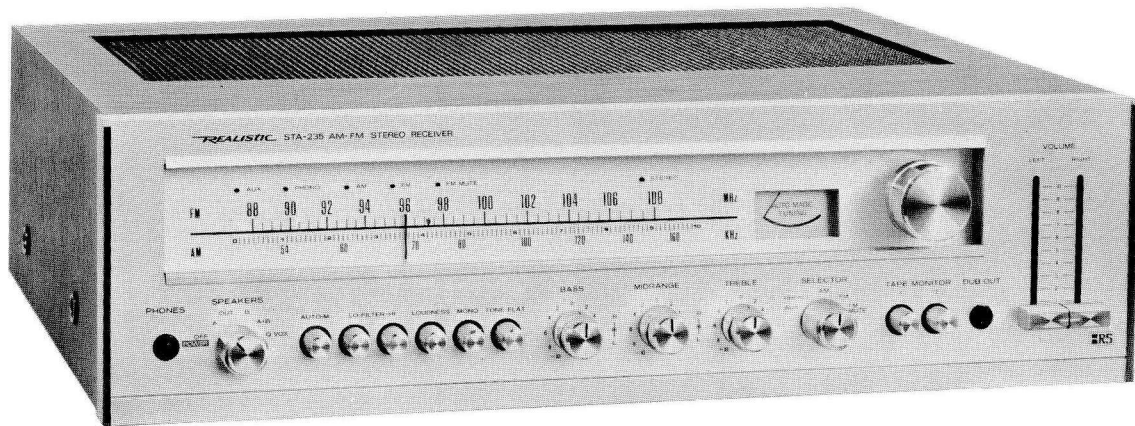


REALISTIC[®]

Service Manual

31-2065

**STA-235
AM / FM STEREO RECEIVER
Catalog Number: 31-2065**



CUSTOM MANUFACTURED FOR RADIO SHACK  A DIVISION OF TANDY CORPORATION

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SPECIFICATIONS

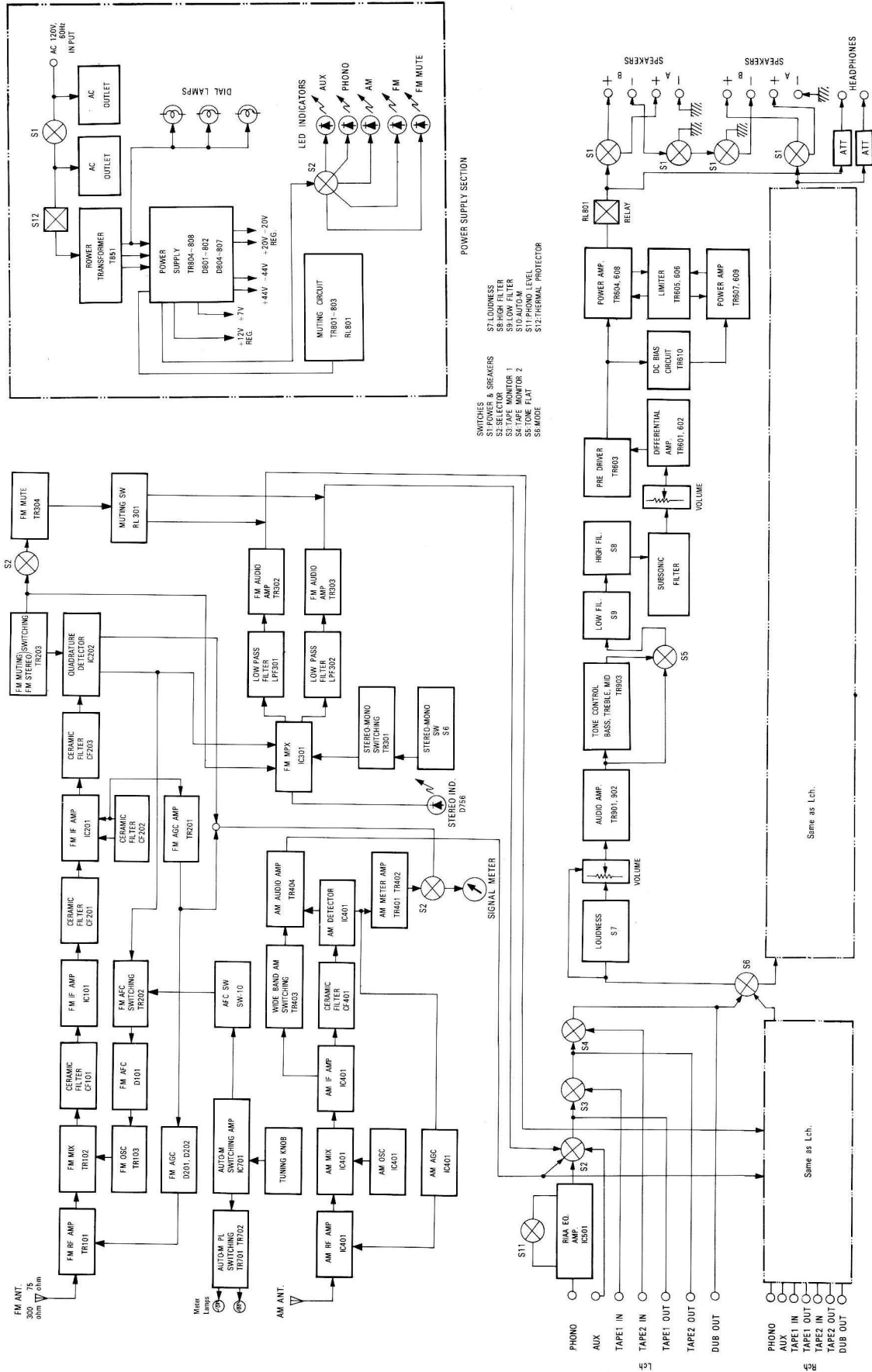
	NOMINAL	LIMIT	UNIT	
FM SECTION				
1. TUNING RANGE	87.5–108.5	88–108	MHz	
2. DIAL CALIBRATION ACCURACY		±250	kHz	
90 MHz		±350	kHz	
98 MHz		±250	kHz	
106 MHz				
3. USABLE SENSITIVITY (NOISE & DISTORTION -30 dB)	2.0	3.0	μV	
4. IMAGE REJECTION (at 106 MHz)	75	65	dB	
5. IF REJECTION (at 90 MHz)	100	80	dB	
6. FULL LIMITING (at -3 dB)	1.5	2.0	μV	
7. IF BANDWIDTH (6 dB down)		±150	kHz	
8. DISTORTION (1mV INPUT)	0.2	0.8	%	
9. SIGNAL-TO-NOISE RATIO (1mV INPUT)	70	60	dB	
10. DE-EMPHASIS 75 μsec. (at 50~10,000 Hz)	±1.5	±2.0	dB	
11. DISCRIMINATOR BANDWIDTH (Peak-to-Peak)	400	300	kHz	
12. AFC HOLDING RANGE (with 1 mV signal)	±1,000	±800	kHz	
13. OUTPUT VOLTAGE (at 75 kHz dev., 400 Hz mod., 1 mV input)	0.9	0.9±3 dB	V	
14. MUTING THRESHOLD	8	3–16	μV	
15. OVERLOAD, THD at 98 MHz, 100% mod. (100 mV RF input)	0.5	1.0	%	
16. SPURIOUS RESPONSE at 98 MHz ANTENNA INPUT 3 μV, 1/2 IF, 103.35 MHz	80	70	dB	
17. CAPTURE RATIO (1 mV INPUT)	2	3.5	dB	
18. ALTERNATE CHANNEL SELECTIVITY (1 mV input)	75	60	dB	
MPX SECTION				
1. STEREO SEPARATION	100 Hz	40	25	dB
(100% mod., 1 mV input)	1 kHz	40	30	dB
	10 kHz	30	20	dB
2. DISTORTION	1 kHz	0.5	1.0	%
(100% mod., 1 mV input)				
3. STEREO BEACON SENSITIVITY (pilot 7%)	4	3–16	μV	
4. RESIDUAL 19 kHz & 38 kHz (1 mV input)	55	45	dB	
5. SUPPRESSION OF SCA INTERFERENCE (1 mV input)		40	dB	
AM SECTION				
1. TUNING RANGE	510–1700	520–1620	kHz	
2. DIAL CALIBRATION ACCURACY		±15	kHz	
600 kHz		±30	kHz	
1,000 kHz		±40	kHz	
1,400 kHz				
3. USABLE SENSITIVITY 600 kHz, 1000 kHz, 1400 kHz (400 Hz, 30% mod., noise & distortion -20 dB)	Radiated Direct	400	μV/m	
	250	30	μV	
4. IMAGE REJECTION (at 1,400 kHz)	70	58	dB	
5. IF REJECTION (at 600 kHz)	60	50	dB	
6. AGC FIGURE OF MERIT (from 100 mV/m at 1,000 kHz)	45	40	dB	
7. DISTORTION (400 Hz, 30% mod., 10 mV/m input)	0.8	2.0	%	
8. IF BANDWIDTH (6 dB down)	18	13–26	kHz	
9. OUTPUT VOLTAGE (400 Hz, 30% mod., 5 mV/m input)	300	200	mV	

		NOMINAL	LIMIT	UNIT
10. AUDIO RESPONSE	(5 mV/m input from 400 Hz to 2 kHz, 0 dB @ 1,000 kHz)	-3	-6	dB
11. SELECTIVITY	200 μ V/m	25	20	dB
12. SIGNAL-TO-NOISE RATIO	(1,000 kHz, with antenna input 5 mV/m)	40	32	dB
13. AM BEAT (input 5 mV/m)		3	10	%
14. WIDE BAND AM THRESHOLD			10-50	mV
AUDIO SECTION				
1. RMS OUTPUT POWER	(distortion < 0.3%, 20 Hz ~ 20 kHz)			
	PER CHANNEL DRIVEN			
	8 Ω	70	60	W
	4 Ω	65	55	W
	BOTH CHANNELS DRIVEN			
	8 Ω	60	55	W
	4 Ω	65	55	W
2. IM DISTORTION	(at 40 W output 70/7,000 Hz 4/1)	0.1	0.3	%
3. HARMONIC DISTORTION (at 40 W output)				
	100 Hz	0.03	0.15	%
	1,000 Hz	0.03	0.15	%
	10,000 Hz	0.08	0.3	%
4. FREQUENCY RESPONSE				
	(AUX, 8 Ω load, 1 W output, \pm 1.0 dB)	50-30k		Hz
	(AUX, 8 Ω load, 1 W output, +1.5 dB, -4 dB)	20-70k	20-40k	Hz
5. INPUT VOLTAGE (at 50 W output)				
	PHONO-HI	5	5 \pm 1	mV
	PHONO-LO	2.5	2.5 \pm 0.5	mV
	AUX	210	210 \pm 30	mV
	TAPE MONITOR	210	210 \pm 30	mV
6. INPUT IMPEDANCE				
	PHONO MAG	50		k Ω
	AUX	70		k Ω
	TAPE MONITOR	70		k Ω
7. TONE CONTROL				
	BASS 100 Hz	\pm 8	\pm 8 \pm 2	dB
	MIDRANGE 1.5 kHz	\pm 6	\pm 6 \pm 2	dB
	TREBLE 10 kHz	\pm 10	\pm 10 \pm 2	dB
8. EQUALIZATION RIAA: 30 ~ 15,000 Hz			RIAA \pm 2	dB
9. PHONO AMP OVER LOAD CAPABILITY (at 1% HD)				
	HI	100	80	mV
	LO	200	160	mV
10. HIGH FILTER	10 kHz	-6	-6 \pm 2	dB
11. LOW FILTER	70 Hz	-6	-6 \pm 2	dB
12. LOUDNESS COMPENSATION (Volume -30 dB)				
	50 Hz	11	11 \pm 2	dB
	100 Hz	9	9 \pm 2	dB
13. CHANNEL SEPARATION	(AUX input 100 ~ 10,000 Hz)	40	35	dB
14. SIGNAL-TO-NOISE RATIO (input shorted)				
	PHONO MAG	65	58	dB
	AUX	80	70	dB
15. RESIDUAL NOISE		0.5	1.5	mV
16. LOAD IMPEDANCE			4-16	OHM
17. POWER SOURCE	120 Volts, 60 Hz AC*			
	30 WATTS, No Signal			
	320 WATTS, Full Signal			

* 220/240V AC, 50 Hz for European and Australian Models

NOTE: Nominal Specs represent the design specs; all units should be able to approximate these—some will exceed and some may drop slightly below these specs. Limit Specs represent the absolute worst condition which still might be considered acceptable; in no case should a unit perform to less than within any Limit Spec.

BLOCK DIAGRAM



DISASSEMBLY INSTRUCTIONS

1. Removing chassis from Wooden Cabinet. (Refer to the Fig. A.)
Remove five screws—two (88) from each side of the wooden cabinet and one(89) from the back.
2. Removing the front Panel. (Refer to the Fig. A.)
Remove six screws—three (89) from each side of the Front Panel and remove panel.

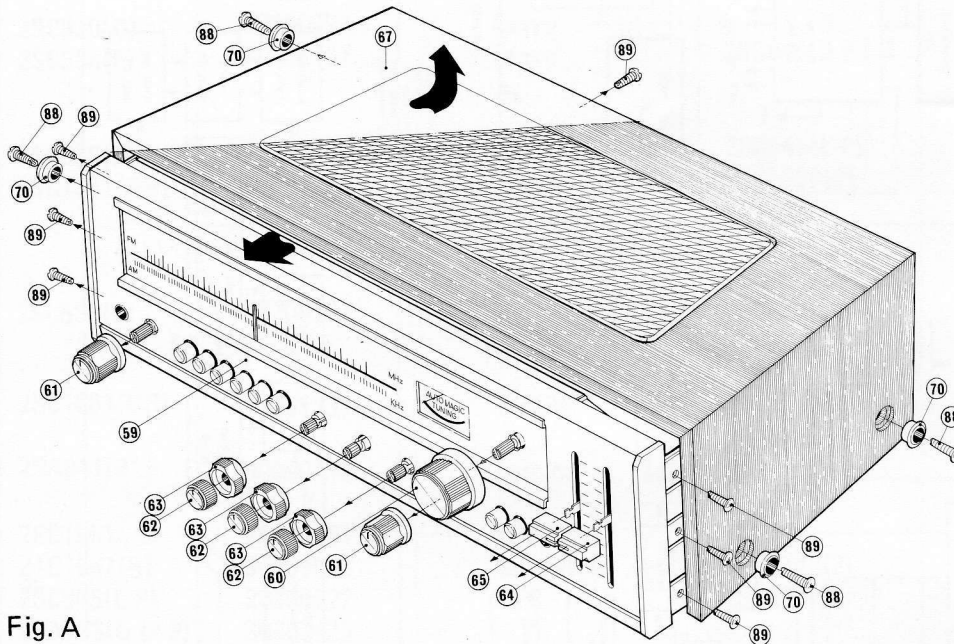
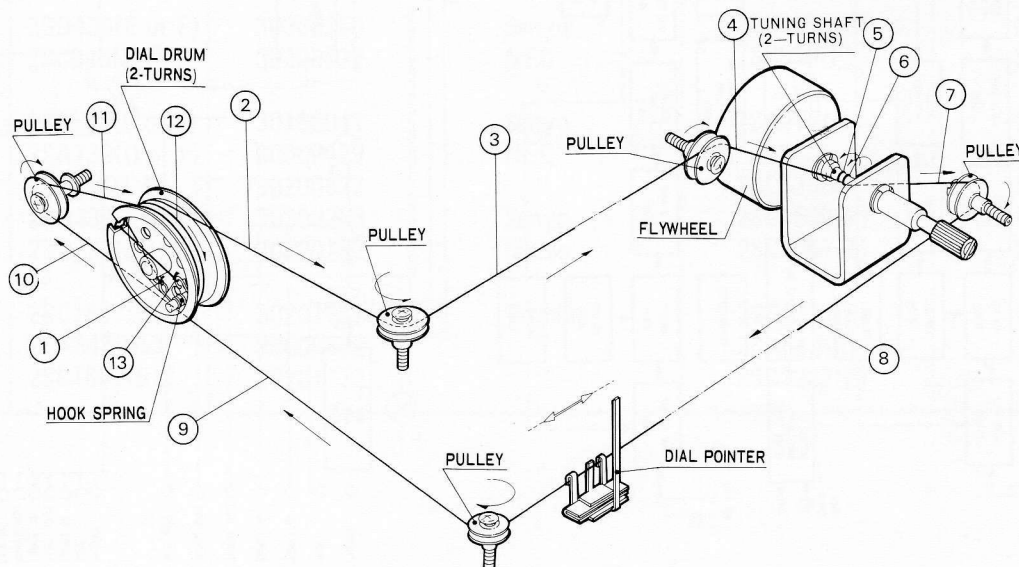


Fig. A

DIAL STRINGING DIAGRAM

Note: Tuning capacitor should be in fully closed position.



