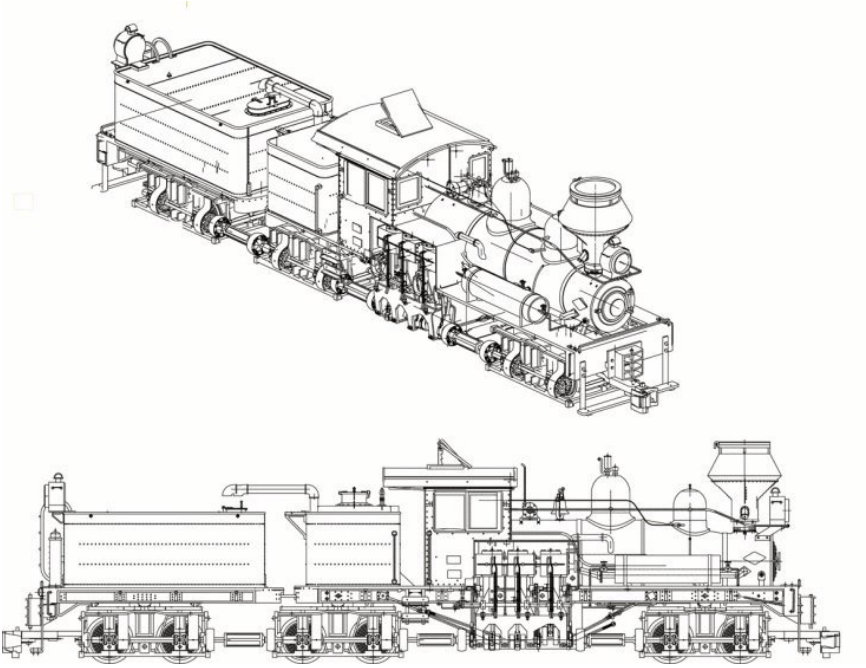
PHOENIX SOUND SYSTEMS

INSTALLATION NOTE

Bachmann 3 Truck Shay



Overview

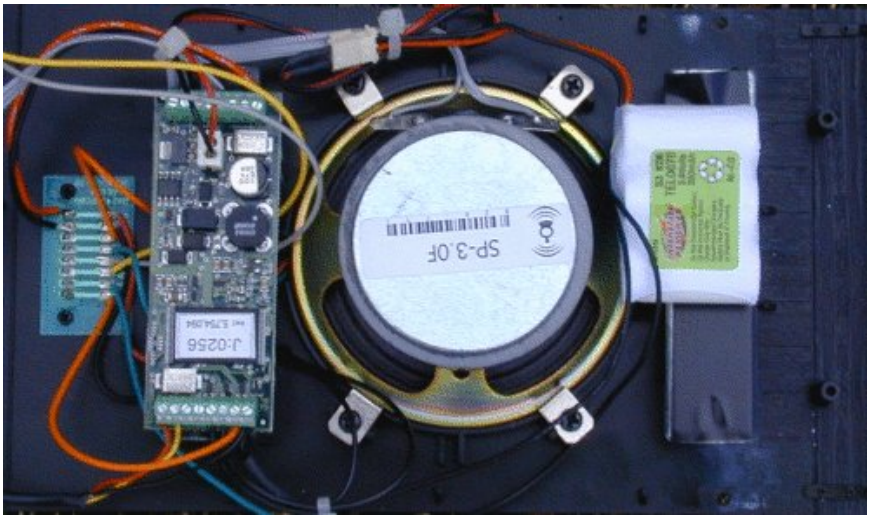
Installation of a BigSound™ in the 55 Ton 3 Truck Shay is straight forward. Bachmann has done most of the difficult work for you.

HOWEVER SOME SOLDERING WILL BE REQUIRED.

The entire system can easily be installed into the trailing car, but you will need to connect a few wires together in the bunker of the engine itself. We have seen several ways to perform this installation. We will show you a straight and simple procedure, as well as offering a few tips and variations along the way for the more adventurous modelers. Pictured below is what a basic finished installation will look like.

Getting Inside The Tender

The bunker is held on by a pair of Phillips head screws located underneath towards the rear of the tender. Once removed, you can wiggle the bunker free, being careful of the tabs which secure the front. The wires from the rear light are long enough that you may comfortably set the bunker aside while you work on the rest of the installation.



Basic installation completed with all components in place, 2K2 system shown.

Speaker Installation

Basic

We recommend securing the wires that come through the speaker grill from the truck by using a wire tie or some good glue. The wires will not interfere with the speaker cone if fastened securely.

Loosen or remove the four hold down tabs. Place the speaker in the opening and tighten the tabs, securing the speaker in place.

Baffled Variant

At this point you may wish to baffle the speaker to obtain better sound output. There is a relatively easy way to do this. You will need the back foam insert from the Phoenix packaging. You will notice that there is a key hole cut into the foam which fits nicely around the magnet of the speaker. Place the opening in the foam around the speaker. Trim the width to that of the inside of the bunker. Trim the length to the outside of the two weights on either side of the speaker. Do not cover the Bachmann circuit board - we will be working on this later. You can see in the picture on page 2 that the sound board and battery are mounted on these weights in the basic install. Do not secure the foam at this point. We will secure this at the same time we mount the sound board and battery.

