

INSTALLATION OF REVERBERATION  
AND SPEAKER BOX KIT  
IN CHORD ORGAN  
(S SERIES)  
CONSOLES

HAMMOND ORGAN COMPANY  
4200 West Diversey Avenue  
Chicago 39, Illinois

## CHECK LIST

Parts required for complete kit are as follows. Check parts received against this list to determine that kit is complete.

- (a) Reverberation amplifier kit with line cord attached. This is available in two models, for 117 or 234 volt input. Same amplifier kit is used for either Chord Organ or Spinet Organ. (Note, however, that additional lamp and resistor are added when used with Chord Organs S-4 and S-6).
- (b) Console type speaker box kit, with lead wires attached, or floor type speaker box kit, with 2-piece cable. Speaker boxes are available in several finishes to match console. Either type speaker box can be used with Chord Organ or Spinet Organ.
- (c) Reverberation unit kit. This is available in one model for Spinet Organ and two models for Chord Organ. Be sure you have correct model.  
 Kit AO-22690-3 fits Chord models S-4 and S-6.  
 Kit AO-22690-4 fits Chord models S and S-1.

These kits include the following parts:

Reverberation unit with lead wires attached. **WARNING:** In handling this unit, observe precautions on tag attached to unit.

Reverberation switch with lead wires attached.

Console speaker wire assembly (red & black, with 2 lugs attached).

Ground wire assembly (black, with 2 lugs attached).

Amplifier Mounting Plate.

Adapter bracket, to which reverberation unit attaches.

Guide bracket assembly, consisting of bracket with 2 coil springs.

Template for drilling adapter bracket and guide bracket mounting holes.

10 ohm 1/2 watt resistor } supplied in  
 #12 pilot lamp } AO-22690-3 kit only

5 spade lugs (2 for speaker, 2 for switch, 1 for line cord).

5 cable clips PO-22059-1.

Screws: 2 #4 x 3/8" round head tapping, for guide bracket.

3 #6 x 1/2" round head tapping, for cable clips.

2 #6 x 5/8" round head tapping (black), for switch.

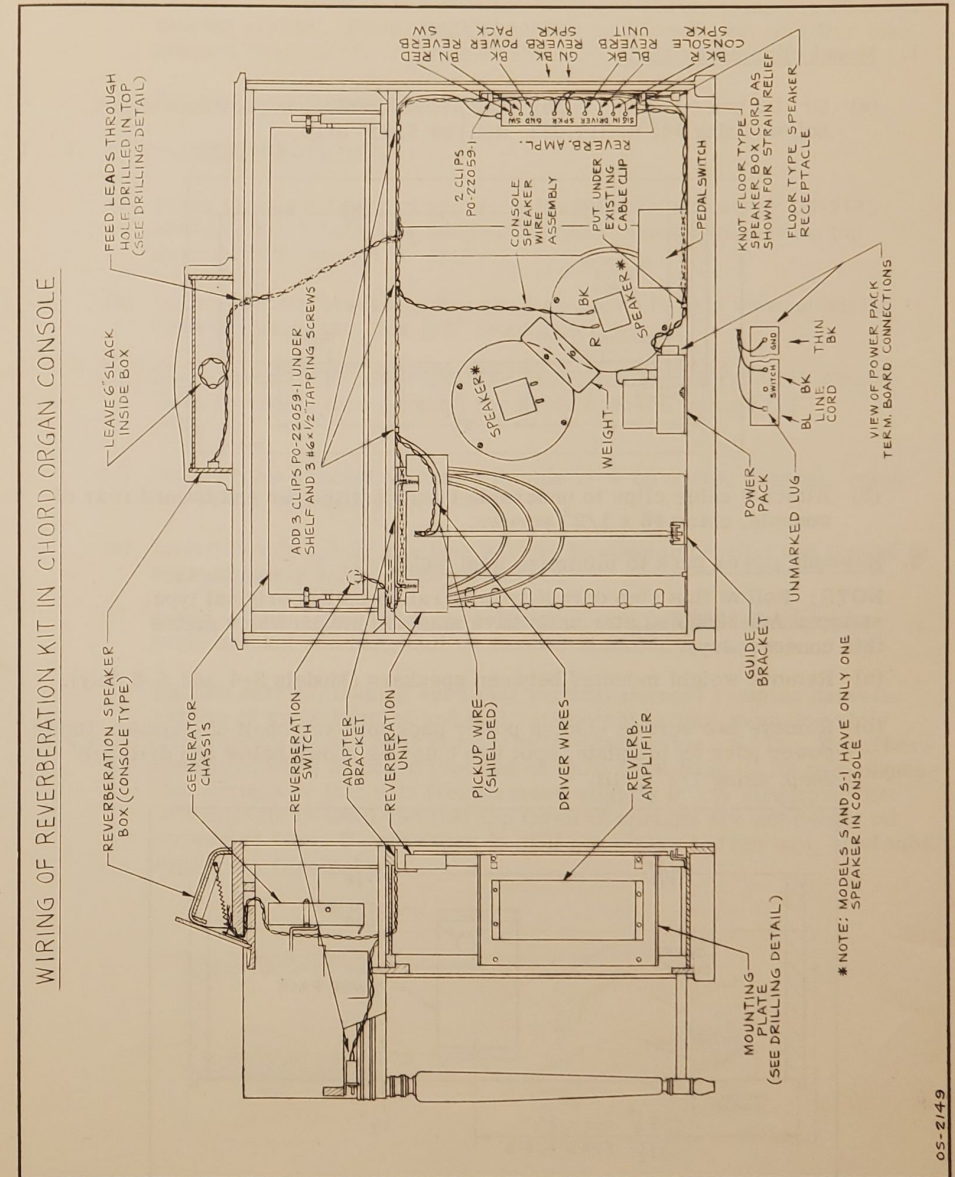
4 #8 x 5/8" recessed head tapping, for adapter bracket and power pack.

