

## **INSTALLING SOUND IN AN ATLAS RS-3**

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For those of you that have converted your layouts to DCC, and want sound in your engines, you may have discovered that installing sound is not as difficult or mysterious as it may appear. In fact, for diesels, the whole trick is finding room under the shell to locate a sound decoder and a speaker. For high hood diesels, this is usually not that hard, because there is usually a fair amount of free space under the shell. However, I model the Long Island Rail Road (LIRR) around 1964, and RS-3 diesels were a large part of the LIRR diesel roster. These engines pose a bit of a challenge because the shell snugly fits around the motor and flywheels. However, loud, clear diesel sound can be installed in these engines relatively easily.

I started with an Atlas RS-3 diesel. The first step is to remove the railings and shell, exposing the motor and flywheels and the circuit board that sits on top of the motor. Carefully remove the circuit board by clipping the wires that come from the front and rear wheel pickups at the circuit board. Carefully bend out of the way the copper straps from the motor that wrap on top of the circuit board. The circuit board can now be removed by gently pushing forward on one of the two plastic clips that hold the circuit board to the engine and lifting up on the end of the circuit board. Once one end of the board is free, the other end should easily lift off.

Now, carefully cut back the copper strap coming from the side of the motor, so only a short stub is left with sufficient area onto which to solder a wire. Solder a short length of fairly fine wire (#22 or smaller) to the copper stub on the side of the motor. Similarly, clip off the excess copper strap on the top of the motor, and solder a short length of wire to the remaining copper stub (see figure 1). As a precaution, before I install the sound decoder board, I usually cut a small piece of electrical tape and put it over the motor and top motor terminal, just to better ensure no shorts if somehow the circuit board were to come in contact with the motor.

### **Installing the Sound Decoder**

Soundtraxx makes a sound decoder for Atlas engines that has the ALCO locomotive sound. It is model DSD-AT100LC820042. Install the sound decoder on the engine by snapping it into place over the two plastic clips that held the original circuit board in place. Make sure you locate the end of the decoder with the speaker terminals on the cab end of the engine (the instruction sheet that comes with the sound decoder will show where on the sound decoder board the speaker terminals are).

Carefully strip off a short piece of insulation from the ends of each of the four pickup wires coming from the front and rear trucks. Using a small soldering gun with a pencil tip, carefully solder the pickup wires coming from the front and rear trucks to the two outer terminals on each end of the sound decoder board. Now, on the side of the sound decoder board, right about in the center, there are two solder terminals. Solder the two wires that go to the motor to these terminals. It doesn't matter which wire goes to which terminal.

At this point, if you want to check out the decoder portion of the sound card, you can put the engine on your layout, program it like you would any decoder-equipped engine, and make sure it works. The engine should respond like any decoder-equipped engine.

## **Installing the Directional Lights**

The Atlas RS-3's have front and rear lights that are made from pieces of clear plastic, and act as light pipes" that run from the headlight to the center of the engine. As manufactured, Atlas engines had a single light in the center of the circuit board that, when lit, transmits light to the headlight via the plastic light pipes. Since the Soundtraxx sound decoder provides for directional lighting, I found it best to cut off the headlight section of each light pipe very close to the end (about 1/8' or less) and then glue the headlight portion into place in the shell. I then glued small 12 volt dc bulbs in front of each headlight (Miniatronics makes a small, 12 volt dc 30 milliamp bulb that works fine for this purpose). Because the older Atlas RS-3's come with weights that fit into ends of the shell, you may need to trim the weights with a file as necessary to make sure they don't interfere with the lights.

## **Installing the Speaker and Hooking up the Sound**

I have experimented with several different speakers, such as Soundtraxx, Miniatronics, and TDS. I have found that the TDS Mini Oval Speaker and the TDS Mini oval speaker enclosure give, by far, the best and loudest sound. The speaker and baffle enclosure are available from Tony's Train Exchange (800-978-3472; [www.tonystrains.com](http://www.tonystrains.com)) and are reasonably priced (speaker is \$8.95 and the baffle enclosure is \$6.50). The speaker snaps into the baffle enclosure. However, you will need to file a groove in the baffle enclosure at one end in order for the speaker wires to come out. Solder two wires to the terminals on the back of the speaker and then snap the speaker into place in the baffle (see figure 2). Note the speaker comes with a protective cover over it. Be sure to remove it before installing the speaker! Now carefully slide the speaker and baffle assembly into the roof of the RS-3 cab (see figure 3). I hold the speaker and baffle in place by putting a couple of small drops of ACC where the baffle and the cab touch.

## **Putting it All Together**

Before putting the cab back on the shell, the shell must be trimmed out so the speaker baffle will not interfere with the shell, and allow the cab to slide completely over and into position on the shell. Figure 4 shows how I trimmed out the shell where the cab slides over it so the speaker baffle would not hit the shell. Once you have put the cab with the speaker installed back on the shell, it is now time to connect the lights and the speaker. The wire leads from the front and rear lights are soldered to the two inner terminals on each end of the sound decoder board. On the end of the sound decoder board just behind the four end terminals, are two small holes with a silver ring around them. These are the speaker terminals. Included with the Soundtraxx sound decoder is a small black capacitor that must be placed between one of the speaker terminals and one of the speaker wires. In order to clear the speaker, I found it best to mount the capacitor so that it hangs over the end of the circuit board with the large part of the capacitor facing downward (see figure 5). Connect one speaker wire to the remaining capacitor lead and solder the remaining speaker lead to the other terminal hole on the sound decoder board. To better ensure against an unanticipated short circuit, I usually put a short section of heat shrink tubing over the exposed capacitor leads and the speaker wire to capacitor lead solder joint. Figure 5 shows the completed installation with the shell ready to be mounted back on the frame and the handrails reinstalled.