

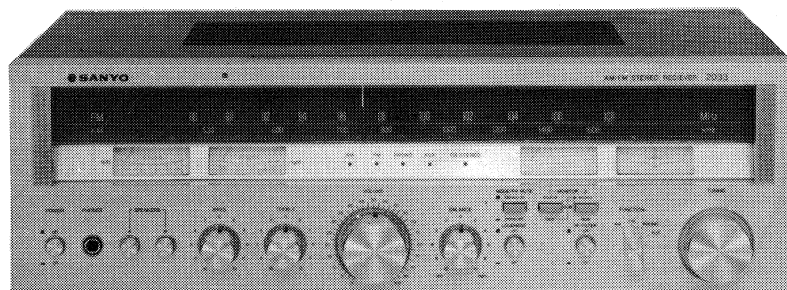
SERVICE MANUAL

STEREO RECEIVER



2033

(U.S.A.)



SPECIFICATIONS

Amplifier Section

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

33 watts

Input Sensitivity/Impedance

PHONO	2.5mV/47k ohms
AUX.	150mV/47k ohms
TAPE Play 1	150mV/47k ohms
TAPE Play 2	150mV/47k ohms

Frequency Response

PHONO (RIAA standard curve)	±0.4dB
AUX, TAPE (20Hz–20kHz)	±0.5dB
(10Hz–40kHz)	±1.0dB

Tone Controls response

Bass 100Hz	–10dB ~ +10dB
Treble 10kHz	–10dB ~ +10dB

Loudness control response

(Volume at –30dB) 100Hz	+8dB
10kHz	+3dB

S/N Ratio (IHF – A)

PHONO (at 10mV)	85dB
(at 2.5mV)	73dB

Output Voltage

TAPE Rec 1	150mV
TAPE Rec 2	150mV
AUX.	90dB
TAPE Play	90dB

PHONO Maximum Input Voltage

(1kHz, RMS)	130mV
High Filter 8kHz	–6dB/oct

Damping Factor

at 1kHz, 8 ohms	32
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Residual Hum & noise

0.7mV

FM Tuner Section

Frequency range	88 ~ 108MHz
Usable sensitivity	
at Mono	1.9μV (10.8dbf)
Signal-to-noise ratio (at 65dbf)	
at Mono	75dB
at stereo	70dB
Harmonic distortion (at 65dbf)	
at Mono 1kHz	0.2%
at Stereo 1kHz	0.3%
AM suppression (30% 400Hz AM)	55dB
Spurious response (at 98MHz)	80dB
Alternate channel selectivity	70dB
Image rejection at 98MHz	70dB
IF rejection at 98MHz	90dB
Capture ratio	1.5dB
Stereo separation at 1kHz	45dB
Antenna input	300 ohms balanced 75 ohms unbalanced

AM tuner Section

Frequency range	525 ~ 1620kHz
Sensitivity	300μV/m
Signal-to-noise ratio	45dB
Image rejection	50dB
IF rejection	40dB
Selectivity	35dB
Antenna	Built-in ferrite bar antenna
Antenna input	External antenna

General

Power requirements	AC: 120V, 60Hz
Power consumption	150W
Dimensions	17-3/8"(W)x5-7/8"(H)x13"(D) 440 x 315 x 138mm
Weight	Approx. 8kg

MODIFICATION NOTICE

STEREO RECEIVER



Model 2033 (USA)

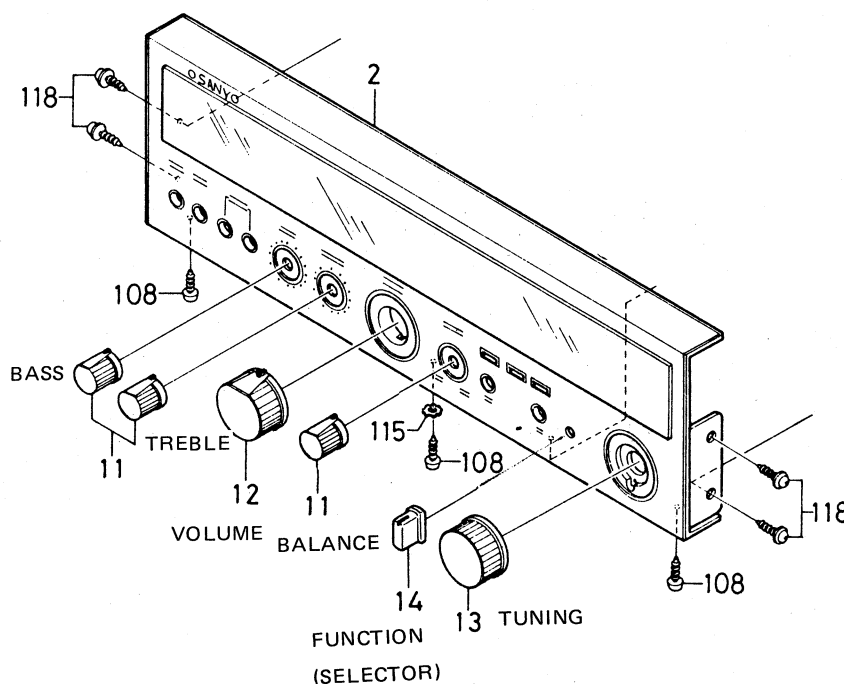
Model 2033 (CANADA)

Date Feb. 18. 1980 Issued by _____

The following corrections should be made in the SERVICE MANUALS and PARTS (PRICE) LIST.

The exploded view corrections should be made in the service manual on page 5.

REASON..... Miss print



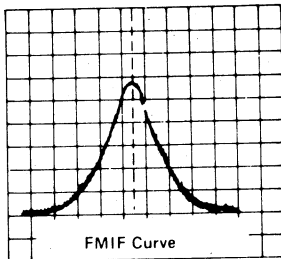
INTERCHANGEABLE	NOT INTERCHANGEABLE	Serial No. Chassis No.	Effective from
Q'ty of initial production before modification.		Identification of modified unit.	
REASON FOR MODIFICATION A Standardization C Improvement of reliability E Miss print G B Change of materials D Improvement of performance F Miss register			

TUNER ADJUST

FM IF ADJUSTMENT

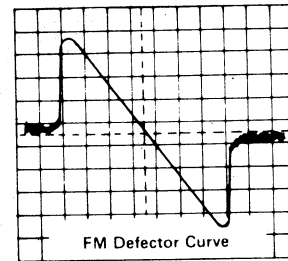
1. V curve adjustment

- 1) Connect TP-3 (HOT) and TP-6 (GROUND) to the output terminal of the sweep generator, and TP-4 (H) and TP-10 (G) 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 C214 (0.022 μ 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.



2. S curve adjustment

- 1) Connect TP-3 (H) and TP-6 (E) to the output the sweep generator. Connect TP-5 (H) and TP10 (E) to its input.
- 2) Adjust the T202 until the S curve presents the pattern as in Fig. 2. Avoid turning the T203 unless absolutely necessary.
* TP-4 is a R218, TP-5 is Terminal, TP-10 is a Terminal, TP-3 is a VC Terminal and TP-6 is a Shield Plate.



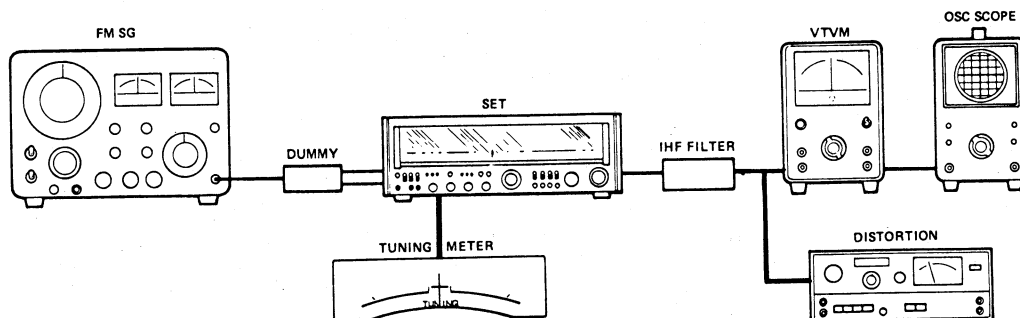
CENTER ADJUSTMENT OF TUNING METER

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

Connect a 300 ohm balanced dummy to the 300 ohm terminal of the external antenna and a filter to TP-9 or TP-10 (H) and TP-11 (G).