ALIGNMENT PROCEDURES

Do not attempt alignment unless the following equipment is available.

- | | | |
|------------------------|------------------------|----------------------|
| 1. AM Signal Generator | 4. FM Signal Generator | 7. Distortion meter |
| 2. Oscilloscope | 5. Stereo Modulator | 8. DC Voltmeter |
| 3. AC Voltmeter | 6. Audio Generator | 9. Frequency Counter |

Note: Remove line cord antenna from FM external antenna terminal when aligning.

AM IF & RF ALIGNMENT

Output of signal generator should be no higher than necessary to obtain an output reading. Signal Generator Modulation: 30% Set SELECTOR switch SW1 to AM.						
STEP	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	INDICATOR	ADJUSTMENT Refer Fig. 4.	REMARKS
1	Refer Fig. 1.	455 kHz (400 Hz Mod.)	Point of non-interference (on/about 600 kHz)	AC Voltmeter to TAPE OUT jack	CF401 (Both Sections)	Adjust for maximum reading.
2	Same as Step 1	600 kHz (400 Hz Mod.)	600 kHz	Same as Step 1	L401 (RF COIL) L402 (OSC. COIL) L451 (ANT. COIL)	Same as Step 1
3	Same as Step 1	1400 kHz (400 Hz Mod.)	1400 kHz	Same as Step 1	TC105 (ANT. Trimmer) TC106 (RF Trimmer) TC107 (OSC. Trimmer)	Same as Step 1
4	Same as Step 1	1000 kHz (400 Hz Mod.)	1000 kHz	Same as Step 1	VR403	Adjust for 300 mV on AC Voltmeter with input of 5 mV/m.
5	Same as Step 1	1000 kHz (4 kHz Mod.)	1000 kHz	Same as Step 1	VR401	Adjust for 210 mV reading on AC Voltmeter with input of 28 mV/m.
6	Same as Step 1	1000 kHz (400 Hz Mod.)	1000 kHz	SIGNAL Meter	VR402	Adjust for 80% reading of full scale with input of 5 mV/m.

Note: Remove line cord antenna from FM external antenna terminal when aligning.

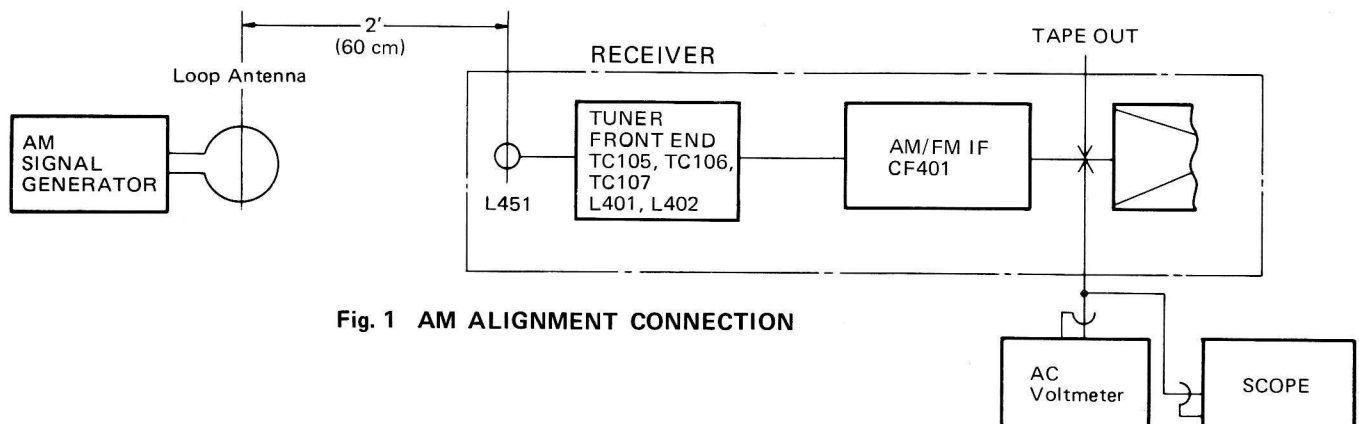


Fig. 1 AM ALIGNMENT CONNECTION

FM RF AND IF ALIGNMENT

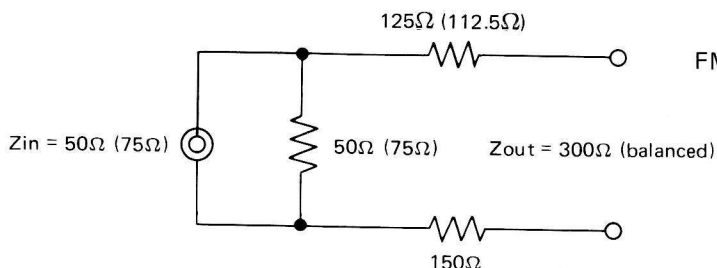
Signal generator output should be no higher than necessary to obtain an output reading.

Set Selector switch to FM.

Signal Generator deviation: 75 kHz NOTE: Be sure to disconnect FM line cord antenna during alignment.

STEP	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	INDICATOR	ADJUSTMENT Refer Fig. 4.	REMARKS
1	Connect to FM Antenna Terminal through FM Dummy Antenna (300Ω), Fig. 2	90 MHz (400 Hz Mod.)	90 MHz	AC Voltmeter connected to TAPE OUT jack	L101 (ANT. COIL) L102 (RF COIL) L103 (RF COIL) L104 (OSC.COIL)	Adjust for maximum reading on AC Voltmeter.
2	Same as Step 1	106 MHz (400 Hz, Mod.)	106 MHz	Same as Step 1	TC102 (RF Trimmer) TC103 (RF Trimmer) TC104 (OSC. Trimmer) TC101 (ANT. Trimmer)	Same as Step 1
Repeat steps 1 & 2 until no further improvement is possible.						
3	Same as Step 1	90 MHz (400 Hz, Mod.)	90 MHz	Same as Step 1	T101 (FM IFT)	Same as Step 1
4	Same as Step 1	90 MHz (400 Hz, Mod.)	90 MHz	DC Voltmeter connected to Pin #16 and #17 on PCB #0042	L203 (Pink Core)	Adjust for zero reading on DC Voltmeter.
5	Same as Step 1	90 MHz (400 Hz, Mod.)	90 MHz	Distortion Meter connected to TAPE OUT jack	L203 (Blue Core)	Adjust for minimum distortion.
6	Same as Step 1	98 MHz (400 Hz, Mod.)	98 MHz	Same as Step 1	VR202	Set SELECTOR switch to FM MUTE. Adjust for zero reading on AC Voltmeter with SG output level of 4 μV.
7	Same as Step 1	98 MHz (400 Hz Mod.)	98 MHz	SIGNAL Meter	VR201	Adjust for Full Scale of SIGNAL Meter with SG output level of 2 volts.

For European model, the lowest frequency of FM tuning range should not be below 87.5 MHz.



FM Dummy Antenna to 300 Ω antenna terminal of Receiver

Fig. 2 FM DUMMY ANTENNA

MPX ALIGNMENT

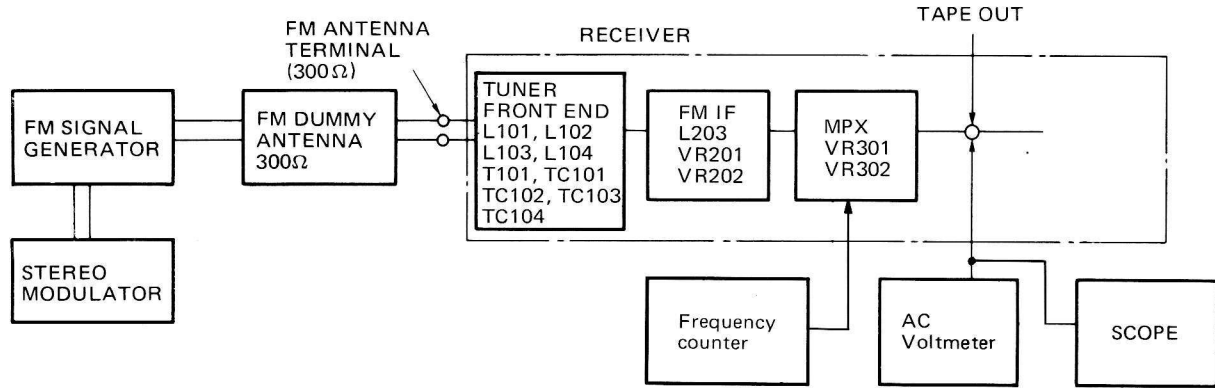


Fig. 3 MPX ALIGNMENT CONNECTION

Set SELECTOR Switch to FM.
Tune for 98 MHz on band.
Signal Generator output level: 1000 μ V Deviation: 75 kHz at 100% modulation of composite signal
Connect Signal Generator to FM Antenna Terminal through FM Dummy Antenna (300 Ω).

STEP	19 kHz (PILOT SIGNAL) MODULATION Level	SIGNAL GENERATOR Freq. Set to	OUTPUT INDICATOR Connected to	ADJUST Refer Fig. 4.	ADJUST FOR	NOTE
1			Frequency counter connected to TP3 and Ground	VR302	76 kHz	
2	8%	Composite 1 kHz R channel	AC Voltmeter connected to TAPE OUT jack of R channel			Adjust input for Audio output of about 0.9V.
3	8%	Composite 1 kHz L channel	AC Voltmeter connected to TAPE OUT jack of R channel	VR301	minimum	AC Voltmeter reading should be at least 30 dB below reading in step 2.
4	8%	Composite 1 kHz R channel	AC Voltmeter connected to TAPE OUT jack of L channel	VR301	minimum	Same as Step 3

If you did not obtain -30 dB readings in steps 3 and 4 (compared with step 2), readjust VR301 until you obtain -30 dB reading for both steps 3 and 4.

MAIN AMPLIFIER ALIGNMENT

INDICATOR	ADJUSTMENT	REMARKS
DC Voltmeter	VR601a, b	Adjust for 0.005–0.015 volts across R626a, b with no signal.

ALIGNMENT POINTS

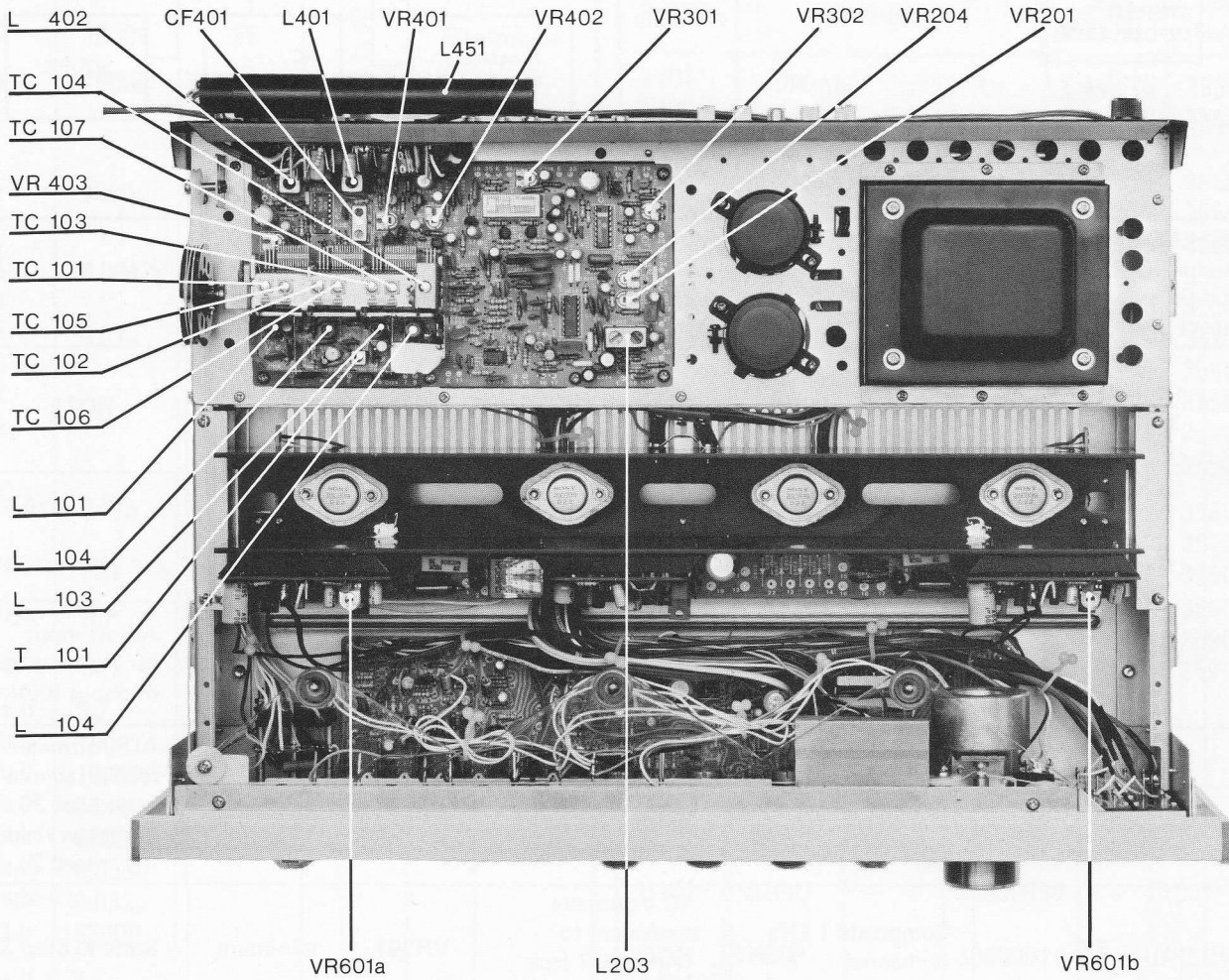
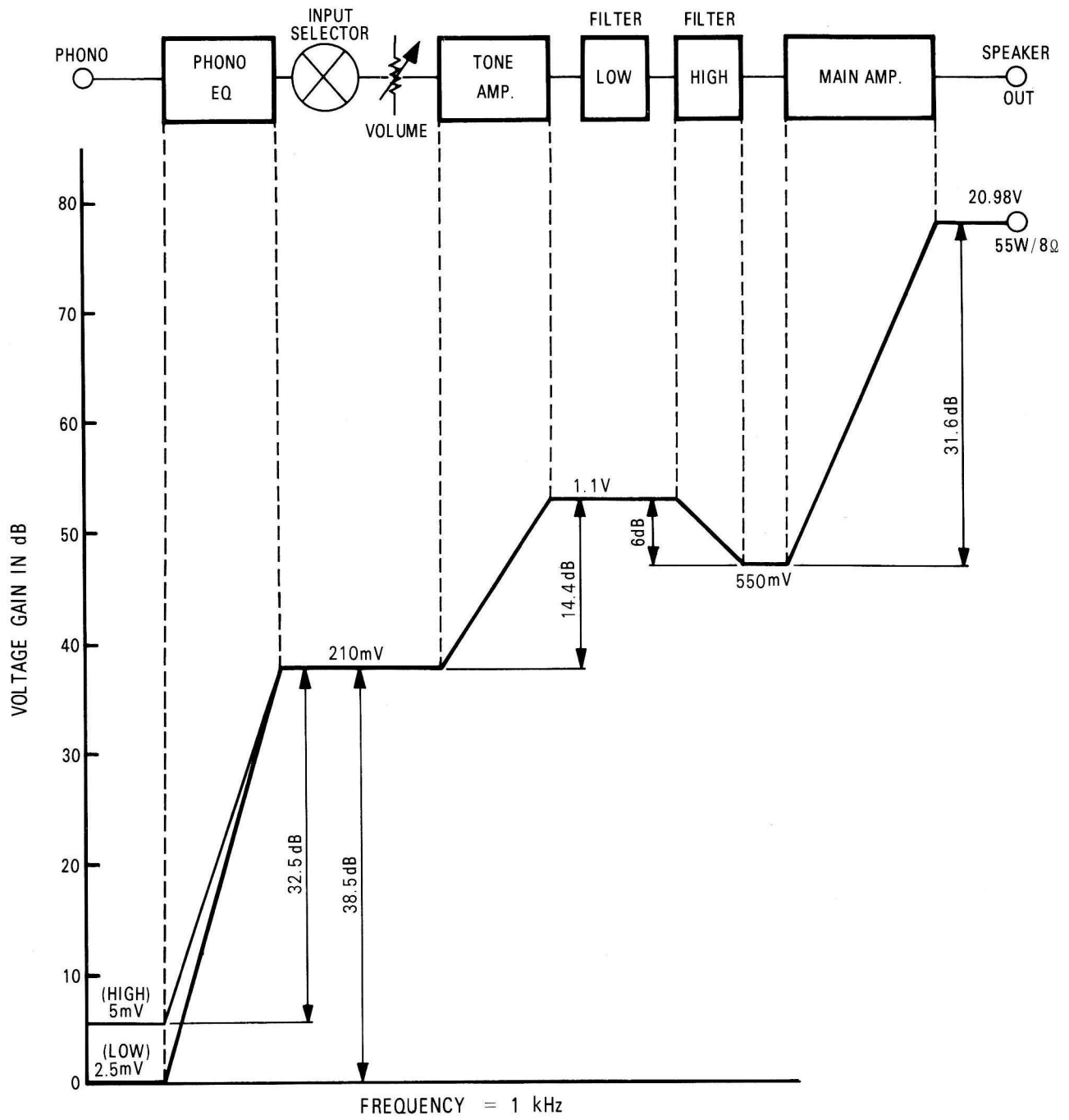


