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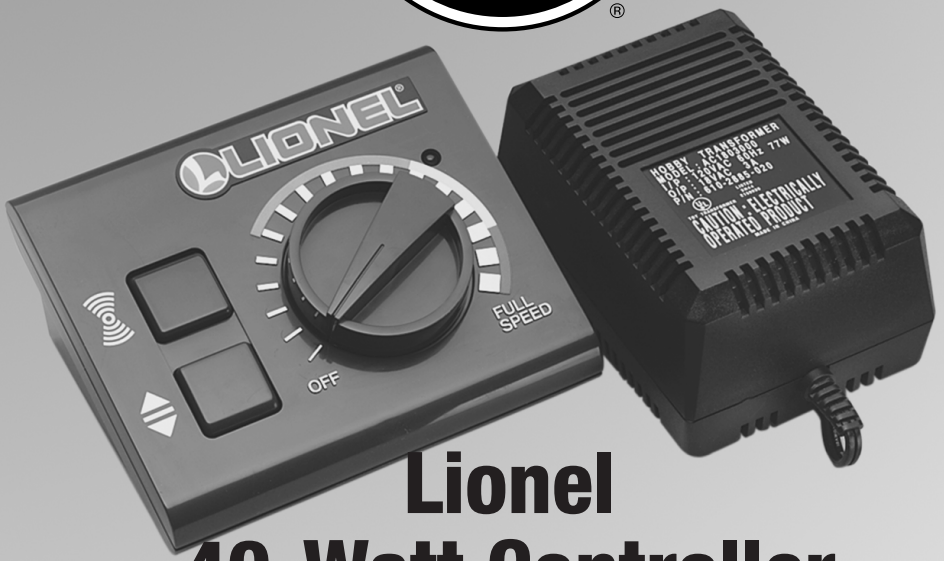

Lionel 40-Watt Controller Owner's Manual

CAUTION—ELECTRICALLY OPERATED PRODUCT

NOT RECOMMENDED FOR CHILDREN UNDER EIGHT YEARS OF AGE. AS WITH ALL ELECTRIC PRODUCTS, PRECAUTIONS SHOULD BE OBSERVED DURING HANDLING AND USE TO PREVENT ELECTRIC SHOCK.

TRANSFORMER RATINGS—INPUT: 120 VAC; 60 HZ ONLY.
AC OUTPUT: 20 V; 54 VA

Congratulations!

Congratulations on your purchase of the Lionel 40 Watt Power and Control System! The Controller features a throttle knob, a horn/whistle button, and a direction button. The UL-listed Transformer features overload protection.

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Controller operations

Operating your Transformer safely

Your Lionel Transformer is listed by Underwriter's Laboratory Inc. and has been carefully designed to ensure peak performance. When using electrical products, basic safety precautions should be maintained.

Be sure to observe the following guidelines:

- Read the manual thoroughly before using this device.
- This device is not recommended for children under eight years of age.
- Parents should periodically inspect this product for potential hazards and, if necessary, have them repaired by an authorized Lionel Service Center. In the event that such a condition exists, the transformer should not be used until it has been properly repaired.
- The Transformer is intended to be used indoors. Do not use this device if water is present. Serious or fatal injuries may result.
- Use the Transformer only for its intended purpose.
- The Transformer was meant to operate on 120-volt, 60-Hertz power. Do not connect this product to any other power supply.
- Do not operate the Transformer with a damaged cord, plug, or case.
- To avoid the risk of electrical shock, do not disassemble the unit. There are no user serviceable parts inside. If damaged, take this product to an authorized Lionel Service Center. A list of authorized Service Centers is packed with this unit.
- Do not operate the Transformer on your layout unattended. Obstructed accessories or stalled trains may overheat, resulting in damage to your layout.
- Always unplug the Transformer from the power source when not in use.
- Never insert objects into the ventilation slots on this product. Damage to sensitive electronic components can result.

Controller operations

Connecting your Transformer with a FasTrack terminal section

When connecting your transformer, make sure that all power connections are secure. Loose connections can produce extremely high temperatures. For this reason, do not touch the terminals or track connections during use. Also, do not locate scenery materials such as lichen or ground foam near the terminals.

