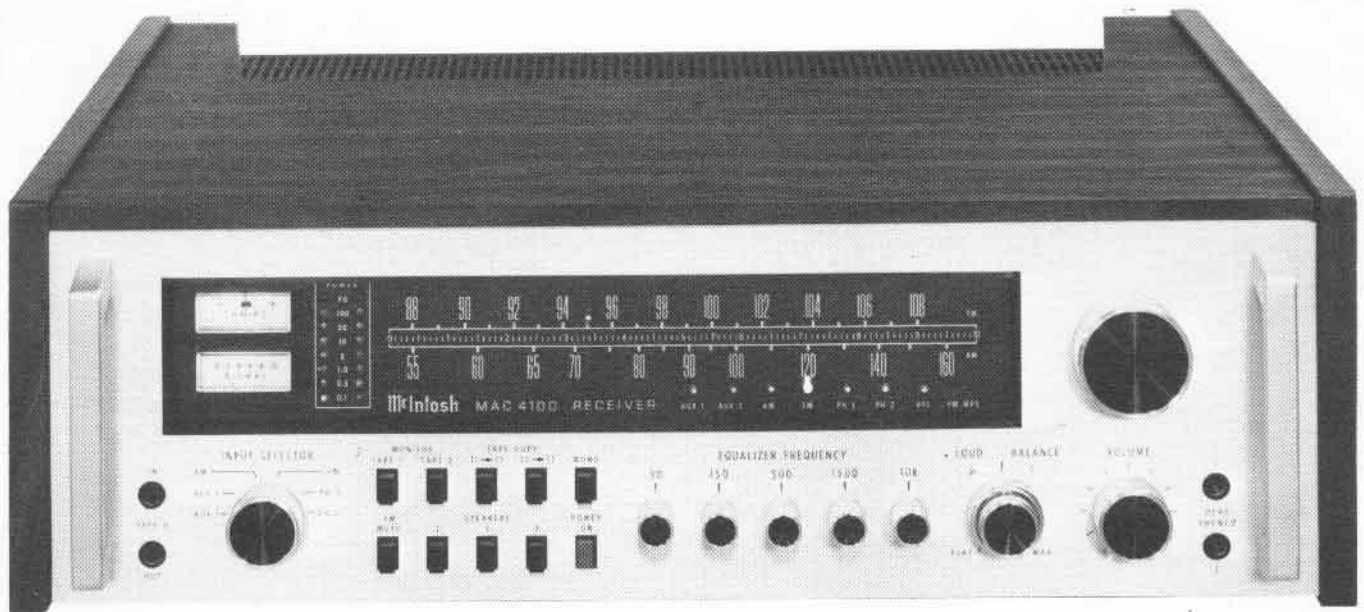


# McIntosh

## MAC 4100 AM/FM RECEIVER



## SERVICE INFORMATION

SERIAL NO. BY1001 AND ABOVE

## PERFORMANCE LIMITS

## POWER OUTPUT

100 watts minimum sine wave continuous average power output, per channel, both channels operating into 4 ohms 20 Hz to 20 kHz, with no more than .05% total harmonic distortion.

75 watts minimum sine wave continuous average power output, per channel, both channels operating into 8 ohms 20 Hz to 20 kHz, with no more than .05% total harmonic distortion.

## OUTPUT LOAD IMPEDANCE

4 ohms, 8 ohms

## RATED POWER BAND

20 Hz to 20 kHz

## TOTAL HARMONIC DISTORTION

From phono input to speaker output, .05% maximum at any power level from 250 milliwatts to rated power per channel, 20 Hz to 20 kHz, both channels operating.

## INTERMODULATION DISTORTION

.05% maximum if instantaneous peak power is twice rated continuous average power or less per channel with both channels operating for any combination of frequencies 20 Hz to 20 kHz.

## FREQUENCY RESPONSE

20 Hz to 20 kHz + 0, - 0.5 dB at rated power

## HUM AND NOISE

Power Amp: IHFA 100 dB, unweighted, 95 dB below rated output

## TAPE AND AUX INPUT: IHFA 95 dB, unweighted,

Tape and Aux Input: IHFA 95 dB, unweighted, 90 dB below rated output

Phono input: IHFA 90, unweighted, 80 dB below 10 mV input

## DAMPING FACTOR

Greater than 30

## INPUT SENSITIVITY AND IMPEDANCE

Power Amp: 2.5V; 22,000 ohms  
Tape and Aux: 250mV; 100,000 ohms  
Phono: 2mV; 47,000 ohms; 87 pF

## TAPE OUTPUT

Tuner: 1.0V at 100% modulation (FM)  
Tape: 250 mV with rated input  
Phono: 250mV with rated input

## PROGRAM EQUALIZER

± 12 dB at 30, 150, 500, 1500, and 10,000 Hz

## AM SECTION

## SENSITIVITY

75  $\mu$ V IHF (External antenna)

## SIGNAL TO NOISE RATIO

45 dB minimum IHF, 55 dB at 100% modulation

## HARMONIC DISTORTION

1% maximum at 30% modulation

## FREQUENCY RESPONSE

3500 Hz @ -6 dB

## ADJACENT CHANNEL SELECTIVITY

30 dB minimum IHF

## IMAGE REJECTION

65 dB minimum, 540 kHz to 1600 kHz

## FM SECTION

## SENSITIVITY

2.5  $\mu$ V (13 dB) IHF minimum

## SIGNAL TO NOISE RATIO

70 dB IHF minimum

## HARMONIC DISTORTION

Mono: 0.18% IHF maximum  
Stereo: 0.38% IHF maximum

## FREQUENCY RESPONSE

20 Hz to 15 kHz + 0, -1 dB

## CAPTURE RATIO

1.8 dB

## SELECTIVITY

75 dB IHF minimum

## SPURIOUS REJECTION

90 dB IHF minimum

## IMAGE REJECTION

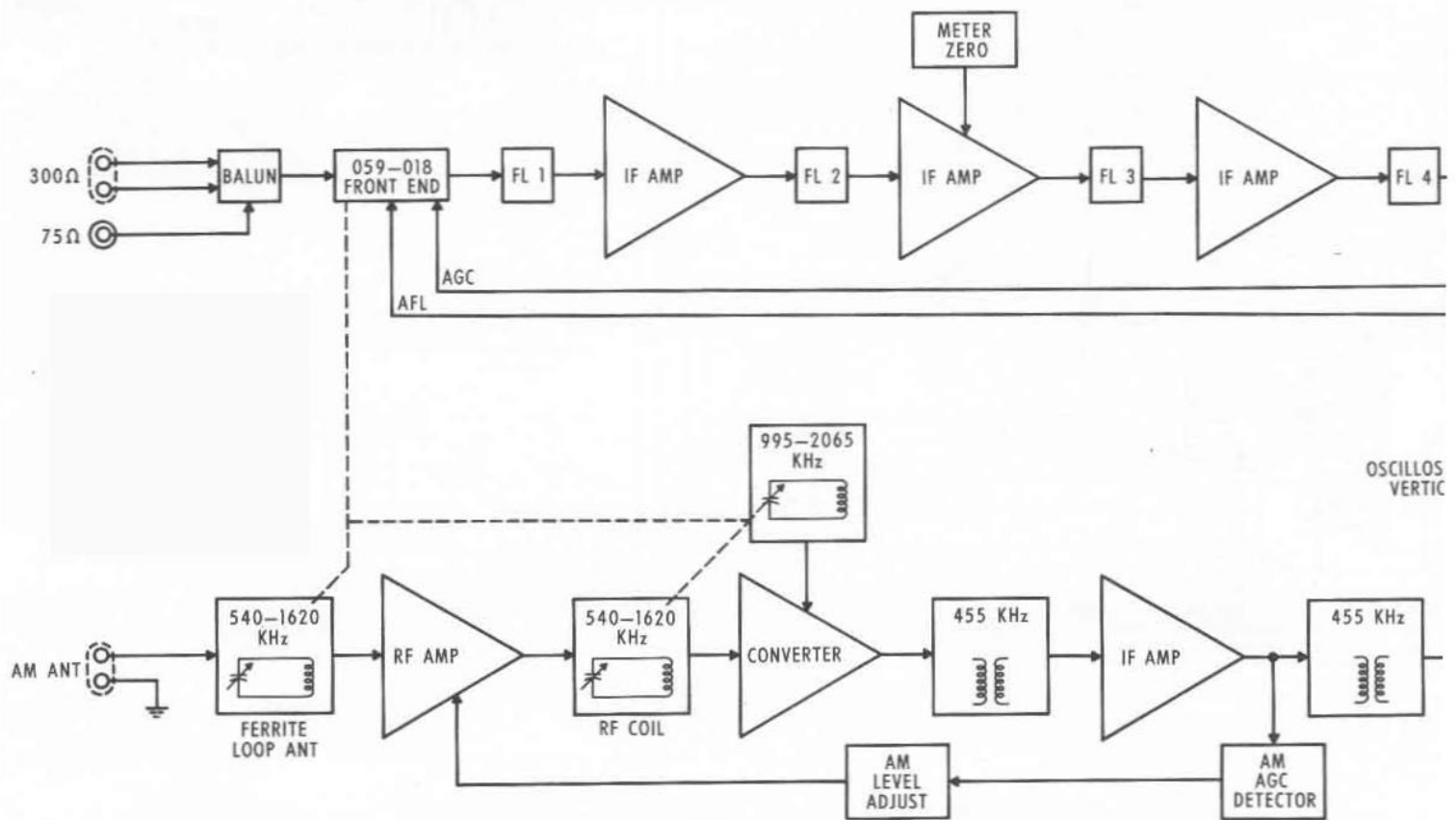
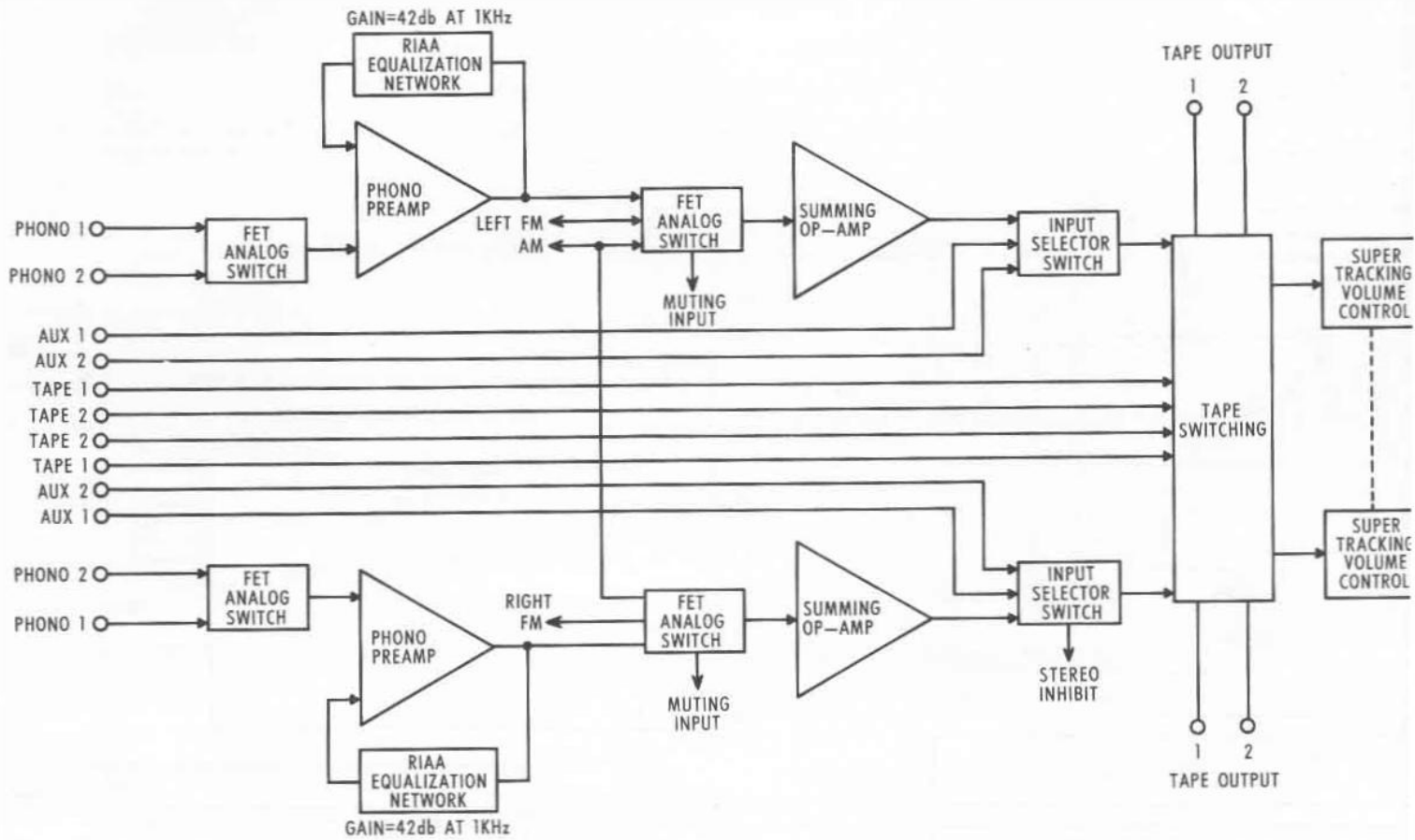
80 dB IHF minimum

## STEREO SEPARATION

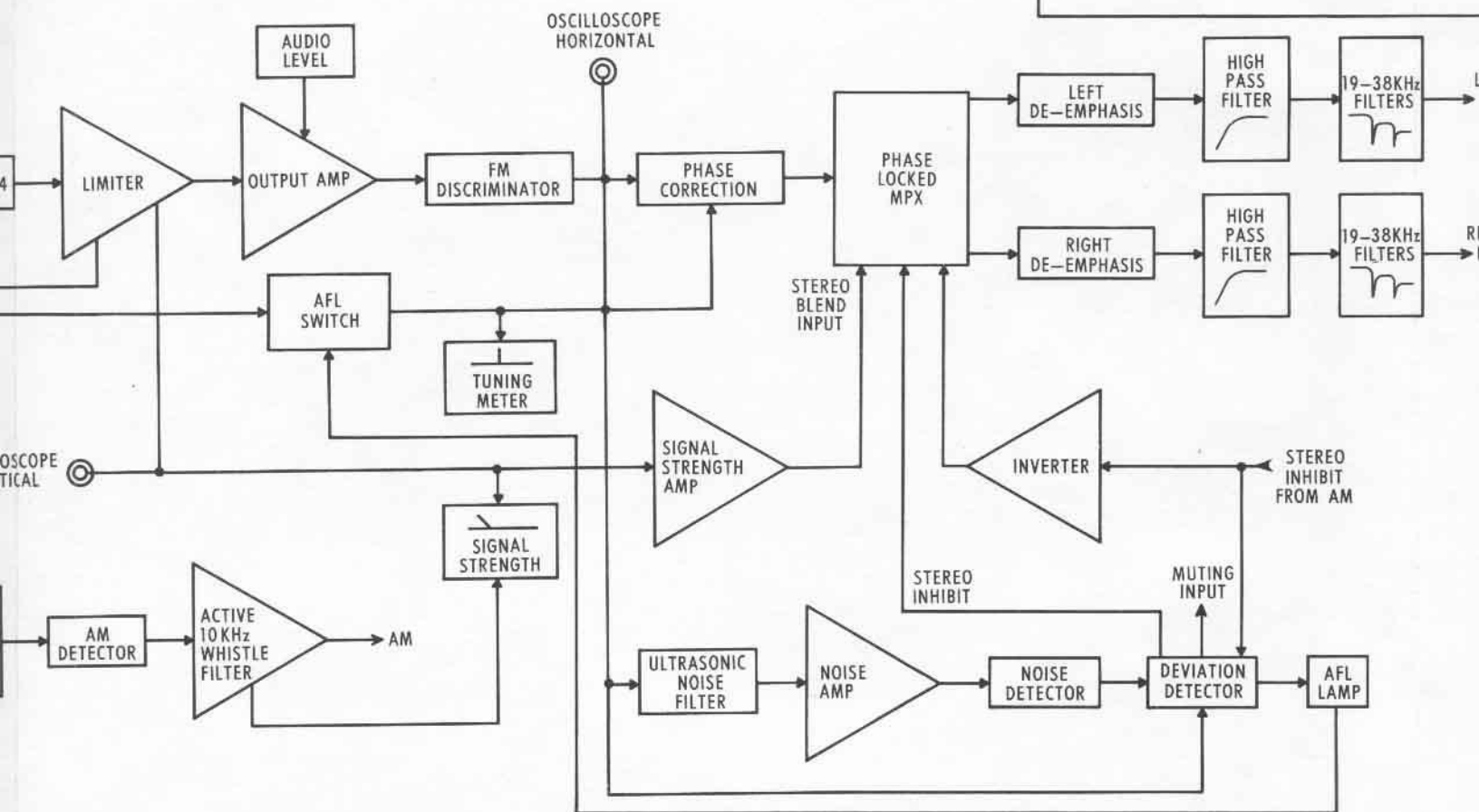
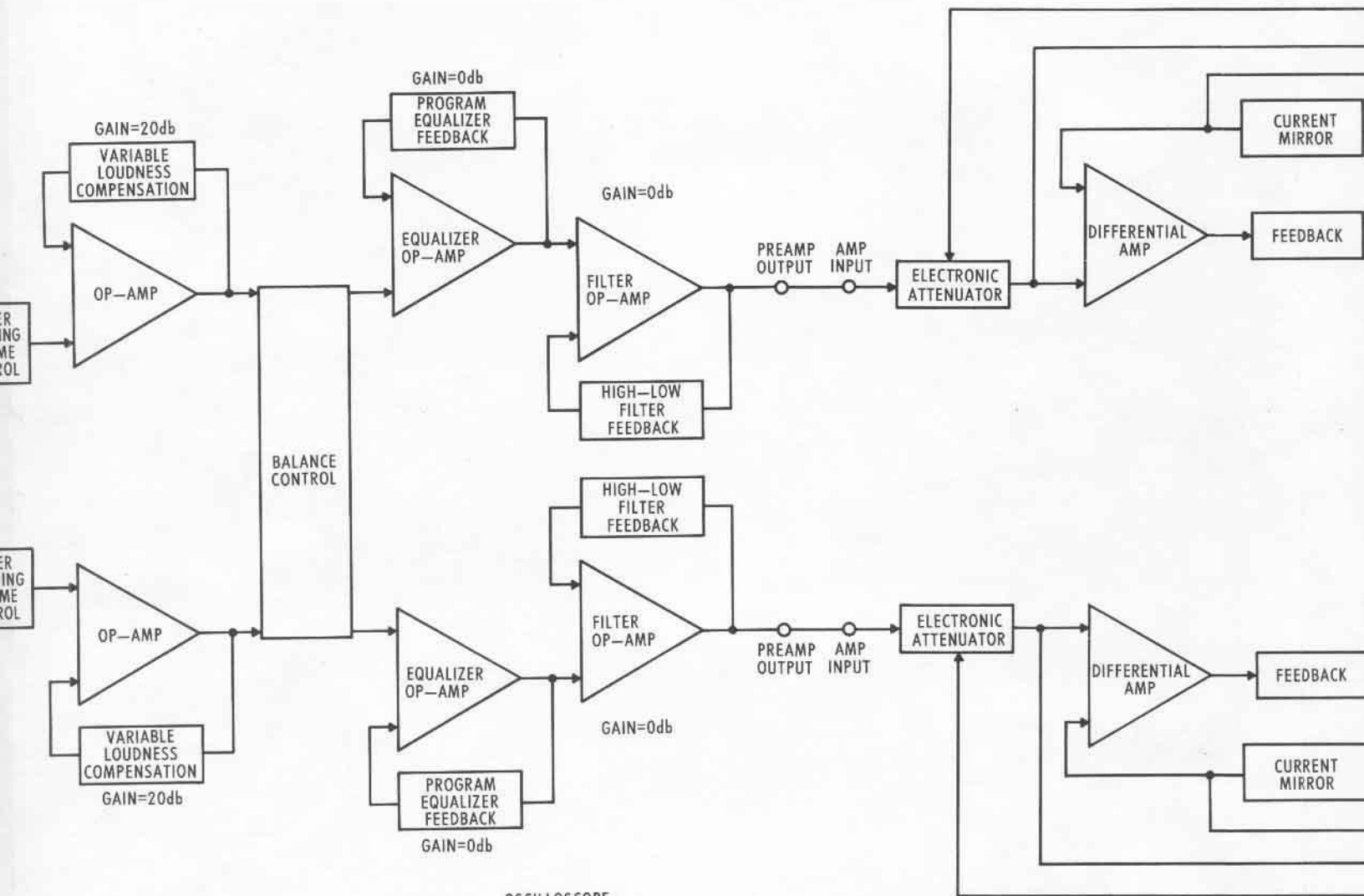
45 dB minimum at 1 kHz

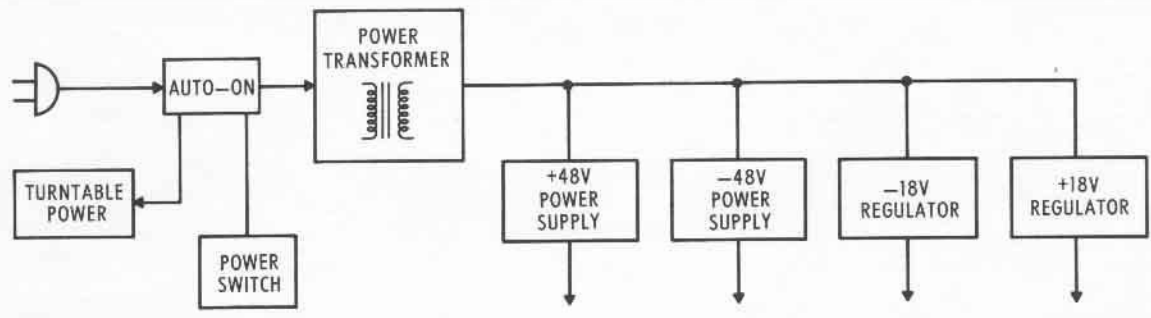
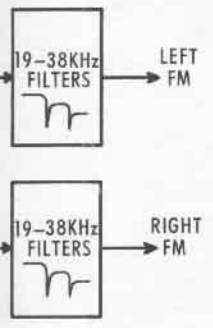
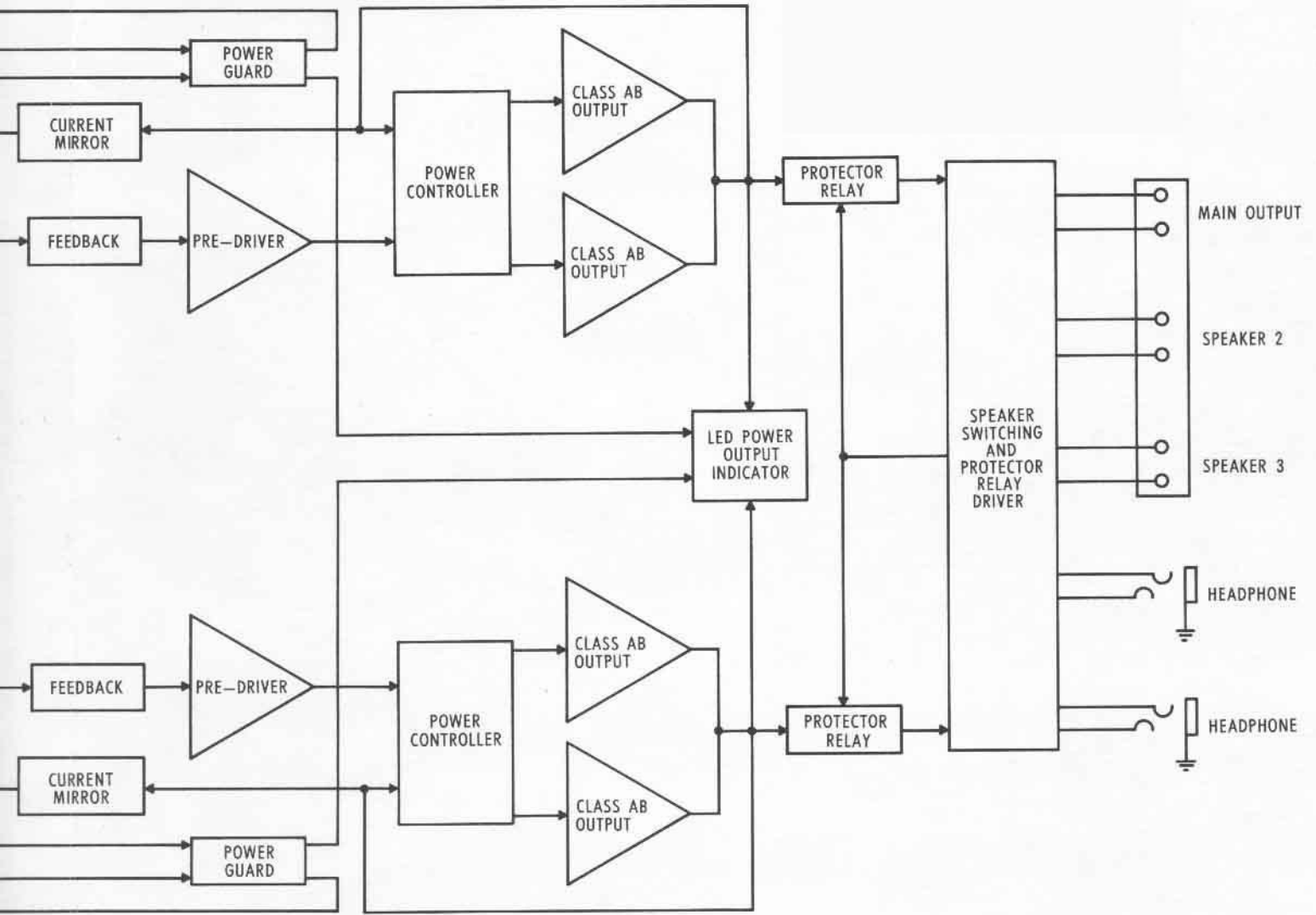
## SCA REJECTION

