INSTALLATION OF REVERBERATION AND SPEAKER BOX KIT IN SPINET ORGAN (M SERIES) CONSOLES

HAMMOND ORGAN COMPANY
4200 West Diversey Avenue
Chicago 39, Illinois

AO-22820-1

Printed in U. S. A.

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 is used for either Spinet Organ or Chord Organ. (Note, however, that additional lamp and resistor are added when used with Chord Organ).

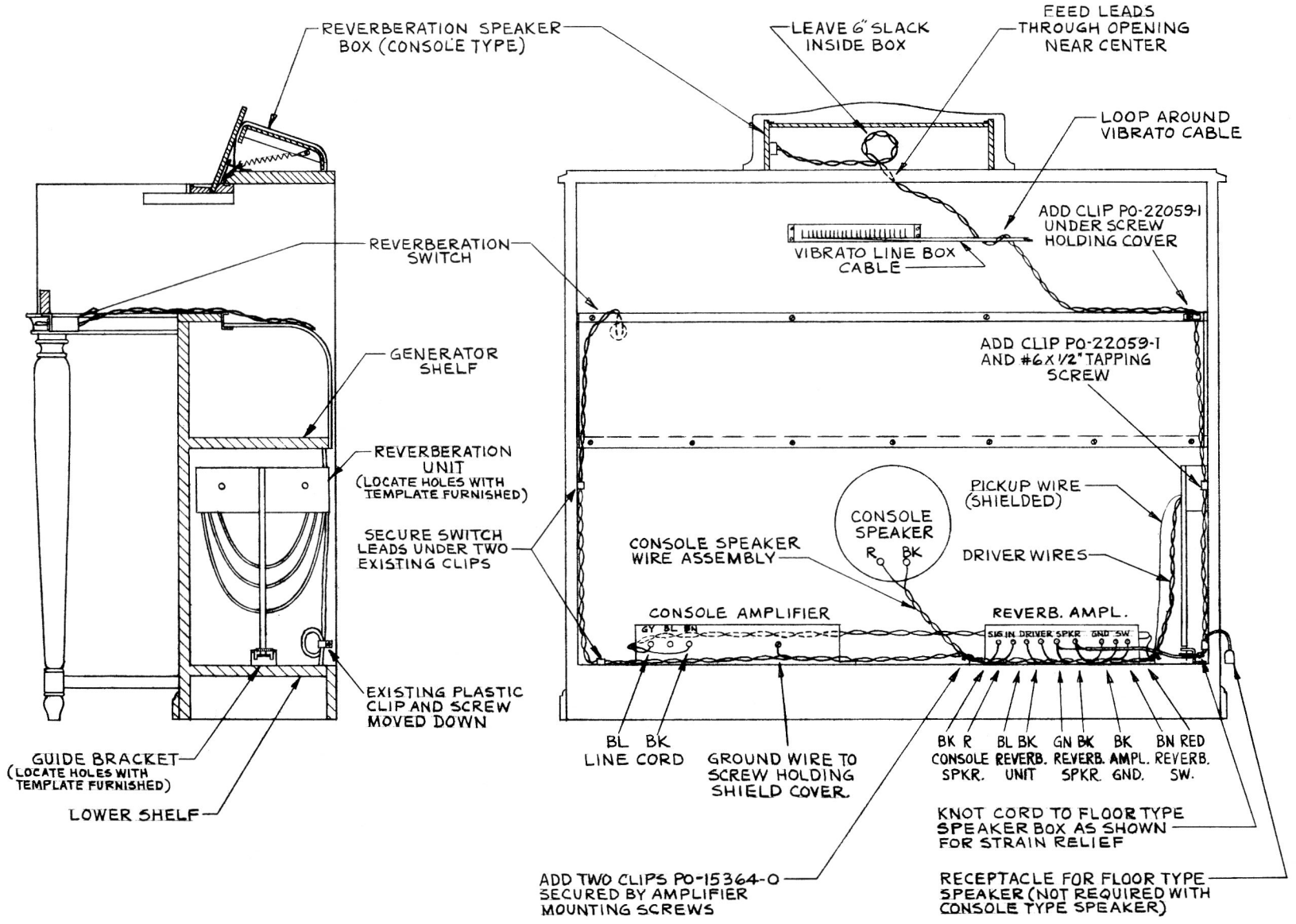
(b) Console type speaker box kit, with lead wires attached, or floor type speaker box kit, with 2-piece cable. Speaker boxes are available in several finishes to match console. Either type speaker box can be used with Spinet Organ or Chord Organ.