Access Jack and Volume Switch Installation

Basic

The basic mounting option for the volume switch and access jack requires you to drill a hole for each. The correct size hole for the access jack is 9/64”. The volume switch requires a ¼” hole.

The volume switch should be mounted so that it protrudes through the floor of the tender, off to a side where it will not interfere with the truck.

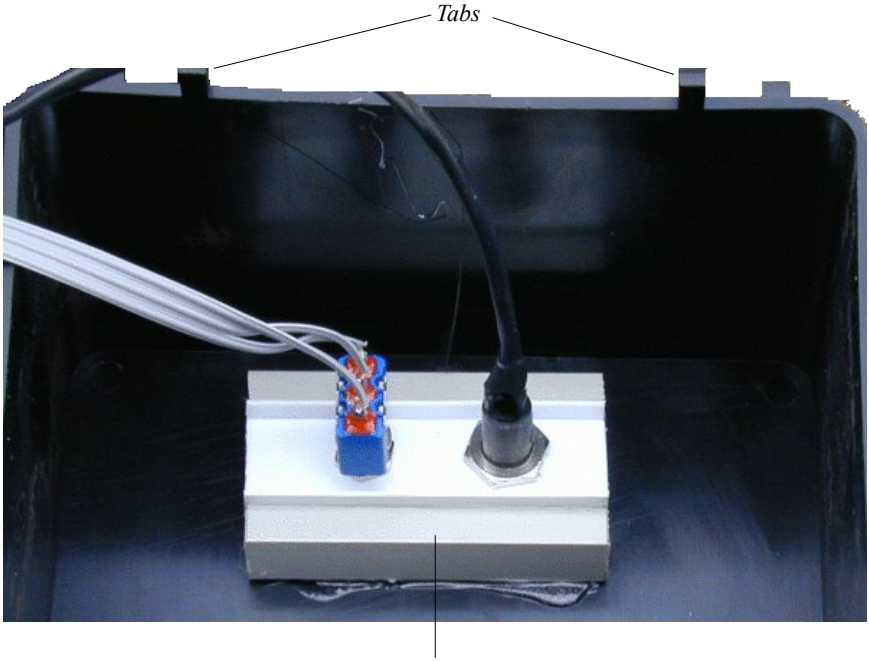
The access jack may also be mounted through the floor of the tender or through a wall if you choose.

However, we prefer another installation location for the jack and switch, although it entails a bit more work.

Mounting Variant

The front of the tender has a hatch that opens in the top. This opening is large enough to accommodate both the jack and the switch handle. Unfortunately, there is nothing but empty space around this hatch. To install the jack and/or switch in this location you will need to fabricate a mounting bracket. The picture below shows the bracket we made to hold the switch and jack in place. A relatively simple bracket can be constructed from a piece of square plastic tubing and secured in place with glue or epoxy.

Make sure that the mounting plane of your bracket is located far enough down from the surface so that the hatch can still close without being held open by the volume switch toggle.



Mounting bracket underneath hatch, secured in place with glue

Feed the wires for the switches so they enter the wiring trough near the bolster and through the floor into the tender.

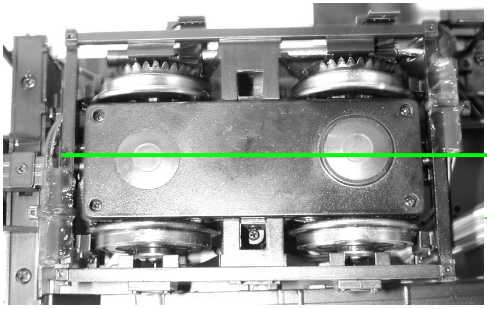
Whistle and Bell Reed Switch Installation

SKIP THIS SECTION IF YOU DO NOT PLAN TO USE REED SWITCHES

Flip the tender over on a piece of foam or other soft material so that you may work on the underside of the tender.

Fasten a reed switch to the leading crossbar of the truck. Fasten the second to the trailing crossbar. Silicone adhesive works well for this. The wires from the switches should point towards the center of the truck. The end of the switch with the wires should align with the centerline of the truck. The picture shows the reed switch on the forward beam pointing to the engineers side - this will be the whistle switch. The trailing reed points towards the fireman side (left when going forward) - this will be the bell trigger.

Feed the wires for the switches so they enter the wiring trough near the bolster and through the floor into the tender.



Wiring the Chuff Contacts to the Tender

Bachmann terminates the chuff contacts for this particular Shay in the locomotive bunker rather than run them all the way into the trailing car. The contacts are the two blue wires which are loose in the bunker. They can easily be connected to the wires - red and white - that Bachmann labels as speaker. You can clip the wires from the circuit board and tie them to the blue chuff leads. You may solder the chuff leads to the red and white wires where they connect to the circuit board if you prefer. You have now routed the chuff contacts into the trailing car where they appear on as the orange and green speaker wires. We don't know why they are red and white in the loco and orange and green in the tender...

