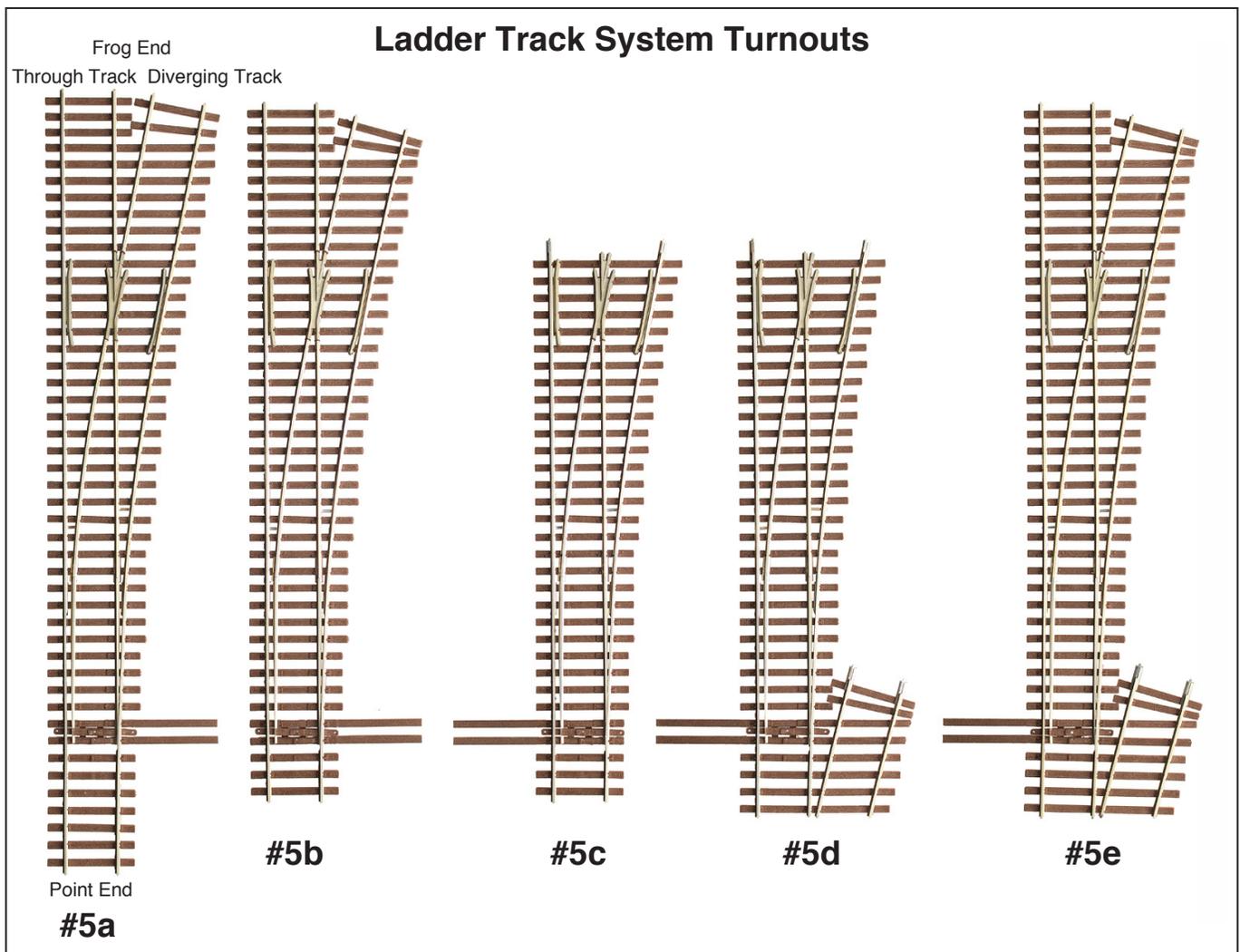


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Introduction

The Micro Engineering **Ladder Track System (LTS)** is a series of five different **HO #5 turnouts** (listed below) that, when used in various combinations, allow up to a 30% increase in usable yard area for a given layout space. The various turnouts achieve more compact yards through the use of curved diverging tracks, increased ladder track angle, overlapping turnouts, shorter turnouts and the use of the minimum track spacing of 2-1/16 inch (the NMRA standard) between body tracks. The amount of increased yard area is dependent on the type of yard modeled (yard configuration) and the size of the yard. Generally the larger the yard, the more space gained.



Turnout Descriptions & Use

#5a Standard Turnout

Description

This turnout is a standard #5 turnout with an 11.42 degree frog angle and a straight Diverging Track. The Point End of the turnout has an additional four ties making it slightly longer than a normal turnout.

How or where to use

1. The additional four ties allows connecting a series of #5A Standard Turnouts, one after the other, to form a ladder track where each body track, including between the mainline and the first body track, has 2-1/16 inch track spacing (the NMRA standard). The angle of the ladder track will be the same as the frog angle, 11.42 degrees. A ladder track made using #5a's forms a classic yard often seen in large, prototype yards but is not a space saving type of ladder track.
2. When the #5A Standard Turnout is used for other than a ladder track, the additional ties on the Point End can be left straight, flexed to a curve or trimmed off, as desired.

#5b Curved Diverging Track

Description

This turnout is different from a standard #5 turnout in that it has a curved Diverging Track and without the additional four ties at the Point End of the turnout.

