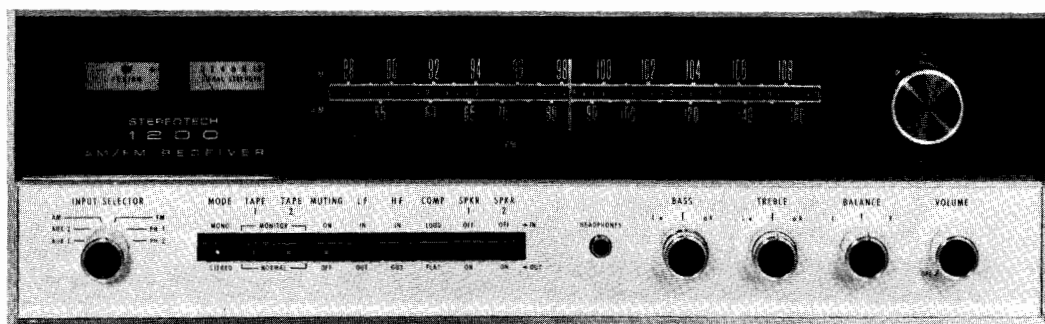


# 1200

STEREOTECH  
AM/FM RECEIVER

## SERVICE INFORMATION



SERIAL NUMBER **BK1001** AND ABOVE

## PERFORMANCE DETAILS

**PREAMPLIFIER AND POWER AMPLIFIER  
POWER OUTPUT**

50 watts minimum sine wave continuous average power output, per channel, both channels operating into 8 ohms load impedance.

30 watts minimum sine wave continuous average power output, per channel, both channels operating into 16 ohms load impedance.

**OUTPUT LOAD IMPEDANCE**

8 ohms or 16 ohms

**RATED POWER BAND**

20 Hz to 20,000 Hz

**TOTAL HARMONIC DISTORTION**

0.2% maximum harmonic distortion at any power level from 250 milliwatts to rated power per channel across 8 ohms or 16 ohms; both channels operating.

**INTERMODULATION DISTORTION**

0.2% if instantaneous peak power output is twice rated power or less per channel with both channels operating for any combination of frequencies 20 Hz to 20,000 Hz

**FREQUENCY RESPONSE**

20 Hz to 20,000  $\pm 1$  dB

**NOISE AND HUM**

Power Amplifier: 95 dB below rated output  
Tape 1 and Tape 2, Aux 1 and Aux 2: 89 dB below rated output  
Phono 1 and Phono 2: 70 dB below 10 mV input

**RATINGS****DAMPING FACTOR**

48 at 8 ohms output  
96 at 16 ohms output

**INPUT SENSITIVITY AND IMPEDANCE**

Power Amplifier: 1.2 volts, 40,000 ohms  
Phono 1 and Phono 2: 3.0 mV, 47,000 ohms  
Tape 1 and Tape 2: 350 mV, 100,000 ohms  
Aux 1 and Aux 2: 350 mV, 100,000 ohms

**TAPE OUTPUT**

Preamp: 12 volts with rated input  
Tuner: 1.2 volts at 100% FM modulation  
Tape: 350 mV with rated input from low level inputs  
Phono: 1.2 volts with 10 mV input at 1000 Hz

**TONE CONTROLS:** Bass  $\pm 16$  dB at 20 Hz. Treble  $\pm 16$  dB at 20,000 Hz.

**L.F. FILTER:** Active filter with 12 dB per octave roll off below 50 Hz, down 18 dB at 20 Hz.

**H.F. FILTER:** Active filter with 12 dB per octave roll off above 7000 Hz, down 18 dB at 20,000 Hz.

**AM TUNER**

**TUNING RANGE:** 535 to 1605 kHz.

**SENSITIVITY:** 75  $\mu$ V IHF (external ant.)

**SIGNAL TO NOISE RATIO:** 50 dB minimum (IHF,) 60 dB at 100% modulation.

**HARMONIC DISTORTION:** Less than 1% (IHF.)

**IMAGE REJECTION:** Greater than 60 dB 535 to 1605 kHz.

**FM TUNER**

**TUNING RANGE:** 87.5 to 108.5 MHz.

**USEABLE SENSITIVITY:** 2.5 microvolts at 100% modulation ( $\pm 75$  kHz deviation) for 3% total noise and harmonic distortion (IHF).

**SIGNAL TO NOISE RATIO:** 70 dB below 100% modulation.

**HARMONIC DISTORTION:** Less than 0.5% mono and less than 0.7% stereo.

**AUDIO FREQUENCY RESPONSE:**  $\pm 1$  dB 50 Hz to 10,000 Hz,  $\pm 2$  dB 20 Hz to 15,000 Hz.

**SELECTIVITY:** 55 dB alternate channel minimum (IHF)

**SPURIOUS REJECTION:** 90 dB minimum (IHF)

**IMAGE REJECTION:** 70 dB minimum

**STEREO SEPARATION:** 35 dB minimum at 1,000 Hz.

**SCA FILTER:** 60 dB minimum

**GENERAL INFORMATION**

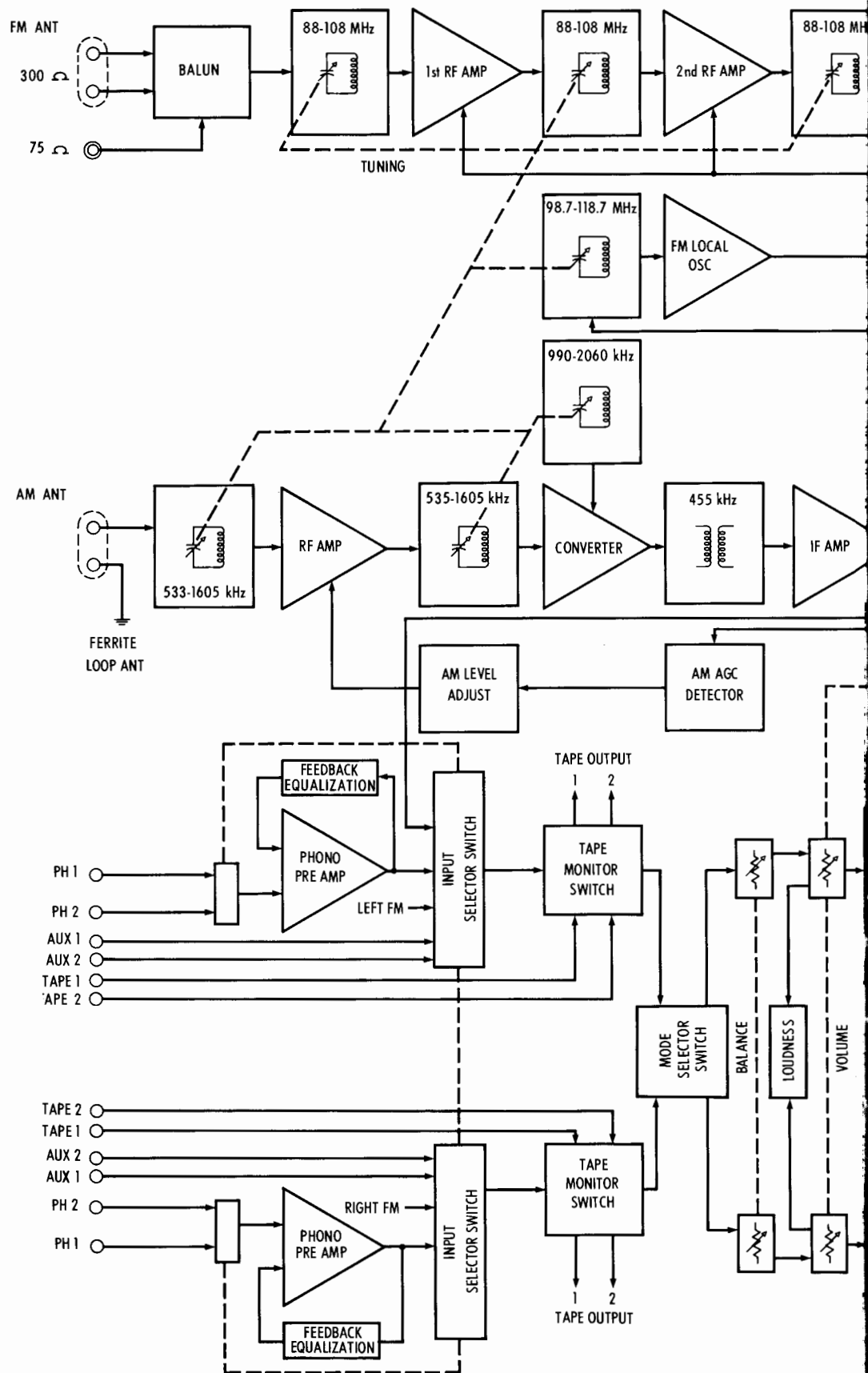
**POWER REQUIREMENTS:** 120 volts 50-60 Hz 50 watts at zero input, 320 watts rated output.

**SEMICONDUCTOR COMPLEMENT:** 68 Transistors; 4 FETs, 5 ICs, 39 Diodes.

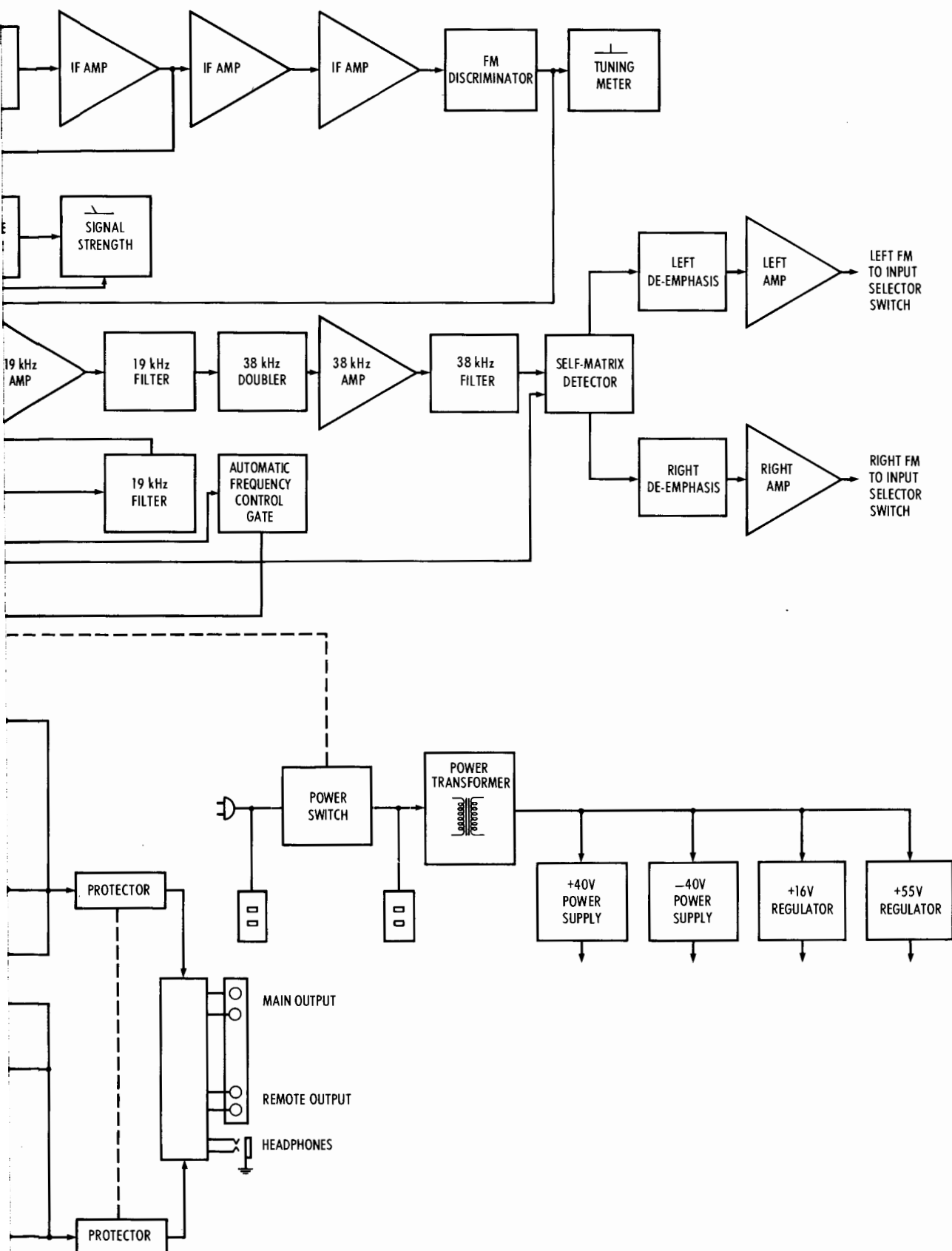
**MECHANICAL INFORMATION**

**SIZE:** Front panel measures 17-1/2 inches wide (444 mm), by 5-5/32 inches high (131 mm). Chassis measures 16-15/16 inches wide (430 mm), by 4-5/8 inches high (117 mm), by 15-7/8 inches deep (403 mm) plus antenna. Knob clearance required is 1-1/2 inches (31 mm) in front of the mounting panel.