60 dB minimum



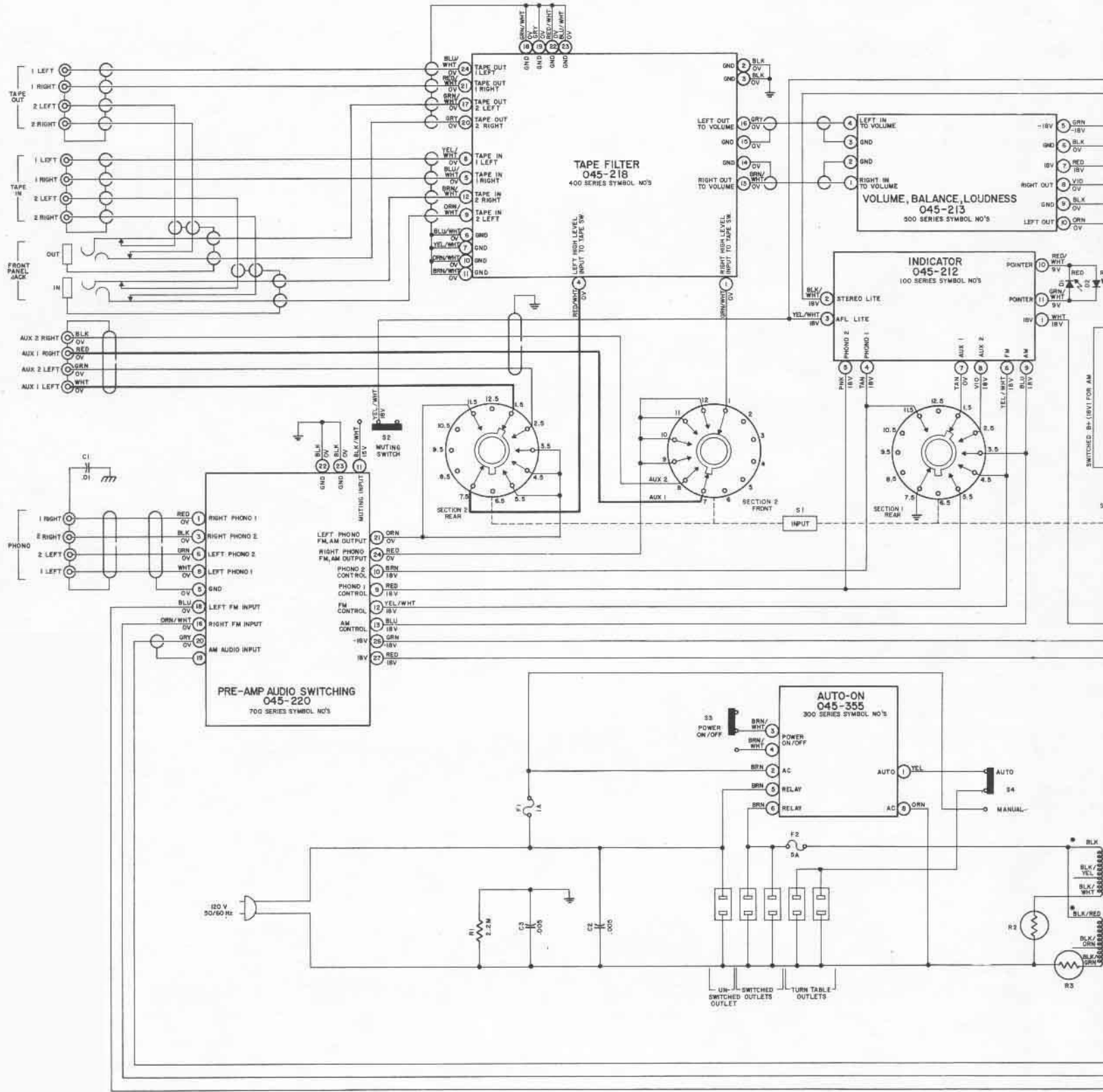
BLOCK DIAGRAM

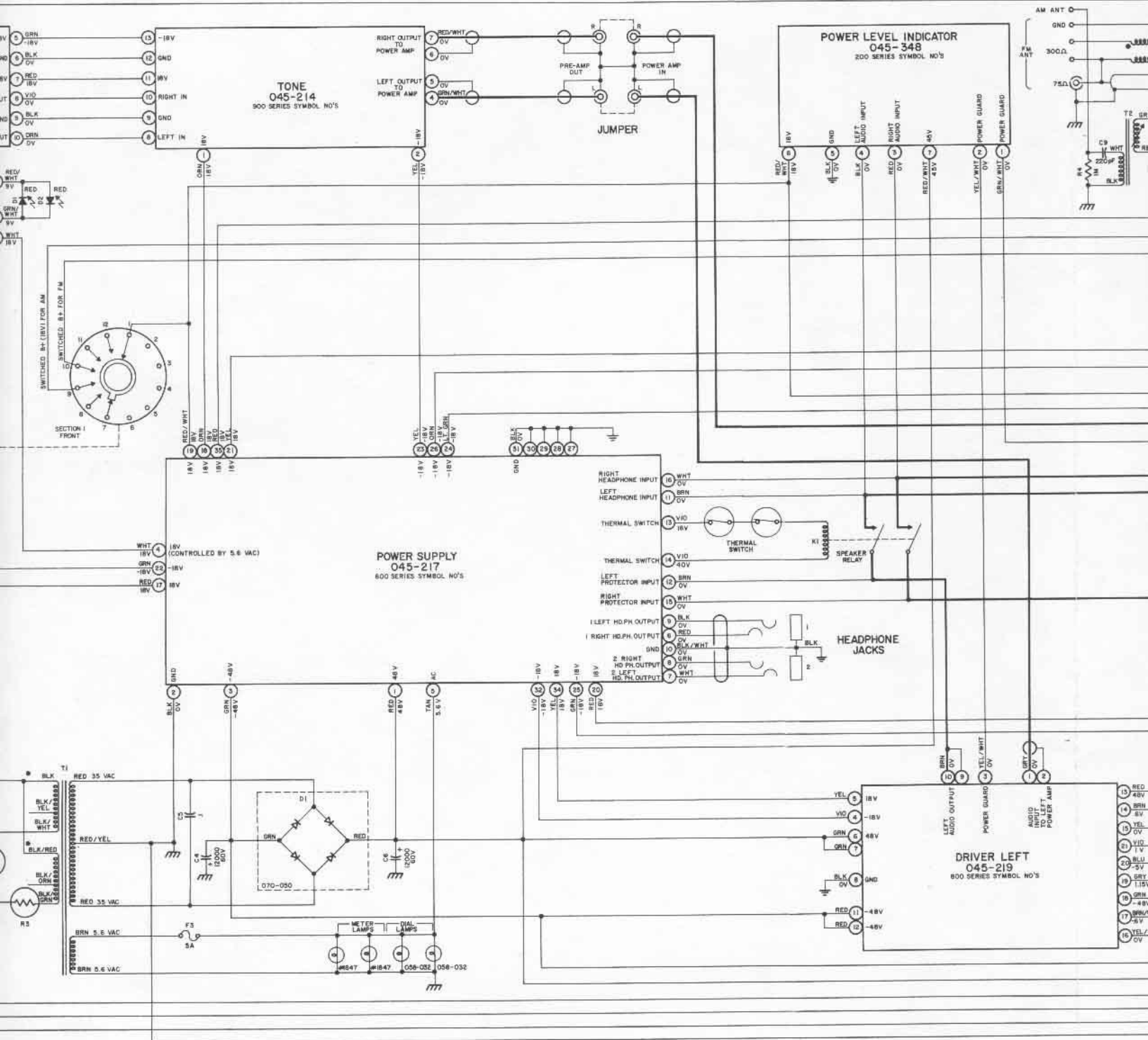


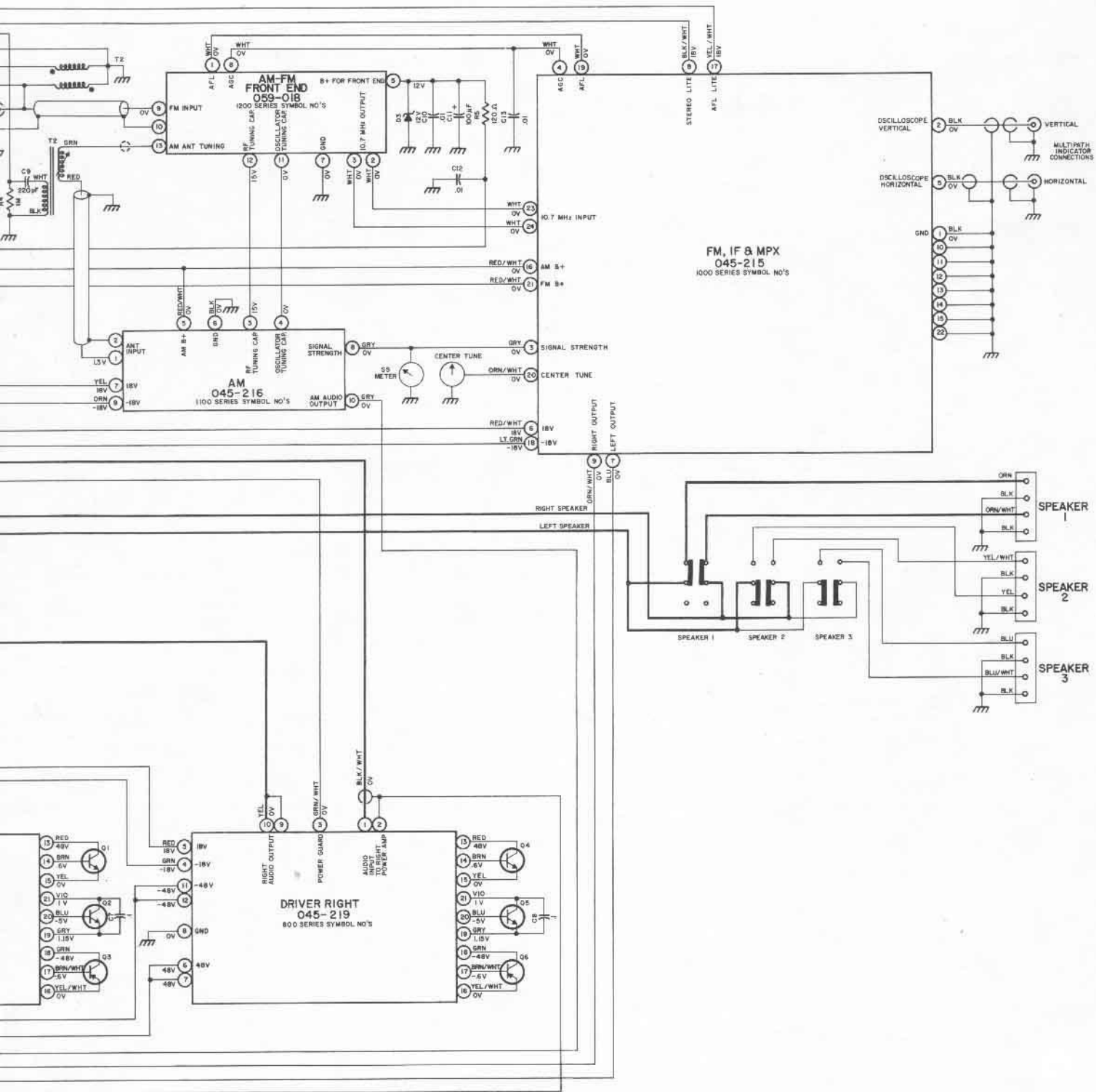


EO  
IT  
AM

AFL  
AMP









## SCHEMATIC NOTES

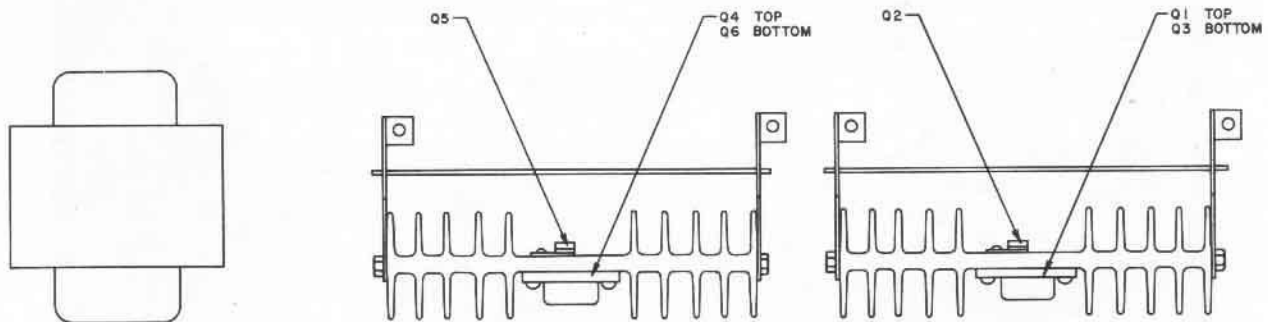
1. Printed circuit board assemblies are outlined on the schematics by dotted lines. The circled numbers on the dotted lines correspond to the numbers on the printed circuit board layouts.
2. The heavy lines on the schematics denote the primary signal path.
3. The terminal numbering of rotary switches is for reference only.
4. A dot on the rotor of a rotary switch indicates that there is an electrical connection between the front and rear rotor section.
5. Unless otherwise specified: Resistance values in the AM, FM & MPX, and Preamp sections are in ohms, 1/4 watt, and 5% tolerance; resistance values in the Power Output and Power Supply sections are in ohms, 1/4 watt, 5% tolerance; capacitance values smaller than 1 are in microfarads ( $\mu\text{F}$ ); capacitance values greater than 1 are in picofarads (pF); inductors are in microhenries ( $\mu\text{H}$ ).
6. To align power supply connect voltmeter to terminal 17 on the power supply PC board and adjust "+18V voltage control" (R622) for between + 17.1 to 18.0 volts.
7. All voltages indicated on the schematics are measured under the following conditions:
 

Use of an 11 megohm input impedance VTVM.	All voltages $\pm 10\%$ with respect to ground.
No signal at antenna or other input terminals.	AC input at 120 volts, 50/60 Hz.

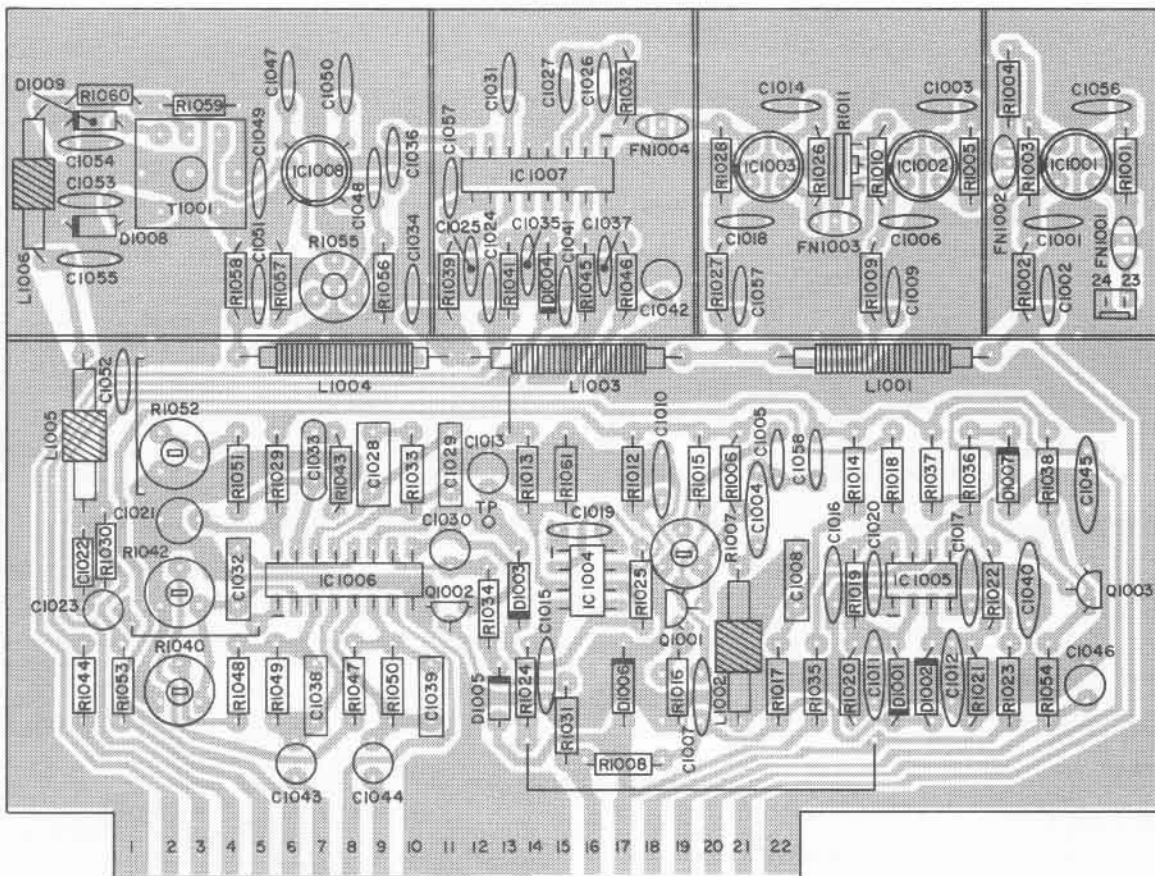
Front panel controls at:

Mono/Stereo switch	Out	Muting	Out
Speaker switches	Out	Loudness	ccw
Volume control	Min	Tape Monitors	Out
Balance control	Middle	Tape 1 2	Out
Tone controls	Flat	Tape 2 1	Out
Input selector	Aux 1 FM (to measure FM section) AM (to measure AM section)	Tuning Indicator	Out (no signal)

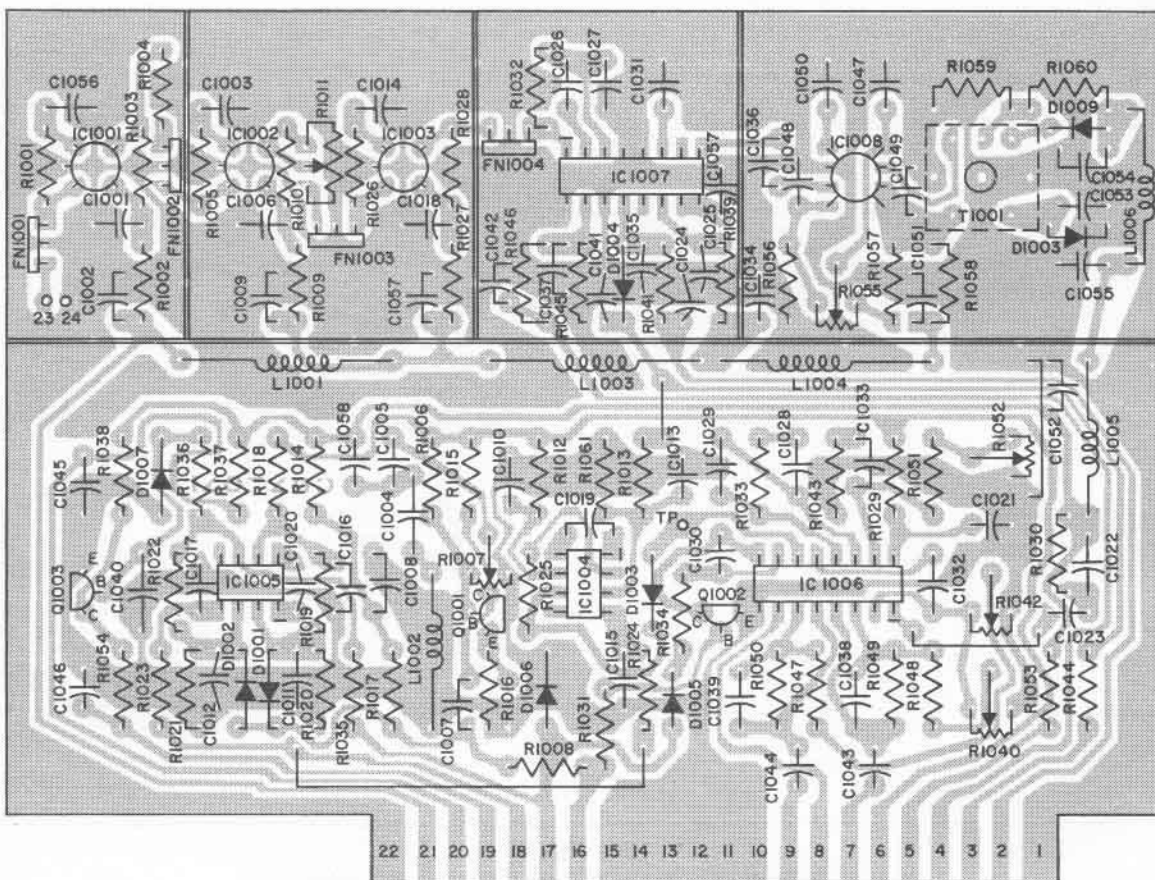
8. To adjust output stage bias operate the MAC 4100 at 120 volts line input with no input signal. Measure the AC line input power (approximately 40 watts) or current (approximately .3A). The bias potentiometer R851 and R852 are located on the power output PC boards.
  - a. Turn both bias potentiometers full counterclockwise.
  - b. Rotate bias adjustment clockwise to the point where the line input power or current begins to increase then back off slightly to the point where the line input just reaches its lowest value.
  - c. Repeat step b for each channel independently.



