

# B100-115

BASS AMPLIFIER

 **YAMAHA SERVICE MANUAL**

**SPECIFICATIONS**

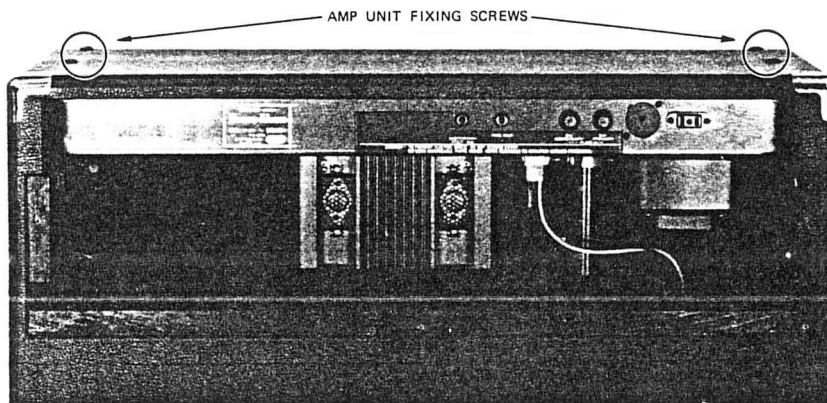
<b>OUTPUT POWER</b>	100 Watts RMS @ 7% THD into 8 ohms
<b>SPEAKER</b>	Single 15" (38cm) Yamaha JA-3802, heavy-duty Rear-loaded enclosure
<b>SENSITIVITY</b>	High, -37.8dBm (10mV); Low, -31.8dBm (20mV) @ 1kHz (Volume & Tone Controls at max.)
<b>INPUT IMPEDANCE</b>	High, 1Mohm; Low, 130 kohms
<b>RECORD OUTPUT</b>	+4dBm nominal, +31.2dBm max. For 600-ohm unbalanced lines
<b>NOISE</b>	-45dBm (Volume Control at min.)
<b>INPUTS</b>	1-high gain & 1-low gain; HIGH and LOW may be used simultaneously, thereby providing equal gain.
<b>CONTROLS</b>	Power switch, plus the following continuously variable controls: VOLUME, BASS, MIDDLE, TREBLE, BRIGHT, DISTORTION
<b>FOOT SWITCH JACK</b>	DISTORTION
<b>POWER REQUIREMENTS</b>	110, 117, 130, 220 or 240VAC, 50/60Hz, 117V 2A (Canadian model), 250W (other models)
<b>DIMENSIONS</b>	Width 27¾" (70.8cm) x Height 38¼" (97.2cm) x Depth 13¾" (35cm)
<b>WEIGHT</b>	113.5 lbs. (51.5 kg)
<b>FINISH</b>	Black leatherette, reinforced corners

*Specifications subject to change without notice.*

## PARTIAL DISASSEMBLY

### Amp Unit Removal

1. Remove the 4 screws securing the amp unit to the cabinet, as shown in Figure 1.
2. Remove the 5 screws securing 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.



*Figure 1*

### MA (Main Amp) Circuit Board Removal

5. Remove the 2 screws holding the MA circuit board to the chassis, and pull it.

## MAIN AMP ADJUSTMENTS

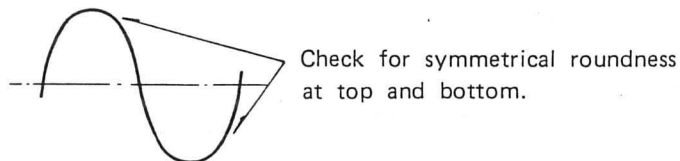
### Equipment Requirements

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 8-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 3 to achieve a waveform which is symmetrically rounded like that shown in Figure 2.



