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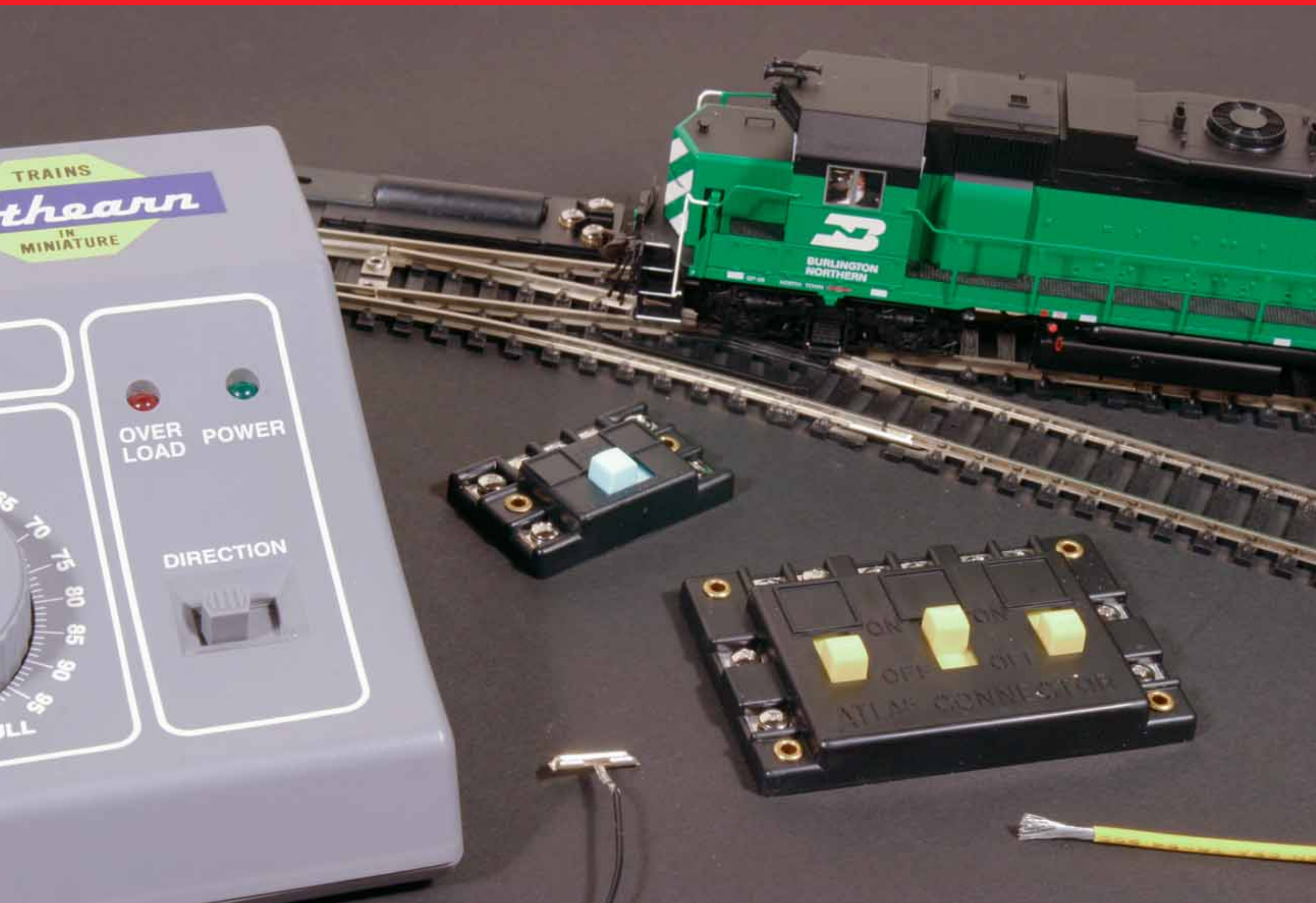
Examples of basic wiring

CHAPTER 4

As you become more interested in the hobby of model railroading, it's inevitable that you will have the urge to expand your layout past the basic oval of track into something that is more enjoyable to operate. When you reach this point, your model railroad's operating potential increases considerably.

