



*G100,-115,-410,-412 Guitar Amplifiers*

# **SERVICE MANUAL**

## SPECIFICATIONS

	G100-115	G100-410	G100-412
<b>OUTPUT POWER</b>	100 Watts RMS @ 7% THD into 8 ohms		
<b>SPEAKERS</b>	Single 15" (38cm) Yamaha JA-3802	Four 10" (25cm) Yamaha JA-2556	Four 12" (30cm) Yamaha JA-3059
<b>SENSITIVITY</b>	High, -37.8dBm (10mV); Low, -31.8dBm (20mV) @ 1kHz (Volume & Tone Controls at max.)		
<b>INPUT IMPEDANCE</b>	High, 1Mohm; Low, 130kohms		
<b>RECORD OUTPUT</b>	+4dBm nominal, +31.2dBm max. For 600-ohm unbalanced lines		
<b>NOISE</b>	-42dBm (Volume Control at min.)		
<b>REVERB</b>	Accutronics, spring-type		
<b>TREMOLO</b>	Modulation depth, 0-80%; Speed, 2-20Hz		
<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, REVERB, TREMOLO SPEED, TREMOLO INTENSITY, PRE-SET VOLUME		
<b>FOOT SWITCH JACKS</b>	PRE-SET VOLUME, TREMOLO, REVERB, DISTORTION		
<b>POWER REQUIREMENTS</b>	110, 117, 130, 220 or 240VAC, 50/60Hz, 117V 2A (Canadian model), 250W (other models)		
<b>DIMENSIONS (W x H x D)</b>	27½" (70.8cm) x23½" (59.7cm)x9¾"(25cm)	27½"(70.8cm)x29½" (75.2cm)x9¾"(25cm)	27½"(70.8cm)x34½" (87.2cm)x9¾"(25cm)
<b>WEIGHT</b>	68.3 lbs. (31kg)	72.8 lbs. (33kg)	88.2 lbs. (40kg)
<b>FINISH</b>	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.

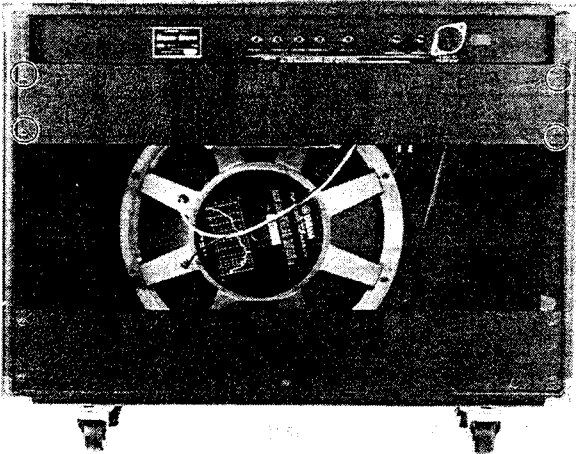


Figure 1

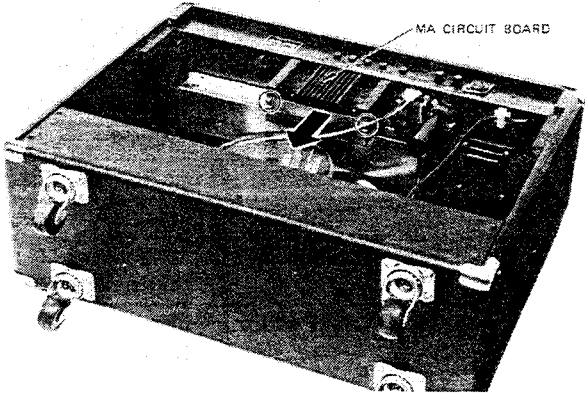


Figure 2

**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.

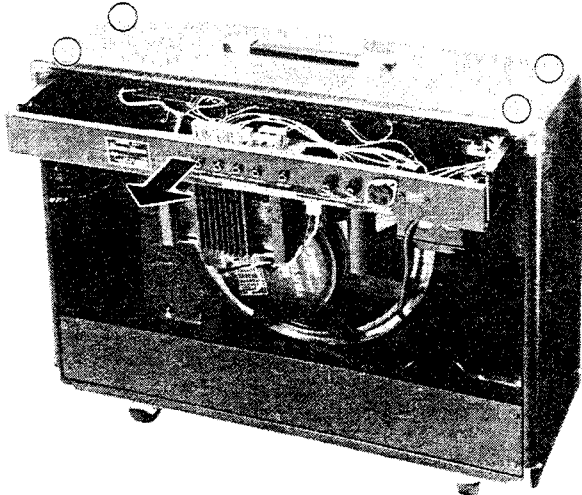


Figure 3

## 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 8-ohm dummy load to the output terminal.
2. Feed a -6dBm/1kHz 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.

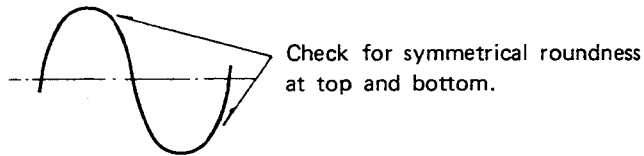


Figure 4. Output Waveform

### Center Voltage Adjustment

4. Adjust VR2 so that the DC circuit board +CO terminal voltage is  $45 \pm 1V$ .
- 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  $10 \pm 1mV$  at no signal.

