

# Removing the E Unit from S Scale Steam Locomotive

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The E unit on S Scale American Flyer 4-4-0 locomotives is removed on these models for conversion to DC operation by using the modeltrainsounds (MTS) Bridge Rectifier circuit Board

On these models the E unit is located just behind the motor extending into the cabin. In order to disconnect the E unit the locomotive motor must first be removed from the shell.

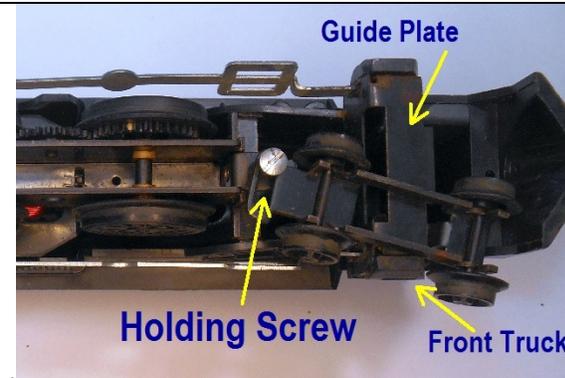
**In summary** the motor is removed from the shell, three securing screw on the E unit are removed, the wire connections to the motor are cut and new wires are added to the motor poles.



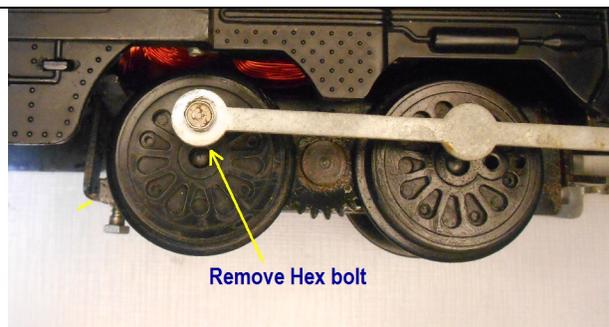
Removing the motor can be tricky because of the way the motor is held in the shell. Tabs on the metal chassis shown here insert into holding slots in the plastic shell, one under the cabin and other in front of the driving wheels. Cutting a slot here will be described.



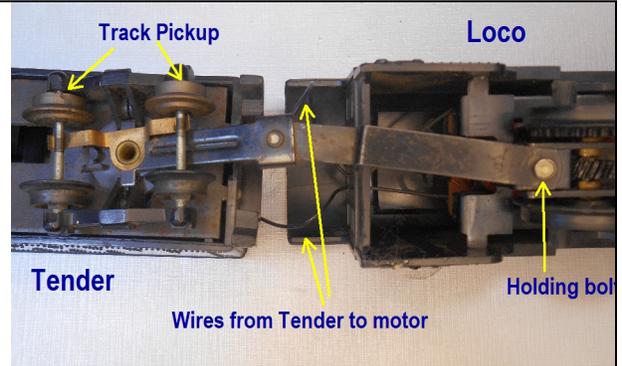
Start by removing the screw holding the front truck and remove the truck from the Guide Plate. It is not necessary to remove the guide plate. If you do make sure you note the orientation for re-assembling. This plate also holds the driving rods in place.



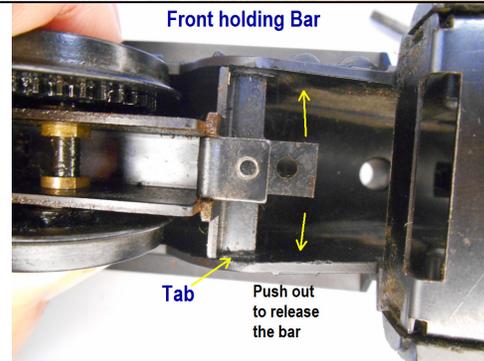
The driving rods should be removed by unscrewing the hex bolt at the rear of each driving rod. Note the orientation of the rods as they fit into the piston on the Guide Plate. Removing the rods is necessary for testing the motor.



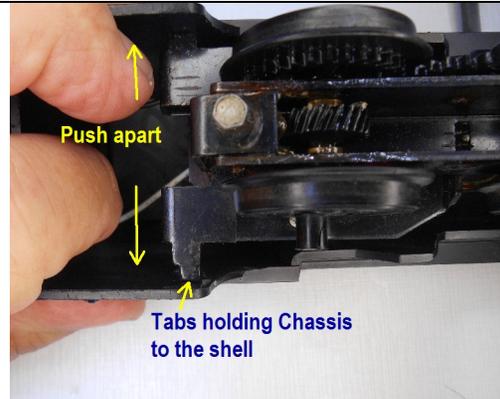
Disconnect the bolt holding the Tender connection drawbar.  
 The two wires coming from the tender to the motor are soldered to the connections for electricity pickup wheels on the tender.