Add a few turnouts and spurs, a passing siding, or a second loop of track, and suddenly you've got a layout that has more variety and is more fun to operate. Instead of simply running your locomotive in a circle, you can set out and pick up cars from sidings or operate different locomotives while others rest quietly on a spur track.

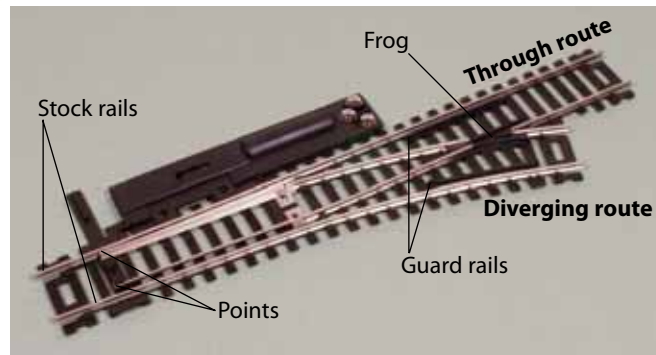
However, track configurations that allow this next level of operation sometimes require special wiring in order for the trains to operate properly. Let's take a look at a few of the possibilities you have when expanding your layout and the wiring techniques you can use to make things work properly.



Wiring turnouts

Understanding the basic components of a turnout helps clarify wiring techniques. Turnouts allow a train to travel from one track to another. Called switches on real railroads, turnouts allow you to add spur, yard, and passing tracks to a 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. 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 – insulated and power-routing. Insulated turnouts (sometimes called standard turnouts) are more common than power-routing (or selective) types, and you may find them easier to install and use. Power-routing turnouts offer a few advantages, but they often require additional wiring to use these features.

You can mix and match turnout types on a layout. You may want to start with insulated turnouts but don't be afraid to mix in a few power-routing turnouts where the added benefits make it worthwhile.



Insulated turnouts route power to both tracks at all times, regardless of the position of the turnout points. Trains on either track leading from a turnout will run any time you operate the throttle on your power pack. The position of the points has no bearing on the way electricity routes through the turnout.



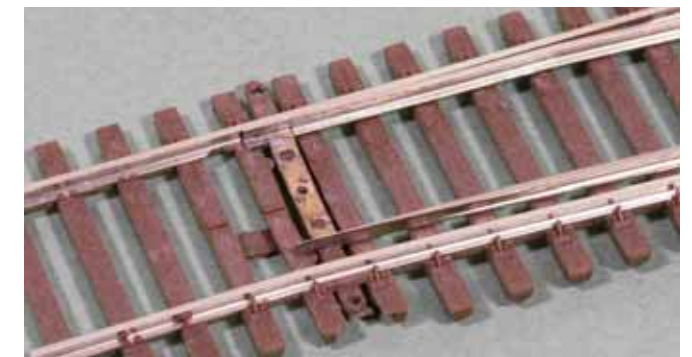
Several characteristics make insulated turnouts easy to identify. The points have no electrical contacts where they meet the stock rails. The frog on these turnouts is typically made of plastic in order to insulate the location where the rails cross and, therefore, does not supply power to locomotive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



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



Power-routing turnouts use contacts and a powered frog to route power to only the route selected by the points. Available for N and HO scales, these turnouts are more versatile, but they require more work to wire properly. There are two big benefits in using power-routing turnouts. 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. Also, you can use the selective power-routing feature to electrically isolate dead-end sidings and spurs by simply throwing the turnout for the main track.



Power-routing turnouts, like this Micro-Engineering model, are easy to identify by examining the turnout frog and the points. These 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 you are unsure of which turnout you need, ask the staff at your local hobby shop for assistance.

Insulated turnout manufacturers

Manufacturer	HO scale	N scale	O scale	G scale
Atlas	Snap-Switches, Custom Line, Mark III turnouts	Snap-Switches, Custom Line	All turnouts	n/a
Bachmann	E-Z Track turnouts	All turnouts	n/a	n/a
Kato	Some turnouts, optional	Some turnouts, optional	n/a	n/a
LGB	n/a	n/a	n/a	All turnouts
Life-Like	All turnouts	n/a	n/a	n/a
Model Power	All turnouts	n/a	n/a	n/a
Peco	InsulFrog turnouts	InsulFrog turnouts	n/a	n/a
REA	n/a	n/a	n/a	All turnouts
Roco	All turnouts	n/a	n/a	n/a