

## **Moog Model 15 Modules**

**902(x2)**

**904A**

**907A**

**910**

**911(x2)**

**921**

**921B**

**923**

**952**

**995**

**CP3**

**CP4A**

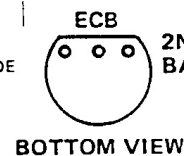
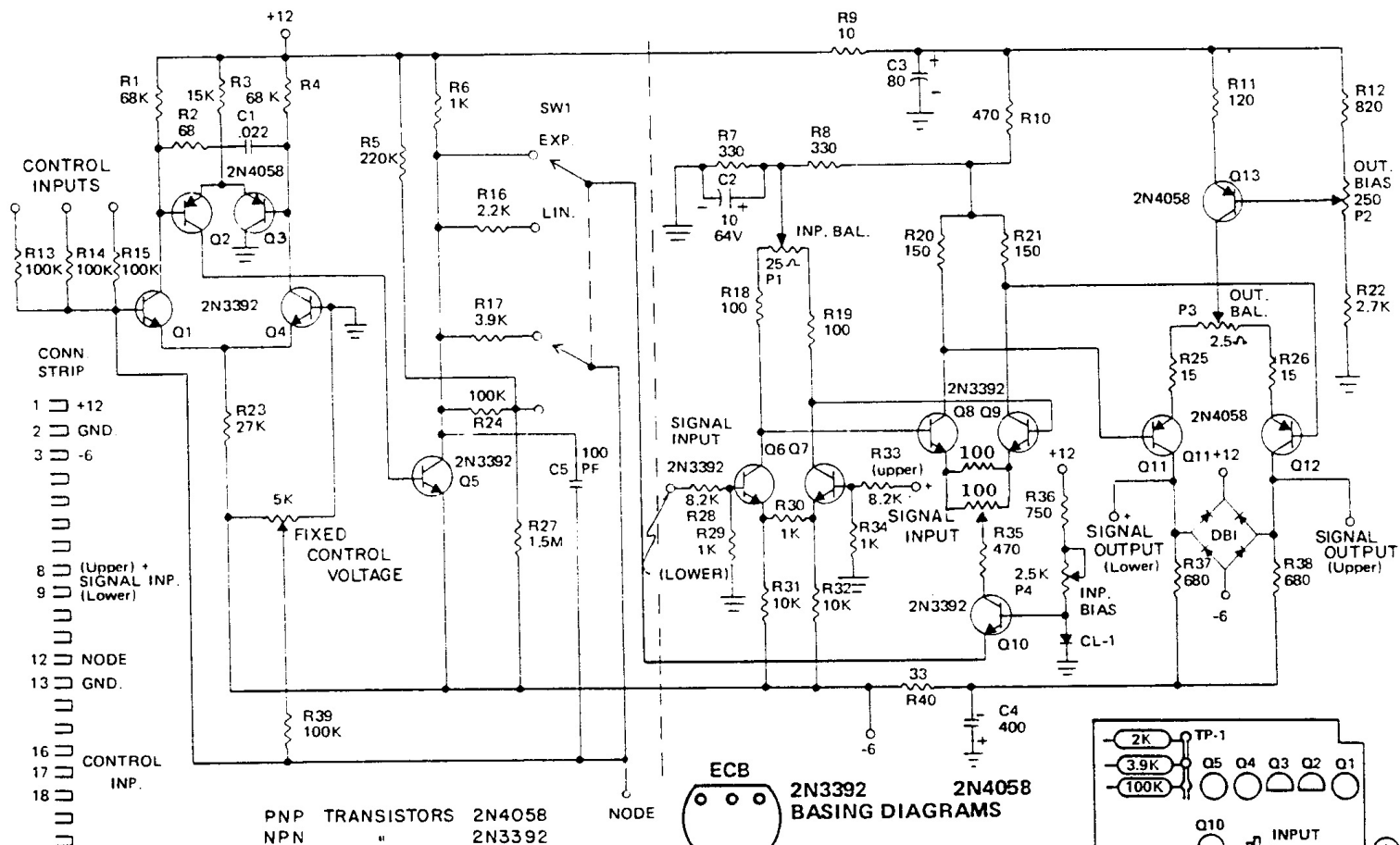
## 902 VOLTAGE CONTROLLED AMPLIFIER TEST PROCEDURE

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.

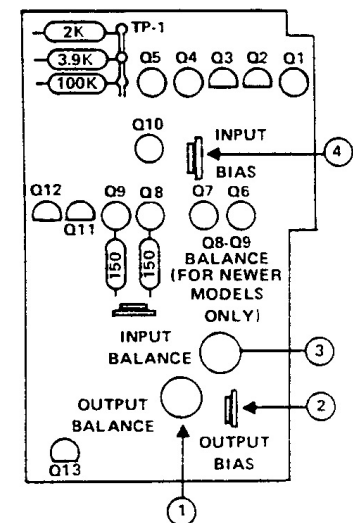
### NOTE

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.



- 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.



