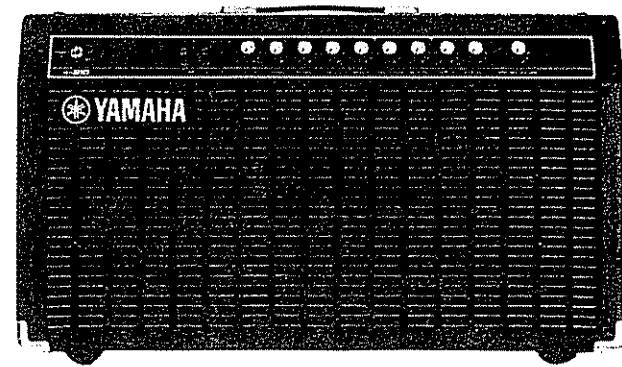


SERVICE MANUAL



Guitar Amplifier
G50-210

SINCE 1887  **YAMAHA**
NIPPON GAKKI CO., LTD. HAMAMATSU, JAPAN

SPECIFICATIONS

OUTPUT POWER	50 Watts RMS @ 7% THD into 4ohms
SPEAKER	10" (25cm) Yamaha JA-2556 x 2
INPUT SENSITIVITY	High -37 dBm (10mV) @ 1KHz (Volume & Tone) Low -31 dBm (20mV) Controls at max.)
INPUT IMPEDANCE	High 1M ohms Low 130K ohms
REVERB	Spring-Type
CONTROLS	VOLUME, BASS, MIDDLE, TREBLE, BRIGHT DISTORTION, REVERB. TREMOLO-INTENSITY, TREMOLO-SPEED, PRESET-VOLUME
FOOT SWITCH JACKS	PRESET VOLUME, TREMOLO, REVERB, DISTORTION.
OTHER FITTINGS	POWER-SWITCH, PILOT-LAMP
POWER REQUIREMENTS	110, 117, 130, 220 or 240VAC 50/60Hz
DIMENSIONS	Width 70.8cm (27-3/4") Height 43.15cm (17") Depth 25.0cm (9-3/4")
WEIGHT	21kg (46-1/3 lbs)
FINISH	Black leatherette reinforced corners

Specifications subject to change without notice.

PARTIAL DISASSEMBLY

MA (Main Amp) Circuit Board Removal

1. Remove the 4 screws securing the rear cover, as shown in Figure 1.
2. Remove the 2 screws holding the MA circuit board to the chassis, as shown in Figure 2, and pull it down.

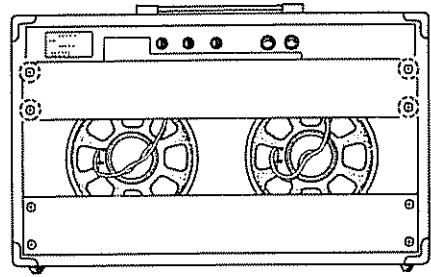


Figure 1

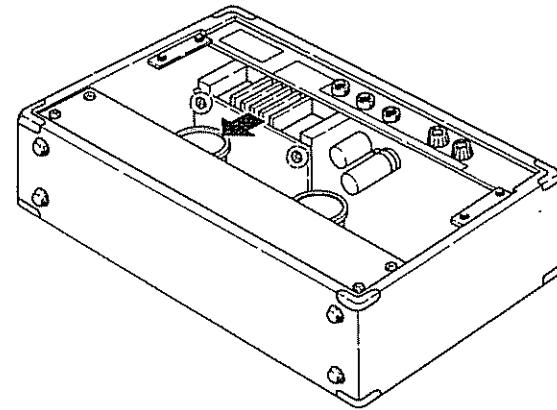


Figure 2

Amp Unit Removal

1. Remove the 4 screws securing the amp unit to the cabinet, as shown in Figure 3.
2. Remove the rear cover.
3. Disconnect the speaker connector and the ground wire from the chassis.
4. To remove the amp unit from the cabinet, pull it forward as shown in Figure 3.

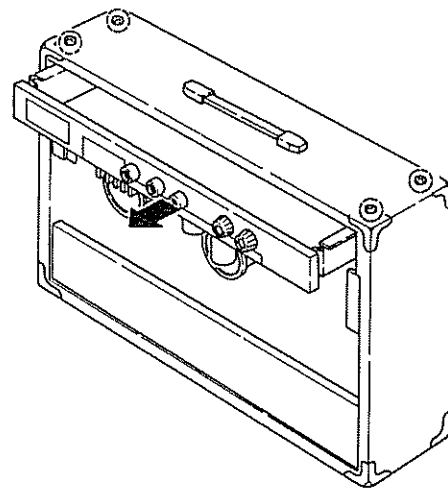


Figure 3

MAIN AMP ADJUSTMENTS

Equipment Requirements

1. The output impedance of the signal generator should be less than 1kohm
2. The input impedance of the oscilloscope, level meter, etc should be more than 100kohms.

When adjusting the main amp follow the proper order: waveform adjustment, center voltage adjustment and last, idling current adjustment.

Waveform Adjustment

1. Connect an 4-ohm dummy load to the output terminal.
2. Feed a $-6\text{dBm}/1\text{kHz}$ signal to the input terminal (between the DC circuit board IN and the E terminal)
3. Adjust the VR3 as shown in Figure 5 to achieve a waveform which is symmetrically rounded like that shown in Figure 4

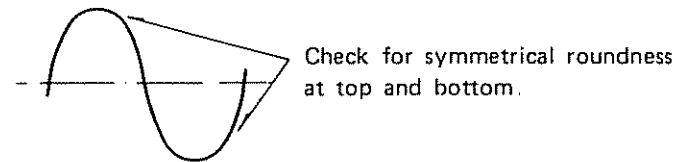


Figure 4. Output Waveform

Center Voltage Adjustment

4. Adjust VR2 so that the DC circuit board +CO terminal voltage is $26 \pm 1\text{V}$.
- NOTE: Only after steps 1 to 4 have been successfully carried out should you continue to idling current adjustment.