- 1) Set the tuning dial of the unit to 98 MHz (where no Broadcasting signal is coming in).
- 2) While keeping the FM SG output level to less than -10 dB, adjust the T202 until the tuning meter needle stands at the center point.
- 3) Apply 60 dB (1 mV) to the 300 ohm terminal of the external antenna and adjust the tuning dial so that the tuning meter needle stands at the center point.

- 4) Reduce the distortion factor to a minimum by turning the T203.
 - 5) Repeat steps 2), 3) and 4).
 - 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 step 2).
 - 8) Set the FM SG output level to the same level as item 3). Conform the distortion factor is minimum when the tuning meter needle is at center point.
- NOTE: Use Hum and Sub-carrier Filter to obtain accurate distortion factor.



FM TRACKING ADJUSTMENT

Set FM SG as follows: modulation frequency 1 KHz, frequency deviation 75 KHz DIV. (100% modulation). Connect VTVM to TP-7 or TP-8 (H) and TP-11 (G) or REC OUT terminal.

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

- 1) Make LOW TRACKING adjustment by means of L101, L102 and L103. Use 90 MHz FM signal for this purpose.
- 2) Make HIGH TRACKING adjustment by means of CT-1, CT-1 and CT-1. Use 106 MHz 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%.

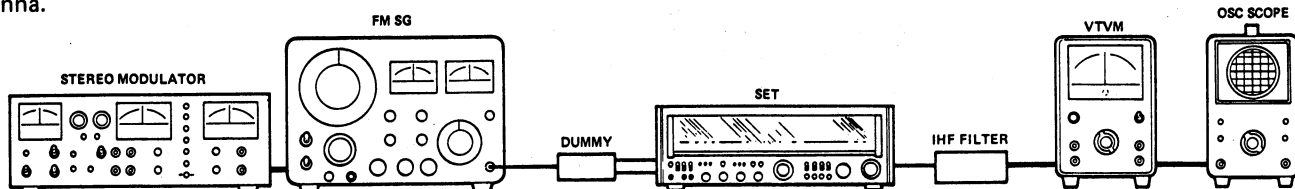
19 KHz PILOT CANCELER ADJUSTMENT

Set the frequency of FM SG to 98 MHz and the pilot signal of the stereo modulator to a modulation degree of 9%. Connect a filter to TP-6 or TP-7 (H) and TP-18 (G).

- 1) Set the tuning dial of the unit to 98 MHz.
- 2) Apply 60 dB (1 mV) to 300 ohm terminal of external antenna.

- 3) Turn R304 (SVR) until the leakage of 19 KHz becomes minimum.

NOTE: Use 19 KHz band-pass filter.
Use 38 KHz band-pass filter.



FM VCO ADJUSTMENT

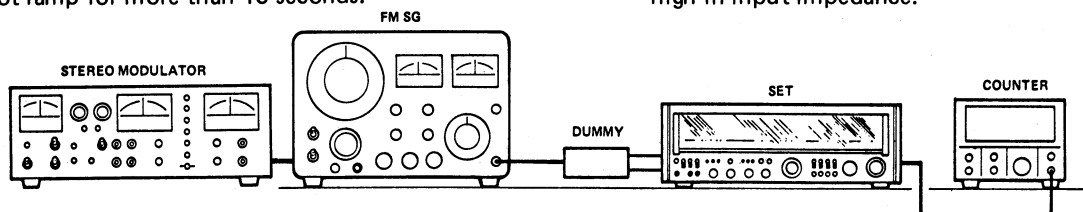
Set the frequency of FM SG to 98 MHz (where no broadcasting signal is coming in), the muting switch of the unit to ON, the pilot signal of the stereo modulator to a modulation degree of 9% and mode switch to MONO. Connect a frequency counter to TP-9 (H) and TP-11 (G).

- 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.

- 2) Adjust R309 (SVR) until the frequency counter reading becomes $19\text{ KHz} \pm 19\text{ Hz}$ 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.



FM MUTING LEVEL ADJUSTMENT

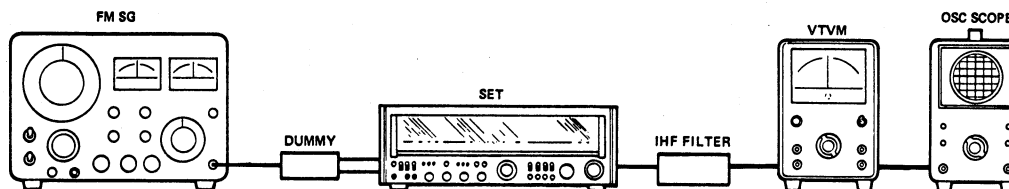
Set FM SG as follows: modulation frequency 1 KHz, frequency deviation 75 KHz DIV. (100% modulation). Then, set the muting switch of the unit to ON. Connect a filter to TP-7 or TP-8 (H) and TP-11 (G).

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

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

- 3) Turn R217 (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.



SEPARATION ADJUSTMENT

Set FM SG as follows: modulation frequency 1 KHz, frequency 98 MHz. Set the pilot signal of the stereo modulator to a modulation degree of 9%.
PL + L + R = 75 KHz DIV.
(9% + 91%)

Select the "STEREO" mode by the mode switch of the unit. Connect a filter to TP-7 or TP-8 (H) and TP-11 (G).

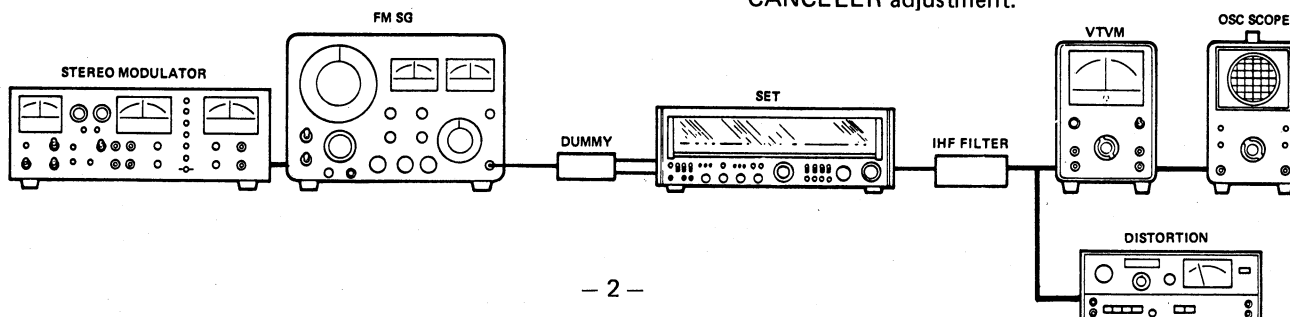
- 1) Set the input to the unit (i.e. voltage at the 300 ohm terminal of the external antenna) to 60 dB (This corresponds to 66 dB - 1.995 mV in terms of FM SG output).

- 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 R304 (SVR).

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

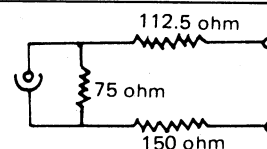
* Make this adjustment after VCO and 19 KHz PILOT CANCELER adjustment.



