



MTH Dump/Log Car Mini Commander Installation Guide

Revised: October, 2008

OVERVIEW:

The Dump car is normally operated by a UCS track. When over the UCS track, application of power on the 4th and 5th rails applies power to the motor to cycle the dump action. The Mini Commander can apply this power to the dump action motor from one of its outputs. If DCS operation is desired, the Mini Commander HC-1 output, controlled by AUX1, should be used.

This guide shows HC-2 as the output driving the dump car, as that was how the prototype was wired. HC-1 is recommended for DCS compatibility, so simply substitute HC-1 for each HC-2 reference.

INSTALLATION PROCESS SUMMARY:

To free yourself from the UCS, you will need to replace one of the trucks on the car to “collect” power from the 3rd (center) rail. The Mini Commander will need power from the track, which is obtained from replacing one of the trucks.

The Mini Commander fits in the car, but just barely. You will need to follow the pictures closely to make sure the dump car hopper can close completely. Several steps are taken on the mounting process. One important step is to insulate the bottom of the Mini Commander so it will not short to the metal casting of the dump car. These steps are outlined in the following sections.

The antenna is created by using the metal plate on the hopper base that is primarily there for the roller contact to the dump motor for the dumping action. MTH was nice enough to make this available for an antenna ☺

Note: The log car has a small spring attached to hold it closed. Remove one end of the spring during the installation to prevent stretching it out of shape.

INSTALLATION SEQUENCE:

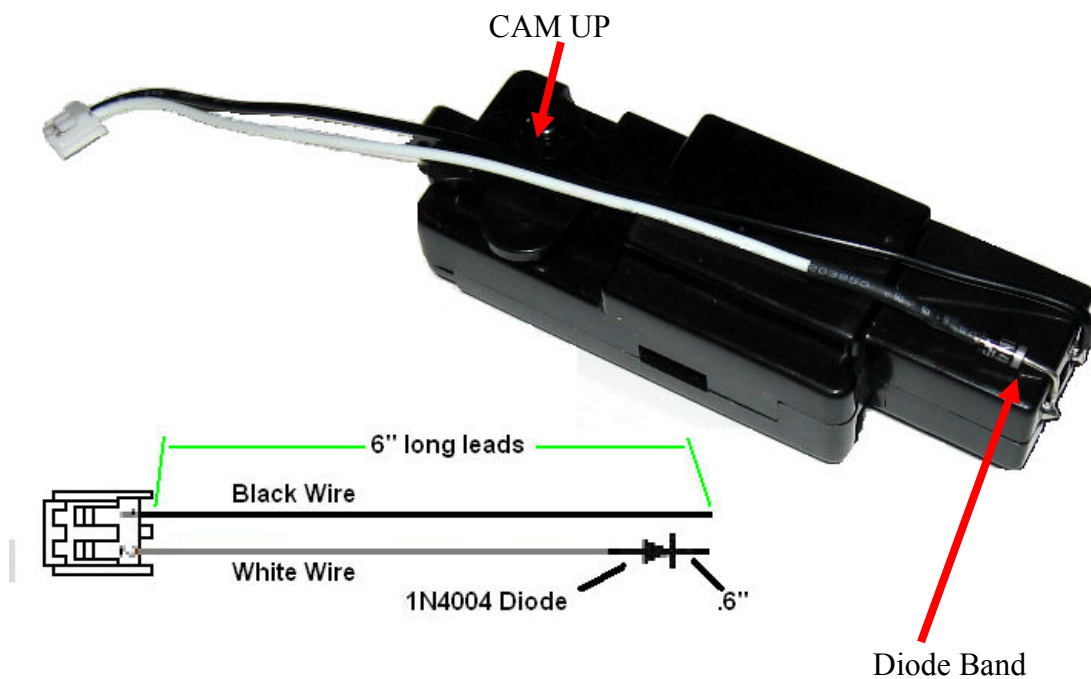
- 1) Prepare the Dump Car by opening the hopper for access. The instructions will now refer to the right side of the car when the brake wheel is on the right and the hopper is opened away from you. (picture of completed car shown)



LEFT SIDE

RIGHT SIDE

- 2) Remove the motor (2 screws) and the original small electronics board (1 screw). Clip the wires from the motor terminals, and the circuit board that lead to the slider shoes on each truck. Next add the power leads to the motor as shown. Re-install the motor into the bay with the original 2 mounting screws.



