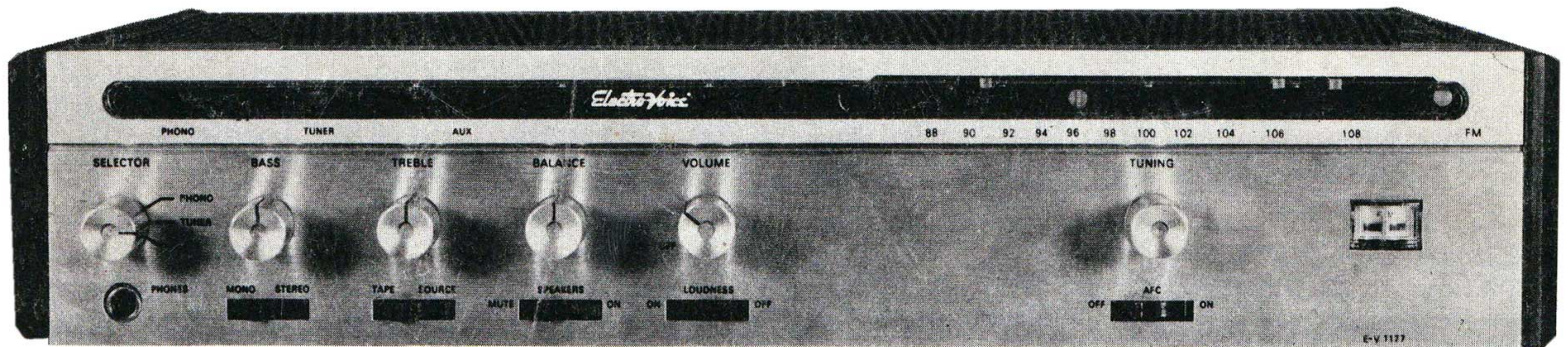


Electro-Voice®

ELECTRONICS SERVICE MANUAL



- E-V 1144** SOLID STATE AMPLIFIER
- E-V 1155** SOLID STATE TUNER
- E-V 1177** SOLID STATE RECEIVER

ELECTRO-VOICE INC., BUCHANAN, MICHIGAN 49107

ELECTRO-VOICE
SERVICE MANUAL

E-V 1144	Solid State Amplifier
E-V 1155	Solid State Tuner
E-V 1177	Solid State Receiver

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INTRODUCTION

This service manual was designed with the technician in mind. It has been kept as brief as possible without oversimplification. All procedures are presented in a clear step-by-step manner. Although we have tried to anticipate all of your problems and questions, in special instances you may need additional guidance. Address any such in-

quiries to our Technical Service Department.

The sheets are punched to fit a three-ring binder so that any production changes and additional service tips can be easily added. This will keep your Electro-Voice Electronics Service Data as up-to-date as possible.

SPECIFICATIONS AND DESCRIPTIONS

E-V 1144 SOLID STATE AMPLIFIER

SPECIFICATIONS:

Amplifier Sections - Output, 65 watts music power at 4 ohms, 50 watts at 8 ohms; Response, at rated output 20-20,000 Hz \pm 1-1/2 db, at 1 watt 20-30,000 Hz \pm 1-1/2 db; Harmonic Distortion, less than 1% at rated output; Hum and Noise, better than 70 db below rated output (mag, phono input, better than 60 db).

E-V 1155 SOLID STATE FM MULTIPLEX TUNER

SPECIFICATIONS:

Tuner Sections - fm: Sensitivity, better than 3 uv IHF; Selectivity, alternate channel down 60 db; Hum and noise, better than 60 db below 100% modulation. am: Sensitivity, 250 uv/meter for 15 db signal to noise ratio.

E-V 1177 SOLID STATE FM STEREO RECEIVER

The E-V 1177 is a combination of the E-V 1144 and E-V 1155. Only the tuner power supply components are omitted when the two units are combined as one chassis with an integrated front panel. Power needed to operate the tuner is taken from the amplifier power supply.

FEATURES

E-V 1144

Loudness control: Compensates for decreased efficiency of the human ear to low frequencies at low listening levels. Only in effect below 12 o'clock position of volume control.

Speaker muting switch: Disables speakers for headphone listening. Output is available at the headphone jack regardless of muting switch position.

Colored indicator lights: Show the input source selected--phono, tuner, auxiliary.

E-V 1155

Full time stereo indicator: Shows when the tuner is receiving a stereo signal even if set for monaural operation--in the case of the E-V 1177, even when phono or tape source is selected.

Movable dial markers: Keep track of favorite stations without the need to memorize frequencies.

Zero-center tuning meter: For pinpoint tuning accuracy.

Automatic frequency control: To lock-in the selected station.

E-V 1177 -- ALL THOSE LISTED ABOVE PLUS:

Fully independent operation of tuner and amplifier is possible if desired. By just removing patch cord from tuner output to amplifier input, the amplifier may be used with turntable or changer while recording from or amplifying the tuner separately.



Figure 1

CONTROL FUNCTIONS

E-V 1144 AMPLIFIER

Tape-source: Selects either tape (high level) or inputs controlled by selector switch. Allows you to monitor what has actually been recorded on the tape.

Stereo-mono: Allows either two-channel amplification of stereo signal source or combines input signals for monophonic reproduction through both speakers. Monophonic input plays back through both speakers with switch in mono position.

Speaker mute: Permits either simultaneous headphone and loudspeaker or headphone listening only.

Loudness: Causes volume control to automatically boost bass at low setting which compensates for hearing deficiencies at low levels.

Selector: Allows choice of signal source--phono, tuner, or other hi level source (auxiliary).

Bass: Approximately 12 db boost and 16 db cut at 50 Hz (both channels) to compensate for speaker system characteristics and listening preference.

Treble: Approximately 12 db boost and 16 db cut at 10,000 Hz both channels.

Balance: Allows choice of left or right speaker operation and provides method of compensating for other system imbalances.

Volume, off-on: Controls listening level and, when used in conjunction with loudness control, maintains natural sound balance even at low volume levels.

E-V 1155 TUNER

Off-on switch: Supplies AC power to tuner. No warm-up period is required with solid state equipment.

Stereo-mono: Allows separate amplification of the two channels transmitted by FM multiplex stations or combines the signals for mono output jacks.

AFC: Maintains tuning even with line voltage fluctuations.

Tuning: Heavily weighted flywheel for smooth and accurate operation. Use the meter for most accurate tuning.

E-V 1177 RECEIVER

Same as for amplifier and tuner combined.

PREPARING FOR OPERATION

E-V 1144

1. Be sure power switch (on volume control) is "off" before plugging amplifier into wall outlet supplying 115-120 volts AC.
2. Connect left and right channel speakers at terminal block using diagram printed on bottom of amplifier. NOTE: AVOID SHORTING SPEAKER TERMINALS TO KEEP FROM BLOWING OUTPUT FUSES.
3. Connect outputs from tape recorder, turntable or changer and tuner to corresponding input jacks.

4. Set tape-source switch to source position and turn selector to appropriate input. Note: If tape player is used, put tape-source in tape position.
5. Turn unit on by advancing volume control until a click is heard. Advance control to a comfortable level and set tone controls at approximately 12:00.
6. Set balance control for equal output from both speakers.
7. Check speaker phasing by reversing leads to one speaker while standing mid-way between and in front of the speakers. The stereo-mono switch should be in the mono position for this check. Make final speaker connection with the polarity that delivers fullest bass and causes the sound to appear to come from the area between the speakers.

E-V 1155

1. Be sure AC switch (on volume control) is in "off" position before plugging receiver into wall outlet supplying 117 volts AC, 50 or 60 Hz.
2. Connect patch cord between tuner output jacks and the tuner input or other high level input jack on the amplifier being used.
3. Connect FM antenna to receiver antenna terminal.
4. Set local-distant switch in the distant position. Note: Switch to local position only if strong local stations overload the tuner.
5. Select tuner source on amplifier, set amplifier for stereo operation, and advance amplifier volume control to comfortable level.
6. Switch AFC to "off", stereo-mono switch to stereo position and tune to desired station using tuning meter.
7. Trim the antenna by following the directions under section on "Preparing the E-V 1177 for Operation".

E-V 1177

1. Be sure AC switch (on volume control) is in "off" position before plugging receiver into wall outlet supplying 117 volts AC, 50 or 60 Hz.
2. Connect left and right speakers to speaker terminals on underside of chassis. Follow diagram printed on bottom of receiver. NOTE: AVOID SHORTING SPEAKER TERMINALS TO KEEP FROM BLOWING OUTPUT FUSES.
3. Connect FM antenna to receiver antenna terminals.
4. Set local-distant switch in the distant position. Note: Switch to local position only when strong local stations overload the tuner.
5. Connect outputs from tape recorder and turntable or changer to corresponding input jacks.
6. Set tape-source switch in source position and turn selector knob to tuner.
7. Turn unit on by advancing volume control until a click

is heard. Advance control to a comfortable level and set tone controls at approximately 12:00.

8. Switch AFC to "off", stereo-mono switch to mono position and tune to desired station using tuning meter.
9. Set balance control for equal output from both speakers.
10. Check speaker phasing by reversing leads to one speaker while standing mid-way between and in front of the speakers. Make final speaker connection with the polarity that delivers fullest bass and causes the sound to come from the area between the speakers.

IF GAIN CONTROL (R-37)

R-37 is preset for maximum gain. On very strong signals a slightly reduced setting of the R-37 may improve fidelity.

Note: Excessive reduction of the control setting will reduce stereo separation and overall tuner sensitivity.

TRIMMING THE ANTENNA

Best results are obtained if the unit is tuned to match the antenna impedance.

1. Connect tuner to antenna to be used for FM reception.
2. Turn AFC to "off".
3. Tune to a weak station (either stereo or mono).
4. Adjust trimmer labeled FAT on bottom of tuner for best signal. (See figure 2 below)

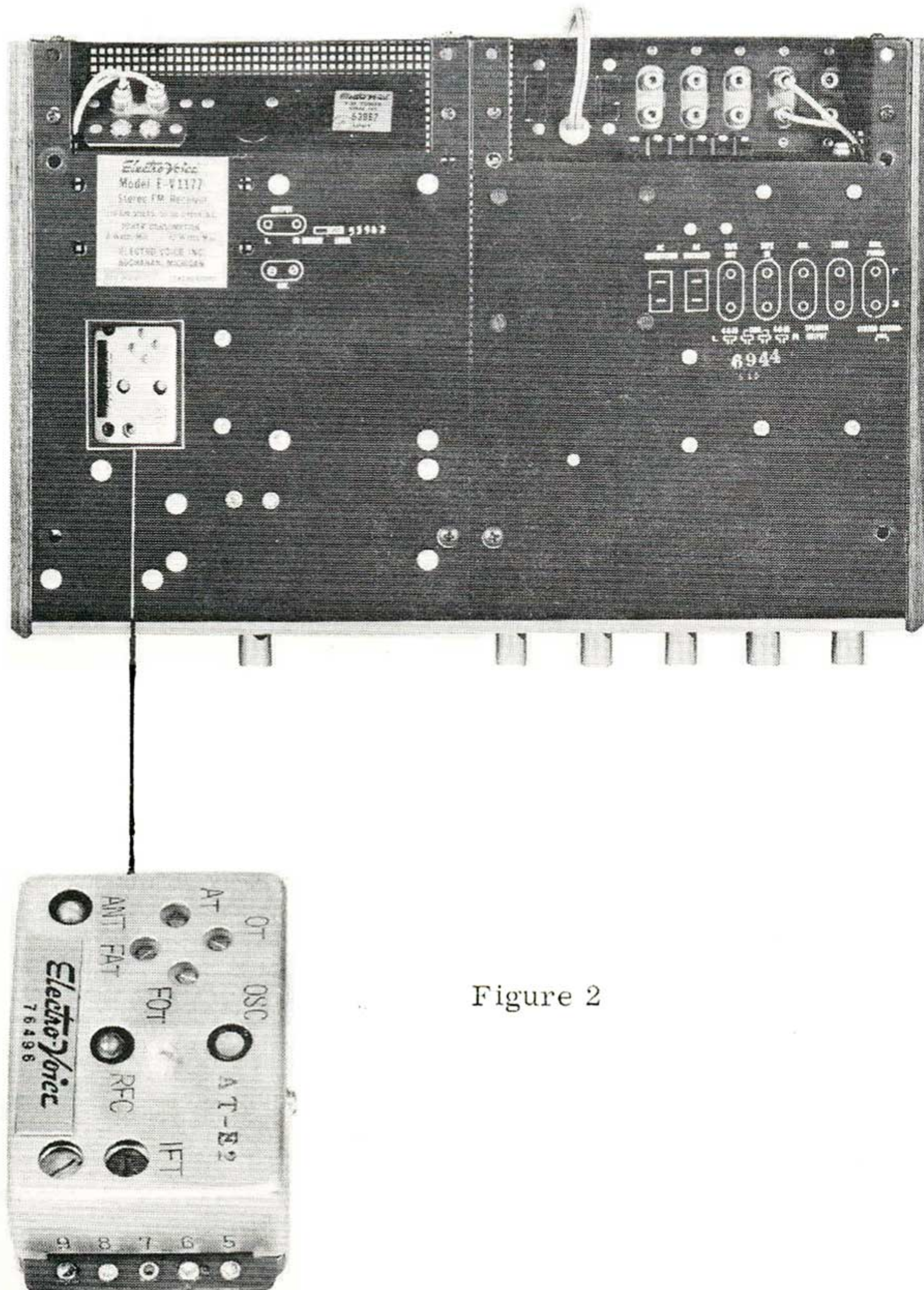


Figure 2

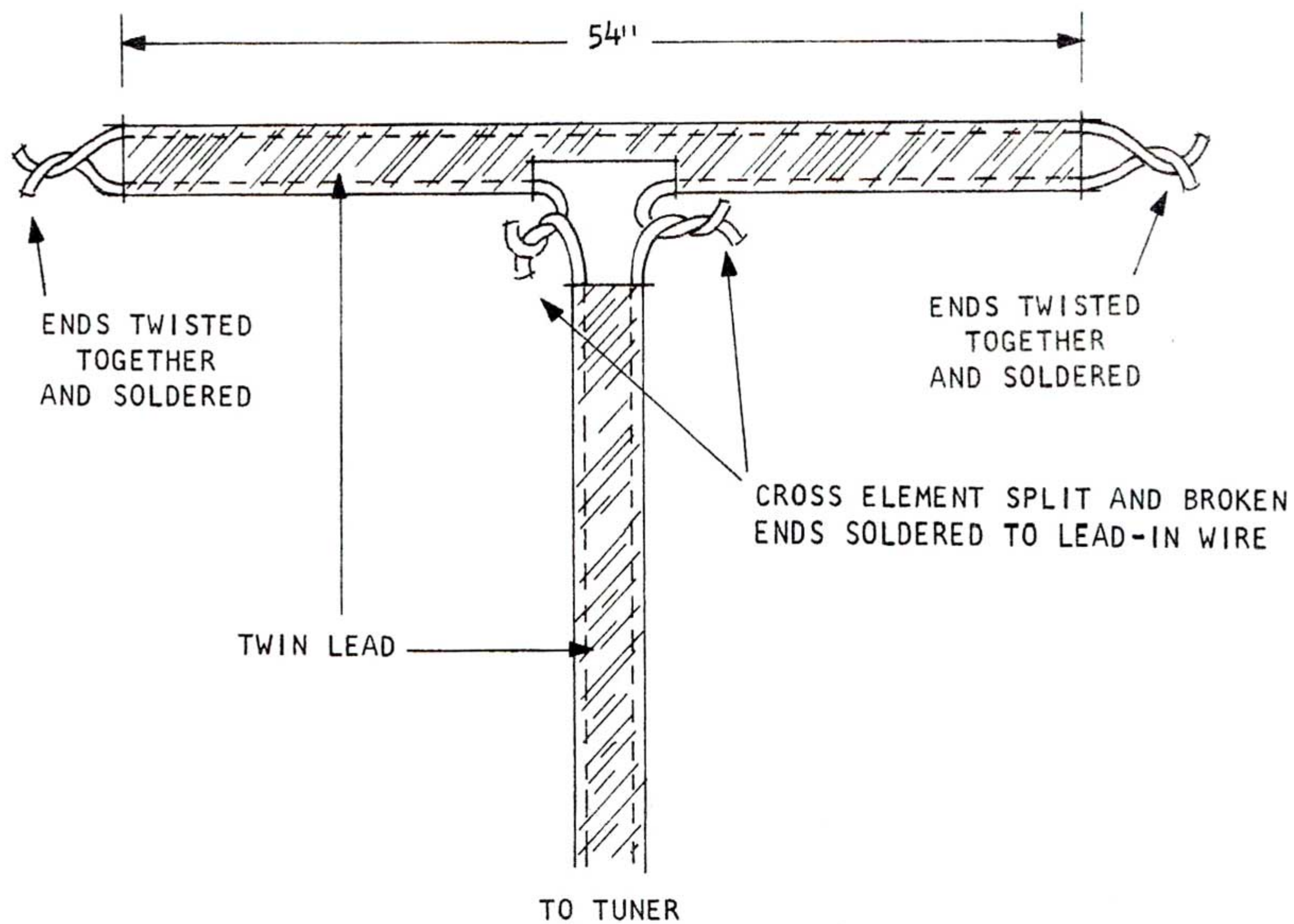
FOR BETTER FM RECEPTION

A long wire connected to one or both of the FM antenna terminals of your FM tuner or receiver will not provide good FM reception. Although you may receive all the local stations, reception of weak, fringe area stations will be poor. FM sets require an antenna of correct length and impedance for good results.

