

ELECTRIC SOUND for AC track power by DALLEE ELECTRONICS, Inc.

ACv1.3

CAUTION: THIS DEVICE CAN BE DAMAGED BY STATIC DISCHARGE. PLEASE EXERCISE CARE DURING INSTALLATION TO AVOID THIS POSSIBILITY. DISCHARGE YOURSELF TO AN ELECTRICAL GROUND (OUTLET COVER SCREW) BEFORE REMOVING THIS DEVICE FROM ITS ANTI-STATIC BAG. PLEASE READ INSTRUCTION SHEET COMPLETELY BEFORE ATTEMPTING TO INSTALL AND OPERATE THIS PRODUCT.

Save the anti-static bag for possible reuse of storing or shipping the sound unit!

OVERVIEW: This device is an electronic sound system for installation in model electric locomotives that are designed to operate with conventional AC track power with standard Horn and Bell operation. In addition to conventional control of the Horn and Bell, this sound system may also use of our LocoMatic™ Controller (Item 755) to operate the horn, bell, cooling fans, and main sounds on/off.

The audio amplifier can produce 1.1 watts of power which is in excess of what most small speakers can handle. The speaker impedance must be 8 ohms or higher. Sound volume is adjustable. Refer to our catalog, web site, or price schedule for available speakers. If space permits, more than one speaker can be utilized as well as an additional 11 watt or 22 watt amplifier (item 671 or 672) but these will also need an additional speaker as well as different wiring.

Sounds produced include user controlled Horn and Bell. Non-user controllable sounds include periodic air system pressure release, brake release and cooling fans sound automatically.

INSTALLATION INSTRUCTIONS: The sound system consists of two printed circuit boards, two 2-pin jumper cables (already installed), two 2-pin connectors with wires and one 3-pin connector with wires. A CHOKE (item 702 or 703 depending on motor power requirements), not included, is required for LocoMatic™ track power installations.

Refer to the drawing on page 2 to familiarize yourself with the connectors and controls on the sound board. Then refer to the specific instruction sheets for the type of installation you intend to make. Before proceeding with the installation read the balance of the instructions on this page carefully so you will be completely familiar with what is required and what sounds you should hear.

The sound circuit board should be mounted so that at minimum, the volume control is accessible either through the frame or via a hatch or a hole in the locomotive body shell. The power board can be mounted anywhere convenient. Be certain that the components on the circuit boards do not come in contact with any metal objects as such contact can destroy them. To mount, degrease the area and then simply remove the coating on the tape. Once mounted they will be quite difficult to remove after a period of time. The speaker should be mounted as per available space bearing in mind that sound reproduction is enhanced when a speaker is properly enclosed and baffled. Be extra careful to insure that none of the speaker wires come into contact with any other metal or wires!

There is an on-board storage capacitor to keep the sound operational during power sequences. If the sequence time is too long, or if the volume is set high, the storage time will be shorter therefore requiring a fast sequence.

If any connections are not done properly, especially the power connections, you will damage the sound system. This type of damage is not covered under any warranty. The sound system is thoroughly tested and inspected before packing to insure proper function. There is a minimum charge of \$40.00 plus s/h for repair.

SOUND INFORMATION:

Cooling Fans (Electric): sounds range from idle (silent - no fans operate when not running) to full fan rpm. With no power to the track and motor the sound system will produce no sounds. As a throttle is advanced to put the locomotive in motion, a brake release will sound (see below) and the electric fans will accelerate to full rpm. With our LocoMatic™ Controller (#755), activating the ALT and F3 buttons simultaneously (and then releasing) will direct the sound system to ramp the fans to

full RPM regardless of track / motor voltage. Activating both buttons again will release the sound system to return to the correct fan setting. This feature allows the simulation of more cooling when sitting after a heavy load run or "pumping air" in a standing train. This full fan RPM feature is available to other users either by a switch or with a remote function. The cooling fans, air pops, and brake release sounds can be turned off without turning off the sound system. This way you can still activate the Horn and Bell. With our LocoMatic™ Controller, use ALT F4 as a push on, push off. For other receivers or stationary, a function or single pole switch will suffice.

BRAKE RELEASE: sound is produced when the throttle is advanced from the idle position, i.e., the e-unit is sequenced from neutral to a running position. This brake release should always precede locomotive movement but will only occur if the locomotive sound is actually at idle. For best realism, you should wait for this sound to play completely before advancing the transformer's voltage to accelerate the locomotive.