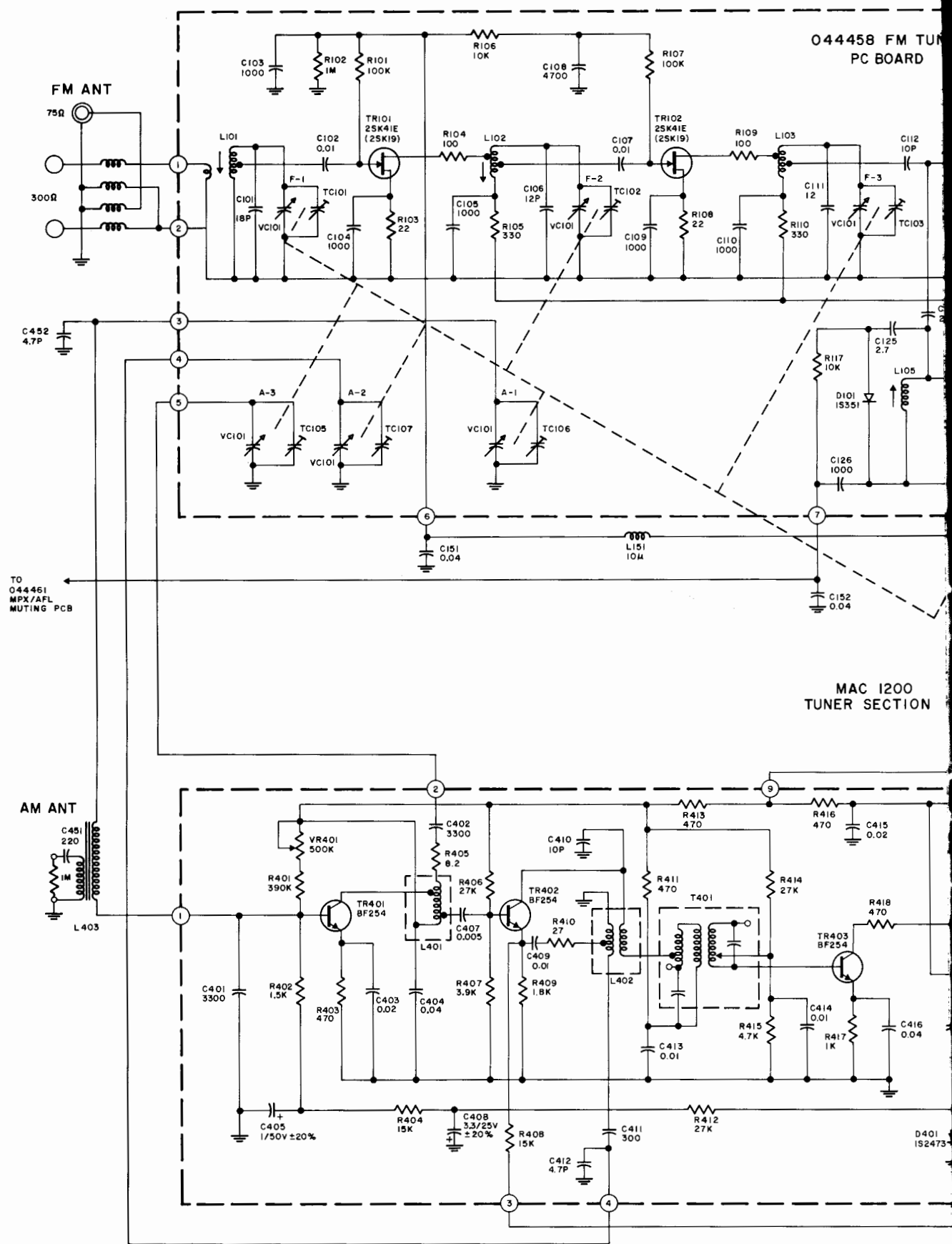
**WEIGHT:** 33 pounds (14.97 kg) net, 39 pounds (17.69 kg) in shipping cartons.



