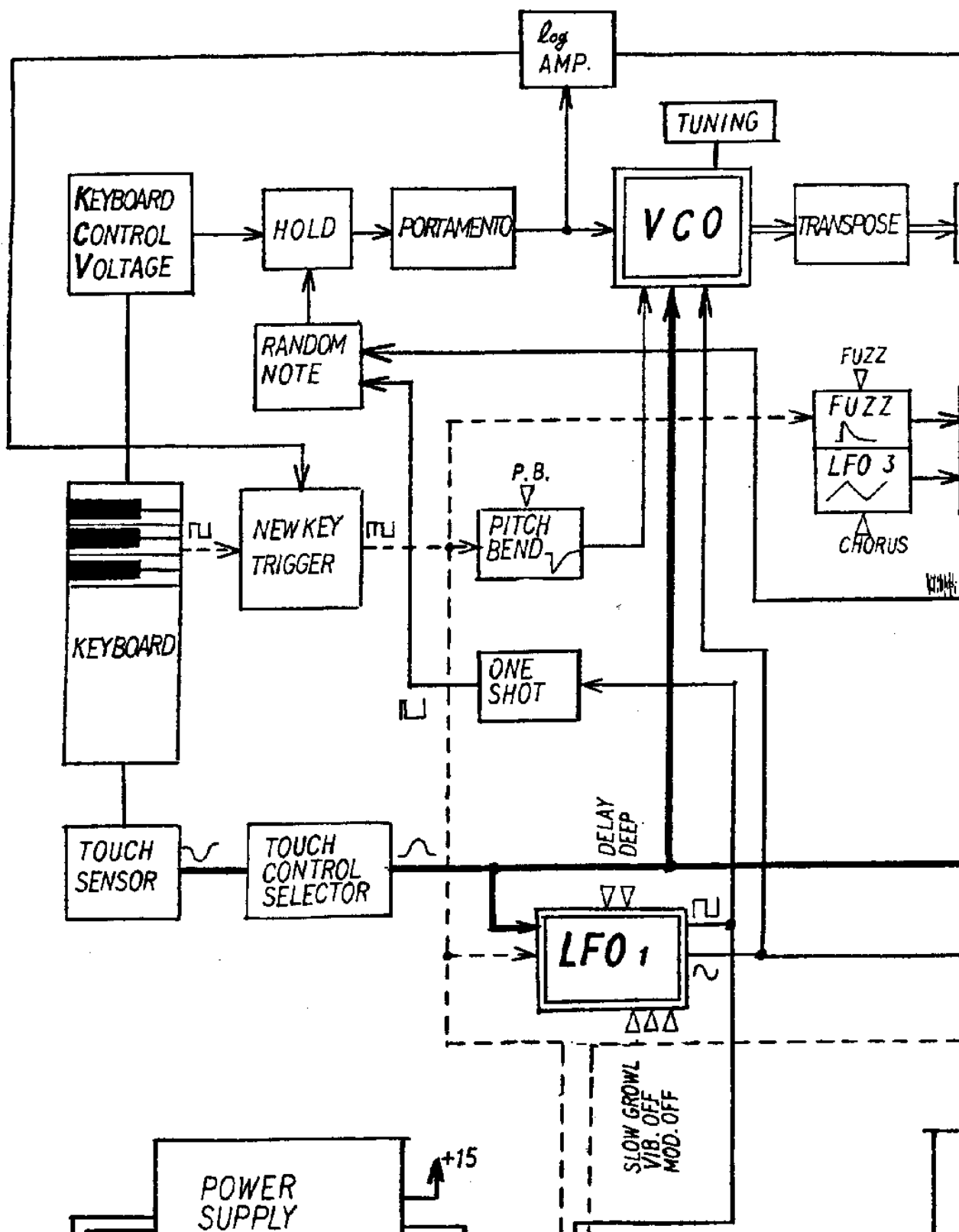
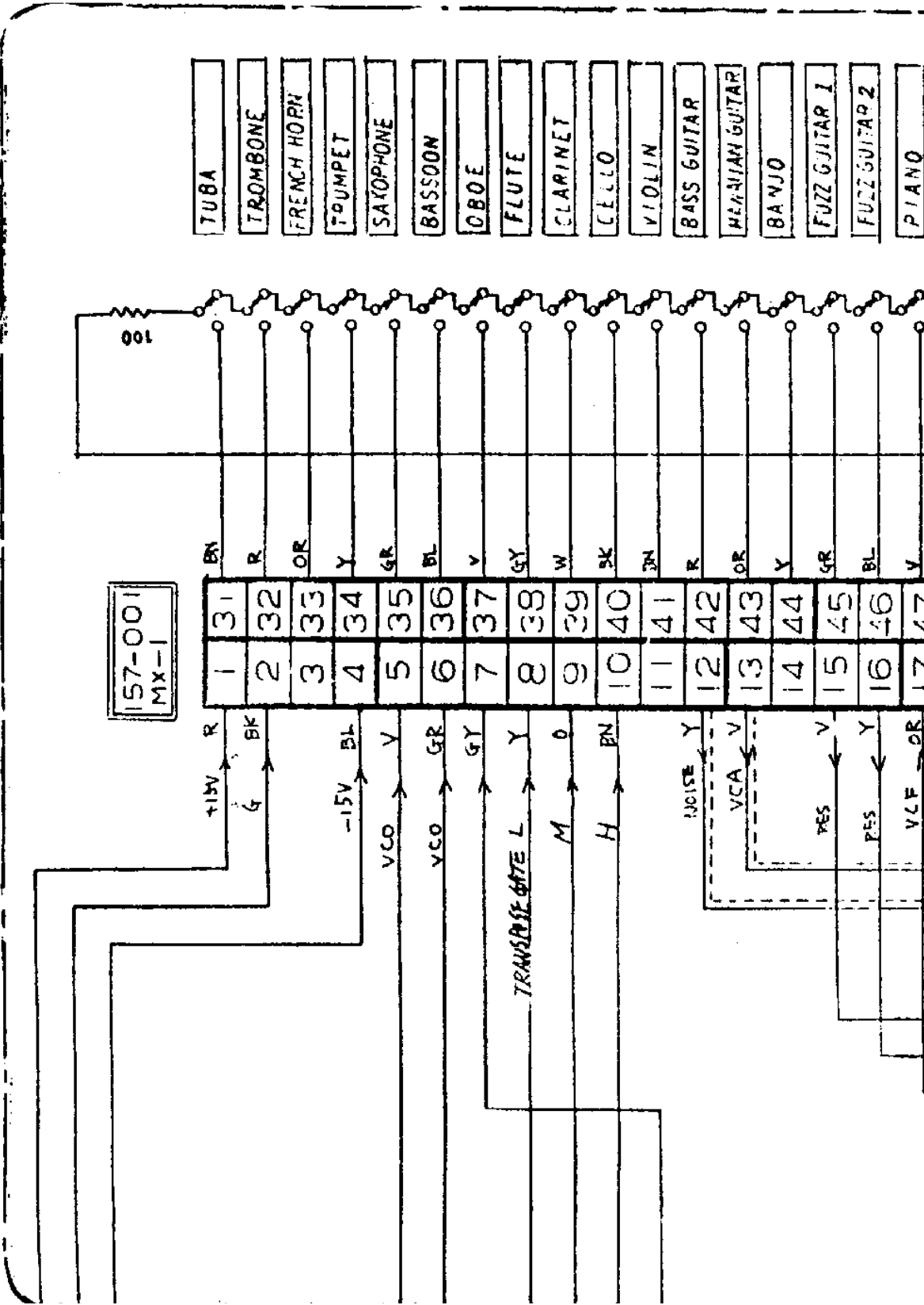