1. **Feed the wires through the notch in the FasTrack terminal section.** Refer to Figure 1.
2. **Loosen the orange thumbscrew terminal, then slide the red spade-shaped connector into position.** The thumbscrew post should be positioned between the "blades" of the spade connector. Tighten the thumbscrew to secure the connection.
3. **Loosen the black thumbscrew terminal, then slide the black spade-shaped connector into position.** Tighten the thumbscrew to secure the connection.
4. **Plug the Transformer into the back of the Controller.**
5. **Plug the Transformer into your wall outlet (120 volts).**

Caution! To prevent the excessive build up of heat, be sure to select the proper wire gauge for your layout. Follow these guidelines:

- Track connections (or Lockon connections) must be made with 18-gauge wire or heavier. Larger layouts require a minimum of 16-gauge wire.
- Use 24-gauge wire only when connecting single accessories that require lower current.
- When wiring multiple accessories (two or more) or accessories that require higher current, be sure to use 18- to 16-gauge wire.

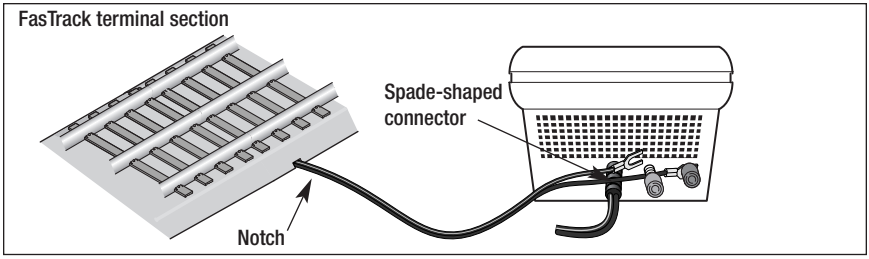

Figure 1. Controller connections

Controller operations

Connecting your Transformer with a Lionel Lockon

To power a layout with traditional O gauge track, you will need two wires and a Lionel Lockon. To make the proper connections, the ends of the wires must be stripped back 1/8" to 1/4". We recommend using a pair of wire strippers.

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

1. As illustrated in Figure 2, attach the Lockon to any straight section of track.

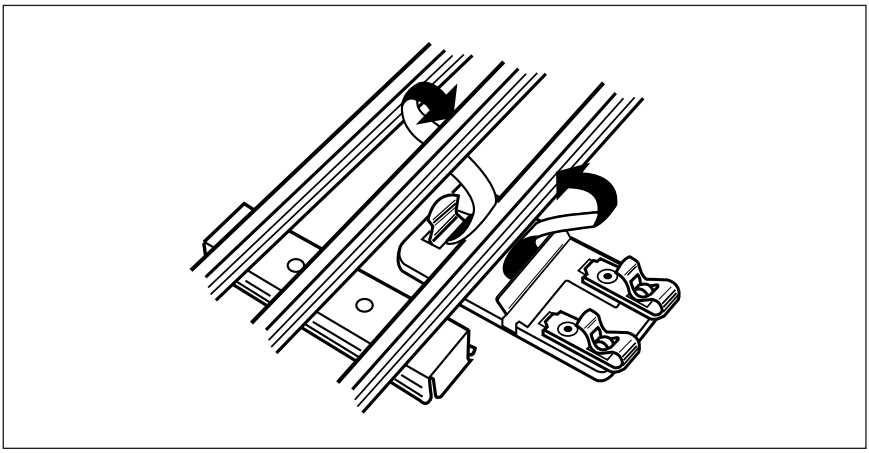

Figure 2. Lionel Lockon

2. Loosen the orange thumbscrew, then insert the bare end of the wire into the hole in the post. Tighten the thumbscrew to secure the connection.
3. Connect the wire from the orange thumbscrew terminal to the #1 Lockon terminal. Refer to Figure 3.
4. Loosen the black thumbscrew terminal, then slide the bare end of the other wire into the hole in the post. Tighten the thumbscrew to secure the connection.
5. Connect the wire from the black thumbscrew terminal to the #2 Lockon terminal.
6. Plug the Transformer into the Controller.

