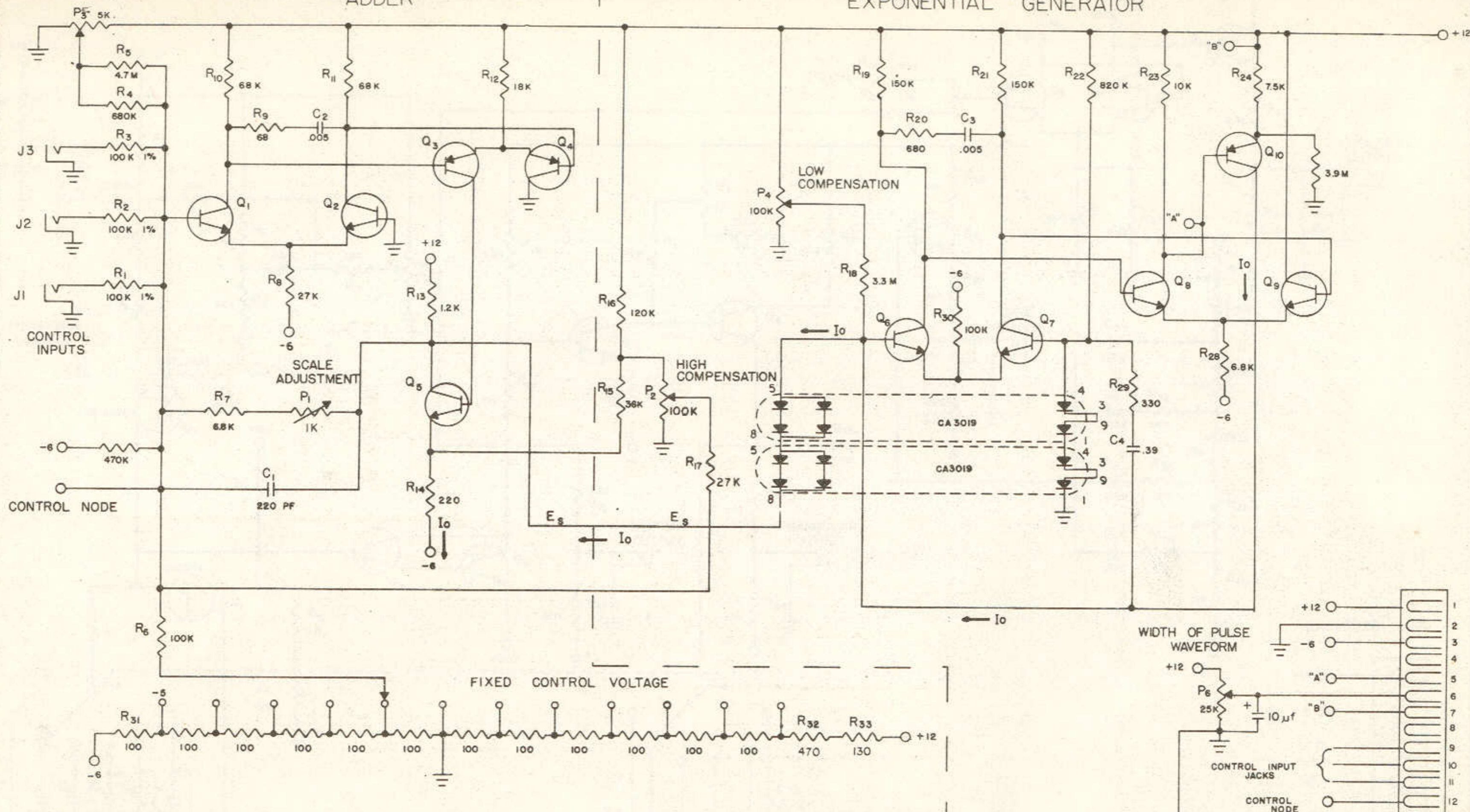


FIXED CONTROL VOLTAGE

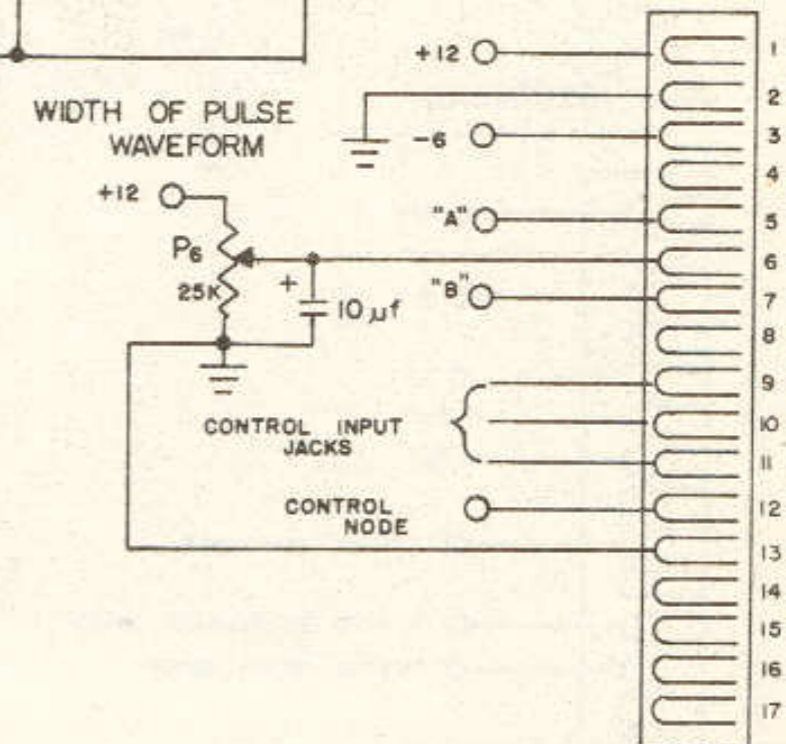
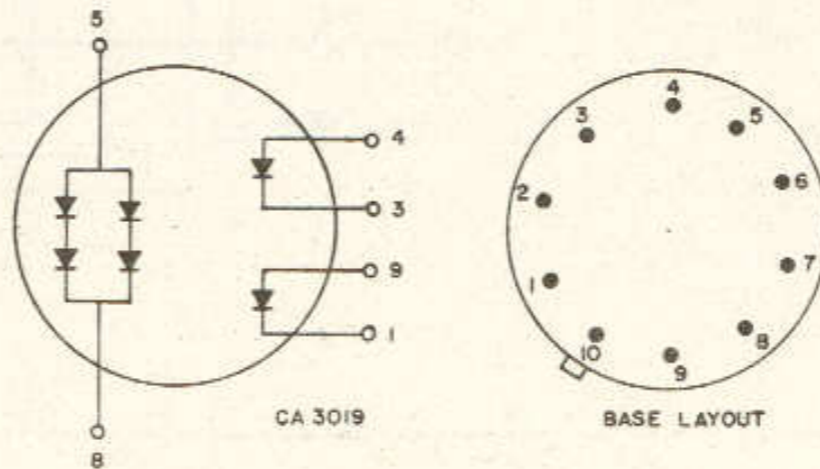
ADDER

EXPONENTIAL GENERATOR



NOTES :

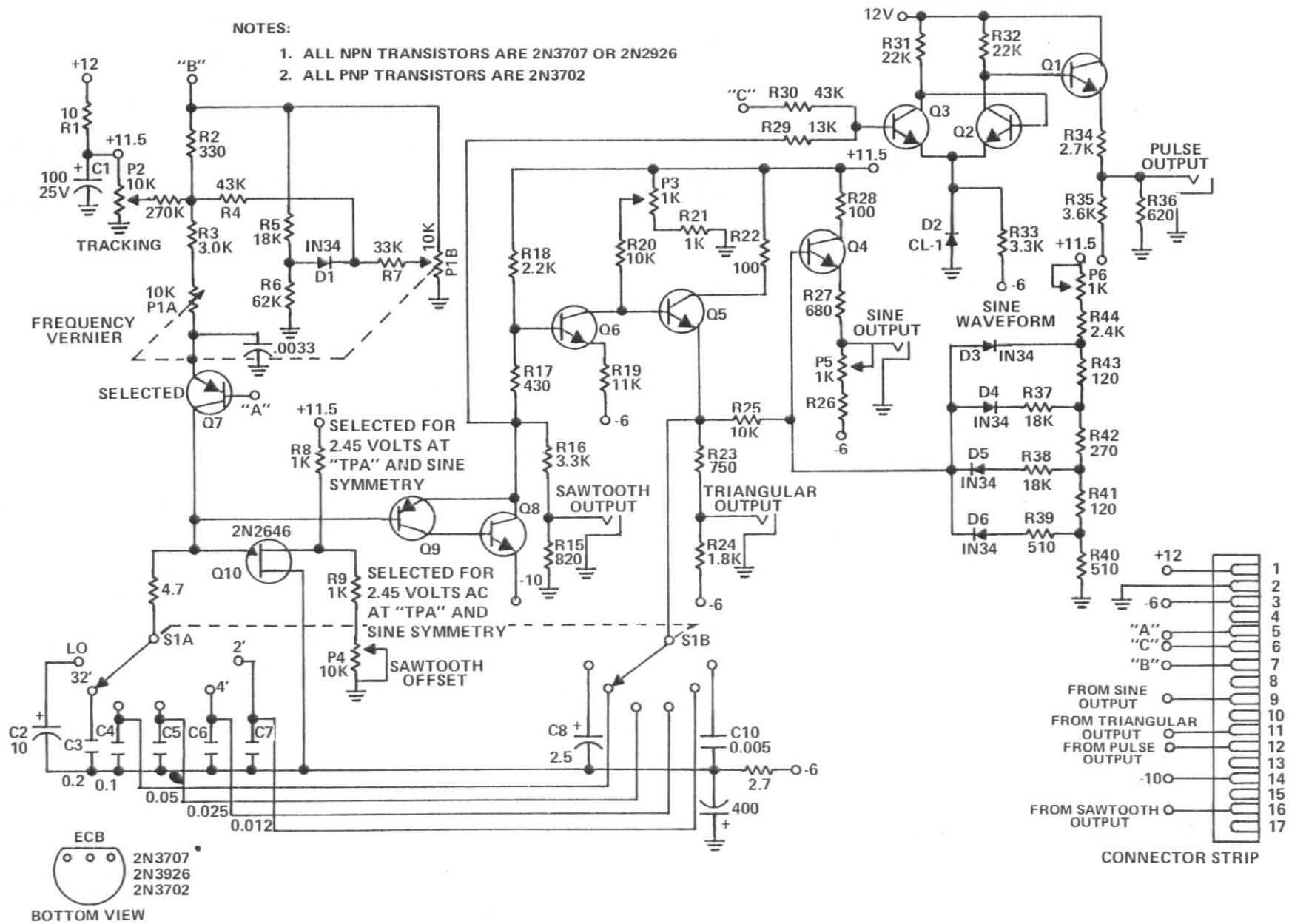
- 1 ALL NPN TRANSISTORS ARE 2N3391A OR 2N3392.
- 2 " PNP " " 2N4058.



OLD DWG. FILED OBSOLETE

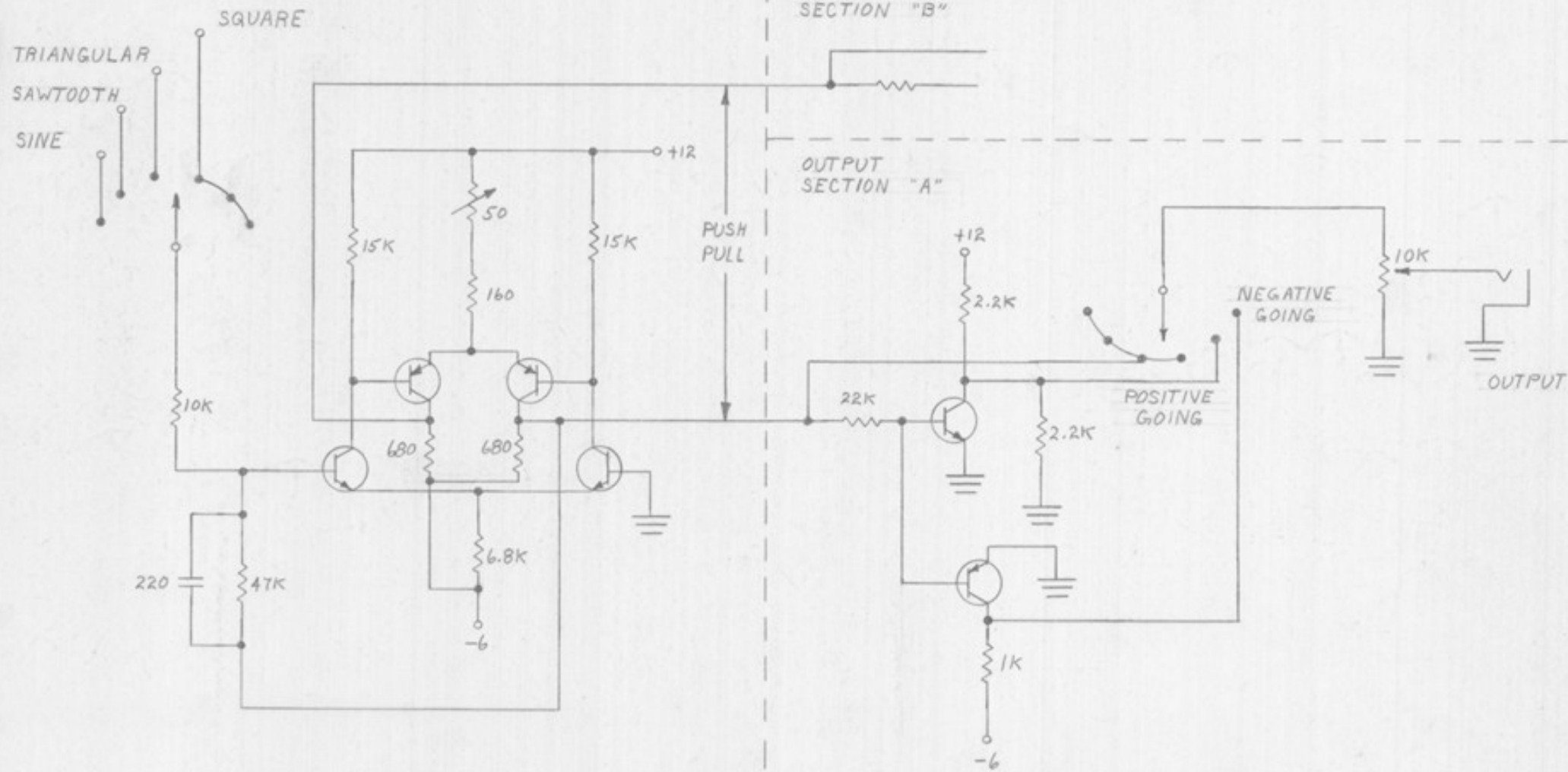
WRH 4-70

APPROVED FOR PRODUCTION WRH 4-70	
REVISIONS	R. A. MOOG CO. TRUMANSBURG, NEW YORK
REV A ECM 014	TITLE 901-A OSCILLATOR CONTROLLER
	SCALE _____ DR. BY JA DWG. NO.
	DATE 7-2-69 CK'D. BY _____ 1100



993-042646

FIGURE 7 OSCILLATOR 901B



901-C OUTPUT STAGE	
DRAWN BY B.S.	SCHEMATIC
APPR. BY	
DATE	DRAWING
2-14-67	NUMBER # 1126 REV. 1
R.A. MOOG CO.	
TRUMANSBURG, N.Y.	

902 VOLTAGE CONTROLLED AMPLIFIER TEST PROCEDURE

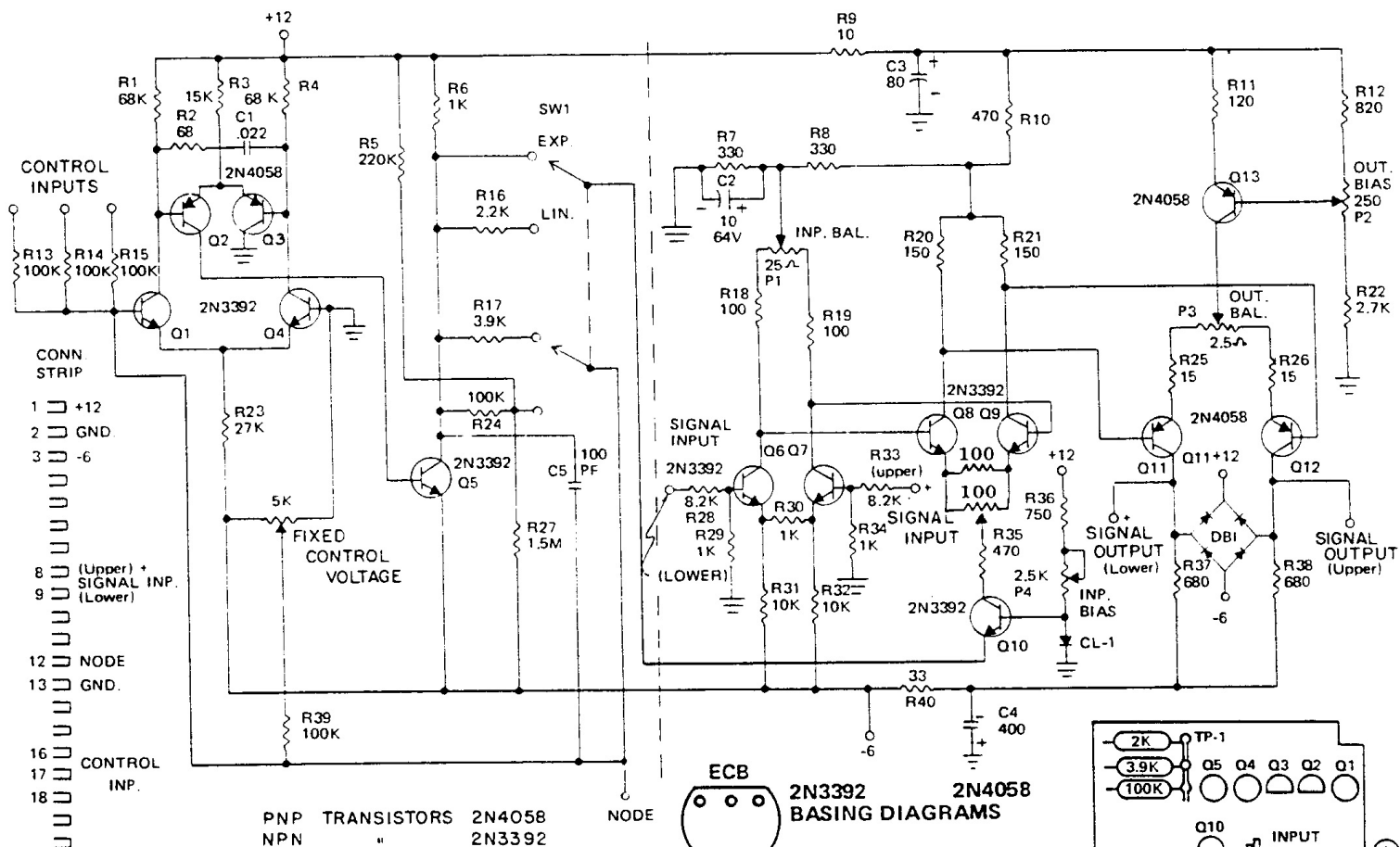
1. Connect dc voltmeter to TP-L (collector of Q5); low side to ground.
2. Turn FIXED CONTROL VOLTAGE pot to 6 and set CONTROL MODE switch to "EXP." DC voltage should read approximately zero.
3. Rotate FIXED CONTROL VOLTAGE pot to 0. DC voltage should read approximately +0.24V.
4. Set CONTROL MODE switch to LIN. DC voltage should read approximately +1.2V.
5. Rotate FIXED CONTROL VOLTAGE pot to 6. DC voltage should read approximately -4.8V.

NOTE

If the above voltages are observed, the adder section (Q1 thru Q5) is operating properly.

6. With FIXED CONTROL VOLTAGE in 6 and dc voltmeter connected between one of the SIGNAL OUTPUTS jacks and ground, adjust OUTPUT BIAS trimpot for zero volts.
7. Connect dc voltmeter across positive terminals of SIGNAL OUTPUTS jacks. Connect jumper between collectors of Q8 and Q9 and adjust OUTPUT BALANCE trimpot for 0 VDC.

8. Remove jumper across collectors of Q8 and Q9 and connect across collectors of Q6 and Q7. Adjust Q8 and Q9 BALANCE trimpot for 0 VDC.
9. Remove jumper and adjust INPUT BALANCE trimpot for 0 VDC.
10. Turn FIXED CONTROL VOLTAGE pot and ascertain that there is no large offset. If necessary, repeat steps 7, 8 and 9.
11. Turn FIXED CONTROL VOLTAGE pot to 6. Apply 0db 1kHz sine wave to one of the SIGNAL INPUTS. Signal output should be approximately +5db to +7db.
12. Note the output level. Set the CONTROL MODE switch to "EXP." Adjust INPUT BIAS to obtain a level equal to that noted in the "LIN" position.



CONN STRIP
1 +12
2 GND
3 -6
8 (Upper) + SIGNAL INP.
9 (Lower)
12 NODE
13 GND.
16 CONTROL INP.
17
18
21 (Upper) SIGNAL OUT (Lower) +
22

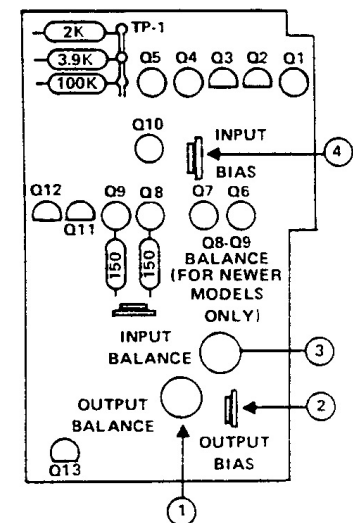
PNP TRANSISTORS 2N4058
NPN " 2N3392

ECB
2N3392
2N4058
BASING DIAGRAMS

BOTTOM VIEW

13. Slowly turn FIXED CONTROL VOLTAGE pot from 6 to 0 and check for linear action in the LIN mode and exponential action in the EXP mode. At 0, signal output should be -60db maximum.
14. Turn FIXED CONTROL VOLTAGE pot to 6. With a dc bias, check each control input for proper voltage control. 0 volts should have no effect, -6 volts should cut the amplifier off completely.
15. With no signal input and FIXED CONTROL VOLTAGE set at 6, output noise should be -60db maximum.

- 1 Adjusts + output balance for exponential dc voltages with FIXED CONTROL VOLTAGE CONTROL fully counterclockwise.
- 2 Adjusts zero output offset with FIXED CONTROL VOLTAGE control fully counterclockwise.
- 3 Adjusts zero output offset with FIXED CONTROL VOLTAGE control fully clockwise.
- 4 Adjusts amplitude level balance between linear and exponential mode with FIXED CONTROL VOLTAGE control full clockwise.



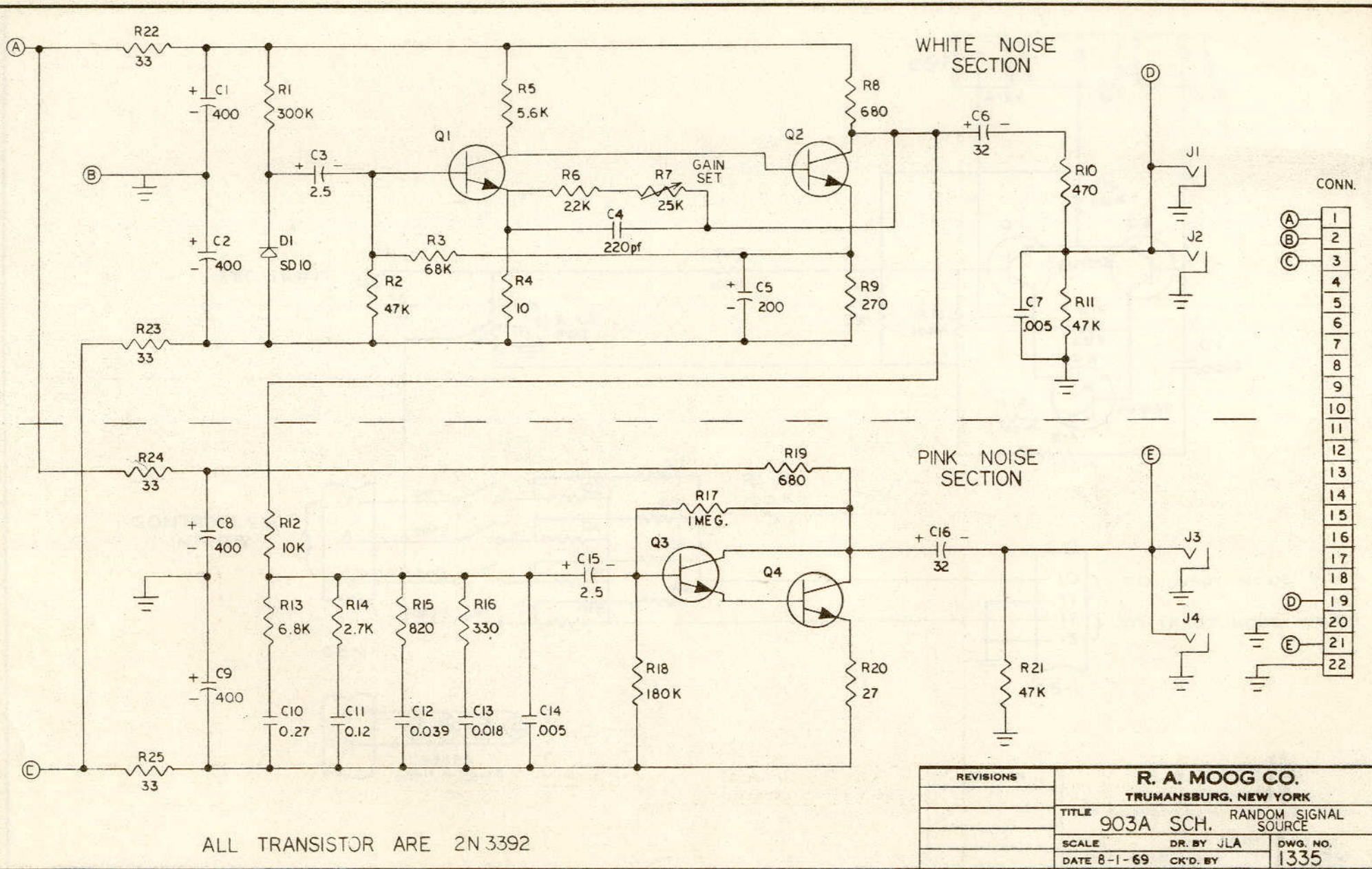
VOLTAGE CONTROLLED AMPLIFIER ALIGNMENT PROCEDURE AND ADJUSTMENT LOCATION DIAGRAM

MOOG MUSIC INC.