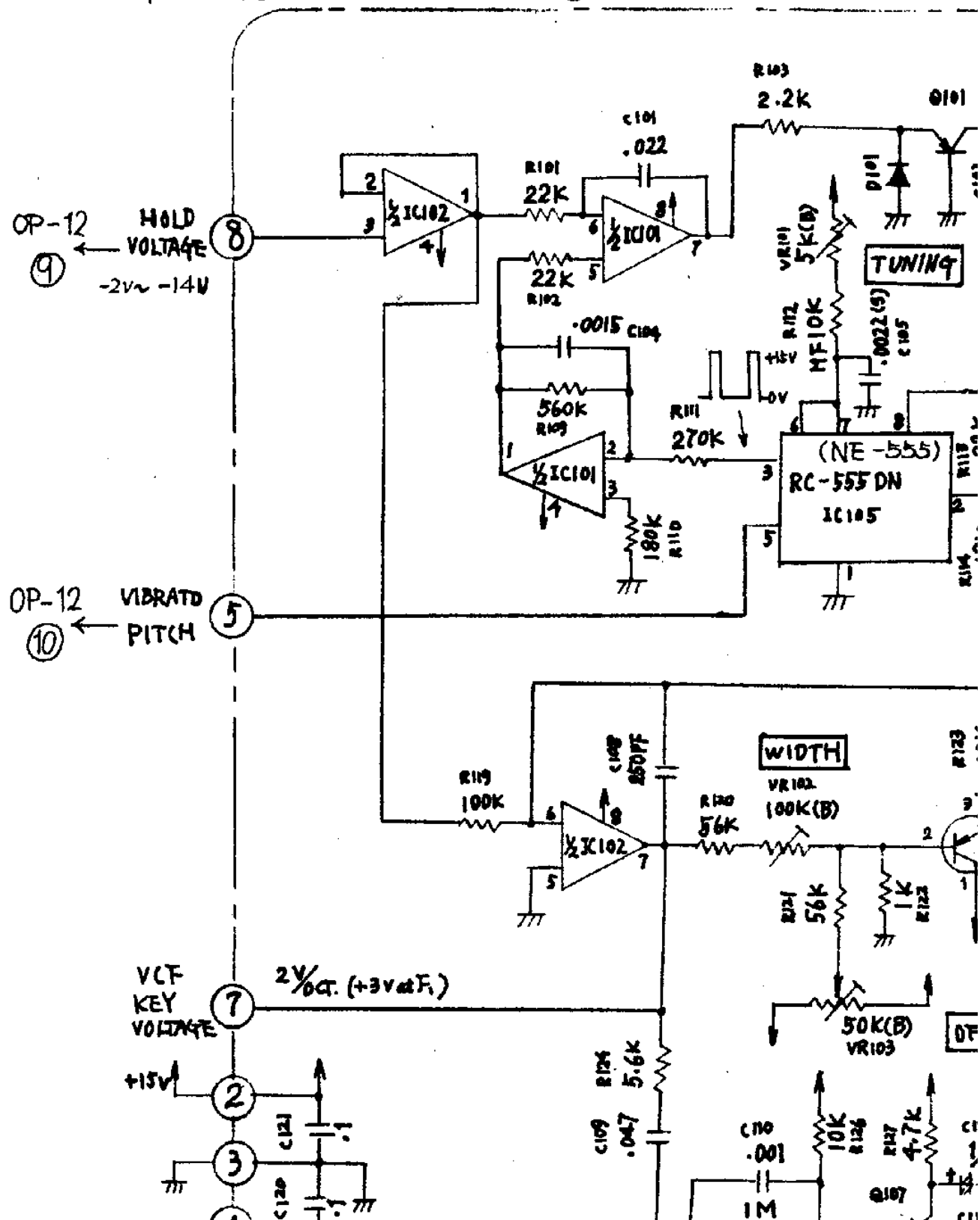
2. GENERAL BLOCK DIAGRAM



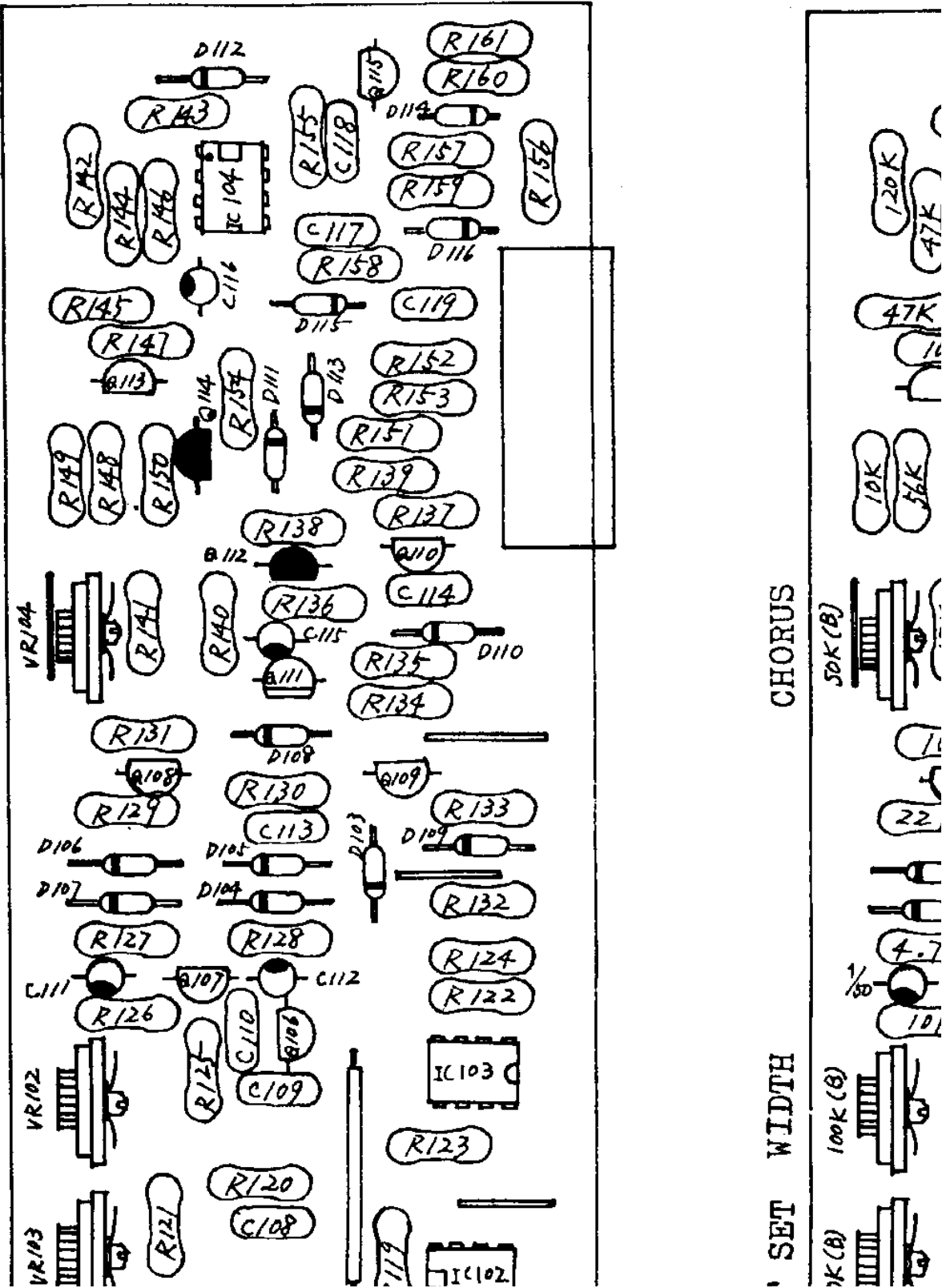


4. VCO CIRCUIT

4-1. VCO-2 Circuit Diagram

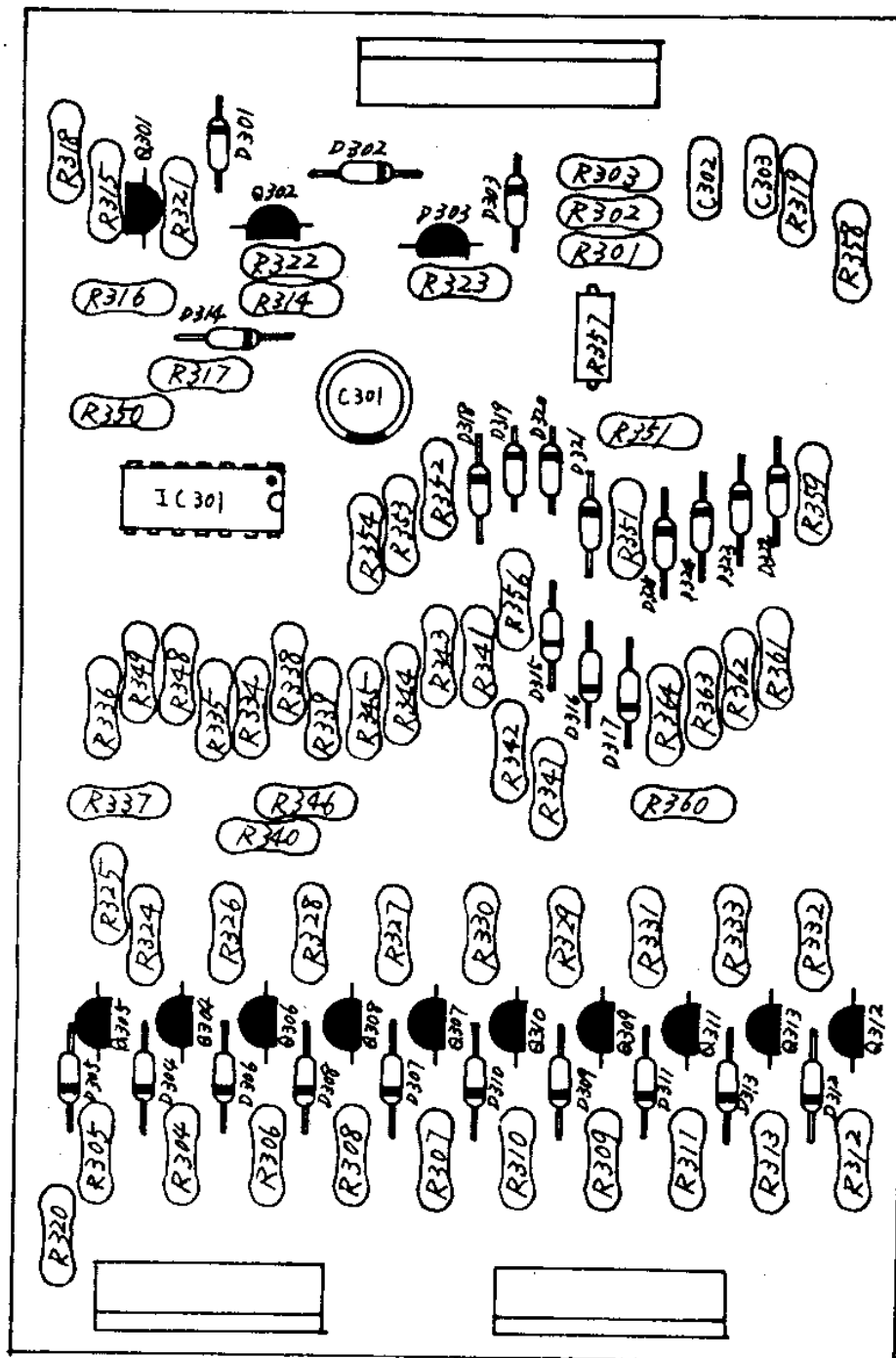


4-2. VCO-2 Board Assembly Parts Layout