Controller operations

Connecting your Transformer with a Lionel Lockon (continued)

7. Plug the Transformer into the wall outlet.

Caution! To prevent the excessive build up of heat, be sure to select the proper gauge wire. Follow these guidelines:

- Track connections (or Lockon connections) must be made with 18-gauge wire or heavier. Larger layouts require a minimum of 16-gauge wire.
- Use 24-gauge wire only when connecting single accessories that require lower current.
- When wiring multiple accessories (two or more) or accessories that require higher current, be sure to use 16- to 18-gauge wire.

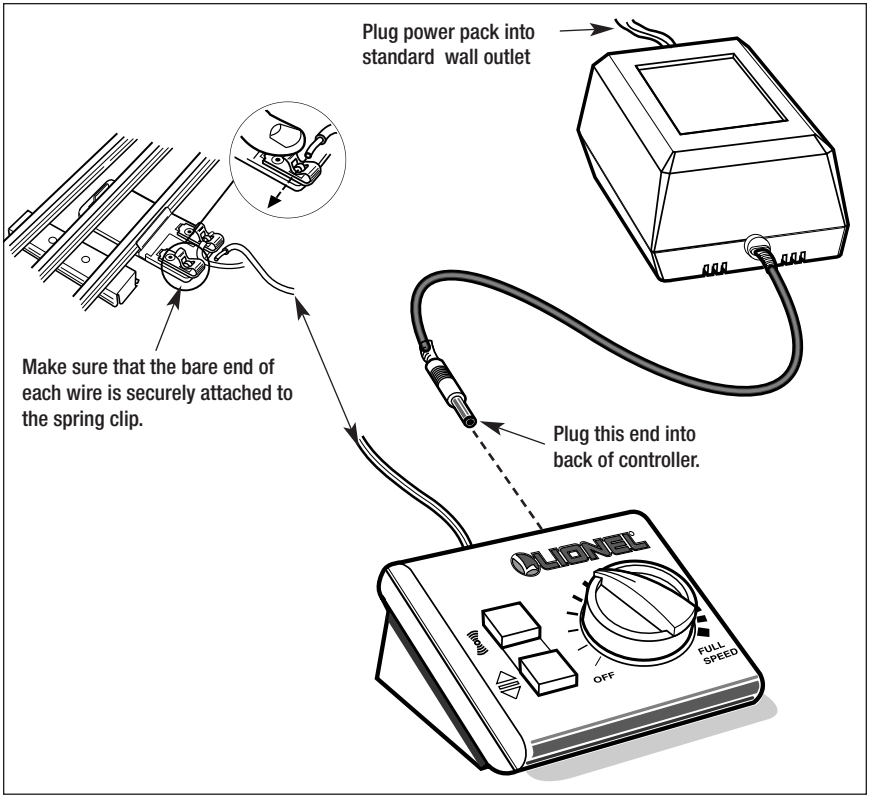

Figure 3. Controller connections

Train operation

Running your train

1 **With track power off, place your train on the track.**

2 **Power up your locomotive with your transformer.**

Your locomotive is designed to operate on 10-16 volts alternating current. Virtually all Lionel and Lionel-compatible alternating-current transformers are suitable.

Caution! **Do not power your locomotive with direct current (DC) transformers. Damage to sensitive electronic components may occur.**

3 **Move 'em out!**

Use the throttle knob to adjust track voltage until your locomotive moves at your desired speed.

Train operation

Transformer functions

As you turn the throttle control knob to the right, power to the track is increased. Figure 4 illustrates the throttle control knob settings. When the indicator reaches the green band, there should be sufficient power to operate the locomotive. The further into the green area the knob is turned, the faster your train will go. Remember that the greater the load on the engine (adding more cars for the engine to pull, for example), the farther into the green area the knob must be turned before it will operate the locomotive.

The yellow band indicates the average power range that the train will be operating in. The red band represents maximum power output.