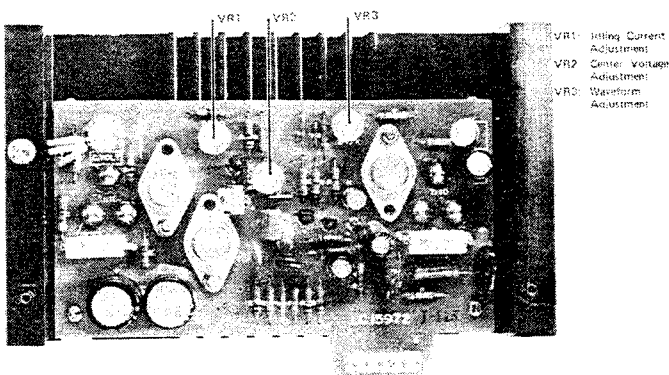


Figure 5. MA Circuit Board

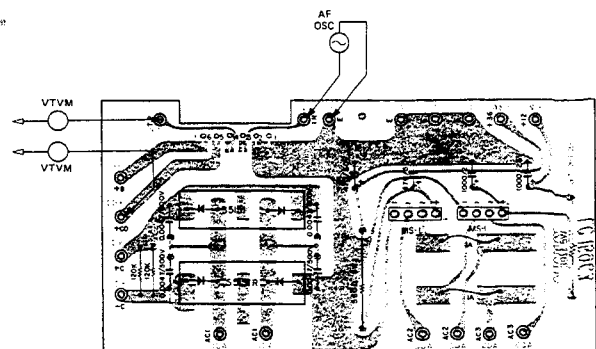


Figure 6. DC Circuit Board

## PERFORMANCE CHECKS

### Gain

1. Connect an 8-ohm dummy load to the output terminal.
2. Set the Bright, Distortion, Reverb, Tremolo Intensity and Tremolo Speed 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.

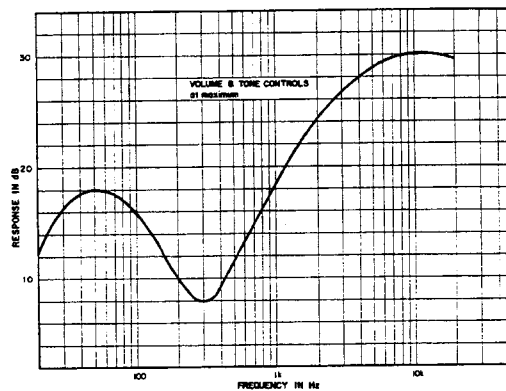
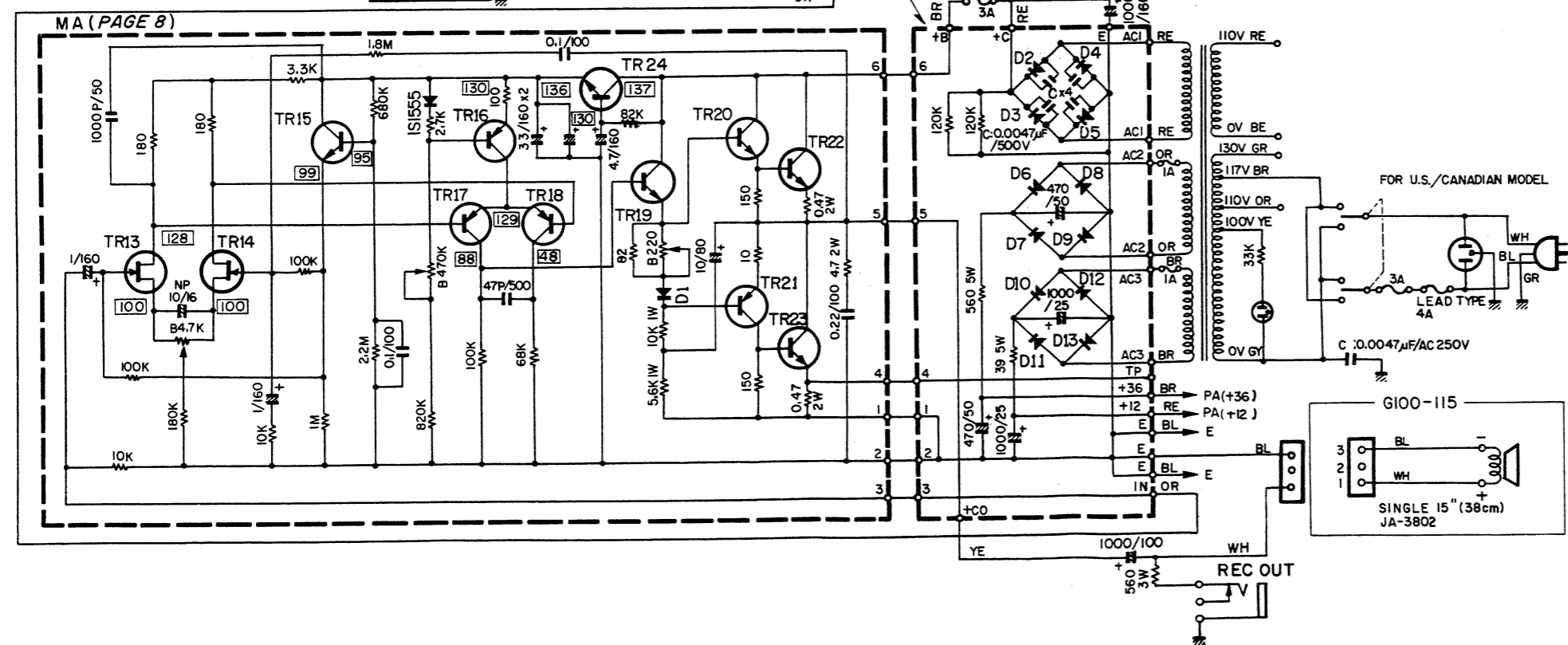
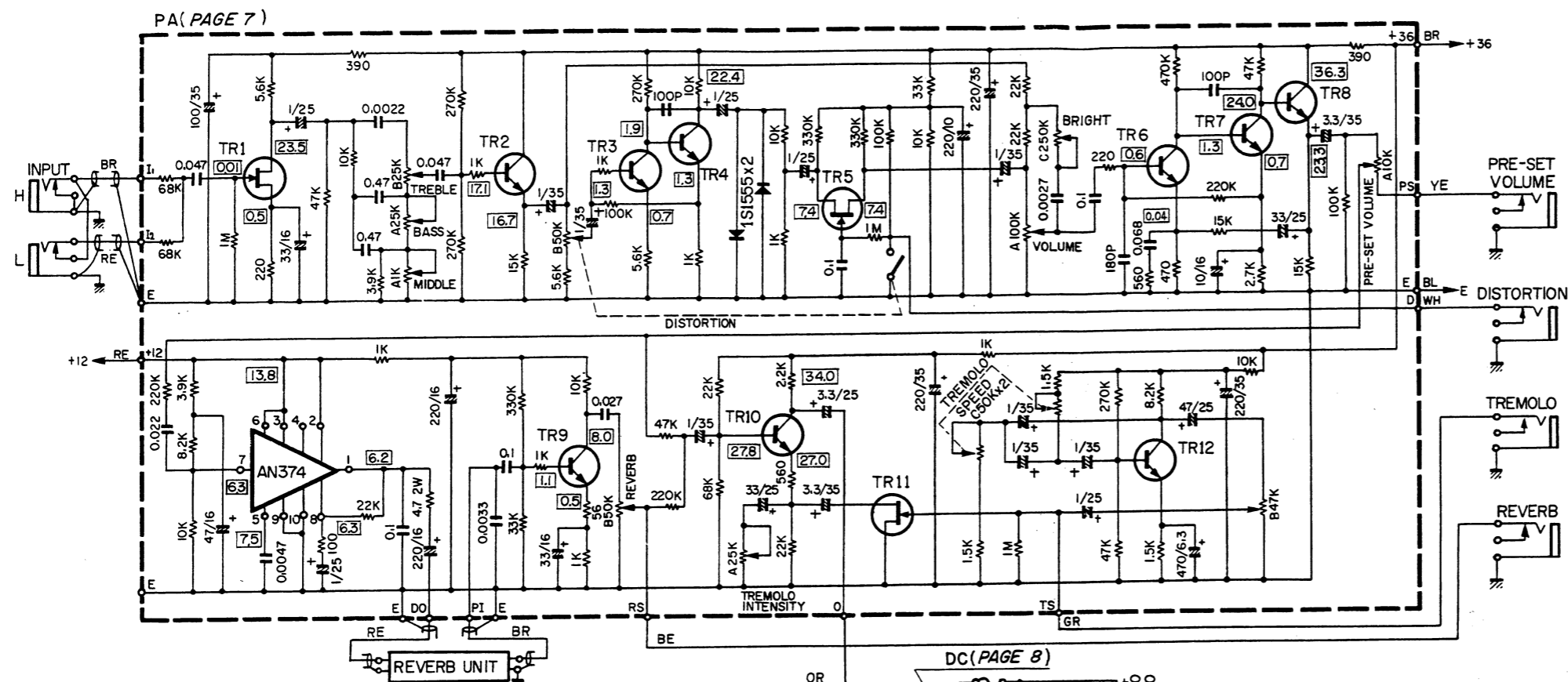