HORN: sound is controlled by the HORN button on the transformer or other conventional controlling device. The LocoMatic™ Controller can also be used if connected for it. The HORN will sound as long you are holding the control on. This will allow you to actually play the sound as on a real locomotive.

BELL: sound is controlled by the BELL button on the conventional transformer's remote controller or again by the LocoMatic™ Controller if wired for it. When BELL sound is requested the sound system will first adjust the diesel sound to the RPM required for simultaneous play. When deactivating, the BELL will stop at the end of a ring and the diesel sound will return to the correct notch setting. For all operators, you depress and release the BELL button to turn on the BELL and then again depress and release the button to turn the BELL off. You do have to pause between requests.

SPEAKER MOUNTING: The speaker generally should be mounted so that the sound can actually "get out" of the locomotive. A hole in the floor or fuel tank is acceptable but open grills or a doorway may be a better choice as the sound can exit upward rather than down toward the track. In some cases, particularly with plastic body shells, just mounting the speaker against the shell will be adequate as the vibrations of the shell can enhance the sound. Enclosing the speaker in a chamber will also enhance sound reproduction. A very simple enclosure can be made with a tube. The longer the tube the better the speaker will reproduce low frequency sound which is inherent in electric cooling fans. It is usually best to seal the end of the tube, so there are no air passages to the rear of the speaker, thus creating a sound chamber. By carefully sealing all openings it may be possible to use the entire body shell as a sound chamber. A simple wall behind the speaker may be all that is possible or perhaps all that is needed.

Speakers can be attached with double sided tape, with glue or with "hot melt". Enclosures can be made with plastic, wood, card stock or even metal. Film cans or medicine bottles make excellent sound chamber enclosures for small diameter speakers. Attachment with "hot melt" is advantageous as the "hot melt" can be used as a gap filler when creating an enclosure.

A second speaker, wired in series with the main speaker, can also enhance sound quality and will permit a higher volume without damage to the individual speakers. A tube with a speaker at each end or a speaker in a doorway at each end of a body shell is an excellent approach. A four speaker approach will yield the highest volume while still maintaining the 8 ohm minimum requirement. Drawings for this are included in the speaker instructions.

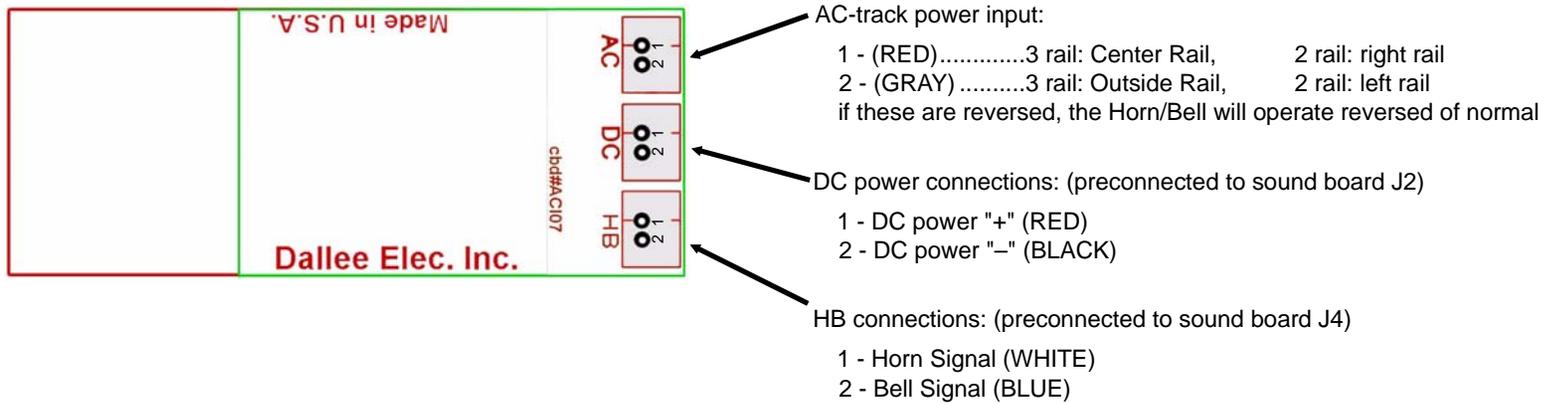
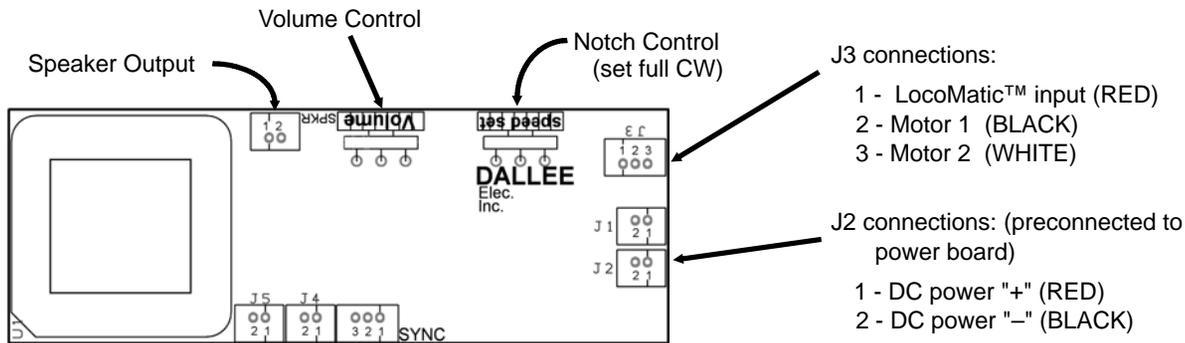
Speaker enclosure is an art and experimentation is definitely in order for your installation so as to gain the maximum benefit of the superb sound quality available in this sound system.

