

4 speaker Sound Installation in an MTH GG-1

This installation is shown using the standard AC track power sound system. Since four smaller speakers are louder than one single speaker, we chose to do this along with adding a #400 E-Unit with directional LED headlights and markers.

First step is to remove the engine shell and everything else. The headlight lenses need to be removed from the shell for easiest installation of the Incandescent White LED's. Everything was mounted in the shell utilizing a 4 pin connector, item #611, for ease of disconnection from the base. The following instructions cover step by step procedures in performing the installation. You may choose to do all or part of it.



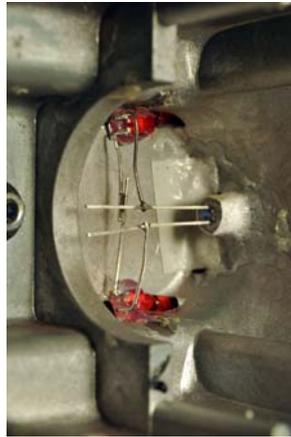
Shown above, the installation of a T1 1/4 incandescent white LED, item 537, attached to the back side of the lens. The larger LED was chosen due to it's higher intensity. The backside of the lens was carved open to allow the curvature of the front of the LED to rest further into the lens. Quick Grip™ (found in the craft shops) is used throughout this installation and was also used to glue the LED to the lens. When reinstalling the lens, place the longer LED lead (+) to one side with the other end to the other side.

Red LED's, item 532, were glued in as shown. These were used to illuminate the markers. They were wired to be directional along with the headlight LED's. The headlight LED's were taped to prevent light from projecting out of it's sides. The better this is done, the better the markers will look.

Left side



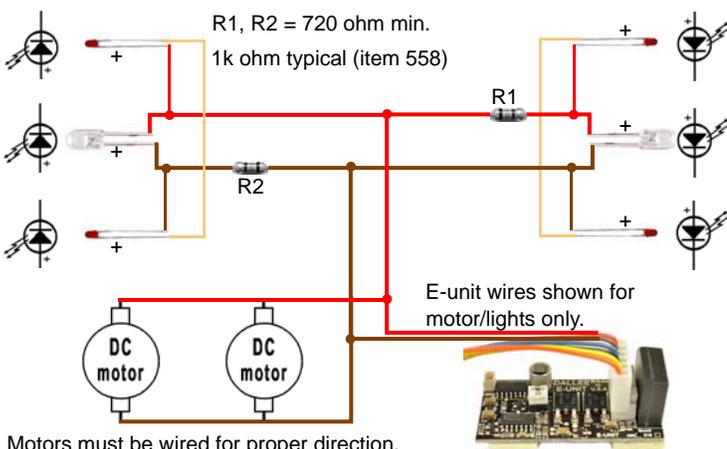
Right side



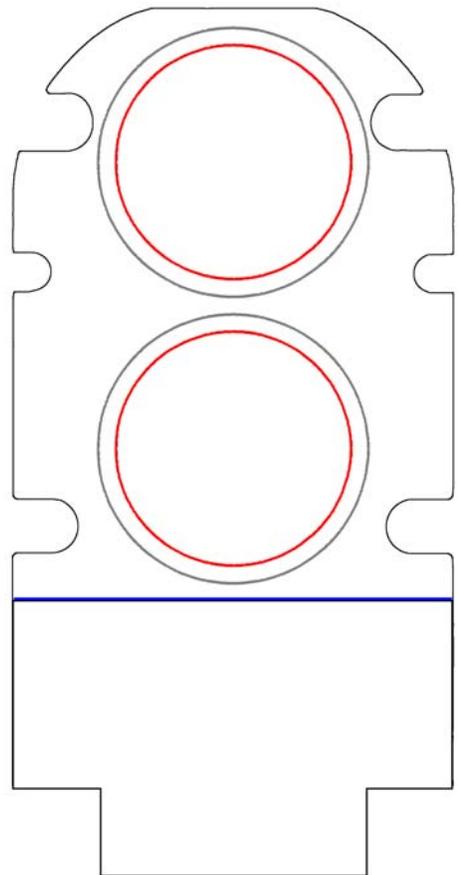
There are two speaker baffle cut outs to be made since one side is different than the other. Cut the baffle out of the instructions, or copy them. Then glue onto rigid card stock. Then carefully cut out along the outer black lines as well as the inner red lines. The inner cuts are to mount the speaker. The gray lines indicate the outer edge of the speaker. You can test the diameter of your construction by placing the speaker onto it. Also test the outside cut's to make sure they clear the shell when installed. A snug fit is good. The blue line is to bend the mount to form the speaker enclosure (baffle). The entire assembly holding the speakers must be completely air tight both around the speakers and the shell of the engine. Before doing the final assembly of the edges, it is wise to test everything out to make sure your wiring is correct. Otherwise you will not be able to fix any incorrect LED wiring since it will be sealed off by the speaker enclosure. A picture of the final mounting of the speakers is shown on the next page.