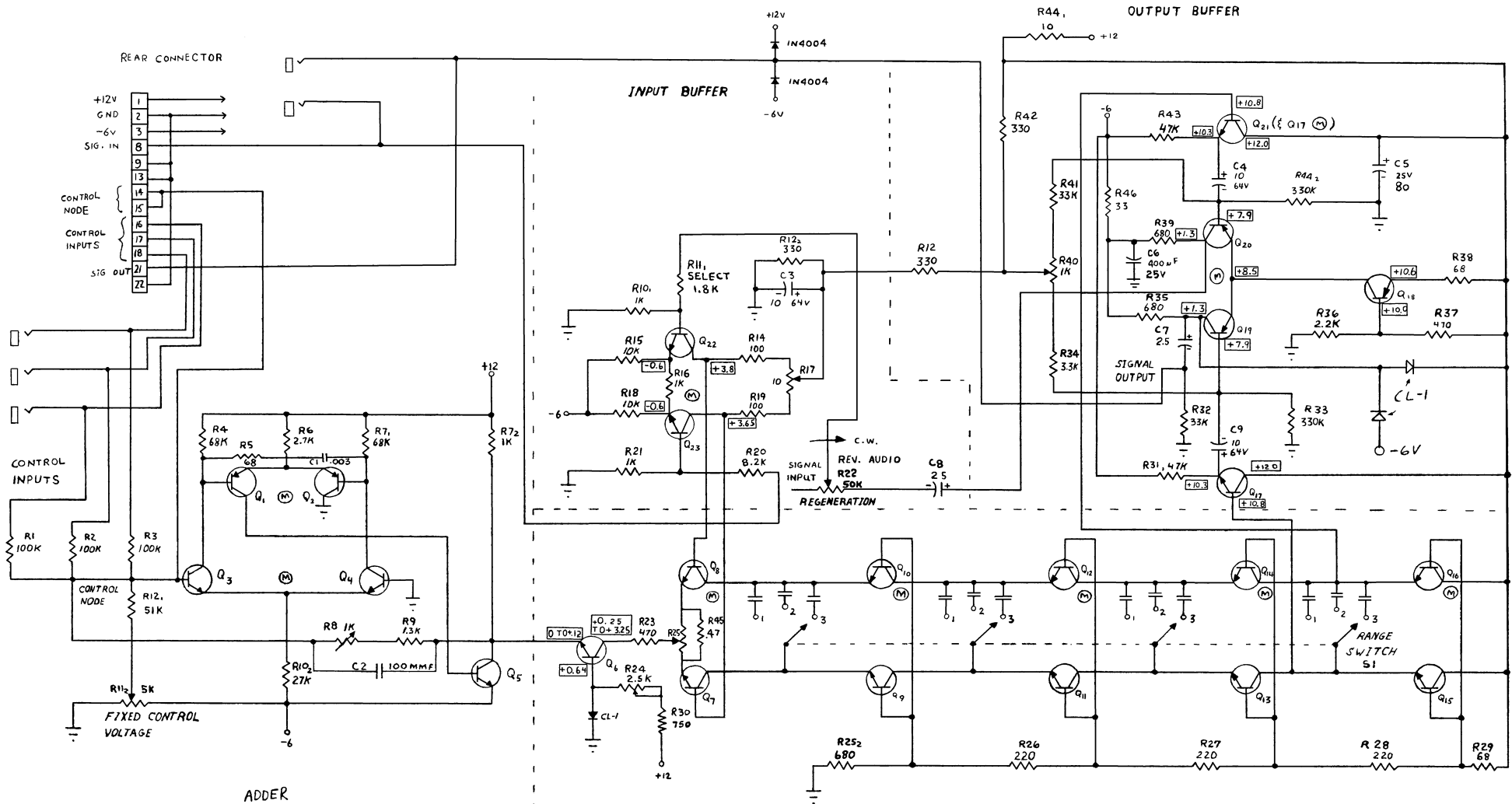
VOLTAGE CONTROLLED AMPLIFIER ALIGNMENT PROCEDURE AND ADJUSTMENT LOCATION DIAGRAM

MOOG MUSIC INC.

SCHMATIC, 902 VOLTAGE CONTROLLED AMPLIFIER  
993-041813

1068

FIGURE 9 VOLTAGE CONTROLLED AMPLIFIER MODEL 902



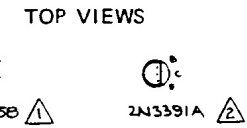
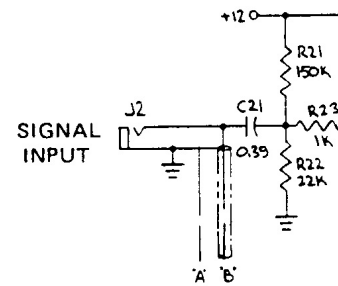
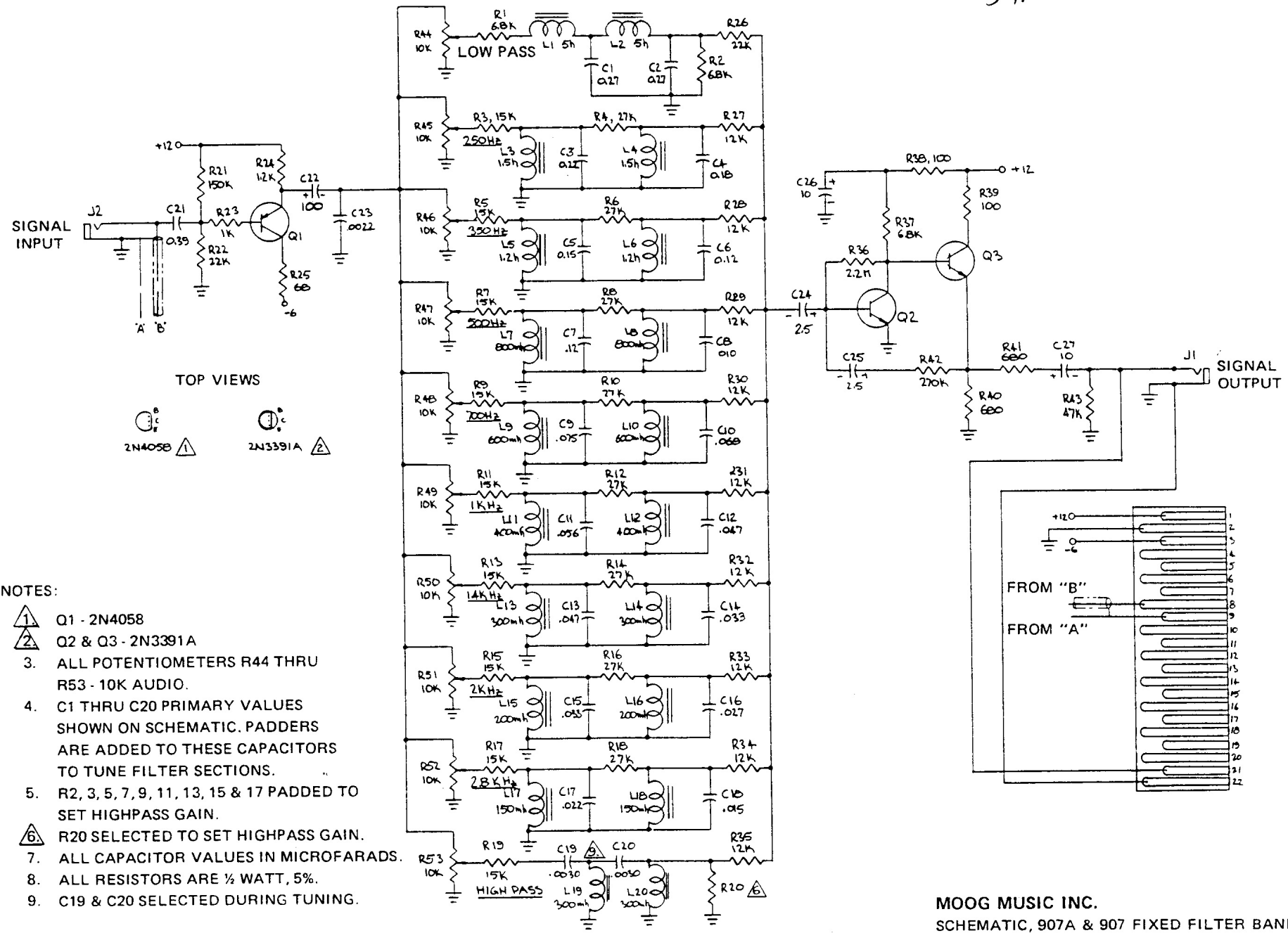
- NOTES:
1. ALL NPN TRANSISTORS: 2N 3392
  2. ALL PNP TRANSISTORS: 2N 4058
  3. (M) ⇒ MATCHED PAIR
  4. RANGE CAPACITOR SIZES
 

