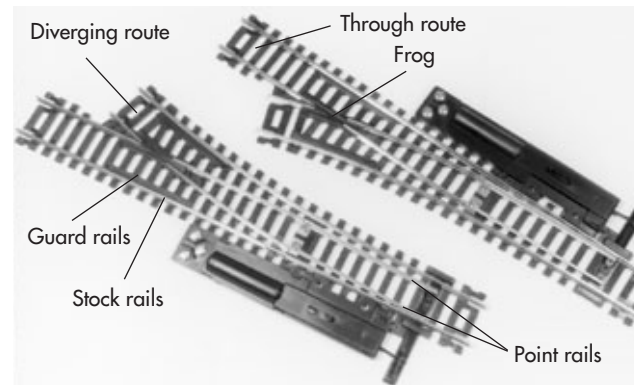

Contents

1 Basic electrical knowhow	7
2 Tools and supplies	15
3 Wiring a basic train set	25
4 Examples of basic wiring	31
5 Basic block wiring	43
6 Realistic train control with DCC	51
7 Wiring lights and accessories	65
8 Wiring tips and suggestions	73
Finding tools and materials	79
Suppliers and manufacturers	80



Wiring Turnouts

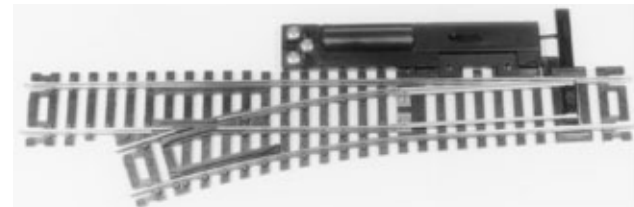
Learning the basic components of a turnout helps clarify wiring techniques. Turnouts allow a train to travel from one track to another. Called “switches” on the prototype, turnouts allow you to add spur, yard, and passing tracks to your layout by taking one track and branching it into two. The main route is called the through route, while the other is called the diverging route. The point rails control the route the train takes through the turnout. The points slide back and forth to rest against the stock rails of the turnout. As the tracks diverge, one rail on each route crosses the other. This occurs at the turnout frog. Guard rails help keep the wheels in check as they move through the frog.



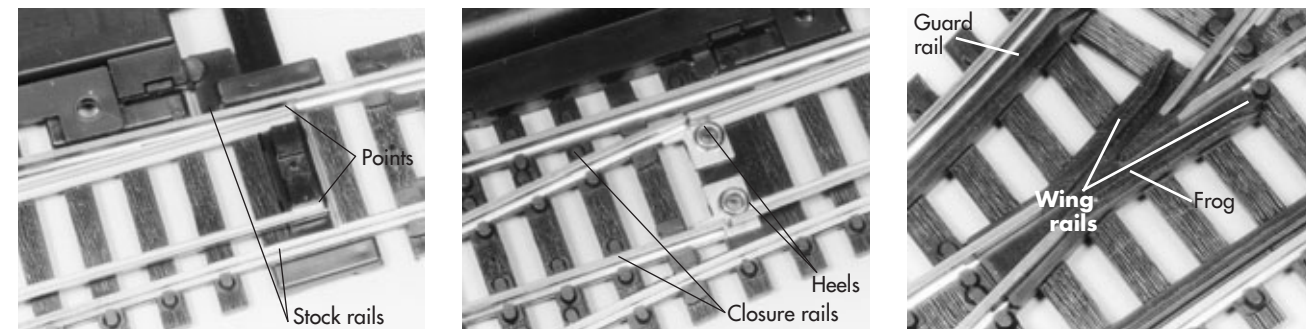
Types of turnouts

Model railroad turnouts come in two basic types—standard and selective. Standard turnouts are more common than selective types, and as a beginner you will find them easier to install and use. Selective turnouts offer a few advantages, but they often require additional wiring to take advantage of these features.

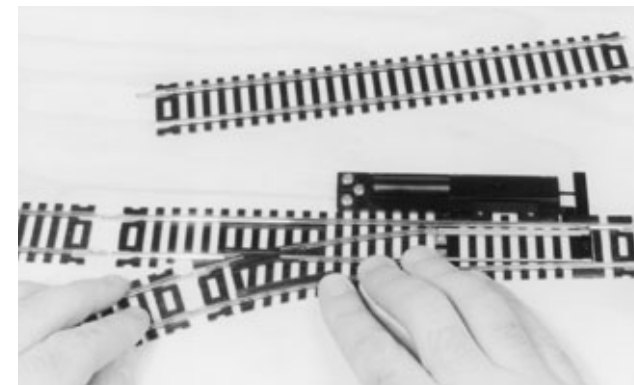
You can mix and match turnout types on a layout. As a beginner, start with standard turnouts, but don't be afraid to mix in a few selective turnouts where the added benefits make it worthwhile.



