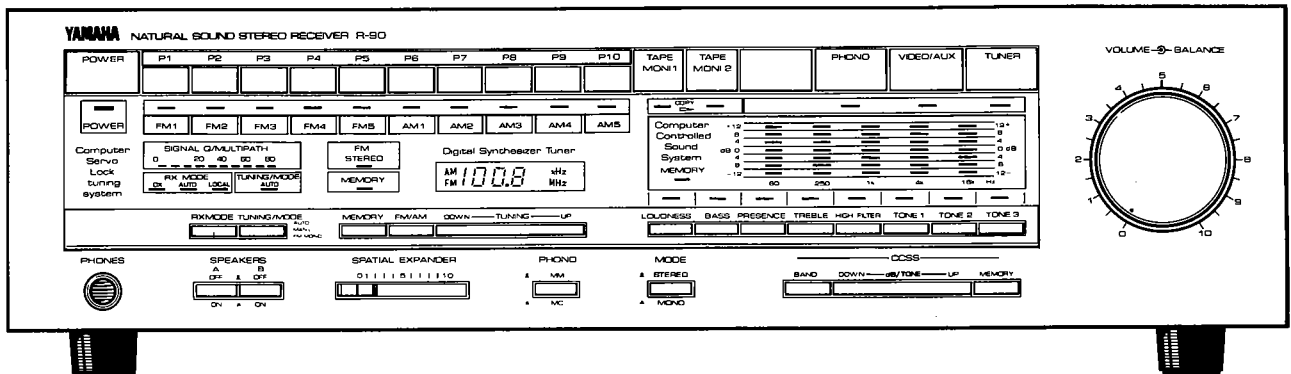


STEREO RECEIVER

R-90

SERVICE MANUAL

FRONT PANEL



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REAR PANELS	1
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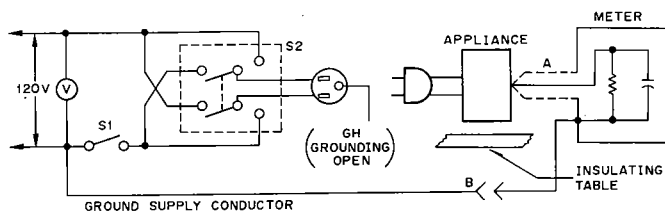


■ TO SERVICE PERSONNEL

Before service of this appliance by you, please carefully read this service manual.

Please make Leakage-current or Resistance measurements by suitable meter to determine that exposed parts are acceptably insulated from the supply circuit before returning the appliance to the customer.

LEAKAGE CURRENT MEASUREMENT CIRCUITS



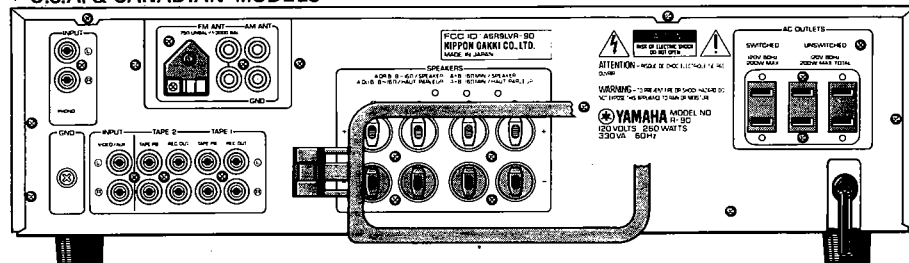
Appliance intended for connection to a 120 volt power supply.

- A : PROBE WITH SHIELDED LEAD.
- B : SEPARATED AND USED AS CLIP WHEN MEASURING CURRENTS FROM ONE PART OF APPLIANCE TO ANOTHER.

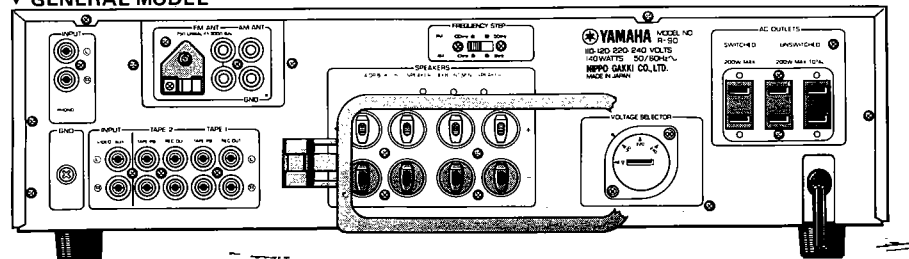
Confirm that the leakage current is not more than 0.5 mA. A.C.

■ REAR PANEL

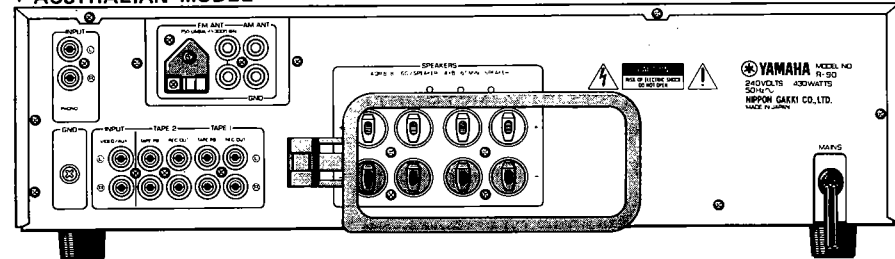
▼ U.S.A. & CANADIAN MODELS



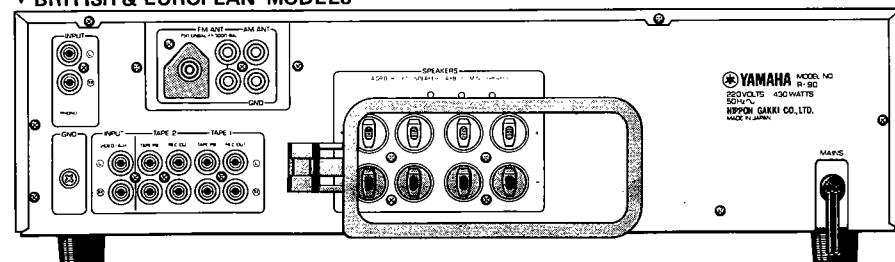
▼ GENERAL MODEL



▼ AUSTRALIAN MODEL



▼ BRITISH & EUROPEAN MODELS



SPECIFICATIONS

AUDIO SECTION

Minimum RMS Output Power per Channel

8 ohms, 20 Hz to 20 kHz, 0.01% THD	70 W
4 ohms, 1 kHz, IHF Signal (Dynamic Power)	110 W
2 ohms, 1 kHz, IHF Signal (Dynamic Power)	110 W

Dynamic Headroom

(IHF, 8 ohms)	1.5 dB
---------------	--------

Power Bandwidth

8 ohms, 0.012% THD, 35 W.	10 Hz to 30 kHz
---------------------------	-----------------

Damping Factor

(8 ohms, 1 kHz)	45
-----------------	----

Input Sensitivity/Impedance

Phono MM	2.5 mV/47 k-ohms
Phono MC	160 μ V/100 ohms
Aux/Tape/Tuner	120 mV/47 k-ohms

Input Sensitivity (New IHF)

Phono MM	0.3 mV
Phono MC	19 μ V
Aux/Tape/Tuner	14 mV

Maximum Input Level

(1 kHz, 0.02% THD)	
Phono MM	110 mV
Phono MC	7 mV

Output Level/Impedance

Rec Out	120mV/4.7kohms
---------	----------------

Headphone Output/Impedance

(0.02% THD)	0.68 V/270 ohms
-------------	-----------------

Frequency Response

Aux/Tape/Tuner (20 Hz to 20 kHz)	+0, -1 dB
-------------------------------------	-----------

RIAA Deviation

Phono MM (20 Hz to 20 kHz)	± 0.5 dB
Phono MC (50 Hz to 20 kHz)	± 0.5 dB

Total Harmonic Distortion (20 Hz to 20 kHz)

Phono MM to Rec Out (1 V)	0.008%
Phono MC to Rec Out (1 V)	0.008%
Aux/Tape/Tuner to Sp Out (1 W/8 ohms)	0.008%

Intermodulation Distortion

Aux/Tape/Tuner (Rated Power/8 ohms)	0.01%
--	-------

Signal-to-Noise Ratio (IHF A Network)

Phono MM (5 mV, Input Shorted)	88 dB
Phono MC (500 μ V, Input Shorted)	75 dB
Aux/Tape/Tuner (AM position, Input Shorted)	100 dB

Signal-to-Noise Ratio (New IHF)

Phono MM	72 dB
Phono MC	74 dB
Aux/Tape/Tuner (AM Position)	81 dB

Residual Noise

(IHF A Net work)	140 μ V
------------------	-------------

Channel Separation (1 kHz)

Phono MM (Input Shorted)	60 dB
Aux/Tape (5.1 k-ohms Shorted)	60 dB

Filter Characteristics

Low (Subsonic, Built-in)	15 Hz, -12 dB/oct
--------------------------	-------------------

CCSS Tone Control Characteristics

Loudness	
Preset 60/250/1k/4k/16kHz.	-1/-4/-7/-7/-4dB ± 2 dB
Max. 60/250/1k/4k/16kHz.	-4/-10/-13/-13/-6dB ± 2 dB
Bass	
Preset 60/250/1k/4k/16kHz.	9/6/4/1/0dB ± 2 dB
Max. 60/250/1k/4k/16kHz.	12/10/4/1/0dB ± 2 dB
Presence	
Preset 60/250/1k/4k/16kHz.	0/4/6/9/3 dB ± 2 dB
Max. 60/250/1k/4k/16kHz.	0/4/9/12/3 dB ± 2 dB
Treble	
Preset 60/250/1k/4k/16kHz.	0/1/4/7/9 dB ± 2 dB
Max. 60/250/1k/4k/16kHz.	0/1/4/9/12 dB ± 2 dB
High Filter	
Preset 60/250/1k/4k/16kHz.	0/-1/-4/-7/-10 dB ± 2 dB
Max. 60/250/1k/4k/16kHz.	0/-1/-4/-9/-13 dB ± 2 dB