Figure 4

LEVEL DIAGRAM



TROUBLESHOOTING

Symptom	Cause and Remedy
1) Receiver not operative: Pilot lamp does not light.	<ul style="list-style-type: none"> A) Faulty AC power cord Replace the cord. B) Defect in the power switch Replace the switch. C) Broken wire in the power transformer Replace the transformer. D) Broken power fuse Replace the fuse.
2) Fuse blows when power is turned on.	<ul style="list-style-type: none"> A) Power Transformer T851 defective Replace the transformer. B) Short in the primary or secondary of the transformer circuitry Repair the short. C) Damaged rectifier D807 Replace the damaged rectifier. D) Short circuit in the rectifier circuit Repair the short. E) Short circuit in the power transistor TR608a, b or TR609a, b Replace the defective transistor and check circuit.
3) Pilot lamp does not light.	<ul style="list-style-type: none"> A) Defective lamp Replace lamp. B) Disconnection in the transformer T851 tertiary winding Replace the transformer.
4) Pilot lamp lights but no sound from both channels.	<ul style="list-style-type: none"> A) Resistor R814, R809, R923 or R924 open Replace. B) Capacitor C803, C804, C805, C812, C813, C851, C852, C916 or C917 defective Replace the defective capacitor(s). C) Diode D807 damaged Replace the diode. D) Open in secondary winding of the power transformer T851 Replace the transformer. E) Transistor TR804 or TR806 open Replace the transistor(s). F) Diode D802, D804 or D805 damaged Replace the damaged diode(s). G) Defective D801 or D803 Replace the defective diode(s).

Symptom	Cause and Remedy
	<p>H) Transistor TR803 defective Replace the transistor.</p> <p>I) Defective R802, R803, R804, C801 or C802 Replace the defective component(s).</p> <p>J) Defective Relay RL801 Replace.</p>
5) A Speakers do not work.	A) Speaker switch S1 defective Replace the switch.
6) B Speakers do not work.	A) Speaker switch S1 defective Replace the switch.
7) One channel does not work with VOLUME at maximum with a test signal applied to the center terminal of VOLUME control VR951 of the dead channel.	<p>A) Defect in transistor TR901, TR902 or TR903 of TONE AMP BOARD 0043 Locate and correct the defect.</p> <p>B) Defect in transistor TR601, TR602, TR603, TR604, TR605, TR606, TR607, TR608, TR609 or TR610 of MAIN AMP DRIVER and MAIN AMP BOARD 0045 Locate and correct the defect.</p> <p>C) Break in copper foil of printed circuit board 6044, 0043 or 0045 Repair or replace circuit board.</p> <p>D) Short in speaker output terminal Repair the short.</p> <p>E) Defective resistor R901, R902, R903, R904, R905, R906, R907, R918, R919, R920, R737, R738, R742, R602, R603, R604, R605, R606, R607, R608, R609, R610, R612, R613, R614, R615, R616, R625, R626, R621 or R622 Replace the defective resistor(s).</p>
8) Same as 7 above but channel operates when test signal is applied as 7.	A) Defective SELECTOR switch S2 or TAPE MONITOR 1 and 2 switches S3, S4 Repair or replace the switch(es).
9) Speaker works normally but headphones do not work.	<p>A) Headphone plug does not mate with jack Replace the plug.</p> <p>B) Defective resistor R651a, b Replace the resistor(s).</p>
10) All inputs work normally except for AUX input.	<p>A) Poor contact in AUX input jack Repair or replace the jack.</p> <p>B) Faulty SELECTOR switch S2 Repair or replace the switch.</p>

Symptom	Cause and Remedy
11) PHONO input not operative	<ul style="list-style-type: none"> A) Defective IC501 Replace the IC. B) Faulty resistor R501, R502, R503, R504, R505, R506, R507 or R508 Replace the faulty resistor(s). C) Faulty capacitor C501, C502, C503, C504, C507 or C508. Replace the faulty capacitor(s). D) Poor contact in PHONO input jack Repair or replace the jack. E) Faulty SELECTOR switch S2 Repair or replace the switch.
12) TAPE MONITOR 1/2 not operative	<ul style="list-style-type: none"> A) Defective contact in TAPE MONITOR 1/2 OUT jack Repair or replace the jack.
13) FM does not operate.	<ul style="list-style-type: none"> A) Transistor TR808 damaged (open) Replace the transistor. B) Defective resistor R816 Replace the resistor. C) Short circuit in TUNER B+ circuit Repair the short. D) Poor contact in SELECTOR switch S2 Repair or replace the switch. E) Resistor R301 defective Replace the resistor. F) Choke coil L202 defective Replace the choke coil. G) Capacitor C301 defective Replace the capacitor. H) Defective IC IC201 or IC202 Replace the defective IC('s). I) Defective IFT T101 or Coil L203 Replace the defective component(s). J) Defective resistor R201, R203, R204, R205, R216, R217, R218, R221, R222, R225 or R232 Replace the defective resistor(s). K) Defective capacitor C111, C112 or C201 Replace the defective capacitor(s). L) Defective transistor TR101, TR102, TR103 or coil L101-L105 of TUNER BOARD 0042 Replace the defective component(s). M) Faulty lead-in Repair or replace the lead-in.

Symptom	Cause and Remedy
14) Poor multiplex separation	<p>A) Improper adjustment Readjust T101, VR301 and VR302. (Refer to MPX ALIGNMENT on page 9.)</p> <p>B) Transistor TR301, TR302, TR303 or IC IC301 of TUNER BOARD 0042 defective Replace the defective component(s).</p> <p>C) Variable resistor VR301 or VR302 defective Replace the defective variable resistor(s).</p>
15) Stereo indicator does not light.	<p>A) Defective indicator LED D756 Replace the LED.</p> <p>B) Improper adjustment of VR301 of TUNER BOARD 0042 Make readjustment. (Refer to MPX ALIGNMENT on page 9.)</p> <p>C) Defective IC IC301 or resistor R327 Replace the defective component(s).</p>
16) FM volume not sufficient	<p>A) If volume of both L and R channels not enough: Front-End defective, or faulty IFT T101 or diode D207, D208 or faulty IC IC202, IC301 or capacitor C219 of TUNER BOARD 0042 Locate and replace the defective component(s).</p> <p>B) If sound of one channel not enough: Defective LPF301 or TR302 (PCB 0042) in case of L channel, or defective LPF302 or TR303 (PCB 0042) in case of R channel Replace the defective component(s).</p>
17) AM does not operate.	<p>A) Damaged either IC401 or TR404 of TUNER BOARD 0042 Replace the damaged component(s).</p> <p>B) Defective L401, L402 or CF401 of TUNER BOARD 0042 Replace the defective component(s).</p> <p>C) One of resistors of TUNER BOARD 0042 defective Replace the defective one.</p> <p>D) One of capacitors of TUNER BOARD 0042 defective Replace the defective one.</p> <p>E) SELECTOR switch S2 defective Repair or replace the switch.</p> <p>F) Defective Tuning Gang Replace.</p> <p>G) Damaged AM bar antenna Repair or replace bar antenna.</p>

Symptom	Cause and Remedy
18) LOUDNESS has no effect.	<p>A) Defective LOUDNESS switch S7 Replace the switch.</p> <p>B) Defective capacitor C731 or resistor R735 Replace defective component(s).</p> <p>C) Defective VOLUME control VR951 Replace.</p>
19) STEREO-MONO not effective	<p>A) Defective MONO switch S6 Replace the switch.</p>
20) TAPE MONITOR 1 or 2 not effective.	<p>A) Defective TAPE MONITOR switch S3 or S4 Replace the defective switch(es).</p> <p>B) Poor contact in TAPE MONITOR 1 or 2 IN jacks. Repair or replace jack(s).</p>
21) BASS control has no effect.	<p>A) VR903 defective Replace.</p> <p>B) Defective capacitor C910, C911, C912 or resistor R913, R914, R917 of TONE AMP BOARD 0043 Replace defective component(s).</p>
22) MID-RANGE control has no effect.	<p>A) VR902 defective Replace.</p> <p>B) Defective C908, C909, R911, R912 or R916 of TONE AMP BOARD 0043 Replace the defective component(s).</p>
23) TREBLE control has no effect.	<p>A) VR901 defective Replace.</p> <p>B) Defective C906, C907, C909, R910 or R915 of TONE AMP BOARD 0043 Replace the defective component(s).</p>
24) Excessive noise with PHONO input	<p>A) Faulty IC501 Replace the IC.</p> <p>B) Faulty R501, R502, R503, R504, R505, C501 or C503 Replace the faulty component(s).</p>
25) Noisy VOLUME control	<p>A) Defective VR951 Replace the variable resistor.</p> <p>B) Defective capacitor C508, C901, C904, C914 or C602 Replace the defective capacitor(s).</p>
26) SIGNAL meter not functioning	<p>A) Defective meter Replace the meter.</p>

Symptom	Cause and Remedy
	<p>B) In case of FM reception, R226, C210, C223, C251, D203 or D204 defective Replace the defective component(s).</p> <p>C) In case of AM reception, VR401, VR402, D401, TR401 or TR402 defective Replace the defective component(s).</p>
<p>27) AUTO-Magic AFC has no effect when AUTO-M switch is ON. (White light behind the tuning meter does not change to red when the tuning control is touched.)</p>	<p>A) Transistor TR701, TR702 or IC701 defective Replace the defective component(s).</p> <p>B) Resistor R701-R718 defective Replace the defective resistor(s).</p> <p>C) Diode D701 or D702 defective Replace the defective diode(s).</p> <p>D) Capacitor C701-C704 defective Replace the defective capacitor(s).</p> <p>E) Defective switch S10 Replace.</p> <p>F) Defective AUTO-Magic indicator lamp PL4 Replace the lamp.</p>
<p>28) White light does not light when the tuning control is released.</p>	<p>A) Defective transistor TR701 (short) TR702 (open) or IC IC701 Replace the defective component(s).</p> <p>B) Defective resistor R703-R718 Replace the defective resistor(s).</p>
<p>29) QUATRAVOX not effective</p>	<p>A) Defective switch S1 Replace the switch.</p>
<p>30) TONE FLAT has no effect.</p>	<p>A) Defective switch S5 Replace the switch.</p>
<p>31) FILTER-LO has no effect.</p>	<p>A) Defective switch S9 Replace the switch.</p> <p>B) Defective capacitor C732 Replace the capacitor.</p>
<p>32) FILTER-HI has no effect.</p>	<p>A) Defective switch S8 Replace the switch.</p> <p>B) Defective resistor R738 or capacitor C733 Replace the defective component(s).</p>
<p>33) WIDE BAND AM is not functioning. (When this circuit is functioning, high frequency response (3 kHz and above) will improve with high input signal levels. With input level of 28 mV/m or more, high frequency response should be noticeably better. Use high quality sig. gen. modulated with 3 kHz or 4 kHz.</p>	<p>A) Damaged transistor TR401, TR402 or TR403 of TUNER BOARD 0042 Replace the damaged transistor(s).</p> <p>B) Defective diode D401 Replace the diode.</p>

Symptom	Cause and Remedy
	C) Damaged transistor TR404 Replace the transistor. D) Improper adjustment of VR401 Readjust VR401. (Refer to AM IF & RF ALIGNMENT on Page 7.)

Note: 1. This Amplifier has built-in over load thermal protection for abnormal operation. When the temperature of the thermal protector (installed with heat sink) does rise abnormally ($90 \pm 5^\circ\text{C}$), the thermal protector will automatically cut out, and as soon as the temperature goes down sufficiently ($65 \pm 15^\circ\text{C}$), the thermal protector turns back on automatically. If the Receiver does turn itself off, check ventilation and speaker connections.

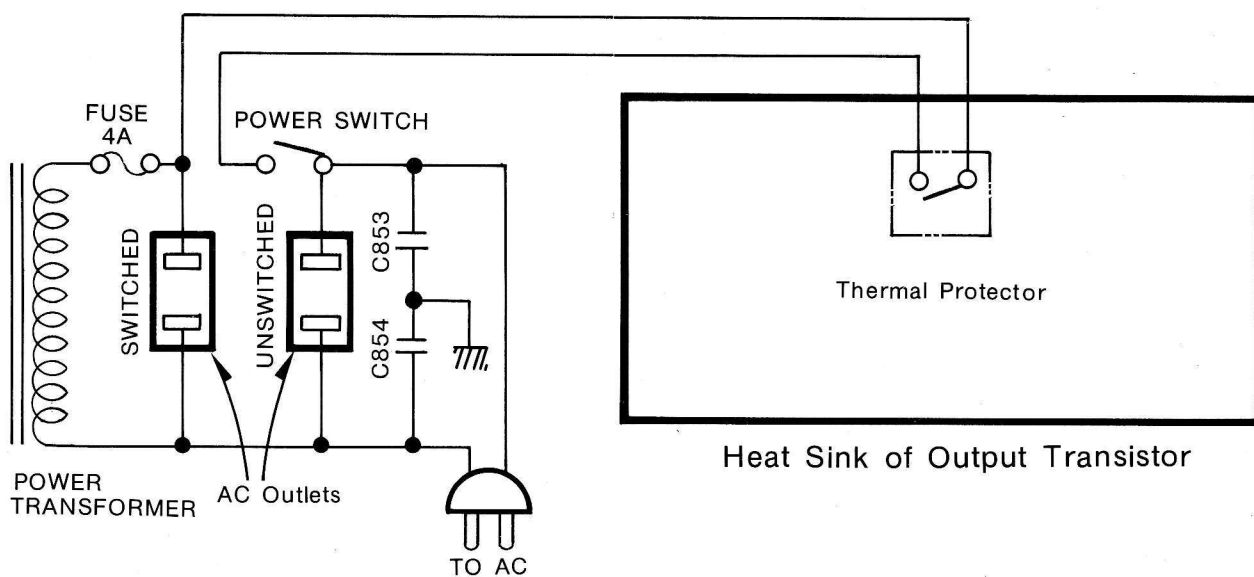


Figure 5

2. Transistors TR605 and TR606 protects the audio output stage when abnormally high current flows through TR608 and TR609, caused by excessive drive at input, or too low impedance load is connected at output. If increase of the current is excessive, the voltage across R625 and R626 will turn on TR605 and TR606 which are normally not biased "on".