You'll get best reception with a high quality, properly installed outdoor FM antenna. A sensitive Yagi type used with a rotor will allow reception within about a 100 mile radius. A turnstyle (folded dipole) type should give good reception within about a 50 mile radius.

Some VHF TV antennas also receive FM radio signals. By using a TV/FM coupler, your existing antenna can be used for both. Your TV serviceman or hi fi dealer can tell you if this is possible in your case and supply the necessary coupler.

If you are interested only in nearby stations or can't install a roof-top antenna, you may want to construct this simple dipole from ordinary 300 ohm TV twinlead. The completed antenna can be tacked to the baseboard, placed in the attic, or under the carpet. This antenna is highly directional, so when making final antenna installation, be sure to orient it for best reception from hard-to-get stations.



DISASSEMBLY

REMOVING BLACK METAL COVER

1. Remove phillips head screws in rear of cabinet. (See figure 3 below)

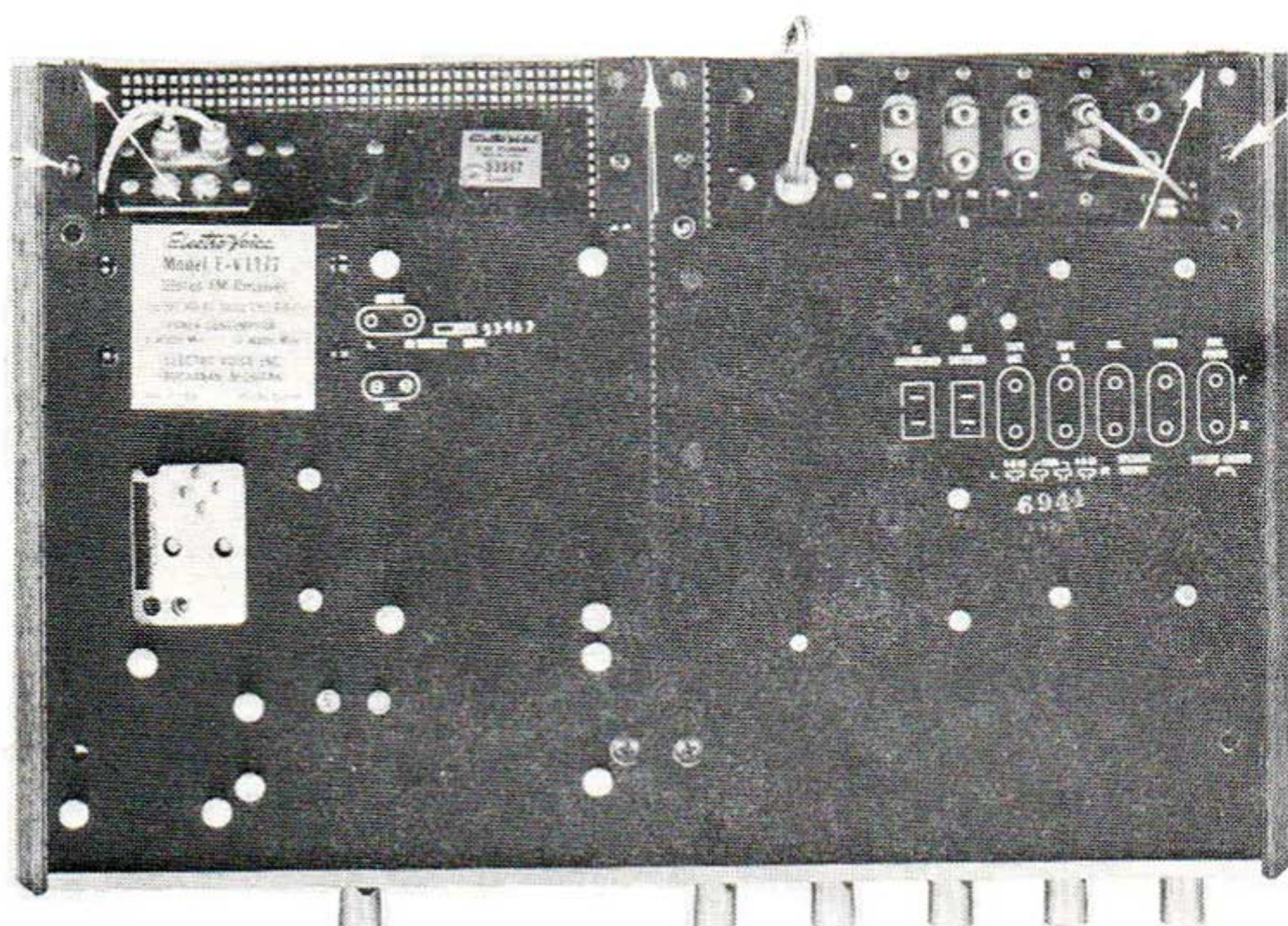


Figure 3

2. Slide cover back and remove.

REMOVING WALNUT END PANELS

1. Remove phillips screw from each panel. (See figure 3 above)
2. Pull back firmly on panel to disengage metal clip.

REMOVING FRONT PANEL

1. Remove the control knobs by pulling forward.
2. Remove felt washers behind knobs.
3. Place a piece of masking or electrical tape across each end of the plastic window to keep it in place within the front panel. As the plastic window is not permanently attached to the front panel, failure to apply tape as directed above will result in possible loss of the station markers. (See figure 4 below)

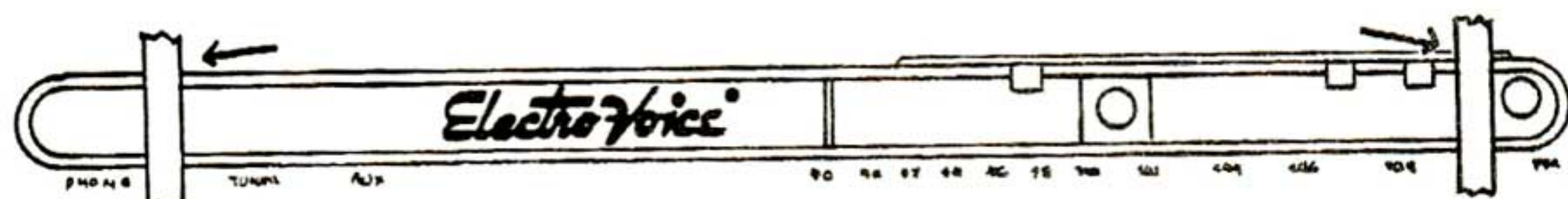


Figure 4

4. Remove the "C" clips (4 for 1177, 2 each for 1144 and 1155) holding the front panel to the chassis. Note: These should be cut off with side cutters and replaced with new clips. Take care not to break off front panel studs. (See figure 5 below)

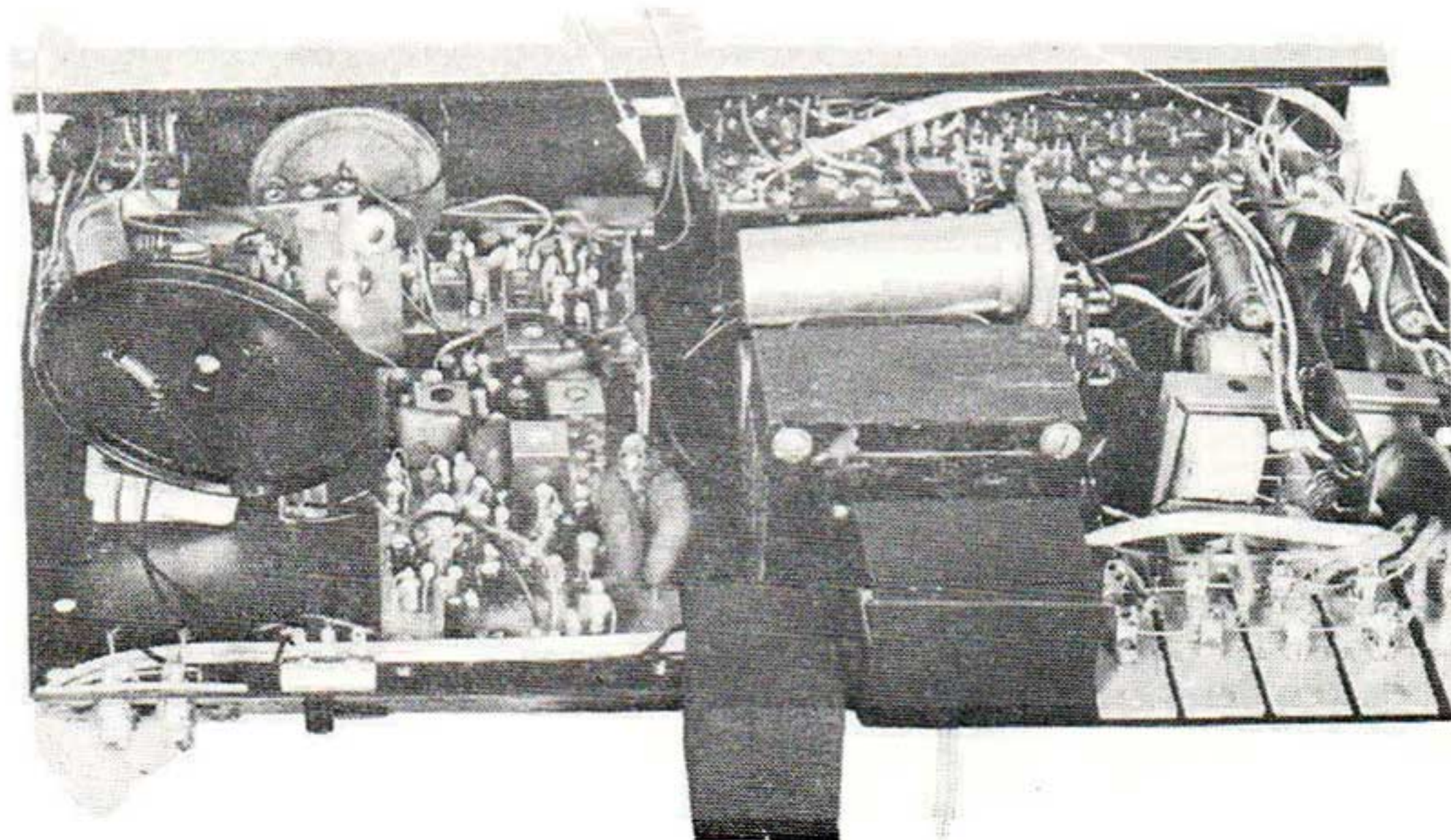


Figure 5

5. Carefully remove the front panel.

ALIGNMENT PROCEDURE

TUNING METER CALIBRATION

1. Disconnect antenna.
2. Set local/distant switch to local.
3. Tune off station.
4. Adjust R-41 for center meter reading.
5. Return switch to distant position.
6. Connect tuner to antenna.
7. Turn AFC off.
8. Tune carefully for center meter reading on strong station (either stereo or mono).
9. Turn AFC on - repeat steps 1 through 5 if needle moves into either dark area.