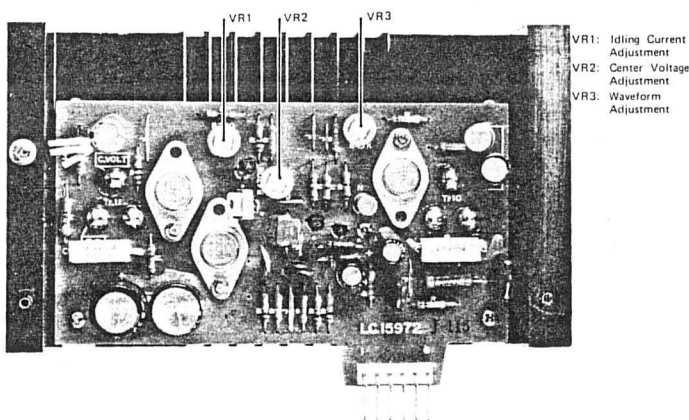
*Figure 2. Output Waveform*

### Center Voltage Adjustment

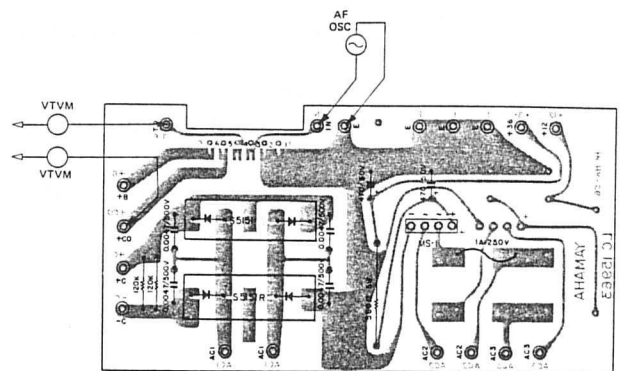
4. Adjust VR2 so that the DC circuit board +CO terminal voltage is  $45 \pm 1\text{V}$ .
- NOTE: Only after steps 1 to 4 have been successfully carried out should you continue to idling current adjustment.

### Idling Current Adjustment

5. Adjust VR1 so that the DC circuit board TP terminal voltage is  $10 \pm 1\text{mV}$  at no signal.



*Figure 3. MA Circuit Board*



*Figure 4. DC Circuit Board*

## PERFORMANCE CHECKS

### Gain

1. Connect an 8-ohm dummy load to the output terminal.
2. Set the Bright and Distortion 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:  $+28 \pm 3\text{dBm}$

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

### Distortion (THD)

5. Feed a 400Hz signal through the Input jack.
6. Set the input level so that the output level is  $+31.2\text{dBm}$  (100 Watts RMS).
7. The distortion factor should be within 10%.