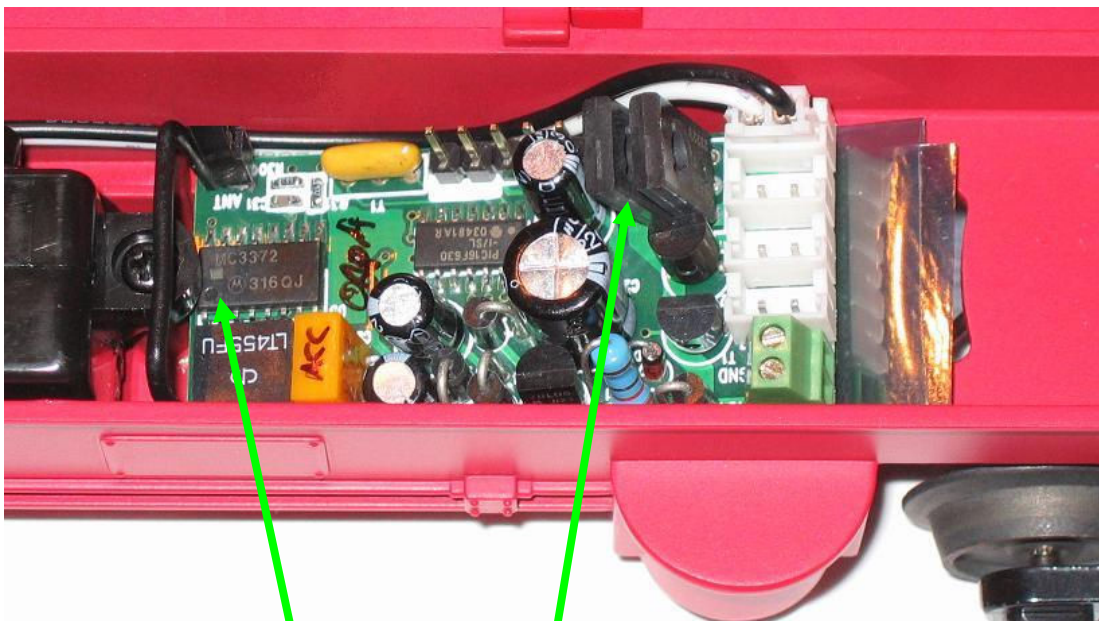
3) Mount the Mini Commander. Take your time to understand this step.

- The bag the Mini Commander is shipped in makes a great insulator. You will need to have 3 layers to protect the mini from poking through the bag into the dump car frame. Cut a 3" by 2" piece of the bag. Tri-fold the 3" length into a 1" final size. When folded the insulator will be 2" x 1" and 3 layers thick.
- Cut 2 pieces of the double stick tape into a $\frac{3}{4}$ x $\frac{3}{4}$ Square.
- Referring to the picture below:
 - Place one piece of double stick into the bottom of the hopper as shown in the picture below.
 - Attach the insulator made above from the bag about $\frac{1}{2}$ way onto the double stick as shown
 - Attach the 2nd piece of double stick on top of the first capturing the insulator between the layers.



