

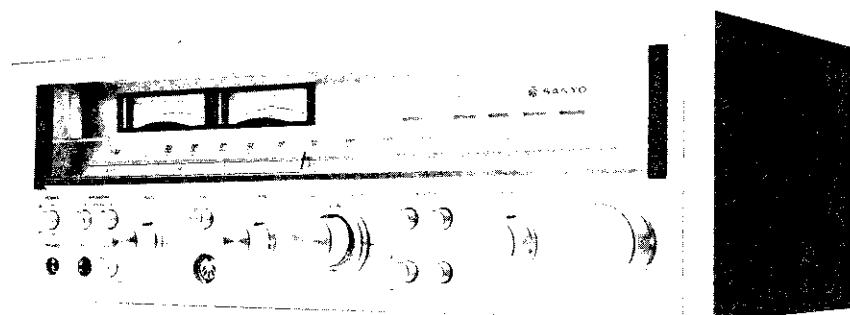
SERVICE MANUAL



SANYO

STEREO RECEIVER

JCX2400KU



SPECIFICATIONS

Amplifier Section

Total music power	240 watts (at 4 ohms)
Continuous power	75 watts x 2 (at 4 ohms) 55 watts x 2 (at 8 ohms)
Total harmonic distortion	less than 0.1% (—3dB power/1kHz)
Power band width	20Hz/30kHz (—3dB power)
Frequency response	7Hz/50kHz (+0.5dB/—3dB)
Input sensitivity and impedance	
PHONO	2.5mV/50k ohms
AUX	150mV/50k ohms
TAPE 1 PLAY	150mV/50k ohms
TAPE 1 REC/PB	150mV/50k ohms
MIC	2mV/10k ohms
REC/PB (TAPE 2)	150mV/50k ohms
Output	
TAPE 1 REC	150mV
TAPE 1 REC/PB	0.55mV/k ohm
REC/PB (TAPE 2)	0.55mV/k ohm
Tone control response	
BASS at 100Hz	±10dB
MID at 1kHz	±6dB
TREBLE at 10kHz	±10dB
Loudness control response	
at 100Hz	+10dB
at 10kHz	+6dB
Hum and noise ratio	
PHONO	70dB
AUX	90dB
TAPE 1 PLAY	90dB
Damping factor	more than 25 (20Hz/20kHz at 8 ohms)

FM Tuner Section

Frequency range	87.5 — 108MHz
Usable sensitivity	1.6μV (DIN)
Signal-to-noise ratio	70dB (at Mono) 65dB (at Stereo)
Harmonic distortion	0.2% (at Mono) 0.3% (at Stereo)
AM suppression	more than 60dB
Spurious response	more than 70dB
Alternate channel selectivity	more than 55dB (=300kHz DIN)
Image rejection	more than 50dB
Capture ratio	1.3dB
Stereo separation	40dB (at 1kHz)
Antenna input	300 ohms balanced

MW Tuner Section

Frequency range	510 — 1605kHz
Sensitivity	300μV/m
Signal-to-noise ratio	50dB
Image rejection	48dB
Selectivity	33dB (10kHz)
Antenna	External ferrite bar antenna

General

Power requirements	AC: 125/220V, 50Hz
Power consumption	320W
Dimensions	17-3/8"W x 5-7/8"H x 14-9/16"D (440 x 146 x 370 mm)
Weight	Approx. 31 lbs. (14 kg)

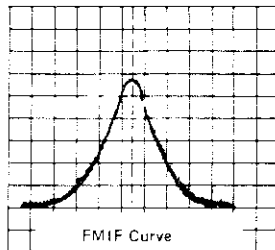
* Specifications subject to change without notice.

FM IF ADJUSTMENT

1. V curve adjustment

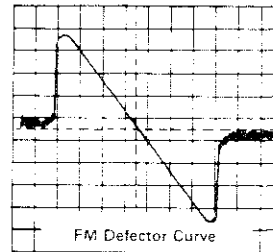
- 1) Connect TP3 (HOT) and TP6 (EARTH) to the output terminal of the sweep generator, and TP4 (H) and TP104 (E) to the input terminal.
- 2) Connect a resistance load of about 10 to 50 K-ohms to the input of the sweep generator and disconnect the tuning meter leadwires from the circuit board.
- 3) Cut off ceramic capacitor C213 ($0.022\mu\text{F}$) at one end.
- 4) Make adjustment while keeping the output from the sweep generator at the low level (where noise appears on the waveform).
- 5) While watching the sweep waveform, adjust the T201 until the sweep waveform presents the pattern as in Fig.1.

* TP6 is a shield plate.



2. S curve adjustment

- 1) Connect TP3 (H) and TP6 (E) to the output of the sweep generator. Connect TP201 (H) and TP104 (E) to its input.
NOTE: It is necessary to connect a capacitor ($1\mu\text{F}/16\text{V}$) to the input of the sweep generator (H) for cutting DC current.
- 2) Adjust the T202 until the S curve presents the pattern as in Fig. 2. Avoid turning the T203 unless absolutely necessary.



CENTER ADJUSTMENT OF TUNING METER

Set FM SG as follows: modulation frequency 1KHz, frequency deviation 75KHz DIV. (100% modulation).

Connect a balanced dummy of 300 ohms between FM SG and the unit (at the 300 ohm terminal of the external antenna).

- 1) Set the tuning dial of the unit to 98MHz (where no Broadcasting signal is coming in).
- 2) While keeping the FM SG output level to 0 (less than 10dB), adjust the T202 until the tuning meter needle stands at the center point.
- 3) Adjust the frequency output of FM SG so that the tuning meter needle stands at the center point.
- 4) Reduce the distortion factor a minimum by turning the T203. Make this adjustment at the FM SG output level of 60 dB (1mV).

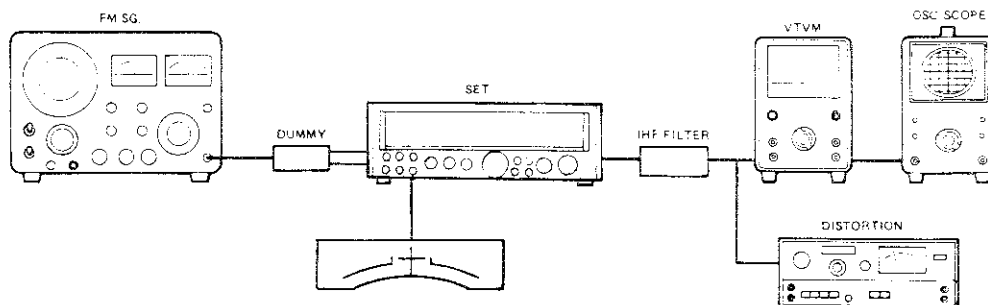
5) Repeat steps 2) and 3) above.

6) Turn the core of T201 only slightly until the distortion factor becomes minimal.

7) Set the FM SG output level to 0. Confirm tuning meter needle stands at the center point. If needle is not at center point, repeat from steps 2).

8) Set the FM SG output level to 60dB. Conform the distortion factor gets minimum when the tuning meter needle is at center point.

NOTE: Use Hum and Sub-carrier Filter to get accurate distortion factor.



FM TRACKING

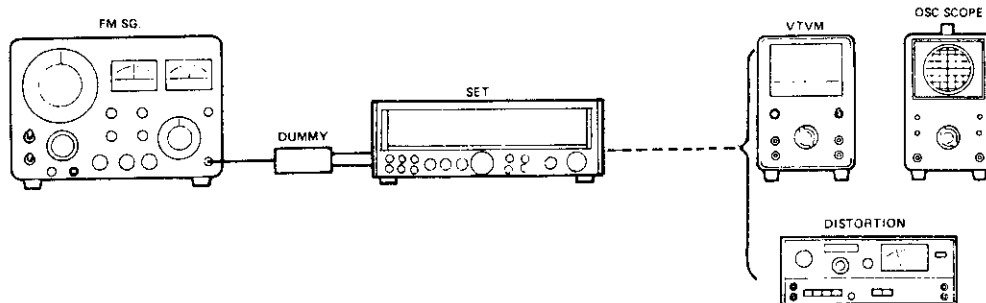
Set FM SG as follows: modulation frequency 1KHz, frequency deviation 75KHz DIV. (100% modulation).

Flip the MODE switch of the unit to "MONO".

- 1) Make LOW TRACKING adjustment by means of L102 and L101. Use 90MHz FM signal for this purpose.
- 2) Make HIGH TRACKING adjustment by means of CT2 and CT1. Use 106MHz FM signal for this purpose.

3) Make complete TRACKING adjustment by repeating steps (1) and (2).

* When properly adjusted, the distortion factor of the output from the unit is reduced to a minimum, provided that the distortion factor of the SG output is about 3%.



FM VCO ADJUSTMENT

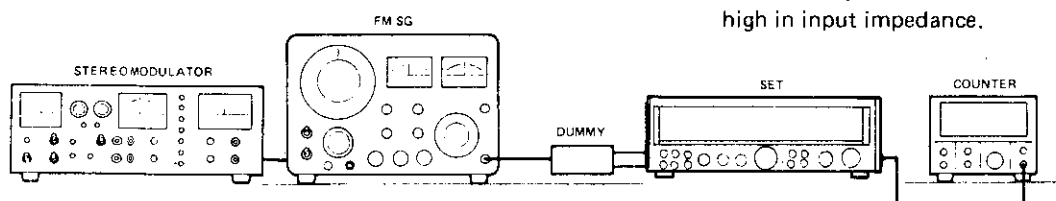
Set the frequency of FM SG to 98MHz (where no broadcasting signal is coming in), the muting switch of the unit to ON and the pilot signal of the stereo modulation to a modulation degree of 9%.

2) Adjust R309(SVR) until the frequency counter reading becomes 19000Hz $\pm$ 19 Hz immediately after cutting off the SG output (viz. after the stereo pilot lamp has gone out).

* Do not make this adjustment immediately after setting to ON the power switch of the unit.

* For this adjustment, use a frequency counter relatively high in input impedance.

1) Increase the output level of FM SG until the stereo pilot lamp of the unit glows. Then, keep the glowing of the stereo pilot lamp for more than 10 seconds).



FM MUTING LEVEL ADJUSTMENT

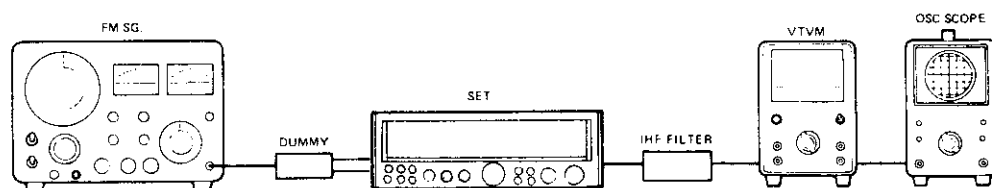
Set FM SG as follows: modulation frequency 1kHz, frequency deviation 75kHz DIV. (100% modulation). Then, set the muting switch of the unit to ON.

2) Apply 16dB to the 300 ohm terminal antenna.

3) Turn R227(SVR) and set it at the position where the VTVM needle stops swinging or the waveform on the oscilloscope becomes very small.

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

1) Set FM SG to 98MHz and tune the unit to that frequency level.



SEPARATION

Set FM SG as follows: modulation frequency 1KHz, frequency 98MHz. Set the pilot signal of the stereo modulator to a modulation degree of 9%.

$$PL + L + R = 75\text{KHz DIV.} \\ (9\% + 91\%)$$

Select the "STEREO" mode by the mode switch of the unit.

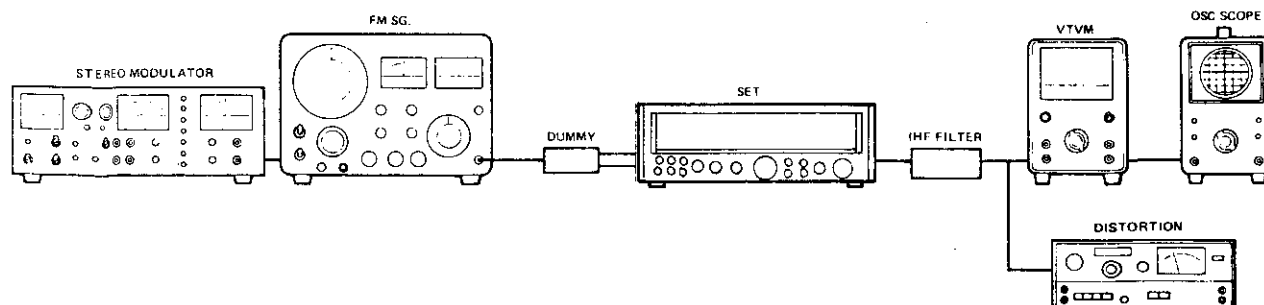
2) Generator L-R signals by the stereo modulator and tune the unit completely to their level. (In this state, the distortion factor is reduced to a minimum.)

3) Switch the stereo modulator from R to L channels.

Reduce signal output leakage of each channel to a minimum by adjusting R306(SVR).

* When making this adjustment, use a lowpass filter and eliminate 19KHz and 38KHz carrier components.

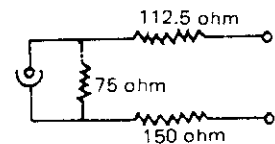
1) Set the input to the unit (i.e. voltage at the 300 ohm terminal of the external antenna) to 60dB (This corresponds to 66dB-1.995mV in terms of FM SG output).



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-3 (H) & TP-6 (E)	Connect oscilloscope to test point TP-4 (H), TP104 (E)	10.7 MHz (0% modulation)	Near max. capacitance of tuning gang with no station signal.	T201	
2	Ratio Det.		Connect oscilloscope to test point TP-201 (H), TP104 (E)			T202	
3	OSC.	Connect FM SG. to FM ANT. Terminals. TP101 (H) & TP102 (E)	Connect VTVM to TP302 (H) & TP104 TP303	87.4 MHz (400 Hz 30% modulation)	Low end of dial scale	L103	Max.
4				109.0 MHz (400 Hz 30% modulation)	High end of dial scale	CT3	
5	ANT.	Connect FM SG. to FM ANT. Terminals. TP101 (H) & TP102 (E)	Connect VTVM to TP302 (H) & Ground TP303	90.0 MHz (400 Hz 30% modulation)	90.0 MHz on dial scale	L101, L102	Max.
6				106.0 MHz (400 Hz 30% modulation)	106.0 MHz on dial scale	CT1, CT2	
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 sweep generator to Test Loop	Connect oscilloscope to TP302 (H)&TP104 TP303	460 KHz (400 Hz 30% modulation)	Low end of dial scale. With no station signal.	T204	Max.
2	OSC.	Connect AM SG to Test Loop.	Connect VTVM to TP302 (H) & TP104 TP303	505 KHz (400 Hz 30% modulation)	Low end of dial scale	L105	Max.
3				1700 KHz (400 Hz 30% modulation)	High end of dial scale	CT5	
4	ANT.	Connect AM SG to Test Loop.	Connect VTVM to TP302 (H) & TP104 TP303	600 KHz (400 Hz 30% modulation)	600 KHz on dial scale	L104	Max.
5				1400 KHz (400 Hz 30% modulation)	1400 KHz on dial scale	CT4	
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.

19KHz TRAP ADJUSTMENT

Set the frequency of FM SG to 98MHz and the pilot signal of the stereo modulator to a modulation degree of 9%.

- 1) Set the tuning dial of the unit to 98MHz.
- 2) Apply 60dB to 300 ohm terminal antenna.
- 3) Turn L301, L302 until the leakage of 19KHz becomes minimum.

NOTE: Use 200Hz HIGH-PASS FILTER.

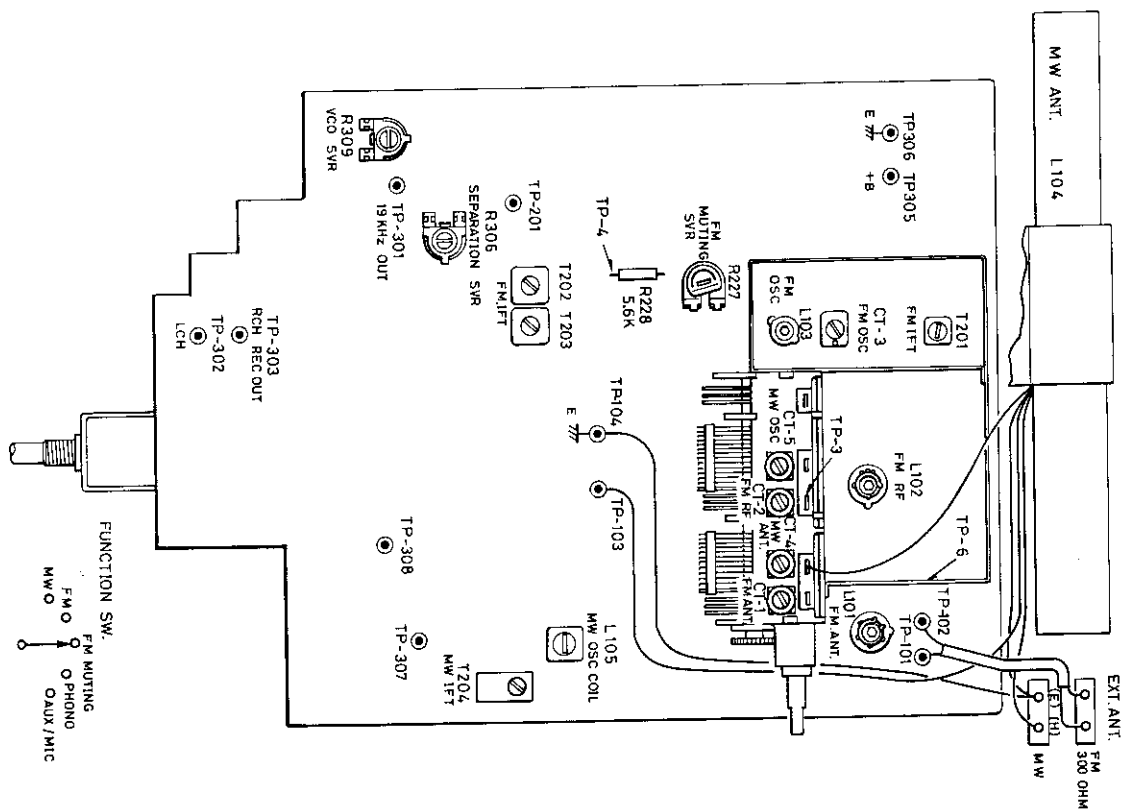
MW TRACKING

Use same method as usual.

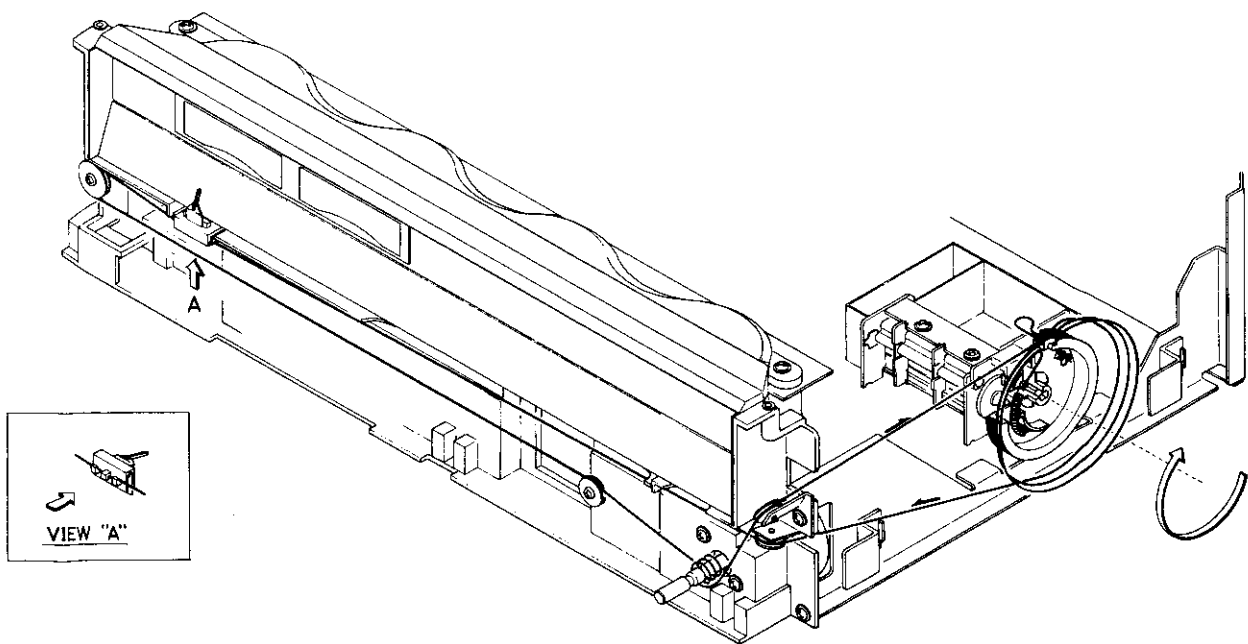
- 1) Set the frequency of AM SG to 600KHz and the tuning dial of the unit to 600KHz.
- 2) Set the position of BAR ANTENNA as requested and dress the leadwires of BAR ANTENNA before making adjustment.
- 3) Turn the core of L104 (BAR ANTENNA) until the output of the unit becomes maximum.
- 4) Set the frequency of AM SG to 1400KHz and the tuning dial of the unit to 1400KHz.
- 5) Turn CT4 (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 and 1400KHz.

NOTE: Use plastic screw driver for adjustment.

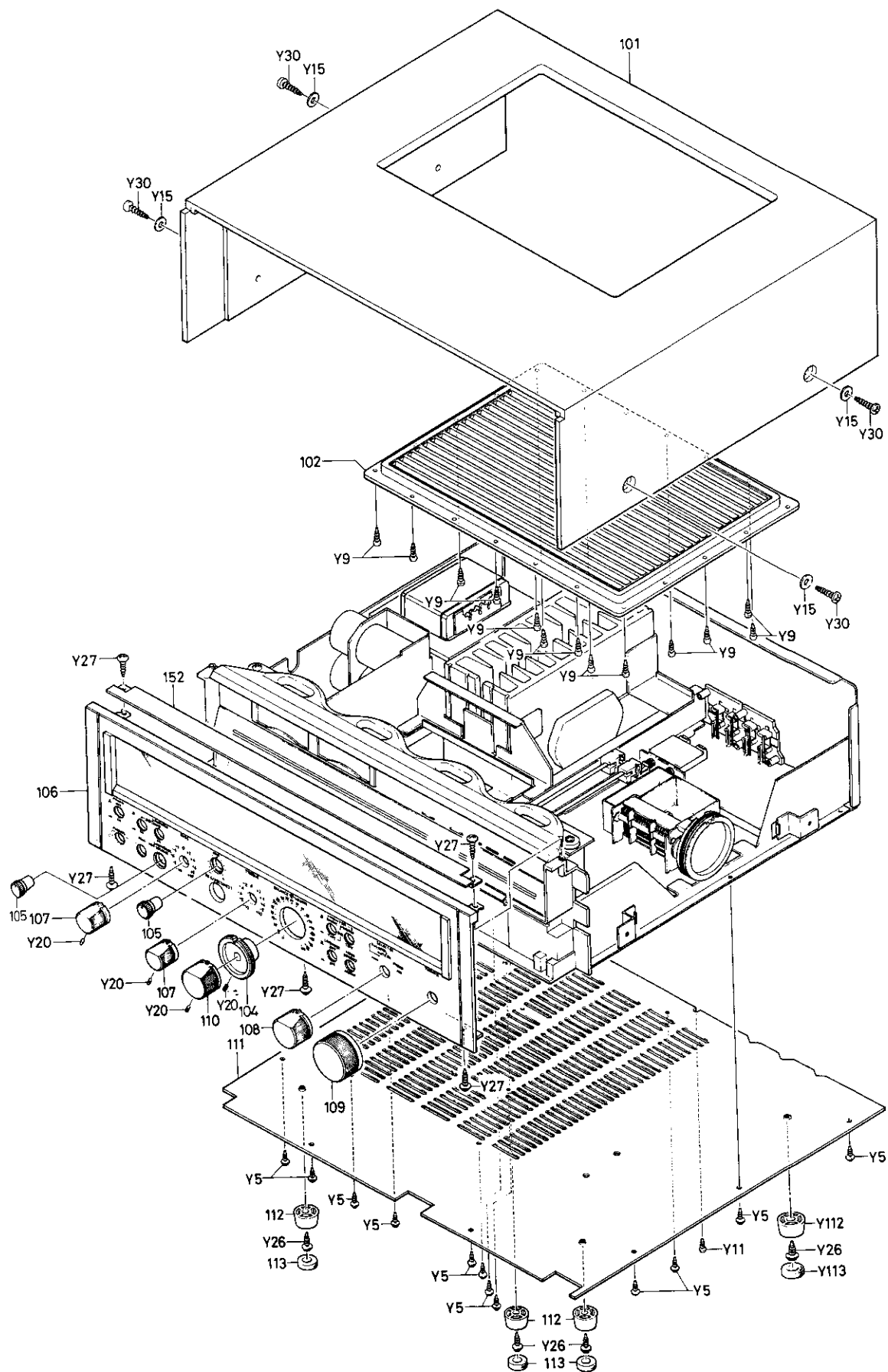
PARTS LOCATION



DIAL CORD STRINGING



CABINET EXPLODED VIEW



PARTS LIST

Ref. No.	Part No.	Description	Q'ty
PACKING			
	141-6-132T-82500	Individual Carton	1
	141-6-144T-41600	Styrol Filler	2
	141-6-231T-25450	Inner Polyethylene Bag, Printed Matter	1
	141-6-410T-02500	Instruction Booklet	1
	141-6-231T-60800	Inner Polyethylene Bag, Set	1
	141-6-415T-15600	Notice, Fuse	1
	141-6-231T-06100	Inner Polyethylene Bag, Fuse Accessories	1
	141-6-231T-10250	Inner Polyethylene Bag, Power Supply Cord	1
	123-6-453R-00100	Inspection Sheet	1
	141-6-231T-06100	Inner Polyethylene Bag, Wrench	1
	141-6-421T-32500	Schematic Diagram	1
	141-6-415T-19200	Notice, SWEDISH	1
	141-6-415T-20500	Notice, HOLLANDER	1
ACCESSORIES			
	4-245T-00100	Antenna, EXT. FM Antenna	1
	4-234T-06371	Fuse	2
	141-2-419T-00200	Wrench, for Rotary Knob	1
CABINET			
101	141-9-111T-12000	Cabinet Assembly	1
102	141-9-242T-00100	Lattice Assembly	1
104	141-2-163T-44300	Rotary knob, Balance	1
105	141-0-163T-14200	Rotary knob Assembly, Mid Mic.	2
106	141-9-122T-06400	Front Panel Assembly	1
107	141-0-163T-13500	Rotary Knob Assembly, Bass & Treble	2
108	141-0-163T-12400	Rotary Knob Assembly, Selector	1
109	141-0-163T-12500	Rotary Knob Assembly, Tuning	1
110	141-0-163T-13700	Rotary Knob Assembly, Volume	1
111	141-2-125T-12400	Bottom Lid	1
112	141-2-174T-04700	Stand	4
113	141-2-441T-05000	Cushion	4
CHASSIS			
114	141-2-126T-21701	Back Lid	1
115	141-2-315T-14300	Reinforcement, Left Side	1
116	141-2-315T-14400	Reinforcement, Right Side	1
117	141-2-315T-14500	Reinforcement, Center	1
118	141-2-310T-05000	Bracket, Reinforcement (112) Mtg.	2
119	141-2-310T-06400	Bracket, PT Mtg.	1
120	141-2-464T-26000	Fixer, ANT Lead	1
121	141-2-315T-15200	Reinforcement, Center	1
122	141-2-310T-07200	Bracket, Bracket (115) Mtg.	1
123	141-2-214T-02100	Bracket, Front Frame	1
124	141-2-421T-20900	Special Screw, Pulley Mtg.	4
125	141-2-661T-71200	Pulley, Large size	3
126	141-2-661T-71300	Pulley, Small size	1
127	141-2-521T-01600	Flywheel, Tuning	1
128	141-2-524T-07600	Bracket, Flywheel Mtg.	2
129	141-2-210T-05700	Bracket, Bracket Frame (119) Mtg.	1
130	141-2-210T-05600	Bracket, Reinforcement (113) Mtg.	1
131	141-2-464T-08700	Fixer, Lead Retainer	9
132	141-2-464T-20671	Fixer, Lead Retainer	8
133	141-2-566T-06600	Tuning Shaft	1
134	141-2-310T-04700	Bracket, Pulley Mtg.	1
135	141-2-464T-14400	Fixer, AC Cord	1
136	141-2-753T-23900	Shaft, Power Switch Connection Rod	1
137	141-2-411T-08100	Plate Nut	1
138	141-2-453T-30500	Washer, Graphite Nylon Washer 4.1 x 6.5 x 0.13 mm	2
139	4-231T-53672	Switch, Voltage Select	1
140	141-2-753T-24000	Shaft, for Tape Monitor Select	2
142	141-2-753T-31100	Shaft, Speaker Select	2
143	141-2-753T-09200	Joint, Tape Monitor, Speaker Select	4
144	141-2-852T-43900	Wire Spring, Joint (137,139) Mtg.	4
145	141-2-852T-44100	Wire Spring	1
146	141-2-472T-01201	Lug, Reinforcement (117) Mtg. for Lead Retainer	4
148	123-2-457R-11700	Special Washer, Selector Switch Mtg.	1

Ref. No.	Part No.	Description	Q'ty
CHASSIS			
149	141-2-246T-12900	Sheet, Pointer (157)	1
150	141-2-329T-05000	Reflector, FM Stereo Lamp Cover	1
151	141-2-153T-31200	Escutcheon, Bracket Frame (119) Mtg.	2
152	141-2-328T-05200	Shield Light, on the Reflector (150)	1
153	141-9-146T-01200	Dial Scale Assembly	1
154	141-2-329T-04500	Reflector, Dial Illuminate	1
155	141-0-161T-02800	Push Button Assembly, Mode/FM Muting/Hi-Filter/Loudness	4
156	141-0-161T-02900	Push Button Assembly, Power/ Speaker/Monitor	5
157	141-2-340T-00200	Rope 0.5 x 2000 mm	1
158	141-2-538T-07300	Drum, V/C	1
159	141-2-855T-14800	Coil Spring, Drum Mtg.	1
161	141-9-511T-00400	Pointer Assembly	1
162	141-2-411T-08700	Plate Nut, DIN socket	1
164	141-2-310T-08500	Bracket, Fuse	1
166	141-2-472T-02000	Lug, Mic VOL	1
167	141-2-327T-16900	Insulator, Fuse Holder	1
ELECTRICAL PARTS			
201	4-251T-72200	Power Transformer	1
202	141-2-310T-07500	Bracket, PT Mtg.	1
203	4-243T-77173	Power Supply Cord	1
205	141-2-383T-04800	Fuse Holder, SP	1
206	4-234T-06371	Fuse	2
207	4-237T-07000	Terminal Board, SP Terminal	2
208	141-2-382T-07000	Terminal, Earth	2
209	4-511T-08200	Meter, Signal	1
210	4-511T-08300	Meter, Tuning	1
211	4-235T-43900	Socket, Meter Connect	1
212	4-235T-44400	Socket FM	1
213	4-235T-44500	Socket AM	1
214	141-2-382T-06900	Terminal, GND.	1
215	4-257T-24102	Antenna Coil Assembly, L104	1
216	141-2-369T-05400	Bracket, Antenna Coil (215) Mtg.	1
217	141-2-243T-02700	Base, Antenna Coil (215) Mtg.	2
220	4-231T-37000	Switch, Power Muting	1
221	141-2-310T-07600	Bracket, Power switch PCB (219) Mtg.	1
222	141-2-253T-07500	Joint, Shaft (136) Mtg.	1
223	141-2-464T-08800	Fixer, Lead Wire Dressing	4
225	141-2-310T-08300	Bracket, VR Mtg.	1
227	141-2-368T-12800	Heat Sink, IC	2
228	141-2-310T-07300	Bracket, Heat Sink & Main AMP P.C.B (226) Mtg.	1
229	141-2-310T-07400	Bracket, Heat Sink & Main AMP P.C.B (226) Mtg.	1
230	141-2-310T-07000	Bracket, Heat Sink (227) Rear Mtg.	1
231	141-2-310T-07100	Bracket, Heat Sink (227) Front Mtg.	1
233	141-2-310T-06900	Bracket, Electrolytic (C912, 913) Mtg.	1
234	141-2-377T-21800	Bracket, DC Power P.C.B (232) Mtg.	1
238	4-235T-45900	Socket, Phone to Tuner	1
240	4-235T-44000	Socket 7 Pin, from Indicator PCB (241)	1
248	141-2-310T-08400	Bracket	1
249	4-234T-01101	Fuse 250V 315mA	2
250	4-234T-04771	Fuse 250V 1.4A	1
251	141-2-246T-19900	Sheet	1
252	141-2-327T-16600	Insulator	
253	4-222T-58900	Variable Resistor 20K-B Mixing (VR721)	
HEADPHONE PCB ASSY			
218	141-9-230T-30503	Printed Circuit Board Assembly, Headphone	1
	4-235T-36771	Socket, Headphone	1
	141-2-382T-07300	or Terminal, Wire Wrapper Pin	3
	4-237T-00100	Metal Oxide Film Resistor 390 ohm ±5% 2W	2
R789, 889			

PARTS LIST

Ref. No.	Part No.	Description	Q'ty
POWER SW PCB ASSY			
219	140-9-230T-66900	Printed Circuit Board Assembly, Power Switch	1
	4-231T-60900	Push Switch, Power	1
	4-234T-03671	Fuse 250V 2A	1
	4-234T-06271	Fuse 250V 3.15A	1
	141-2-382T-07300	or Terminal, Wire Wrapper Pin	6
	4-237T-00100		
C901	141-6-476T-10000	Indication Label	1
	4-223T-04700	Capacitor	2
	141-2-381T-01800	Fuse Bracket	4
TONE PCB ASSY			
224	140-9-230T-67000	PCB assy, TONE AMP	1
VR751,851	4-222T-58700	Variable resistor, BALANCE, VOL 250K (MN) 100K-B x 2	1
752,852			
VR753,853	4-222T-57000	Variable resistor, BASS, TREBLE	2
755,855			
S5,6	4-231T-63900	Switch, LOUDNESS, MODE	1
	4-237T-00100	or Terminal	15
	141-2-382T-07300		
Q751,851,		Transistor 2SC1571	4
753,853			
Q752,852		Transistor 2SA929	2
CAPACITORS			
C751,851		Ceramic 680pF $\pm 10\%$ 50V	2
C762,862		Ceramic 22pF $\pm 5\%$ 50V	2
C754,854		Ceramic 220pF $\pm 10\%$ 50V	2
C765,865		Mylar 470pF $\pm 10\%$ 50V	2
C756,856,		Mylar 0.027 μ F $\pm 5\%$ 50V	4
757,857			
C752,852		Mylar 0.033 μ F $\pm 5\%$ 50V	2
C758,858,		Mylar 0.0047 μ F $\pm 5\%$ 50V	4
759,859			
C760,860		Mylar 0.0018 μ F $\pm 5\%$ 50V	2
C766		Electrolytic 330 μ F 35V	1
C763,863		Electrolytic 100 μ F 6.3V	2
C761,861,		Electrolytic 1 μ F 50V	6
764,864,			
791,891			
C753,853		Electrolytic 0.47 μ F 50V	2
C755,855		Electrolytic 2.2 μ F 50V	2
RESISTORS			
R770,870		Carbon 180K ohm $\pm 5\%$ 1/4W	2
R751,851,		Carbon 1M ohm $\pm 5\%$ 1/4W	4
756,856			
R773,873		Carbon 470K ohm $\pm 5\%$ 1/4W	2
R757,857		Carbon 330K ohm $\pm 5\%$ 1/4W	2
R755,855		Carbon 82K ohm $\pm 5\%$ 1/4W	2
R763,864		Carbon 27K ohm $\pm 5\%$ 1/4W	4
764,864			
R759,859		Carbon 22K ohm $\pm 5\%$ 1/4W	2
R761,861,		Carbon 15K ohm $\pm 5\%$ 1/4W	4
762,862			
R753,853		Carbon 8.2K ohm $\pm 5\%$ 1/4W	2
R752,852		Carbon 6.8K ohm $\pm 5\%$ 1/4W	6
765,865,			
766,866			
R760,860		Carbon 4.7K ohm $\pm 5\%$ 1/4W	2
R769,869		Carbon 33K ohm $\pm 5\%$ 1/4W	2
R754,854,		Carbon 1K ohm $\pm 5\%$ 1/4W	6
774,874,			
771,871			
R758,858		Carbon 560 ohm $\pm 5\%$ 1/4W	2
R767,867,		Carbon 6.8K ohm $\pm 5\%$ 1/4W	4
768,868			
R772,872		Carbon 5.6K ohm $\pm 5\%$ 1/4W	2
R791,891		Carbon 100K ohm $\pm 5\%$ 1/4W	2
R792,892		Carbon 1.5K ohm $\pm 5\%$ 1/4W	2

Ref. No.	Part No.	Description	Q'ty
MAIN AMP PCB ASSY			
226	140-9-230T-66700	Printed Circuit Board Assembly, Main AMP	1
IC781,881	4-206T-01200	IC STK-084, Power	2
	4-232T-04900	Relay	1
	4-209T-01171	Resistor	1
	141-2-382T-07300	Terminal, Wire Wrapper Pin	14
L781,881	4-265T-04800	V.H.F. Coil	2
Q401,402		Transistor 2SC536G	2
Q403		Transistor 2SD438F	1
D401,402		Diode 1S2473	4
403,404			
D405,406		Diode 1S2472	2
D407		Diode 1N4002	1
CAPACITORS			
C784,884		Ceramic 2pF $\pm 20\%$ 50WV	2
C781,881		Mylar 470pF $\pm 10\%$ 50WV	2
C789,889		Mylar 0.047 μ F $\pm 20\%$ 50WV	2
C782,882		Electrolytic 1 μ F 35WV	2
C403		Electrolytic 4.7 μ F 35WV	1
C786,788		Electrolytic 10 μ F 50WV	4
886,888			
C783,883		Electrolytic 47 μ F 16WV	2
C402		Electrolytic 10 μ F 16WV	1
C401		Electrolytic 100 μ F 25WV, Non Polar	1
C785,787		Electrolytic 220 μ F 500WV	4
885,887			
RESISTORS			
R786,886		Metal Oxide Film 5.6 ohm $\pm 5\%$ 1W	2
R787,887		Metal Oxide Film 10 ohm $\pm 5\%$ 1W	2
R784,785,		Metal Oxide Film 100 ohm $\pm 5\%$ 1/2W	4
884,885			
R411		Metal Oxide Film 390 ohm $\pm 5\%$ 2W	1
R401		Carbon Resistor 1k ohm $\pm 5\%$ 1/4W	1
R410		Carbon Resistor 1.2k ohm $\pm 5\%$ 1/4W	1
R782,882		Carbon Resistor 2.7k ohm $\pm 5\%$ 1/4W	2
R409,412		Carbon Resistor 5.6k ohm $\pm 5\%$ 1/4W	2
R402		Carbon Resistor 15k ohm $\pm 5\%$ 1/4W	1
R406,407		Carbon Resistor 18k ohm $\pm 5\%$ 1/4W	2
R788,888		Carbon Resistor 22k ohm $\pm 5\%$ 1/4W	2
R405,781,		Carbon Resistor 56k ohm $\pm 5\%$ 1/4W	5
783,881,			
883			
R403,404,		Carbon Resistor 120k ohm $\pm 5\%$ 1/4W	3
408			
DC POWER PCB ASSY			
232	140-9-230T-66800	Printed Circuit Board Assembly, DC Power	1
	4-237T-00100	or Terminal, Wire Wrapper Pin	19
	141-2-382T-07300		
	141-2-368T-11000	Heat Sink	1
		Tapping Screw 3 x 8 mm	1
Q901		Transistor 2SD386E	1
Q902,903		Transistor 2SD438E	2
D501,502		Diode 3DZ61	4
503,504			
D505		Diode DS131B	1
D506		Diode WZ130	1
CAPACITORS			
C915		Ceramic 0.001 μ F $\pm 80\%$ 50WV	1
C901,902,		Ceramic 0.01 μ F 500WV	6
903,904,			
905,906			
C911		Electrolytic 220 μ F $\pm 100\%$ 16WV	1
C909,910		Electrolytic 470 μ F $\pm 100\%$ 50WV	2
C912,913		or Electrolytic 10000 μ F 50WV	2
	4-163T-00400,		
	4-163T-00471		

PARTS LIST

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
DC POWER PCB ASSY				TUNER PCB ASSY			
RESISTORS				CAPACITORS			
R905		Metal Oxide Film 5.6 ohm ±5% 1/2W	1	C108		Ceramic 2pF ±0.25pF 50WV	1
R903,904		Metal Oxide Film 82 ohm ±5% 2W	2	C106		Ceramic 4pF ±0.25pF 50WV	1
R911		Solid Resistor 100 ohm ±5% 1/2W	1	C114		Ceramic 6pF ±0.25pF 50WV N.P.O	1
R910		Solid Resistor 220 ohm ±5% 1/2W	1	C101		Ceramic 12pF ±10% 50WV	1
R906		Carbon Resistor 2.2k ohm ±5% 1/4W	1	C105,123		Ceramic 12pF ±10% 50WV N750	2
R912		Solid Resistor 2.7k ohm ±10% 1/2W	1	C112		Ceramic 15pF ±5% N.P.O	1
R901,902		Metal Oxide Film 5.6k ohm ±5% 1W	2	C115		Ceramic 20pF ±5% 50WV N330	1
R907		Carbon Resistor 6.8k ohm ±5% 1/4W	1	C113		Ceramic 33pF ±5% 50WV N.P.O	1
R909		Carbon Resistor 12k ohm ±5% 1/4W	1	C208		Ceramic 33pF ±10% 50WV	1
R908		Carbon Resistor 22k ohm ±5% 1/4W	1	C216		Ceramic 47pF ±10% 50WV	1
TUNER PCB ASSY				C109		Ceramic 100pF ±10% 50WV	1
235	140-9-230T-56300	Printed Circuit Board Assembly, TUNER	1	C222		Ceramic 220pF ±20% 50WV	1
	141-2-322T-35500	Shield Plate, VC Mtg.	1	C103,107		Ceramic 0.001μF ±20% 50WV	2
	141-2-322T-40800	Shield Plate	1	C102,111,		Ceramic 0.01μF +80 -20% 50WV	11
S9	4-231T-68600	Switch, Function	1	116,119,			
	4-237T-00100	Terminal, Wire Wrapper Pin	13	120,125,			
P1	4-236T-10271	Plug 4 pin	1	201,202,			
P2	4-236T-10274	Plug 7 pin	1	203,218,			
P3	4-236T-10275	Plug 8 pin	1	231			
L101	4-265T-05100	V.H.F. Coil	1	C110,124,		Ceramic 0.022μF +80 -20% 50WV	4
L102	4-265T-03800	V.H.F. Coil	1	213,217			
L103	4-265T-03900	V.H.F. Coil	1	C204,205,		Ceramic 0.047μF +80 -20% 50WV	7
L105	4-258T-15500	OSC Coil	1	206,210,			
L106,201,	4-253T-08600	Filter 3μH	3	211,212,			
203				324			
L202	4-253T-09900	Filter	1	C122		Styrol 300pF ±5% 125WV	1
T201	4-256T-05140	I.F.T	1	C309		Styrol 1500pF ±5% 125WV	1
T202	4-256T-10100	I.F.T	1	C333,343		Mylar 0.0012μF ±20% 50W	2
T203	4-256T-10200	I.F.T	1	C117,121		Mylar 0.01μF ±20% 50WV	3
CT-3	4-224T-08800	Trimmer	1	221			
	4-224T-08300	Variable Capacitor	1	C243		Mylar 0.012μF ±10% 50WV	1
C0102	123-2-471T-10900	Core	1	C240		Mylar 0.022μF ±10% 50WV	1
T204	4-256T-07871	I.F.T.	1	C316		Mylar 0.047μF ±20% 50WV	1
LPF301,	4-255T-01300	MX Coil	2	C242,224		Mylar 0.068μF ±20% 20WV	2
302				C332,347		Mylar 0.01μF ±20% 50W	2
R306	4-222T-39472	Semi Fixed Resistor 1k (B)	1	C306,241,		Aluminum Electrolytic 0.22μF ±20% 10WV	4
R309	4-222T-39474	Semi Fixed Resistor 5k (B)	1	331,341,		Aluminum Electrolytic 0.33μF ±20% 10WV	1
R227	4-222T-39477	Semi Fixed Resistor 50k (B)	1	C308		Aluminum Electrolytic 0.47μF ±20% 10WV	1
	4-256T-80500	Red 10.7MHz				Electrolytic 0.47μF +150 -10% 25WV or 50WV	1
CF201	4-266T-80571	Blue 10.67MHz		C209,230		Electrolytic 1μF +150 -10% 25WV	2
202	4-256T-80572	or I.F. Filter Orange 10.73MHz	3	C207,301		Electrolytic 4.7μF +100 -10% 25WV	2
203	4-256T-80573	Black 10.64MHz		C118		Electrolytic 10μF +100 -10% 16WV	1
	4-256T-80574	White 10.76MHz		C351,352		Electrolytic 10μF +100 -10% 35WV	2
IC101		IC HA-1138	1	C223		Electrolytic 33μF +100 -10% 10WV	1
IC201		IC LA1230	1	C353		Electrolytic 100μF +100 -10% 10WV	1
IC301		IC LA3350S	1	C215		Electrolytic 100μF +100 -10% 16WV	1
Q101		FET 3SK59	1	C350		Electrolytic 100μF +100 -10% 35WV	1
Q102		Transistor 2SC535B	1	C317		Electrolytic 470μF +100 -10% 16WV	1
Q103,201		Transistor 2SC930E	2	C354		Electrolytic 1000μF +100 -10% 16WV	1
Q202		Transistor 2SC536G	1	C330,340		Electrolytic 330μF +100 -10% 6.3V	2
Q301,309		Transistor 2SC536F or G	2	RESISTORS			
Q310,312		Transistor 2SA702F	2	R103		Carbon Resistor 10 ohm ±5% 1/4W	1
Q305,306		Transistor 2SC945P	3	R110,234,		Solid Resistor 56 ohm ±10% 1/2W	3
303				312			
Q307,308		Transistor 2SC945P or Q	2	R117,233,		Carbon Resistor 100 ohm ±5% 1/4W	4
Q311,313		Transistor 2SC1571G	2	237,356			
Q302		Transistor 2SC1571F	1	R106,111		Carbon Resistor 150 ohm ±5% 1/4W	3
D101,102		Diode 1S2473	4	206			
201,301				R304		Carbon Resistor 220 ohm ±5% 1/4W	1
D103,202		Diode 1S188 FM	2	R321,331		Carbon Resistor 270 ohm ±5% 1/4W	2
D302,303,		Diode 1S2472	4	R205,207,		Carbon Resistor 330 ohm ±5% 1/4W	6
304,306				220,322,			
D305		Diode 1S188 AM or 1N60 AM	1	332,362			
D307		Diode WZ-250	1	R210		Carbon Resistor 470 ohm ±5% 1/4W	1
D203,204		Diode 1S2473	2	R225		Carbon Resistor 560 ohm ±5% 1/4W	1
				R351		Solid Resistor 680 ohm ±5% 1/2W	1
				R107,305		Carbon Resistor 1k ohm ±5% 1/4W	2
				R230		Carbon Resistor 1.2k ohm ±5% 1/4W	1
				R203,244		Carbon Resistor 1.8k ohm ±5% 1/4W	2
				R213,240,		Carbon Resistor 2.2k ohm ±5% 1/4W	4
				219,221			

PARTS LIST

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
TUNER PCB ASSY				PHONO AMP PCB ASSY			
R112,115		Carbon Resistor 2.7k ohm ±5% 1/4W	2	CAPACITORS			
R217,302,		Carbon Resistor 3.3k ohm ±5% 1/4W	11	C712,713		Ceramic 0.01μF +80 -20% 50V	2
320,324,				C704,804		Ceramic 470pF ±10% 50V	2
327,243,				C701,801		Ceramic 47pF ±10% 50V	4
330,334,				703,803			
337,303,				C714		Ceramic 0.047μF +80 -20% 50V	1
308				C708,808		Mylar 0.022μF ±5% 50V	2
R222		Carbon Resistor 3.9k ohm ±5% 1/4W	1	C706,806		Mylar 0.0039μF ±5% 50V	2
R360		Carbon Resistor 4.7k ohm ±5% 1/4W	1	C707,807,		Mylar 0.0033μF ±5% 50V	4
R109,104,		Carbon Resistor 5.6k ohm ±5% 1/4W	5	709,809			
116,228,				C711		Electrolytic 470μF 50V	1
242				C705,805		Electrolytic 47μF 6.3V	2
R211		Carbon Resistor 6.8k ohm ±5% 1/4W	1	C702,802		Electrolytic 4.7μF 25V	2
R310,328,		Carbon Resistor 8.2k ohm ±5% 1/4W	4	C701,810		Electrolytic 1μF 50V	2
338,246				RESISTORS			
R202,352,		Carbon Resistor 10k ohm ±5% 1/4W	5	R703,803		Carbon 270k ohm ±5% 1/4W	2
307,353,				R705,805		Carbon 180k ohm ±5% 1/4W	2
359				R709,809,		Carbon 100k ohm ±5% 1/4W	4
R226,229,		Carbon Resistor 12k ohm ±5% 1/4W	3	710,810			
113				R702,802		Carbon 68k ohm ±5% 1/4W	2
R114,215,		Carbon Resistor 15k ohm ±5% 1/4W	4	R708,808		Carbon 27k ohm ±5% 1/4W	2
323,333				R707,807		Carbon 10k ohm ±5% 1/4W	2
R204		Carbon Resistor 18k ohm ±5% 1/4W	1	R711,811		Carbon 6.8k ohm ±5% 1/4W	2
R209,311		Carbon Resistor 22k ohm ±5% 1/4W	2	R701,801		Carbon 2.2k ohm ±5% 1/4W	2
R208		Carbon Resistor 27k ohm ±5% 1/4W	1	R706,806		Carbon 470 ohm ±5% 1/4W	2
R105		Carbon Resistor 33k ohm ±5% 1/4W	1	R704,804		Carbon 220 ohm ±5% 1/4W	2
R108,218,		Carbon Resistor 39k ohm ±5% 1/4W	3	R712,812		Carbon 27k ohm ±5% 1/4W	2
355				SPEAKER PCB ASSY			
R357,238		Carbon Resistor 47k ohm ±5% 1/4W	2	239	140-9-230T-30600	Printed Circuit Board Assembly, Speaker	1
R358		Carbon Resistor 82k ohm ±5% 1/4W	1		4-231T-63600	Push Switch	1
R101,212,		Carbon Resistor 100k ohm ±5% 1/4W	7		4-237T-00100	Terminal, Wire Wrapper Pin	12
245,223,				INDICATOR PCB ASSY			
361,326,				241	140-9-230T-30200	Printed Circuit Board Assembly, Indicator Lamp	1
336					4-612T-08100	Lamp, Function 6.3V 65mA	4
R354		Carbon Resistor 330k ohm ±5% 1/4W	1		4-612T-08200	Lamp, Stereo 6.0V 30mA	1
R241		Carbon Resistor 150M ohm ±5% 1/4W	1		4-237T-00100	Terminal, Wire Wrapper Pin	9
MIC AMP PCB ASSY				DIAL LAMP PCB ASSY			
236	140-9-230T-67200	PCB assy, MIC AMP	1	242	140-9-230T-30300	Printed Circuit Board Assembly, Dial Lamp	1
	4-235T-36700	Socket, MIC	1		4-612T-07371	Dial Lamp	4
Q721,722	141-2-322T-41500	Shield plate, Mic socket	1		4-237T-00171	Lamp	5
		Transistor 2SC1571 G	2	FUSE HOLDER PCB ASSY			
CAPACITORS				243	140-9-230T-67300	Printed circuit board assembly, FUSE HOLDER	1
C727		Electrolytic 100μF 35V	1		4-237T-00171	Terminal board	6
C722,726		Electrolytic 4.7μF 25V	2	MID VOLUME PCB ASSY			
C725		Electrolytic 47μF 10V	1	244	140-9-230T-65100	PCB assy, MID VOLUME	1
C721		Ceramic 680pF ±10% 50V	1		4-222T-58800	Variable resistor 100-B x2	1
C724		Ceramic 100pF ±10% 50V	1	DIN SOCKET PCB ASSY			
C723		Ceramic 220pF ±5% 50V	1	245	140-9-230T-74600	PCB assy, DIN SOCKET	1
					4-235T-48300	Socket, DIN	1
R726		Carbon 330k ohm ±5% 1/4W	1		4-237T-00171	Terminal board	6
R725		Carbon 220 ohm ±5% 1/4W	1	C742,842		Ceramic capacitor 100pF ±10% 50V	2
R729		Carbon 150k ohm ±5% 1/4W	1	R742,842		Carbon resistor 270k ohm ±5% 1/4W	2
R723		Carbon 100k ohm ±5% 1/4W	1				
R728		Carbon 4.7k ohm ±5% 1/4W	1				
R727		Carbon 820 ohm ±5% 1/4W	1				
R724		Carbon 560 ohm ±5% 1/4W	1				
R722		Carbon 1K ohm ±5% 1/4W	1				
R721		Carbon 10k ohm ±5% 1/4W	1				
R731		Carbon 560 ohm ±5% 1/4W	1				
PHONO AMP PCB ASSY							
237	140-9-230T-67100	PCB assy, PHONO AMP	1				
	4-235T-48400	Socket RCA type, PHONO, AUX, REC, TAPE	2				
	4-231T-63700	Switch	1				
	141-2-310T-08200	Bracket, Jack	1				
	4-235T-45900	Socket	1				
	4-237T-00100	Terminal board	23				
	141-2-382T-07300	Terminal	2				
IC701,801		IC TA7129 P	2				

PARTS LIST

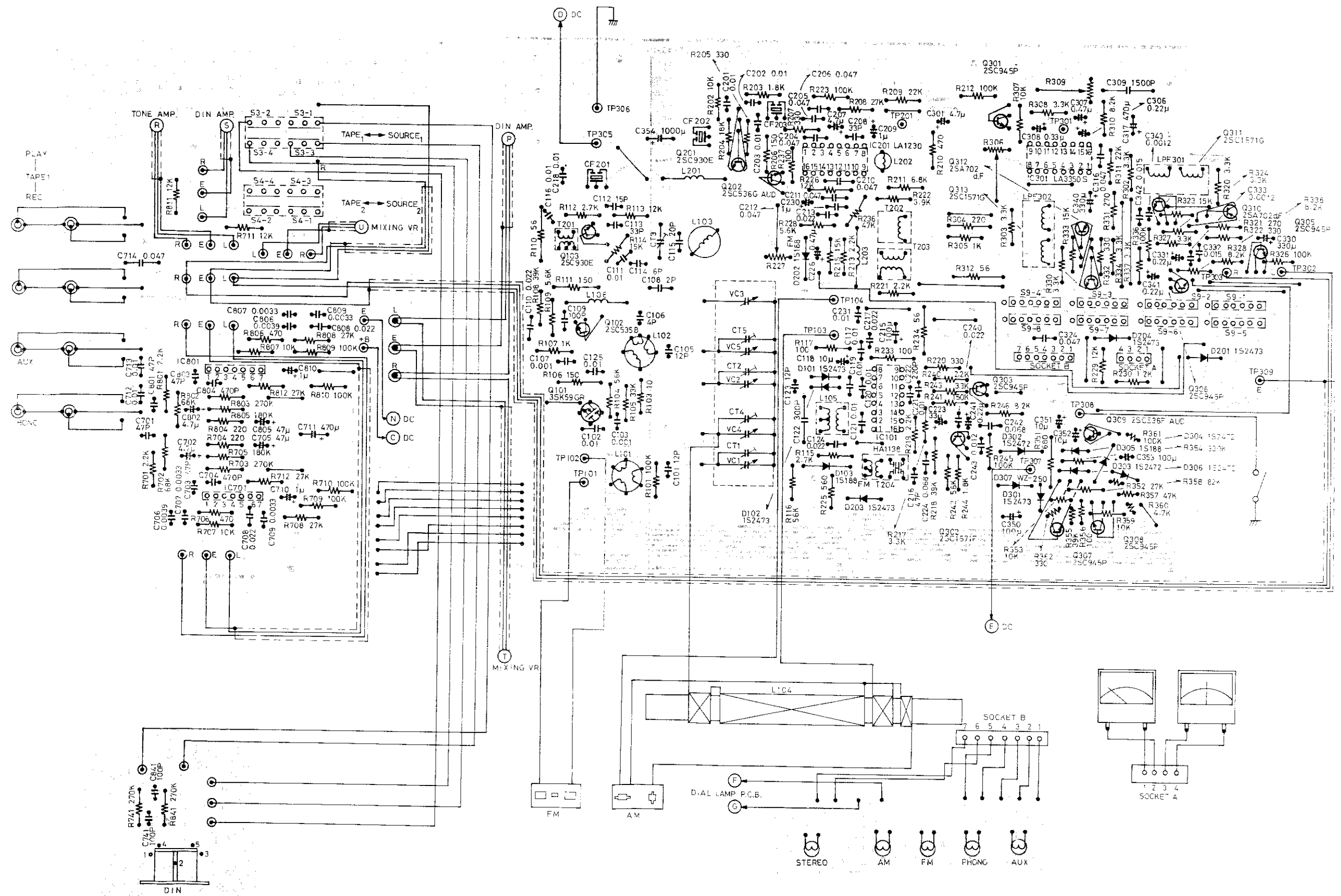
MEMO

Ref. No.	Part No.	Description	Q'ty
DIN SOCKET PCB ASSY			
246	140-9-230T-74601	PCB assy, DIN SOCKET	1
	4-235T-48300	Socket, DIN	1
	4-237T-00171	Terminal board	6
C741,841		Ceramic capacitor 100pF 50V	2
		±10% 50V	2
R741,841		Carbon resistor 270k ohm	2
		±5% 1/4W	
SCREW MOUNTING			
Y1		Pan Head Screw 2 x 8 mm	2
Y2		Pan Head Screw 3 x 6 mm	6
Y3		Pan Head Screw 3 x 50 mm	1
Y4		Binding Head Pan Head Screw 3 x 8 mm	2
Y5		Tapping Screw 3 x 6 mm	11
Y6		Tapping Screw 3 x 8 mm	7
Y7		Tapping Screw 3 x 12 mm	1
Y8		Tapping Screw 4 x 8 mm	4
Y9		Round Head Wood Screw 3.1 x 10 mm	12
Y10		Binding Head Tapping Screw 3 x 12 mm	2
Y11		Binding Head Tapping Screw 3 x 10 mm	22
Y12		Nut 3 mm	1
Y13		Nut 4 mm	4
Y14		Washer 3.3 x 10 x 1 mm	1
Y15		Washer 4.5 x 13 x 1.2 mm	8
Y16		Spring Washer 3 mm	1
Y17		External Tooth Lock Washer 3 mm	9
Y18		External "E" Ring 2.5 mm	1
Y19		External "E" Ring 3 mm	1
Y20		Headless Screw with Hexagon Hole 3 x 4 mm	4
Y21		Pan Head Screw with Hexagon Hole 3 x 6 mm	2
Y22	141-2-435T-01700	Fiber Washer 3 x 10 x 0.8 mm	1
Y23		Fiber Washer 3 x 10 x 1 mm	13
Y24		Tapping Screw with Washer 3 x 4 mm	1
Y25		Tapping Screw with Washer 3 x 8 mm	43
Y26		Tapping Screw with Washer 3 x 10 mm	31
Y27		Tapping Screw 3 x 12 mm	7
Y28		Tapping Screw 3 x 16 mm	6
Y29		Thread Rolling Screw 3 x 12 mm	2
Y30		Thread Rolling Screw 4.5 x 16 mm	4
Y31		UL Tape 12 x 40 mm	1
Y32		UL Tape 12 x 70 mm	1
Y33		Tapping Screw 2.3 x 6 mm	2

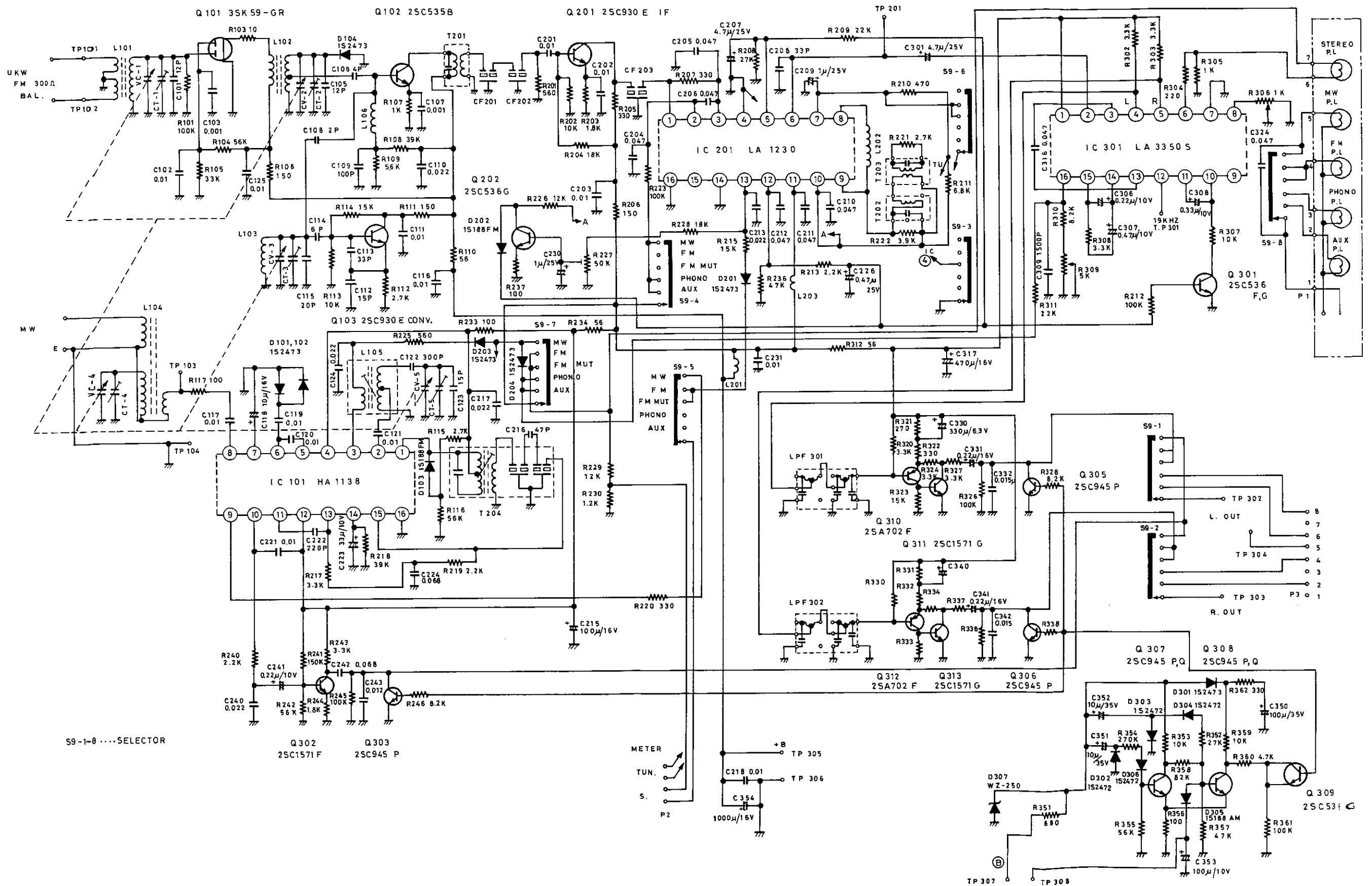
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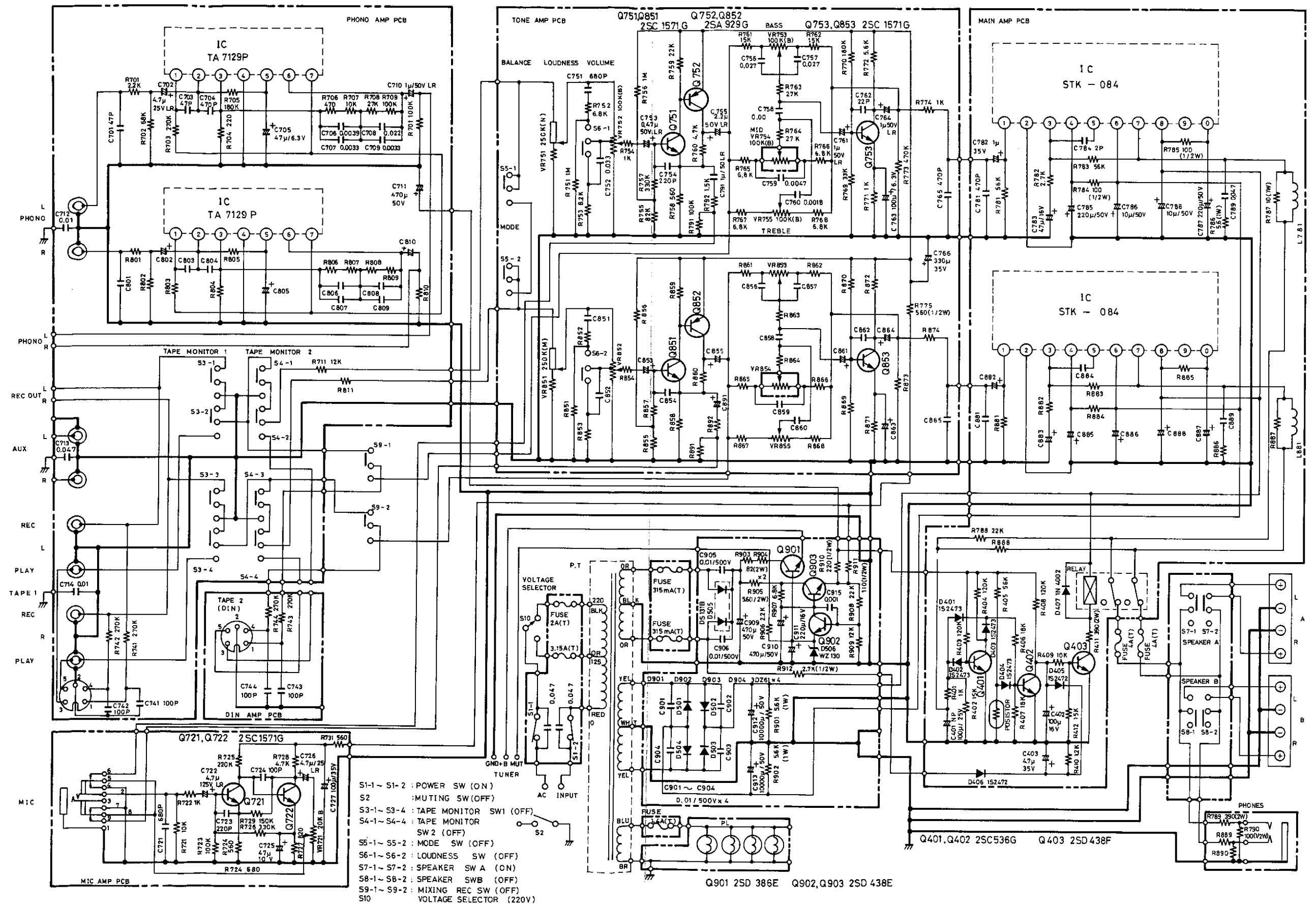
WIRING DIAGRAM (TUNER)



