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***Lionel
TrainMaster Command
Control Upgrade Kit
Owner's Manual***

Congratulations!

Congratulations on your purchase of the Lionel TrainMaster Command Control Upgrade Kit! This kit allows you upgrade a Lionel locomotive that has been specifically designated as “Command upgradeable.” These locomotives were first offered in the 1998 Lionel Catalog.

Caution! The Lionel TrainMaster Command Control Upgrade Kit is composed of electronic circuit boards that are extremely sensitive to static electricity. Please avoid all physical contact with the chips and handle the boards by their edges only.

Note! To upgrade the Platinum Ghost F-3 (6-38150), the Santa Fe FT (6-18157), the New York Central FT (6-18163), or the Baltimore & Ohio FT (6-18169), follow the upgrade instructions in the Owner’s Manual for the particular locomotive.

Note! The Hudson locomotive with the Conventional RailSounds sound system (6-21988) must also have an upgrade to the full RailSounds sound system (Upgrade Kit 6-22963) for proper operation.

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Table of contents

Steam locomotive upgrades	4-7
Early Hudson and Pacific locomotive modifications	8-12
Diesel locomotive upgrades	13-14
Reprogramming your locomotive	15
The TrainMaster Command Control environment	16
Running your locomotive in the TrainMaster Command Control environment	17
CAB-1 Remote Controller command for your locomotive	17
Assigning your locomotive a new ID#	18
Notes	19
Limited Warranty/Lionel Service	20

Steam locomotive upgrades

Follow these steps to upgrade all steam locomotives, with the exception of the early versions of the upgradeable Hudson and Pacific locomotives (6-18082, 6-18083, 6-18084, 6-18085, 6-18086, 6-18087, 6-18088, and 6-28000). These exceptions are discussed in the next section.

1. Remove the body screws that secure the locomotive body to the frame and lift away the body. Refer to your locomotive's manual for the location of these screws.
2. Locate and unplug the 104E circuit board from the motherboard. Refer to Figure 1.

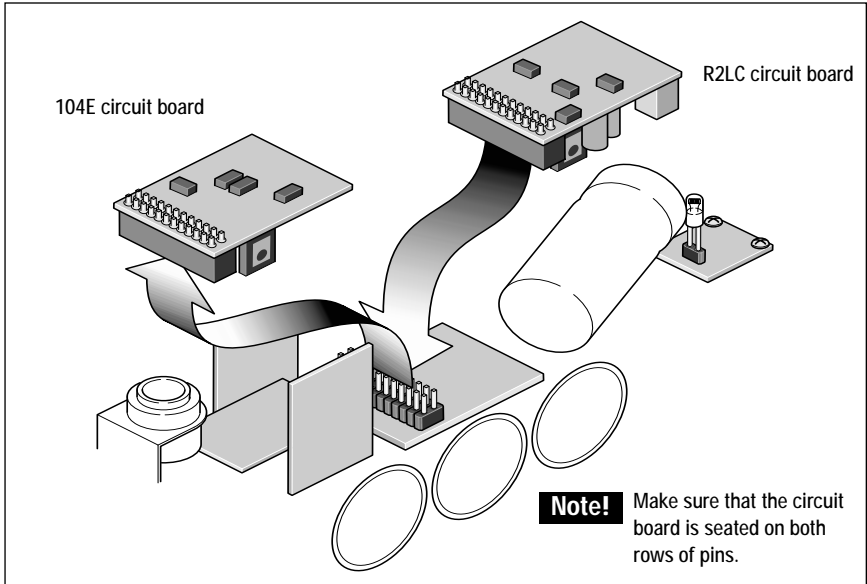


Figure 1. Replacing the 104E circuit board

Steam locomotive upgrades (continued)

3. Install the R2LC circuit board from the TrainMaster Command Control upgrade kit in the position made available in Step 2.
4. As illustrated in Figure 2, move the jumper marked JP1 to the next position, leaving the opposite pin open.