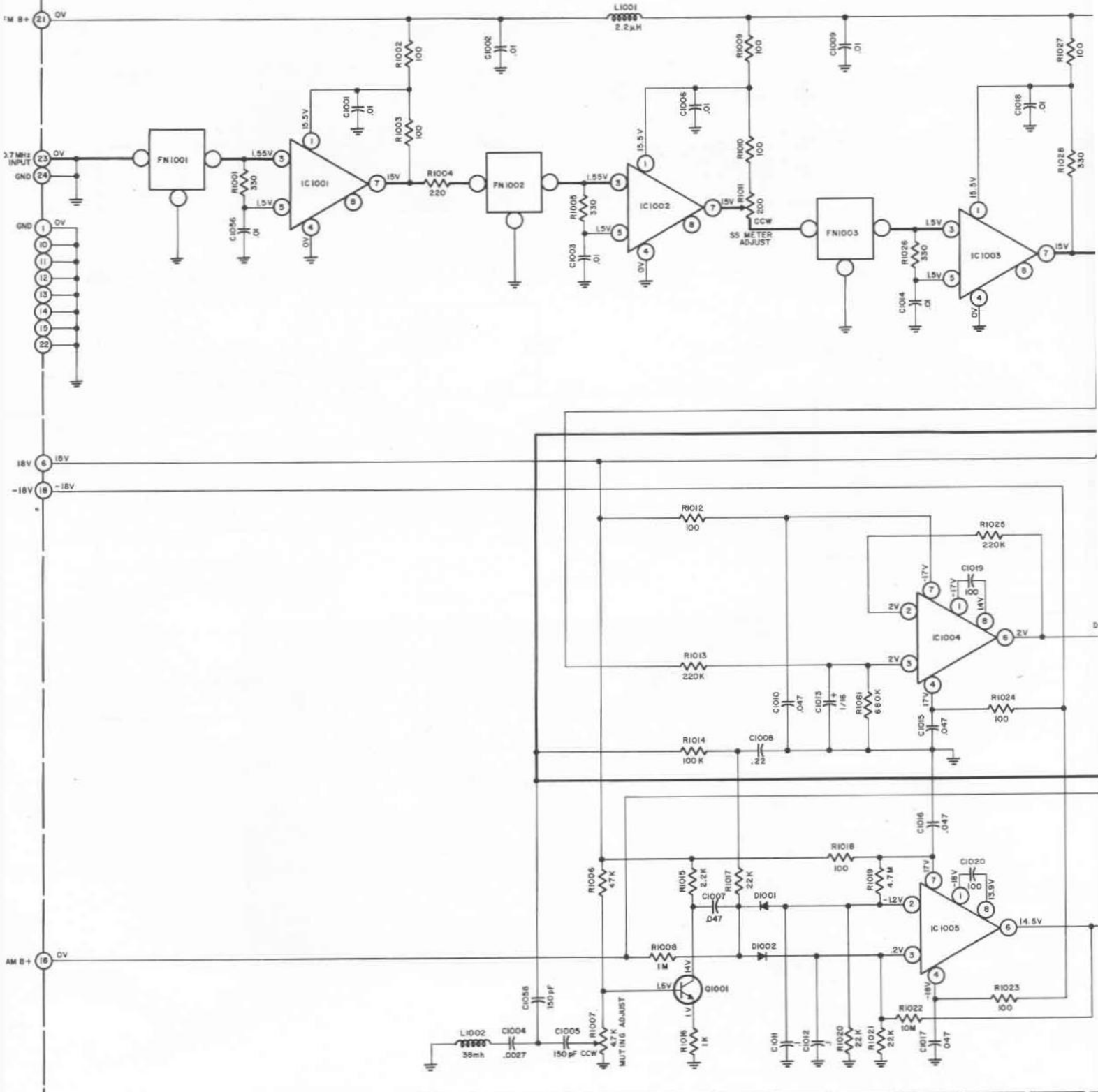
**TOP-REAR  
LOCATION OF TRANSISTORS NOT ON PC BOARDS**