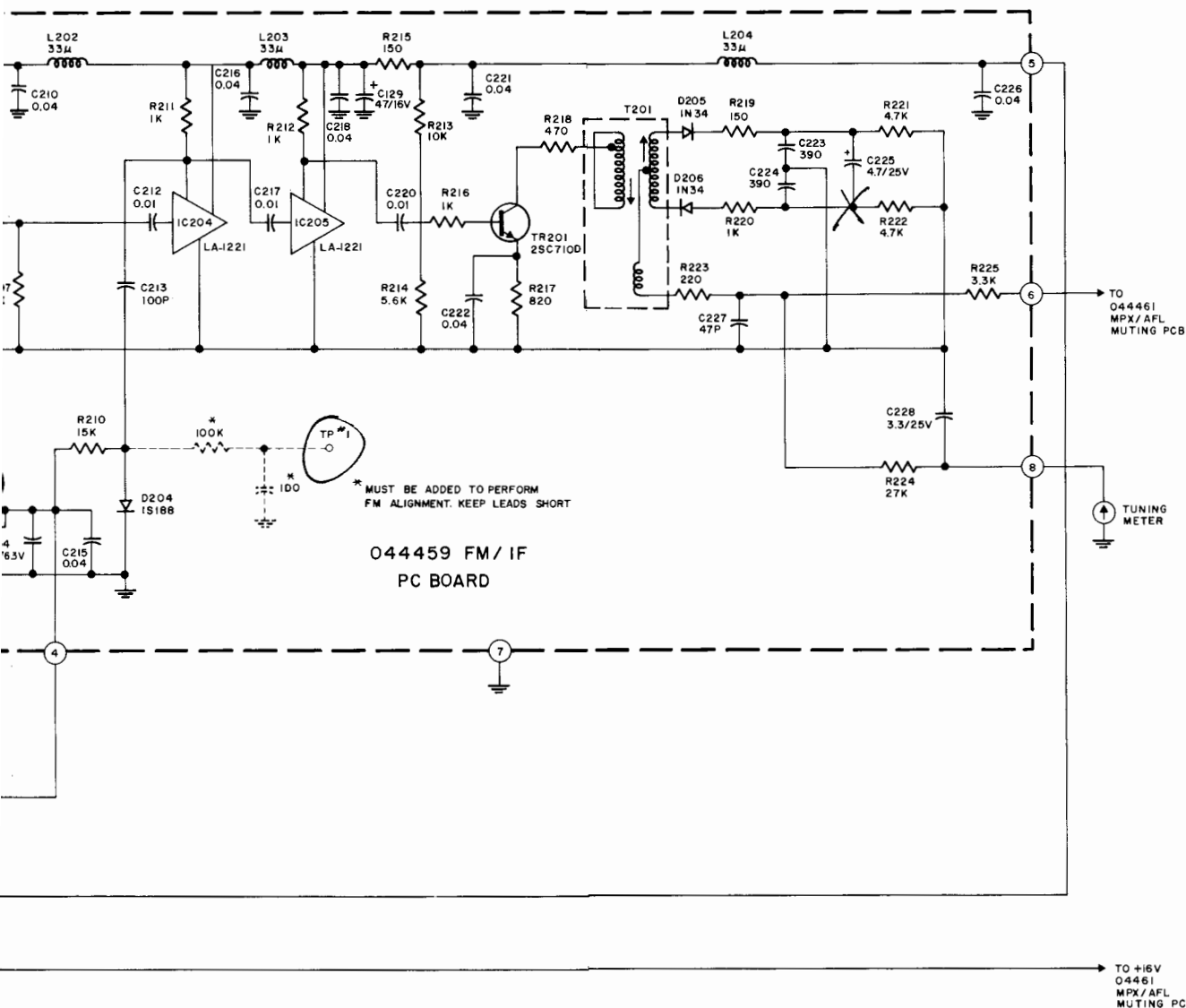




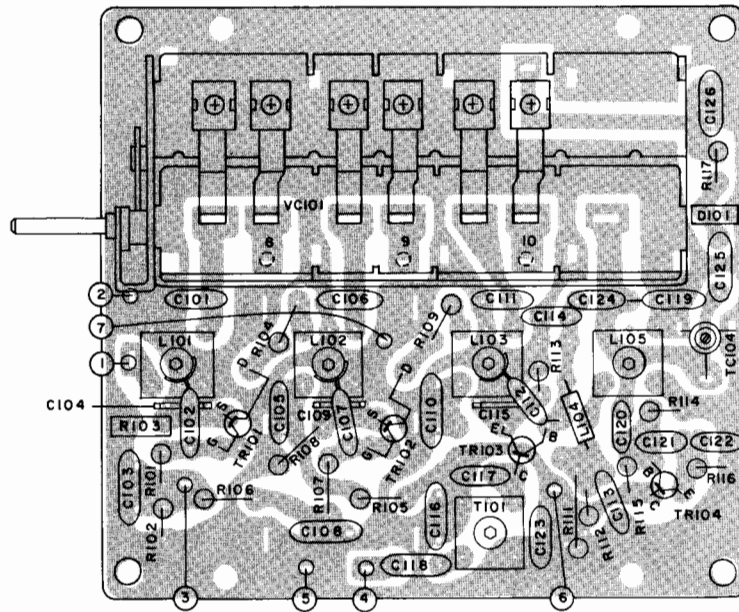
BLOCK DIAGRAM



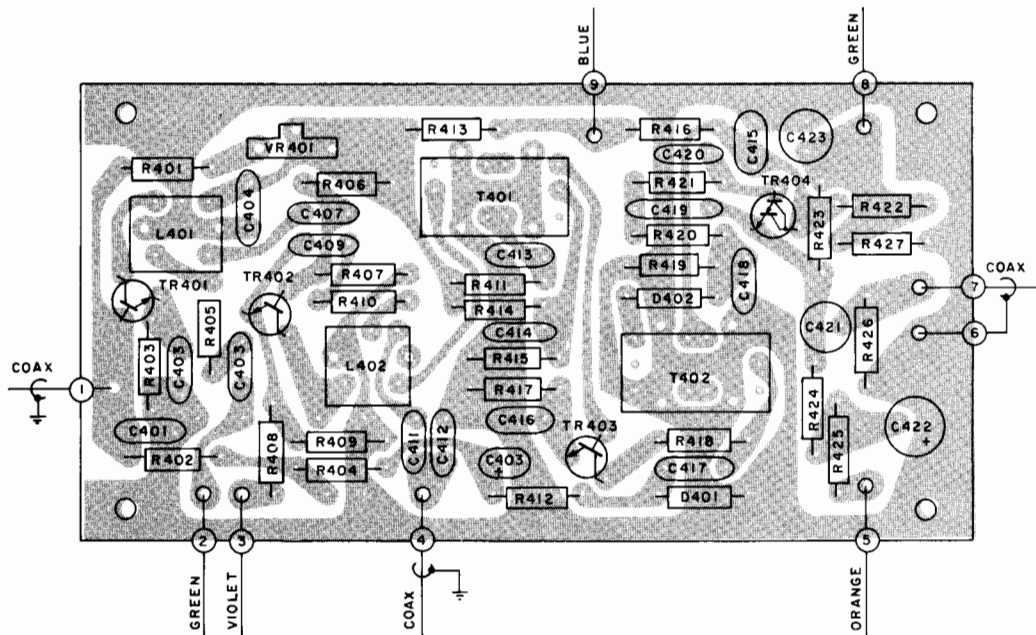




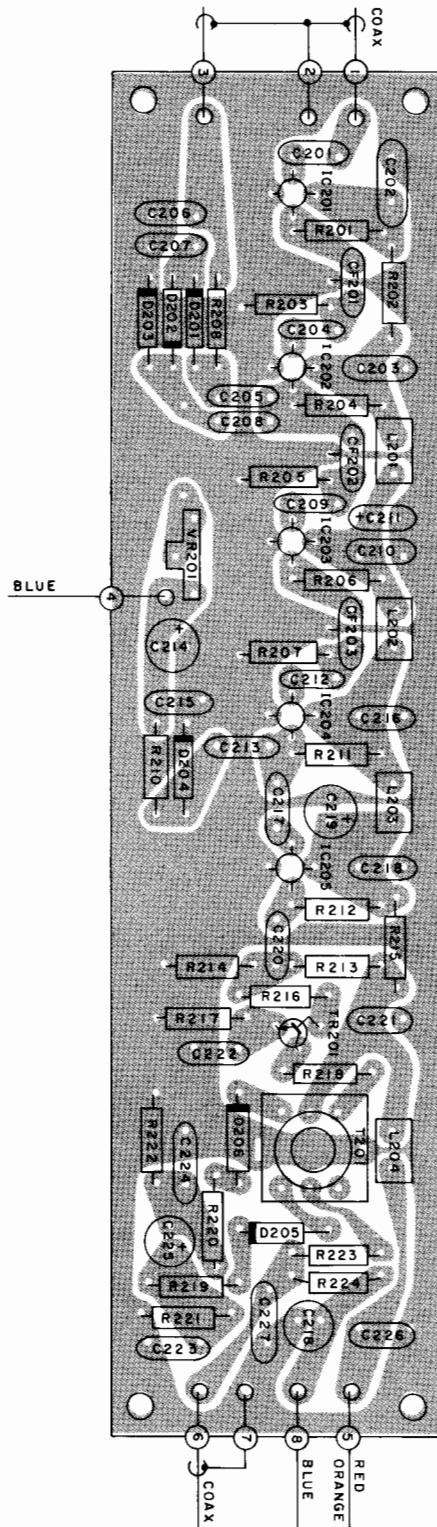




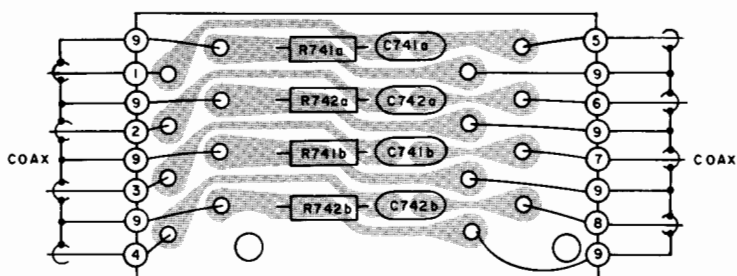
AM PC BOARD 044-460



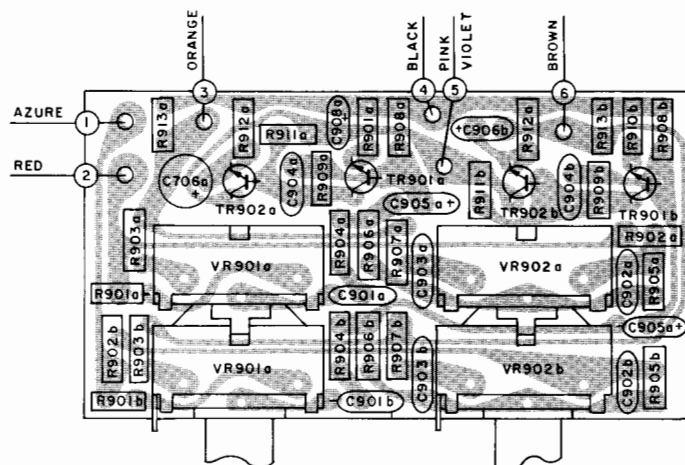
# FM IF PC BOARD 044 -459



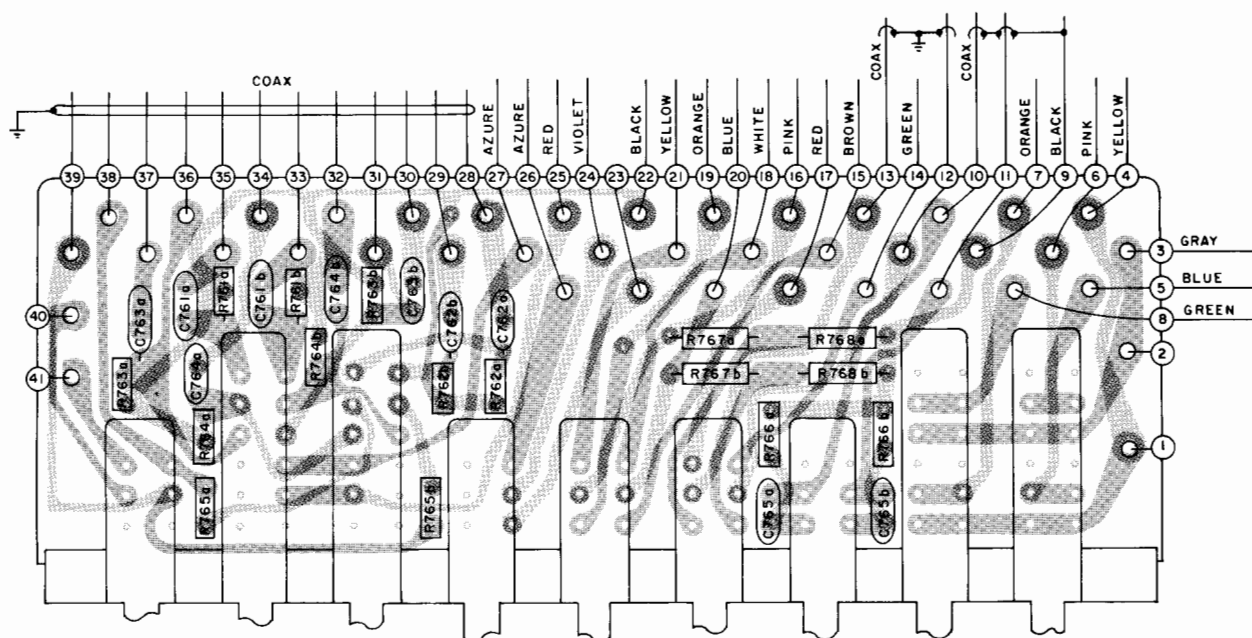
INPUT PC BOARD 044-467



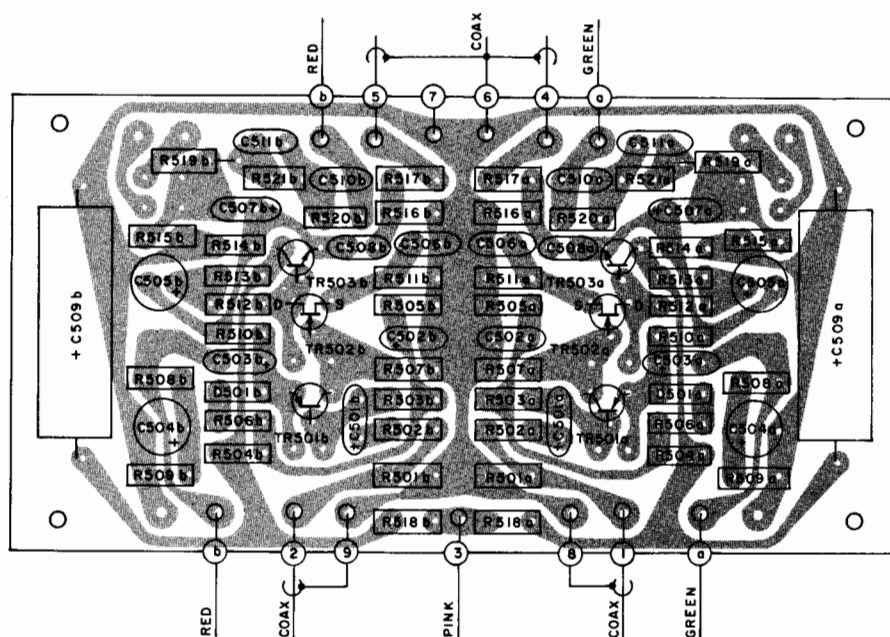
TONE CONTROL PC BOARD 044-476