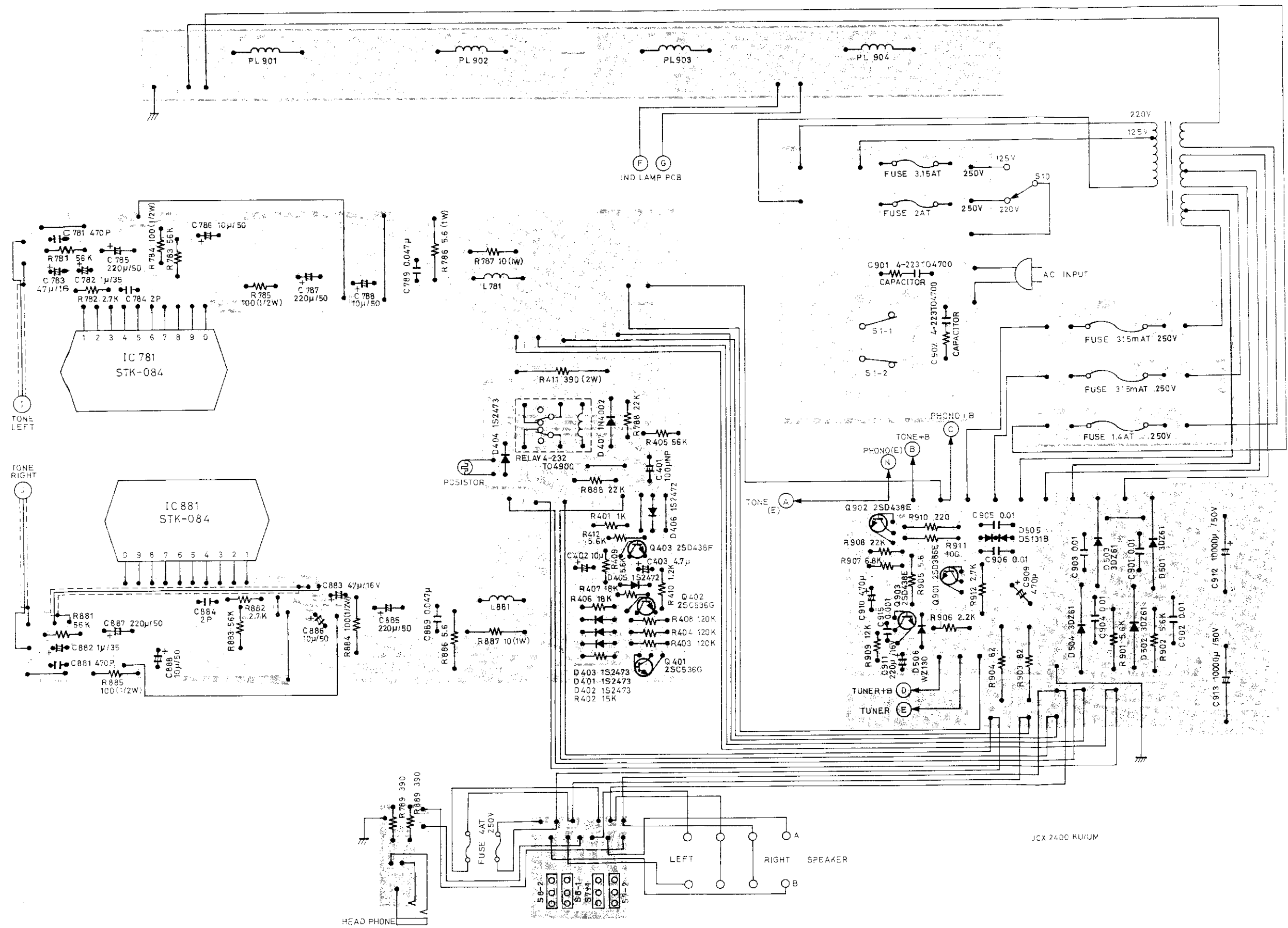
SCHEMATIC DIAGRAM (TUNER)

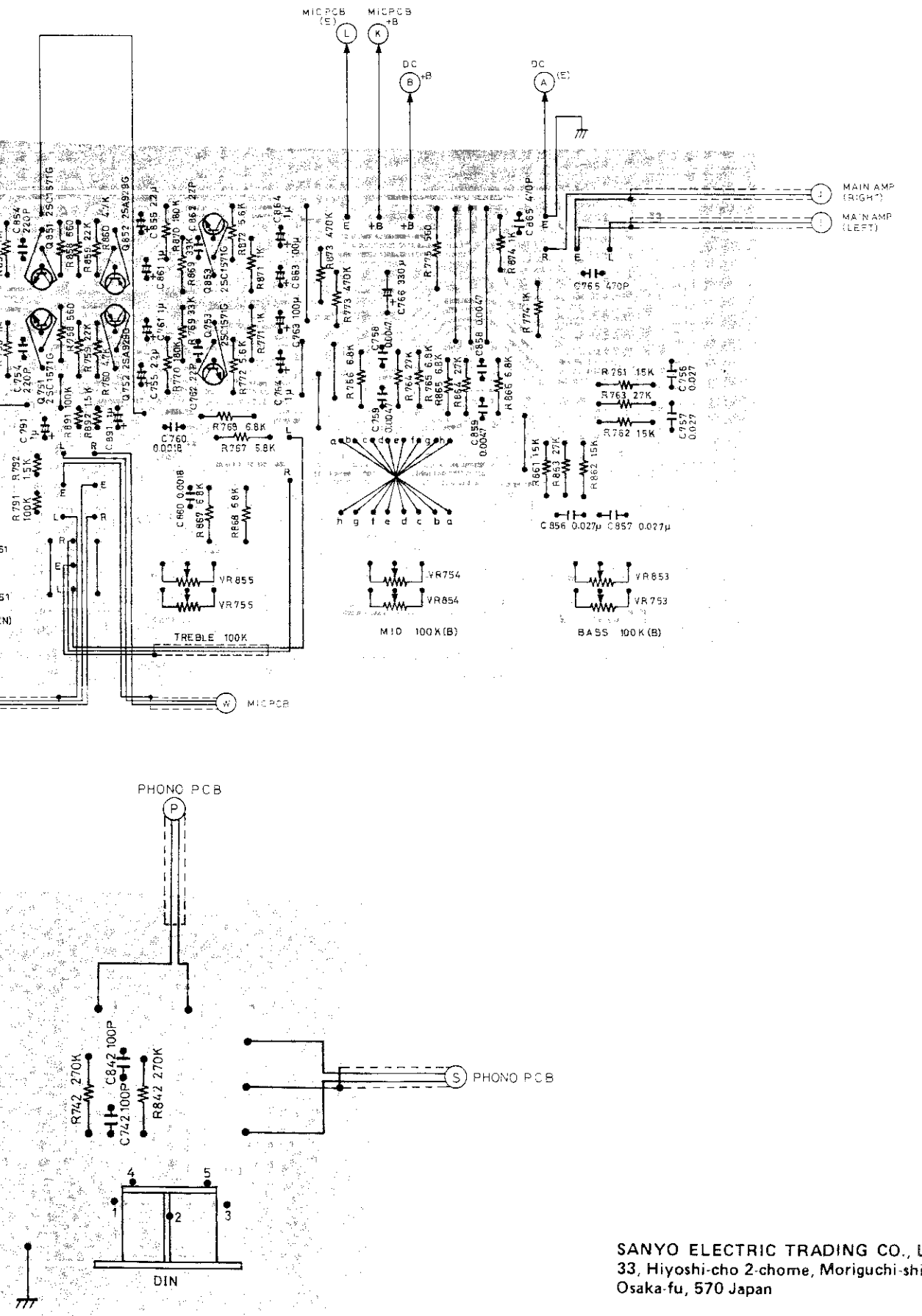


SCHEMATIC DIAGRAM (AMP)



WIRING DIAGRAM (AMP)





SANYO ELECTRIC TRADING CO., LTD.
33, Hiyoshi-cho 2-chome, Moriguchi-shi,
Osaka-fu, 570 Japan

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