Idling Current Adjustment

5. Adjust VR1 so that the DC circuit board TP terminal voltage is $5 \pm 1\text{mV}$ at no signal.

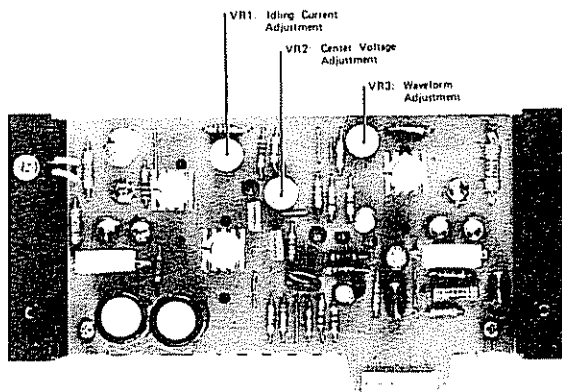


Figure 5. MA Circuit Board

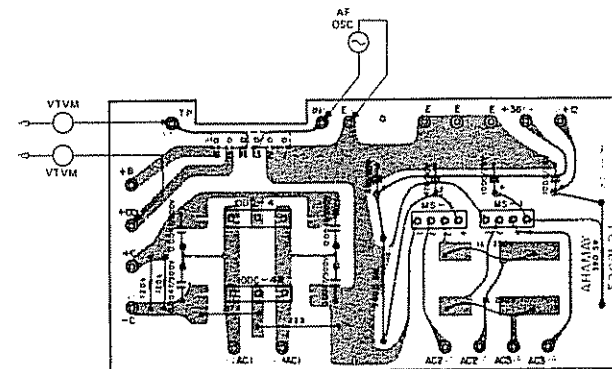


Figure 6. DC Circuit Board

PERFORMANCE CHECKS

Gain

1. Connect an 4-ohm dummy load to the output terminal.
2. Set the Bright, Distortion Reverb, Intensity-Speed and Preset Volume knobs to minimum, Volume, Bass, Middle and Treble knobs to maximum.
3. Feed a $-30\text{dBm}/400\text{Hz}$ signal through the Input jack.
4. The output signal level from the output terminal should be within the following limits.

High Input Jack: $22 \pm 3\text{dBm}$

Low Input Jack: $16 \pm 3\text{dBm}$

Distortion (THD)

5. Feed a 400Hz signal through the Input jack.
6. Set the input level so that the output level is $23 \pm 3\text{dBm}$.

Frequency Response

7. Feed -55dBm signals from 20KHz down to 20Hz observing the output on a level meter.
8. The indicated response should be within $\pm 3\text{dB}$ of the specified response curve.