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 (G) . . . shield plate	Connect oscilloscope to test point TP-4 (H), TP-10 (G)	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-5 (H), TP-10 (G)			T202, T203	
3	OSC.	Connect FM SG. to FM ANT. Terminals or TP-1 (H) & TP-2 (G)	Connect VTVM to TP-7 (H) & TP-11 (G)	87.0 MHz (400 Hz 30% modulation)	Low end of dial scale	L104	Max.
4				109.0 MHz (400 Hz 30% modulation)	High end of dial scale	CT-3	
5	ANT.	Connect FM SG. to FM ANT. Terminals or TP-1 (H) & TP-2 (G)	Connect VTVM to TP-7 (H) & TP-11 (G)	90.0 MHz (400 Hz 30% modulation)	90.0 MHz on dial scale	L101, L102, L103	Max.
6				106.0 MHz (400 Hz 30% modulation)	106.0 MHz on dial scale	CT-1, CT-2, CT-3	
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.



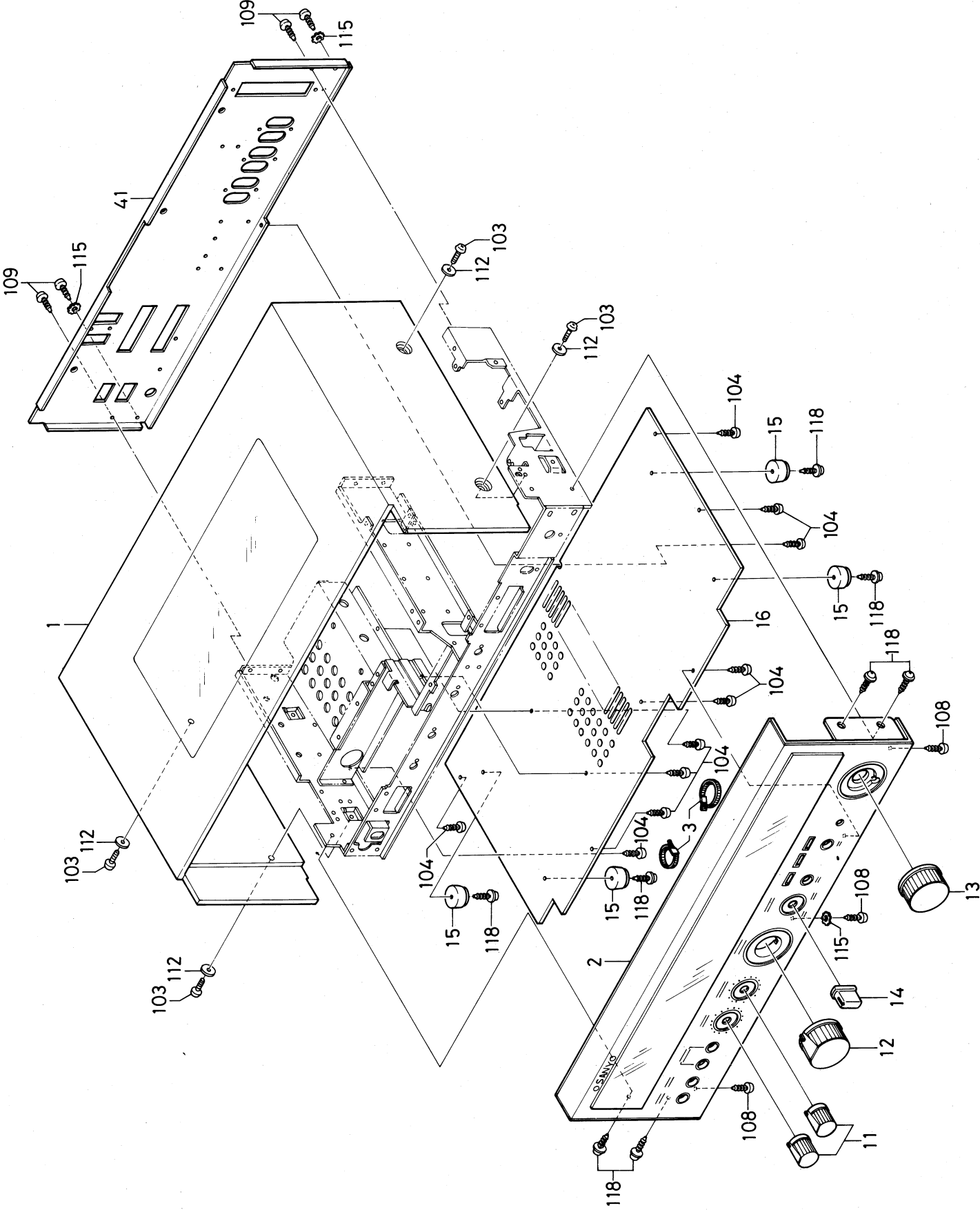
MW ALIGNMENT

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-7, 8 (H) & TP-11 (G)	455 KHz (400 Hz 30% modulation)	Low end of dial scale. With no station signal.	T204 T205	Max.
2	OSC.	Connect AM SG to test loop-antenna	Connect VTVM to TP-7, 8 (H) & TP-11 (G)	510 KHz (400 Hz 30% modulation)	Low end of dial scale	L107	Max.
3				1700 KHz (400 Hz 30% modulation)	High end of dial scale	CT-5	
4	ANT.	Connect AM SG to test loop-antenna	Connect VTVM to TP-7, 8 (H) & TP-11 (G)	600 KHz (400 Hz 30% modulation)	600 KHz on dial scale	L106	Max.
5				1400 KHz (400 Hz 30% modulation)	1400 KHz on dial scale	CT-4	
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.



CABINET EXPLODED VIEW



PARTS LIST

Key No.	Part No.	Description	Q'ty
PACKING			
	141-6-132T-02600	Individual Carton	1
	141-6-144T-57100	Form Plastic Case	2
	141-6-231T-50702	Inner Poly Cover, Set	1
	141-6-231T-25352	Inner Poly Cover, Inst. B	1
	141-6-231T-10250	Inner Poly Cover, Power Cord	1
	141-6-231T-06100	Inner Poly Cover, Spanner	1
	141-6-440T-06000	Hang Tag	1
	141-6-472T-14900	Caution Label	2
	141-6-479T-39800	Label	1
	141-6-231T-06100	Inner Poly Cover, Fuse	1
	141-6-415T-15600	Notice, Fuse	1
ACCESSORY			
	141-6-410T-31000	Instruction Manual	1
	141-6-493T-01102	Customer Card	1
	141-2-419T-00200	Spanner, Rotary Knob	1
	4-245T-00171	Antenna	1
	4-234T-09100	Fuse 125V, 3A	2
CABINET			
1	141-0-111T-40100	Cabinet Ass'y	1
2	141-0-122T-30100	Front Panel Ass'y	1
3	141-2-464T-20671	Fixer	2
4	141-2-231T-01300	Bracket, Dial Scale	1
5	141-2-146T-21600	Dial Scale	1
6	141-0-245T-07600	Back Plate Ass'y	1
11	141-0-163T-62600	Rotary Knob Ass'y, Boss/ Treble/Balance	3
12	141-0-163T-62700	Rotary Knob Ass'y, Volume	1
13	141-0-163T-62800	Rotary Knob Ass'y, Tuning	1
14	141-0-163T-63000	Rotary Knob Ass'y, Selector	1
15	141-0-174T-05101	Stand Ass'y	4
16	141-2-125T-17900	Bottom Lid	1
17	141-2-464T-20671	Fixer	9
18	141-2-472T-01001	Lug	1
CHASSIS			
19	141-0-161T-65900	Push Button Ass'y, Power/SP	3
20	141-0-161T-49203	Push Button Ass'y	2
21	141-0-253T-17500	Joint Ass'y	3
22	141-2-661T-71200	Pulley	5
23	141-2-421T-20900	Special Screw	5
24	141-0-566T-08800	Tuning Shaft Ass'y	1
25	141-2-310T-30000	Bracket	1
26	141-2-184T-00201	Tape	1
27	141-2-310T-23100	Bracket	1
28	141-2-310T-23200	Bracket, Lamp	1
29	141-2-445T-13301	Rubber Cushion, Lamp	4
30	141-2-310T-23300	Bracket, Pulley	1
31	141-2-365T-43300	Bracket, Power Switch	1
32	141-2-511T-16600	Pointer	1
33	141-2-513T-05000	Carriage	1
34	141-2-246T-12900	Sheet	1
35	141-2-538T-07300	Drum	1
36	141-2-855T-14800	Spring Coil, Rope	1
37	141-2-340T-00200	Rope	1
38	141-2-464T-24100	Fixer	3
39	141-2-361T-16300	Bracket, Rotary Switch	1
40	141-2-371T-08900	Bracket, Transformer	1
41	141-2-126T-30000	Back Lid	1
42	141-2-315T-18400	Reinforcement, R	1
43	141-2-315T-18500	Reinforcement, L	1