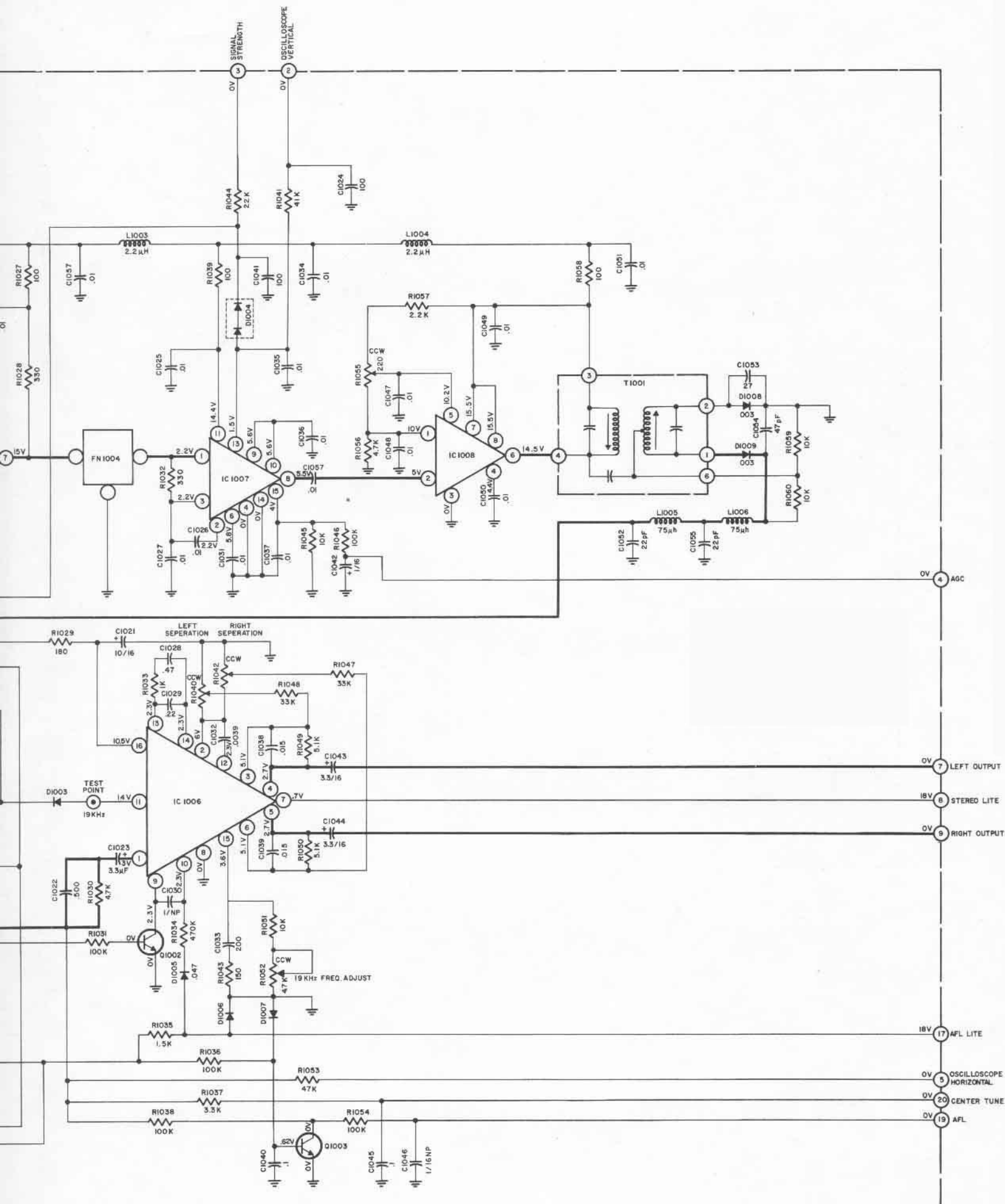


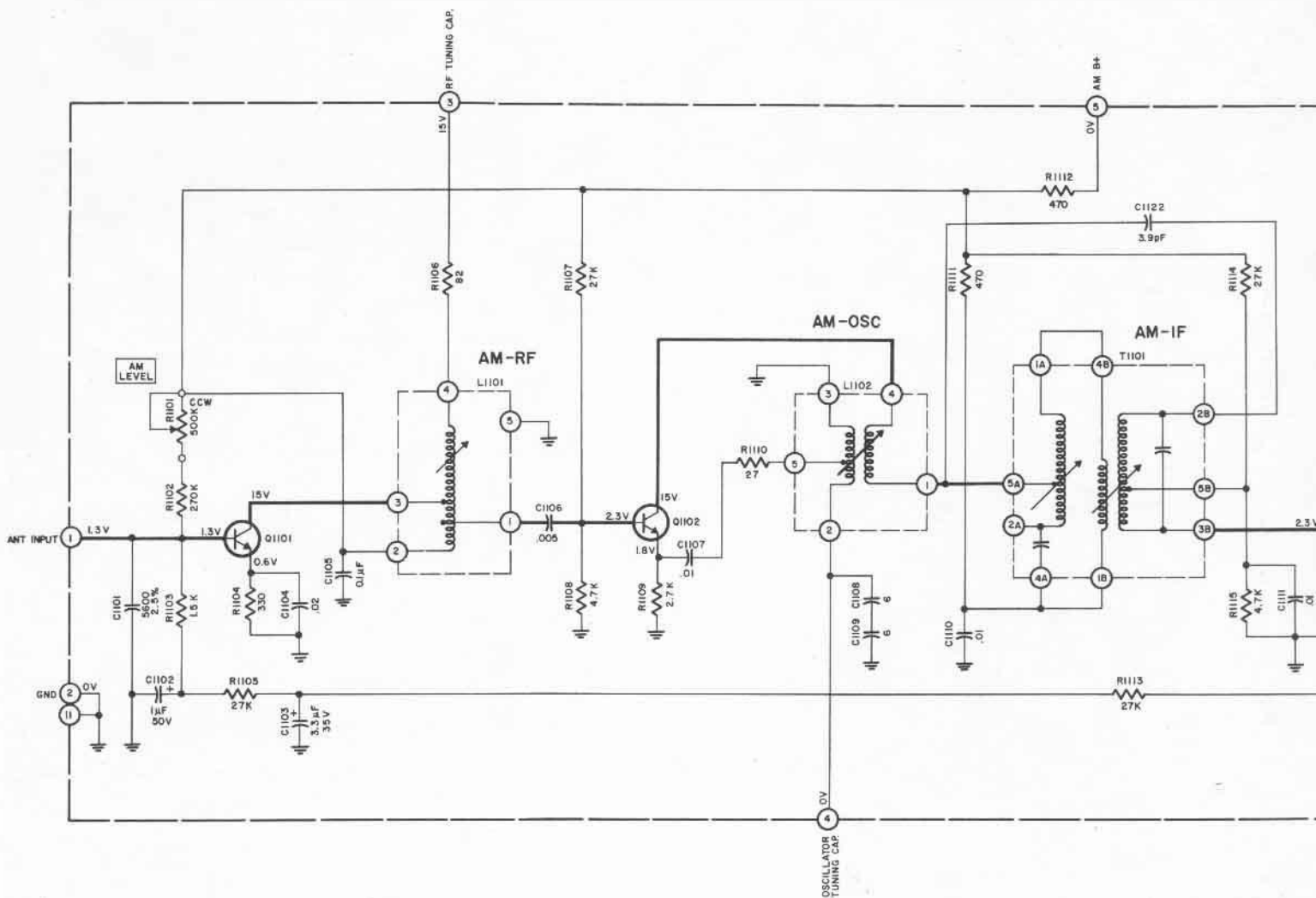
FM, IF, MPX PC BOARD  
045215

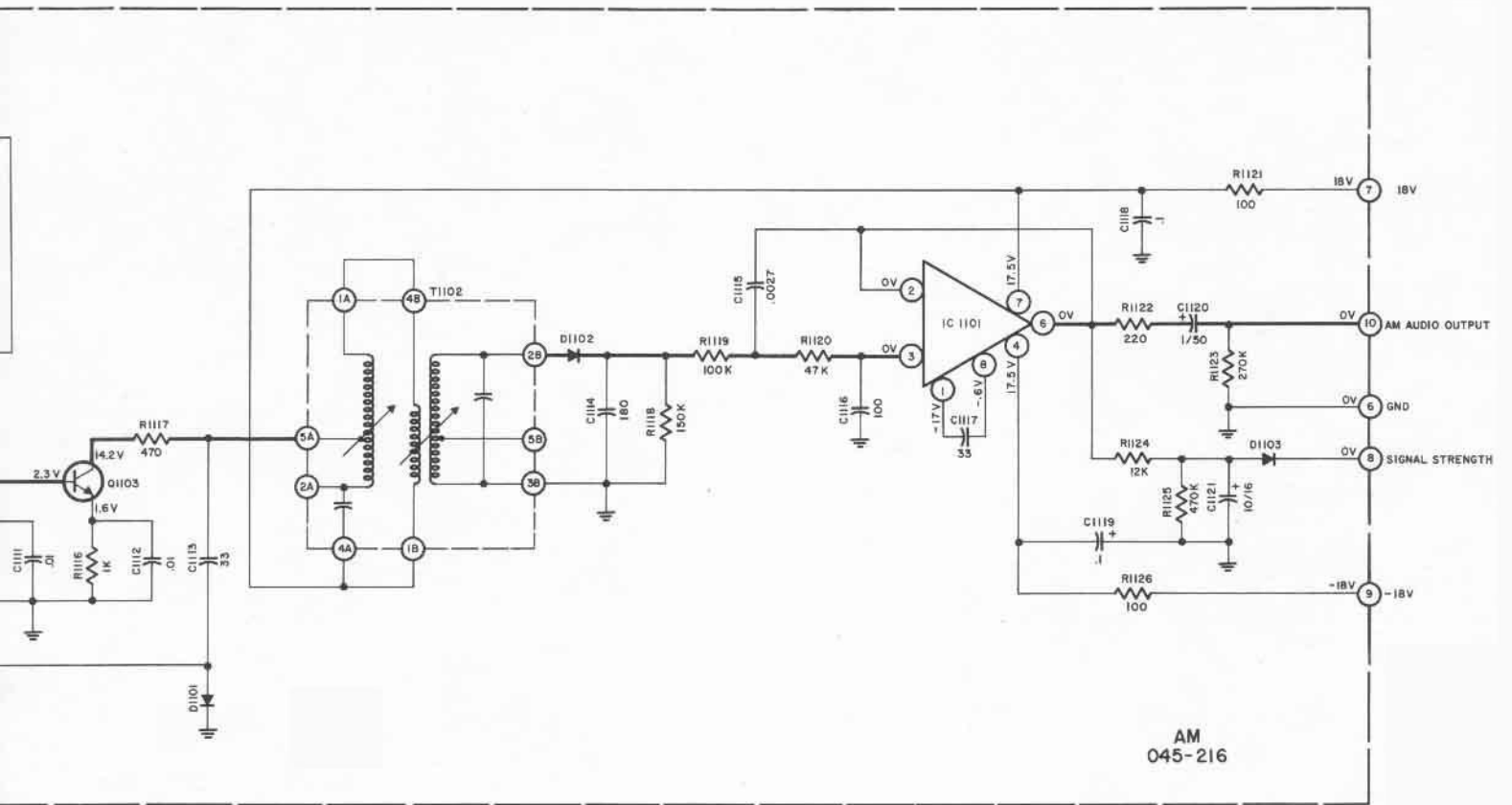


FM, IF, MPX  
045-215

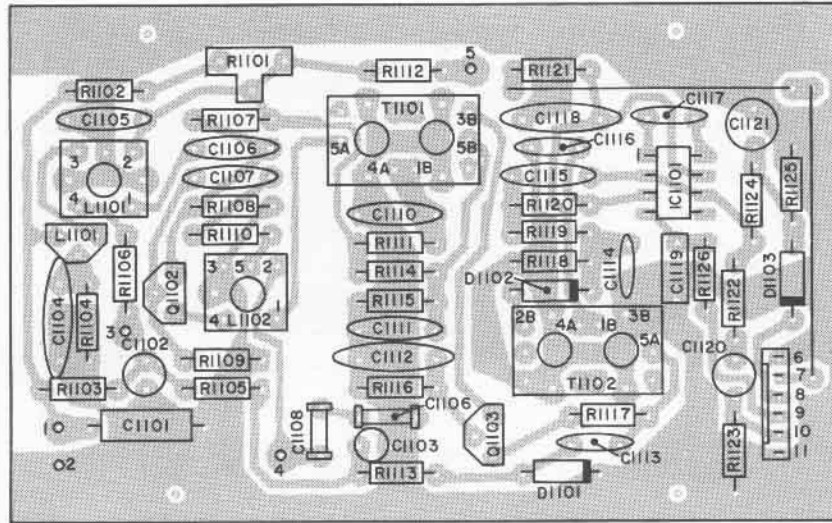




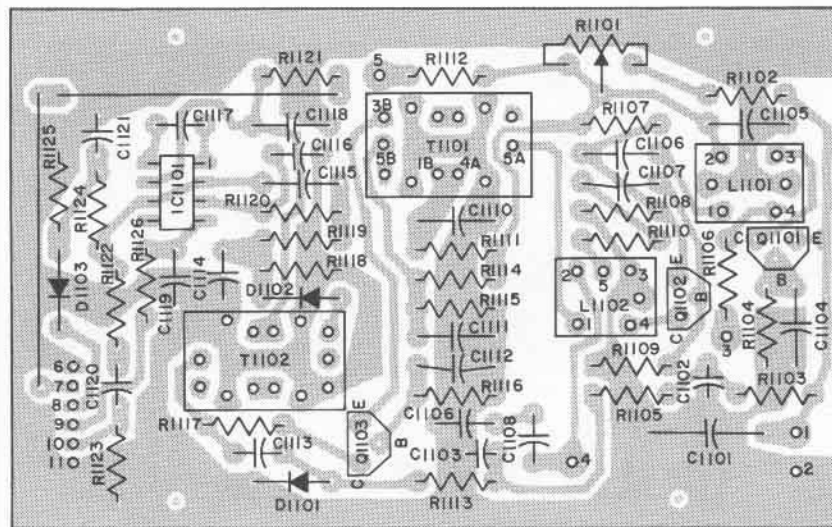




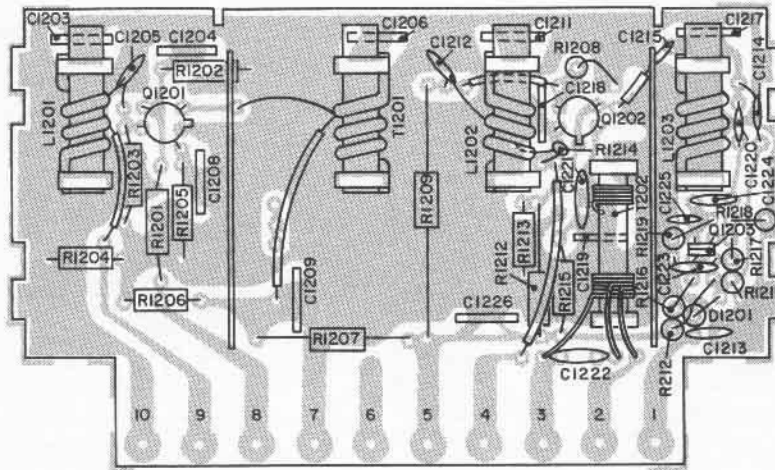
AM  
045-216



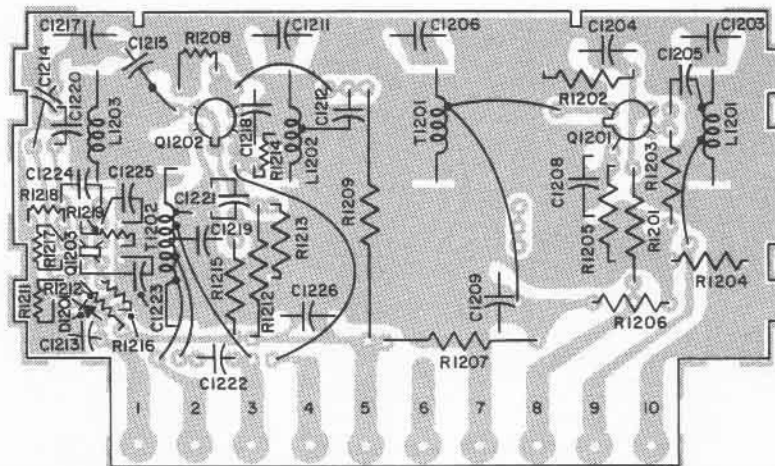
AM PC BOARD  
045216



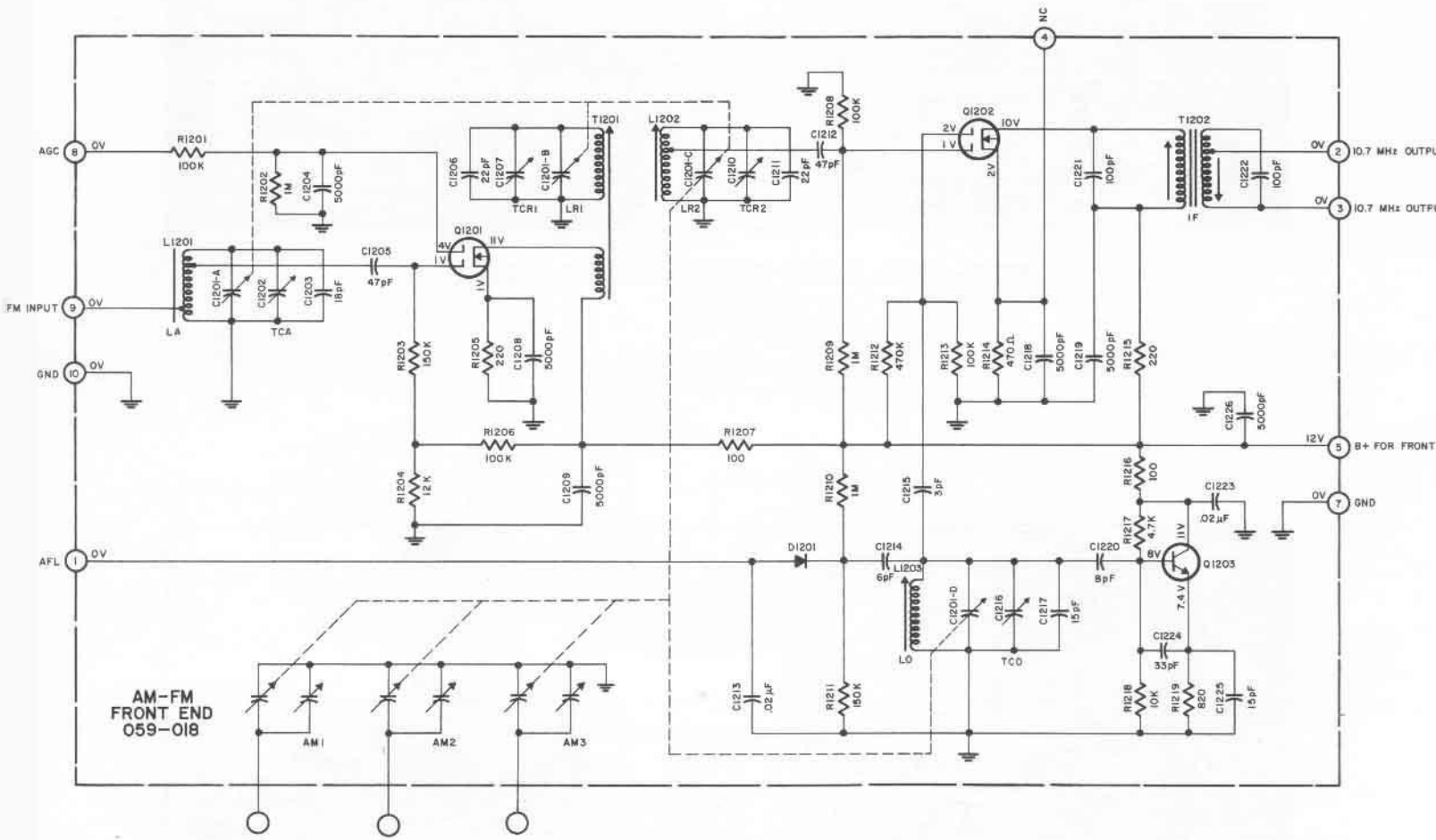


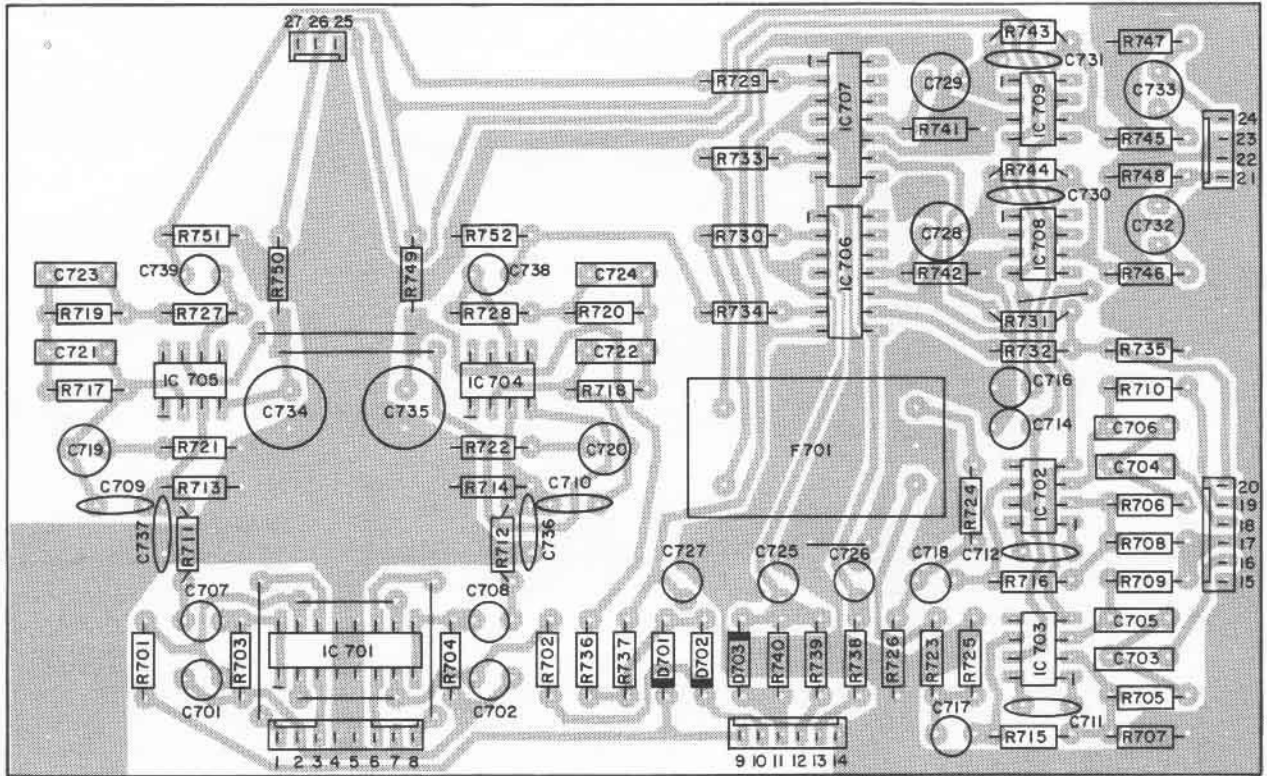


AM-FM  
FRONT END PC BOARD  
059-018

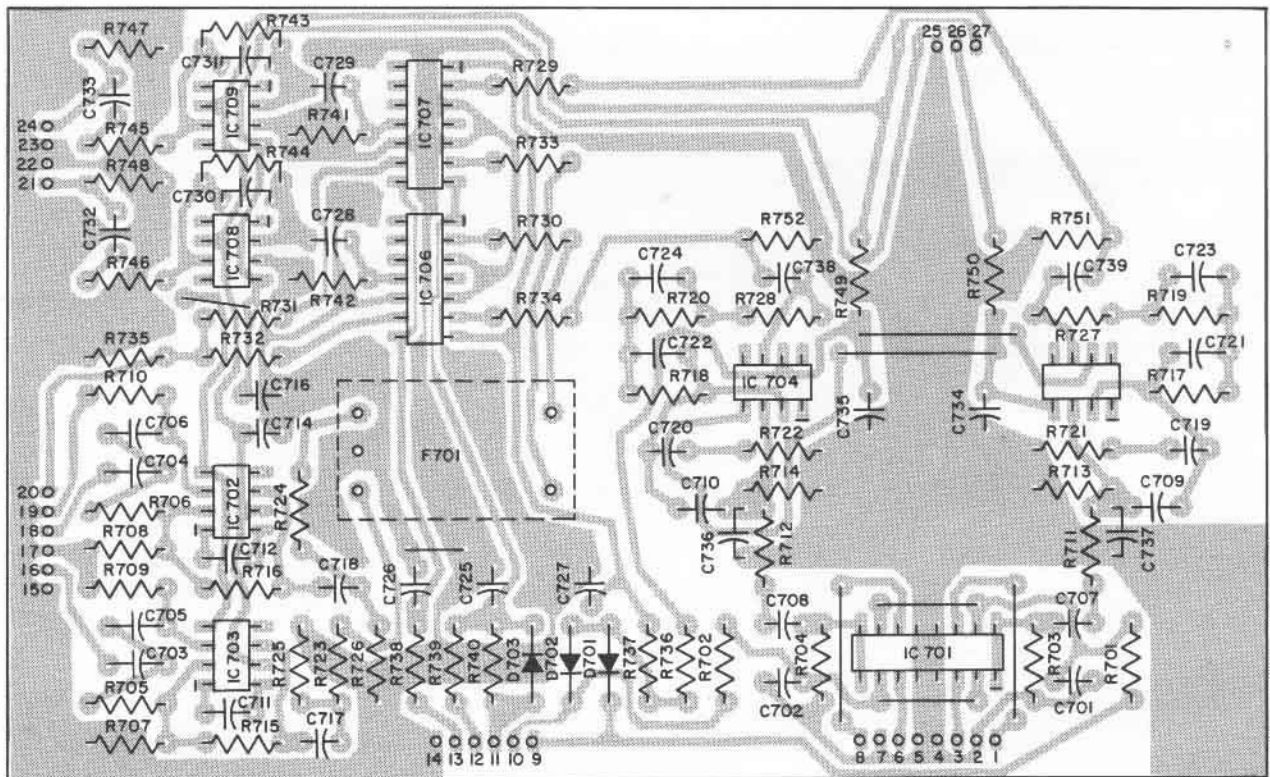


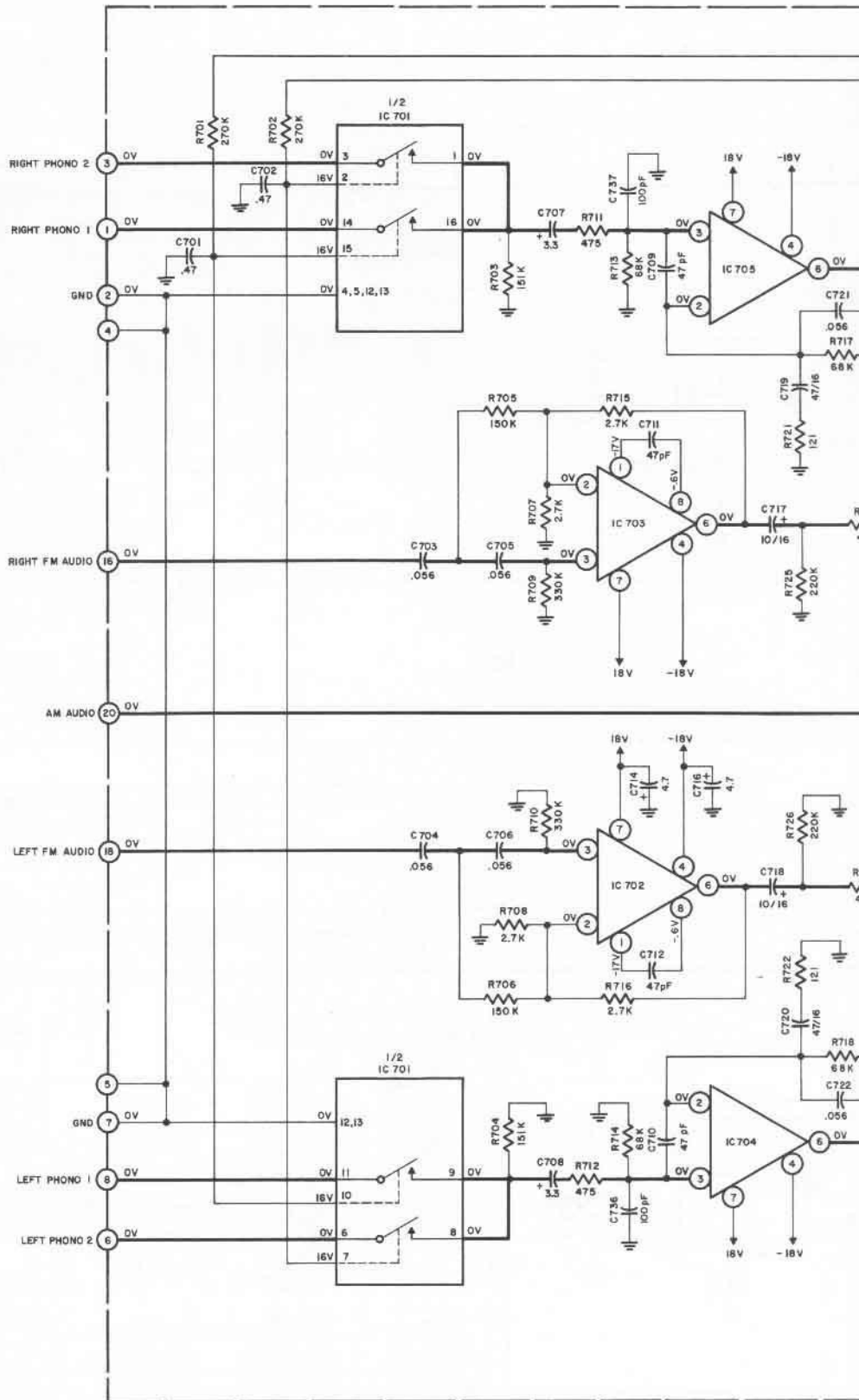


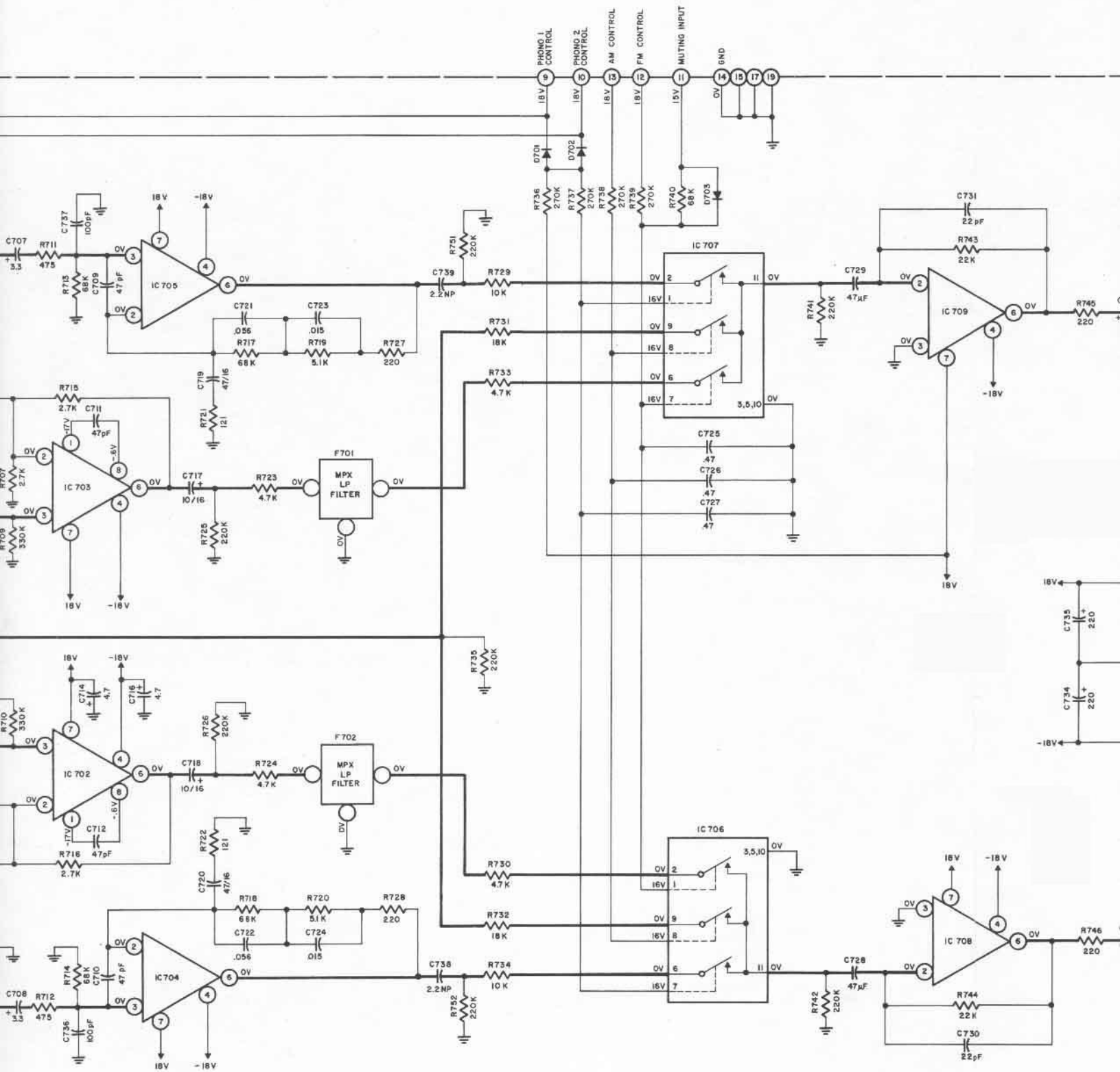




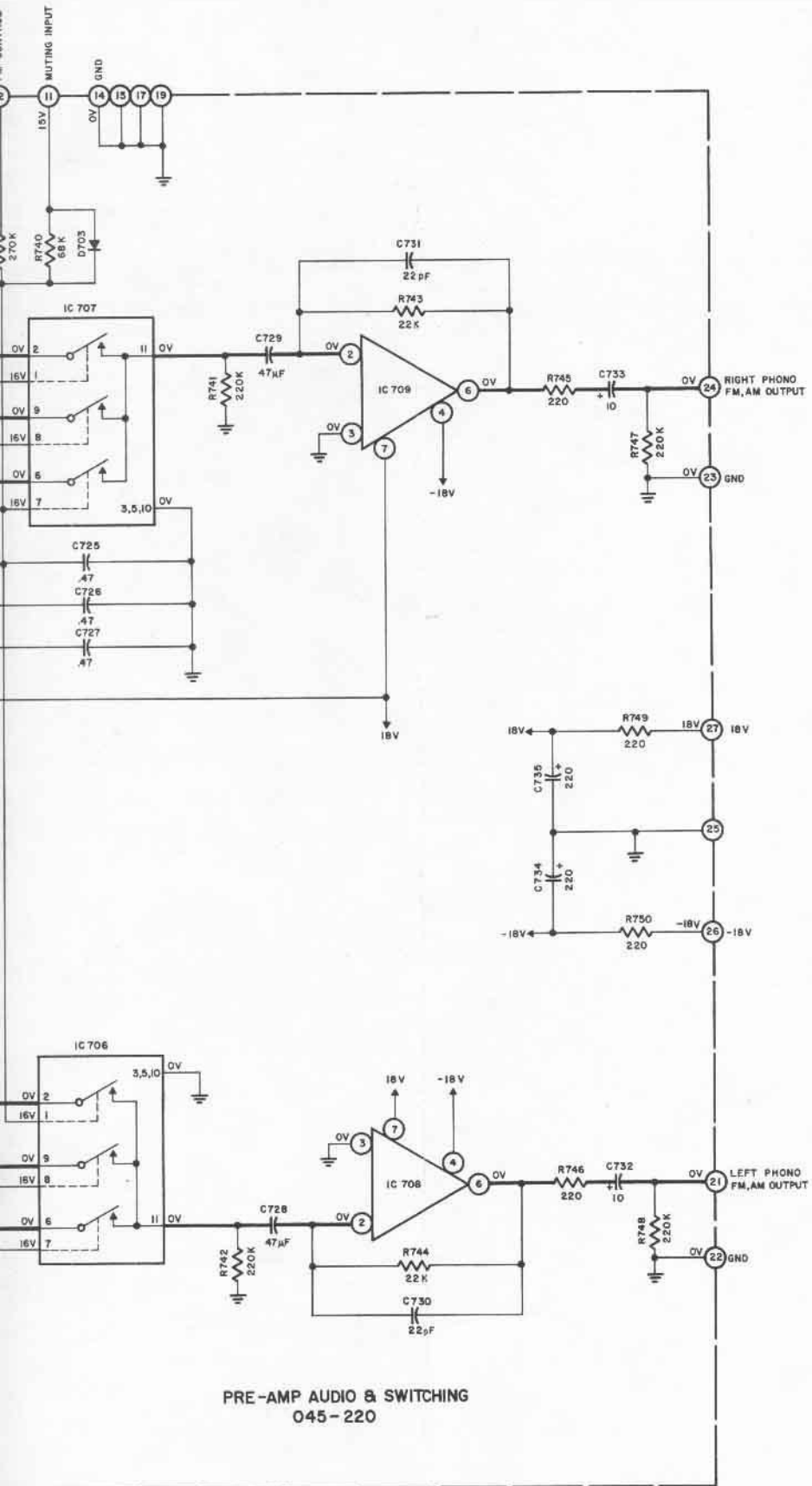
PRE-AMP AUDIO SWITCHING PC BOARD  
045220