GENERAL OPERATING INFORMATION:

VOLUME ADJUSTMENT: should be set as desired for your application. Please remember that the amplifier can produce more power than a small speaker can handle and that the sound will be louder if the speaker is properly enclosed and baffled.

NOTCH ADJUSTMENT: this control serves no real function for the electric's sound system but should be set full CW for best results.

Connections & Locations



Common Horn signals	
<u>SOUND</u>	<u>INDICATION</u>
short.....	apply brakes, stop
2-long.....	release brakes, proceed
long, 3-short.....	flagman protect rear of train
4 or 5 long.....	recall flagman
2-short.....	acknowledgment
3-short.....	back up movement
4-short.....	call for signals
short, long.....	inspect train line for leak or brakes sticking
2-long, short.....	approaching meet or wait point
2-long, short, long.....	approaching grade crossings
continuous long.....	approaching stations or junctions
successive shorts.....	alarm for something on track

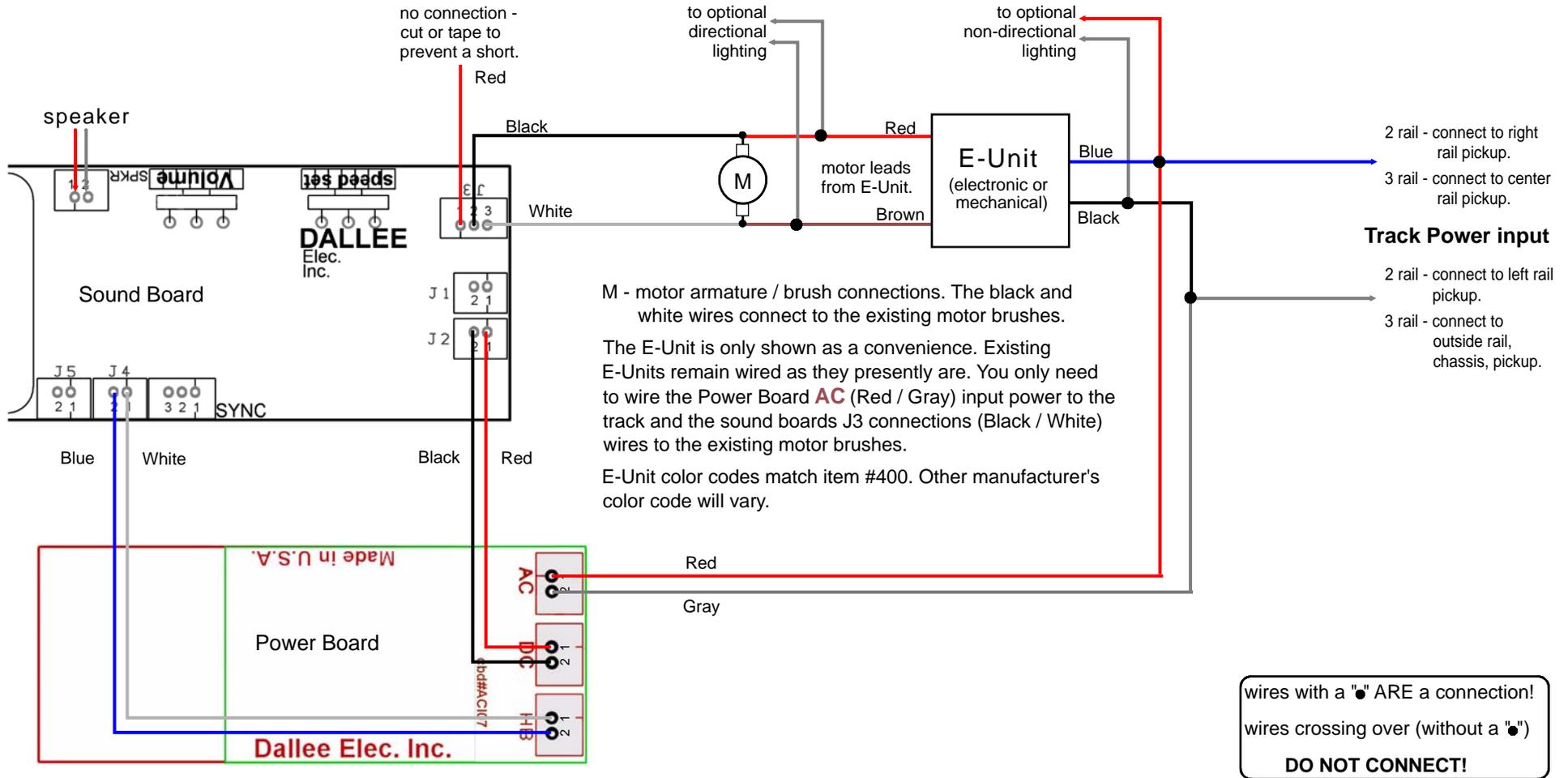
SPECIFIC INSTRUCTION SHEETS	
<u>PAGE</u>	<u>INSTALLATION TYPE</u>
3.....	Conventional AC
4.....	using LocoMatic™ Controller
5.....	sample speaker installation