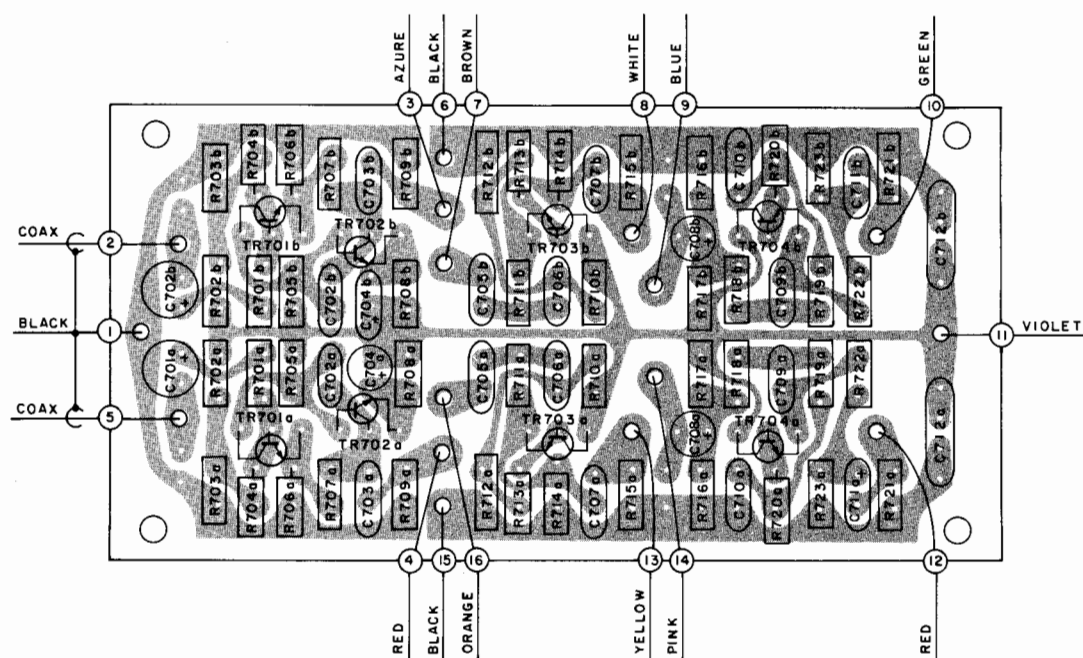
MODE SELECTOR PC BOARD 044-465



PREAMP PC BOARD 044-462

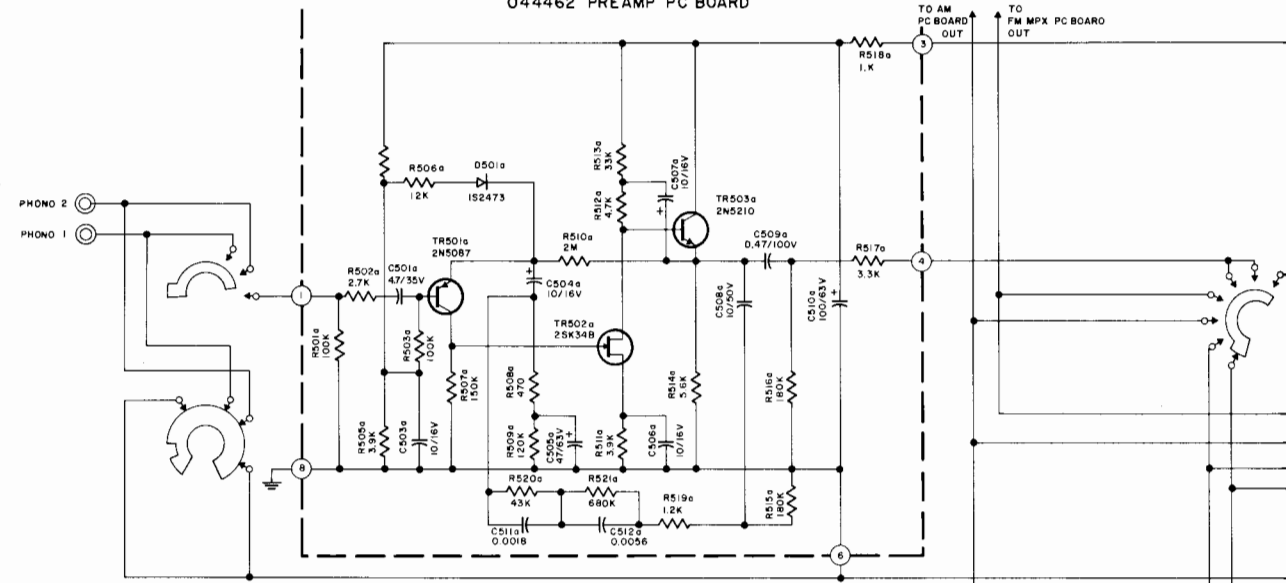


FILTER AMP PC BOARD 044-466



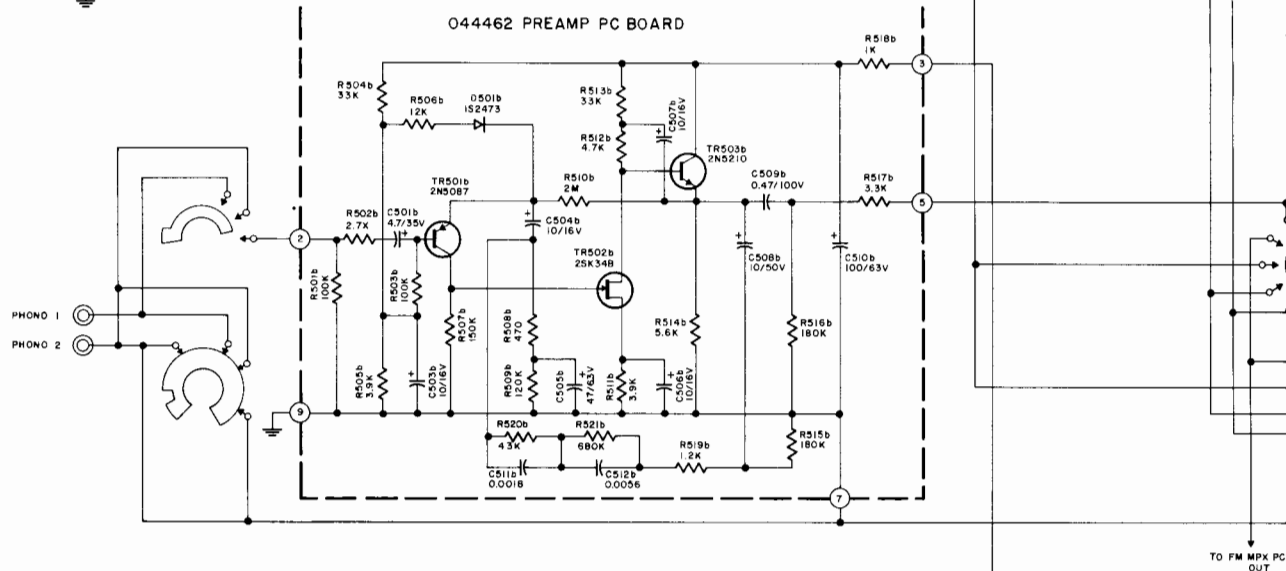
# 044462 PREAMP PC BOARD

LEFT CHANNEL INPUT

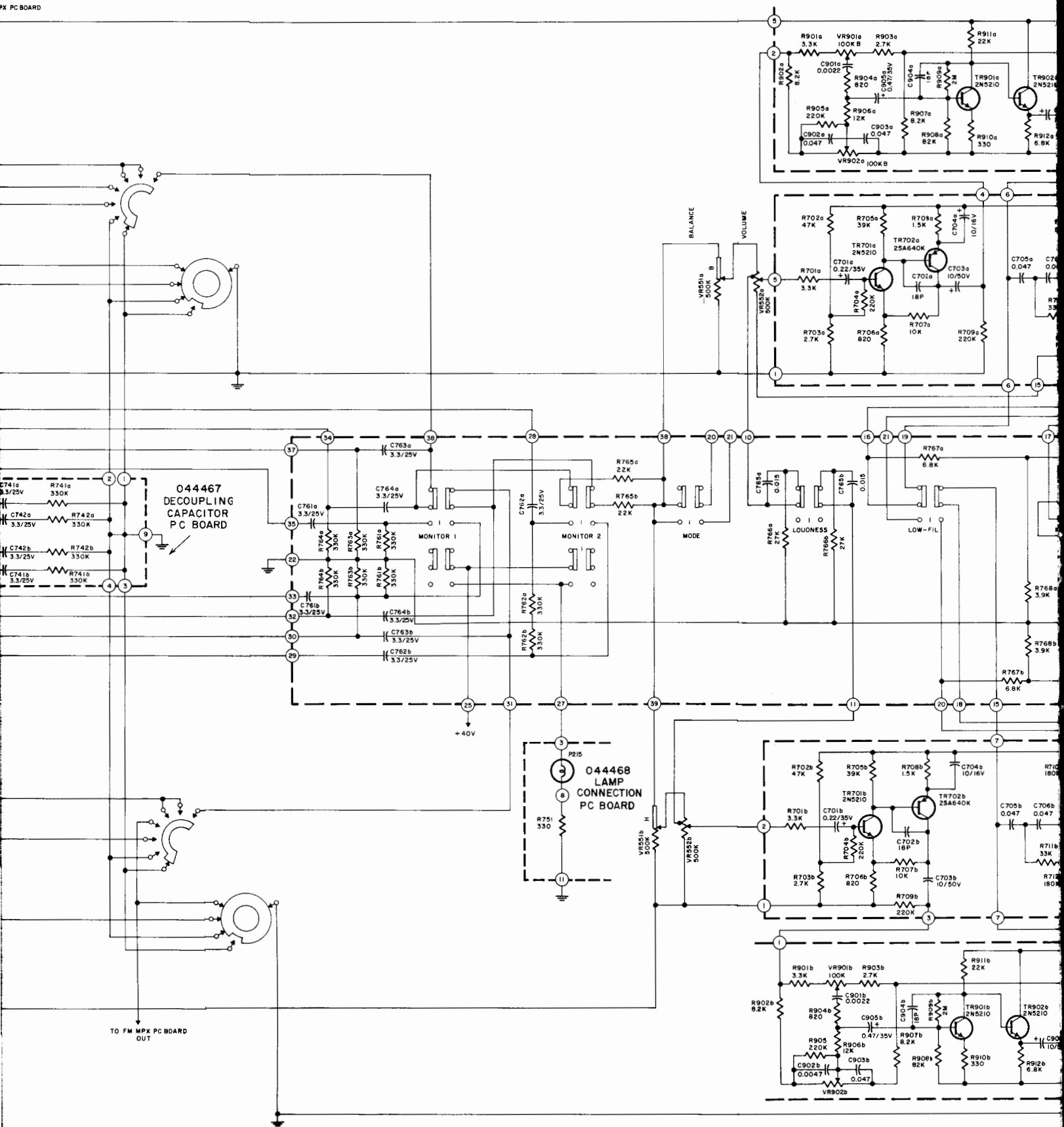


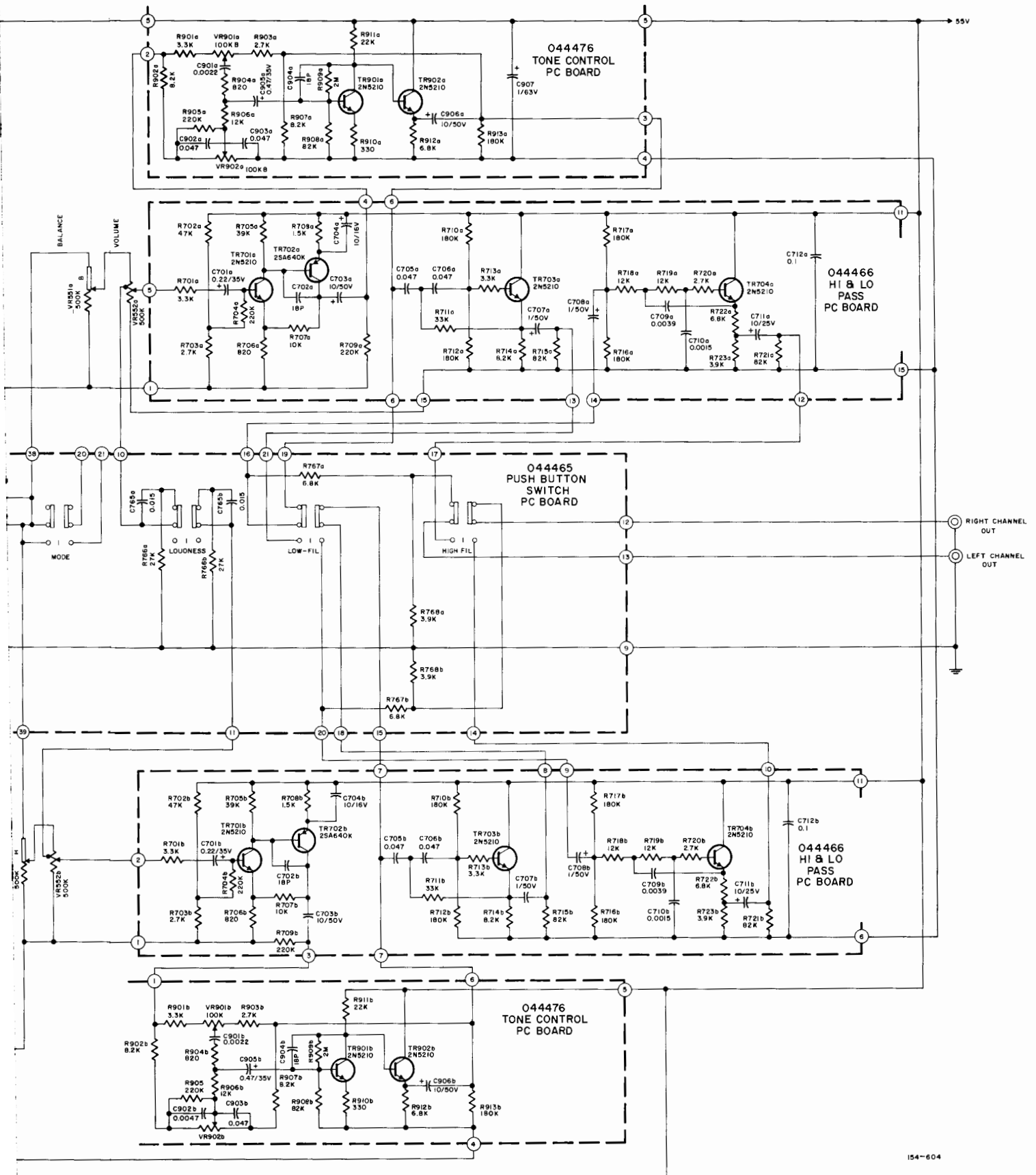
TAPE IN 2  
TAPE OUT 2  
TAPE OUT 1  
TAPE IN 1  
AUX 1  
AUX 2  
AUX 2  
AUX 1  
TAPE IN 1  
TAPE OUT 2  
TAPE OUT 1  
TAPE IN 2