We used "Quick Grip" glue for this which can be found at most craft shops. It sets up quickly while still allowing for manipulation of the materials if needed.

Physical wiring shown below.

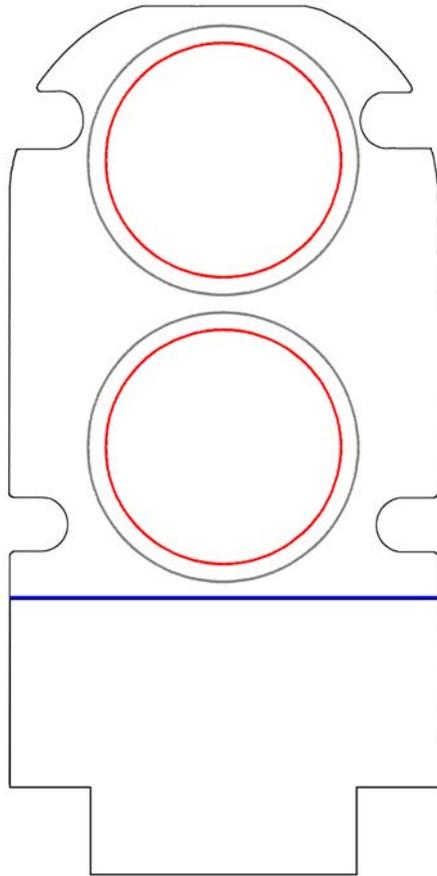


Motors must be wired for proper direction.



Speaker templates: Glue templates to stiff, thick, card stock. Then cut it out on the red lines.

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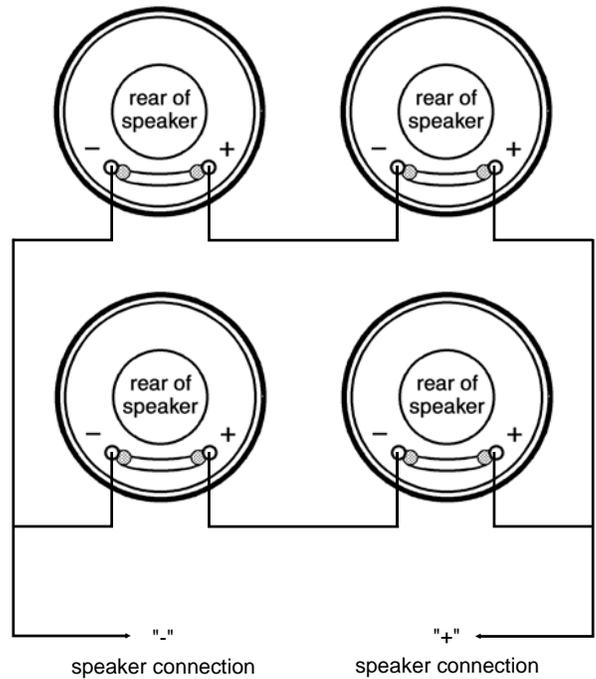
Test fit the speaker cut out to make sure it fits properly.



Top side of speakers with speakers and baffle totally sealed with glue. Note how the wires are held into place with dabs of glue. Their exit from the baffle is also totally sealed against any air ape.