Standard turnouts are those that have both tracks powered at all times, regardless of the position of the turnout points. Trains on either track leading from a turnout will operate any time you operate the throttle on your power pack.



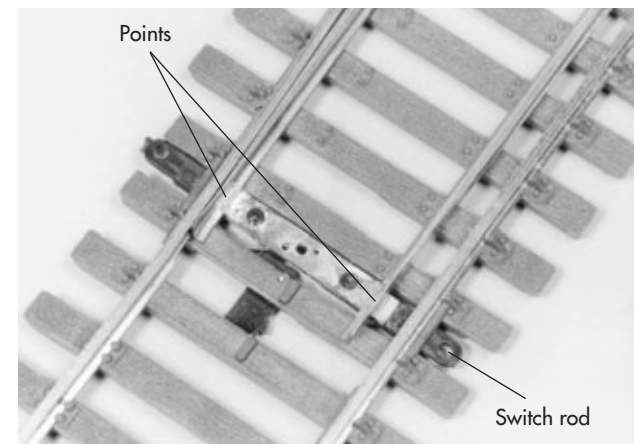
Several characteristics make standard turnouts easy to identify. The points have no electrical contacts where they meet the stock rails. The frog on standard turnouts is typically made of plastic and therefore does not supply power to locomotive wheels. Hidden electrical contacts molded into the tie sections route power to the two track routes.



Standard turnouts do not require any special wiring. Simply insert them in your layout track plan. Since both tracks are powered at all times, trains will run on either route any time you apply power to the track.



Selective turnouts use contacts and a powered frog to route power to each track route. Selective turnouts are more versatile, but they require more work to wire properly. There are two big benefits to using selective turnouts. First, since the frog is metal, it transmits electricity to the locomotive wheels as the train moves through the turnout. This makes your locomotive less sensitive to dirty track. And second, you can use the selective power-routing feature to electrically isolate dead-end sidings and spurs.

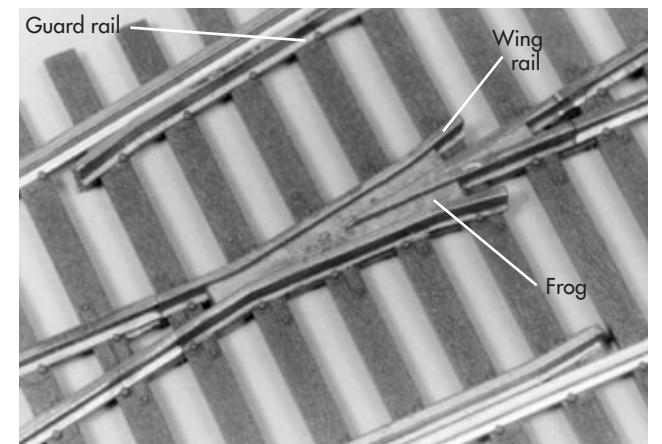


Standard Turnout Manufacturers

Manufacturer	HO Scale	N Scale
Atlas	Snap-Switches Custom Line Mark III turnouts	Snap-Switches
Bachmann	E-Z Track turnouts	
Kato	Some turnouts, optional	Some turnouts, optional
Life-Like	All turnouts	N/A
Model Power	All turnouts	N/A
Peco	InsulFrog turnouts	InsulFrog turnouts
Roco	All turnouts	N/A

Selective Turnout Manufacturers

Manufacturer	HO Scale	N Scale
Micro-Engineering	All turnouts	All turnouts
Peco	ElectroFrog turnouts	ElectroFrog turnouts
Shinohara	All turnouts	All turnouts
Walthers	All turnouts	N/A



Selective turnouts, like this Micro-Engineering model, are easy to identify by examining the turnout frog and the points. Selective turnouts have a metal frog connected to the adjoining rails. They also typically use copper electrical contacts where the points meet the stock rails. If in doubt, ask the staff at your local hobby shop for assistance.