SCHMATIC, 902 VOLTAGE CONTROLLED AMPLIFIER
993-041813

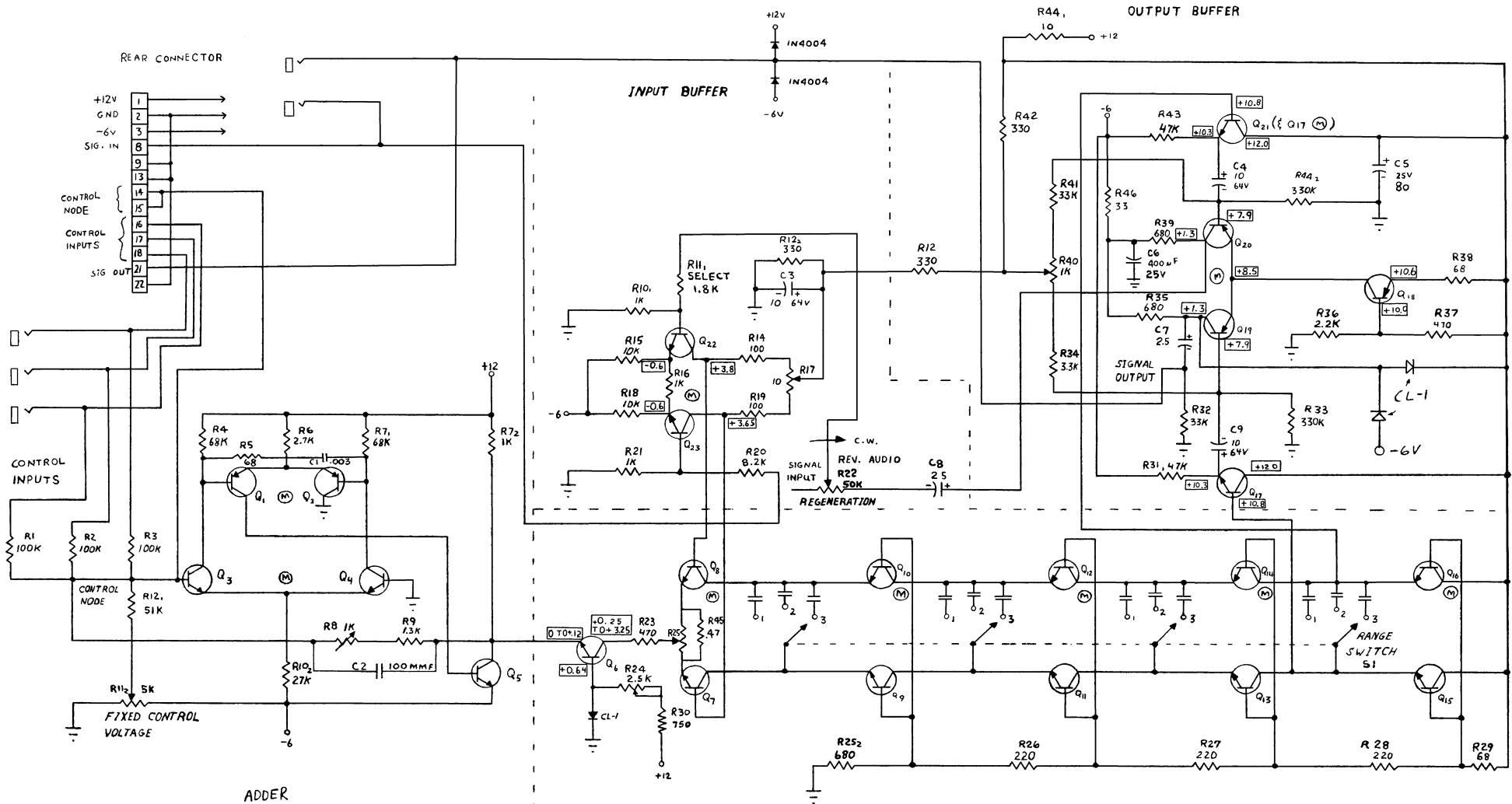
1068

FIGURE 9 VOLTAGE CONTROLLED AMPLIFIER MODEL 902



ALL TRANSISTOR ARE 2N 3392

REVISIONS		R. A. MOOG CO.	
		TRUMANSBURG, NEW YORK	
		TITLE	903A SCH. RANDOM SIGNAL SOURCE
		SCALE	DR. BY JLA DWG. NO. 1335
		DATE 8-1-69	CK'D. BY



- NOTES:
1. ALL NPN TRANSISTORS: 2N 3392
 2. ALL PNP TRANSISTORS: 2N 4058
 3. (M) ⇒ MATCHED PAIR
 4. RANGE CAPACITOR SIZES

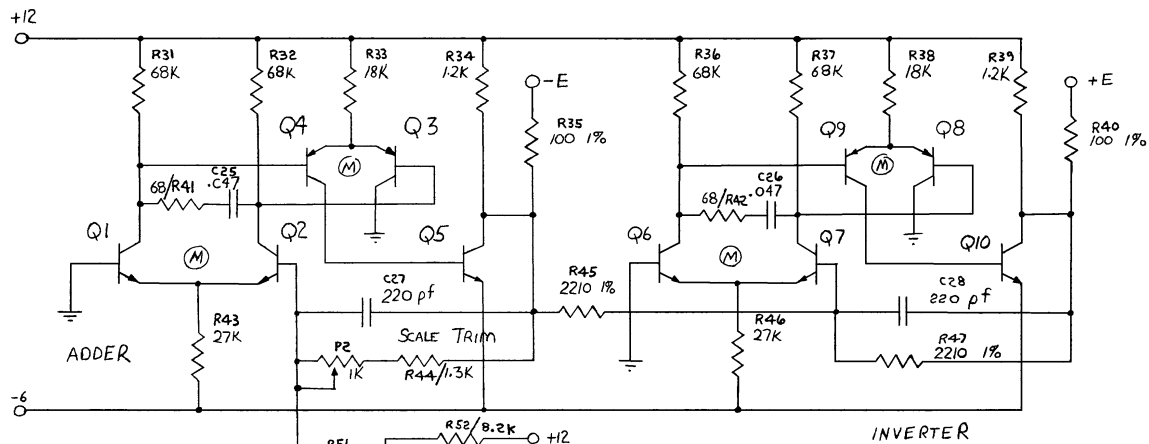
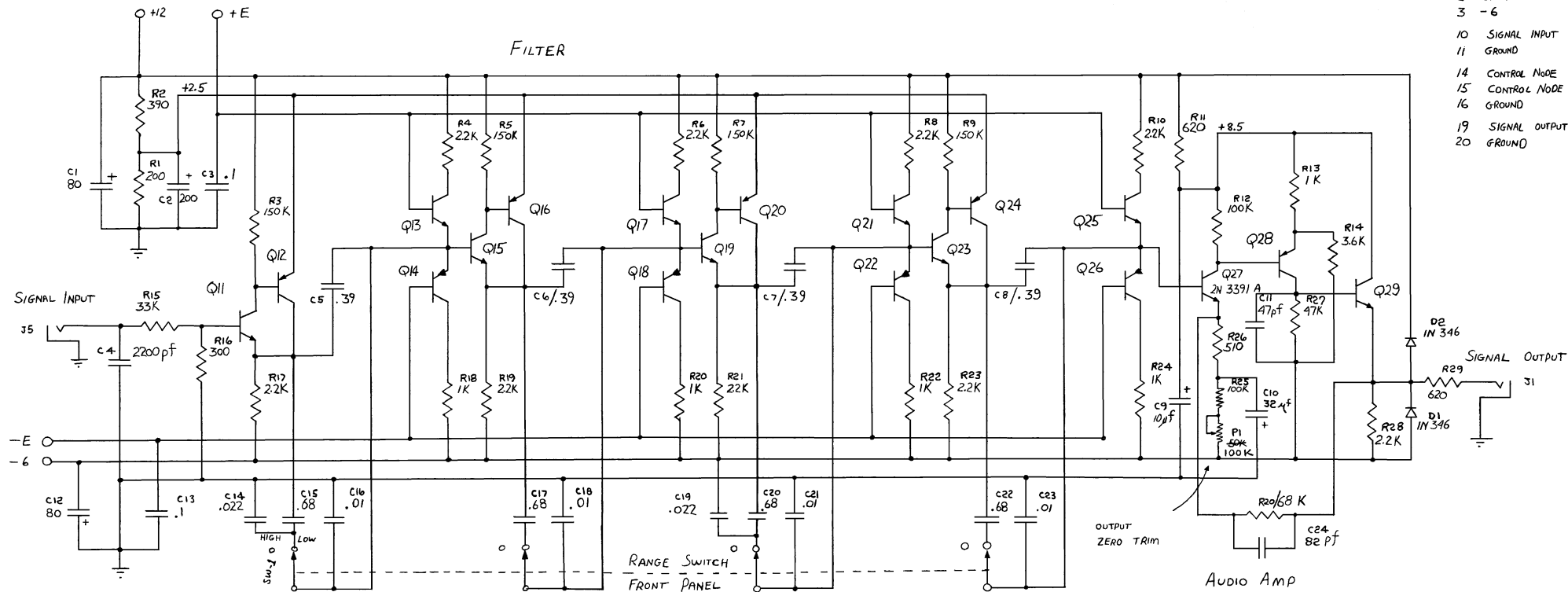
1	1.2 μ F
2	0.3 μ F
3	0.075 μ F

904-A VOLTAGE CONTROLLED LOW PASS FILTER	
DRAWN BY P.Y.	SCHMATIC
APPR. BY	
DATE 7-25-67	DRAWING NUMBER 1149
SUPERCEDES NO. 1039	
R. A. MOOG CO. TAUMANSBURG, N. Y.	

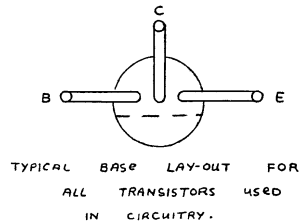
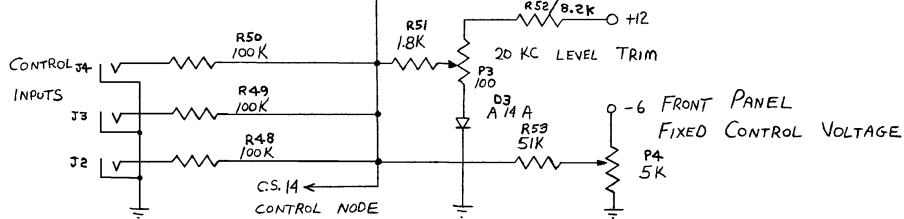
REV. C 11/10/70 w/g.s.	REV. D
REV. A 9-8-69 - JLA	REV. B ~ECN-003

CONNECTOR STRIP

- 1 +12
- 2 GROUND
- 3 -6
- 10 SIGNAL INPUT
- 11 GROUND
- 14 CONTROL NODE
- 15 CONTROL NODE
- 16 GROUND
- 19 SIGNAL OUTPUT
- 20 GROUND

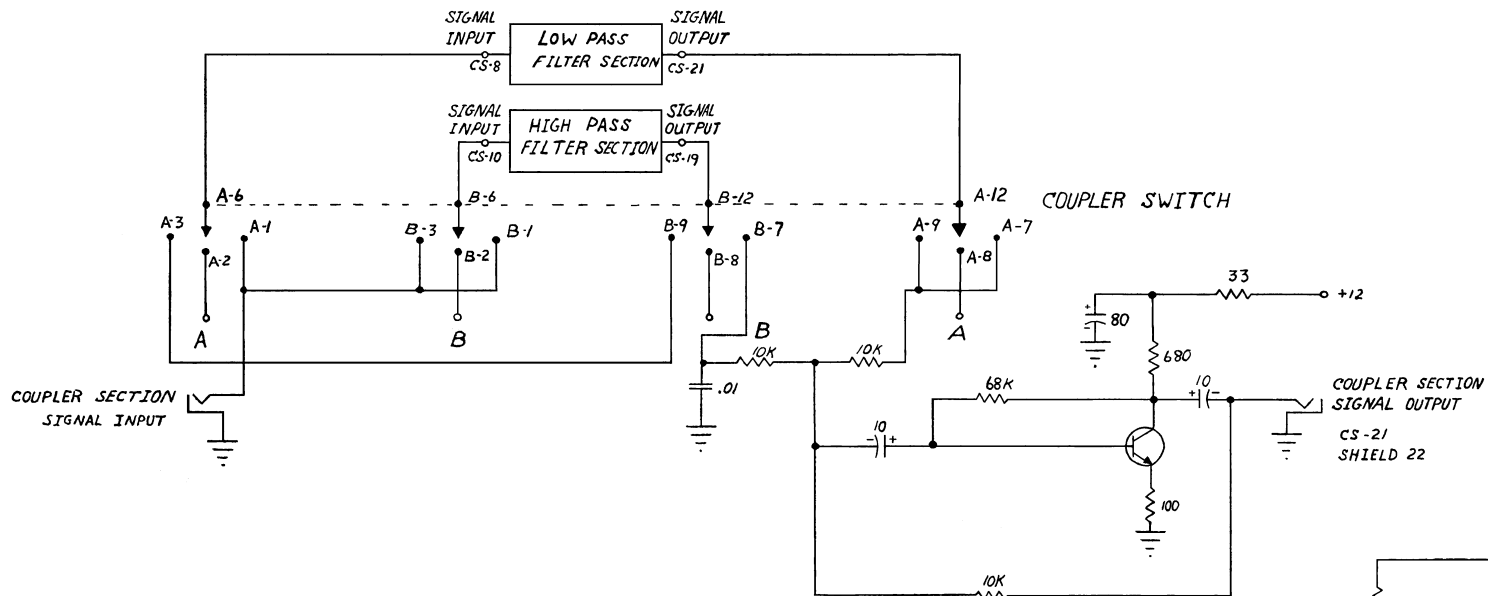


ALL NPN TRANSISTORS 2N 3392 EXCEPT Q 27
 ALL PNP TRANSISTORS 2N 405B
 (M) INDICATES MATCHED PAIR
 ALL RESISTORS 1/2 WATT 5% CARBON } UNLESS OTHERWISE MARKED
 ALL CAPACITORS IN μ F
 Q 13, 17, 21, 25 ARE A MATCHED SET
 Q 14, 18, 22, 26 " " " "



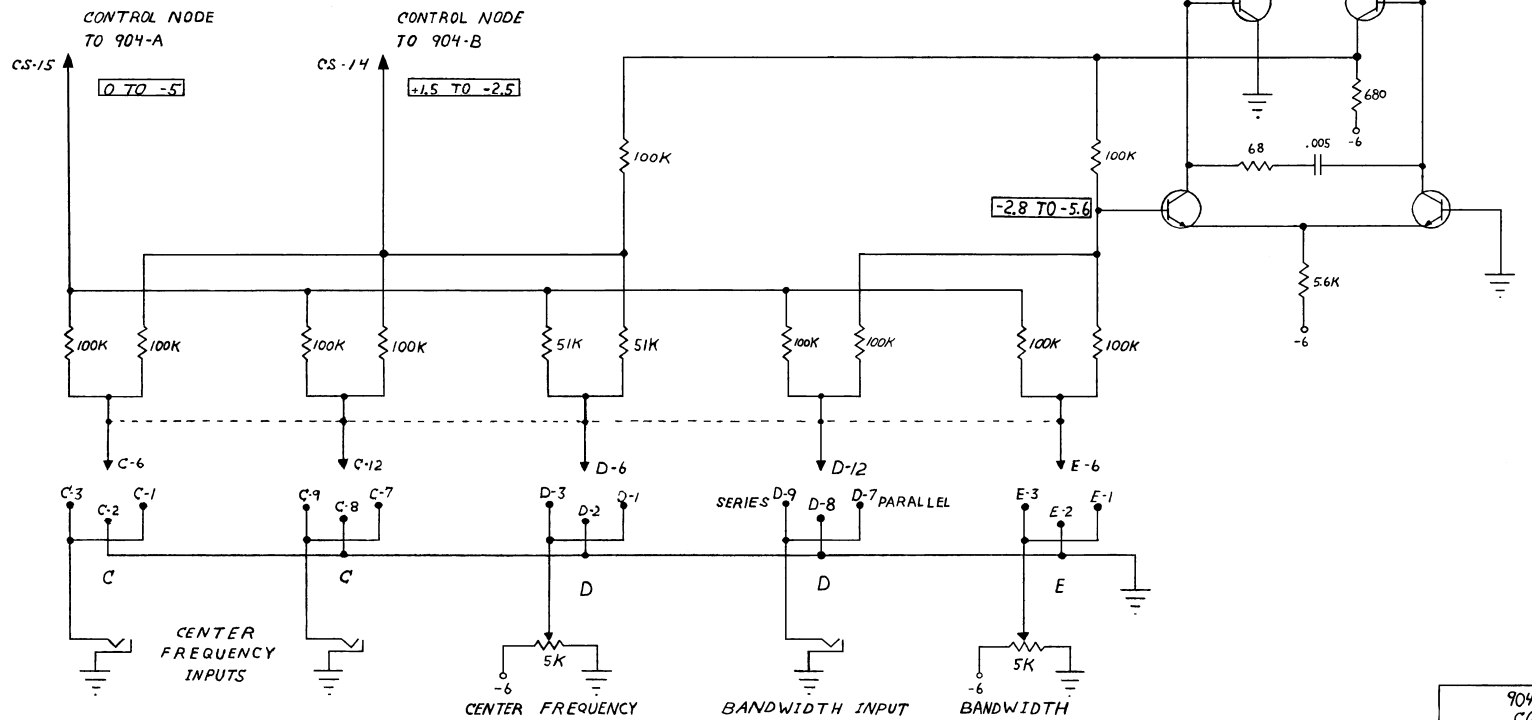
THIS DWG. APPLIES TO MODULES WITH SERIAL NUMBERS 199 AND ABOVE

REVISIONS		R. A. MOOG CO.	
COMPLETE * C REDRAWING		TRUMANSBURG, NEW YORK	
* OLD DWG DATED 12/12/66 OBSOLETE		TITLE 904 B	NEW VERSION
SCALE		DR. BY Scott	DWG. NO.
DATE 6/23/70		CK'D. BY	11/8

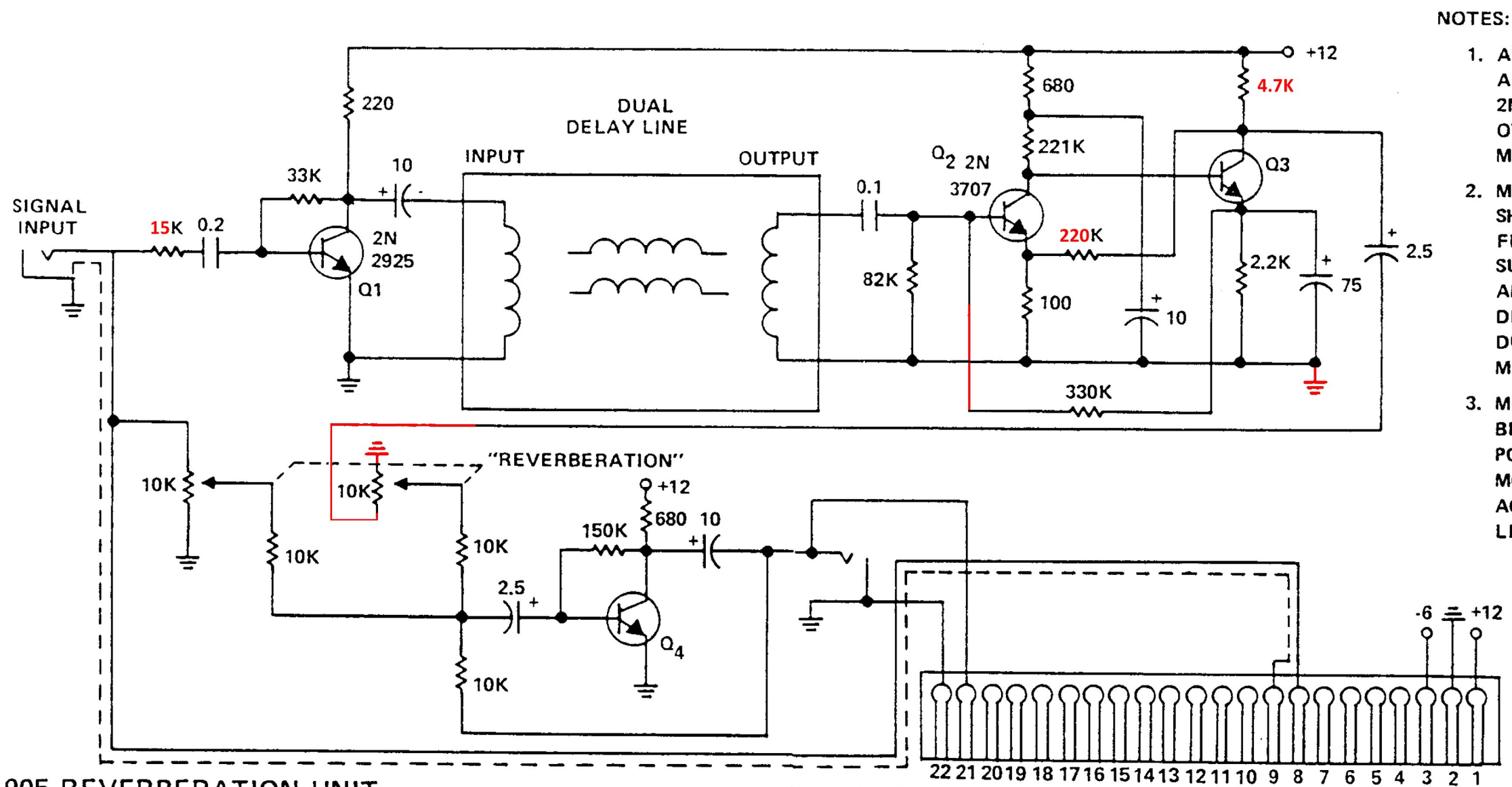


SWITCH FUNCTION
 POSITION THREE ON FRONT PANEL - SERIES (BAND PASS)
 POSITION TWO ON FRONT PANEL - LOW PASS - HIGH PASS
 POSITION ONE ON FRONT PANEL - PARALLEL (BAND REJECT)

TRANSISTORS
 NPN - 2N2926 OR TI416
 PNP - 2N3702



904-C VOLTAGE CONTROLLED FILTER COUPLER CONTROL CIRCUITRY	
DRAWN BY PY.	SCHMATIC
APPR. BY	
DATE 7-14-67	DRAWING NUMBER 1148 SUPERCEDES NUMBER
R. A. MOOG CO. TRUMANSBURG N.Y.	



- NOTES:
1. ALL TRANSISTORS ARE 2N2926 OR 2N3707 UNLESS OTHERWISE MARKED
 2. MOUNTING SHOULD BE AWAY FROM POWER SUPPLIES, MOTORS AND OTHER DEVICES PRODUCING STRONG MAGNETIC FIELDS
 3. MOUNTING SHOULD BE AS RIGID AS POSSIBLE TO AVOID MOVEMENT OF THE ACOUSTIC DELAY LINE

905 REVERBERATION UNIT

A. GENERAL

The 905 Reverberation Unit utilizes a dual spring-type acoustic delay line to produce a succession of decaying echoes of an audio signal. A single panel control determines the ratio between the amounts of reverberated and non-reverberated signals that appear at the output jack. The front panel control does not alter the characteristic decay time of the echoes, since this is a function of the delay line itself.