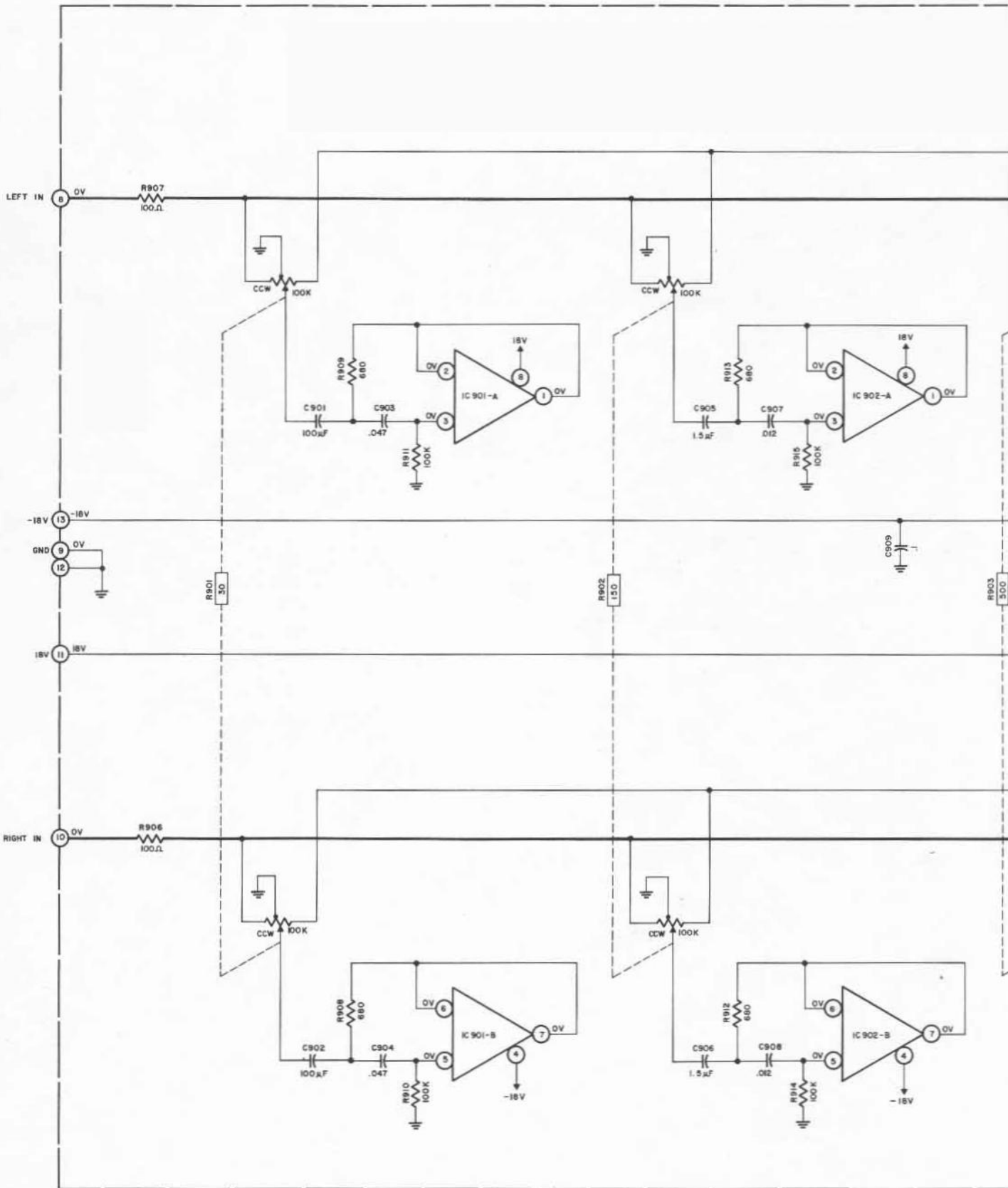


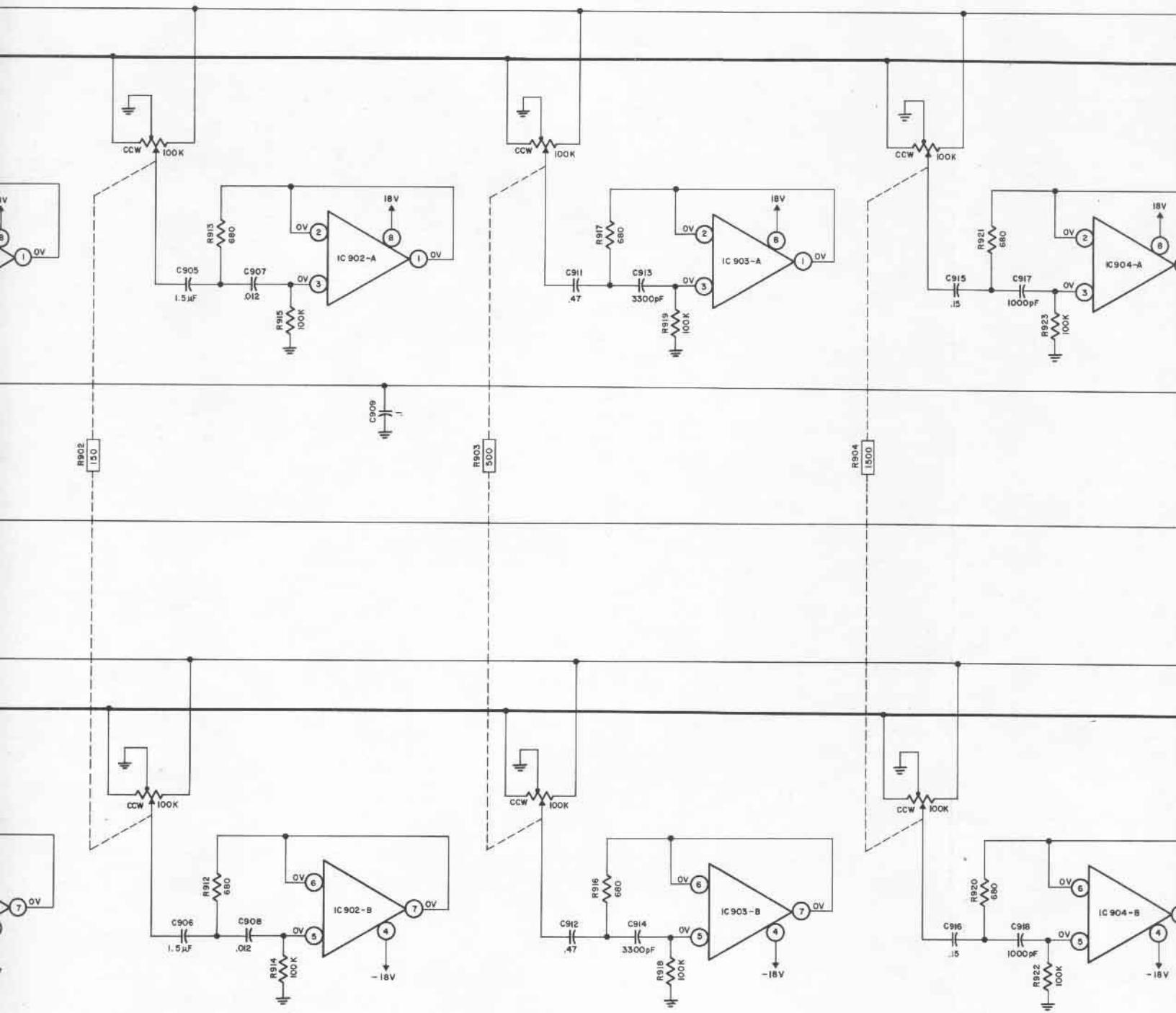


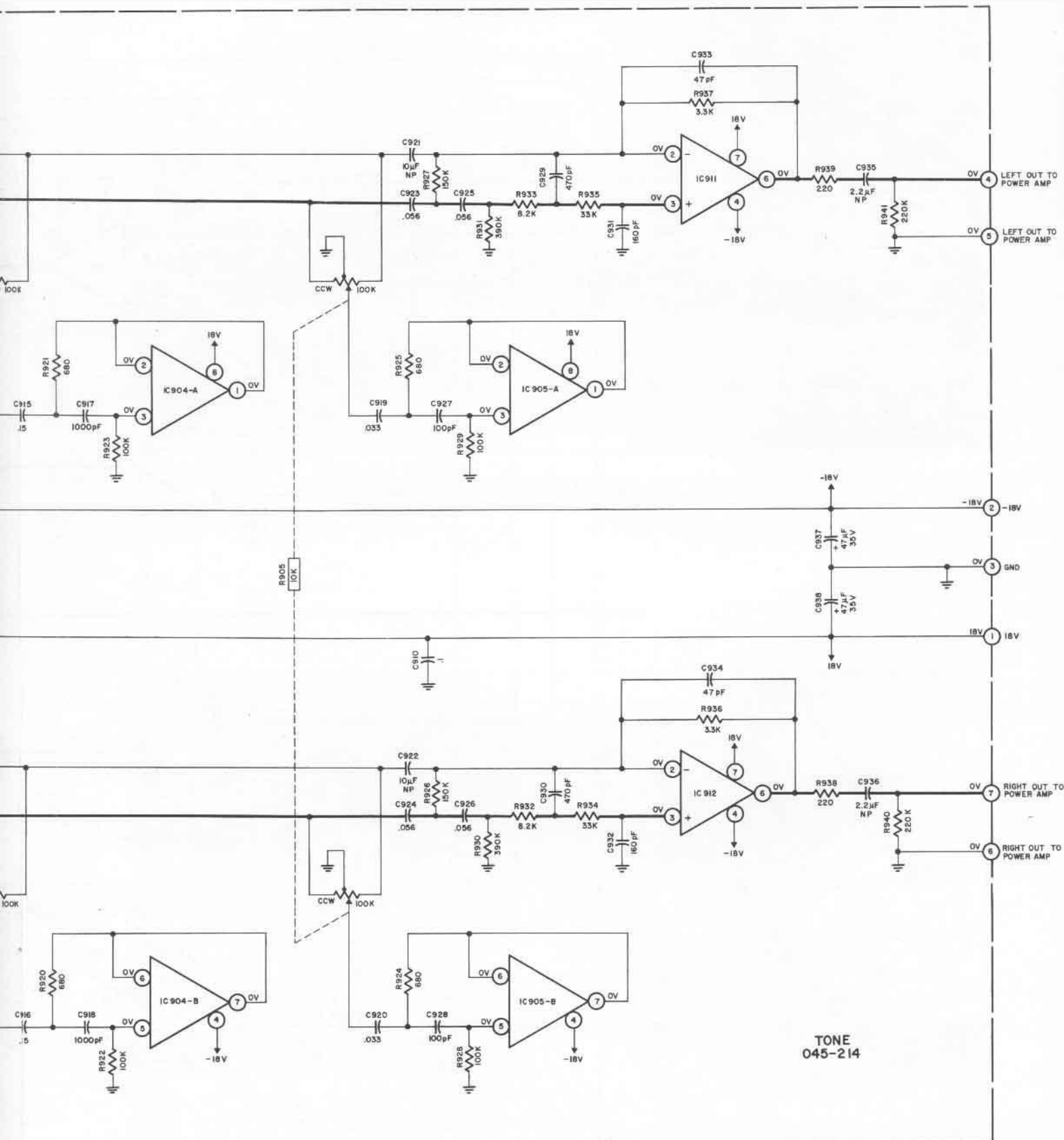
PRE-AMP AUDIO & SWITCHING  
045-220



PRE-AMP AUDIO & SWITCHING  
045-220

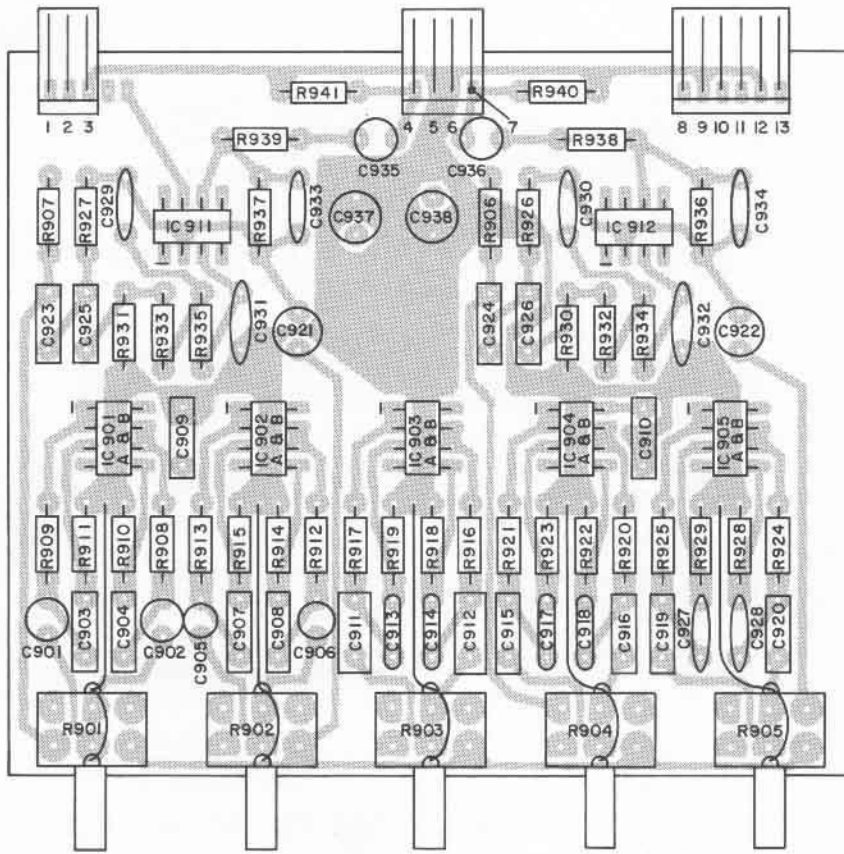




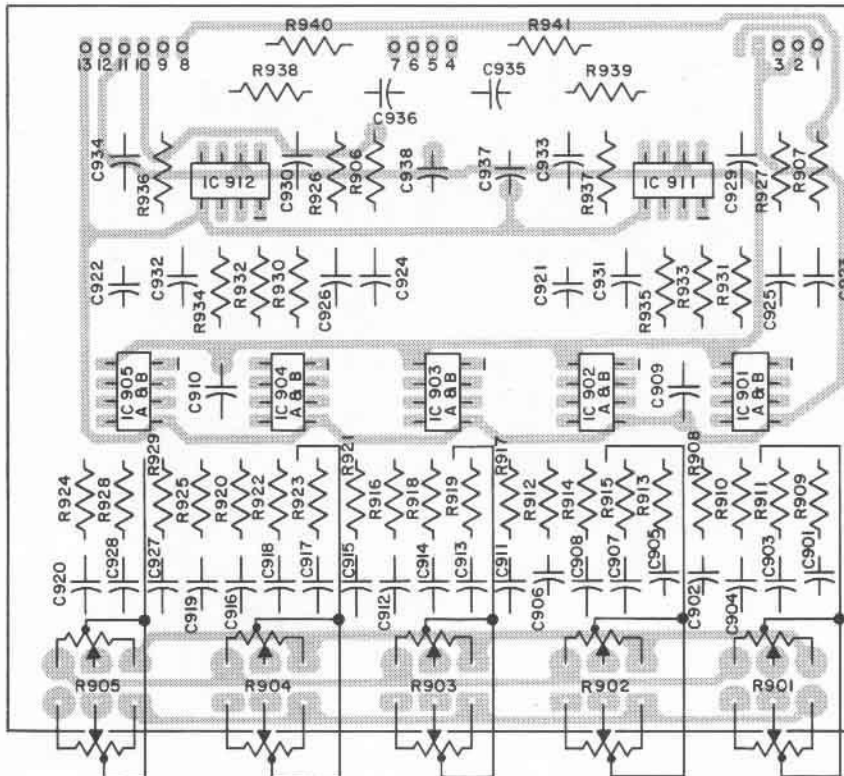


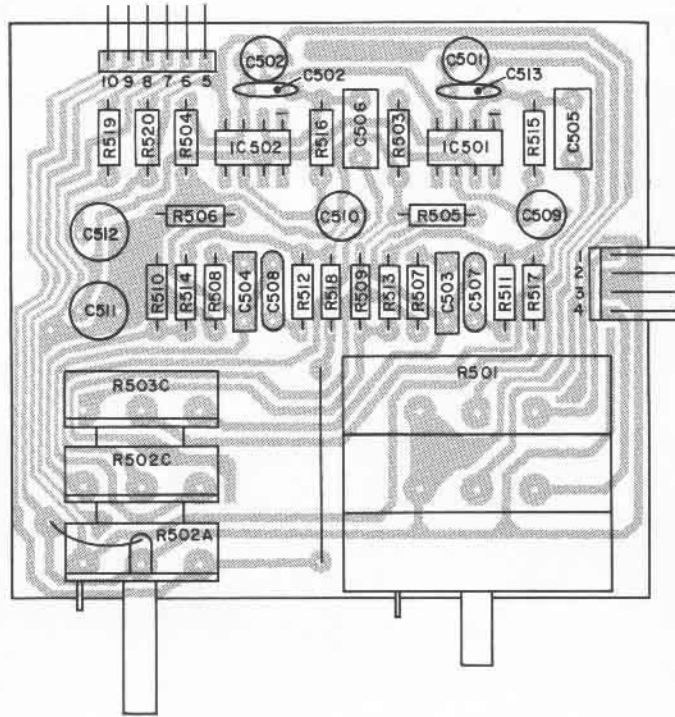
TONE  
045-214



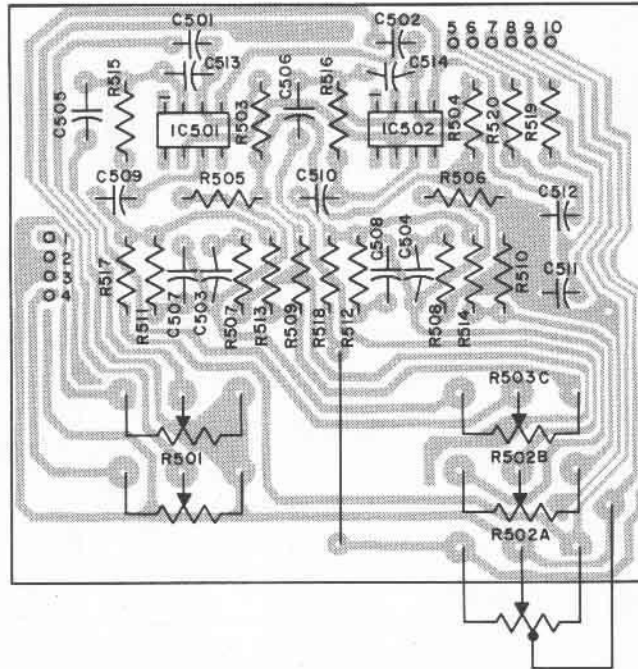


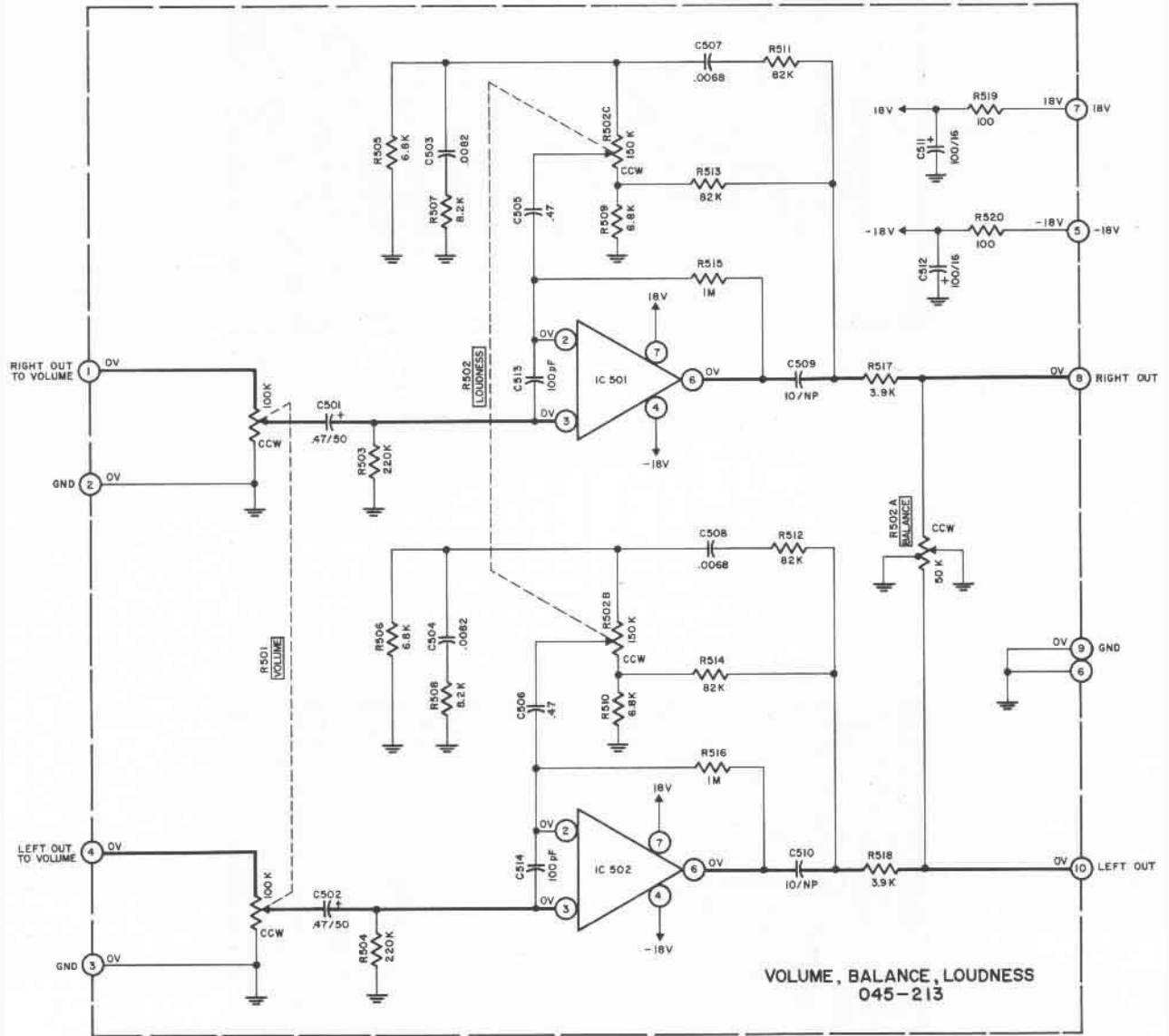
TONE PC BOARD  
045214

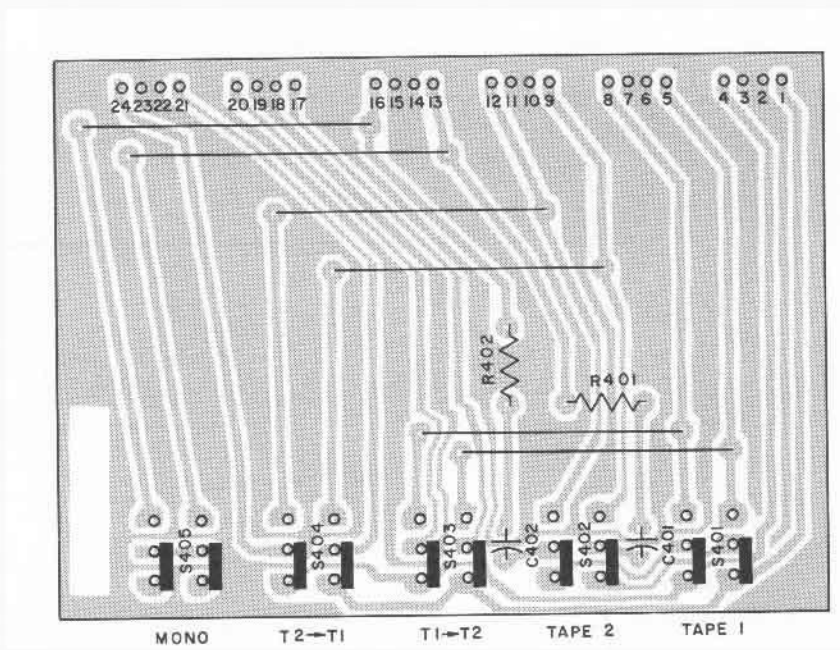
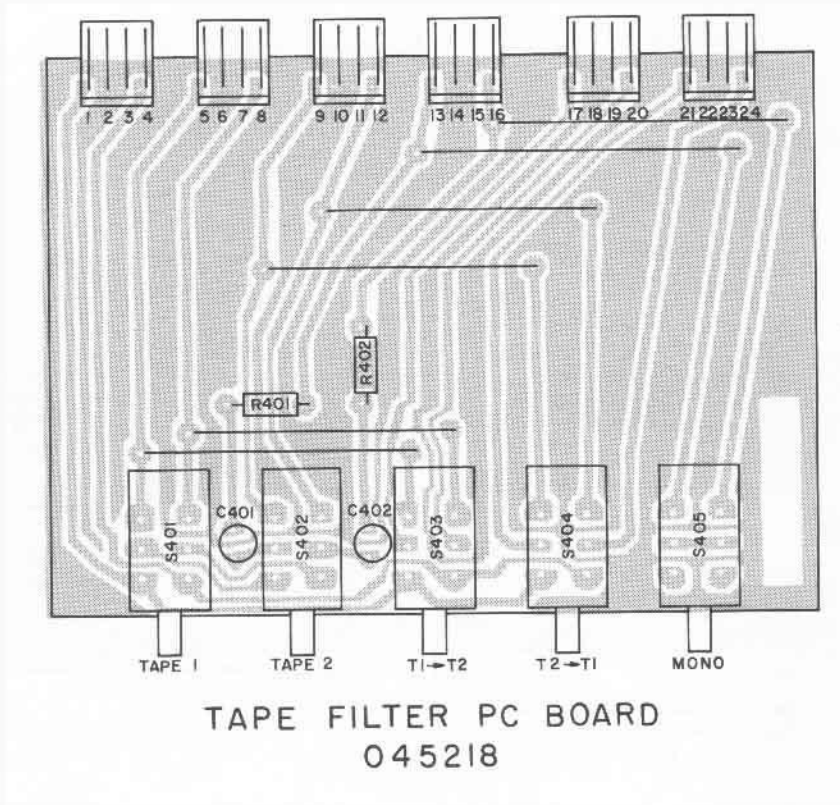