5. VG-7 CIRCUIT

5-1. VG-7 Board Assembly Parts Layout

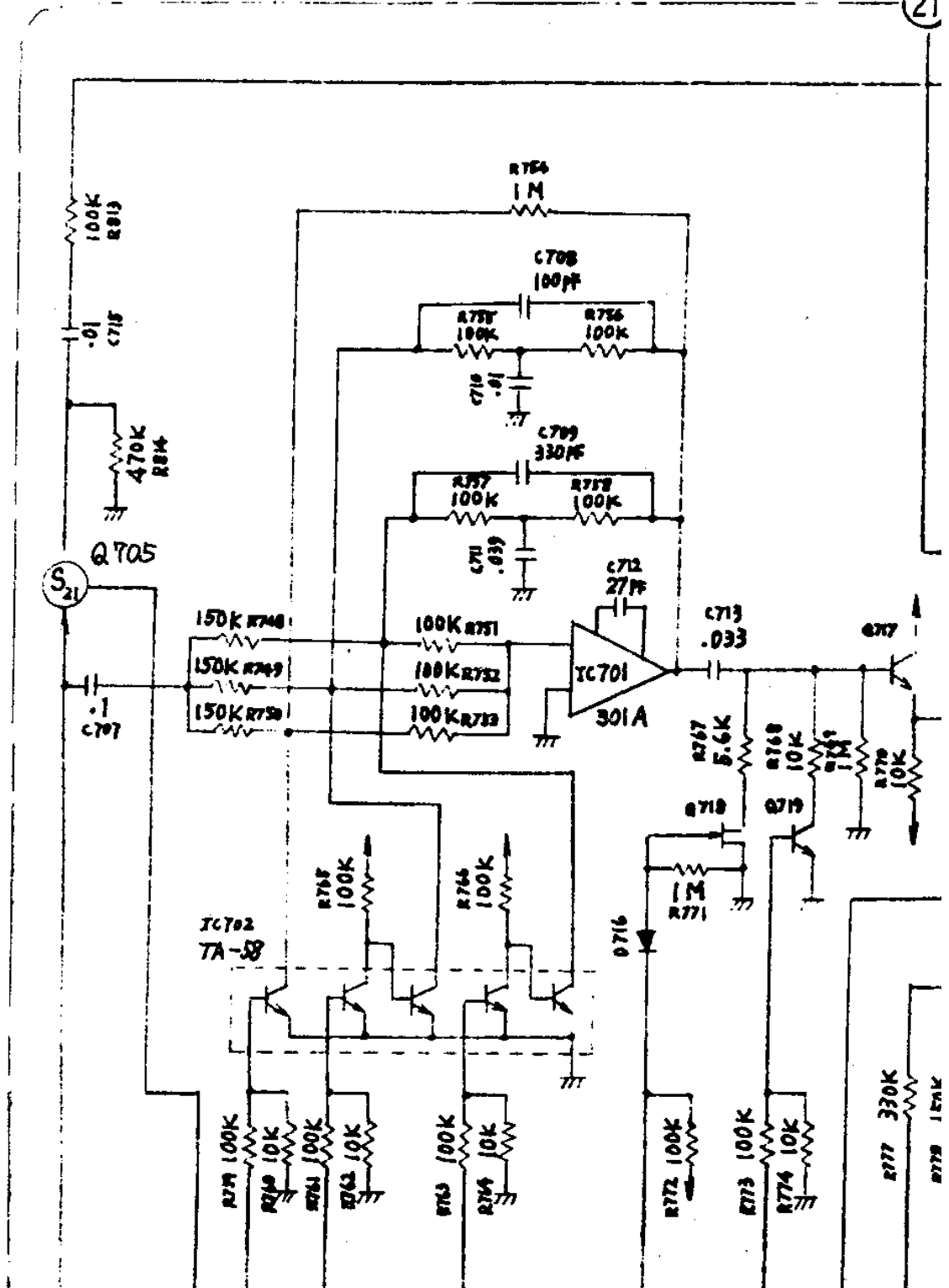


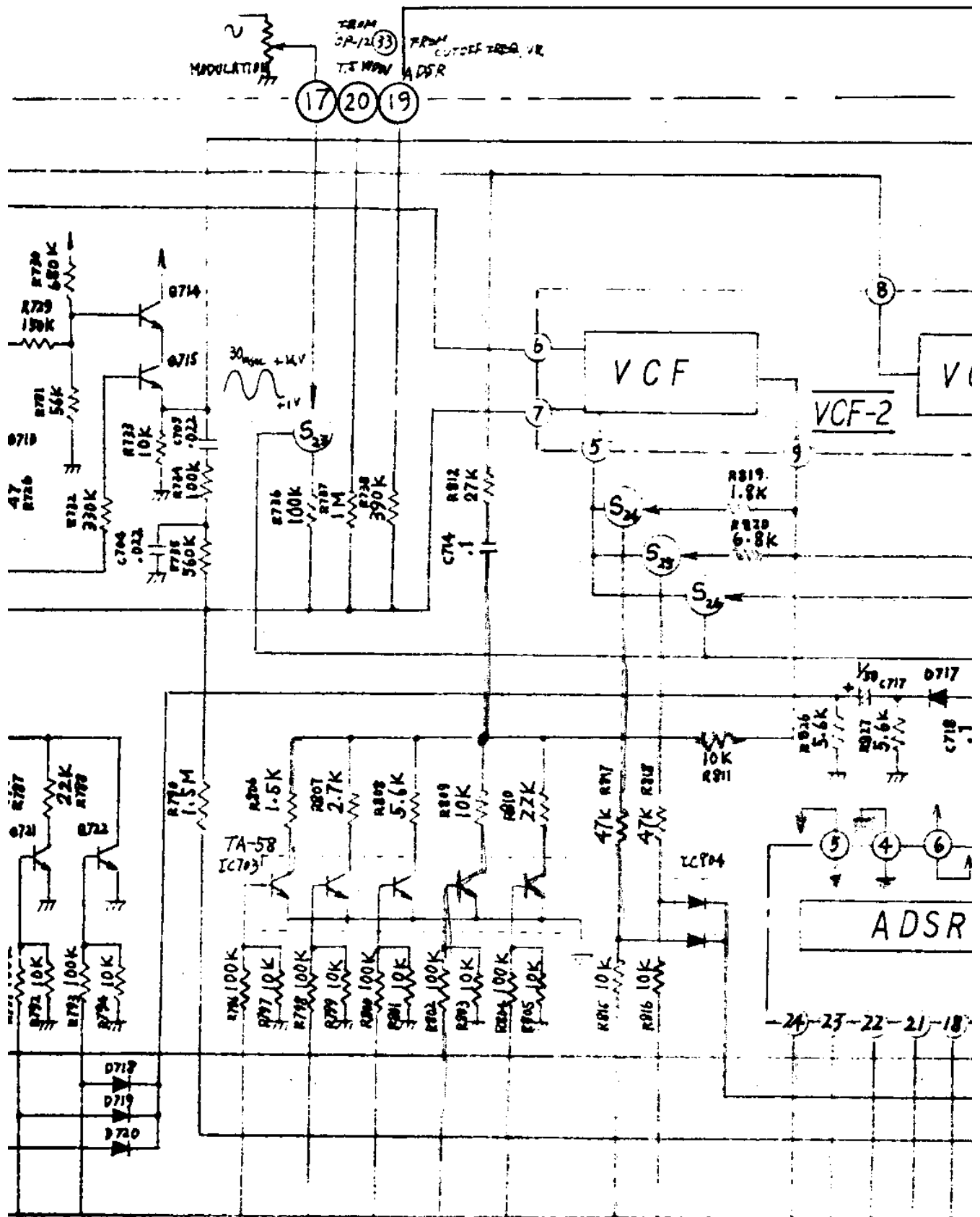
9. MX-1 CIRCUIT

9-1. MX-1 Circuit Diagram

T.S.G.
FROM

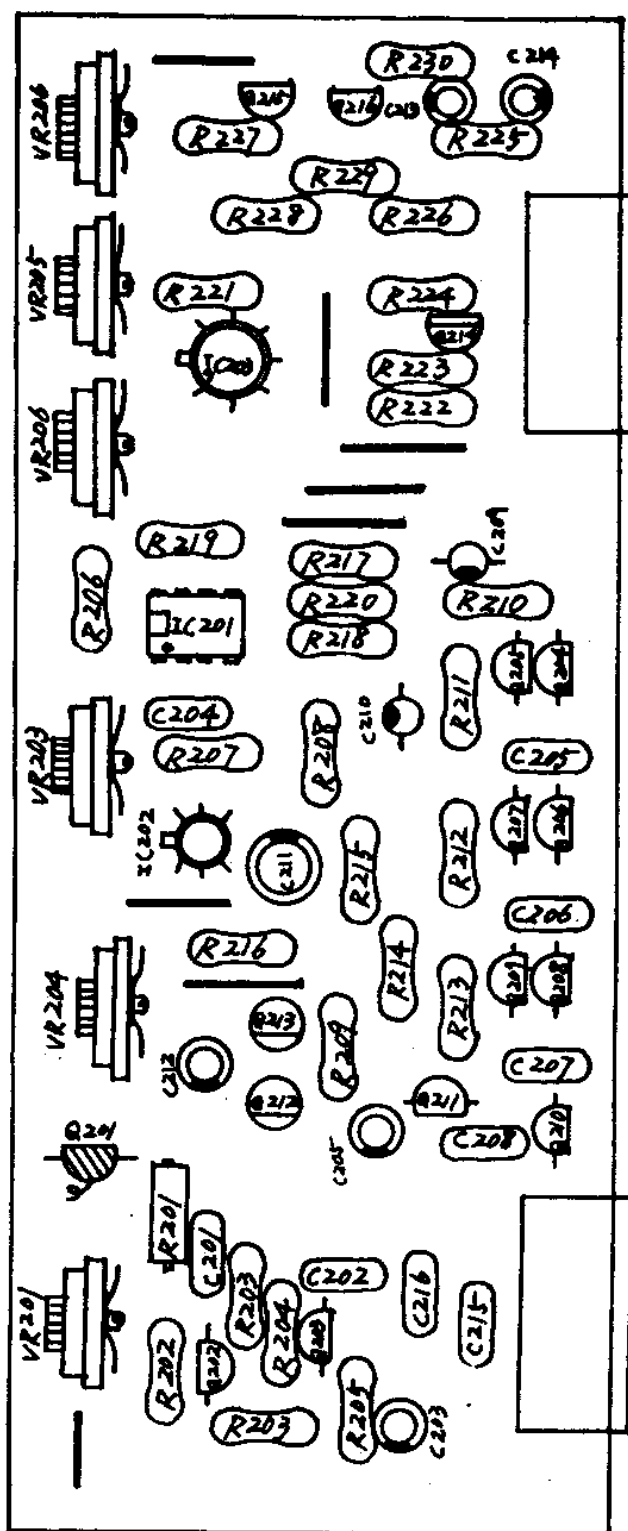
(21)