Mounting the Sound Board and Battery

We feel the best location to mount the sound board and battery is on the weights on either side of the speaker. If you are not using the baffle option, run a piece of PVC (electrical) tape along the top of each weight to insulate the board and battery against the possibility of an electrical short which can damage the system. For the 2K2, place one of the adhesive foam squares on the microprocessor (the large chip on the bottom of the sound board) and secure it to the rear weight, centering the board on the weight. Place another square on the battery and secure it to the other weight - making sure it is in a place where it can still plug into the sound board. The PB9 and its battery and the P5 can be fastened with foam tape as well.

Speaker Baffle Variant

Place a single adhesive foam square on the center of each weight and slip the foam baffle into place with the key hole around the speaker.

Secure the sound board and battery (2K2 or PB9) to the foam baffle with the remaining two pieces of adhesive foam tape provided with your kit. The foam baffle also provides excellent insulation against electrical gremlins.

Wiring the System

BigSound™ 2K2

Power

Solder a wire to The Bachmann circuit board (RED) and connect it to Phoenix #1; solder a second wire to the Bachmann circuit board (BLACK) and connect it to Phoenix #2. Reverse the wires into Phoenix #1 & #2 if the directional toots do not match the direction of travel.

Chuff Contacts

Run the ORANGE wire from the Bachmann circuit board to Phoenix #15. Connect the GREEN wire - next to the orange - on the Bachmann circuit board to Phoenix #16.

Access Jack

Red to Phoenix #9, Yellow to Phoenix #10 and Black to Phoenix #16.

Volume Switch

Feed the ribbon cable into Phoenix #4, #5 & #6 (center lead to #5).

Reed Switches

Connect one lead from each switch to Phoenix #16. The whistle switch

connects to Phoenix #14 and the Bell to #13.

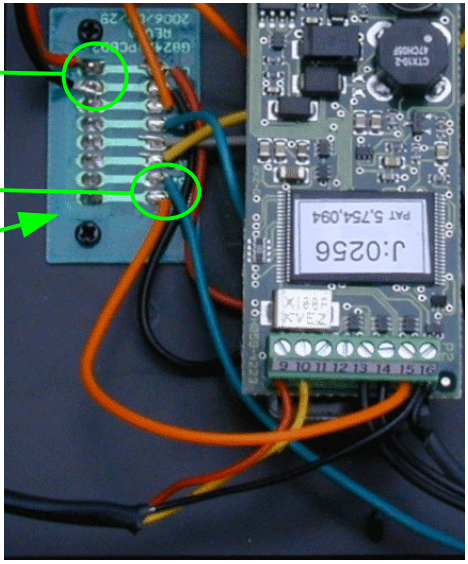
Battery

Plug in the battery.

Power Connections:
to Phoenix 1 & 2 You may solder on to the empty pads.

Chuff Connections:
to Phoenix 15 & 16

Bachmann Circuit Board



BigSound™ P5

Power

Connect the power leads directly to your track pick ups, in parallel with the motor decoder.

Chuff Contacts and Volume Switch

Run the ORANGE wire from the Bachmann circuit board to the Brown lead on Phoenix C2 connector (also has the volume switch). Connect the GREEN wire - next to the orange - on the Bachmann circuit board to the Blue lead on Phoenix C2 connector. Plug connector with switch and contacts into C2.

Access Jack

Plug into C3.

BigSound™ PB9

Power

Solder a wire to The Bachmann circuit board (RED) and connect it to Phoenix #1; solder a second wire to the Bachmann circuit board (BLACK) and

connect it to Phoenix #2. Reverse the wires into Phoenix #1 & #2 if the directional toots do not match the direction of travel.

Chuff Contacts

Run the ORANGE wire from the Bachmann circuit board to Phoenix #10. Connect the GREEN wire - next to the orange - on the Bachmann circuit board to Phoenix #11.

Access Jack

Plug into socket.

Volume Switch

Feed the ribbon cable into Phoenix #3, 4 & 5 (center lead to #4).

Reed Switches

Connect one lead from each switch to Phoenix #11. The whistle switch connects to Phoenix #9 and the Bell to #8.

Battery

Plug in the battery.

Testing

2K2 & PB9

Put the Shay on a track, set the motor polarity switch to the center position (motor off) and apply power to the track. The sound system should come on when you get to about a quarter throttle. When the battery is charged, the sound system will come on almost immediately.

At this point you may want to let the Shay sit and charge the battery so you can hear the idle sounds. You can turn the volume up or down as you prefer, without affecting battery charging. Charging will start at about 5 track volts, and is optimum at 8 volts.

FULL THROTTLE WILL ACTUALLY TAKE LONGER TO CHARGE THE BATTERY.

If you decide to run the Shay without charging the battery, it will take a few laps before the battery will be able to give you sound when your track voltage falls below 5 volts.

P5

Put the Shay on a track and apply power to the track. The sound system should come on. Use the function buttons on your DCC controller to trigger various functions and ensure DCC is being received.