

## IMPROVING THE SOUND IN THE BOWSER SD40-2F (RED BARN)

The Bowser Red Barn is a beautiful model, and it also runs very well. Unfortunately, the sound is terrible because 1) the speaker is too small and the enclosure is not sealed, and 2) it points upward inside a totally sealed car body. Here are the steps I took to improve the sound, using a 1" TDS (formerly QSI) speaker. I am very happy with the results.

1. Remove the couplers and unhook the engineer's side air line below the cab. It is simply a press fit. Then lift off the sill and car body from the mechanism

You will now see that Bowser used the SD40-2 mechanism for the 40-2F (Red Barn). Note the narrow speaker. I figured that with a full width car body, I could replace it with a round 1" speaker. This raised unanticipated problems which I discuss below! In order to work inside the car body, it should be separated from the sill and end steps.

2. The car body is attached to the sill with six screws and four tabs. Two of the screws are beneath the air reservoirs. The reservoirs are held in place with two pins, which appear to have been glued. Pry the reservoirs off, partly or completely so that you can get to the screws. On my model, one pin broke and one popped out on each reservoir. They glued back on with no problems and no signs of damage. Remove front and rear handrails (easy – they are a press fit) and the door handrails on the engineer's side. You do not need to remove the end railings on the sill. Undo all screws and separate the sill from the car body by releasing the tabs (front, rear and one on each side).

The cab appears to be separate from the rest of the car body, but I could not figure out how to remove it. So Bowser gave us interior cab detail but no apparent way to add a crew!

The car body is completely sealed inside, with no way for the sound to get out (speaker faces upward), except downward through the rear truck. So here's what to do.

3 Remove the forward of the two roof fans. There is a light bar under the rear fan, so don't remove this fan. The fan is held in place with two locating pins, which are glued inside. Use a drill in a pin vise to drill away the inside end of the locating pins. Pressure with the end of a pin in the hole you made with the drill will eventually cause the fan to pop off. The car body is solid below the fan.

4 I used a 1/8 inch drill in a drill press, making several holes to open up the top of the car body, below the fan. I finished the hole with a round file. The hole should be a tiny bit smaller than the fan, so that it will fit back on without the hole showing from the outside. There are fan blades inside the fan. I did not re-install these because 1) they hardly show, and 2) I wanted lots of space for the sound to get out.

5 Now do the same for the winterization hatch. Drill out the four pins. It may pop off. But on my model, there seemed to be some glue along the edge of the hatch. Very carefully slide a #11 blade along the edge of the hatch, starting at the front end. After the hatch comes off, remove the fan as before, and drill out a hole below the fan. You now have two holes in the car body for sound to escape from an upward-facing speaker. Re-assemble the fans and winterization hatch to the car body.

I figured that with the full width car body, a 1" speaker would fit easily. Wrong. The inside of the car body slopes inward below the radiator grilles. You will have to remove this part of the car body to make it wide enough for the speaker enclosure to fit.

6. Remove the old speaker. It pulls out vertically from the four posts at each corner. Unsolder the leads. Mask the area around the rear two posts, and cut them off using a cutting blade in the Dremel. The masking is to prevent metal cuttings from getting anywhere near the mechanism or electronics. The new 1" speaker in its enclosure is best located as far backward as possible, up against the black plastic fitting that encloses the light bar.

7 Put a new chisel blade in your knife and remove the inward slanting car body below the radiator grilles in the area where your speaker is to go. Do this extremely carefully, taking out a tiny sliver at each cut. Eventually, you will expose the inside of the grilles (they are metal).

8. Assemble the speaker enclosure (sides and bottom), and then file two opposite sides to narrow the enclosure. I had to remove most of the thickness of the wall, tapering it to almost zero thickness at the top.

9. Keep test fitting the narrowed speaker enclosure until it fits snugly against the top of the car body. You may have to keep filing the enclosure, and or keep removing material from the slanting part of the car body. Even though you will expose the insides of the grilles, this will not show when the model is re-assembled. It will also let more sound out.

I now discovered that the speaker was wider than the gap that runs down the centre of the sill. You can't fit the sill over the mechanism. So –

10. Mark the position of the speaker on the top of the sill, and then mill out the two insides of the sill to widen the gap enough for the speaker to pass through. This will not show when the model is re-assembled, nor will it weaken the longitudinal stability of the sill. Remember, the sill will be screwed back onto the car body, for strength.

11. When you think the speaker will fit through the sill and into the car body, tape it temporarily in place and test fit the mechanism, sill and car body. Make sure there are no gaps between the sill and car body. If all is OK, you can proceed to install the speaker.

12. Drill two holes at the back of the speaker enclosure for the wires. Thread the wires through the holes, and solder to the speaker. You do not need any extra resistors or capacitors (I checked with the manufacturer). I found the original wires to be just long enough, but if you want to splice in more wire, there is room to do so. Glue the speaker to the mechanism, using Goop or Walther's Goo – something that will allow the parts to move a little before setting up. Re-assemble the mechanism, sill and car body – this will push the speaker into its final position. Leave for a few hours for the glue to set. After you are happy that everything fits, screw the sill to the car body and re-assemble the air tanks. Don't forget to hook up the air line under the cab on the engineer's side.

**Put your Red Barn on the test track. F8 will begin the firing-up sequence, and F2 will have you running away from the grade crossing before the SD40-2F blasts past. The new sound is well worth the effort of modifying the sill, fans and car body.**