1 1/2” Scale Switches With Real Trains Parts

These instructions apply to the construction of switches (more properly called turnouts) using Real Trains 1 1/2” scale aluminum rail. They apply to any gauge. It should be noted that our points and 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.

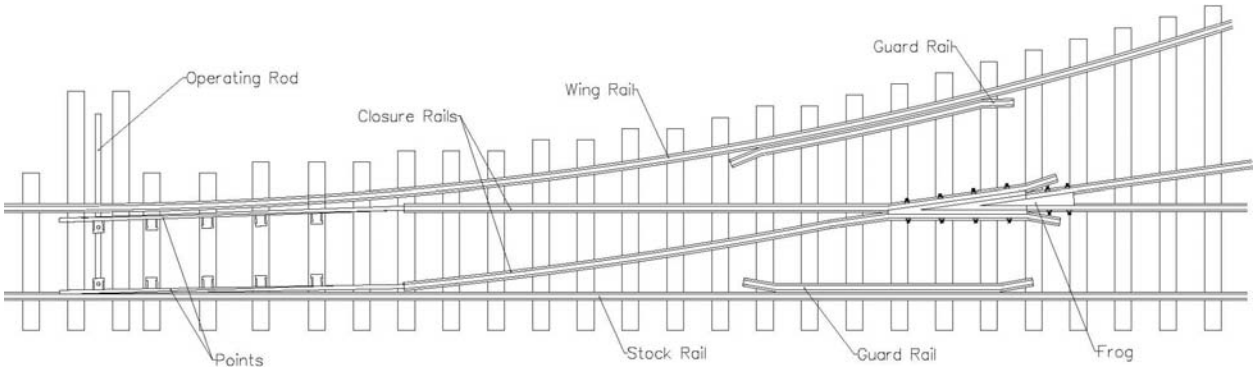

Figure 1 - Typical Switch Layout

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 nine switch is an angle that separates the rails by one unit at a distance of nine 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 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. You should also try to obtain a good fit within the side of the rail so that each fully supports the other.

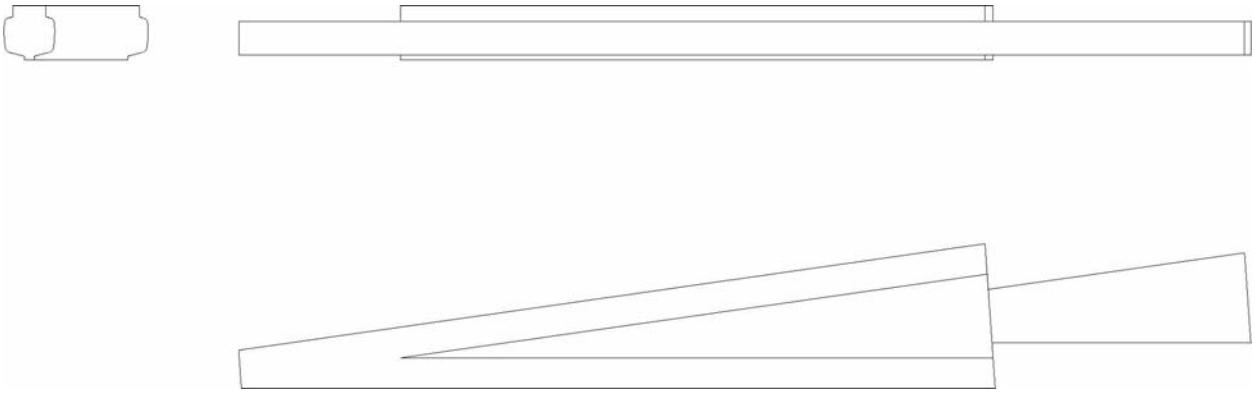

Figure 2 - Frog as Cast

Rails will be attached to the frog and bent as shown in figure 3. The two closure rails should be long enough to reach the points. When these extend beyond the frog on the other side they become guard rails and should be bent outward at their end. If you are building in the field the two other rails that extend away from the switch 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. For attachment of the rail to the frog we recommend the use of studs (pieces of threaded rod) at least 3/16 inch (4mm) in diameter (equivalent to a number 10 screw) and nuts of the self-locking type. The rail can be formed to shape and clamped together with the frog and drilled through all at one time. Once this assembly is completed all other portions of the switch can be added.

