Bachmann C-19

Basic DC Installation

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Overview

Installation of a BigSound™ in the Bachmann C-19 is relatively straight forward once you understand the basics of Bachmann's circuit board layout.

HOWEVER SOME SOLDERING WILL BE REQUIRED.

The entire system can easily be installed into the tender. 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.

Getting Inside The Tender

Before removing the tender shell, remove the coal load to disconnect the rear light. The wires from the rear light can be easily unplugged from the circuit board so that you may set the entire shell aside while you work on the installation.

Disconnect rear light here.
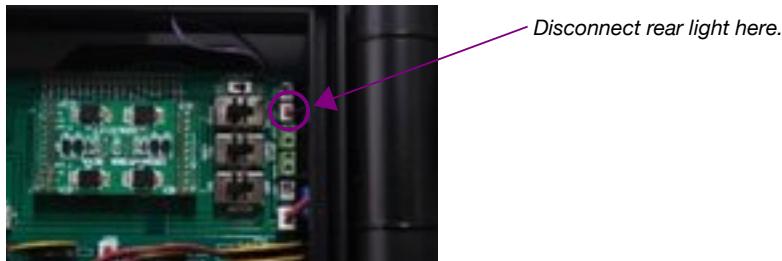
The tender shell is held on by three Phillips head screws accessible from the top of the tender. Once removed, you can wiggle the tender free. For further information see the Bachmann documentation on opening the tender.

Speaker Installation

Basic

Remove the 4 screws holding the main Bachmann circuit board in place. Gently lift the circuit board off and place it to the side. If you like you may disconnect the wires from the tender plugged into the circuit board to have the freedom of an unconnected circuit board – just remember – or better yet note which connectors plug into which socket. Place the speaker in the opening and tighten the tabs, securing the speaker in place. Remount the C-19's circuit board in its original position above the speaker, making sure you have left the speaker leads easily accessible to connect to the sound system later.

Tall speaker variant

While the low profile speaker we provide with the C-19 kit will fit with no issues you may wish to use our standard profile 3" speaker instead as it tends to provide a deeper, fuller sound. To use this speaker you will need to raise the Bachmann circuit board. Luckily Bachmann has considered this option and includes 4 plastic risers and longer screws to elevate the circuit board and accommodate a taller speaker.

You will mount the speaker as above, but when replacing the circuit board make sure you have placed the risers on the original mounting posts.

BE ADVISED, THIS MAY NOT BE A VIABLE OPTION IF YOU PLAN ON PLUGGING ANYTHING OTHER THAN THE DUMMY BOARD INTO THE BACHMANN SOCKET AS THE CIRCUIT BOARD IS ELEVATED QUITE A BIT CLOSER TO THE COAL LOAD ONCE THE TENDER IS REASSMBLED.

Access Jack and Volume Switch Installation

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 19/64". The volume switch requires a ¼" hole.

There are two handles near the coal gate of the tender which can be removed providing convenient, unobtrusive and yet accessible mounting for the access jack and volume switch. Make sure when you mount the volume switch that the direction of travel for the switch is front-to-back, in relation to the locomotive, rather than side-to-side. If you mount the switch so that it throws from one side to the other it will be difficult to operate when fully assembled and in use.
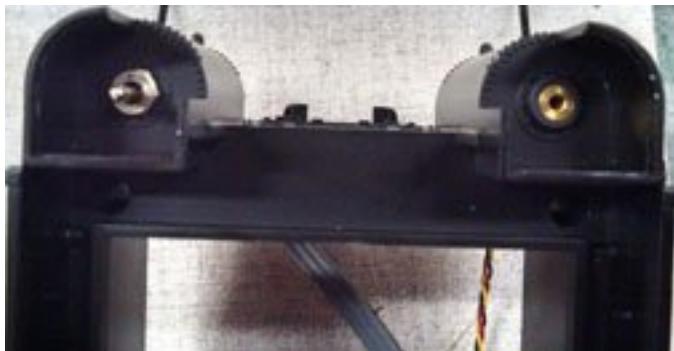
Whistle and Bell Reed Switch Installation

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 reed switch pointing to the engineers side will be the whistle switch. The reed pointing towards the fireman side (left when going forward) will be the bell trigger.