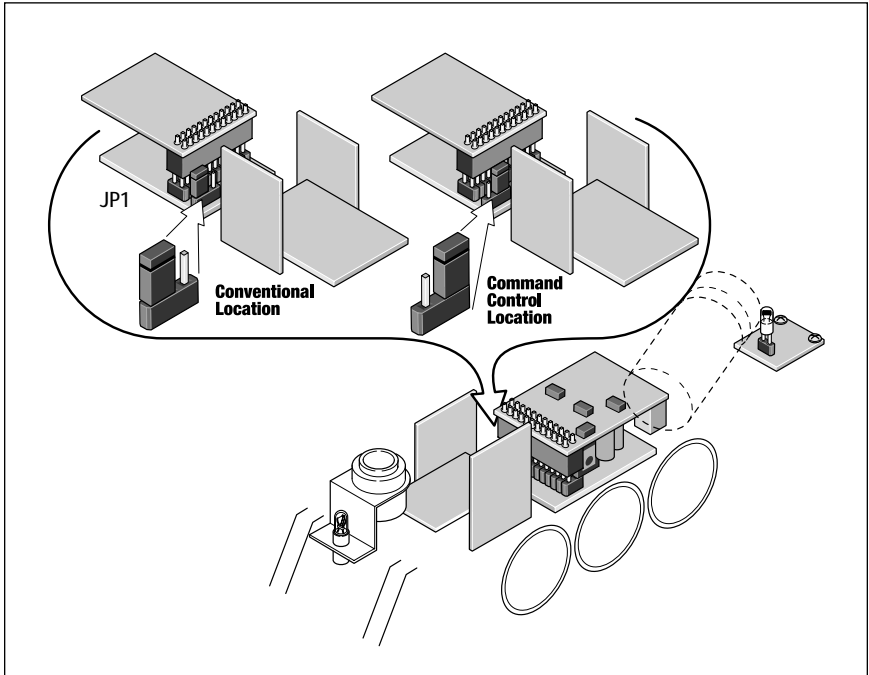


Figure 2. Changing the jumper location

Steam locomotive upgrades (continued)

5. Install the locomotive's body back on the frame, making sure that no wires are pinched.
6. Remove the tender body screws and lift away the body. Refer to the locomotive's manual for the locations of the screws.
7. Follow the tether cable to the end of the black insulation and locate the green wire.
8. Determine if the green wire is connected to the four-pin connector. If the wire is connected, reinstall the tender body. The upgrade is complete. Proceed to page 15 to reprogram your locomotive for use in the TrainMaster Command Control environment. If the green wire is not attached, continue with this procedure. Refer Figure 3.

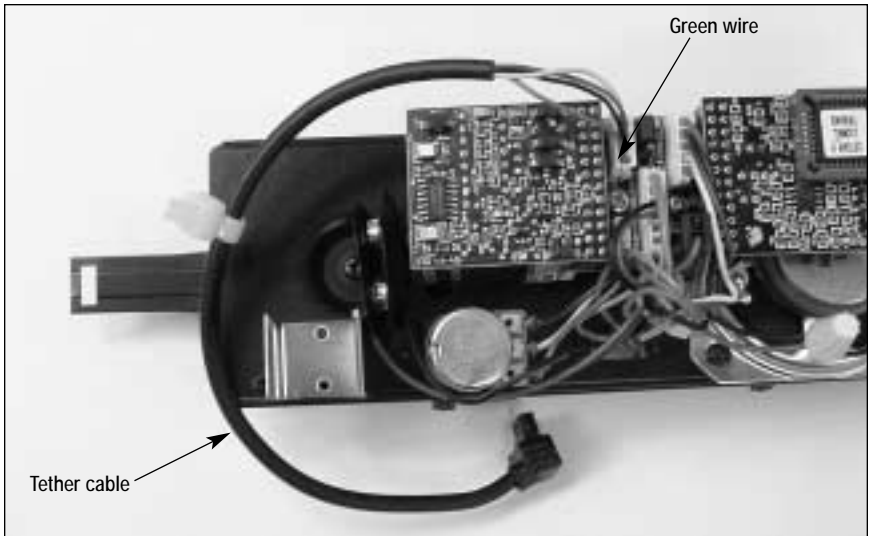


Figure 3. Tether cable

Steam locomotive upgrades (continued)

9. Pull the black insulating sleeve off the end of the loose green tether wire.
10. Grasp the white housing of the four-pin connector and pull it straight up and off the circuit board.
11. As illustrated in Figure 4, insert the connector pin at the end of the green wire into the empty fourth position on the connector.

Note! If you are also adding a RailSounds sound system upgrade, install the RailSounds sound system circuit boards as discussed in the RailSounds sound system upgrade manual.