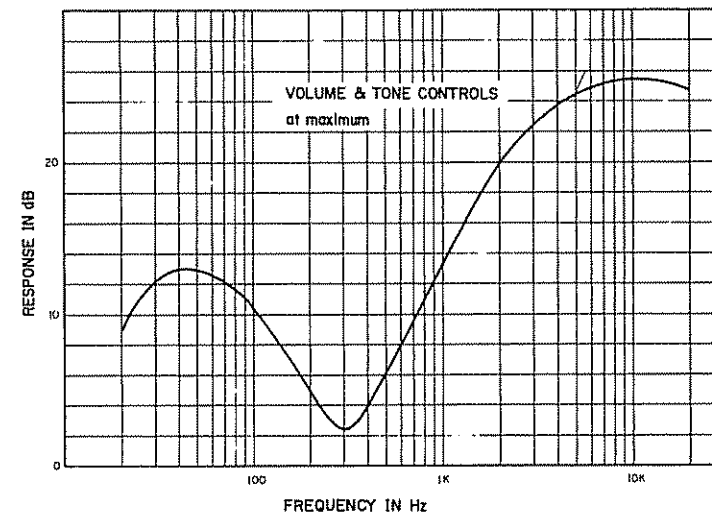


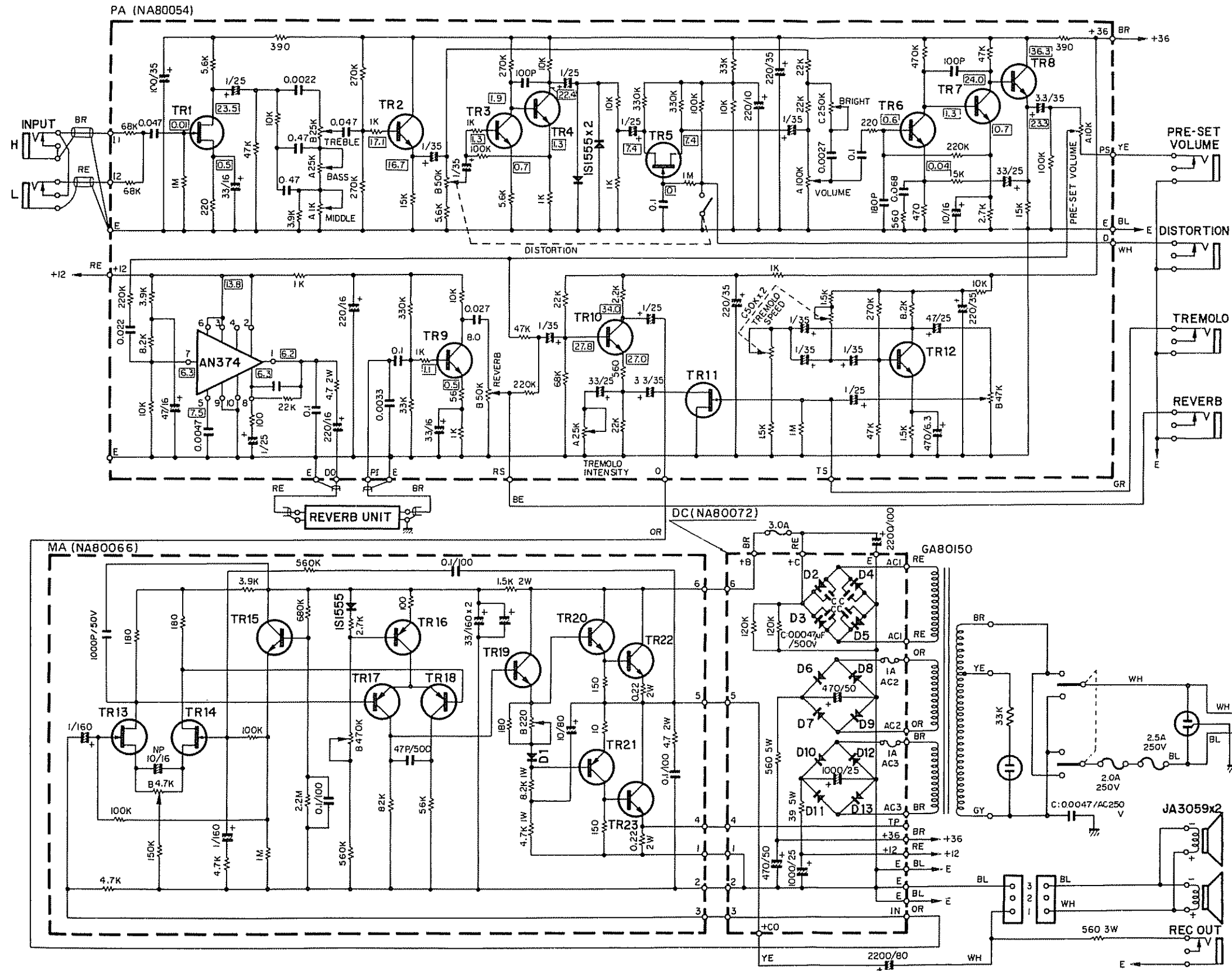
Figure 7. Frequency Response Curve

Noise Level

10. At no input condition noise level should be below -23dBm . When the Volume knob is turned from maximum to minimum, the noise level should be below -48dBm . During this check, make sure the power switch is set to the On position which provides the lower hum level.

NOTE: Value of "dBm" in this manual refers to $0\text{dBm} = 0.775\text{V}$, except where specified.

G50-210 GUITAR AMPLIFIER SCHEMATIC DIAGRAM



NOTES:

1. ALL RESISTORS IN OHMS ¼ WATT UNLESS OTHERWISE NOTED
2. ALL CAPACITORS IN MFD. UNLESS OTHERWISE NOTED.
3. ALL VOLTAGES MEASURED WITH A VTVM, WITH ALL CONTROLS SET AT MINIMUM.
4. ABBREVIATIONS

WIRE COLORS

BL: BLACK	GR: GREEN	GG: LIGHT GREEN
BR: BROWN	BE: BLUE	SB: LIGHT BLUE
RE: RED	VI: VIOLET	PK: PINK
OR: ORANGE	GY: GRAY	TR: TRANSPARENT
YE: YELLOW	WH: WHITE	TP: TIN PLATED

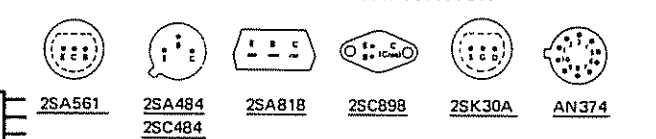
5. TRANSISTORS

Tr	: 2SK30A
Tr2,3,4,6	: 2SK30A
7,8,9,10,	: 2SC1681
12,15	: 2SC1681
Tr5,11,13	: 2SK30A
14	: 2SK30A
Tr16	: 2SA561
Tr17,18	: 2SA818
Tr19,20	: 2SC484
Tr21	: 2SA484
Tr22,23	: 2SC898

6. DIODES

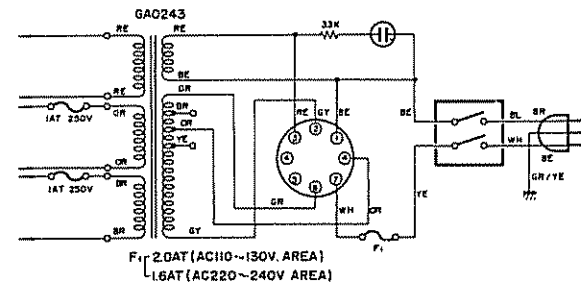
D1	: STV-3H
D2~D3	: 10DC-4
D4~D5	: 10DC-4R
D6~D13	: MS-J