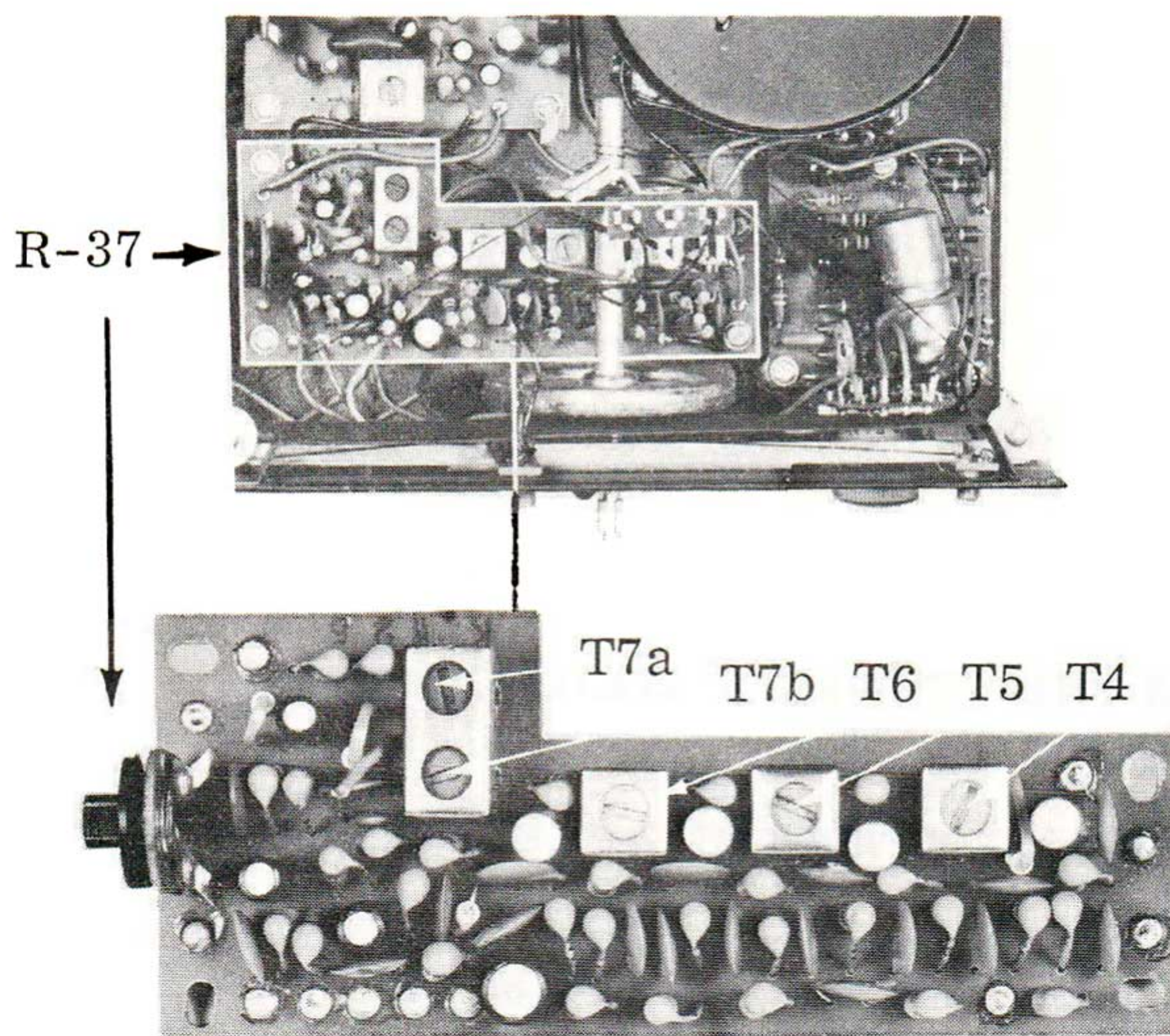
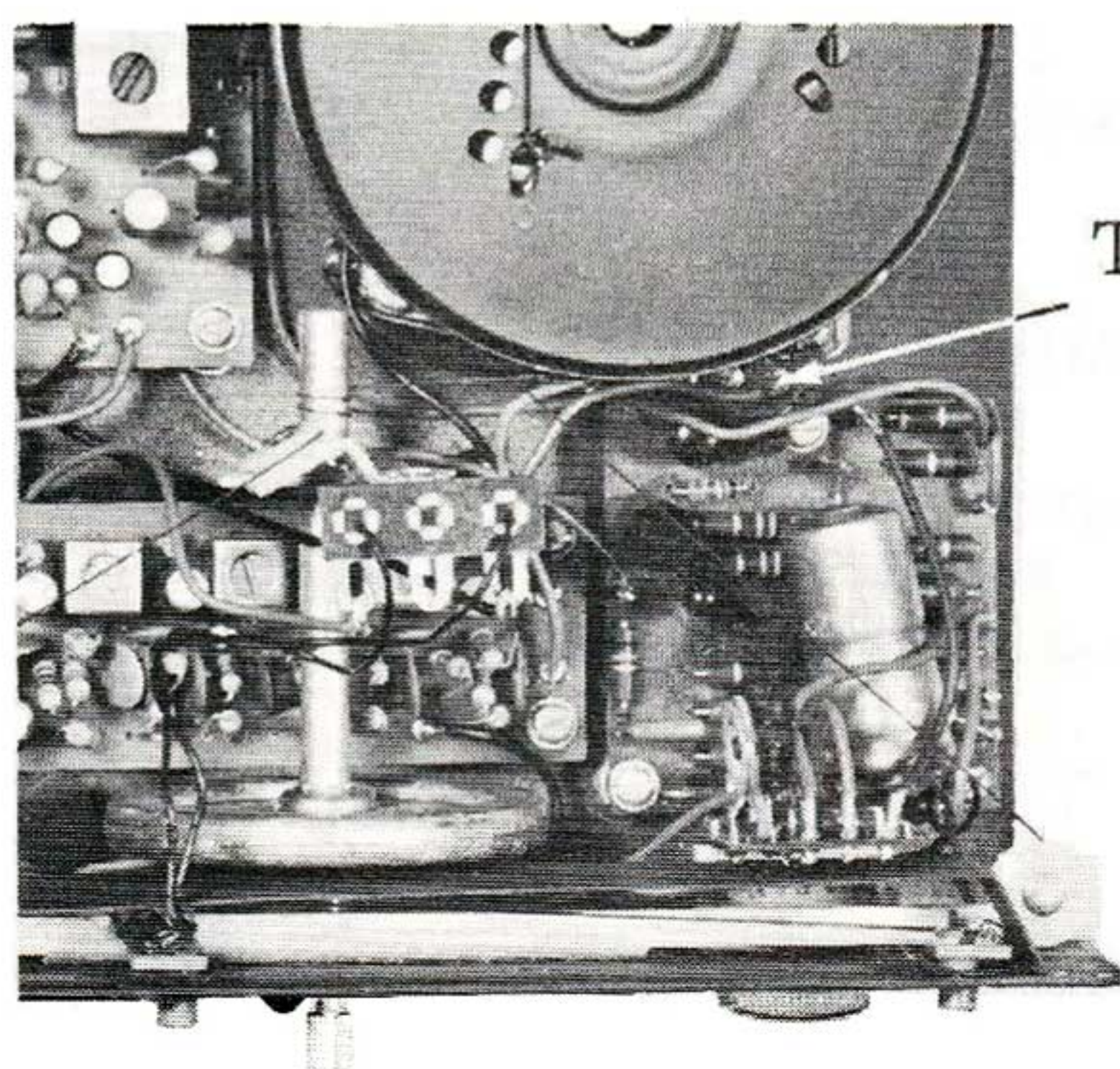


Figure 7

FM IF ALIGNMENT

1. Unsolder red wire from terminal 9 of tuner subassembly (PC 1). (See figure 6 below)



Terminal 9
(TP-3)

Figure 6

2. Apply 10.7 mc modulated signal from generator to red wire.
3. Connect VTVM (AC mode) or vertical scope input to left channel tuner output jack.
4. Adjust generator output for lowest usable indication on VTVM or scope.
5. Adjust (in the following order) T7a, T7b, T6, T5, & T4 for maximum deflection. (See fig's. 7 & 8) Repeat several times if necessary to achieve maximum deflection. Note: Keep generator output as low as possible during alignment.
6. Adjust T7a for equal needle swing either direction from center - while rocking tuning capacitor across station.

7. Remove generator and VTVM or scope connections and resolder red wire to terminal 9 of PC 1. (Fig. 6)

FM "FRONT END" ALIGNMENT

1. Connect generator output to antenna input terminals across 300 ohm dummy load.
2. Set local-distant switch in distant position.
3. Connect VTVM or scope to left channel output jack.
4. Adjust generator for 88 mc modulated output. Advance generator output to approximately half full.
5. Adjust receiver tuning to achieve deflection on VTVM or scope. (The dial indicator should be very near the 88 mc mark.)
6. While rocking the tuning capacitor back and forth, reduce generator output for lowest usable deflection.
7. If illuminated indicator is not at exactly 88, hold dial cord stationary near indicator and move indicator until it reads 88 mc.
8. Set generator at 108 mc and tune receiver for output deflection.
9. If dial indicator does not read 108 mc, adjust the oscillator (marked FOT) until VTVM or scope indicates output with dial pointer at 108 mc plus or minus 1/2 mc.
10. Adjust T3b and T3a for maximum deflection. (See figure 8)
11. Remove test equipment and 300 ohm dummy load.

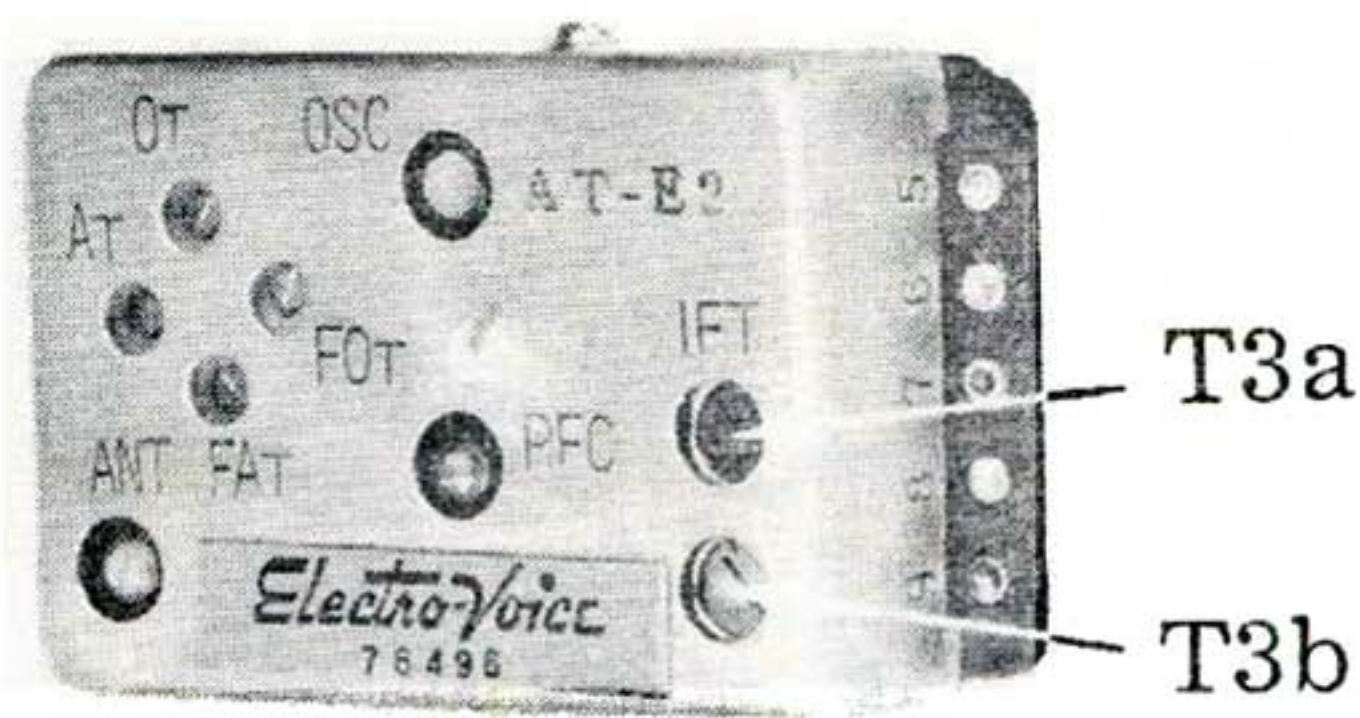


Figure 8

FM MULTIPLEX ALIGNMENT

ALIGNMENT WITHOUT MULTIPLEX GENERATOR

1. Connect antenna to tuner and tune to a strong stereo station. AFC switch in "off" position.
2. Place stereo-mono switch in stereo position.
3. Rotate R58 fully clockwise. (See figure 9 below)
4. Connect scope of VTVM to TP-1.
5. Alternately adjust T8 and T9 for maximum deflection. (See figure 9 below) DO NOT ADJUST L2 OR L3
6. Remove test equipment and connect speakers.
7. Adjust R58 for best sound quality and maximum stereo separation. (3/8 of full rotation generally provides best stereo separation.)

ALIGNMENT WITH MULTIPLEX GENERATOR

1. Connect multiplex generator to antenna terminals across 300 ohm dummy load.

2. Set the generator for right channel operation.
3. Place scope or VTVM across right channel output jack.
4. Set stereo-mono switch to stereo position.
5. Rotate R58 fully clockwise as viewed from knob side.
6. Adjust T8 and T9 for maximum deflection. (See figure 9 below) DO NOT ADJUST L2 OR L3
7. With generator still set for right channel operation, change VTVM or scope leads from right to left output jacks.
8. Adjust R58 for minimum deflection.

ALIGNMENT WITH SCOPE OR VTVM

1. Connect receiver to antenna.
2. Connect vertical scope input or VTVM set for 1.5 v AC to TP3. Note: See figure below.
3. Adjust FAT for minimum scope on meter deflection.
4. Follow step 5 under FM IF ALIGNMENT and step 10 under FM FRONT ALIGNMENT.
5. Readjust FAT for maximum deflection.
6. Follow steps 2 through 7 under FM MULTIPLEX ALIGNMENT.

IF OUTPUT ADJUSTMENT (R-37)

The unit is shipped with R-37 fully clockwise. Reduce it only if stereo light flickers while tuning across monaural stations or if audio is badly distorted.

