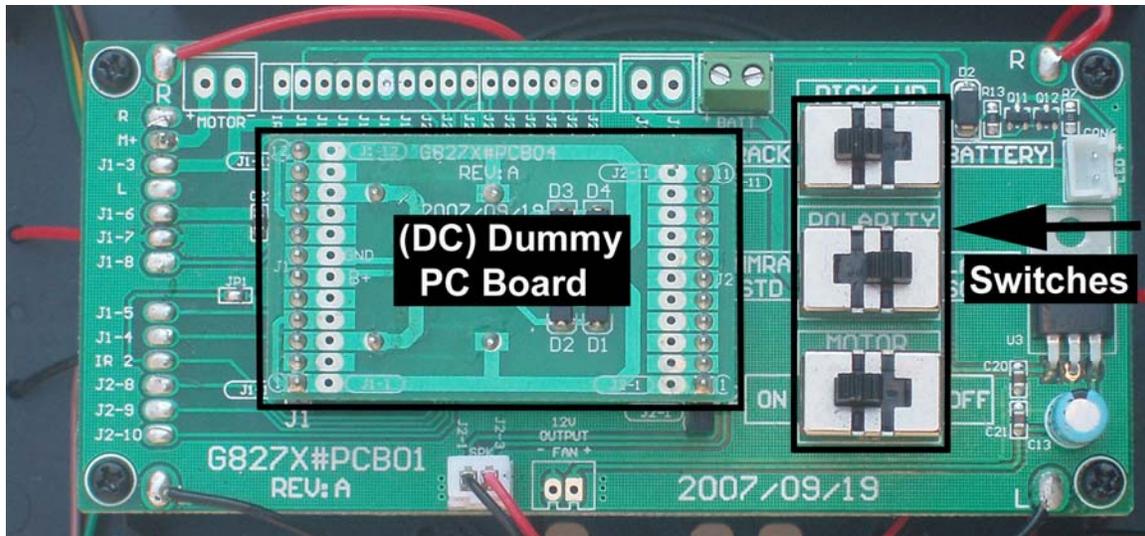


## Dallee Steam Sound Install for Bachmann's K27 Large Scale Steam Locomotive



Dallee Electronics manufactures a variety of sound systems for DC and DCC operation for Large Scale.

The following installation instructions are provided to gain the full benefits of the socket in the K27 when used with the Dallee sound board in DC mode.

The first step is to install a speaker. The tender is designed to have a large 3 inch speaker installed under the main circuit board. Removing the 4 screws holding the board and moving it to one side provides easy access to the speaker area. Remove the 4 speaker placement screws, place the speaker in the space provided and reinstall the speaker holding screws. Next solder the Bachmann K27 speaker cable to the speaker, and reinstall the screws on the main board the main board .

Dallee provides several suitable 3" 8 Ohm speakers for this purpose #658 or #668. If using the 2.6" speaker Item # 659, then the edge around the speaker needs to be filled in to prevent sound cancellation.

If the Dallee sound board is to be used in conjunction with a DCC decoder or RC control, replace the (DC) Dummy PC Board with a plug and play decoder motor decoder of choice and install the Dallee sound board wires to the solder pads on the side of the main PC board in the tender.

The following describes a DC install for the Dallee Steam sound board in the K-27 using the (DC) Dummy PC Board. Either the solder pads on the engineers' side of the tender or the (DC) Dummy PC Board can be used to attach after market electronics. The (DC)

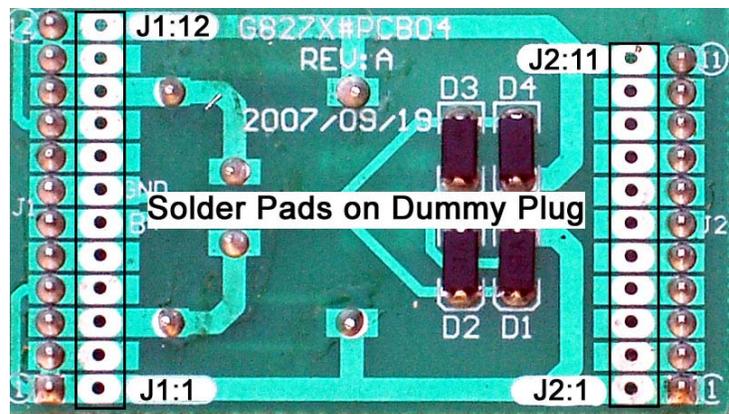
Dummy PC Board is being used for this install since it allows the modeler to perform the installation at the workbench.

The first step is to remove the (DC) Dummy PC Board from the tender. All of the following connection points refer to the solder connections on the (DC) Dummy PC Board



To install the Dallee Steam Sound decoder, connect the Dallee AC input J1 leads to the J1:1-12 solder pads on the (DC) Dummy PC Board. The gray wire goes to **J1:1** and the red wire to **J1:12**.

Connect the speaker wires to J2-1:3. Connect the red wire to **J2:1** and the gray wire to the **J2:3** connections.



If you wish to use the Dallee automatic chuff synchronization connect the Black and White wires of the J3 connector to the J1:2-11 pins the black wire going to **J1:2** and the white wire to **J1:11**. If you wish to use the locomotives optical sensors you do not need to make these connections.