FM SECTION

Tuning Range 87.5 to 108.0 MHz

50 dB Quieting Sensitivity (IHF, 75 ohms)
Mono/Stereo 1.5 μ V (14.8 dBf)/
20 μ V (37.3 dB)

Usable Sensitivity (30 dB Quieting,

75 ohms, Mono) 0.75 μ V (8.8 dBf)

Image Response Ratio 75 dB

IF Response Ratio 95 dB

Spurious Response Ratio 95 dB

AM Suppression Ratio 66 dB

Capture Ratio 1.2 dB (Local)

2.5 dB (DX)

Alternate Channel Selectivity

(IHF) 35 dB (Local)/85 dB (DX)

Signal-to-Noise Ratio (IHF)

Mono/Stereo 88 dB/ 83 dB

Harmonic Distortion (Local)

Mono 0.05%/0.05%/0.1%

Stereo 0.07%/0.07%/0.15%

Stereo Separation (IHF, Local)

50 Hz/1 kHz/10 kHz 50 dB/50 dB/45 dB

Frequency Response

50 Hz to 10 kHz ± 0.3 dB

30 Hz to 15 kHz $+0.3, -0.5$ dB

Subcarrier Product Ratio (IHF) 55 dB

AM SECTION

Tuning Range 510 kHz to 1,620 kHz

Usable Sensitivity 250 μ V/m

Selectivity 25 dB

Signal-to-Noise Ratio 52 dB

Image Response Ratio 40 dB

Spurious Response Ratio 50 dB

Harmonic Distortion (400 Hz) 0.3%

Output Level/Impedance (Fixed)

FM 100% mod. 1 kHz 500 mV/5 k-ohms

AM 30% mod. 400 Hz 150 mV/5 k-ohms

GENERAL

Power Supply

US and Canadian Models AC 120V/60Hz

General Model AC 110V, 120V, 220V,
240V 50/60Hz

European Model AC 220V 50Hz

British and Australian Models AC 240V 50Hz

Power Consumption

260W (U,C)

140W (R)

430W (B,G,A)

AC Outlet

Switched x 1 200 W max.

Unswitched x 2 200 W max. total

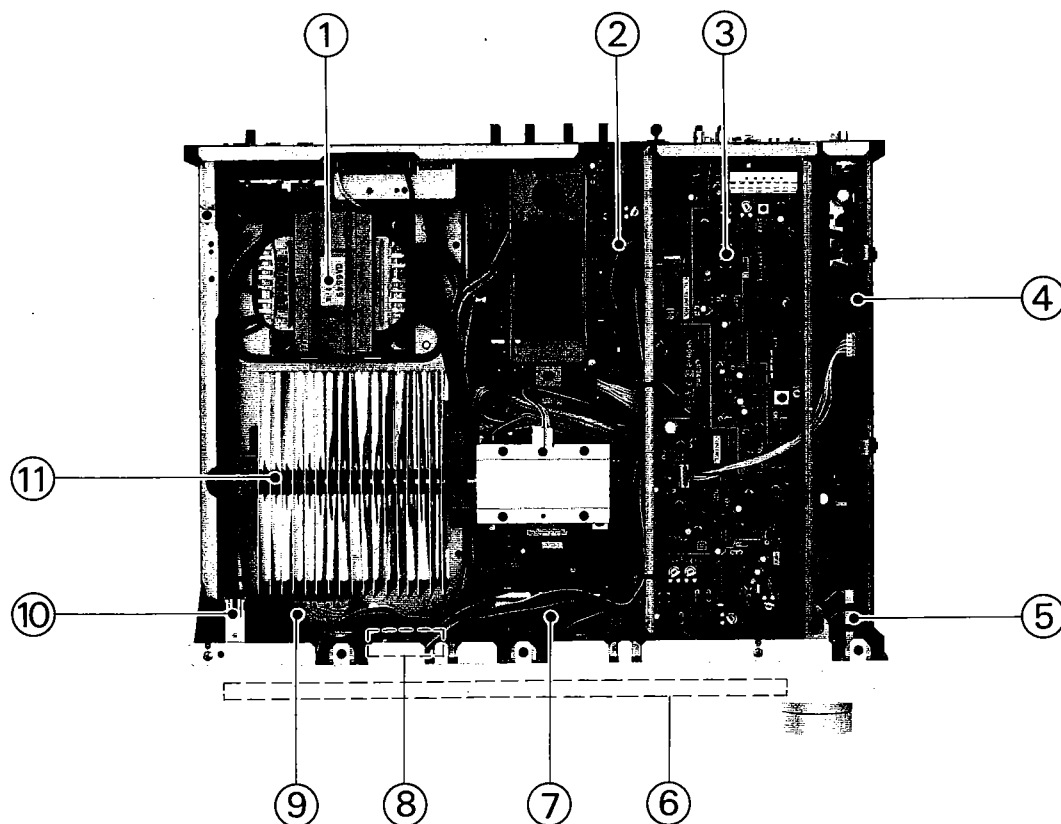
Dimensions (W x H x D) 435 x 122 x 386 mm
(17-1/8" x 4-13/16" x
15-3/16")

Weight 9.6 kg (21 lbs. 2 oz.)

Specifications subject to change without notice.

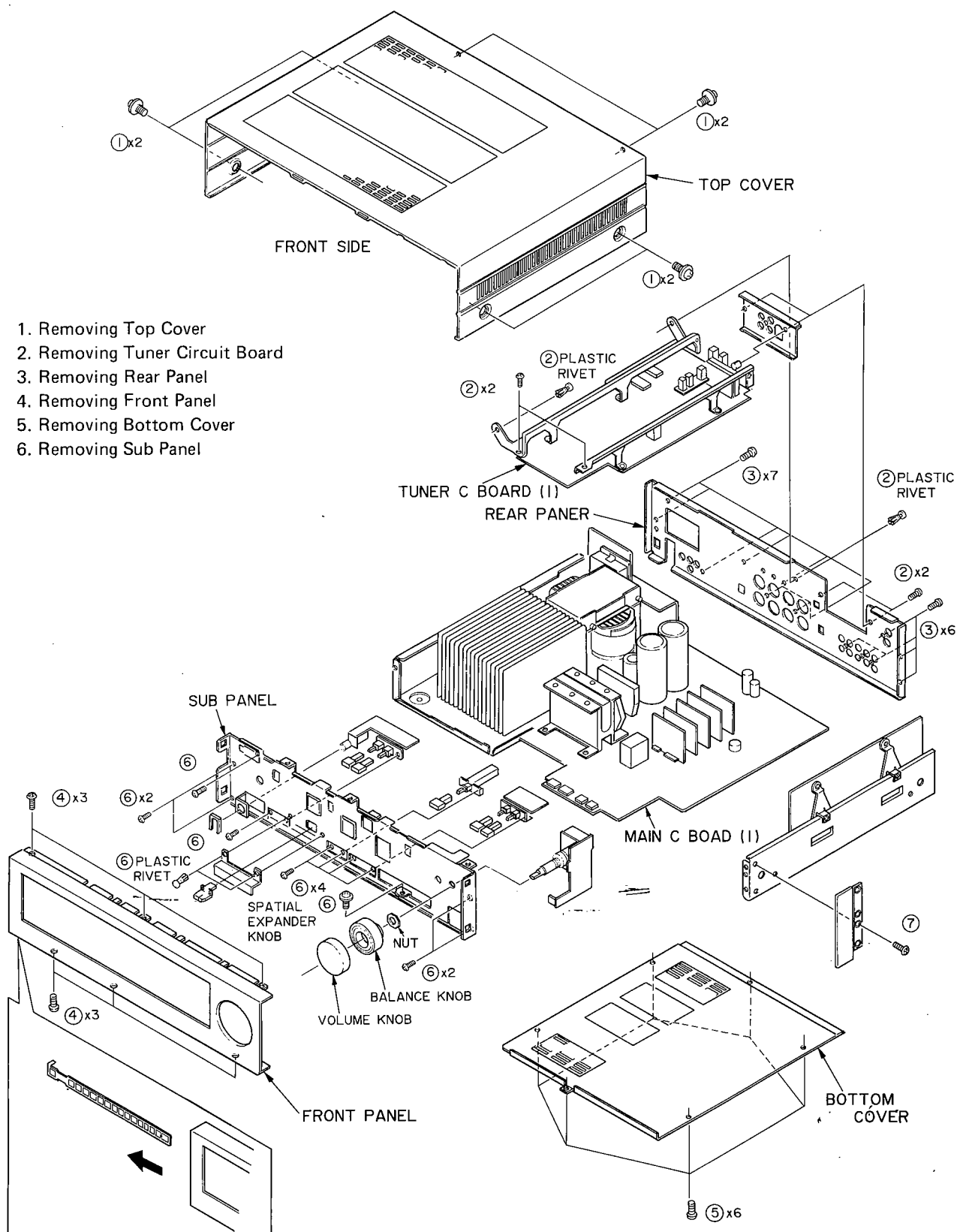
U	U.S.A Model
C	Canadian Model
A	Australian Model
B	British Model
G	European Model
R	General Model

■ NAMES OF THE PARTS



- 1 Power Transformer
- 2 Main Circuit Board (1)
- 3 Tuner Circuit Board (1)
- 4 Tuner Circuit Board (2)
- 5 CCSS Circuit Board (7)
- 6 Key Board Unit
- 7 Main Circuit Board (3)
- 8 Main Circuit Board (4)
- 9 Main Circuit Board (2)
- 10 Power Switch
- 11 Heat Sink

DISASSEMBLY INSTRUCTIONS (Remove parts in order of disassembly as numbered)



