

RetroLinear / Warneck Research  
**WURLITZER EP200 INSTALLATION INSTRUCTIONS**

## **INTRODUCTION**

The Warneck Research EP200 amplifier is a high-performance, reliable replacement for the original Wurlitzer model 200 amplifier board. The new low-noise design is excellent for applications where sonic performance and dependability are paramount. Although the new architecture is vastly different than the original design, the new circuitry is carefully optimized to recreate the original Wurlitzer EQ curve and tonal qualities. Also included are 1<sup>st</sup> stage shield plates for the reed bar pickups to reduce hum and interference. This board is for use in model 200 series pianos ONLY. It will not work in 200A series instruments. It is recommended that the installer be familiar with working on Wurlitzer EPs. Because there is high voltage involved, installation should only be completed by qualified personnel.

## **AMPLIFIER INSTALLATION INSTRUCTIONS**

1. For the installation, you will need a #2 Phillips head screwdriver, small flat head screwdriver, wire strippers, side cutters, and soldering iron (optional).
2. Turn off and unplug the instrument from the AC line.
3. Unplug the reed bar RCA cable from the old amplifier and move out of the way.
4. Cut or desolder the transformer, control, speaker, and AUX output wires from the amplifier board. Desoldering by heating the SIDE of the contact pins in the old board is recommended but not required.
5. Strip the wires leaving between 1/8" to 1/4" of bare wire exposed. If the wires were desoldered, simply trim the ends back if necessary. Make sure no wire or insulation scraps make their way into the piano.
6. Remove the old amplifier from the piano. It is held down with seven screws, two of which go through the heatsink. Using a magnetic screwdriver is helpful.
7. Install the EP200 board into the piano, re-using the seven screws. As with the original amplifier, two of the screws go through the middle of the large heatsink.
8. Connect all wiring (controls, speaker, transformer, line out) to the EP200. The wire colors are silk-screened on the board next to the terminal blocks. Carefully observe that the correct wires are placed in the correct terminals. The wire should be secured but the insulation should not be pinched in the terminal blocks. Make sure the ground wire for the Line Out is not frayed and is kept fairly short. It is good to check that each wire is properly secured in the terminal blocks by testing with a very gentle tug.
9. Configure the amplifier output switch. It selects either a fixed or variable (with volume control) line out.
10. Recheck all connections.
11. Plug in and power on the piano to test for proper operation. Adjust the GAIN ADJ trimmer with the volume control turned all the way up to the point just below where the amp begins to distort while playing loud full chords. The VIB ADJ trimmer is factory set, and should not need adjustment. If adjustment is necessary, the Vibrato control should be turned to maximum and the trimmer should be adjusted so that it does not sound too choppy or reduce the volume of the piano.
12. This completes installation of the EP200.

## SHIELD BAR INSTALLATION INSTRUCTIONS

1. You will need a flat head screwdriver, #2 Phillips head screwdriver, and 1/4" nut driver for this procedure.
2. Turn off and unplug the piano from the AC line.
3. It is important that the pickups do not get shifted during the shield installation process. It is therefore imperative that the procedure is carefully followed as described. Do not remove or loosen screws until instructed to do so.
4. Remove the large hum plate from the reed bar assembly, exposing the dampers and reeds.
5. Look down in between the dampers to locate the screws which secure the pickup plates to the reed bar. Remove only the damper arms from the damper bar that will give you access to the screws for the pickups. Keep the dampers in order so that they can be put back in their identical locations when finished. There are 4 screws for the treble reed bar, 2 screws for the middle reed bar, and 5 screws of interest for the bass reed bar (4 left-most and 1 right-most). **DO NOT** remove the screws for the pickups yet.
6. To add the treble shield, remove the two middle screws and washers from the treble pickup. Do not disturb the nylon spacers. Replace the two middle screws without the flat washers, and tighten very gently.
7. Now, remove the two screws and washers on the ends of the treble pickup, again being careful not to disturb the nylon spacers. Depress the sustain mechanism in the middle rear of the piano to raise the all of the dampers off of the reeds. Slide the shield bar into position while the dampers are raised, being careful not to hit the reeds. Release the sustain mechanism and secure the two ends of the shield plate to the pickups using the screws you just removed without the flat washers.
8. Now again remove the two middle screws, and then replace them again, this time using the flat washers.
9. For the middle shield bar, there are only two screws, and the pickup can shift easily. Extreme care must be taken to avoid shifting the pickup. Remove the two screws and metal washers, depress the sustain mechanism, slide the shield plate into place, release the sustain mechanism, and replace the screws without the washers. Observe the spacing of the reeds in the middle pickup to insure the pickup did not shift.
10. Check the jumper that connects the middle to the upper pickup. There are cutouts in the shield plates where it is located. Make sure the jumper is not touching the shield plate. If it is, very gently bend it out of the way or loosen its screws, turn it slightly, and retighten.
11. To install the bass shield bar, the procedure is very similar to the treble shield bar. There are seven screws total that secure the bass pickups to the reed bar. Of interest for the procedure are only the left-most 4 screws and right most screw. For ease of understanding, we will number them from left to right (#1, #2, #3, #4 and #7). Remove the #2 and #3 screws and flat washers. Do not disturb the nylon spacers. Replace the #2 and #3 screws without the flat washers and tighten very gently.
12. Remove the #1, #4, and #7 screws and flat washers, again being careful not to disturb the nylon spacers. Depress the sustain mechanism and slide the bass shield plate under the dampers and over the pickups, being careful not to disturb the reeds.
13. Replace the #1, #4, and #7 screws without the flat washers.
14. Remove the #2 and #3 screws and replace them again with flat washers.
15. Check that the jumper between the two bass pickups (oval slot in shield) is not shorting to the shield plate. If so, gently bend out of the way or loosen its screws, turn it slightly, and retighten.
16. Replace all the dampers, and check for proper clearance between the damper and shield plate screws. You may need to file the underside of some dampers to clear the screws and washers on top of the shield plate. This is rare, but when it does occur it is usually only the dampers above the #2 and #3 screws on the bass reed bar/pickup that need adjustment.
17. Plug in and test piano. Once it is verified that there are no shorts and the pickups did not shift, replace the outer hum shield and close up the piano.
18. This completes installation of the Reed Bar Shields.