Micro Engineering Company

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INSTRUCTIONS
N SCALE TURNOUT

15-405 Code 70 #6 LH, 15-505 Code 55 #6 LH
15-406 Code 70 #6 RH, 15-506 Code 55 #6 RH

1. FEATURES

The **Micro Engineering N Scale Turnout** is a *scale model* turnout. The turnout is a "DCC friendly" design meaning it is compatible with Digital Command Control (DCC) power systems but can also be used with conventional DC block control power systems. Some of the features incorporated in this turnout include; an all metal frog for good electrical performance and appearance; metal guard rails for a more realistic appearance; prototypical spacing and placement of scale size turnout ties; snap action, sprung switch rails; a non-operating switch stand; optional positioning of headblock ties and switch stand on either side of the turnout; blind nail mounting holes; and a special wheel-set gauge for checking wheel sets should derailments occur. The turnout also has molded-in detail including; scale size tie plates and spikes; tie wood grain detail; and rail braces and slide plates in the switch rail area.

Cut to 5-7/8" wide

2. DESIGN & OPERATION

Attention to factors effecting good operation and prototype appearance were the guiding principles in the development of these turnouts.

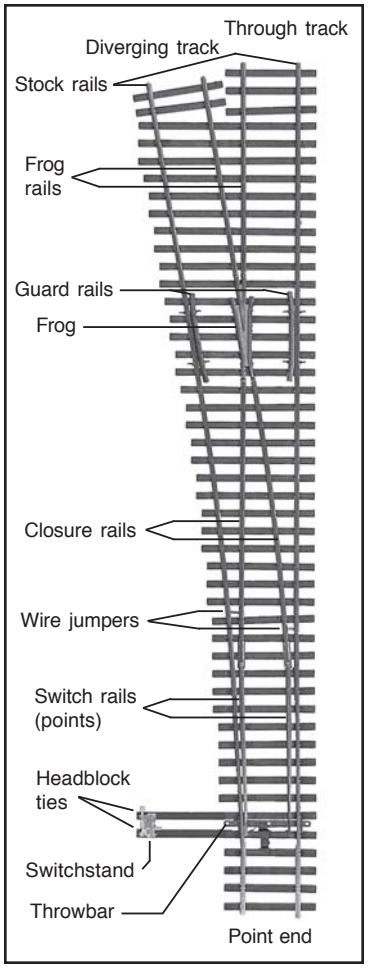
Design effort was especially focused on the dimensions in the frog area in order to accommodate as wide a range of N scale wheel sets as possible while still maintaining smooth operation. This, combined with computer aided design and machining technology (CAD-CAM) results in a turnout that has superior operating characteristics with trouble free operation of most equipment, forward or backward, at virtually any speed. When derailments do occur, it is often the result of an out of spec wheel set on the rolling stock. Included with your turnout is a **wheel set gauge** for checking wheel pairs. If the wheel flanges of a suspect wheel pair do not fit in the grooves of the wheel set gauge, twist one of the wheels to loosen it and slide it along the axle until both wheel flanges are in the grooves. This piece of rolling stock should then run correctly through the turnout. An alternative is to replace the bad wheel pair with a better one.

Another important feature for good operation is the all metal frog which allows locomotives to operate through the turnout at a crawl speed without stalling as can happen with plastic frog turnouts.

3. PARTS

The turnout is ready to install on your layout right out of the package. The following acetal plastic or white metal parts are included with the Micro Engineering N Scale Turnout and should be glued with a cyanoacrylate (CA) cement.

headblock tie extension set **wheel set gauge**
switchstand (non-operating)



4. MODIFICATIONS

a. Weathering: The metal parts of the turnout can be weathered to match our Weathered Flex-Trak™ by using Micro Engineering Rail Weathering Solution, #49-103 or #49-104. Remove the weathering from the tops of the rails with a Bright Boy, Micro Engineering #49-113, or a fine sanding block.

b. Curving: To put a slight curve in either track just beyond the frog, cut the last four to seven long ties in half using a razor knife. Then, cut out every other plastic connector between ties under one or both frog rails and curve the track.

5. ELECTRICAL

a. DCC Compatible: Micro Engineering turnouts are compatible with Digital Command Control (DCC) power systems. The turnouts are manufactured so the stock rails and their adjacent closure rails and switch rails have the same polarity. This assures that if a metal wheel contacts the stock rail and its adjacent switch rail at the same time, it will not short and shut down the DCC control system. Another feature of DCC compatible turnouts is an electrically isolated frog which is necessary to avoid shorts where rails with opposite polarity join the frog. Built in plastic insulators between the frog base and the base of each of the four rails joining it, prevent the rails from sliding against the frog and creating a short. The turnouts can also be used with conventional DC Block Control power systems without alteration.

b. Power Feeds: The wiring hookup to the turnout is identical for DCC or conventional DC Block Control power systems.

1. Stock rails: Power of opposite polarity needs to be

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supplied to each stock rail through metal rail joiners from connecting tracks or through a power wire soldered to each stock rail. (See 6d. Wire Attachments, below.)