RIGHT CHANNEL INPUT

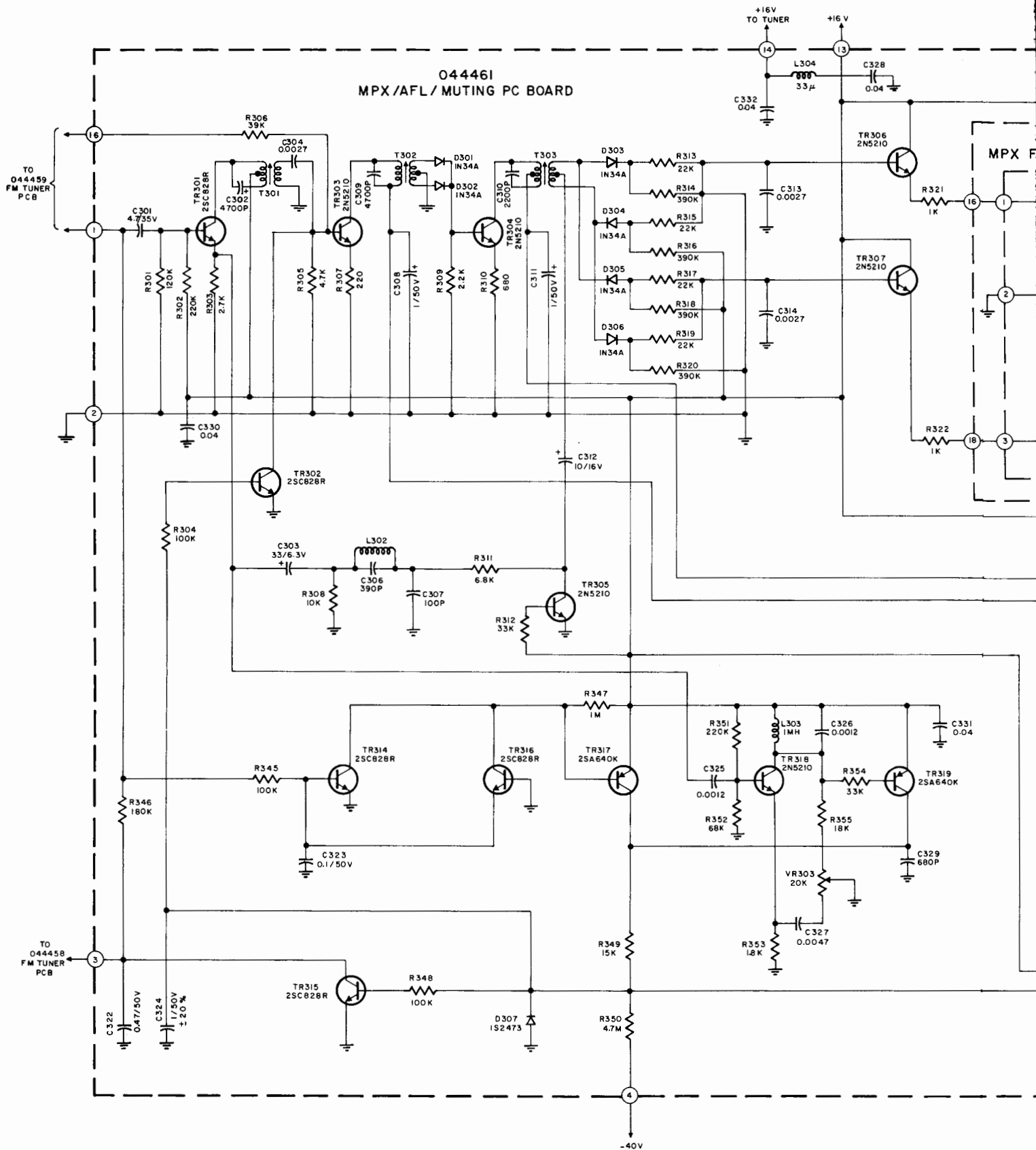


TO FM MPX PC BOARD OUT



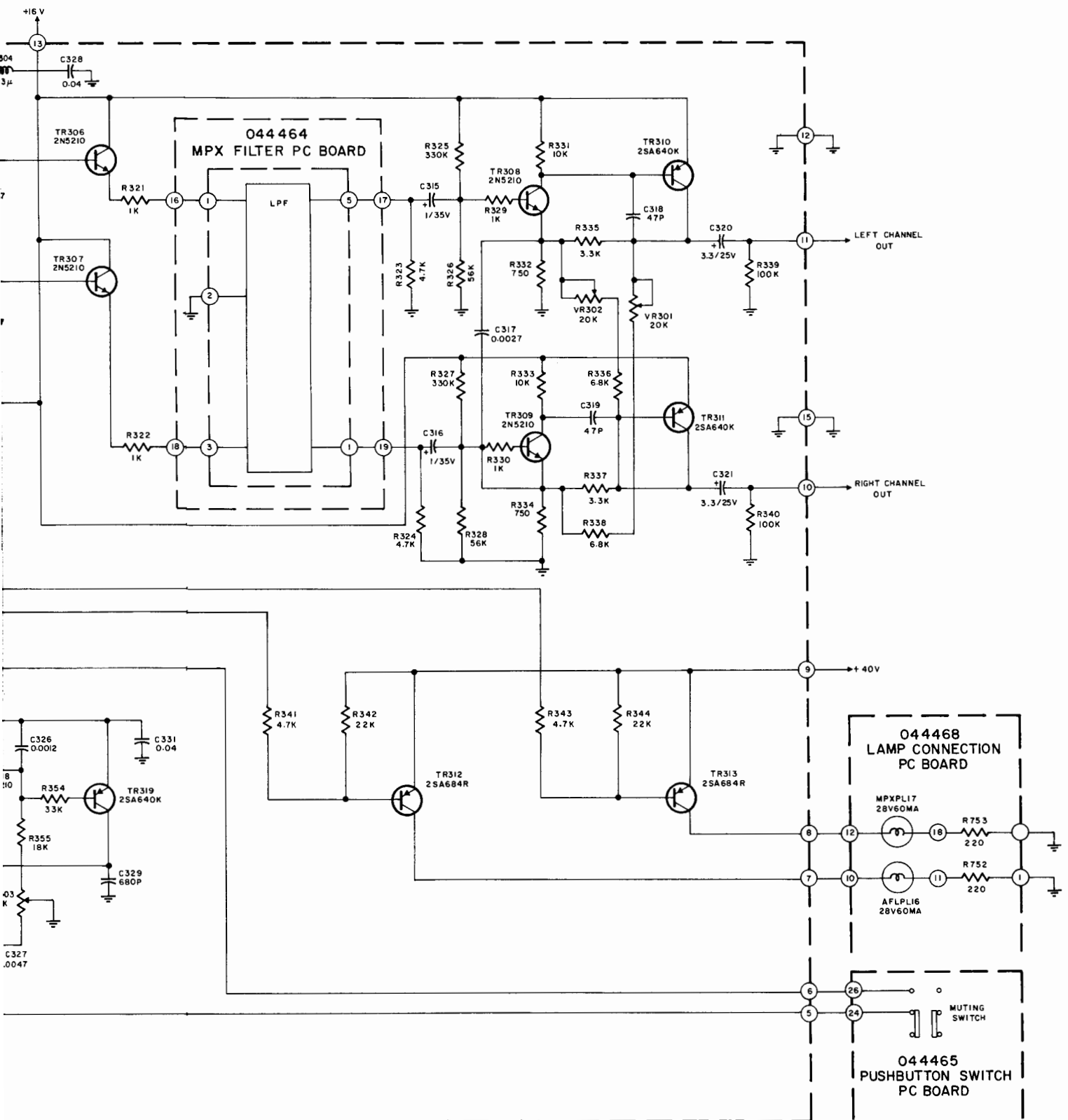


# 044461 MPX/AFL/MUTING PC BOARD

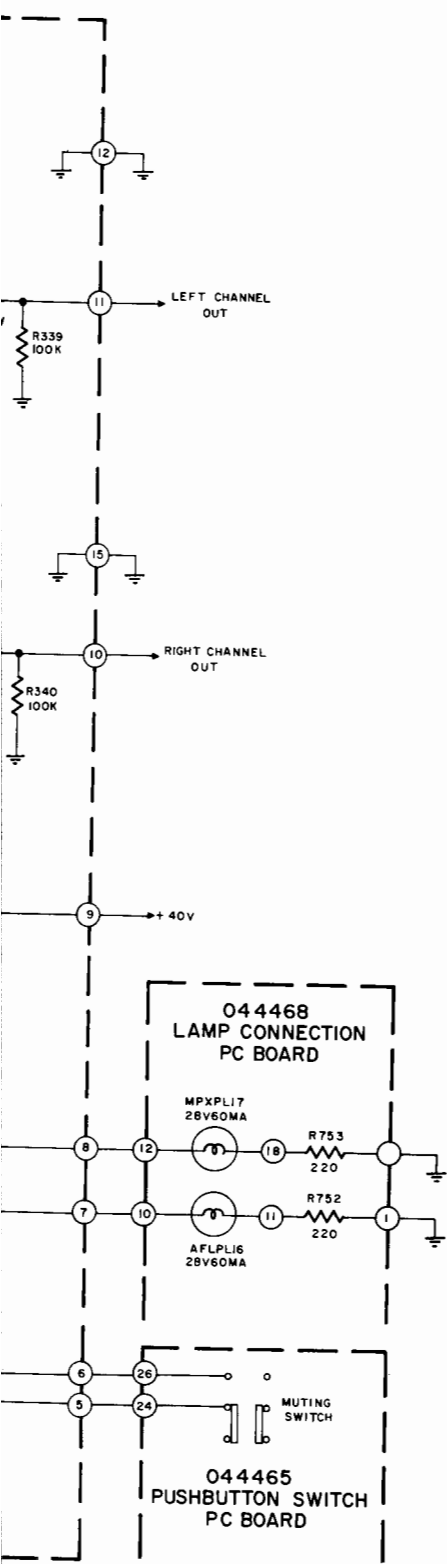


MULTIPLEX

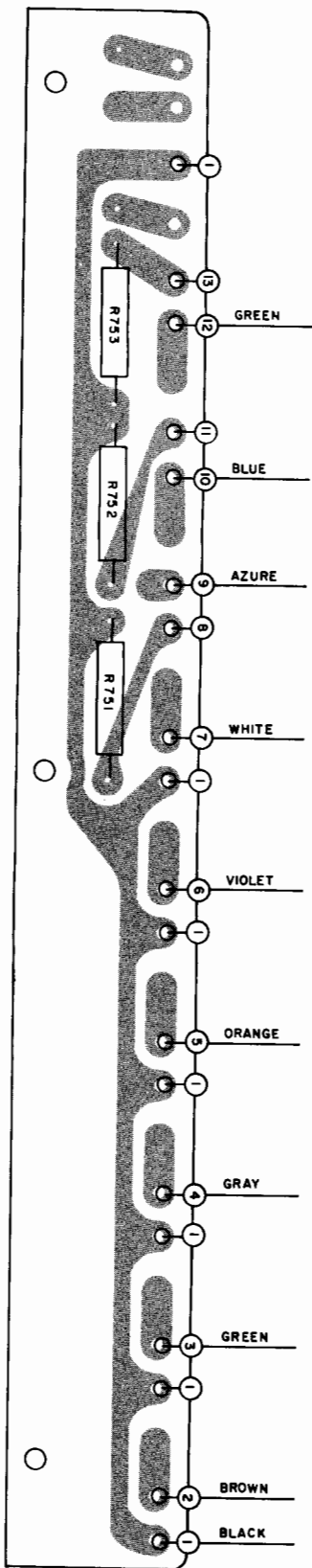




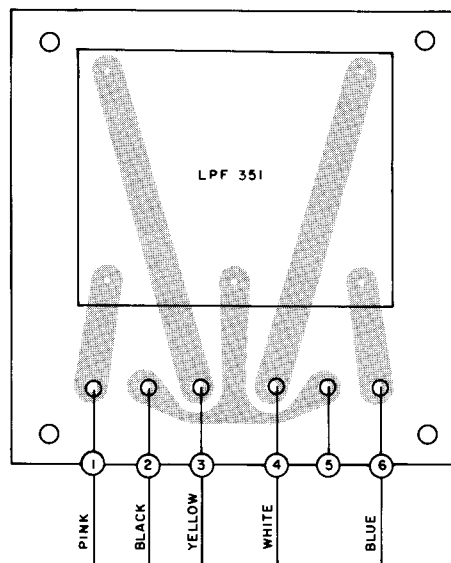
PL PC BOARD 044-468



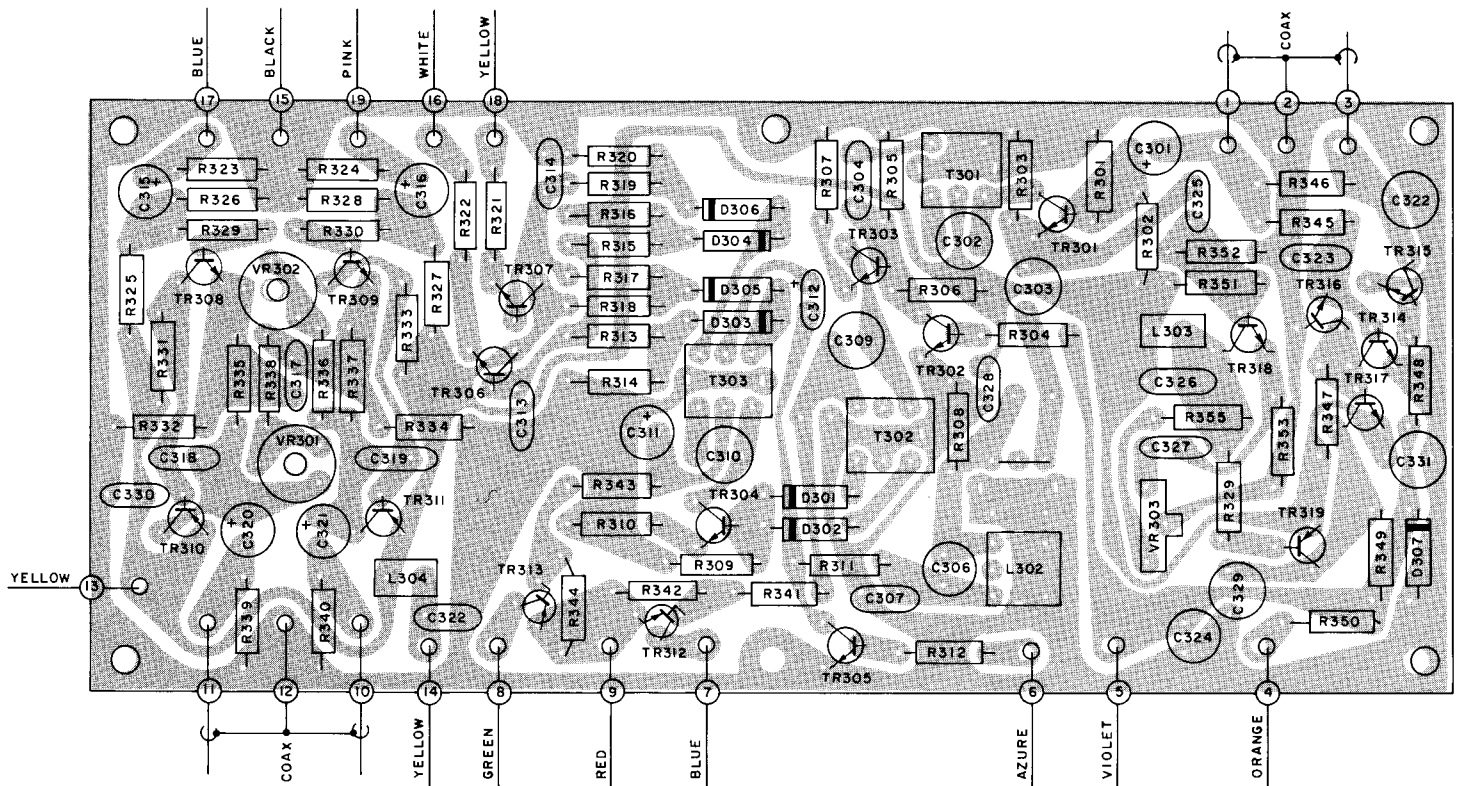
134-605



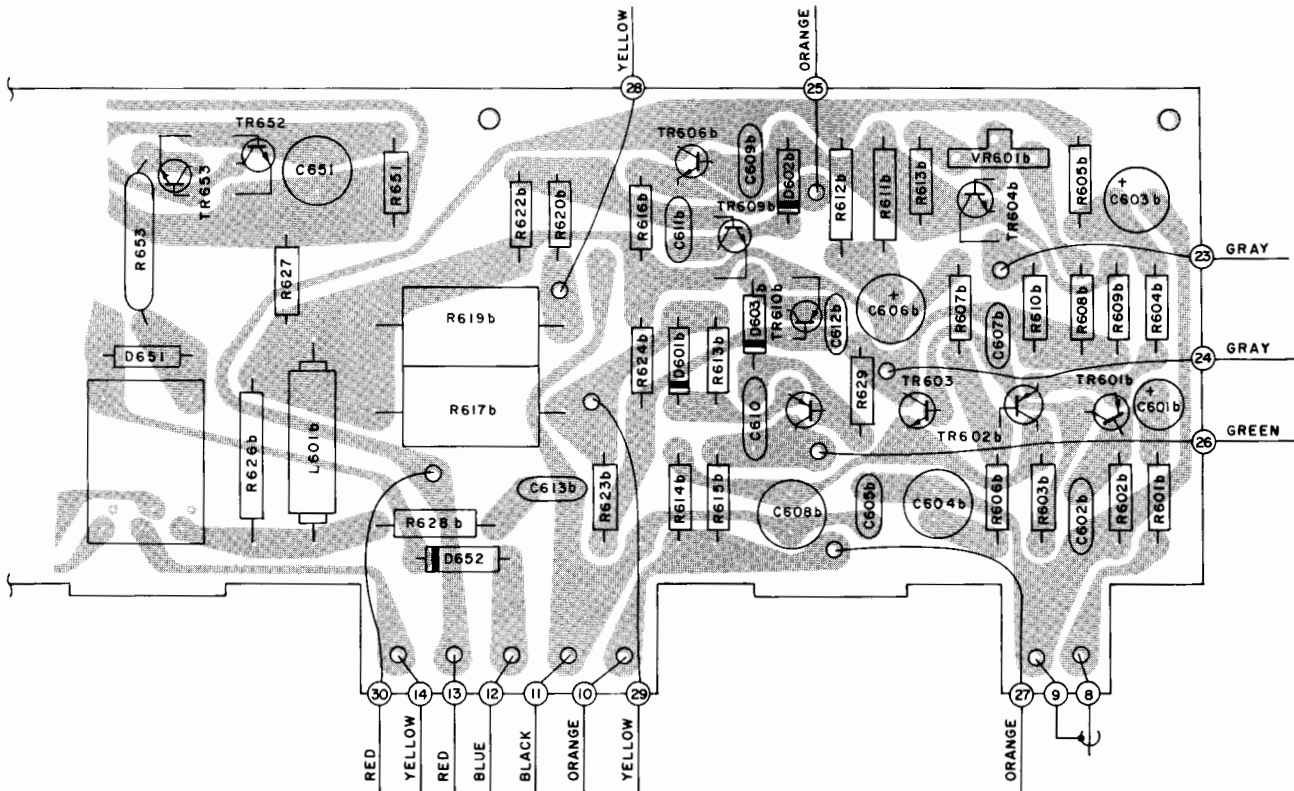
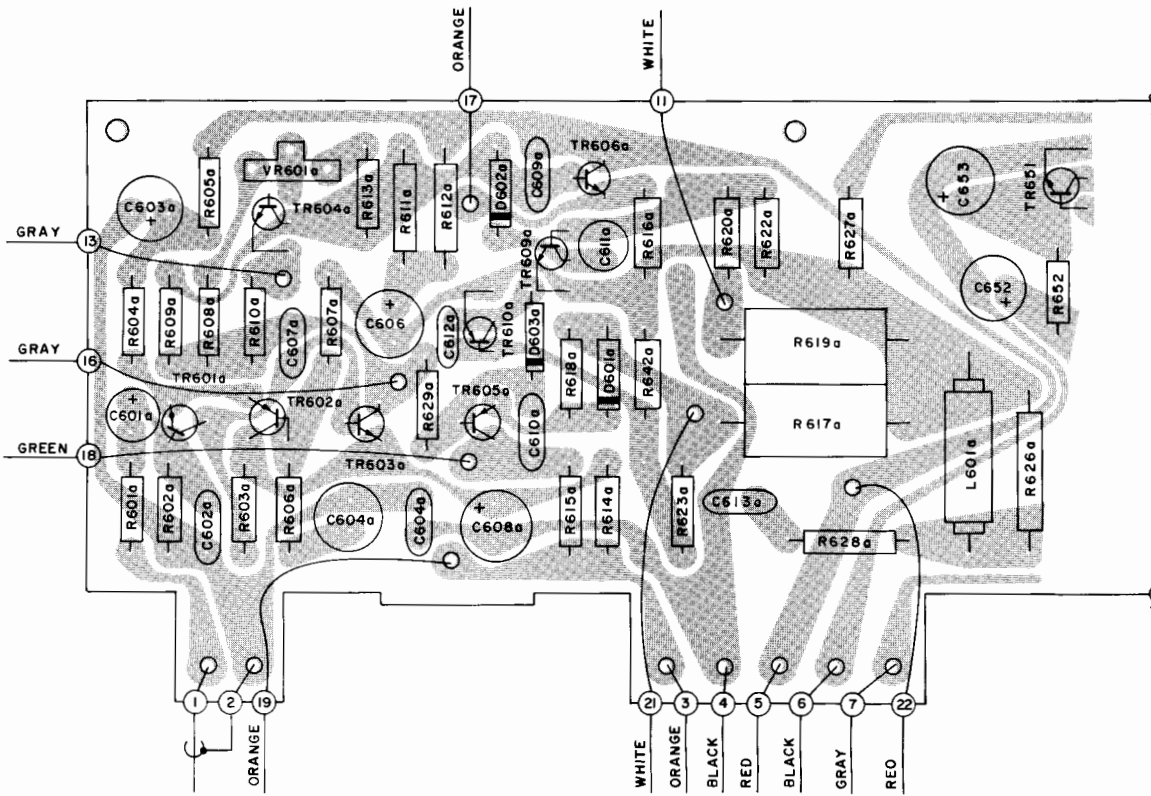
MPX FILTER PC BOARD 044-464



MPX PC BOARD 044-461



## POWER OUTPUT PC BOARD 044-463



The schematic diagram illustrates the internal circuitry of a PC BOARD, divided into two symmetrical channels: LEFT CHANNEL INPUT and RIGHT CHANNEL INPUT. Each channel features a multi-stage amplifier design.

**Left Channel Input:**

- Input Stage:** The input signal enters through a 10K resistor (R601a) and a 4.7/35V capacitor (C601a) to the base of a 2SA640K transistor (TR601a).
- First Amplifier Stage:** The emitter of TR601a is connected to a 33K resistor (R602a) and a 120P capacitor (C602a). The collector is connected to a 15K resistor (R604a) and a 47/50V capacitor (C603a).
- Second Amplifier Stage:** The signal is coupled to the base of a 2SA640K transistor (TR602a) through a 3.9K resistor (R603a). The emitter is connected to a 1.2K resistor (R606b) and a 33/16V capacitor (C604a). The collector is connected to a 27K resistor (R607a) and a 47/50V capacitor (C606a).
- Third Amplifier Stage:** The signal is coupled to the base of a 2SC1124-2 transistor (TR603a) through a 2.7K resistor (R607b). The emitter is connected to a 1K resistor (R608a) and a 100/50V capacitor (C608a). The collector is connected to a 5.6K resistor (R613a) and a 2.2K resistor (R612a).