2 #8 x 3/8" binder head machine, for reverberation unit.

4 #10 x 5/8" round head tapping, for amplifier mounting plate.

(Amplifier is to be mounted with screws which hold it in packing).

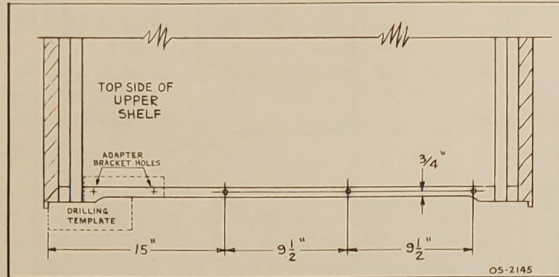
**Note:** In addition to the usual service tools, the following will be needed: Medium size recessed head screwdriver (generally called Phillips type) with shank at least 4" long; Ruler or tape measure: #45, 1/16", 1/8", and 5/32" drills.



## INSTALLATION INSTRUCTIONS

### 1. Mount clips under shelf.

- (a) Drill 3 holes through upper shelf, from top side, in positions shown below, using #45 drill (.082" dia.) or 5/64" drill.

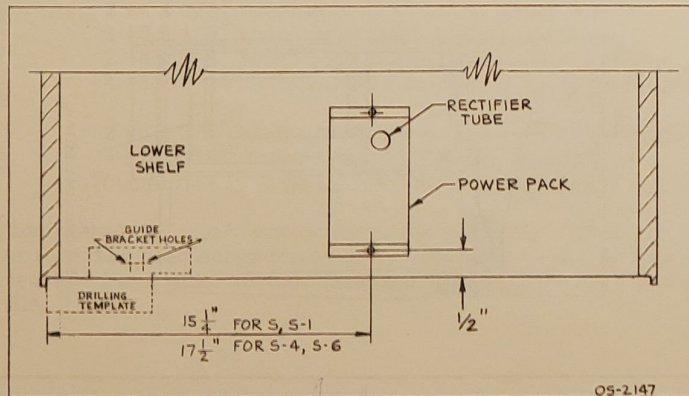


- (b) Attach 3 cable clips to underside of shelf with open end toward rear of console, using #6 x 1/2" screws.

### 2. Relocate power pack to minimize hum pickup.

NOTE: Follow this step only if reverberation unit is original type, stamped AO-22555. Later units have shielded pickup which makes this unnecessary.

- (a) Remove weight mounted between speakers (Models S-4 and S-6 only).
- (b) Remove two screws holding power pack to lower shelf of console. Using power pack as template, spot two holes as shown below and drill 5/8" deep, using 1/8" drill.



