



Lionel Hot Box Car Mini Commander Installation Guide

Revised: October, 2008

OVERVIEW:

The Hot Box Car is normally active when powered on, and may be switched off by an extended press of the horn button. This car is awesome, and adding the Mini Commander for TMCC operation enhances the operating experience.

INSTALLATION PROCESS SUMMARY:

The Mini Commander ACC is used as a “power gate”, simply turning off the power to the car with the AUX1 or AUX2 key on the remote. If DCS operation is desired, the Mini Commander HC-1 output, controlled by AUX1, should be used.

Originally, the power input to the car is routed to the Sound Module, the Smoke Module, and the LED Control Module. There are two (2) 3rd rail roller pickup wires that are black with a white tracer. These are routed and joined with a cluster of red wires, secured by a wire nut in the car. This is where we need to “intercept” the power for the Mini Commander to control the operation. Additionally, we need to get a common wire for the Mini Commander to operate. This is best picked up in the cluster of black wires, which is also grouped together and secured by a wire nut.

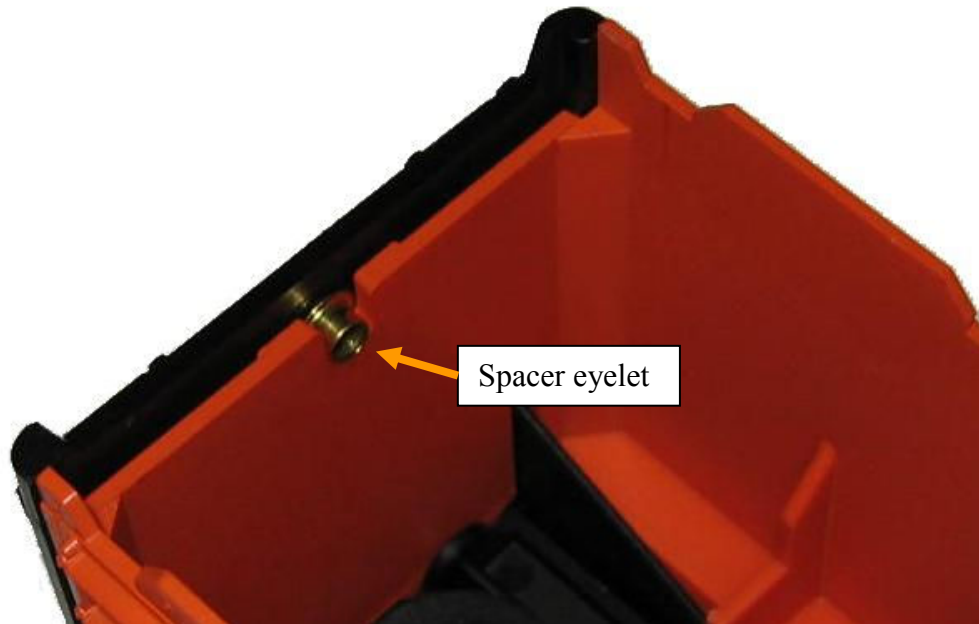
The wire nuts are only used for insulation, as the wires are soldered together. I found it easiest to cut the wire ties for access, and then add the additional wiring. You may want to shoot a digital photo or sketch the wiring and module placements before removing the wire ties. It all seems to go back together fairly easy, and just make sure none of the wiring or modules touch the smoke unit when restoring and securing the wiring.

The Speaker provides a perfect location to mount the Mini Commander. The wiring is very simple, only requiring 3 wires to connect the Mini Commander. This consists of 2 power wires, and the switched white wire attached to HC-1 or HC-2. The black wire on the HC-1 (or HC-2) output is not required, and must be removed from the connector.

Adding an LED to the LC-1 output is quite useful to know when the Mini Commander is in Configuration Mode. The LC-1 output pulses when Configure Mode is active. The car has several holes in the chassis to place an LED, so simply enlarge as needed and secure with a drop of CA or Zap-A-Gap.

INSTALLATION SEQUENCE:

Start by removing the Hot Box Reefer car shell. There are 2 screws, one at each end to remove. Do this with the car upside-down, as there are 2 spacer eyelets that are located between the chassis and the outer plastic shell sides & roof. Take note as to how the roof and body go together. The roof & sides secure the smoke refill door, just like the Milk Car can load door. Set the screws, spacers, and shell components aside for later reassembly.