1	1.2 $\mu$ F
2	0.3 $\mu$ F
3	0.075 $\mu$ F

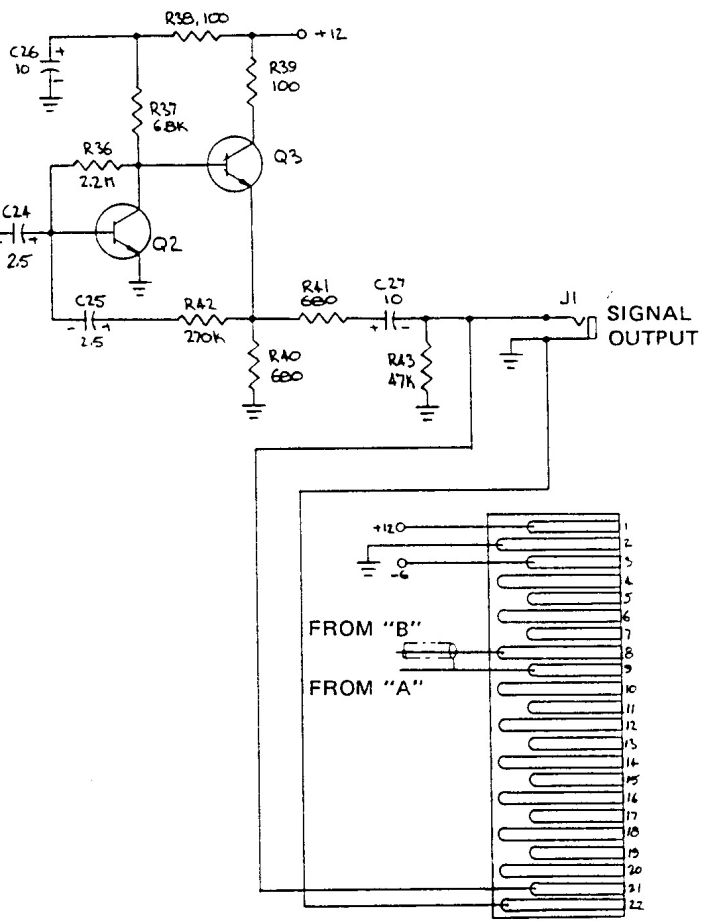
904-A VOLTAGE CONTROLLED LOW PASS FILTER	
DRAWN BY P.Y.	
APPR. BY	
DATE 7-25-67	DRAWING NUMBER SUPERCEDES NO. 1039
R. A. MOOG CO. TAUMANSBURG, N. Y.	
REV. C 11/10/70 w/g.s.	REV. D
REV. A 9-8-69 - JLA	REV. B ~ECN-003

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



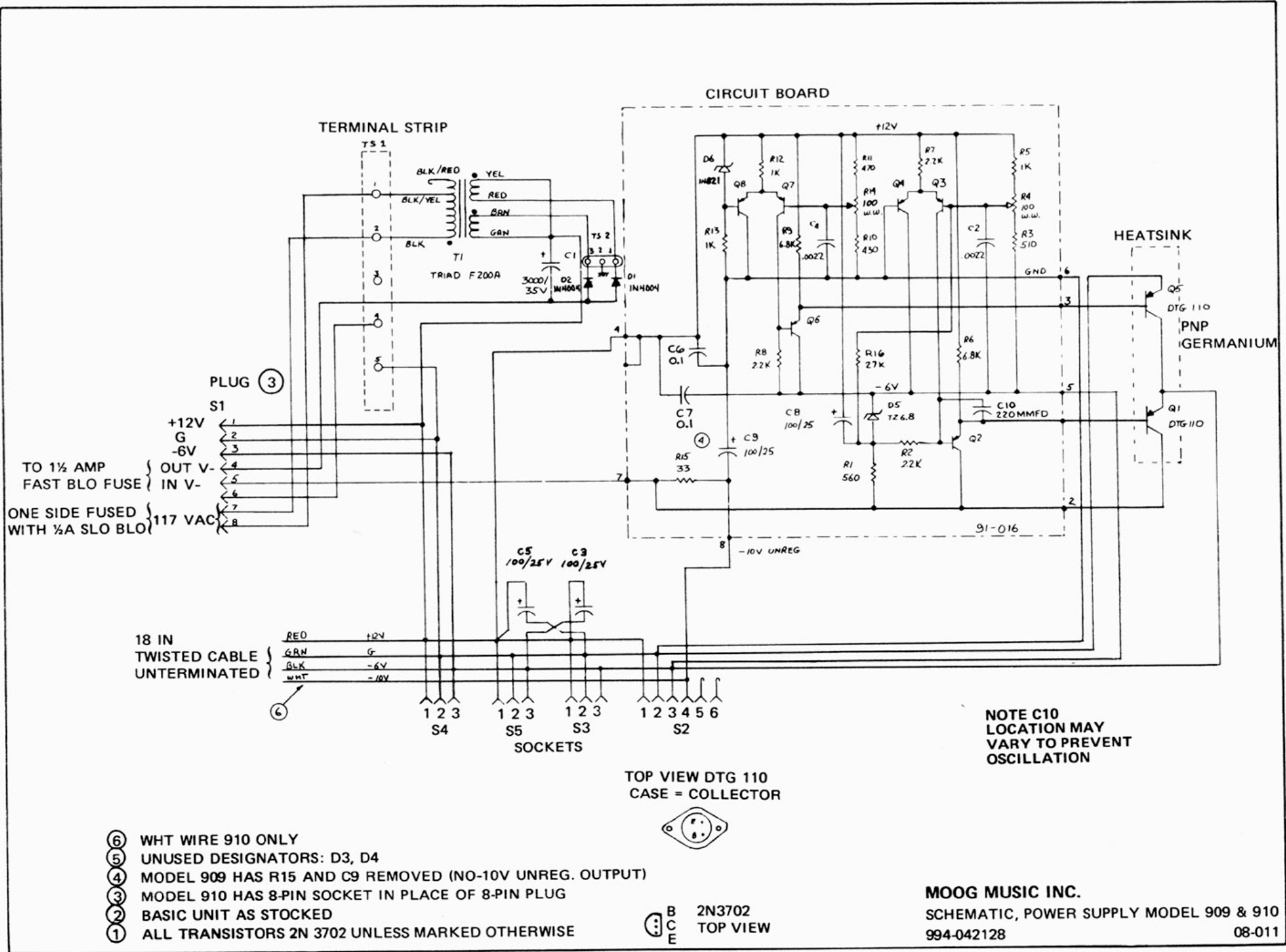
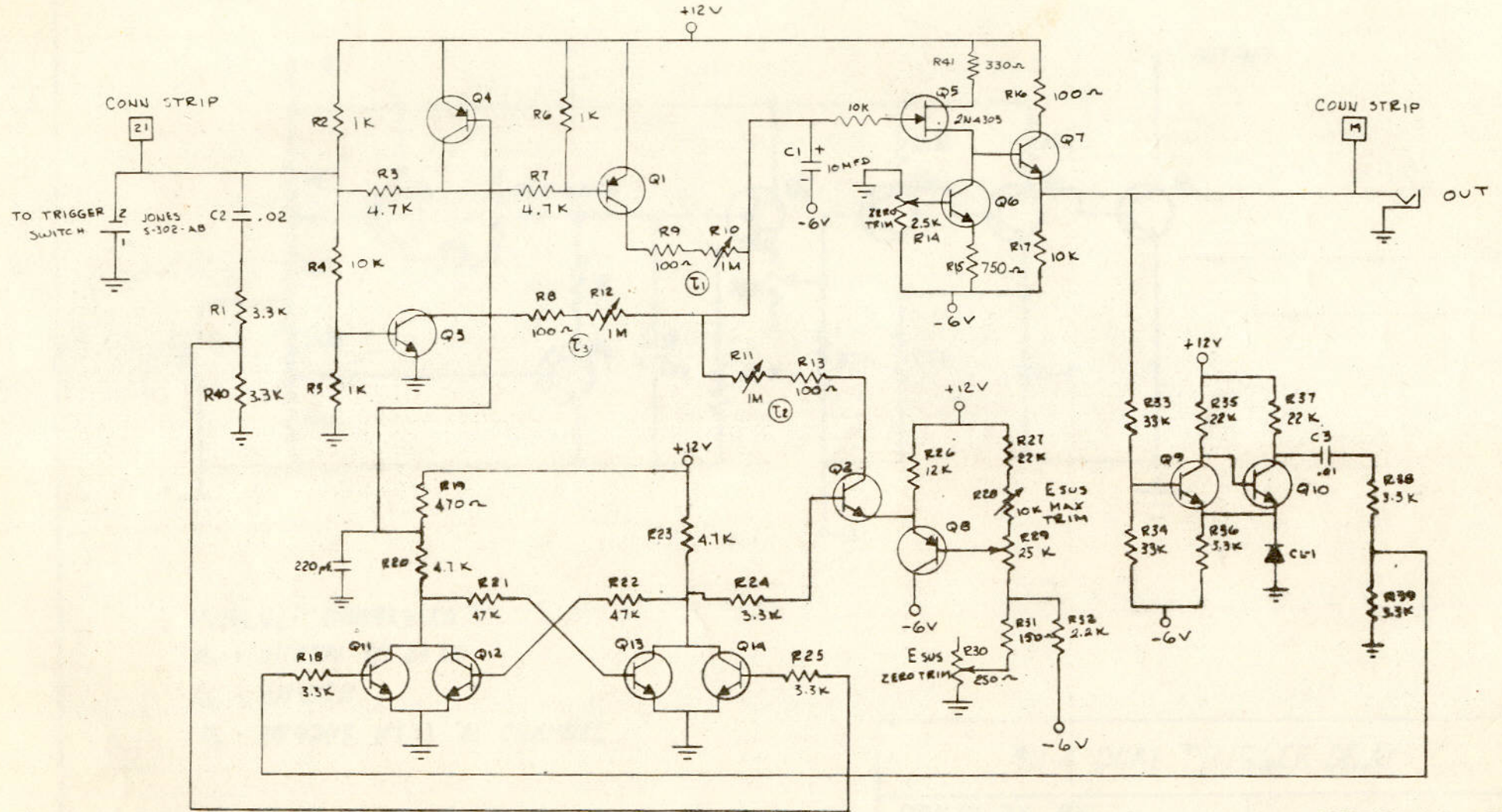