Instructions for mounting and connecting of power, and input and output characteristics, are the same as those which apply to all 900 series modules. However, special consideration in mounting the 905 must be observed. First, power supplies, motors and other devices producing

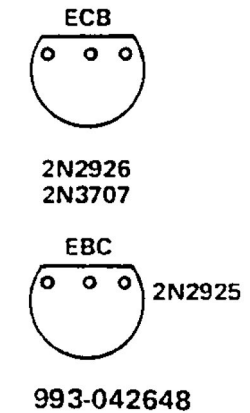
strong magnetic fields should be kept away from this instrument to avoid the pickup of power line frequency hum. Second, the mounting should be rigid to avoid shaking the acoustic delay line which would result in unwanted output signals. Third, monitor speakers should not be mounted close to the 905, as this would encourage acoustic feedback between speaker and delay line.

Before the 905 is installed, fittings and wrappings restricting the motion of the delay line should be removed. When the 905 is mounted vertically, the delay line bracket will be supported entirely by the suspension springs, and should not touch the chassis frame.

B. APPLICATIONS

When a dynamically varying signal is applied to the input of the 905, the output will consist of a series of closely spaced echoes, the subjected

BOTTOM VIEW



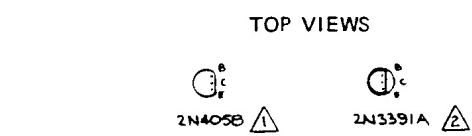
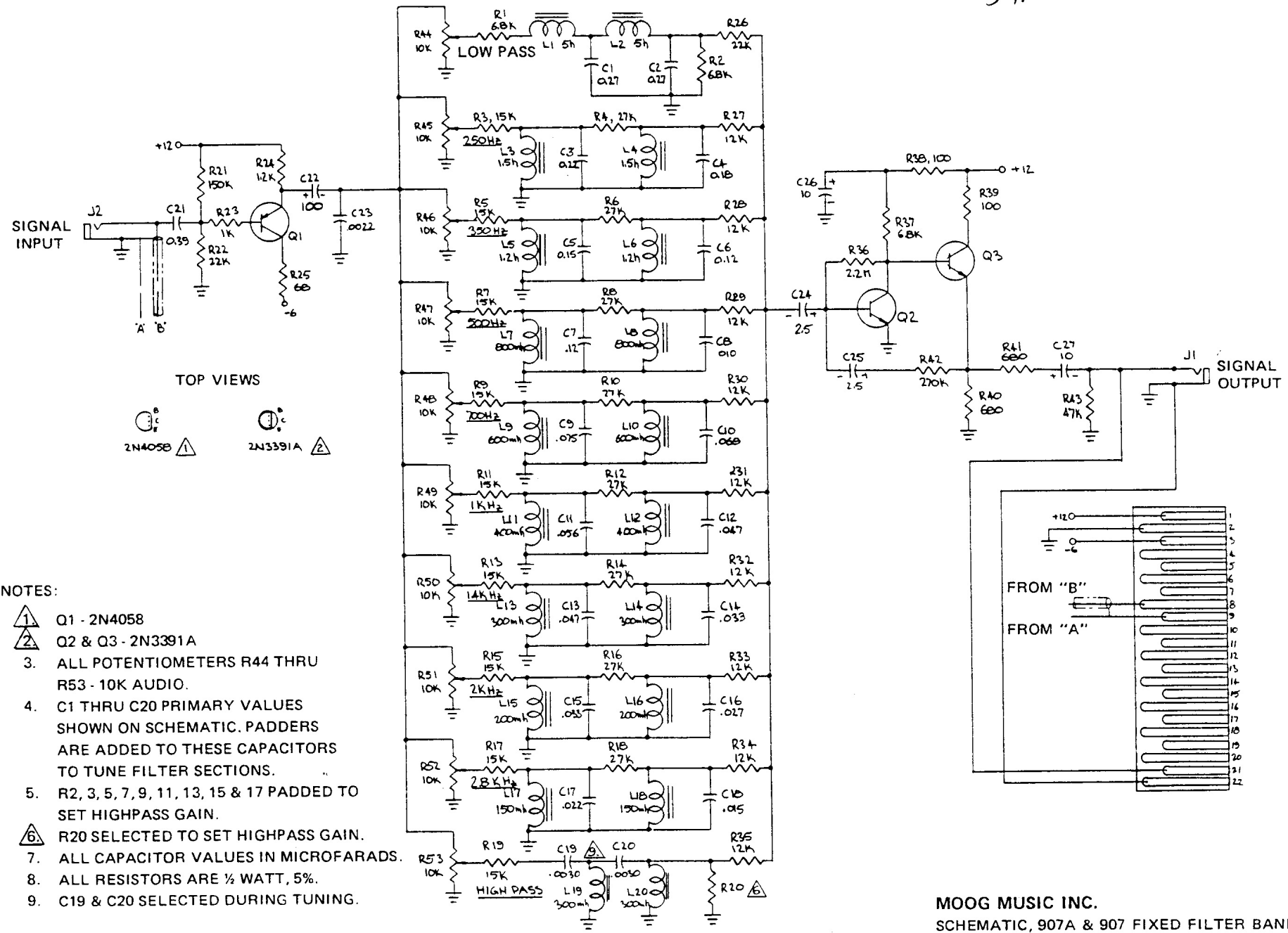
effect of which is similar to that of reverberation of sound. If a small amount of "echo signal" is mixed with a larger amount of "direct signal" (REVERBERATION Control set slightly clockwise), the effect of a typical concert hall is obtained. If the echo signal only is passed (REVERBERATION Control set fully clockwise), an exaggerated echo suggesting a cave is obtained. The relative amount of echo signal and direct signal can be continuously changed from 100 percent direct signal to 100 percent echo signal.

When a static signal is applied to the input of the 905, the output will also be static. There will be no sensation of echo. Rather, the 905 will perform in this application like a formant filter, strongly coloring the timbre of any signal with appreciable harmonic content.

FIGURE 14 REVERBERATION UNIT MODEL 905

INDUCTORS 10mm x 5mm Body

SH



- NOTES:
1. Q1 - 2N4058
 2. Q2 & Q3 - 2N3391A
 3. ALL POTENTIOMETERS R44 THRU R53 - 10K AUDIO.
 4. C1 THRU C20 PRIMARY VALUES SHOWN ON SCHEMATIC. PADDERS ARE ADDED TO THESE CAPACITORS TO TUNE FILTER SECTIONS.
 5. R2, 3, 5, 7, 9, 11, 13, 15 & 17 PADDED TO SET HIGHPASS GAIN.
 6. R20 SELECTED TO SET HIGHPASS GAIN.
 7. ALL CAPACITOR VALUES IN MICROFARADS.
 8. ALL RESISTORS ARE 1/2 WATT, 5%.
 9. C19 & C20 SELECTED DURING TUNING.

MOOG MUSIC INC.
SCHEMATIC, 907A & 907 FIXED FILTER BANK
993-041838 08-028

FIGURE 15 FIXED FILTER BANK MODELS 907 AND 907A

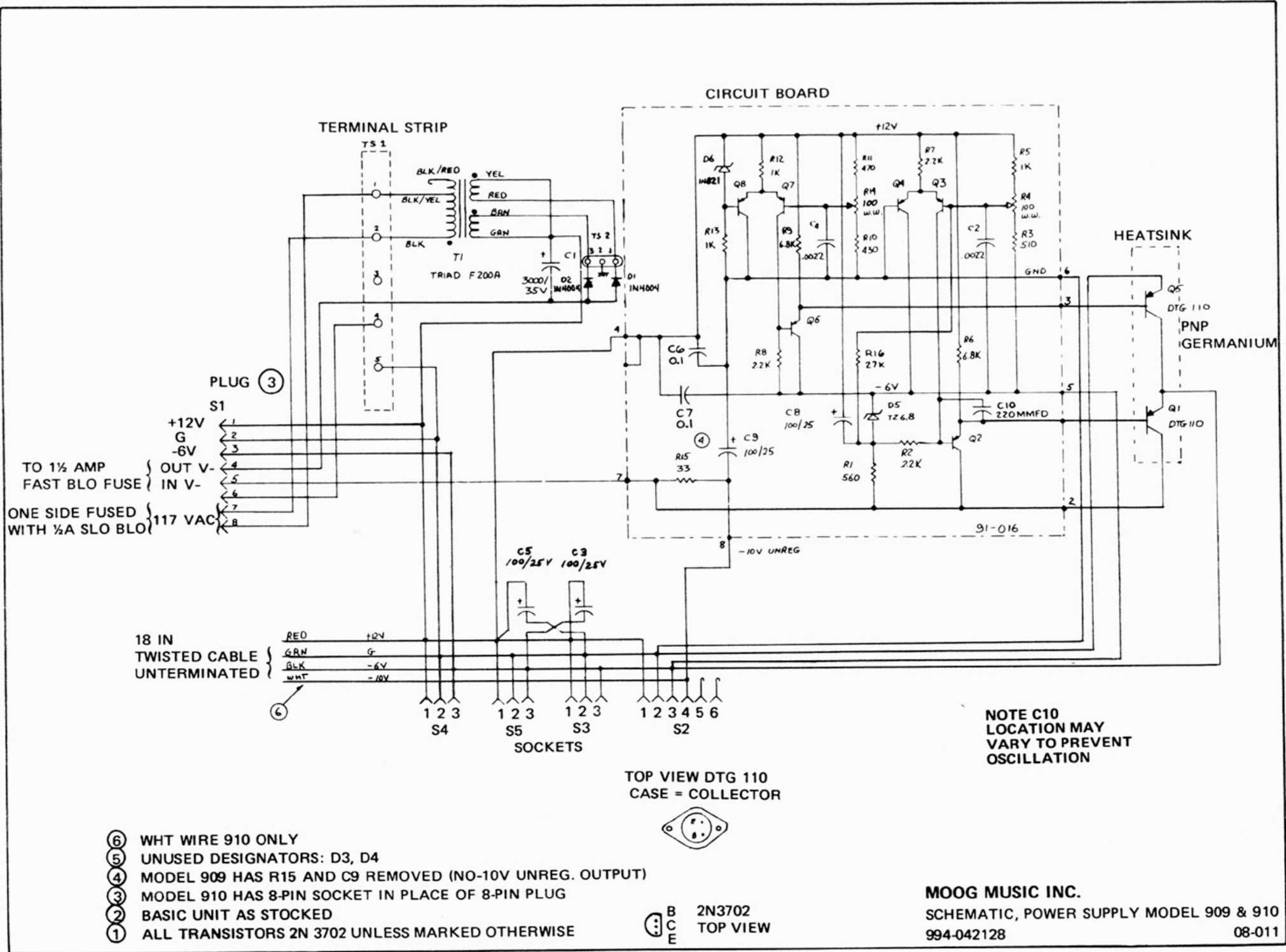
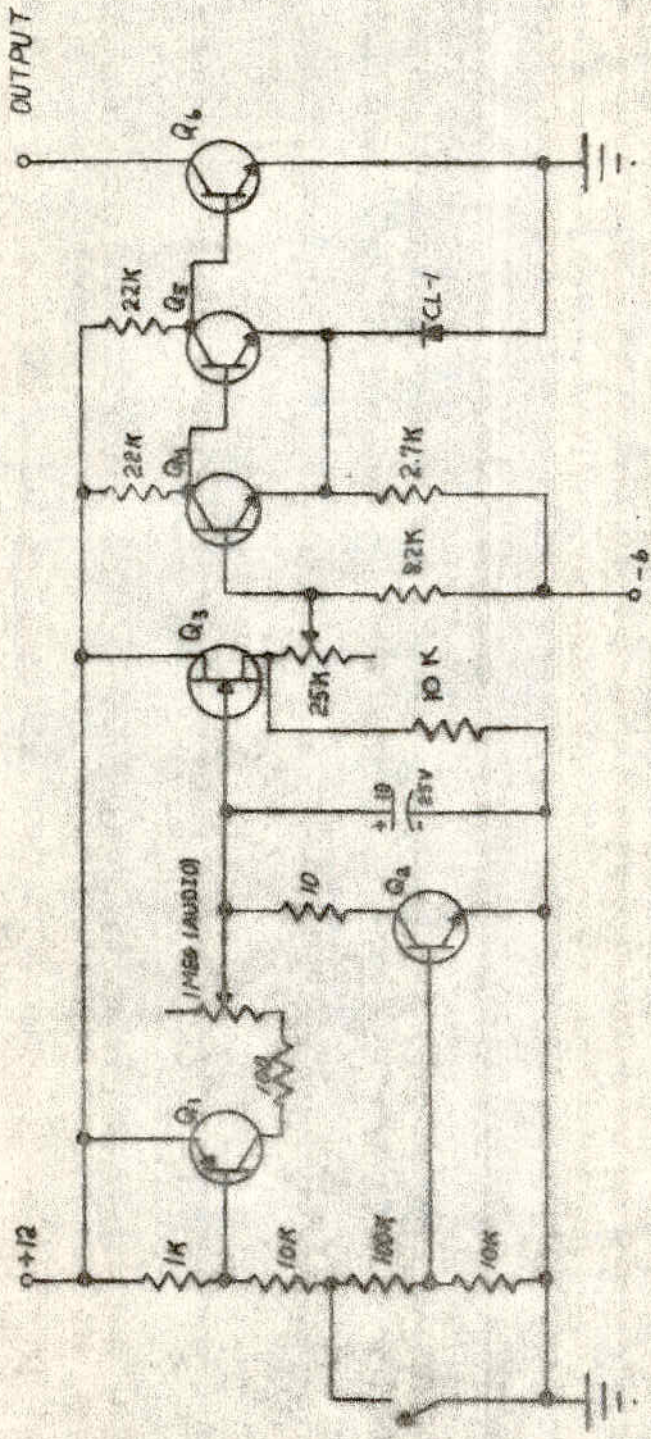
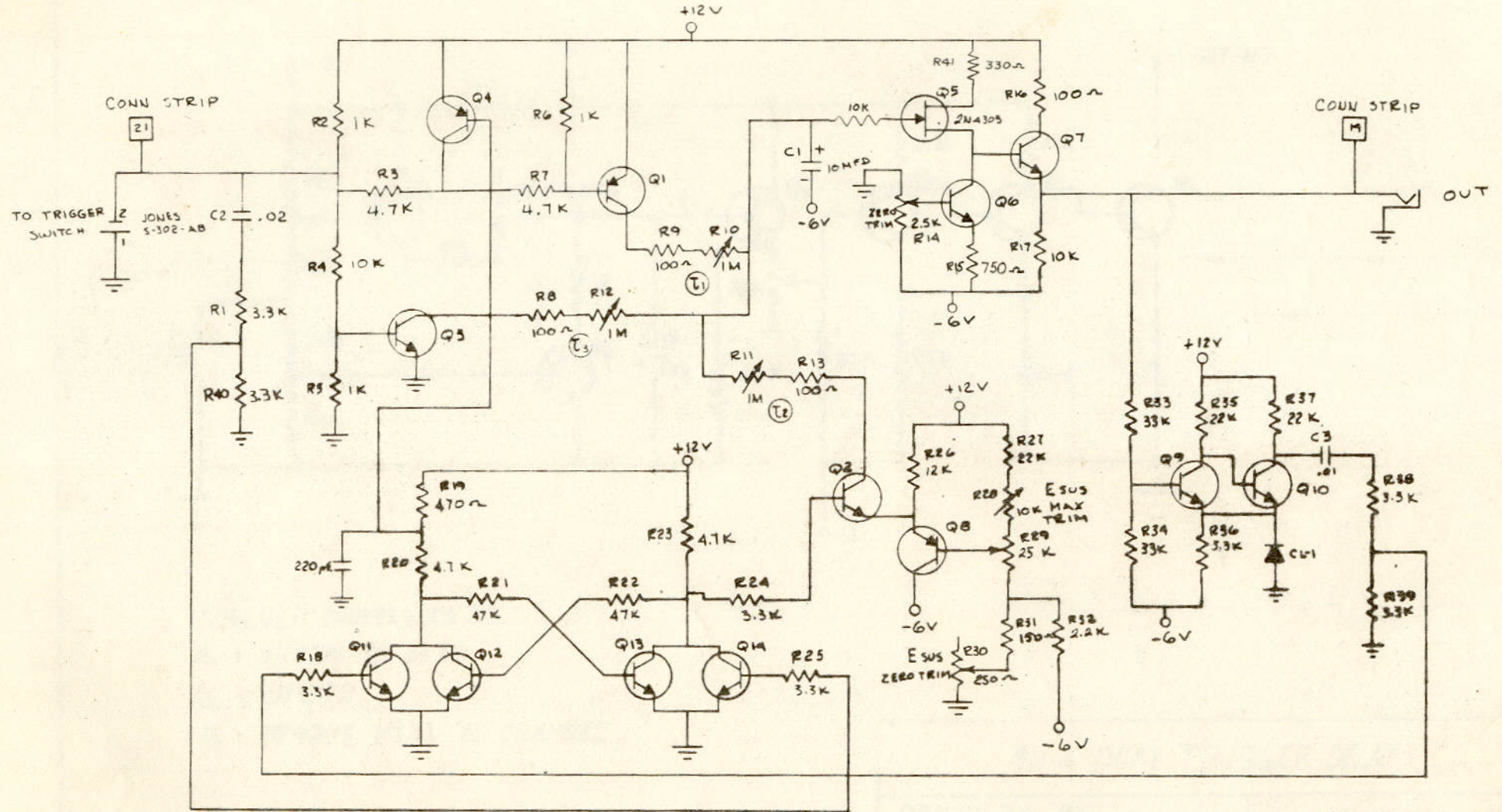


FIGURE 16 POWER SUPPLY MODELS 909 AND 910



- Q₁, Q₂, Q₃ - 2N2926 (P)
- Q₄ - 2N2926 (N) OR (S)
- Q₅ - 2N4058
- Q₆ - 2N4303 (FET) "N" CHANNEL

911-A DUAL TRIGGER DELAY	
DRAWN BY PY.	SCHEMATIC
APPA. BY	
DATE 7-13-67	DRAWING NUMBER 1146
R. A. MOOG CO. TRAUMANSBURG, N. Y.	

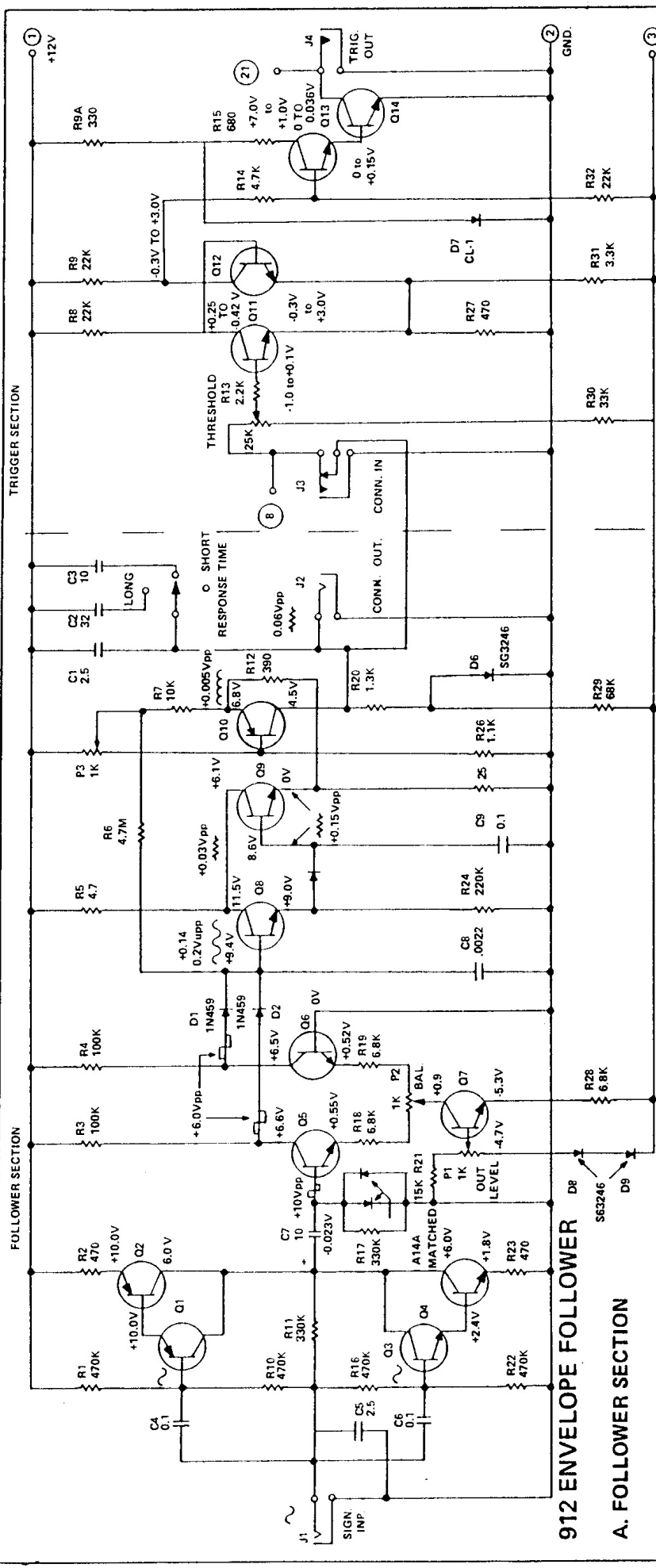


NOTES:

- I. ALL PNP TRANSISTORS ARE 2N4058
- II. ALL NPN TRANSISTORS ARE 2N3392

REPLACES DWG. 1103

C-ECN-004 1-12-69 318		REVISIONS		R. A. MOOG CO.	
		A-R15 FROM 1.5K		TRUMANSBURG, NEW YORK	
		To R20		TITLE 911 ENVELOPE GENERATOR	
		A-R41 FROM Q5		SCALE DR. BY RER	
		To 25K		DATE 8-14-68 CK'D. BY	
		B-ECN-002		DWG. NO. 1220	



912 ENVELOPE FOLLOWER
A. FOLLOWER SECTION

1. Set P1 to mid-rotation.
2. Apply a 250Hz sine wave at -15db to the SIGNAL INPUT (J1).
3. Set P4 for 4.5 volts dc at the CONTROL OUTPUT (J2).
4. Adjust P3 to even the "TOPS" of the peaks of the sine wave, with response ON, as observed on oscilloscope connected at CONTROL OUTPUT (symmetry). Repeat steps 3 and 4 to maintain proper dc output. If necessary, change R21 from 15K to

6.5K for a 4.5V indication.

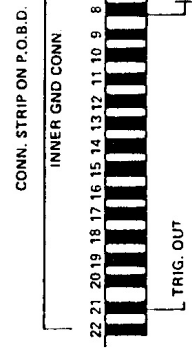
5. Check input/output levels as shown below with a 250Hz sine wave.

INPUT (db) OUTPUT (volts)	OUTPUT (volts)
+3	6.0
-3	5.5
-9	5.0
-15	4.5
-21	4.0
-27	3.5
-33	3.0
-39	2.4
-45	1.8
-51	1.1
-57	0

B. TRIGGER SECTION

1. Apply a -42db signal to SIGNAL INPUT (J1).
2. Connect dc voltmeter across TRIGGER OUTPUT (J4). As THRESHOLD control (R13) is rotated counterclockwise, trigger output of approximately 50MV will occur at mid-range of rotation.

NOTE
 Utilize a 912 Envelope Follower to trigger a 921, 902 and 911 setup to determine proper operation of trigger threshold.