Key No.	Part No.	Description	Q'ty
CHASSIS			
44	141-2-315T-18600	Reinforcement	1
45	141-2-315T-18700	Reinforcement	1
46	141-2-310T-23400	Bracket, Speaker SW	1
47	141-2-310T-23500	Bracket, Switch	1
48	141-2-310T-23600	Bracket, Headsink, Front	1
49	141-2-310T-23700	Bracket, Headsink, Back	1
50	141-2-310T-23800	Bracket, Phono PCB	1
51	141-2-310T-23900	Bracket, Amp PCB	2
52	141-2-464T-08700	Fixer	1
53	141-2-368T-17100	Heatsink, IC	1
54	141-2-464T-11800	Fixer, AC Cord	1
55	141-6-476T-11700	Indication Label	1
HARDWARE			
101		Pan Head Screw 3x8	1
102		Binding Head Screw 3x10	7
103		Binding Head Screw 4x14	4
104		Tapping Screw 3x8	10
105		Tapping Screw 3x10	8
106		Tapping Screw 3x14	1
107		Tapping Screw 4x8	4
108		Binding Head Tapping Screw 3x8	3
109		Binding Head Tapping Screw 3x10	22
110		Washer 3x10x0.5	1
111		Washer 4x10x1	4
112		Washer 4x13x1.2	4
113		Regular Hexagon Nut 3	2
114		Regular Hexagon Nut 9/16x0.75	1
115		External Tooth Lock Washer 3	5
116		Tapping Screw with Washer 3x6	4
117		Tapping Screw with Washer 3x8	2
118		Tapping Screw with Washer 3x10	49
119		Tapping Screw with Washer 3x14	4
ELECTRICAL PARTS			
61	4-300T-00300	Power Trans	1
62	4-243T-81271	for Power Cord	1
63	4-243T-82500	Terminal Board, Speaker	2
64	141-2-383T-05900	Fuse Holder	1
65	4-234T-09100	Fuse 125V 3A, Speaker	2
66	4-235T-64800	Socket, AC Outlet	2
67	4-235T-44871	for Socket, Head phone	1
68	4-235T-65700		
69	4-235T-64900	Socket, Phono AUX	1
70	141-2-382T-10600	Terminal, Ground	1
71	4-511T-11000	Meter, Signal	1
72	4-511T-11100	Meter, Tuning	1
73	4-511T-11071	Meter, Power	2
74	123-2-472R-00401	Lug	1
75	4-612T-13173	Lamp	2
76	4-612T-13174	Lamp	1
	4-612T-13175	Lamp	1

PARTS LIST

Key No.	Part No.	Description	Q'ty	Key No.	Part No.	Description	Q'ty
TUNER PCB ASS'Y				TUNER PCB ASS'Y			
77	141-4-233T-06400	P.C. Board Ass'y Tuner	1	CAPACITORS			
L102	4-265T-03700	VHF Coil	1	C204,205		Ceramic 0.047 μ F 50V	3
L103	4-265T-03800	VHF Coil	1	206		+80-20%	
L104	4-265T-03900	VHF Coil	1	C120		Ceramic 10pF 50V $\pm$ 5%	1
L108	4-265R-11300	VHF Coil	1	C125		Ceramic 24pF 50V $\pm$ 10%	1
T201	4-256T-05140	IFT	1	C210,211		Ceramic 0.047 μ F 50V	2
T202	4-256T-12740	IFT	1			+80-20%	
T203	4-256T-12840	IFT	1	C219,226		Ceramic 0.047 μ F 50V	2
T204	4-256T-16740	IFT	1			+80-20%	
T205	4-256T-16840	IFT	1	C307		Ceramic 0.047 μ F 50V	1
L106	4-257T-34101	Ant Coil Ass'y	1			+80-20%	
L107	4-258T-24440	O.S.C Coil	1	C214		Ceramic 0.022 μ F 50V	1
L203	4-253T-09300	Filter	1			+80-20%	
L105,202	4-253T-12200	Filter	2	C230		Ceramic 0.047 μ F 50V	1
	4-256T-80500	IF Filter				+80-20%	
CF201	4-256T-80571	IF Filter		C402		Ceramic 91pF 50V $\pm$ 10%	1
202	4-256T-80572	IF Filter	3	C401		Ceramic 220pF 50V $\pm$ 10%	1
203	4-256T-80573	IF Filter		C702,802		Ceramic 47pF 50V $\pm$ 20%	4
	4-256T-80574	IF Filter		703,803			
CF204	4-256T-80900	IF Filter	1	C309,313		Mylar 0.0022 μ F 50V $\pm$ 10%	2
CT-3	4-224T-08800	Trimmer	1	C222		Mylar 0.01 μ F 50V $\pm$ 10%	1
	4-224T-08300	Variable Capacitor	1	C228		Mylar 0.012 μ F 50V $\pm$ 10%	1
	4-238T-00900	Rotary Switch	1	C122,123		Mylar 0.022 μ F 50V $\pm$ 10%	2
R304	4-222T-71172	Variable Resistor	1	C311,315		Mylar 0.022 μ F 50V $\pm$ 10%	2
R309	4-222T-71174	Variable Resistor	1	C227,308		Mylar 0.047 μ F 50V $\pm$ 10%	2
R217	4-222T-71176	Variable Resistor	1	C118		Mylar 0.01 μ F 50V $\pm$ 10%	1
B101	123-2-471R-10900	Core	1	C705,805		Mylar 0.018 μ F 50V $\pm$ 5%	2
	141-2-322T-50800	Shield Plate	1	C706,806		Mylar 0.0047 μ F 50V $\pm$ 5%	2
	141-2-322T-40800	Shield Plate	1	C121		Mylar 0.0047 μ F 50V $\pm$ 5%	2
	141-2-369T-05100	Bracket, Coil	2	C306		Styrol 330pF 50V $\pm$ 5%	1
Q101		Transistor FET 3SK45	1	C207,312		Styrol 0.0015 μ F 50V $\pm$ 5%	1
Q102		Transistor 2SC535	1	316		Electrolytic 0.47 μ F 50V	3
Q301,304		Transistor 2SC945	6	C317,318			
305,306				C209,212		Electrolytic 0.47 μ F 50V	2
309,310				216		Electrolytic 1 μ F 50V	3
Q307,308		Transistor 2SA733	2	C224		Electrolytic 3.3 μ F 50V	1
Q201		Transistor 2SC930 IF	1	C225,302		Electrolytic 4.7 μ F 25V	2
Q103		Transistor 2SC930 Conv	1	C124,319		Electrolytic 10 μ F 16V	2
Q302,303		Transistor 2SA702 ALF	2	C213,220		Electrolytic 100 μ F 16V	2
D201,203		Diode 1SS53	2	C301		Electrolytic 220 μ F 16V	1
D301,302		Diode 1SS53	2	C229		Electrolytic 0.47 μ F 50V	1
D202		Diode MA26	1	C304		Electrolytic 0.22 μ F 50V	1
IC201		IC LA1231	1	C303		Electrolytic 0.33 μ F 50V	1
IC301		IC LA3350 S	1	C305		Electrolytic 0.47 μ F 50V	1
IC101		IC LA1240	1	C320		Electrolytic 47 μ F 6.3V	1
IC701		IC RC4558PL	1	C707,807		Electrolytic 1 μ F 50V	2
				C708,808		Electrolytic 220 μ F 25V	2
				C701,801		Electrolytic 4.7 μ F 25V	2
				C704,804		Electrolytic 22 μ F 10V	2
CAPACITORS				RESISTORS			
C116		Ceramic 1.5pF 50V $\pm$ 0.25pF	1	R104		Carbon 10 ohm $\pm$ 10% 1/4W	1
C107		Ceramic 3pF 50V $\pm$ 0.25pF	1	R335		Carbon 22 ohm $\pm$ 10% 1/4W	1
C112		Ceramic 8pF 50V $\pm$ 0.25pF	1	R114		Carbon 100 ohm $\pm$ 10% 1/4W	1
C106		Ceramic 12pF 50V $\pm$ 10%	1	R105		Carbon 220 ohm $\pm$ 10% 1/4W	1
C113		Ceramic 15pF 50V $\pm$ 5%	1	R113		Carbon 220 ohm $\pm$ 10% 1/4W	1
C111		Ceramic 22pF 50V $\pm$ 5%	1	R116		Carbon 220 ohm $\pm$ 10% 1/4W	1
C101		Ceramic 12pF 50V $\pm$ 10%	1	R207		Carbon 330 ohm $\pm$ 10% 1/4W	1
C114		Ceramic 33pF 50V $\pm$ 5%	1	R223		Carbon 220 ohm $\pm$ 10% 1/4W	1
C208		Ceramic 33pF 50V $\pm$ 10%	1	R224		Carbon 220 ohm $\pm$ 10% 1/4W	1
C218		Ceramic 68pF 50V $\pm$ 10%	1	R206		Carbon 330 ohm $\pm$ 10% 1/4W	1
C108		Ceramic 100pF 50V $\pm$ 10%	1	R208		Carbon 330 ohm $\pm$ 10% 1/4W	1
C310,314		Ceramic 560pF 50V $\pm$ 10%	2	R230		Carbon 330 ohm $\pm$ 10% 1/4W	1
C103,110		Ceramic 0.001 μ F 50V $\pm$ 10%	2	R202		Carbon 560 ohm $\pm$ 10% 1/4W	1
C119,221		Ceramic 0.001 μ F 50V $\pm$ 10%	2	R210		Carbon 680 ohm $\pm$ 10% 1/4W	1
C102,104		Ceramic 0.01 μ F 50V	3	R312,319		Carbon 820 ohm $\pm$ 10% 1/4W	2
105		+80-20%		R108		Carbon 1K ohm $\pm$ 10% 1/4W	1
C109,115		Ceramic 0.01 μ F 50V	2	R221		Carbon 1K ohm $\pm$ 10% 1/4W	1
		+80-20%		R303,339		Carbon 1.2K ohm $\pm$ 10% 1/4W	2
C201,202		Ceramic 0.01 μ F 50V	3				
203		+80-20%					
C215		Ceramic 0.022 μ F 50V	1				
		+80-20%					