FIGURE 16 POWER SUPPLY MODELS 909 AND 910

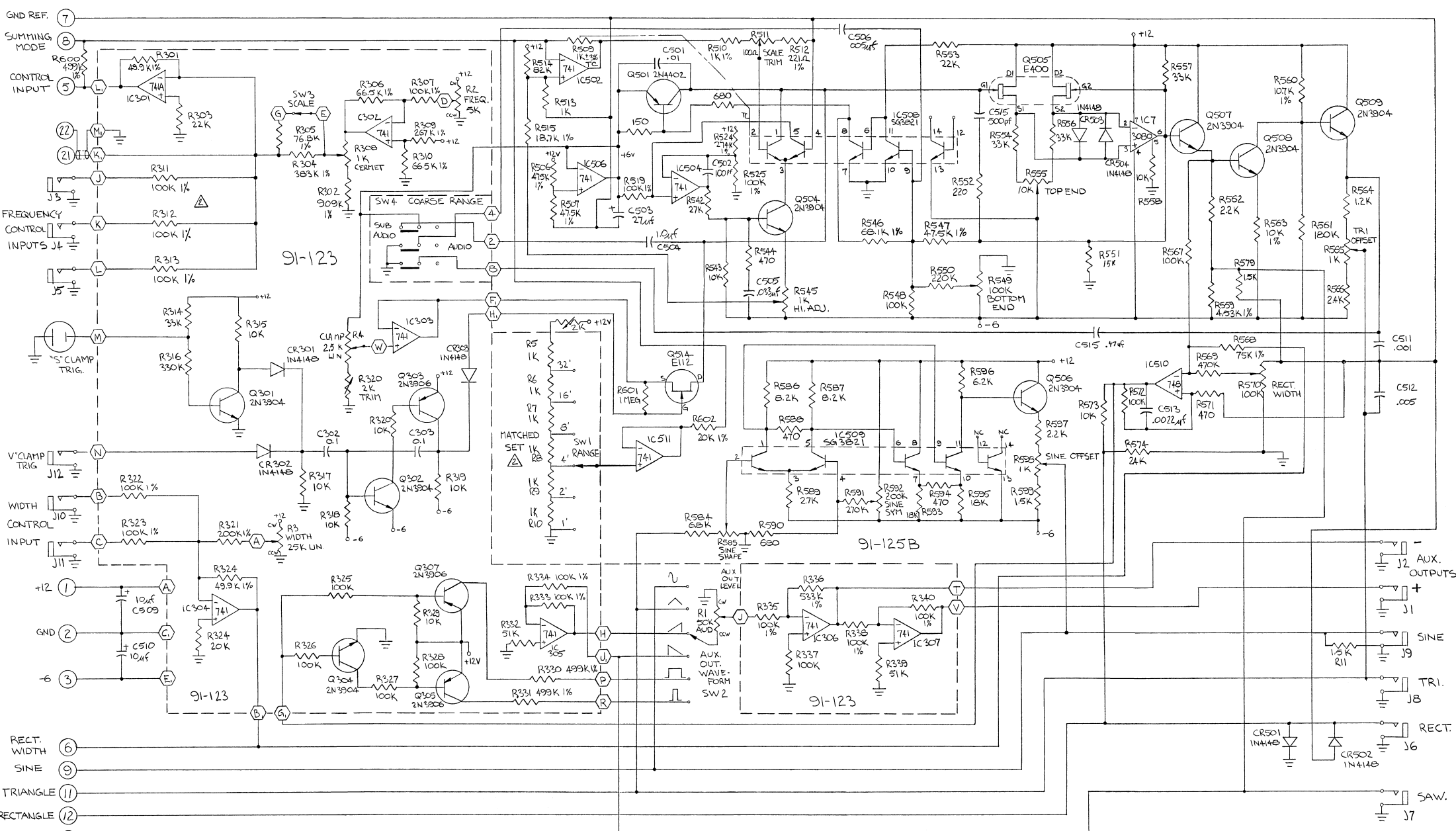


NOTES:

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

REPLACES DWG. 1103

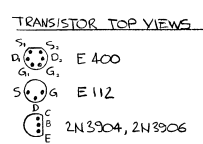
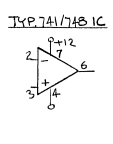
C-ECN-004 1-12-69 318		REVISIONS		R. A. MOOG CO.	
		A-R15 FROM 1.5K		TRUMANSBURG, NEW YORK	
		To R20		TITLE 911 ENVELOPE GENERATOR	
		A-R41 FROM Q5		SCALE DR. BY RER	
		To 25K		DATE 8-14-68 CK'D. BY	
		B-ECN-002		DWG. NO. 1220	



- GND REF. (7)
- SUMMING MODE (8)
- CONTROL INPUT (5)
- (22)
- (21)
- FREQUENCY CONTROL INPUTS J4
- (J3)
- (J5)
- 'S' CLAMP TRIG. (M)
- V' CLAMP TRIG. (N)
- WIDTH CONTROL INPUT (J10)
- (J11)
- +12 (1)
- GND (2)
- 6 (3)
- RECT. WIDTH (6)
- SINE (9)
- TRIANGLE (11)
- RECTANGLE (12)
- SAWTOOTH (16)

**NOTES:**

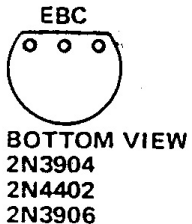
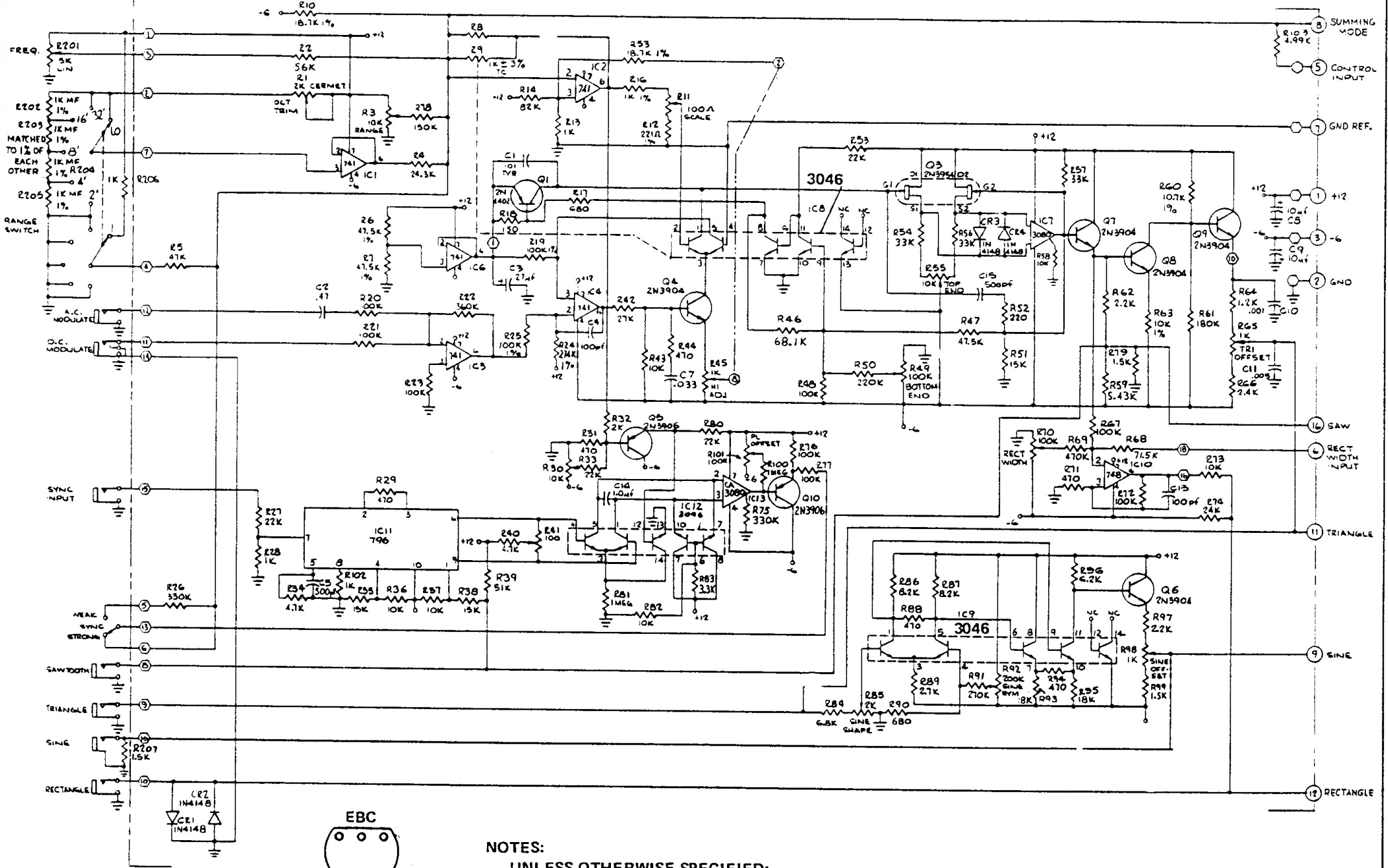
- △ ALL RESISTORS 5%, 1/2 WATT UNLESS OTHERWISE NOTED
- △ 1% RESISTORS MATCHED TO 0.1%
- (X) DESIGNATES REAR CONNECTOR NUMBER (PCB 91-125)
- (X) DESIGNATES P/C BOARD INTERCONNECTIONS