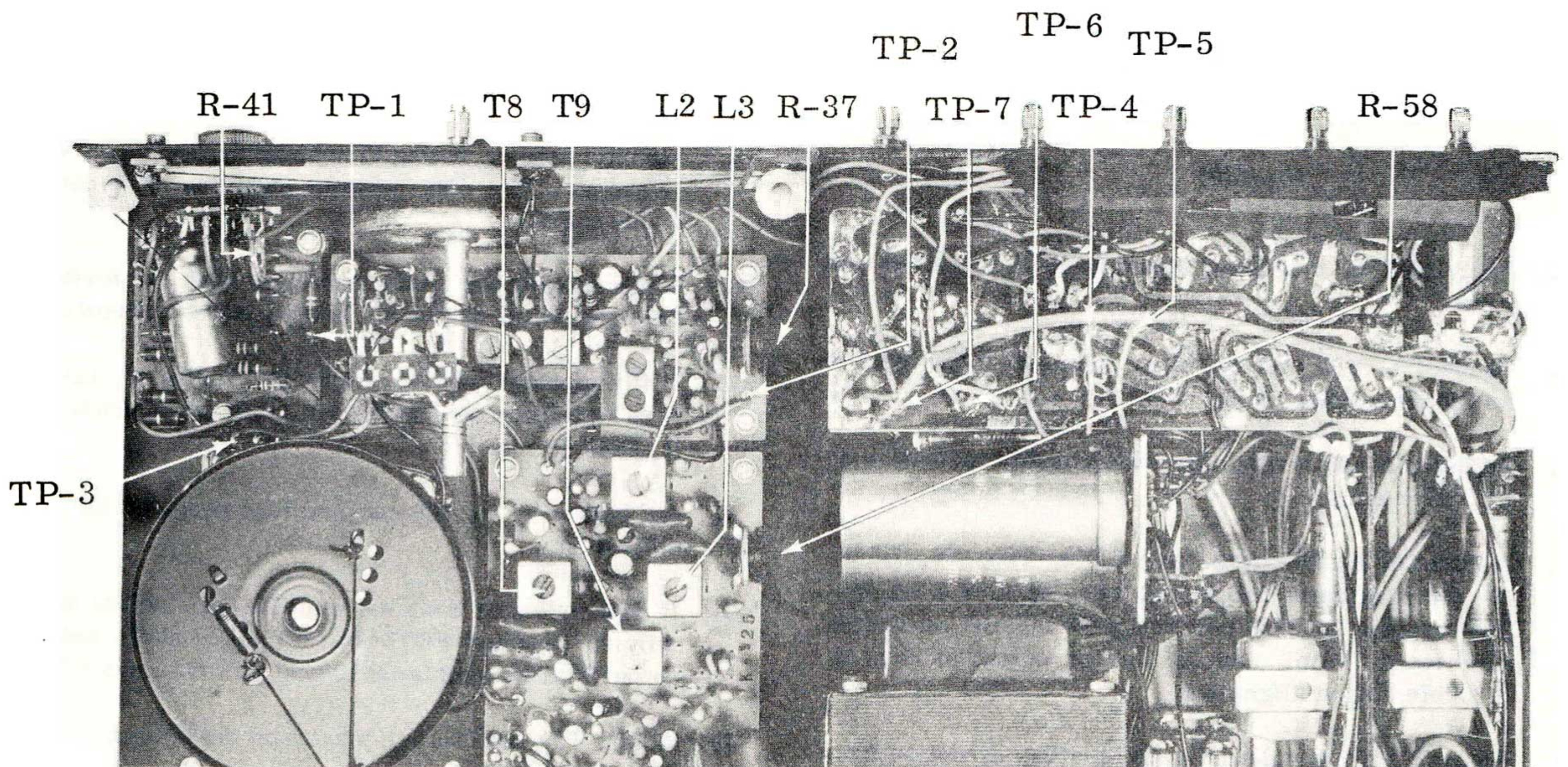


Figure 9 - Underside of Receiver Chassis

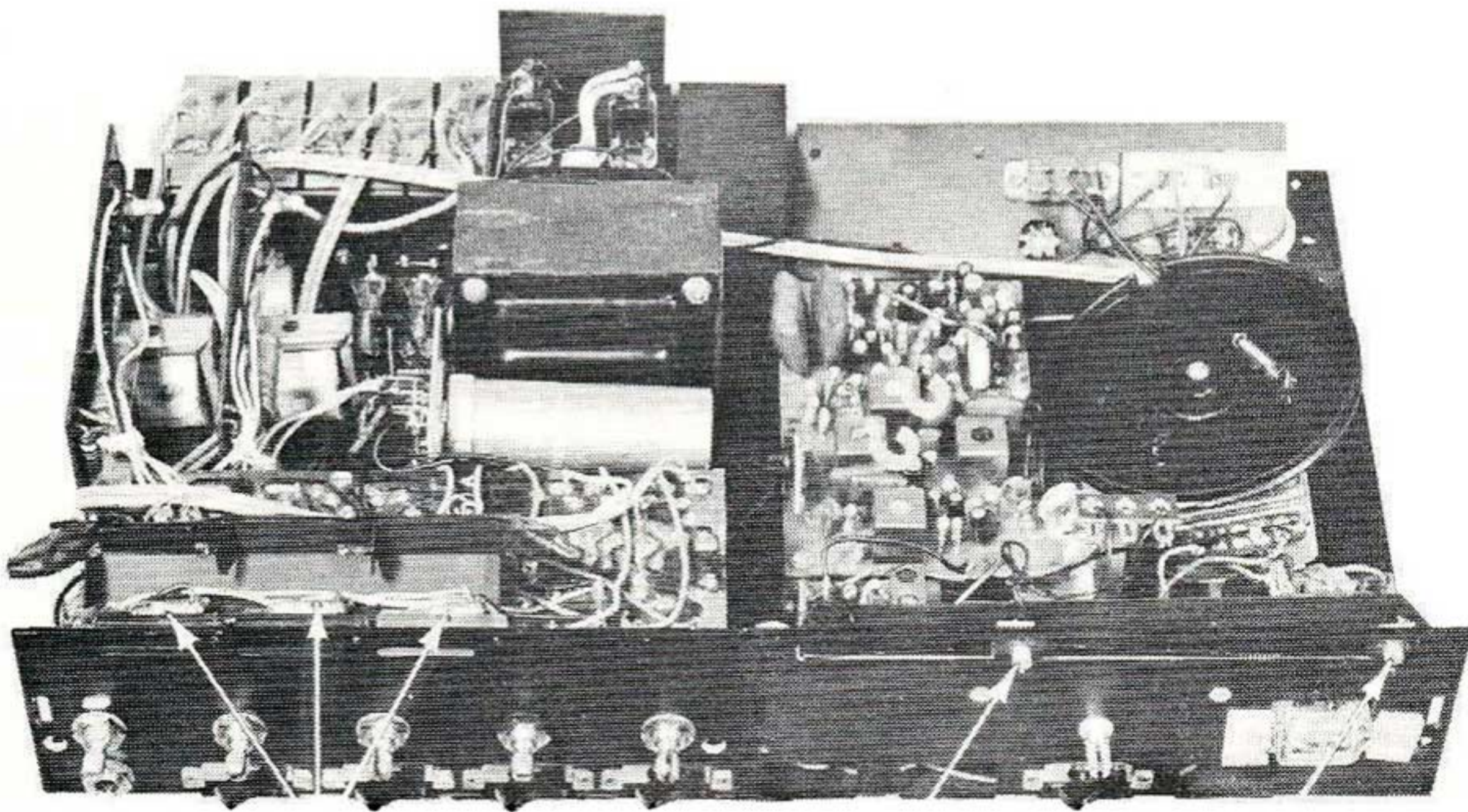
REPLACING LAMPS AND FUSES

REPLACING STEREO INDICATOR LAMP

1. Follow steps 1 thru 5 under disassembly.
2. Unsolder stereo indicator lamp leads at power supply board (PC-5).
3. Remove lamp assembly.
4. Install new indicator and reverse the above steps.

REPLACING FUNCTION INDICATOR LAMPS

1. Follow steps 1 thru 5 under disassembly.
2. Loosen silk tape holding fishpaper shield in place.
3. Bend shield back to gain access to bulbs.
4. Replace defective lamp (s) and reverse steps above.



Function Indicator Lamps	Illuminated Dial Pointer	Stereo Indicator
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REPLACING THE ILLUMINATED DIAL POINTER

1. Follow steps 1 thru 5 under disassembly.
2. Unsolder the two black lamp wires from the terminal strip.
3. Rotate the tuning knob until the pointer is about one-fourth of the way from the left end of the dial.

4. Holding the cardboard shield away from the pointer, push back on the pointer assembly until the groove clears the metal flange on the chassis.
5. Raise the pointer and remove it from the dial cord.
6. Install new lamp and reverse the steps above. Note: Be sure to install new indicator on the dial cord so the pointer moves equal distance beyond 88 or 108 mc marks when tuning from end-to-end of the dial.
7. Recalibrate tuning dial by following "FM Front End Alignment" directions.

REPLACING THE TUNING METER LAMP

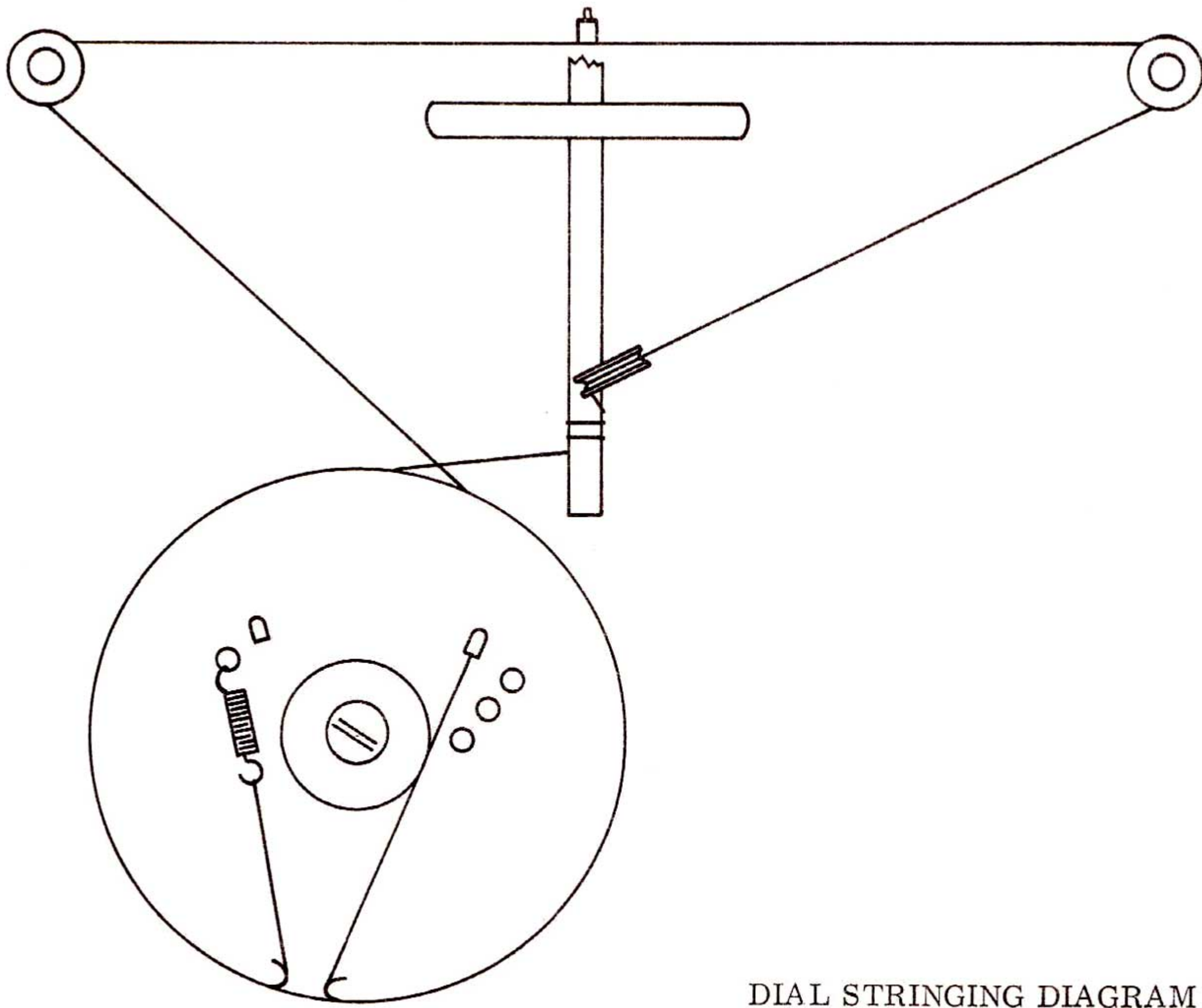
1. Follow steps 1 through 5 under disassembly.
2. Unsolder lamp leads and remove defective lamp from grommet under tuning meter.
3. Install new lamp and reverse steps above.

REPLACING POWER FUSE (F1)

1. Follow steps 1 through 5 under disassembly.
2. Remove open fuse from holder. (See Fig.9, pg.8)
3. Replace with new fuse (1.5 a Slo-Blo) and reassemble.

REPLACING OUTPUT FUSES (F2, F3)

1. Follow steps 1 through 5 under disassembly.
2. Remove open fuse from holder. (See Fig.9, pg.8)
3. Replace with new fuse (1.5 a Slo-Blo) and reassemble.



DIAL STRINGING DIAGRAM

TROUBLE SHOOTING

AMPLIFIER

TUNER

<u>TROUBLE</u>	<u>CAUSE</u>	<u>TROUBLE</u>	<u>CAUSE</u>
Unit dead	Open fuse (F1) Defective switch Defective power cord Defective power transformer (T1)	Unit dead	Open fuse (F1) Defective switch Defective line cord Defective transformer (T10)
Indicators light, but no sound from speaker or headphones	Both fuses (F2, F3) open Speaker wiring shorted Open diode (s) D1, D2, D3, D4 Defective PC-1 Defective transformer T1	Dial pointer and meter light, but no output	Open R94 on PC-5 Defective diode (s) D14, D15 on PC-5 Defective PC-4 Defective PC-2 Defective PC-1 Defective transformer (T10)
Left channel dead	Check left channel speaker wiring Open fuse (F3) Defective PC-3 Defective PC-1	Output from just one channel	Poor stereo station signal Defective PC-4 Defective jack (J2)
Right channel dead	Check right channel speaker wiring Open fuse (F2) Defective PC-2 Defective PC-1	AFC inoperative	Defective PC-2 Defective PC-1 Defective AFC switch
One or more indicator lights inoperative	Lamp not making contact Defective lamps Poor contact on wafer "C" of SW-1. Adjust wiper blade.	Tuning meter inoperative	R41 out of adjustment Poor IF alignment Defective meter (M1) Defective PC-3 Defective PC-2
No output from headphones. Speakers okay	Check wiring at headphone jack Defective resistors R54, R55 Defective headphone jack (J1)	Stereo indicator does not light on stereo broadcasts	Defective indicator (B-1) Defective PC-5
Unbalanced output with magnetic phono only	Unbalanced phonograph cartridge Defective PC-1	No stereo effect on stereo broadcasts	Poor stereo station signal Stereo-mono switch in mono position Poor multiplex alignment Poor IF alignment Defective PC-4 or PC-2
Unbalanced output with all inputs	Defective balance control Defective PC-1, PC-2 or PC-3	Inadequate station pickup-low sensitivity	Inadequate antenna Local-distant switch in local position Poor front end alignment Poor IF alignment Defective PC-1 or PC-2
<u>HUM</u> Both channels-all volume settings-all inputs	See engineering changes Page Defective power supply components D1, D2, D3, D4, C1, C2	Hum in output	Station transmitting hum Defective D14, D15, C79
Right channel-all inputs-all volume settings	Defective PC-2	Local stations garbled or appearing more than once on the dial	Tuner overloaded. Move local-distant switch to local position Defective PC-1
Left channel-all inputs-all volume settings	Defective PC-3	Stations not appearing at proper place on dial (within 1/2 mc)	See section on dial calibration
Both channels- increasing with volume setting	Source not properly grounded Defective PC-1		
Right channel- increases with volume setting	Improper source grounding Defective PC-1		
Left channel- increases with volume setting	Improper source grounding Defective PC-1		

TROUBLE SHOOTING

PRINTED CIRCUIT BOARDS

<u>TROUBLE</u>	<u>INDICATION</u>	<u>CAUSE</u>
PC-1		
Left channel dead Phono mode only	no output at TP-6	TR2
Right channel dead Phono mode only	no output at TP-7	TR1
Left channel dead all modes	no output at TP-4	TR4
Right channel dead all modes	no output at TP-5	TR3
Both channels dead all modes	no output at TP5 or TP4	R-23 C-9
PC-2		
Right channel dead all modes	R48 and R49 burned	(TR7 & TR8)
Right channel distorted and/or low output		(TR5 add heat sinks)
PC-3		
Left channel dead all modes	R50, R51 burned	TR9, TR10
Left channel distorted and/or low output		(TR6 add heat sinks)
Power Supply		
Unit dead	repeatedly blows power fuses	D1, D2, D3, D4

TROUBLE SHOOTING

RECEIVER

<u>TROUBLE</u>	<u>CAUSE</u>	<u>TROUBLE</u>	<u>CAUSE</u>
Unit dead	Open fuse (F1) Defective switch Defective power cord Defective power transformer (T1)	Both channels- in-creasing with volume setting (all functions)	Source not properly grounded Defective PC-1
Indicators light, but no sound from speaker or headphones. (All functions)	Both fuses (F2, F3) open Speaker wiring shorted Open diode (s) D1, D2, D3, D4 Defective PC-1 Defective transformer (T1)	Right channel- in-creases with volume setting (all functions)	Improper source grounding Defective PC-1 Defective PC-2
Indicators light, but no sound from speaker or headphones. (Tuner only)	Open R99 on PC-5 Open R94 on PC-5 Shorted C-79 on PC-5	Left channel- in-creases with volume setting (all functions)	Improper source grounding Defective PC-1 Defective PC-3
Left channel dead (all functions)	Bad left channel speaker wiring Open fuse (F3) Defective PC-3 or PC1	Hum in output (tuner only)	Station transmitting hum Defective D14, D15, C79
Output from just one channel (Tuner only)	Poor stereo station signal Defective PC-4 Defective jack (J2)	AFC inoperative	Defective PC-2 Defective PC-1 Defective AFC switch
Right channel dead (all functions)	Bad right channel speaker wiring Defective fuse (F2) Defective PC-2 or PC-1	Tuning meter inoperative	R41 out of adjustment Poor IF alignment Defective meter (M1) Defective PC-3 or PC-2
One or more indicator lights inoperative (all functions)	Lamp not making contact Defective lamps Poor contact on wafer "C" of SW-1. Adjust wiper blade	Stereo indicator does not light on stereo broadcasts	Defective indicator (B-1) Defective PC-5
No output from headphones. Speakers okay. (all functions)	Bad wiring at headphone jack Defective resistors R54, R55 Defective headphone jack (J1)	No stereo effect on stereo broadcasts (tuner function)	Poor stereo station signal Stereo-mono switch in mono position Poor multiplex alignment Poor IF alignment Defective PC-4 or PC-2
Unbalanced output with magnetic phono only	Unbalanced phonograph cartridge Defective PC-1	Inadequate station pickup low sensitivity	Inadequate antenna Local-distant switch in local position Poor front end alignment Poor IF alignment Defective PC-1 or PC-2
Unbalanced output with all inputs	Defective balance control Defective PC-1, PC-2 or PC-3	Local stations garbled or appearing more than once on the dial	Tuner overloaded. Move local-distant switch to local position Defective PC-1
<u>HUM</u> Both channels - all settings-all inputs	See engineering changes Page Defective power supply components D1, D2, D3, D4, C1, C2	Stations not appearing at proper place on dial (within 1/2 mc)	Poor calibration See section on dial calibration
Right channel - all inputs-all volume settings	Defective PC-2		
Left channel - all inputs-all volume settings	Defective PC-3		

FURTHER NOTES ON TROUBLESHOOTING

In many cases the information given in the troubleshooting chart will be sufficient for you to pinpoint the defective component or assembly and correct it without further troubleshooting. Occasionally, however, especially when two or more subassemblies can cause the same symptoms, you must make further checks to determine which component is at fault. In all cases, check for poor solder connection and other obvious troubles before replacing any printed circuit board.