The collector potential of these transistors (through D601 and D602 diodes) reduce bias on TR604 and TR607, which causes output transistor current (TR608 and TR609) to reduce.

This performs two safety functions.

- 1) Protects the output circuit devices.
- 2) Protects the speakers from loud clicks, pops and excessive levels.

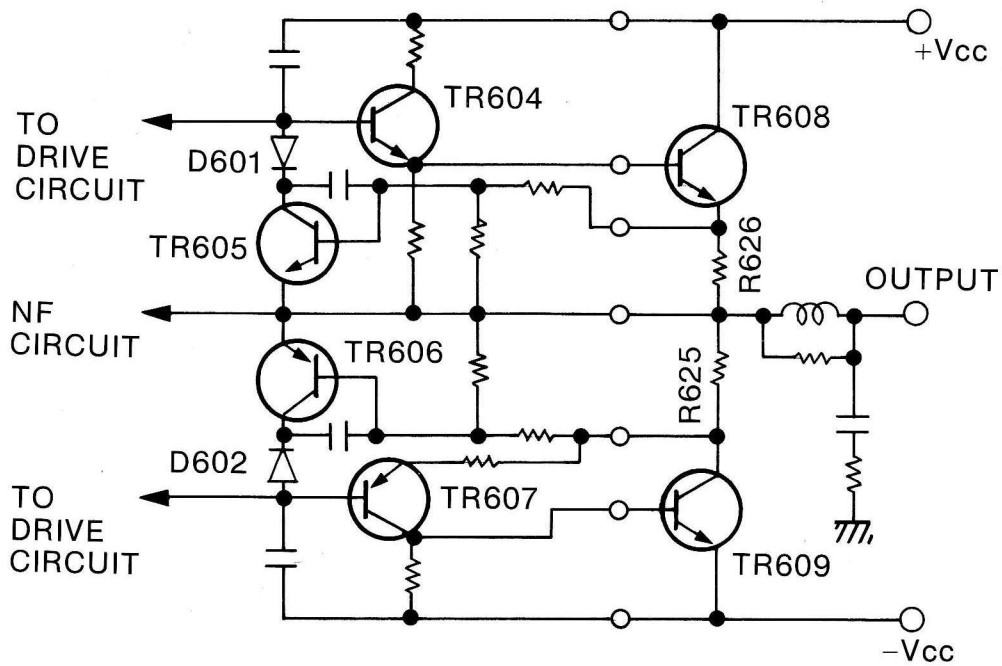
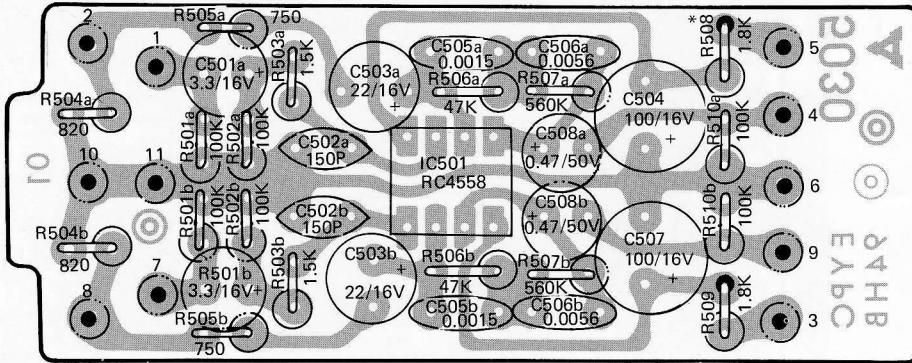
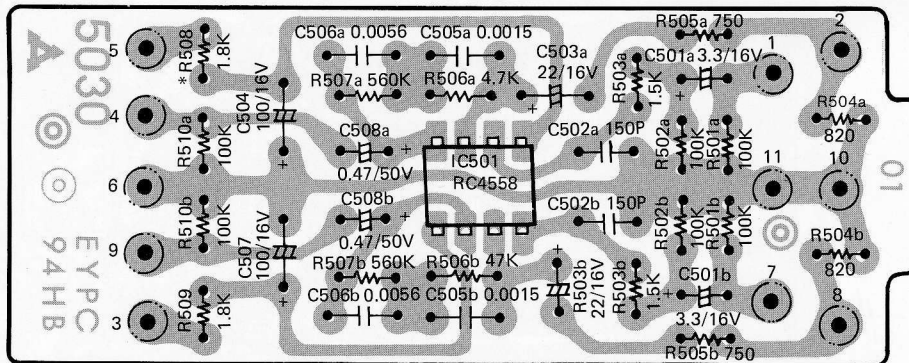


Figure 6

5030 EQ AMP BOARD (TOP VIEW)

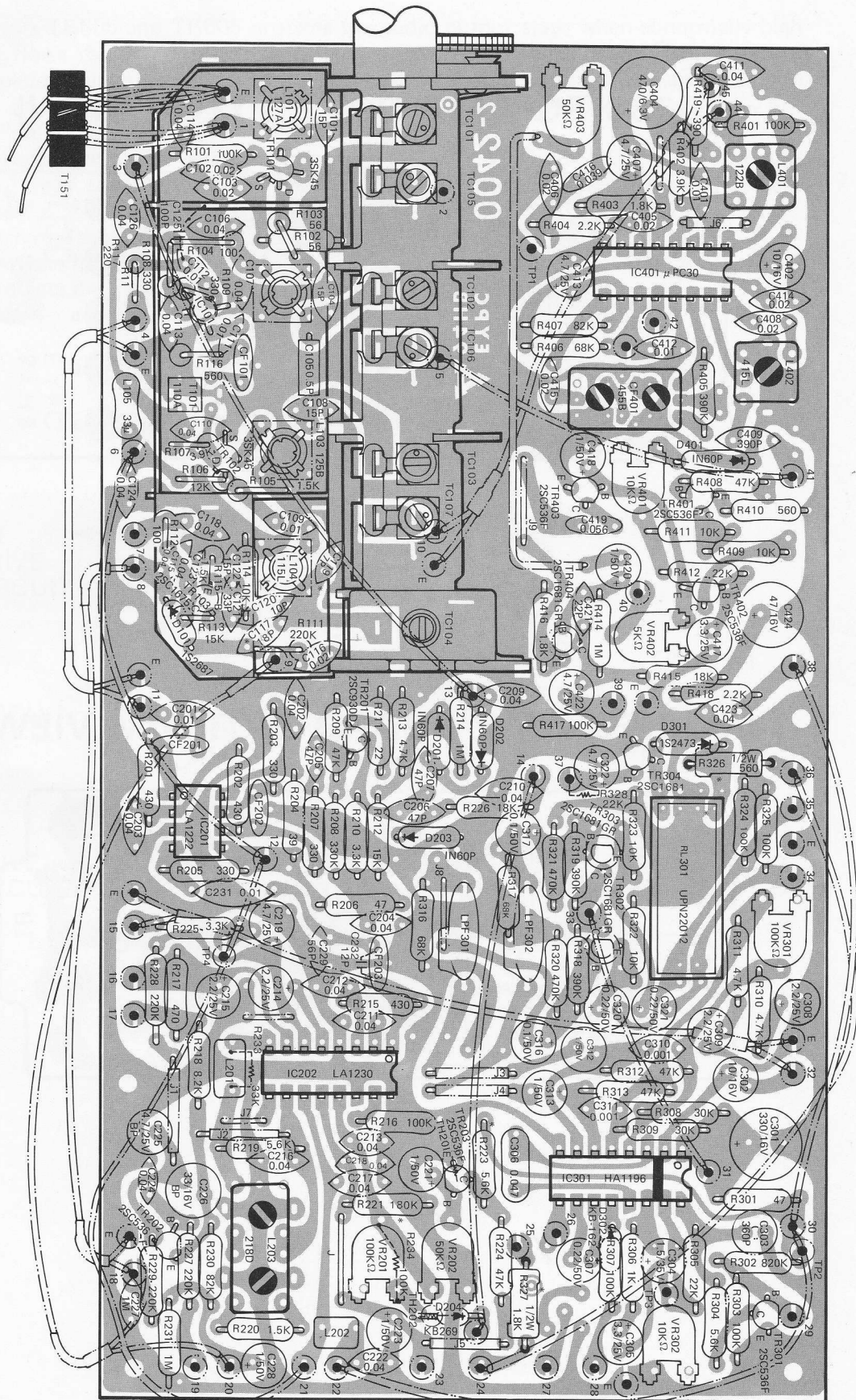


5030 EQ AMP BOARD (BOTTOM VIEW)

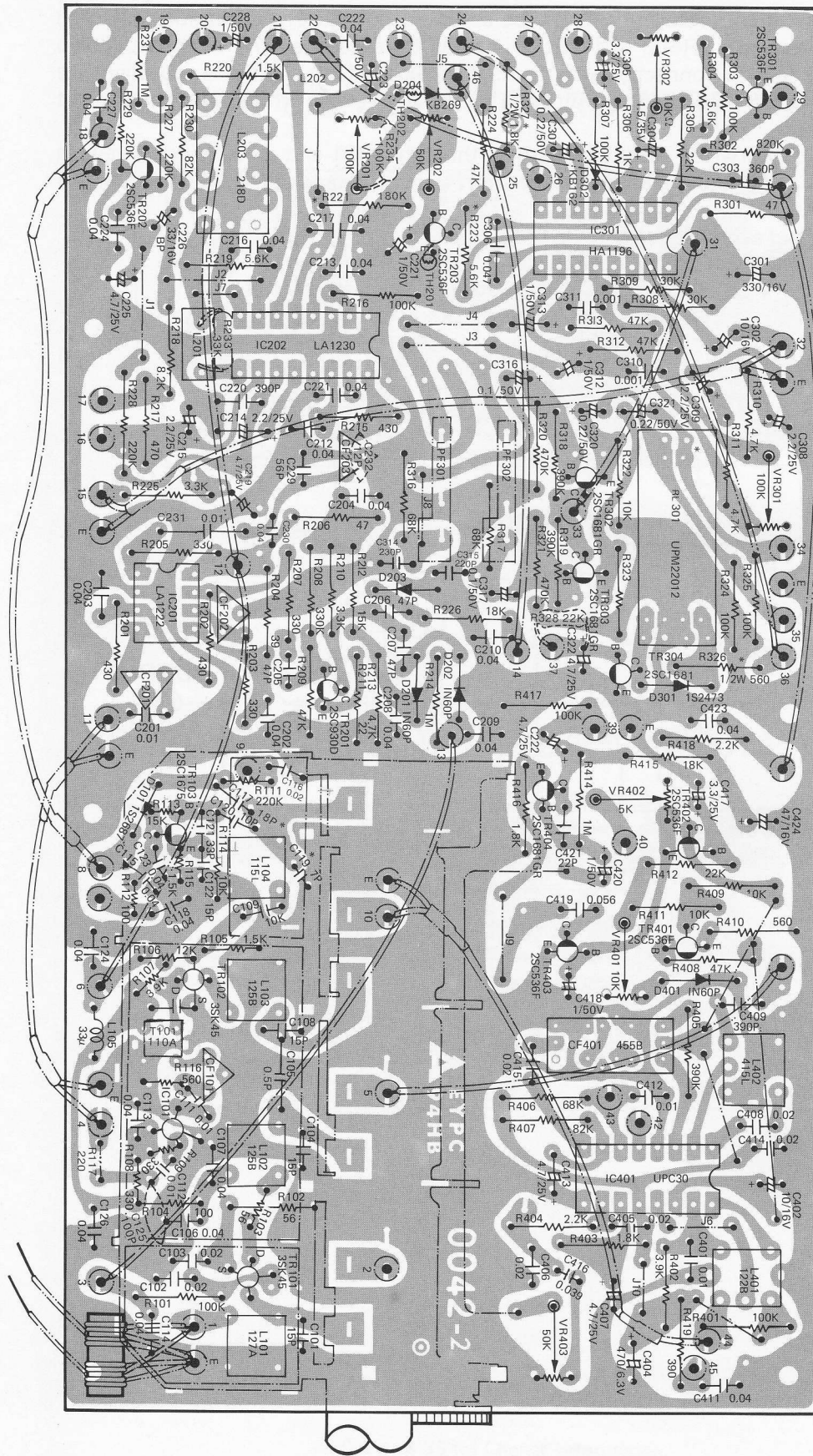


*: See page 35 for Change Information.

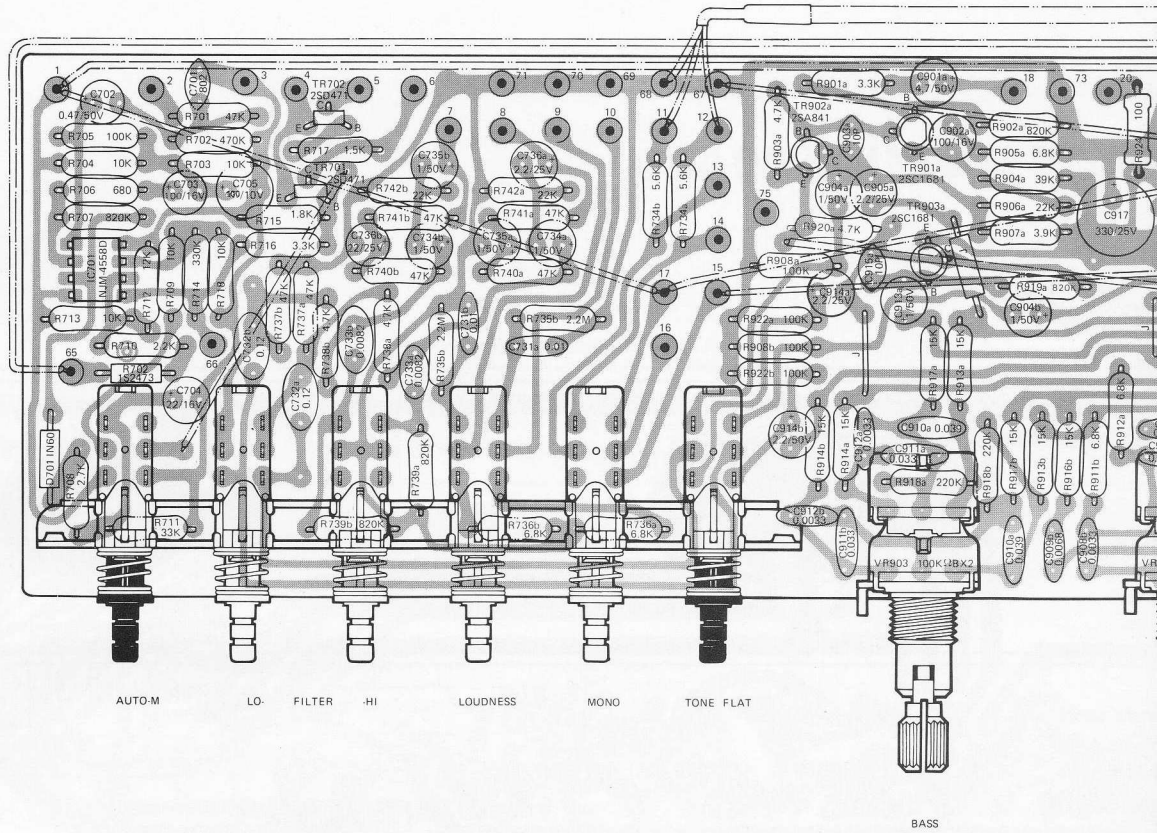
0042 TUNER BOARD (TOP VIEW)



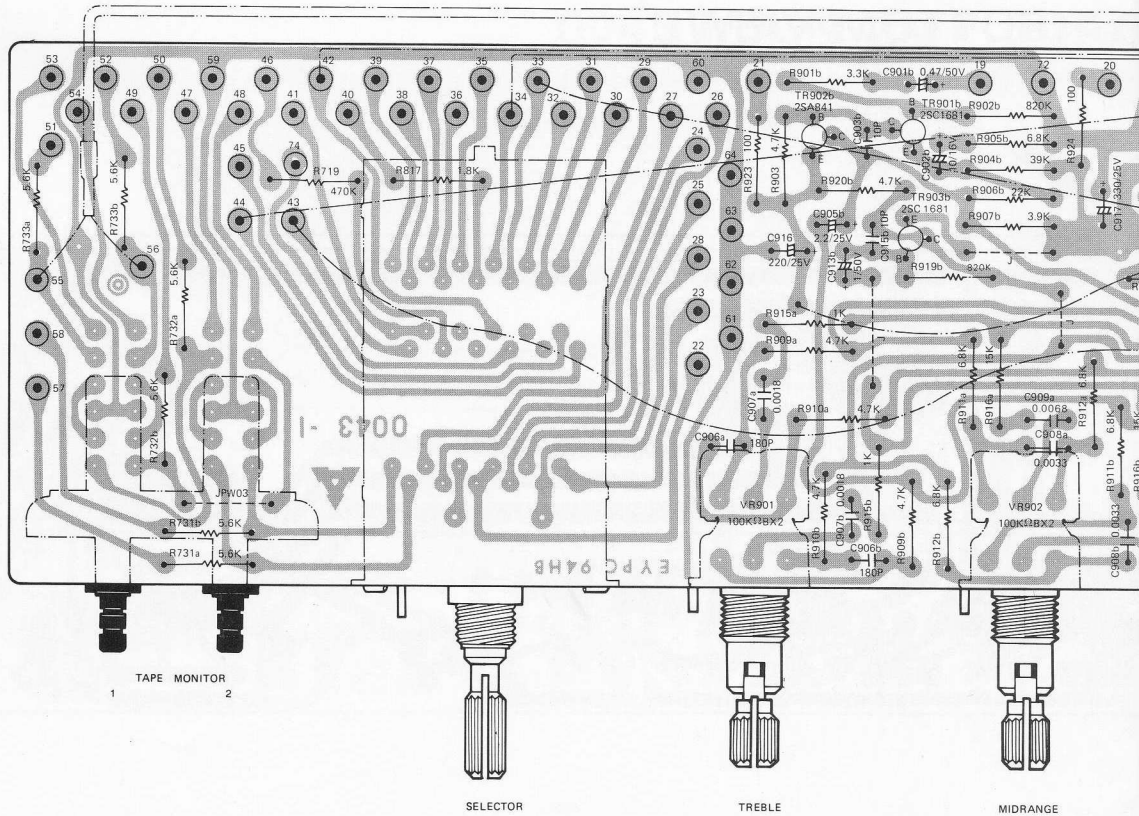
0042 TUNER BOARD (BOTTOM VIEW)



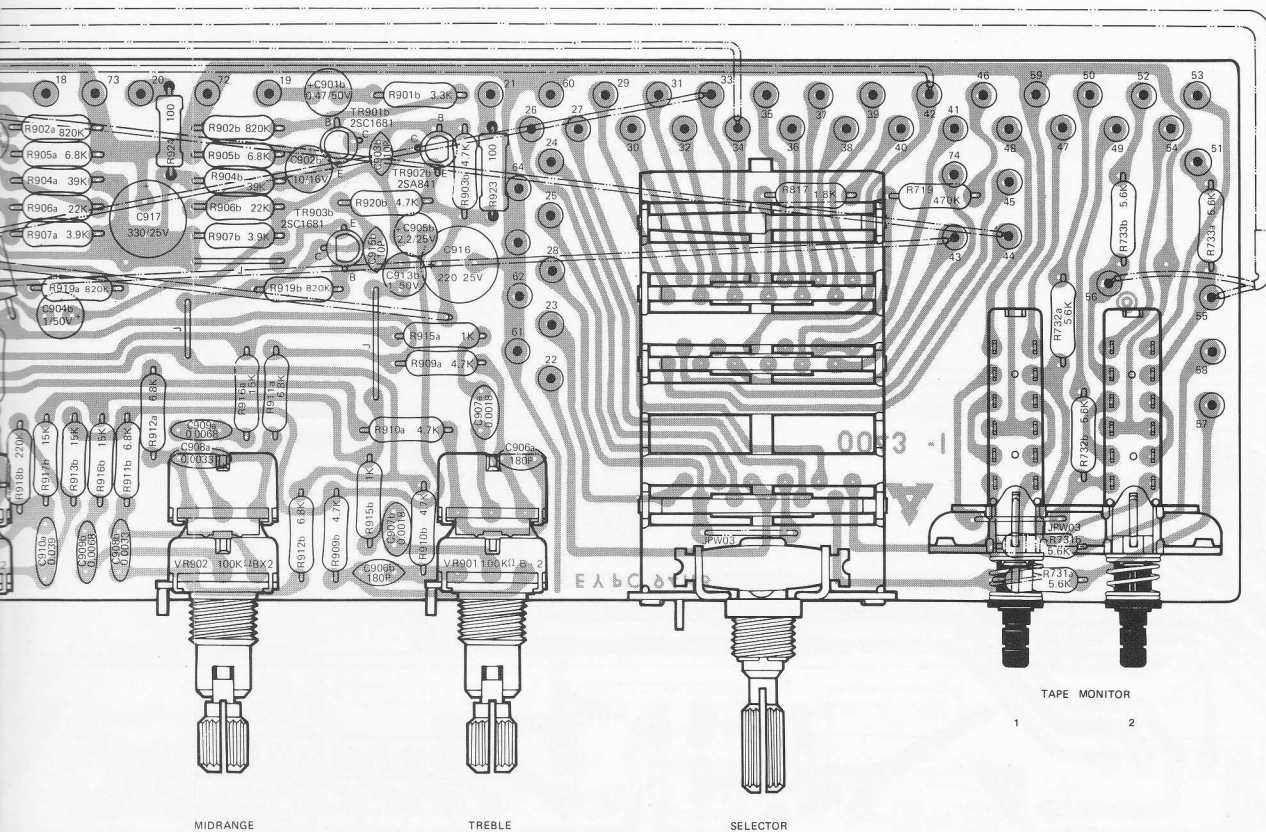
0043 TONE AMP & AU



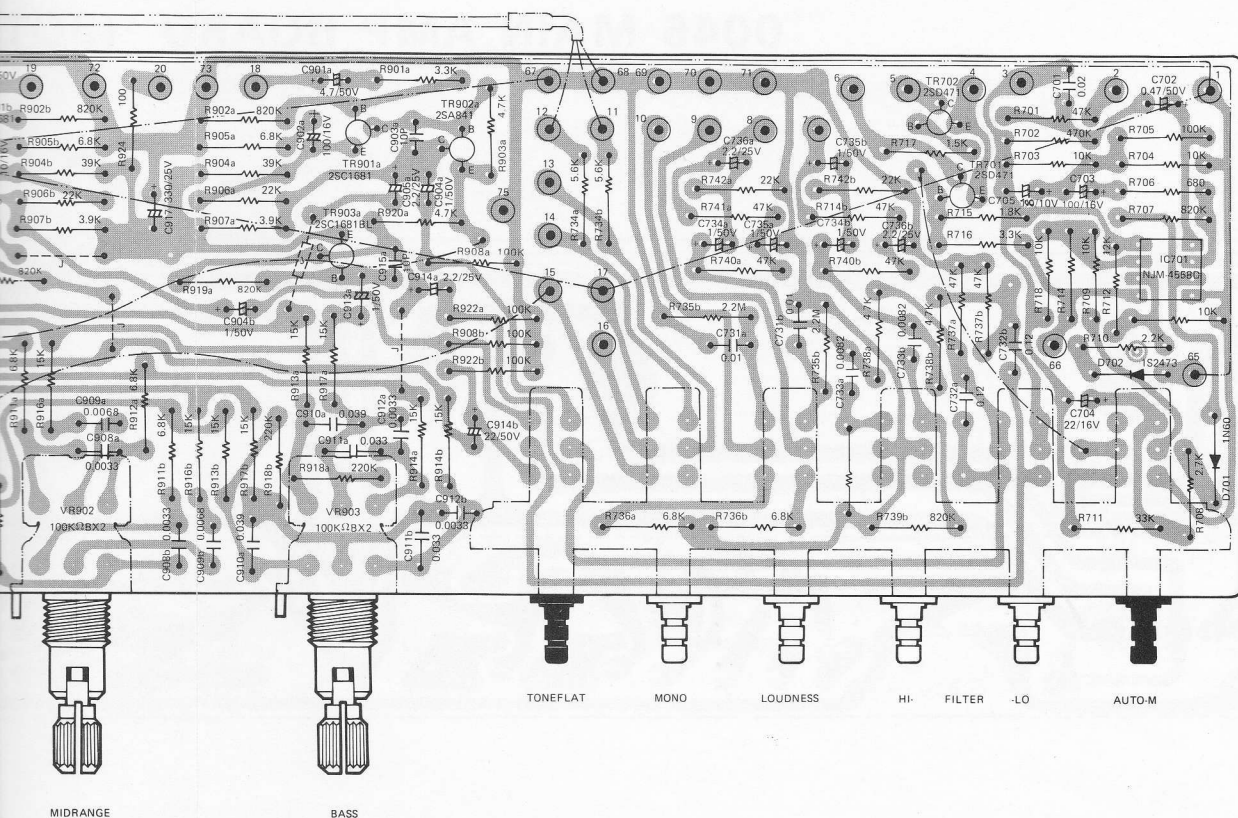
0043 TONE AMP & AUTO-M



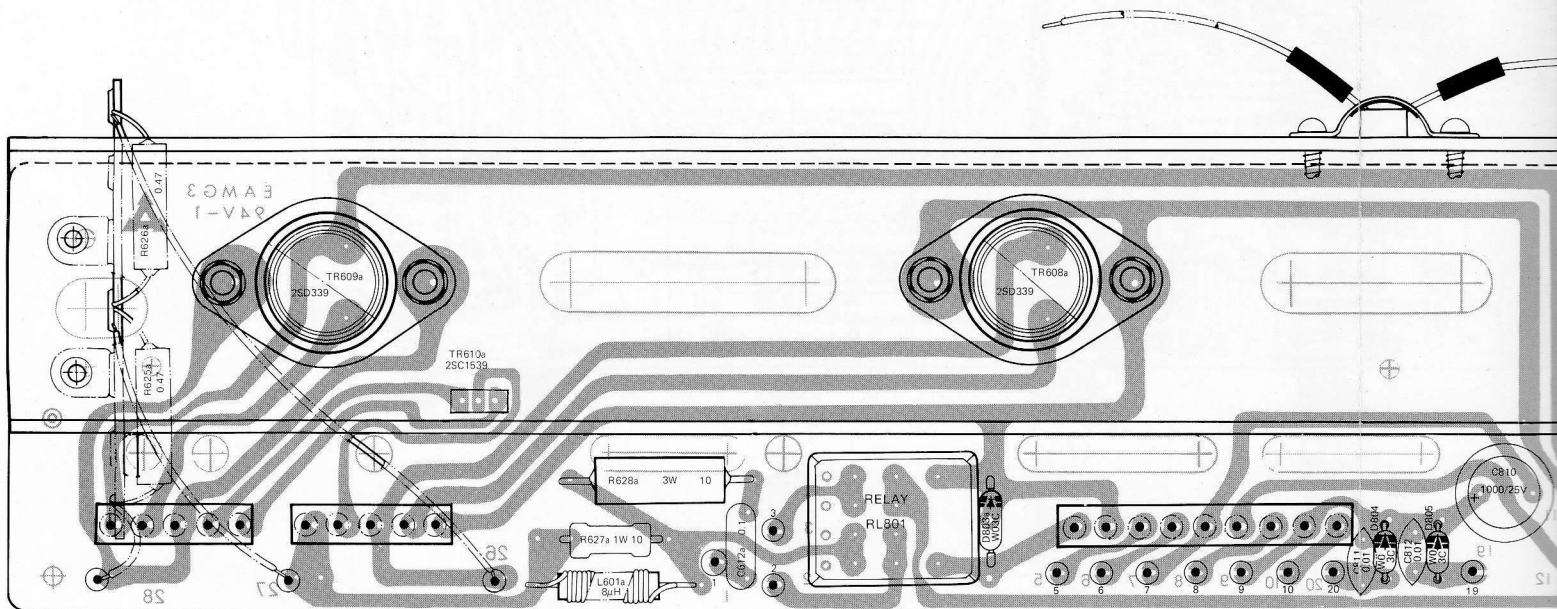
P & AUTO-M BOARD (TOP VIEW)



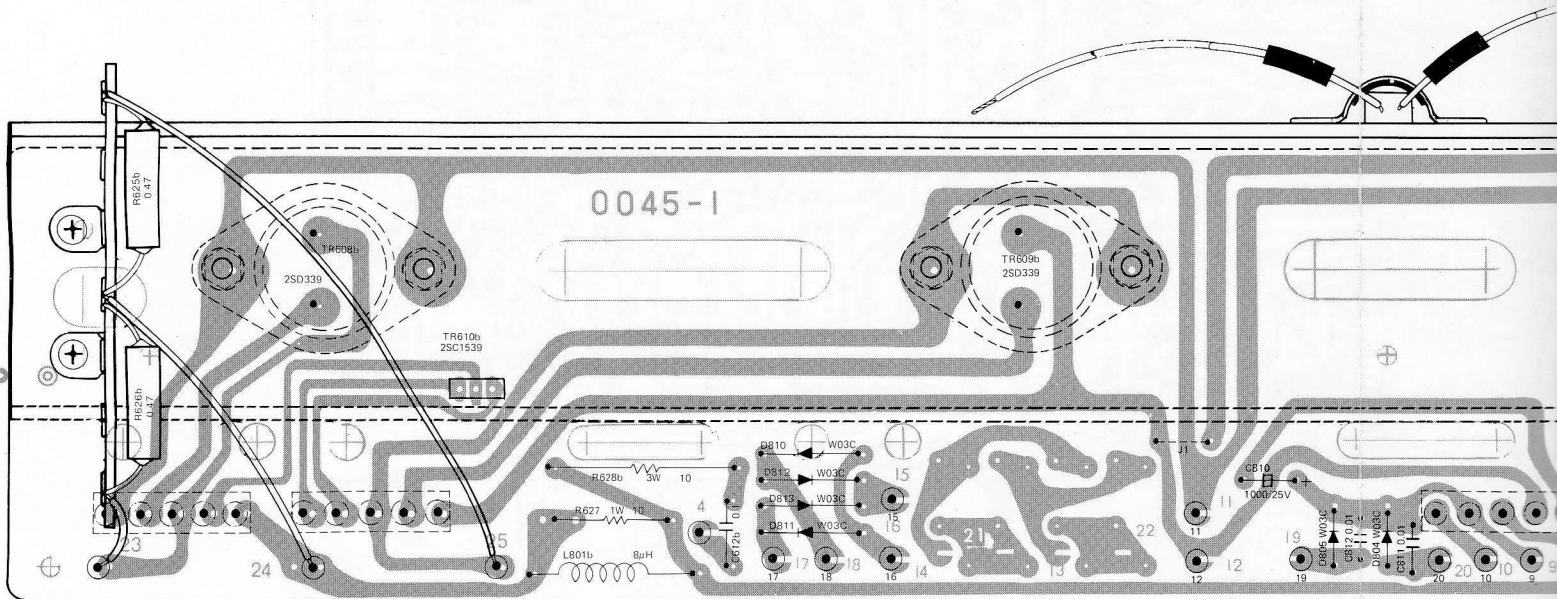
AUTO-M BOARD (BOTTOM VIEW)



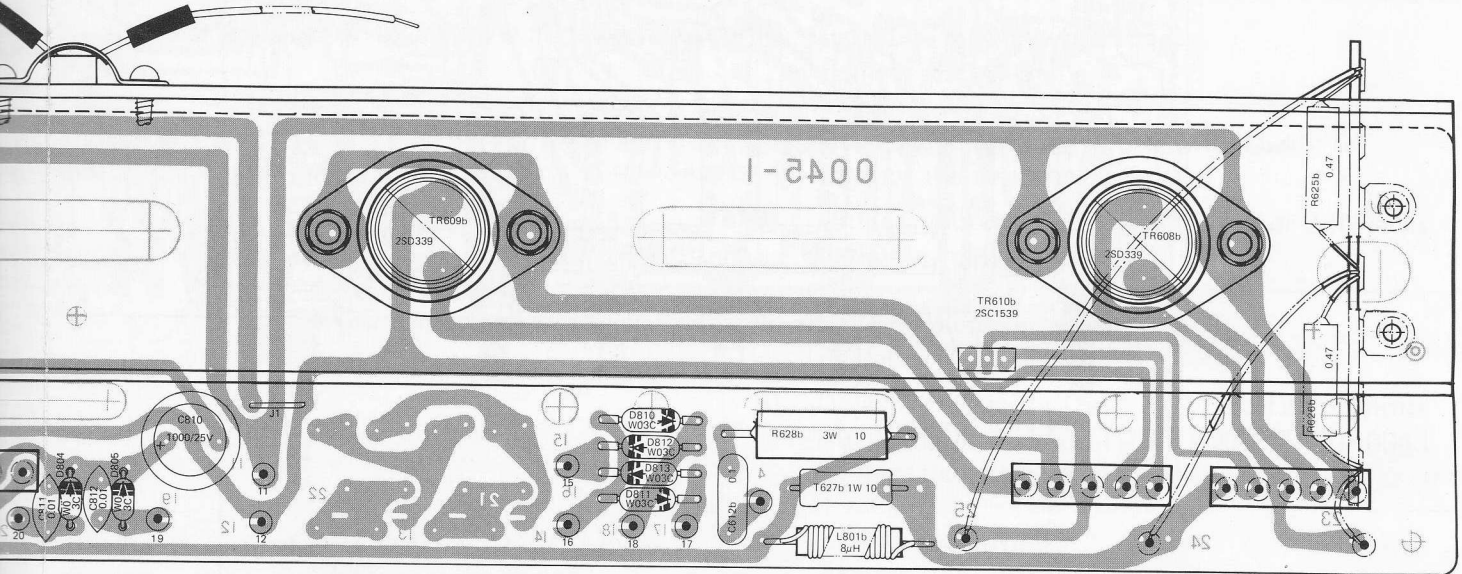
0045 MAIN AMP BOARD (TOP)



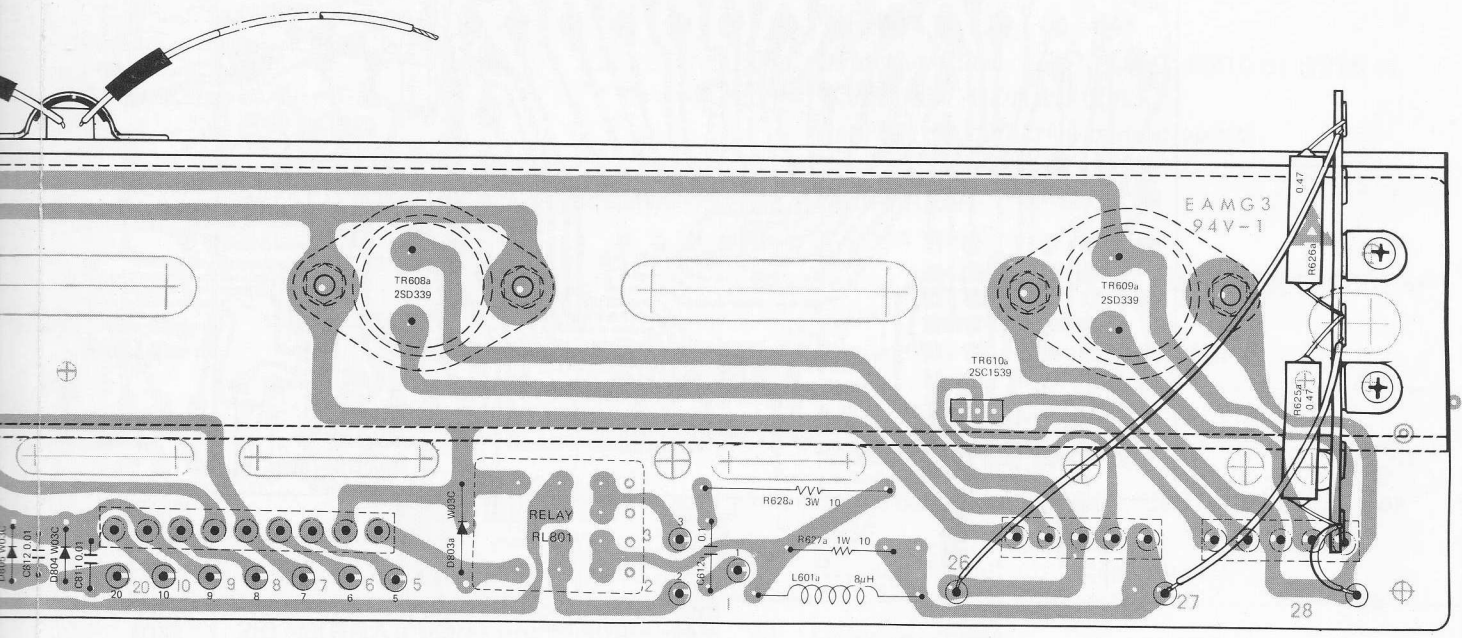
0045 MAIN AMP BOARD (BOTTOM)



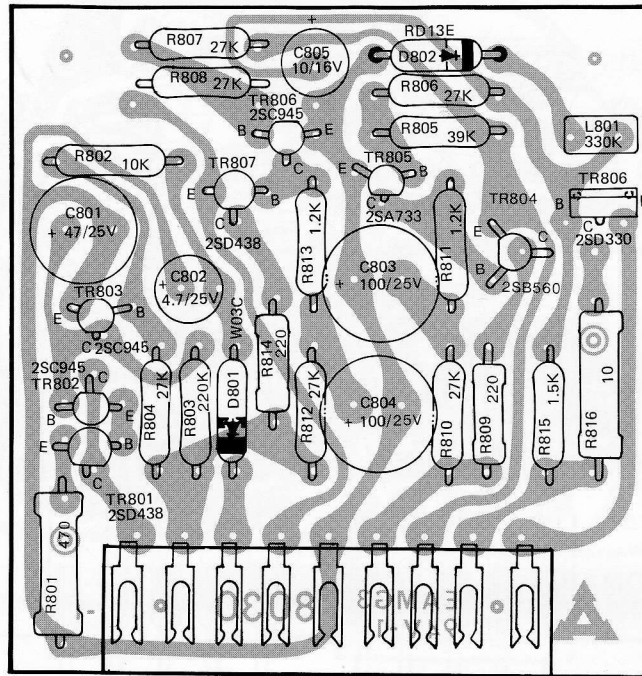
BOARD (TOP VIEW)



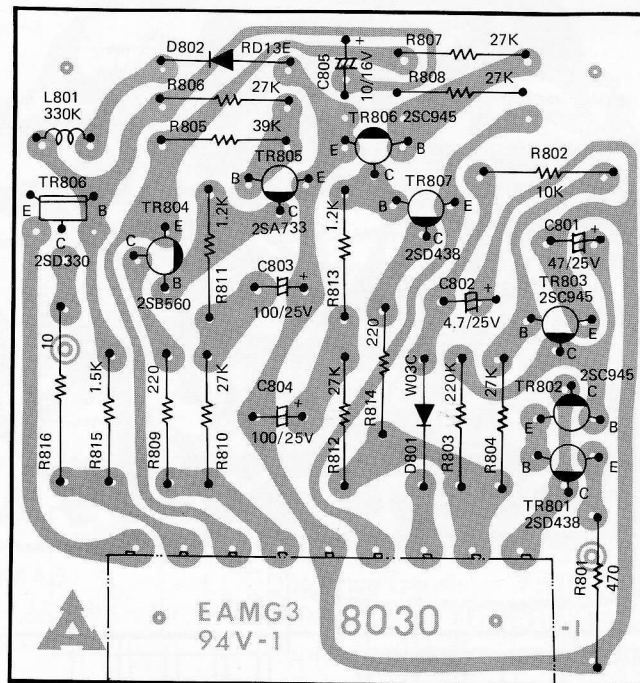
BOARD (BOTTOM VIEW)



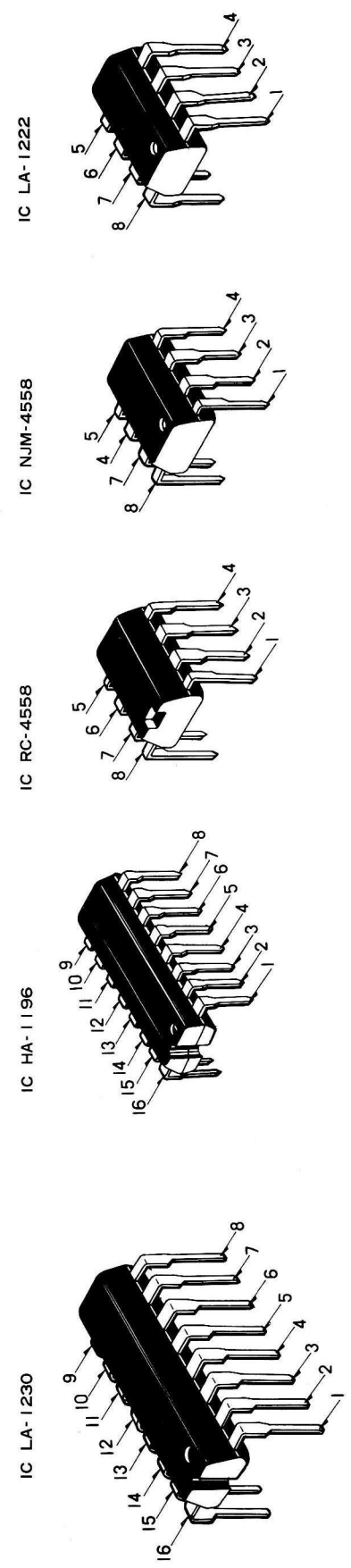
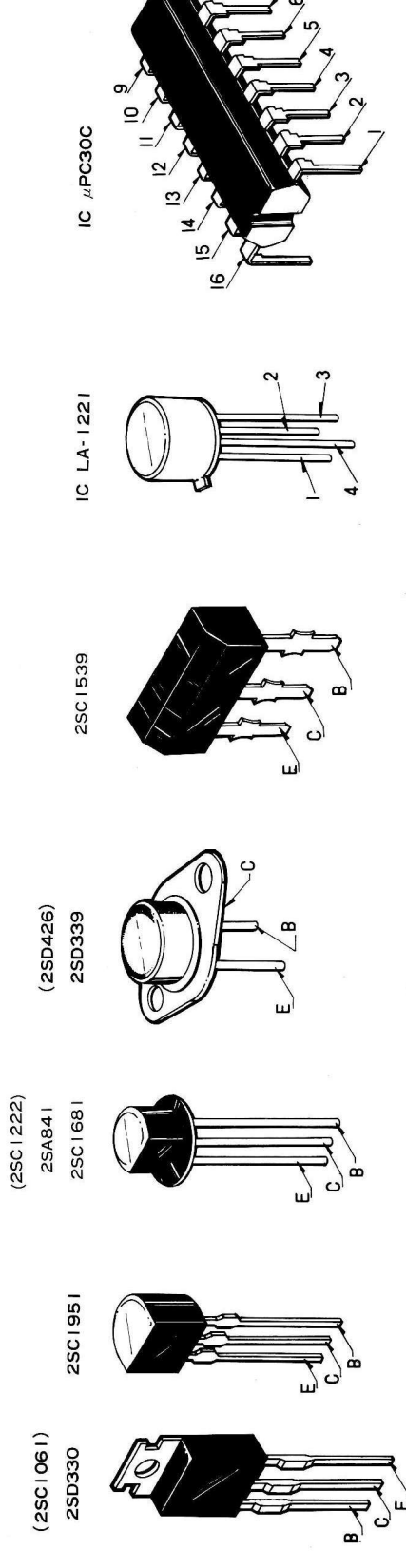
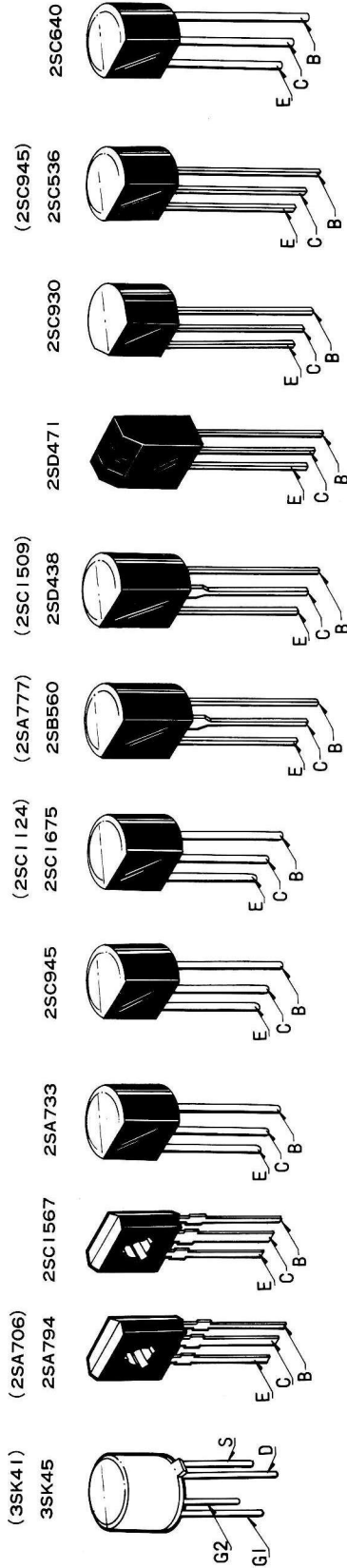
8030 POWER SUPPLY BOARD (TOP VIEW)



8030 POWER SUPPLY BOARD (BOTTOM VIEW)



TRANSISTOR & IC LEAD IDENTIFICATIONS



ELECTRICAL PARTS LIST

CAPACITORS				
Ref. No.	Value (F)	Voltage (V)	Tolerance (%)	Material
C101	15P	25	±5	Ceramic
C102	0.02μ	25	+80 -20	"
C103	"	"	"	"
C104	15P	50	±5	"
C105	0.5P	12	±10	"
C106	0.04μ	25	+80 -20	"
C107	"	"	"	"
C108	15P	50	±5	"
C109	0.01μ	25	+80 -20	"
C110	0.04μ	"	"	"
C111	0.01μ	"	"	"
C112	"	"	"	"
C113	0.04μ	"	"	"
C114	"	"	"	"
C115	"	"	"	"
C116	0.02μ	"	"	"
C117*	18P(UJ)	50	±5	"
C118	0.04μ	25	+80 -20	"
C119*	7P(TH)	50	±0.5P	"
C120	10P	"	±5	"
C121	33P	"	±10	"
C122	15P	"	±5	"
C123	0.04μ	25	+80 -20	"
C124	"	"	"	"
C125	100P	50	±10	"
C126	0.04μ	25	+80 -20	Ceramic
C201	0.01μ	25	+80 -20	Ceramic
C202	0.04μ	"	"	"
C203	"	"	"	"
C204	"	"	"	"
C205	47P	50	±10	"
C206	"	"	"	"
C207	"	"	"	"
C208	0.04μ	25	+80 -20	"
C209	"	"	"	"
C210	"	"	"	"
C211	"	"	"	"
C212	"	"	"	"
C213	"	"	"	"

Ref. No.	Value (F)	Voltage (V)	Tolerance (%)	Material
C214	2.2μ	25	+75 -10	Electrolytic
C215	"	"	"	"
C216	0.04μ	"	+80 -20	Ceramic
C217	"	"	"	"
C218	"	"	"	"
C219	4.7μ	"	+75 -10	Electrolytic
C220	390P	50	±10	Ceramic
C221	1μ	"	+75 -10	Electrolytic
C222	0.04μ	25	+80 -20	Ceramic
C223	1μ	50	+75 -10	Electrolytic
C224	0.04μ	25	+80 -20	Ceramic
C225	4.7μ	"	+75 -10	Electrolytic
C226	33μ	16	+50 -10	"
C227	0.04μ	25	+80 -20	Ceramic
C228	1μ	50	+75 -10	Electrolytic
C229	56P	"	±10	Ceramic
C230	0.04μ	25	+80 -20	"
C231	0.01μ	"	"	"
C232*	12P	50	±5	"
C251	47μ	6.3	+50 -10	Electrolytic
C301	330μ	16	+50 -10	Electrolytic
C302	10μ	"	"	"
C303	360P	50	±5	Polystyrene
C304	1.5μ	35	+75 -10	Electrolytic
C305	3.3μ	25	"	"
C306	0.047μ	50	±10	Ceramic
C307	0.22μ	"	±20	Electrolytic
C308	2.2μ	25	+75 -10	"
C309	"	"	"	"
C310	0.001μ	50	±10	Ceramic
C311	"	"	"	"
C312	1μ	"	+75 -10	Electrolytic
C313	"	"	"	"
C314	220P	"	±10	Ceramic

*: See page 35 for Change Information.

Ref. No.	Value (F)	Voltage (V)	Tolerance (%)	Material	Ref. No.	Value (F)	Voltage (V)	Tolerance (%)	Material
C315	220P	50	±10	Ceramic	C505a,b	1500P	50	±10	Polyester
C316	0.1μ	"	+75	Electrolytic	C506a,b	5600P	"	"	"
C317	"	"	-10	"	C507	100μ	16	+50	Electrolytic
C318	Not Used	"	"	"	C508a,b	0.47μ	50	+75	"
C319	"	"	"	"				-10	
C320	0.22μ	50	±20	Electrolytic	C551	0.01μ	25	+80	Ceramic
C321	"	"	"	"	C552	"	"	-20	"
C322	4.7μ	25	+75	"	C553	0.056μ	50	±10	Polyester
			-10		C554	"	"	"	"
C401	0.01μ	25	±10	Ceramic	C555	0.22μ	"	"	"
C402	10μ	16	+50	Electrolytic	C556*	0.01μ	25	"	Ceramic
C403	Not Used	"	-10	"	C601a,b	56P	50	±10	Ceramic
C404	470μ	6.3	+50	Electrolytic	C602a,b	1μ	"	+75	Electrolytic
C405	0.02μ	25	-10	Ceramic	C603a,b	10μ	35	-10	"
C406	"	"	±10	"	C604a,b	"	25	+50	"
C407	4.7μ	"	"	Electrolytic	C605a,b	10P	500	-10	"
C408	0.02μ	25	+75	Ceramic	C606a,b	100μ	50	±10	Ceramic
C409	390P	50	-10	"	C607a,b	47μ	"	+50	Electrolytic
C410	Not Used	"	±5	"	C608a,b	0.001μ	"	-10	"
C411	0.04μ	25	±10	Ceramic	C609a,b	"	"	"	Ceramic
C412	0.01μ	"	"	"	C610a,b	100P	500	"	"
C413	4.7μ	"	+75	Electrolytic	C611a,b	"	"	"	"
C414	0.02μ	"	-10	Ceramic	C612a,b	0.1μ	50	"	Polyester
C415	"	"	±10	"	C613a,b	2P	500	+50	Ceramic
C416	0.039μ	50	"	Polyester	C614a,b	5P	50	±0.5P	"
C417	3.3μ	25	+75	Electrolytic				"	
C418	1μ	50	-10	"	C701	0.02μ	25	+80	Ceramic
C419	0.056μ	"	"	"	C702	0.47μ	50	-20	"
C420	1μ	"	+75	Electrolytic	C703	10μ	16	+75	Electrolytic
C421	22P	"	-10	Ceramic	C704	22μ	"	-10	"
C422	4.7μ	25	±10	Electrolytic	C705	100μ	10	+50	"
C423	0.04μ	"	-10	Ceramic				"	
C424	47μ	16	+75	Electrolytic	C731a,b	0.01μ	50	±10	Polyester
			-10		C732a,b	0.012μ	"	"	"
C501a,b	3.3μ	16	+75	Electrolytic	C733a,b	8200P	"	"	"
C502a,b	120P	50	-10	Ceramic	C734a,b	1μ	"	+75	Electrolytic
C503a,b	22μ	16	±10	Electrolytic	C735a,b	"	"	-10	"
C504	100μ	"	+50	"	C736a,b	2.2μ	25	"	"
			-10					"	

*: See page 35 for Change Information.

Ref. No.	Value (F)	Voltage (V)	Tolerance (%)	Material
C801	47 μ	25	+50 -10	Electrolytic
C802	4.7 μ	"	+75 -10	"
C803	100 μ	"	+50 -10	"
C804	"	"	"	"
C805	10 μ	16	"	"
C810	1000 μ	25	+50 -10	Electrolytic
C811	1000P	50	\pm 10	Ceramic
C812	"	"	"	"
C851	8000 μ	50	+50 -10	Electrolytic
C852	"	"	"	"
C853	0.0047 μ	125	\pm 20	Polyester
C854	"	"	"	"
C855	0.01 μ	500	\pm 10	Ceramic
C856	"	"	"	"
C857	"	"	"	"
C858	"	"	"	"
C901a,b	0.47 μ	50	+75 -10	Electrolytic
C902a,b	10 μ	16	+50 -10	"
C903a,b	10P	50	\pm 10	Ceramic
C904a,b	1 μ	"	+75 -10	Electrolytic
C905a,b	2.2 μ	25	"	"
C906a,b	180P	50	\pm 10	Ceramic
C907a,b	1800P	"	"	Polyester
C908a,b	3300P	"	"	"
C909a,b	6800P	"	"	"
C910a,b	0.039 μ	"	"	"
C911a,b	0.033 μ	"	"	"
C912a,b	3300P	"	"	"
C913a,b	1 μ	"	+75 -10	Electrolytic
C914a,b	2.2 μ	25	"	"
C915a,b	10P	50	\pm 10	Ceramic
C916	220 μ	25	+50 -10	Electrolytic
C917	330 μ	"	"	"

CERAMIC FILTERS

Ref. No.	Description	R/S Part No.	Mfr's Part No.
CF101	FM IFT SFE10.7MA	C-0546	35300012

Ref. No.	Description	R/S Part No.	Mfr's Part No.
CF201	FM IFT SFE10.7MA	C-0546	35300012
CF202	"	"	"
CF203	"	"	"
CF401	AM IFT CFT455B	C-0547	35704061

COILS & TRANSFORMERS

Ref. No.	Description	R/S Part No.	Mfr's Part No.
L101	FM ANT. Coil 127A	CA-3646	35501271
L102	FM RF Coil 125B	CA-4754	35501252
L103	"	"	"
L104	FM OSC Coil 115L	CA-4674	35501156
L105	Inductor 33 μ H	CA-2559	35500090
L152	Choke Coil 10 μ H	CB-2301	35500100
L201	Inductor 18 μ H	C-0713	35500310
L202	" 33 μ H	CA-3100	35500160
L203	FM DESCR I Coil 218D	CA-3647	35702184
L401	AM RF Coil 122B	CA-4753	35501222
L402	AM OSC Coil 415L	CA-4755	35504156
L451	AM Bar Antenna Coil	CA-0274	35400471
L601a,b	Choke Coil 8 μ H	CB-2299	35500170
L801	" 33 μ H	CA-3100	35500160
T101	FM IFT 110A	CA-7624	35701101
T151	Balun Transformer	TA-0435	35500060
T851	Power Transformer (UL)	TA-0580	35900206
"	" (CSA)		35900217
"	" (Europe/Australia)		35900218

DIODES

Ref. No.	Type No.	R/S Part No.	Part No.	Manufacturer
D101	1S2687		30600560	JRC
D201	1N60P		30600011	UNISON
D202	"		"	"
D203	"		"	"
D204	KB-269		30600490	"
D205	1S2473		30600410	Toyo Electronics
D301	1S2473		30600410	"
D302	KB-162		30600500	UNISON
D401	1N60P		30600011	"
D601	Not Used			
D602a,b	1S2473		30600410	Toyo Electronics
D603a,b	"		"	"
D701	1N60		30600010	UNISON
D702	1S2473		30600410	Toyo Electronics

Ref. No.	Type No.	R/S Part No.	Part No.	Manufacturer
D801	W03C		30600871	Hitachi
D802	RD13E		30600331	NEC
D803	W03C		30600871	Hitachi
D804	"		"	"
D805	"		"	"
D806	Not Used			
D807	"			
D808	"			
D809	"			
D810	W03C		30600871	Hitachi
D811	"		"	"
D812	"		"	"
D813	"		"	"
D851	S5VB-20		30600981	Shindengen

FILTERS

Ref. No.	Description	R/S Part No.	Mfr's Part No.
LPF301	Low Pass Filter M675F	C-0710	35000060
LPF302	"	"	"

INTEGRATED CIRCUITS

Ref. No.	Type No.	Part No.	Manufacturer
IC101	LA1221	30900120	Sanyo
IC201	LA1222	30900340	Sanyo
IC202	LA1230	30900380	"
IC301	HA1196	30900410	Hitachi
IC401	μ PC30	30900350	NEC
IC501a,b*	RC4558	30900360	RAYTHEON
IC701	NJM4558D	30900361	JRC

LAMPS

Ref. No.	Description	R/S Part No.	Mfr's Part No.
PL1	Dial Lamp 8V 0.3A	L-0718	37008041
PL2	"		"
PL3	"		"
PL4	Meter Lamp 8V 0.25A		37008019
PL5	"		"

LIGHT EMITTED DIODES

Ref. No.	Type No.	R/S Part No.	Part No.	Manufacturer
D751	GD-4-203RD		BA211-49064A	Stanley
D752	"		"	"
D753	"		"	"
D754	"		"	"
D755	"		"	"
D756	"		"	"

METER

Ref. No.	Description	R/S Part No.	Mfr's Part No.
M1	TUNING Meter	M-0315	60200018

RELAYS

Ref. No.	Description	R/S Part No.	Mfr's Part No.
RL301*	Reed Relay	R-8082	82000070
RL801	Relay MY4-02-US-24VDC	R-8083	82000060

RESISTORS

Ref. No.	Value (Ω)	Wattage (W)	Tolerance (%)	Material
R101	100K	1/4	± 5	Carbon
R102	56	"	"	"
R103	"	"	"	"
R104	100	"	"	"
R105	1.5K	"	"	"
R106	12K	"	"	"
R107	3.9K*	"	"	"
R108	330	"	"	"
R109	"	"	"	"
R110	Not Used			
R111	220K	1/4	± 5	Carbon
R112	100	"	"	"
R113	15K	"	"	"
R114	10K	"	"	"
R115	1.5K	"	"	"
R116	560	"	"	"
R117	220	"	"	"
R201	430	1/4	± 5	Carbon
R202	"	"	"	"
R203	330	"	"	"
R204	39	"	"	"
R205	330	"	"	"
R206	47	"	"	"
R207	330	"	"	"
R208	330K	"	"	"
R209	47K	"	"	"
R210	3.3K	"	"	"
R211	22	"	"	"

*: See page 35 for Change Information.

Ref. No.	Value (Ω)	Wattage (W)	Tolerance (%)	Material	Ref. No.	Value (Ω)	Wattage (W)	Tolerance (%)	Material
R212	15K	1/4	±5	Carbon	R404	2.2K	1/4	±5	Carbon
R213	4.7K	"	"	"	R405	390K	"	"	"
R214	1M	"	"	"	R406	68K	"	"	"
R215	430	"	"	"	R407	82K	"	"	"
R216	100K	"	"	"	R408	47K	"	"	"
R217	470	"	"	"	R409	10K	"	"	"
R218	8.2K	"	"	"	R410	560	"	"	"
R219	5.6K	"	"	"	R411	10K	"	"	"
R220	1.5K	"	"	"	R412	22K	"	"	"
R221*	180K	"	"	"	R413	Not Used			
R222	Not Used				R414	1M	1/4	±5	Carbon
R223*	5.6K	1/4	±5	Carbon	R415	18K	"	"	"
R224	47K	"	"	"	R416	1.8K	"	"	"
R225	3.3K	"	"	"	R417	100K	"	"	"
R226	18K	"	"	"	R418	2.2K	"	"	"
R227	220K	"	"	"	R419	390	"	"	"
R228	"	"	"	"	R501a,b	100K	1/4	±5	Carbon
R229	"	"	"	"	R502a,b	100K	"	"	"
R230	82K	"	"	"	R503a,b	1.5K	"	"	"
R231	1M	"	"	"	R504a,b	820	"	"	"
R232	Not Used				R505a,b	750	"	"	"
R233	33K	1/4	±5	Carbon	R506a,b	47K	"	"	"
R234	100K	"	"	"	R507a,b	560K	"	"	"
R301	47	"	"	"	R508*	1.8K	"	"	"
R302	820K	"	"	"	R509	"	"	"	"
R303	100K	"	"	"	R510a,b	100K	"	"	"
R304	5.6K	"	"	"	R601a,b	270K	1/4	±5	Carbon
R305	22K	"	"	"	R602a,b	2.2K	"	"	"
R306	1K	"	"	"	R603a,b	220K	"	"	"
R307	100K	"	"	"	R604a,b	1.8K	"	"	"
R308	30K	"	"	"	R605a,b	"	"	"	"
R309	"	"	"	"	R606a,b	33K	"	"	"
R310	4.7K	"	"	"	R607a,b	10K	"	"	"
R311	"	"	"	"	R608a,b	2.7K	"	"	"
R312	47K	"	"	"	R609a,b	100K	"	"	"
R313	"	"	"	"	R610a,b	3K	"	"	"
R314	Not Used				R611a,b	5.6K	"	"	"
R315	"				R612a,b	6.8K	"	"	"
R316	68K	1/4	±5	Carbon	R613a,b	2.2K	"	"	"
R317	"	"	"	"	R614a,b	100	"	"	"
R318	390K	"	"	"	R615a,b	1K	"	"	"
R319	"	"	"	"	R616a,b	"	"	"	"
R320	470K	"	"	"	R617a,b	100	"	"	"
R321	"	"	"	"	R618a,b	300	"	"	"
R322	10K	"	"	"	R619a,b	100	"	"	"
R323	"	"	"	"	R620a,b	300	"	"	"
R324	100K	"	"	"	R621a,b	15	"	"	"
R325	"	"	"	"	R622a,b	"	"	"	"
R326*	560	1/2	±10	Metal	R623a,b	1.2K	"	"	"
R327*	1.8K	"	"	"	R624a,b	"	"	"	"
R328	22K	1/4	±5	Carbon	R625a,b	0.47	5	±10	Wire Wound
R401	100K	1/4	±5	Carbon	R626a,b	"	"	"	"
R402	3.9K	"	"	"	R627a,b	10	1	±5	Metal
R403	1.8K	"	"	"					

*: See page 35 for Change Information.