To remove the motor spread the shell apart to release the tabs holding the motor in place, This must be done carefully to avoid breaking the plastic though it is fairly strong . Release the tabs in the front first .



Next address the tabs under the cabin. This may require some effort to push out the side walls to release the tabs from the holes .



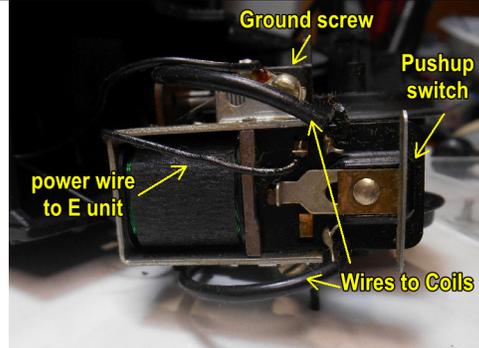
If you have difficulty with this step I recommend cutting a short slot in front of the existing opening using a Dremel cutting disc so the motor slides forward to free it from the body. This will make reassembly and future repairs easier.



Once the motor with the E Unit has been removed you will note that the E unit is attached to the frame by two screws on either side along with a grounding screw. Unscrew the 2 securing screws from the frame.



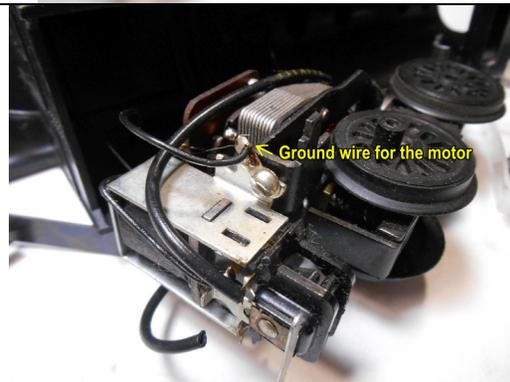
Four wires connect to the E Unit. Two are larger black wires that trace back to the field coil. A smaller wire from the motor power input going the coil field of the E Unit. A fine wire from this filed is attached to the ground screw .



The wires to the field coil are cut at the connections to the E Unit. The end of these wires will be tinned with solder.



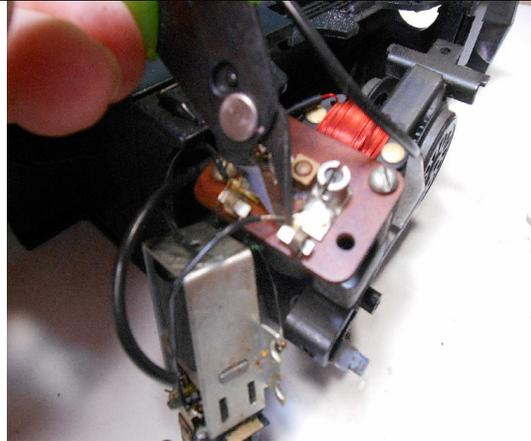
A wire coming from the motor to the ground screw is cut.



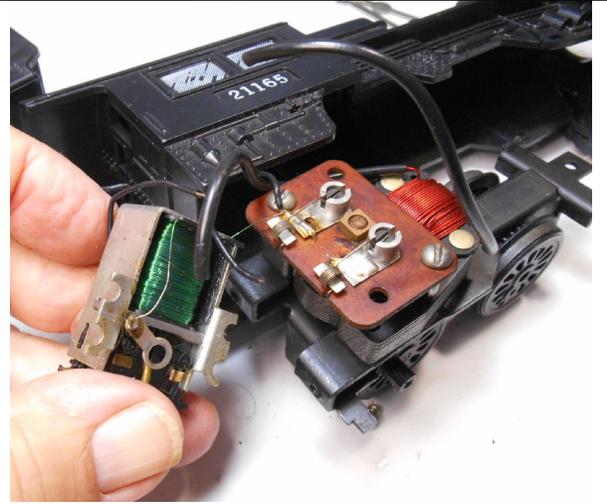
The grounding screw can be removed from the metal frame and reinserted once the E Unit is removed.



Finally two small black wires attach to the motor pole connections. These are cut at the connection point on the motor.



Cut the wires at the motor poles.  
The E unit can now be removed.



Note need to add wires to the motor poles.

3 Inches of 24-26G wire added to the solder point on the motor poles.

