



71-4111-250
3/15



#153IR Controller Owner's Manual

Congratulations!

Congratulations on your purchase of the Lionel 153IR Controller. Place this device on any Lionel O or O-27 gauge three-rail layout to activate any track side accessory. The 153IR Controller uses an infrared beam to detect passing trains, cueing the device to activate your signals and accessories. The 153IR Controller was built to provide years of reliable operation.

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Installing and powering your 153IR Controller

Your 153IR Controller must be powered to control the infrared detection circuit and also to provide power to the accessory it is controlling. There are two ways to accomplish this.

Powering the 153IR and the accessory from the track

You can power the 153IR and the accessory from the track. To accomplish this use the two wires with Fastrack compatible terminals to connect the wires to the underside of any Fastrack straight or full curve section. The red terminal connects to the center rail. The black terminal connects to the outside rail. See figure 1 below.

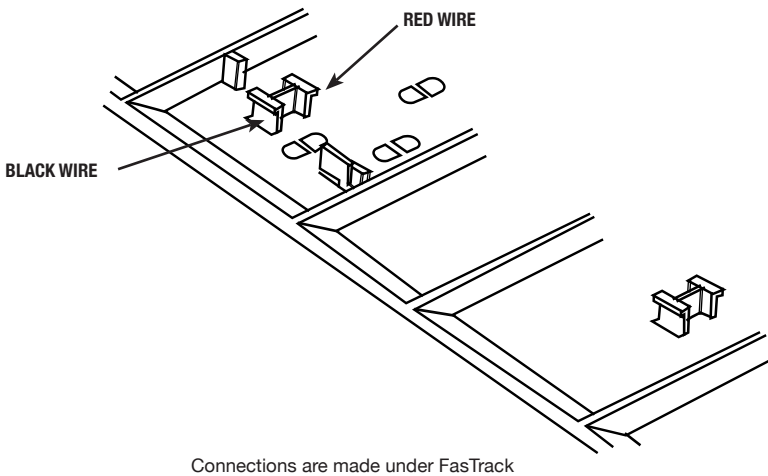


Figure 1. Wire connections with FasTrack

Installing and powering your 153IR Controller continued

If you are using tubular track, simply cut off the slide on terminals and strip the wires back. Connect the black wire with the white tracer to a Universal Lockon (6-24213) for the center rail. Connect the solid black wire to the outside rail. See figure 2 below.

Caution To make the proper connections to the auxiliary power terminals, you need the ends of the wires to be stripped back 1/4" to 3/8". To strip the wires, use a pair of wire strippers or a sharp knife. Only an adult should perform this task! Always use care when stripping wires.

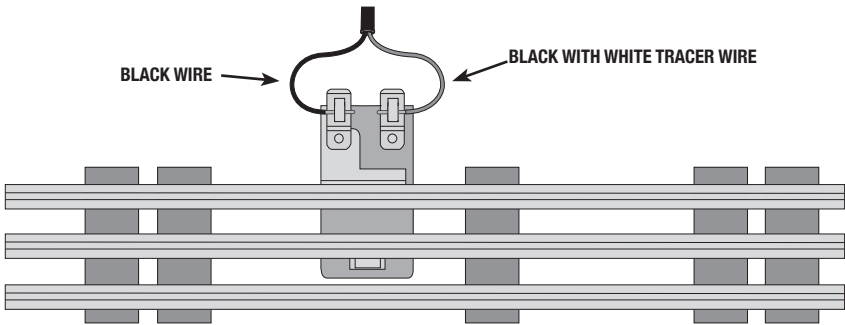


Figure 2. Wire connections with Tubular track

Installing and powering your 153IR Controller continued

If you chose to power your 153IR using method 1 above, open the long hatch on the back side of the 153IR base and move the switch to the “Track Power” position. (If the switch is not in the track power position the 153IR will not function, providing it is powered from the track). See figure 3 below.