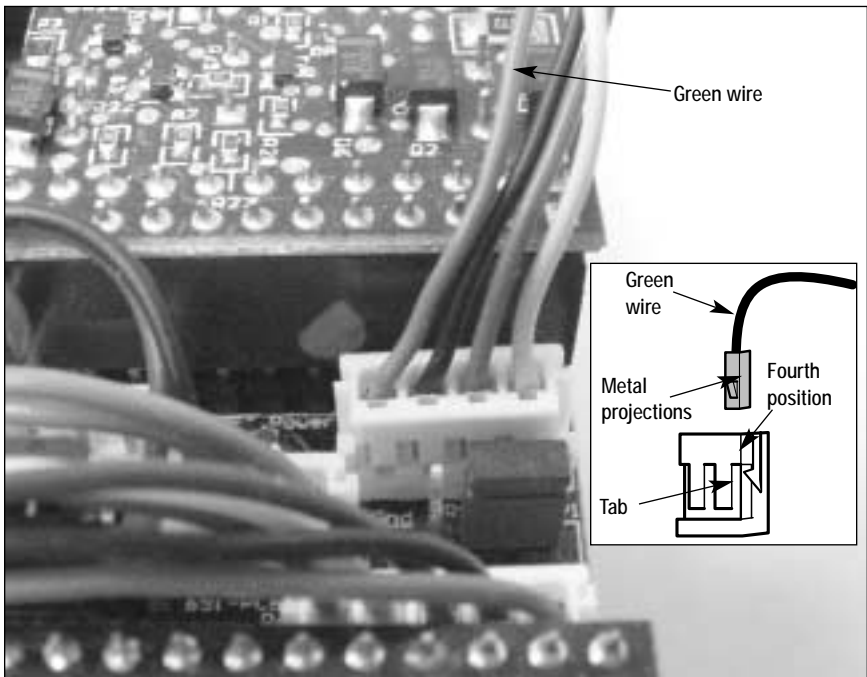


Figure 4. Connecting the green wire

12. Replace the body, making sure that the wires are not pinched between the body and the frame.
13. Reprogram the R2LC for your specific locomotive. Refer to page 15.

Early Hudson and Pacific locomotive modifications

Follow these steps to upgrade early versions of the upgradeable Hudson and Pacific locomotives (6-18082, 6-18083, 6-18084, 6-18085, 6-18086, 6-18087, 6-18088, and 6-28000).

1. Remove the body screws that secure the locomotive to the frame and lift away the body. Refer to your locomotive's manual for the location of these screws.
2. Locate and remove the jumper marked JUMP FOR EUNIT on the motherboard. This position is to remain open. Refer to Figure 5.
3. As illustrated in Figure 5, move the jumper marked RADIO(FL)/EUNIT to the next position, leaving the opposite pin open.

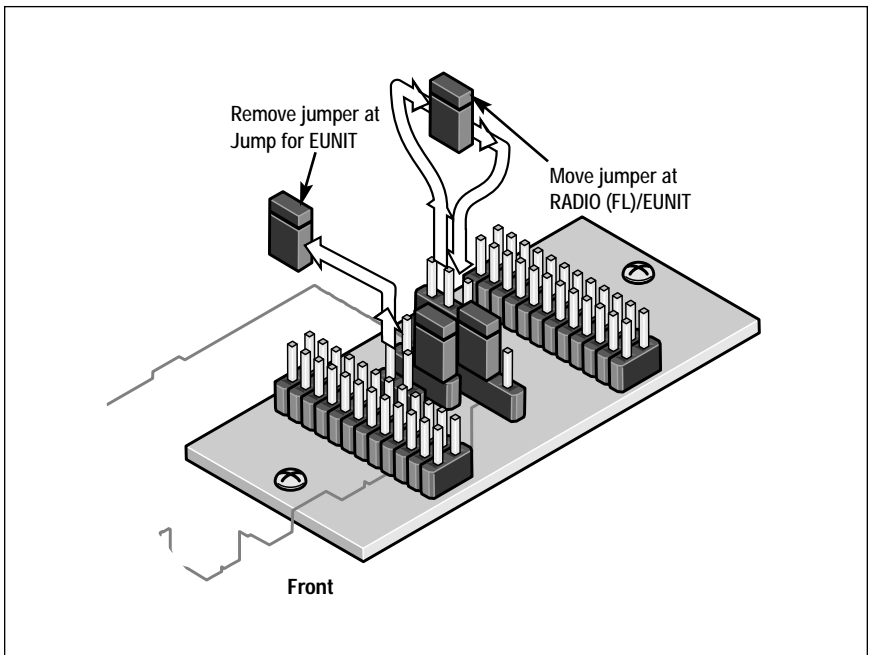


Figure 5. JUMP FOR EUNIT jumper position

Early Hudson and Pacific locomotive modifications (continued)