Figure 7. Frequency Response Curve

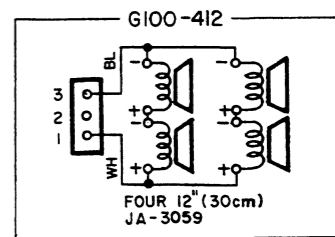
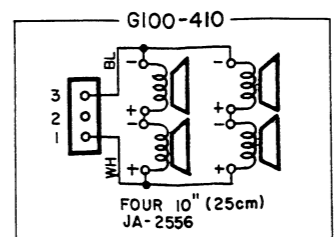
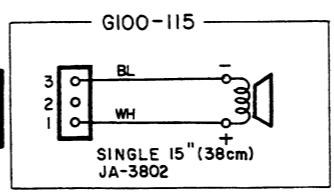
### Noise Level

10. At no input condition noise level should be below  $-18\text{dBm}$ . When the Volume knob is turned from maximum to minimum, the noise level should be below  $-42\text{dBm}$ . 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.

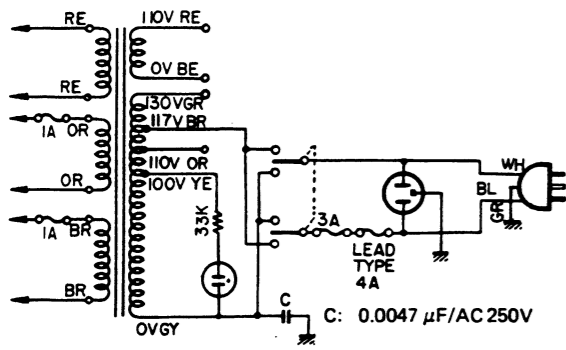


- NOTES:
1. ALL RESISTORS IN OHMS 1/4 WATT UNLESS OTHERWISE NOTED.
  2. ALL CAPACITORS IN MFD. UNLESS OTHERWISE NOTED.
  3. ALL VOLTAGES MEASURED WITH A VTVM, WITH ALL CONTROLS SET AT MINIMUM.
  4. WIRE COLOR ABBREVIATIONS  
 BL: BLACK GR: GREEN GG: LIGHT GREEN  
 BR: BROWN BE: BLUE SB: LIGHT BLUE  
 RE: RED VI: VIOLET PK: PINK  
 OR: ORANGE GY: GRAY TR: TRANSPARENT  
 YE: YELLOW WH: WHITE TP: TIN PLATED
  5. TRANSISTORS  
 TR1, 5, 11, 13-14: 2SK30A (FET)  
 TR2-4, 6-10, 12, 15: 2SC1000  
 TR16: 2SA561  
 TR17-18: 2SA818  
 TR19-20: 2SC783  
 TR21: 2SA483  
 TR22-23: 2SC1586  
 TR24: 2SC484
  6. DIODES  
 D1: STV-3H (VARISTOR)  
 D2-3: S5151  
 D4-5: S5151R  
 D6-9/10-13: MS-1