Carefully review the wiring in the car. Note how the wiring is dressed. See the picture below for a typical placement of the wires and modules.



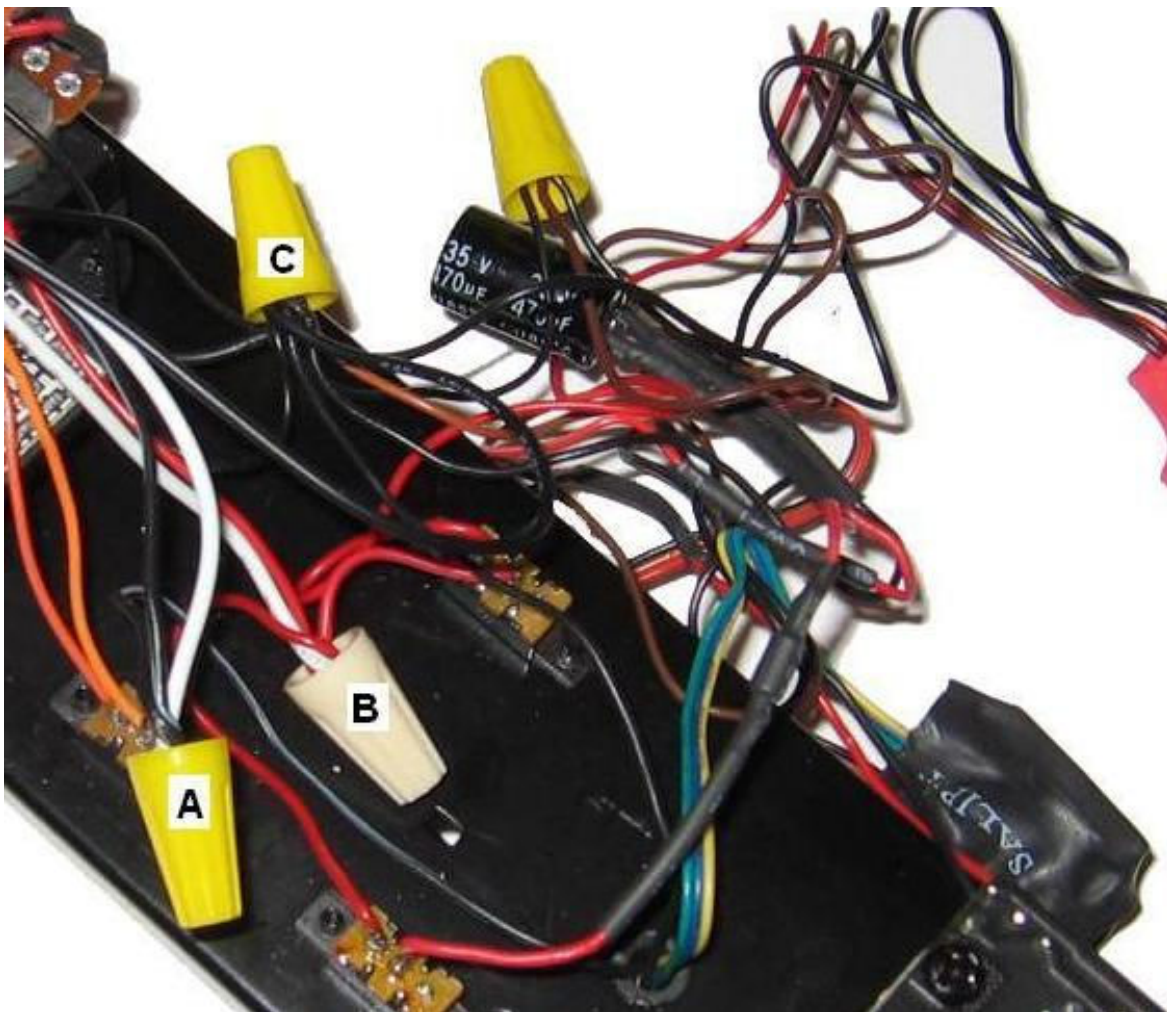
Wiring the car consists of identifying and isolating the power pickup from the internal modules. The first step is to locate the red cluster of wires. Verify the 3rd rail roller wires (black w/ white tracer) are attached to the red wires.