4. Move the jumper marked EUNIT (RL)/R2LC to the next position, leaving the opposite pin open. Refer to Figure 6.

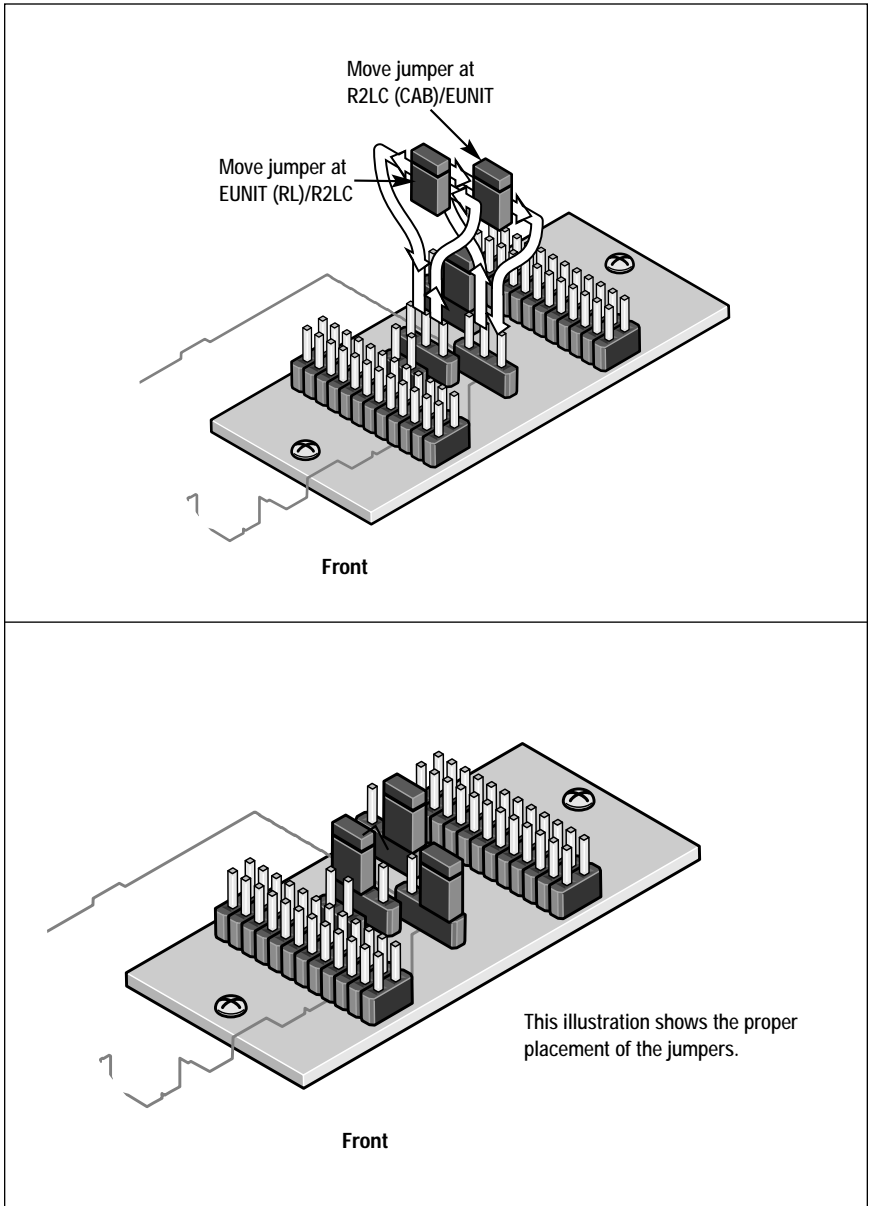


Figure 6. Jumper positions

Early Hudson and Pacific locomotive modifications (continued)

5. Move the jumper marked R2LC(CAB)/EUNIT to the next position, leaving the opposite pin open. Refer to Figure 6.
6. As illustrated in Figure 7, install the R2LC circuit board into the slot marked RADIO on the motherboard.