(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. Spinet model kit AO-22690-1 includes 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 shield base (aluminum foil) and 2 tacks for fastening it.
Guide bracket assembly, consisting of bracket with 2 coil springs.
Template for drilling reverberation unit and guide bracket mounting holes.
2 spade lugs (for line cord).
2 cable clips, PO-15364-0.
2 spring cable clips, PO-22059-1.
Screws:- 2 #4 x 3/8" round head tapping, for guide bracket.
1 #6 x 1/2" round head tapping, for pedal cable clip.
2 #6 x 5/8" round head tapping (black) for switch.
6 #8 x 5/8" recessed head tapping, two for reverberation unit and four for amplifier.

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; small hammer; ruler or tape measure; #36, #45, and 1/16" drills.

WIRING OF REVERBERATION KIT IN SPINET CONSOLES



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INSTALLATION INSTRUCTIONS

1. Drill holes for reverberation unit and for cable clip.

   (a) Remove plastic clip holding pedal cable. It is located inside right end of console (as viewed from rear).

   (b) Place reverberation unit drilling template inside end of console (at right end, viewed from rear) as instructed on template. Drill two holes, for reverberation unit, 5/8" deep with #36 drill (.106" dia.) or 7/64" drill. WARNING: Do not drill deeper than 5/8",, as side panel is only 3/4" thick.

   (c) Place template on lower shelf at right end (viewed from rear) as instructed on template. Drill two holes, for guide bracket, at least 5/16" deep (or through wood) with 1/16" drill.

   (d) Drill hole for pedal cable clip 15/16" from back edge of side panel and 1-1/2" up from surface of lower shelf. Drill 5/8" deep with #45 drill (.082" dia.) or 5/64" drill. WARNING: Do not drill deeper than 5/8", as side panel is only 3/4" thick.

2. Relocate pedal cable loop.

   (a) Form loop in cable near lower shelf, as shown in wiring diagram, and fasten with plastic clip which was removed in previous step, using same screw.

   (b) Install spring clip with open end toward rear of console, in hole where plastic clip was formerly located, using #6 x 1/2" tapping screw.

3. Mount reverberation unit and guide bracket assembly.

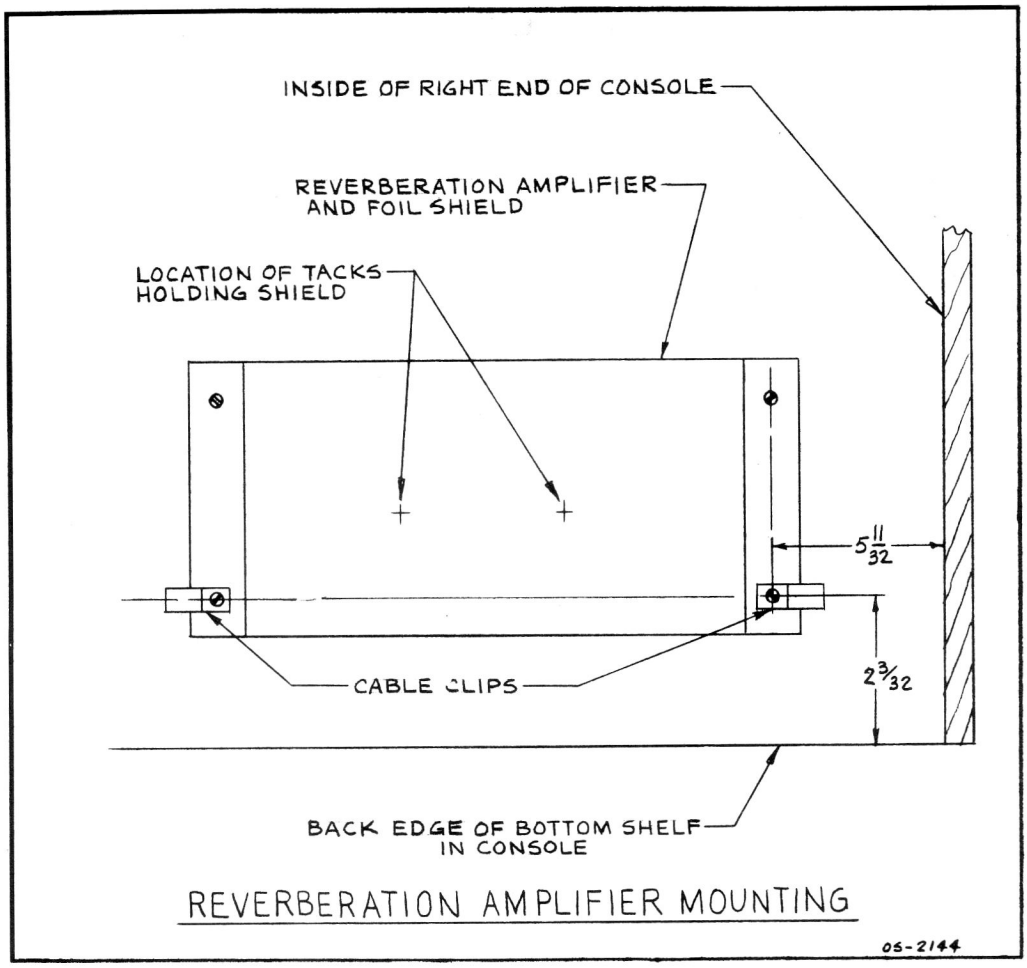
   (a) Install guide bracket on lower shelf, using two #4 x 3/8" tapping screws, in holes previously drilled in step 1 (c).

