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Lionel
#148 Dwarf Signal
Owner's Manual

Congratulations!

Congratulations on the purchase of your Lionel #148 Dwarf Signal. Place the signal along the mainline on your 3-rail layout and passing trains will automatically cause the lights to change from green to red. Once the train has cleared the insulated block the light will change from red back to green. This accessory has been updated to be used with an insulated outside rail or a “block section”. To wire this accessory you will need at least one piece of insulated straight track.

Read this instruction manual thoroughly for important tips on operating and maintaining your signal.

***IMPORTANT* What You Will Need**

- For O27 gauge tubular track you will need at least one 6-12841.
- For O gauge tubular track you will need at least one 6-12840.
- For Fastrack you will need a 6-12029 Fastrack Activator Pack.

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Wiring the #148 Dwarf Signal

The Dwarf Signal is designed to be operated on 6-18 Volts AC or DC power. There are a total of 3 wires on the signal; Red, Black and Yellow. See Figure 1.

Have an adult strip $\frac{1}{4}$ " of insulation from the ends of the three wires attached to the #148 Dwarf Signal, if they have not already been stripped.

Note! Only an adult should perform this task. Always use care when stripping wires.

Connecting the signal wires

The Red wire connects to either the center rail of the track OR the "A" terminal on an accessory transformer (the accessory transformer must be in phase with the track power supply). If you use a DC power supply the Red wire MUST connect to the Positive DC rail or terminal (most commonly the center rail).

The Black wire connects to the grounded outside rail of the track OR the "U" terminal on an accessory transformer (the accessory transformer must be in phase with the track power supply). If you use a DC power supply the Black wire MUST connect to the Negative DC rail or terminal (most commonly the outside rail).

The Yellow wire connects to the insulated outside rail of the track. When a train is present on the insulated track the LED's will change from an illuminated green LED to an illuminated red LED. Once the train leaves the insulated block the red LED will turn off and the green LED will illuminate again.

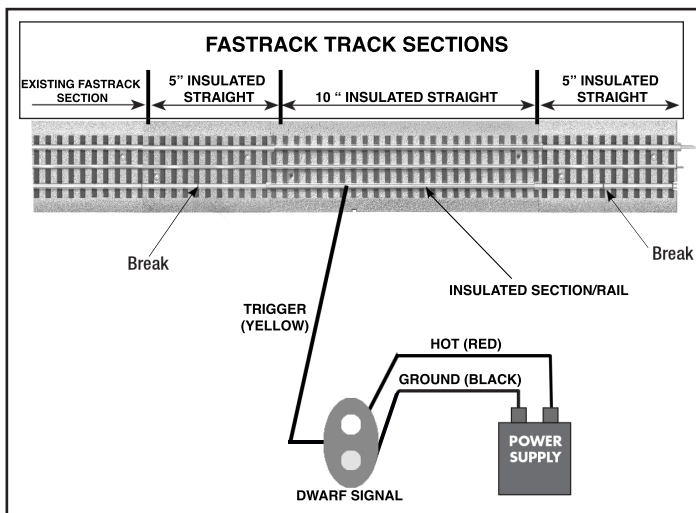


Figure 1. Connecting to the accessory transformer using Fastrack

Note! Refer to Figure 5 on page 6 for Instructions on connecting wires to Fastrack.