Bag should reach to about this slot

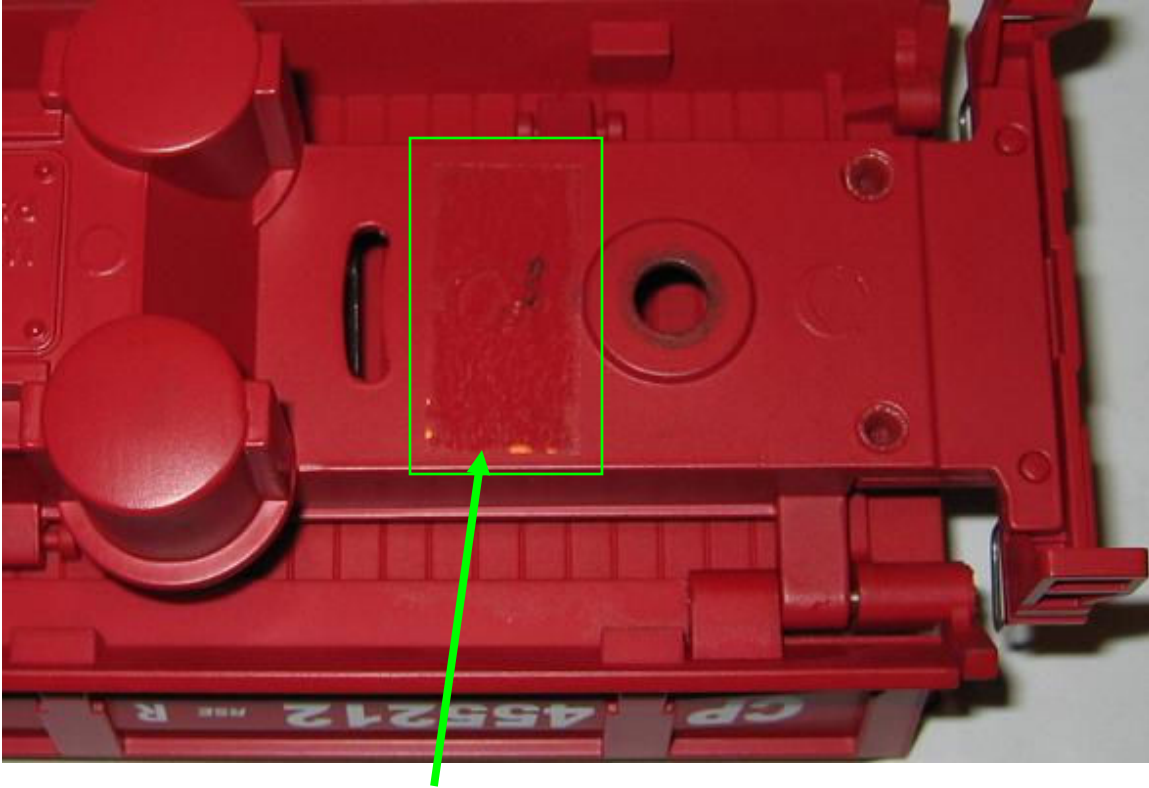
- Install the Mini commander onto the double stick as shown.



Note location of this part...

These components bent slightly left to clear hopper

- 4) Attach the motor wire to the HC-1 or HC-2 terminal on the Mini commander. HC-2 is shown connected, however if you plan to use the DCS remote, it is best to use the HC-1 connection.
- 5) Place the 1" x .5" acetate insulator on the underside of the right side of the car as shown. Wipe the car clean in the appropriate area, then after removing the Acetate sticky backing apply as shown.



Acetate insulator, close to bolster mount as possible

- 6) Replace the truck on the right with the new truck with the center rail roller. The new truck will use the MTH color-coding by placing the BLACK wire on the center roller, and the RED wire on the wheel-set wiper. Feed the wires up through the slot and attach to the Mini Commander. Be certain the 3rd rail roller is connected to the "HOT" terminal.
- 7) The left truck will still have a wire attached to it that went to the sliding shoe. You may opt to open up the truck and removed the wire; but that is risky as the truck springs may come off. The lead can be stored in the hopper and taped out of the way, or may be cut off, but be certain the cut end is not able to contact anything.

- 8) Prepare the “antenna”. Remove the weight from the hopper bottom. Use an exacto-knife to scrape the paint away from the hole as shown below. This will enable the antenna wire to contact the metal plate.