- NOTES: UNLESS OTHERWISE NOTED:**
1. ALL RESISTORS IN OHMS
 2. ALL CAPACITORS IN UF
 3. ALL NPN TRANSISTORS = 2N3392
 4. ALL PNP TRANSISTORS = 2N4058
 5. ALL DC VOLTAGES ± 20% MEASURED WITH 250Hz ±5db SIGNAL AT SIGNAL INPUT
 6. VOLTAGES READ WITH THRESHOLD CONTROL GOING FROM FULL CW TO FULL CCW
 7. BASE LAYOUT FOR TRANSISTORS USED:

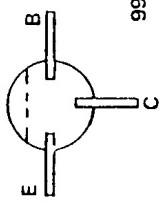
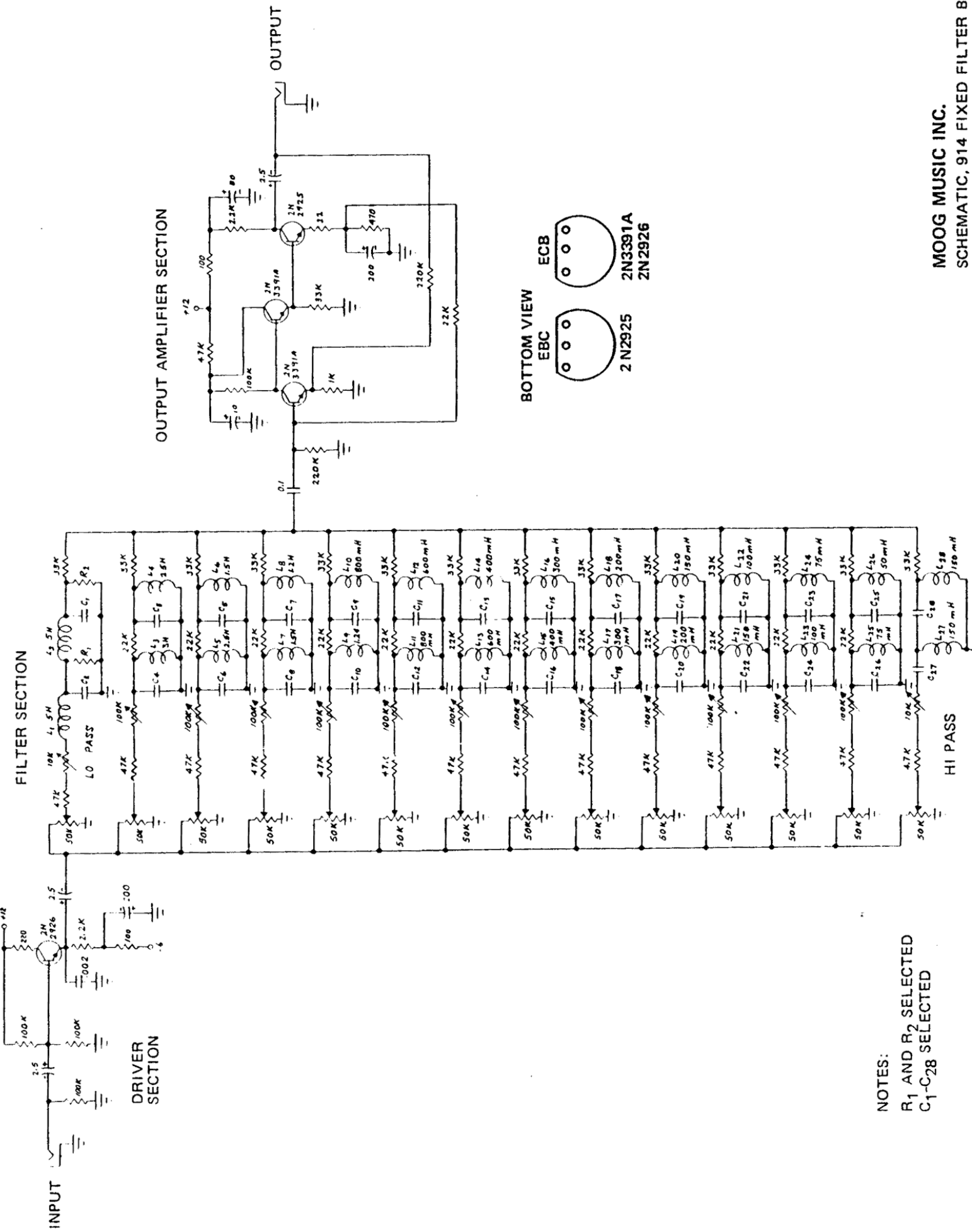


FIGURE 19 ENVELOPE FOLLOWER MODEL 912

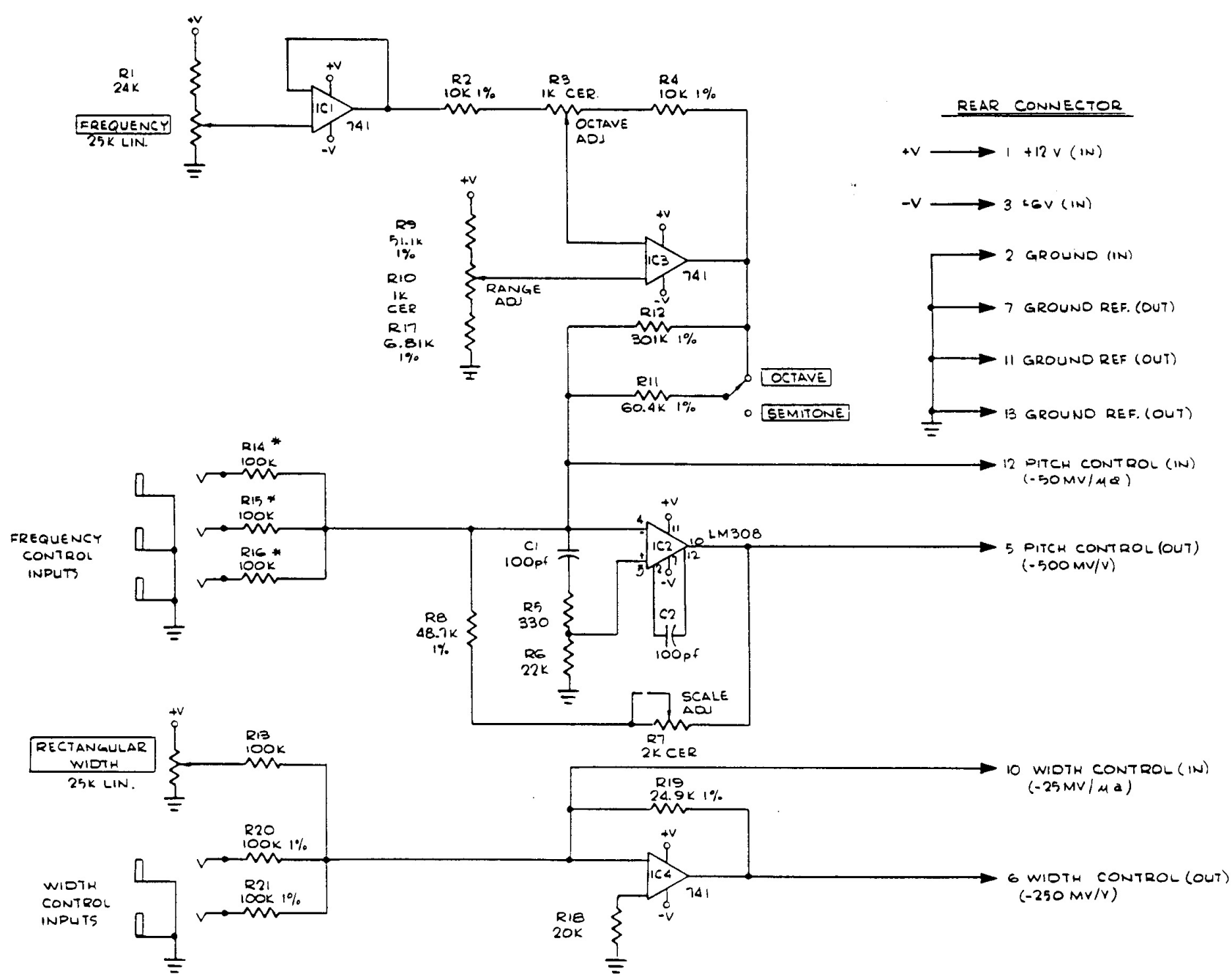


FILTER SECTION

OUTPUT AMPLIFIER SECTION

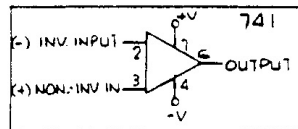
BOTTOM VIEW

NOTES:
 R₁ AND R₂ SELECTED
 C₁-C₂₈ SELECTED



NOTES:

1. UNLESS OTHERWISE SPECIFIED ALL RESISTORS ARE $\pm 5\%$, 1/2 W.
2. ALL 1% RESISTORS ARE 1/4 W.
3. * MATCHED TO 0.1%

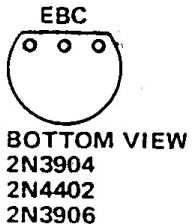
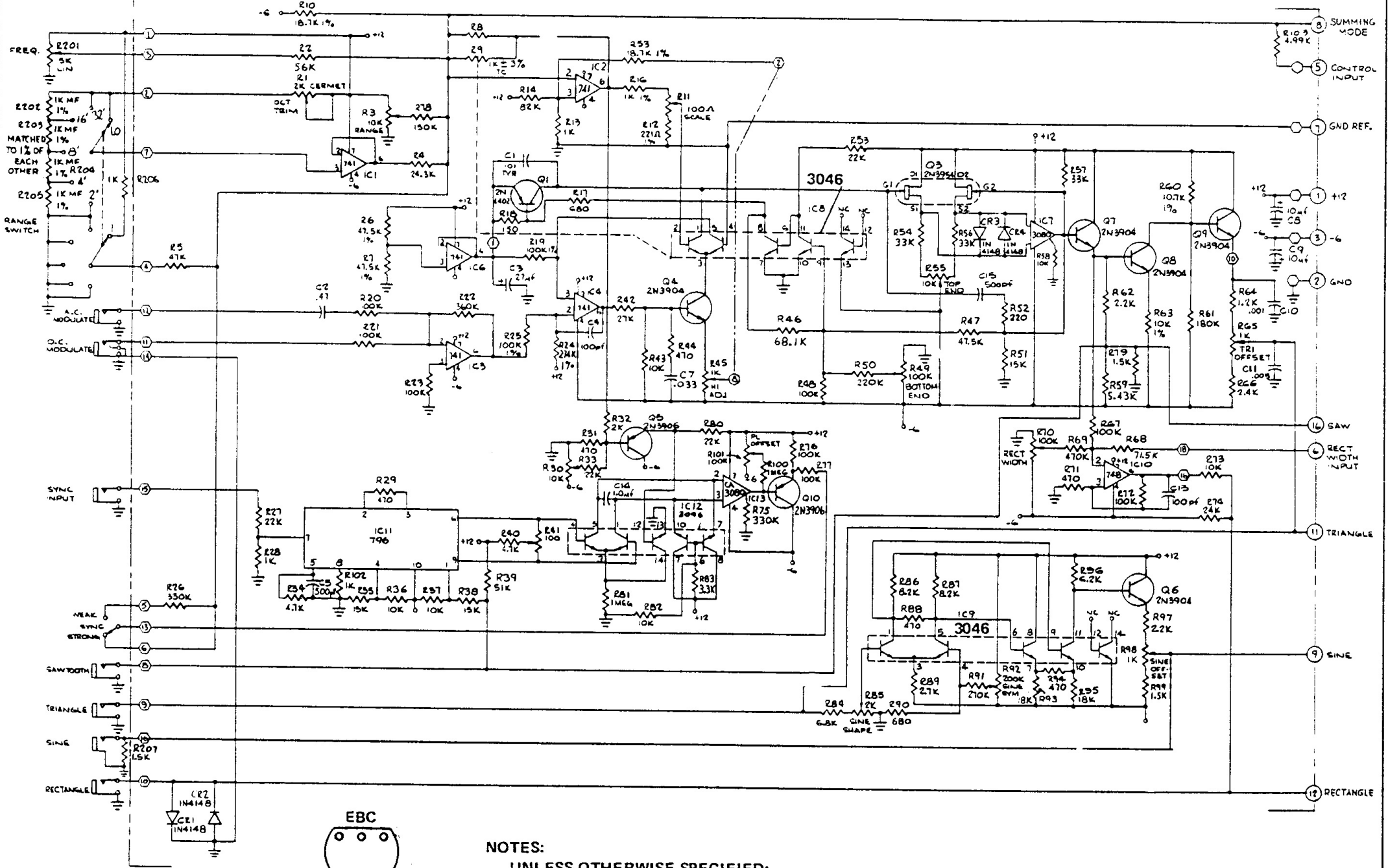


MOOG MUSIC INC.

SCHEMATIC, 921A-OSCILLATOR DRIVER
993-041835

08-009

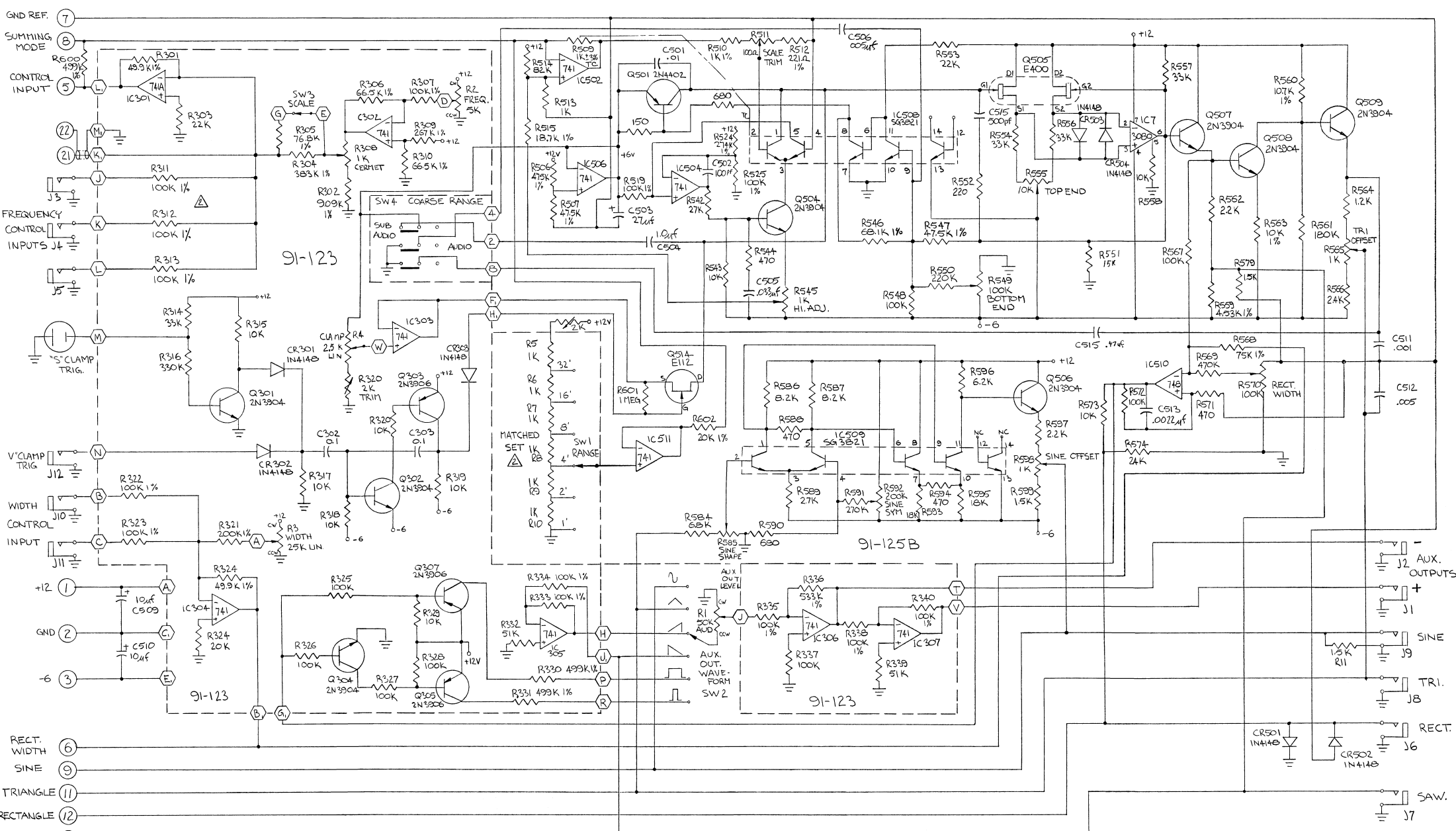
FIGURE 22. OSCILLATOR DRIVER MODEL 921A



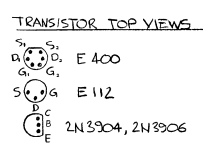
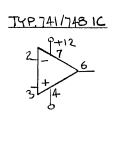
- NOTES:
 UNLESS OTHERWISE SPECIFIED:
 1. ALL RESISTOR VALUES IN OHMS, 1/4 OR 1/2W
 2. ALL CAPACITOR VALUES IN MFD.
 3. ○ DESIGNATES PLUG PIN
 4. ○ DESIGNATES REAR CONNECTOR FINGER

MOOG MUSIC INC.
 SCHEMATIC, OSCILLATOR 921B
 993-041875 08-013

FIGURE 23. OSCILLATOR MODEL 921B



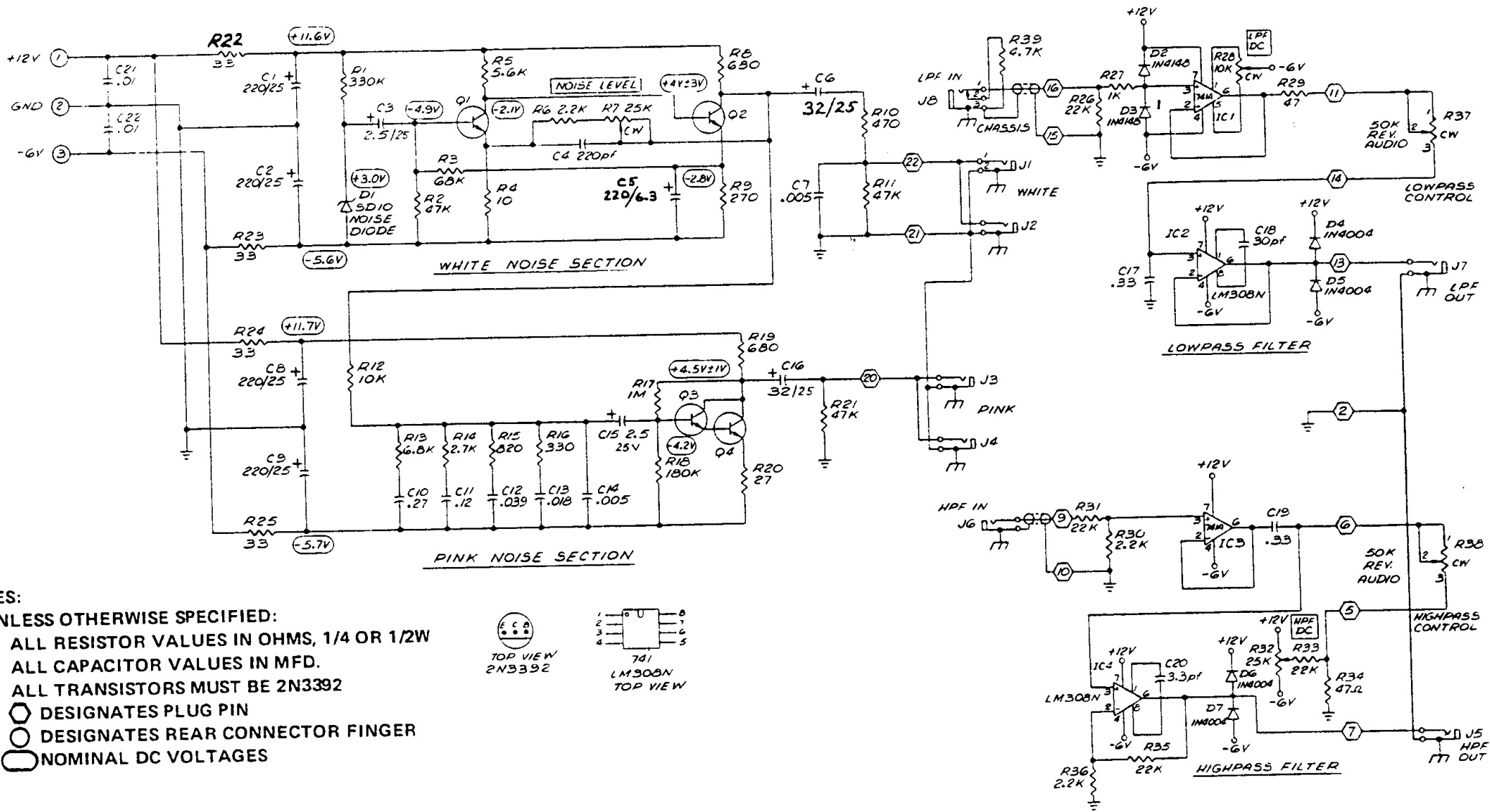
NOTES: Δ ALL RESISTORS 5%, 1/2 WATT UNLESS OTHERWISE NOTED
 \triangle 1% RESISTORS MATCHED TO 0.1%
 (X) DESIGNATES REAR CONNECTOR NUMBER (PCB 91-125)
 (X) DESIGNATES P/C BOARD INTERCONNECTIONS



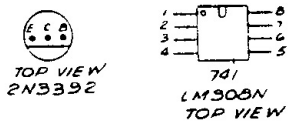
COMPONENT DESIGNATORS
 NO PREFIX - FRONT PANEL
 3XX - 92-123 PCB ASSY
 5XX, 6XX - 92-125 PCB ASSY

ITEM	PART NUMBER	DESCRIPTION	MATERIAL
DRAWN BY JRB 7/74			
CHECK			
GRP ENGR			
REVIEW QC			
SUPERVISOR			
NEXT ASSY		MODEL NO.	SIZE
APPLICATION		SCALE	WT.

meag		WILLIAMSVILLE, NEW YORK	
921 OSCILLATOR			
SCHEMATIC DIAGRAM			
C	CODE IDENT	08-036	
SHEET 1 OF 1			

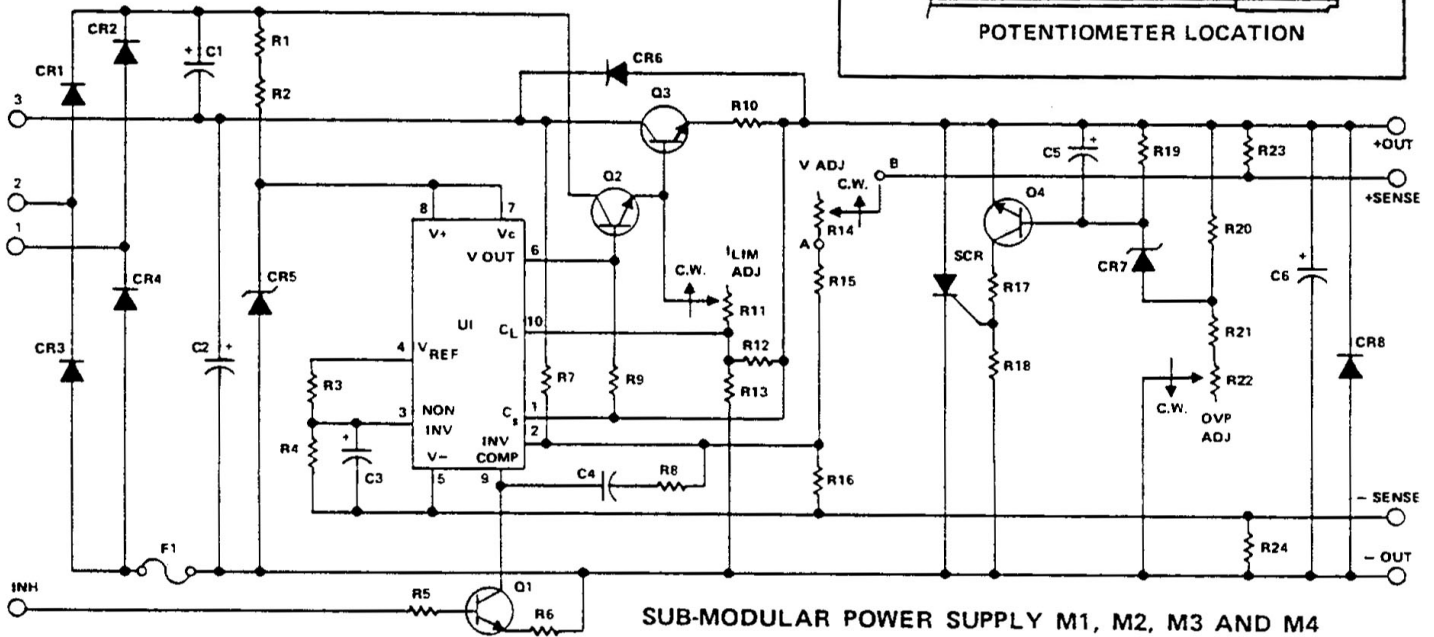
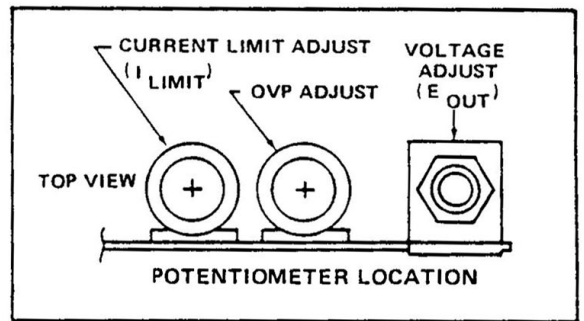


- NOTES:**
 UNLESS OTHERWISE SPECIFIED:
 1. ALL RESISTOR VALUES IN OHMS, 1/4 OR 1/2W
 2. ALL CAPACITOR VALUES IN MFD.
 3. ALL TRANSISTORS MUST BE 2N3392
 4. ○ DESIGNATES PLUG PIN
 5. ○ DESIGNATES REAR CONNECTOR FINGER
 6. ○ NOMINAL DC VOLTAGES