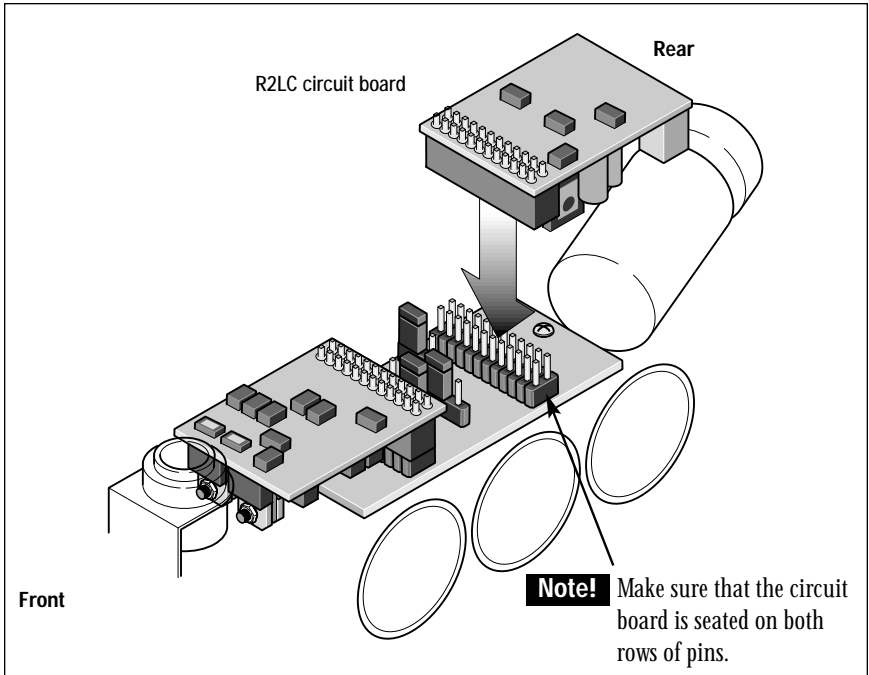


Figure 7. R2LC circuit board installation

Early Hudson and Pacific locomotive modifications (continued)

7. Install the locomotive's body back on the frame.
8. Remove the tender body screws and lift away the body.
9. Follow the tether cable to the end of the black insulation and locate the green wire. The green wire should not be connected to any terminal or connector.
10. Pull the black insulating sleeve off the end of the loose green tether wire.
11. Grasp the white housing of the four-pin connector and pull it straight up and off the circuit board.
12. Insert the connector pin at the end of the green wire into the empty fourth position on the connector and then plug in the connector. Refer to Figure 8.

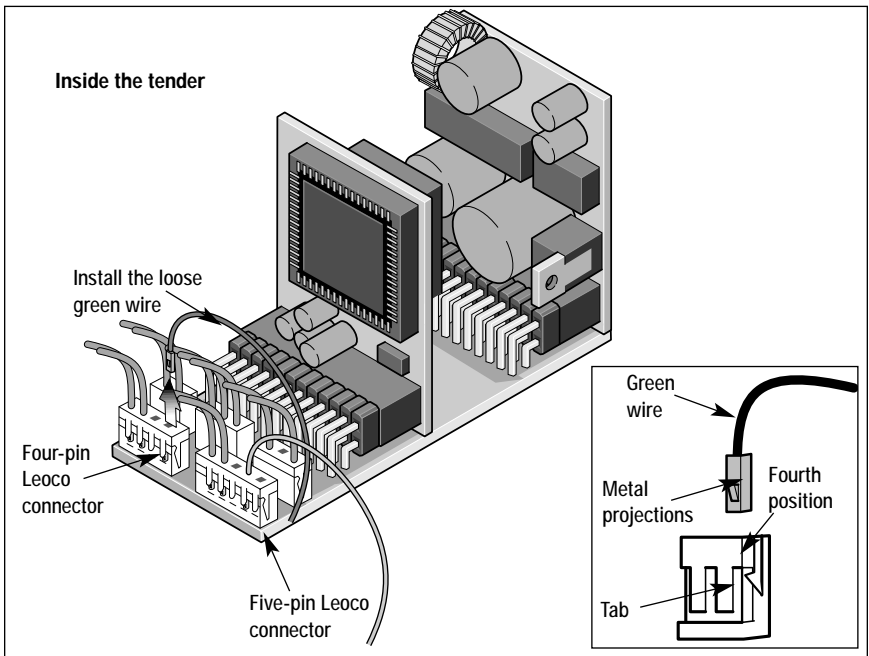


Figure 8. Connecting the green wire

Early Hudson and Pacific locomotive modifications (continued)