■ GENERAL ADJUSTMENTS

1 Confirmation of Audio Section

Step	Confirmation	Test Point	Rating or Standard	Adjustment Method	Remark
1	Gain	IC415 (Lch) IC416 (Rch) Across pin 8 and E.	+10V \pm 1V	Apply a 1kHz, 100 mV sine wave signal to the points "BL" and "BR".	
2	DC offset	IC415 (Lch) IC416 (Rch) Across pin 8 and E.	0V \pm 70 mV DC		
3	Phono Amp.	PL, PR	+120mV \pm 20mV	Apply a 1 kHz, 2.5mV sine wave signal to phono input.	Phono selector set to MM.
				Apply a 1 kHz, 160 μ V sine wave signal to phono input.	Phono selector set to MC

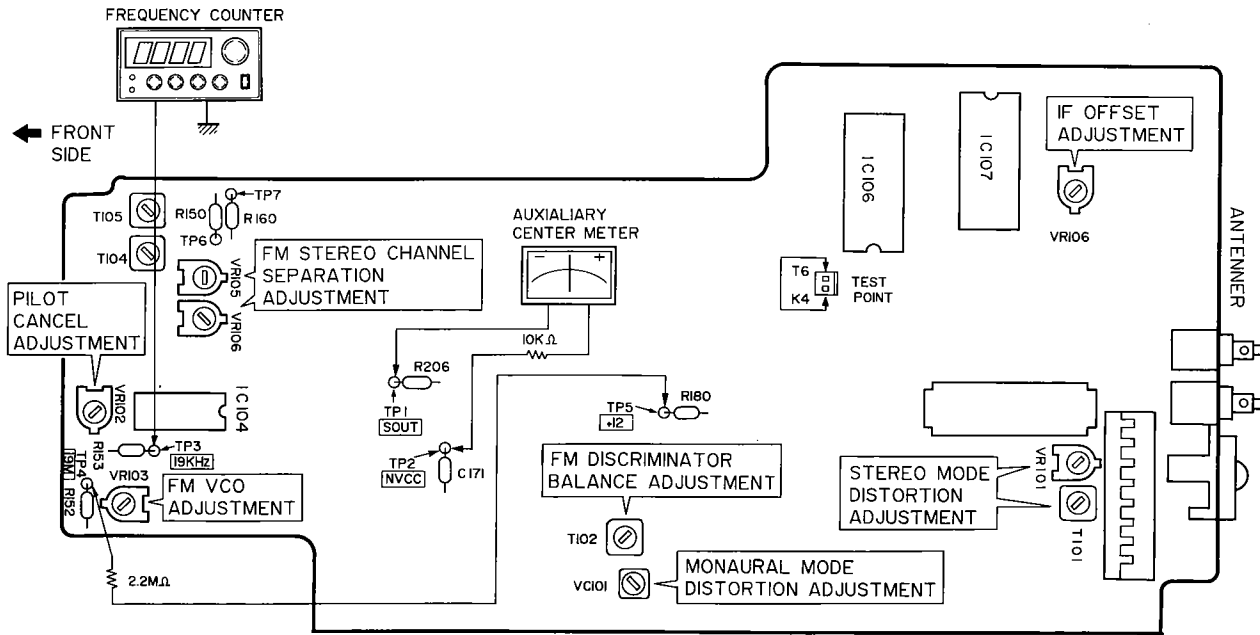
2 FM Tuner Section General Adjustments.

- Start with the adjustment procedure more than 3 minutes after switching on the power.

Step	Adjustment Item	Connection Terminal	Test Equipment	Adjustment Point	Adjustment Procedure	Specification (Standard Value)	Remarks
1	Discriminator balance	300 ohms ANT terminals REC OUT	FM signal generator, Stereo signal generator distortion meter, oscilloscope.	T102 (DISCRI CENTER)	Adjust the core of T102 for tuning meter zero deflection.		FUNCTION SW: FM De-tuned condition RX Mode: AUTO
2	Tuning point setting.	TP1 SOUT TP2 NVCC	Connect a tuning meter via a 10 kohm resistor.				
3	Adjustment of monaural-mode distortion.		Antenna input 70 dB μ 98 MHz (75.2dBf) ↓ Monaural 100 Hz (400 Hz) 100% modulation.	TUNING MODE= AUTO UP or DOWN SW VC101 (MONO DIST)	Confirm that the designated frequency is received at appr. zero deflection of the tuning meter. Adjust for minimum distortion.	< (-64dB)	
4	VCO adjustment.	TP3 19kHz GND TP4 19M TP5 +12	Zero modulation Connect a frequency counter. Connect a 2.2M Ohms resistor. (→ forced stereo)	VR103 (VCO)	Adjust for forced stereo at 19 kHz.	19KHz \pm 20 Hz (\pm 10 Hz)	Stereo indicator lit.
5	Adjustment of stereo-mode distortion		Disconnect the frequency counter and 2.2M Ohms resistor. Stereo L or R 1 kHz 100% modulation.	T101, VR101 (ST. DIST)	Adjust for minimum distortion. (Do not turn T101 excessively, as this will impair sensitivity.)	< -55 (60) dB.	

Step	Adjustment Item	Connection Terminal	Test Equipment	Adjustment Point	Adjustment Procedure	Specification (Standard Value)	Remarks
6	Monaural-mode distortion check		Monaural 1 kHz 100% modulation.		Confirm that monaural-mode distortion is within specifications.	< -60 (55) dB.	
7	Adjustment of channel separation.		Stereo L or R 1 kHz 100% modulation.	VR105 VR106	Adjust for maximum L → R and R → L channel separation.	> 42 (60) dB	
8	Adjustment of pilot signal cancellation		Pilot signal 9% only	VR102 (PILOT CANCEL)	Adjust for minimum carrier leak level.	> 46 (60) dB	
9	Signal indicator check				Confirm that all indicators are lit. (All out in detuned condition.)		
10	Discriminator balance check		Antenna input -10 dBμ (-4.8dBf)		Confirm that tuning meter deflection is zero.		If not satisfactory, repeat adjustment procedure of step 1.
11	IF offset adjustment	Short-circuit the TEST terminals K4 and T6.	Antenna input (75.2dBf) (98 MHz ±1 kHz).	VR106 (FM FINE)	By short-circuiting the TEST terminals, counter indication is shifted by one digit. Adjust the VR so that the 10 kHz digit becomes 9 or 0.		
12	Auto Search reception check	TEST terminals open.	Antenna input 20 dBμ (25.2dBf) 1kHz 100% modulation.		Confirm that Auto tuning is possible using the UP and DOWN switches. (Tuning mode : AUTO)		Confirm that the audio output muting is active during Search.

ADJUSTING POINTS



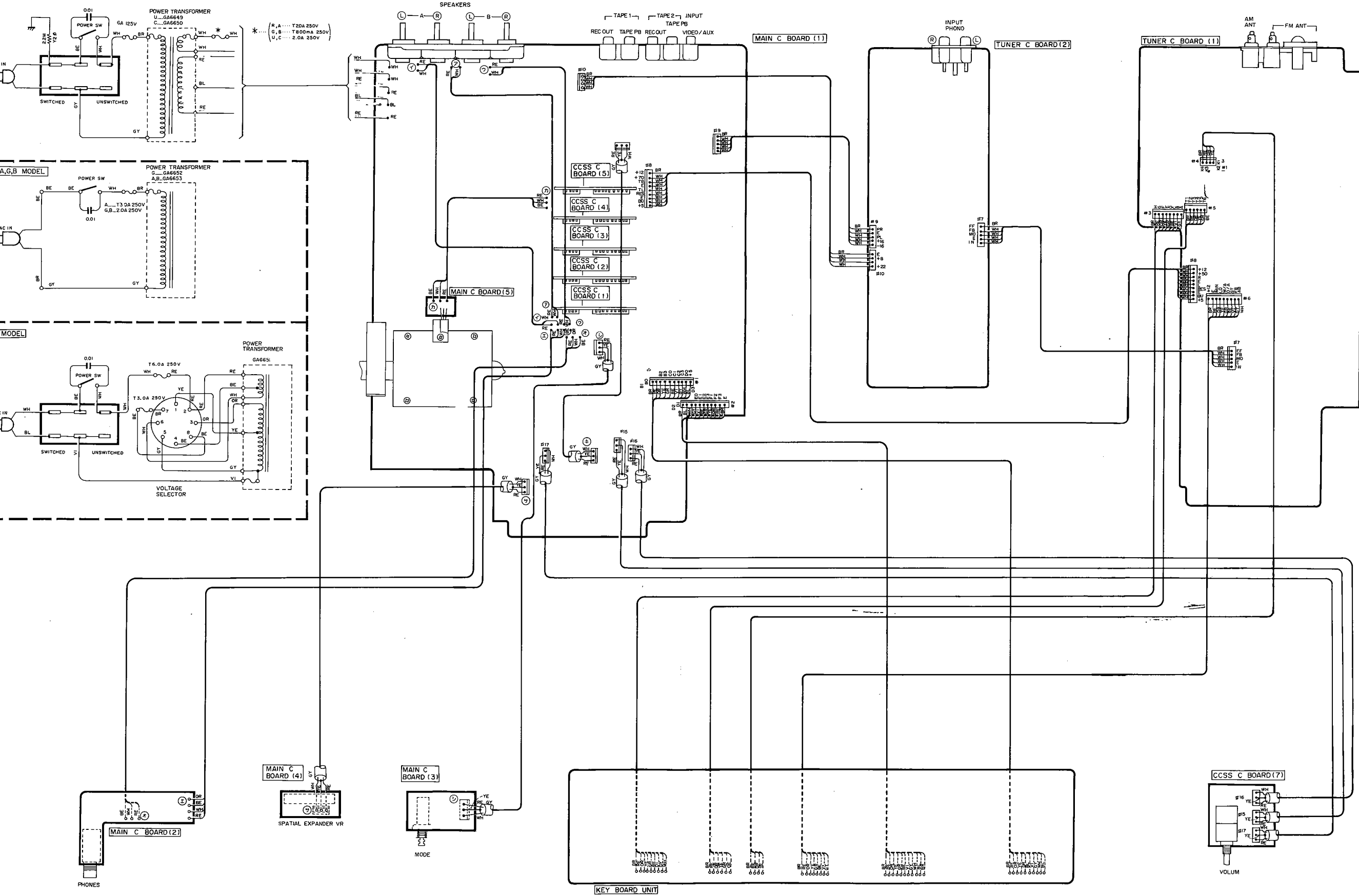
3 AM Tuner Section Specifications Check

Step	Adjustment Item	Connection Terminal	Test Equipment	Adjustment Point	Adjustment Procedure	Specification (Standard Value)	Remarks
1		AM ANT. GND REC. OUT	Am signal generator, dummy antenna, oscilloscope, distortion meter.		* When the TEST terminals are short-circuited in the FM mode, the AM frequencies 630 kHz, 1440 kHz and 1080 kHz are automatically programmed in the preset memories 1 ~ 3. (If AM check is to be performed before FM adjustment, set the unit first to the FM mode and short-circuit the TEST terminals.)		FUNCTION SW : AM
2	Sensitivity check.		400 Hz 30% modulation. 630 kHz 1440kHz 1080 kHz	Preset SW 1 Preset SW 2 Preset SW 3	Confirm sensitivity.	< 55 (52) dBμ < 55 (52) dBμ < 55 (52) dBμ	
3	Signal indicator check		1080 kHz Antenna input 80 dBμ	Preset SW 3	Confirm that all indicators are lit. (All out in detuned condition.)		
4	Auto Search reception check.		Antenna input 60 dBμ		Confirm that Autotuning is possible using the UP and DOWN switches. (Tuning mode : AUTO)		

4 Digital Control Section Specifications Check (This check can be performed during 1 or 2.)

Step	Adjustment Item	Connection Terminal	Test Equipment	Adjustment Point	Adjustment Procedure	Specification (Standard Value)	Remarks
1	Preset check	300 ohms ANT Terminals AM ANT	FM signal generator FM 98 MHz 70 dBμ Mono 1 kHz 100% modulation AM signal generator AM 1080 kHz 80 dBμ 400 Hz 30% modulation. AM dummy ANT	FUNCTION FM AM TUNING MODE AUTO UP, DOWN SW MEMORY SW CHANNEL SW	1. Tune to FM 98 MHz and memorize into Preset 1. 2. Tune to AM 1080 kHz and memorize into Preset 2. 3. Press Preset 1 and 2 and confirm that correct memory contents are retrieved.	• Memory switch pressed → Memory LED lights up → Preset 1 pressed → Memory LED goes out, Preset 1 LED lights up. • Memory switch pressed → Memory LED lights up, Preset 1 LED flashes → Preset 2 pressed → Memory LED goes out, Preset 2 LED lights up. • Preset 1 and 2 LEDs both lit.	
2	Last-channel memory check			POWER SW	1. Select Preset 1. 2. Set the power switch to Off. 3. Set the power switch to On again after 5 seconds. 4. Confirm that unit is tuned to Preset 1 frequency. (Preset indicator does not light.)		

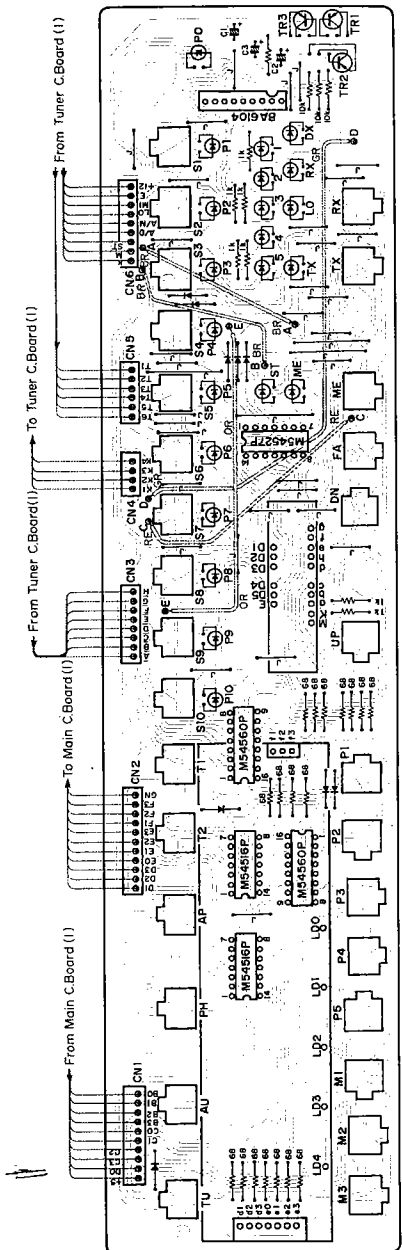
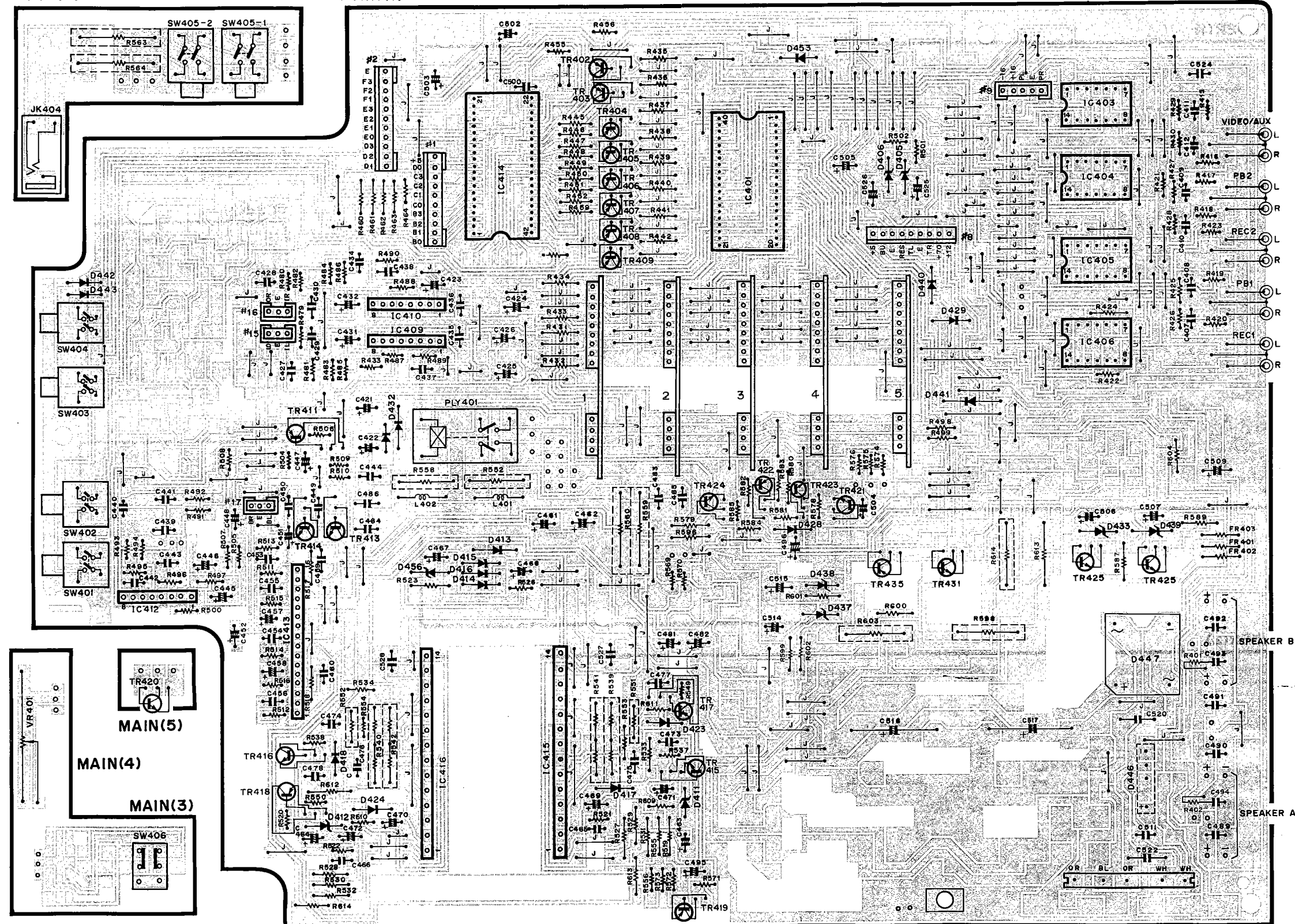
WIRING



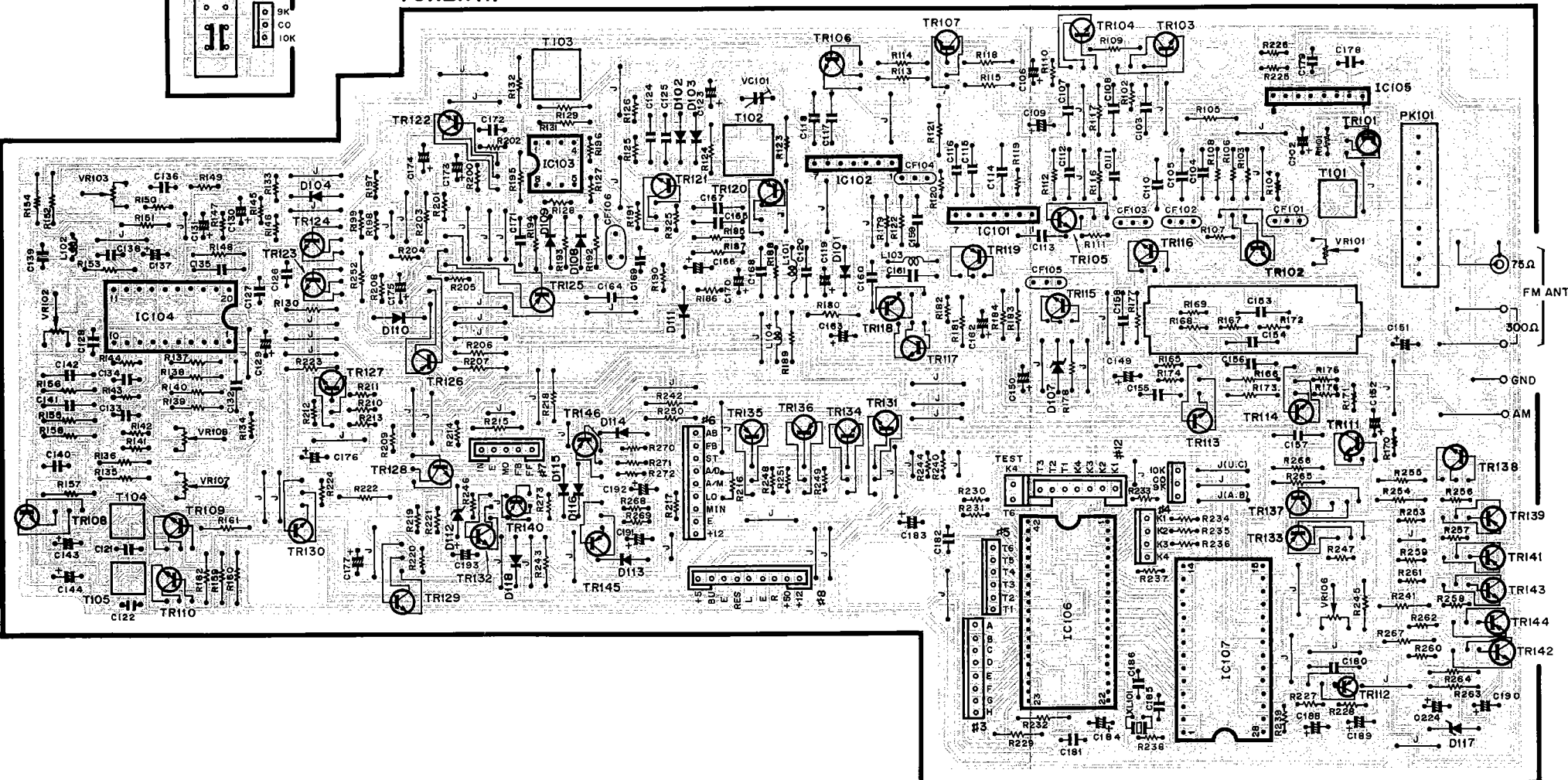
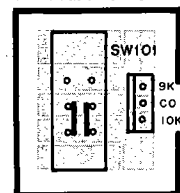
PRINTED CIRCUIT BOARD LAYOUT

MAIN(2)

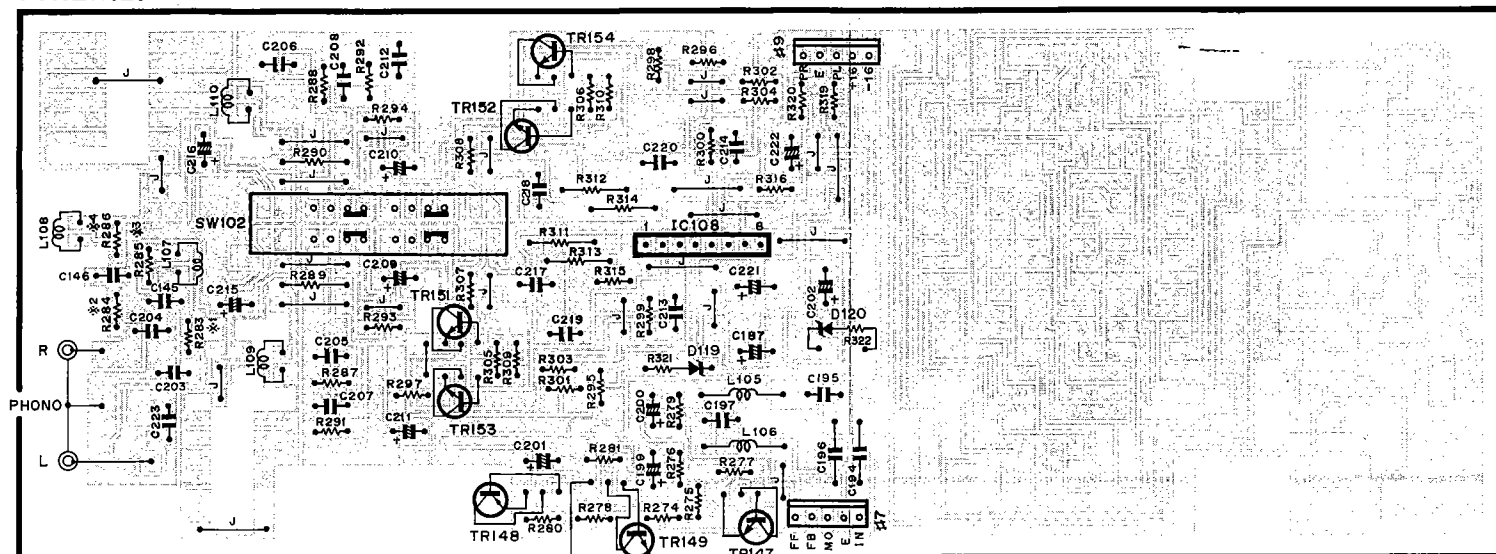
MAIN(1)

KEY BOARD
CIRCUIT BOARD

TUNER(1)

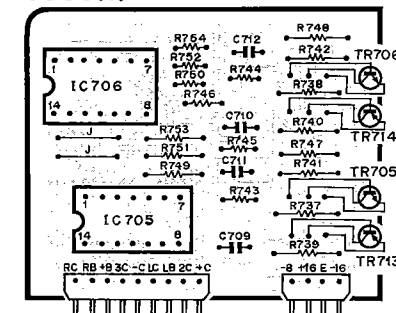


TUNER(2)

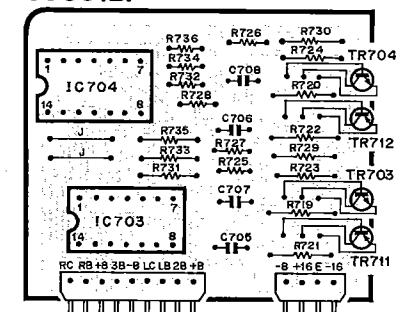


	R, U, A, C, B, Model	G Model
※1	Jamp	R283
※2	Jamp	R284
※3	Jamp	R285
※4	Jamp	R286

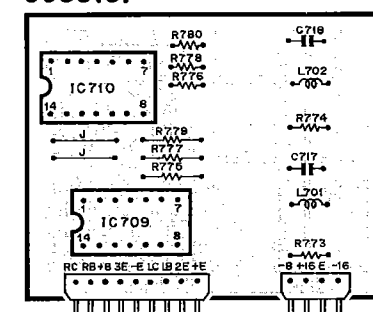
CCSS(1)



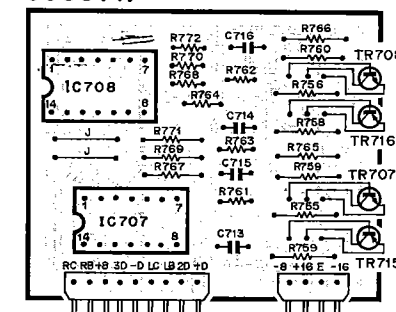
CCSS(2)



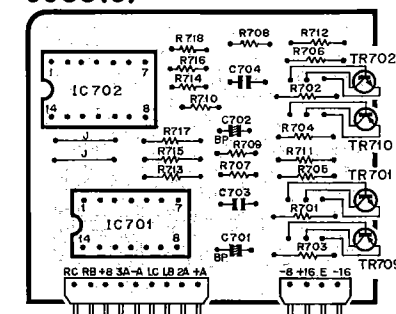
CCSS(3)