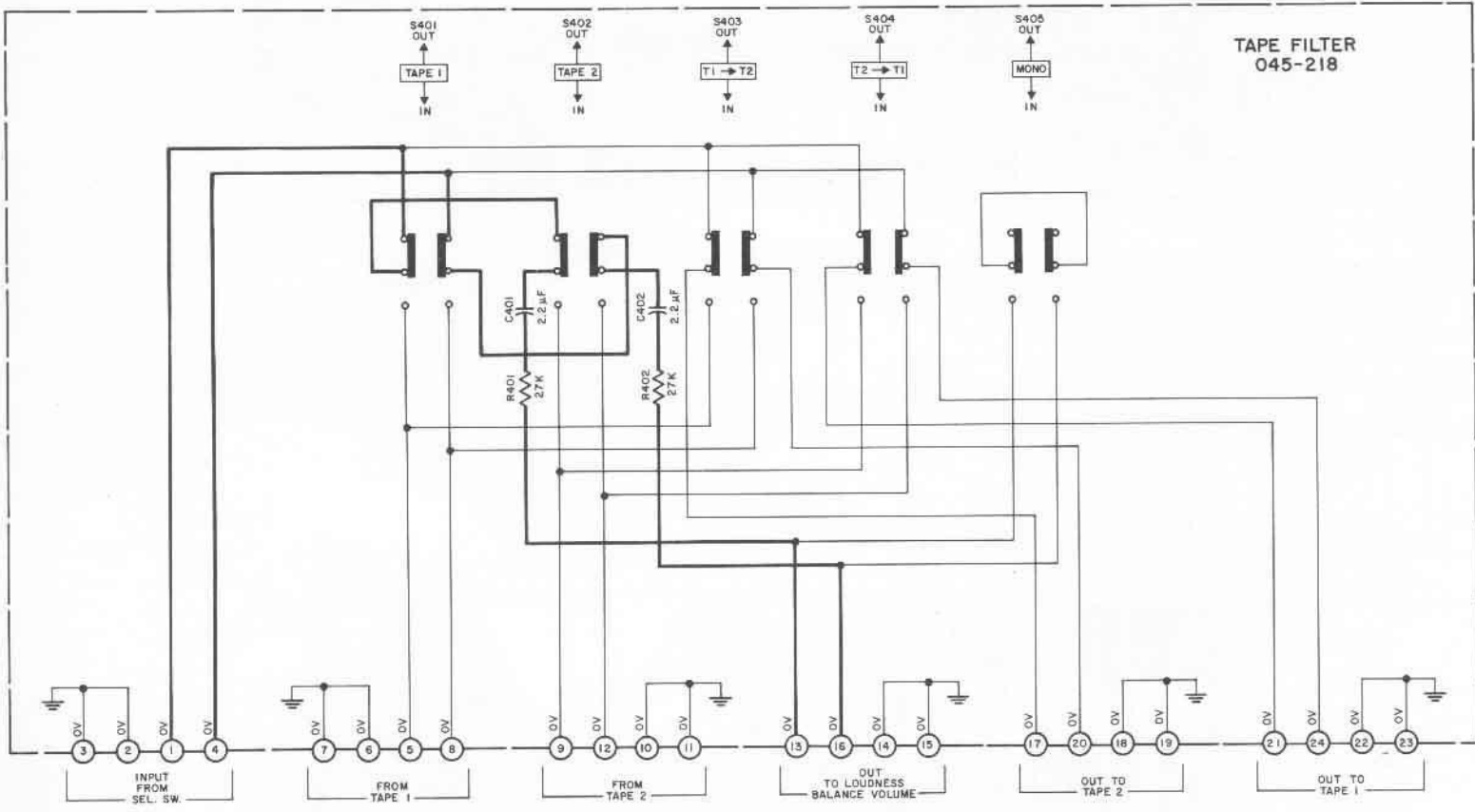


VOLUME,BALANCE,LOUDNESS PC BOARD  
045213

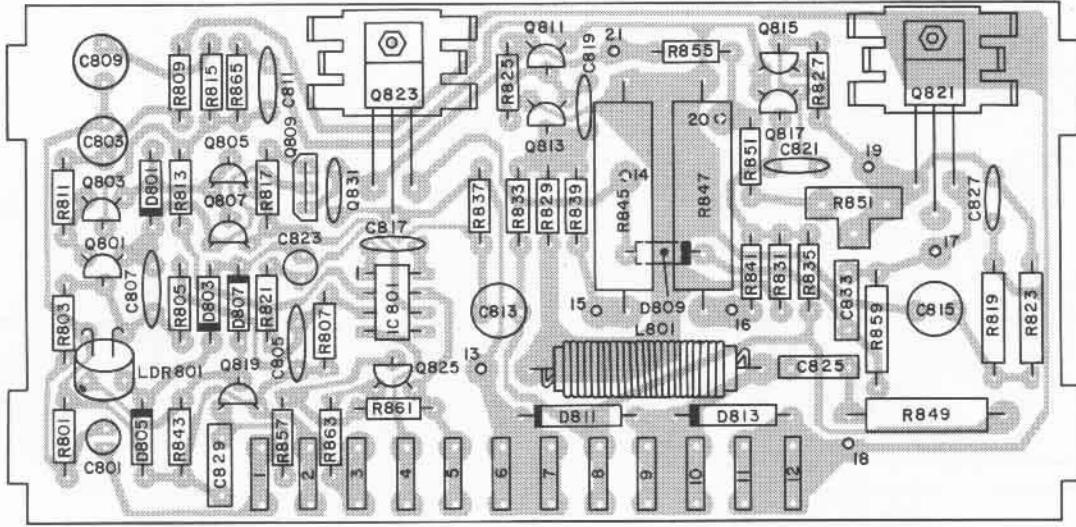




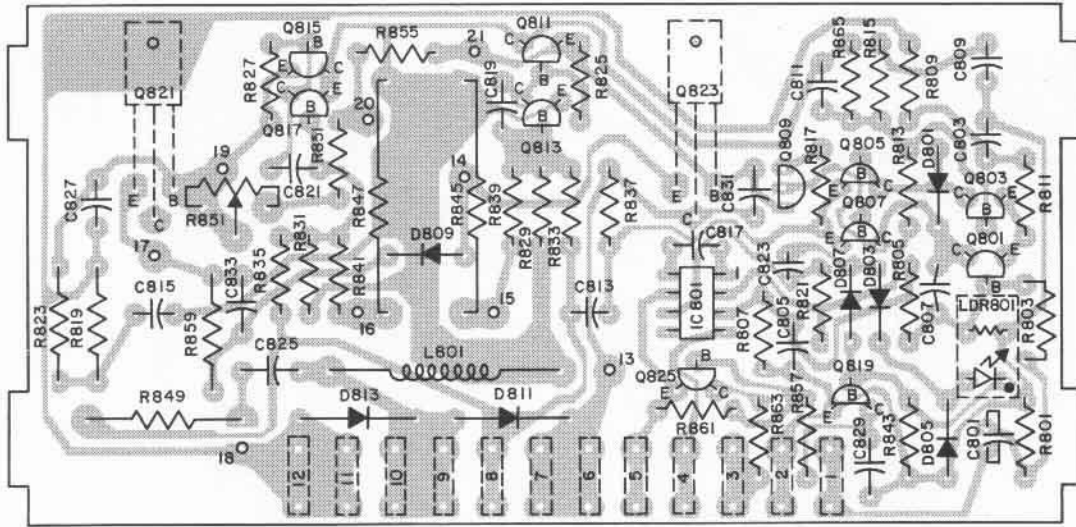


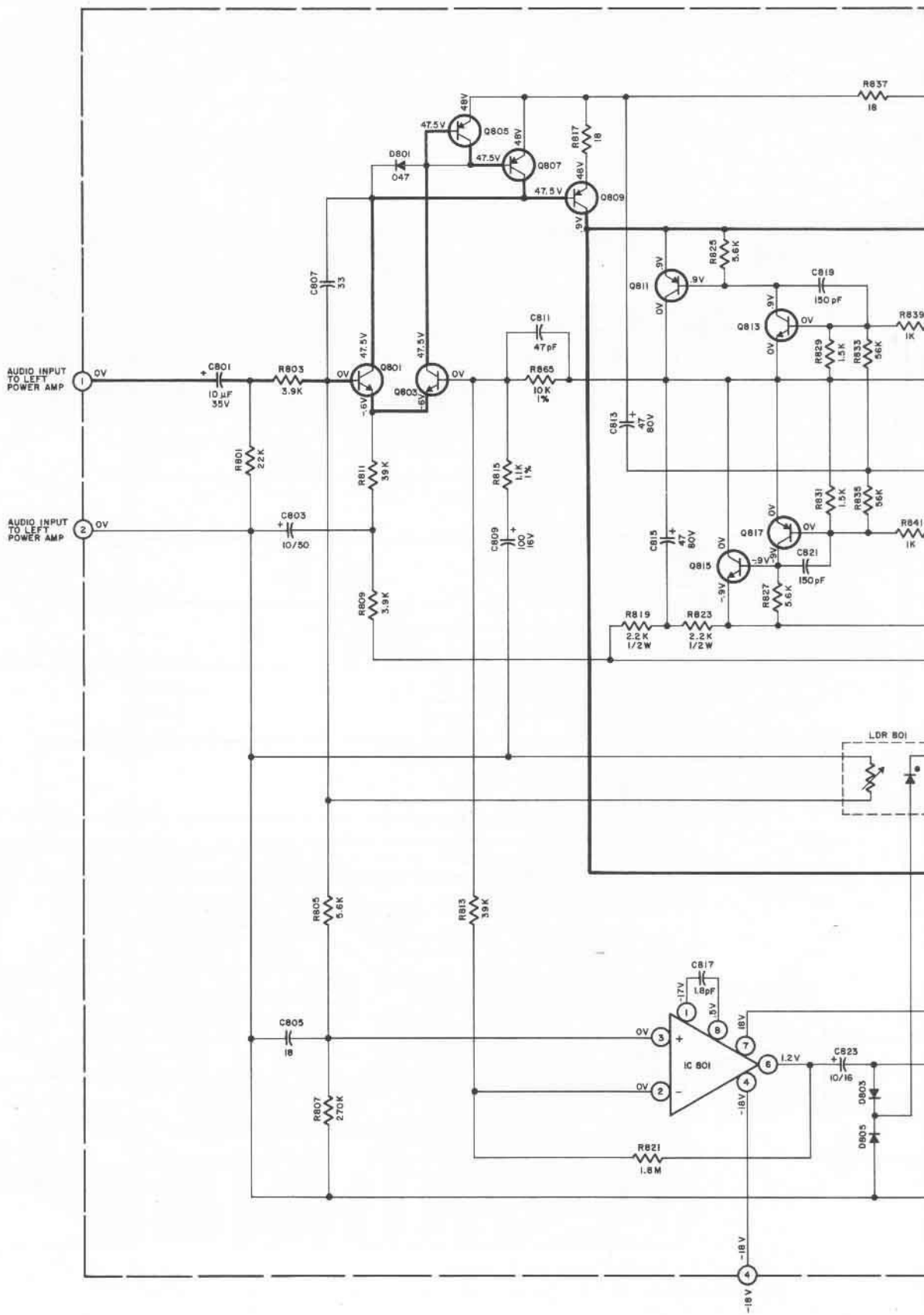


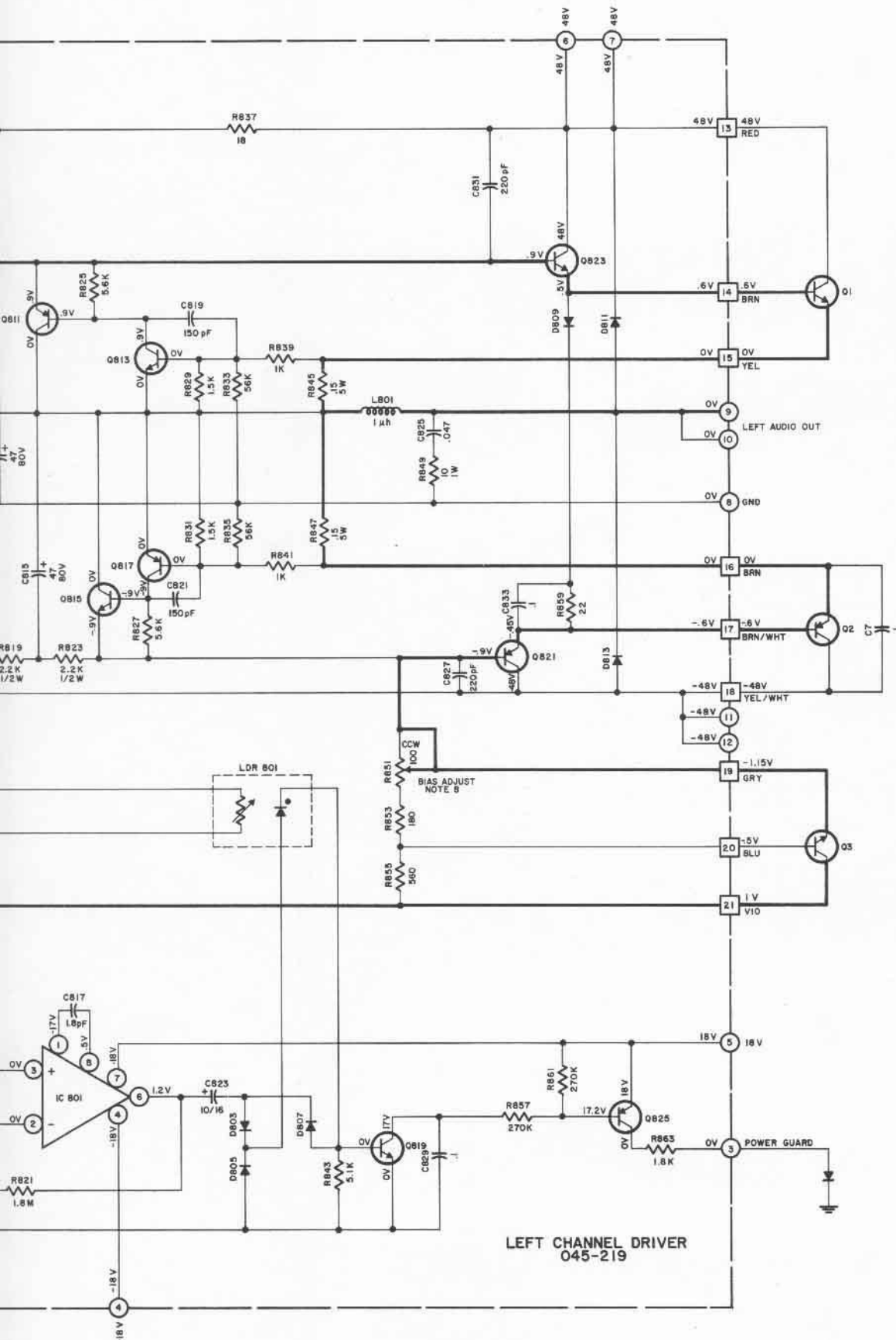
TAPE FILTER  
O45-218



LEFT CHANNEL DRIVER  
045219

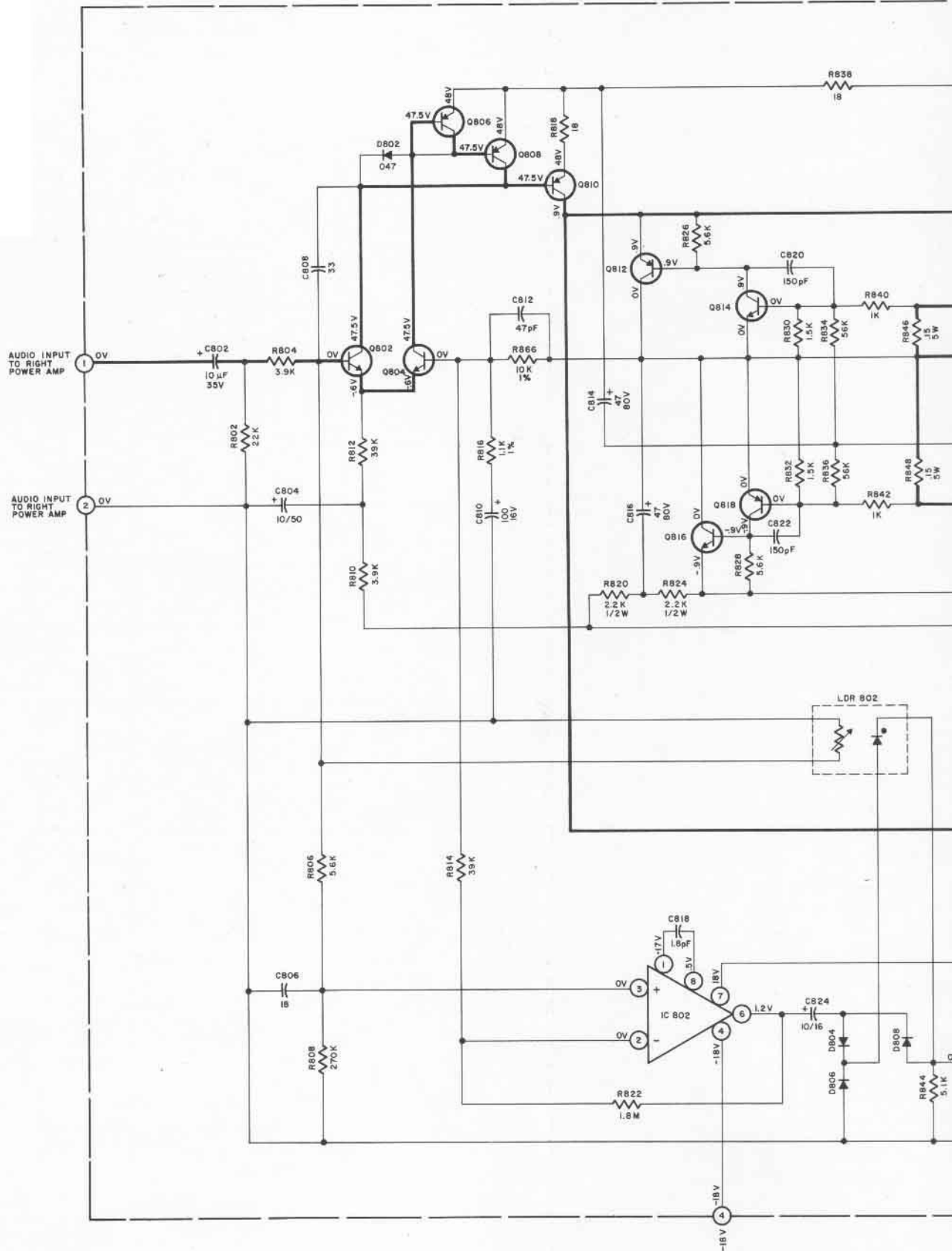


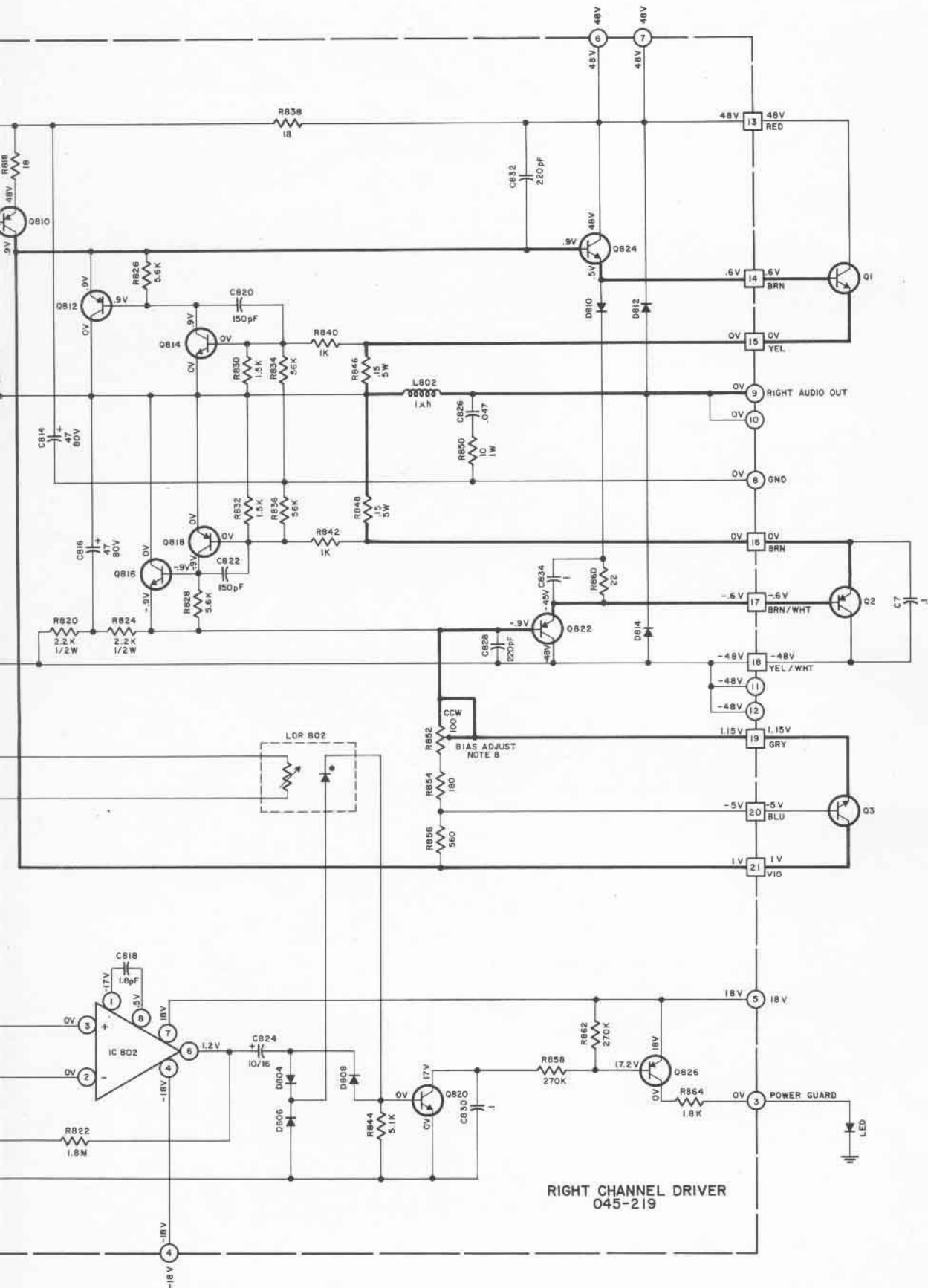




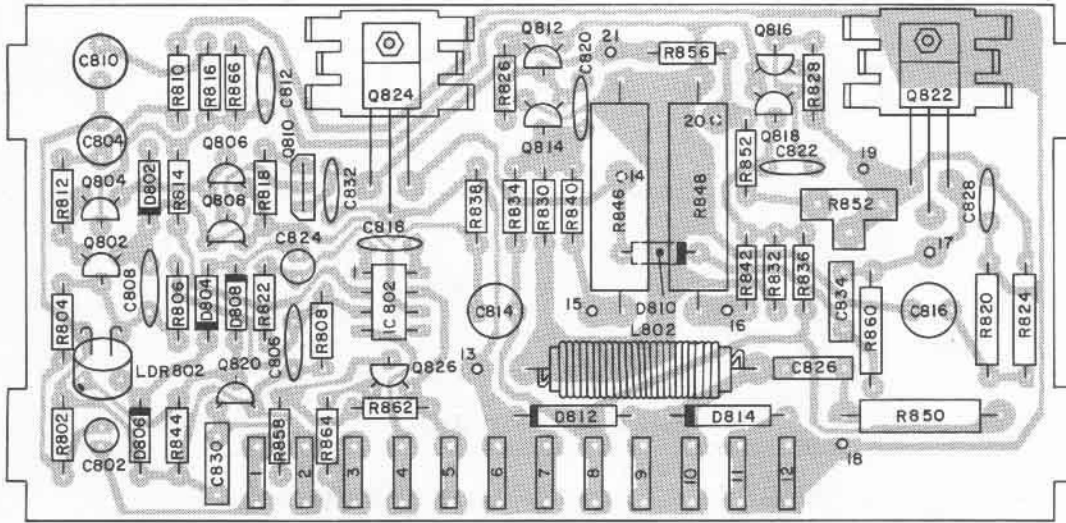
LEFT CHANNEL DRIVER  
045-219



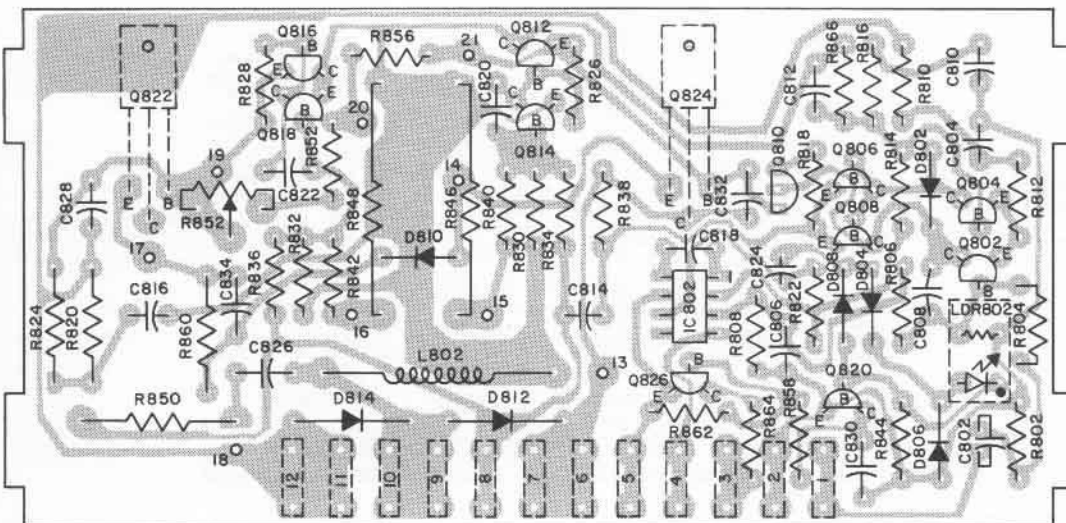


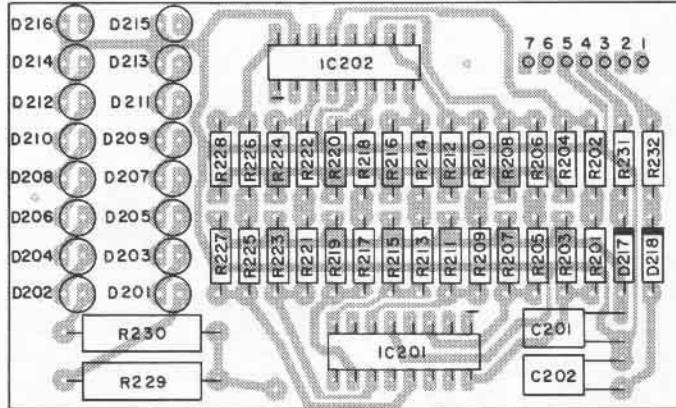


RIGHT CHANNEL DRIVER  
O45-219

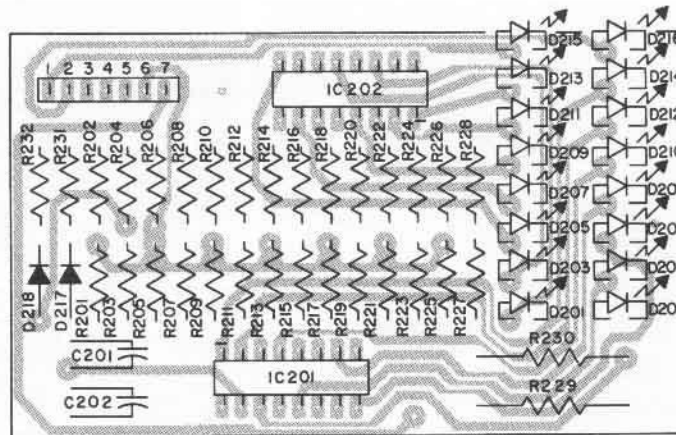


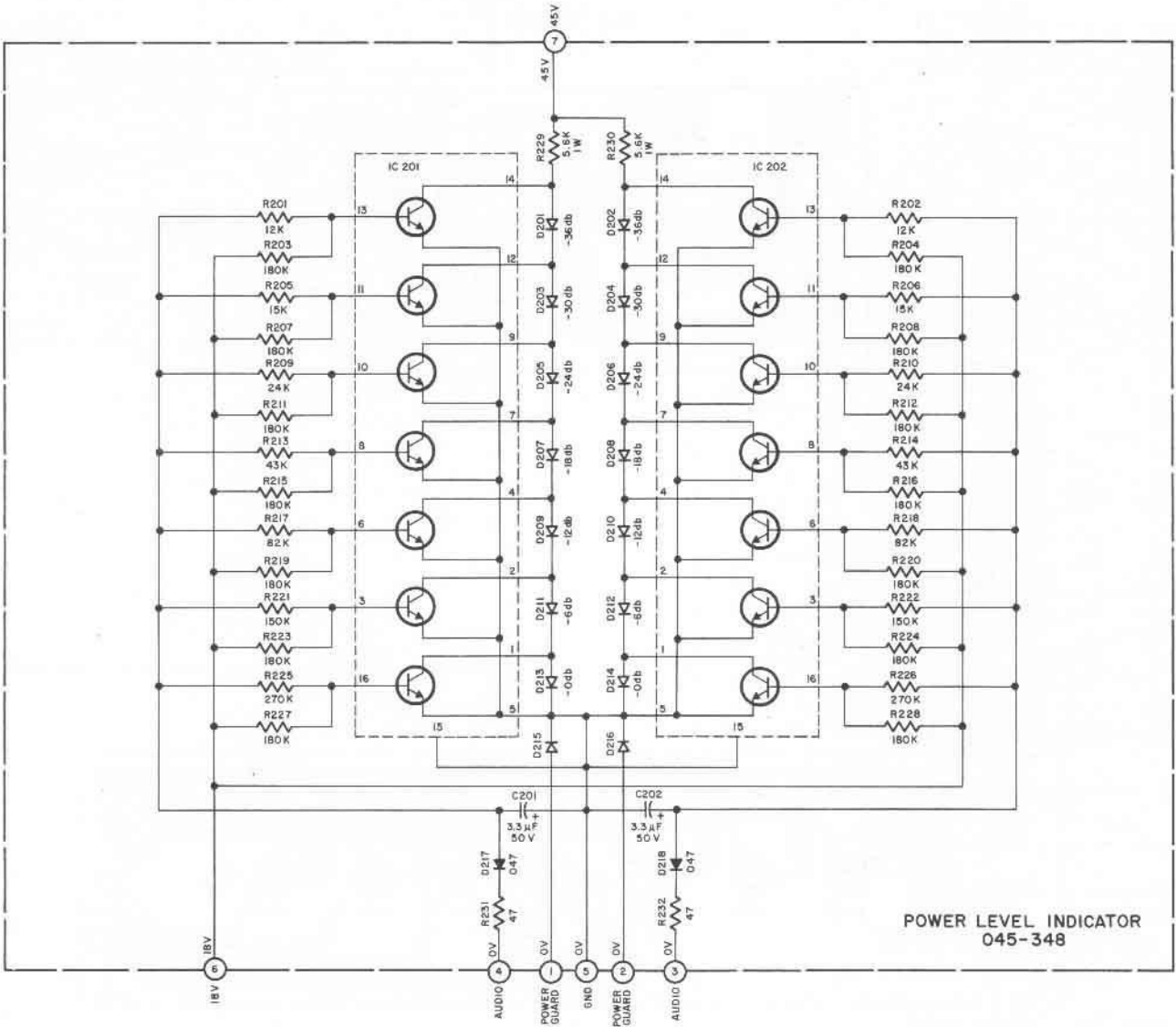
RIGHT CHANNEL DRIVER  
045219

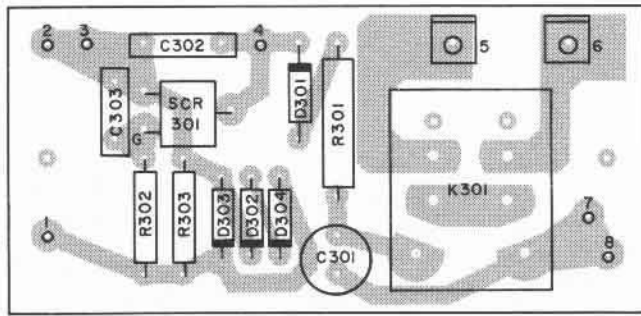




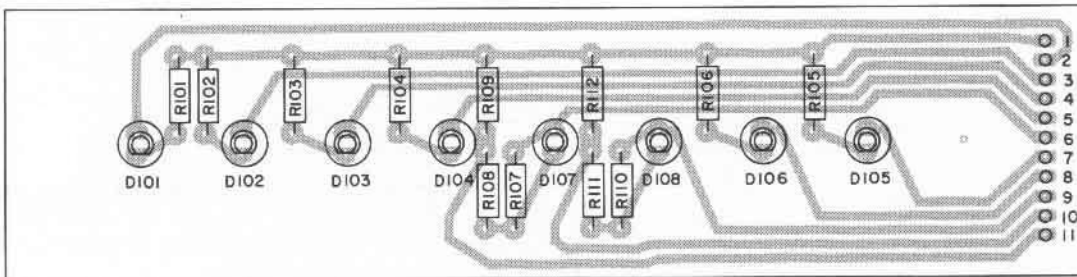
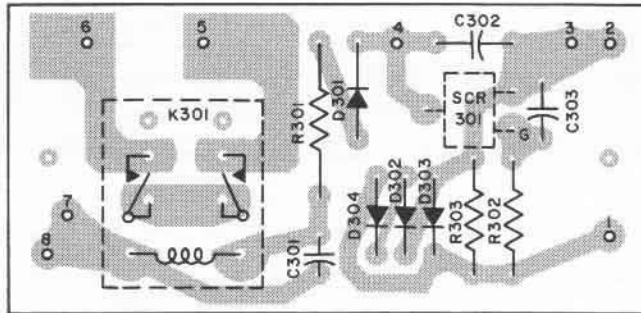
POWER LEVEL INDICATOR  
045348