The two ends have their speakers wired in series. These two ends are then joined together back at the sound systems speaker wires. The top pair shown in the schematic below are the one sides speakers. The lower pair are the opposite end. The speakers utilized are item 661.



Position and glue speaker sides flush to the front with no air gaps as pictured.

Wiring requires proper "+" and "-" observation. Mark your wires carefully. As shown below, each side has it's speakers placed in series. These wires get joined together at the sound systems speaker wires.

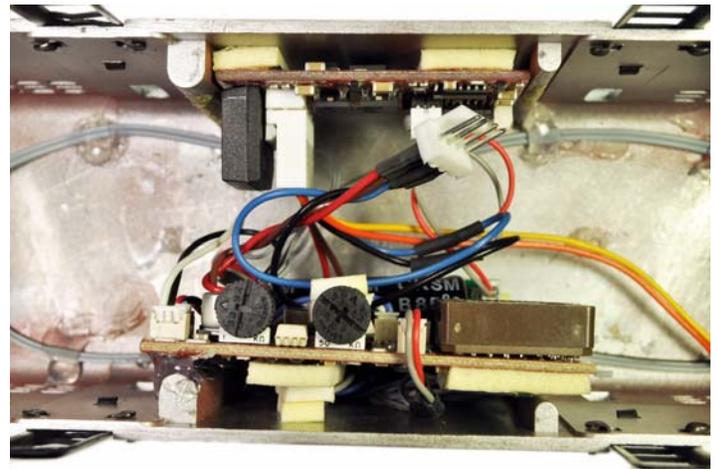


Locations for the main components are in the shell between the main extrusions. As can be seen, the #400 E-Unit was installed on one side with the sound card on the other. Beneath the sound card, mounted on the ceiling, is the main power board for the sound unit. Extra double sided tape (item 388) was utilized in spacing the sound card to prevent shorts against the cast sprue. The controls were faced to the bottom so that if adjustment is needed, one can get at them (providing you place access holes in the chassis).

When installing, don't forget, the entire shell on nearly all 3-rail engines are at the same potential as the outside rails. So it is very important so that you do not short out any component or wire to it. That would destroy the items!

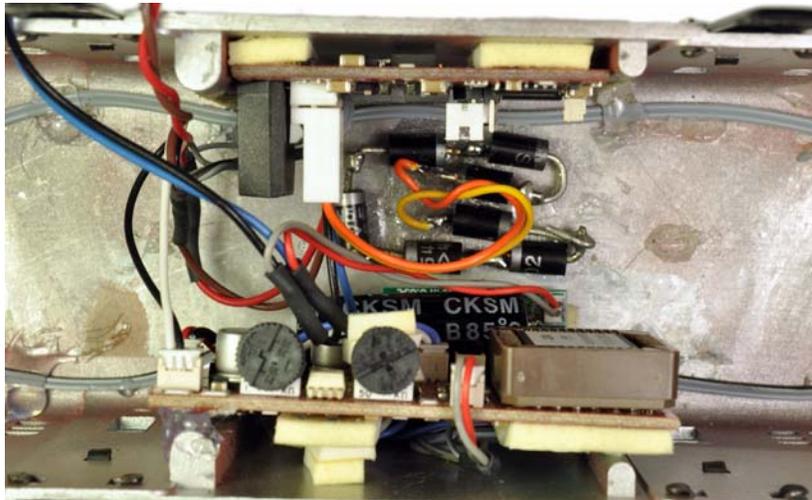
The #400 E-Unit is wired as per instructions contained with it. In this case we also utilized a 4 pin connector, item #611.

Since most engines are geared to run too fast, we elected to install a series string of diodes (as also shown in the #400's instructions) to reduce the top speed. This also aids the operation of the lighting and sound system when moving at slower speeds since it elevates the track voltages. A string of 6 diodes is sufficient to do this. Three of item 375 can be used to accomplish this task. These are wired and glued in the roof of the shell, as shown.



Heat shrink tubing was used for all connections. You can also use hot melt to attach the boards. Care must be utilized when doing so.

Final wiring and installation close up.



Final installation, full view:

