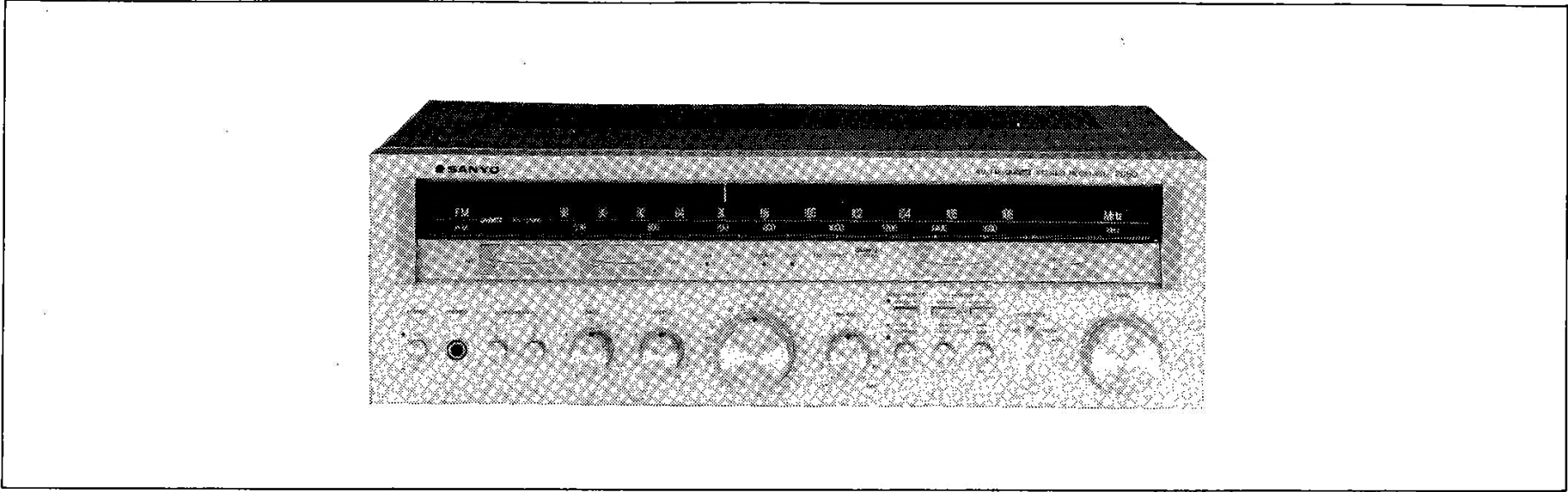
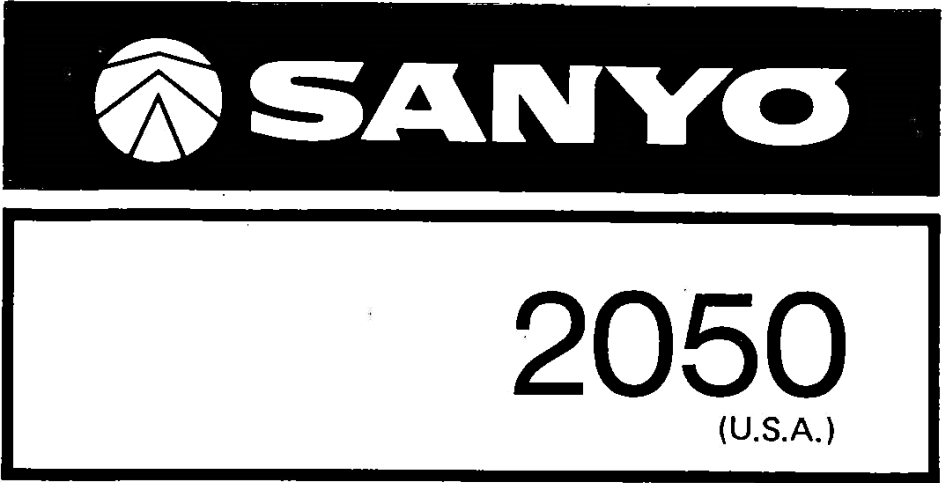


SERVICE MANUAL

STEREO RECEIVER



SPECIFICATIONS

AMPLIFIER SECTION

Continuous minimum sine wave RMS power output per channel at 8 ohms from 20 Hz to 20 kHz with no more than 0.04% harmonic distortion. 50 watts

Intermodulation Distortion (Rated power, Aux. input, 60Hz & 7kHz, 4:1)		0.04%
Input Sensitivity/Impedance		
PHONO	2.5mV/47k ohms	
AUX. TAPE 1, 2	150mV/47k ohms	
Frequency Response		
PHONO (RIAA standard curve)	±0.2dB	
AUX. TAPE (20Hz – 20kHz)	±0.5dB	
(10Hz – 40kHz)	±1.0dB	
S/N Ratio (IHF-A-weighted)		
PHONO (at 10mV)	87 dB	
(at 2.5mV)	75 dB	
AUX. TAPE PLAY	95 dB	
Damping Factor (1kHz, 8 ohms)		35
Residual Hum & Noise		0.7mV
Input Sensitivity/Impedance		
PHONO	2.5mV/47k ohms	
AUX. TAPE PLAY 1, 2	150mV/47k ohms	
Phono Maximum Input Voltage (1kHz)		150mV (RMS)
Tone Controls		
Bass (100Hz)	–10dB – +10dB	
Treble (10kHz)	–10dB – +10dB	
Loudness Control (Vol. at –30dB)		
100Hz/10kHz	+8dB/+3dB	
Filter		
Low (30Hz)	–6dB/oct.	
High (8kHz)	–6dB/oct.	
Output Voltage		
TAPE REC 1, 2	150mV	

AM TUNER SECTION

Frequency Range	525 – 1620kHz
Usable Sensitivity	
at Ferrite Ant.	300µV/m
at Ext. Ant.	30µV
S/N Ratio (at 5mV/m)	45dB
Selectivity	35dB
Image Rejection Ratio (1,000kHz)	50dB
IF Rejection Ratio (1,000kHz)	40dB

FM TUNER SECTION

Frequency Range	88 – 108MHz
Usable Sensitivity	
Mono	10.8 dBf (1.9µV)
50dB Quieting Sensitivity	
Mono	13.7 dBf (2.7µV)
Stereo	37 dBf (39µV)
Maximum S/N Ratio	
Mono	75 dB
Stereo	70 dB
Total Harmonic Distortion	
Mono 100Hz	0.2%
1kHz	0.2%
6kHz	0.35%
Stereo 100Hz	0.35%
1kHz	0.3%
6kHz	0.4%
Frequency Response	
20Hz – 15,000Hz	+1.0/–2.0dB
Alternate Channel Selectivity	
at 400kHz	70dB
Capture Ratio	
	1.5dB
AM Suppression	
	55dB
Stereo Separation	
1kHz	45dB
10kHz	35dB
Spurious Response Rejection	
at 98MHz	80dB
Image Rejection Ratio	
at 98MHz	70dB
IF Rejection Ratio	
at 98MHz	90dB
Muting Threshold	
	5µV
Antenna Terminal	
	300 ohms (Balanced)
	75 ohms (Unbalanced)

GENERAL

Dimensions (W x D x H) Approx.	17-5/16" x 10-5/8" x 5-3/16" (440 x 270 x 132mm)
Power requirements	AC: 120V, 60Hz
Power consumption	200W
AC Outlets	
Switched	1 (100W max.)
Unswitched	1 (100W max.)

ADJUSTMENTS OF TUNER SECTION

INSTRUMENTS USED FOR ADJUSTMENTS

This set is specified by high grade of standard, especially in distortion and carrier leak, as compared with the conventional receivers. Therefore, the instruments used for various adjustments of this set should be of high quality and high grade, and always serviced and adjusted strictly.

DSG	Output, more than 50 dB; high grade (Digital leadout SG) of standard.
Stereo modulator	Strictly calibrated in phase; high grade of standard conforming to the level of FM DSG.
AF OSC	20 Hz to 15 kHz, level within ± 0.1 dB, low distortion (less than 0.01).
Distortion meter	For automatic level; measurable up to 0.05%.
IHF filter	Distortion less than 0.02% (at 100 mV to 1.5 V), S/N more than 80 dB.
19 kHz band pass filter	More than 40 dB/oct, 38 kHz attenuation (more than 60 dB).
Frequency counter (with AMP)	Input level in the vicinity of 76 kHz, possible at 0.5 mV; small input capacity (cable), less than 50 pF; high input impedance, more than 500K ohms (at 76 kHz); displayable up to 76,000 kHz.
DVM (Digital volt meter)	Resolution less than 1 mV (DC).

NOTE

- Use high quality IHF filter, otherwise the center "0" point may not coincide with the minimum distortion point in the tuning meter center "0" adjustment.
- If the phase of the stereo modulator is calibrated by means of ordinary oscilloscope, an error may be caused. Hence, the phase calibration should be performed strictly.
- The output figures are given for open type DSG:

FM IF ADJUSTMENT

1. V-curve adjustment

- (1) Connect TP-2 (hot) and TP-3 or 102 (ground) to the output terminals of sweep generator, and TP-202 (hot) and TP-206 (ground) to the input terminals.
- (2) Disconnect ceramic capacitor C217 ($0.022\mu\text{F}$).
- (3) Reduce the input level of the set as small as possible so that the output waveform may not be saturated.
- (4) While watching the sweep waveform, adjust the T201 until the sweep waveform presents the pattern as in Fig. 1

NOTE

Match the center of V-curve with the center line of the ceramic filter being.

V curve

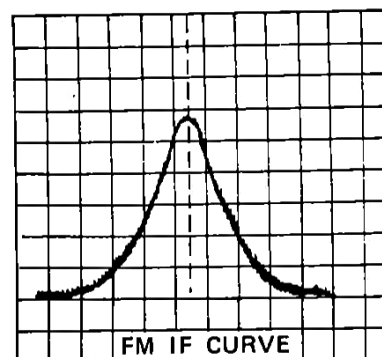


Fig. 1

2. S-curve adjustment

- (1) Connect TP-2 (hot) and TP-3 or 102 (ground) to the output terminals of the sweep generator, and TP-201 (hot) and TP-206 (ground) to the input terminals.

NOTE

In order to cut the direct current at the hot side of the sweep generator, connect a capacitor ($1\mu\text{F}/16\text{V}$) between TP-207 and input terminal.

- (2) Turn T202 until the waveform of the sweep generator presents the pattern as in Fig. 2. Avoid turning T203 unless absolutely necessary.

S curve

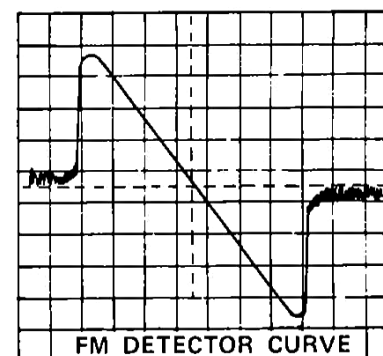


Fig. 2

GENE SCOPE

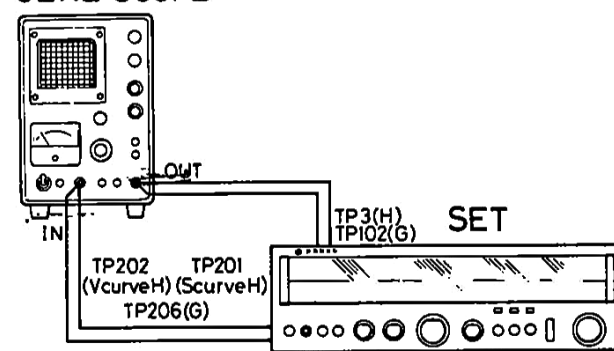


Fig. 3

FM TRACKING ADJUSTMENT

Make this adjustment after Pre-adjustment is done. Connect the instruments as Fig. 4.

- (1) Receive a 111.4 MHz image signal of 90 MHz (a 127.4 MHz image signal for 106 MHz) by feeding an over 70 dB input.
- (2) Reduce the input so that the distortion factor gets worst or the audio output is minimized. Raise the distortion factor nearly to 20 per cent as an aim. Adjust the 111.4 MHz image signal by rotating L102 and L104. Adjust the 127.4 MHz one by TC1 and TC2. Make tracking by repeating the above adjustments.

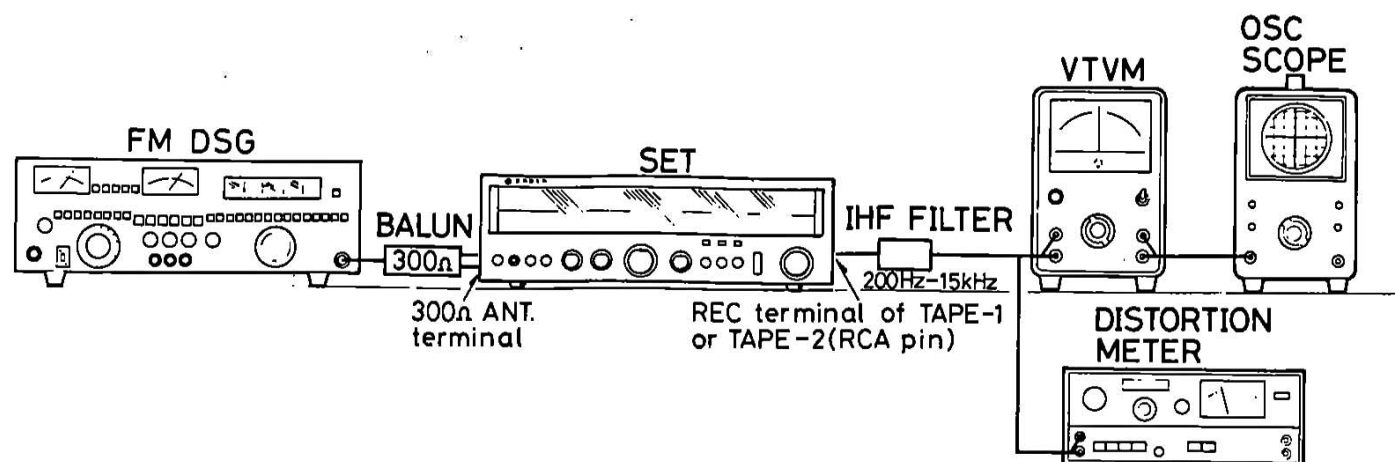
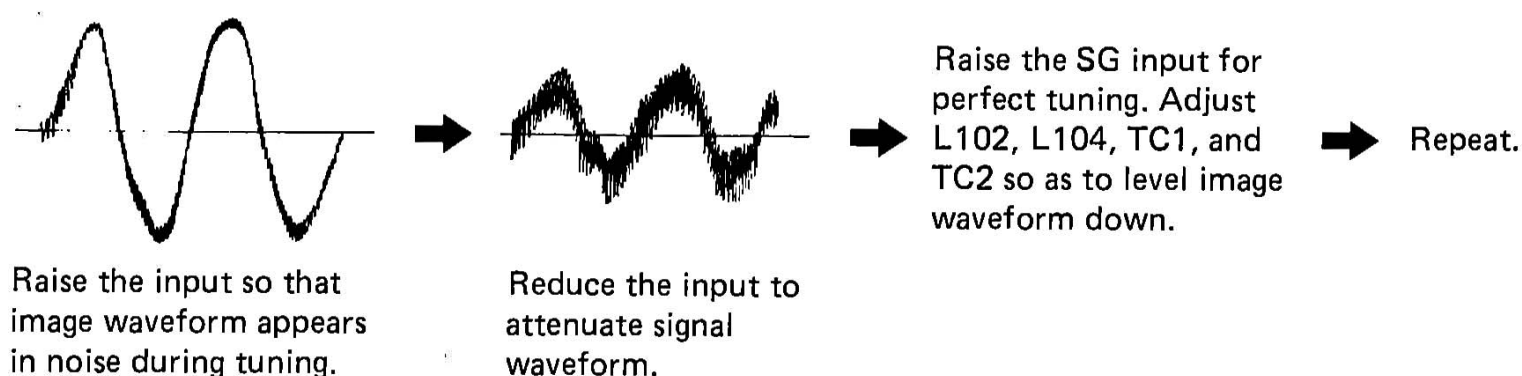


Fig. 4



FM TUNING METER ADJUSTMENT

Set FM DSG to 1kHz, 75kHz DEV. Connect the equipments as shown in Fig. 5.

- (1) Set FM DSG and the unit to 98.00MHz.
- (2) Set the output of FM DSG to OFF (less than -20dB), and turn T202 until the display of DVM connected between TP201 (hot) and TP206 (ground) becomes within $\pm 10\text{mV}$.
- (3) Change the output of FM DSG to ON (40dB ~ 60dB), and attain finetuning with the tuning knob so that the output signal may be received while the display of DVM is within $\pm 10\text{mV}$.
- (4) Turn T203 until the distortion factor becomes the minimum. At this time, keep the output of FM DSG at MONO position.

- (5) Repeat adjustment steps (2) thru (4).
- (6) Set the output of FM DSG to 40dB ~ 70dB, fine-adjust T201 until the distortion factor reaches the minimum again.
(This adjustment requires only a slight rotation of the core of T201.)
- (7) Attempt adjustment steps (2) thru (6) once again.

NOTE

- If the core is turned too much in step (6), the V-curve may be deviated excessively, so that the practical sensitivity of the set may be lowered. Hence perform fine-adjustment of T201 with care.

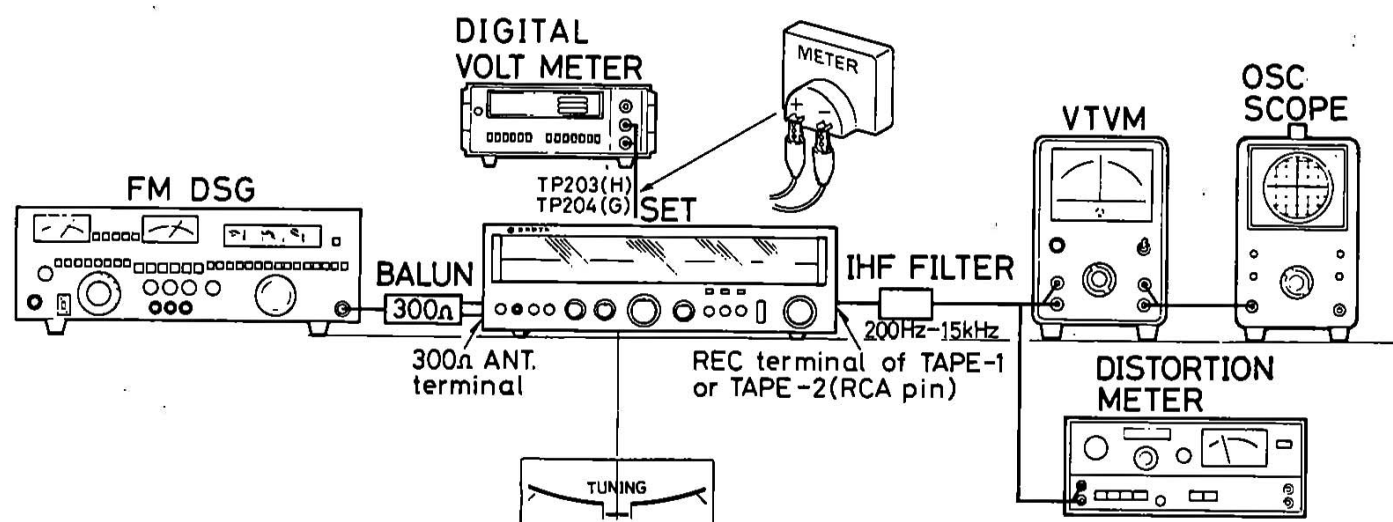


Fig. 5

FM MPX ADJUSTMENT

Feed modulated input into FM DSG through stereo modulator.

* Modulation frequency is 1kHz.

Pilot signal	6.75kHz dev.	
(19kHz)	(9% mod.)	75kHz dev.
Stereo signal	68.25kHz dev.	(100% mod.)
(98 MHz) L+R	(91% mod.)	

Place the output signal switch of stereo modulator in MAIN (L + R) position. Set the output frequency of FM DSG and the unit to 98.000MHz. *Output fo FM DSG is 72dB (i.e. 60dB or 1mV at 300 ohm ANT. terminal).

The adjustment of VCO must be promptly made more than 10 seconds after energization.

ADJUSTMENT OF VCO

- (1) Place MODE/FM MUTE switch of the unit in stereo/on position, and set the output of FM DSG to off (Less

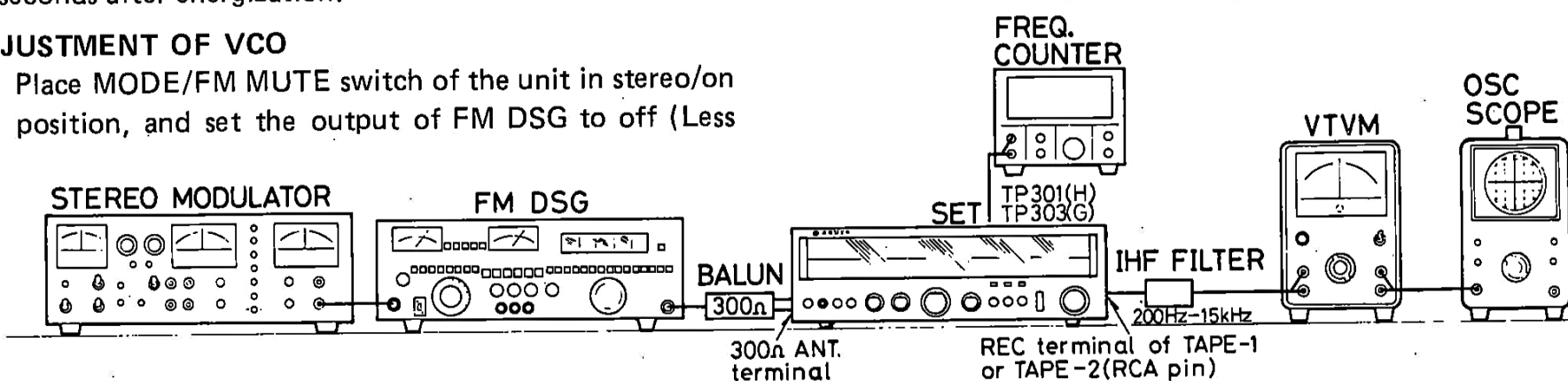


Fig. 6

than -20dB) and connect frequency counter to TP-301 (hot) and TP-303 (ground) as shown in Fig. 6.

- (2) Cut the output of stereo modulator to eliminate modulation, and turn SVR R306 until the counter display becomes within 19kHz $\pm$ 19Hz.

NOTE

- To eliminate modulation means to turn off PILOT and MAIN & SUB of the output signal switch. Use instruments of high input impedance as far as possible.
- Keep the leadwires connected between the unit and instruments as short as possible.
- If hum may be induced, use a hum cut filter.

ADJUSTMENT OF SEPARATION

- (1) Place MODE/FM MUTE switch of the unit in stereo/on position, and fine tune with tuning knob of the unit so that the distortion factor becomes the minimum.
- (2) Switch the stereo modulator to R-channel only or L-channel only. Reduce the output signal leakage of each channel to a minimum by adjusting SVR R305.

NOTE:

- Make this adjustment after VCO ADJUSTMENT is done.
- Use a filter to eliminate the carrier signal of 19kHz 38kHz.

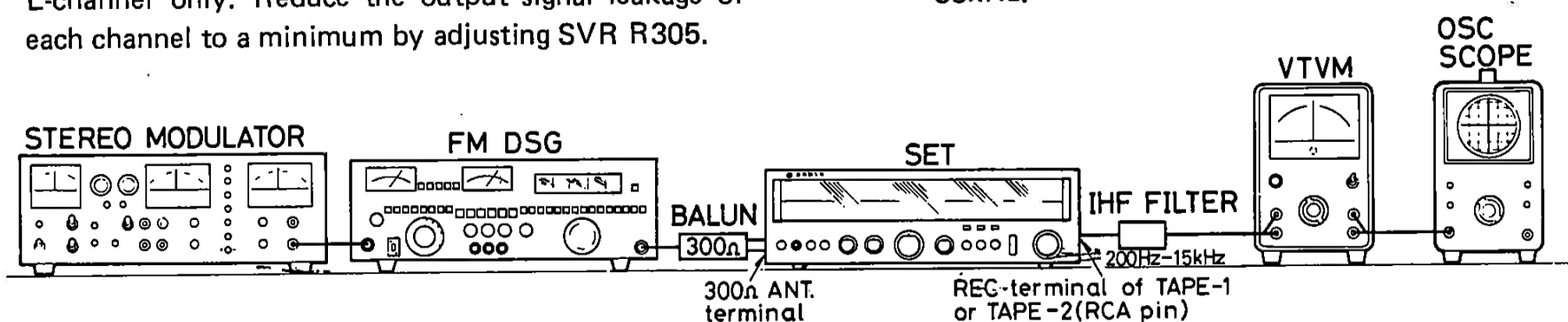


Fig. 7

FM MUTING LEVEL ADJUSTMENT

Set FM DSG to 1kHz, 75kHz DEV., 98.000MHz. Place MODE/FM MUTE switch of the unit in stereo/on position.

- (1) Fine tune with tuning knob of the unit in to FM DSG. Set the output of FM DSG to 28dB (i.e. 16dB or 5μV at 300 ohm ANT. terminal).
- (2) Adjust SVR225 and set it at the position where the VTVM needle stops swinging or the waveform on the

oscilloscope becomes very small.

NOTE:

When the muting function is ON, the waveform decrease in size, and weak signals and noise are cut off.

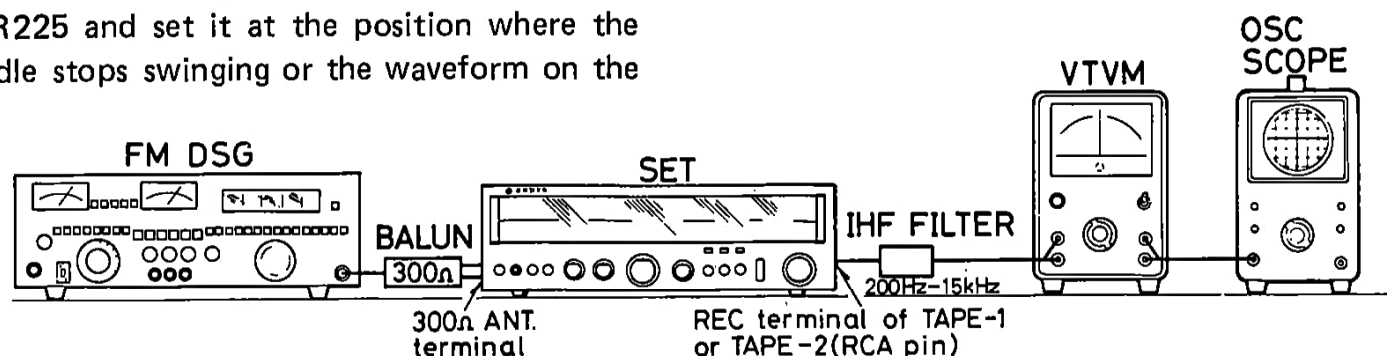


Fig. 8

AM TRACKING ADJUSTMENT

Connect VTVM to TP-311 (H) and TP-303 (G).

- 1) Set the frequency of AM SG to 600kHz and the tuning dial of the unit to 600kHz.
- 2) Set the position of BAR ANTENNA as requested and dress the leadwires of BAR ANTENNA before making adjustment.
- 3) Turn the core of L151 (BAR ANTENNA) until the output of the unit becomes maximum.
- 4) Set the frequency of AM SG to 1400kHz and the tuning dial of the unit to 1400kHz.
- 5) Turn TC4 (VC TRIMMER) until the output of the unit becomes maximum.
- 6) Repeat the above steps from 1). until the output of the unit becomes maximum at both 600kHz at 1400kHz.

NOTE: Use plastic screw driver for this adjustment.

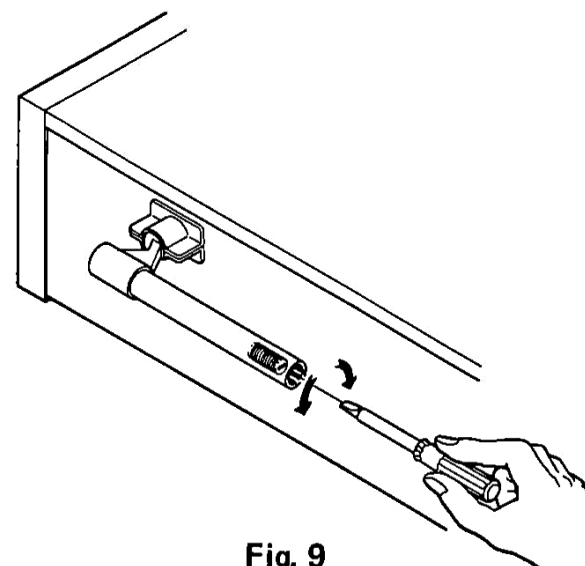
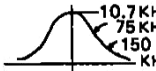
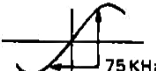
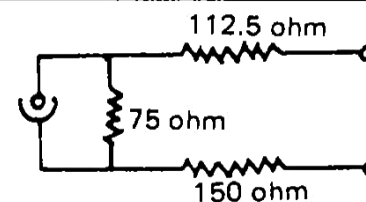


Fig. 9

FM ALIGNMENT

Step	Adjusting Circuit	Connections		SG frequency	Position of tuning dial	Adjustment	VTVM Oscilloscope
		Input	Output				
1	I.F.	Connect sweep generator to FM TP-2 (H) & TP-102 or 3 (G) ... shield plate	Connect oscilloscope to test point TP-201 (H), TP-206 (G)	10.7 MHz	Near max. capacitance of tuning gang with no station signal.	T201	
2	Ratio Det.		Connect oscilloscope to test point TP-202 (H), TP-206 (G)			T202, T203	
3	OSC.	Connect FM SG. to FM ANT. Terminals or TP-101 (H) & TP-102 (G)	Connect VTVM to TP-311 (H) & TP-303 (G)	87.4 MHz (400 Hz 30% modulation)	Low end of dial scale	L106	Max.
4			TP-315	108.3 MHz (400 Hz 30% modulation)	High end of dial scale	TC3	
5	ANT.	Connect FM SG. to FM ANT. Terminals or TP-101 (H) & TP-102 (G)	Connect VTVM to TP-311 (H) & TP-303 (G)	90.0 MHz (400 Hz 30% modulation)	90.0 MHz on dial scale	L102, L104	Max.
6				TP-315	106.0 MHz (400 Hz 30% modulation)	106.0 MHz on dial scale	
7	Repeat adjustments						

- PREPARE:**
1. Set the dial pointer to very left line of dial scale.
 2. Connect sweep generator, FM SG, VTVM and oscilloscope. FM ANT input impedance is 300 ohm.
 3. Use a screwdriver with plastic grip for all adjustments.
 4. Use a 300 ohm balanced dummy load.



MW ALIGNMENT

Step	Adjusting Circuit	Connections		SG frequency	Position of tuning dial	Adjustment	VTVM Oscilloscope
		Input	Output				
1	I.F.T.	Connect AM SG to test loop-antenna	Connect oscilloscope to TP-311, TP-315 TP-303 (G)	455 KHz	Low end of dial scale. With no station signal.	T251, T252	Max.
2	OSC.	Connect AM SG to test loop-antenna	Connect VTVM to TP-311 (H) & TP-303(G) TP-315	510 KHz (400 Hz 30% modulation)	Low end of dial scale	L152	Max.
3				1700 KHz (400 Hz 30% modulation)	High end of dial scale	TC5	
4	ANT.	Connect AM SG to test loop-antenna	Connect VTVM to TP-311(H) & TP-303(G) TP-315	600 KHz (400 Hz 30% modulation)	600 KHz on dial scale	L151	Max.
5				1400 KHz (400 Hz 30% modulation)	1400 KHz on dial scale	TC4	
6	Repeat adjustments.						

- PREPARE:**
1. Set the dial pointer to very left line on dial scale.
 2. Use a screwdriver with plastic grip for all adjustments.
 3. Selector switch to "MW".
 4. Connect sweep generator, AM SG, VTVM and oscilloscope.

QUARTZ BLOCK ADJUSTMENTS

VCO ADJUSTMENT

- (1) Connect counter between TP (hot) and Shield Plate (ground).
- (2) Adjust TC451 until the counter display becomes $400.000\text{kHz} \pm 4\text{Hz}$.

NOTE:

Use the counter of high input impedance.

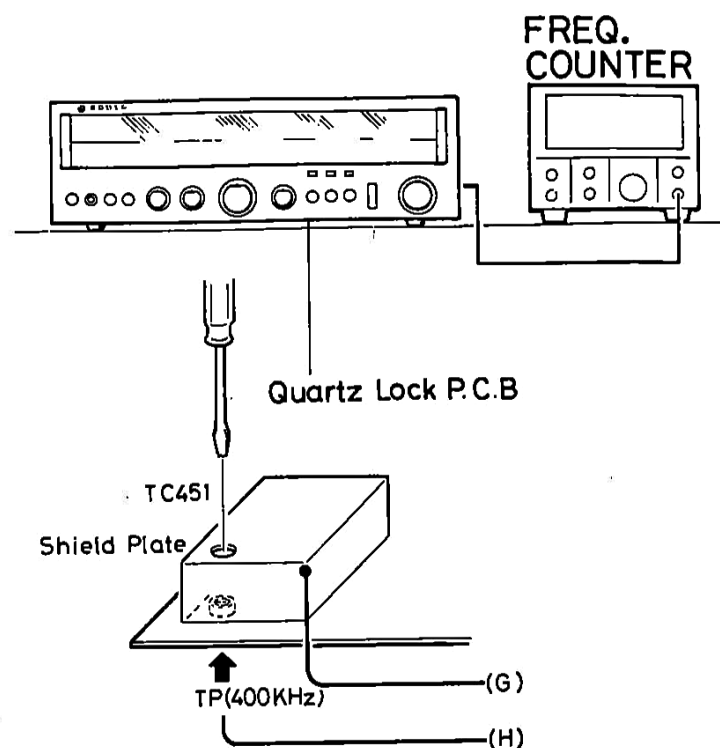
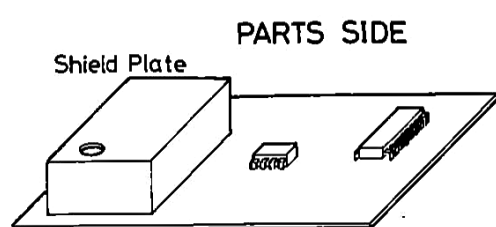


Fig. 10

AMP METER ADJUSTMENT

1. Make connections as follows.
2. Push the power switch ON.
3. Impress 1kHz signals on both the right and left input terminals. When the speaker terminal output reaches 8.94V, adjust by manipulating VR725 and VR825 of SVR so that the output meter reads 10W.

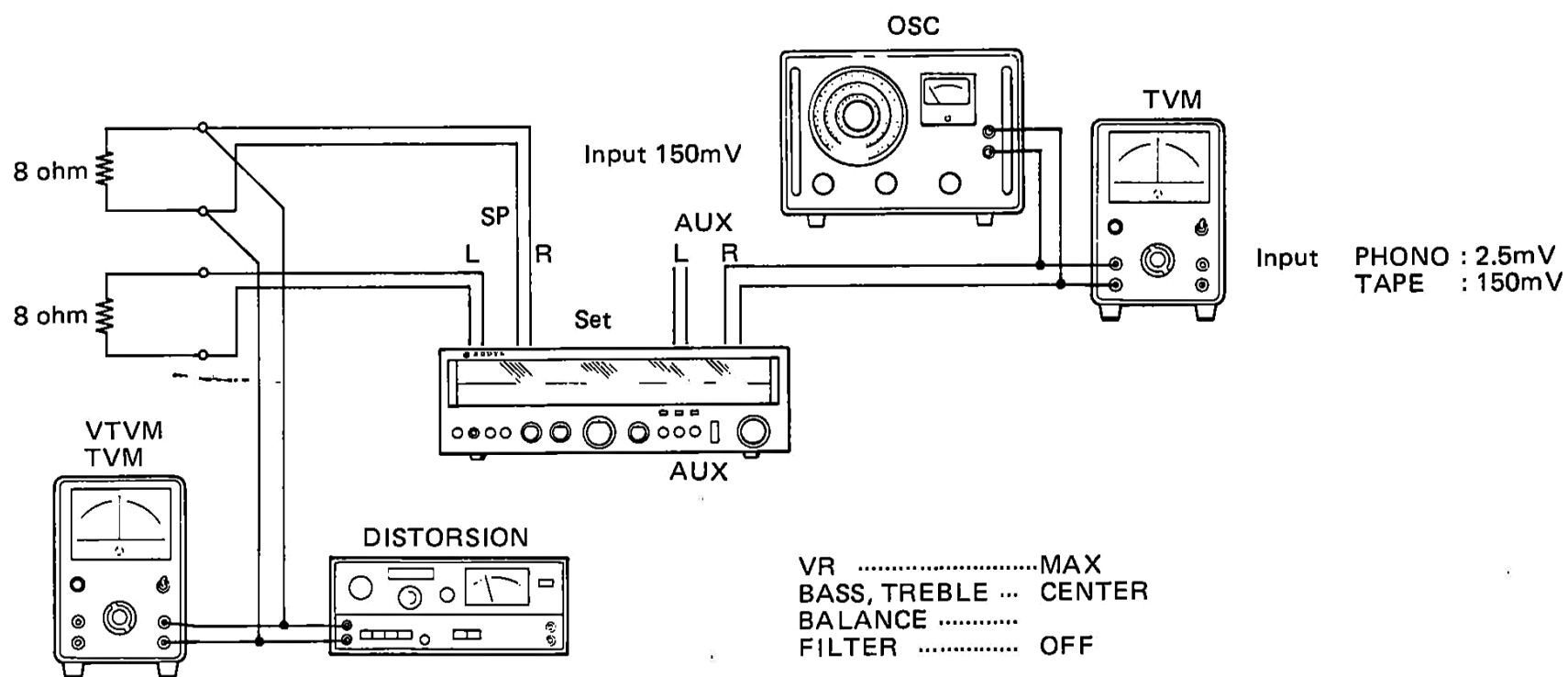
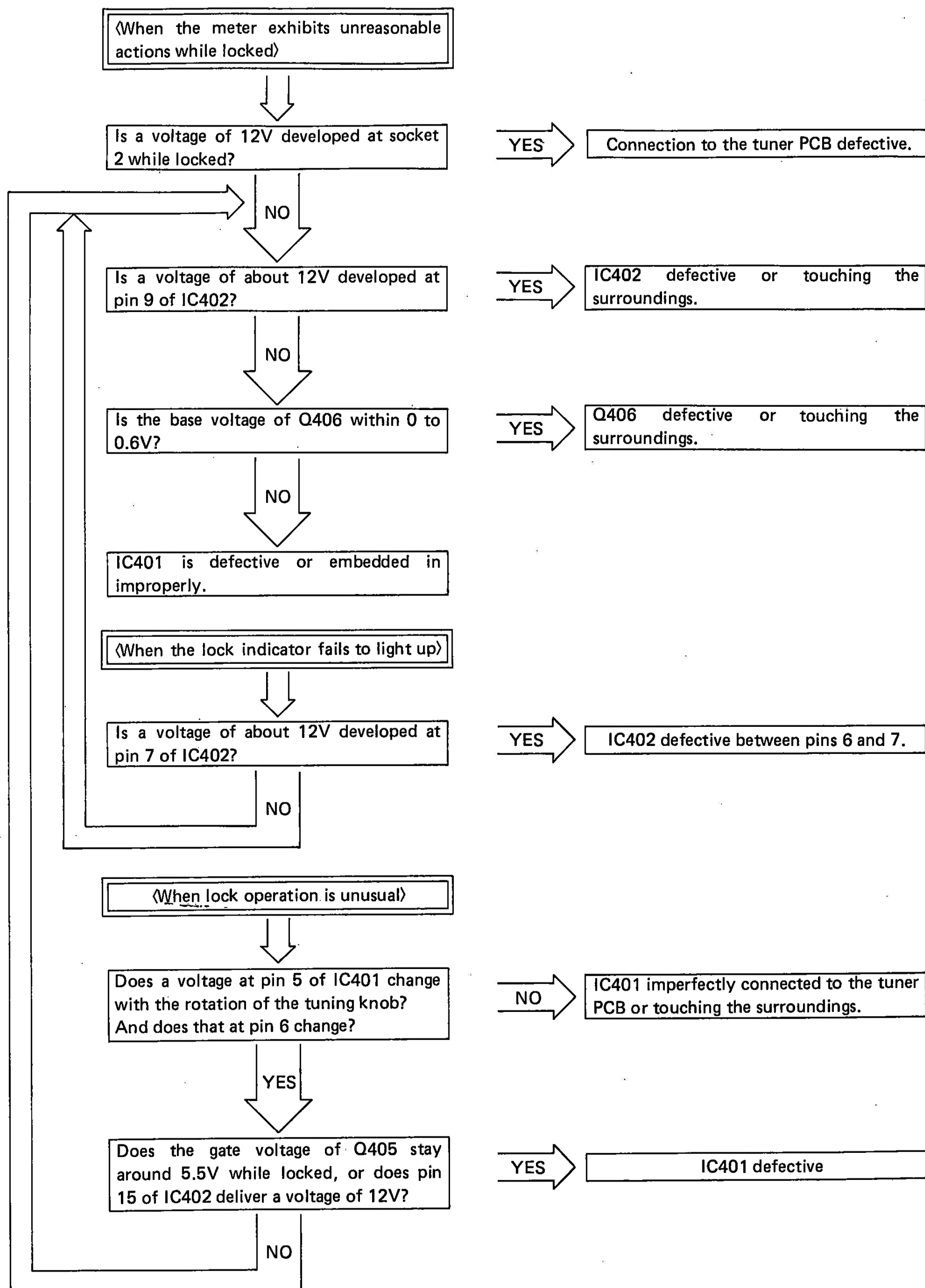
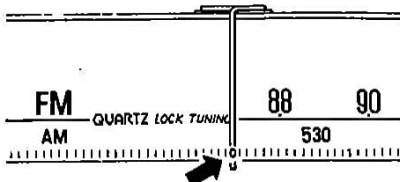
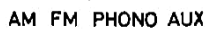


Fig. 11

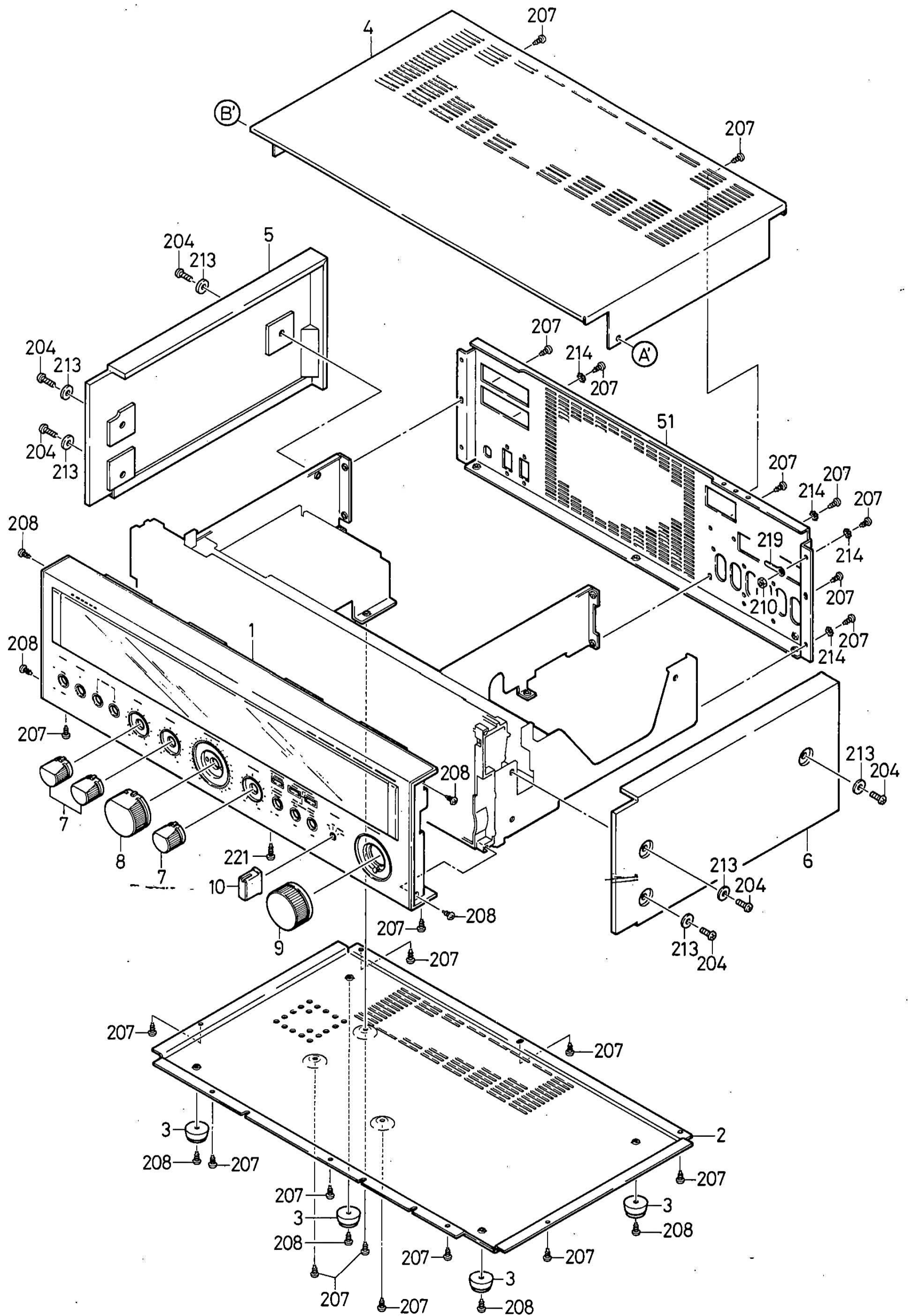
TROUBLE SHOOTING (METER)







CABINET EXPLODED VIEW



PARTS LIST

Key No.	Part No.	Description	Q'ty
PACKING			
	141-6-133T-07800	Individual Carton	1
	141-6-144T-54800	Foam Plastic Case	1
	141-6-317T-16100	Pad	1
	141-6-231T-90507	Inner Poly Cover, Set	1
	141-6-231T-25350	Inner Poly Cover, Inst. M	1
	141-6-231T-06100	Inner Poly Cover, Spanner	1
	141-6-144T-59000	Foam Plastic Case	1
	141-6-317T-16300	Pad, Antenna	1
ACCESSORY			
	141-6-410T-36100	Instruction Manual	1
	141-6-439T-01100	Customer Card	1
	141-6-440T-08700	Hang Tag	1
	141-2-419T-00200	Spanner	1
	4-245T-00171	Antenna	1
CABINET			
1	141-0-122T-32600	Front Panel Ass'y	1
2	141-0-125T-19300	Bottom Lid Ass'y	1
3	141-0-174T-05101	Stand Ass'y	4
4	141-0-111T-42300	Cabinet Ass'y	1
5	141-0-123T-05300	Side Panel Ass'y	1
6	141-0-123T-05400	Side Panel Ass'y	1
7	141-0-163T-62600	Rotary Knob Ass'y, Tone	3
8	141-0-163T-62700	Rotary Knob Ass'y, Volume	1
9	141-0-163T-62800	Rotary Knob Ass'y, Tuning	1
10	141-0-163T-63000	Rotary Knob Ass'y, Function	1
CHASSIS			
21	141-2-310T-34200	Bracket, Pulley L Front	1
22	141-2-310T-34300	Bracket, Pulley R Front	1
23	141-2-310T-34400	Bracket, Pulley L Back	1
24	141-2-310T-34500	Bracket, Pulley R Back	1
25	141-2-661T-71200	Pulley	5
26	141-2-421T-20900	Special Screw	5
27	141-2-513T-05700	Carriage	1
28	141-2-538T-11900	Drum	1
29	141-2-511T-18600	Pointer	1
30	141-2-340T-05003	Rope	1
31	141-2-146T-23600	Dial Scale	1
32	141-2-210T-18400	Bracket	1
33	141-2-210T-18300	Bracket	1
34	141-2-855T-38700	Spring Coil	1
35	141-2-246T-12901	Sheet	1
36	141-0-253T-17901	Joint Ass'y, Speaker Switch	2
37	141-0-253T-18001	Joint Ass'y, Power Switch	1
38	141-0-253T-20500	Joint Ass'y, Mode Switch	1
39	141-0-253T-17801	Joint Ass'y, Tape Switch	2
40	141-0-161T-49202	Push Button Ass'y, Filter Switch	3
41	141-2-464T-20671	Fixer	14
42	141-2-135T-63200	Cover	2
43	141-2-445T-13301	Rubber Cushion, Meter Pilot	2
44	141-2-310T-35500	Bracket	1
45	141-2-464T-24000	Fixer	5
46	141-0-214T-04600	Bracket Ass'y, Frame	1
47	141-2-315T-20700	Reinforcement, L	1
48	141-2-315T-20800	Reinforcement, R	1
49	141-2-315T-19301	Reinforcement, Center	1
50	141-2-315T-19200	Reinforcement, Side	1
51	141-2-119T-00101	Back Panel	1
52	141-2-368T-17401	Heatsink	1
53	141-2-310T-24500	Bracket, Heatsink	1
54	141-2-310T-24600	Bracket, Heatsink	1

Key No.	Part No.	Description	Q'ty
CHASSIS			
55	141-2-361T-16600	Bracket, VR	1
56	141-2-310T-24700	Bracket, Power Switch	1
57	141-2-310T-24800	Bracket, Speaker Switch	1
58	141-2-310T-33900	Bracket, Tape Switch	1
59	141-0-566T-09800	Tuning Shaft Ass'y	1
60	141-2-464T-11800	Fixer, AC Cord	1
61	141-2-310T-34000	Bracket, Quartz	1
62	141-2-322T-51600	Shield Plate, Quartz	1
63	141-2-322T-51500	Shield Plate, Quartz	1
64	141-2-310T-25000	Bracket	1
65	141-0-371T-09100	Bracket Ass'y Transformer	1
66	123-2-472R-00401	Lug	2
67	141-2-472T-01201	Lug	4
68	141-2-464T-27600	Fixer	1
HARD WARE			
201		Pan Hd. Screw 3x8	1
202		Binding Hd. Screw 3x8	9
203		Binding Head Screw 3x10	4
204		Binding Head Screw 4x12	6
205		Tapping Screw 3x8	1
206		Binding Hd. Tapping Screw 3x6	7
207		Binding Hd. Tapping Screw 3x8	61
208		Binding Hd. Tapping Screw 3x10	13
209		Binding Hd. Tapping Screw 4x10	3
210		Nut 3	2
211		Nut 9 x 0.75t	1
212		Washer 3x10x0.5	1
213		Washer 4x13x1.2	6
214		External Tooth Lock Washer 3	7
215		Pan Hd. Self-Tapping Screw 3x6	2
216		Tapping Screw with Washer 3x6	1
217		Tapping Screw with Washer 3x8	2
218		Tapping Screw with Washer 3x14	4
219	141-2-472T-00600	Lug	2
220	141-2-453T-01700	Fiber Washer 3x10x1	2
ELECTRICAL PARTS			
101	4-300T-08100	Power Trans	1
102	4-243T-81271	Power Cord	1
103	4-237T-08400	Terminal Board, Speaker	2
104	141-2-382T-10100	Terminal, Ground	1
105	141-2-382T-10600	Terminal, Phono Ground	1
106	4-235T-44871	Socket, Headphone	1
107	4-511T-11072	Meter, Power	2
108	4-235T-65800	Socket, AC Outlet	1
109	4-612T-14900	Lamp 8V 100mA, Meter	2
110	141-2-368T-18900	Heatsink, IC901	1
111	4-511T-11000	Meter, Signal	1
112	4-511T-11100	Meter, Tuning	1
113	4-257T-37301	Antenna Coil Ass'y	1
114	141-2-327T-18200	Insulator, IC901	1
115		Carbon Res. 10K ohm $\pm 5\%$ $\frac{1}{4}W$ (R575)	1
116		Ceramic Cap 120pF 50V $\pm 10\%$ (C120)	1
117		Ceramic Cap 330pF 50V $\pm 10\%$ (C101)	1
118	141-2-243T-09800	Base	1
119	123-2-472R-00401	Lug, IC901	2

PARTS LIST

Key No.	Part No.	Description	Q'ty
TONE AMP PCB ASS'Y			
121	141-4-233T-09271	P.C Board Ass'y, Tone Amp	1
VR556	4-222T-76600	Variable Resistor 100K (B) x 2,	1
656		Main	
VR555	4-222T-76700	Variable Resistor 250K (MW),	1
655		Balance	
VR565	4-222T-76800	Variable Resistor 100K (C) x 2,	2
665		Tone	
IC502,		IC M5213L	2
602			
Q501,601		Transistor 2SC2320	2
CAPACITORS			
C560,660		Electrolytic 4.7μF 16V	2
C556,656		Electrolytic 1μF 50V	4
559,659			
C566,667		Electrolytic 100μF 25V	2
C562,662		Mylar 0.12μF 50V ±5%	2
C561,661		Mylar 0.022μF 50V ±5%	4
564,664			
C563,663		Mylar 0.0039μF 50V ±5%	2
C565,665		BC Con 0.068μF 25V ±20%	2
C555,558		Ceramic 100pF 50V ±10%	4
655,658			
C553,557		Ceramic 330pF 50V ±20%	4
653,657			
RESISTORS			
R557,562		Carbon 1M ohm ±5% ¼W	4
657,662			
R570,670		Carbon 1M ohm ±5% ¼W	2
R559,659		Carbon 100K ohm ±5% ¼W	3
573			
R560,660		Carbon 2.2K ohm ±5% ¼W	2
R567,667		Carbon 1.5K ohm ±5% ¼W	2
R572,672		Carbon 1K ohm ±5% ¼W	2
R569,669		Carbon 560 ohm ±5% ¼W	2
R561,563		Carbon 330 ohm ±5% ¼W	4
661,663			
R571,671		Carbon 330 ohm ±5% ¼W	2
R574		Carbon 18K ohm ±5% ¼W	1
R564		Carbon 18K ohm ±5% ¼W	1
R664		Carbon 18K ohm ±5% ¼W	1
R566,666		Carbon 3.3K ohm ±5% ¼W	2
LOUD SWITCH PCB ASS'Y			
122	141-4-233T-09371	P.C Board Ass'y, Loud Switch	1
S5,6	4-238T-02971	Push Switch	1
C554,654		Mylar Cap. 0.033μF 50V ±10%	2
R558,658		Carbon Res. 12K ohm ±5%	2
		¼W	
FILTER SWITCH PCB ASS'Y			
123	141-4-233T-09471	P.C Board Ass'y, Filter Switch	1
S3,4	4-238T-03000	Push Switch	1
CAPACITORS			
C551,651		Mylar 0.0056μF 50V ±10%	2
C552,652		Mylar 0.12μF 50V ±10%	2

Key No.	Part No.	Description	Q'ty
FILTER SWITCH PCB ASS'Y			
RESISTOR			
R551,651		Carbon 2.2K ohm ±5% ¼W	2
R554,654		Carbon 3.3K ohm ±5% ¼W	2
R652,653		Carbon 1M ohm ±5% ¼W	2
R552,553		Carbon 1M ohm ±5% ¼W	2
POWER AMP PCB ASS'Y			
124	141-4-233T-29400	P.C Board Ass'y, Power Amp	1
	4-235T-48400	Socket, Input RCAx4	3
S1,2	4-238T-03171	Push Switch	1
	141-2-322T-50700	Shield Plate	1
IC501		IC NJM 4558	1
D501		Zener Diode WZ320	1
CAPACITORS			
C509,510		Electrolytic 220μF 25V	2
C501,601		Electrolytic 4.7μF 25V	2
C503,603		Electrolytic 22μF 10V	2
C507,607		Electrolytic 1μF 50V	2
		(Nonpolar)	
C505,605		Mylar 0.018μF 50V ±5%	2
C506,606		Mylar 0.0047μF 50V ±5%	2
C502,602		Ceramic 51pF 50V ±5%	2
C508,608		Ceramic 220pF 50V ±20%	2
C504,604		Ceramic 100pF 50V ±10%	2
C511		Ceramic 0.047μF 50V	1
		+80-20%	
C512,513		Ceramic 0.01μF 50V	3
514		+80-20%	
RESISTORS			
R505,605		Carbon 270K ohm ± 5% ¼W	2
R502,503		Carbon 100K ohm ± 5% ¼W	4
602,603			
R506,606		Carbon 15K ohm ± 5% ¼W	2
R507,607		Carbon 1.5K ohm ± 5% ¼W	4
501,601			
R508,509		Carbon 390 ohm ± 5% ¼W	2
R504,604		Carbon 330 ohm ± 5% ¼W	2
POWER AMP PCB ASS'Y			
125	141-4-233T-29300	P.C Board Ass'y, Power Amp.	1
S7	4-232T-05300	Relay	1
	4-209T-01172	Pozistor, 90° C	1
L701,801	4-265T-04830	VHF Coil	2
VR725,	4-222T-39575	Variable Resistor	2
825			
IC701,		IC STK0050	2
801			
IC901		IC NJM78M12A1 SIP03	1
D901,902		Diode GP30 D	4
903,904			
D905,912		Diode 1N4003	2
D911		Diode YZ047 A	1

PARTS LIST

Key No.	Part No.	Description	Q'ty	Key No.	Part No.	Description	Q'ty
POWER AMP PCB ASS'Y				POWER AMP PCB ASS'Y			
D701,702 703,704 705,801 802,803 804,805 706,707 806,807 906,907 908,909 910	CAPACITORS	Diode DS442 X	19	RESISTORS			
Q703,704 705,803 804,805 Q702,802 Q903 Q901,902 Q701,801 Q706,806 Q707,807		Transistor 2SC2375	6	R701,801		Carbon 1K ohm ±5% ¼W	2
		Transistor 2SA1019	2	R827		Carbon 1.5K ohm ±5% ¼W	1
		Transistor 2SD438	1	R828		Carbon 1.8K ohm ±5% ¼W	1
		Transistor 2SC945	2	R704,705 708,718 719,724		Carbon 2.2K ohm ±5% ¼W	6
		Transistor 2SA798	2	R804,805 808,818 819,824		Carbon 2.2K ohm ±5% ¼W	6
		Transistor 2SA999	2	R907		Carbon 15K ohm ±5% ¼W	1
		Transistor 2SC2320	2	R703,803		Carbon 18K ohm ±5% ¼W	2
				R721,821		Carbon 33K ohm ±5% ¼W	4
				729,829			
				R702,711		Carbon 47K ohm ±5% ¼W	4
				802,811			
				R911		Carbon 100 ohm ±5% ¼W	1
				R727		Carbon 1.5K ohm ±5% ¼W	1
				R728		Carbon 1.8K ohm ±5% ¼W	1
				R904,908 909		Carbon 15K ohm ±5% ¼W	3
				R910		Carbon 33K ohm ±5% ¼W	1
				R905,906 912		Carbon 47K ohm ±5% ¼W	3
C909		Electrolytic 100µF 25V (Nonpolar)	1	POWER SWITCH PCB ASS'Y			
C701,801		Electrolytic 4.7µF 25V (Nonpolar)	2	126	141-4-233T-09700 4-231T-76500 4-227T-01000 4-234T-06777 4-234T-08777 141-6-476T-08300	P.C Board Ass'y, Power Switch Push Switch CR Pack Fuse 4A) or Fuse 4A Indication Label	1 1 1 1 1 1
C907		Electrolytic 2200µF 25V	1	R917		Solid Res. 3.3M ohm ±10% ¼W	1
C908		Electrolytic 100µF 16V	1	SPEAKER SWITCH PCB ASS'Y			
C706,707 806,807		Electrolytic 100µF 50V	4	127	141-4-233T-09800 4-238T-02100	P.C Board Ass'y, Speaker Switch Push Switch	1 1
C910		Electrolytic 220µF 10V	1	R731,831		Metal Res. 390 ohm ±5% 2W	2
C704,804		Electrolytic 100µF 10V	2	TUNER PCB ASS'Y			
C716,816		Electrolytic 10µF 16V	2	128	141-4-233T-30200	P.C Board Ass'y, Tuner	1
C715,815 710,810		Electrolytic 1µF 50V	4	S11	4-238T-06500	Rotary Slide Switch	1
C713,813		Electrolytic 0.047µF 150V	2	R225	4-222T-39576	Semifixed Variable Resistor	1
C905,906		Electrolytic 10000µF 50V	2	R306	4-222T-39574	Semifixed Variable Resistor	1
C714,814		Mylar 0.047µF 50V ±20%	2	R305	4-222T-39572	Semifixed Variable Resistor	1
C711,712 811,812		Mylar 0.0082µF 50V ±20%	4		4-236T-10275	Plug, 3P-25P	1
C705,805		Mylar 470pF 50V ±20%	2		4-236T-10276	Plug, 3P-25P	1
C912		Mylar 0.1µF 50V ±20%	1		4-236T-10293	Plug, 2P	1
C717,817		Ceramic 47pF 50V ±10%	2	CO101	123-2-471R-10900	Core	1
C718,818		Ceramic 220pF 50V ±10%	2		141-2-322T-50800	Shield Plate	1
C901,902 903,904 911		Ceramic 0.01µF 500V ±10%	5		141-2-322T-40800	Shield Plate	1
C702,802		Ceramic 470pF 50V ±10%	2	CF201	4-256T-80500	IF Filter	3
C709,809		Ceramic 6pF 50V ±0.25pF	2	202			
C703,803		Ceramic 12pF 50V ±10%	2	203			
C708,808		Ceramic 5pF 50V ±0.25pF	2	CR251	4-256T-80900	IF Filter	1
	RESISTORS			L102	4-265T-54940	VHF Coil	1
R717,720 817,820		Metal 0.33 ohm ±5% 2W	4	L104	4-265T-55040	VHF Coil	1
R913		Metal 560 ohm ±5% 1W	1	L106	4-265T-03900	VHF Coil	1
R723,823		Metal 10 ohm ±5% 1W	2	T201	4-256T-05140	IFT	1
R722,822		Metal 5.6 ohm ±5% 1W	2	T202	4-256T-19340	IFT	1
R715,815 716,816		Metal 100 ohm ±5% ¼W	4	T203	4-256T-19440	IFT	1
R902,903		Metal 1K ohm ±5% 1W	2	T251	4-256T-19640	IFT	1
R901		Metal 1 ohm ±5% 1W	1	T252	4-256T-16840	IFT	1
R712,713 812,813		Carbon 56 ohm ±5% ¼W	4	L152	4-258T-26140	OSC Coil	1
R709,710 809,810		Carbon 150 ohm ±5% ¼W	4				
R714,814		Carbon 180 ohm ±5% ¼W	2				
R726,826		Carbon 330 ohm ±5% ¼W	2				
R706,806		Carbon 470 ohm ±5% ¼W	2				

Key No.	Part No.	Description	Q'ty	Key No.	Part No.	Description	Q'ty
TUNER PCB ASS'Y				TUNER PCB ASS'Y			
TC-3	4-224T-08800	Trimmer	1		CAPACITORS		
	4-224T-08300	Variable Capacitor	1				
L201	4-253T-12714	Filter 3.3μF	1	C204		Ceramic 0.047μF 50V +80-20%	1
L105	4-253T-08600	HI-frequency Choke Coil	1	C205		Ceramic 0.047μF 50V +80-20%	1
IC201		IC LA1231N	1	C206		Ceramic 0.047μF 50V +80-20%	1
IC301		IC LA3350S	1	C208		Ceramic 33pF 50V ±5%	1
IC151		IC LA1240	1	C214		Ceramic 0.047μF 50V +80-20%	1
Q101		Transistor FET 3SK73	1	C215		Ceramic 0.047μF 50V +80-20%	1
Q104		Transistor FET 2SK61	1	C216		Ceramic 0.047μF 50V +80-20%	1
Q202		Transistor FET 2SK117	1	C217		Ceramic 0.022μF 50V +80-20%	1
Q102		Transistor 2SC535	1	C218		Ceramic 0.047μF 50V +80-20%	1
Q201		Transistor 2SC930	1	C321,331		Ceramic 0.0022μF 50V ±10%	2
Q103		Transistor 2SC930	1	C322,332		Ceramic 560pF 50V ±10%	2
Q301,356		Transistor 2SC536	2	C152		BC Con 0.022μF 25V ±20%	1
Q351,352		Transistor 2SC945	3	C153		BC Con 0.01μF 25V ±20%	1
353				C157		BC Con 0.022μF 25V ±20%	1
Q354,355		Transistor 2SA826	2	C158		BC Con 0.022μF 25V ±20%	1
Q302,303		Transistor 2SA702	2	C256		BC Con 0.01μF 25V ±20%	1
D151,201		Diode 1S2473	8	C258		BC Con 0.022μF 25V ±20%	1
202,203				C261		BC Con 0.068μF 25V ±20%	1
301,351				C302,303		BC Con 0.027μF 25V ±20%	2
352,353				C304		BC Con 0.047μF 25V ±20%	1
D204		Diode MA26	1	C156		Styrol 330pF 50V ±5%	1
D101		Diode 1S553	1	C305		Styrol 1500pF 50V ±5%	1
D102		Zener Diode WZ094	1	C306		AL Electrolytic 0.47μF 10V +40-20%	1
	CAPACITORS			C307		AL Electrolytic 0.22μF 10V +40-20%	1
C100		Ceramic 68pF 50V ±10%	1	C308		AL Electrolytic 0.33μF 10V +40-20%	1
C102		Ceramic 15pF 50V ±5%	1	C324,334		AL Electrolytic 0.1μF 16V	2
C103		Ceramic 0.01μF 50V +80-20%	1	C154		Electrolytic 10μF 16V	1
C104		Ceramic 0.01μF 50V +80-20%	1	C253		Electrolytic 3.3μF 50V	1
C105		Ceramic 0.001μF 50V ±10%	1	C254		Electrolytic 4.7μF 25V	1
C106		Ceramic 0.01μF 50V +80-20%	1	C257		Electrolytic 100μF 16V	1
C110		Ceramic 18pF 50V ±5%	1	C207		Electrolytic 4.7μF 25V	1
C111		Ceramic 4pF 50V ±0.25pF	1	C211		Electrolytic 4.7μF 25V	1
C112		Ceramic 1pF 50V ±0.25pF	1	C212		Electrolytic 1μF 50V	1
C113		Ceramic 100pF 50V ±10%	1	C213		Electrolytic 1μF 50V	1
C114		Ceramic 0.01μF 50V +80-20%	1	C221		Electrolytic 1μF 50V	1
C115		Ceramic 0.01μF 50V +80-20%	1	C222		Electrolytic 100μF 16V	1
C116		Ceramic 0.001μF 50V ±10%	1	C230		Electrolytic 47μF 10V	1
C121		Ceramic 20pF 50V ±5%	1	C301		Electrolytic 220μF 16V	1
C122		Ceramic 4pF 50V ±0.25pF	1	C351		Electrolytic 0.47μF 50V	1
C123		Ceramic 1pF 50V ±0.25pF	1	C352		Electrolytic 0.47μF 50V	1
C124		Ceramic 0.022μF 50V +80-20%	1	C353		Electrolytic 10μF 16V	1
C125		Ceramic 8pF 50V ±0.25pF	1	C399		Electrolytic 1μF 50V	1
C126		Ceramic 10pF 50V ±5%	1		RESISTORS		
C127		Ceramic 33pF 50V ±5%	1	R102		Carbon 27K ohm ±5% ¼W	1
C128		Ceramic 0.01μF 50V +80-20%	1	R103		Carbon 330K ohm ±5% ¼W	1
C131		Ceramic 10pF 50V ±5%	1	R104		Carbon 10 ohms ±5% ¼W	1
C155		Ceramic 10pF 50V ±5%	1	R105		Carbon 220 ohm ±5% ¼W	1
C161		Ceramic 0.047μF 50V +80-20%	1	R106		Carbon 22K ohm ±5% ¼W	1
C251		Ceramic 56pF 50V ±5%	1	R107		Carbon 5.6K ohm ±5% ¼W	1
C252		Ceramic 0.047μF 50V +80-20%	1	R108		Carbon 39K ohm ±5% ¼W	1
C255		Ceramic 0.001μF 50V ±10%	1	R111		Carbon 1K ohm ±5% ¼W	1
C200		Ceramic 0.022μF 50V +80-20%	1	R112		Solid 56 ohm ±10% ¼W	1
C201		Ceramic 0.01μF 50V +80-20%	1	R113		Carbon 100K ohm ±5% ¼W	1
C202		Ceramic 0.01μF 50V +80-20	1	R114		Carbon 12K ohm ±5% ¼W	1
C203		Ceramic 0.01μF 50V +80-20%	1	R115		Carbon 15K ohm ±5% ¼W	1
				R116		Carbon 1.5K ohm ±5% ¼W	1
				R117		Carbon 220 ohm ±5% ¼W	1

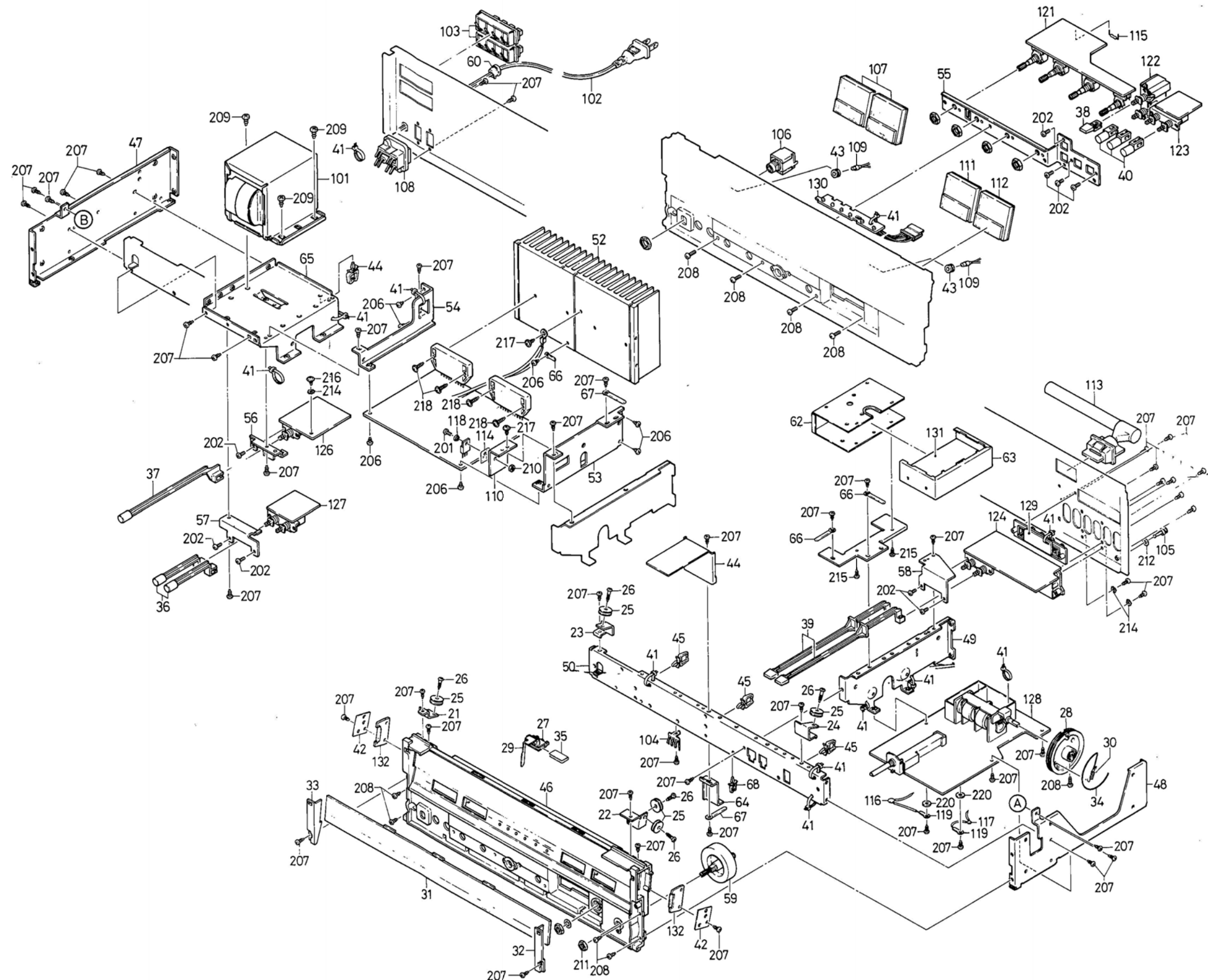
PARTS LIST

Key No.	Part No.	Description	Q'ty	Key No.	Part No.	Description	Q'ty
TUNER PCB ASS'Y				ANTENNA PCB ASS'Y			
R118 R120 R121 R151 R152 R153 R154 R155 R156 R251 R252 R253 R254 R255 R256 R257 R258 R203 R204 R205 R206 R207 R208 R211 R212 R213 R214 R215 R216 R217 R218 R221 R222 R223 R224 R226 R227 R228 R229 R301 R302,303 R304 R307 R308 R309 R311 R312 R313 R321,331 R322,332 R323,333 R324,334 R325,335 R326,336 R351 R352 R353 R354 R355 R356 R357 R358 R359 R361 R362 R363 R364 R365 R366 R391	RESISTORS	Carbon 100K ohm ±5% ¼W	1	129 L101	141-4-233T-30300 4-268T-00100 141-2-382T-05900	P.C Board Ass'y, Antenna VHF Coil Terminal	1 1 1
		Carbon 10K ohm ±5% ¼W	1	FUNCTION			
		Carbon 1K ohm ±5% ¼W	1	130 D391,393 394,395 396 D392	141-4-233T-30400 4-235T-77100	P.C Board Ass'y, Function LP 24 Red SLS 32GG Green Socket, 8P	1 5 1 1
		Carbon 100 ohm ±5% ¼W	1	QUARTZ PCB ASS'Y			
		Carbon 1.5K ohm ±5% ¼W	1	131	141-4-233T-35700	P.C Board Ass'y, Quartz	1
		Carbon 180 ohm ±5% ¼W	1	TC451	4-225T-02600	Crystal	1
		Carbon 220 ohm ±5% ¼W	1		4-224T-15400	Trimmer	1
		Carbon 120K ohm ±5% ¼W	1		4-235T-77000	Socket, 9P	1
		Carbon 33K ohm ±5% ¼W	1		4-235T-80400	Socket, 2P	1
		Carbon 270 ohm ±5% ¼W	1		141-2-322T-53200	Shield Plate	1
		Carbon 10K ohm ±5% ¼W	1		141-2-322T-53300	Shield Plate	1
		Carbon 270K ohm ±5% ¼W	1		4-253T-12708	Filter	1
		Carbon 10K ohm ±5% ¼W	1		4-253T-12720	Filter	1
		Carbon 270K ohm ±5% ¼W	1		4-253T-12720	Filter	1
		Carbon 10K ohm ±5% ¼W	1		4-253T-12720	Filter	1
		Carbon 3.3K ohm ±5% ¼W	1	Q404,405		Transistor FET 2SK117 Y	2
		Carbon 100K ohm ±5% ¼W	1	Q402,403		Transistor 2SC930 IF	3
		Carbon 100 ohm ±5% ¼W	1	451			
		Solid 56 ohm ±5% ½W	1	Q401		Transistor 2SC535	1
		Carbon 18K ohm ±5% ¼W	1	Q406,407		Transistor 2SC536 AUD	2
		Carbon 10K ohm ±5% ¼W	1	D401,402		Diode 1S2473	8
		Carbon 10K ohm ±5% ¼W	1	403,404			
		Carbon 1.8K ohm ±5% ¼W	1	405,451			
		Carbon 5.6K ohm ±5% ¼W	1	406,407			
		Carbon 1.5M ohm ±5% ¼W	1	IC451		IC TC5048P	1
		Carbon 1.5M ohm ±5% ¼W	1	IC402		IC TC4049BP	1
		Solid 56 ohm ±10% ½W	1	IC452		IC SN74S03	1
		Carbon 56K ohm ±5% ¼W	1	IC401		IC RC4558P	1
		Carbon 2.2K ohm ±5% ¼W	1	IC453		IC NJM78L05A	1
		Carbon 15K ohm ±5% ¼W	1	CAPACITORS			
		Carbon 10K ohm ±5% ¼W	1	C401		Ceramic 0.01µF 50V ±10%	1
		Carbon 27K ohm ±5% ¼W	1	C402		Ceramic 0.01µF 50V +80-20%	1
		Carbon 22K ohm ±5% ¼W	1	C403		Ceramic 100pF 50V ±10%	1
		Carbon 22K ohm ±5% ¼W	1	C404		Ceramic 8pF 50V ±0.25pF	1
		Carbon 820 ohm ±5% ¼W	2	C405		Ceramic 0.047µF 50V +80-20%	1
		Carbon 100K ohm ±5% ¼W	2	C406		Ceramic 82pF 50V ±10%	1
		Carbon 2.2K ohm ±5% ¼W	1	C407		Ceramic 0.01µF 50V +80-20%	1
		Carbon 2.2K ohm ±5% ¼W	1	C408		Ceramic 56pF 50V ±10%	1
		Carbon 2.2K ohm ±5% ¼W	1	C410		Ceramic 10pF 50V ±10%	1
		Carbon 56K ohm ±5% ¼W	1	C412		Ceramic 0.022µF 50V +80-20%	1
		Carbon 22K ohm ±5% ¼W	1	C427		Ceramic 0.022µF 50V +80-20%	1
		Carbon 22K ohm ±5% ¼W	1	C451		Ceramic 33pF 50V ±10%	1
		Carbon 10K ohm ±5% ¼W	1	C452		Ceramic 0.022µF 50V +80-20%	1
		Carbon 100K ohm ±5% ¼W	1	C453		Ceramic 220pF 50V ±10%	1
		Carbon 270K ohm ±5% ¼W	1	C413		Electrolytic 100µF 16V	1
		Carbon 27K ohm ±5% ¼W	1	C414		Electrolytic 4.7µF 25V	1
		Carbon 22 ohms ±5% ¼W	1	C415		Electrolytic 10µF 16V	1
		Carbon 100K ohm ±5% ¼W	1				
		Carbon 1M ohm ±5% ¼W	1				
		Carbon 100 ohm ±5% ¼W	1				
		Carbon 1.2K ohm ±5% ¼W	1				

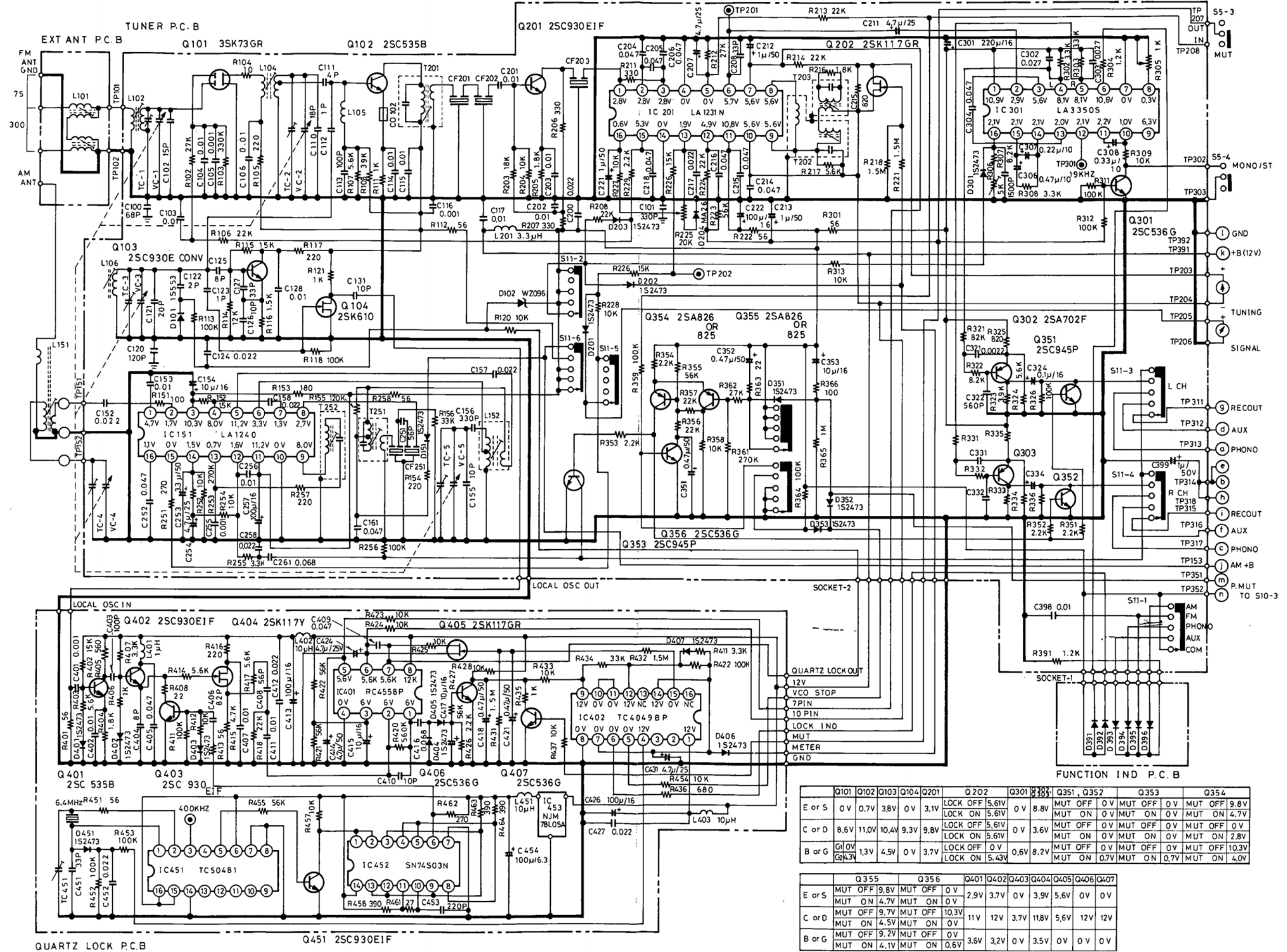
PARTS LIST

Key No.	Part No.	Description	Q'ty
QUARTZ PCB ASS'Y			
	CAPACITORS		
C418		Electrolytic 0.47μF 50V	1
C426		Electrolytic 100μF 16V	1
C454		Electrolytic 100μF 6.3V	1
C424		Electrolytic 4.7μF 25V	1
C421		Electrolytic 0.47μF 50V	1
C431		Electrolytic 0.47μF 50V	1
C411		BC Con 0.01μF 25V ±20%	1
C416		BC Con 0.068μF 25V ±20%	1
C409		BC Con 0.047μF 25V ±20%	1
	RESISTORS		
R401		Carbon 56 ohm ±5% ¼W	1
R402		Carbon 15K ohm ±5% ¼W	1
R403		Carbon 5.6K ohm ±5% ¼W	1
R404		Carbon 1.8K ohm ±5% ¼W	1
R405		Carbon 560 ohm ±5% ¼W	1
R406		Carbon 1K ohm ±5% ¼W	1
R407		Carbon 3.3K ohm ±5% ¼W	1
R408		Carbon 22 ohm ±5% ¼W	1
R411		Carbon 100K ohm±5% ¼W	1
R412		Carbon 10K ohm ±5% ¼W	1
R413		Carbon 56 ohm ±5% ¼W	1
R414		Carbon 5.6K ohm ±5% ¼W	1
R415		Carbon 4.7K ohm ±5% ¼W	1
R416		Carbon 220 ohm ±5% ¼W	1
R417		Carbon 5.6K ohm ±5% ¼W	1
R418		Carbon 22K ohm ±5% ¼W	1
R420		Carbon 560K ohm±5% ¼W	1
R421		Carbon 56K ohm ±5% ¼W	1
R422		Carbon 56K ohm ±5% ¼W	1
R423		Carbon 10K ohm ±5% ¼W	1
R424		Carbon 10K ohm ±5% ¼W	1
R425		Carbon 10K ohm ±5% ¼W	1
R426		Carbon 2.2K ohm ±5% ¼W	1
R427		Carbon 56K ohm ±5% ¼W	1
R428		Carbon 10K ohm ±5% ¼W	1
R431		Carbon 1.5M ohm ±5% ¼W	1
R432		Carbon 1.5M ohm ±5% ¼W	1
R433		Carbon 10K ohm ±5% ¼W	1
R434		Carbon 33K ohm ±5% ¼W	1
R435		Carbon 1K ohm ±5% ¼W	1
R436		Carbon 680 ohm ±5% ¼W	1
R437		Carbon 10K ohm ±5% ¼W	1
R441		Carbon 3.3K ohm ±5% ¼W	1
R442		Carbon 100K ohm±5% ¼W	1
R451		Carbon 56 ohm ±5% ¼W	1
R452		Carbon 100K ohm±5% ¼W	1
R453		Carbon 100K ohm±5% ¼W	1
R454		Carbon 10K ohm ±5% ¼W	1
R455		Carbon 56K ohm ±5% ¼W	1
R457		Carbon 10K ohm ±5% ¼W	1
R430		Carbon 560K ohm±5% ¼W	1
R458		Carbon 390 ohm ±5% ¼W	1
R461		Carbon 27 ohm ±5% ¼W	1
R462		Carbon 270 ohm ±5% ¼W	1
R463		Carbon 390 ohm ±5% ¼W	1
R464		Carbon 390 ohm ±5% ¼W	1
LAMP PCB ASS'Y			
132	141-4-233T-09100 4-612T-13200	P.C Board Ass'y, Lamp Lamp 0.1A 8V	1

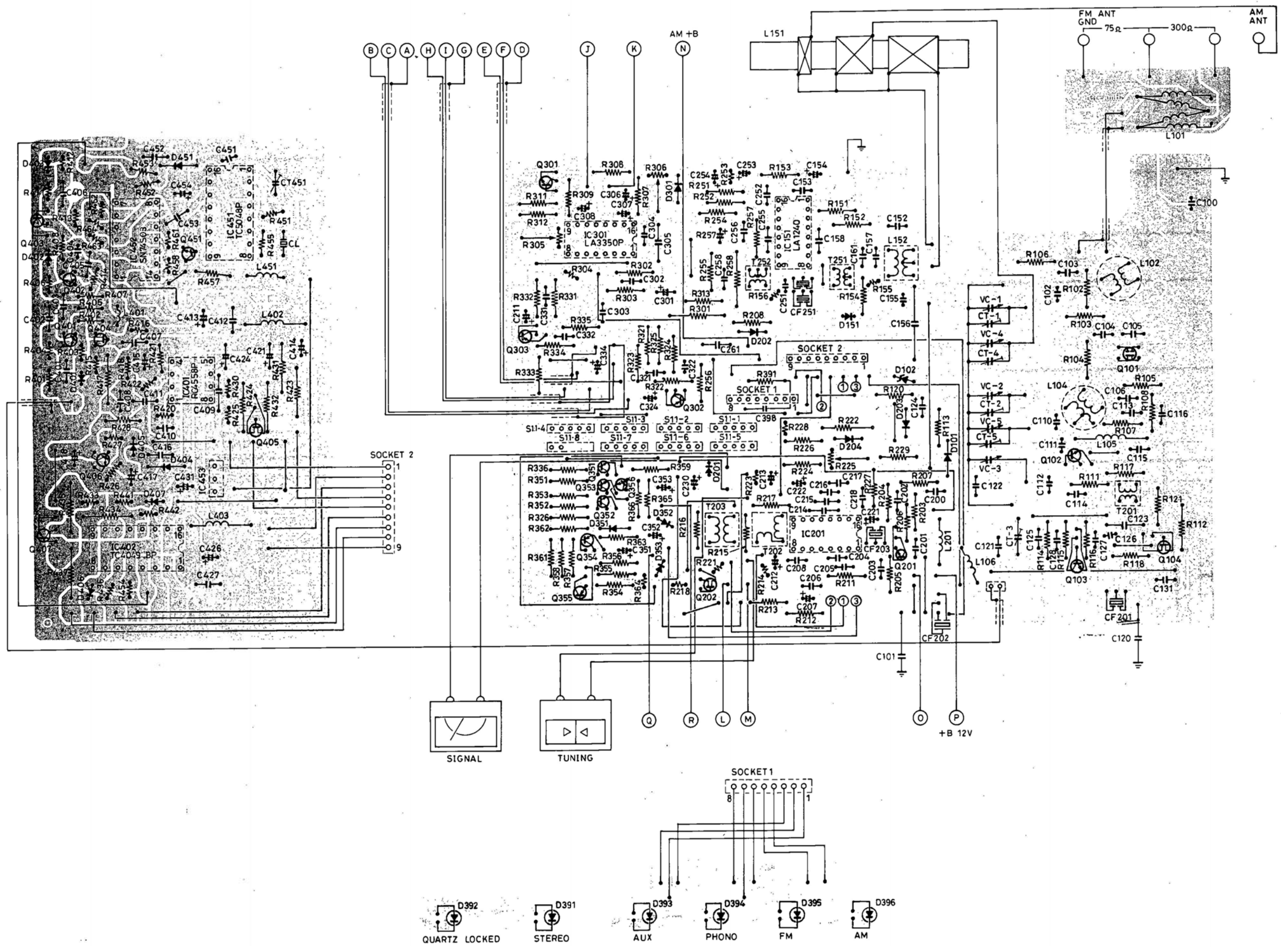
CHASSIS EXPLODED VIEW



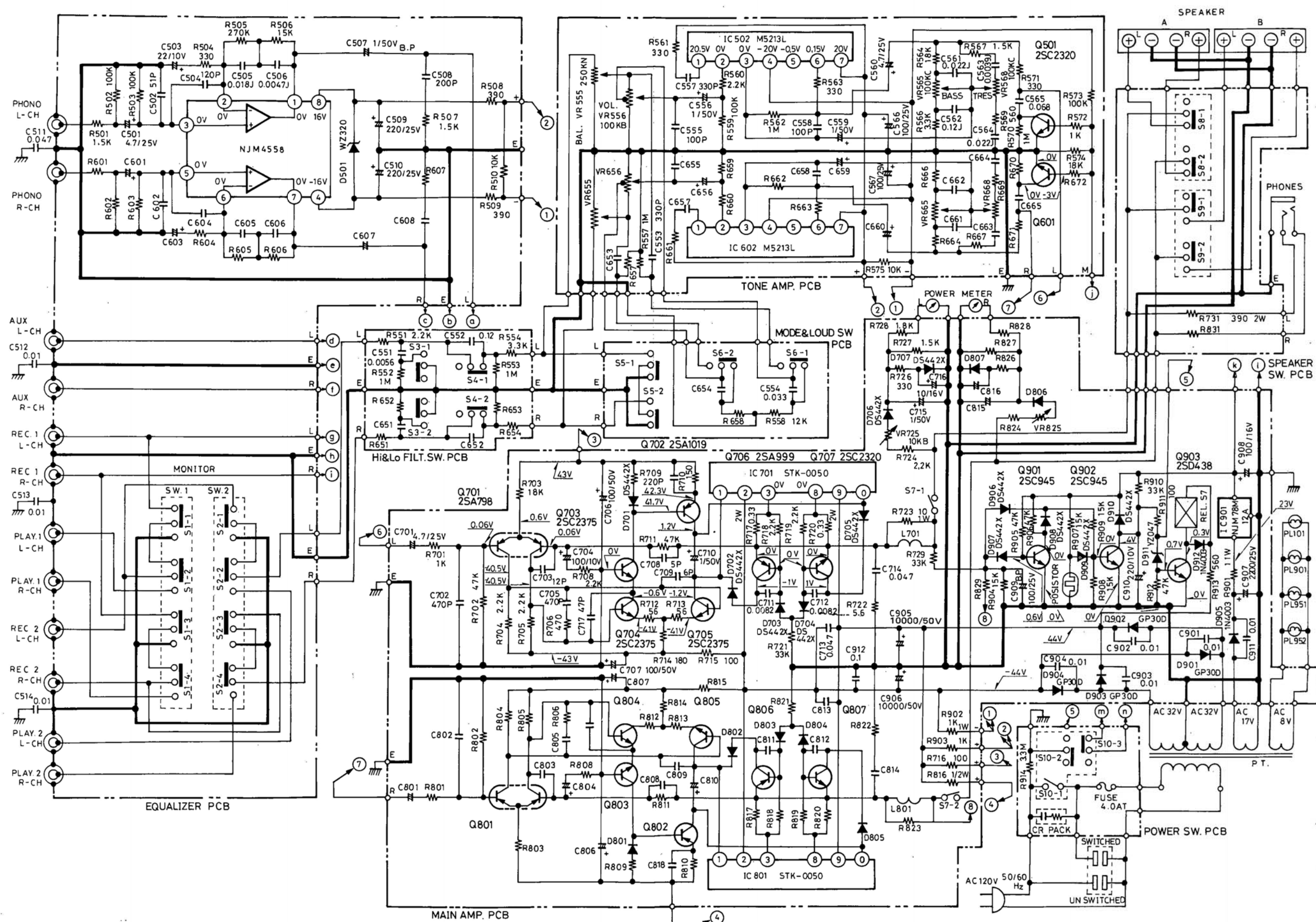
SCHEMATIC DIAGRAM (TUNER)

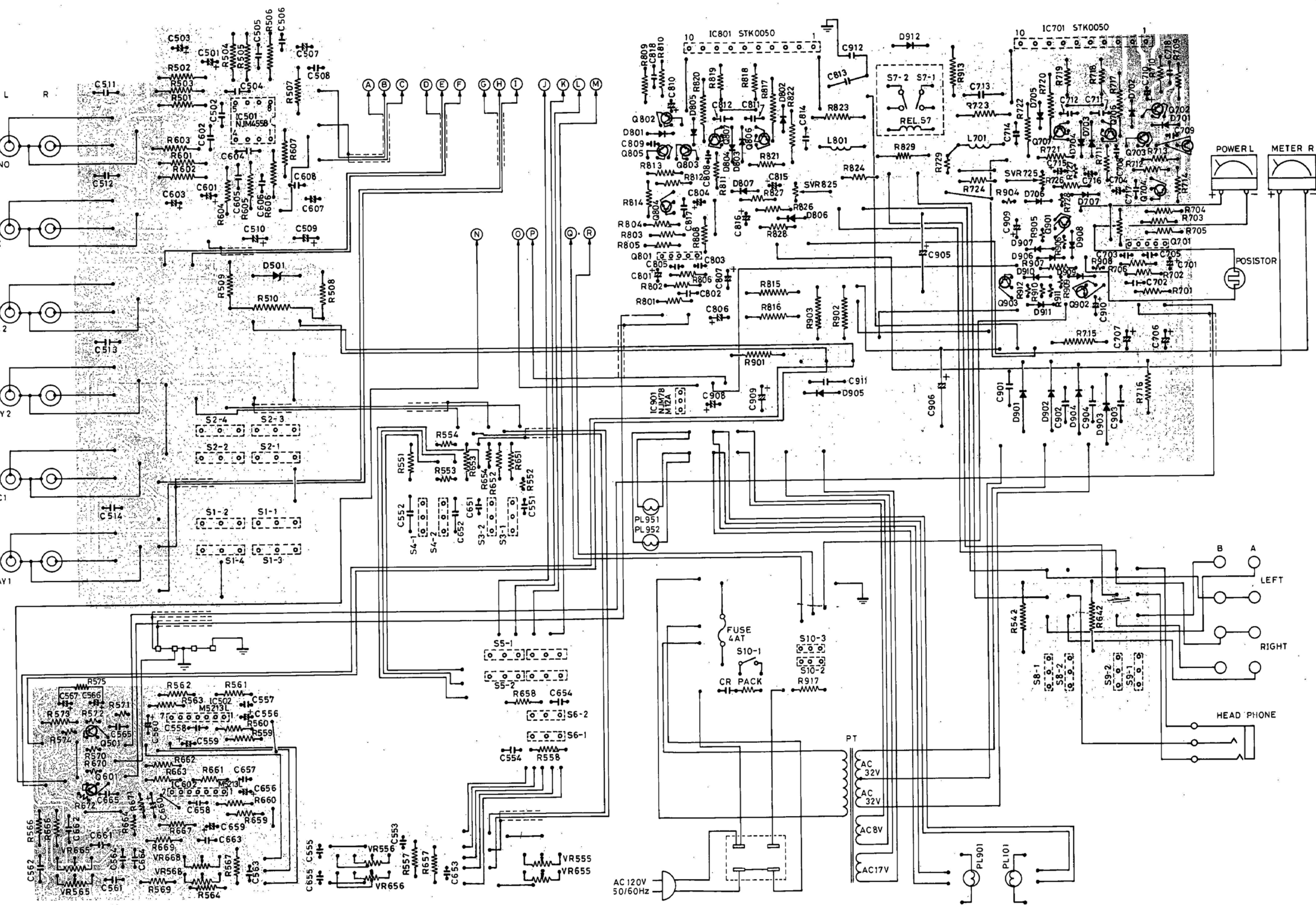


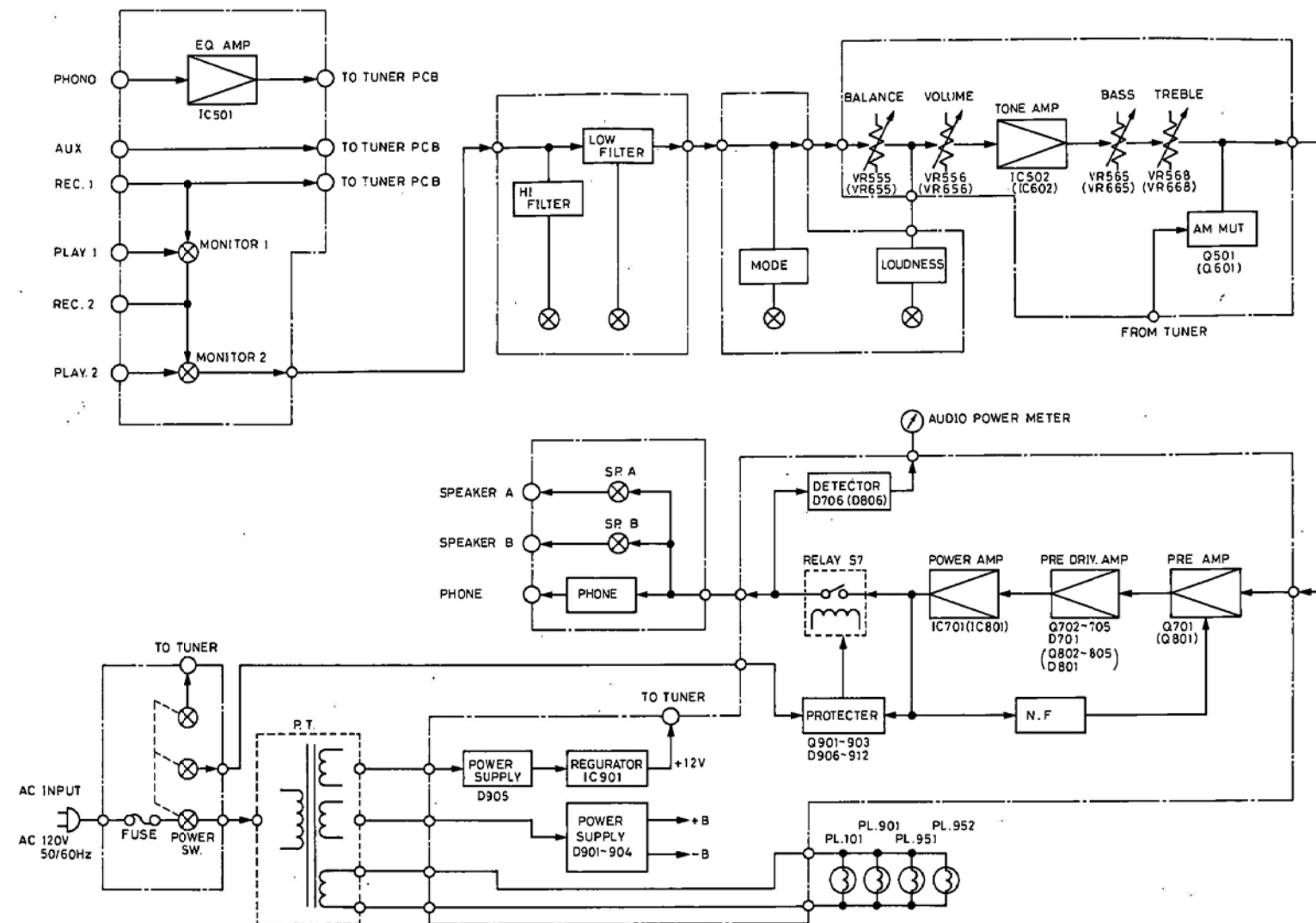
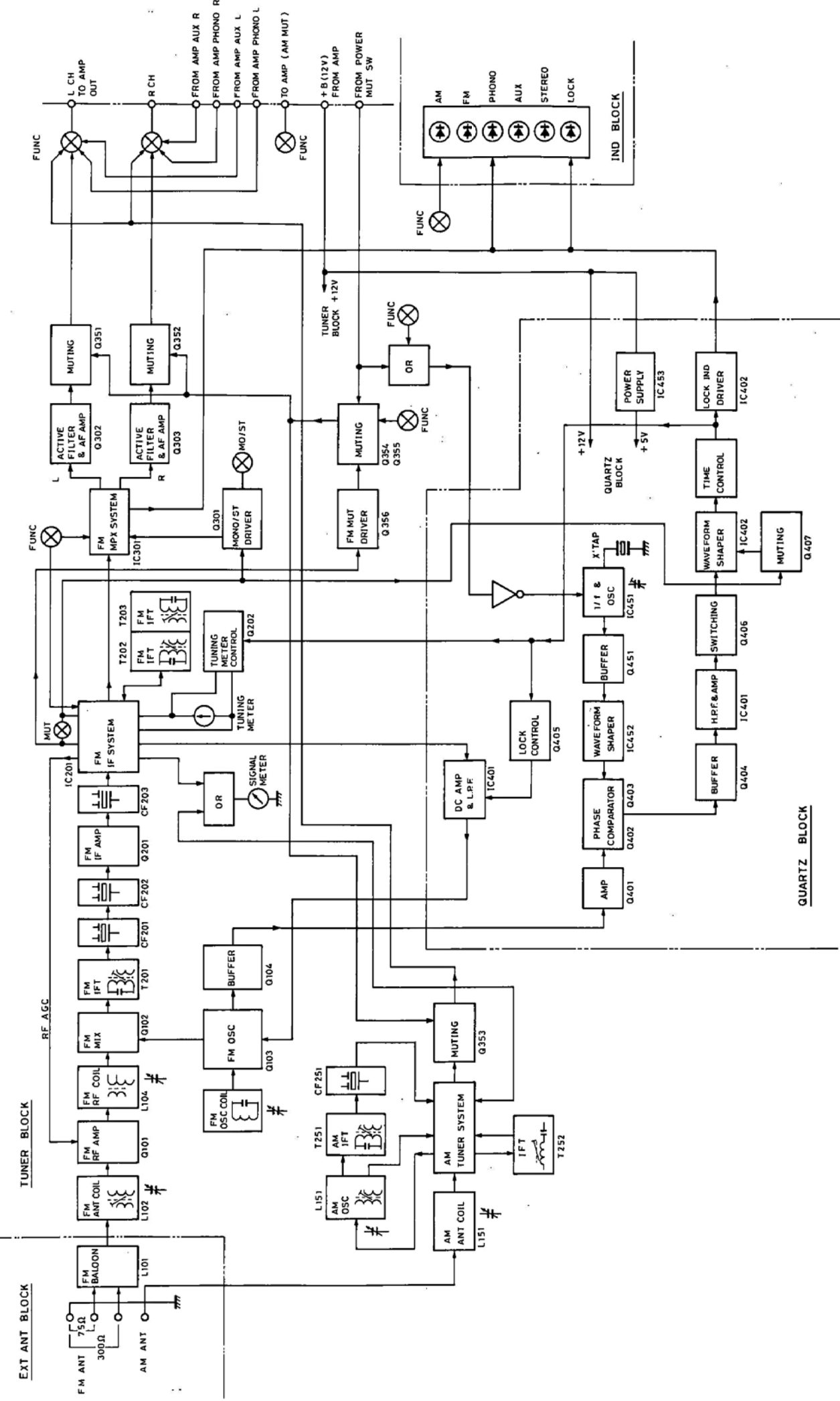
WIRING DIAGRAM (TUNER)



SCHEMATIC DIAGRAM (AMP).







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