YAMAHA

G100B-212 Guitar Amplifier

SERVICE MANUAL

LSM-26 ① 13 @ Printed in Japan 1·75

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SPECIFICATIONS

OUTPUT POWER	100 watts RMS @ 7% THD into 4 ohms
SPEAKERS	Two 12" (30cm) Yamaha JA-3059, heavy-duty
SENSITIVITY (Ch 1 & Ch 2)	High, –37.8dBm (10mV); Low, –31.8dBm (20mV) @ 1kHz (Volume & Tone Controls at max.)
INPUT IMPEDANCE (Ch 1 & Ch 2)	High, 1 Mohm; Low, 130 kohms
NOISE	–45dBm (Volume Controls at min.)
REVERB (Ch 1 only)	Accutronics, spring-type
INPUTS (Ch 1 & Ch 2)	1-high gain & 1-low gain for each channel; HIGH and LOW of each channel may be used simultaneously, thereby providing equal gain.
RECORD OUTPUT	+4dBm nominal, +28.2dBm max. For 600-ohm unbalanced lines
CONTROLS	POWER switch, plus the following continuously variable controls: CH 1 – VOLUME, BASS, MIDDLE, TREBLE, BRIGHT, DISTORTION, REVERB CH 2 – VOLUME, BASS, MIDDLE, TREBLE, BRIGHT (switch, not variable)
FOOT SWITCH JACKS (Ch 1 only)	DISTORTION, REVERB
POWER REQUIREMENTS	110, 117, 130, 220 or 240VAC, 50/60Hz, 117V 2A (Canadian model), 250W (other models)
DIMENSIONS	Width 27¾" (70.8cm) x Height 23½" (59.7cm) x Depth 9¾" (25cm)
WEIGHT	63.9 lbs. (29kg)
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.

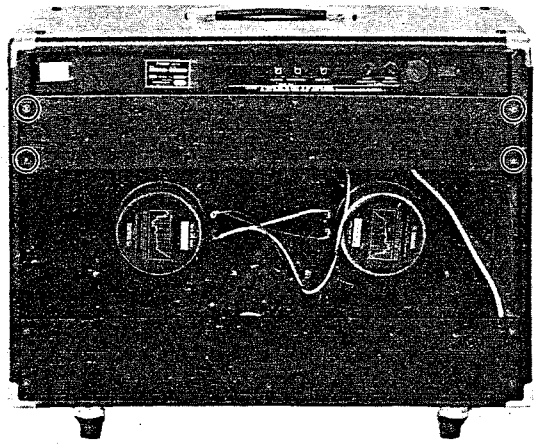


Figure 1

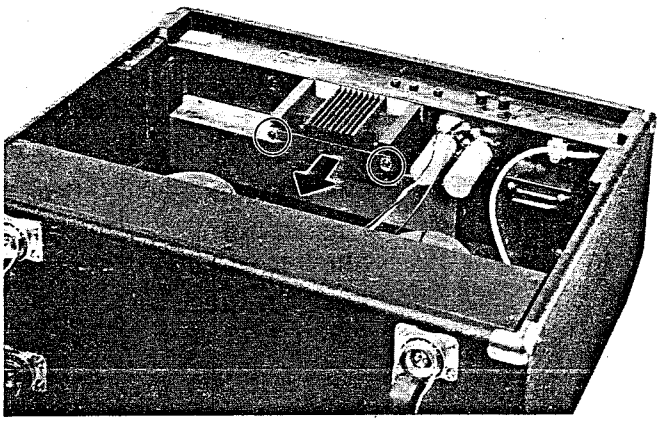


Figure 2

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 4.