   (b) Install two #8 x 5/8" tapping screws in holes previously drilled in step 1 (b) and tighten to approximately 3/32" from surface.

   (c) Insert vertical channel of reverberation unit between springs of guide bracket and hang unit on screws installed in step (b). Tighten screws, making sure that vertical channel remains between springs of guidebracket and that reverberation unit mounting slots are properly seated over screws before tightening.

4. Mount reverberation amplifier to bottom shelf.

(a) Place amplifier as illustrated and drill four holes through bottom shelf with #36 drill (.106" dia.) or 7/64" drill. **WARNING:** Do not drill into metal cover of pedal switch below shelf.



(b) Place foil shield in position illustrated, and fasten with two tacks located approximately as shown.

(c) Place two cable clips, PO-15364-O, as shown above, and fasten amplifier with four #8 x 5/8" tapping screws.

5. Connect reverberation unit to amplifier.

(a) Route shielded wire and twisted pair under cable clip 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.

6. Connect line cord.

   (a) Route black and blue twisted pair (coming out of back of reverberation amplifier) to console amplifier as shown in wiring diagram.

   (b) Remove farthest left terminal cover from console amplifier and put wires through grommets in bracket under cover.

   (c) Cut wires to length and connect to terminals which have grey and brown wires on them. If amplifier has screw terminals, first solder lugs to wires.

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

   (a) Solder console speaker wire assembly to signal terminals on console speaker as shown in wiring diagram (these are same terminals to which green and black wires from console amplifier are connected). Connect end with lugs to "SIG. INPUT" terminals on reverberation amplifier as shown. (Note: on some early amplifiers these terminals are marked "COMP.")

   (b) Connect ground wire assembly to "GND" terminal on reverberation amplifier as shown and to nearest screw holding shield cover on console amplifier.

8. Mount reverberation switch.

   (a) Switch is to be mounted on underside of wooden front rail of console, as shown in side view on wiring diagram. Most commonly used 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" deep with #45 drill. (.082" dia.) or 5/64" drill, and mount with two #6 x 5/8" black tapping screws.

9. Connect reverberation switch.

(a) Route wires through space under keyboard and over generator dust cover. If switch is at right of console (as viewed from front) route wires and connect to "SWITCH" terminals on reverberation amplifier as shown in wiring diagram. If switch is at left of console (as viewed from front), route wires through clips at that end. (Note: on some early amplifiers these terminals are marked "KEY".)

IF REVERBERATION SPEAKER IS CONSOLE TYPE, FOLLOW STEPS 10 and 11.

10. Mount speaker on top of console.

(a) Loosen thumb screw holding music rack and lift rack out.

(b) Place speaker box on top of console. Feed twisted wires through space between music rack and console top, near center, leaving 6" slack inside speaker box.

(c) Unhook spring-loaded speaker box hooks and hook them over front edge of console top as shown in side view on wiring diagram.