### Frequency Response

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

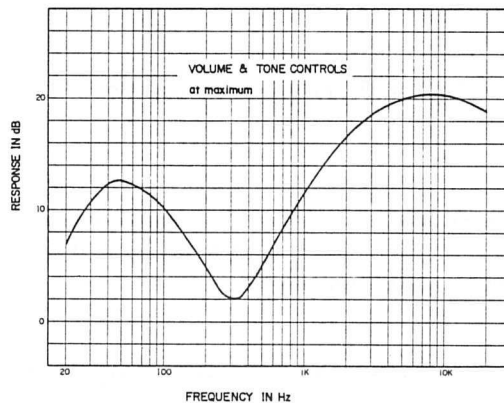
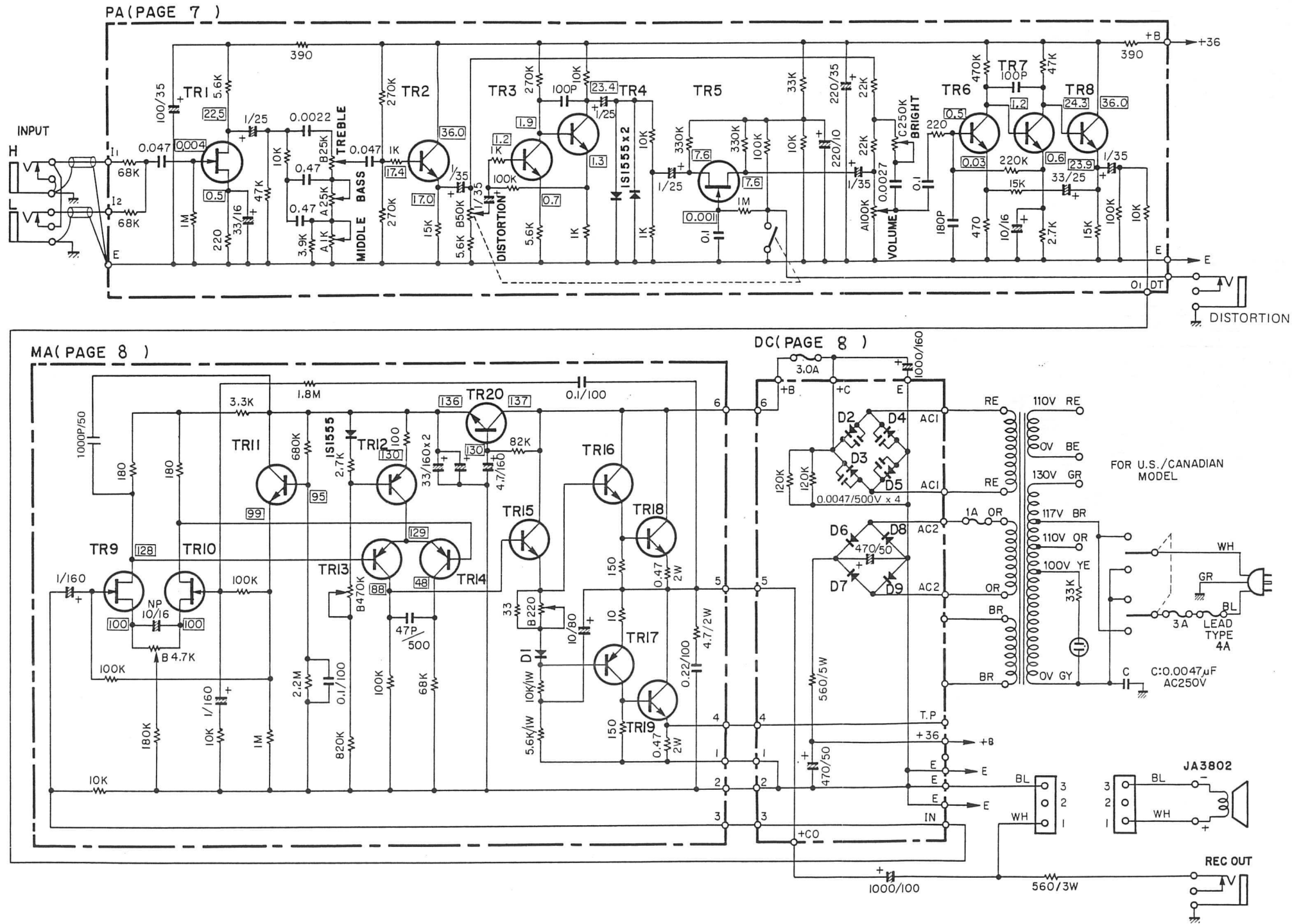


Figure 5. Frequency Response Curve

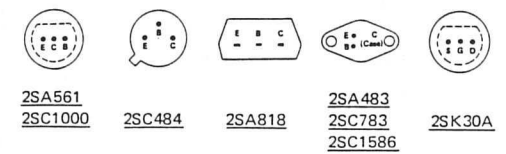
### Noise Level

10. At no input condition noise level should be below  $-20\text{dBm}$ . When the Volume knob is turned from maximum to minimum, the noise level should be below  $-45\text{dBm}$ . 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.