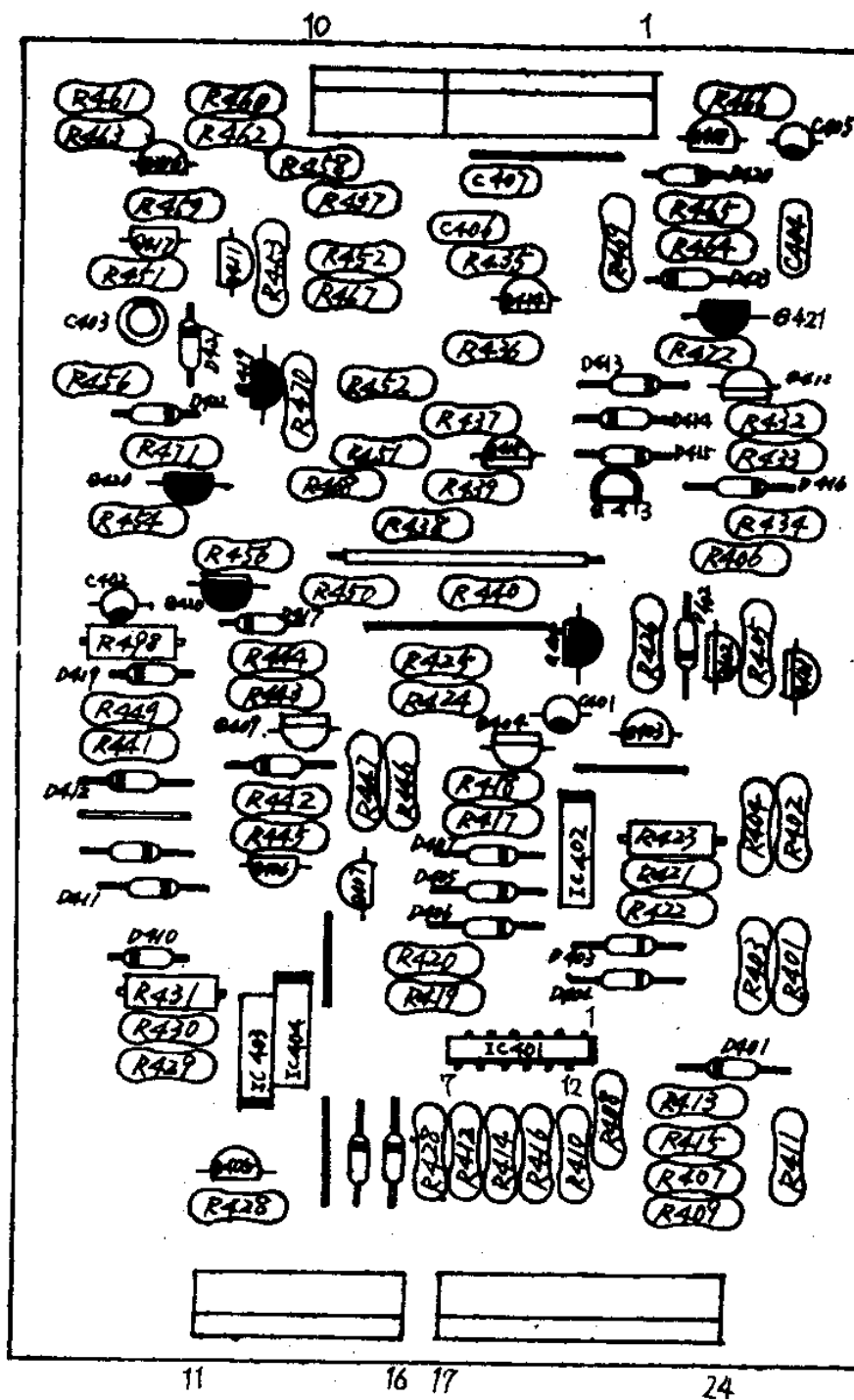
6. VCF-2 CIRCUIT

6-1. VCF-2 Board Assembly Parts Layout

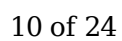


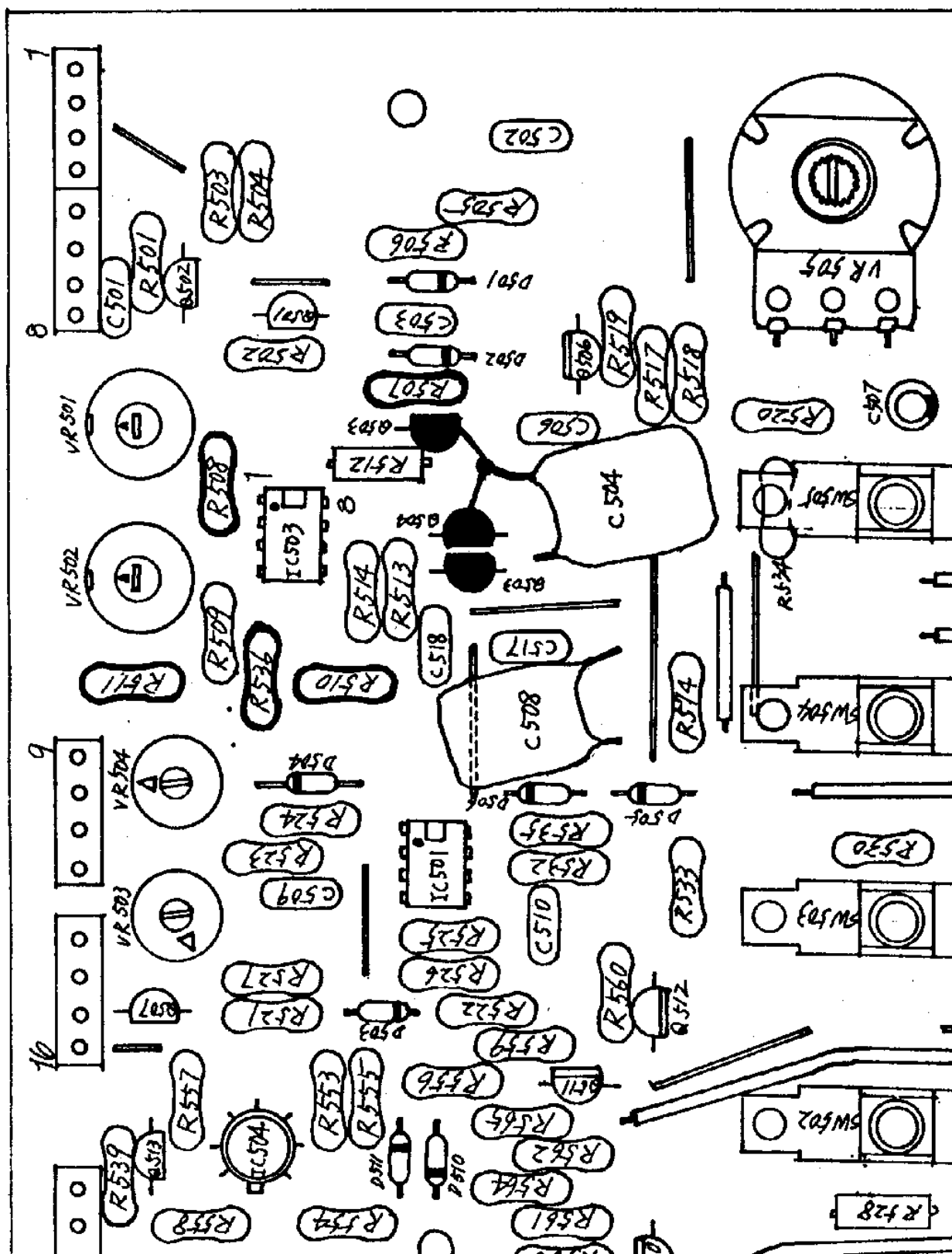
7. AR-2 CIRCUIT

7-1. AR-2 Board Assembly Parts Layout

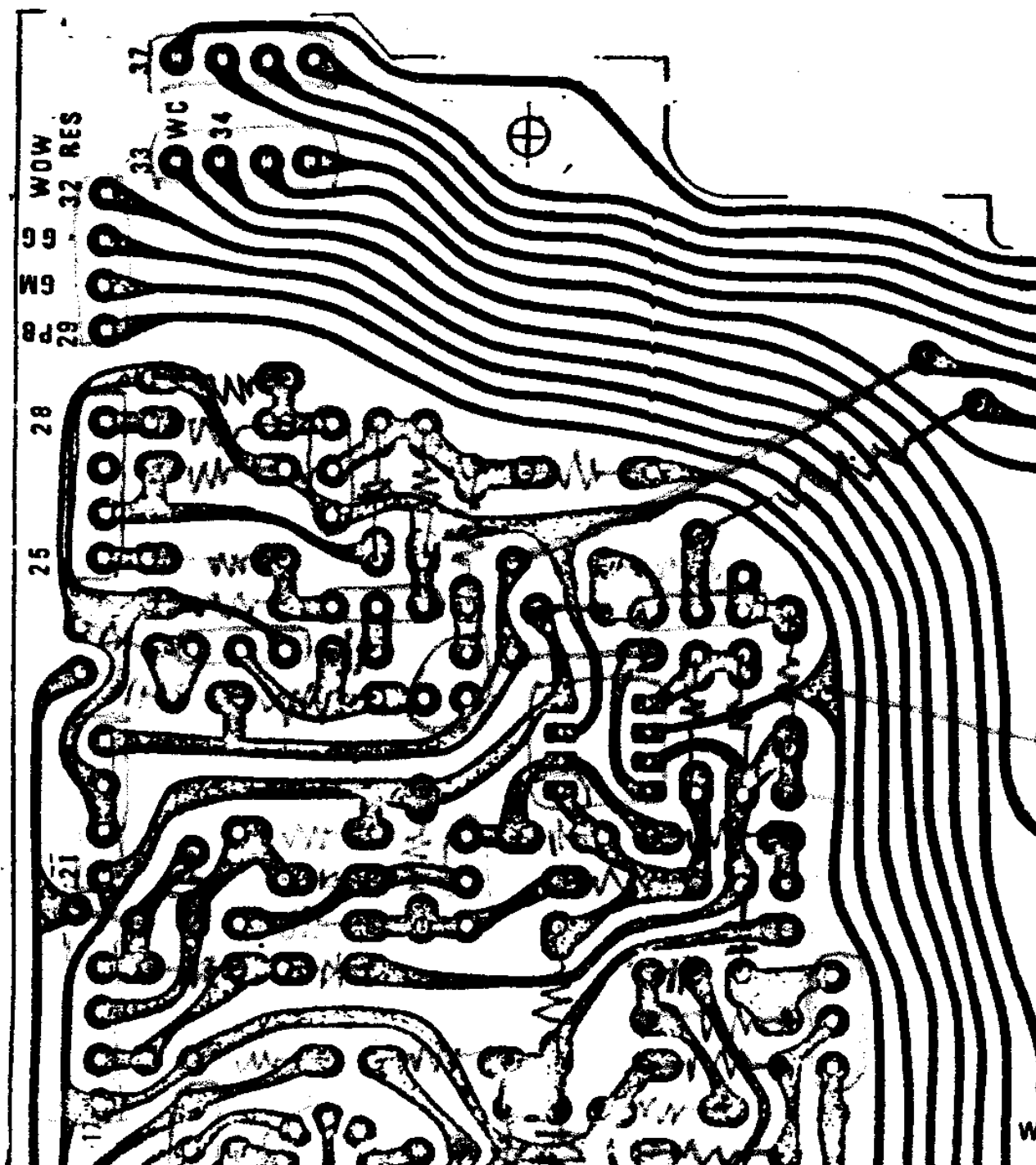