2. Frog rails: Power also needs to be supplied to the two frog rails in the same manner as the stock rails. Frog rails must be of opposite polarity from their adjacent stock rail.

3. Frog (optional): The metal frog can be powered. (See 5c. Frog Power Routing, below.)

4. Closure rails: Power is already supplied to the two closure rails via built-in wire jumpers from their adjacent stock rails.

5. Switch rails (points): Power is already supplied to the two switch rails via the built in hinge rail joiners at the closure rail / switch rail junction.

c. Frog Power Routing: Because the frog is not powered, it is possible some short wheel based locomotives such as 0-4-0's could stutter or stop when crossing the frog at slow speeds. To avoid this, the metal frog in Micro Engineering turnouts offers the option of powering the frog through Power Routing (which cannot be done with plastic frog turnouts). Power Routing provides power to the frog and changes its polarity each time the turnout is thrown. To do this, a wire is soldered to the frog (see 6d. Wire Attachments, below) and power is supplied to the frog through the electrical contacts of a switch machine (or a separate toggle switch).

6. INSTALLATION

a. Headblock ties: (See photo.) The turnout is designed so the headblock ties and switch stand can be located on either side of the turnout. The two ties of the **headblock tie extension set** have a plastic connector between them near each end. With a razor knife cut out the connector at the end with the pins (the end that will be against the turnout). Do not remove the connector at the opposite end as it will be hidden by the switch stand (if used). Place the turnout on a flat surface and insert the pins on the end of the extension set into the slots in the ends of the headblock ties on the desired side of the turnout and cement in place. Paint the **switch stand** and cement it near the ends and on top of the headblock tie extensions.

b. Throw Mechanism: To throw the switch rails, manual throw or electric switch machines can be used. Since the spring installed in the turnout is fairly strong, it may be necessary to remove the plastic retainer and spring from the underside of the turnout for use with some throw mechanisms. The plastic throwbar has .031" diameter holes at either end and in the center where a 1/32" wire throw linkage can be inserted from below or above. **Note:** the center hole in the throwbar can only be used if the spring and retainer are removed since the spring fouls this hole when throwing.

c. Rail Joiners: When using metal rail joiners, attach them to the appropriate turnout rails. The end ties do not have spike detail and are slightly thinner to allow installation of the metal rail joiners without forcing the tie below the other ties. Micro Engineering nickel silver metal rail joiners are available, #26-070 Code 70 and # 26-055 Code 55. When a turnout connects the main line to a siding, branch line, or yard tracks, prototype railroads usually use a smaller rail size than that used on the main line. To model this, the rail size might change from Code 70 on the main line to Code 55 in the yards or sidings. To make this change easier, Micro Engineering plastic Transition Rail Joiners are available, #26-005 Code 70 to 55. Insulated plastic rail joiners are also available, #26-071 Code 70 and #26-056 Code 55.

d. Wire Attachments: If power wires are needed (see 5. Electrical, above) it may be easier to solder them to the appropriate rails and/or frog before mounting the turnout. On the underside of the turnout, a small, round metal pad that is part of the frog extends through the plastic for soldering a wire to the frog. (This pad may be covered with a thin layer of plastic flash which is easily scraped off.) **Caution:** when soldering wires to the turnout, use a small, hot soldering iron and apply the heat quickly to avoid melting the plastic spikes and ties. Pre-tinning the wire end can help reduce soldering time.

e. Mounting: The turnout can be mounted to the roadbed by gluing or nailing. Many modelers prefer gluing their track and turnouts in place for a more realistic appearance (no nail heads showing). The turnout ties, like our Flex-Trak, are made of an acetal plastic (for superior strength) and require a rubber based cement such as Pliobond®, Micro Engineering #49-101 or #49-102 or a cyanoacrylate (CA) cement or silicone caulk. To glue the turnout in place, paint a thin layer of Pliobond cement on the roadbed, or apply CA cement to the undersides of the ties, or spread a thin layer of caulk on the roadbed with a putty knife, place the turnout in position, and place weights on the turnout until the cement sets. Additional holding power will be gained when the ballast is cemented around the ties.

For nailing, blind nail holes are provided on the underside of some of the ties. Use a 3/64" (#56) drill to drill through the remainder of the blind holes. Avoid applying too much pressure when drilling which can break the ties. Fasten the turnout to the track board with small nails, brads, or spikes. Avoid driving the nails in too far which can warp or break the tie.

f. Final Installation: Attach the connecting tracks to the turnout and ballast the turnout and track. Be sure to ballast over the wire jumpers or paint them black to hide them. **Caution -** Keep glue and ballast clear of the moving switch rails and throwbar. Do not ballast between the headblock ties where the throwbar operates. Check the throw action of the switch points making sure they snap against the stock rail when thrown to either side. Use a Bright Boy, Micro Engineering #49-113, or a fine sanding block to clean the top of the rails for good electrical pickup and a better appearance.