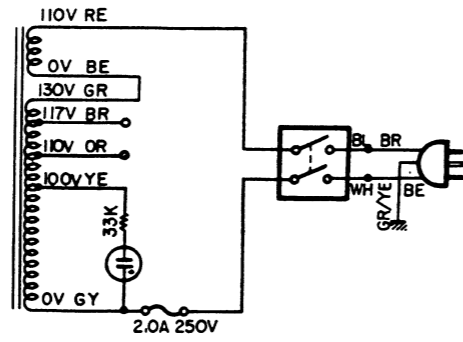


G100, -115, -410, -412 GUITAR AMPLIFIER SCHEMATIC DIAGRAM

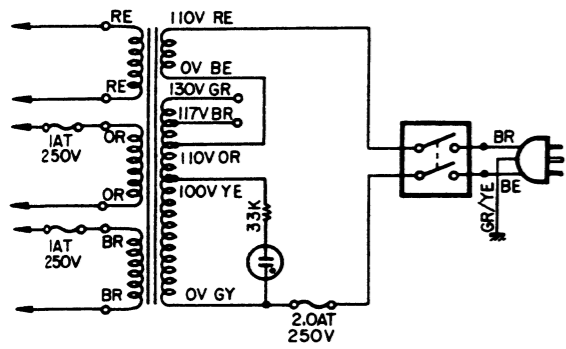
▼ FOR U.S./ CANADIAN MODEL



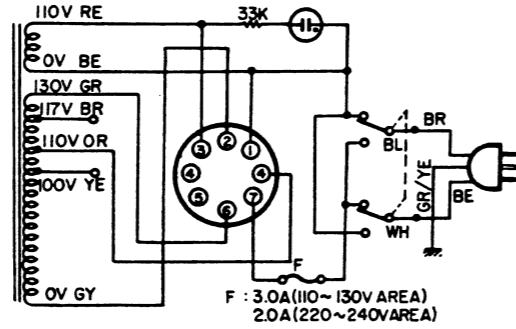
▼ FOR AUSTRALIAN MODEL



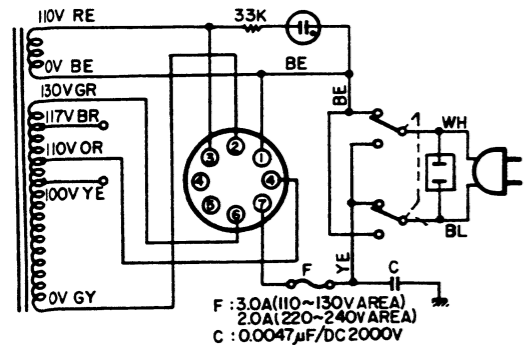
▼ FOR EUROPEAN MODEL



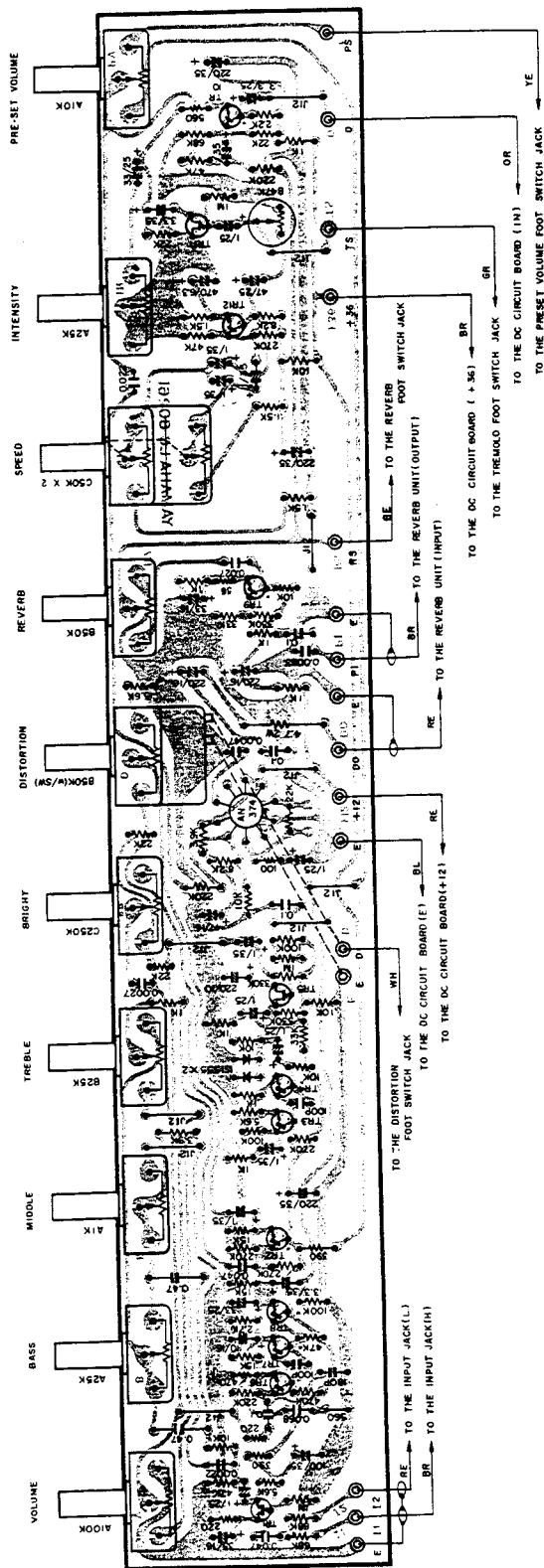
▼ FOR SOUTH AFRICAN MODEL



▼ FOR GENERAL MODEL



POWER CIRCUIT ARRANGEMENTS



CIRCUIT REF. NO.	DESCRIPTION
TR1/5/11	2SK30A
TR2-4/6-10/12	2SC1000



**Part No.**

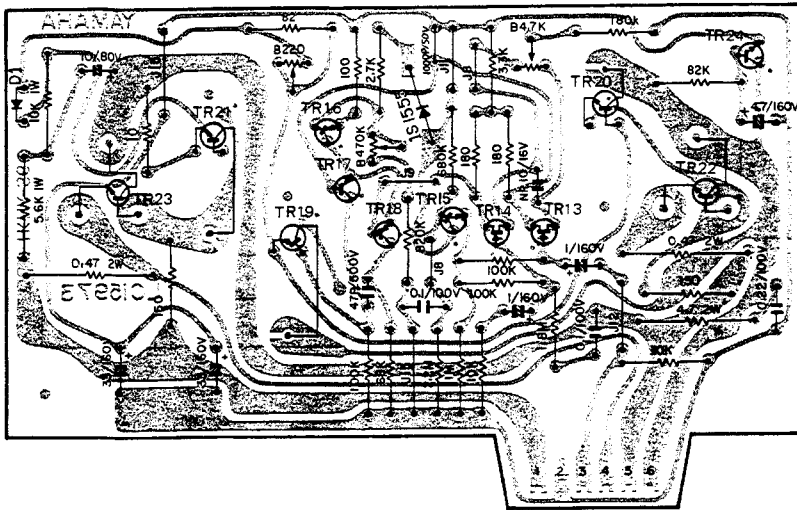
**Description**

305400NA800540	PA Circuit Board Ass'y # 80261
401000iC100010	Transistor 2SC1000
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