COMPONENT DESIGNATORS

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

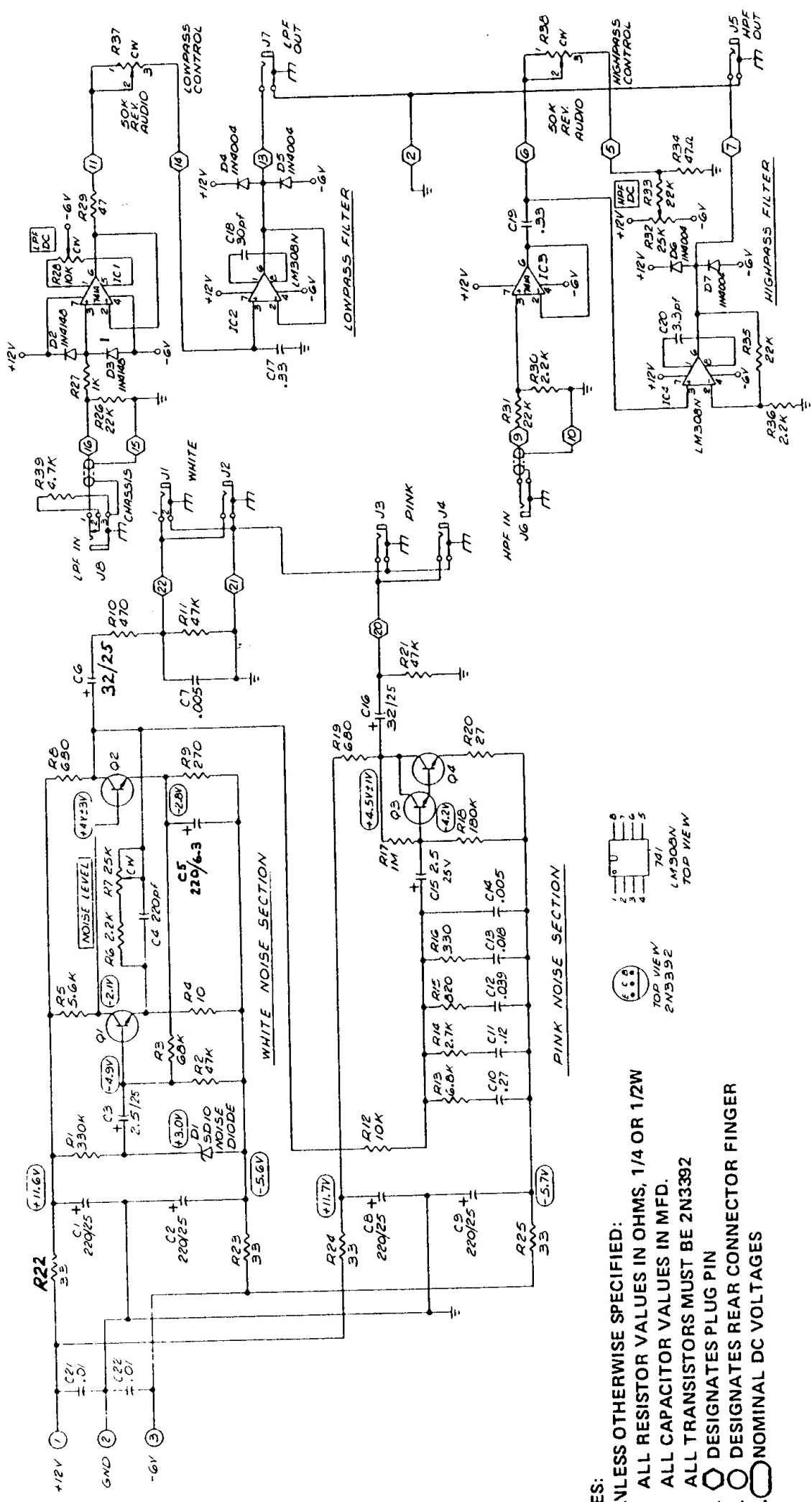
ITEM	PART NUMBER	DESCRIPTION	MATERIAL
<small>UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES            FRACTIONS SHALL BE IN 16ths            DECIMALS SHALL BE TO 2 PLACES            DIMENSIONS ON SURFACES UNLESS OTHERWISE SPECIFIED</small>			
DRAWN BY JRB/ML		meag WILLIAMSVILLE, NEW YORK	
CHECK		MUSIC INC.	
GRP ENGR		921 OSCILLATOR	
REVIEW QC		SCHEMATIC DIAGRAM	
SUPERVISOR		SIZE CODE IDENT	
NEXT ASSY		MODEL NO.	08-036
APPLICATION		SCALE	WT.
		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. ○ DESIGNATES PLUG PIN
  4. ○ DESIGNATES REAR CONNECTOR FINGER

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

FIGURE 23. OSCILLATOR MODEL 921B



- NOTES:
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

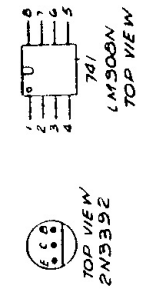
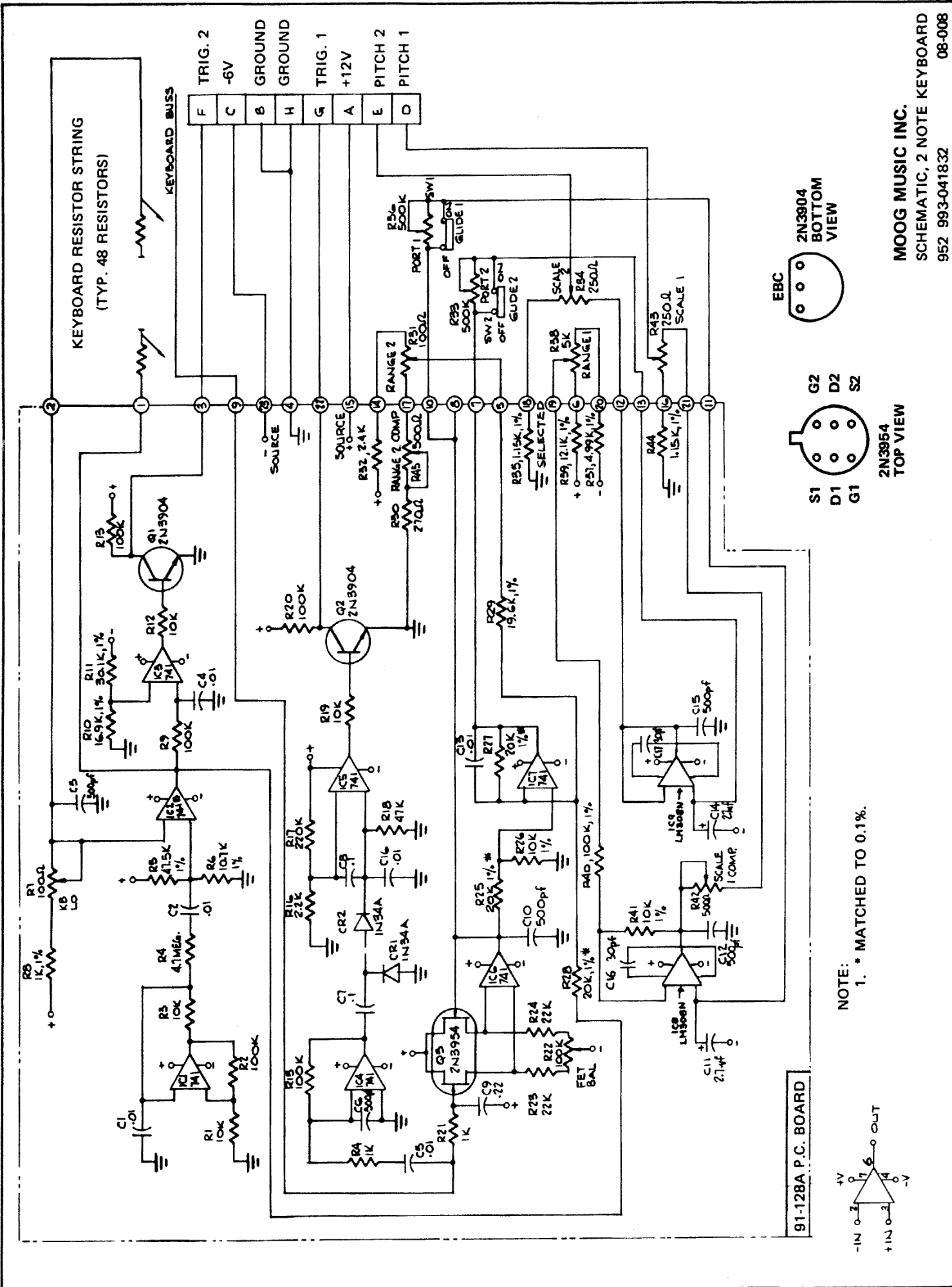
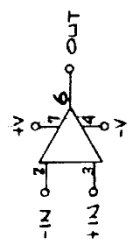