7. SEMICONDUCTOR LEAD IDENTIFICATION

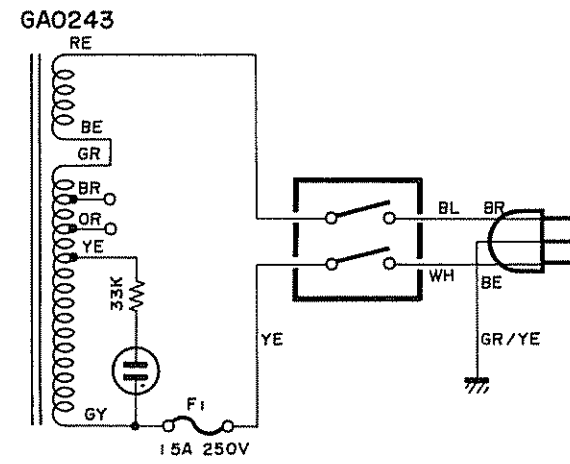


POWER CIRCUIT ARRANGEMENTS

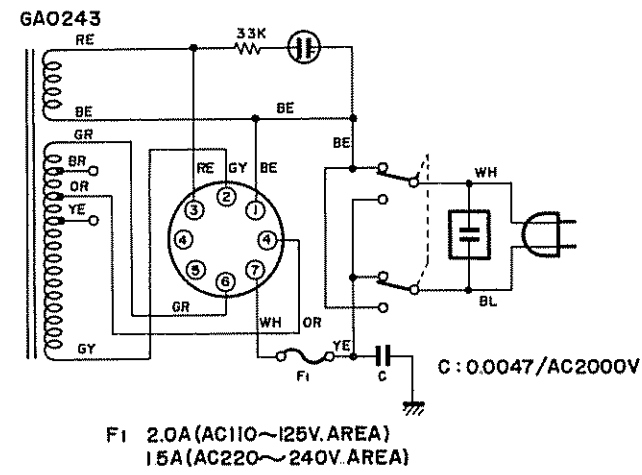
▼ FOR EUROPEAN MODEL



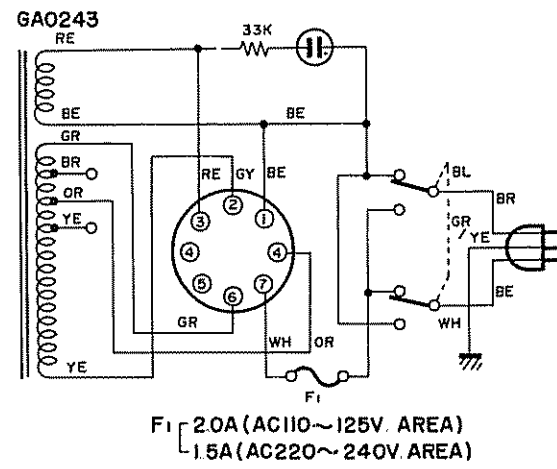
▼ FOR AUSTRALIAN MODEL



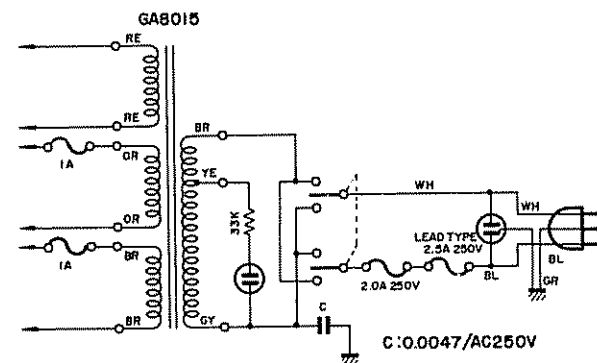
▼ FOR GENERAL MODEL



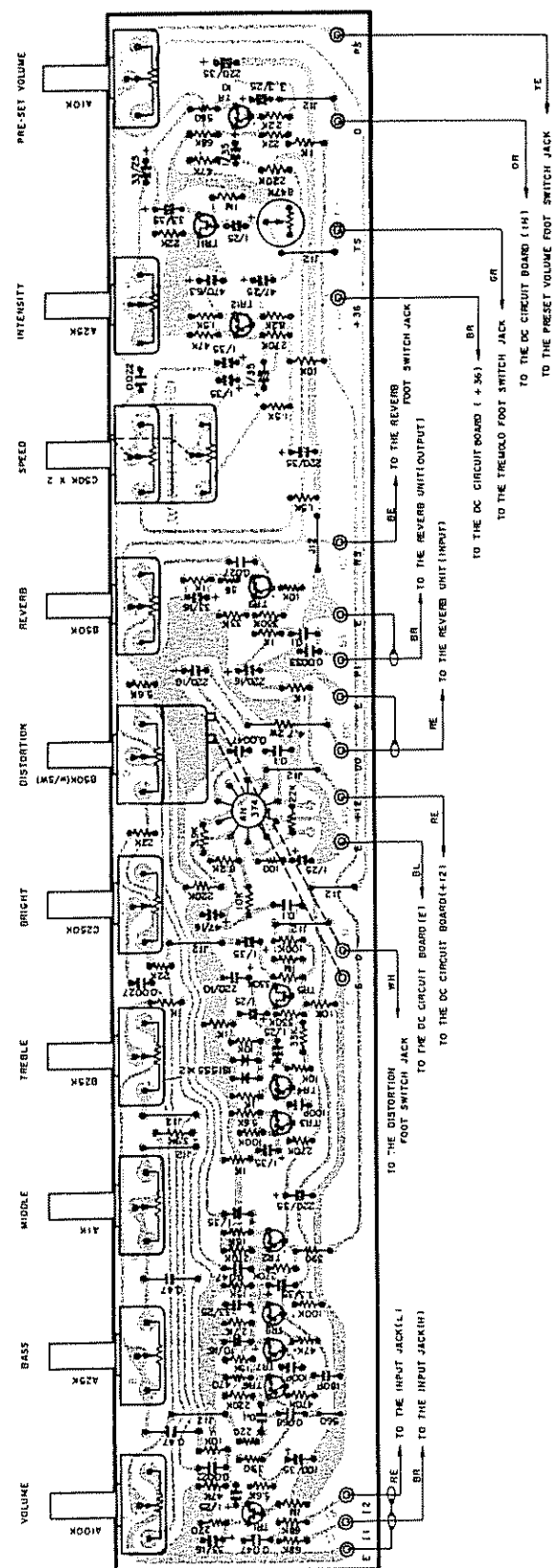
▼ FOR SOUTH AFRICAN MODEL



▼ FOR U.S./CANADIAN MODEL



PA CIRCUIT BOARD

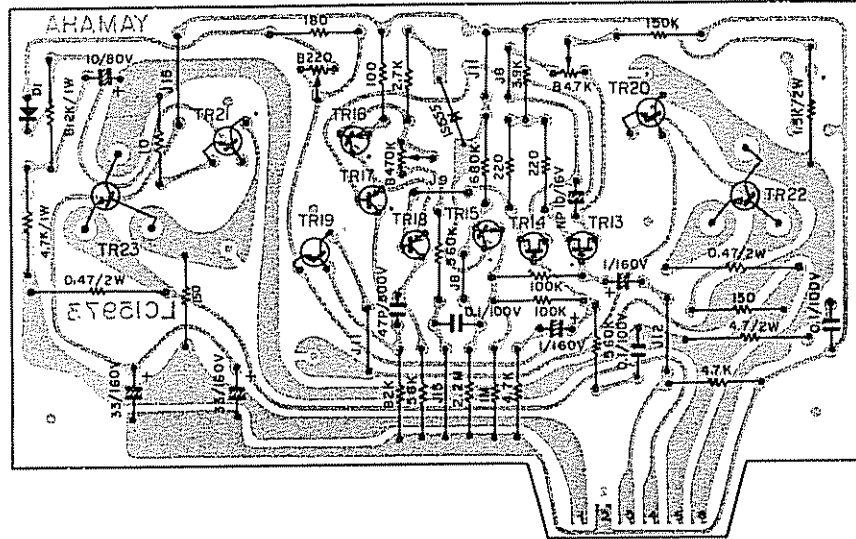


CIRCUIT REF. NO.	DESCRIPTION
TR1/5/11	2SK30A
TR2-4/6-10/12	2SC1681



Part No.	Description
305400NA800540	PA Circuit Board Ass'y #80261
401000iC168110	Transistor 2SC1681
401000iE000010	FET 2SK30A
401000iG000150	IC AN374
401000iF000040	Diode 1S1555
401000HS320250	Variable Resistor A100kΩ, Volume
401000HS320260	Variable Resistor A25kΩ, Bass & Tremolo Intensity
401000HS320300	Variable Resistor A1kΩ, Middle
401000HS320270	Variable Resistor B25kΩ, Treble
401000HS320290	Variable Resistor C250kΩ, Bright
401000HS320280	Variable Resistor B50kΩ (w/Switch), Distortion
401000HS320220	Variable Resistor B50kΩ, Reverb
401000HS320330	Variable Resistor C50kΩ x 2, Tremolo Speed
401000HS320320	Variable Resistor A10kΩ, Pre-set Volume
401000HT410140	Trimmer B47kΩ
401000HM523470	Cement Molded Resistor 4.7Ω 2W

MA CIRCUIT BOARD

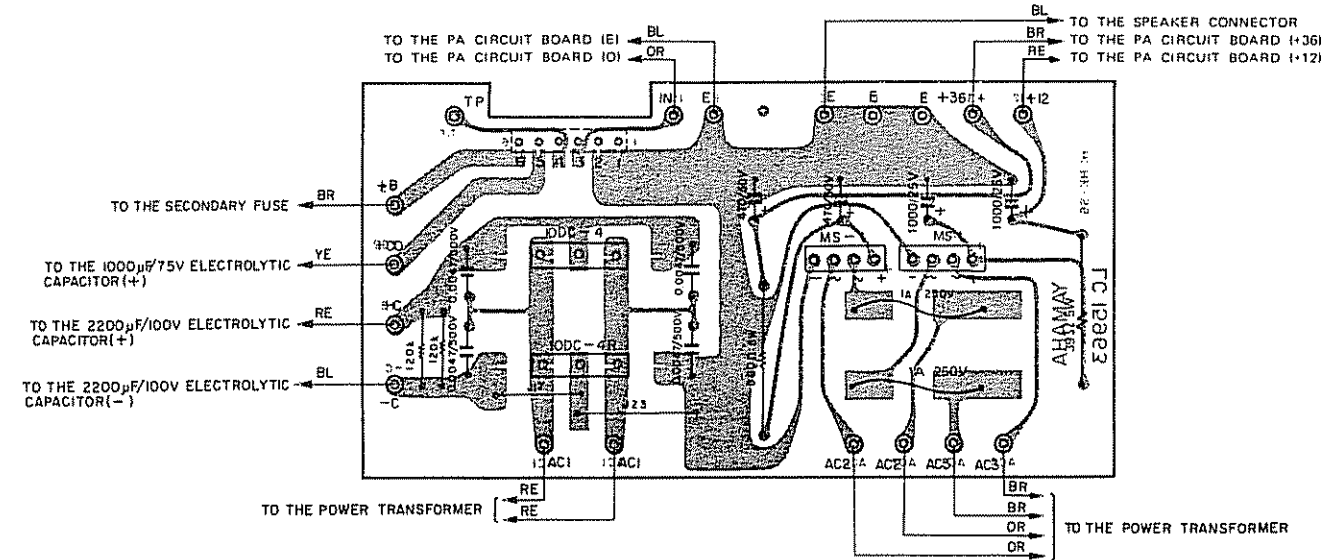


CIRCUIT REF.	DESCRIPTION
TR13/14	2SK30A
TR15	2SC1681
TR16	2SA561
TR17/18	2SA818
TR19/20	2SC484
TR21	2SA484
TR22/23	2SC898



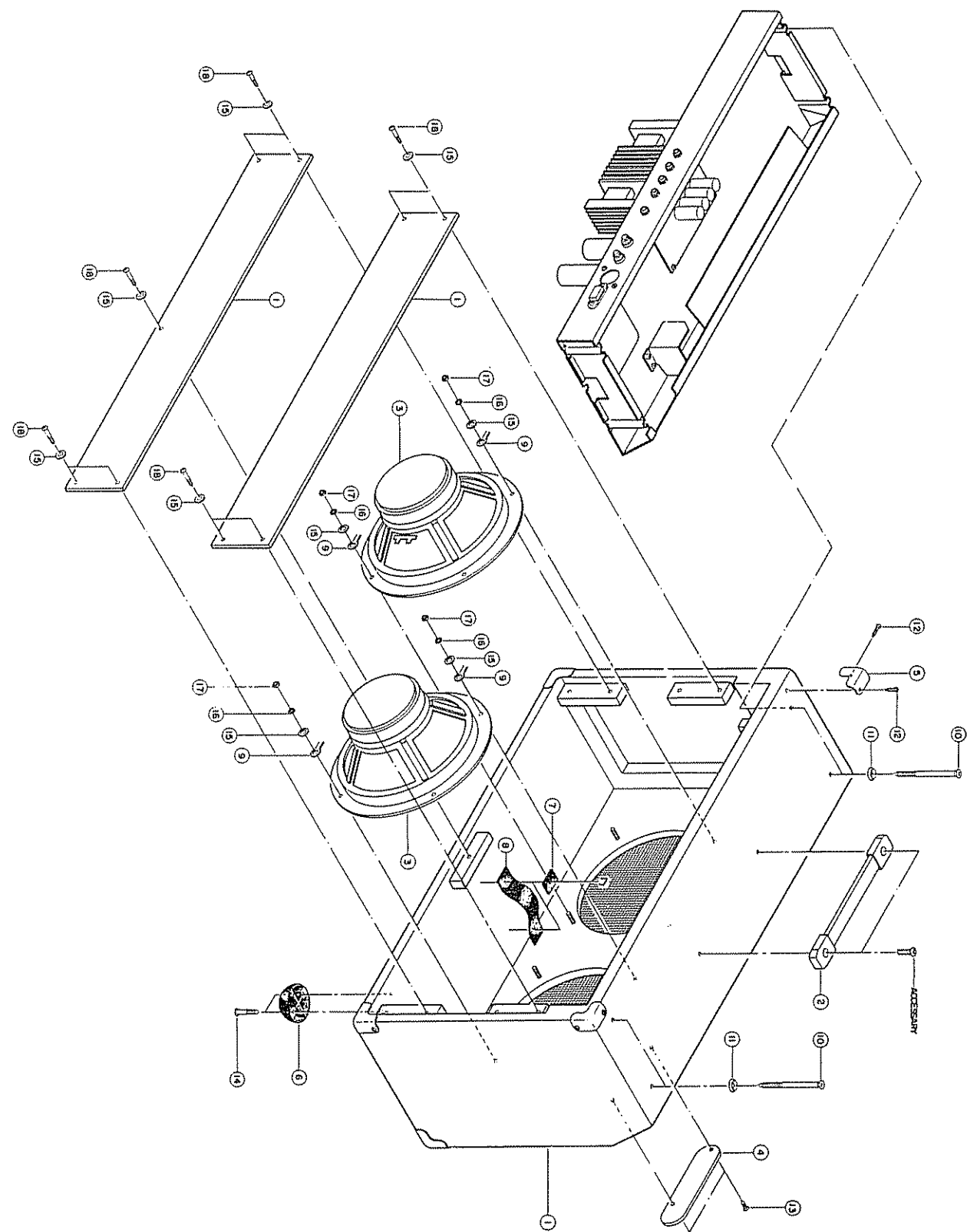
Part No	Description
305400NA80066	MA Circuit Board Ass'y #15973
401000iA048440	Transistor 2SA484
401000iA056120	Transistor 2SA561
401000iA081820	Transistor 2SA818
401000iC048440	Transistor 2SC484
401000iC168110	Transistor 2SC1681
401000iC089800	Transistor 2SC898
401000iE000010	FET 2SK30A
401000iF000040	Diode 1S1555
401000iF000450	Varistor STV 3H
401000HT410010	Trimmer B220Ω
401000HT410040	Trimmer B4.7kΩ
401000HT410110	Trimmer B470kΩ
401000LB300110	Transistor Socket
305400BA008140	Heat-sinker
305400AA800740	Transistor Cover
305400AA800760	Circuit Board Cover