(d) Replace music rack panel and tighten thumb screw.

11. Connect console top speaker.

(a) Take speaker wires and make one loose turn around vibrato line cable.

(b) Mount a spring clip under screw holding top of generator dust cover at right end (viewed from rear), and place speaker wires under clip.

(c) Let wires run over dust cover and through pedal cable clips inside end of console. Connect to "SPKR" terminals on reverberation amplifier as shown in wiring diagram.

IF REVERBERATION SPEAKER IS FLOOR TYPE, FOLLOW STEP 12

12. Place and connect floor type speaker.

    (a) Place speaker box in convenient location in room and run cord around wall or under carpet to console.

    (b) Route short piece of parallel cord, with receptacle attached, through plastic clip to the right of amplifier to avoid strain on amplifier terminals in case cord is pulled. Connect cord to "SPKR" terminals on reverberation amplifier as shown in wiring diagram.

13. Final adjustment.

    (a) Unlock reverberation unit as directed on tag attached to unit. 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.

TECHNICAL DESCRIPTION OF REVERBERATION AND SPEAKER BOX KITS

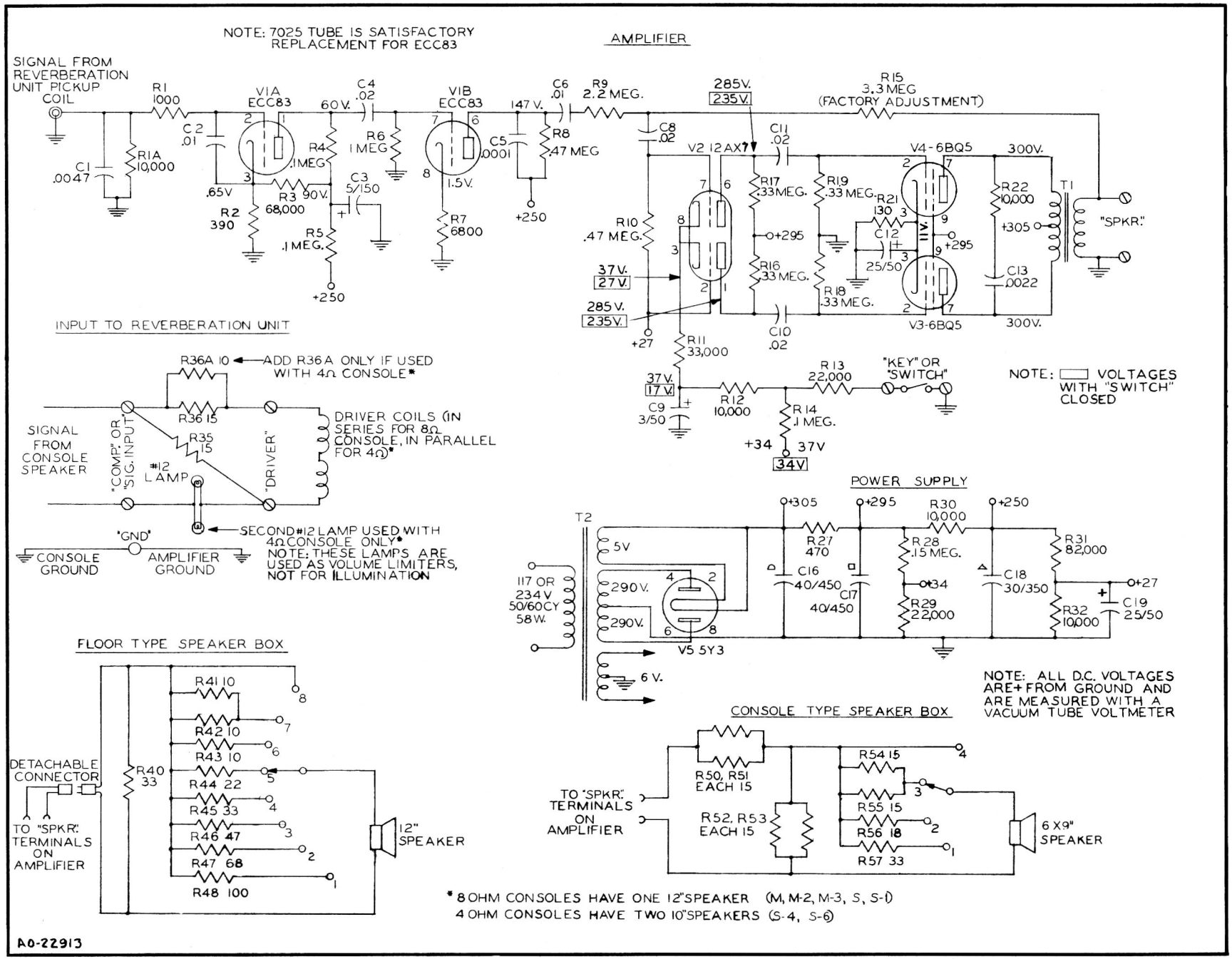
These kits are intended for use only with Spinet (M series) and Chord (S series) consoles. They provide reverberated music which is heard from either a console type speaker box mounted behind the music rack or a floor type speaker box located at any convenient place in the room. This reverberated signal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