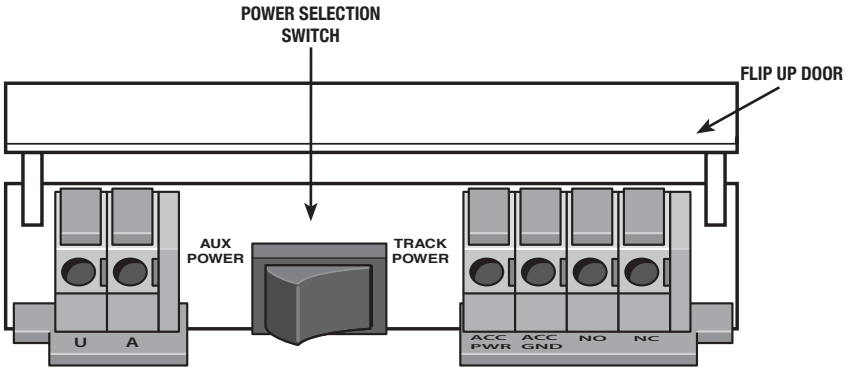


Figure 3. Back of the 153IR with the power selection switch in the TRACK POWER position

Installing and powering your 153IR Controller continued

Powering the 153IR and the accessory from an auxiliary AC power transformer

You can power the 153IR and the accessory from an auxiliary AC power transformer. If you use auxiliary power, do not connect the track wires to the track. Refer to figure 4 below for properly wiring the 153IR to an accessory power transformer. It is very important you get the polarity correct for your accessory to operate properly.

Caution To make the proper connections to the auxiliary power terminals, you need the ends of the wires to be stripped back 1/4" to 3/8". To strip the wires, use a pair of wire strippers or a sharp knife. Only an adult should perform this task! Always use care when stripping wires.

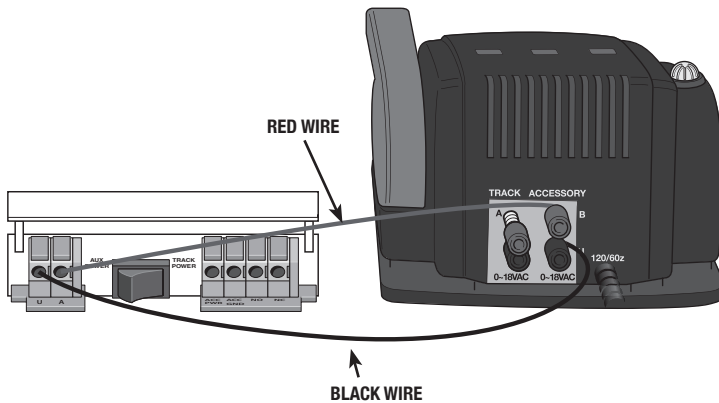


Figure 4. 153IR connected to a transformer

Set the input voltage to the 153IR Controller to 12-14 VAC (you can increase this input voltage if the accessory you have it connected to requires more power than 12 to 14 Volts).

Installing and powering your 153IR Controller continued

If you chose to power your 153IR using an auxiliary AC power transformer, open the long hatch on the back side of the 153IR base and move the switch to the “Aux Power” position. (If the switch is not in the aux power position the 153IR will not function, providing it is powered from an accessory transformer). See figure 5 below.

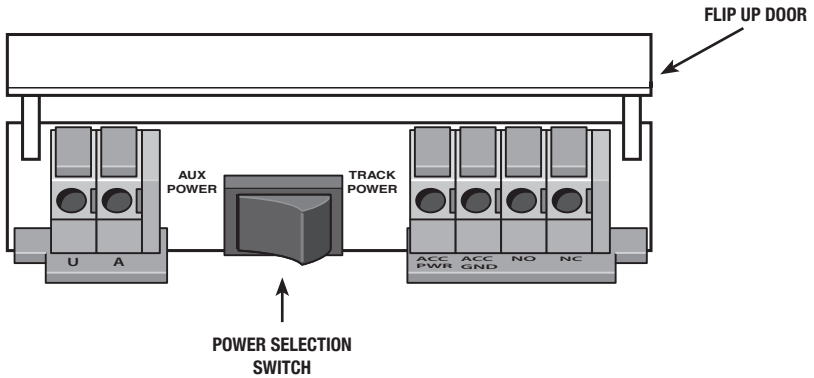


Figure 5. Back of the 153IR with the power selection switch in the AUX POWER position