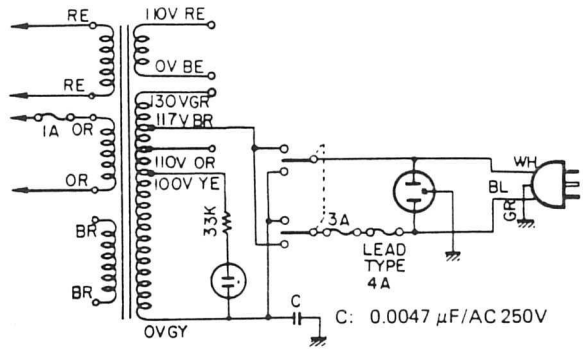


- NOTES:
1. ALL RESISTORS IN OHMS ¼ WATT UNLESS OTHERWISE NOTED.
  2. ALL CAPACITORS IN MFD. UNLESS OTHERWISE NOTED.
  3. ALL VOLTAGES MEASURED WITH A VTVM, WITH ALL CONTROLS SET AT MINIMUM.
  4. WIRE COLOR ABBREVIATIONS  
 BL: BLACK GR: GREEN GG: LIGHT GREEN  
 BR: BROWN BE: BLUE SB: LIGHT BLUE  
 RE: RED VI: VIOLET PK: PINK  
 OR: ORANGE GY: GRAY TR: TRANSPARENT  
 YE: YELLOW WH: WHITE TP: TIN PLATED
  5. TRANSISTORS  
 TR1, 5, 9-10: 2SK30A (FET)  
 TR2-4, 6-8, 11: 2SC1000  
 TR12: 2SA561  
 TR13-14: 2SA818  
 TR15-16: 2SC783  
 TR17: 2SA483  
 TR18-19: 2SC1586  
 TR20: 2SC484
  6. DIODES  
 D1: STV-3H (VARISTOR)  
 D2-3: S5151  
 D4-5: S5151R  
 D6-9: MS-1
  7. SEMICONDUCTOR LEAD IDENTIFICATION