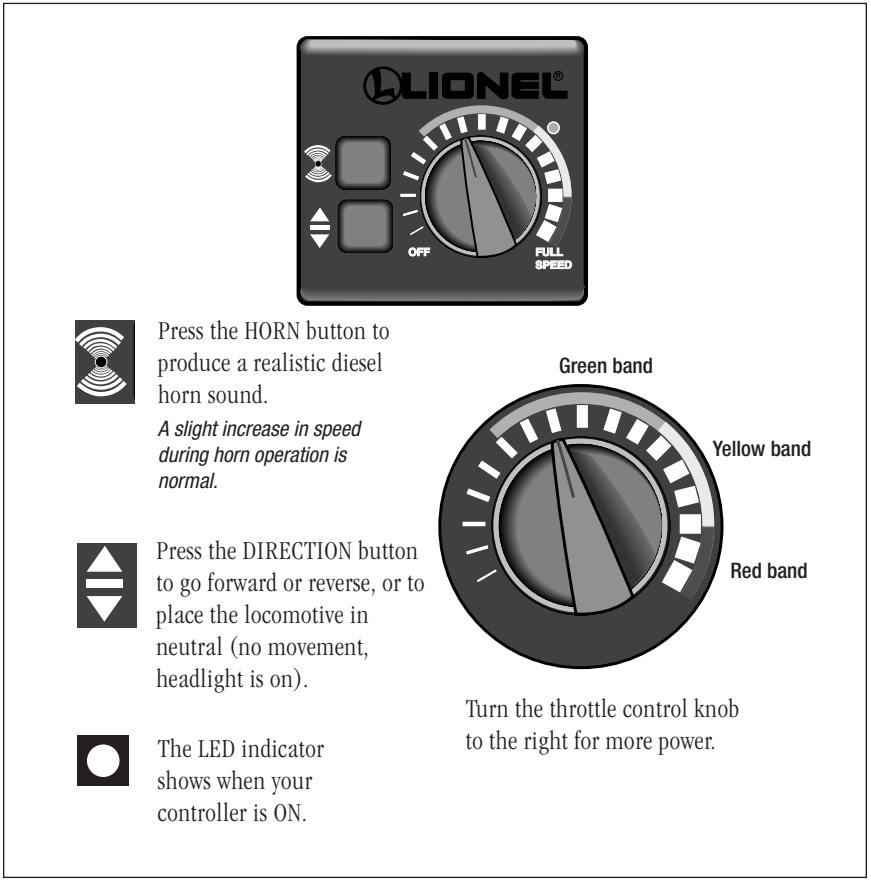

Figure 4. Transformer operation

Controller operations

Transformer and short circuits

Your Lionel power pack is listed by Underwriters Laboratories Inc. and has been carefully designed and tested to ensure peak performance. The Transformer is equipped with a built-in electronic circuit breaker that alternately cuts off and restores the flow of power to the track whenever a short circuit exists—for example, when the train derails. The circuit breaker's action continues until the cause of the short circuit is eliminated. This circuit breaker is incorporated into the Transformer to protect it from possible damage. It will not protect the locomotive or electrically operated accessories, so it's important to eliminate short circuits as soon as possible.

Note! The power pack must be unplugged from the wall socket when a short circuit is noticed, and the short circuit must be corrected.

A short circuit is caused by a direct connection between the center rail and one of the outside rails or by a direct connection between bare wires. The axles of a derailed car or locomotive are the most frequent cause of short circuits, so make sure that all wheels are properly set on the rails. Some other causes of short circuits might be staples, nails, paper clips, or other metallic objects lying across the rails, or two bare wires touching each other.

If too many cars or accessories are used, your Transformer will exceed its power limit and begin to cycle on and off. To correct this problem, cars or accessories must be removed before normal operation can resume. For more power, see the line of Lionel high-output transformers at your authorized Lionel Dealer.

The same condition can occur if the power is turned up too quickly. This also could cause your train to move too fast and derail.

After your power pack has been operating for a while, you will find it warm to the touch. It is the nature of all electrical power equipment to become warm when in use. If your power pack is loaded to capacity, it is a good idea to let it cool down after an hour or two of continuous use. Unplug the power pack from the wall when the Transformer is not in use.