Wiring accessories with your 153IR controller

Accessories are only connected to the terminals labeled “ACC PWR”, “ACC GND”, “NO” and “NC”. NO is “Normally Open” and is not powered until the 153IR detects a train. NC is Normally Closed and is powered until the 153IR detects a train. When the 153IR detects a train the NC output turns off and the NO output turns on. When the train passes and the 153IR deactivates the NO output turns off and the NC output turns on again. Figure 6 below illustrates where these terminals are located. The ACC PWR terminal provides power to your accessory (AC Hot or red). The ACC GND terminal provides AC Ground to your accessory (AC Ground/U/black) at all times.

Note Do not use a wire larger than 24 gauge!

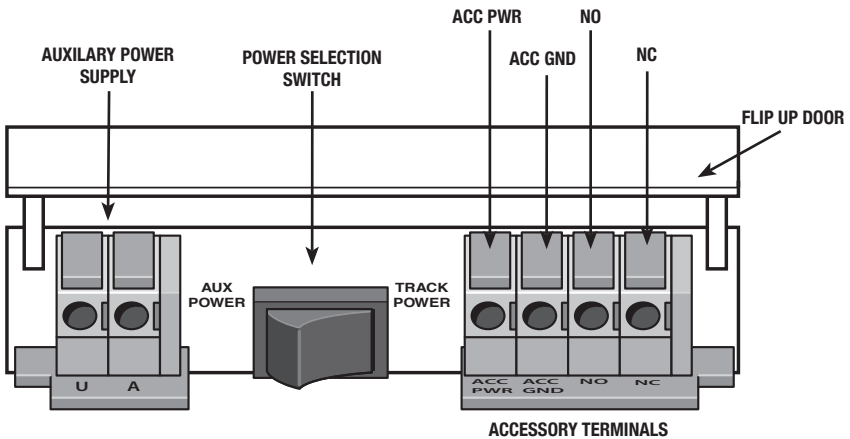


Figure 6. 153IR wire terminals and connections

Wiring accessories with your 153IR controller continued

Table 1 provides the basic wiring for various accessories (lamps, sounds, animation, etc.). Some accessories feature only one animation such as a light that turns on and off. Other accessories feature two animations such as a light and some type of motion (a gateman figure for instance).

Refer to the specific wiring examples that appear on pages 12- 15 to help determine which accessory terminals control the different accessory animations.

Power is constantly ON	POWER terminal on the accessory connected to the ACC PWR terminal GROUND terminal on the accessory connected to the ACC GND terminal
Power is ON until triggered by the train	POWER terminal on the accessory connected to the ACC PWR GROUND terminal on the accessory connected to the NC terminal
Power is OFF until triggered by the train	POWER terminal on the accessory connected to the ACC PWR GROUND terminal on the accessory connected to the NO terminal

Table 1. Accessory option and wiring configurations

Choosing a location for your 153IR controller

With the 153IR Controller you are able to activate signals and accessories for more prototypical operation of your layout. Position your 153IR Controller so that the train will trigger the 153IR to activate the accessory before the train arrives. For example, if your train is moving from left to right (in figure 7 below), position the 153IR to the left side of the accessory so that the train triggers the activation before the train arrives where the accessory is placed. (In this instance we use a grade crossing gate and signal).