- Output Stage:** The signal is coupled to the base of a 2SC828R transistor (TR604a) through a 1K resistor (R609a). The emitter is connected to a 100 resistor (R615a) and a 220P capacitor (C610a). The collector is connected to a 100 resistor (R616a) and a 120P capacitor (C609a).
- Final Output Stage:** The signal is coupled to the base of a 2SD323L transistor (TR605a) through a 1.2K resistor (R629a). The emitter is connected to a 100 resistor (R615a) and a 220P capacitor (C610a). The collector is connected to a 100 resistor (R616a) and a 120P capacitor (C609a).
- Diode Network:** The output of the final stage is connected to a diode network consisting of D602a (IS2473), D604a (VO6C), D605a (VO6C), and D603a (IS2473).

**Right Channel Input:**

- The right channel input is a mirror image of the left channel, with components labeled with 'b' suffixes (e.g., R601b, C601b, TR601b, etc.).

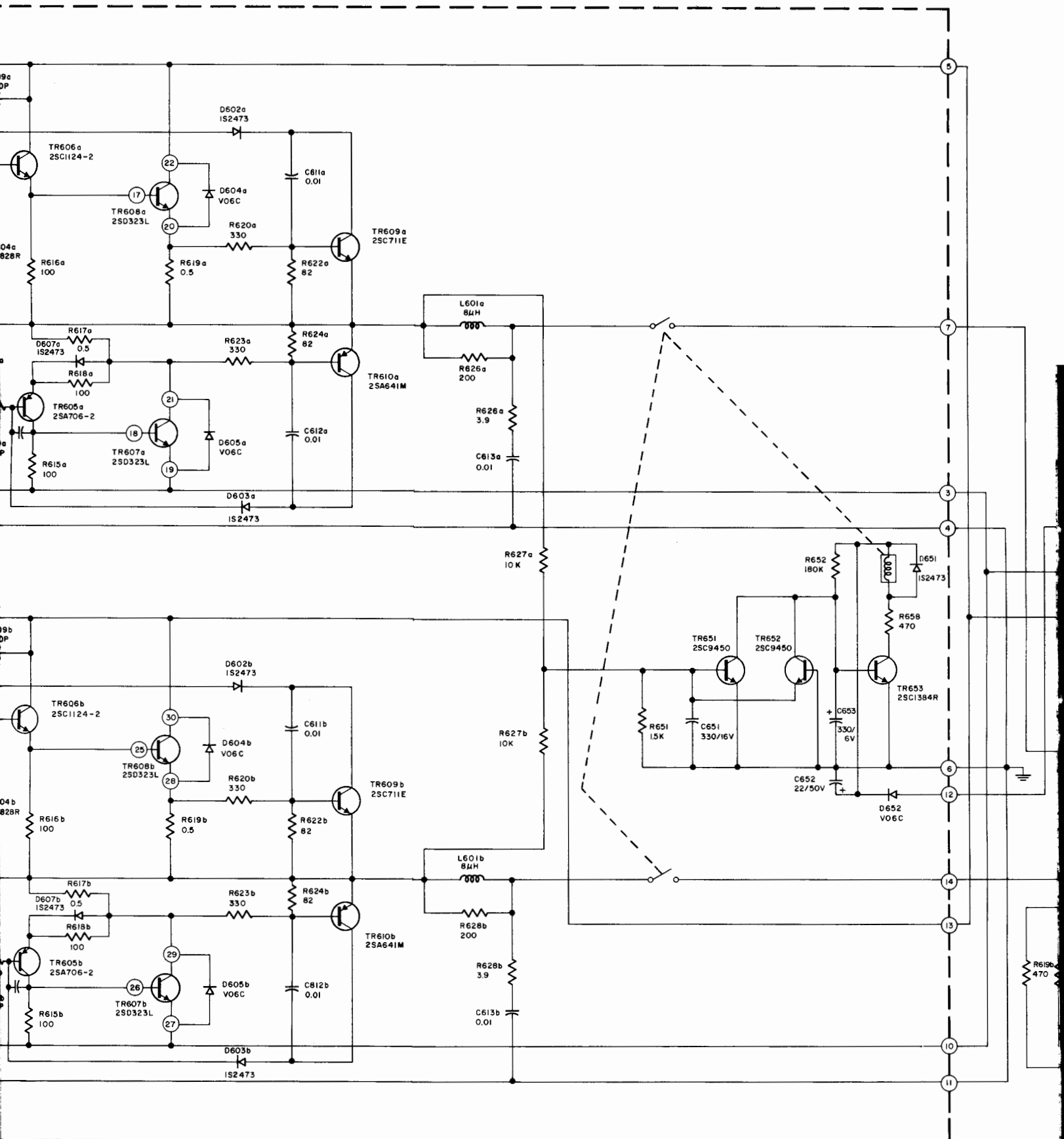
**Common Components:**

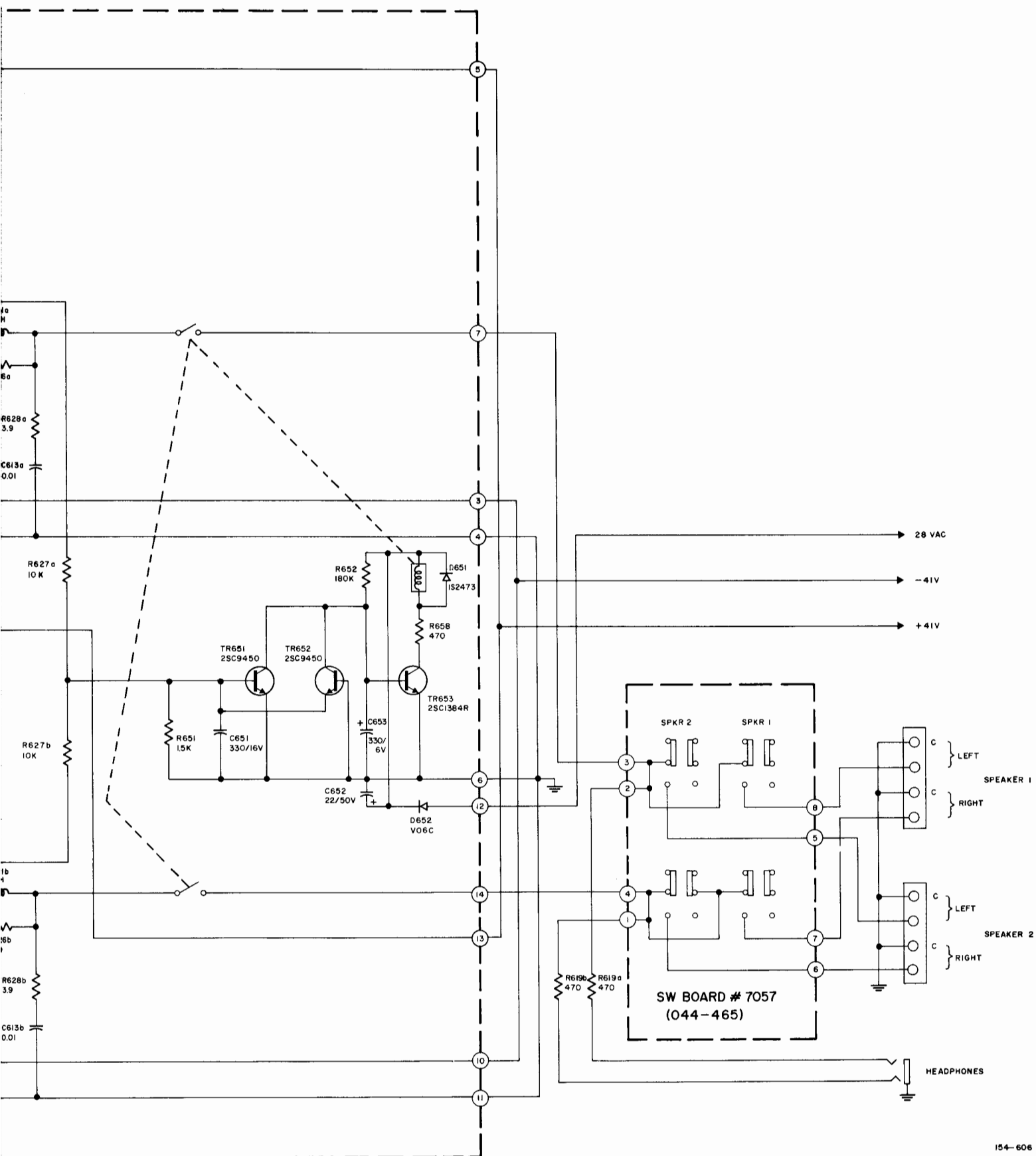
- Resistors:** R601a/b (10K), R602a/b (33K), R603a/b (3.9K), R604a/b (15K), R605a/b (4.7K), R606a/b (1.2K), R607a/b (27K), R608a/b (1K), R609a/b (820), R610a/b (82), R611a/b (100), R612a/b (2.2K), R613a/b (5.6K), R614a/b (100), R615a/b (100), R616a/b (100), R617a/b (0.5), R618a/b (100), R619a/b (0.5), R620a/b (330), R621a/b (82), R622a/b (82), R623a/b (330), R624a/b (82).
- Capacitors:** C601a/b (4.7/35V), C602a/b (120P), C603a/b (47/50V), C604a/b (33/16V), C605a/b (0.01), C606a/b (47/50V), C607a/b (10P), C608a/b (100/50V), C609a/b (120P), C610a/b (220P).
- Transistors:** TR601a/b (2SA640K), TR602a/b (2SA640K), TR603a/b (2SC1124-2), TR604a/b (2SC828R), TR605a/b (2SA706-2), TR606a/b (2SC1124-2), TR607a/b (2SD323L), TR608a/b (2SD323L).
- Diodes:** D602a/b (IS2473), D603a/b (IS2473), D604a/b (VO6C), D605a/b (VO6C).