FIGURE 24 FILTERS/NOISE SOURCE MODEL 923

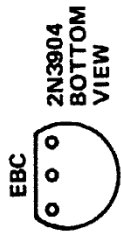
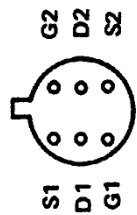




91-128A P.C. BOARD

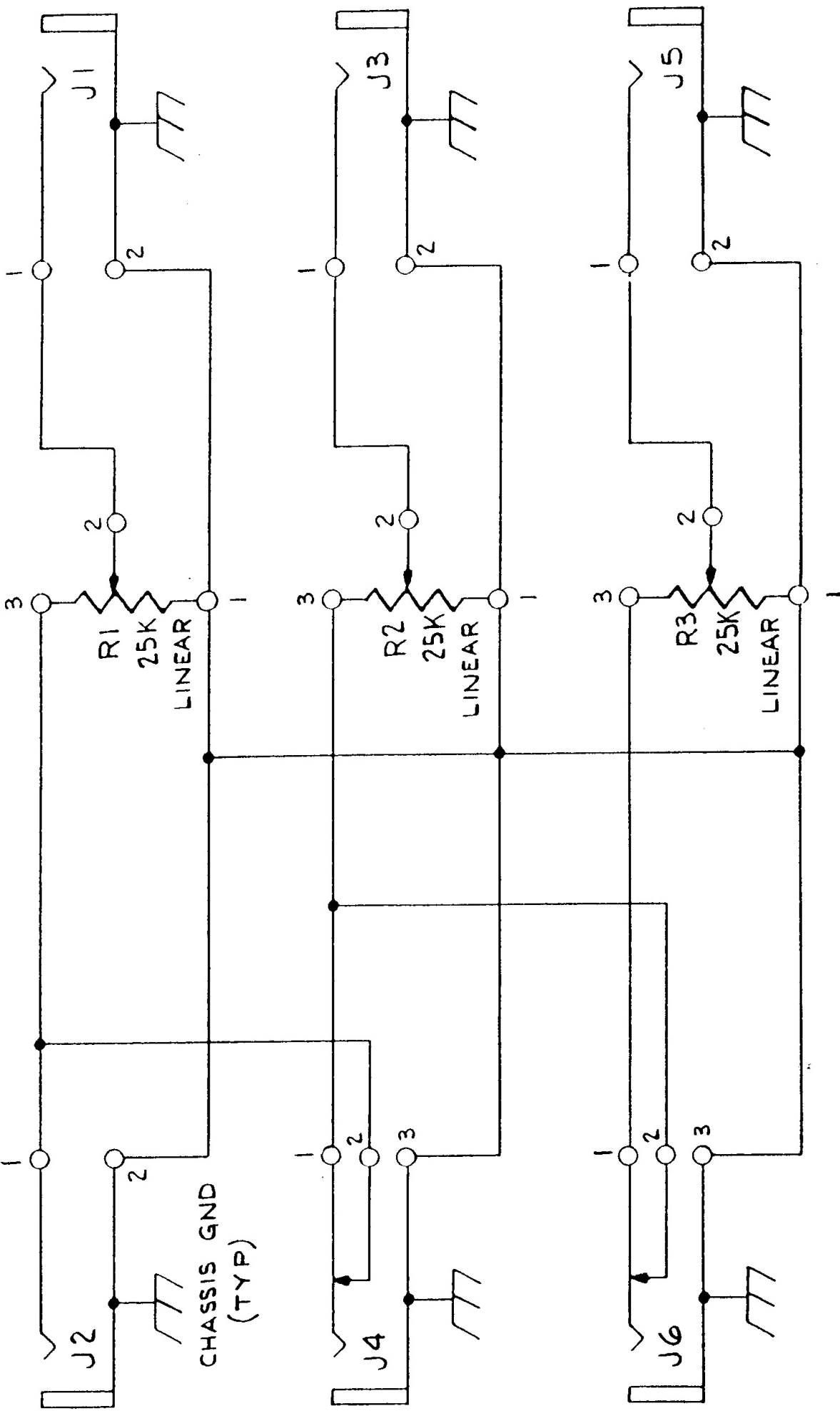


NOTE:  
1. \* MATCHED TO 0.1%.