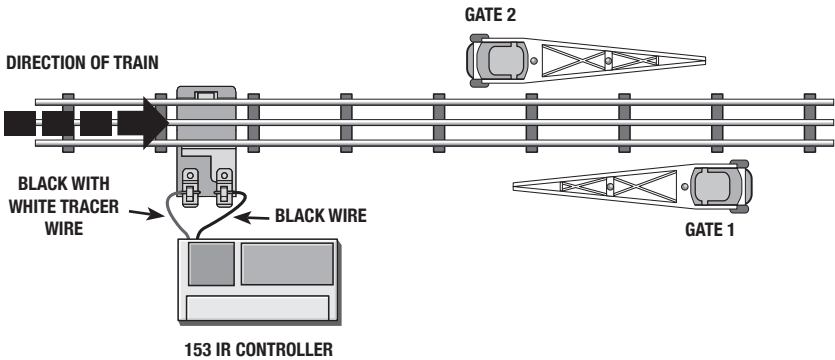


Figure 7. Single 153IR Controller location

If you are using a block signal you may want the signal to change from green to red once the train passes the signal. In this instance you will want to place the 153IR after the signal itself. Refer to figure 8 below.

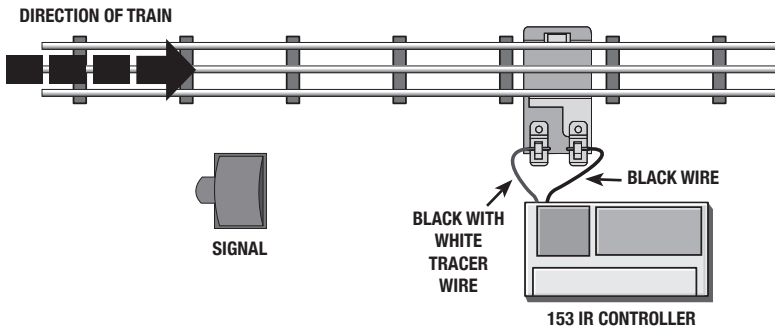


Figure 8. Signal and 153IR Controller locations

Adjusting your 153IR Controller

Your 153IR Controller allows you to fine tune its performance. You can adjust the sensitivity of the detection as well as the duration the Controller keeps an accessory activated for. These adjustments can be made using the two adjustment dials located under the “battery box” on the 153IR.

Adjusting the duration

Use the “TIME” dial located under the battery box hatch on top of the 153IR base (refer to figure 9) to set the length of time that the 153IR Controller remains activated. Begin by turning the “TIME” dial counter clockwise until it stops, this will set the activation to the shortest amount of time. Quickly pass your hand in front of the sensor (the red lens on the track facing side of the 153IR) and note how long the accessory stays activated. If you would like the accessory to remain activated for a longer period of time turn the “TIME” dial clockwise slowly. Some experimentation will be required to fine tune the duration to your liking. It is not unlikely for this adjustment setting to take several tries to find the "sweet" spot.

Note

The accessory will turn on while the infrared beam is reflected back by the train. Once the train has moved past the sensor the duration timing begins. When the timer runs out the accessory will deactivate. If the train passes in front of the sensor prior to the timer running out the accessory will continue to be activated.

