



### 2.3 Model Pointwork

When modelling pointwork a number of compromises have to be accepted regardless of the standards used. The major one is lack of space, which limits the radii of the turnouts employed. Most of the curves used by modellers for their main line would, in prototype practice, equate to industrial or siding curves. On page 2-2-7, Figure 2-8 lists the crossing angles from 1 in 2 to 1 in 13 and their associated turnout curvature. The table is taken from a North British Railway pocketbook but can be considered as typical of pre-grouping practice. Unless an industrial complex with tight curves is being modelled the crossing angle of the majority of model turnouts would fall in the range from 1 in 4 to 1 in 8.

Although prototype turnouts are described in terms of their crossing angle and switch lengths most modellers describe turnouts by the radius of the curved track, e.g. 4ft 6in radius, 6ft radius, etc. Similarly, some manufacturers quote the turnout radius when describing their products but there are an increasing number who follow prototype practice and refer to the crossing angle and switch length. To provide a guide, Table 1a lists the popular radii used by model manufacturers and gives the corresponding crossing angle, while Table 1b gives the approximate model radius for a range of standard crossing angles.

#### 2.3.1 Model switches

Prototype switches are described as either 'heel' or 'spring'. (See also 2.1.3) Heel switches are joined to the closure rail by means of a fishplate that is collared to permit pivoting at that point. They are held in position by heel blocks between them and the adjacent stock rail. Spring switches are tightly fixed to the closure rail and have to bend when operated. Bullhead switches are restrained by switch anchors, which are steel straps bolted to the switch rail and the adjacent stock rail, while flat bottomed switches use a series of heel baseplates

and blocks. The model equivalents in ready-to-lay turnouts would be the Peco turnout that has the blade pivoted from the closure rail and the Marcway turnout that combines the blade and closure rail into a single unit.

Heel switches are described by their overall length, e.g. 2743mm or 9ft, 3658mm or 12ft, etc. They are mainly used in sidings and industrial areas. Spring switches are described by code letters ranging from A to F. Only A and B switches are normally needed for model turnouts. The lengths of the prototype switches are A – 6096mm or 20ft and B – 6858mm or 22ft 6in. (See Figure 2-22 and Photo 2.23)

#### 2.3.2 Dimensional compromises

With the exception of Scale Seven, model track is narrower than the prototype and the overall length of a turnout will vary slightly with the standard used. However, the major difference is that the clearance required at the switch heel is greater than the prototype. Using a straight-planed heel switch as an example, the clearance at the heel would be 1.75in or 1.02mm in 0 scale. The flangeway clearance required for Fine Standard is 1.75mm so either the switch needs to be set at a sharper angle to achieve the required clearance or, if set to the correct angle, it needs to be lengthened by approximately 30%. In the former case the turnout radius is reduced and in the latter case the overall length of the turnout is increased. In the case of Coarse Standard the distortion is greater as the clearance at the heel is 2.2mm.

Most pointwork drawings available are a compromise. Nearly all combine the blade with the closure rail in a form of spring switch with the result that the position of the heel clearance is not immediately obvious. The compromises vary slightly from manufacturer to manufacturer, so, for example, a drawing of a B7 turnout from manufacturer A may not be quite the same as one from manufacturer B.

**Table 1a**

Model radius		Crossing angle
700mm	27in	1 in 3 1/4
914mm	3ft	1 in 3 3/4
1220mm	4ft	1 in 4 1/4
1372mm	4ft 6in	1 in 4 1/2
1524mm	5ft	1 in 4 3/4
1676mm	5ft 6in	1 in 5
1829mm	6ft	1 in 5 1/4
2134mm	7ft	1 in 5 3/4
2438mm	8ft	1 in 6

**Table 1b**

Crossing angle	Model radius	
1 in 4	1050mm	3ft 6in
1 in 4 1/2	1372mm	4ft 6in
1 in 5	1676mm	5ft 6in
1 in 5 1/2	1996mm	6ft 6in
1 in 6	2331mm	7ft 8in
1 in 6 1/2	2788mm	9ft 2in
1 in 7	3227mm	10ft 7in
1 in 7 1/2	3715mm	12ft 2in
1 in 8	4340mm	14ft 3in