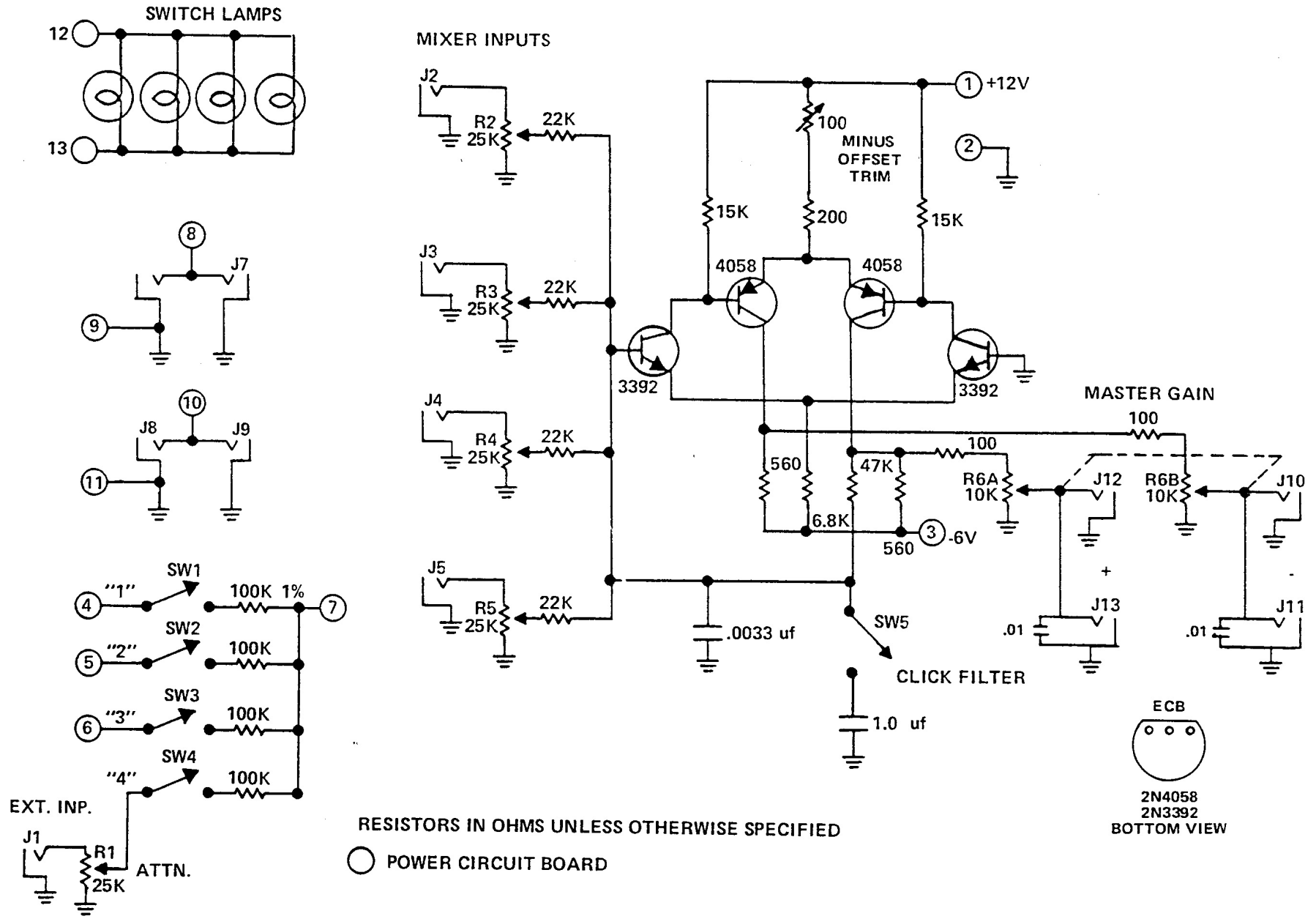
MOOG MUSIC INC.  
SCHEMATIC, 2 NOTE KEYBOARD  
952 993-041832 08-008

FIGURE 29 TWO NOTE KEYBOARD MODEL 952



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

FIGURE 38 ATTENUATORS MODEL 995



RESISTORS IN OHMS UNLESS OTHERWISE SPECIFIED  
 ○ POWER CIRCUIT BOARD

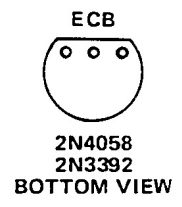
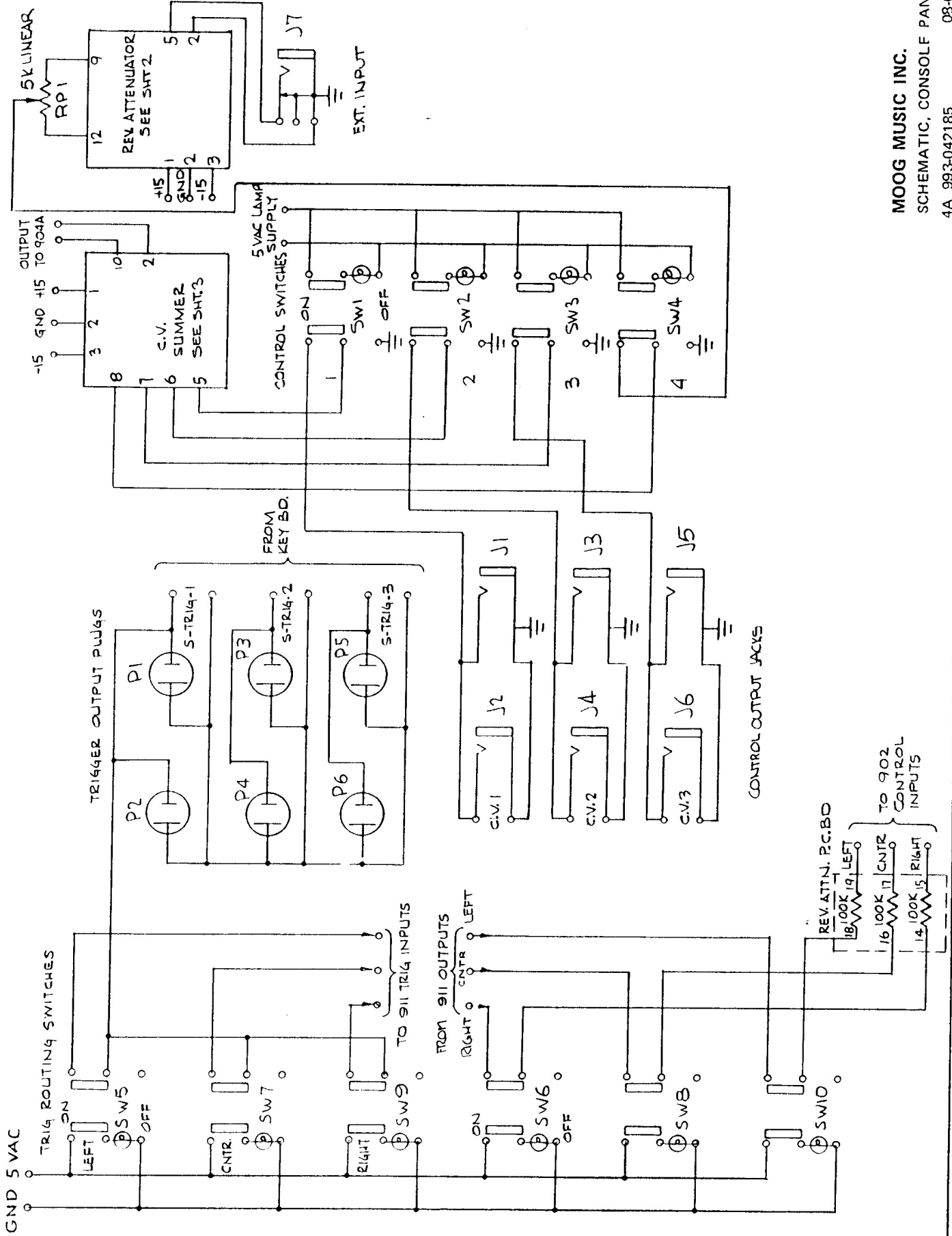


FIGURE 2 CONSOLE PANEL MODEL 3





MOOG MUSIC INC.

SCHEMATIC, CONSOLE PANEL

4A 993-042185

08-050

FIGURE 4 CONSOLE PANEL MODEL 4A