TUNER

A quick check for proper voltages at points A, B, C on the power supply board (PC-5) will determine whether it is working properly. Next, with the tuner set for stereo operation and a VTVM set for lowest scale AC operation connected to the left channel output apply an audio tone of at least 150 mv to test point TP-1. If the VTVM indicates output, PC-4 is okay. Note: this does not check the stereo operation of the board, only that it is amplifying. If the complaint was--no stereo effect--see the troubleshooting chart.

If PC-4 checks okay, apply a 10.7 mc modulated signal to test point TP-2. A VTVM across the left channel output should show output. If there is no output, replace PC-2. Check to see that all connections to it are good, the antenna terminals are okay, and the dial cord is not slipping before replacing the tuner assembly (PC-1).

AMPLIFIER

Connect 4, 8, or 16 ohm speakers to both right and left speaker terminals, set the amplifier for stereo phono operation and adjust volume control to the center of its range.

Apply an audio signal of about 1 volt to TP-3. Signal coming from the right channel speaker indicates that PC-2 is okay. The same signal applied to TP-4 should yield output from the left channel speaker. If it does, PC-3 is functioning. Note: this checks only for amplification. Either board may be causing distortion or low output.

If PC-2 and PC-3 test okay using the procedure above, PC-1 is defective. Remember to check for poor connections and other obvious troubles before replacing any circuit boards.

PRODUCTION MODIFICATIONS

ALL MODELS (HUM)

Tighten all chassis screws on the bottom plate.

E-V 1144 - AMPLIFIER SECTION E-V 1177

Cut ground foil with razor blade at point indicated on output board nearest the left end panel. (See figure 10)

Move function lamp ground lead from center terminal of headphone strip to center terminal of 3 terminal strip on filter capacitor mounting bracket. (NOTE: yellow/red and green wires are already connected to this terminal.)(Fig.11)

NOTE 2: If there is a 5.6 resistor connected to this point, this modification has been already incorporated.

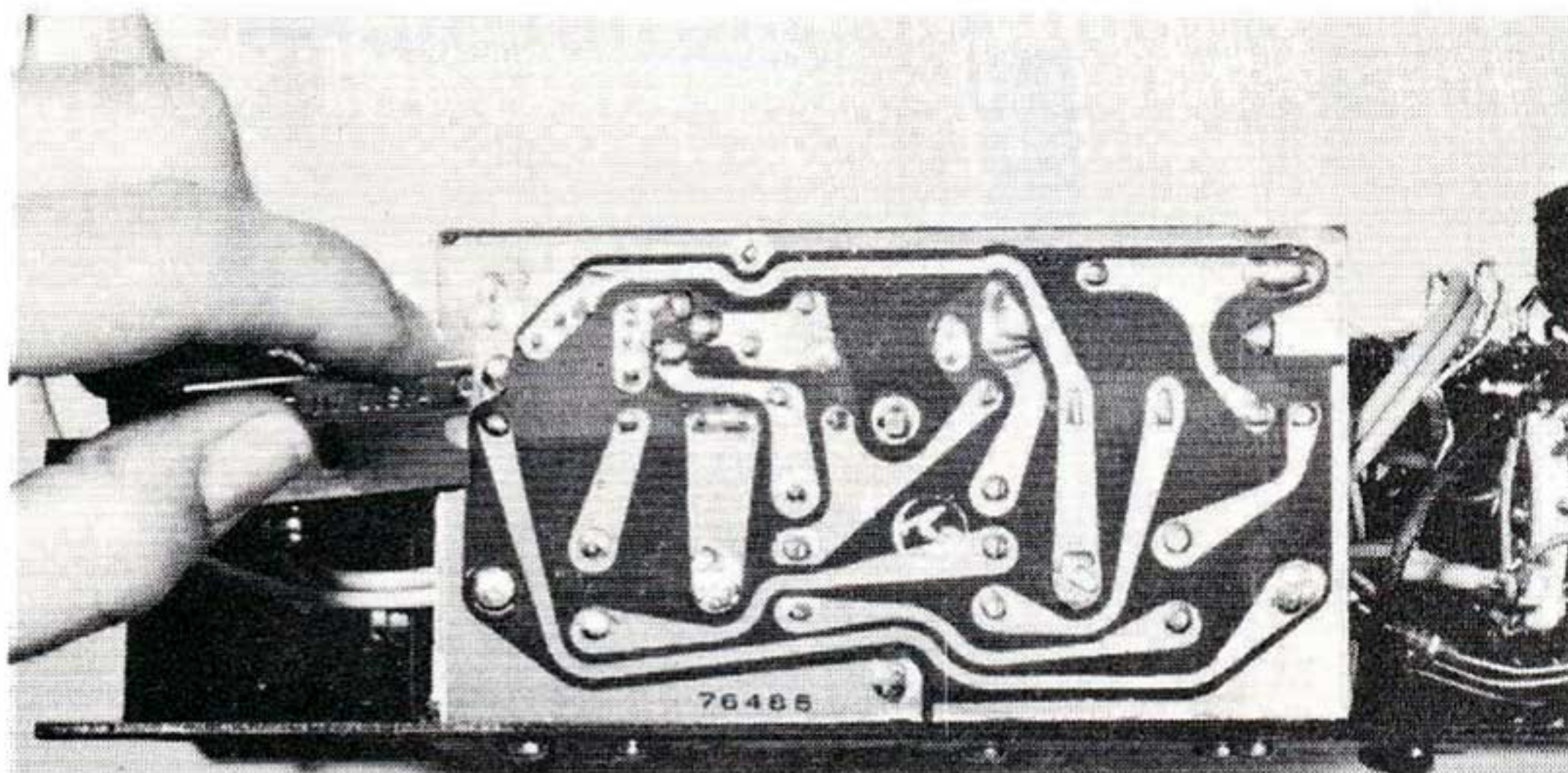


Figure 10

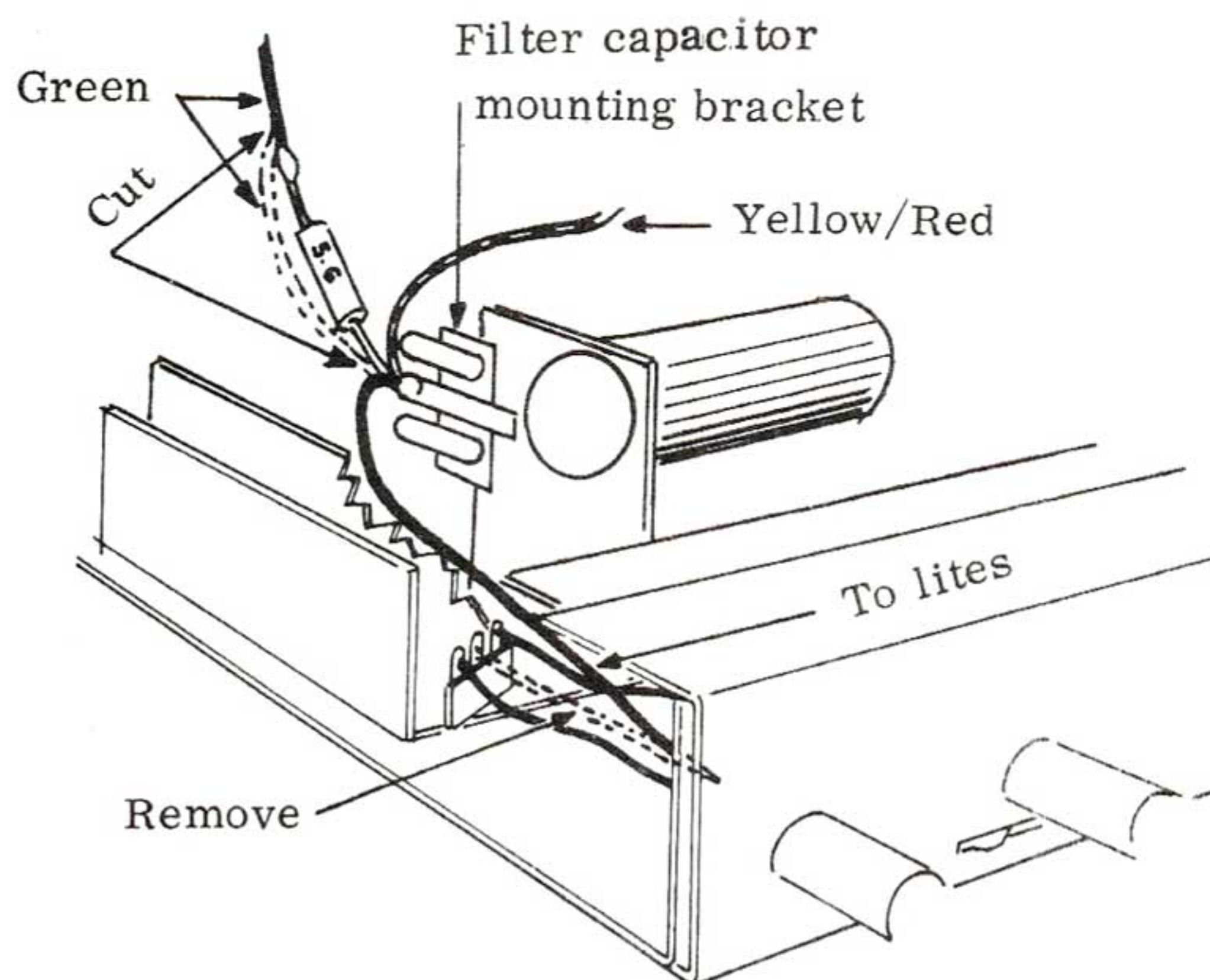


Figure 11

TUNER SECTION E-V 1177 (HUM)

Unsolder 3 leads from 2-terminal board located above the dial shaft. Remove 2-terminal board and replace with 3-

terminal board. (Fig. 12A) Tighten securely. Solder AC supply lead and one lamp lead to right-hand lug. Run leads from left hand and center lugs to center lug of upper power supply filter capacitor (center lug of this capacitor is grounded - the outside case is hot). Add C-79 (250 mfd at 25 v capacitor) plus R-99 (150 ohm 1/4 watt resistor) to power supply board (PC5). Note: This will require some rewiring as indicated in Figure 13.

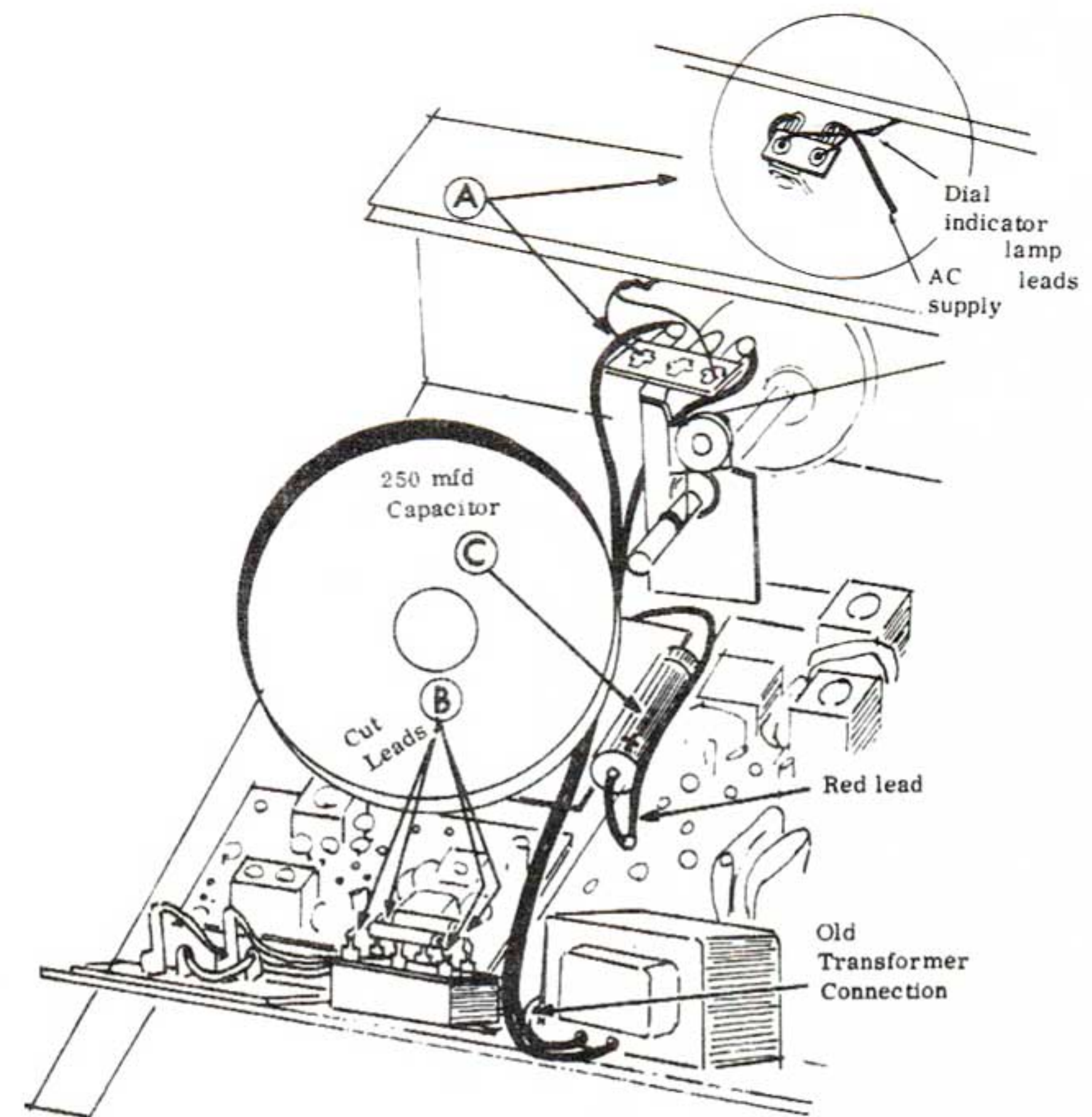


Figure 12

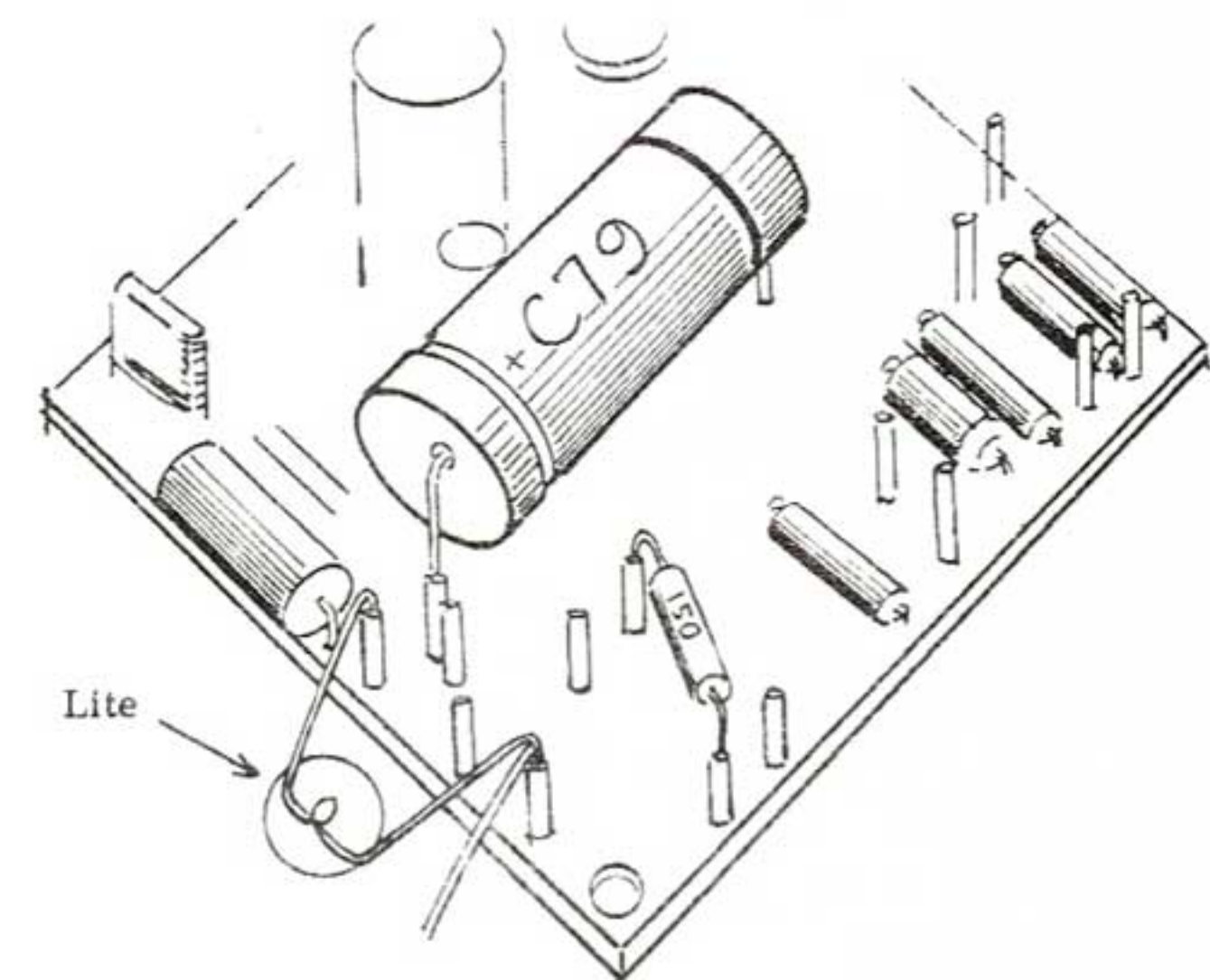


Figure 13

E-V 1155 TUNER (HUM)