Feed the wires for the switches so they enter the slots on the floor of the tender.

Wiring the Sound Board

The power and chuff sensor output to the sound board will require soldering and can be made either from the Bachmann plug in DC Dummy board or from solder connections on the side of the main circuit board. The connections we show are made to the main circuit board.

Along the edge of the main circuit board, adjacent to the Bachmann socket containing the Dummy board, are plated holes for soldering wire connections. These are labeled as to their purpose. We are interested in the positions marked "Right W", "Left W" and "Sensor"
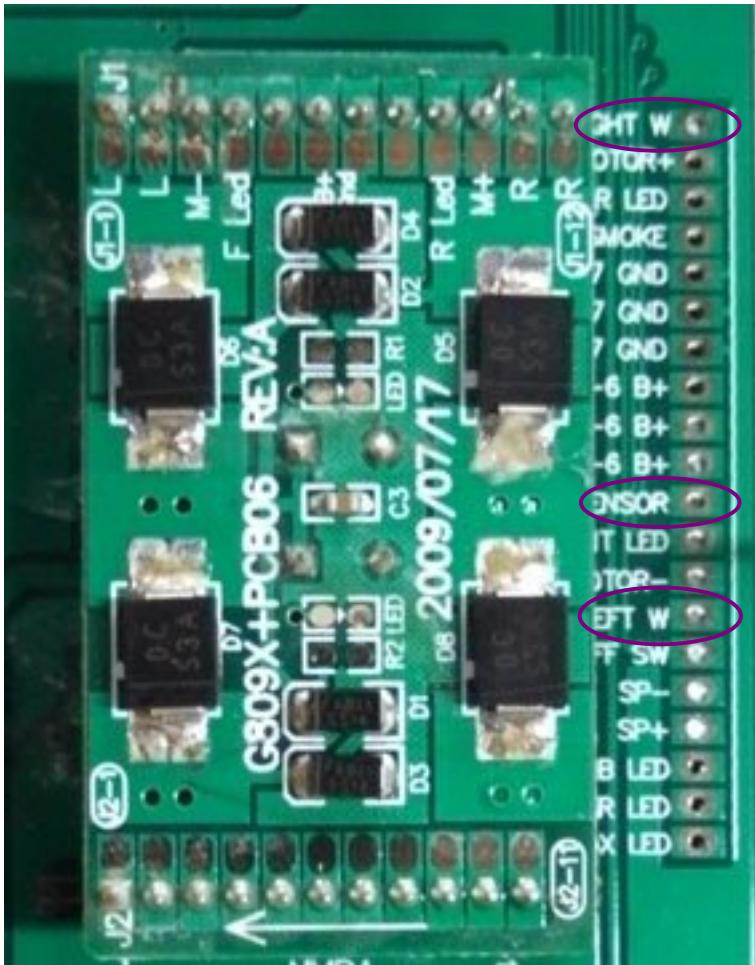
The "Left W" and "Right W" are for power, "Sensor" is the optical chuff.

Powering the Sound Board

The 2K2, PB9, PB11 and PB11v6

Solder a length of wire to the "Right W" connection point; this is the right side rail pickups. Connect the other end of the wire to Terminal 1 of the sound board.

Solder a length of wire to the "Left W" connection on the circuit board; this is the left hand rail pickups. The other end of this wire connects to Terminal 2 on the sound board.

The Optical Chuff Sensor

SKIP THIS SECTION IF YOU PLAN TO USE A REED SWITCH OR SPEED FROM MOTOR VOLTAGE.

Powering the Sensor

Bachmann provides optical chuff sensors on this locomotive, however, they do not function at low track voltage. Bachmann has been kind enough to provide an auxiliary power input for these chuff sensors, so that they can be fed power while the track voltage is low or off, which is a 2 position screw terminal labeled "6V input" on rear of the Bachmann main circuit board, just behind the 3 switches for motor, power and polarity.

POLARITY IS MARKED ON THE 6V INPUT AND SHOULD BE FOLLOWED

The Phoenix sound board has an internal 5V supply which can be wired to the 6V chuff sensor power input on the Bachmann board. From the 2K2 connect Terminal 15 to "-" and Terminal 9 to "+". From the PB9, PB11 or PB11v6 connect Terminal 3 to "-" and Terminal 5 to "+".