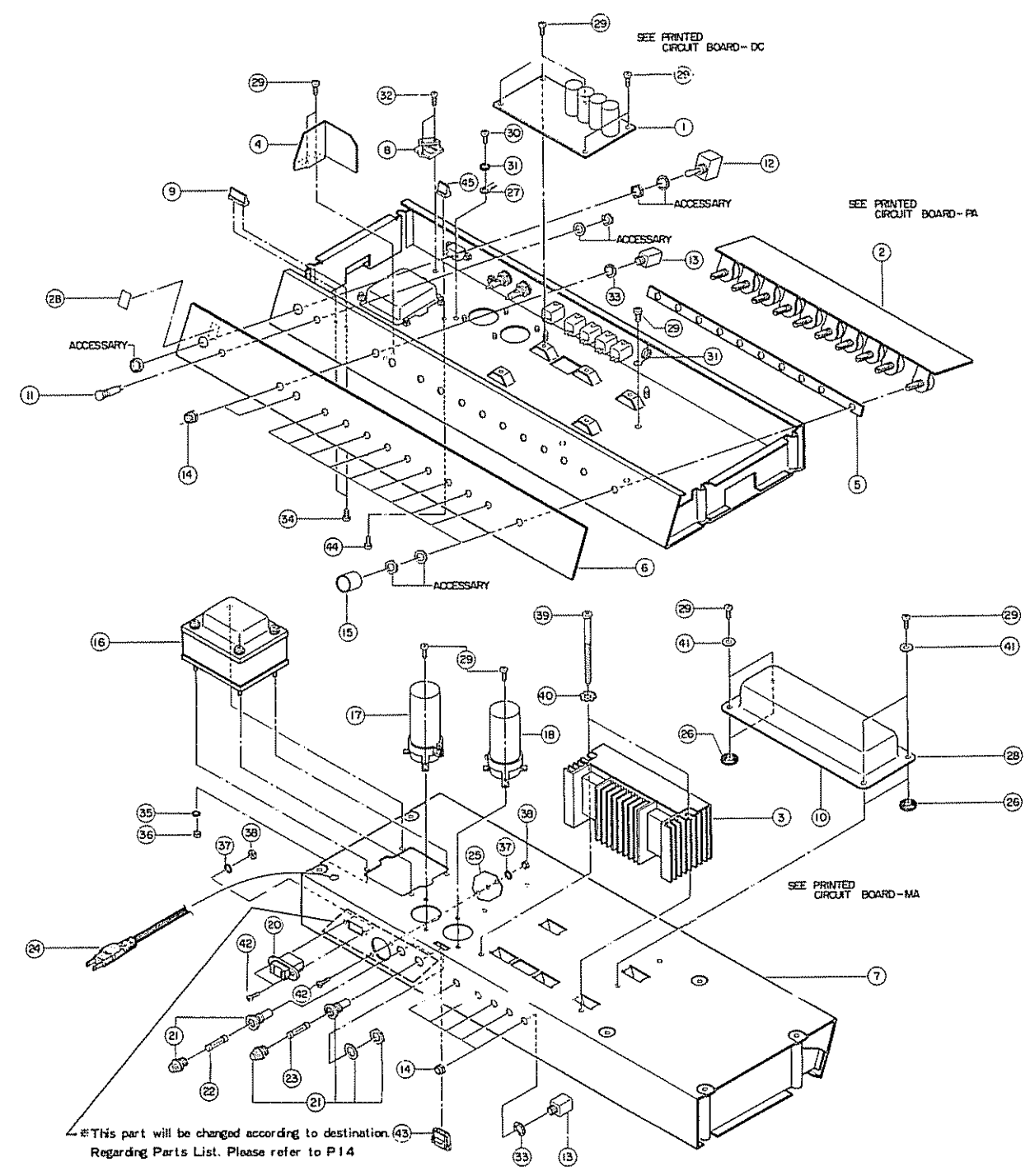
DC CIRCUIT BOARD



Part No.	Description
305400NA800720	DC Circuit Board Ass'y #15965 for General South African Australian Models
305400NA800730	DC Circuit Board Ass'y #15963 for U.S / Canadian Model
305400NA800740	DC Circuit Board Ass'y #15963 for European Model
401000iH000120	Diode MS-1
401000iH000140	Diode 10DC-4
401000iH000150	Diode 10DC-4R
401000HM554390	Cement Molded Resistor 39Ω 5W
401000HM555560	Cement Molded Resistor 560Ω 5W
401000KB000330	Fuse 1A 250V (U.S./Canadian Model only)
401000KB000730	Miniature Fuse 1AT 250V (European Model only)

