Assembly and fit all P Slide Chairs into respective sockets. Ensure all P Slide chairs are fully home and refit stock rail to complete Rail and Chair assembly.



Stretcher / Tie Bar Assembly:

Not supplied with Kit but, currently under development and I hope to offer option later.

Electrical Wiring:

Fixing to Baseboard:

Painting and Scenic Suggestions:

Suggested / recommended build.... Still to be completed.... Constantly evolving and improving...

Complete turnout build on the bench

Remove rail assemblies from timber support fretwork

Stick ply timbers to baseboard or display board

Stain timbers

Re-fit rail assemblies into timbers add dropper wires and lightly fix chairs in position using paint (see below)

Remove rail assemblies and apply light coat of rust acrylic to chairs and rail sides

Mask timber sockets/dropper wire holes and apply/fix ballast as required to track work

Re-fit painted rail assemblies with dropper wires into timbers ensuring chairs are pushed/pressed fully down and seating correctly.

Painting/Finishing Turnout suggestions:

Resin Chairs: The chairs are fully cured at 70 degrees C for 60 minutes so they can be painted with regular acrylic paints and do not generally require any primer. If you do use primer then be mindful to apply a mist or light coat so as not to lose any fine detail etc. I lightly brush apply a rust colour to chairs and the sides of the rail when rail assemblies are NOT inserted into ply timbers. This is to avoid getting any paint on the ply timbers prior to staining timbers.

Whilst rail assembly is in finished timbers apply a light dab of paint to the top of each chair and adjacent rail side and allow to dry. This acts to lightly fix the chairs in position to the rail prior to removing individual rail assemblies. carefully remove each rail assembly (rail section complete with chairs) and apply a light coat of rust paint to chair tops and rail sides.

I have successfully used the following; Ammo Medium Rust, RailMatch medium/dark rust and Daler-Rowney Burnt Sienna

Ply Timbers:

The ply timber fret(s) should be glued to baseboard or display board prior to staining or painting. I use regular PVA or wood glue as this gives you time to reposition and add weights etc. Using contact adhesives do not give sufficient time to adjust, check and re-position before setting!

When applying glue to underside of timber fret try not to apply glue to the supporting frame/fretwork as this may prove difficult to remove when dry.

When thoroughly dry, usually 24 hours, use a sharp, thin scalpel/knife to cut down each of the timber ends and carefully remove support/fretwork. Clean any remaining tabs/snibs at the end of timbers using a blade and/or fine file or sand paper.

I generally stain the ply timbers as this emphasises the natural grain whereas paint tends to obscure the grain. Testing different stains on a scrap piece of ply or discarded support fretwork is recommended to achieve your personal preference.

After much experimenting I now utilise Littlefair's wood dye and a mix of 2:1 of English Oak and Driftwood Grey.