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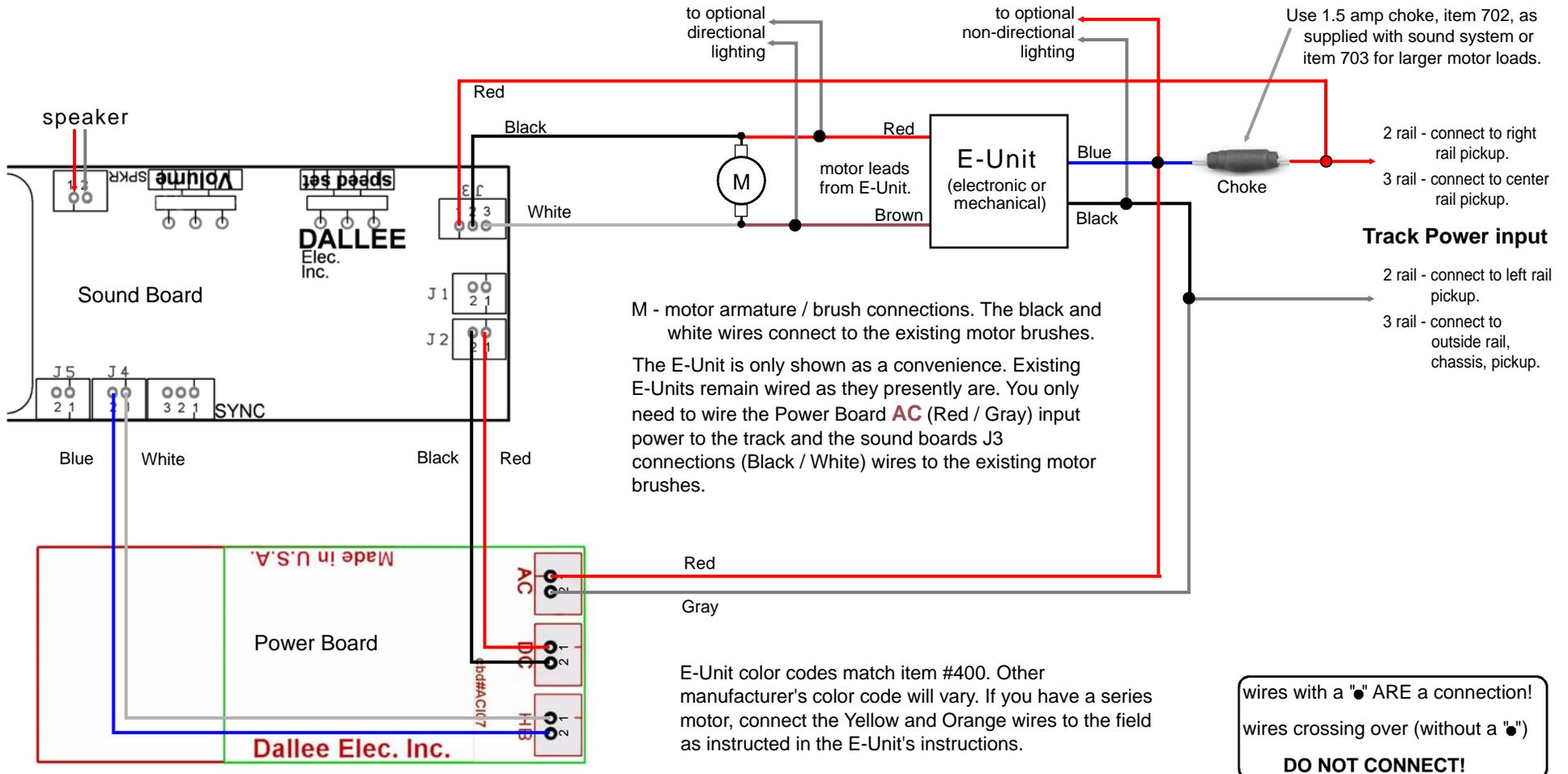
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AC track power installation using standard Horn/Bell operation



AC track power installation using standard Horn/Bell or DALLEE controller #755



If you do not want the sound system to operate from the standard Horn/Bell signals, then disconnect the HB - J4 wire harness.

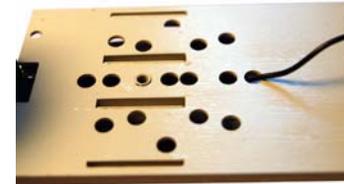
Sample Speaker Installations

For open body shells it is necessary to make a speaker baffle instead of using the body for a baffle. In both cases, the backside of the speaker is closed off.

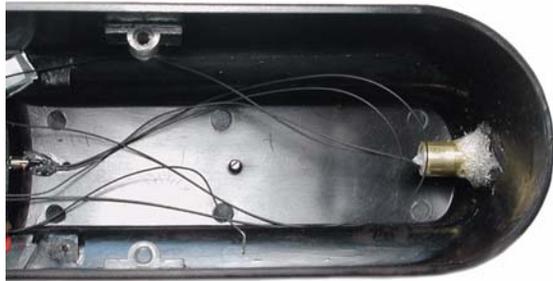


When mounting the sound unit in an open chassis (car or locomotive) area with a power feed entering under the speaker requires raising the speaker from the chassis floor. This is easily accomplished by adding item #388, 1/8" thick double sided tape, to the rim of the speaker. As you can see, only a small amount is needed. This creates an air tightness from the front side of the speaker which is required for a good baffle. In this case, the entire body shell is used for the speaker baffle which is why nothing is required on the back side of the speaker.

In the case of a long body, such as the GG1, you can place four speakers inside the shell. As shown below, the body shell is used as the backside of the baffle. The more speakers, the better the sound (especially when using small speakers as in model locomotives. Four speakers make an ideal configuration.



Body shell before speaker installation.