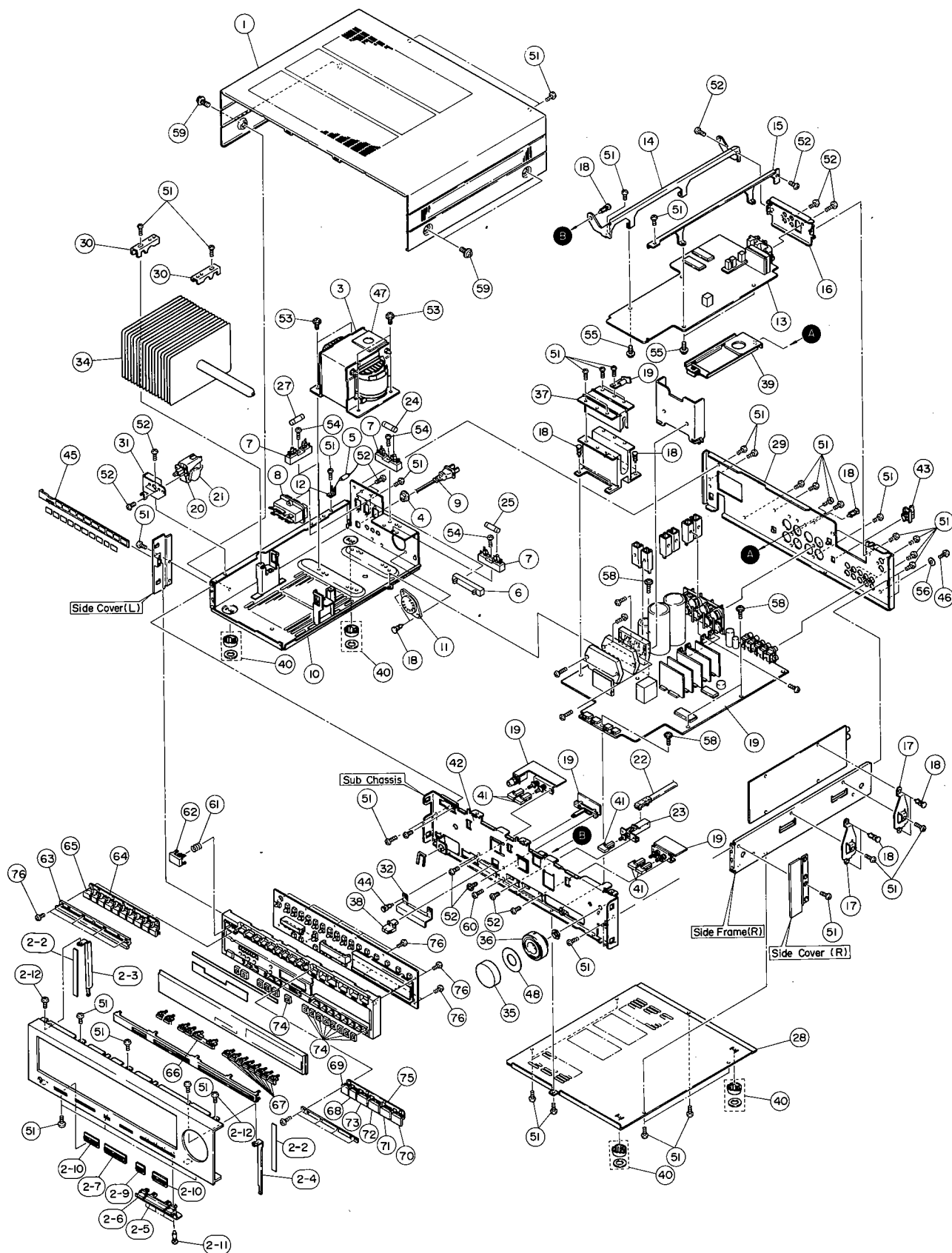
CCSS(4)



CCSS(5)



EXPLODED VIEW (Allover)



PARTS LIST (Allover)

Ref. No.	Part No.	Description	部 品 名	Remarks	Common Model	Markets	ランク
1	AA 61 65 00	Top Cover	トップカバー		R90	R,U,C	
※ 1-1	NB 61 25 10	Top Cover Unit	トップカバーユニット		R90	A,G,B	
※ 2	NB 61 25 20	Panel Unit	パネルユニット				
※ 2-1	PB 06 28 30	Key Board Unit	キーボードユニット				
2-3	AA 61 67 20	Holder for Unit(L)	ユニットホルダー(L)		R-70		
2-4	AA 61 67 30	" (R)	" (R)		"		
2-5	CB 61 82 40	Button, See-Saw	シーソーボタン		"		
2-6	CB 61 82 50	Button, Single	シングルボタン		"		
2-7	CB 61 83 10	Frame, Slide	スライド枠		"		
2-9	CB 60 80 50	Frame, IP	IPワク		R-30		
2-10	CB 60 80 60	" 2P	2Pワク		K-300		
2-11	CB 06 88 80	Plastic Rivet	φ3.5 プラスチックリベット				
2-21	ED 03 00 66	Bind Head Screw	3×6(ZMC2-Y) 鉄バインド小ネジ				
2-2	CB 07 41 90	Adhesive Tape					
※ 3	GA 66 51 00	Power Transformer	電源トランス			R	
※ "	GA 66 49 00	"	"			U	
※ "	GA 66 50 00	"	"			C	
※ "	GA 66 52 00	"	"			G	
※ "	GA 66 53 00	"	"			A,B	
4	CB 07 27 50	Cord Stopper	SR-4N-4 コードストッパー				
5	HG 30 92 20	Carbon Resistor	2.2MΩ 1/2P RD50S(J) カーボン抵抗			U,C	
6	LA 00 29 50	Terminal Board 2P	MA0092A 2P中継端子台			A,G,B	
7	LB 20 13 00	Fuse Holder	ヒューズホルダー			R,U,C	
"	LB 20 21 10	"	"			A,G,B	
8	LB 60 48 10	AC Outlet	M7026-B ACアウトレット3連			R,U,C	
9	MG 00 07 80	AC Cord (Black 2m)	6A 250V 電源コード			R	
"	MG 00 09 20	" (Gray 2.5m)	7.5A 250V "			A	
"	MG 00 09 50	" (Gray 2m)	2.5A 250V "			G	
"	MG 00 10 00	" (Gray (Black 2m))	6A 300/500V "			B	
"	MG 00 14 50	" (Black 1.98m)	10A 125V "	Inter-changeable		U,C	
"	MG 00 14 60	" (Black 2m)	10A 125V "			U,C	
10	AA 61 65 30	Holder Transformer	トランスホルダー		R-70		
11	LB 20 14 80	Voltage Selector	0211 電圧切換器			R	
12	LA 00 44 30	Lug Terminal	P-217 ラグターミナル			U,C	
※ 13	NA 08 18 20	Tuner Circuit Board	チューナシート			R	
※ "	NA 08 18 30	"	"			U,C	
※ "	NA 08 18 40	"	"			A,B	
※ "	NA 08 18 50	"	"			G	
14	AA 61 66 80	Stay, Hinge	ヒンジステイ				
15	AA 61 66 90	" , Tuner	チューナステイ				
16	AA 61 67 00	Panel, Antenna	アンテナパネル			U,C,A	
"	AA 61 83 20	"	"			R	
17	AA 61 67 50	Holder, C.Board	シートホルダー				
18	CB 06 88 80	Plastic Rivet	φ3.5 プラスチックリベット				
※ 19	NA 08 19 60	Main Circuit Board	メインシート			R,A,B	
※ "	NA 08 19 70	"	"			U,C	
"	NA 08 19 80	"	"			G	
※ 20	KA 80 24 30	Power Switch	4A/128A パワースイッチ			A,G,B	
"	KA 80 25 40	"	TV-8 "			R,U,C	
21	Fi 38 41 50	Ceramic Capacitor	セラコン				
※ 22	KA 90 53 60	Remote Push Switch	Wire Section リモートプッシュSW				

※ : New Parts (新部品)

[illegible]

※ : New Parts (新部品)

■ KEY BOARD UNIT (100S)

[illegible]

※ : New Parts (新部品)

PARTS LIST (Mecha)

Ref. No.	Part No.	Description	部 品 名	Remarks	Common Model	Markets	ランク
	NA:08:18:20	Tuner Circuit Board	チューナーシート			R	
	NA:08:18:30	"	"			U, C	
	NA:08:18:40	"	"			A, B	
	NA:08:18:50	"	"			G	
	FG:41:21:00	Ceramic Capacitor	100PF 50V (K)	セラコン	C203, 204	G	
	FG:41:22:20	"	220PF "	"	C207, 208	R, U, C, A, B	
	FG:41:24:70	"	470P "	"	C207, 208	G	
	FG:41:22:70	"	270PF "	"	C145, 146		
	FG:41:31:00	"	1000PF "	"	C169, 179		
	FG:44:41:00	"	0.01 μ F 50V (Z)	"	C128, 178, 182, 223		
	Fi:19:12:20	Ceramic Capacitor	22PF 50V, CH (J)	セラコン	C185, 186		
	Fi:19:14:70	"	47PF 50V	円筒形セラコン	C110		
	Fi:19:21:00	"	100PF "	"	C124, 125		
	FG:21:31:00	"	1000PF "	"	C120, 159, 196		
	FG:21:24:70	"	470PF "	"	C194		
	FG:21:34:70	"	4700PF "	"	C132, 141, 142		
	Fi:22:41:00	"	0.01 μ F 25V	"	C103~105, 107, 108, 111~118, 154~157, 160, 161, 165, 167, 168, 171, 180		
	Fi:22:41:00	Ceramic Capacitor	0.01 μ F 25V	円筒形セラコン	C164	G	
	Fi:22:42:20	"	0.022 μ F "	"		R, U, A, C, B	
	Fi:22:42:20	"	" "	"	C135, 153, 158		
	FS:25:26:80	SA Capacitor	680PF 50V (J)	フォーミング, SAコン	C136		
	FU:35:12:70	Mica Capacitor	27PF 500V (F, E)	マイカコン	C181		
	UA:25:24:70	Mylar Capacitor	470PF 50V (J)	マイラーコン	C133, 134	A, G, B	
	UA:25:26:80	"	680PF "	"		R, U, C	
	UA:25:26:80	"	" "	"	C127	R, U, A, C, B	
	UA:25:31:00	"	1000PF "	"		G	
	UA:25:31:50	"	1500PF "	"	C126		
	UA:25:28:20	"	820PF "	"	C121, 122	R, U, A, C, B	
	UA:25:32:20	"	2200PF "	"		G	
	UA:25:36:80	"	6800PF "	"	C140		
	UA:25:36:80	"	6800P "	"	C213, 214	R, U, A, C, B	
	UA:25:42:20	"	0.022 μ F "	"		G	
	UA:25:41:00	"	0.01 μ F "	"	C138, 139, 205, 206		
	UL:46:61:00	Electrolytic Capacitor	1 μ F 50V	ケミコン			
	Ui:93:82:20	"	220 μ F 16V	"	C192		
	UA:25:41:50	Mylar Capacitor	0.015 μ F "	"	C197		
	UA:25:41:60	"	0.016 μ F "	"	C219, 220		
	UA:25:44:70	"	0.047 μ F "	"	C172, 195		
	UA:25:45:60	"	0.056 μ F "	"	C217, 218		
	Ui:91:74:70	Electrolytic Capacitor	47 μ F 6.3V	"	C193		
	UW:91:82:20	"	220 μ F "	"	C123		
	Ui:91:91:00	"	1000 μ F "	"	C215, 216		
	UW:93:71:00	"	10 μ F 16V	"	C102, 109, 119, 129, 130, 149, 163, 170, 176, 183, 189, 175		
	UW:93:73:30	Electrolytic Capacitor	33 μ F 16V	ケミコン	C150, 190		
	UW:93:74:70	"	47 μ F "	"	C191, 211, 212		

