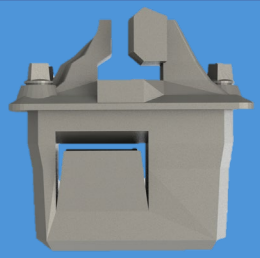


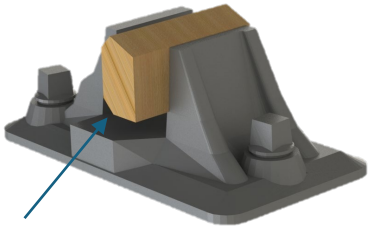
Understanding the Prototype

REA Chairs

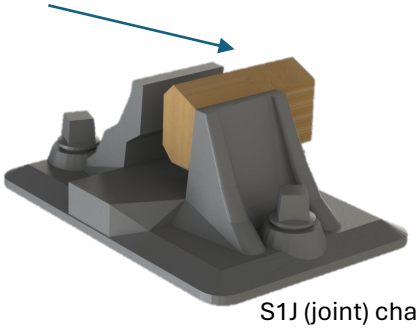
There have many different methods of railway track construction used across the world; the materials used, the design of components and their assembly have evolved as techniques and manufacturing methods have developed.
Templot Plug Track currently caters for Bullhead rail to BS-95R specifications and uses REA (Railways Engineers Association) chair designs.
REA chairs have been across the UK by most railway companies from 1923, to standardise upon the pre-grouping chairing practices and make the components interchangeable between regions.
The GWR did not join in with the REA, preferring to maintain their pre-grouping practices. That said, BR Western Region did start using some REA components in the 1950's.
Although now superseded by Flat Bottom (FB) rail, Bullhead (BH) rail can still be found on the national network, especially so in yards and sidings.

At the time of writing, all Plug Track chair components are based upon REA designs, other chair styles *may* be available in the future.

Plain Line:

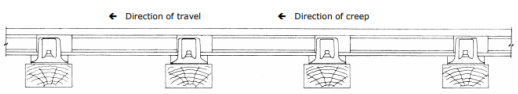


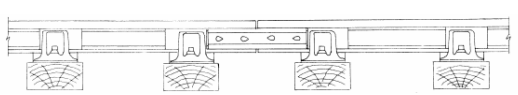
S1 chair



S1J (joint) chair

Note: The S1J chair has a wider baseplate.



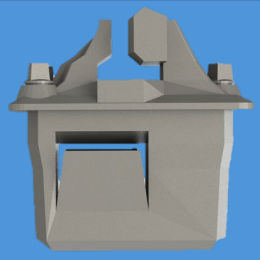


Plain Line (or Plain Track) laid with BS-95R BH rail is relatively simple.
It is laid in track panels, which are often 60' long with 25 10" wide sleepers .
It will *usually* be chaired with S1 chairs, with S1J chairs used at rail joints in situations where a 12" sleeper is used at the ends of track panels.
Variations on the S1 chair exist and will be delt with later, as will the wider variety of track panel sizes and sleeper options.

Care must be paid to the arrangements of the keys, which will always be driven in away from the joint on the sleepers adjacent to the joint, to allow the fishplates to be fitted.
Elsewhere keying practice in the S1 chairs will vary depending upon the direction of travel on the line and local circumstances.
As a rule of thumb, chairs will be keyed with the keys driven in towards the direction of travel on the line.
This is due to the motion of traffic upon the line tending to push the rail forward, especially under braking. This is called rail creep. Thus, the wedging action of the keys facing in the direction of travel will have the effect of gripping the rail and lessening the creep.
On bi-directional lines such as a single-track branch line the chairs will often be keyed alternately. The diagrams (left) should explain this clearly.
It is common for the chairing to be reversed in station areas, to minimise the effect of accelerating trains creeping the rail backwards.

There are many variations to this basic approach to keying, such as on inclines, so close study of the prototype is required to ascertain your needs. That said, if you follow the general rules above, then you'll not be far wrong.

Templot allows the user to determine how they wish the keys to be generated, which will be covered much later in this manual.
If you are a first-time user, don't worry about it for now. By the time it is important to you, the methods to achieve correct keying will become fully understandable – best not to complicate things for now.

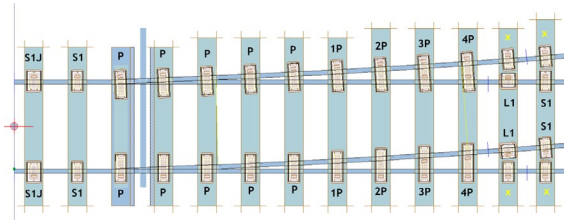


Understanding the Prototype

Turnouts:

There are many different chair designs required to build a turnout. Specialist chairs exist for switches, common crossings and check rails. Templot can produce each of these. In practice, there are variations of each to accommodate variables such as different crossing angles etc. Templot simplifies the range available, and programmatically derives the required chairs for any given formation. Thus, the Templot user only needs to know the basic designations to assemble Plug Track successfully.
The exact number of each type of special chair, and their locations will vary according to the size of the turnout. Again, Templot will work all of this out, but it is helpful to have a basic understanding before starting work – the better to understand the various controls embedded with Templot.

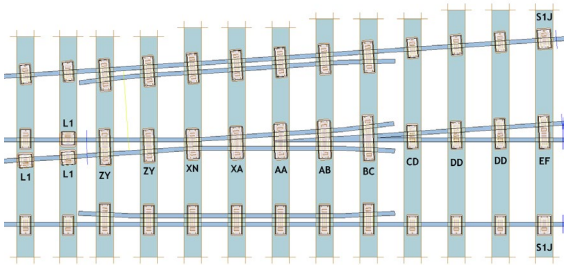
A Turnout can be simply broken down into two basic elements, the **Switch** and the **Common Crossing**.



The Switch

The switch consists of the rails which move. These allow traffic to pass from the **main road** to the **turnout road**.
A switch is designated by size, and are named A to F, with an A switch being the smallest through to F which is the largest of the REA standards.

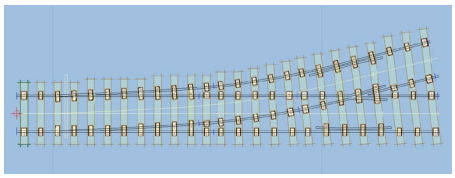
The choice of switch is largely determined by the speed of traffic on the line. A small shunting yard might use A switches, whereas a high speed mainline will use one of the larger designations.
In reality, the choice of switch size can be a little more complicated than that, but for now a simple understanding will get us going.



The Common Crossing

The Common Crossing is the name given to the components which form the point at which the diverging route crosses the main route through the turnout.

This is the most complex aspect of a Turnout. In very simple terms it is defined by the unit angle at which the tracks cross. For example, a 1:6 crossing will diverge by 1 foot for every 6 feet of length. Commonly, these angles are 1:6, 1:8, 1:10, 1:12 and so on up to 1:20.
A smaller unit angle will give a sharper crossing and a larger unit angle will make the crossing less severe.
As with Switches, lower crossing angles are suitable for yards and slow speed lines, higher crossing angles would be more suitable for higher speed lines.
Intermediate sizes such a 1:7.25 can also be specified. Templot can create all of them.



A simple size comparison between an A4 turnout and an F20. Templot can produce these, and any size between.
Note: *Consider the different timbering arrangements on these two examples we will look more closely at these later.*