7-2. AR-2 Circuit Diagram

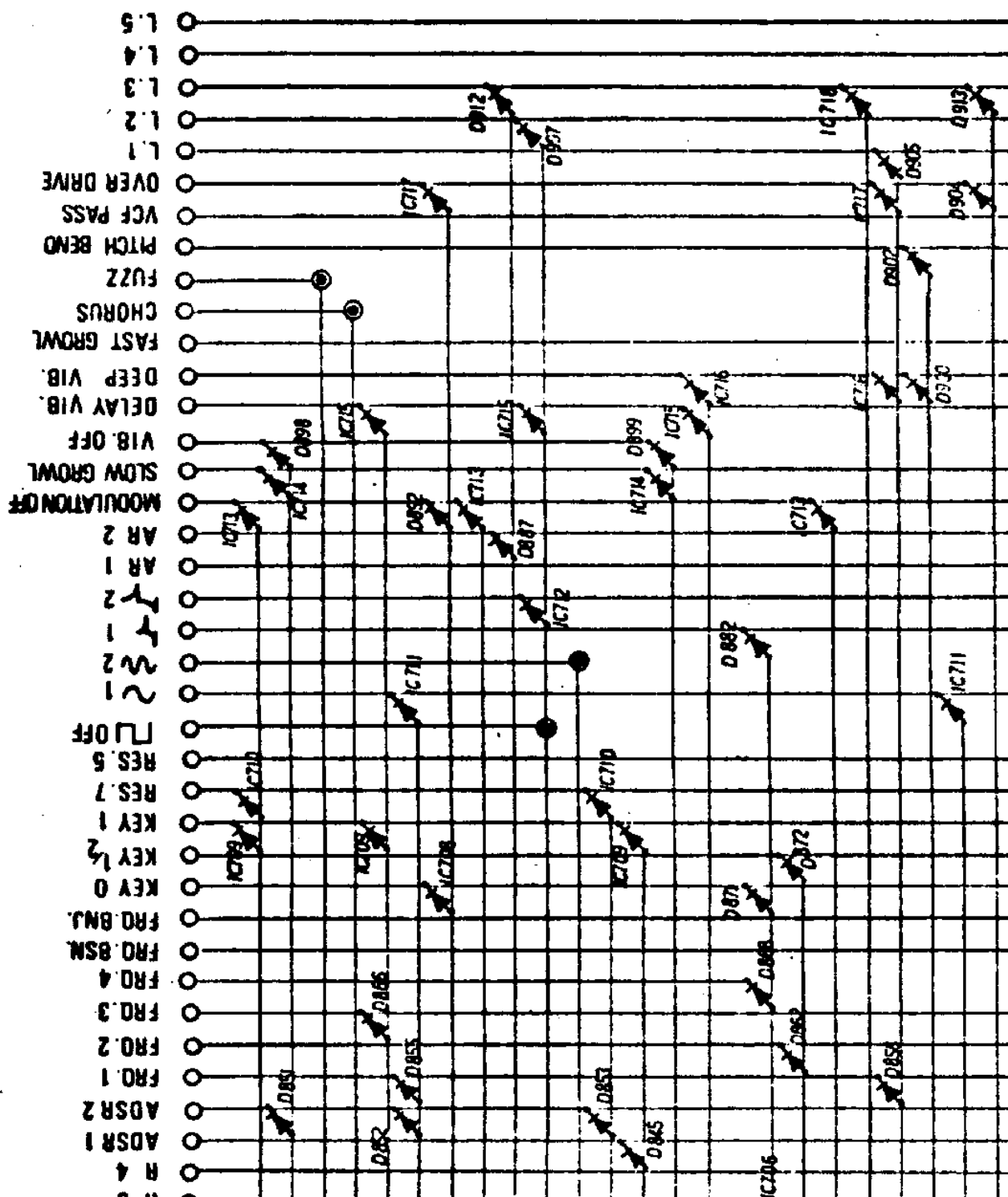


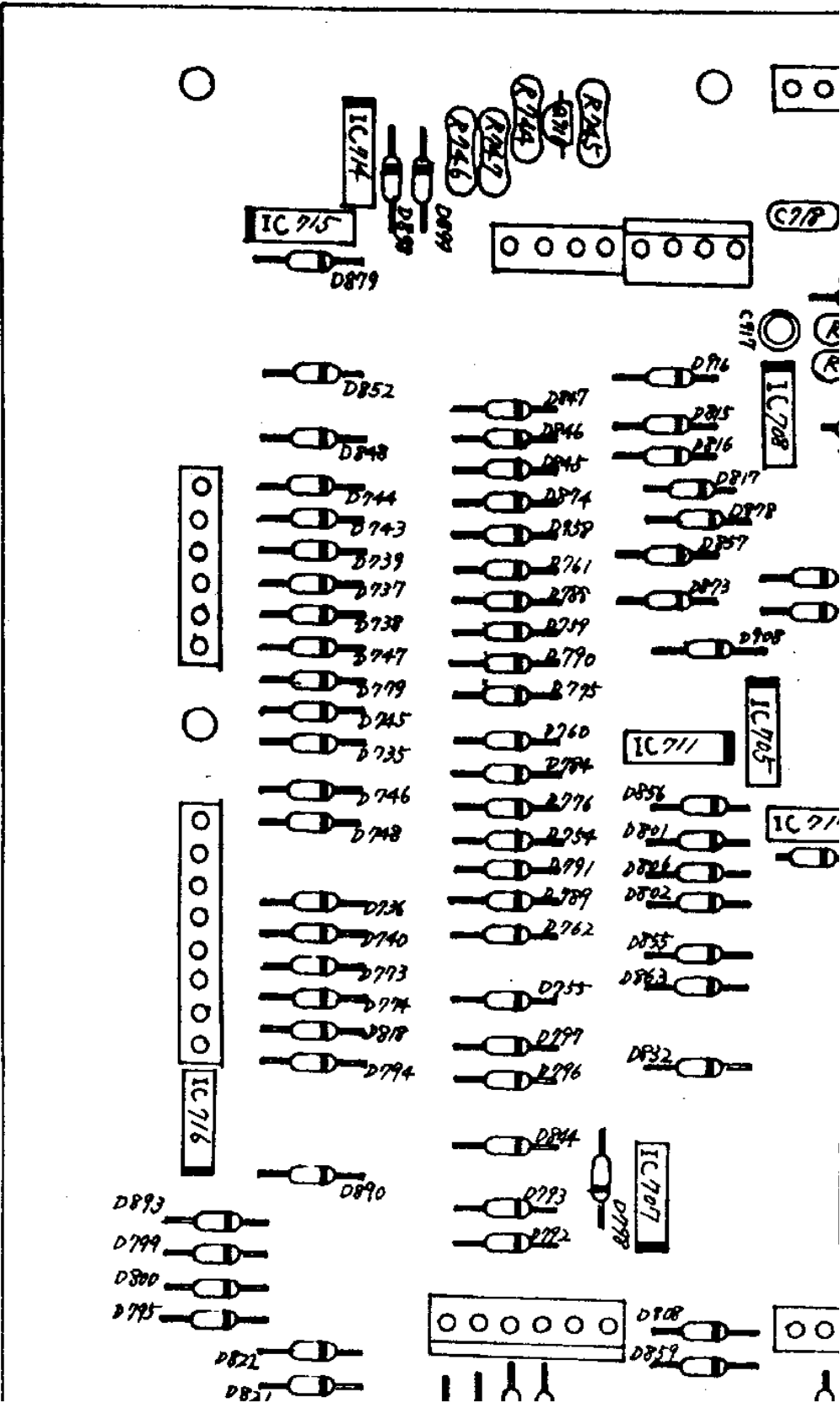


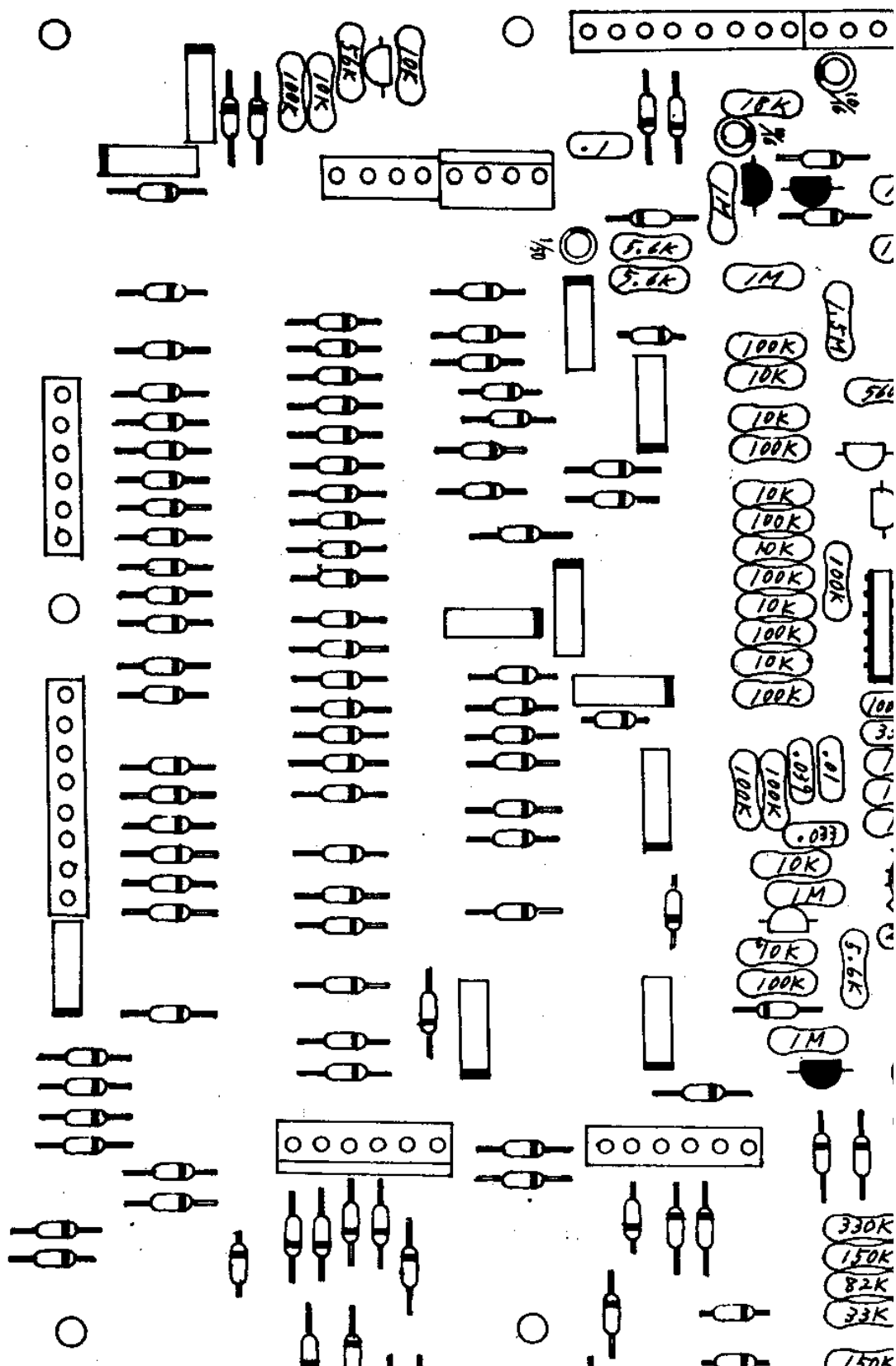
8-3. Rear Side of OP-12 Board

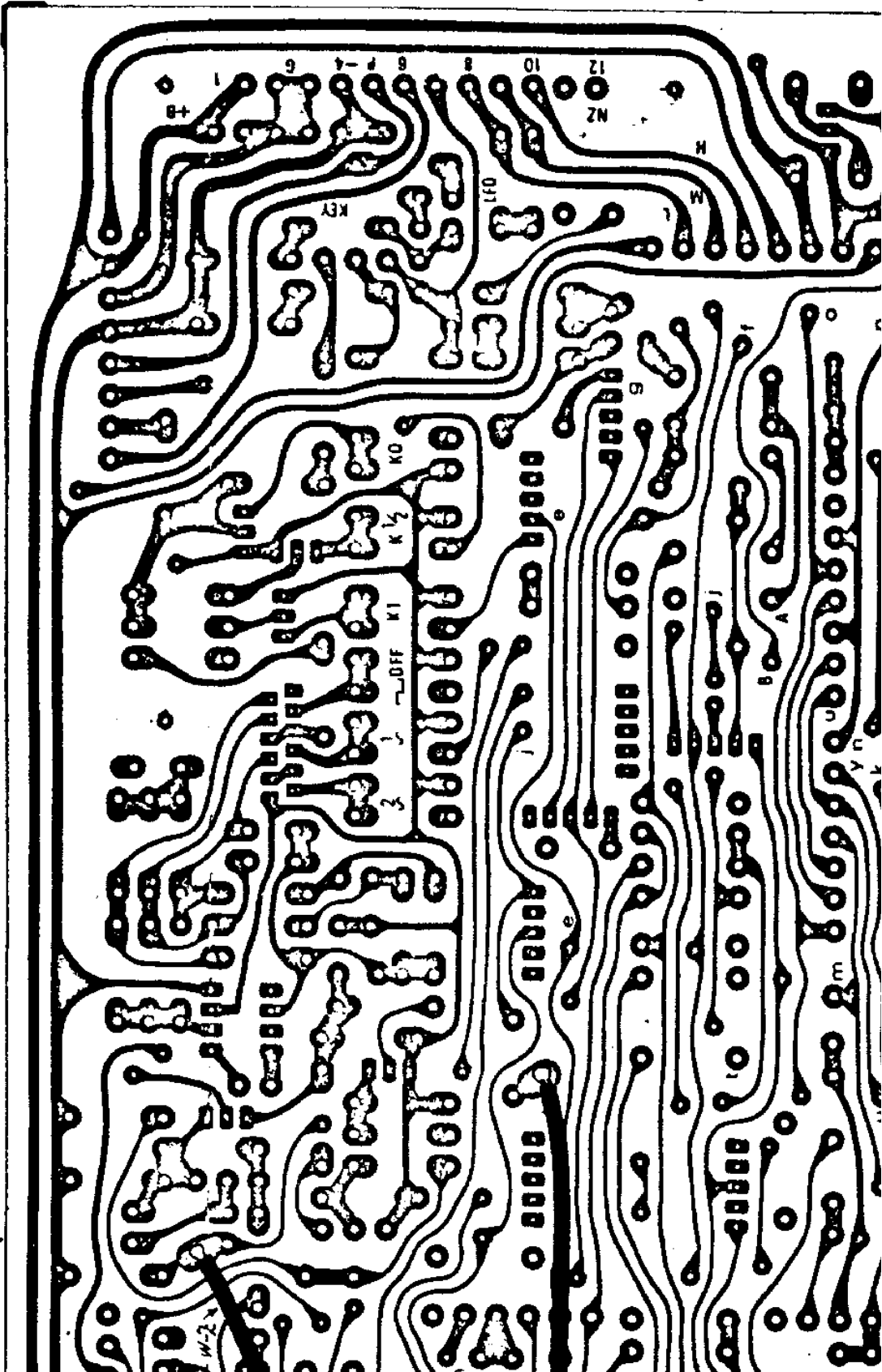


9-2. Diode Matrix MX-1 Circuit Diagram