- If you are not adding a RailSounds sound system upgrade, reinstall the body. The TrainMaster Command Control upgrade is complete.
 - If you are also adding a RailSounds sound system upgrade, install the RailSounds sound system circuit boards as discussed in the RailSounds sound system upgrade manual.
13. Replace the body, making sure that the wires are not pinched between the body and the frame.
 14. Reprogram the circuit board for use in the TrainMaster Command Control environment. Refer to page 15.

Diesel locomotive upgrades

Follow these steps to upgrade all diesel locomotives.

1. Remove the body screws that secure the locomotive body to the frame and lift away the body. Refer to your locomotive's manual for the location of these screws.
2. As illustrated in Figure 9, locate and unplug the 104E circuit board from the motherboard.

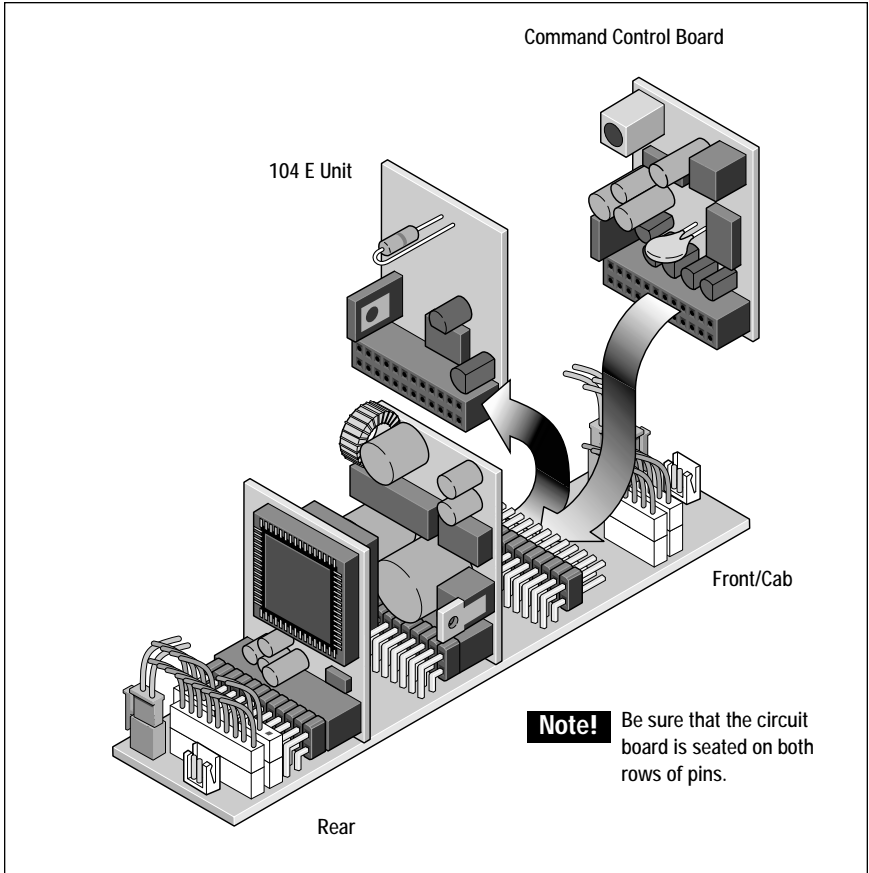


Figure 9. Replacing the 104E circuit board

Diesel locomotive upgrades (continued)

3. Install the R2LC circuit board from the TrainMaster Command Control upgrade kit in the position made available in Step 2.
- **C-420 locomotives only.** Reverse the two wires that connect the front lighting harness contact pads and the two wires that connect to the rear lighting harness pads so that the LED marker lights and headlights operate. Refer to Figure 10.