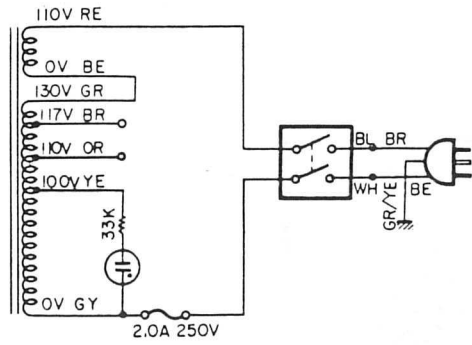


B100-115 BASS AMPLIFIER SCHEMATIC DIAGRAM

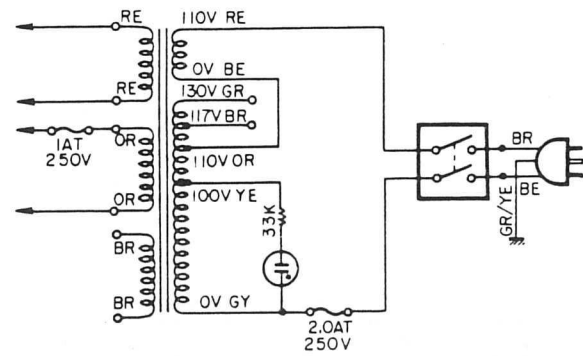
▼ FOR U.S./ CANADIAN MODEL



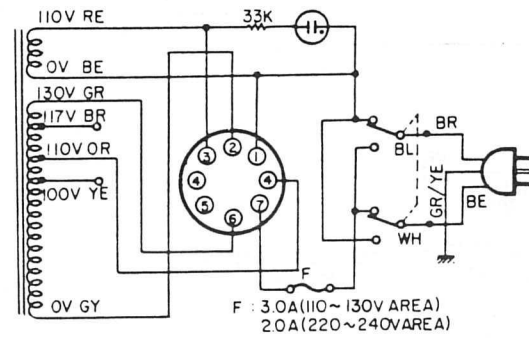
▼ FOR AUSTRALIAN MODEL



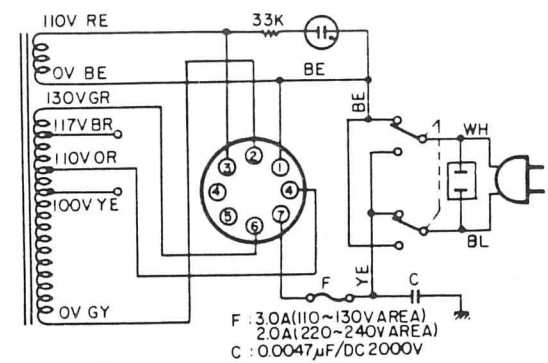
▼ FOR EUROPEAN MODEL



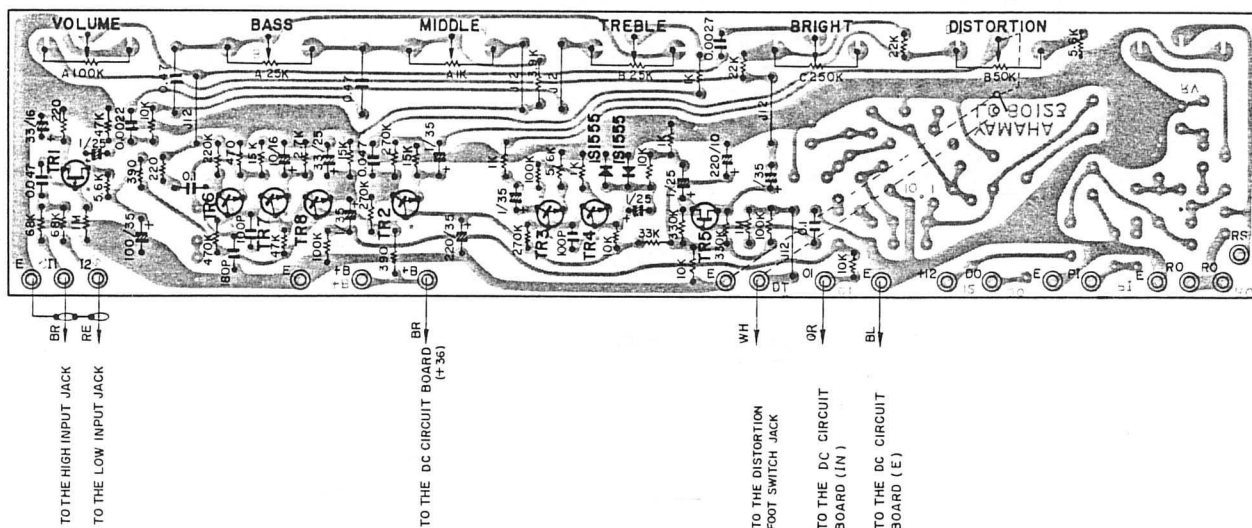
▼ FOR SOUTH AFRICAN MODEL



▼ FOR GENERAL MODEL



POWER CIRCUIT ARRANGEMENTS



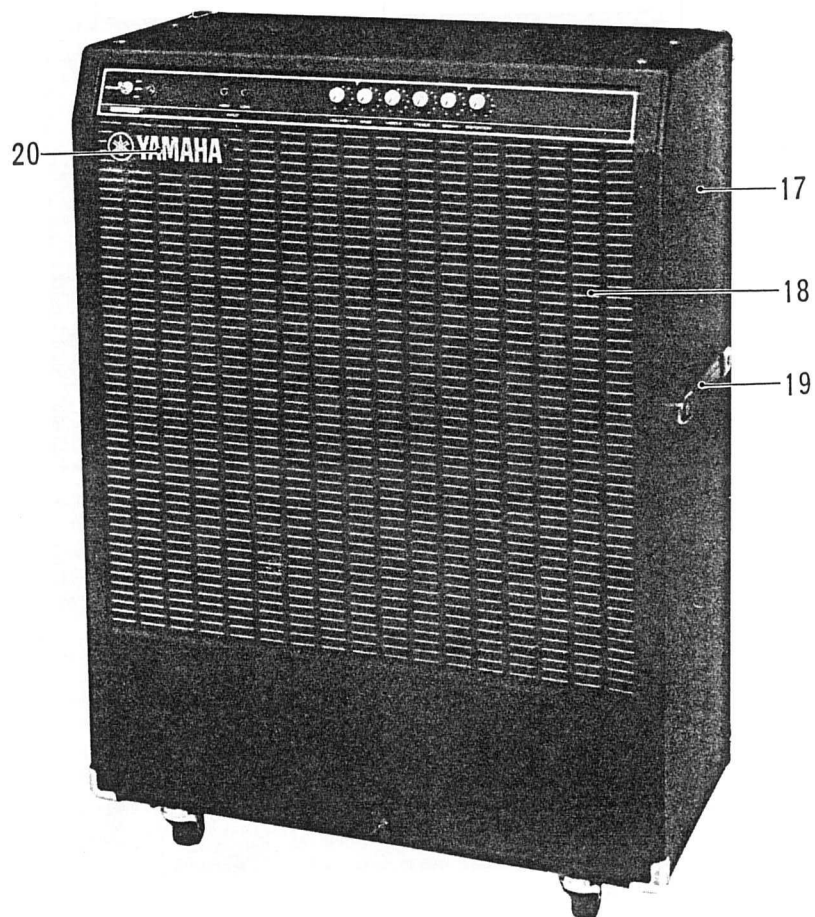
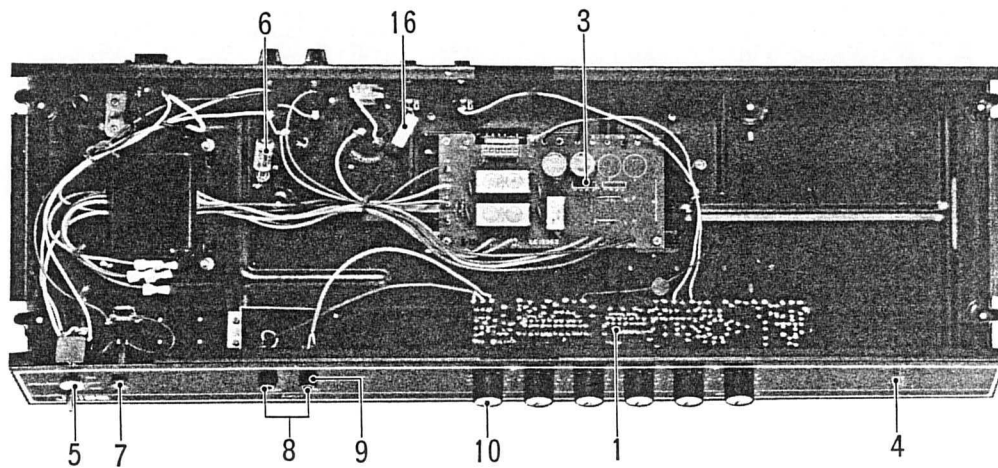
Part No.	Description
305400NA800700	PA Circuit Board Ass'y #80123
401000iC100010	Transistor 2SC1000
401000iE000010	FET 2SK30A
401000iF000040	Diode 1S1555
401000iG000150	IC AN374
401000HS320250	Variable Resistor A100kΩ, Volume
401000HS320260	Variable Resistor A25kΩ, Bass
401000HS320300	Variable Resistor A1kΩ, Middle
401000HS320270	Variable Resistor B25kΩ, Treble
401000HS320290	Variable Resistor C250kΩ, Bright
401000HS320280	Variable Resistor B50kΩ (w/Switch), Distortion
401000FP156100	Tantalum Capacitor 1 μF/35V