To reduce hum accompanying stereo reception which is not present with monaural stations, parallel C-79 with another 250 mfd at 25 v capacitor. (Fig.14) Note: Observe polarity.

Unsolder 3 leads from 2-terminal board located above the dial shaft. Remove 2-terminal board and replace with 3-terminal board. Tighten securely. Solder AC supply lead and one lamp lead to right-hand lug. See Figure 12A.

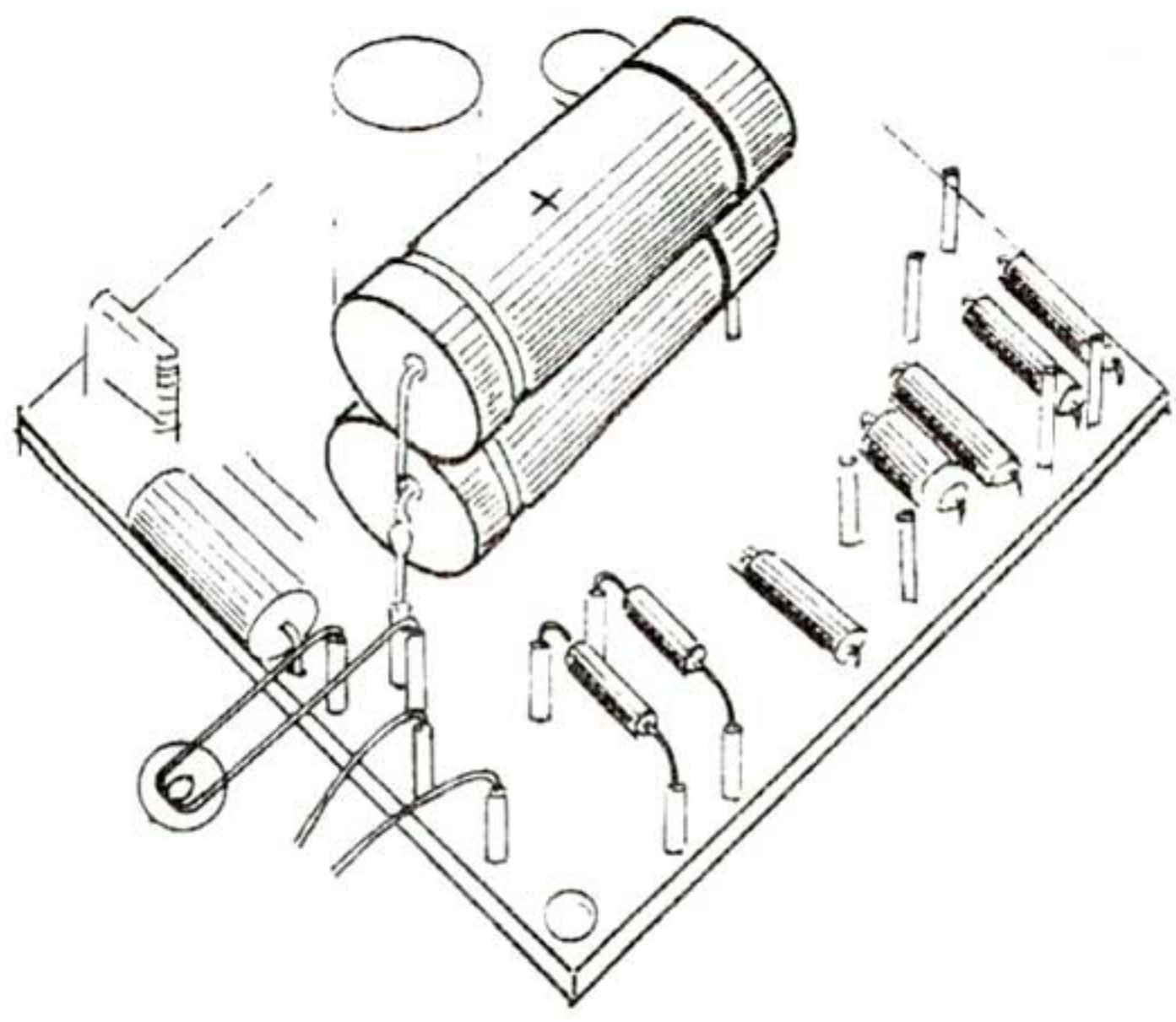


Figure 14

Add a 250 mfd capacitor as shown in Fig. 12C. Connect positive lead to multiplex board (red wire already connected here) and the negative lead to ground lug on tuner assembly mounting bracket.

OTHER MODIFICATIONS

On the first few 1144 and 1177 units, the wiring to the head-phone jack was reversed. To correct this, locate the 3-terminal board mounted on preamp board behind the input selector switch. Unsolder 2 wires to outside lugs of terminal board. Reverse them and resolder. See Figure 11.

Heat sinks should be added to TR5 and TR6 (Figure 15A). If metal filter capacitors are used, place tape over upper filter capacitor to prevent shorting to amplifier top cover of both 1144 and 1177. See Figure 15B.

Install 5.6 ohm resistor in series with green filament lead for longer indicator lamp life. See Figure 11.

Cut out 150 ohm resistors across local distant switch on 1155 and 1177 to decrease sensitivity in local position. See figure 12B.

Install ground strap as shown to avoid hum and extraneous signal pickup. See figure 16.

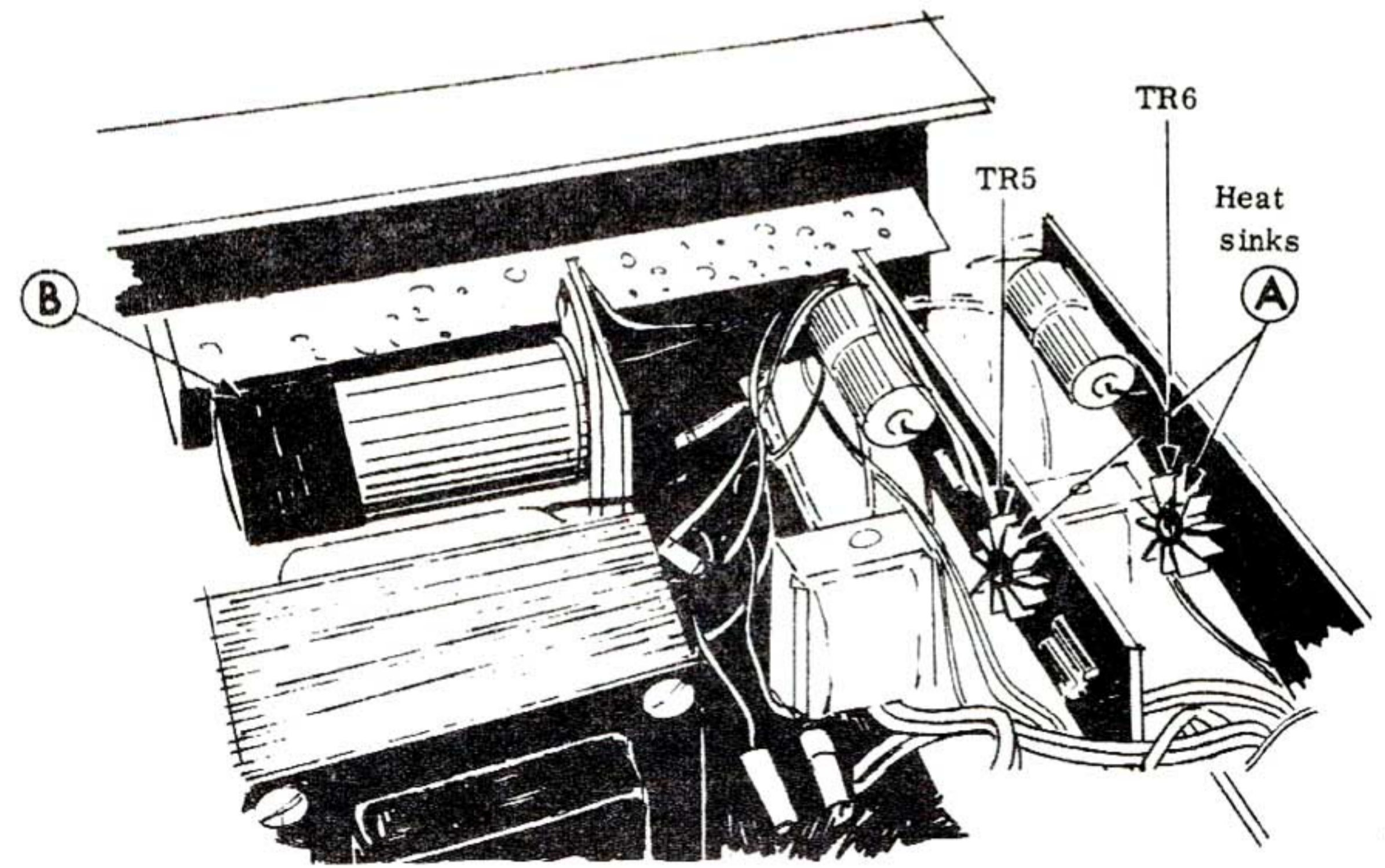


Figure 15

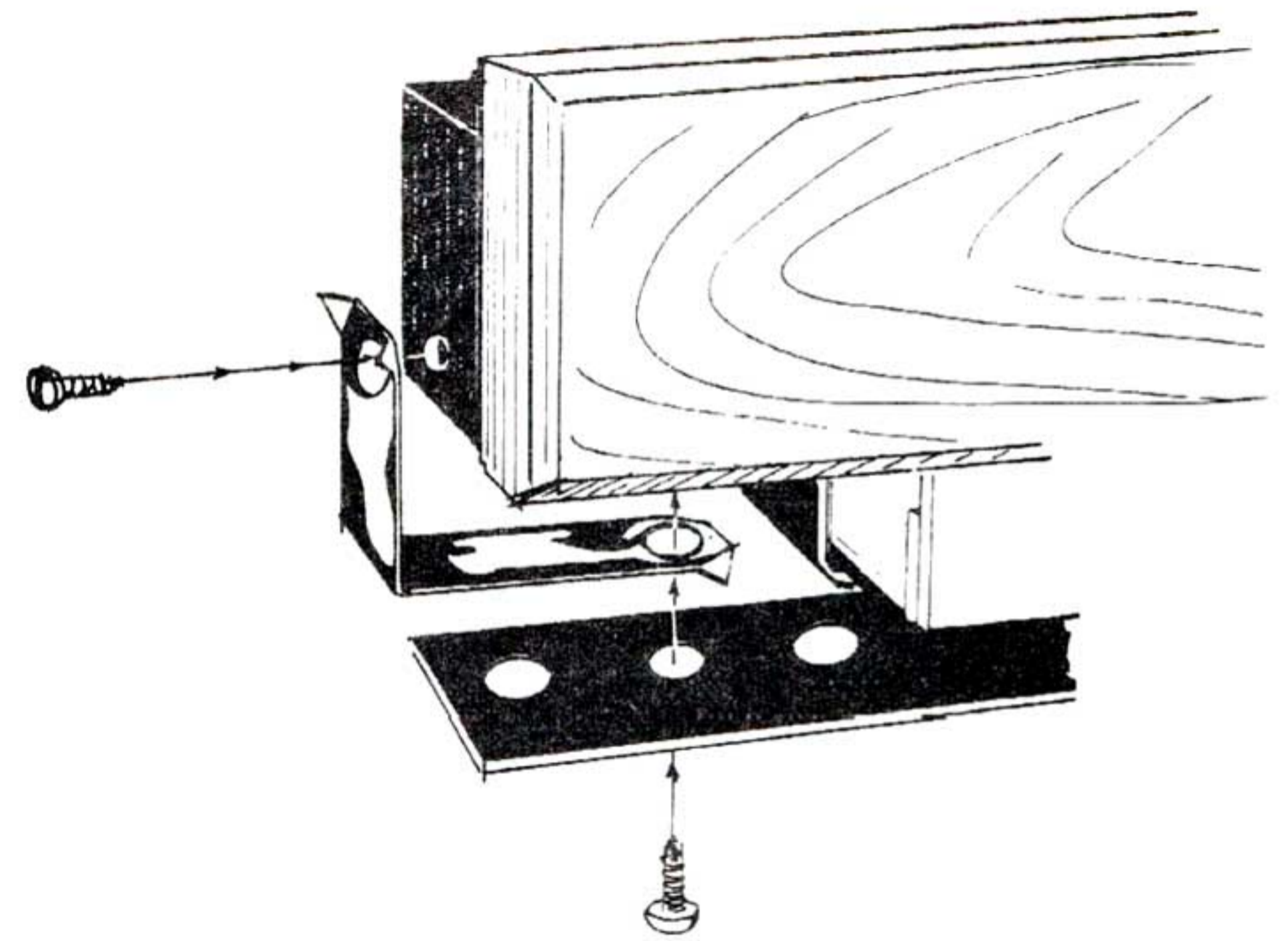


Figure 16

Electro-Voice®

PARTS IDENTIFICATION

E-V 1144 STEREO CONTROL AMPLIFIER

SYMBOL	DESCRIPTION
<u>Subassemblies</u>	
PC1	Pre-Amplifier
PC2,3	Power Amplifier
<u>Capacitors</u>	
C1,2	2500 uF, 25V
C3,4,7,8,13	
15,16,17,22,23	5 uF, 15V
C5,6	.0022 uF
C9	1000 uF, 15V
C10,11	.047 uF
C12,14	.1 uF, flat foil
C20,21,28,29	.22 uF, flat foil
C18,19	.01 uF
C24,25	250 uF, 25V
C26,27	.005 uF
<u>Resistors</u>	
(1/2W, 10% unless otherwise noted)	
R1,2	2.2M
R3,5	100K
R4,6,19,21	4.7K
R7,8	22K
R9,10	6.8K
R11,12	Control, Volume, 25K
R13,14	Control, Balance, 25K
R15,16	2.7K
R17,18	Control, Bass, 25K
R20,22	560K
R23	680
R24,25	1.5K
R26,28,33,35	12K
R27,29	1.2K
R30,31	Control, Treble, 15K
R32,34	150K
R36,37	5.6, 2W
R38,39	100
R40,42,44,46	2.2K
R41,43,45,47	12
R48,49,50,51	.47, 2W
R52,53	220
R54,55	560

<u>Transistors & Diodes</u>	
TR1,2,3,4	SE4002
TR5,6	SE6002
TR7,8,9,10	B10167
D1,2,3,4	100PIV, 750 mA.