- Remove the wire nut and carefully cut the 3rd rail roller wires from the cluster. Strip the wires, and twist them together with the white wire in the kit. Now solder the 3 wires, and replace the wire nut. This is connection “A” shown below.
- Next locate the white wire with connector included in the kit, twist and solder this with the red wire cluster. Use the included heat shrink to insulate the connection. (note: the below picture shows a wire nut, however the heat shrink works better) This is shown as connection “B” below.

Next, locate the black cluster of wires.

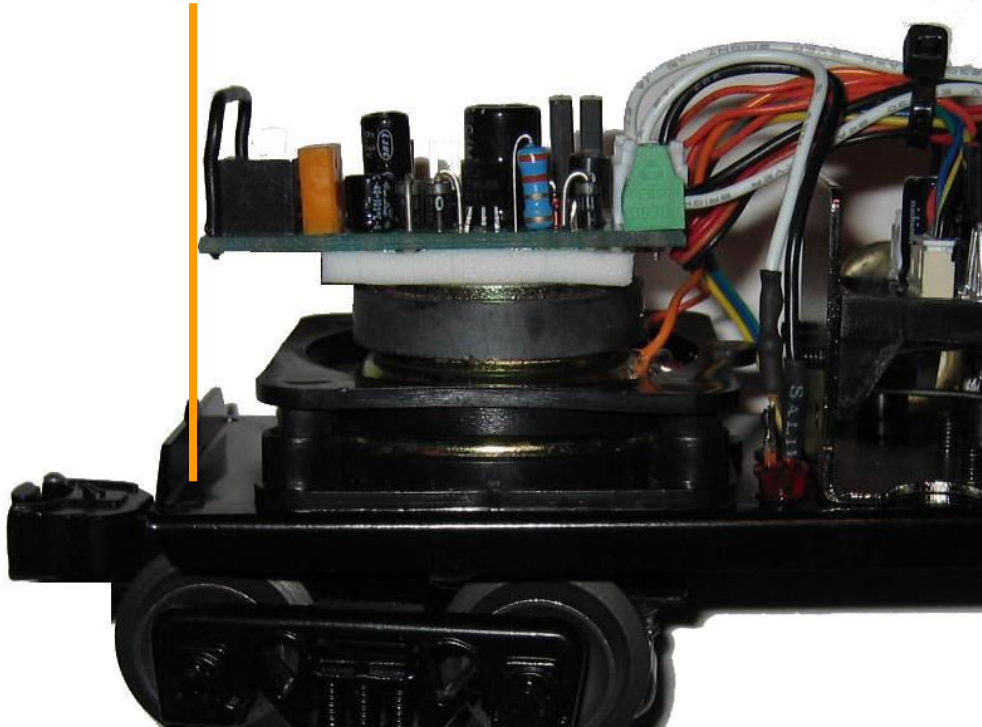
- Remove the wire nut, and twist the black wire in the kit around them and solder. Either replace the wire nut, or heat shrink to insulate the connection. This is shown as “C” below.

When using heat shrink, be certain the wires do not protrude out of the end. Also, adding a second layer of heat shrink is recommended. The kit contains enough heat shrink for this purpose.