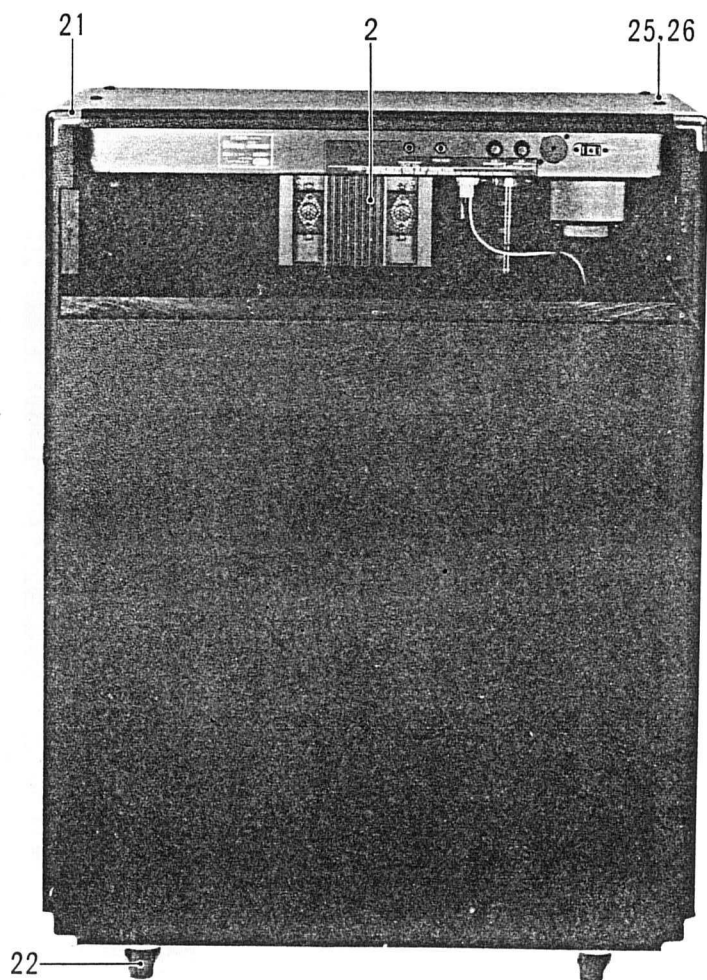
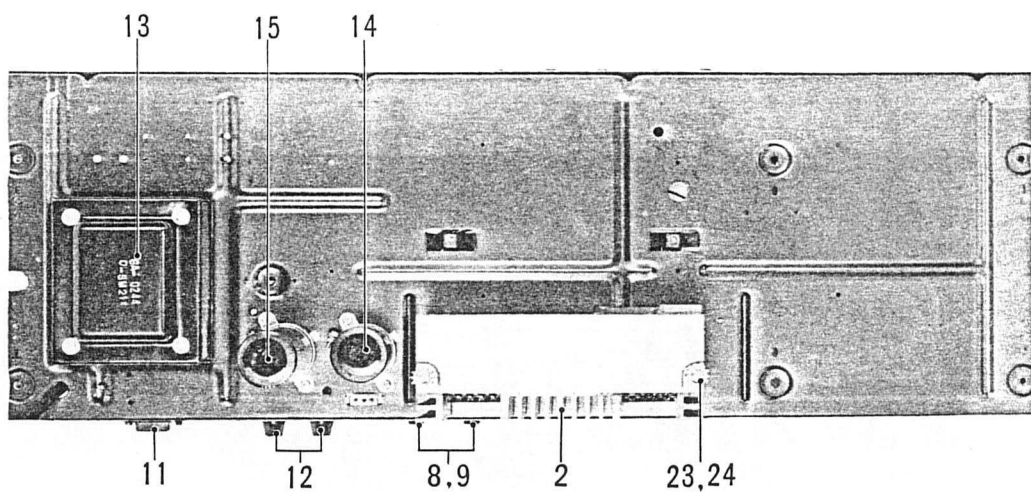
PA CIRCUIT BOARD