※ : New Parts (新部品)

Ref. No.	Part No.	Description	部 品 名	Remarks	Common Model	Markets	ランク
	UW:91:81:00	Electrolytic Capacitor	100 μ F 6.3V	ケミコン	C162, 166		
	UW:94:64:70	"	4.7 μ F 25V	"	C209, 210, 221, 222		
	UW:94:81:00	"	100 μ F 25V	"	C187, 202		
	UW:96:54:70	"	0.47 μ F 50V	"	C173, 184, 174, 200		
	UW:96:61:00	"	1 μ F "	"	C106, 131, 137,		
					143, 144,		
					199, 244		
	UW:96:62:20	Electrolytic Capacitor	2.2 μ F 50V	ケミコン	C177		
	UL:46:62:20	"	2.2 μ F 50V	"	C152		
	UW:96:63:30	"	3.3 μ F "	"	C188, 201		
	FY:00:01:90	Trimmer Capacitor	5P CTZ51A117	トリマーコン	VC101		
	GE:10:02:80	Coil		FMディスクリコイル	T102		
※	GE:10:06:50	FM IFT		FM IFT	T101		
	GE:20:04:30	Filter	114KHz	アンチバーディフィルター	T103	G	
※	GE:90:12:10	"	5.6K:33K	ローパスフィルター	T104, 105	G	
	GE:90:12:20	"	10K:10K	"		R, U, A, C, B	
	GE:30:04:50	Inductor	1mH	円筒形インダクター	L105, 106		
	GE:30:05:00	"	12 μ H 小形	"	L103, 104		
	GE:30:05:10	"	120 μ H 小形	"	L101		
	GE:90:03:30	Coil	220 μ H	フェラリルニードタイプチョークコイル	L109, 110	G	
	GE:90:08:40	"	15 μ F	"	L107, 108	G	
	GE:90:06:90	RF Inductor	8.2mH	RFインダクター	L102		
	GG:00:04:20		CDA450A	AMセラミックディスクリ	CF106		
	GG:00:06:00	Ceramic Filter Kit	SFE10.7 MX \times 2	セラミックフィルターキット	CF101, 104,		
		"	" MS3G \times 2	"	102, 103		
	GG:00:06:60	AM Ceramic Filter	SFU450B9	セラミックフィルター	CF105		
	HF:85:41:00	Carbon Resistor	10 Ω $\frac{1}{6}$ W RI6T	カーボン抵抗	R307, 308		
	HF:85:43:30	"	33 Ω "	"	R283, 284	G	
	HF:85:45:60	"	56 Ω "	"	R299, 300		
	HF:85:51:00	"	100 Ω "	"	R134, 176, 191, 287,		
					288, 315, 316, 321, 322		
※	HF:85:51:50	Carbon Resistor	150 Ω $\frac{1}{6}$ W RI6T	カーボン抵抗	R 305, 306		
	HF:85:52:20	"	220 Ω "	"	107, 169, 272, 281		
	HF:85:53:30	"	330 Ω "	"	R102, 120, 214		
	HF:85:55:60	"	560 Ω "	"	R285, 286	G	
	HF:85:58:20	"	820 Ω "	"	R172		
	HF:85:61:00	"	1K Ω "	"	R110, 119, 147,		
					190, 277		
	HF:85:61:20	Carbon Resistor	1.2K Ω $\frac{1}{6}$ W RI6T	カーボン抵抗	R145		
	HF:85:61:50	"	1.5K Ω "	"	R186, 295, 296,		
					301~304		
	HF:85:62:20	Carbon Resistor	2.2K Ω $\frac{1}{6}$ W RI6T	カーボン抵抗	R257, 297, 298		
	HF:85:63:30	"	3.3K Ω "	"	R249, 268, 270,		
					280		
	HF:85:64:70	Carbon Resistor	4.7K Ω $\frac{1}{6}$ W RI6T	カーボン抵抗	R101, 127, 167		
					170, 196, 253,		
					279		
	HF:85:65:60	Carbon Resistor	5.6K Ω $\frac{1}{6}$ W RI6T	カーボン抵抗	R309, 310		
	HF:85:66:80	"	6.8K Ω "	"	R125, 126, 278		
	HF:85:68:20	"	8.2K Ω "	"	R275		

※ : New Parts (新部品)

Ref. No.	Part No.	Description	部 品 名	Remarks	Common Model	Markets	ランク
	HF 85 71 00	"	10K Ω "	"	R104, 141, 142, 165, 174, 200, 205, 227, 228, 248, 251, 269, 271		
	HF 85 73 90	Carbon Resistor	39K Ω $\frac{1}{6}$ W R16T	カーボン抵抗	R261		
	HF 85 71 50	Carbon Resistor	15K Ω $\frac{1}{6}$ W R16T		R150, 204, 128		
	HF 85 72 20	"	22K Ω "	"	R146, 225, 226, 240		
	HF 85 72 70	"	27K Ω "	"	R168, 262		
	HF 85 73 30	"	33K Ω "	"	R149, 256		
	HF 85 74 70	"	47K Ω "	"	R 220, 244, 224, 246, 319, 320		
※	HF 85 76 80	Carbon Resistor	68K Ω $\frac{1}{6}$ W R16T	カーボン抵抗	R276		
	HF 85 81 00	"	100K Ω "	"	R143, 144, 171, 198, 199, 209, 211, 213, 216, 217, 219, 221, 230, 231, 233, ~237, 273, 274, 291~294		
※	HF 85 82 20	Carbon Resistor	220K Ω $\frac{1}{6}$ W R16T	カーボン抵抗	R133, 197, 201, 210, 212, 238, 260		
※	HF 85 83 30	Carbon Resistor	330K Ω "	カーボン抵抗	R111, 239, 259		
	HF 85 83 90	"	390K Ω "	"	R325		
	HF 85 84 70	"	470K Ω "	"	R175, 208, 202		
	HF 85 91 00	"	1M Ω	"	R202, 247, 258		
	HT 37 00 10	Semi Variable Resistor	B5K Ω "	半固定VR	VR101		
	HT 37 00 50	"	B10K Ω "	"	VR106		
	HT 37 00 20	"	B20K Ω "	"	VR103		
	HT 37 00 80	"	B100K Ω "	"	VR107, 108		
	HT 37 00 30	"	100K Ω SN14K2E	"	VR102		
	HU 57 81 00	Metal Film Resistor	100 Ω RDF25SL	金属被膜抵抗	R229		
	i A 09 70 00	Transistor	2SA970 (GR, BL)	トランジスタ	TR120		
	i A 09 99 10	"	2SA999 (E, F)	"	TR112, 119, 125, 126, 133, 139~	Inter-changeable	
	i A 11 27 00	Transistor	2SA1127 (R, S, T)	トランジスタ	141, 144~146, 148		
※	i C 19 23 00	Transistor	2SC1923	トランジスタ	TR102, 105, 117		
	i C 23 20 10	"	2SC2320 (E, F)	"	TR101, 103, 104, 106, 108, 111, 113, 114, 116, 118, 121~124, 127~132, 134, 137, 138, 142, 143, 147, 149	Inter-changeable	
	i C 26 34 00	Transistor	2SC2634 (R, S, T)	トランジスタ			
※	i D 06 55 00	Transistor	2SD655 (D, E, F)	トランジスタ		Inter - changeable	
※	i D 10 12 00	"	2SD1012 (G, H)	"	TR109, 110, 115,		
※	i D 13 02 00	"	2SD1302 (R, S)	"			
	i D 07 86 00	"	2SD786 (Q, R, S)	"	TR151~154		

※ : New Parts (新部品)

Ref. No.	Part No.	Description	部 品 名	Remarks	Common Model	Markets	ランク
	NA:08:19:30	Main Circuit Board	メインシート			R, A, B	
	NA:08:19:40	"	"			U, C	
	NA:08:19:50	"	"			G	
	FG:41:13:30	Ceramic Capacitor	3.3PF 50V(K) セラコン	C500			
	FG:41:21:20	"	120PF "	C435~438			
	FG:41:21:80	"	180PF "	C433, 434			
	FG:41:22:20	"	220PF "	C429, 430			
	FG:41:23:30	"	330PF "	C407~412		G	
	FG:41:25:60	"	560PF "	C453,454,455,456			
	FG:41:31:00	"	1000PF "	C449, 450			
	FG:41:34:70	"	4700PF "	C524			
						G	
	FG:44:41:00	"	0.01 μ F 50V(Z)	C511			
	FG:44:42:20	"	0.022 μ F "	C493, 494		G	
	FH:23:41:00	"	0.01 μ F 500VYZ(P)	C520			
	FH:23:41:00	"	" "	C522		G	
	FH:61:02:00	"	2PF 500V CH	C459, 460			
	FH:61:15:60	"	56PF "	C527, 528			
	FZ:00:35:80	Spark Killer Capacitor	47000 μ F 5.5V スパークキャパシタ	C505			
※	FZ:00:42:00	Black Electrolytic Capacitor	10000 μ F 65V ブロックケミコン	C516, 517			
※							
	FA:15:33:00	Mylar Capacitor	3000PF 50V(J) マイラーコン	C442, 443			
	UA:25:34:70	"	4700PF "	C440			
	UA:25:43:30	"	0.033 μ F "	C444, 475~478			
	UA:25:51:00	"	0.1 μ F "	C427, 428			
	UA:25:51:50	"	0.15 μ F "	C439, 441			
	UA:25:41:00	"	0.01 μ F "	C473, 474			
	UA:25:42:20	"	0.022 μ F "	C465, 466			
	UA:25:42:20	"	0.022 μ F "	C489~482		G	
	UA:25:52:20	"	0.22 μ F 50V(J)	C483~486			
	UW:69:54:70	Electrolytic Capacitor	0.47 μ F 100V ケミコン	C481, 482			
	UW:69:73:30	"	33 μ F "	C461, 462			
	UW:91:81:00	"	100 μ F 6.3V	C431, 432, 457,			
				458, 495, 496			
	UW:81:91:00	"	1000 μ F "	C503			
	UW:82:74:70	"	47 μ F 10V	C445~448, 451,			
				452, 467~470,			
				504, 525, 526			
	UW:94:81:00	"	100 μ F 25V	C421, 422, 514, 515			
	UW:94:92:20	"	2200 μ F "	C509			
	UW:96:54:70	"	0.47 μ F 50V	C502			
	UW:96:71:00	"	10 μ F "	C423~420, 463,			
				464, 471, 472,			
				506, 507			
	GD:90:03:40	Coil, Output	1.5 μ H アウトプットコイル	L401, 402			
※	HF:85:42:70	Carbon Resistor	27 Ω $\frac{1}{6}$ W RI6T カーボン抵抗	R576			
	HF:85:52:20	"	220 Ω "	R481, 482, 575			
	HF:85:52:20	"	220 Ω "	R415~420		R, U, A, CB	
	HF:85:62:20	"	2.2K Ω "			G	
	HF:85:52:70	"	270 Ω "	R483, 484			
	HF:85:53:30	"	330 Ω "	R549, 550, 515, 516			