PARTS LIST

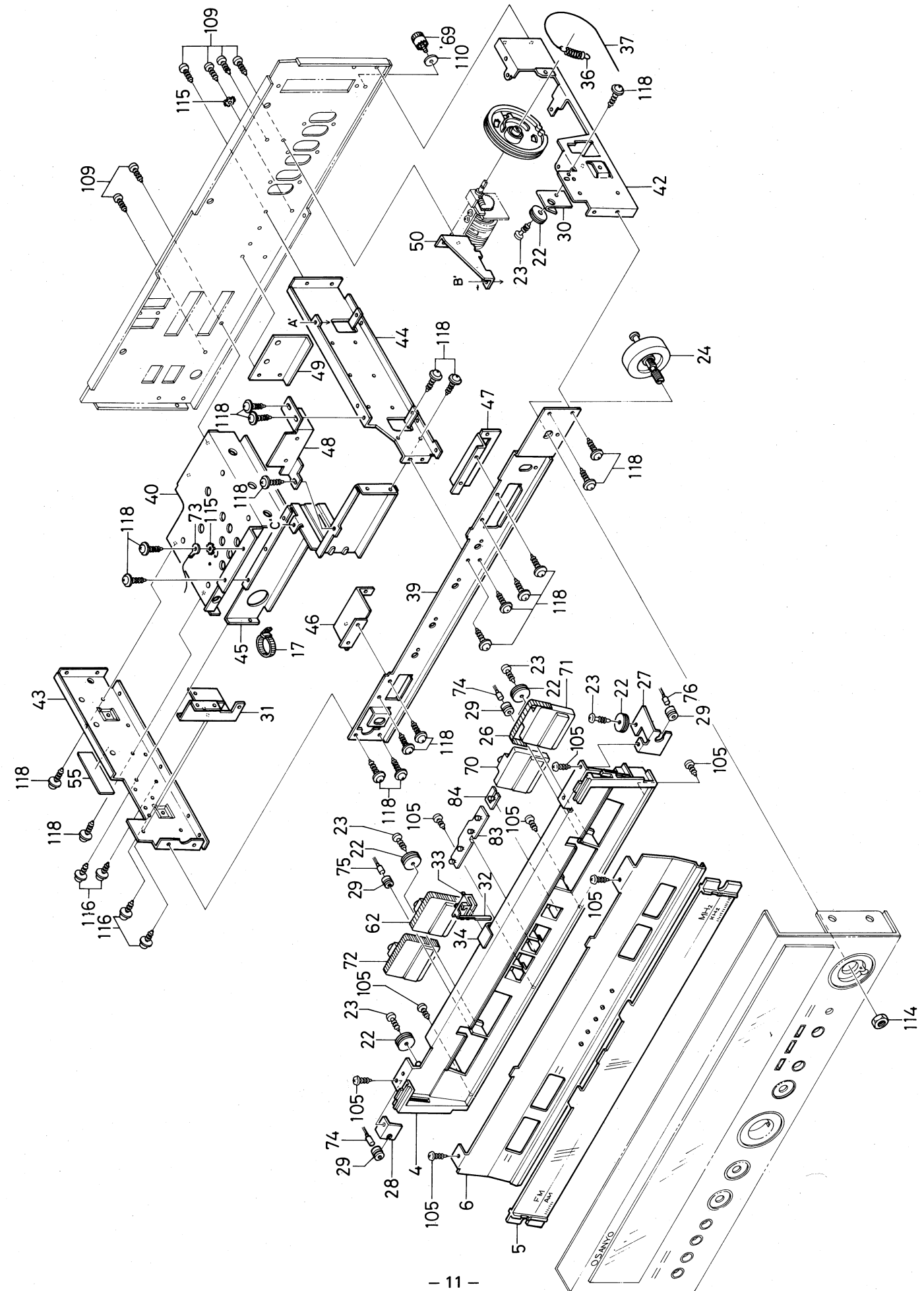
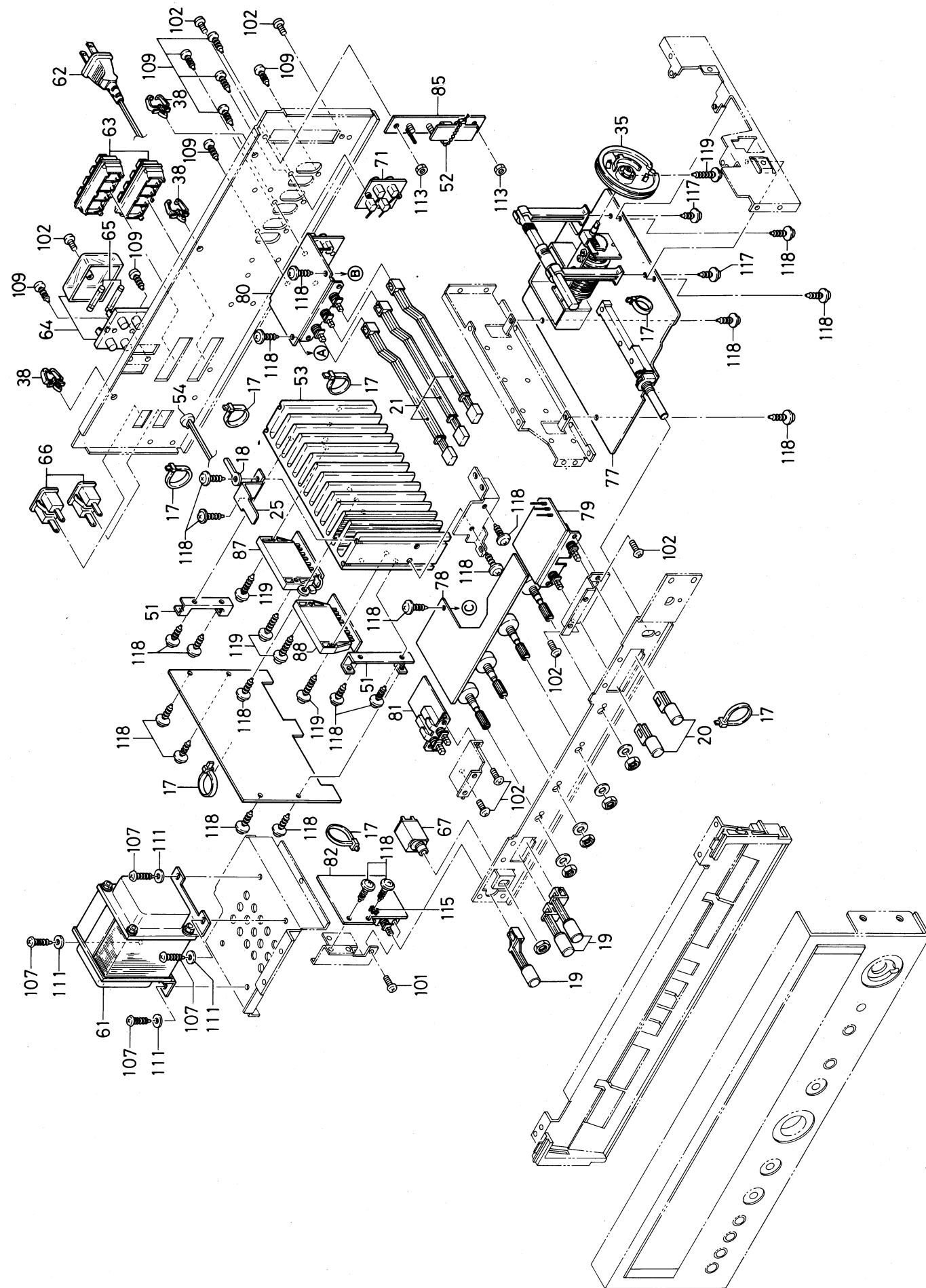
Key No.	Part No.	Description	Q'ty
TUNER PCB ASS'Y			
	RESISTORS		
R115	Carbon 1.5K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R205	Carbon 1.8K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R211	Carbon 1.8K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R215	Carbon 2.2K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R112	Carbon 2.7K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R232	Carbon 3.3K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R301,302	Carbon 3.3K ohm $\pm 10\%$ $\frac{1}{4}W$	2	
R308	Carbon 3.3K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R212	Carbon 3.9K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R315,322	Carbon 3.9K ohm $\pm 10\%$ $\frac{1}{4}W$	2	
R317,324	Carbon 4.7K ohm $\pm 10\%$ $\frac{1}{4}W$	2	
R327	Carbon 4.7K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R106	Carbon 5.6K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R213	Carbon 8.2K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R310	Carbon 8.2K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R313,320	Carbon 8.2K ohm $\pm 10\%$ $\frac{1}{4}W$	2	
R314,321	Carbon 8.2K ohm $\pm 10\%$ $\frac{1}{4}W$	2	
R316,323	Carbon 8.2K ohm $\pm 10\%$ $\frac{1}{4}W$	2	
R203	Carbon 10K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R219	Carbon 10K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R226,228	Carbon 10K ohm $\pm 10\%$ $\frac{1}{4}W$	2	
R337	Carbon 100 ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R235	Carbon 820 ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R328	Carbon 2.2K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R233	Carbon 3.3K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R214	Carbon 22K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R330,331	Carbon 22K ohm $\pm 10\%$ $\frac{1}{4}W$	2	
R209	Carbon 27K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R329	Carbon 56K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R342	Carbon 56K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R109	Carbon 56 ohm $\pm 10\%$ $\frac{1}{2}W$	1	