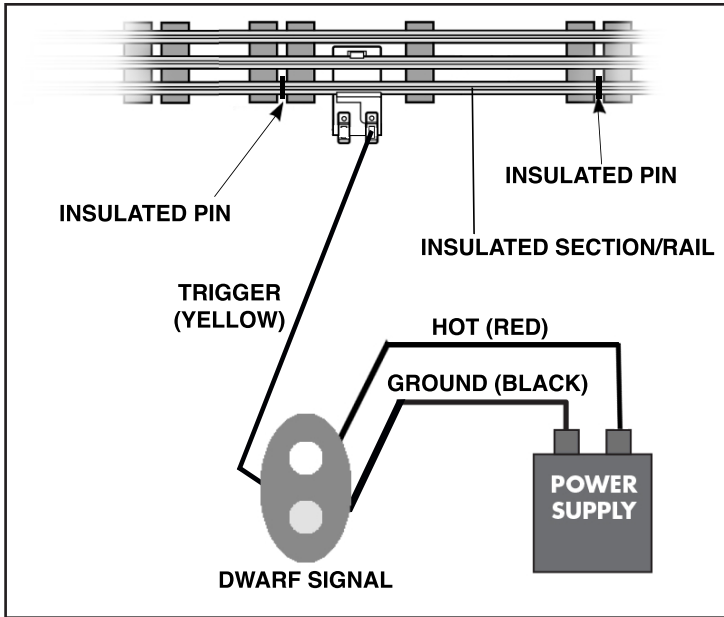


Figure 2. Connecting to the accessory transformer using Tubular Track

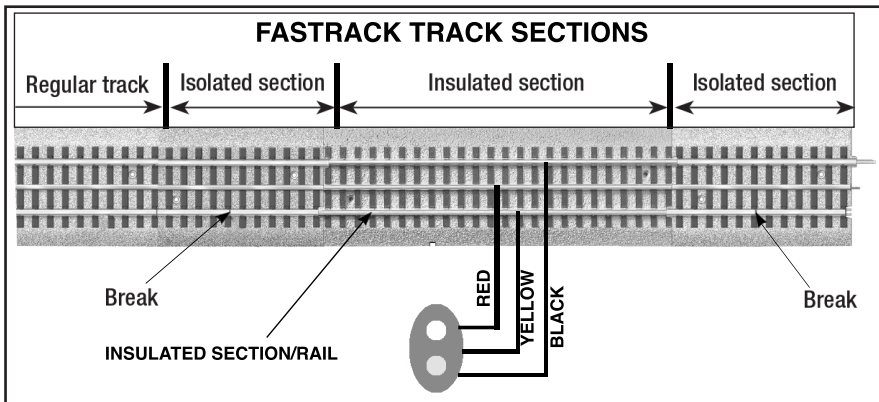


Figure 3. Connecting the signal to track power using FasTrack

Note! Refer to Figure 5 on page 6 for Instructions on connecting wires to FasTrack.

Connecting the #148 Dwarf Signal to Tubular Track

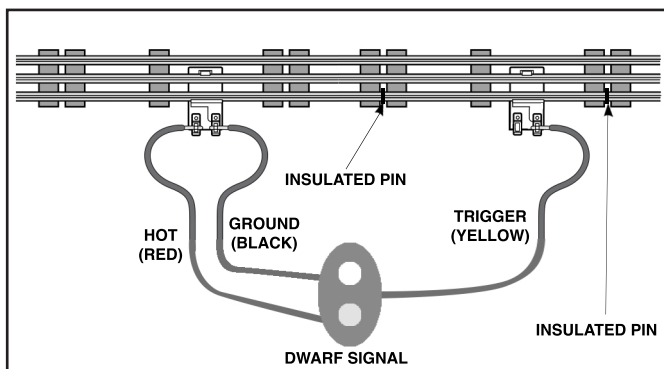


Figure 4. Connecting the signal to the Tubular Track

Connecting the #148 Dwarf Signal to Fastrack Insulated Straight

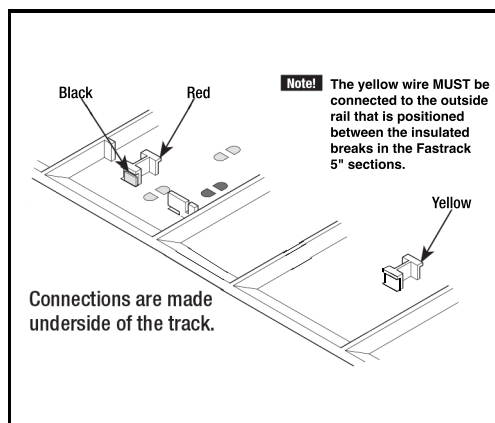


Figure 5. Connecting the signal to the Fastrack Activator Track

Extending the length of the Activator section

027 Tubular Track

To extend the distance of your insulated block section simply add additional insulated straight tracks. Ensure you use a steel pin between the insulated rails you are joining together. Insulated pins are only installed at the extreme ends of the insulated block section. (The insulated straight track ensures the outside rails are electrically isolated from one another.)

Extending the length of the Activator section

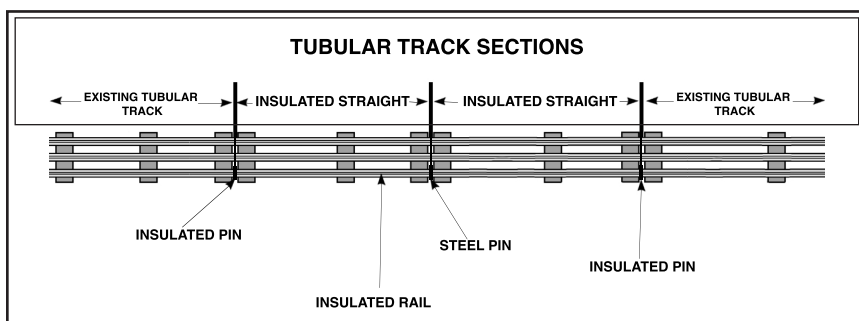


Figure 6. Extending the length of the Activator section using Tubular track

FasTrack

To extend the length of your insulated block simply add additional Accessory Activator Extender Straight sections (6-12027) between the 5" insulated straights. You can make this block as long as it needs to be.