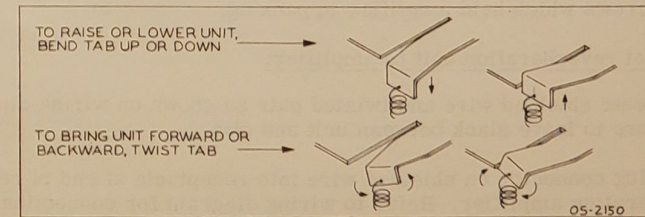
- (c) Mount power pack in new position as shown above, using two #8 x 5/8" tapping screws. Power pack should be positioned with rectifier tube nearest to speaker. Loosen cable clip, if necessary.

- (d) Replace weight removed in step (a).

### 3. Mount reverberation unit.

- (a) Place template on top of upper shelf as shown in drawing OS-2145 above. Drill 2 holes for adapter bracket, through wood from top side of shelf, using 1/8" drill.
- (b) Install adapter bracket under shelf as shown in side view on wiring drawing, using two #8 x 5/8" tapping screws.
- (c) Place template on lower shelf as shown in drawing OS-2147 above. Drill two holes through shelf for guide bracket, using 1/16" drill.
- (d) Install guide bracket as shown in side view on wiring drawing, using two #4 x 3/8" tapping screws.
- (e) Install two #8 x 3/8" machine screws in adapter bracket and tighten to approximately 3/32" from surface.
- (f) Insert vertical channel of reverberation unit between springs of guide bracket and hang unit on screws installed in step (e).

Tighten screws, making sure that vertical channel remains between springs of guide bracket and that reverberation unit mounting slots are properly seated over screws before tightening. NOTE: Reverberation unit, when unlocked (see tag on unit) must hang on its two suspension springs so that it is free to move slightly in any direction. Be sure console is level and that top turns of springs are not caught on corners of tabs. If correction is still necessary to free unit, bend tabs slightly as required:

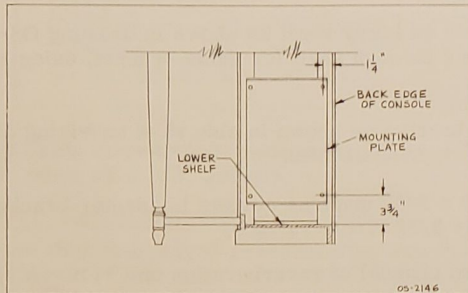


4. Add lamp and resistor to reverberation amplifier for S-4 or S-6 only.

- (a) Plug second #12 pilot lamp bulb into socket underneath amplifier, next to lamp already in amplifier.
- (b) Solder 10 ohm resistor to inside of terminal strip on back of amplifier. It goes to second and third lugs from end, in parallel with 15 ohm resistor which is already connected to those terminals.

5. Mount reverberation amplifier.

- (a) Hold mounting plate inside right end of console (as viewed from rear), in position shown below, and spot 4 holes.



- (b) Drill 4 holes 5/8" deep with #36 drill (.106" dia.) or 7/64" drill. **WARNING:** Do not drill deeper than 5/8", as side is only about 1" thick.
- (c) Fasten mounting plate to console with four #10 x 5/8" tapping screws. Place one clip PO-22059-1 under lower screw nearest to back of console.
- (d) Fasten amplifier to mounting plate with four #8 x 3/8" machine screws which held amplifier in packing.

6. Connect reverberation unit to amplifier.

- (a) Route shielded wire and twisted pair as shown on wiring diagram. Be sure to leave slack between unit and clip.
- (b) Plug connector on shielded wire into receptacle at end of reverberation amplifier. Refer to wiring diagram for connection of twisted pair to "DRIVER" terminals on reverberation amplifier.

7. Connect line cord.

- (a) Route black and blue twisted pair (coming out of back of reverberation amplifier) to power pack as shown on wiring diagram.
- (b) Remove terminal cover from power pack.
- (c) Cut wires to length, put through grommet on power pack, and connect as shown on wiring diagram. If power pack has screw terminals, first solder a lug to wire which goes to screw terminal.

8. Connect reverberation amplifier to console speaker and to ground.

- (a) Solder console speaker wire assembly to console speaker lugs as shown in wiring diagram (these are the speaker lugs which already have wires from tone generator connected to them). Connect other end (with lugs) to "SIG. INPUT" terminals on reverberation amplifier as shown. (NOTE: on some early amplifiers these terminals are marked "COMP".)
- (b) Route ground wire through clip at corner of amplifier mounting plate and connect to "GND" terminal on reverberation amplifier as shown. Put other end through grommet on power pack and connect as shown. If power pack does not have screw terminals, cut off spade lug on that end of ground wire.