<u>Miscellaneous</u>	
T1	Power Transformer
T2,3	Driver Transformer
SW1	Switch, Selector
SW2,3,4,5	Switch, DPDT
F1,2,3	Fuse, 1.5A
	Slow Blow
PL1,2,3	Lamp, 6.0V., .2A, GE Type 1768

E-V 1155 FM STEREO TUNER

<u>Subassemblies</u>	
PC1	FM Tuner Assembly
PC2	FM IF Amplifier
PC3	Meter Amplifier Assembly
PC4	Multiplex Demodulator
PC5	Indicator & Power Supply Assy.

SYMBOL	DESCRIPTION
<u>Capacitors</u>	
C1	18 pF
C2,3	266 pF, with 5 pF trimmer
C4	30 pF
C5	1 pF
C6,10,12,16	
20,50,57	.002 uF
C7	22 pF
C8,17	20 pF with 5 pF trimmer
C9	.02 uF
C11	3 pF
C13	7 pF
C14	5 pF
C15	12 pF
C18,48	30 uF, 6V
C21,22,23,24	
26,27,28,30,	
31,32,34,35,	
36,38,39,42,	
47	.01 uF
C40,41	150 pF
C43	500 pF
C44	10 uF, 6V
C45,77	5 uF, 6V
C46	50 uF, 15V
C49,51,52,64	
65,66,67,69,	
70,73,74,78	10 uF, 10V
C53	400 pF
C54	.005 uF
C55,56	.001 uF
C58	.04 uF
C59	.008 uF
C60,61,62,63	100 pF
C68	100 uF, 10V
C71,72,76	30 uF, 10V
C75	.022 uF
C79	250 uF, 25V
C80	.0025 uF

<u>Resistors</u>	
R1	700
R2,5	5K
R3,68,70,79	
80	15K
R4,7,24,26,	
27,29,30,31,	
32,81,82,89,	
98	1K
R6,9,48,52	10K
R8	3K
R10	100
R11	100K
R12,17,21,51,	
71,72,73,74,	
83,84,97	5.6K.
R13,18,22,25,	
39,59,60,61,	
62,67,69	22K
R14,19,23	1.5K
R15,33,38	330K
R16,20,34,95	220
R28	330
R35,36,85,87	
90	12K
R37	50K Variable
R40	18K
R57,96	470

R41,58	5K Variable
R42,88	3300
R43,93	8200
R44	3900
R45	560K
R46,49,75,77	56K
R47,56,65,66	
86	39K
R50	150K
R53	6.8K
R54,76,78	120K
R55	2700
R63,64	47K
R91	180, 2W
R92	180
R94	150

<u>Transformers & Coils</u>	
T1	FM Antenna Transformer
T2	FM RF Transformer
T3	IF Output Transformer
T4,5,6	IF Transformer
T7	Discriminator Transformer
T8	Transformer, 19kHz
T9	Transformer, 38kHz
T10	Power Transformer
L1	FM Oscillator Coil
L2	Filter Coil 67kHz
L3	Filter Coil 38kHz

<u>Transistors & Diodes</u>	
TR1	2SA166
TR2,3	2SA163
TR4,5,6,7	2SA433
TR8,15	SE4002
TR9,10	2SA52
TR11,12	2SB439
TR13,14	2SB54
TR16	SE6002
D1	1S352
D2,3,6,7	1N60
D4,5,8,9,10	
11,12	1N34A
D13	1E12Z10, Zener
D14,15	100PIV, 750mA

<u>Miscellaneous</u>	
M1	Meter, 100-0-100 uA
S1	Switch, DPDT
S2,3,4	Switch, DPDT
J1	Antenna Terminal
J2	Dual Output Jacks
F1	Slo-Blo Fuse 1/10 amp.
B1,2	Lamp, CM8/880
B3	Lamp, 6.3V., .2 amp.

PARTS IDENTIFICATION

E-V 1177 FM STEREO RECEIVER

AMPLIFIER SECTION

SYMBOL	DESCRIPTION
<u>Subassemblies</u>	
PC1	Pre-Amplifier
PC2,3	Power Amplifier
<u>Capacitors</u>	
C1,2	2500 uF, 25V
C3,4,7,8,13	
15,16,17,22,23	5 uF, 15V
C5,6	.0022 uF
C9	1000 uF, 15V
C10,11	.047 uF
C12,14	.1 uF, flat foil
C20,21,28,29	.22 uF, flat foil
C18,19	.01 uF
C24,25	250 uF, 25V
C26,27	.005 uF
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(1/2W, 10% unless otherwise noted)	
R1,2	2.2M
R3,5	100K
R4,6,19,21	4.7K
R7,8	22K
R9,10	6.8K
R11,12	Control, Volume, 25K
R13,14	Control, Balance, 25K
R15,16	2.7K
R17,18	Control, Bass, 25K
R20,22	560K
R23	680
R24,25	1.5K
R26,28,33,35	12K
R27,29	1.2K
R30,31	Control, Treble, 15K
R32,34	150K
R36,37	5.6, 2W
R38,39	100
R40,42,44,46	2.2K
R41,43,45,47	12
R48,49,50,51	.47, 2W
R52,53	220
R54,55	560.
<u>Transistors & Diodes</u>	
TR1,2,3,4	SE4002
TR5,6	SE6002
TR7,8,9,10	B10167
D1,2,3,4	100PIV, 750 mA.
<u>Miscellaneous</u>	
T1	Power Transformer
T2,3	Driver Transformer
SW1	Switch, Selector
SW2,3,4,5	Switch, DPDT
F1,2,3	Fuse, 1.5A
	Slow Blow
PL1,2,3	Lamp, 6.0V., .2A, GE Type 1768

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SYMBOL	DESCRIPTION
<u>Subassemblies</u>	
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PC3	Meter Amplifier Assembly

PC4	Multiplex Demodulator
PC5	Indicator & Power Supply Assy.
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C9	.02 uF
C11	3 pF
C13	7 pF
C14	5 pF
C15	12 pF
C18,48	30 uF, 6V
C21,22,23,24	
26,27,28,30,	
31,32,34,35,	
36,38,39,42,	
47	.01 uF
C40,41	150 pF
C43	500 pF
C44	10 uF, 6V
C45,77	5 uF, 6V
C46	50 uF, 15V
C49,51,52,64	
65,66,67,69,	
70,73,74,78	10 uF, 10V
C53	400 pF
C54	.005 uF
C55,56	.001 uF
C58	.04 uF
C59	.008 uF
C60,61,62,63	100 pF
C68	100 uF, 10V
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C79	250 uF, 25V
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R1	700
R2,5	5K
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80	15K
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32,81,82,89,	
98	1K
R6,9,48,52	10K
R8	3K
R10	100
R11	100K
R12,17,21,51,	
71,72,73,74,	
83,84,97	5.6K
R13,18,22,25,	
39,59,60,61,	
62,67,69	22K
R14,19,23	1.5K
R15,33,38	330K
R16,20,34,95	220
R28	330
R35,36,85,87	

90	12K
R37	50K Variable
R40	18K
R57,96	470
R41,58	5K Variable
R42,88	3300
R43,93	8200
R44	3900
R45	560K
R46,49,75,77	56K
R47,56,65,66,	
86	39K
R50	150K
R53	6.8K
R54,76,78	120K
R55	2700
R63,64	47K
R91	180, 2W
R92	180
R94, 99	150
<u>Transformers & Coils</u>	
T1	FM Antenna Transformer
T2	FM RF Transformer
T3	IF Output Transformer
T4,5,6	IF Transformer
T7	Discriminator Transformer
T8	Transformer, 19kHz
T9	Transformer, 38kHz
T10	Power Transformer
L1	FM Oscillator Coil
L2	Filter Coil 67kHz
L3	Filter Coil 38kHz
<u>Transistors & Diodes</u>	
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TR2,3	2SA163
TR4,5,6,7	2SA433
TR8,15	SE4002
TR9,10	2SA52
TR11,12	2SB439
TR13,14	2SB54
TR16	SE6002
D1	1S352
D2,3,6,7	1N60
D4,5,8,9,10	
11,12	1N34A
D13	1E12Z10, Zener
<u>Miscellaneous</u>	
M1	Meter, 100-0-100 uA
S1	Switch, DPDT
S2	Switch, DPDT
J1	Antenna Terminal
J2	Dual Output Jacks
B1,2	Lamp, CM8/880
B3	Lamp, 6.3V., .2 amp.
W1	Phono Cable, 2 Cond. Shielded

ELECTRO-VOICE INC.
BUCHANAN, MICHIGAN



SERVICE BULLETIN



SUBJECT : MODIFICATION – Emitter Resistors In Output Transistor Amplifiers

MODELS AFFECTED: E-V 1244X
 E-V 1244
 E-V 1144A
 E-V 1278
 E-V 1277
 E-V 1178B
 E-V 1177B

ALSO MODELS: E-V 1144
 E-V 1177
 E-V 1177A
 E-V 1178

Parts Required: 4 – E-V 46428 0.47 ohm
 2-watt wire wound resistors.

In early production versions of the above listed models, output transistor emitter circuits used IRC type carbon resistors (0.47 ohm) shown in Figure 1. This type of resistor experienced a high failure rate and has been replaced with a more reliable wire wound 0.47 ohm resistor E-V No. 46428 (Figure 2).

When servicing any of the above listed models, inspect the output amplifier pcb assembly for the carbon resistors. Replace any carbon type resistors found with wire wound E-V 46428 resistor (four per assembly).

The first seven models listed above employ output amplifier pcb assembly No. 85432-XX (Figure 1—Item 9). The remaining four models employ a similar circuit but with a different amplifier pcb assembly configuration.