NOTE: 7025 TUBE IS SATISFACTORY REPLACEMENT FOR ECC83
AMPLIFIER
SIGNAL FROM REVERBERATION UNIT PICKUP COIL
R1 1000
C1 .0047
R1A 10,000
C2 .01
VIA ECC83
60 V.
C4 .02
R4 .1MEG
R6 1 MEG
C3 5/150
.65V
R3 90V.
R2 390
68,000
R5 .1 MEG.
+250
VIB ECC83
1.5V.
R7 6800
147 V.
C6 .01
C5 .0001
R8 .47 MEG
+250
R9 2.2 MEG.
285V. 235V.
R15 3.3 MEG (FACTORY ADJUSTMENT)
C8 .02
V2 12AX7
C11 .02
V4-6BQ5
300V.
R17 .33 MEG.
R19 .33 MEG.
R21 130
C12 25/50
+295
R22 10,000
+305
T1
"SPKR."
R10 .47 MEG.
37V. 27V.
285V. 235V.
+27
R16 .33 MEG.
R18 .33 MEG.
C13 .0022
V3-6BQ5
300V.
C10 .02
R11 33,000
37V. 17V.
C9 3/50
R12 10,000
R13 22,000
"KEY" OR "SWITCH"
R14 1 MEG.
+34 37V
34V
NOTE: ▭ VOLTAGES WITH "SWITCH" CLOSED
INPUT TO REVERBERATION UNIT
R36A 10 ← ADD R36A ONLY IF USED WITH 4Ω CONSOLE*
R36 15
SIGNAL FROM CONSOLE SPEAKER
"COMP." OR "SIG. INPUT"
R35 15
#12 LAMP
"DRIVER"
DRIVER COILS (IN SERIES FOR 8Ω CONSOLE, IN PARALLEL FOR 4Ω)*
SECOND #12 LAMP USED WITH 4Ω CONSOLE ONLY*
NOTE: THESE LAMPS ARE USED AS VOLUME LIMITERS, NOT FOR ILLUMINATION
"GND"
CONSOLE GROUND
AMPLIFIER GROUND
POWER SUPPLY
T2
5V
117 OR 234 V 50/60 CY 58 W.
290 V.
290V.
6 V.
V5 5Y3
+305
+295
R30 10,000
+250
R27 470
C16 40/450
C17 40/450
R28 .15 MEG.
+34
R29 22,000
C18 30/350
R31 82,000
R32 10,000
+27
C19 25/50
NOTE: ALL D.C. VOLTAGES ARE + FROM GROUND AND ARE MEASURED WITH A VACUUM TUBE VOLTMETER
FLOOR TYPE SPEAKER BOX
R41 10
R42 10
R43 10
R44 22
R45 33
R46 47
R47 68
R48 100
R40 33
DETACHABLE CONNECTOR
TO "SPKR." TERMINALS ON AMPLIFIER
12" SPEAKER
CONSOLE TYPE SPEAKER BOX
R50, R51 EACH 15
R52, R53 EACH 15
TO "SPKR." TERMINALS ON AMPLIFIER
R54 15
R55 15
R56 18
R57 33
6 X 9" SPEAKER
* 8 OHM CONSOLES HAVE ONE 12" SPEAKER (M, M-2, M-3, S, S-1)
4 OHM CONSOLES HAVE TWO 10" SPEAKERS (S-4, S-6)
A0-22913