Parents! The Transformer included with this set should be periodically examined for conditions that may result in the risk of fire, electric shock, or injury to persons (such as damage to the output cord, blades, housing, or other parts). In the event that such conditions exist, the transformer should not be used until properly repaired.

Controller operations

Advanced connections: powering two isolated blocks with two transformers

As you expand your layout, you may decide to create two isolated blocks of track. Trains in each block are controlled by separate transformers.

Before you operate your trains on this type of layout, be sure that your transformers are in phase. Operating your trains on a layout with two transformers that are out of phase may cause damage to the locomotive's sensitive electronic components.

To be certain that your transformers are in phase, use a small 18-volt lamp with leads (available at your local electronics supply store) to perform a quick test. Refer to Figure 5.

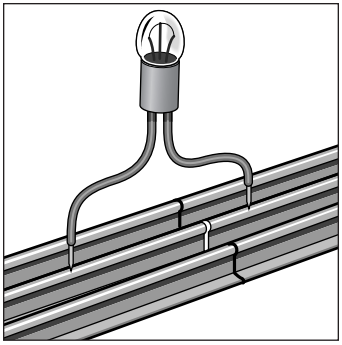

Figure 5. Testing for proper phasing

1. Attach one lamp wire to the center rail in one block.
2. Attach the second lamp wire to the center rail in the other block.
3. Power up both blocks of track. Both transformers should be set to full power.
4. See if the lamp illuminates.

If the lamp illuminates brightly, your transformers are not in phase. Do not operate your trains on the layout until you change the wiring. If the lamp does not illuminate or is dimly lit, your transformers are in phase and should not cause problems.

To bring your transformers into phase, simply swap the track wires at the A and U terminals on one of the transformers. If you are using an older transformer that lacks a polarized plug, you may reverse the plug at the outlet so that the prongs are inserted into the opposite openings. Repeat the procedure described above, and you should find that the lamp does not illuminate.

Notes

Limited Warranty/Lionel Service

This Lionel product, including all mechanical and electrical components, moving parts, motors and structural components, except for light bulbs, is warranted to the original consumer-purchaser, for **one year** against original defects in materials or workmanship when purchased through an authorized Lionel merchant.

This warranty does NOT cover normal wear and tear, light bulbs, defects appearing in the course of commercial use, or damage resulting from abuse or misuse of the product by the purchaser. Transfer of this product by the original consumer-purchaser to another person voids this warranty. Modification of this product voids this warranty.

Any warranted product which is defective in original materials or workmanship and is delivered by the original consumer-purchaser to Lionel L.L.C. or an authorized Lionel L.L.C. Service Center, together with proof of original purchase will, at the option of Lionel L.L.C., be repaired or replaced, without charge for parts or labor. In the event the defective product cannot be repaired, and a replacement is not available, a refund of the original purchase price will be granted. Any products on which warranty service is sought must be sent freight or postage prepaid, as transportation and shipping charges are not covered by the warranty.

In no event shall Lionel L.L.C. be 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 limited 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 L.L.C. product is required, bring the item, along with your dated sales receipt and completed warranty information to the nearest Authorized Lionel Service Center. Your nearest Lionel Service Center can be found by calling 1-800-4-Lionel, or by accessing our Website at www.lionel.com.

If you prefer to send your product back to Lionel L.L.C. for repair in Michigan, you must first call 586-949-4100 or FAX 586-949-5429, or write to Customer Service, P.O. Box 748, New Baltimore, MI 48047-0748, stating what the item is, when it was purchased and what seems to be the problem. You will be sent a return authorization letter and label to ensure your merchandise will be properly handled upon receipt.

Once you have received your return authorization and label, make sure that the item is packed to prevent damage during shipping and handling. We suggest that you use the product's original packaging. This shipment must be prepaid and we recommend that it be insured.

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 our Authorized Lionel Service Centers after its warranty has expired. A reasonable service fee will be charged.

Warranty Information

Please complete the information below and keep it, along with your dated sales receipt. You must present this and your dated sales receipt when requesting warranty service.

Name _____

Address _____

Place of Purchase _____

Date of Purchase _____

Product Number _____

Product Description _____