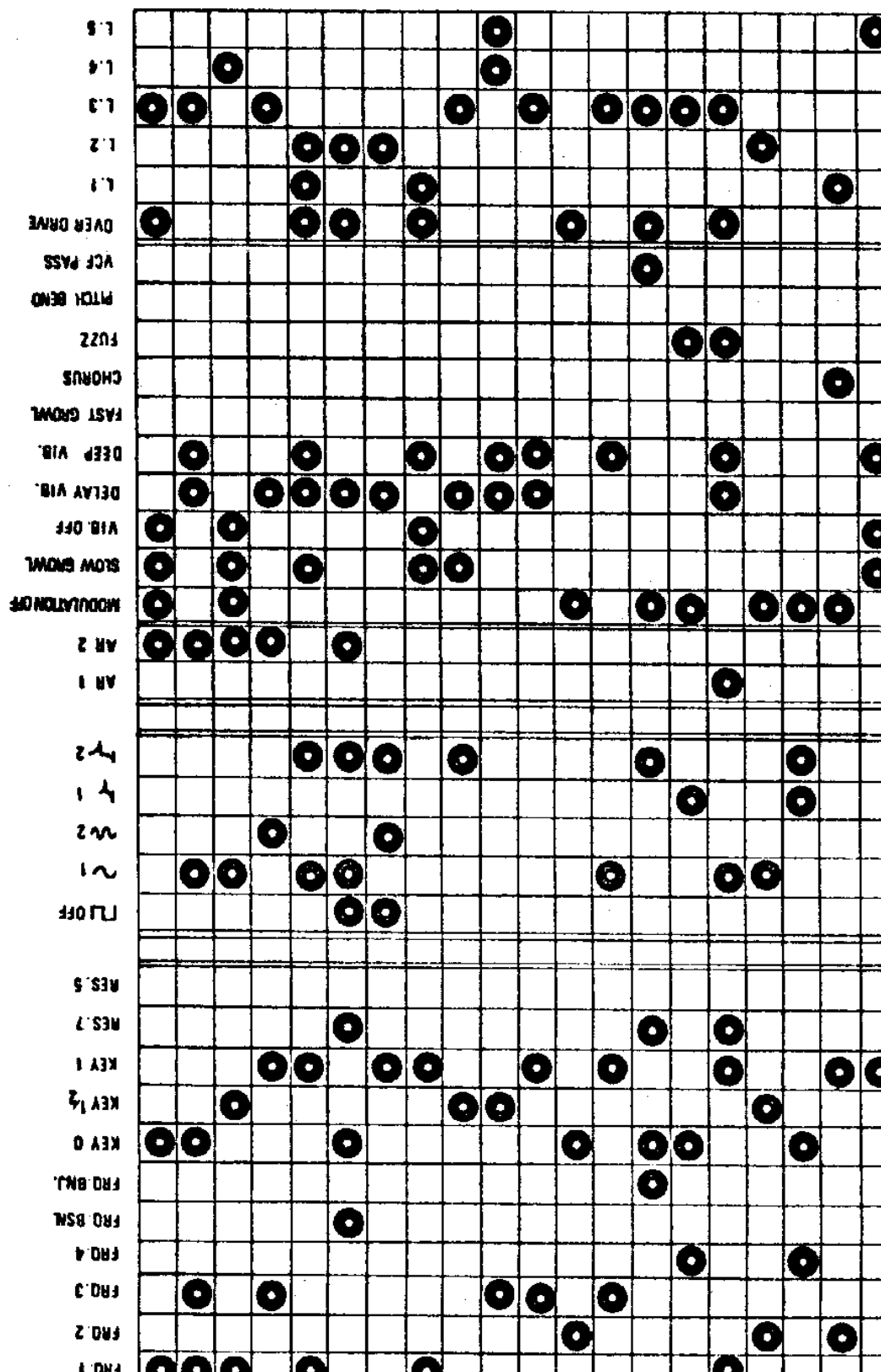






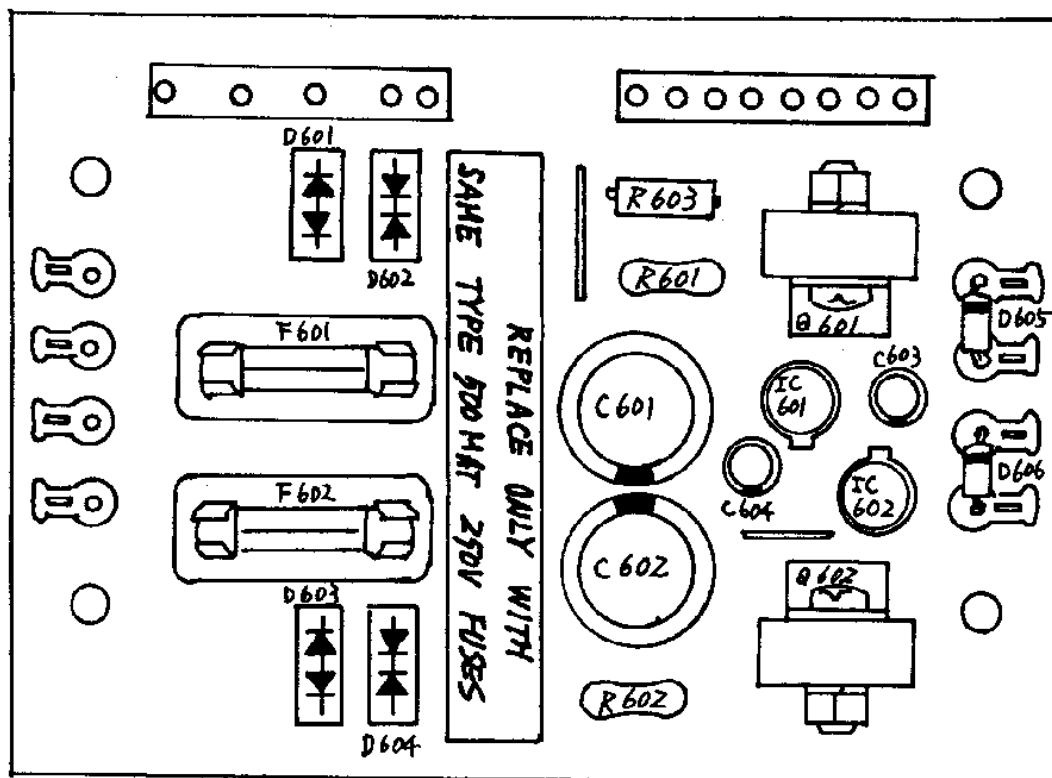


9-5. Matrix Composition Chart



10. PC-3 CIRCUIT

10-1. PS-14 Board Assembly Parts Layout



11. ADJUSTMENT

1. Plug the line cord plug into a standard AC outlet.
2. Connect the output jack on rear panel to an amplifier or the external input jack of an organ.
3. Connect the oscilloscope ground lead to the chassis and the scope vertical input lead to the No.44 terminal of OP-12.
4. Turn on the AC Power Switch.
5. Before adjusting, allow at least 3 minutes as a warmup time.