PARTS LIST





Ref. No.	Part No.	Description	Remarks	Common Models
1	305400NA800700	PA Circuit Board #80123	P A シ ー ト	
2	305400NA800580	MA Circuit Board #15973	M A シ ー ト	
3	305400NA800670	DC Circuit Board #15963	D C シ ー ト	General, South African, Australian Models only
3	305400NA800680	DC Circuit Board #15963	D C シ ー ト	U.S./Canadian Model only
3	305400NA800690	DC Circuit Board #15963	D C シ ー ト	European Model only
4	305400AA801420	Control Panel	バ ネ ル	
5	401000KA300050	Power Switch	ト グ ル ス イ ッ チ	except for European, Australian Models
5	401000KA300010	Power Switch	ト グ ル ス イ ッ チ	European, Australian Models only
	401000FC013470	Metalized Polyester Capacitor 0.0047 $\mu$ F/250V	コ ン デ ン サ	U.S./Canadian Model only
6	401000FQ083470	Oil Capacitor 0.0047 $\mu$ F/DC2000V	コ ン デ ン サ	General Model only
7	401000JB000360	Neon Lamp	ネオンフラケツ ラ	
8	401000LB200630	Phone Jack	イヤホンジャック	
9	305600CB062010	Phone Nut	ホ ー ン ナ ッ ト	
10	305400CB800820	Knob	ツ マ ミ	
	401000LB300250	AC Socket	3P A Cソケット	U.S./Canadian Model only
11	401000LB200300	AC Socket	A C ソ ケ ッ ト	General Model only
	401000LB200250	Voltage Selector	電 圧 切 換 器	General, South African Models only
12	401000LB200480	Fuse Holder	ヒ ュ ー ズ ホ ル ダ ー	except for European Model
12	401000LB200590	Fuse Holder	ヒ ュ ー ズ ホ ル ダ ー	European Model only
	401000KB000350	Fuse 2A 250V	ヒ ュ ー ズ	General, South African, Australian (220~240V Area) Models only
	401000KB000360	Fuse 3A 250V	ヒ ュ ー ズ	General, U.S./Canadian, South African, Australian Models
	401000KB000750	Miniature Fuse 2AT	ミ ニ ヒ ュ ー ズ	European Model only
	401000KB000760	Miniature Fuse 3.15AT	ミ ニ ヒ ュ ー ズ	European Model only
	401000KB000860	Lead Type Fuse 4A 250V	リ ー ド 付 ヒ ュ ー ズ	U.S./Canadian Model only
13	401000GA024400	Power Transformer	電 源 ト ラ ン ス	
14	401000FL299100	Electrolytic Capacitor 1000 $\mu$ F/100V	電 解 コ ン デ ン サ	
15	401000FL209100	Electrolytic Capacitor 1000 $\mu$ F/160V	電 解 コ ン デ ン サ	
16	401000HM535560	Cement Molded Resistor 560 $\Omega$ 3W	セ メ ン ト 抵 抗	
	305400JA380200	Speaker	ス ピ ー カ ー	
17	30542100000010	Cabinet Ass'y	外 装 組 立	
18	305421000000100	Speaker Grille	前 板	
	305421000000200	Back Cover	裏 板	
19	305400NB801540	Carrying Strap Ass'y	取 手 Ass'y	
20	305400CB800840	YAMAHA Plate	ネ ー ム プ レ ー ト	
21	305400AA800790	Metal Corner	コ ー ナ ー 金 具	
22	401000NB021390	Caster	キ ャ ス タ ー	
23	401000EK000980	⊕Pan Head Screw 5x107S, MA Circuit Board	尖 先 ナ ベ 小 ネ ジ	
24	401000EV430050	Toothed Washer AB5S, MA Circuit Board	歯 付 座 金	
25	401000EK800020	⊕Oval Head Screw 5x95S, Amp Unit	尖 先 丸 皿 小 ネ ジ	FCM3-BL
26	401000EK800030	Washer 5 $\phi$ , Amp Unit	山 形 ワ ッ シ ャ	FCM3-BL
	401000EQ335200	⊕Round Head Wood Screw 3.5x20, Back Cover	丸 木 ネ ジ	FCM3-BL
	401000EV203040	Washer 4S, Back Cover	平 座 金	FCM3-BL
	401000EF250250	⊕Oval Head Screw M5x25, Carrying Strap Ass'y	鉄 丸 皿 小 ネ ジ	FCrM3-2b
	401000ER231130	⊕Oval Head Wood Screw 3.1x13, YAMAHA Plate	鉄 丸 皿 木 ネ ジ	FCM3-BL
	401000EZ980550	⊕Tapping Screw 3x12, Metal Corner	ト ラ ス タ ッ ピ ン ネ ジ	FCrM3-2b
	401000EA060200	⊕Pan Head Screw 6x20, Caster	ナ ベ 小 ネ ジ	ZMC2-Y
	401000EA060300	⊕Pan Head Screw 6x30, Caster	ナ ベ 小 ネ ジ	ZMC2-Y
	401000EA350300	⊕Pan Head Screw 5x30S, Speaker	ナ ベ 小 ネ ジ	FCM3-BL
	401000EV303050	Spring Washer 5S, Speaker	バ ネ 座 金	