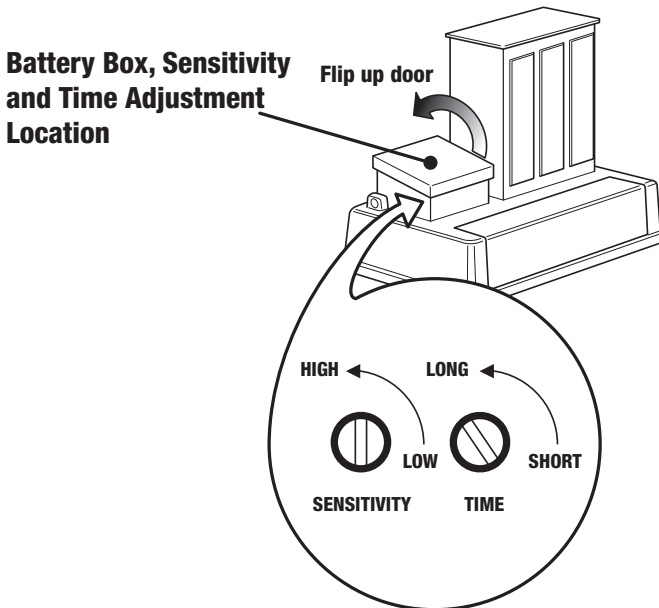


Figure 9. TIME and SENSITIVITY adjustment knobs

Adjusting your 153IR Controller continued

Adjusting the sensitivity

Use the “SENSITIVITY” dial if the 153IR Controller does not properly detect your locomotive and/or rolling stock. Dark colored finishes may not be detected by the 153IR without adjusting the sensitivity. To remedy this problem; you can adjust the “SENSITIVITY” dial located under the battery box. Refer to figure 9 on page 10. Turn the dial counter clockwise to INCREASE the sensitivity or clockwise to DECREASE the sensitivity of the sensor. Some fine tuning will be required to make the 153IR Controller work properly for your layout.

Accessory wiring examples

Refer to the following diagrams as you wire your accessories. The section entitled *Wiring accessories with your 153IR controller* explains these connections.

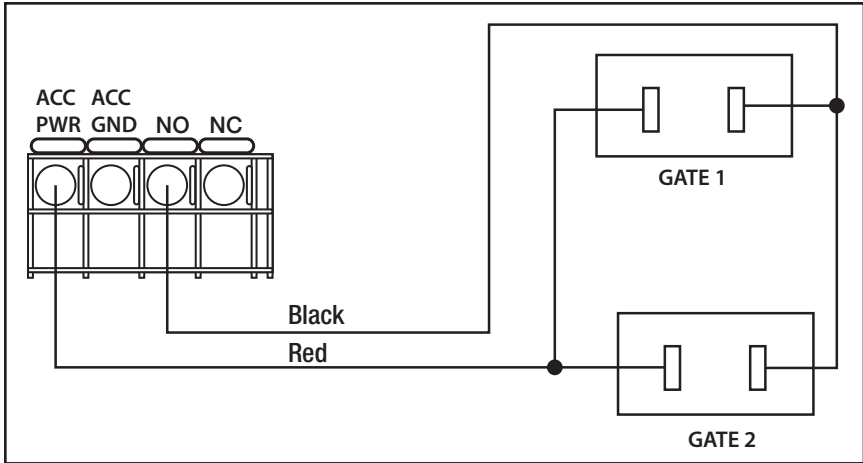


Figure 10. Crossing Gates (6-12714)

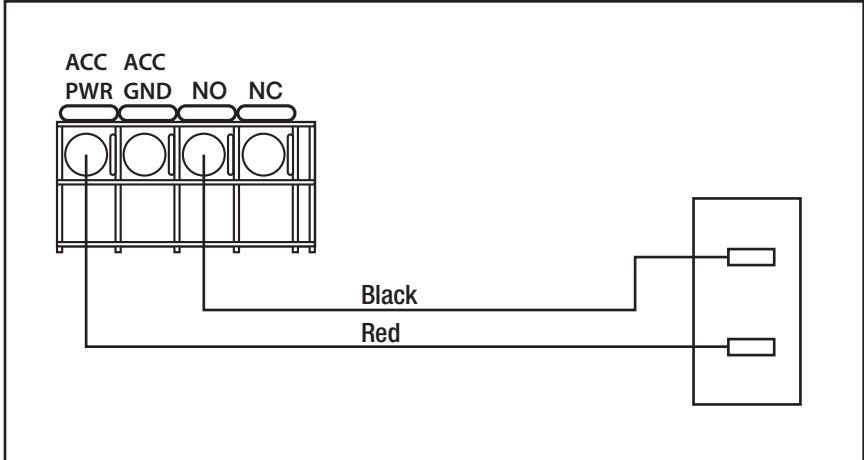


Figure 11. Automatic Crossing Gate (6-12714); Automatic Crossing Gate and Signal Mainline Automatic Crossing Gate (6-22947); Automatic Operating Semaphore (6-12727); Railroad Crossing Flasher (6-12888); Mainline Automatic Operating Semaphore (6-22944); Banjo Signal (6-12709)