R220	Carbon 56 ohm $\pm 10\%$ $\frac{1}{2}W$	1	
R231	Carbon 56 ohm $\pm 10\%$ $\frac{1}{2}W$	1	
R311	Carbon 56 ohm $\pm 10\%$ $\frac{1}{2}W$	1	
R236	Carbon 10K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R305	Carbon 10K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R332	Carbon 10K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R110	Carbon 12K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R111	Carbon 15K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R218	Carbon 15K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R204	Carbon 18K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R117	Carbon 22K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R341	Carbon 22K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R103	Carbon 27K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R334	Carbon 27K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R107	Carbon 39K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R216	Carbon 56K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R306	Carbon 100K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R307	Carbon 100K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R318,325	Carbon 100K ohm $\pm 10\%$ $\frac{1}{4}W$	2	
R338	Carbon 100K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R340	Carbon 100K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R326	Carbon 100K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R227	Carbon 270K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R333	Carbon 270K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R102	Carbon 330K ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R336	Carbon 1M ohm $\pm 10\%$ $\frac{1}{4}W$	1	
R705,805	Carbon 270K ohm $\pm 5\%$ $\frac{1}{4}W$	2	
R702,802	Carbon 100K ohm $\pm 5\%$ $\frac{1}{4}W$	6	
703,803			
708,808			
R706,806	Carbon 15K ohm $\pm 5\%$ $\frac{1}{4}W$	2	
R701,801	Carbon 1.5K ohm $\pm 5\%$ $\frac{1}{4}W$	2	
R707,807	Carbon 560 ohm $\pm 5\%$ $\frac{1}{4}W$	2	
R704,804	Carbon 330 ohm $\pm 5\%$ $\frac{1}{4}W$	2	