MOOG MUSIC INC.
 SCHEMATIC, 923 FILTERS/NOISE SOURCE
 993-041876 08-032

FIGURE 24 FILTERS/NOISE SOURCE MODEL 923



SUB-MODULAR POWER SUPPLY M1, M2, M3 AND M4

**MODEL 22B-300 (M1, M2, M3)
REPLACEMENT PARTS LIST**

REF DESIG	DESCRIPTION
C1, C6	Capacitor, Electrolytic, 220 uf, 35V
C2	Capacitor, Electrolytic, 4000 uf, 30V
C3, C5	Capacitor, Electrolytic, 1 uf, 50V
C4	Capacitor, Film, 0.001 uf, 50V
CR 1 thru CR4	Diode, Semtek 3F11, Motorola MR501
CR5	Diode, Zener, 1N4753A
CR6, CR8	Diode, 1N4002
CR7	Diode, Zener, 1N754A
F1	Fuse, 5 Ampere
Q1	Transistor, 2N2222A
Q2	Transistor, 13159-1
Q3	Transistor, 13002-3
Q4	Transistor, 2N2907A
R1, R2	Resistor, 750 Ohms, $\pm 5\%$, 1/2 W
R3	Resistor, 470 Ohms, $\pm 5\%$, 1/2 W
R4	Resistor, Not Used
R5	Resistor, 47K Ohms, $\pm 5\%$, 1/2 W
R6, R9	Resistor, 1 K Ohms, $\pm 5\%$, 1/2 W
R18, R19	Resistor, Not Used
R7	Resistor, Not Used
R8	Resistor, 3.3K Ohms, $\pm 5\%$, 1/2 W
R10	Resistor, 0.22 Ohms, BWH
R11	Potentiometer, 100 Ohms
R12	Resistor, Not Used
R13	Resistor, 1.2K Ohms
R14, R22	Potentiometer, 1.5K Ohms
R15	Resistor, 309 Ohms, RN60C
R16	Resistor, 1.19K Ohms, RN60C
R17	Resistor, 270 Ohms, $\pm 5\%$, 1/2 W
R20	Resistor, 1.55K Ohms, RN60C
R21	Resistor, 750 Ohms, RN60C
R23, R24	Resistor, 10 Ohms, $\pm 5\%$, 1/2 W
SCR1	Silicon Control Rectifier, 2N4441
U1	Integrated Circuit, 723CE

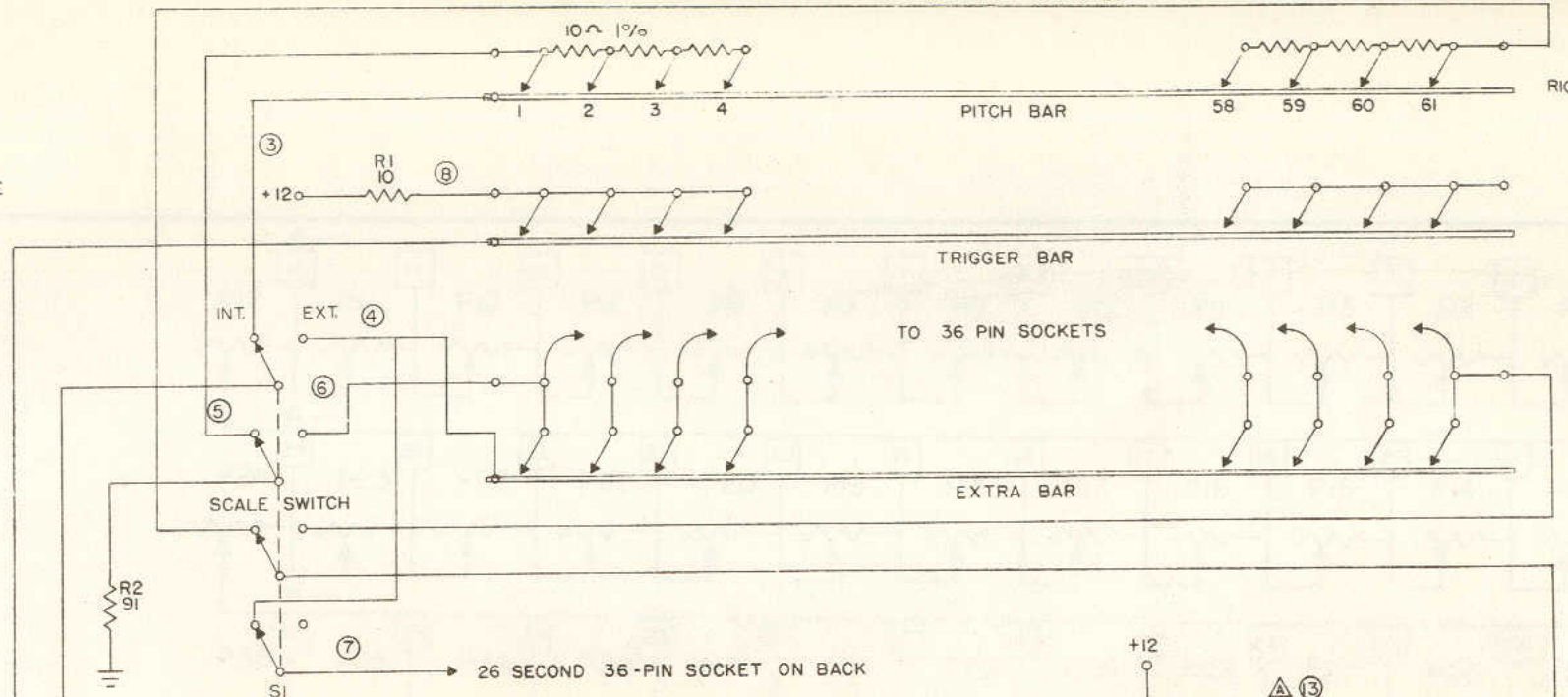
**MODEL 22B-100 (M4)
REPLACEMENT PARTS LIST**

REF DESIG	DESCRIPTION
C1, C6	Capacitor, Electrolytic, 470 uf, 15V
C2	Capacitor, Electrolytic, 9000 uf, 15V
C3, C5	Capacitor, Electrolytic, 1 uf, 50V
C4	Capacitor, Film, 0.001 uf, 100V
CR1, CR2, CR6, CR8	Diode, 1N4002
CR3, CR4	Diode, Semtek 3F11, Motorola MR501
CR5	Diode, Not Used
CR7	Diode, Zener, 1N751A
Q1	Transistor, 2N2222A
Q2	Transistor, 13159-2
Q3	Transistor, 13002-3
Q4	Transistor, 2N2907
R1, R2	Resistor, 51 Ohms, $\pm 5\%$, 1/2 W
R1	Resistor, 3.01K Ohms, RN60C
R4	Resistor, 4.02 K Ohms, RN60C
R5	Resistor, 47K Ohms, $\pm 5\%$, 1/2 W
R6, R9	Resistor, 1K Ohms, $\pm 5\%$, 1/2 W
R18, R19	Resistor, 1K Ohms, $\pm 5\%$, 1/2 W
R7	Resistor, Not Used
R8	Resistor, 3.3K Ohms, $\pm 5\%$, 1/2 W
R10	Resistor, 0.1 Ohms, BWH
R11	Potentiometer, 100 Ohms
R12	Resistor, Not Used
R13	Resistor, 510 Ohms, $\pm 5\%$, 1/2 W
R14	Potentiometer, 1.5K Ohms
R15	Resistor, Jumper
R16	Resistor, 1.5K Ohms, RN60C
R17	Resistor, 100 Ohms, $\pm 5\%$, 1/2 W
R20	Resistor, 1K Ohms, RN60C
R21	Resistor, Jumper
R22	Potentiometer, 500 Ohms
SCR1	Silicon Control Rectifier, 2N4441
U1	Integrated Circuit, 723CE

KEYBOARD SWITCHES

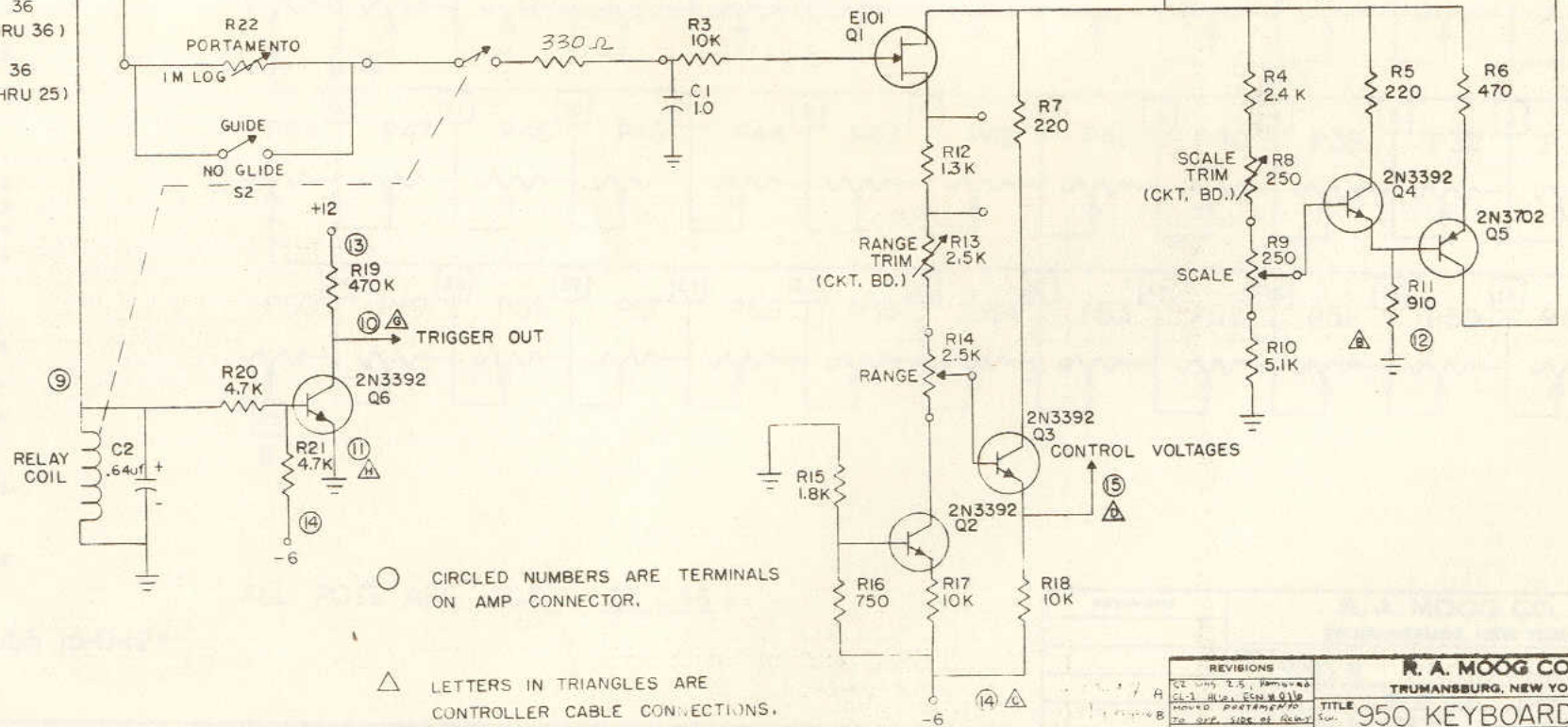
CONTROLLER CABLE

TERM.	FUNCTION	COLOR WIRE
A	+12	RED
B	GND	BLACK
C	-6	BLUE
D	CONTROL VOLTAGE	GRN
E	_____	_____
F	_____	_____
G	TRIGGER	BRN
H	TRIGGER GND	WHITE



KEYS 1 THRU 36 - (FIRST 36 PIN SOCKET, PINS 1 THRU 36)

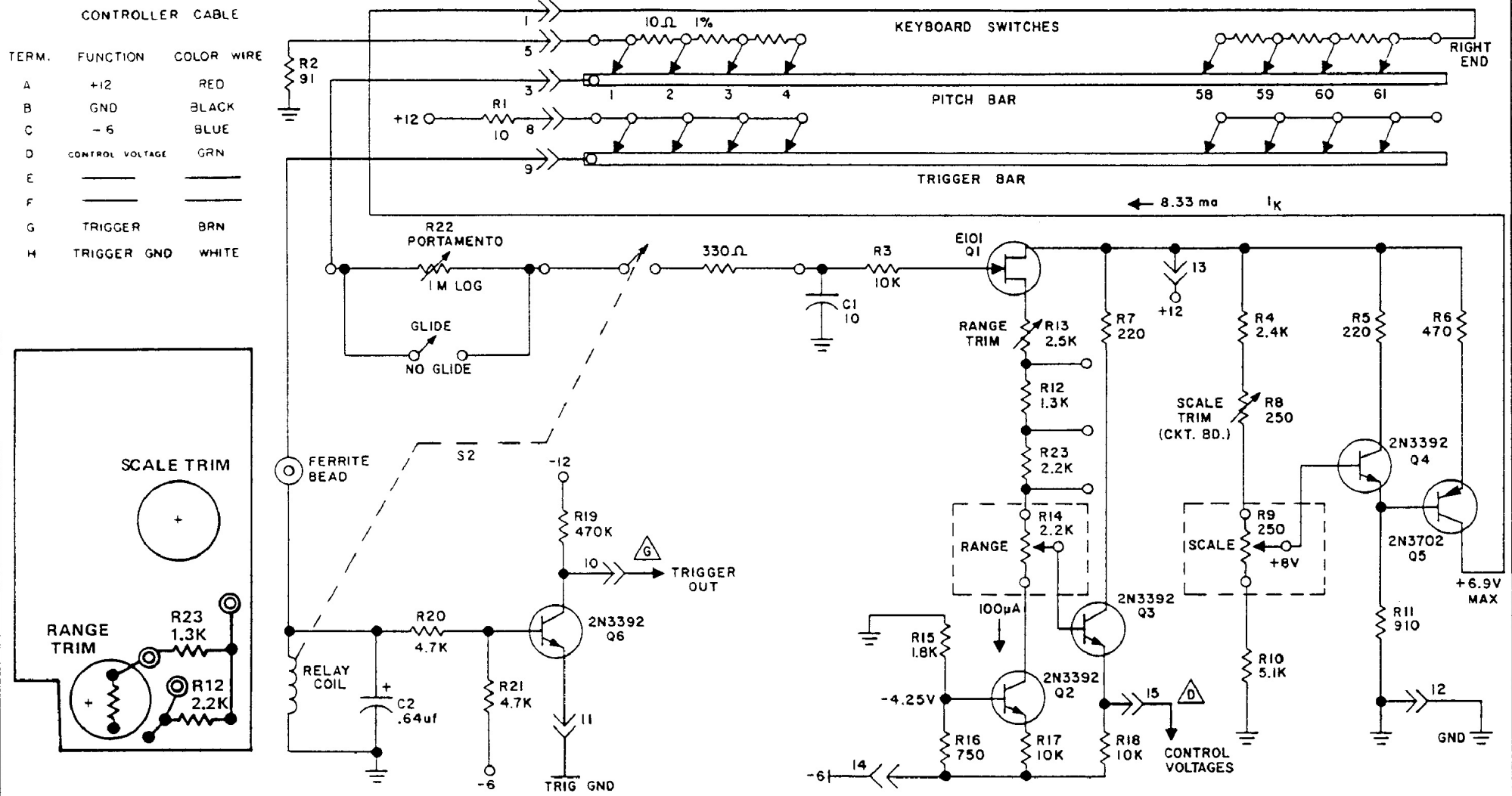
KEYS 37 THRU 61 - (2ND 36 PIN SOCKET, PINS 1 THRU 25)



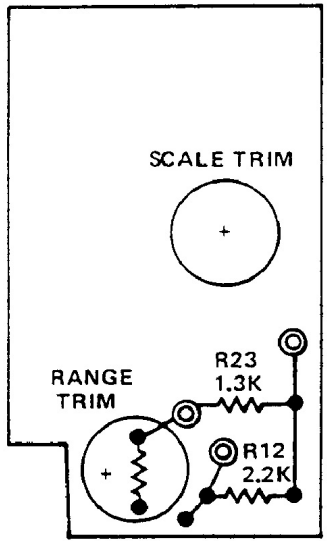
○ CIRCLED NUMBERS ARE TERMINALS ON AMP CONNECTOR.

△ LETTERS IN TRIANGLES ARE CONTROLLER CABLE CONNECTIONS.

REVISIONS		R. A. MOOG CO.	
02	Ans. E.S. removed	TRUMANSBURG, NEW YORK	
01	CL-3 Blue. ESN 9116	TITLE	
	MOVED PORTAMENTO TO opp. side of board	950 KEYBOARD	
SCALE		DR. BY JLA	DWG. NO.
DATE 4-25-65		CKD. BY	1266

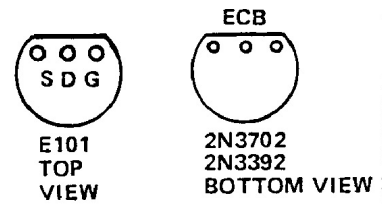


TERM.	FUNCTION	COLOR	WIRE
A	+12	RED	
B	GND	BLACK	
C	-6	BLUE	
D	CONTROL VOLTAGE	GRN	
E			
F			
G	TRIGGER	BRN	
H	TRIGGER GND	WHITE	



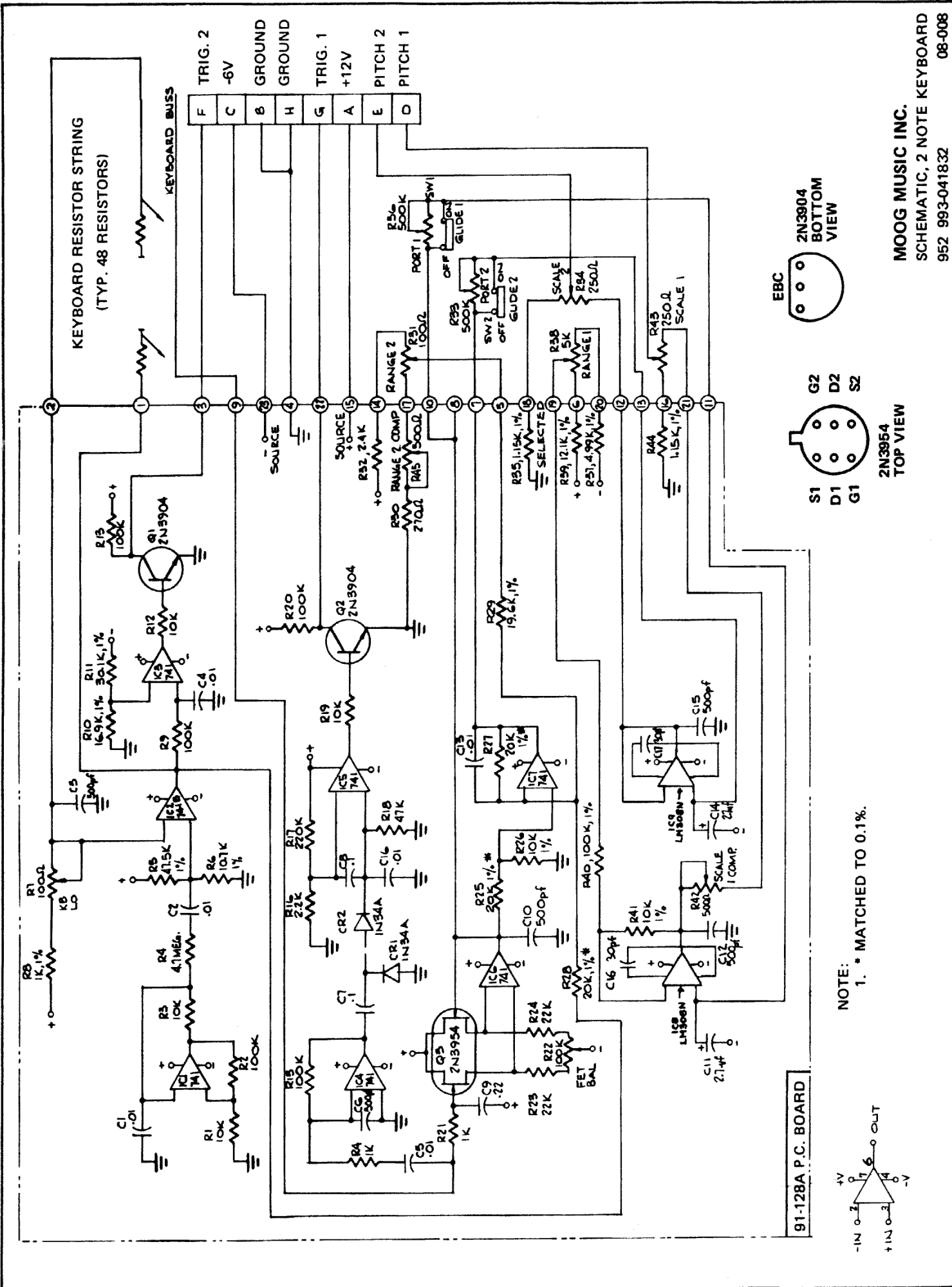
951 KEYBOARD TUNING

1. The keyboard has two adjustments to be made. The scale adjustment adjusts the current source so that the total drop across the resistor string is 5.000 volts. The range adjustment fixes the lowest key at zero volts. Adjustments are made with the external range and scale controls on the five mark.
2. Adjust the range setting with the trimpot. If adjustment cannot be made within the range of the trimpot, it may be necessary to short one or both of the two resistors in series with it.
3. Adjust the scale trimmer so that the keyboard spans five volts. If zero shifts, for example to .04, then adjust the top for 5.04. That is, always adjust for a five volt span.
4. Now readjust range trim so that first key is zero. Check to see that scale still gives 0 to 5.000 volts.

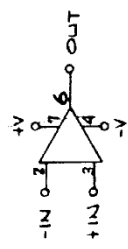


MOOG MUSIC INC.
 SCHEMATIC, 951, KEYBOARD
 993-041831 1266

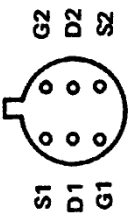
FIGURE 28 KEYBOARD MODEL 951



91-128A P.C. BOARD

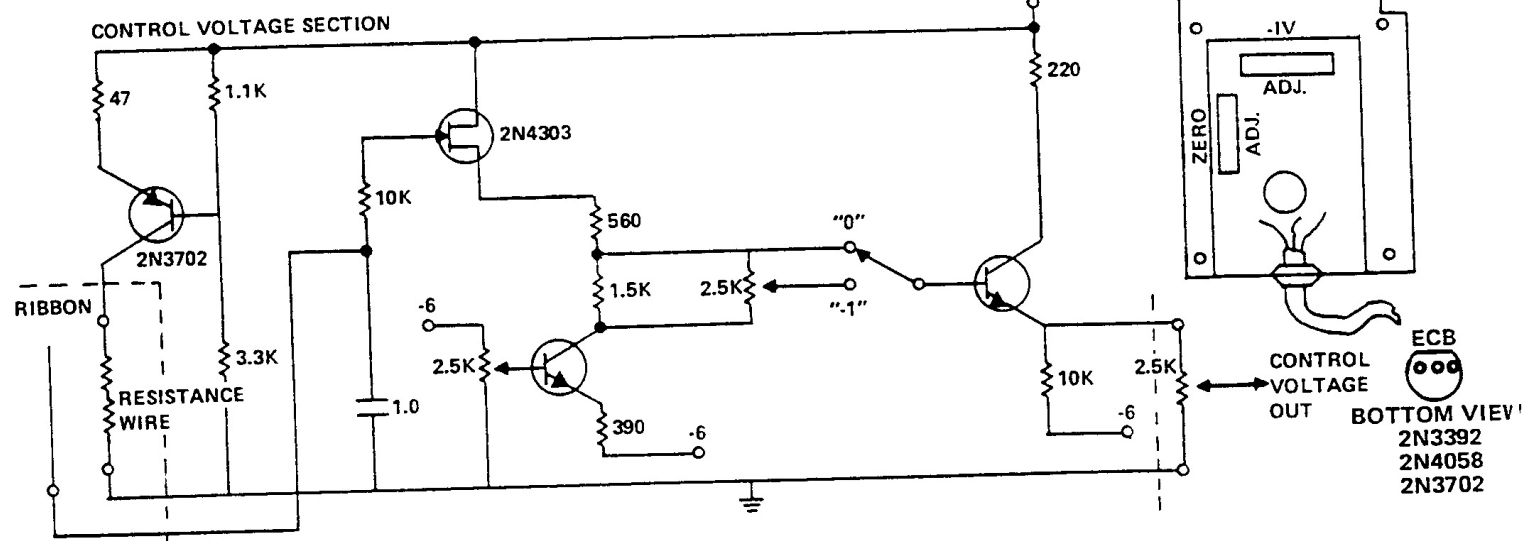
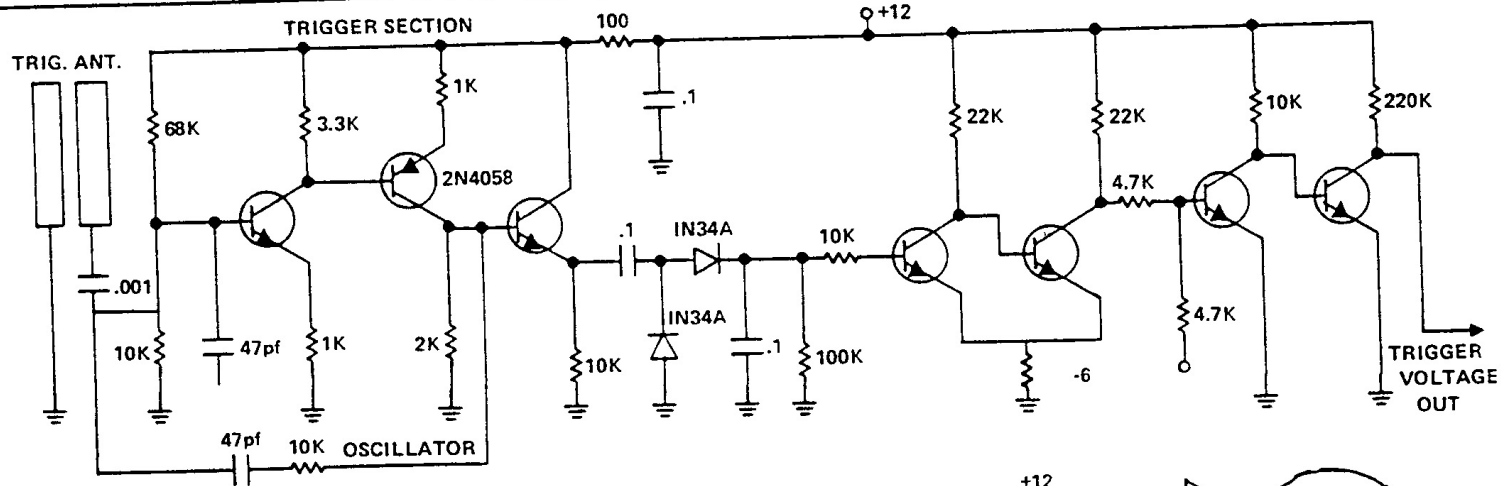


NOTE:
1. * MATCHED TO 0.1%.