**PA CIRCUIT BOARD**

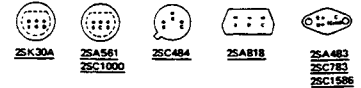


G100-115 (S/# 1026~)  
 G100-410 (S/# 1026~)  
 G100-412 (S/# 1026~)

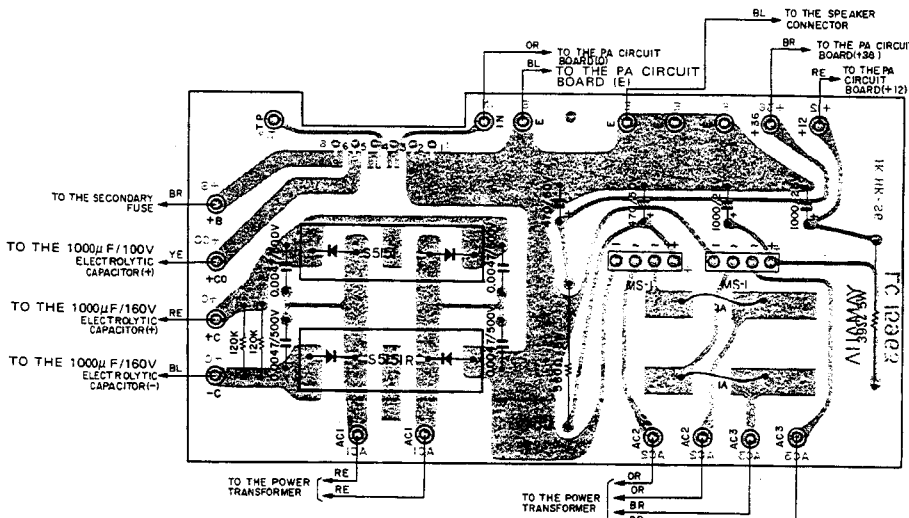


Part No.	Description
305400A800580	MA Circuit Board Ass'y # 15973
401000A048320	Transistor 2SA483
401000A056120	Transistor 2SA561
401000A081820	Transistor 2SA818
401000C048440	Transistor 2SC484
401000C078320	Transistor 2SC783
401000C100010	Transistor 2SC1000
401000C158600	Transistor 2SC1586
401000E000010	FET 2SK30A
401000F000040	Diode 1S1555
401000F000450	Varistor STV-3H
401000HT410010	Trimmer B220Ω
401000HT410040	Trimmer B4.7kΩ
401000HT410110	Trimmer B470kΩ
401000HM522470	Cement Molded Resistor 0.47Ω 2W
401000LB300110	Transistor Socket
305400BA008130	Heat-sinker
305400A800740	Transistor Cover
305400A800750	Circuit Board Cover

CIRCUIT REF. NO.	DESCRIPTION
TR13/14	2SK30A
TR15	2SC1000
TR16	2SA561
TR17/18	2SA818
TR19/20	2SC783
TR21	2SA483
TR22/23	2SC1586
TR24	2SC484



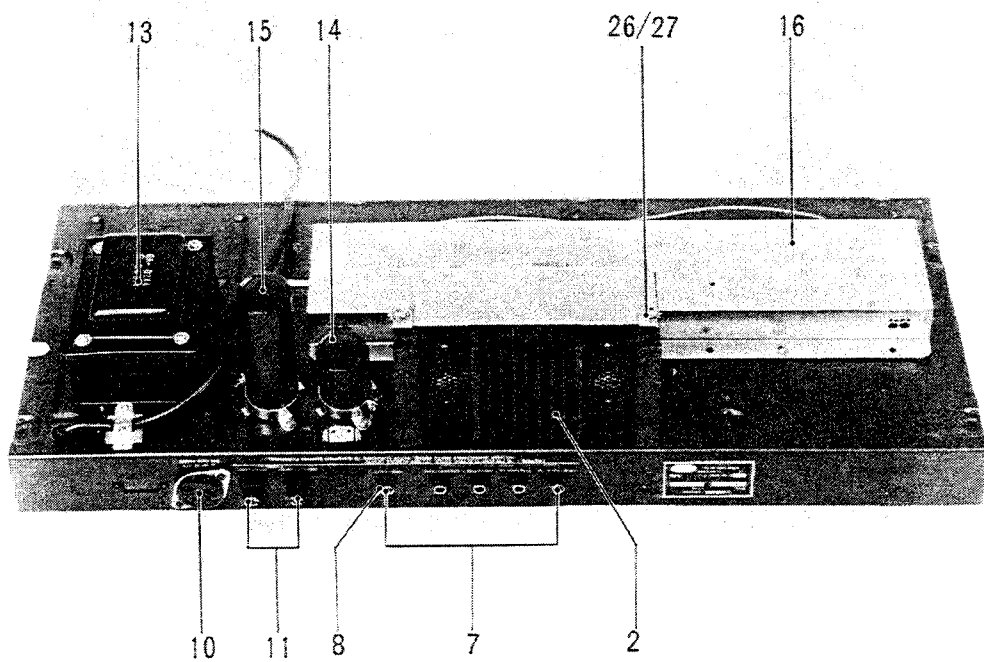
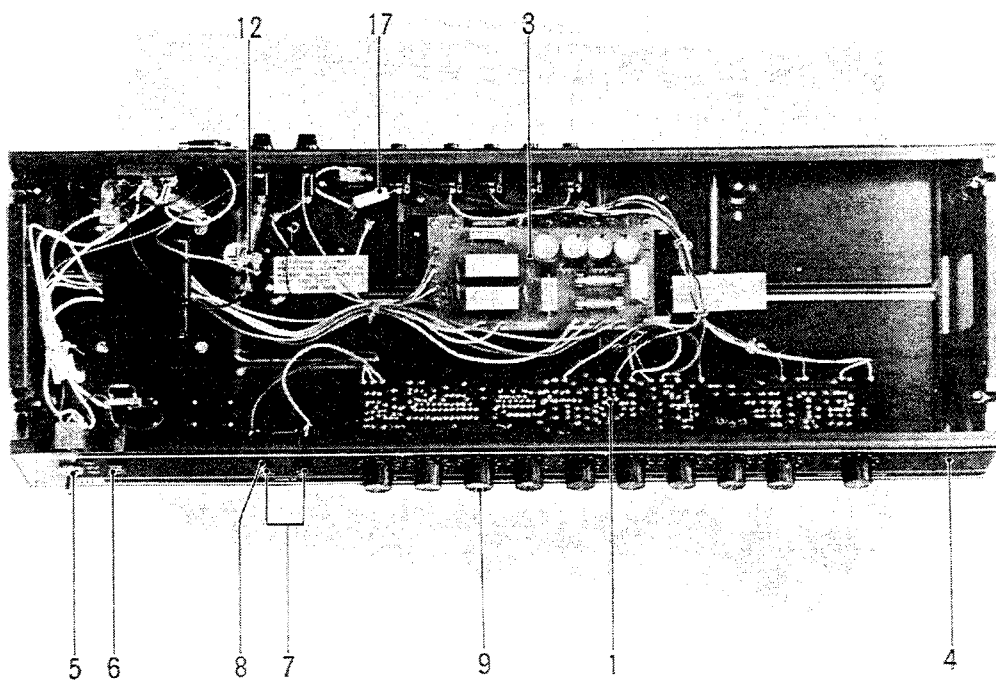
### MA CIRCUIT BOARD