Accessory wiring examples continued

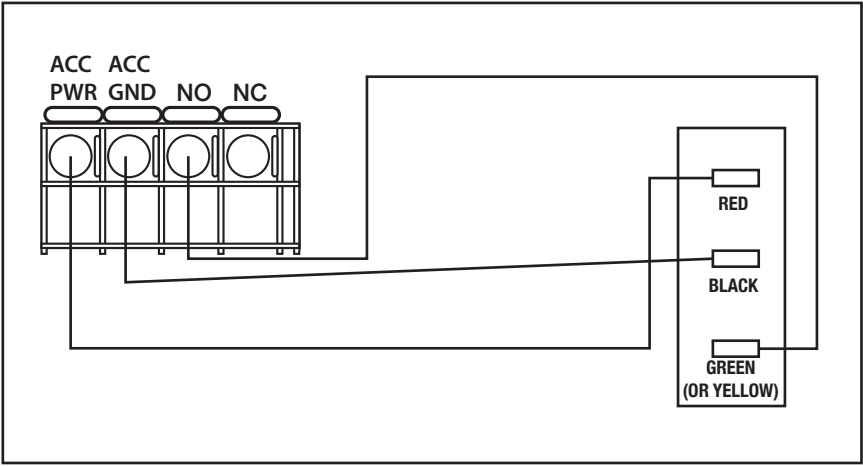


Figure 12. Automatic Crossing Gate (6-12714); Mainline Automatic Crossing Gate (6-22947); Automatic Operating Semaphore (6-12727); Railroad Crossing Flasher (6-12888); Mainline Automatic Operating Semaphore (6-22944); Automatic Crossing Gate and Signal (6-62162); Banjo Signal (6-12709), Dwarf Signal (2014; 6-12883)

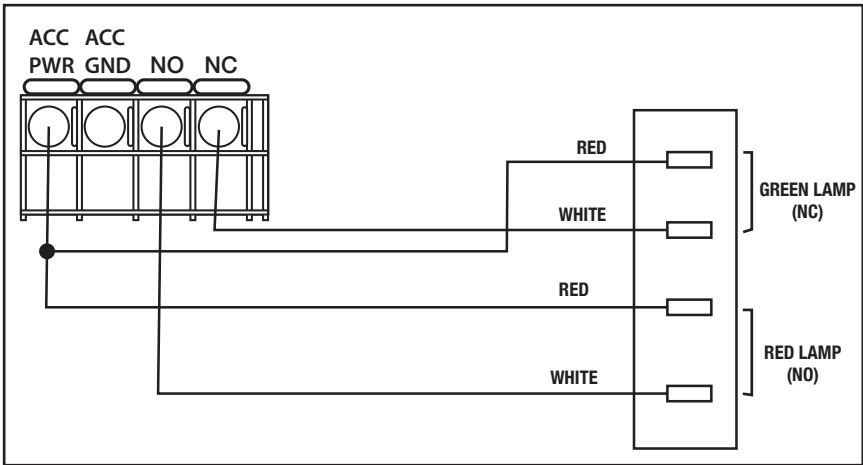


Figure 13. Dwarf Signal (pre-2014; 6-12883); Mainline Dwarf Signal (6-22951)