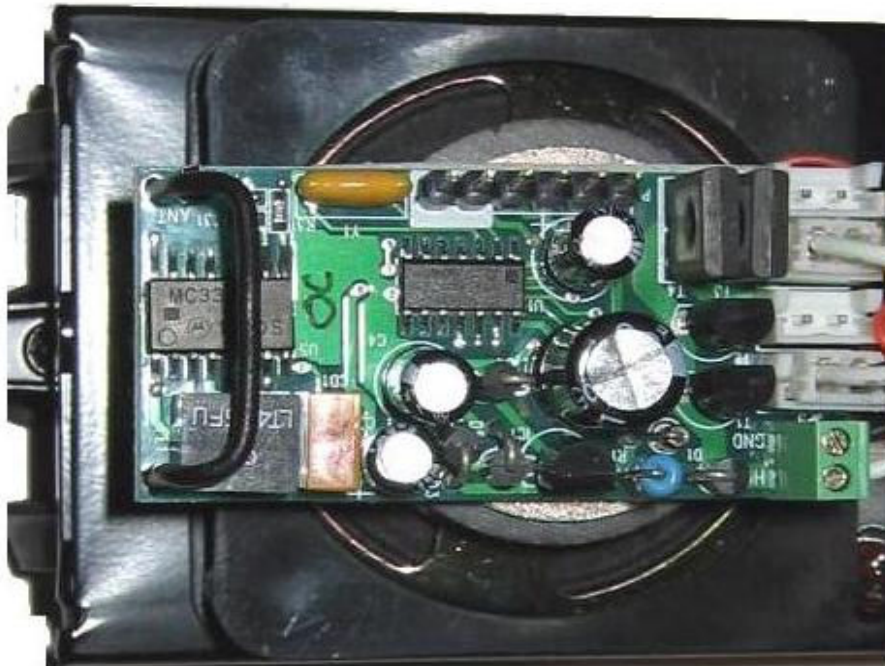


With the car wiring connected, the next step is to mount the Mini Commander. The Mini Commander is affixed to the speaker with double stick tape. The position of the Mini Commander is very important. See the pictures below and mount the Mini Commander as shown.

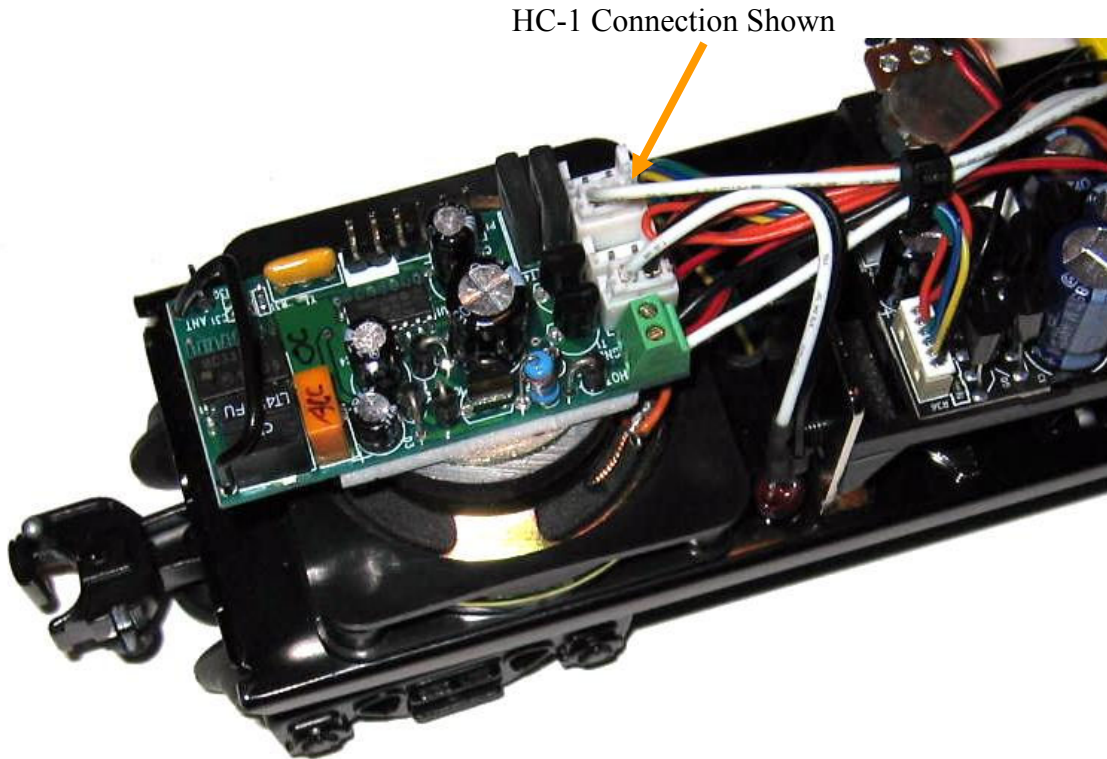
About 1/8" in. from the end of the car.



IMPORTANT: Mini Commander must be centered from side to side



After mounting the Mini Commander, the 3 wires just added need attached. The white is the “HOT”, strip and attach. The black is “GND”, strip and attach. Plug the white wire with connector plug into HC-1 or HC-2, HC-1 is shown.



If adding the **optional** LED, mount and plug into LC-1 as shown. The Wiring harness is included in the kit, however the LED and series-dropping resistor are **NOT** included. Contact support@electricrr.com for assistance if you wish to have this feature.