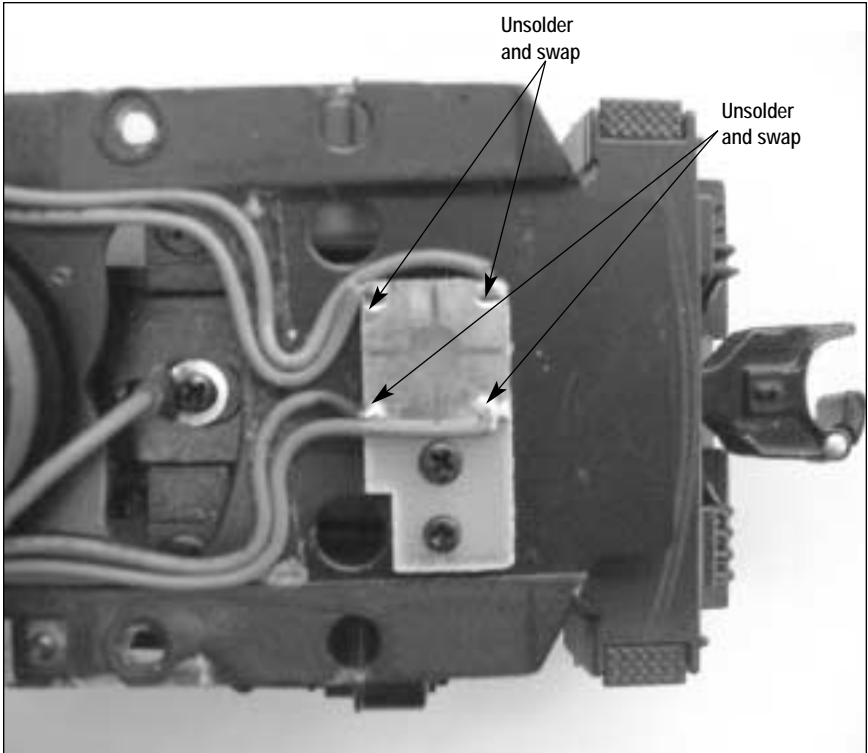


Figure 10. C-420 lighting pads

Note! If you are also adding a RailSounds sound system upgrade, install the RailSounds sound system circuit boards as discussed in the RailSounds sound system upgrade manual.

4. Install the locomotive's body back on the frame, making sure that no wires are pinched.
5. Reprogram the R2LC for your specific locomotive. Refer to page 15.

Reprogramming your locomotive

Before you attempt to operate your locomotive in the TrainMaster Command Control environment, you must reprogram your locomotive's R2LC circuit board. When you reprogram the circuit board, you will also assign a unique ENG ID#.

Note! Be sure that no other locomotive is assigned the same ENG ID#.

1. Slide the RUN/PROGRAM switch on your locomotive to the PROGRAM position. Refer to your locomotive's instructions for the location of the switch.
2. Plug in the Command Base.
3. Place the locomotive on the track.
4. Turn on track power.
5. On your CAB-1 Remote Controller, press **ENG** and enter a unique ID# for your locomotive.

Note! Choose any number from 1 to 99.

6. Press the **SET** button under the front panel of the CAB-1 Remote Controller.
7. Press the **AUX1** button, then enter the appropriate reprogramming number for your locomotive. See Table 1 below.
8. Turn off track power and wait ten seconds.
9. Remove your locomotive from the track and slide the RUN/PROGRAM switch back to the RUN position.
10. Place the locomotive back on the track, power up, and address your locomotive by pressing **ENG** and entering the unique ID#. You are ready to start TrainMaster Command Control operations.

Number	Locomotive
5	Diesel with Strobe Light (GP-7, GP-9, GP-20)
6	Diesel with Cab Light (FT, F-3)
8	All Diesels with Smoke
34	All Upgradeable Steam Locomotives

Table 1. Reprogramming codes

The TrainMaster Command Control environment

TrainMaster Command Control is the advanced model railroad control system from Lionel. TrainMaster Command Control gives you the power to operate multiple Command-equipped locomotives *on the same track, at the same time*.

To operate in Command mode, you need a Command Base (6-12911) and a CAB-1 Remote Controller (6-12868). Find them both at your authorized Lionel retailer.

1

Place your locomotive on Lionel or Lionel-compatible track.

- **Make sure track power is OFF before placing on the track.**
- **Make sure your Lionel Command Base is plugged-in** and its communications wire is connected to the COMMON post on your Lionel transformer *or* the U terminal on any of your installed PowerMasters or TPC units.
- Once positioned on the track, **increase track voltage to FULL** (no more than 19 volts). On PowerMasters, slide the CMD/CONV switch to CMD. Program TPC units for Command operation.

2

Address your locomotive using your CAB-1 Remote Controller.