11-1. Tuning Procedure

- 1) Turn the Pitch control to the center of its rotation.
- 2) Turn the Tuning control (rear panel) to the center of its rotation.
- 3) Set the Transpose switch to the M position.
- 4) Set the Volume Control to the suitable position for adjustment.
- 5) Set the Filter control to the center position.
- 6) Turn off all the tab switches except Popcorn and Hold.
- 7) Turn off all the lever switches and set the controls to the minimum position except abovementioned.
- 8) There are two methods for tuning.

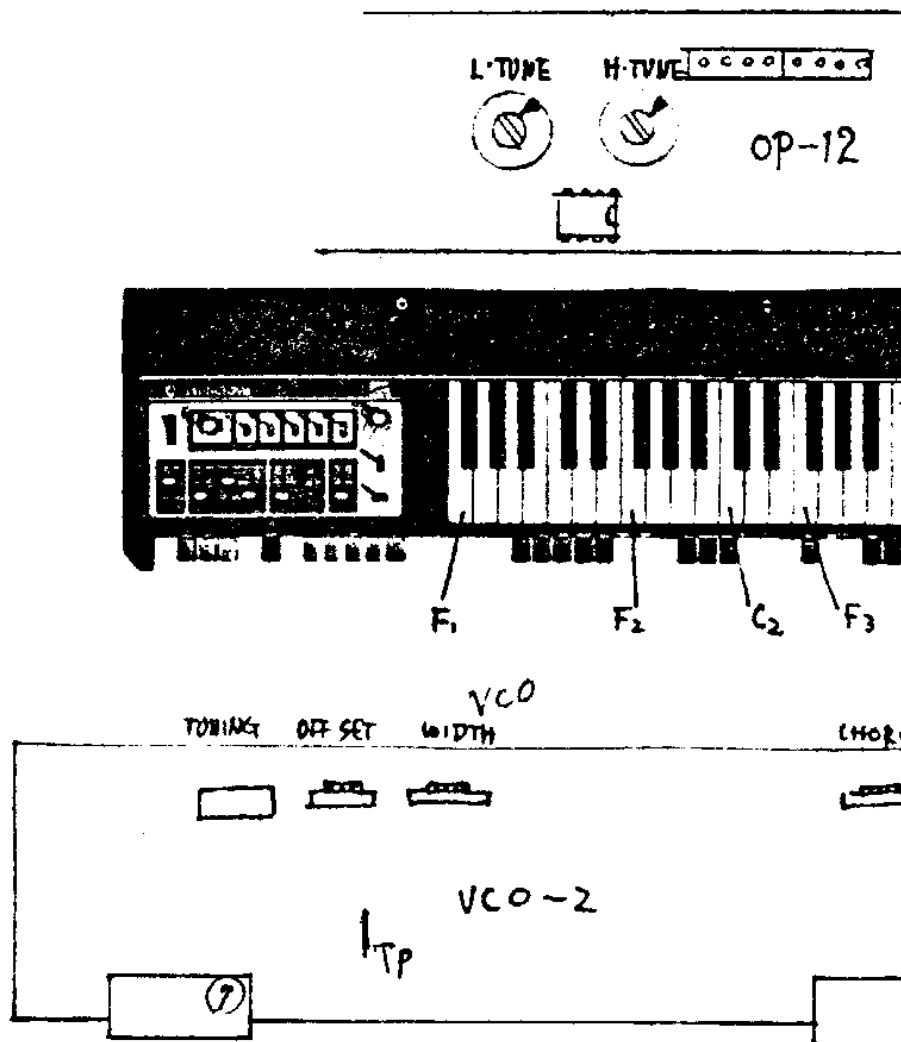
(1) Feed a signal from an audio generator to the horizontal input of the scope, and adjust the VCO controls to display stationary wave on the screen.

(2) Use the "beat note" sound heard when the loudspeaker reproduces two note of almost the same frequency. The beat note sound can best be described as a "throbbing" or "pulsating" sound.

As the VCO is adjusted closer to standard signal, the beat rate will slow down and the beat will finally disappear at "zero beat."

And the VCO may be on correct frequency.

- *1. Set the two trim pot.(L-Tune and H-Tune) on OP-12 to the center position.
- *2. Depress the F2 key, set the frequency to 349Hz by turning the "TUNING" trim pot. on the VCO-2.
- *3. Depress the F1 key, set the frequency to $349/2$ Hz by turning the "L-TUNE" trim pot. on the OP-12.
- *4. Repeat steps 2 and 3.
- *5. Depress the F4 key, set the frequency to 1397Hz by turning the "H-TUNE" on the OP-12.
- *6. Finally set the F2 frequency to 349Hz by "TUNING"(VCO-2).

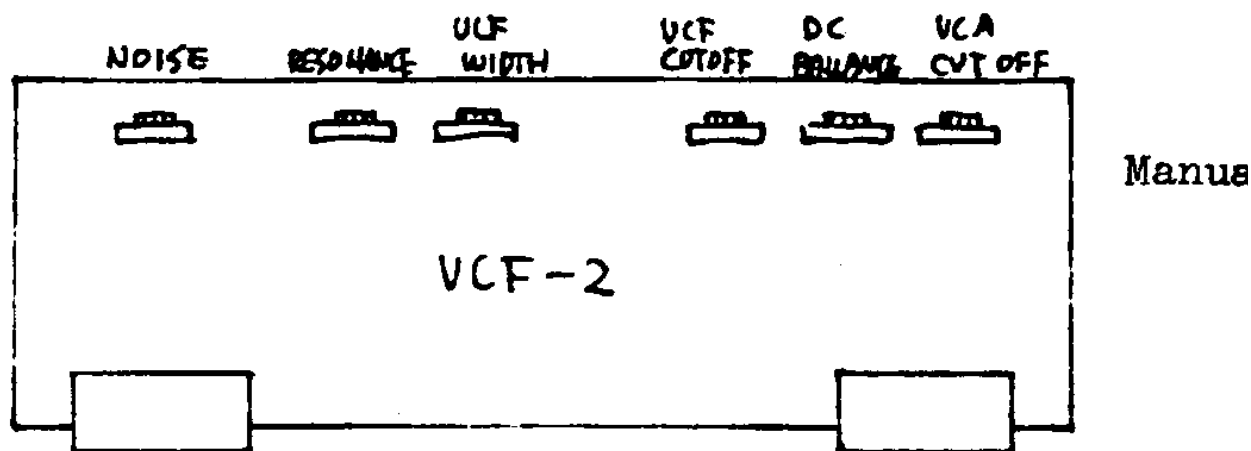


11-2. VCF control voltage adjustment

- 1) Connect a VOM or VTVM across terminal No.7 of VCO-2 and a grounded point of chassis.
- 2) Press F1 key, continue turning the " OFF SET " trim until +3volts appears at the No.7 terminal.
- 3) Press F4 key, continue turning the " WIDTH " trim pot +9volts appears.

NOTE

Being sure that a waveform similar to the scope.



- 2) Turn off the " PLANET " tab switch.
 Depress the " FILTER MANUAL " tab.
 Set the CUTOFF FREQUENCY knob to proper po
 Set RESONANCE knob to max. position.
 While depressing the keys of C1 and C2 alt
 trim pot on the VCF-2 to get one octave mu
- 3) Turn on " SINGING VOICE " tab, all other t
 Set the " CUTOFF FREQ " knob to 5 position
 While holding the C2 key down, adjust " VC
 so as to get the output waveform looks lik

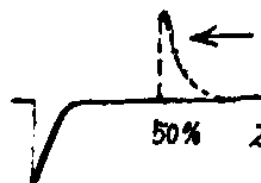
- 2) Turn the " TRANSPOSE " switch to "L" position.

Press down the F1 key, a pulse wave seen on the scope i and shuttling as shown in the figure shown below.

And then, turn the Transpose switch to "M" position.

While holding a key down, depress

the " ACCORDION " tab switch, a Chorus of the note should be heard.



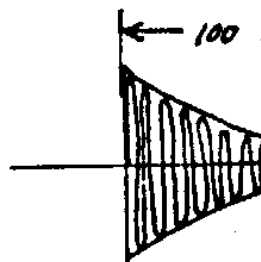
11-5. VCA adjustment

- 1) Turn off all the tab switches except the " REPEAT " tab

Press any key. If any pulse wave is seen on the scope, reduced by the " DC BALANCE " on the VCF-2.

- 2) Depress the " POP CORN " tab switch.

The DECAY TIME of its wave should be adjusted to 100mSec CUTOFF " on the VCF-2.



11-6. TOUCH SENSITIVITY adjustment

- 1) Shift the scope vertical input lead to point A.

Adjust the " T.S OFFSET " on the OP-12 until point A's to 0 volt.

- 2) Depress the " FRENCHHORN " tab switch, all other tab s be off.

Turn the " PITCH BEND " to Up or Down.

Turn the " SENSITIVITY " control fully clockwise.

While holding a key down strongly (800 to 900 grams pr