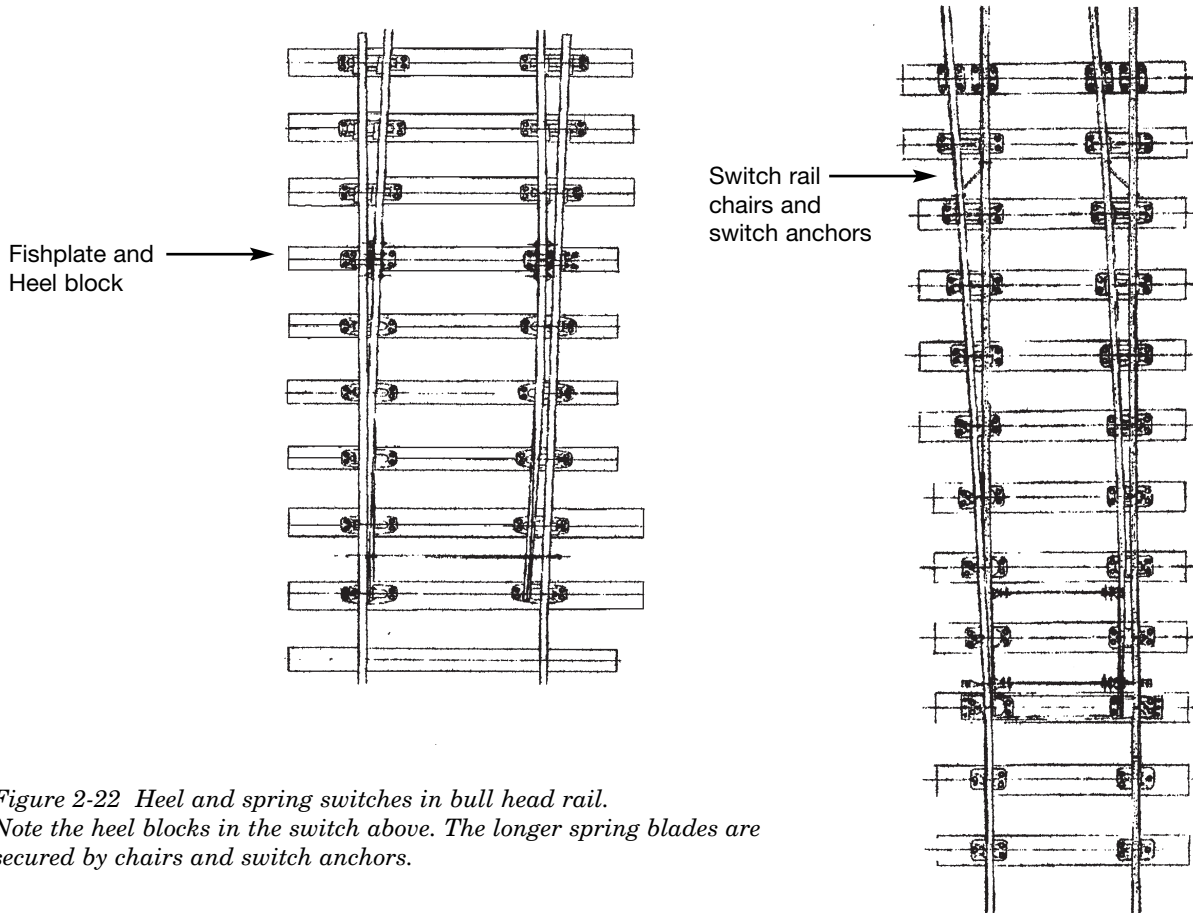
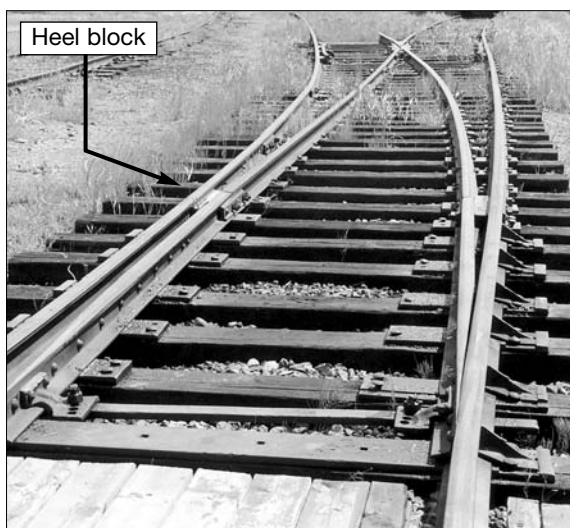


Figure 2-22 Heel and spring switches in bull head rail. Note the heel blocks in the switch above. The longer spring blades are secured by chairs and switch anchors.



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Photo 2.23 Heel and spring switches in flat bottom rail. The series of heel blocks securing the spring blades are just visible in the photo on the right.