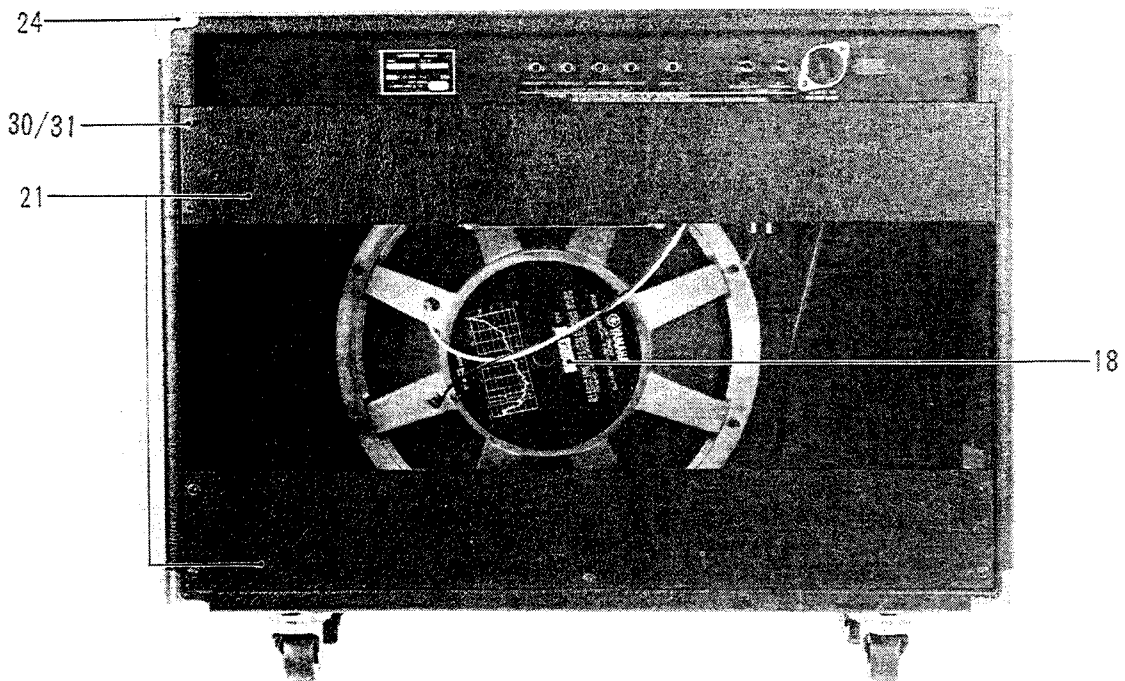
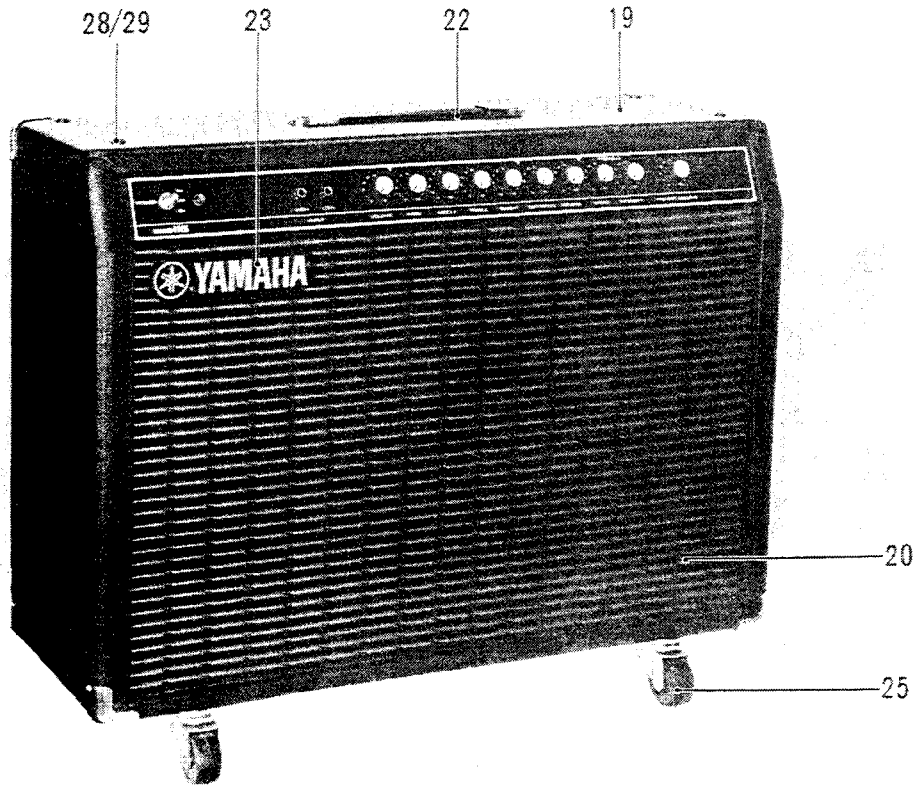
Part No.	Description
305400A029180	DC Circuit Board Ass'y #15963 for General, South African, Australian Models
305400A800360	DC Circuit Board Ass'y #15963 for U.S./Canadian Model
305400A800370	DC Circuit Board Ass'y #15963 for European Model
401000H000120	Diode MS-1
401000H000210	Diode S5151
401000H000220	Diode S5151R
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)

