Atlas® Silver Series HO RS-3 (2014 Release)

**Tsunami Digital Sound Decoder Installation Notes**

**Overview**
This application note describes how to install a TSU-AT1000 Digital Sound Decoder into an Atlas Silver Series HO RS-3 (2014 Release) locomotive.

Skill Level 3: One to three hours installation requiring working in tight places and some modifications to the model.

**Bill of Materials**

<table>
<thead>
<tr>
<th>P.N.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>828043</td>
<td>TSU-AT1000 for ALCO 244</td>
</tr>
<tr>
<td>810113</td>
<td>16mm x 35mm Oval Speaker</td>
</tr>
<tr>
<td>810037</td>
<td>Insulative Heat-Shrink tubing</td>
</tr>
<tr>
<td></td>
<td>Two 1000-Ohm (1k) Resistors</td>
</tr>
</tbody>
</table>

Evergreen P.N.

9030  0.030" (1mm) Sheet Styrene

For your convenience, Evergreen part numbers have been listed above. Please visit their website at www.evergreenscalemodels.com.

**Tools You Will Need**
- 25W Soldering Iron
- Rosin Core Solder
- Flux for Electronic Work
- Wire Strippers
- Wire Cutters
- X-Acto Knife
- Miniature Screwdriver Set
- #55 Miniature Drill Bit
- 3mm or 1/8" Drill Bit
- Pin Vise or Electric Drill
- Aquarium Sealant / Silicone
- Liquid Plastic Cement (Tenax 7R or equivalent)
- Insulative Electrical Tape
- Masking Tape
- Small Pliers
- 30 -32 Gauge Wire
- Heat Gun or Blow Dryer
- Metal and Plastic Files
- Metal Straight Edge
- Milling Machine or Metal Hacksaw
- Dial Calipers
Installation

1. Begin by removing the couplers and coupler boxes. To do this, remove the screws located in the center of the coupler boxes and gently pull the coupler boxes out from each end. (Photo 1)

2. Lift off the locomotive’s shell. (Photo 2)

3. Note the location and function of all wires connected to the factory PCB. Use masking tape to ID the wires as necessary. Remove the black plastic clips that secure the track pickup wires and motor wires to the PCB and then carefully disconnect the wires from the PCB. (Photo 3)

4. Remove the factory-installed PCB. (Photo 4)

5. The rear track pickup wires are routed through notches in the rear weight. Spread the wires out and away from the weight. Remove the two screws holding the rear weight in place and then remove the weight. (Photo 5)

6. Mill, machine, or cut the rear weight according to the diagram at end of this application note to make room for the speaker. Be sure to counter-sink holes for screws so that top (speaker-mounting) surface is flat. Your finished rear weight should look like the one shown. (Photo 6)
7. Re-install the rear weight and thread the track pickup wires through the notches. The screws that were removed in Step 5 may be cut to fit or replaced if desired; regardless, ensure that the screws do not interfere with truck movement. (Photo 7)

8. Build a 37mm x 18mm x 11mm speaker baffle following the template provided at end of this application note.

9. Solder one 3” segment of 30-32 gauge wire to each of the speaker’s terminals. Thread the speaker wires through the two small holes drilled into one end of the speaker baffle. (Photo 8)

10. Extend the length of the backup light wires as follows: Solder a 3” segment of 30-32 gauge wire to the end of the black backup light wire and a 3” segment of 30-32 gauge wire to the end of the red backup light wire. (Photo 9)

11. As indicated in the speaker baffle template at the end of this application note, there should be a 3mm hole drilled into one end of the baffle. Fit the backup light LED into the 3mm hole. Thread the wire extensions through the two smaller holes drilled into the opposite end of the baffle. (Photos 10 and 11)

12. Using liquid plastic cement, secure the top of the speaker baffle in place; carefully file or sand the edges of the baffle top for an easier fit if necessary. Test fit the speaker baffle in the locomotive’s shell and on the rear weight to ensure proper sizing.

13. Using silicone, mount the speaker to the top of the rear weight. Use tape to secure the speaker in place until the silicone fully cures. (Photo 12)
14. Install the TSU-AT1000 decoder by placing it in position on the tabs on top of the motor. Attach track power wires and motor wires to the decoder. Attach the speaker wires to the S+ and S- terminals. Attach negative leads for headlight and backup light to their respective terminals. (Photo 13)

15. Using insulative heat-shrink tubing to protect connections, attach one 1000-ohm (1k) resistor to each of the positive headlight and backup light leads. Solder the resistors to the positive tabs for headlight and backup light.

16. To make room for the capacitor, clear out the top of the locomotive’s shell casting between window tabs. (Photo 14)

17. Tape the capacitor wires to inside of the shell, positioning capacitor in opening. (Photo 15)

18. Test your locomotive on the track without the shell to ensure proper operation. Tuck in any loose wires and replace the shell over the frame. Test run one more time to ensure all wires are clear of the driveline; correct any problems at this time.

19. Replace coupler boxes.

Enjoy your new RS-3!