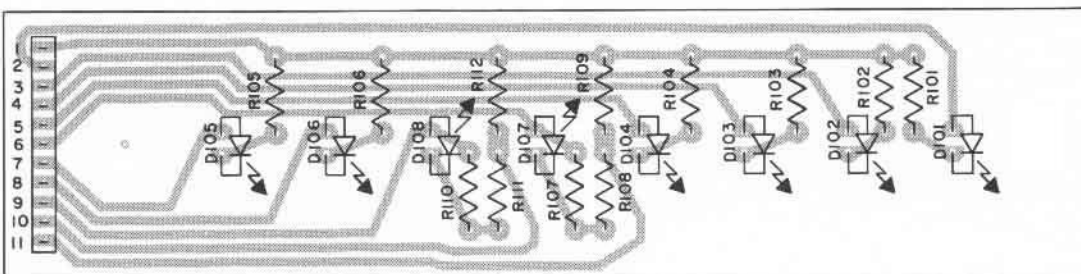


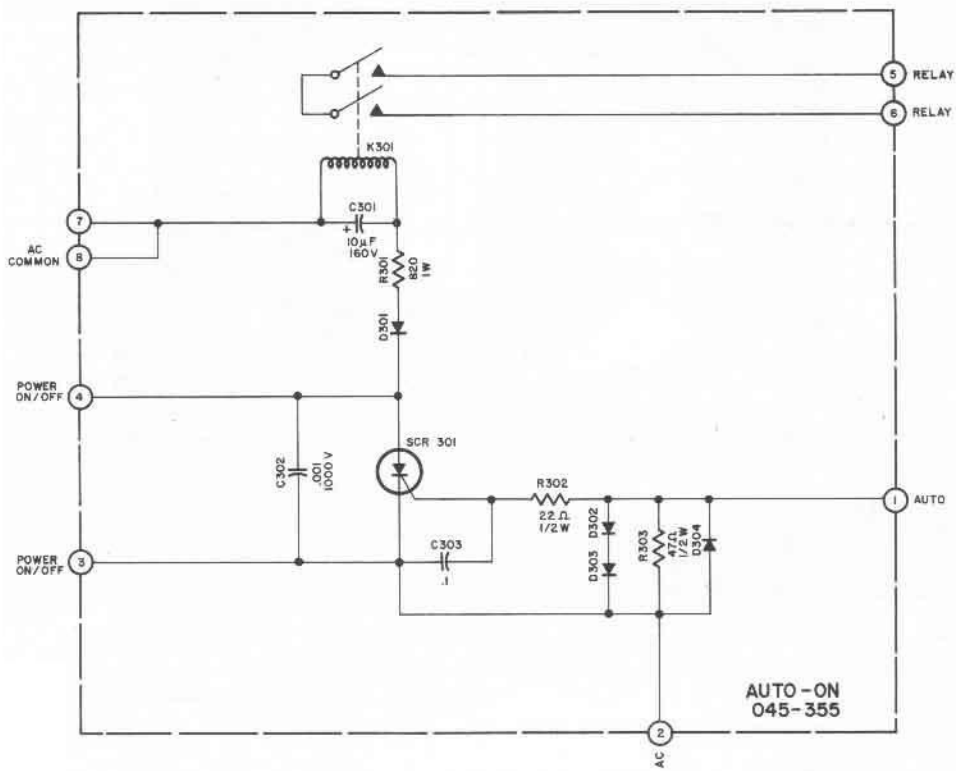


AUTO-ON PC BOARD  
045355

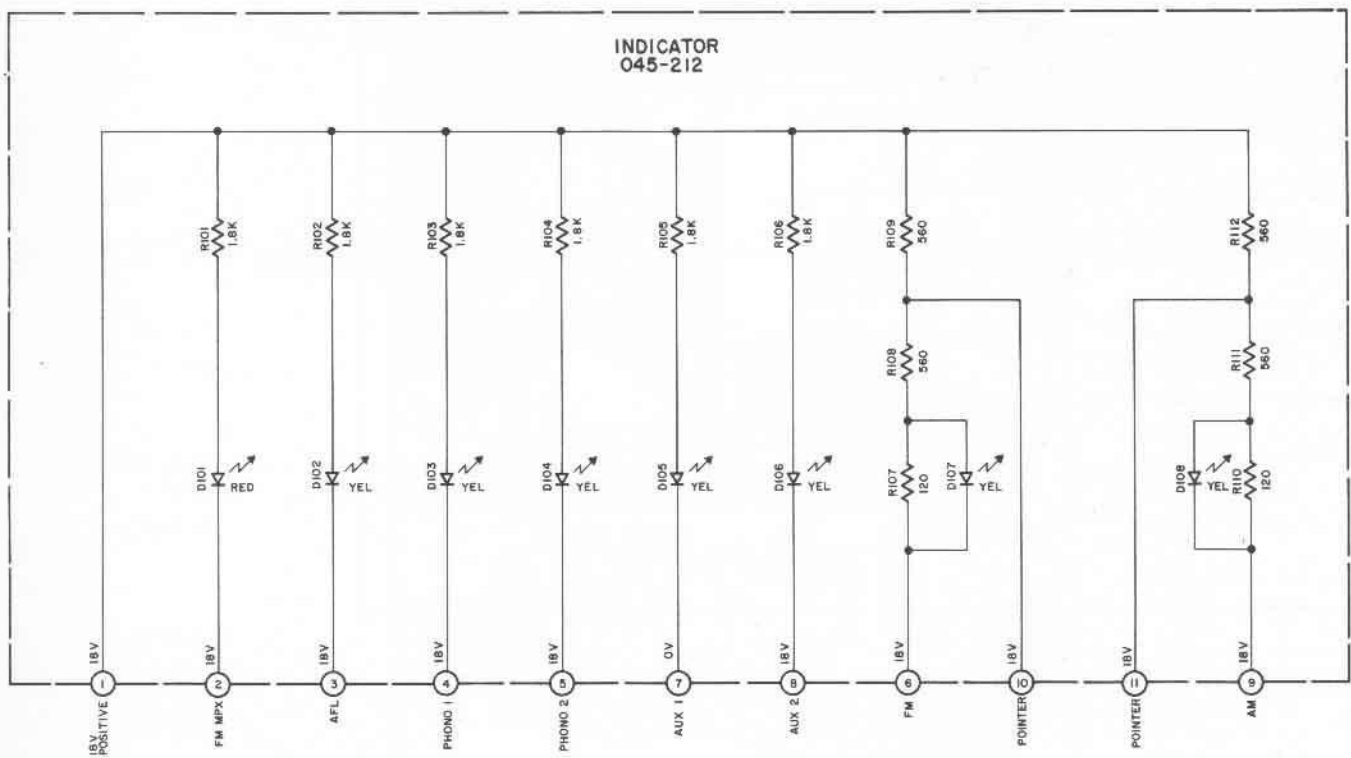


INDICATOR PC BOARD  
045212

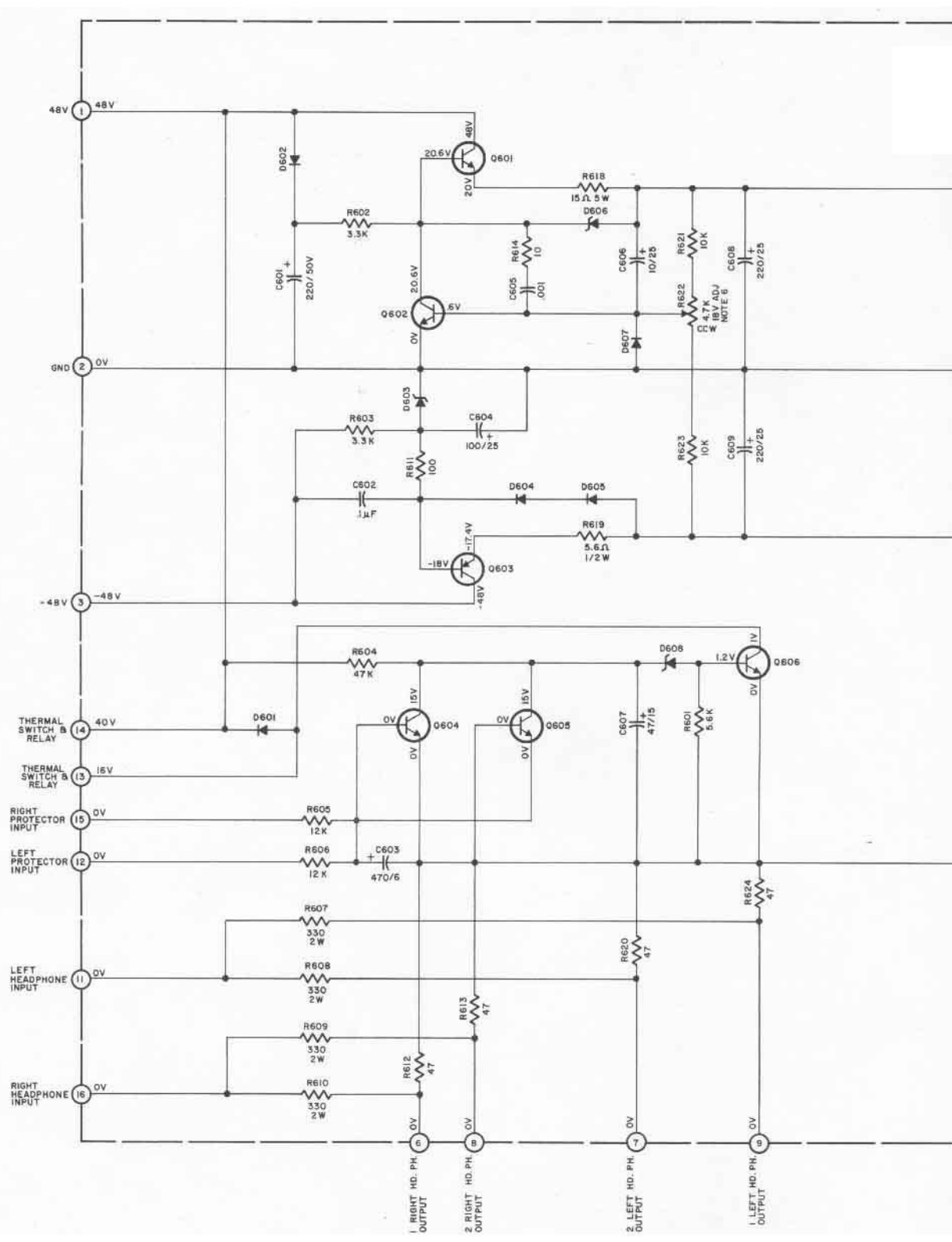




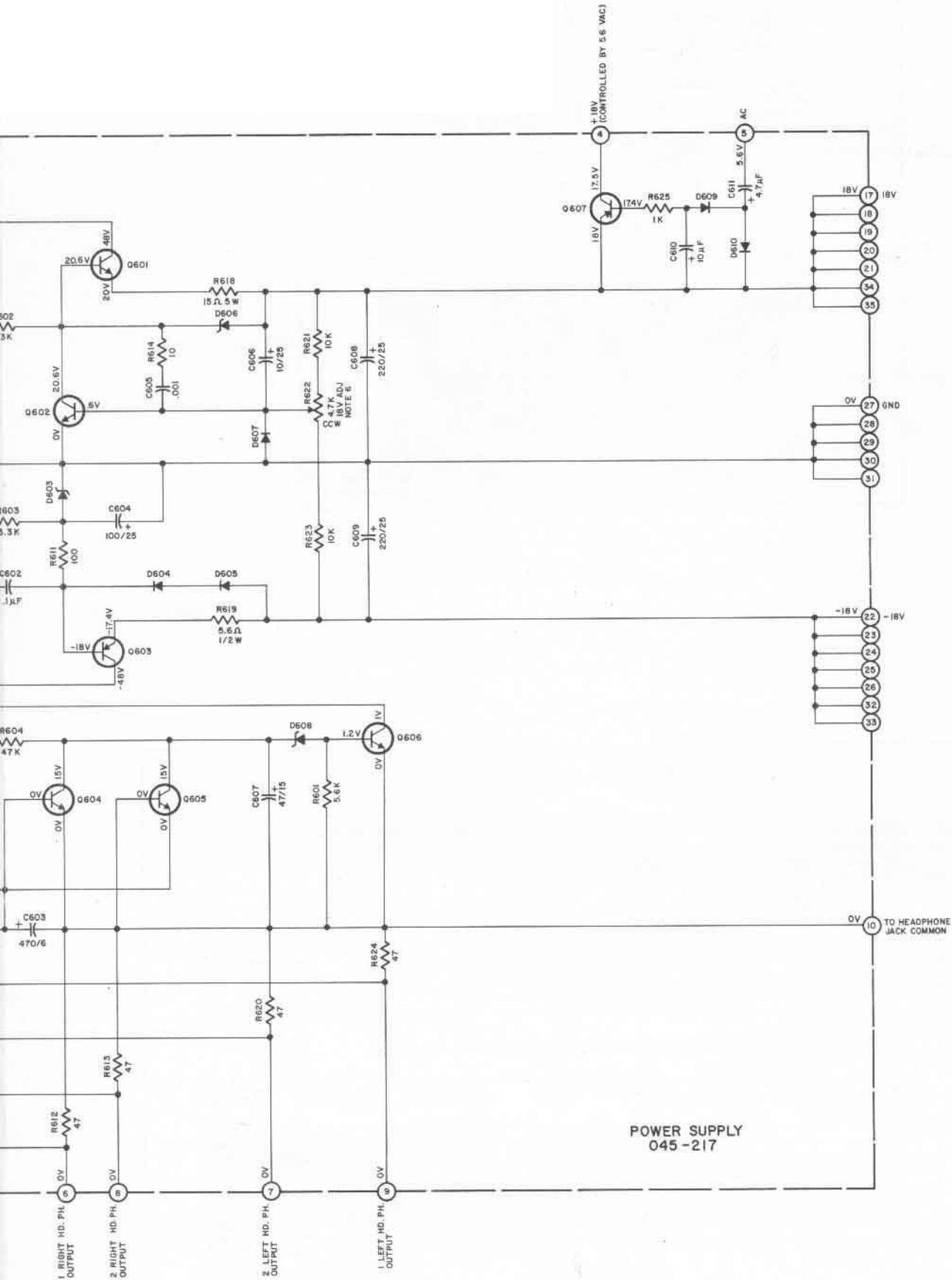
**AUTO-ON**



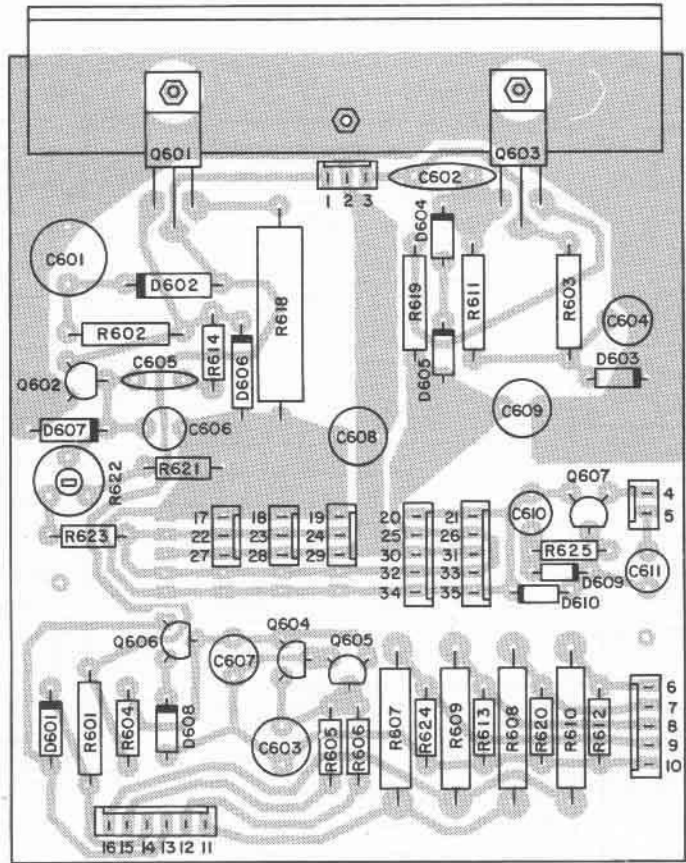
**INDICATOR**



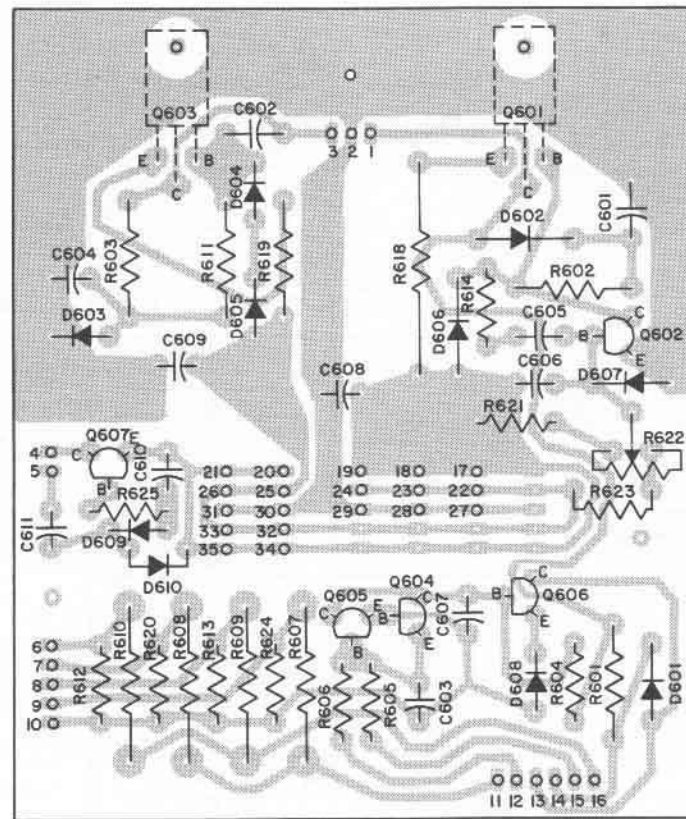




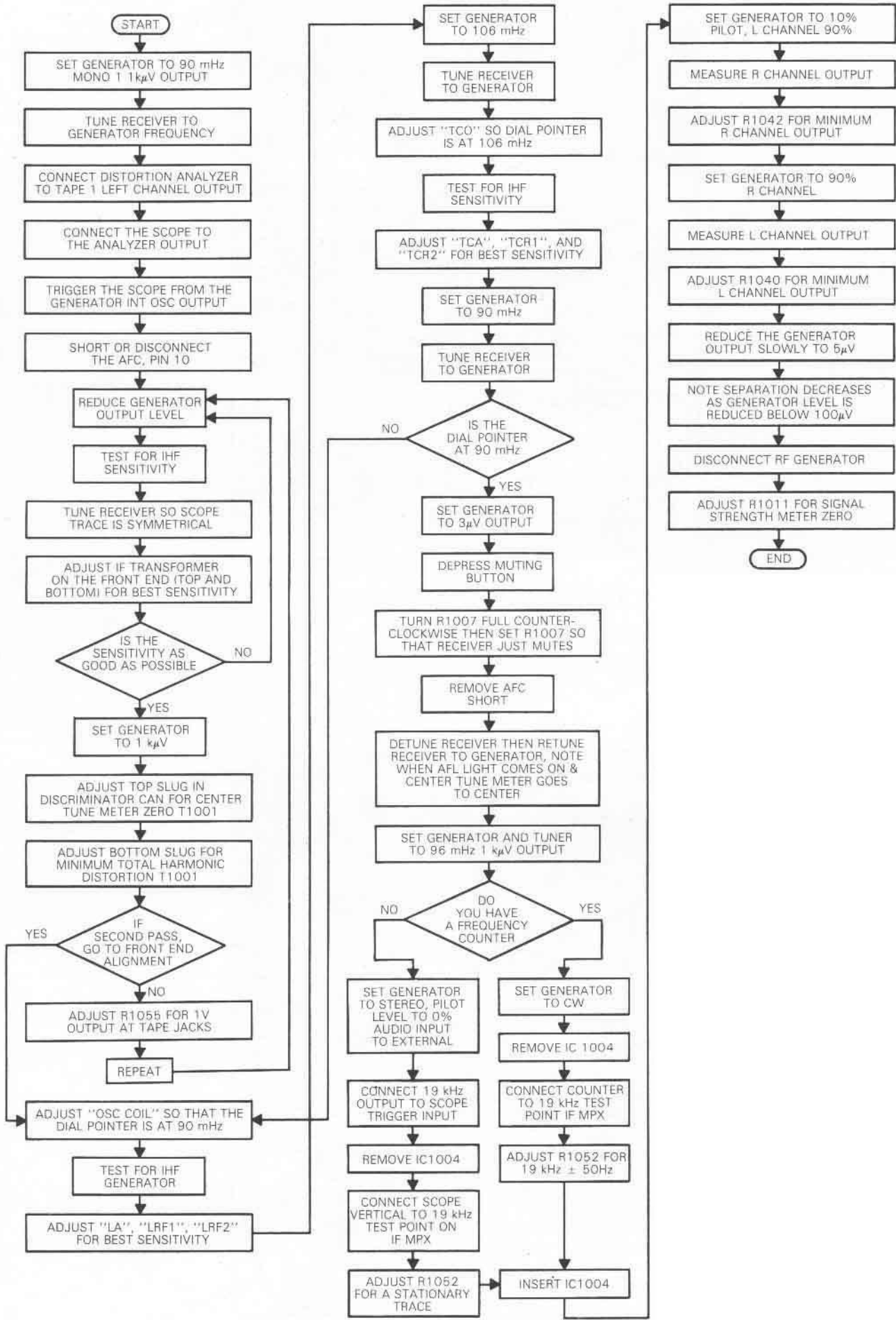
POWER SUPPLY  
045-217

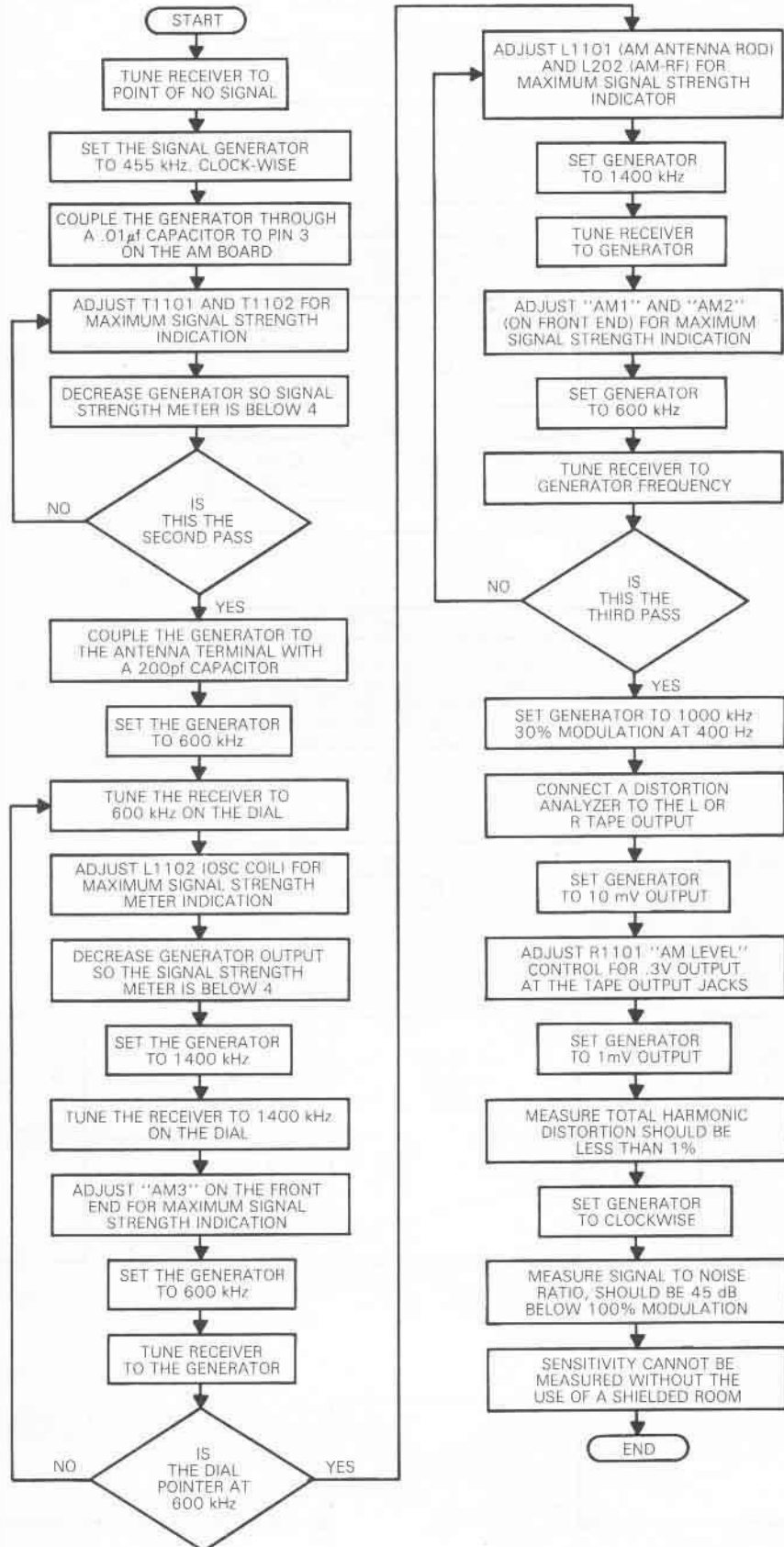


POWER SUPPLY PC BOARD  
045217

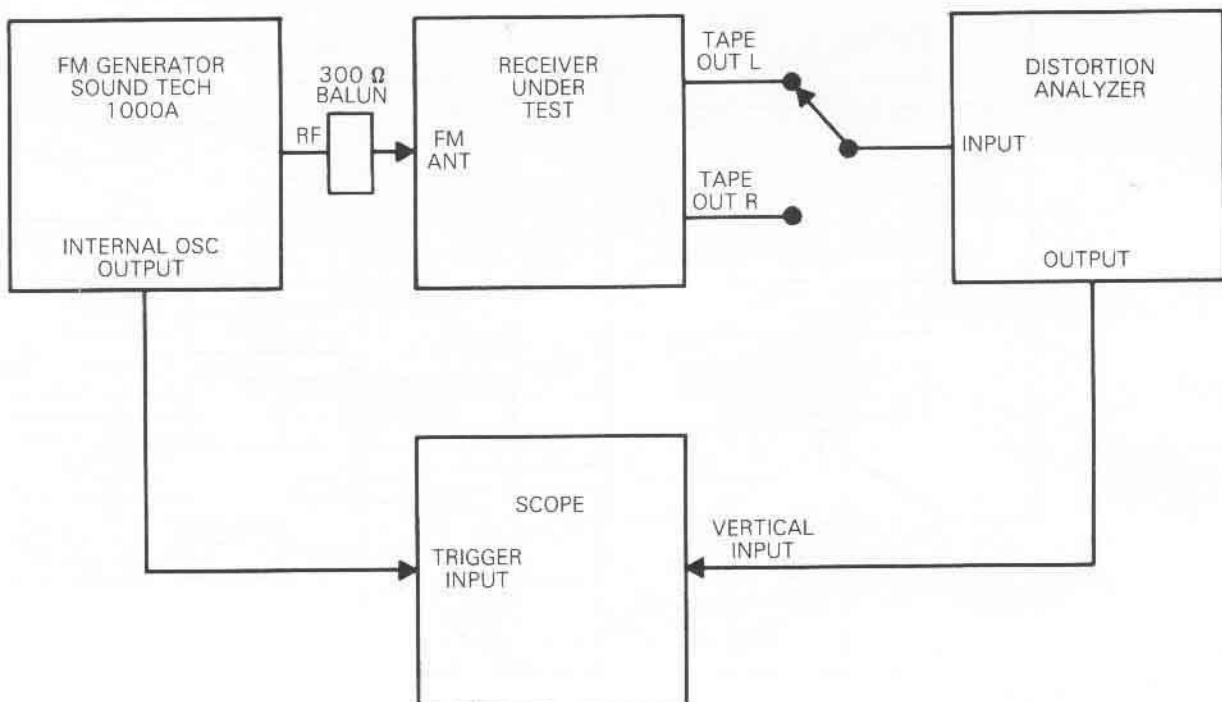
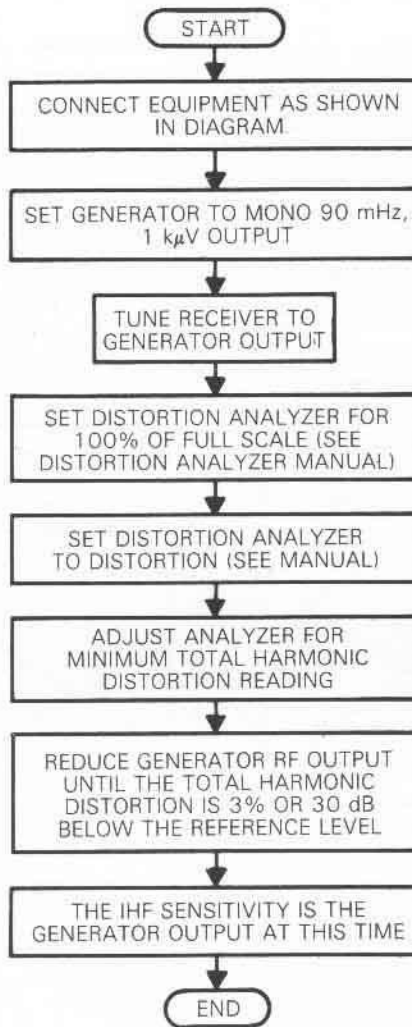


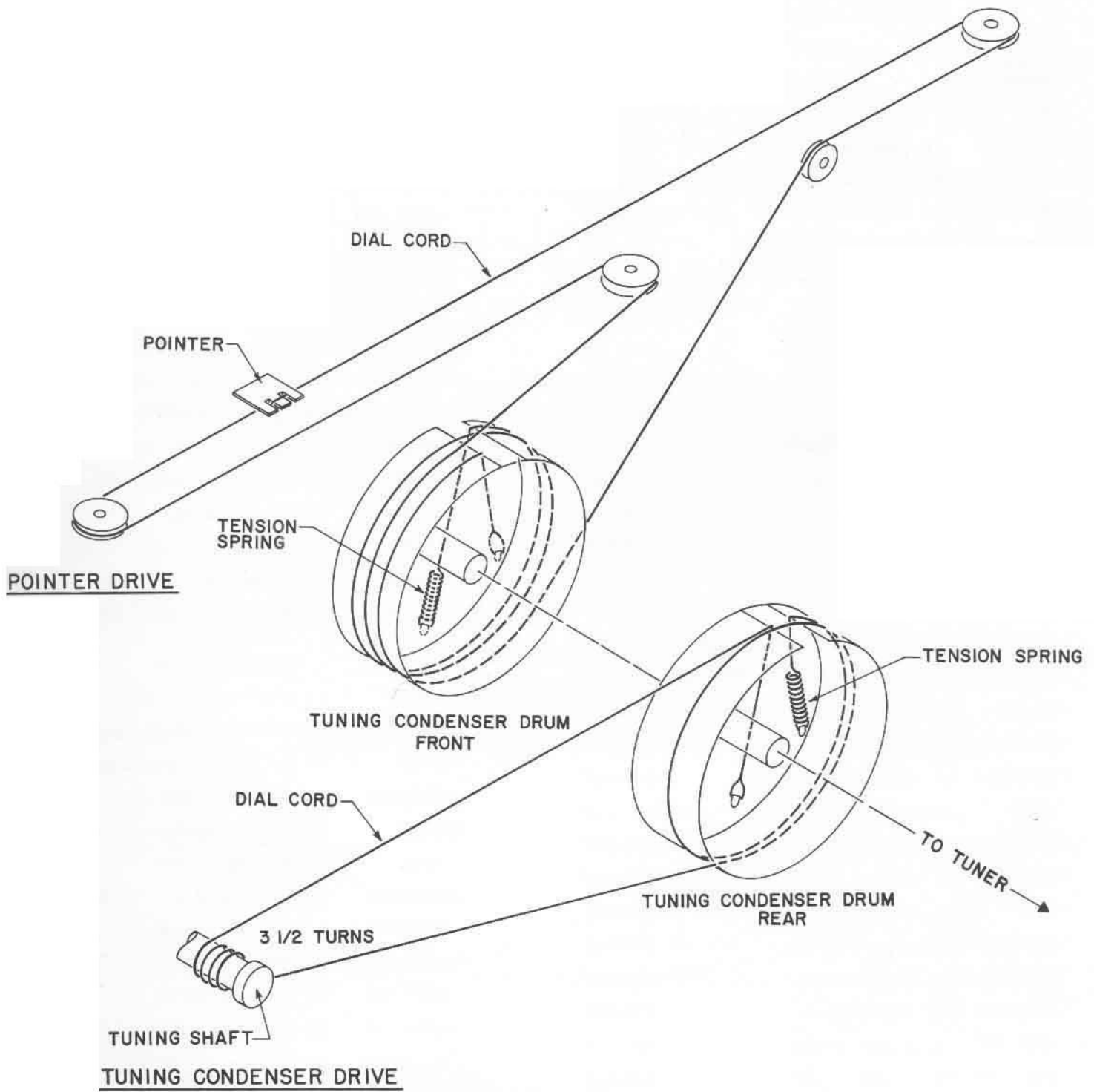
### FM ALIGNMENT





## F SENSITIVITY MEASUREMENTS





## MAC4100

## REPLACEMENT PARTS

All parts not listed are common items obtainable from radio parts jobbers.

Replacement parts may be obtained when ordered by PART NUMBER from:

McIntosh Laboratory, Inc.  
Customer Service Department  
2 Chambers Street  
Binghamton, New York 13903  
(Telephone 607-723-3512)

Symbol Number	DIODES Description	Part Number
D101	LED lamp red	070-108
D102,103	LED lamp yellow	070-109
D104,105	LED lamp yellow	070-109
D106,107	LED lamp yellow	070-109
D108	LED lamp yellow	070-109
D201,202	LED lamp yellow	070-109
D203,204	LED lamp yellow	070-109
D205,206	LED lamp yellow	070-109
D207,208	LED lamp yellow	070-109
D209,210	LED lamp yellow	070-109
D211,212	LED lamp yellow	070-109
D213,214	LED lamp yellow	070-109
D215,216	LED lamp red	070-108
D217,218	Si. signal diode	070-047
D301,302	Si. Rectifier	070-031
D303,304	Si. Rectifier	070-031
SCR301	Rectifier	131-010
D601,602	Si. Rectifier	070-031
D603	Zener 18V	070-103
D604,605	Si. signal diode	070-047
D606,607	Si. signal diode	070-047
D608	Zener 15V	070-061
D609,610	Si. signal diode	070-047
D701,702	Si. signal diode	070-047
D703	Si. signal diode	070-047
D801,802	Si. signal diode	070-047
D803,804	Si. signal diode	070-047
D805,806	Si. signal diode	070-047
D807,808	Si. signal diode	070-047
D809,810	Si. signal diode	070-098
D811,812	Si. rectifier	070-031
D813,814	Si. rectifier	070-031
D1001,1002	Si. signal diode	070-003
D1003	Si. signal diode	070-003
D1004	Si. signal diode	070-046
D1005	Si. signal diode	070-047

D1007	Si. signal diode	070-047
D1008,1009	Si. signal diode	070-003
D1102	Si. signal diode	070-003
D1103	Si. signal diode	070-047

## INTEGRATED CIRCUITS

IC201,202	Integrated Circuit	133-069
IC501,502	Integrated Circuit	133-066
IC701	Integrated Circuit	133-042
IC702,703	Integrated Circuit	133-037
IC704,705	Integrated Circuit	133-067
IC706,707	Integrated Circuit	133-051
IC708,709	Integrated Circuit	133-066
IC801,802	Integrated Circuit	133-068
IC901,902	Integrated Circuit	133-028
IC903,904	Integrated Circuit	133-028
IC905	Integrated Circuit	133-028
IC911,912	Integrated Circuit	133-066
