

4 speaker Sound Installation in a Fairbanks Morse Trainmaster

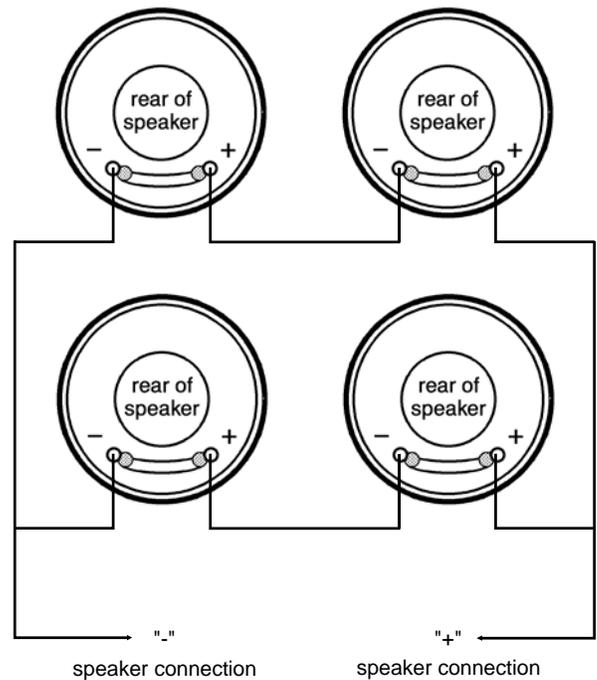
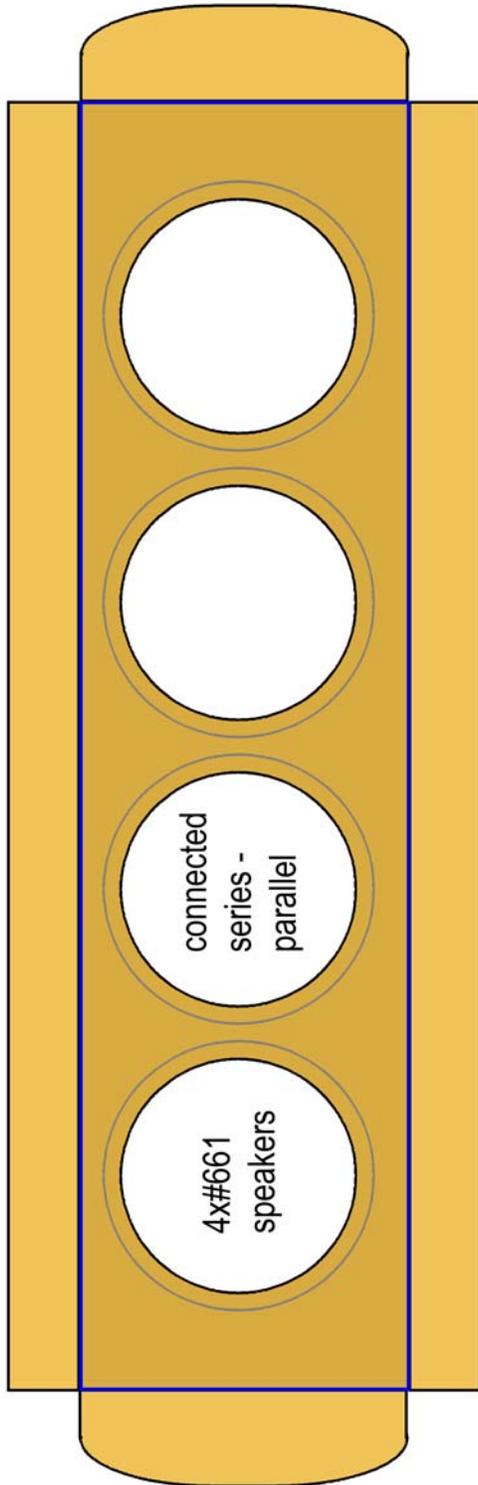
This installation is shown using the standard AC track power sound system. Since four smaller speakers are louder than one single speaker, we chose to do this along with adding a #400 E-Unit with directional LED headlights and markers.

One speaker baffle cut out is required, pictured to the left. Cut the baffle out of the instructions, or copy them. Then glue onto rigid card stock, not cardboard! Next, carefully cut out along the outer black lines as well as the inner black 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. The blue line is to bend the mount to form the speaker enclosure (baffle). The outer edges get bent down from the main speaker portion. Test the outside cut's to make sure they clear the shell when installed. A snug fit is good. 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 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.

The two end speakers are 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 end speakers. The lower pair are the opposite end. The speakers utilized are item #661.

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



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

Wiring requires proper "+" and "-" observation. Mark your wires carefully. As shown, each pair has its speakers placed in series. Then the ends are wired in parallel and joined together to the sound systems speaker wires.



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



Top side of speakers, which is looking to the roof from the bottom of the shell, with speakers and baffle totally sealed with glue. The internal wire between the speakers are held into place with dabs of glue. Their wire's that connect to the "speaker" sound unit exit from the baffle and are totally sealed against any air escape. A good air tight enclosure is required. This installation was done in a hurry to get ready for a show, so it's not too "pretty" looking. Sorry that we don't have other pictures to show you.

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.



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.

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 place on the chassis.

Shown below is the wiring for the installation of T1 3/4 incandescent white LED, item #537, attached to the back side of the lens (item #536, a T1 LED, could also be used. 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 in the wiring diagram as well. These were used to illuminate the markers. They were wired to be directional along with the headlight LED's. The headlight LED's were covered with heatshrink tubing to prevent light from projecting out of their sides. The better this is done, the better all of the lighting will look.

There are other ways to wire this but they would require additional parts and possibly not have the headlights as bright as they could be at lower voltages.

Physical wiring shown below.