Ref. No.	Value (Ω)	Wattage (W)	Tolerance (%)	Material
R628a,b	10	3	±5	Wire Wound
R651a,b	470	2	±5	Metal
R701	47K	1/4	±5	Carbon
R702	470K	"	"	"
R703	10K	"	"	"
R704	"	"	"	"
R705	100K	"	"	"
R706	680	"	"	"
R707	820K	"	"	"
R708	2.7K	"	"	"
R709	10K	"	"	"
R710	2.2K	"	"	"
R711	33K	1/4	±5	Carbon
R712	12K	"	"	"
R713	10K	"	"	"
R714	330K	"	"	"
R715	1.8K	"	"	"
R716	3.3K	"	"	"
R717	1.5K	"	"	"
R718	470K	"	"	"
R719	10K	"	"	"
R731a,b	5.6K	1/4	±5	Carbon
R732a,b	"	"	"	"
R733a,b	"	"	"	"
R734a,b	"	"	"	"
R735a,b	2.2M	"	"	"
R736a,b	6.8K	"	"	"
R737a,b	47K	"	"	"
R738a,b	4.7K	"	"	"
R739a,b	820K	"	"	"
R740a,b	47K	"	"	"
R741a,b	"	"	"	"
R742a,b	22K	"	"	"
R801	470	1	±5	Metal
R802	10K	1/4	"	Carbon
R803	220K	"	"	"
R804	27K	"	"	"
R805	39K	"	"	"
R806	27K	"	"	"
R807	"	"	"	"
R808	"	"	"	"
R809	220	"	"	"
R810	27K	"	"	"
R811	1.2K	"	"	"
R812	27K	"	"	"
R813	1.2K	"	"	"
R814	220	"	"	"
R815	1.5K	"	"	"
R816	10	1	±5	Metal
R817	1.8K	1/4	"	Carbon

Ref. No.	Value (Ω)	Wattage (W)	Tolerance (%)	Material
R851	2.2M	1/2	±10	Solid
R901a,b	3.3K	1/4	±5	Carbon
R902a,b	820K	"	"	"
R903a,b	4.7K	"	"	"
R904a,b	39K	"	"	"
R905a,b	6.8K	"	"	"
R906a,b	22K	"	"	"
R907a,b	3.9K	"	"	"
R908a,b	100K	1/4	±5	Carbon
R909a,b	4.7K	"	"	"
R910a,b	"	"	"	"
R911a,b	6.8K	"	"	"
R912a,b	"	"	"	"
R913a,b	15K	"	"	"
R914a,b	"	"	"	"
R915a,b	1K	"	"	"
R916a,b	15K	"	"	"
R917a,b	"	"	"	"
R918a,b	220K	"	"	"
R919a,b	820K	"	"	"
R920a,b	4.7K	"	"	"
R921a,b	Not Used			
R922a,b	100K	1/4	±5	Carbon
R923	100	"	"	"
R924	"	"	"	"

SWITCHES

Ref. No.	Description	R/S Part No.	Mfr's Part No.
S1	POWER/SPEAKERS	S-0784	27100136
S2	SELECTOR	S-0781	27100137
S3	TAPE MONITOR 1	S-0782	27200088
S4	" 2	"	"
S5	TONE FLAT	S-0783	27200089
S6	MONO	"	"
S7	LOUDNESS	"	"
S8	FILTER-HI	"	"
S9	FILTER-LO	"	"
S10	AUTO-M	"	"
S11	PHONO LEVEL	S-2231	27300008
S12	Thermal Protector (UL)	HB-5116	30700190
"	" (CSA)		30700160

THERMISTERS

Ref. No.	Description	R/S Part No.	Mfr's Part No.
TH201	TD5-A120		30700090
TH202	SDT-1000		30700200

TRANSISTORS

Ref. No.	Type No.	Part No.	Manufacturer	Substitute	
				Type No.	Manufacturer
TR101	3SK45 (B or C)	30400071	Hitachi	3SK41 (Korl)	NEC Hitachi
TR102	"	"	"	"	"
TR103	2SC1675(L)	30201121	NEC		
TR201	2SC930(D)	30200271	Sanyo		
TR202	2SC536(F)	30200131	Sanyo	2SC945(L-P)	NEC
TR203	"	"	"	"	"
TR301	2SC536(F)	30200131	Sanyo	2SC945(L-P)	NEC
TR302	2SC1681(GR)	30201131	Toshiba	2SC1222(E)	"
TR303	"	"	"	"	"
TR304	" (BL)	"	"	"	"
TR401	2SC536(F)	30200131	Sanyo	2SC945(L-P)	NEC
TR402	"	"	"	"	"
TR403	"	"	"	"	"
TR404	2SC1681(GR)	30201131	Toshiba	2SC1222(E)	"
TR601a,b	2SA841(BL)	30000442	Toshiba	2SA640(E)	NEC
TR602a,b	"	"	"	"	"
TR603a,b	2SC1951	30201261	SONY		
TR604a,b	21C1567(R)	30201023	Matsushita	2SC1124(2)	Sony
TR605a,b	2SC945(L-P)	30200522	NEC	2SC536(F)	Sanyo
TR606a,b	2SA733(Q or P)	30000423	"		
TR607a,b	2SA794(R)	30000413	Matsushita	2SA706(2)	Sony
TR608a,b	2SD339-2-1	30300201	Sony	2SD426(0)	Toshiba
TR609a,b	"	"	"	"	"
TR610a,b	2SC1539	30200921	Toyo Electronics		
TR701	2SD471(Korl)	30300280	NEC		
TR702	"	"	"		
TR801	2SD438(E or F)	30300250	Sanyo	2SC1509(R)	Matsushita
TR802	2SC945(L-P)	30200522	NEC	2SC536(F)	Sanyo
TR803	"	"	"	"	"
TR804	2SB560(E or F)	30100041	Sanyo	2SA777(R)	Matsushita
TR805	2SA733(Q or P)	30000423	NEC		
TR806	2SC945(L-P)	30200522	"	2SC536(F)	Sanyo
TR807	2SD438(E or F)	30300250	Sanyo	2SC1509(R)	Matsushita
TR808	2SD330(E)	30300192	Sanyo	2SC1061(B)	Hitachi
TR901a,b	2SC1681(BL)	30201132	Toshiba	2SC1222(E)	NEC
TR902a,b	2SA841(BL)	30000442	"	2SA640(E)	"
TR903a,b	2SC1681(BL)	30201132	"	2SC1222(E)	"

VARIABLE CAPACITORS			
Ref. No.	Description	R/S Part No.	Mfr's Part No.
VC101	Tuning Gang C774J118 (Includes TC101-TC103, TC105-TC107)	C-4516	26370081
TC104	Trimmer ECV-1ZW10P31	C-0447	26010093
VARIABLE RESISTORS			
Ref. No.	Description	R/S Part No.	Mfr's Part No.
VR201	FM Signal Meter Sensitivity 200k Ω /B	P-6368	28100063
VR202	Auto Stereo & Muting Sensitivity 50k Ω /B	P-6369	28100096
VR301	MPX Separation 50k Ω /B	P-6368	28100063
VR302	76 kHz Frequency Adjust 10k Ω /B	P-6367	28100061

Ref. No.	Description	R/S Part No.	Mfr's Part No.
VR401	WIDE-BAND AM Sensitivity 10k Ω /B	P-6367	28100061
VR402	AM SIGNAL Meter Sensitivity 5k Ω /B	P-1604	28100060
VR403	AM Output Level Control 50k Ω /B	P-6369	28100096
VR601a,b	Bias Control 1k Ω /B	P-6274	28100037
VR901a,b	TREBLE 100k Ω /B	P-5006	28000130
VR902a,b	MID 100k Ω /B	"	"
VR903a,b	BASS 100k Ω /B	"	"
VR951-1a	VOLUME-L channel 200k Ω /B	P-1699	28200020
VR951-2a	VOLUME-L channel 200k Ω /B	"	"
VR951-1b	VOLUME-R channel 200k Ω /B	"	"
VR951-2b	VOLUME-R channel 200k Ω /B	"	"

COMPLETE BLOCK ASSEMBLIES

Ref. No.	Description	R/S Part No.	Mfr's Part No.
5030	EQ AMP BOARD	X7242	97503010
0042	TUNER BOARD	C4585	97004220
0043	TONE AMP & AUTO-M BOARD	X7243	97004310
0045	MAIN AMP BOARD	X7244	97004510
6044	AUDIO DRIVER AMP BOARD	X7246	97604410
8030	POWER SUPPLY BOARD	X7245	97803010
7126	LED INDICATOR BOARD	X7248	97712610
7127	METER LAMP BOARD		97712710


MISCELLANEOUS PARTS LIST

Ref. No.	Description	R/S Part No.	Mfr's Part No.	Ref. No.	Description	R/S Part No.	Mfr's Part No.
1	Wire Wrap Pin 13mm	HB-0955	19044001		P.C. Board Support Rubber	HB-5126	74127002
2	" 19mm	HB-0945	19043001	50	Angle Bracket for Heat Sink (R)	HB-5121	63339001
3	Jumper Wire JPW-03		19000001	51	Angle Bracket for Heat Sink (L)	HB-5122	63340001
4	" JPW-02		19000002	52	Insulation Fiber (B)	HB-5127	75071002
5	P.C.B. Connector Socket 5P	J-6435	19074001	53	Wire Clumper		73075001
6	" " 9P	J-6436	19075001	54	Fiber Barrier (C)	HB-5128	75079001
7	Heat Sink	HH-0191	15079001	55	Terminal Strip 1L1P Small		51027002
8	P.C. Board Bracket	HB-5118	63341002	56	" 1P1L1P Small	HB-3229	51041002
9	Thermal Protector UI2 90C	HB-5116	30700190	57	" 2P1L1P1L2P		51084002
10	Thermal Protector Bracket	HB-5117	63255001		Snap Bushing	HB-5125	74036001
11	P.C.B. Connector Plug 9P	J-6437	36011001	59	Front Panel Assembly	Z-2931	10196002
12	Back Panel	Z-2925	11183002	60	Tuning Knob	K-2303	29237001
13	12P RCA Jack	J-0721	33120240	61	SELECTOR Knob	K-2304	29238001
14	Fuseholder FH002 (UL)	F-1017	34032001	62	L Ch. Knob for Tone Control	K-2305	29239001
15	AC Outlet IR02 (UL)	J-6438	34048001	63	R Ch. Knob for Tone Control	K-2306	29240003
16	Bar Antenna Holder	A-4367	63030001	64	VOLUME Knob (R ch.)	K-2307	29241003
17	Bar Antenna Metal Bracket	A-4366	63026002	65	VOLUME Knob (L ch.)	K-2308	29242003
18	Fuse ST-2 4A 125V (UL)		38334140	66	Push Switch Knob	K-2302	29206002
19	4P Screw Terminal	J-4476	53041600	67	Wooden Cabinet	Z-2933	85071004
20	10P Speaker Terminal	J-4430	53100240	68	Bottom Plate	Z-2930	05049001
21	AC Cord Strain Relief SR4P-4	HB-0954	74089001	69	Plastic Foot	F-0183	74074001
22	Cord Strain Relief SR4K-4	HB-3212	74035001	70	Plastic Washer		84092001
23	AC Cord with Plug	J-4436	62110004	71	Acryl Board for Dial Lamps	HB-5131	71039001
24	Phono Ground Terminal	HB-0953	53012300	72	Metal Fitting for Acryl Board	HB-5130	63345001
25	Line Cord Antenna	H-3533	63101001	73	Light Shield Fiber	HB-5132	73218001
26	Line Cord Antenna Fiber	H-1901	75017002	74	P.C.B. Connector Plug 5P		36010001
27	Dial Scale	G-0275	20098002	75	Screw M4x45		40340451
28	Dial Shaft Assembly	D-3267	23048001	76	Flat Washer M4		42120421
29	Tuning Meter	M-0315	60200018	77	Lock Nut		40000030
30	Pulley Shaft E	HB-5107	24003001	78	Binding Head Screw M3x8		40430085
31	Plastic Pulley	D-0250	84085001	79	Binding Head TP Screw M3x8		40630085
32	Fiber Washer		75048001	80	Screw M3x6		40330061
33	Fiber Insulator for Dial Shaft		75047001	81	Nut M3		41113070
34	Phone Jack	J-1722	33031300	82	Spring Washer M3		42250341
35	Meter Filter (Red)	HB-5123	74122001	83	Nut M4		41114010
36	Plastic Rivet		84254001	84	Flat Washer M4		42120421
37	Wire Bundler 15D		84252001	85	Spring Washer M4		42250441
38	" 11D		84250001	86	Tapping Screw B M3x8		40000086
39	" 8D		84249001	87	Tapping Screw B M3x10		40000087
40	Metal Bracket for Power Transformer		63342001	88	Tapping Screw M4x15 Black		40640155
41	Angle Bracket for Pulley	HB-5124	63343001	89	Screw M3x8 TH		40000086
42	Dial Drum	D-0365	21012001	90	Plastic Pulley (Small)	D-0243	84010001
43	Spring Coil for Dial Drum	RB-5691	19070001	91	Screw M5x15		40350151
44	Terminal Strip 1P1L1P		51025002	92	Metal Fitting for Meter	HB-0958	19041002
45	Pulley Shaft G		24004002	93	Ground Lug M3	H3532	51036001
46	Metal Bracket for Wooden Cabinet	D-1193	63287001		Wired-in Fuse 2A 125V		38354120
47	Dial Pointer	HB-5127	25044001				
48	Mylar Sheet for Dial Pointer		84267001				

PARTS CHANGE NOTICE

The following parts have been changed/added during the course of production.

Change	Serial No.	Reasons
R223, 5.6K to 6.8K	6060101 & UP	To improve Muting Lock level
C232, 12P	"	Added to improve charactalistic of CF203
R327, 1.8K to 1K	6073201 & UP	To change power supply voltage for D756
C117, 18P(SH) to 18P(UJ)	"	To improve FM OSC. frequency stability
C119, 7P(SH) to 7P(TH)	"	Same as above C117
RL301, Mfr's Part No. 82000070 to 82000050	6100101 & UP	Change in manufacturer of reed relay
R326, 560 to 470 ohms (1/2 W, Metal to 1/4W, Carbon)	"	Required by change of RL301
R107, 3.9K to 10K	"	To improve FM sensitivity
R221, 180K to 1,000K	"	To improve FM Muting Lock stability with high input levels
R508, 1.8K to 1.5K	"	To improve PHONO AMP overload capability
C556, 0.01 μ	"	Added to change of wirings to improve PHONO Signal-to-Noise Ratio
IC501, Type No. RC4558 to NJM4558 (Mfr's Part No. 30900360 to 30900363)	"	To improve Signal-to-Noise Ratio in PHONO mode

RADIO SHACK  **A DIVISION OF TANDY CORPORATION**
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