

1" Scale Switches With Real Trains Parts

#4, 6, 8 or 10 Track Switch Construction

General

These instructions apply to the construction of switches (more properly called turnouts) using Real Trains 1" scale aluminum rail. They apply to any gauge. It should be noted that our frogs are designed to be used only with our rail. The methods discussed here are very general and it is assumed that the builder knows the basics of track construction and has a specific idea of the exact switch design needed. No specific dimensions are included as these should be developed to maintain compatibility with other parts of the track construction project.

General Layout

Before starting construction a full size layout of your design should be drawn out. This may be done on paper, a sheet of plywood, etc. If you are building a number of switches of the same design you should consider making a jig that will locate the ties and rails automatically. A drawing of a typical switch is shown as Figure 1.

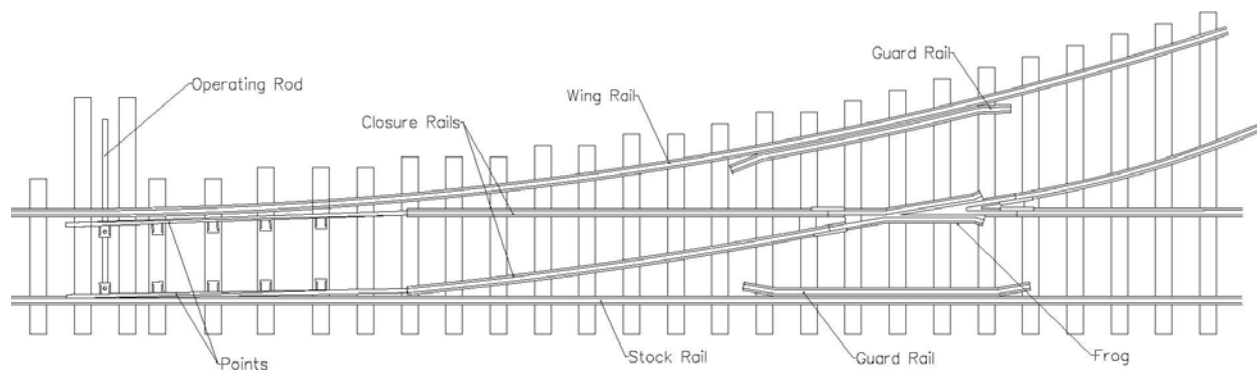


Figure 1 - Typical Switch Layout

A common question is what radius certain switch design is equivalent to. Since switches are straight through the points and the frog they do not result in a single radius. What is important to get correct is the angle at the frog (a number four switch is an angle that separates the rails by one unit at a distance of four units).

Ties

Ties used in switch construction should be similar in height and width to ties used in adjacent track. Their length will have to be longer. While it is possible to make each tie the exact length required it is more common to use several standard lengths (such as two inches longer than

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standard, four inches, etc.). Two long ties are commonly used to extend out to the switch machine and to support it.

Tie spacing should also be similar to what is normally used but some adjustment is usually necessary. A tie should be each side of the operating rod. Ties should also be located under each of the angle braces that extend from the base of the points if these angle braces are not tied together. If they are tied, then each tie should be between two ties. Ties should also be located under the joint between the rail and the frog.

Frog

Begin construction with the frog. The frog is furnished as-cast and is shown in figure 2. Some cleanup may be required to properly fit it to the rails. In removing material from the frog you should match the height and head shape of the frog with the rail that connects to it. If the rail is higher than the frog remove material from the top of the extended joint bar of the frog so that the rail is lower, do not remove material from the rail.

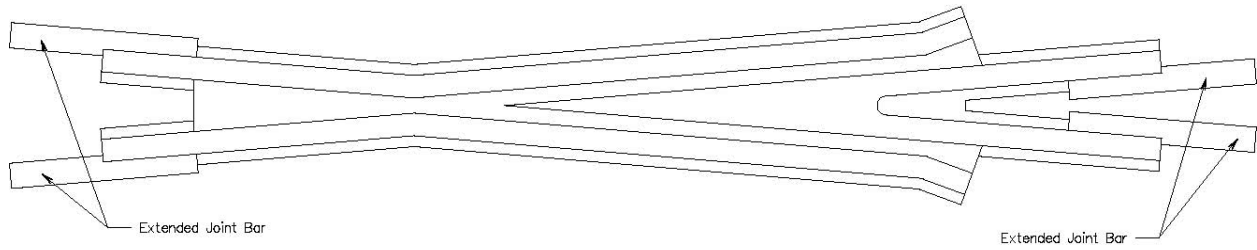


Figure 2 - Frog as Cast

The closure rails will be attached to the frog as shown in figure 3. The two closure rails should be long enough to reach the points. The rails should be cut square, both horizontally and vertically, and material removed from the frog, if necessary, to match. When positioned against the extended joint bar the rail is attached with two bolts and nuts in a similar way in which joint are made in the rail (except the joint bar is on only one side) as shown in Figure 3.