※ : New Parts (新部品)

Ref. No.	Part No.	Description	部 品 名		Remarks	Common Model	Markets	ランク
	HF 85 61 00	Carbon Resistor	1KΩ	"	カーボン抵抗	R501, 502, 511, 512		
	HF 85 55 60	"	560Ω	"	"	R537, 538		
	HF 85 62 70	"	2.7KΩ	"	"	R485, 486		
	HF 85 64 70	"	4.7KΩ	"	"	R491~494, 521, 522		
	HF 85 65 60	"	5.6KΩ	"	"	R504, 505, 507, 508		
	HF 85 66 80	"	6.8KΩ	"	"	R487~490, 497, 500		
	HF 85 61 80	"	1.8KΩ	"	"	R526		
	HF 85 71 50	"	15KΩ	"	"	R495, 496, 574		
	HF 85 72 20	"	22KΩ	"	"	R520		
	HF 85 72 70	"	27KΩ	"	"	R581, 609, 610		
	HF 85 73 30	"	33KΩ	"	"	R513, 514		
	HF 85 74 70	"	47KΩ	"	"	R569, 570, 573		
※	HF 85 76 80	"	68KΩ	"	"	R584, 585		
	HF 85 81 00	"	100KΩ	"	"	R455, 456, 507, 509, 510, 571		
	HF 85 82 70	"	270KΩ	"	"	R479, 480		
	HF 85 83 30	"	330KΩ	"	"	R572		
	HF 85 84 70	"	470KΩ	"	"	R556, 578		
	HL 71 34 70	Oxide Metal Film Resistor	4.7Ω	1P	酸化金属抵抗	R557, 558		
	HL 72 41 00	"	10Ω	2P	"	R559, 560		
	HL 72 52 70	"	270Ω	"	"	R563, 564		
※	HM 05 51 50	Sement Resistor Mφ-4P	150Ω	5P	セメント抵抗	R598, 603, 613, 614		
※	HQ 42 02 80	Slide Variable Resistor	B5K	S3018	スライドVR	VR401		
	HF 85 81 20	Carbon Resistor	120Ω	1/6W	カーボン	R425~430		
	HV 45 41 00	Flame Proof Carbon Resistor	10Ω	RDF25SL	不燃化カーボン抵抗	R498, 499		
	HV 45 51 00	"	100Ω	"	"	R596, 579		
	HV 45 62 70	"	2.7KΩ	"	"	R527, 528		
※	HW 59 34 70	Fuse Resistor	4.7Ω	1/4P	ヒューズ抵抗	FR401~403		
	HZ 00 19 40	Dual Metal Plate Resistor	0.22×2	MPC702-2P	デュアル金属板抵抗	R539~542		
	HF 85 46 80	"	68Ω	"	"	R511, 512		
	HF 85 34 70	"	4.7Ω	"	"	R401, 402	G	
	HF 85 63 90	"	3.9KΩ	"	"	R554		
※	HZ 00 29 00	Metal Plate Resistor	0.22Ω×5P	MPC74	金属板抵抗	R551, 552		
	i A 07 77 00	Transistor	2SA777		トランジスター	TR417, 418		
	i A 09 70 00	"	2SA970 (GR, BL)		"	TR419		
	i A 09 99 10	"	2SA999 (E, F)		"	TR402~409	Inter-changeable	
	i A 11 27 00	"	2SA1127 (R, S, T)		"	411, 422		
	i B 05 07 00	"	2SB507		"	TR435		
	i C 09 82 00	"	2SC982		"	TR424		
	i C 19 83 00	Zener Diode	2SC1983		ツェナーダイオード	TR425, 426		
	i C 23 20 10	"	2SC2320 (E, F)		"	TR421, 423	Inter-changeable	
	i C 26 34 00	"	2SC2634 (R, S, T)		"			
	i C 28 78 00	"	2SC2878		"	TR413, 414		
	i D 03 13 00	"	2SD313 (E, F)		"	TR431		
	i D 04 00 20	"	2SD400 (F)		"	TR420		
	i F 00 00 40	Diode	1S1555		ダイオード	D455, 423, 424,	Inter-changeable	
						428, 429, 432,		
	i F 00 06 70	"	1S2473		"	440, 442, 443,		
						453		
	i F 00 14 00	"	1SS82		"	D413~418		
	i F 00 34 40	Zener Diode	RD6.2EB3		ツェナーダイオード	D439		
	i F 00 25 50	"	HZ9A-1		"	D405, 406		

※ : New Parts (新部品)

Ref. No.	Part No.	Description	部 品 名		Remarks	Common Model	Markets	ランク
	i F 00 23 50	Zener Diode	HZ12-B2	ツェナーダイオード	D433			
	i F 00 30 40	"	HZ18-1L	"	D411, 412, 437, 438			
	i F 00 33 70	"	HZ5C-1	"	D456			
	i G 05 82 00	IC	M5218L	IC	IC412			
	i G 00 12 70	"	μPD4066BC	"	IC403-406		Inter-changeable	
	i G 08 92 00	"	LC4066B	"				
※	i G 09 00 00	"	STK8770II	"	IC415, 416			
※	i G 09 17 00	"	LC6502	"	IC414			
※	i G 09 18 00	"	M-50780	"	IC411			
※	i G 09 20 00	"	M5220L	"	IC409, 410			
※	i G 09 23 00	"	STK3081Y	"	IC413			
	i H 00 07 10	Diode	W06C	ダイオード	D441			
	i H 00 07 70	Bridge Diode	SIRBA	ダイオードブリッジ	D446			
	i H 00 10 10	"	RB602	"	D447			
※	KA 80 38 00	Push Switch	SDWA 2回路×2	プッシュスイッチ	SW405			
※	KA 80 38 10	"	SUN 1回路	"	SW406			
※	KA 90 29 30	Tact Switch	SPQ009A	タクトSW	SW401~404			
	KC 00 11 00	Relay	AR3421 DC12V	リレー	RY401		R, A, G, B	
※	KC 00 14 90	"	UL, CSA	"			U, C	
	LB 20 22 70	Pin Jack	T5854-AA	2Pピンジャック	PJ401			
	LB 40 10 30	"	T5857-AA	4P	PJ402, 403			
	LB 30 17 50	Jack Headphones	HLJ0540-01-020	ヘッドホンジャックハイ	JK401			
※	NA 08 19 90	CCSS Circuit Board		CCSSシート				
	LA 00 23 40	Wrapping Terminal	5P P=7.5	I型ラッピング端子板				
	LB 91 20 30	Plug, I-type	3P EMCS0352M	ショートプラグI型				
	LB 91 20 50	"	5P EMCS0552M	"				
※	LB 92 11 00	LP Connector I-type	10P W-P9010	LPコネクタープラグI型				
※	LB 92 11 10	"	11P W-P9011	"				
※	BA 08 58 30	Block, Heat Sink	# 8583	放熱ブロック				
	CB 06 88 80	Plastic Rivet	# 6888 (φ3.5)	プラスチックリベット				
	BA 08 40 00	Heat Sink	# 8400	放熱板				
	BB 06 83 70	Metal Fitting	# 6837	アース金具				
	EU 33 00 86	Bind Head Tapping Screw	3×8 (FCM3-B1)	鉄バイントAPPINGネジ	(PACK)			
	EZ 00 13 50	Bind Head Cap Screw	3×14 (FCM3-B1)	鉄カップスクリュー				
	LA 00 34 30	Terminal, Speaker	8P	8P SPターミナルブロック			R, U, A, C, B	
※	LA 00 44 80	"	8P	"			G	
	AA 61 70 10	Shielded Plate		3040シールド板		R-50		
	NA 08 19 90	CCSS Circuit Board		CCSSシート				
	UA 25 41 60	Mylar Capacitor	0.016μF 50V(J)	マイラーコン	C713, 714			
	UA 25 42 20	"	0.022μF	"	C703, 704			
	FA 15 36 20	"	6200PF	"	C707, 708			
	UA 25 34 70	"	4700PF	"	C717, 718			
	UA 25 46 20	"	0.062μF	"	C709, 710			
	UA 25 51 50	"	0.15μF	"	C715, 716			
	FA 15 52 70	"	0.27μF	"	C705, 706			
	FA 15 55 60	"	0.56μF	"	C711, 712			
	UK 16 61 00	Electrolytic Capacitor, B.P	1μF 50V	B.Pコン	C701, 702			
※	GE 90 10 30	Inductor	22mH	円筒形インダクター	L701, 702			

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