Accessory wiring examples continued

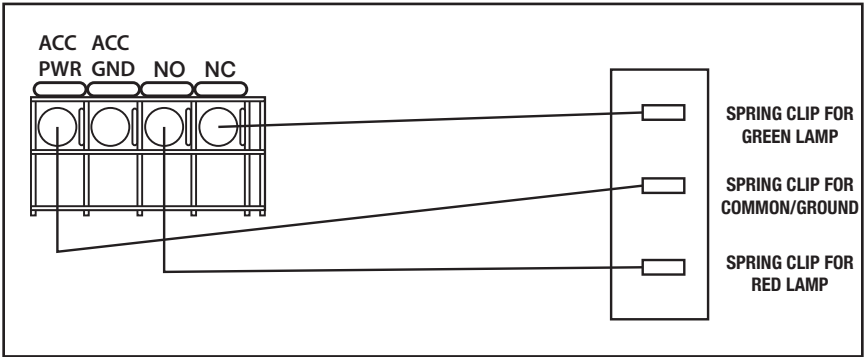


Figure 14. Single Signal Bridge (6-12894); Mainline Cantilever Signal (6-22931)

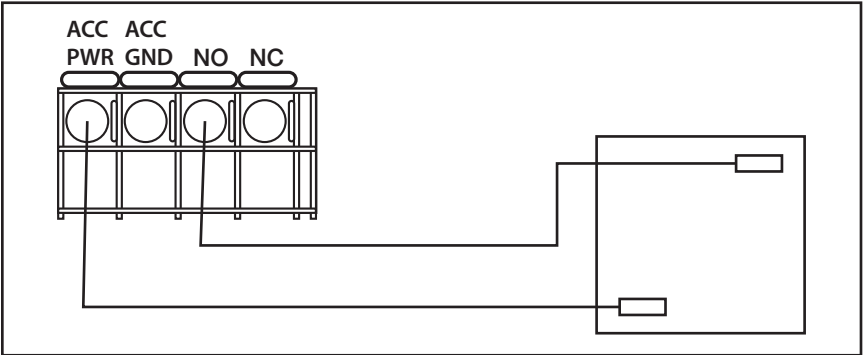


Figure 15. Whistle Shack (6-12737 & 6-12903 Diesel Horn Variant)

Accessory wiring examples continued

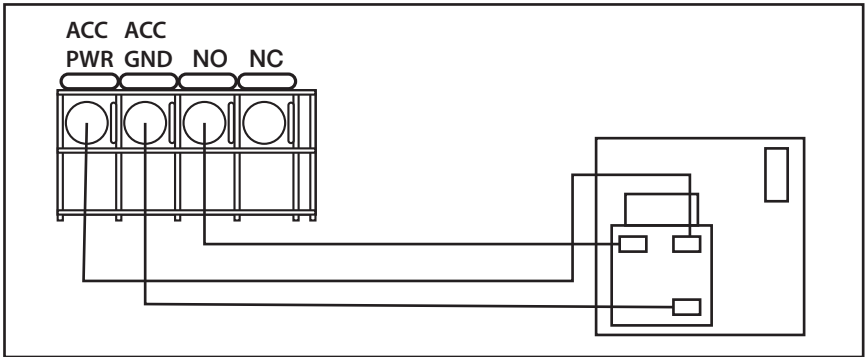


Figure 16. Automatic Gateman (6-12713)

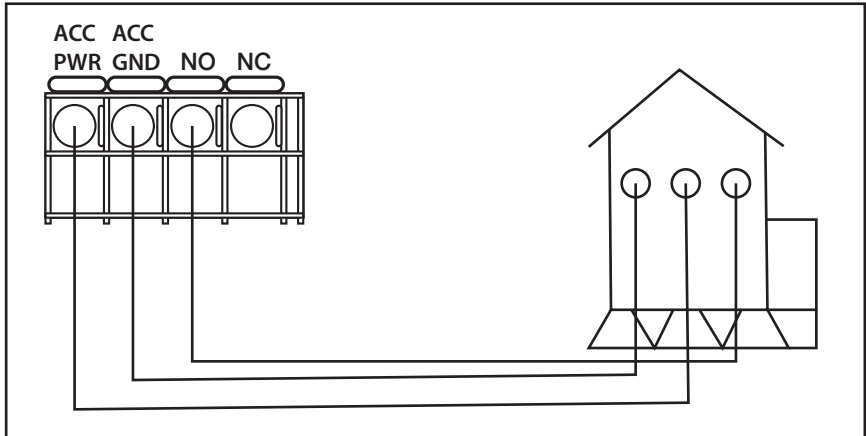


Figure 17. Animated Maiden Rescue(6-32919)