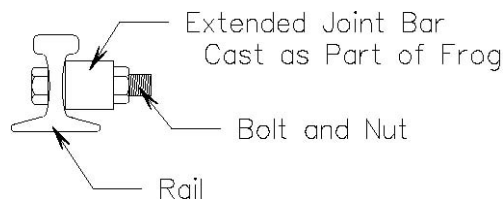


Figure 3 - Rail Connection

The rails at the other end of the frog are attached in the same way. If you are building in the field these rails will typically be full lengths. If building in the shop, they can be short pieces to be joined later or can be omitted to use full lengths later. Once this assembly is completed all other portions of the switch can be added.

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Guard Rails

As shown in Figure 1 a guard rail should be placed inside of the stock and wing rails in the area of the frog. The purpose of this guard rail is to contact the back surface of a wheel to make sure that the other wheel on the same axle remains on the correct path through the frog. You should base their location on the back to back distance between wheels specified for the gauge and scale that you are modeling.

Points

We recommend that you make points from 1/2" by 1/2" by 1/8" steel angle. The movable end of the point should be shaped to fit into the side recess of the rail as shown in figure 4. You should leave a "tab" on the end of the rail because it will both increase the strength of the point by providing more material below the sharp end, and because the tab will help support more weight by bearing against the foot of the rail. The top edge should be brought almost to a sharp point in the area that will fit against the side of the rail head. We do not recommend notching the head of the rail.

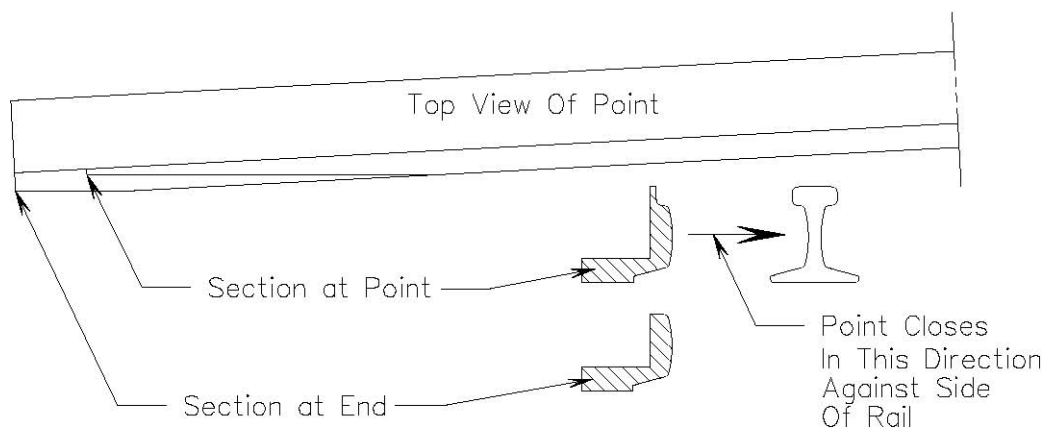


Figure 4 - Movable End of Point

The end of the points that are attached to the closure rails should be cut down to provide another tab that extends along the center web of the rail as shown in figure 5. This tab should be shaped to hold the points in vertical alignment. The thickness of the tab should then be adjusted to horizontally align the inner edge of the point with the corresponding edge of the rail.

Near the end of the points the lower surface of the angle iron should be connected with a cross bar and two slightly loose bolts and lock nuts to maintain their gauge. A minimum of one cross bar is required to attach an operating rod to connect the points to the switch stand mechanism. Many designs use springs that allow the points to move away from the rail if operating through them in the reverse direction with the points set for the other route. Other variations are also possible and you may use any that fit your needs.

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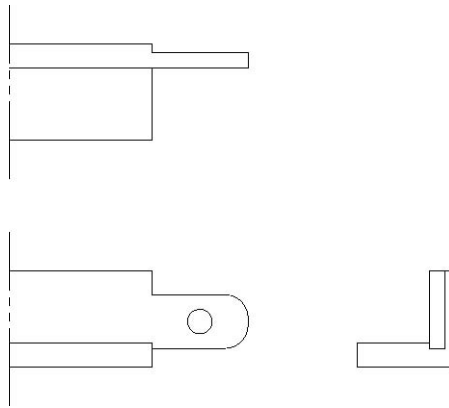


Figure 5 - Point Connection to Closure Rail

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