Straight-Line Track Diagrams and Precautions with ZoneMaster Auto-Reverse Feature

Analyze Your Track Plan To Locate Reversing Sections, Loops and Wyes

A straight-line track diagram is essential for accurately locating reversing sections. You have likely seen a straight line diagram if you have ever seen a picture of a dispatcher's panel. Notice there are no curves, hills or other bends shown in the track diagram.

A straight-line diagram is easy to create. To make one, you need to get into the cab of your locomotive and take a virtual ride around your layout.

A section of single track, curved, straight or twisty, is simply a straight line [1]. Don't attempt to draw the actual curvature of the track. A single section of mainline is represented as a straight line even if it twists around as it climbs a hill or goes around a peninsula.

Turnouts are shown as diverging [2] and [3], or converging [3] and [4] as if you are encountering them as you travel your layout looking out the front of the your locomotive cab. , or converging from the left or right side of the mainline.

To start your diagram, pick a starting point located away from complex junctions. A straight section of mainline is best. Label this starting point with a letter such as A. Now, pretend you are riding the cab, looking out the front window. Draw each turnout you see, noting the orientation, and give it a unique number. Stay on the mainline.

Except where a turnout exits or enters the mainline, don't bother with dead end sidings, yards or industries. This is a drawing of your main line only.

Once you have your made your first pass drawing of the mainline and you are back to where you started you are ready to explore the diverging and converging routes.

Go to the first diverging turnout, throw it, and drive down the diverging track. If it never reconnects with the mainline then it is a dead end [7]. But if it reconnects with the mainline, it will be at a turnout you have already drawn. The important point is notice if the locomotive returns to the mainline going in the same direction as when it first diverged from the mainline. If so, then this section of track is like a large passing siding [8]. It is not a reversing section. But if the locomotive returns to the mainline, going in the opposite direction, then you have found a reversing section or loop. The straight line diagram will might look like [9] or [10].

Continue down each diverging track and complete your straight line diagram. It is possible for you to find several locations where the train can reverse itself and return to the mainline going in the opposite direction. All of these are considered reversing sections. They don't always look like loops. That is why we call them reversing sections [10].

Illegal Reversing Sections with ZoneMaster and ZoneShare Boosters

Back to back reversing sections or two loops, either back to back or inside each other, **CANNOT** use the ZoneMaster or ZoneShare Auto-Reverse feature.

When block gaps between the reversing sections or loops are bridged by a loco, each booster's autoreverse output will reverse polarity at exactly the same time. This means that the polarity mismatch _has not_ been corrected; it is possible it might never be correct. Each will flip polarity again and again and again. During this time (called a race condition), maximum current [up to the sum of both booster's currents] is flowing between the two boosters through the locomotive's wheel set and internal wiring. If this occurs, the internal locomotive wiring can be damaged.

This race condition cannot be resolved by the ZoneMaster boosters. There are two solutions to deal with this issue.

The first solution is to power the two loops with two 3rd party auto-reverse modules that are specifically designated as suitable for adjacent or nested reversing loops or sections. There is usually a switch setting on the AR module for this condition. If this solution is selected, power the two modules from the same ZoneMaster booster that is set for NO-AUTOREVERSE. But you are still counting on the two AR modules to reliably work 100% of the time with all of your locomotives.

The best solution is to eliminate the illegal reversing sections. Use only simple loops and sections such as shown in [9, 10]. This is the only way you can ensure reliable operation of the AR feature of the ZoneMaster booster.

Also, as discussed in the ZoneMaster user guide, your longest train must fit **completely** inside the loop or section. The train can either enter or exit the reversing loop/section but **_NOT_** do both at the same time.

1, 2, 3, 4, 5, 6 Forward, 7, 8, 9 reversing loop, 10 reversing section, 11, 12