LEFT CHANNEL

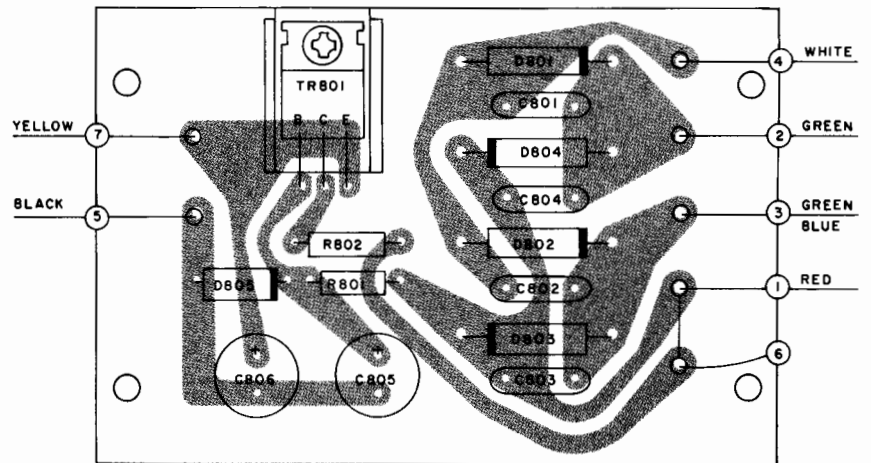
RIGHT CHANNEL

RIGHT CHANNEL

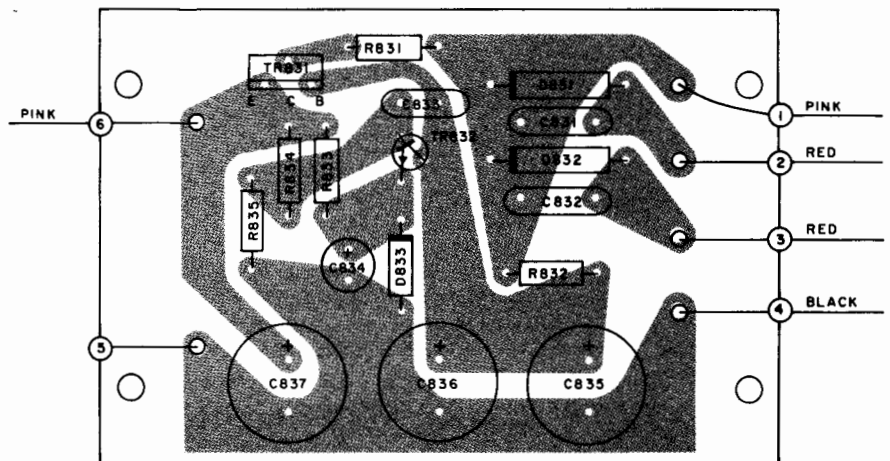




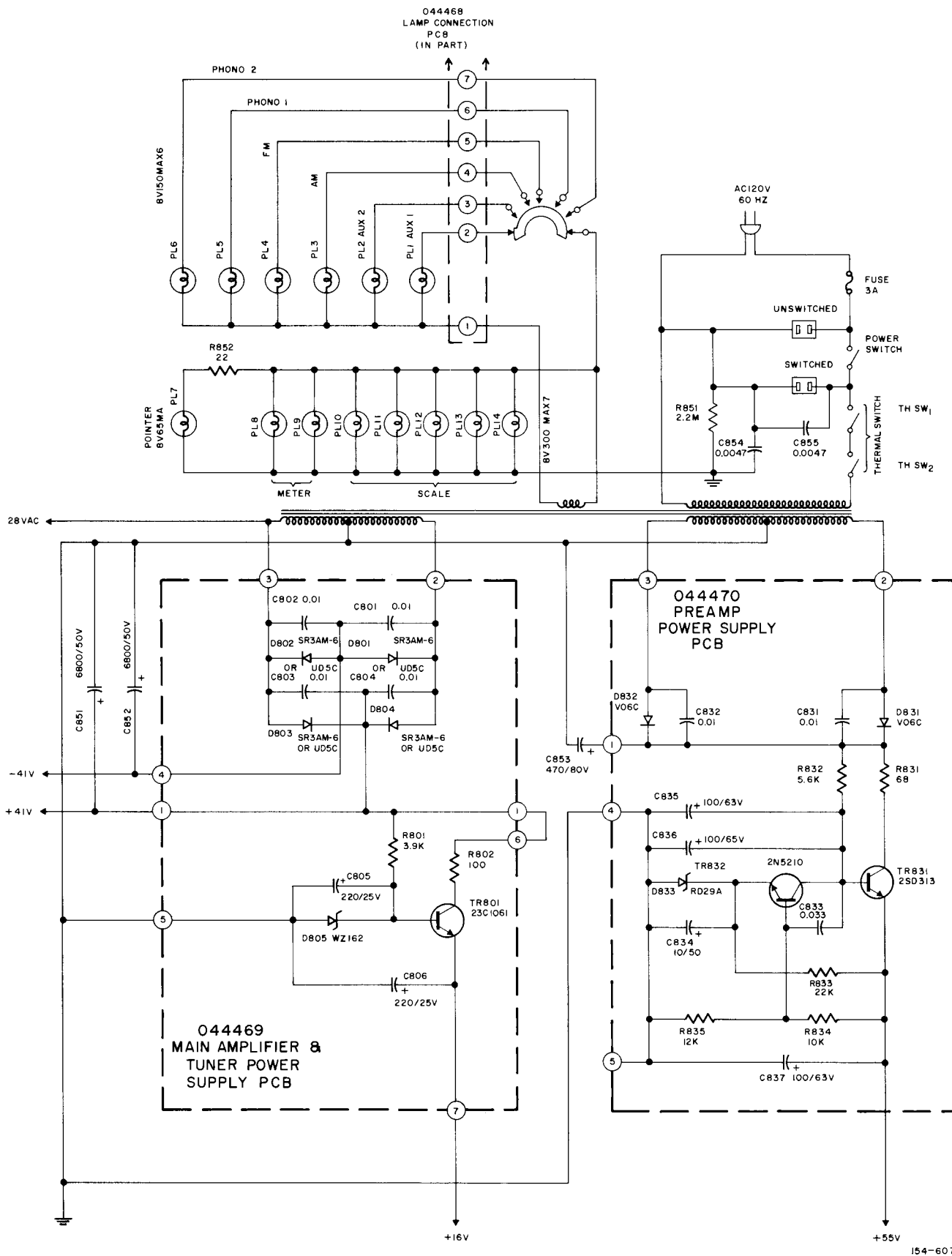
# POWER SUPPLY PC BOARD 044-469



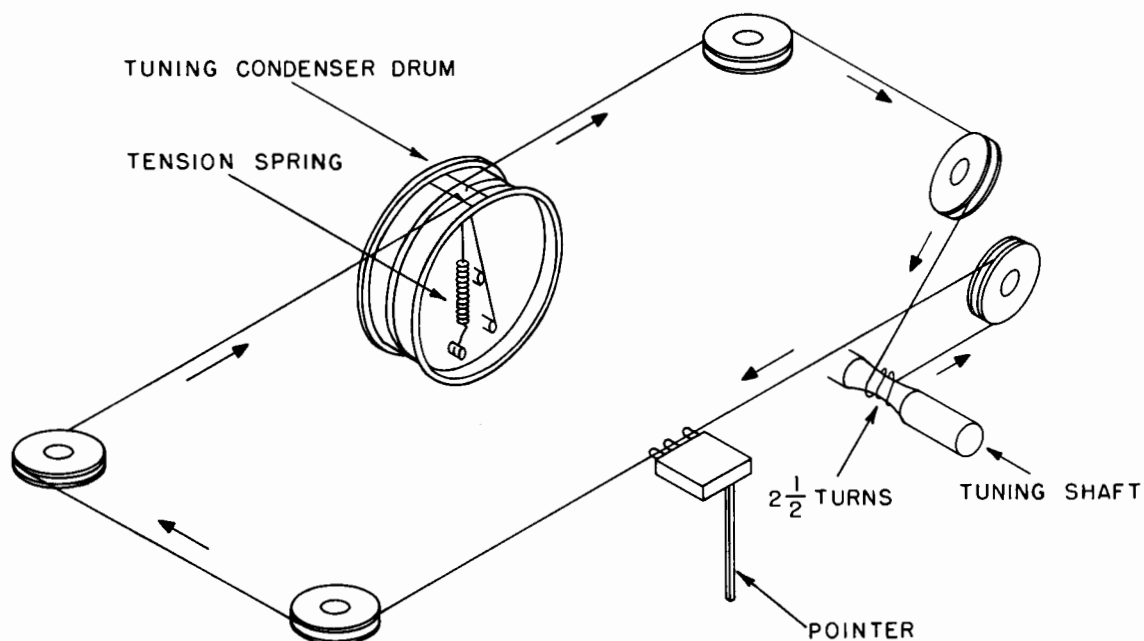
# PREAMP POWER SUPPLY PC BOARD 044-470



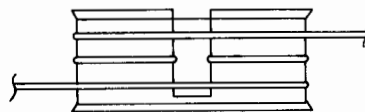




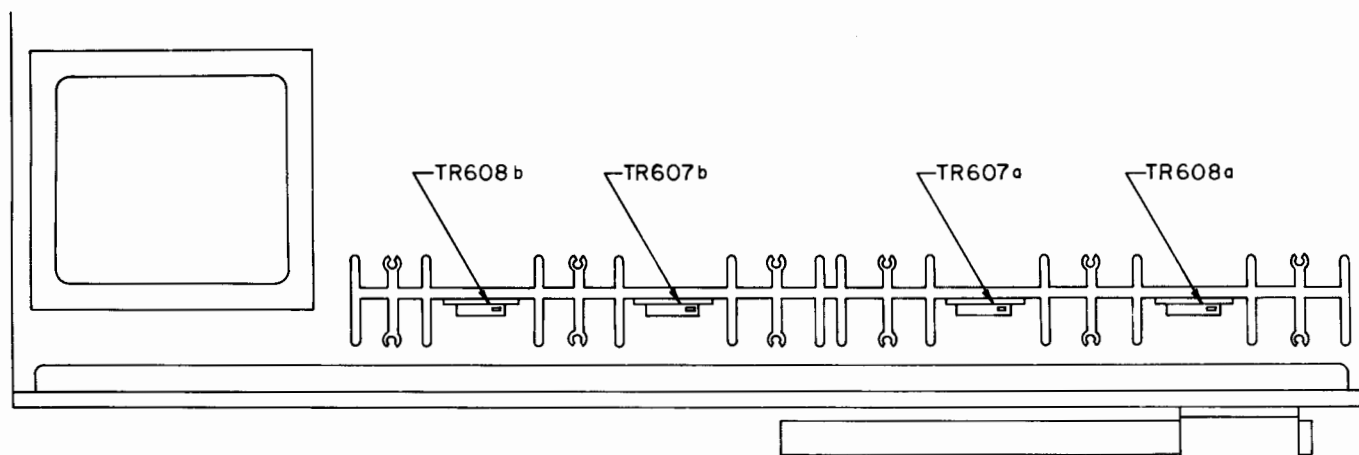
## POWER SUPPLY



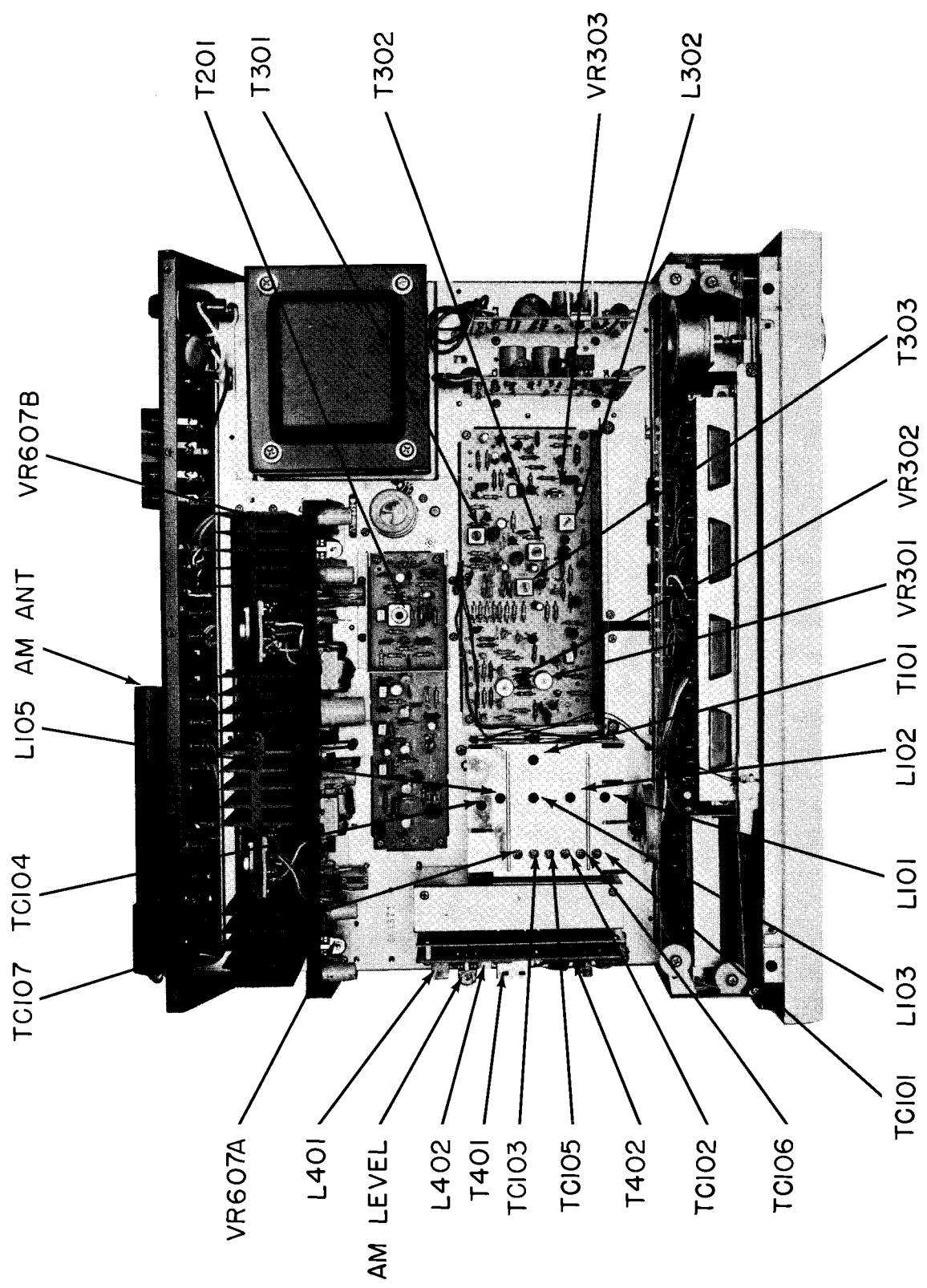
TUNING CONDENSER DRUM



## DIAL STRINGING



LOCATION OF TRANSISTORS NOT ON PC BOARD



## STEREOTECH 1200 ALIGNMENT INSTRUCTIONS

## TEST EQUIPMENT REQUIRED

All Stereotech receivers are carefully aligned and tested at the factory using the finest available test equipment. All Stereotech receivers will meet their published specifications when shipped from the factory.

After extensive operation, or servicing, it may be desirable to realign the receiver circuits for best performance. The charts below give complete information on the circuit realignment procedure for the Stereotech 1200.

The test equipment listed (or its equivalent) is necessary to properly align a 1200. The accuracy of the alignment will be directly related to the accuracy and calibration of the test equipment used.

If the necessary test equipment is not available, alignment should not be attempted.

Alignment should be done in the following order: AM-FM-MPX.

1. FM Signal Generator (Measurement 188 or Sound Technology 1000A).
2. VTVM (RCA WV96C).
3. Multiplex Generator (Radiometer SMG1) or Sound Technology 1000A.
4. Oscilloscope (Hewlett-Packard 120B or equivalent).
5. Harmonic Distortion Analyzer (Hewlett-Packard 333A or equivalent).

**WARNING** The center frequency of the IF ceramic filters vary from 10.64MHz to 10.76MHz. A 10.7MHz crystal controlled generator should not be used for IF alignment.

## AM ALIGNMENT

STEP	TUNER DIAL SETTING	SIGNAL GENERATOR			INDICATOR		ADJUST	TEST LIMITS	REMARKS
		FREQ.	COUPLING	MODULATION	TYPE	CONNECTED TO			
1	Point of no interference or signal	455kHz	Through external .01µF capacitor to Pin 2 on AM circuit board	CW	Signal strength meter.	Normal.	Pri. & Sec. cores of T401 & T402	Maximum possible indication below 4.	As the tuner output increases, attenuate generator output to keep meter indication below 4.
2	600kHz	600kHz	Through a 200pF capacitor to ant. terminals.	Same	Same	Same	L402 (oscillator coil.)	Same	Same as Step 1.
3	1400kHz	1400kHz	Same	Same	Same	Same	T407 (oscillator trimmer)	Same	Repeat Steps 2 & 3 until dial calibration is accurate.
4	600kHz	600kHz	Same	Same	Same	Same	AM antenna rod & L401 (AM-RF)	Same	Same as Step 1 except adjust generator so that output signal is just above the noise level. Position antenna rod away from chassis and nearby objects.
5	1400kHz	1400kHz	Same	Same	Same	Same	T406 (AM antenna trimmer) & T405 (AM-RF trimmer).	Same	Repeat Steps 4 & 5 until output is as high as possible.
	1000kHz	1000kHz	Same	30% @ 400Hz	Distortion Analyzer.	L or R output.			With a distortion analyzer, the following measurements can be performed:

STEP	TUNER DIAL SETTING	FREQ.	COUPLING	MODULATION	TYPE	INDICATOR	ADJUST	TEST LIMITS	REMARKS
6									

be performed:

tion Analyzer.

1. With a 10mV input signal adjust "AM Level" control for 0.3 volts of audio output at tape outputs. This will correspond to 1.0 volt audio output for a 100% modulated signal.
2. With a 1mV input signal, harmonic distortion, whistle filter attenuation at 10kHz modulating frequency and signal to noise ratio may be measured.
3. IHFM sensitivity of 75 microvolts for 20dB signal to noise ratio. (This measurement is only possible in the absence of man-made interference, as fluorescent lamps, etc.)

## FM ALIGNMENT

STEP	TUNER DIAL SETTING	SIGNAL GENERATOR			INDICATOR		ADJUST	TEST LIMITS	REMARKS
		FREQ.	COUPLING	MODULATION	TYPE	CONNECTED TO			
1	Point of no interference or signal	Noise from mixer.	None	None	VTVM	Terminal 6 on IF	Top (Sec.) Core of T201	Adjust for zero volt.	Turn muting off for alignment tests
2	Same	Same	Same	Same	Same	Junction of R222 & C225	Bottom (Pri.) core of T201	Maximum possible negative voltage.	If a distortion analyzer is available, omit this step. Adjust T102 Primary after Step 5. At that time, use a 1mV signal from an FM generator, modulate 100% @ 400Hz. Adjust primary of T102 for minimum distortion. Should be less than 0.3%.
3	105MHz	105MHz	300Ω antenna terminals w/ matching network.	100% @ 400Hz.	VTVM connected to TP#1 and oscilloscope connected to L or R tape output		Oscillator trimmer TC104	Maximum negative voltage at TP#1	As TP#1 voltage increases, reduce output of signal generator to keep TP#1 voltage at a low level (less than -0.75 volt). Add components (100k, 100pF as indicated on Schematic to form TP#1.