How or where to use

1. For space saving yards, the #5b Curved Diverging Track turnout is the turnout used most often as the first turnout of a ladder track, coming off the mainline. This is because the curved Diverging Track effectively increases the ladder track angle from 11.4° of a standard #5 to 16.2°. This allows longer body tracks for the same layout space.
2. Connecting a series of #5b Curved Diverging Track turnouts, of the same hand, easily forms a pinwheel yard.
3. The #5b Curved Diverging Track turnout can be used anywhere a larger Diverging Track angle is needed.

#5c Lead Ladder

Description

This turnout is a shortened turnout, ending just past the frog and guard rails at the Frog End of the turnout. The ends of the Through Track and the Diverging Track have effectively been removed. This allows the next turnout to start just past the frog, in effect creating overlapping turnouts and thus saving space. The Point End of the turnout has the normal three ties.

How or where to use

1. The #5c Lead Ladder turnout is generally used as the second turnout in a ladder track, after the turnout coming off the mainline. It is also the opposite hand from the first ladder turnout.
2. Point End: When connected to a #5b turnout, the track spacing between the mainline and the first body track is 2-1/2 inches.
3. Frog End: A #5d or #5e turnout, of the same hand, must be attached to the Frog End of the #5c turnout.

#5d Intermediate Ladder

Description

This turnout has the same shortened Frog End as the #5c, ending just past the frog and guard rails. At the Point End of the turnout, the Through Track and curved Diverging Track from the previous turnout has, in effect, been made apart of the #5d turnout. The two modified ends allows the #5d turnout to overlap the previous turnout and to be overlapped by the next turnout, thus saving space.

How or where to use

1. The #5d Intermediate Ladder turnout is usually used after the #5c turnout near the start of a ladder track or after another #5d to continue adding body tracks. Generally, a series of #5d's are used, one after the other, for most of the body tracks of a yard making the #5d the most widely used turnout for most ladder tracks. The #5d provides 2-1/16 inch track spacing between body tracks.
2. Point end: The Point End of the #5d turnout must connect to either a #5c turnout or another #5d turnout, of the same hand.
3. Frog End: Another #5d or a #5e turnout, of the same hand, must be connected to the Frog End of the #5d turnout.

#5e Last Ladder

Description

This turnout has the same Frog End as the #5b turnout including the curved Diverging Track. The Point End of the turnout is the same as the #5d where the Through Track and curved Diverging Track from the previous turnout has, in effect, been made apart of the #5e turnout. This allows the #5e turnout to overlap the previous turnout thus saving space. The #5e provides 2-1/16 inch track spacing between body tracks.

How or where to use

1. The #5e Last Ladder turnout is generally used as the last turnout on a ladder track.
2. Point End: The Point End of the #5e turnout must connect to either a #5c or #5d turnout of the same hand.
3. Frog End: The Diverging Track and the Through Track of the #5e become the last two body tracks of the yard (or a runaround track from the Through Track).

#5 Turnout Specifications

Turnout specifications are also listed on each of the Ladder Track Turnout templates.

#5a Standard Turnout Specifications

Frog angle: #5, 11.421°
Turnout length: 10.416"
Track centerline radius, closure area: 22.9"
Tie width: .094" (prototype 8")
Tie thickness: .078" (prototype 7")
Tie lengths: 1.157" to 2.261" (prototype 8'-5" to 16'-5")
Tie spacing: .226" (prototype 20")
Switch point throw: .080"
Turnouts have a sprung switch rail assembly
Turnouts are DCC compatible

#5b Curved Diverging Track Specifications

Frog angle: #5, 11.421°
Diverging track angle: 16.2°
Turnout length: 9.269"
Track centerline radius, closure area: 22.9"
Track centerline radius, diverging track: 22.1"
Tie width: .094" (prototype 8")
Tie thickness: .078" (prototype 7")
Tie lengths: 1.157" to 2.261" (prototype 8'-5" to 16'-5")
Tie spacing: .226" (prototype 20")
Switch point throw: .080"
Turnouts have a sprung switch rail assembly
Turnouts are DCC compatible

#5c Lead Ladder Specifications

Frog angle: #5, 11.421°
Turnout length: 7.284"
Track centerline radius, closure area: 22.9"
Tie width: .094" (prototype 8")
Tie thickness: .078" (prototype 7")
Tie lengths: 1.157" to 2.261" (prototype 8'-5" to 16'-5")
Tie spacing: .226" (prototype 20")
Switch point throw: .080"
Turnouts have a sprung switch rail assembly
Turnouts are DCC compatible

#5d Intermediate Ladder Specifications

Frog angle: #5, 11.421°
Diverging stub angle: 16.2°
Turnout length: 7.489"
Track centerline radius, closure area: 22.9"
Track centerline radius, diverging stub: 22.1"
Tie width: .094" (prototype 8")
Tie thickness: .078" (prototype 7")
Tie lengths: 1.157" to 2.261" (prototype 8'-5" to 16'-5")
Tie spacing: .226" (prototype 20")
Switch point throw: .080"
Turnouts have a sprung switch rail assembly
Turnouts are DCC compatible

#5e Last Ladder Specifications

Frog angle: #5, 11.421°
Diverging track angle: 16.2°
Diverging stub angle: 16.2°
Turnout length: 9.474"
Track centerline radius, closure area: 22.9"
Track centerline radius, diverging track: 22.1"
Track centerline radius, diverging stub: 22.1"
Tie width: .094" (prototype 8")
Tie thickness: .078" (prototype 7")
Tie lengths: 1.157" to 2.261" (prototype 8'-5" to 16'-5")
Tie spacing: .226" (prototype 20")
Switch point throw: .080"
Turnouts have a sprung switch rail assembly
Turnouts are DCC compatible