- **Press ENG and 1** on the numeric keypad of your CAB-1 Remote Controller. This command is sent by your CAB-1 Remote Controller to the Command Base, which then translates your command into digital code. That code is sent around your railroad's outside rails in the form of a digital "halo." All Command-equipped Lionel locomotives listen to this digital communication, but they do not respond until they hear their individual ID number—in this case, "1."
- **The digital language of TrainMaster Command Control—and not track power—controls the actions of Command-equipped Lionel engines.** Track power is simply like gasoline in the tank of your car—it gives you the power to go places, but it doesn't tell you where to go or how fast to get there.

Note!

All Command locomotives come factory-programmed with an ID# of "1." To change the ID# of your locomotive, see page 17.

3

Move 'em out!

- **Throttle up or press any command button on the CAB-1 Remote Controller.** Your locomotive will respond to your every command.

Running your locomotive in the TrainMaster Command Control environment

Example *Address Locomotive #1*

Set PowerMaster to CMD or traditional power supplies to full throttle (no more than 19 volts)



Press **ENG**



Press **1** (the ID#)

Throttle up/press any command button

Your Command-equipped locomotive comes factory-programmed with an ID# of “1.” To get your locomotive in action, set PowerMasters to CMD, program all TPC units for Command operation, or set all power supplies on full (no more than 19 volts). Press **ENG** and **1** on your CAB-1 Remote Controller. Turn the throttle or press any command button, and your locomotive is ready for Command operations.

CAB-1 Remote Controller commands for your locomotive

RailSounds sound system effects are in bold italic.



Press **F** to activate *Coupler release sounds*.



Press **R** to activate *Tender rear coupler releases*. *Coupler release sounds*.



Press **AUX1** to activate the numeric keypad.



Press **AUX2** to turn your locomotive's headlight on and off.



Turn the **THRATTLE** to the right to accelerate, left to decelerate. *Speed-dependent variable steam chuffing*. *DynaChuff dynamic chuffing effect*.



Press **HALT** to shut down all PowerMaster electrical output on your railroad. Stops all Command-equipped locomotives in operation.

Note!

Use **HALT** only in emergency situations.



Press **WSTL/HRN** to activate the locomotive's whistle, release to discontinue. *Multi-Whistle steam whistle sound*.



Press **BELL** once to activate the bell, again to discontinue.

Traditional bell sound.



Press **DIR**—the locomotive decelerates to a complete stop; turn the throttle up, and the locomotive moves in the opposite direction. There is no neutral. *Steam air-release sound*.



Press and hold **BOOST** for extra power. Release **BOOST** and return to the locomotive's previous speed. *Labored chuff*.



Press and hold **BRAKE** to slow down or stop. Release **BRAKE** and return to the previous speed. *Squealing brake sounds*.

Assigning your locomotive a new ID#

Example Assign a new ID# to your Command-equipped locomotive

Set the Command reverse unit switch to PROGRAM

Command Base plugged in

Place the locomotive on track

PowerMasters set to CMD, program TPC units for Command operation, or traditional power supplies ON FULL (no more than 19 volts)

Turn track power on (PowerMaster's or TPC unit's):



Press TR



Enter the PowerMaster's or TPC units ID#



Press BOOST

Program the locomotive with a new ID#:



Press ENG



Press a number you choose (the ID#)



Press SET

Set the Command reverse unit switch to RUN

Your locomotive remembers its ID# forever; change it any time with these steps

As your fleet of Command-equipped Lionel locomotives grows, you'll want to give your locomotive a more individualized number. Choose from any between 1 and 99. To make things easy, use a portion of your locomotive's cab number.

Set the locomotive's Command reverse unit switch to PROGRAM (see Figure 2 on page 5). Plug in the Command Base and place the locomotive on track, then power up. Using your CAB-1 Remote Controller, press **ENG**, the locomotive ID# that you select, and then press the **SET** button located under your CAB-1 Remote Controller's removable panel. Hear the whistle blow (or see the headlight flash if the RailSounds sound system is off); that's the Command reverse unit confirming the new ID#. Set the Command reverse unit switch to RUN. Your locomotive is ready for operations with its all-new ID#.

We recommend that you choose an easy to remember ID# for your engine. Some possibilities are part of the engine road number, your age, or any two digit number that is not used by another engine. Write the number on a small piece of tape and put this on the bottom of the frame to aid in remembering.

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 _____



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