Connecting the Sensor

The output of the chuff sensor connects to the chuff input of the sound board. You will need to solder a wire to the point marked "Sensor" on the Bachmann circuit board. The other end will connect to Terminal 15 on the 2K2, Terminal 10 on the PB9, Terminal 11 on the PB11 or Terminal 12 on the PB11v6.

The Volume Switch, Access Jack and Speaker

You may disconnect and discard the black and purple wires from "CON5", located right next to the socket for the rear light. These wires are not used as we connect the speaker directly to the sound board, not through the Bachmann circuit board.

2K2

Connect the volume switch to Terminals 4, 5 & 6; make sure the center wire on the ribbon cable goes into Terminal 5.

Connect the speaker leads to Terminals 7 & 8.

Wire the access jack as follows: Red to Terminal 9, Yellow to Terminal10 and Black to Terminal 15.

PB9/PB11/PB11v6

Connect the volume switch to Terminals 3, 4 & 5; make sure the center wire on the ribbon cable goes into Terminal 4.

The access jack plugs into its socket on the sound board.

Plug one end of the speaker harness into the connector on the speaker and the other end into the speaker terminals on the sound board.

Connecting the Reed Switches

One lead from each switch will connect to the sound board trigger ground; Terminal 16 on a 2K2, Terminal 11 on a PB9, Terminal 12 on a PB11 and either Terminal 13 or 14 on a PB11v6.

The other lead for the whistle reed will connect to Terminal 14 on the 2K2, Terminal 9 on the PB9, Terminal 10 on the PB11 or Terminal 11 on the PB11v6.

The other lead for the bell reed will connect to Terminal 13 on the 2K2, Terminal 8 on the PB9, Terminal 9 on the PB11 or Terminal 10 on the PB11v6.

You now should have something resembling the picture below.
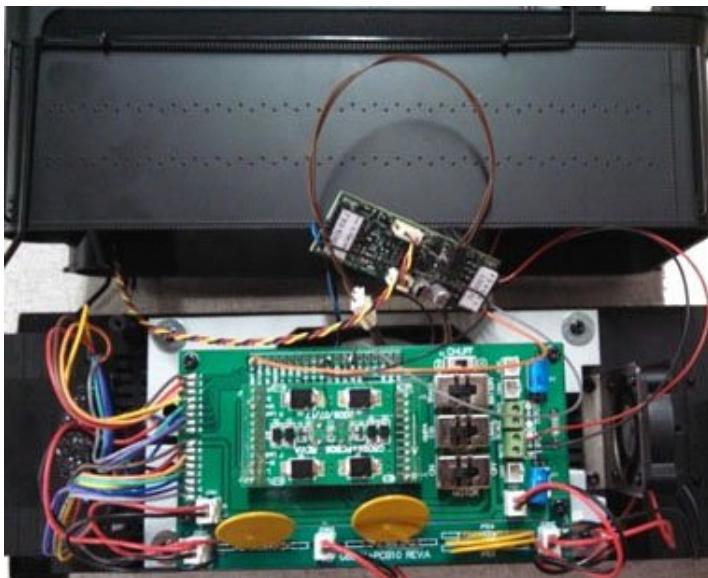
Mounting the Sound Board and Battery

     We feel one of the best locations to mount the sound board and battery is on the inside wall of the tender. Feel free to mount the board and battery where you would like. You may use the double sided foam tape squares included with the kit to mount the pieces. One square is typically enough to hold the weight of the battery or the sound board.

Reassembly and Testing

     Once you have reassembled the tender – don't forget to reconnect the rear light! – you may wish to charge the battery and test the system. Simply place the locomotive and tender on the track and run it for awhile. You should hear all the typical sounds of the locomotive if everything is working properly.

     To charge the battery leave the locomotive and tender on the track, flip the "Motor" switch in the tender to "OFF" and turn up your transformer so there is between 8-12V on the rails. 30 minutes should charge your battery for normal operation.

     You should now have a noisy C-19. Happy modeling!