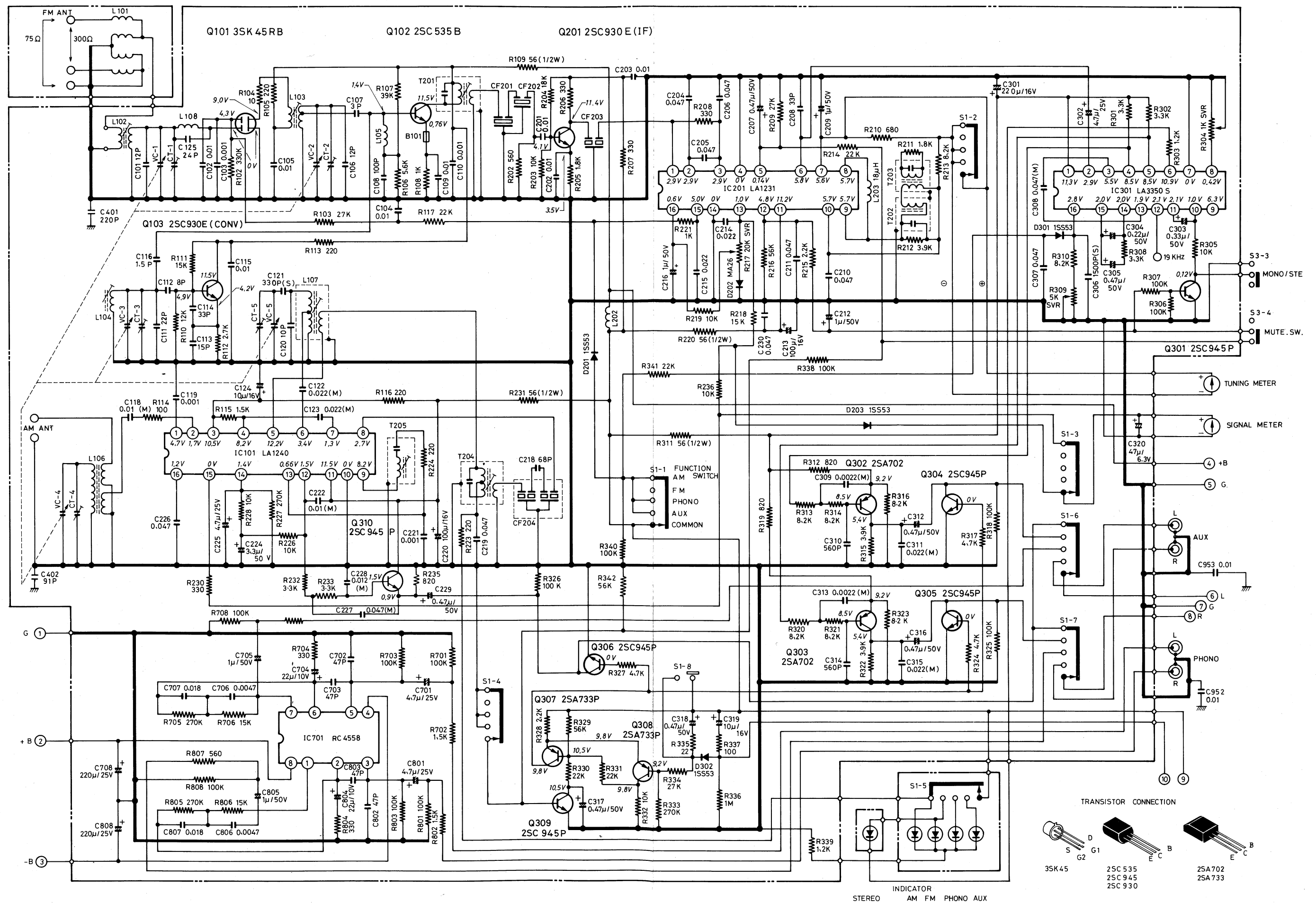
PARTS LIST

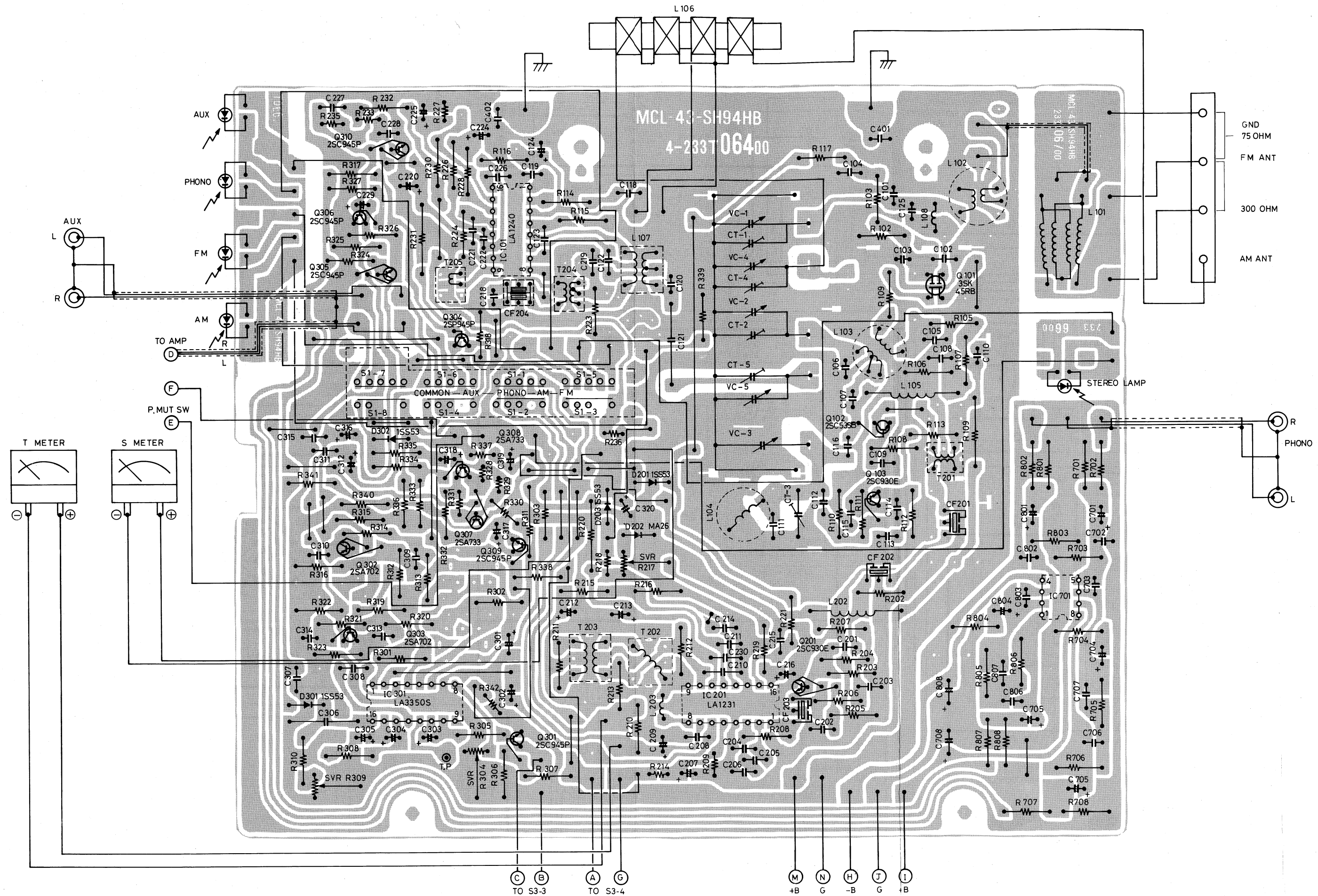
Key No.	Part No.	Description	Q'ty
SPEAKER SWITCH PCB ASS'Y			
81	141-4-233T-07300 4-238T-02100	P.C Board Ass'y, Speaker Switch Push Switch	1 1
R743,843	RESISTORS	Metal 390 ohm ±5% 1W	2
POWER SWITCH PCB ASS'Y			
82	141-4-233T-02200 4-231T-76500 4-234T-09000 4-227T-01000	P.C Board Ass'y, Power Switch Push Switch Fuse 125V, 2.5A CR Pack	1 1 1 1
R951	RESISTORS	Solid 3.3M ohm ±10% ¼W	1
FUNCTION IND. PCB ASS'Y			
83	141-4-233T-06500	P.C Board Ass'y, Function Ind. LED LP24 Red, AM/FM/ PHONO/AUX	1 4
STEREO IND. PCB ASS'Y			
84	141-4-233T-06600	P.C Board Ass'y, Stereo Ind. LED LP24 Red, Stereo	1 1
EXT ANT PCB ASS'Y			
85 L101	141-4-233T-06700 4-268T-00100 141-2-382T-12900	P.C Board Ass'y, Ext Antenna VHF Coil Terminal 4P	1 1 1
MAIN AMP PCB ASS'Y			
86 L701,801	141-4-233T-10700 4-265R-12600 4-236T-13471 4-236T-13475 4-236T-13400 141-2-368T-11000	P.C Board Ass'y, Main Amp VHF Coil Plug 2P Plug 6P Plug 1P Heatsink	1 2 1 1 1 1
Q509,609 Q508,608 Q506,606 507,607 510,610 Q503,504 505,603 604,605 Q902 Q901 D501,601 502,602 503,603 908		Transistor 2SC2363 Transistor 2SA1017 Transistor 2SC945 Transistor 2SA640 Transistor 2SA733 Transistor 2SD288 Diode DS442 X	2 2 6 6 1 1 7