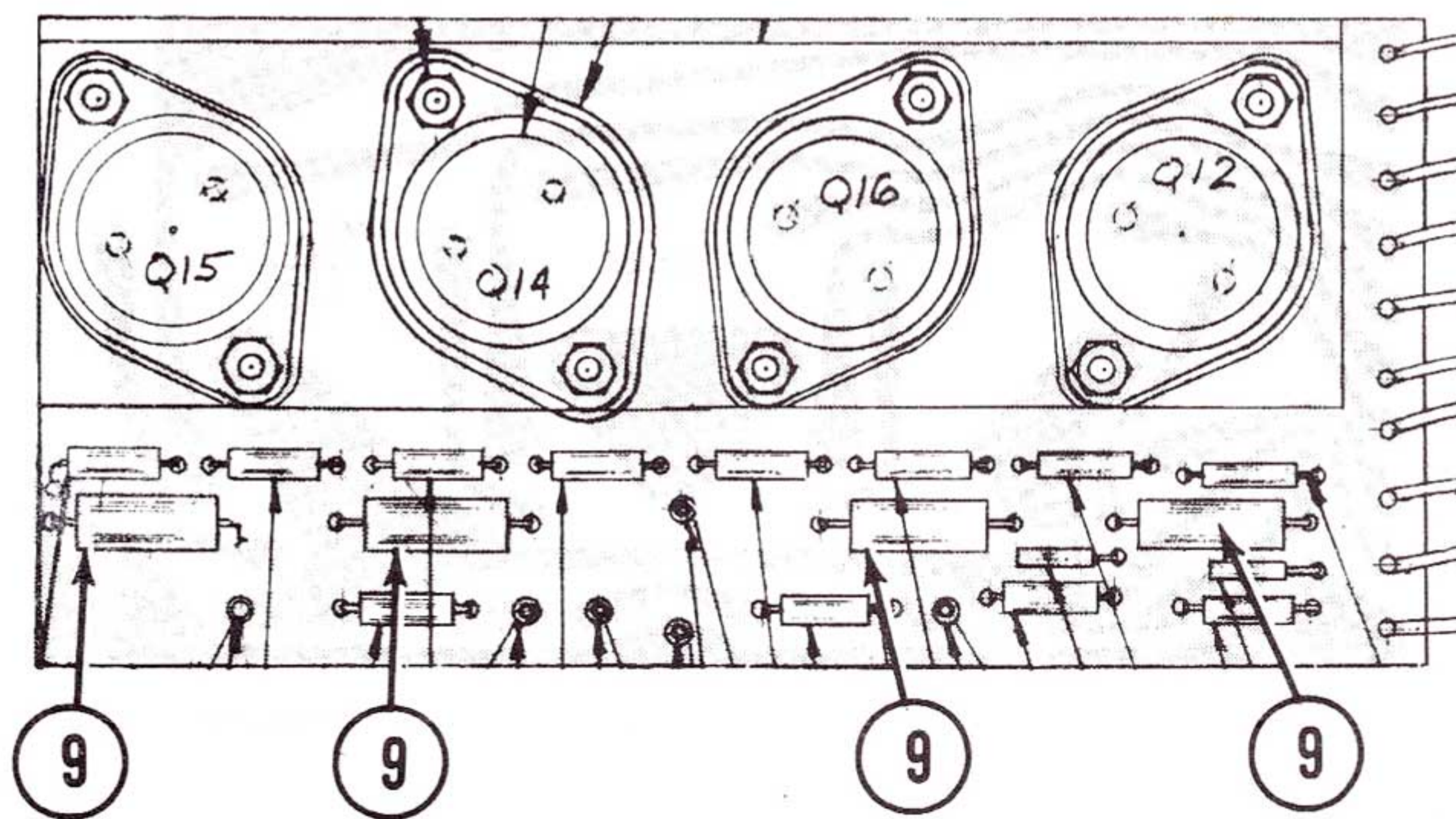


FIGURE 1

RESISTANCE VALUE
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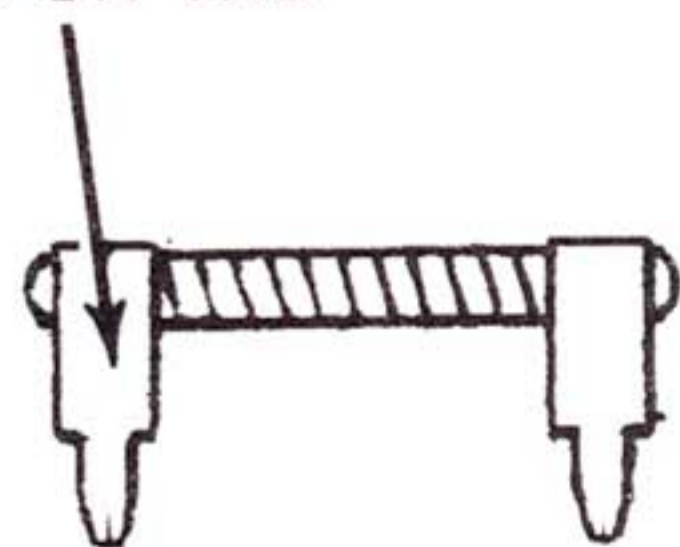
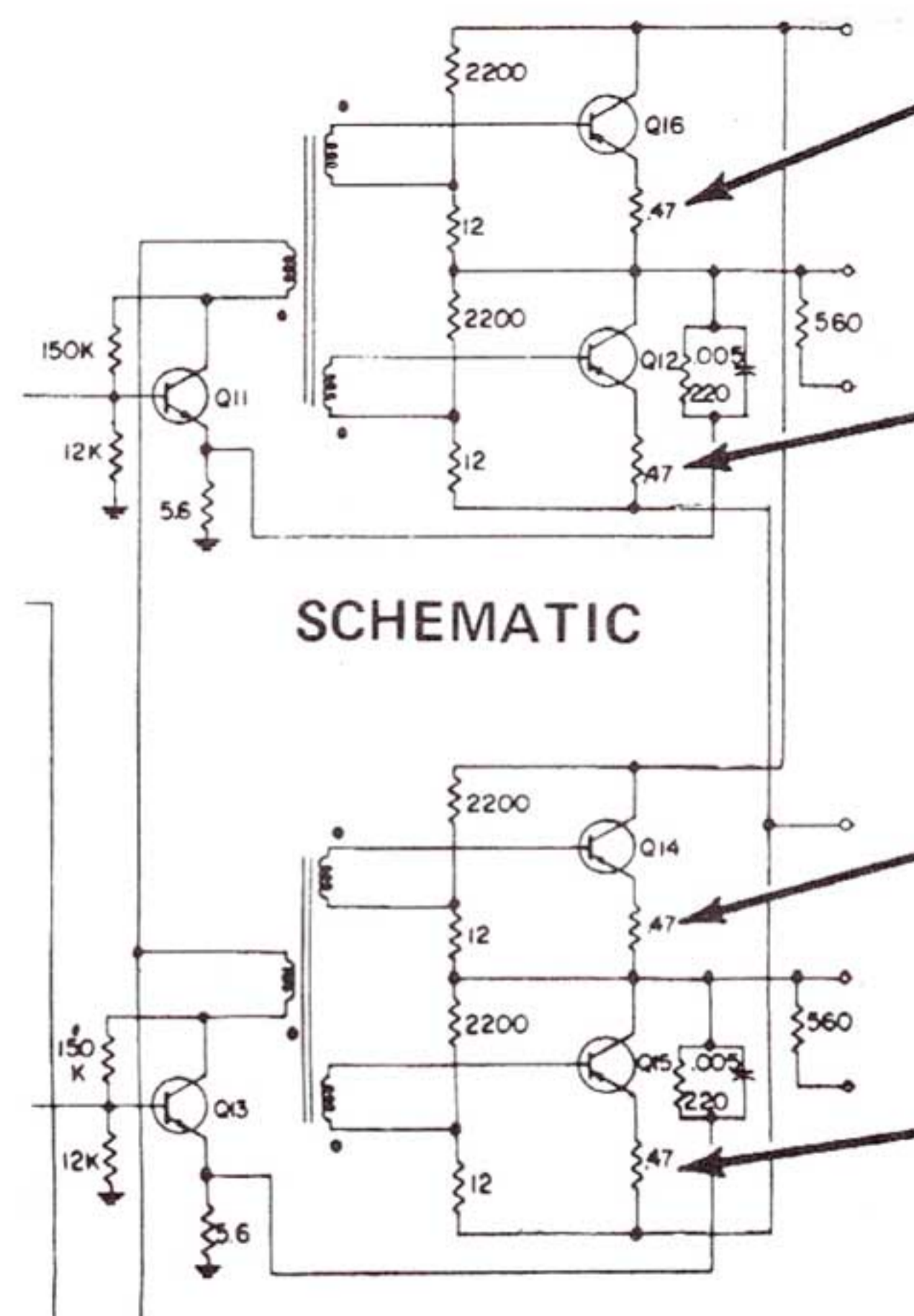
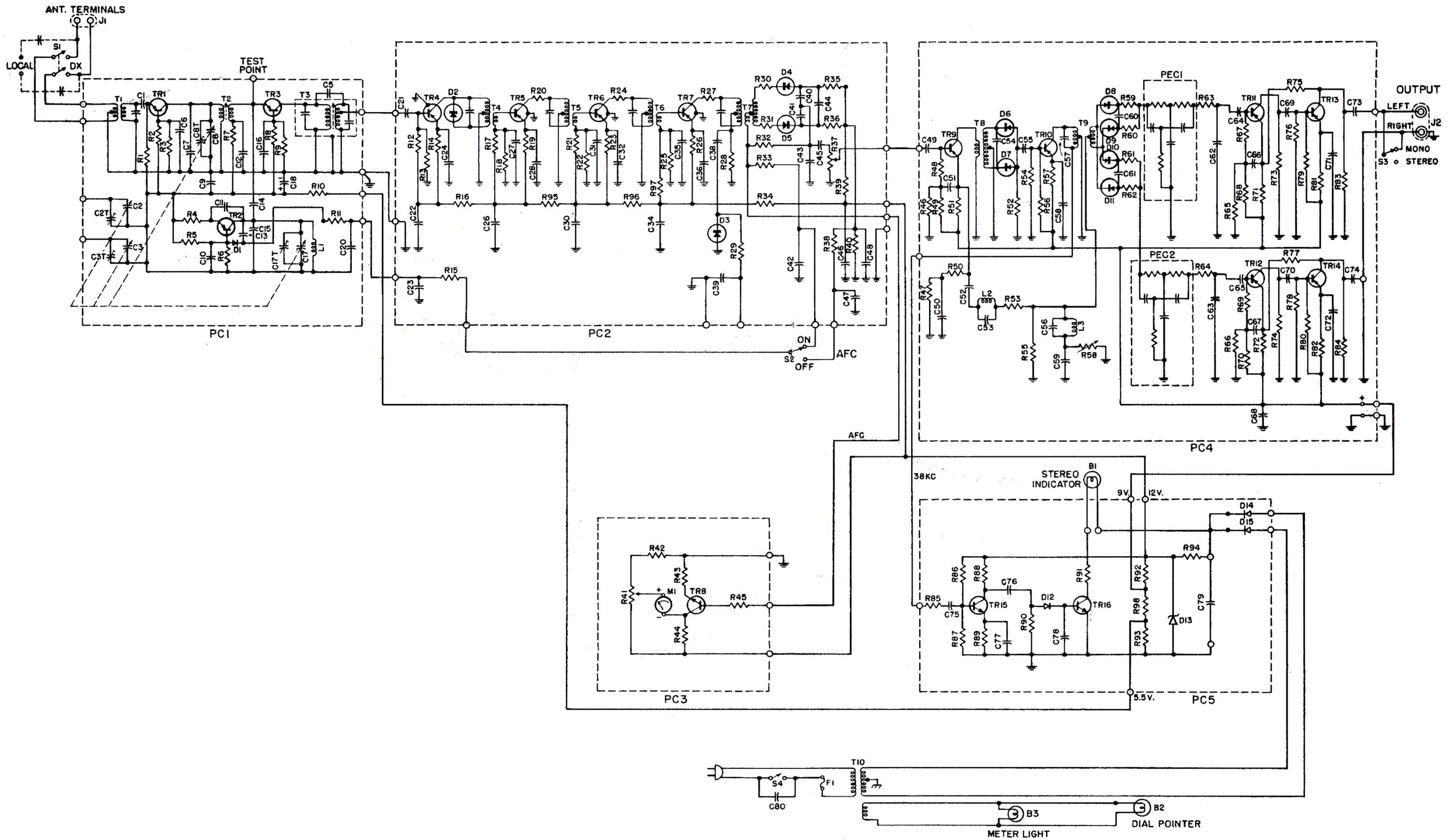


FIGURE 2

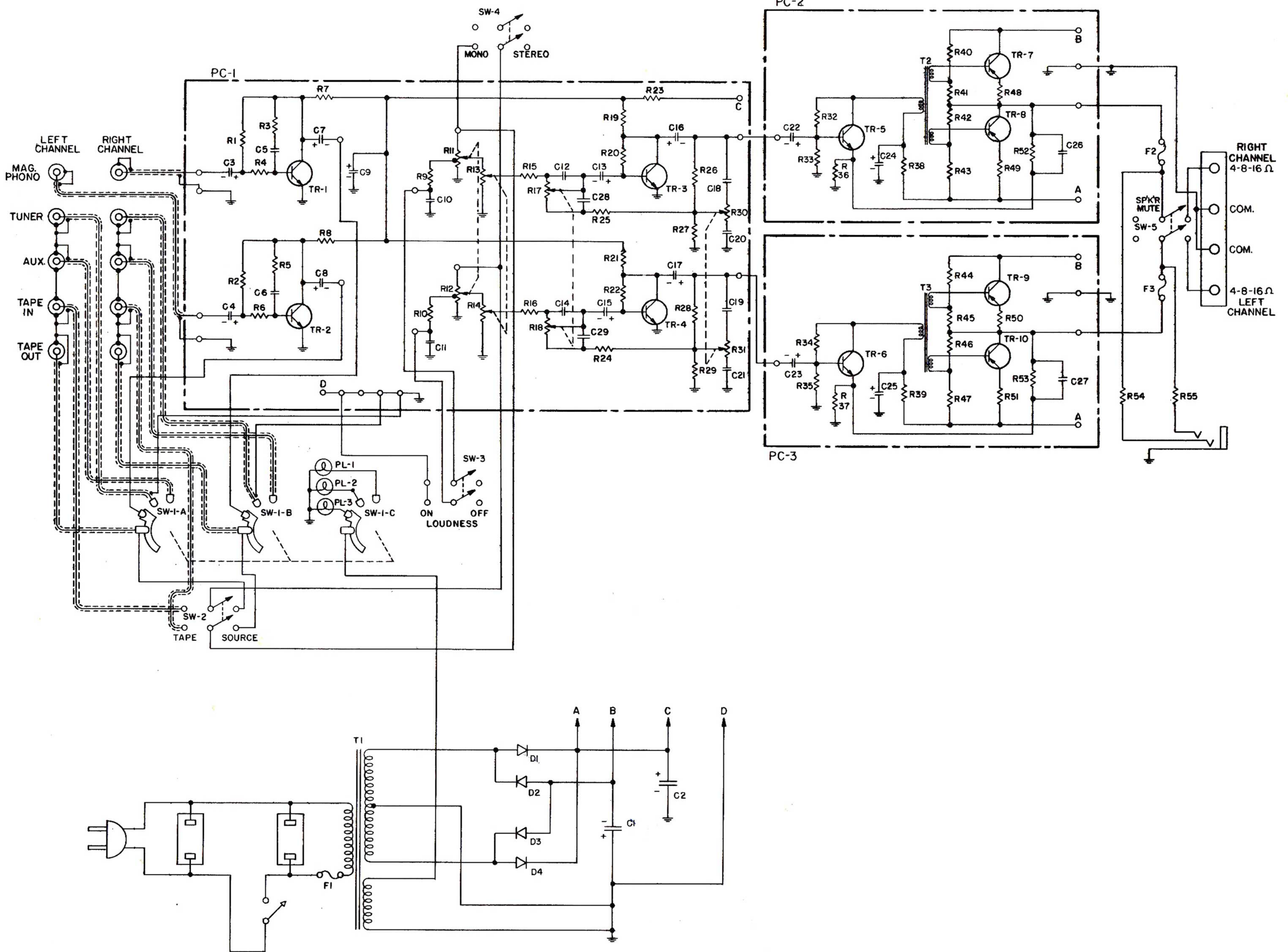


SCHEMATIC



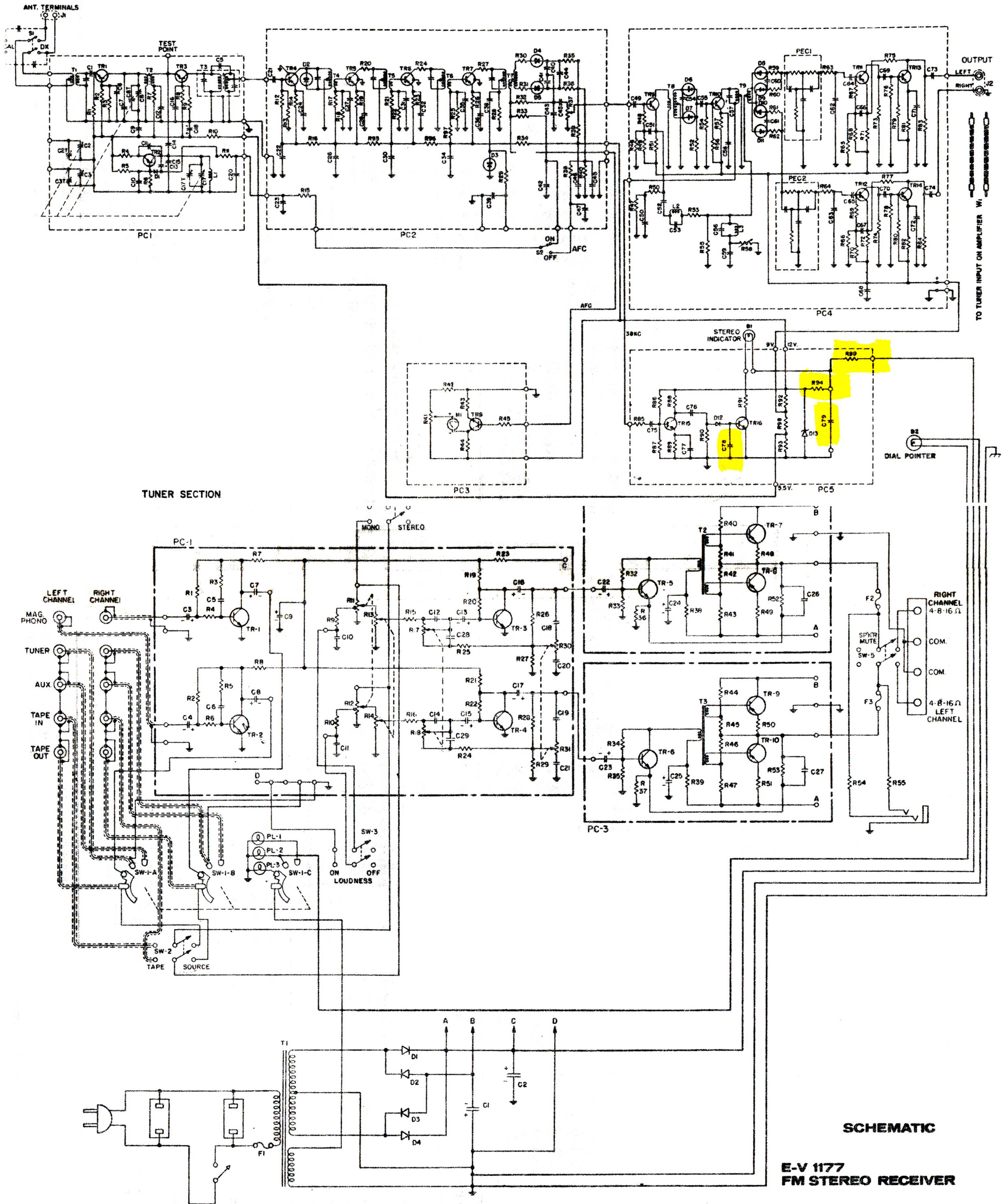
SCHEMATIC E-V 1155 FM STEREO TUNER

E-V 1177 SCHEMATIC



SCHEMATIC E-V 1144 STEREO CONTROL AMPLIFIER

E-V 1177 SCHEMATIC



TUNER SECTION

PC-1

PC-2

PC-3

PC-4

PC-5

PC-1

PC-2

PC-3

PC-4

PC-5

PC-1

PC-2

PC-3

PC-4

PC-5

PC-1

PC-2

PC-3

PC-4

PC-5

PC-1

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PC-4

PC-5

PC-1

PC-2

PC-3

PC-4

PC-5

PC-1

PC-2

PC-3

PC-4

PC-5

SCHEMATIC

E-V 1177
FM STEREO RECEIVER