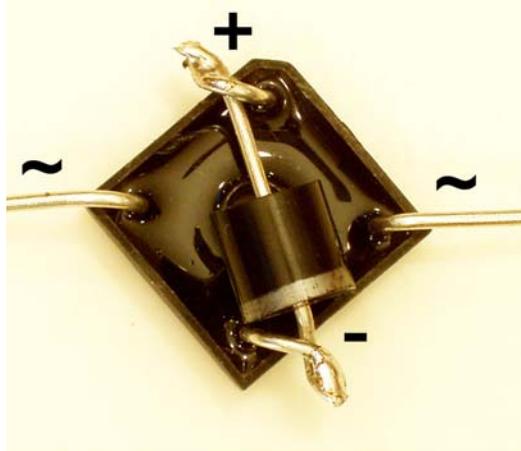
If you want to use the locomotive's internal optical chuff control instead of the automatic chuff the following additional steps are needed.



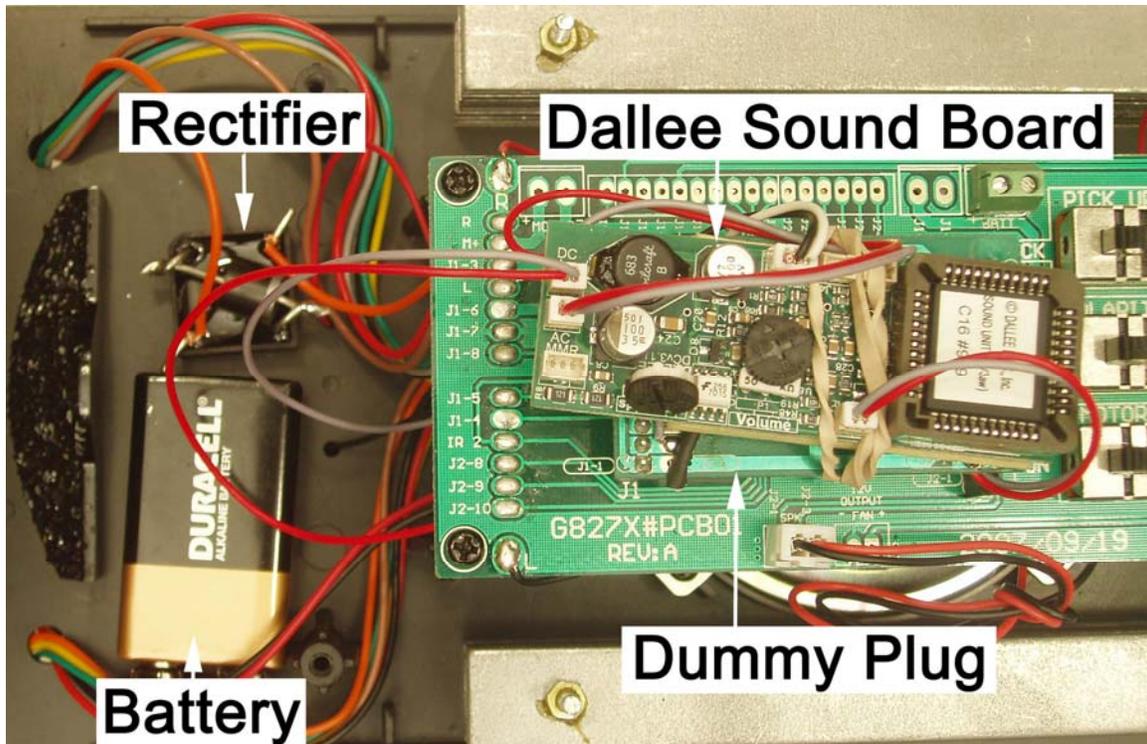
- 1) Install a NPN transistor on the removable K27 (DC) Dummy PC Board. Almost any NPN transistor such as a 2N3904, or 2N2222 will work. Radio shack has numerous NPN transistors any of which can be used. Transistors have three pins. One is Base, One is the Collector and the third is the Emitter. Refer to the package your transistor came in to determine which pin is which.
- 2) Insert the base pin of the transistor to the K27 chuff output (**J1:5**), and the Emitter pin of the transistor in the ground connection (**J1:7**).
- 3) Solder the Dallee SYNC **Black** wire (or Gray wire from J2 connector) to Emitter pin of the transistor installed in the step above. This step makes the ground common between the locomotive and the sound board.
- 4) Solder the Dallee SYNC **White** wire to the collector pin on the transistor as shown in the photo. Covering the wire and with heat shrink tubing ensures no short can occur in the future.
- 5) The default mode is 4 chuffs per revolution, for 2 chuffs per revolution remove the 2/4 chuff solder jumper on the main board.

When used for DC operations, the track voltage at slow speeds is insufficient to power the sound board. For best effects in slow speed DC operation, a 9 volt or rechargeable battery backup should be added to the Dallee sound board as per their instructions.

The motor and gear train in the K27 is a high efficiency design and will start before there is sufficient voltage to light the headlights and activate the chuff sensors. To ensure the lights and chuff circuits are activated before the motor begins to move, you need to install a 3 diode drop in one motor lead. The easiest way to do this is to use a Rectifier and a Diode as shown in the photo above. 6 amp or greater components should be used for this. A rectifier has 4 pins. Two are labeled ~, the third is labeled + and the fourth is labeled -. Install a diode between the + and - leads with the diode band facing the - lead.



Install the rectifier in one motor lead in the K27. The easiest way to do this is to cut the **orange motor M+ wire** and connect one end of the wire to each ~ lead as shown in the photo below. The photo also shows the Dallee Steam sound board installed using the dummy socket reinstalled in the socket on the main PC board in the tender.



To connect the Bell, Whistle, and optional battery backup for the Dallee Steam sound board please refer to the instructions that come with your Dallee sound board.

For more information on Dallee sound products please contact:

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