### DC CIRCUIT BOARD

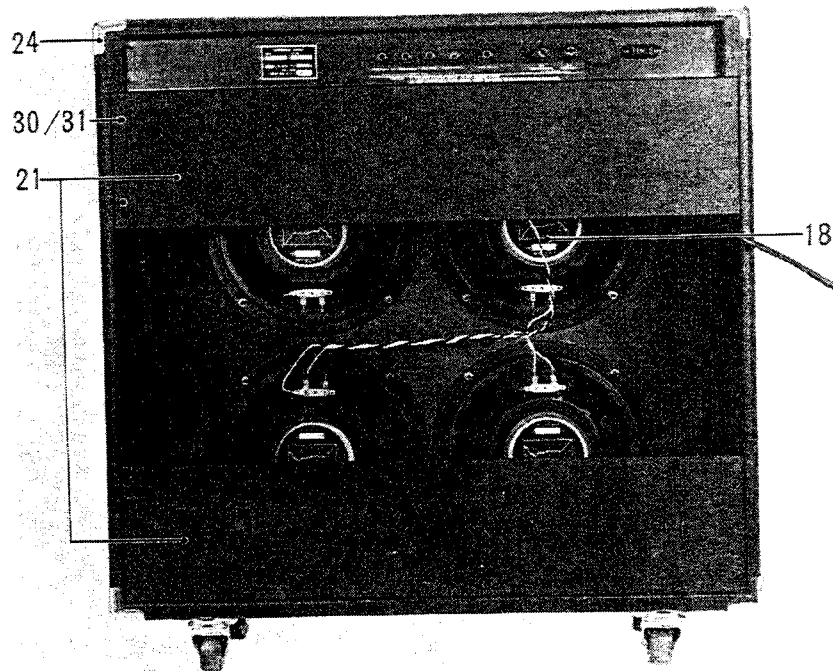
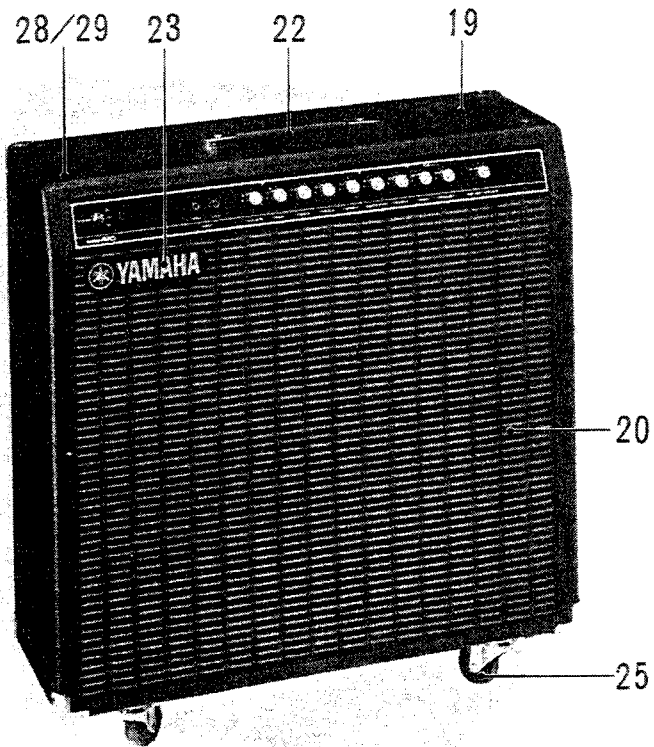
PARTS LIST



G100-115 (S/# 1026~)  
G100-410 (S/# 1026~)  
G100-412 (S/# 1026~)