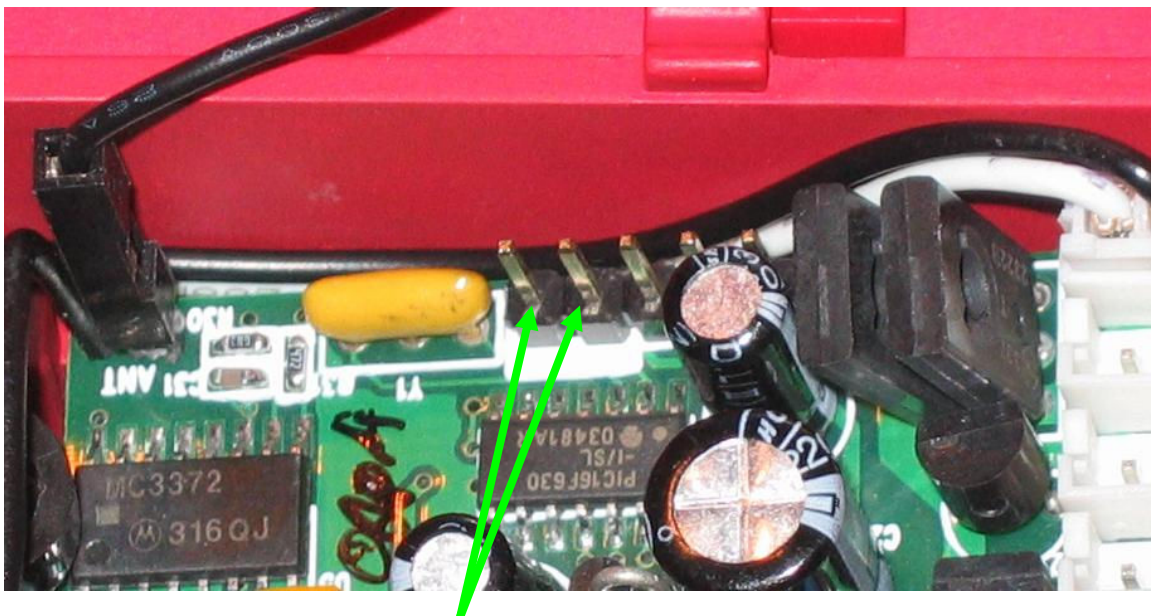
Scrape paint around hole here.

- 9) Prepare the antenna wire extension by cutting the WIRE to 2.5". Strip the wire ½". Install the weight back onto the hopper by first attaching the non-scraped side. Wrap the bare end of the antenna wire around the post and re-attach the mounting screw/spacer. This will hold the wire against the bare metal.
- 10) Plug the Antenna wire connector into the Mini Commander “ANT” pin. Verify the wire will fold down into the center of the opening under the hopper when closed.

11) Review the connections as shown below, and you are ready to configure the Mini Commander!



12) **Optional** programming jumper connection:



Optional: Plug Thumb Pull Jumper across these 2 pins to configure the Mini...

CHECKOUT and 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. When AUX2 or HC-2 is referred to, substitute AUX1 or HC-1 if you selected these for operation under DCS.

Although the configuration is not done yet, you can get the car to operate by selecting ACC + 1 + AUX2 (or AUX1), then press AUX2 (or AUX1) repeatedly noting the dump action bursts on each key press. If this checks out, proceed to configuration. If not, you will need to verify the connections again, and use a meter to be sure the Mini Commander is getting power.

CONFIGURATION:

Since there is not a Configure / Run switch, you should enter Soft Set to finalize the installation. Since the hopper can be opened, it is possible to attach a programming jumper as indicated above. NOTE: the Mini Commander must have power removed 10 seconds to observe a jumper state change. (on or off)

To use Soft Set for programming: With the car on the track and power applied, configure the Mini Commander 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 + 5 + BRAKE + 3

AUX2 + 5 + BRAKE + 3

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 + 5 + BRAKE + 3

AUX2 + 5 + BRAKE + 3

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 AUX2 (or AUX1) to operate the dump action. You will quickly get the hang of when to release the key to stop the dump action at the end of the cycle.

If the car is not operating, you will need to redo the configuration sequence. If you are un-sure you are able to get into Soft Set to configure the car, you may use the jumper on the connector P1 pins 1 & 2. Then enter the configuration sequence without the "Soft Set entry sequence" line above.

The configuration sequence above shows AUX1 and AUX2 getting configuration settings. This is not an absolute requirement, but until you get more familiar with Soft Set, please follow the sequence above.

OPERATION:

CAB-1

Operation with the CAB-1 is as simple as selecting the ACC or ENG and the ID that you assigned. Pressing AUX2 (or AUX1) will activate the dump action. Release the AUX2 (or AUX1) key to stop the cycle. You will quickly get the hang of when to release the key to stop the dump action at the end of the cycle.

DCS

Operation under DCS can be initiated by adding the Dump Car as a TMCC engine. When selected, using the AX9 soft key under the LCD will operate the Dump Car.

TMCC, R2LC, CAB-1, and RailSounds are registered trademarks of Lionel LLC

DCS is a registered trademark of MTH, Inc.

The Mini Commander and Soft Set Technology are trademarked and patent-pending – reverse engineering or duplication prohibited. All manual contents are Copyright ©2004, The Electric Railroad Company, 2326 Walsh Avenue, Santa Clara, CA 95051