IC1001,1002	Integrated circuit	133-031
IC1003	Integrated circuit	133-031
IC1004,1005	Integrated circuit	133-037
IC1006	Integrated circuit	133-056
IC1007	Integrated circuit	133-029
IC1008	Integrated circuit	133-005
IC1101	Integrated circuit	133-037

## TRANSISTORS

Q601	Si NPN Power Transistor	132-173
Q602	Si NPN Transistor	132-171
Q603	Si PNP Power Transistor	132-174
Q604,605	Si NPN Transistor	132-143
Q606	Si NPN Transistor	132-171
Q607	Si PNP Transistor	132-150
Q801,802	Si NPN Transistor	132-185
Q803,804	Si NPN Transistor	132-185
Q805,806	Si PNP Transistor	132-096
Q807,808	Si PNP Transistor	132-096
Q809,810	Si PNP Transistor	132-187
Q811,812	Si PNP Transistor	132-150
Q813,814	Si NPN Transistor	132-143
Q815,816	Si NPN Transistor	132-143
Q817,818	Si PNP Transistor	132-150
Q819,820	Si NPN Transistor	132-092
Q821,822	PNP Medium Power	132-184
Q823,824	NPN Medium Power	132-183
Q825,826	PNP Darlington	132-182

## REPLACEMENT PARTS

MAC4100

			FRONT PANEL & TRIM	
Q1001,1002	Si NPN Transistor	132-093		
Q1003	Si NPN Transistor	132-093	Front Panel	018-196
Q1101,1102	Transistor	132-110	Dial Glass	045-234
Q1103	Transistor	132-110	Handle	018-197
CAPACITORS			Tuning Knob	054-395
C603	Elect. Cap 470 $\mu$ F 6V	066-197	Input Selector Knob	090-199
C607	Elect. Cap 47 $\mu$ F 16V	066-215	Volume Knob	090-199
RESISTORS			Loudness Knob	090-195
LDR801	LED Photoresistor	144-070	Balance Knob	090-196
R1049,1050	Metal Film 5.1K 2% 1/4W	144-083	Equalizer Knobs	090-202
R1059,1060	Metal Film 10K 1% 1/4W	144-053	Pushbuttons Black	017-246
FILTERS			Pushbuttons Red	017-247
FN1001,1002	Ceramic Filter	180-024		METERS
FN1003,1004	Ceramic Filter	180-024	Tuning	124-031
CHOKES			Signal Strength	124-032
L1002	Coil Low Pass	122-015		LAMPS
L1003,1004	Choke 2.2 $\mu$ H	122-001	Lamp #1847	058-008
L1005,1006	Choke 75 $\mu$ H	122-013	Lamp Festoon	058-032
L1101	AM RF Coil	122-086		MISCELLANEOUS
L1102	AM Osc. Coil	162-073	Plastic Feet	017-156
SWITCHES			Tuning Shaft	021-126
S1	INPUT SELECTOR	146-201	Shipping Carton	045-436
S3,4	Pushbutton Sw. Power Spkrs.	150-029	Push Terminal (Antenna)	074-051
S401,405	Pushbutton Switch Tape	150-028	Push Terminal (Speakers)	074-050
POTENTIOMETERS			Owners Manual	039-042
R501	Volume Control	134-322	Mounting Template	039-043
R502	Loudness-Balance	134-312	Dial Cord Pointer	045-236
R901,902	Equalizer 30 & 150	134-316	Dial Cord Drive	045-235
R903,904	Equalizer 500 & 1500	134-316	Pointer	079-001
R905	Equalizer 10K	134-316	AC Line Cord	170-021
FUSES			FM Dipole Antenna	170-033
F1	Fuse 1A Norm Blo	089-002	Fuse Holder	178-106
F2	Fuse 4A Slo Blo	089-013	Jumper	015-009
F3	Fuse 5A Slo Blo	089-030	Hardware Package	045-239
RELAYS			Shorting Plug	127-021
K301	Relay DPST	087-019		
TRANSFORMERS				
T1	Power Transformer	159-141		
T1101,1102	AM IF Transformer	162-050		