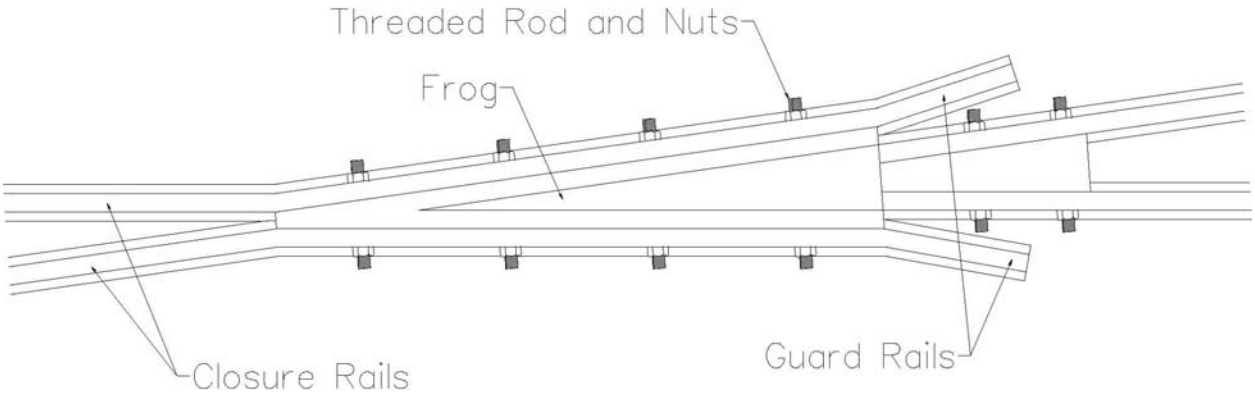

Figure 3 - Frog Assembled to Rails

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 though 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

The points are furnished as-cast and are shown in Figure 4. Some cleanup may be required to properly fit to the rails. During cleanup the height and head shape of the point should be matched to the rail they will join. The movable end of the point should be shaped to fit into the side recess of the rail with the top edge brought almost to a sharp point in the area that will fit against the side of the rail head (a casting cannot form a sharp edge and some shaping must be done here).

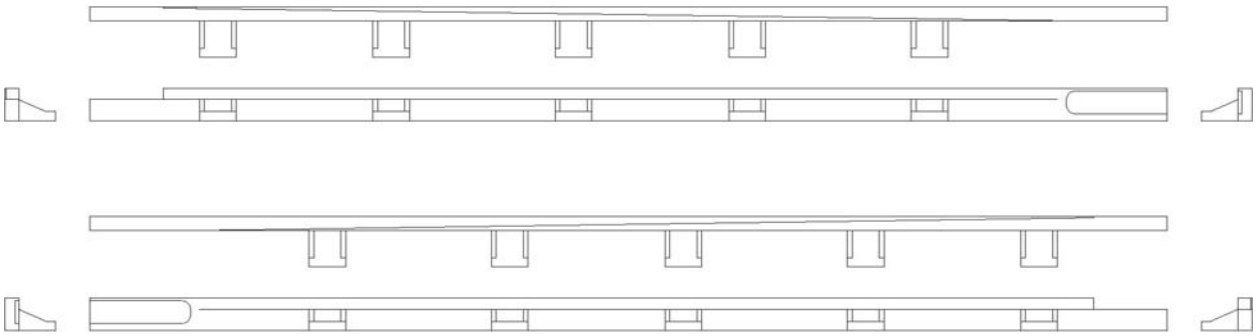

Figure 4 - Points

The points are to be attached to the closure rails with the extended end of the point, sized to fit within the recess on the side of the rail. This is bolted to the rail as shown in Figure 5. Do not over tighten these bolts. The purpose of this joint piece is to provide a flexible connection from the point to the rail.

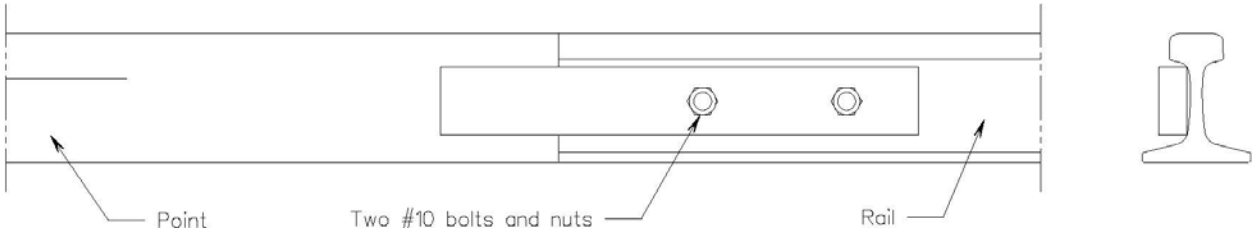

Figure 5 - Point Connection to Closure Rail

The points include feet cast on to their lower edge that should be connected with a cross bar and two slightly loose bolts and lock nuts to maintain their gauge as required. 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.