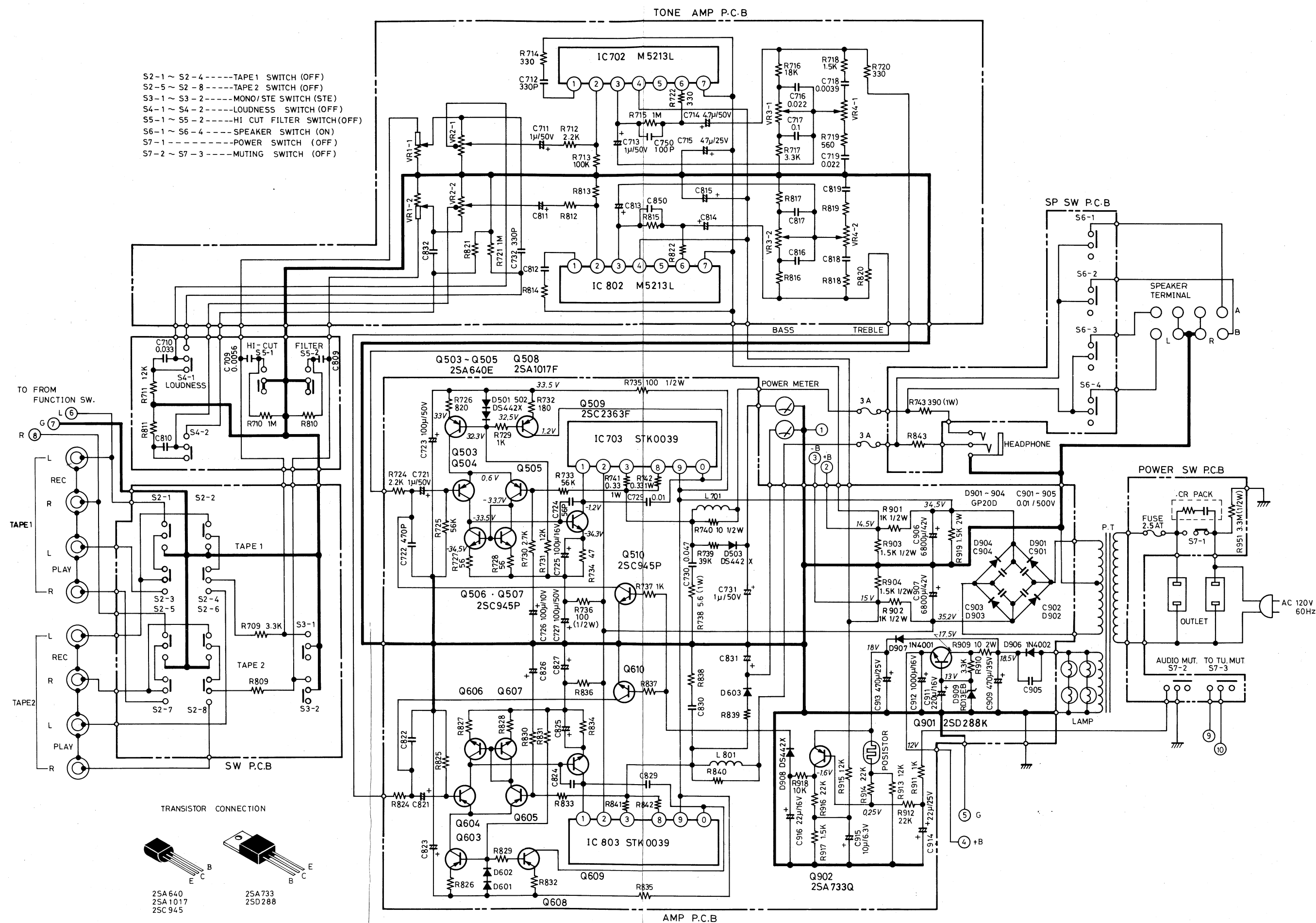
Key No.	Part No.	Description	Q'ty
MAIN AMP PCB ASS'Y			
D906 D907 D901,902 903,904 D909	CAPACITORS 4-163T-03100 		

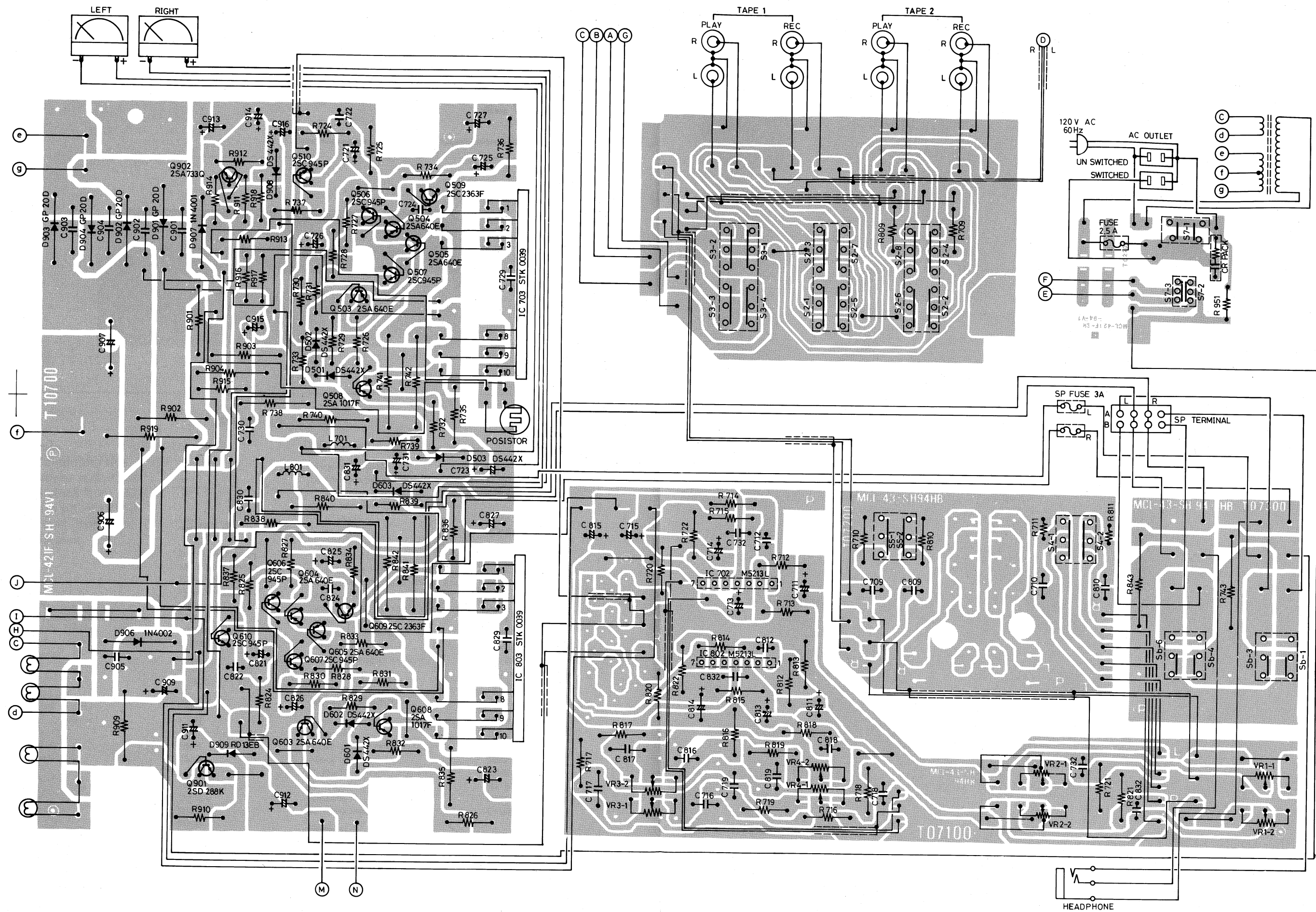
CHASSIS EXPLODED VIEW











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