4	90MHz	90MHz	Same	Same	Same		Oscillator Coil L105	Same	Repeat Steps 3 and 4 until dial calibration is accurate.
5	Same	Same	Same	FM $\pm$ 300kHz Sweep at 60Hz rate.	Oscilloscope.	TP#1	Top (Pri.) and Bottom (Sec.) cores of T101.	Optimum symmetry about IF center.	Connect scope for overall response display. Hold the signal generator output to a low level such that the DC voltage at TP #1 is less than -0.5 volt.
6	105MHz	105MHz	Same	100% @ 400Hz.	VTVM connected to TP #1 and scope connected to L or R tape output.		Mixer, RF-2, TC101, RF-1, TC102 trimmers TC103	Maximum negative voltage at TP #1.	Same as Step 3.
7	90MHz	90MHz	Same	Same	Same		Mixer, RF-2, and RF-1; coils L101, 102, 103	Same	Same as Step 3. Then repeat Steps 6 and 7 until TP#1 voltage is as high as possible for the least signal input at both alignment frequencies.
8	Same	Same	Same	Same	VTVM connected to TP#1 and a harmonic distortion analyzer to L or R tape output.				This step is an overall sensitivity check. Reduce input signal to the point where total noise and distortion reads 3% (-30dB).

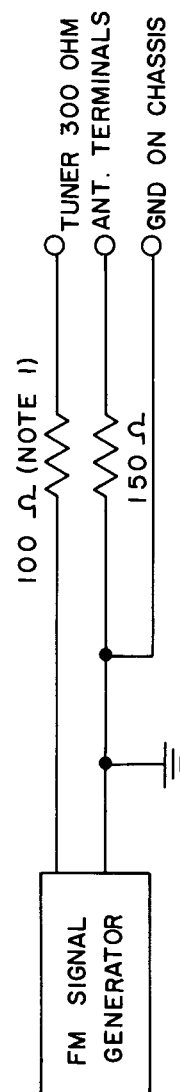
## MULTIPLEX DECODER ALIGNMENT

7	90MHz	Same	Same	Same	Mixer, RF-2, and RF-1; coils L101, 102, 103	Same	Same	Same as Step 3. Then repeat Steps 6 and 7 until TP#1 voltage is as high as possible for the least signal input at both alignment frequencies.
8	Same	Same	Same	Same	VTVM connected to TP#1 and a harmonic distortion analyzer to L or R output.			This step is an overall sensitivity check. Reduce input signal to the point where total noise and distortion reads 3% (-30dB). The input signal will then be the usable sensitivity and should be less than 2.5µV.

STEP	TUNER DIAL SETTING	SIGNAL GENERATOR			INDICATOR		ADJUST	TEST LIMITS	REMARKS
		FREQ.	COUPLING	MODULATION	TYPE	CONNECTED TO			
1	100MHz	100MHz	300Ω antenna terminals w/ approx. 1000 microvolts signal w/* matching network.	75kHz deviation @ 67kHz.	AC-VTVM or oscilloscope w/very low cap. probe.	Collector TR305 MPX-PC Board.	L302 (SCA adj.)	Minimum output	Adjust for minimum 67kHz output.
2	Same	Same	Same	19kHz stereo pilot.	Same	Collector TR303 MPX-PC Board	T301 (19kHz phase adj.) & T302 (19 kHz trans-former.)	Adjust for maximum AC voltage.	Decrease pilot level, if necessary, so that 19kHz circuits do not limit or saturate.
3	Same	Same	Same	Same	Same	Collector TR304	T303	Adj. for maximum AC voltage.	Decrease pilot level so that 19kHz and 38kHz circuits do not limit. Mode switch must be in stereo position.
4	Same	Same	Same	1kHz (100% modulation) L or R only, pilot level normal and on.	AC-VTVM	L or R output Jack.	First T301 Then VR301 & VR302	35dB separation or more.	Set VR301 & VR302 at maximum resistance. Modulate left channel and measure right channel output. Adjust tuning core (T301) for minimum right channel output (maximum separation). Then, adjust VR301 for maximum separation. Reverse channels then adjust VR302.
5	Same	Same	Input 15µF	Same	Same	Same	VR303		Adjust stereo threshold for auto switchover at 15µV input.

Note 1:

If signal generator has other than 50 ohm internal impedance, use a resistor of 150 ohms less internal generator impedance.



## REPLACEMENT PARTS

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

Stereo Technology Division  
Box A  
Conklin, New York 13748

## CAPACITORS

Symbol Number	Description	Part Number
C851,852	Elect 6800 $\mu$ F 50V	066-207

## DIODES

D101	Si. Signal diode	070-067
D151	Si. Signal diode	070-068
D201,202	Si. Signal diode	070-068
D203,204	Si. Signal diode	070-068
D205,206	Ge. Signal diode	070-069
D207,208	Si. Signal diode	070-068
D301,302	Ge. Signal diode	070-069
D303,304	Ge. Signal diode	070-069
D305,306	Ge. Signal diode	070-069
D307	Si. Signal diode	070-070
D401	Si. Signal diode	070-070
D501a,b	Si. Signal diode	070-070
D602a,b	Si. Signal diode	070-070
D603a,b	Si. Signal diode	070-070
D604a,b	Si. Signal diode	070-071
D605a,b	Si. Signal diode	070-071
D607a,b	Si. Signal diode	070-070
D651	Si. Signal diode	070-070
D652	Si. Signal diode	070-071
D801,802	Si. Signal diode	070-072
D803,804	Si. Signal diode	070-072
D805	Zener diode	070-074
D830	Zener diode	070-073
D831,832	Si. Signal diode	070-071

## CHOKES &amp; COILS

L302	67kHz Filter coil	122-146
L303	Muting filter coil	122-147
L401	AM RF coil	122-144
L402	AM Osc coil	122-145
L403	AM Antenna	122-143

## TRANSISTORS

TR101,102	Transistor	132-107	VR551
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TR305,306	Transistor	132-113	
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TR316	Transistor	132-112	TH SW
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TR404	Transistor	132-111	T301
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