MOOG MUSIC INC.
SCHEMATIC, 2 NOTE KEYBOARD
952 993-041832 08-008

FIGURE 29 TWO NOTE KEYBOARD MODEL 952

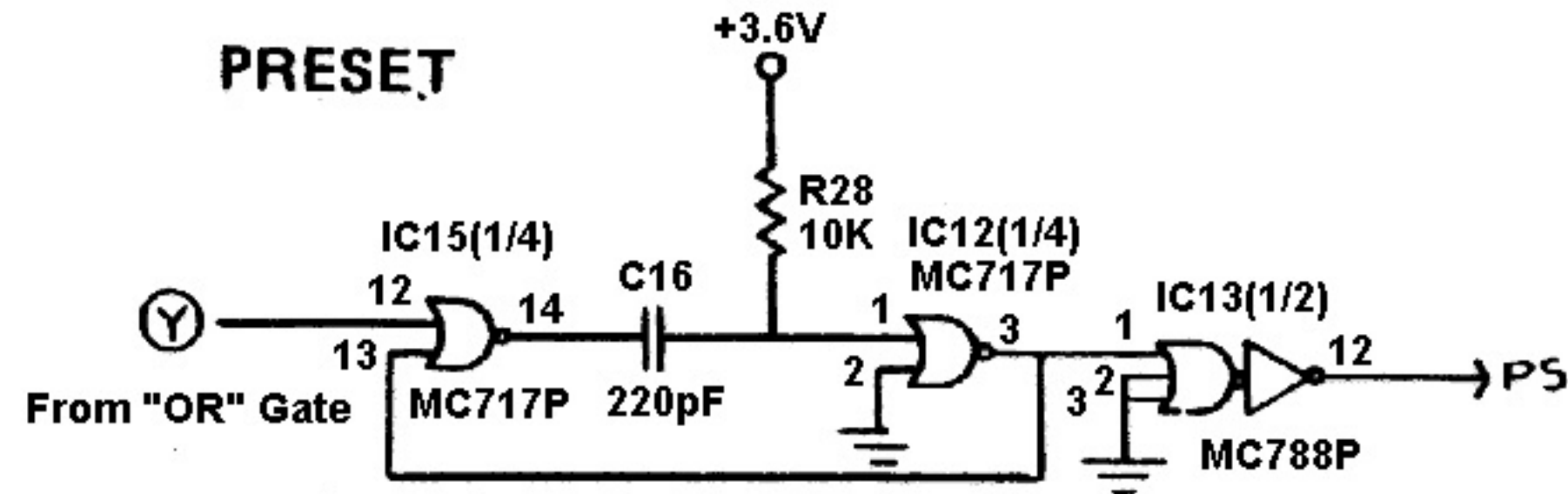
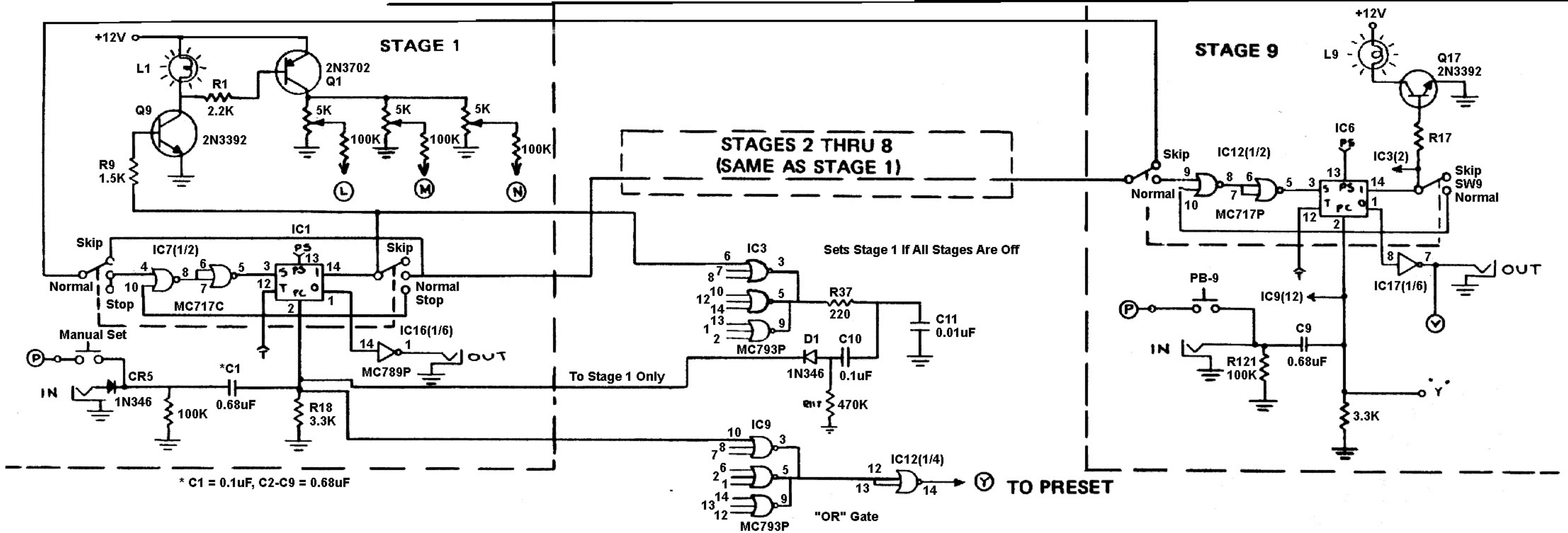


NOTE: ALL UNLABELED TRANSISTORS OF TYPE 2N3392

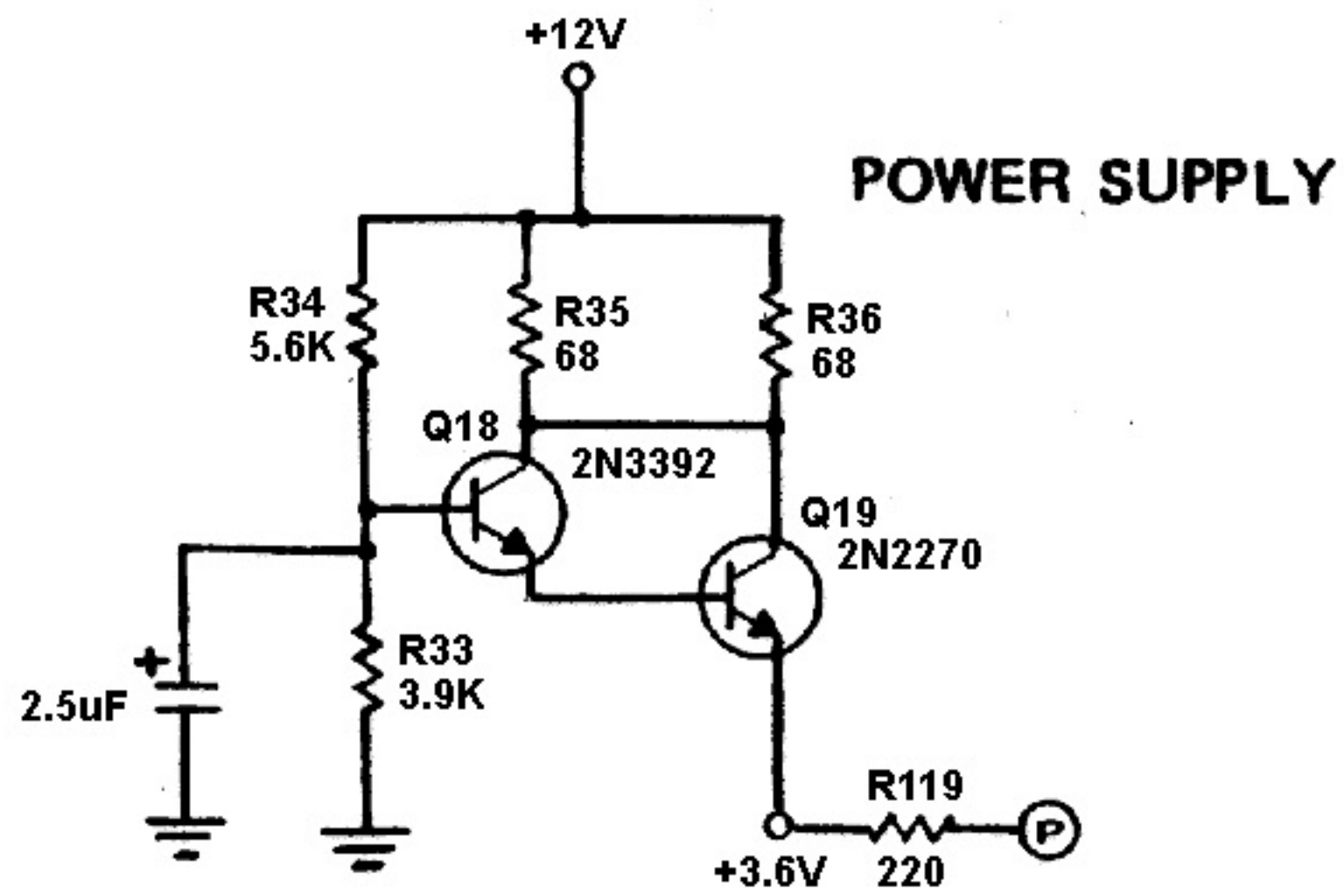
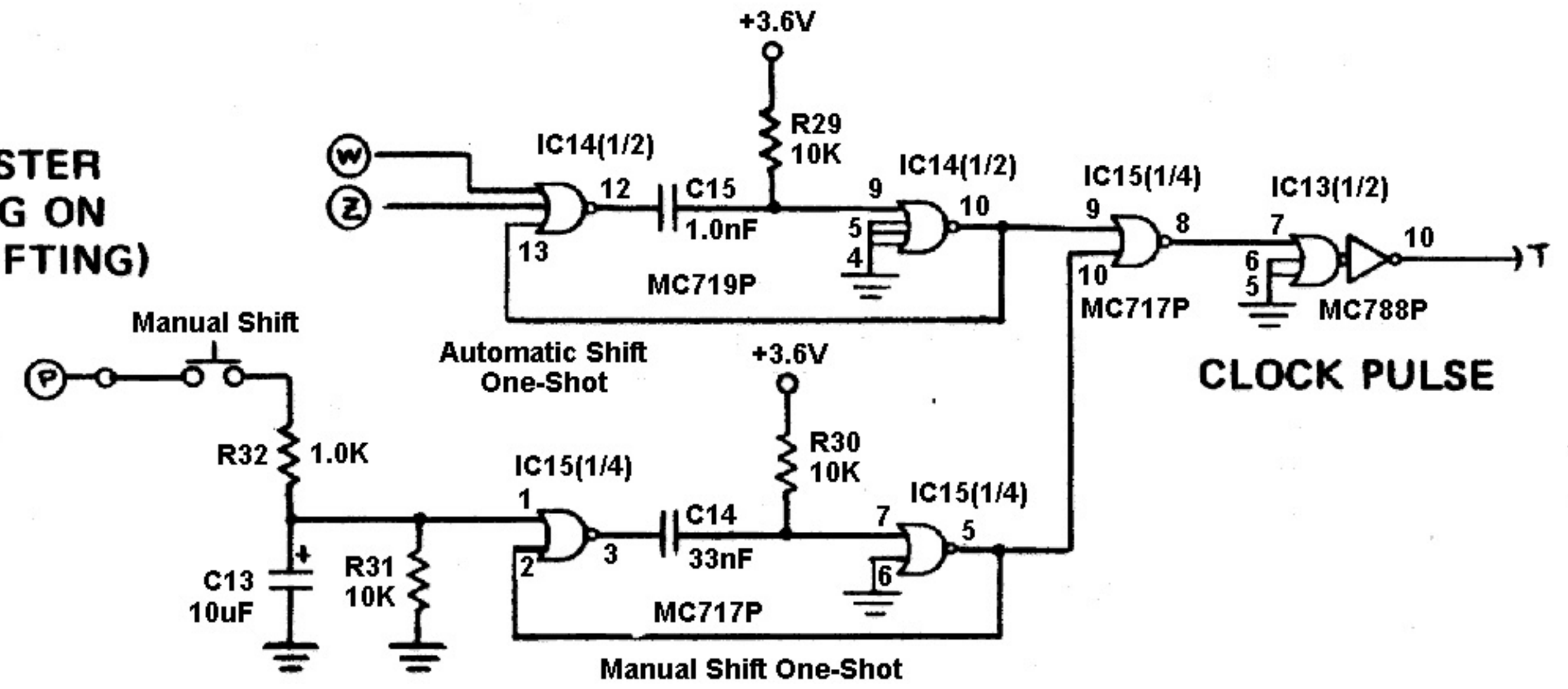
956 RIBBON CONTROLLER TEST PROCEDURE

1. Connect the 956 Ribbon Controller to the test rack.
2. Patch TRIGGER output of the 956 to the 911 Envelope Generator, then to the 902 Voltage Controlled Amplifier. Connect SIGNAL OUTPUT of a voltage controlled oscillator to the 902 SIGNAL INPUT. Connect 902 SIGNAL OUTPUT to a monitor amplifier and speaker.
3. Connect PITCH output to the voltage controlled oscillator CONTROL INPUT.
4. Touch TRIGGER bar on the 956. Oscillator should be heard. Adjust the 911 and 902 for a square envelope.
5. Set SCALE to "1" and LOW END VOLTAGE to "0".
6. Slide finger up and down the ribbon while touching the TRIGGER bar. A pitch change should be heard.
7. Adjust the ZERO ADJ. trimpot for 0.0 volt dc indication at PITCH OUTPUT jack.
8. Adjust the -1V. ADJ. trimpot for a 1.0 dc indication when switching between 0 and -1 low end voltage. Trimpot offsets - 1 volt position only.
9. Play the ribbon. It should have a 6.0 volt dc span (six octaves). Decrease the SCALE setting to "5". The ribbon should now span 3.0 volts (three octaves).
10. Slowly play the ribbon listening for erratic pitch changes. If erratic conditions exist, lightly sand the resistance wire and underside of ribbon with No. 400 emery paper. Apply a light film of cramolin to the resistance wire and ribbon to further promote a smooth contact.
11. Depress and release ribbon at low, middle and high end with scale at "10". Check for drift of the sample hold circuit at each of these points. Drift shall be less than 10 mv/minute as measured at the PITCH CONTROL OUTPUT jack.

FIGURE 20 RIBBON CONTROLLER MODEL 956



CLEARs ENTIRE SHIFT REGISTER IN THE PROCESS OF TURNING ON A COLUMN. (EXCLUDING SHIFTING)



- NOTE:**
- INTERMITTENT OPERATION MAY BE DUE TO SHORTING MOLEX CONNECTORS OR CORROSION**
 - WHEN REPLACING SOCKETED IC'S, SOLDER FOUR CORNERS TO SOCKET**

INCLUDES CB-1

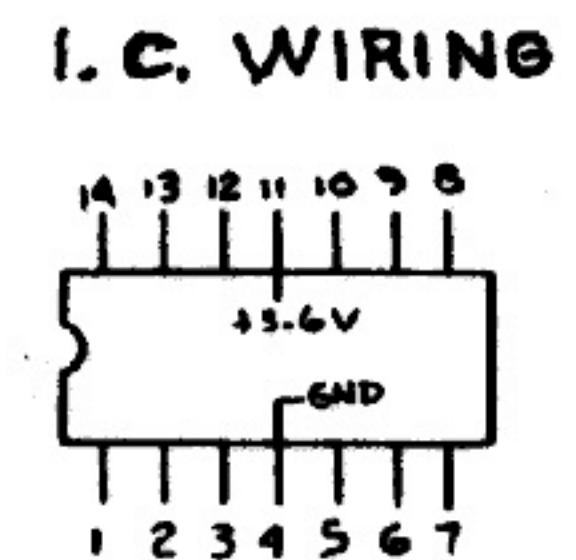
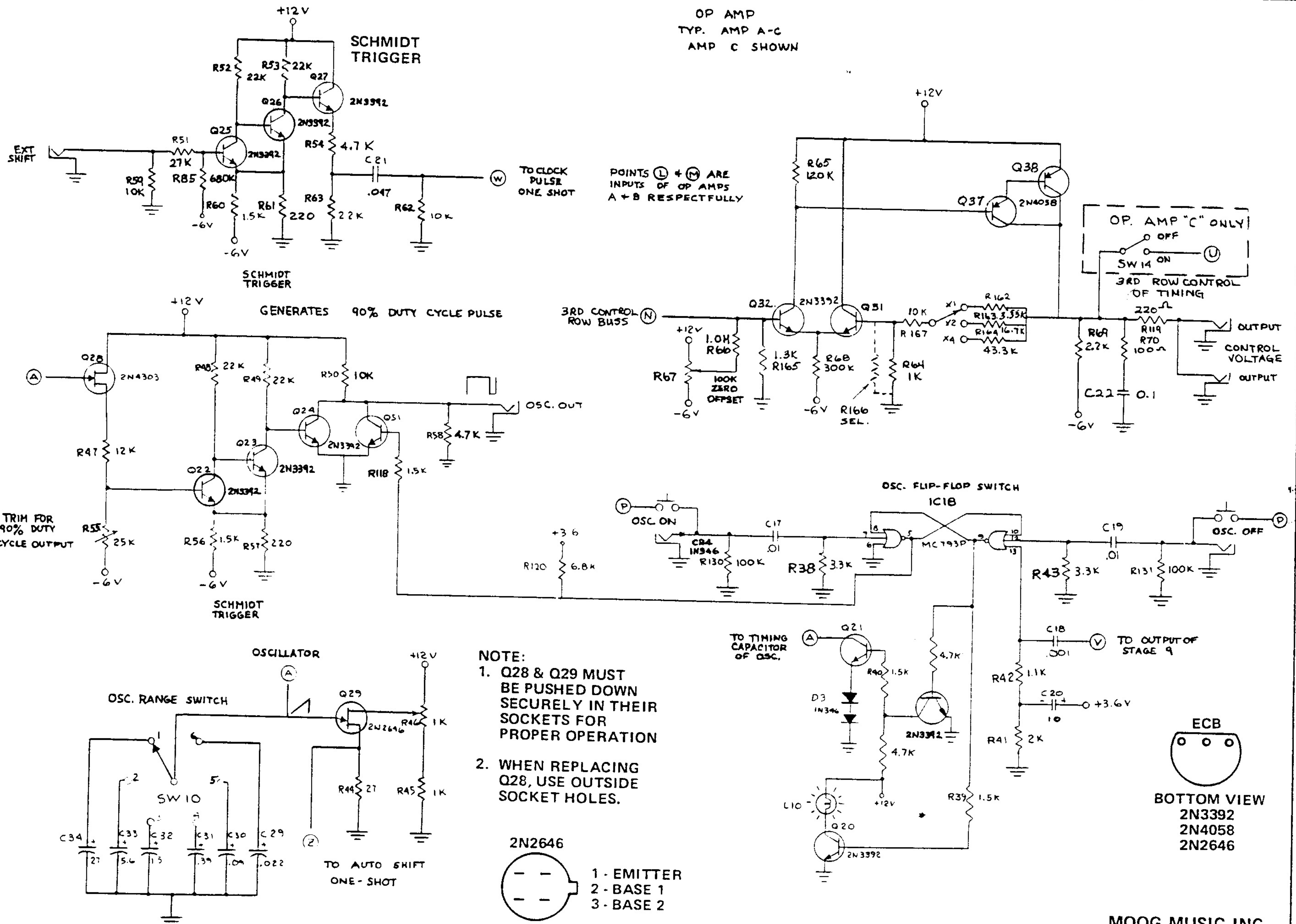