DO NOT allow the speaker wires to contact ANYTHING else INCLUDING the chassis of the engine or the speaker frame. **This will damage the sound unit and voids the warranty.**

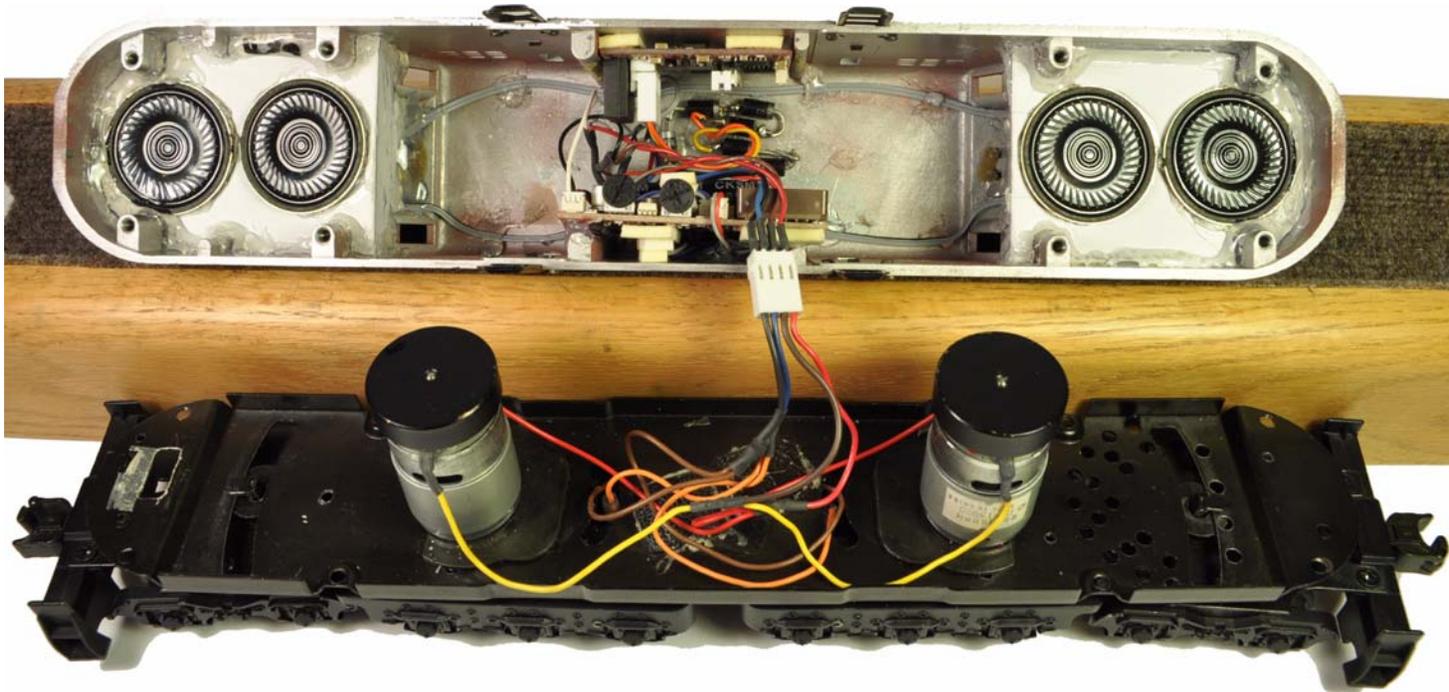


Body shell after speaker installation. Speakers are mounted on a card stock formed shelf and then hot melted in place. Air space is required between the front of the speakers and the body bottom but the back of the speaker enclosure is completely sealed to make a good enclosure! This type of installation yields more sound per watt than one single speaker.



You can also find on our web site, under "Product Instructions, Application & Technical Notes" an application note showing how to install four 1.5" speakers into an "O" gauge GG-1. This is listed under the heading of "APPLICATION NOTES FOR SOUND SYSTEMS" and contains the link heading of "4-Speaker Sound Installation in an MTH GG-1".

4 speaker Sound Installation in an MTH GG-1



Find this and other application notes on our web site (www.dallee.com). Listed under the main heading of "Product Instructions, Application & Technical Notes", sub heading "APPLICATION NOTES FOR SOUND SYSTEMS". The link title is "4-Speaker Sound Installation in an MTH GG-1" (http://www.dallee.com/PDFs/Application%20Notes/AN-ACsnd-4spkr-400_GG1.pdf). Templates and wiring instructions is included. Also shown is wiring up directional headlights and marker lights.