9. Mount reverberation switch.

- (a) Switch is to be mounted on underside of wooden front rail of console as shown in side view on wiring drawing. Suggested position is on the right side as you look at front of console, but it may be placed at left side if owner so desires.
- (b) Hold switch under front rail about an inch from leg of console, spot two holes, drill 1/2 inch deep with #45 drill (.082") or 5/64" drill, and mount with two #6 x 5/8" black tapping screws.

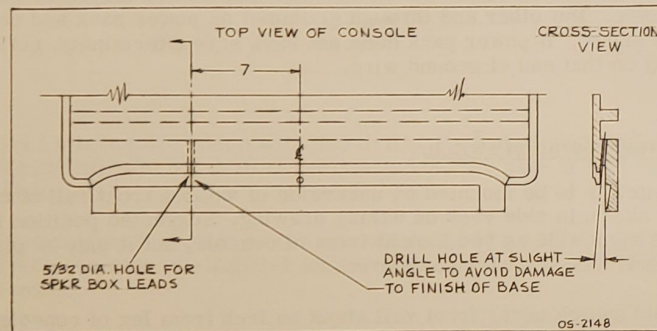
10. Connect reverberation switch.

- (a) Route wires through space under keyboard and around end of shelf. If switch is at right of console (as viewed from front), route wires under shelf through same clips as reverberation unit wires. If switch is at left of console (as viewed from front), route wires through clip under end of shelf and then to reverberation amplifier. Cut wires to length, solder lugs to them, and connect to "SWITCH" terminals on reverberation amplifier as shown in wiring diagram.  
(Note: on some early amplifiers these terminals are marked "KEY".)

IF REVERBERATION SPEAKER IS CONSOLE TYPE, FOLLOW STEPS 11 AND 12.

11. Mount speaker on top of console.

- (a) Loosen thumb screw holding music rack and lift rack out.  
(b) Lower generator chassis to horizontal position.  
(c) Drill one hole  $5/32$ " diameter through console top as shown below. Be sure to spread papers under hole inside and outside of console to catch all shavings.



- (d) Place speaker box on top of console. Cut off lugs and feed twisted wires through hole in console top, leaving 6" slack inside speaker box.  
(e) Unhook spring-loaded speaker box hooks and hook them over front edge of console top as shown in side view on wiring diagram.  
(f) Replace music rack panel and tighten thumb screw.

12. Connect console top speaker.

- (a) Route wires behind generator chassis, as shown in side view on wiring diagram, and through pedal cable hole in shelf.  
(b) Run wires through clips under end of shelf and at upper corner of amplifier. Cut wires to length, solder lugs to them, and connect to "SPKR" terminals on reverberation amplifier as shown in wiring diagram.  
(c) Return generator to normal position.

IF REVERBERATION SPEAKER IS FLOOR TYPE, FOLLOW STEP 13.

13. Place and connect floor type speaker.

- (a) Mount legs on speaker box. Large end of leg goes next to box. Place speaker box in convenient location in room and run cord along wall or under carpet to console.  
(b) Route short piece of parallel cord, with receptacle attached, through clip at corner of amplifier mounting plate, and tie knot in cord as shown, to avoid strain on amplifier terminals in case cord is pulled. Connect cord to "SPKR" terminals on reverberation amplifier as shown in wiring diagram.

14. Final adjustment.

- (a) Unlock reverberation unit as directed on tag attached to it. Give tag to owner or organist.  
(b) Set reverberation volume control on speaker box as directed on tag attached to it. Give tag to owner or organist.  
(c) Check position of spring guides on vertical channel of reverberation unit. They should be placed so that coil springs are centered in them to reduce danger of touching if console is bumped.

## TECHNICAL DESCRIPTION OF REVERBERATION AND SPEAKER BOX KITS

These kits are intended for use only with Spinet (M series) and Chord (S series) consoles. They provide reverberated music which is heard from either a console type speaker box mounted behind the music rack or a floor type speaker box located at any convenient place in the room. This reverberated signal is in addition to the normal sound produced by the speaker or speakers in the console.