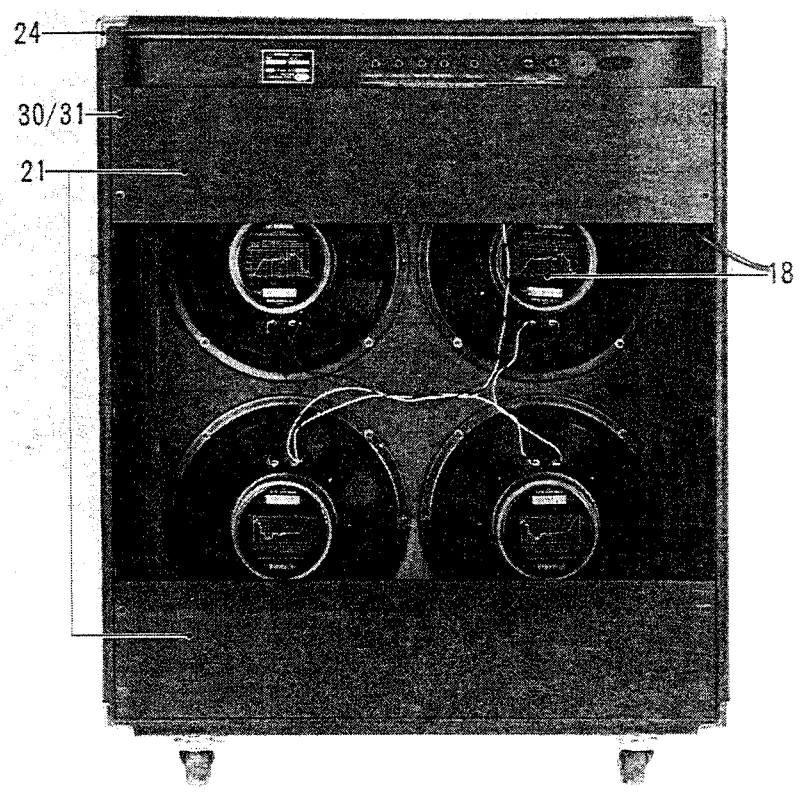
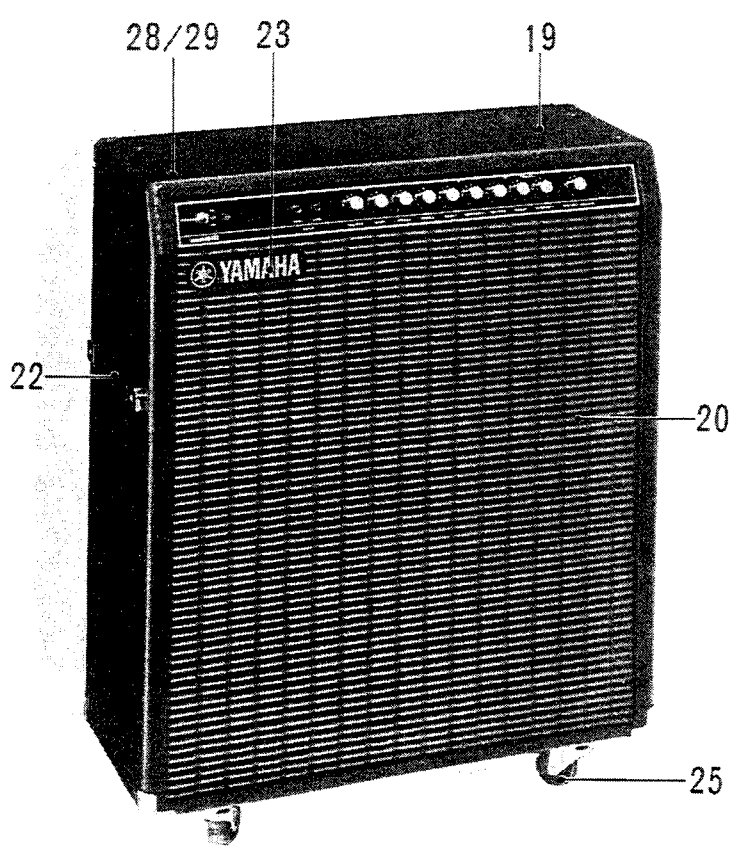


G100-115



G100-410

100-115 (S/# 1026~)  
100-410 (S/# 1026~)  
100-412 (S/# 1026~)



Ref. No.	Part No.	Description	Remarks	Common Models
1	305400NA800540	PA Circuit Board #80261	P A シ ー ト	
2	305400NA800580	MA Circuit Board #15972 <i>J115</i>	M A シ ー ト	
3	305400NA029180	DC Circuit Board #15962	D C シ ー ト	General, South African, Australian Models only
3	305400NA800360	DC Circuit Board #15962	D C シ ー ト	U.S./Canadian Model only
3	305400NA800370	DC Circuit Board #15962	D C シ ー ト	European Model only
4	305400AA801310	Control Panel	バ ネ ル	G100-115
4	305400AA801330	Control Panel	バ ネ ル	G100-410
4	305400AA801350	Control Panel	バ ネ ル	G100-412
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
	401000FQ083470	Oil Capacitor 0.0047 $\mu$ F/DC2000V	コ ン デ ン サ	General Model only
6	401000JB000360	Neon Lamp	ネオンブラケット	
7	401000LB200630	Phone Jack	イヤホンジャック	
8	305600CB062010	Phone Nut	ホ ー ン ナ ッ ト	
9	305400CB800820	Knob	ツ マ ミ	
10	401000LB300250	AC Socket	3 P A C ソ ケ ッ ト	U.S./Canadian Model only
	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
11	401000LB200480	Fuse Holder	ヒューズホルダー	except for European Model
	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
12	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	401000JH000090	Reverb Unit, Accutronics 4AB2C1A	リバーブユニット	
17	401000HM535560	Cement Molded Resistor 560 $\Omega$ 3W	セメント抵抗	
18	301000JA380200	Speaker	ス ピ ー カ ー	G100-115
18	401000JA255600	Speaker	ス ピ ー カ ー	G100-410
18	305400JA305900	Speaker	ス ピ ー カ ー	G100-412
19	30541400000010	Cabinet Ass'y	外 装 組 立	G100-115
19	30541700000010	Cabinet Ass'y	外 装 組 立	G100-410
19	30541800000010	Cabinet Ass'y	外 装 組 立	G100-412
20	30541200000100	Speaker Grille	前 板	G100-115
20	30540900000100	Speaker Grille	前 板	G100-410
20	30541800000100	Speaker Grille	前 板	G100-412
21	30541200000200	Back Cover	裏 板	G100-115
21	30540900000200	Back Cover	裏 板	G100, -410, -412
22	305400N8801540	Carrying Strap Ass'y	取 手 Ass'y	
23	305400CB800840	YAMAHA Plate	ネームプレート	
24	305400AA800790	Metal Corner	コ ー ナ ー 金 具	
25	401000NB021390	Caster <i>AA 801680</i>	キャスター	
26	401000EK000980	⊕ Pan Head Screw 5x107S, MA Circuit Board	尖先ナベ小ネジ	
27	401000EV430050	Toothed Washer AB5S, MA Circuit Board	歯付座金	
28	401000EK800020	⊕ Oval Head Screw 5x95S, Amp Unit	尖先丸皿小ネジ	FCM3-BL