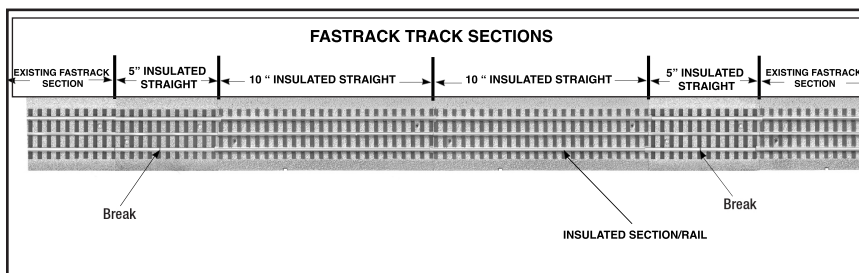


Figure 7. Extending the length of the Activator section using FasTrack

Replacing the LED's

Your # 148 Dwarf Signal is equipped with Light Emitting Diodes (LED's) which are designed to operate for the life of your accessory. In the event you need to replace an LED in your signal please contact Lionel Customer Service in North Carolina at 586-949-4100 extension 2, Monday-Friday 8am to 5pm EDT.

Troubleshooting

If your signal is powered up and the red LED is constantly illuminated it is because the yellow wire is NOT connected to the insulated rail. Find where the mistake was made and move the yellow wire to the insulated rail. Once wired properly the green LED will be illuminated when a train is not on the insulated track section. Place a train on the insulated track section and the red LED will illuminate. Remove the train and the green LED will turn back on.

Lionel Limited Warranty Policy & Service

This Lionel product, including all mechanical and electrical components, moving parts, motors and structural components, with the exception of **LIGHT BULBS, LED's & TRACTION TIRES** are warranted to the original owner-purchaser for a period of **one year from the original date of purchase** against original defects in materials or workmanship when purchased through a **Lionel Authorized Retailer***.

This warranty does **NOT** cover the following:

- Normal wear and tear
- Light bulbs or LED's
- Defects appearing in the course of commercial use
- Damage resulting from abuse/misuse of the product

Transfer of this product by the original owner-purchaser to another person voids this warranty in its entirety. Modification of this product in any way; visually, mechanically or electronically, voids the warranty in its entirety.

Any warranted product which is defective in original materials or workmanship and is delivered by the **original owner-purchaser** (this warranty is non-transferrable) to Lionel LLC or any Lionel Authorized Service Station **MUST** be accompanied by the original receipt for purchase (or copy) from an **Authorized Lionel Retailer***, will at the discretion of Lionel LLC, be repaired or replaced, without charge for parts or labor. In the event the defective product cannot be repaired, and a suitable replacement is not available, Lionel will offer to replace the product with a comparable model (**determined by Lionel LLC**), if available. In the event a comparable model is not available the customer will be refunded the original purchase price (requires proof of purchase from the **Authorized Lionel Retailer*** it was originally purchased). Any products on which warranty service is sought must be sent freight or postage prepaid (Lionel will refuse any package when postage is due). **Transportation and shipping charges are not covered as part of this warranty.**

NOTE: Products that require service that do not have a receipt from an LIONEL AUTHORIZED RETAILER* will be required to pay for all parts required to repair the product (labor will not incur a charge) providing the product is not older than 3 years from date of manufacture and is within 1 year from date of purchase. A copy of the original sales receipt is required.

In no event shall Lionel LLC be held liable for incidental or consequential damages.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion may not apply to you. This warranty gives you specific legal rights and you may have other rights which vary from state to state.

Instructions for Obtaining Service

If service for this Lionel LLC product is required; bring the item, along with your DATED sales receipt and completed warranty information (at the bottom of this page) to the nearest Lionel Authorized Service Station. Your nearest Lionel Service Station can be found by calling 1-800-4-LIONEL or by accessing the website at www.lionel.com.

If you prefer to send your Lionel product directly to Lionel, for repair you must FIRST call 586-949-4100 extension 2 or write to Lionel Customer Service, 6000 Victory Lane, Concord, NC 28027. Please have the 6-digit Lionel product number, the date of original purchase, the dealer where the item was purchased and what seems to be the problem. You will receive a return authorization (RA) number to ensure your merchandise will be properly tracked and handled upon receipt at Lionel LLC.

Once you have your Return Authorization (RA) number, make sure the item is packed in its original Styrofoam inner container which is placed inside the original outer display box (this will help prevent damage during shipping and handling). This shipment **MUST** be prepaid and we recommend that it be insured with the carrier of your choice.

Please make sure you have followed all of the above instructions carefully before returning any merchandise for service. You may choose to have your product repaired by one of Lionel LLC's Authorized Service Stations after its warranty has expired. A reasonable service fee should be expected once the product warranty has expired.

Warranty Information

Please complete the information below and keep it, along with your **DATED ORIGINAL SALES RECEIPT**. You **MUST** present this form **AND** your **DATED SALES RECEIPT** when requesting warranty service.

*A complete listing of Lionel Authorized retailers can be found by calling 1-800-4-LIONEL or by visiting our website at www.lionel.com.

Products that are more than 3 years old, from date of manufacture, are not applicable for warranty coverage, even if they have never been sold prior to this date. (Under no circumstance shall any components or labor be provided free of charge.)

Name _____

Address _____

Place of Purchase _____

Date of Purchase _____

Product Number _____

Product Description _____



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