FIG 32 SEQUENTIAL CONTROLLER (CIRCUIT BOARD 2) MODEL 960



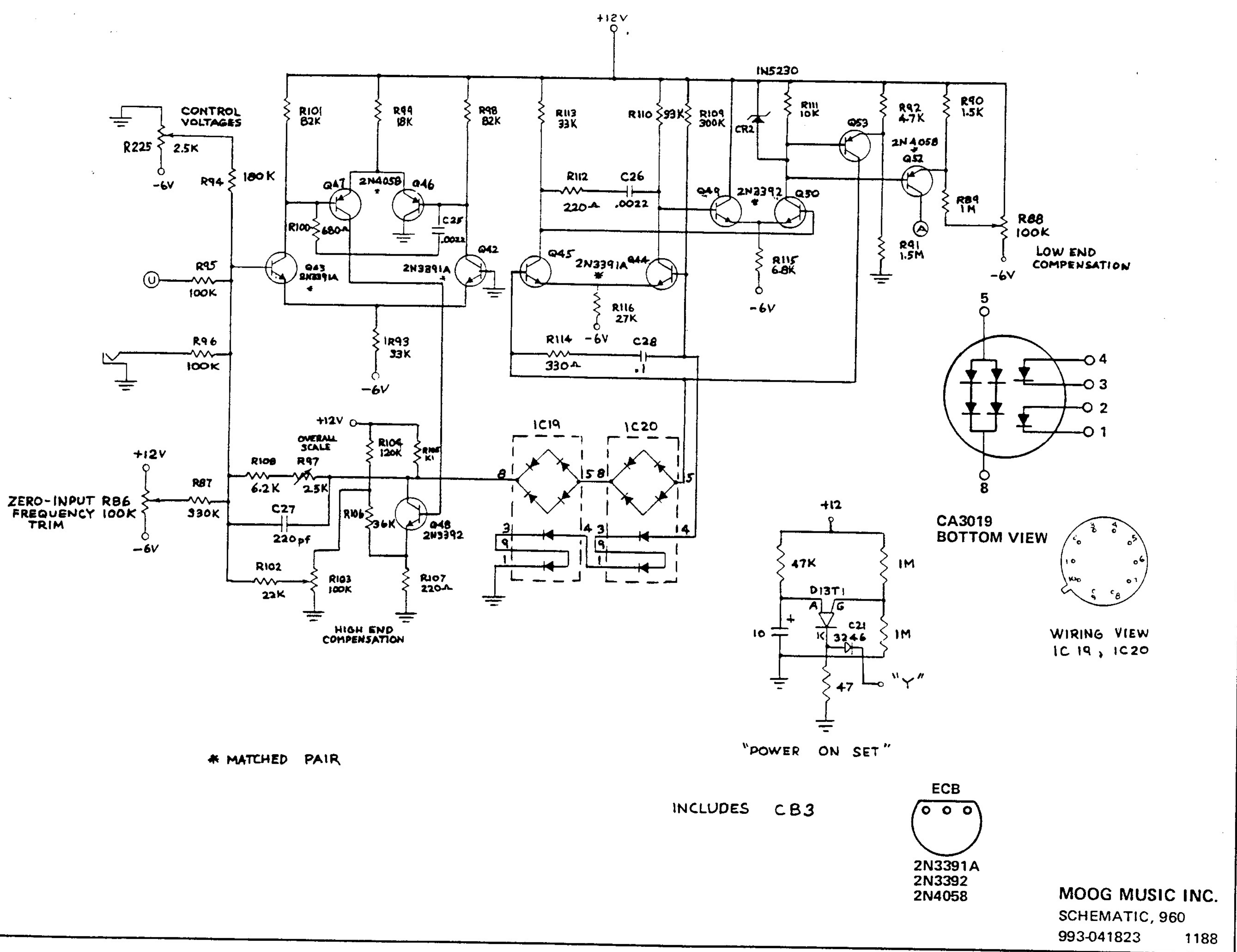
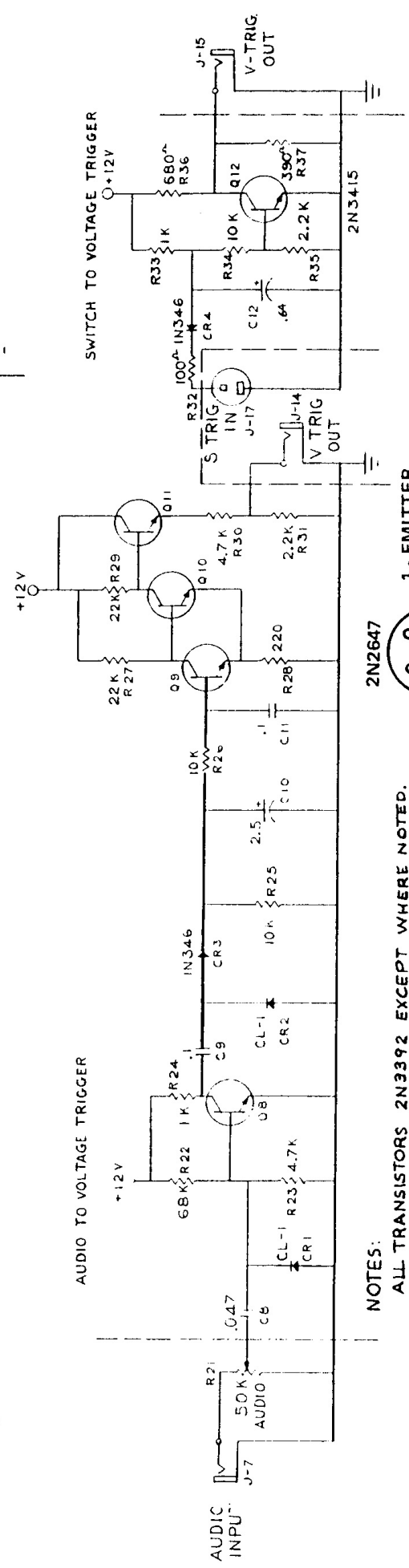
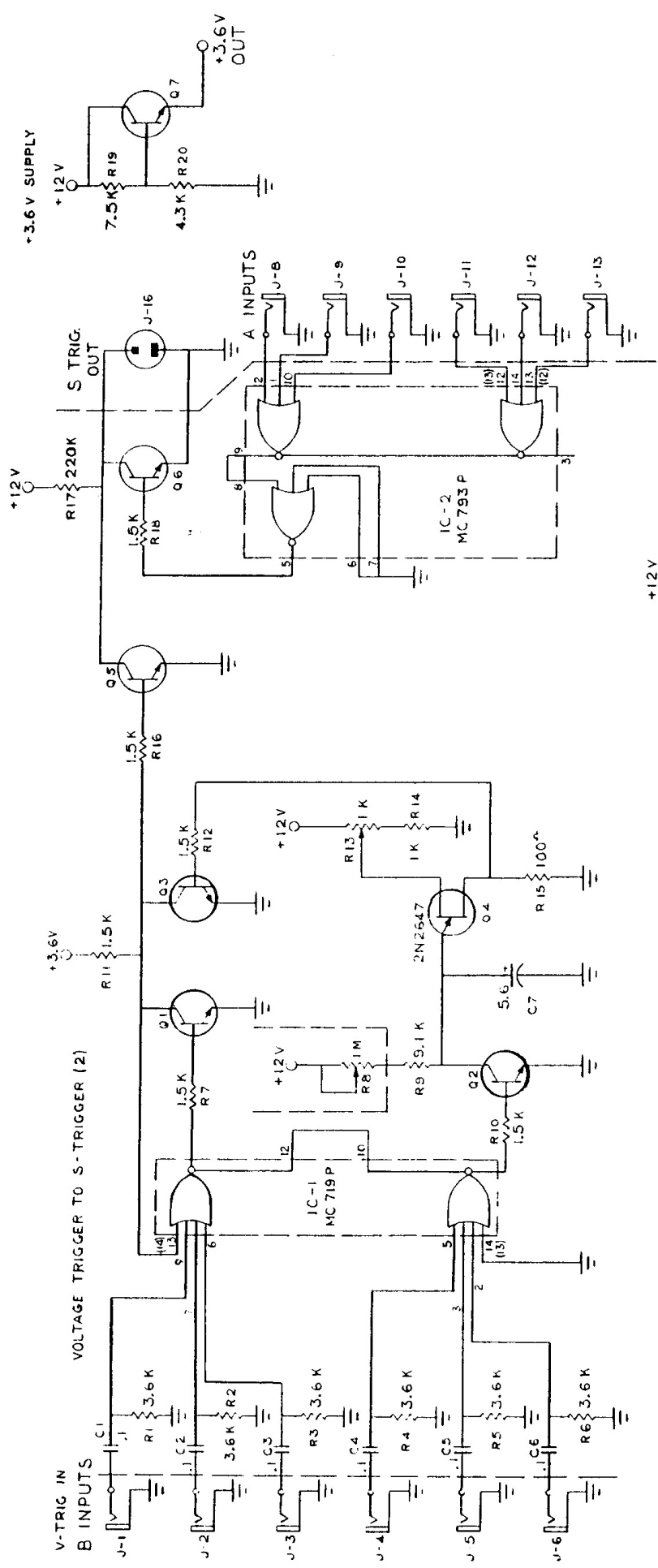
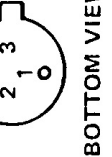
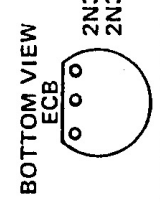


FIGURE 33. SEQUENTIAL CONTROLLER (CIRCUIT BOARD 3) MODEL 960

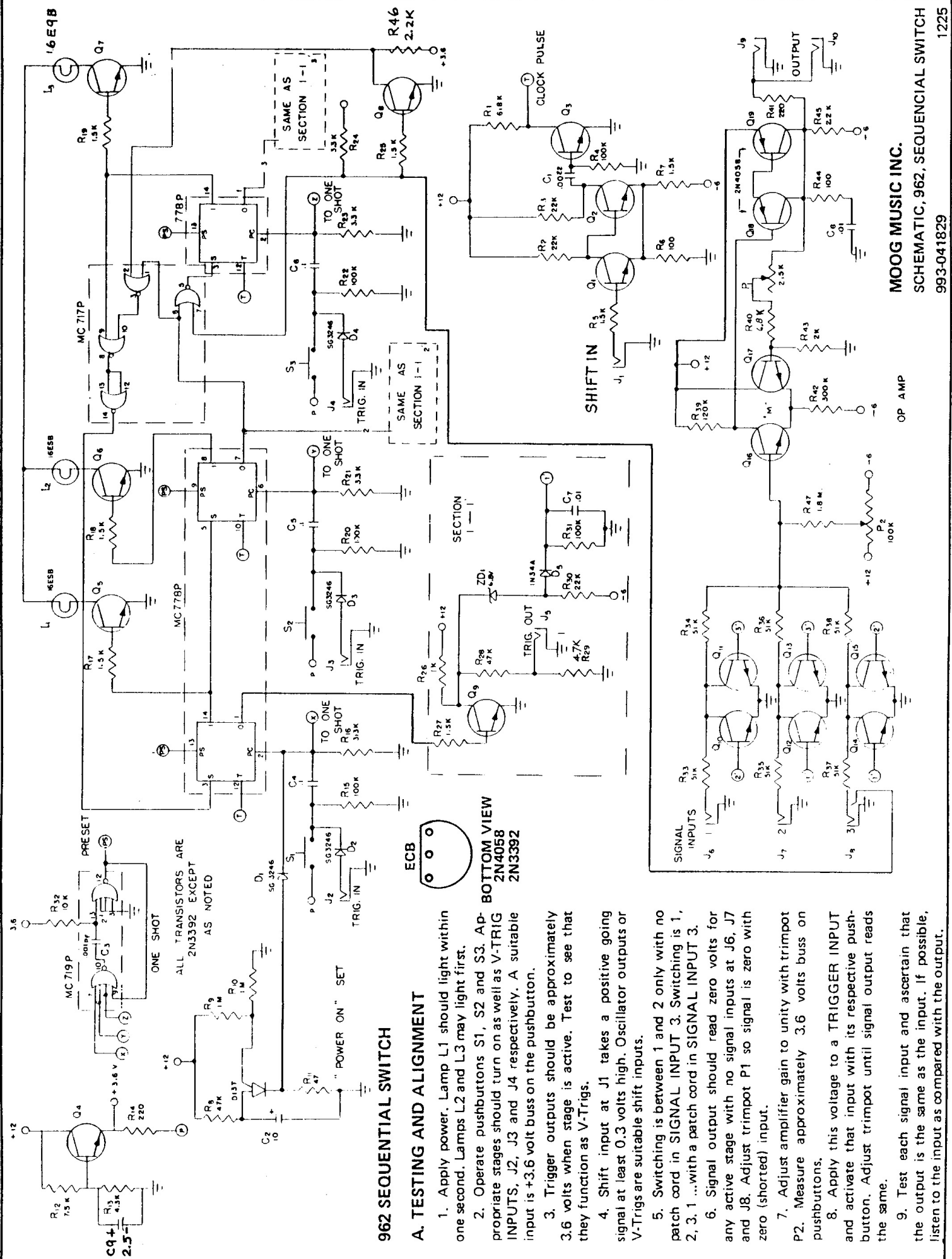


NOTES:
ALL TRANSISTORS 2N3392 EXCEPT WHERE NOTED.



MOOG MUSIC INC.
SCHEMATIC, 961, INTERFACE
993-041827 1212

FIGURE 34 INTERFACE MODEL 961



962 SEQUENTIAL SWITCH

A. TESTING AND ALIGNMENT

1. Apply power. Lamp L1 should light within one second. Lamps L2 and L3 may light first.
2. Operate pushbuttons S1, S2 and S3. Appropriate stages should turn on as well as V-TRIG INPUTS, J2, J3 and J4 respectively. A suitable input is +3.6 volt buss on the pushbutton.
3. Trigger outputs should be approximately 3.6 volts when stage is active. Test to see that they function as V-Trigs.
4. Shift input at J1 takes a positive going signal at least 0.3 volts high. Oscillator outputs or V-Trigs are suitable shift inputs.
5. Switching is between 1 and 2 only with no patch cord in SIGNAL INPUT 3. Switching is 1, 2, 3, 1 ... with a patch cord in SIGNAL INPUT 3.
6. Signal output should read zero volts for any active stage with no signal inputs at J6, J7 and J8. Adjust trimpot P1 so signal is zero with zero (shorted) input.
7. Adjust amplifier gain to unity with trimpot P2. Measure approximately 3.6 volts buss on pushbuttons.
8. Apply this voltage to a TRIGGER INPUT and activate that input with its respective pushbutton. Adjust trimpot until signal output reads the same.
9. Test each signal input and ascertain that the output is the same as the input. If possible, listen to the input as compared with the output.

FIGURE 35. SEQUENTIAL SWITCH MODEL 962

MOOG MUSIC INC.

SCHEMATIC, 962, SEQUENTIAL SWITCH
993-041829

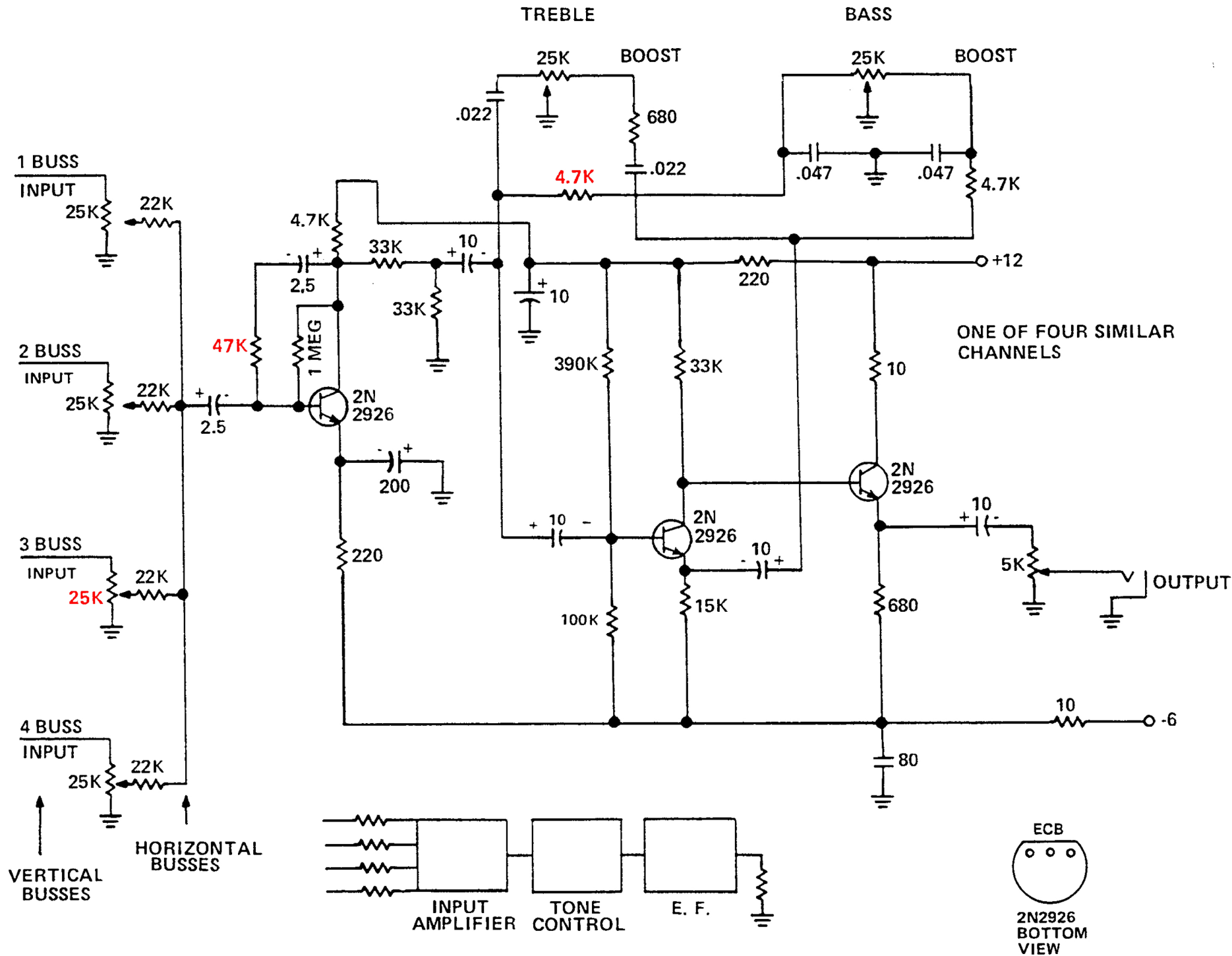


FIGURE 36 FOUR CHANNEL MIXER MODEL 984

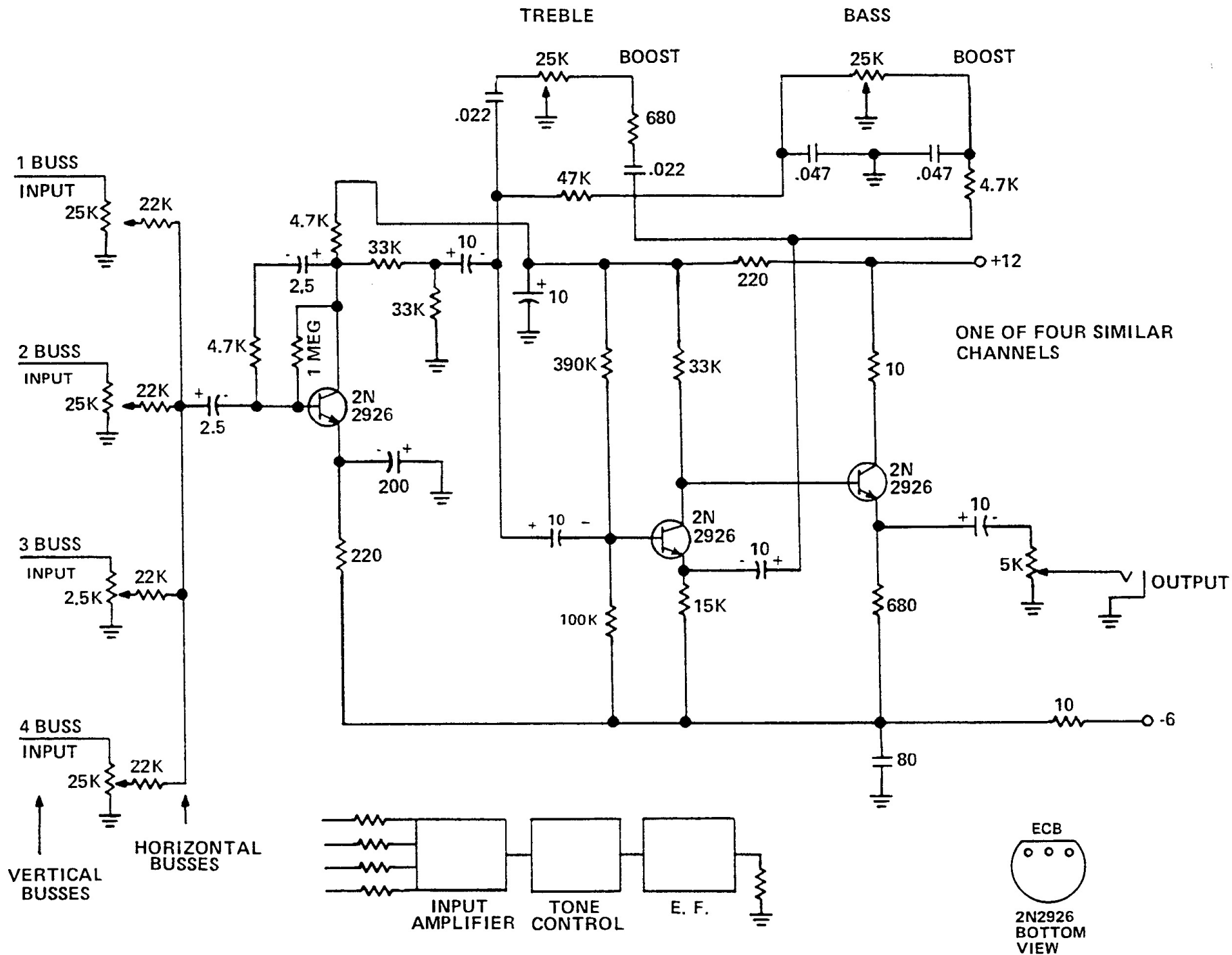
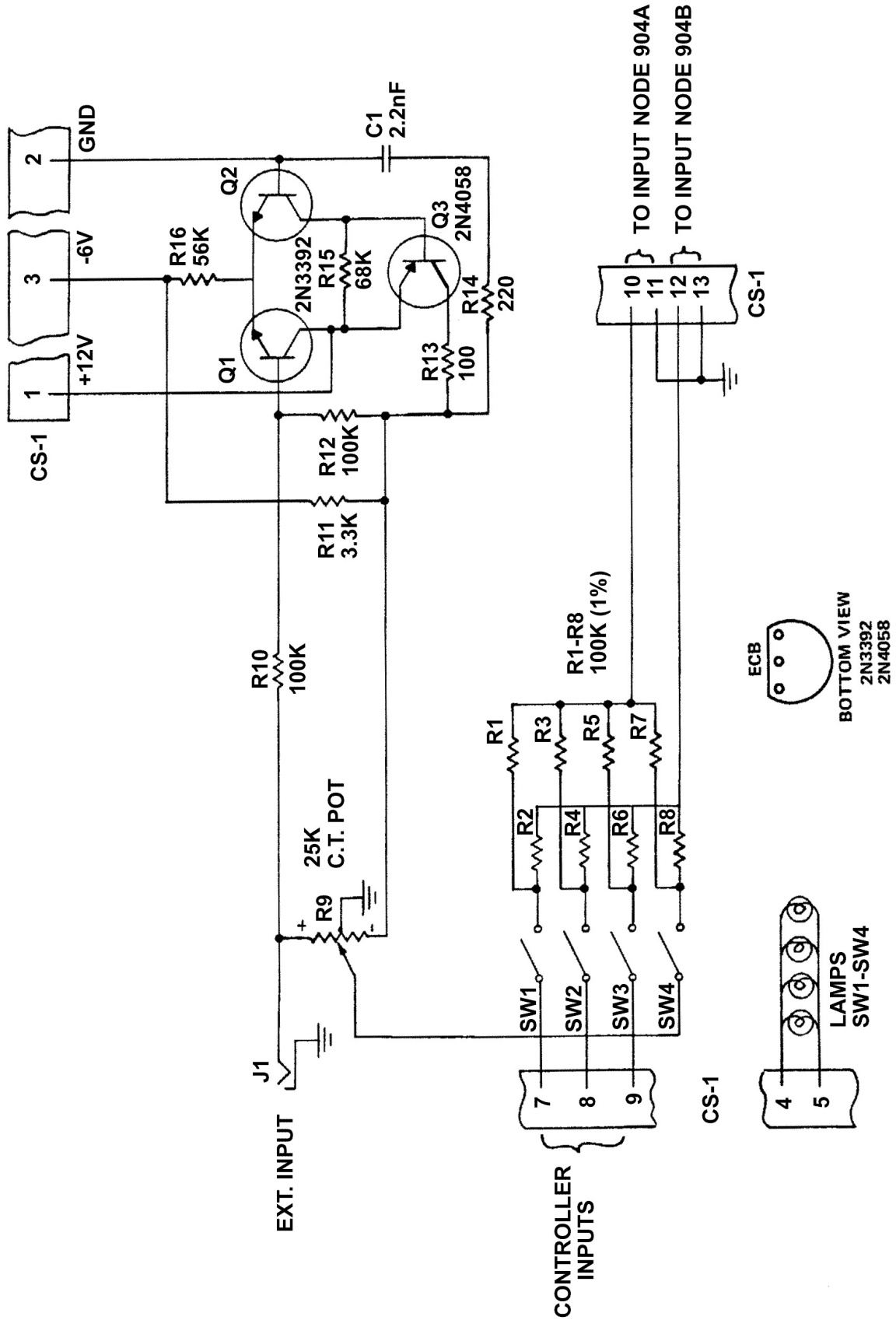
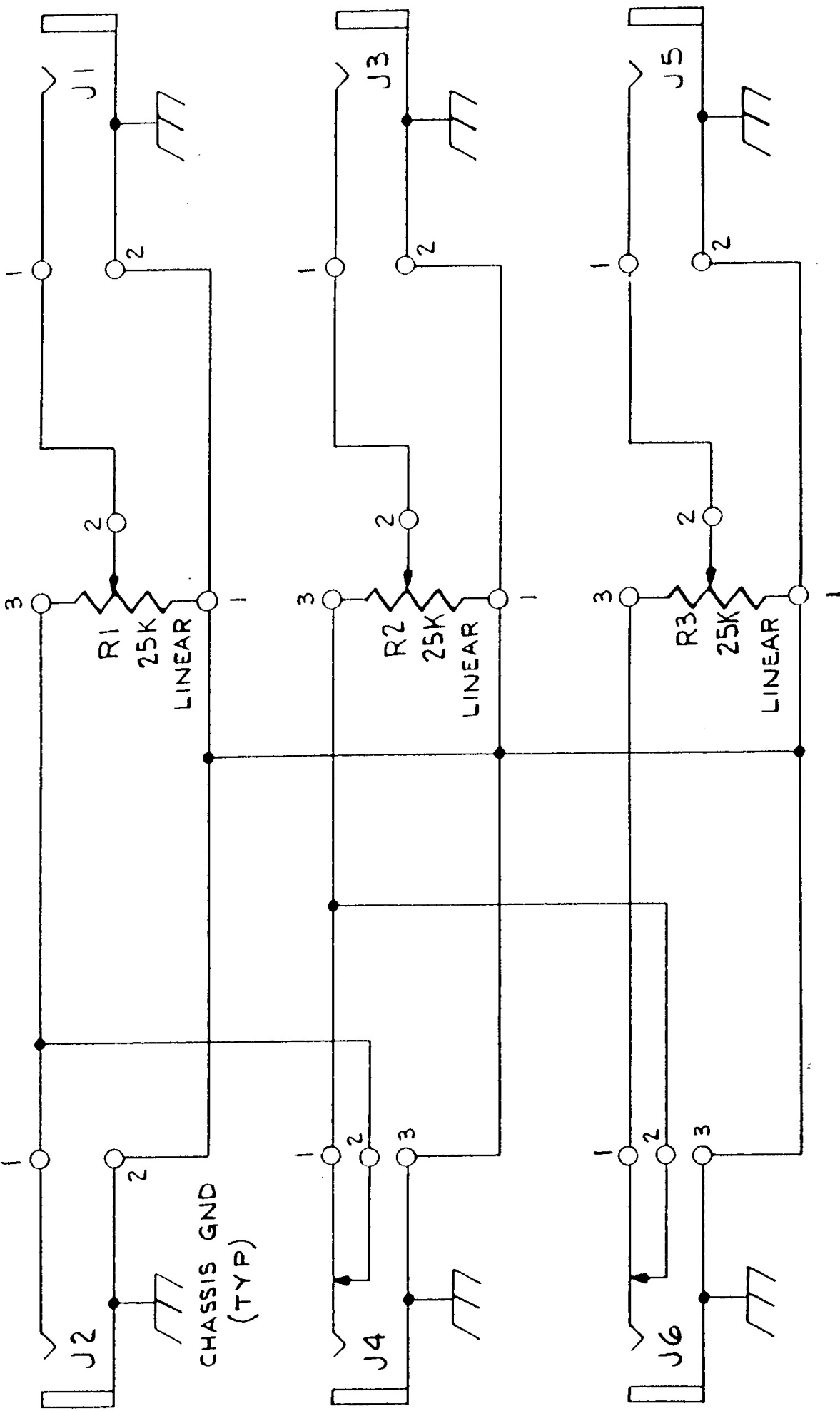