****** USE EXTREME CAUTION ******

If the LED does not fit in the hole selected, you will need to enlarge the hole. A reamer was used on this install to enlarge the mounting hole; the process did not generate metal shavings. **It goes without saying metal shavings and electronics do not play well together.**

The car wiring should now be placed back together, placing the components in as close to the original locations as possible. Use the supplied wire ties to fix the wires in place. Do not over tighten the wire ties when closing.



Review all the wiring, especially looking for loose or broken wires on the switches that may need attention. After review, proceed to checkout and configuration.

NOTE: In almost all cases, the built in antenna will work fine. If you find the car is not as responsive as you would like, you can enhance the signal reception by using the supplied antenna extension. The extension is a single wire with a connector (included) that plugs over the “ANT” pin. Place the antenna wire in a place that will not be in the way of the operation of the car, it is fine to shorten the wire. However, if you shorten it too much, it will not help the reception

After configuration and checkout, replace the shell on the car. It is usually easier to assemble the shell upside down, complete with spacer eyelets, and then drop the chassis in while the shell is upside down. Be sure to place the smoke unit on the side with the top smoke fluid cover door.

INSTALLATION COMPLETED

CONFIGURATION:

Assuming you have the wiring reviewed, power up the car on the track. The Mini Commander is set to ACC one (1) when shipped. Configuration is normally done by using Soft Set Technology. Using this method eliminates the need for the presence of a configure / run switch.

Note: A jumper (included) may be placed on P1, pins 1 & 2 to enter configuration mode if problems are experienced with Soft Set mode. The shell will need to be removed to access the Mini Commander board in this case.

IMPORTANT NOTE: The configure/run mode of operation is determined at power on of the Mini Commander. Once sampled, the state is maintained. The power must be removed 10 seconds to observe a jumper or switch state change. (on or off)

Your installation may use an ENG ID or ACC ID from the CAB-1. DCS will require the ENG ID selection. Pick a number for the ID, and do one of the following:

CONFIGURATION USING SOFT SET

With the car on the track and power applied, configure the Mini Commander HC as follows- waiting 1 second between each SET press. Actually a few extra SETs are a good idea. I usually press it 6 to 7 times!

As ACC:

ACC + 1 + SET + SET + SET + SET + SET (Soft Set entry sequence)

ACC + ## + SET (where ## is the ACC number you want)

AUX1 + 9 + BOOST

AUX2 + 9 + BOOST

WAIT 10 seconds; do not press any CAB-1 key while waiting.

As ENG:

ACC + 1 + SET + SET + SET + SET + SET (Soft Set entry sequence)

ENG + ## + SET (where ## is the ENG number you want)

AUX1 + 9 + BOOST

AUX2 + 9 + BOOST

WAIT 10 seconds; do not press any CAB-1 key while waiting.

Now select the car by ACC (or ENG) + ## (the number you entered above) and then press AUX1 (or AUX2, if HC-2 is connected) to activate the Hot Box Car.

If the car is not operating correctly, you will need to redo the configuration sequence. Notice the AUX1 and AUX2 keys are configured, as AUX2 will not configure before AUX1 is configured. This is a CAB-1 issue, some work, some don't - so do both to be safe.

CONFIGURATION USING A JUMPER

Power off the track for at least 10 seconds

Add the jumper

Power on the track

As ACC:

ACC + ## + SET

(where ## is the ACC number you want)

AUX1 + 9 + BOOST

AUX2 + 9 + BOOST

As ENG:

ENG + ## + SET

(where ## is the ENG number you want)

AUX1 + 9 + BOOST

AUX2 + 9 + BOOST

Power off the track for at least 10 seconds

Remove the jumper

OPERATION:

CAB-1

Operation with the CAB-1 is as simple as selecting the ACC or ENG and the ID that you assigned. Pressing AUX1 (or AUX2 if HC-2 is connected) will activate the Hot Box sequence. Pressing AUX1 again, will switch off the Hot Box operation.

DCS

Operation under DCS can be initiated by adding the Hot Box car as a TMCC engine. When selected, using any of the soft keys (except AX8/9) under the LCD will operate the Hot Box car.

If you opted for AUX2 operation, the HDLT key will trigger the action on/off.

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DCS is a registered trademark of MTH, Inc. The Mini Commander and Soft Set Technology
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