PARTS LIST





Ref. No.	Parts No.	Description	Remarks	Common Models
1	30:54:00:NA:80:07:20	DC Circuit Board	D C シ ー ト	General, South African, Australian models
	30:54:00:NA:80:07:30	-do.-	"	US, Canadian
	30:54:00:NA:80:07:40	-do.-	"	European
2	30:54:00:NA:80:05:40	PA Circuit Board	P A シ ー ト	G100-212
3	30:54:00:NA:80:06:60	MA Circuit Board	M A シ ー ト	J-65
4	30:54:00:AA:80:07:80	Shield Plate	シ ー ル ド 板	
5	30:54:00:AA:80:14:70	Spacer	ス ペ ー サ ー	
6	30:54:00:AA:80:22:20	Panel	パ ネ ル	
7	30:54:00:AA:80:04:90	Chassis	シ ャ ー シ	
8	30:54:00:CB:02:12:20	Cord Presser	コ ー ド 押 え	YAT-25
9	40:10:00:LA:00:07:60	Lug Terminal	CV-2SH	カラ ー 端 子 板
10	40:10:00:JH:00:00:80	Reverb Unit	JH00008	リバ ー ブ ユ ニ ッ ト
11	40:10:00:JB:00:03:60	Neon Lamp Unit	BNR-3-Red	ネ オ ン プ ラ ケ ッ ト
12	40:10:00:KA:30:02:10	Toggle Switch	ト グ ル ス W	General, US/Canadian models
	40:10:00:KA:30:00:10	-do.-	Power SW	Australian, European models
13	40:10:00:LB:20:05:30	Jack	SG7615 #1	イヤホ ン ジャ ッ ク SHK, モ ー ル ド タ イ プ
14	30:56:00:CB:06:20:10	Phone Nut		ホ ー ン ナ ッ ト
15	30:54:00:CB:80:08:20	Knob		ツ マ ミ
16	40:10:00:GA:02:43:00	Power Transformer		パ ワ ー ト ラ ン ス
	40:10:00:GA:80:15:00	-do.-	"	J-65
17	40:10:00:FL:18:92:20	Electrolytic Capacitor	2200 μ F 80V Lug	電 解 コ ン デ ン サ ー
18	40:10:00:FL:49:92:20	-do.-	2200 μ F 100V Lug	"
19	40:10:00:LA:00:07:50	Lug Terminal	CV-1P	カラ ー 端 子 板
20	40:10:00:LB:20:03:00	A C Socket	#5038 MC 010	A C ソ ケ ッ ト
21	40:10:00:LB:20:04:80	Fuse Holder	SN-1301 (Screw Type)	ヒ ュ ー ス ホ ル ダ ー
22	40:10:00:KB:00:03:50	Fuse	2.0A 250V	ヒ ュ ー ス 耐 ラ ッ シ ュ
23	40:10:00:KB:00:03:60	-do.-	3.0A 250V	"
24	40:10:00:MG:00:02:30	A.C. Cord	3.3 m All Models	電 源 コ ー ド
25	30:54:00:AA:02:43:10	Voltage Selector Plate		電 圧 切 換 器 百 板
26	40:10:00:CB:80:15:90	Rubber Bush		ゴ ム ブ ッ シ ュ
27	40:10:00:LA:00:02:90	Lug Terminal		ア ー ス ラ グ 4 本
28	40:10:00:AA:00:56:10	Fill Board		百 板
29	40:10:00:E1:03:08:00	Binding Tapping Screw	3 x 8s ZMC2-Y	バ イ ン ド タ ッ ピ ン グ ネ ジ 2 種
30	40:10:00:EA:04:00:60	Pan Head Screw	4 x 6s -do.-	ナ ベ 小 ネ ジ
31	40:10:00:AA:01:14:90	Wire Stopper		束 線 止 め
32	40:10:00:EJ:03:01:60	Pan Head Tapping Screw	3 x 16s ZMC2-Y	ナ ベ タ ッ ピ ン グ ネ ジ 2 種
33	40:10:00:EV:41:00:90	Theethed Locked Washer	A.9s -do.-	歯 付 座 金
34	40:10:00:EA:03:00:60	Pan Head Screw	3 x 6s -do.-	ナ ベ 小 ネ ジ
35	40:10:00:EV:41:00:40	Theethed Locked Washer	A.4s -do.-	歯 付 座 金
36	40:10:00:EV:10:00:40	Hexagonal Nut	M4 -do.-	六 角 ナ ッ ト 1 種
37	40:10:00:EV:41:00:30	Theethed Locked Washer	A.3s -do.-	歯 付 座 金
38	40:10:00:EV:10:00:30	Hexagonal Nut	M3 -do.-	六 角 ナ ッ ト 1 種
39	40:10:00:EG:05:09:50	Pan Head Screw	5 x 95s ZMC2-B1	尖 光 ナ ベ 小 ネ ジ
40	40:10:00:EV:43:00:50	Theethed Locked Washer	AB.5s ZMC2-Y	歯 付 座 金
41	40:10:00:EV:20:00:40	Plain Washer	4s -do.-	平 座 金 ミ ガ キ 丸
42	40:10:00:EA:33:01:00	Pan Head Screw	3 x 10s FCM3-B1	ナ ベ 小 ネ ジ
				コ ネ ク ト コ ン ハ ウ ジ ン グ 2 P