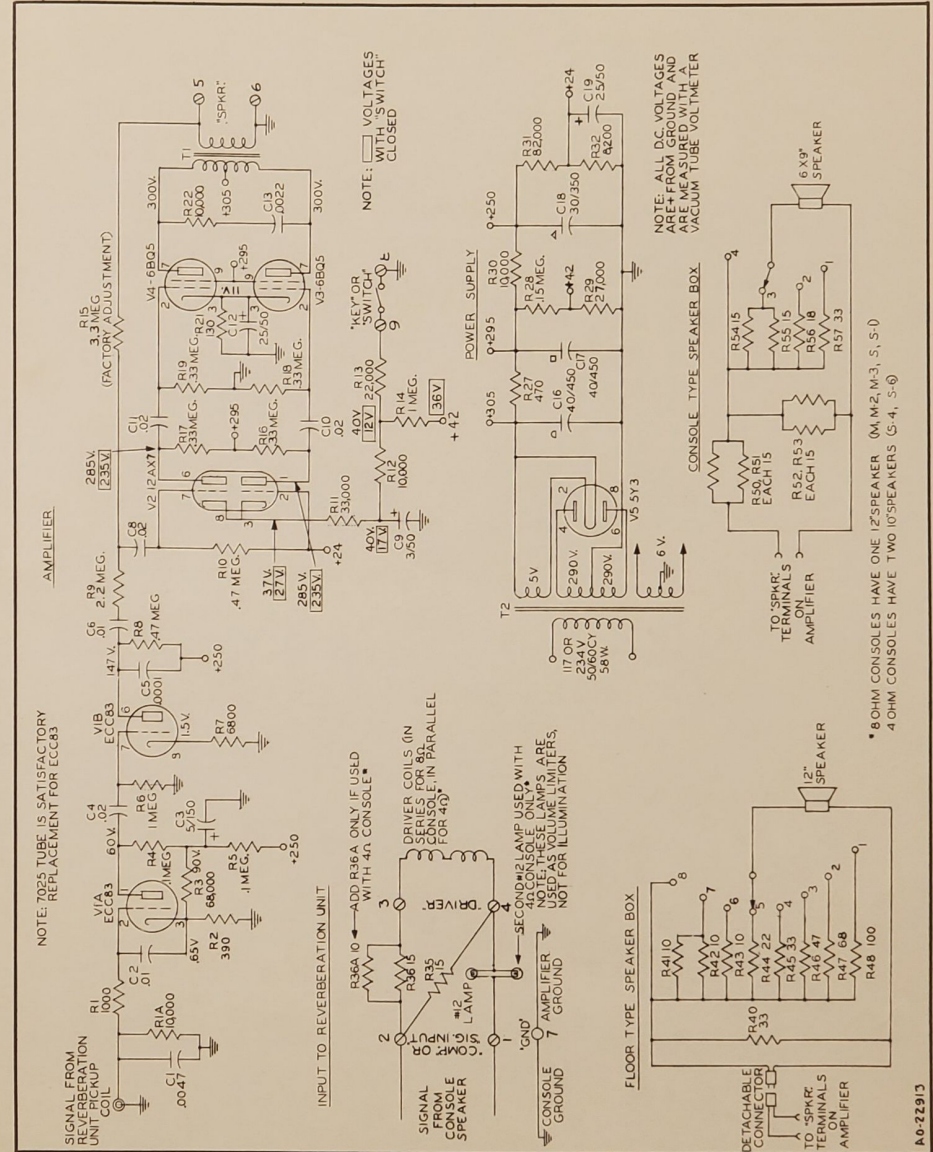
A signal from the voice coil terminals of the regular speaker in the Spinet or Chord organ console goes through a resistor network and one or two incandescent lamps to the driver coils of the reverberation unit, as shown under "input to reverberation unit" in the schematic diagram.

The incandescent lamps are used as a volume limiter or volume compression circuit. When the organ is played loudly, the lamp filaments become hot and increase in resistance, and therefore, the amount of signal furnished to the reverberation unit does not increase as fast as the volume of the non-reverberated signal. This is a desirable musical effect, since a greater proportion of reverberated signal is needed at low volume levels.

The driver coils introduce vibrations in three coil springs. These vibrations bounce back and forth in the coil springs to simulate natural echoes of sound in a large room. Pickup coils at the other end of the three springs drive the input of the amplifier.

The reverberated signal is turned on and off by a switch on the front of the console which controls a cut-off bias on driver tube V2. The amplifier is connected so that its power supply circuit is turned on whenever the console is turned on. The amplifier output drives either a console type speaker box with a 4-position volume switch or a floor type speaker box with 8-position volume switch, as shown at the bottom of the schematic diagram.

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