FIGURE 36 FOUR CHANNEL MIXER MODEL 984



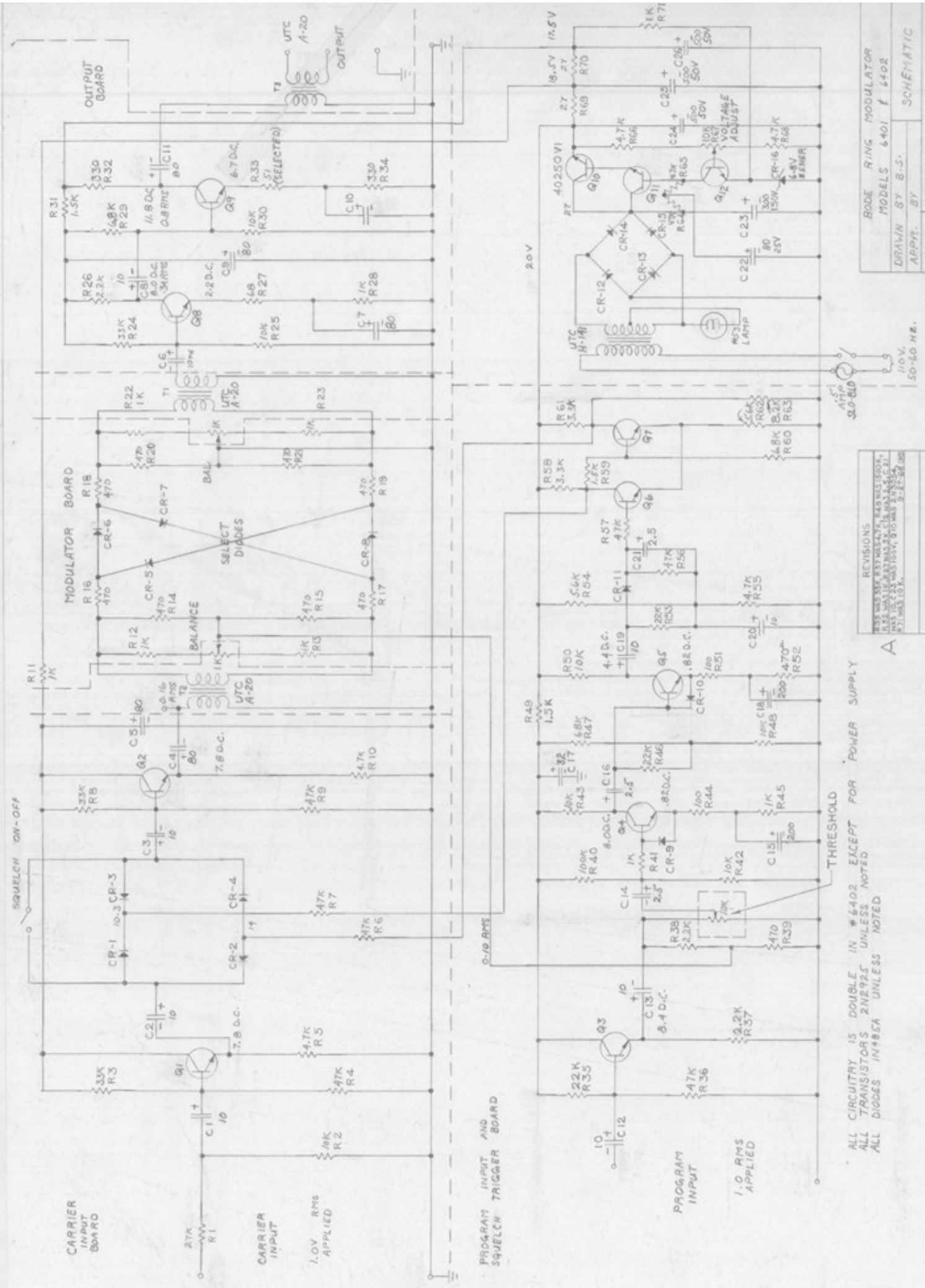
MOOG MUSIC INC.
 SCHEMATIC, 904S CONTROL-992 MODULE
 993-041804

FIGURE 37 CONTROLLER MODEL 992 FOR MODEL 904S



MOOG MUSIC INC.
 SCHEMATIC, ATTENUATORS MODULE 995
 993-041812

FIGURE 38 ATTENUATORS MODEL 995



ALL CIRCUITRY IS DOUBLE IN #6402 EXCEPT FOR POWER SUPPLY
 ALL TRANSISTORS 2N2925 UNLESS NOTED
 ALL DIODES IN#65A UNLESS NOTED

REVISIONS
 #15 WAS REVISED BY BAS NELLESON
 #14 WAS REVISED BY BAS NELLESON
 #13 WAS REVISED BY BAS NELLESON
 #12 WAS REVISED BY BAS NELLESON

RODE RING MODULATOR
 MODELS 6401 & 6402
 DRAWN BY B.S.
 APPR. BY
 DATE 10-21-66
 NUMBER
 R. A. MOOG CO.
 TRUMANSBURG, N.Y.
 SCHEMATIC
 1113

A

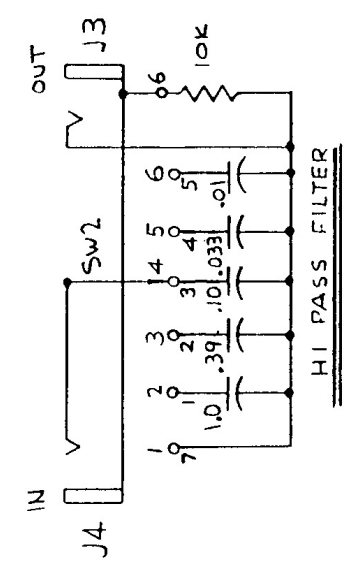
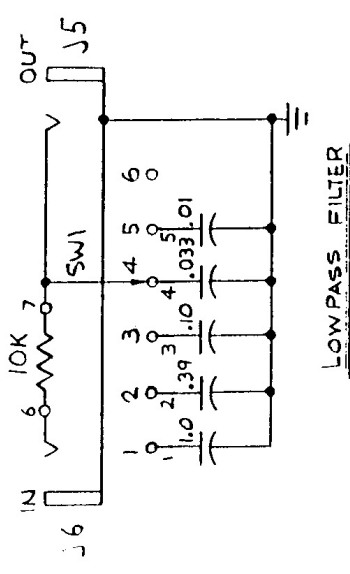
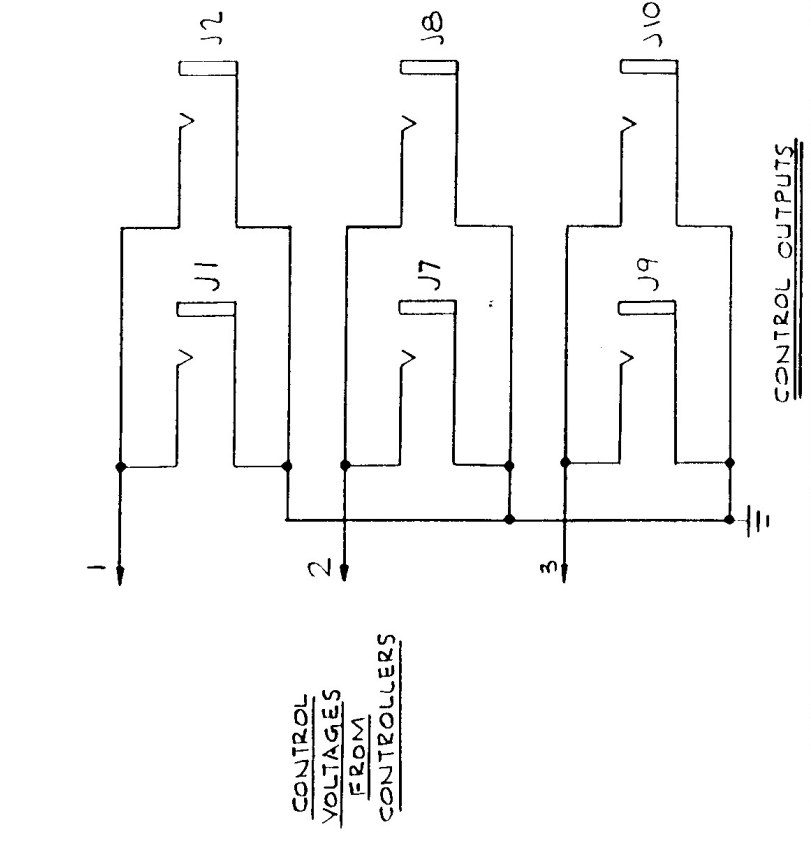
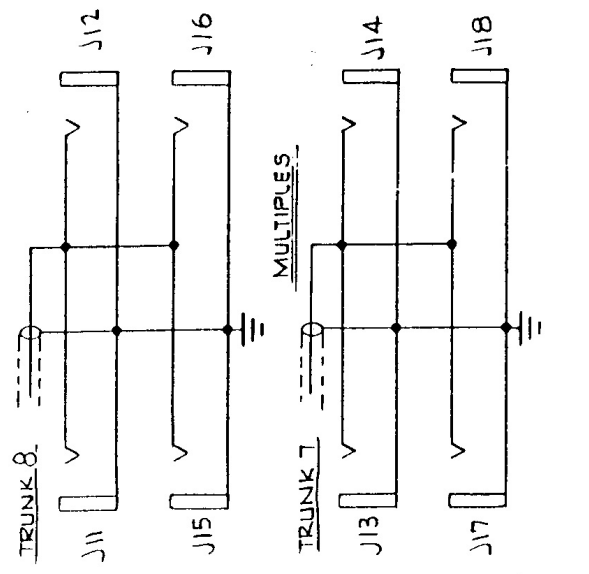
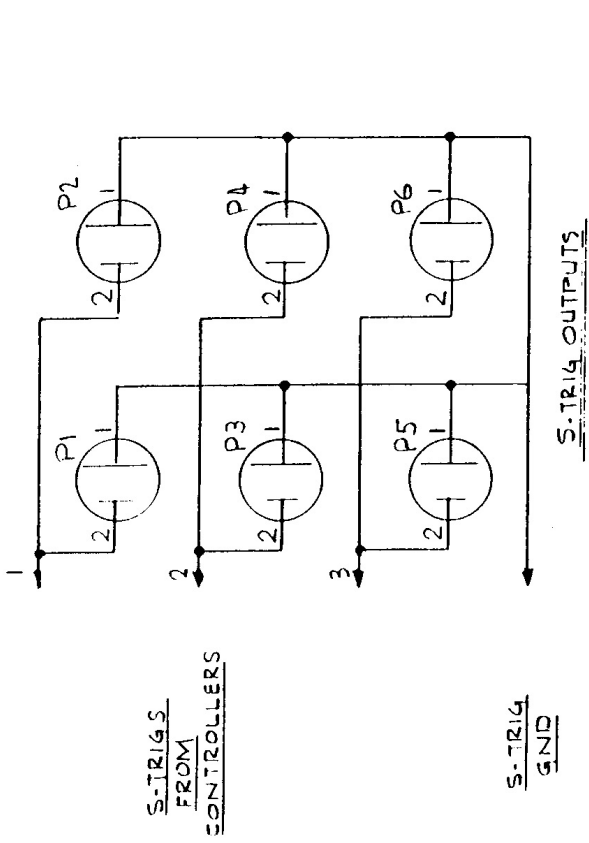
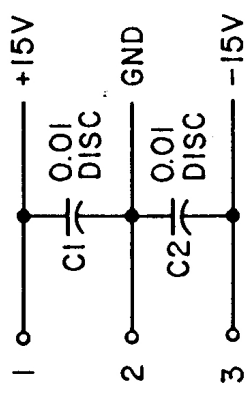
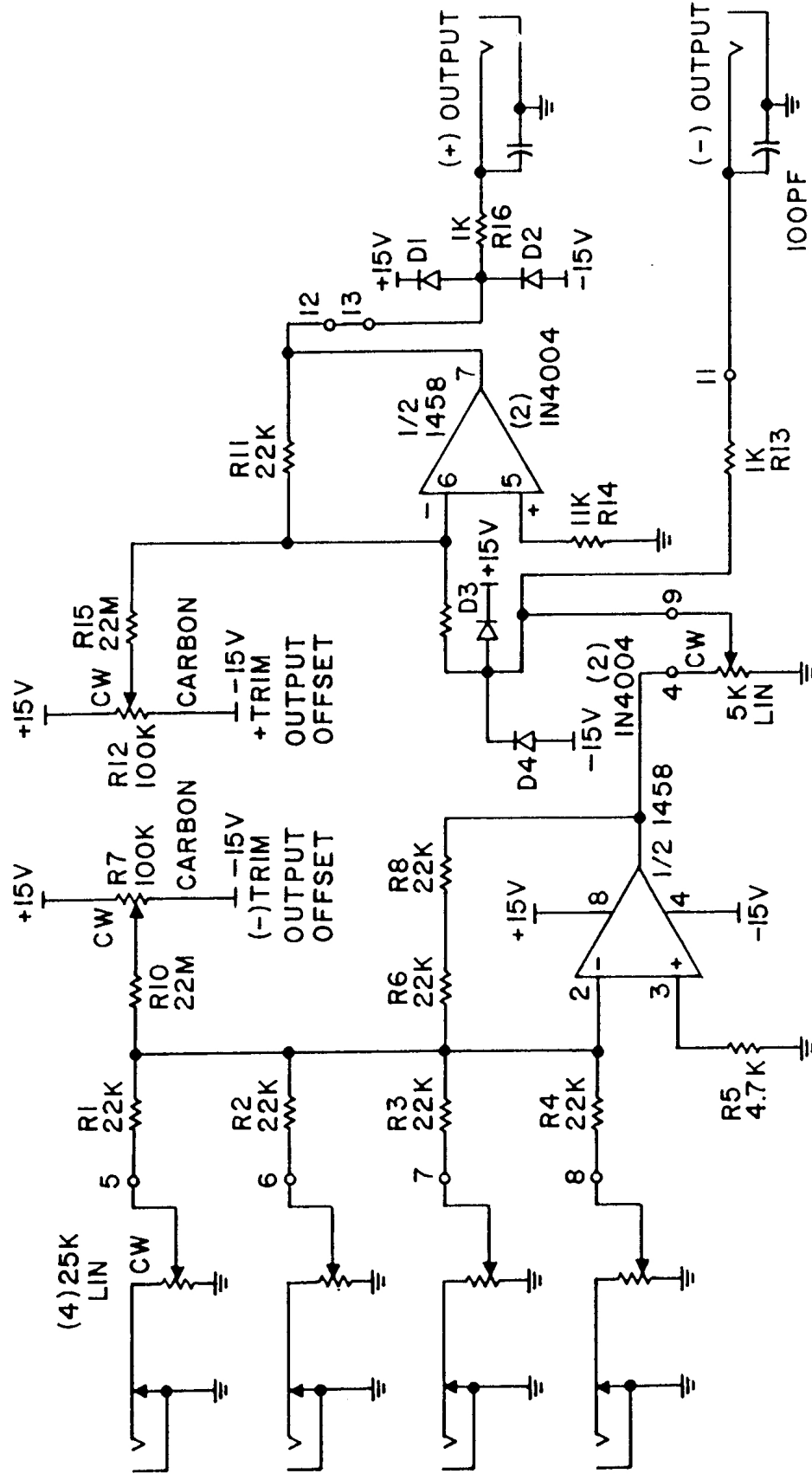


FIGURE 1 CONSOLE PANEL MODEL 2A



- ① ALL RESISTORS MAY BE 5% DISCRETE
- ② R1, 2, 3, 4, 6, 8, 9, 11 MAY BE DIP

MOOG MUSIC INC.
 SCHEMATIC. CONTROL PANEL 3A MIXER
 993-042239

FIGURE 3 CONTROL PANEL MIXER MODEL 3A

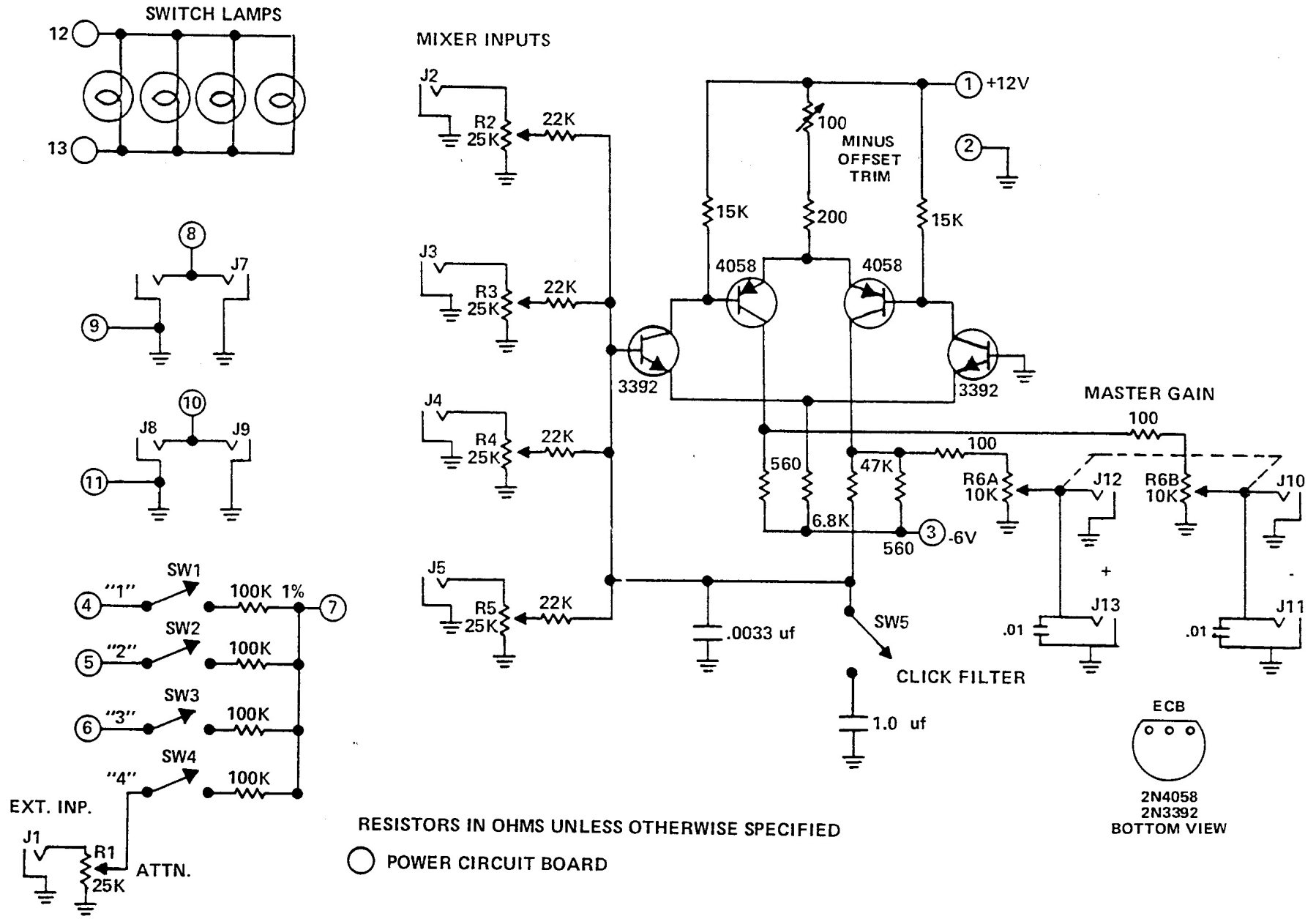
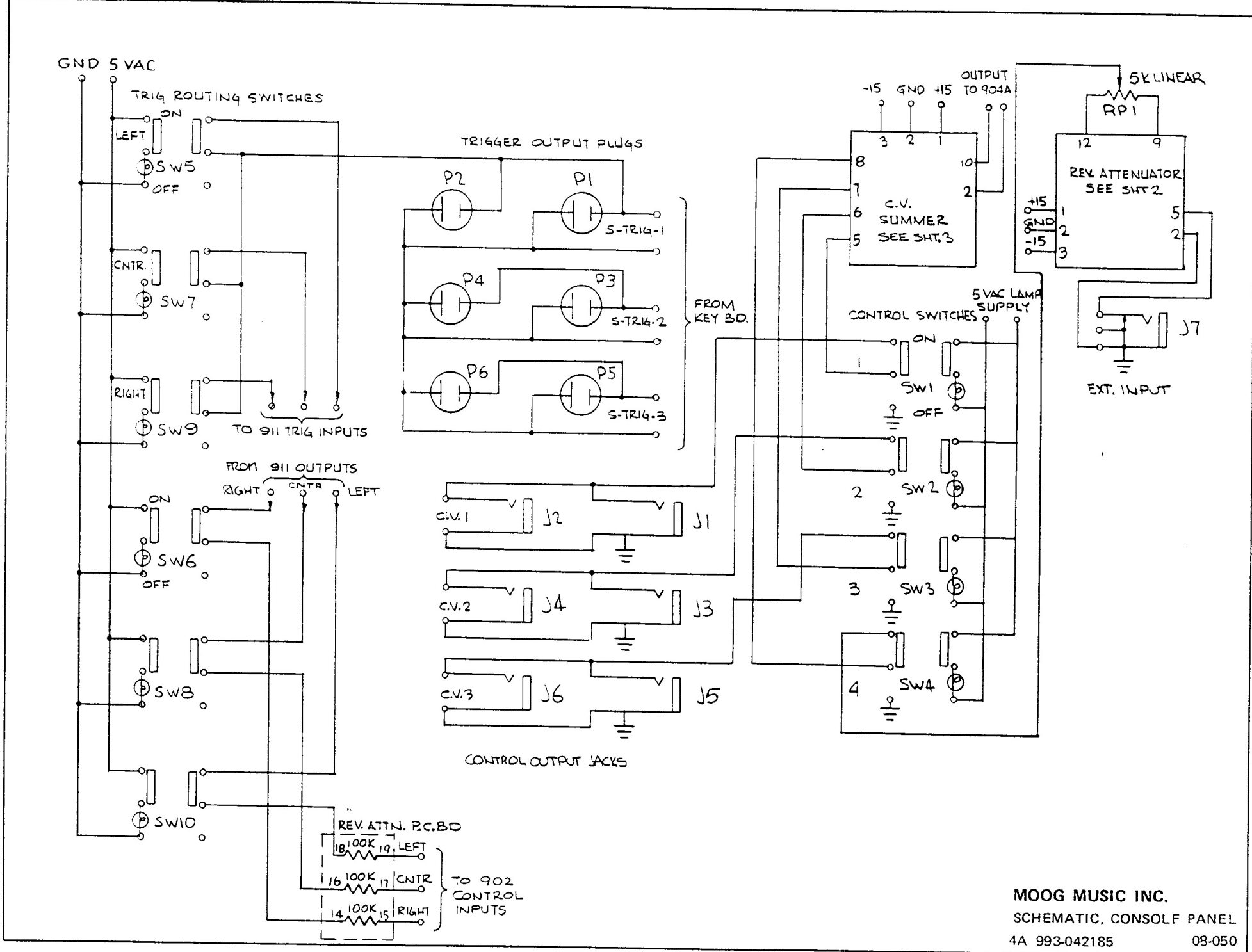


FIGURE 2 CONSOLE PANEL MODEL 3



MOOG MUSIC INC.
 SCHEMATIC, CONSOLE PANEL
 4A 993-042185 08-050

FIGURE 4 CONSOLE PANEL MODEL 4A