Ref. No.	Parts No	Description	Remarks	Common Models
#	40:10:00:LB:20:03:00	AC Socket	A C ソ ケ ッ ト	General model
#	30:54:00:AA:01:10:20	AC Socket Fill Board	A C コ ン セ ン ト 百 板	except for General model
#	40:10:00:LB:20:02:50	Voltage Selector	電 圧 切 替 器	General, South African, North European models
#	30:54:00:AA:02:43:10	Voltage Selector Fill Board	電 圧 切 替 器 百 板	Australian model
#	40:10:00:LB:30:02:50	AC Socket 3P	3 P A C コ ン セ ン ト	U.S., Canadian models
#	40:10:00:LA:00:10:00	Lug Terminal	カ ラ ー 端 子 板	except for General model
#	40:10:00:LA:00:07:50	-do-	カ ラ ー 端 子 板	U.S., Canadian, Australian models
#	40:10:00:LB:20:04:80	Fuse Holder	ヒ ュ ー ズ ホ ル ダ ー	except for North European model
#	40:10:00:LB:20:05:90	-do-	ヒ ュ ー ズ ホ ル ダ ー	North European model
#	40:10:00:AA:03:15:80	Fuse Holder Washer	ヒ ュ ー ズ ホ ル ダ ー ワッシャー	-do-
#	40:10:00:KB:00:03:40	Fuse 1.5A, 250V	ヒ ュ ー ズ 250V, 1.5A	General, Australian, South African models
#	40:10:00:KB:00:03:50	-do- 2.0A, 250V	ヒ ュ ー ズ 250V, 2.0A	General, U.S., Canadian, South African models
#	40:10:00:KB:00:03:60	-do- 3.0A, 250V	ヒ ュ ー ズ 250V, 3.0A	except for North European models
#	40:10:00:KB:00:07:30	Fuse Miniature 1AT, 250V	ミ ニ ヒ ュ ー ズ 11T, 250V	North European model
#	40:10:00:KB:00:07:50	-do- 2AT, 250V	ミ ニ ヒ ュ ー ズ 2T, 250V	-do-
#	40:10:00:KB:00:08:80	Fuse (with Lead) 2.5A, 250V	リ ー ド 付 ヒ ュ ー ズ 250V, 2.5A	U.S., Canadian models
#	40:10:00:EV:41:00:30	Theethed Locked Washer A3S	歯 付 座 金 A 3 S	
#	40:10:00:EV:10:00:30	Hexagonal Nut 3S	六 角 ナ ッ ト 3 S	
#	40:10:00:EA:33:01:00	Pan Head Screw 3 x 10S FCM3-BL	平 頭 ナ べ 小 ね じ 3x10S FCM3-BL	All models
#	40:10:00:EA:33:00:60	-do- 3 x 6S -do-	平 頭 ナ べ 小 ね じ 3x6S FCM3-BL	-do-
PARTS LIST OF CIRCUIT BOARD				
	30:54:00:NA:80:05:40	PA Circuit Board Ass'y # 80261	P A シ ー ト	
	40:10:00:IC:16:81:10	Transistor 2SC1681	ト ラ ン ジ ス タ ー	
	40:10:00:IE:00:00:10	FET 2SK30A	F E T	
	40:10:00:IG:00:01:50	IC AN374	I C	
	40:10:00:IF:00:00:40	Diode IS1555	ダ イ オ ー ド	
	40:10:00:HS:32:02:50	Variable Resistor A100KΩ, Volume	可 変 抵 抗	
	40:10:00:HS:32:02:60	-do- A25KΩ, Bass & Tremolo Intensity	"	
	40:10:00:HS:32:03:00	-do- A1KΩ, Middle	"	
	40:10:00:HS:32:02:70	-do- B25KΩ, Treble	"	
	40:10:00:HS:32:02:90	-do- C25KΩ, Bright	"	
	40:10:00:HS:32:02:80	-do- B50KΩ, (w/Switch) Distortion	"	
	40:10:00:HS:32:02:20	-do- B50KΩ, Reverb	"	
	40:10:00:HS:32:03:30	-do- C50KΩ, x 2	"	
	40:10:00:HS:32:03:20	-do- A10KΩ, Pre-set Volume	"	
	40:10:00:HT:41:01:40	Trimmer B47KΩ		
	40:10:00:HM:52:34:70	Cement Molded Resistor 4.7Ω 2W	セ メ ン ト 抵 抗	
	30:54:00:NA:80:06:60	MA Circuit Board Ass'y # 15973	M A シ ー ト	
	40:10:00:IA:04:84:40	Transistor 2SA561	ト ラ ン ジ ス タ ー	
	40:10:00:IA:05:61:20	-do- 2SA561	"	
	40:10:00:IA:08:18:20	-do- 2SA818	"	
	40:10:00:IC:04:84:40	-do- 2SC484	"	
	40:10:00:IC:16:81:10	-do- 2SC1681	"	
	40:10:00:IC:08:98:00	-do- 2SC898	"	
	40:10:00:IE:00:00:10	FET 2SK30A	"	

Ref. No.	Parts No.	Description	Remarks	Common Models
40:10:00	F 00:00:40	Diode 1S1555	ダイオード	
40:10:00	F 00:04:50	Varistor STV 3H	バリスター	
40:10:00	HT 41:00:10	Trimmer B220Ω	ソリッドVR	
40:10:00	HT 41:00:40	-do- B4 7KΩ	"	
40:10:00	HT 41:01:10	Trimmer B470KΩ	"	
40:10:00	LB 30:01:10	Transistor Socket	トランジスター	
30:54:00	BA 00:81:40	Heat-sinker	放熱器	
30:54:00	AA 80:07:40	Transistor Cover		
30:54:00	AA 80:07:60	Circuit Board Cover		
30:54:00	NA 80:07:20	DC Circuit Board Ass'y # 15965		General, Australian, South African models
30:54:00	NA 80:07:30	-do- # 15963		U S , Canadian models
30:54:00	NA 80:07:40	-do.- # 15963		North European model
40:10:00	IH 00:01:20	Diode MS-1		
40:10:00	IH 00:01:40	-do.- 10DC-4		
40:10:00	IH 00:01:50	-do.- 10DC-4R		
40:10:00	HM 55:43:90	Cement Noided Resistor 39Ω 5W		
40:10:00	HM 55:56:00	-do.- 560Ω 5W		
40:10:00	KB 00:03:30	Fuse 1A 250V		U S , Canadian models
40:10:00	KB 00:07:30	Miniature Fuse 1AT 250V		North European model