Accessory wiring examples continued

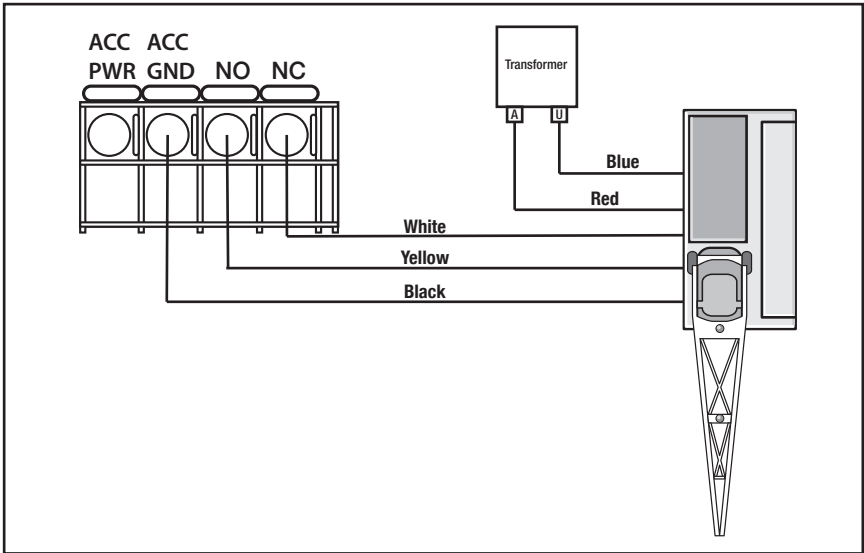


Figure 18. Mainline Auto Crossing Gate (pre-2015 Production; 6-14098)

Accessory wiring examples continued

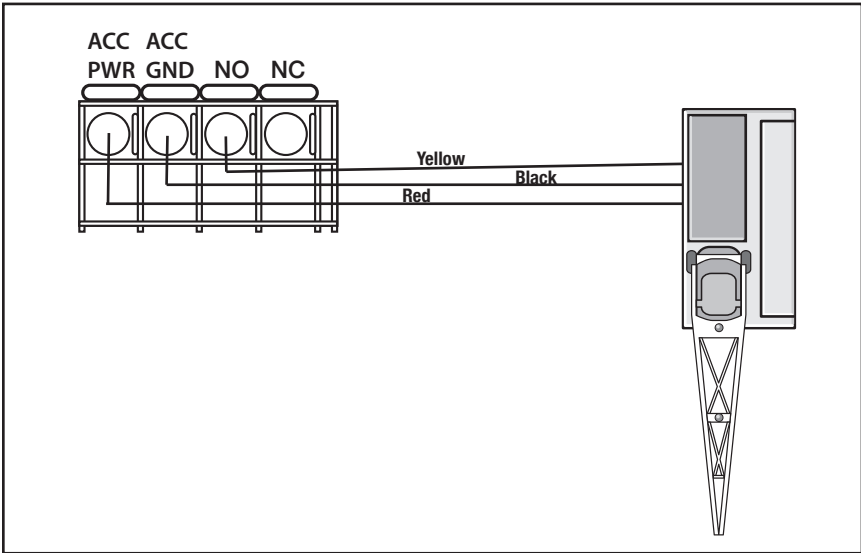


Figure 19. Mainline Auto Crossing Gate (2015 Production; 6-14098)

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 **two years 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). Lionel will pay postage both ways on all VISION products during the warranty period. **Transportation and shipping charges are not covered as part of this warranty.**

NOTE: Products that require service that do not have a receipt from a 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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