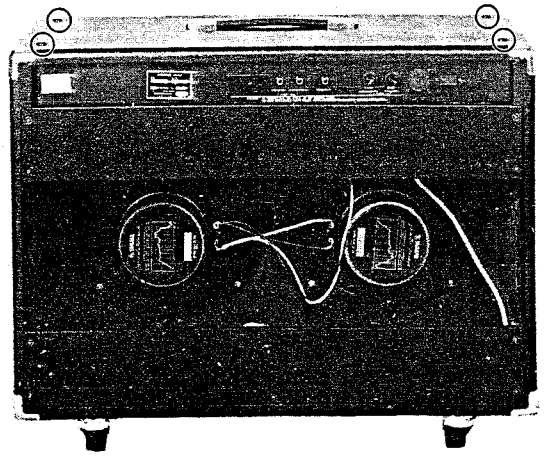


Figure 3

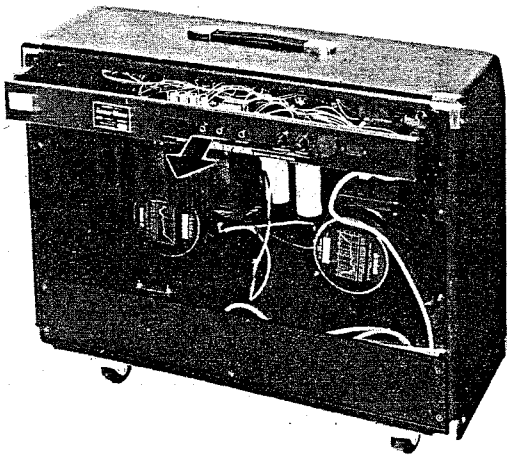


Figure 4

MAIN AMP ADJUSTMENTS

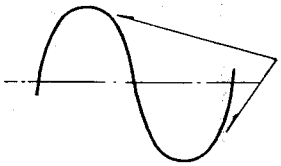
Equipment Requirements

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

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

Waveform Adjustment

1. Connect a 4Ω dummy load to the output terminal.
2. Feed a 1kHz, −6dBm signal to the input terminal (between the DC circuit board IN and the E terminal).
3. Adjust the VR3 as shown in Figure 6 to achieve a waveform which is symmetrically rounded like that shown in Figure 5.



Check for symmetrical roundness at top and bottom.

Figure 5. Output Waveform

Center Voltage Adjustment

4. Adjust VR2 so that the DC circuit board +CO terminal voltage is 31 ± 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 5 ± 1mV at no signal.

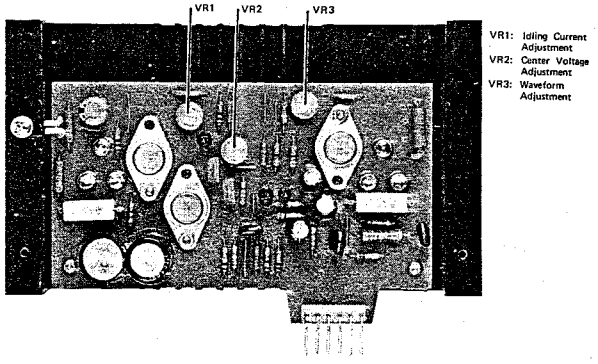


Figure 6. MA Circuit Board

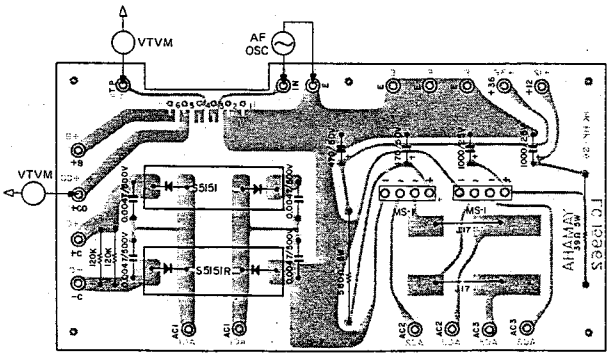


Figure 7. DC Circuit Board

PERFORMANCE CHECKS

Gain

1. Connect a 4Ω dummy load to the output terminal.
2. Set the Bright, Distortion, Reverb knobs to minimum, Bright switch to off, Volume, Bass, Middle, Treble knobs to maximum.
3. Feed a −30dBm/400Hz signal through the Input jack.
4. The output signal level from the output terminal should be within the following limits.

   High Input Jack: +25± 3dBm
   Low Input Jack: +19 ± 3dBm

Total Harmonic Distortion

5. Feed a 400Hz signal through the Input jack.
6. Set the input level so that the output level is +28.2dBm (100 Watts RMS).
7. The distortion factor should be within 10%.

Frequency Response

8. Feed −50dBm signals from 20kHz down to 20Hz observing the output on a level meter.
9. The indicated response should be within ± 3dB of the specified response curve.

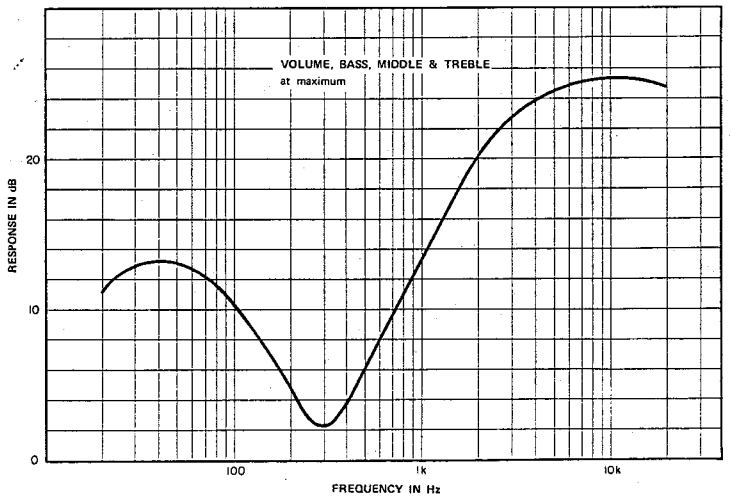
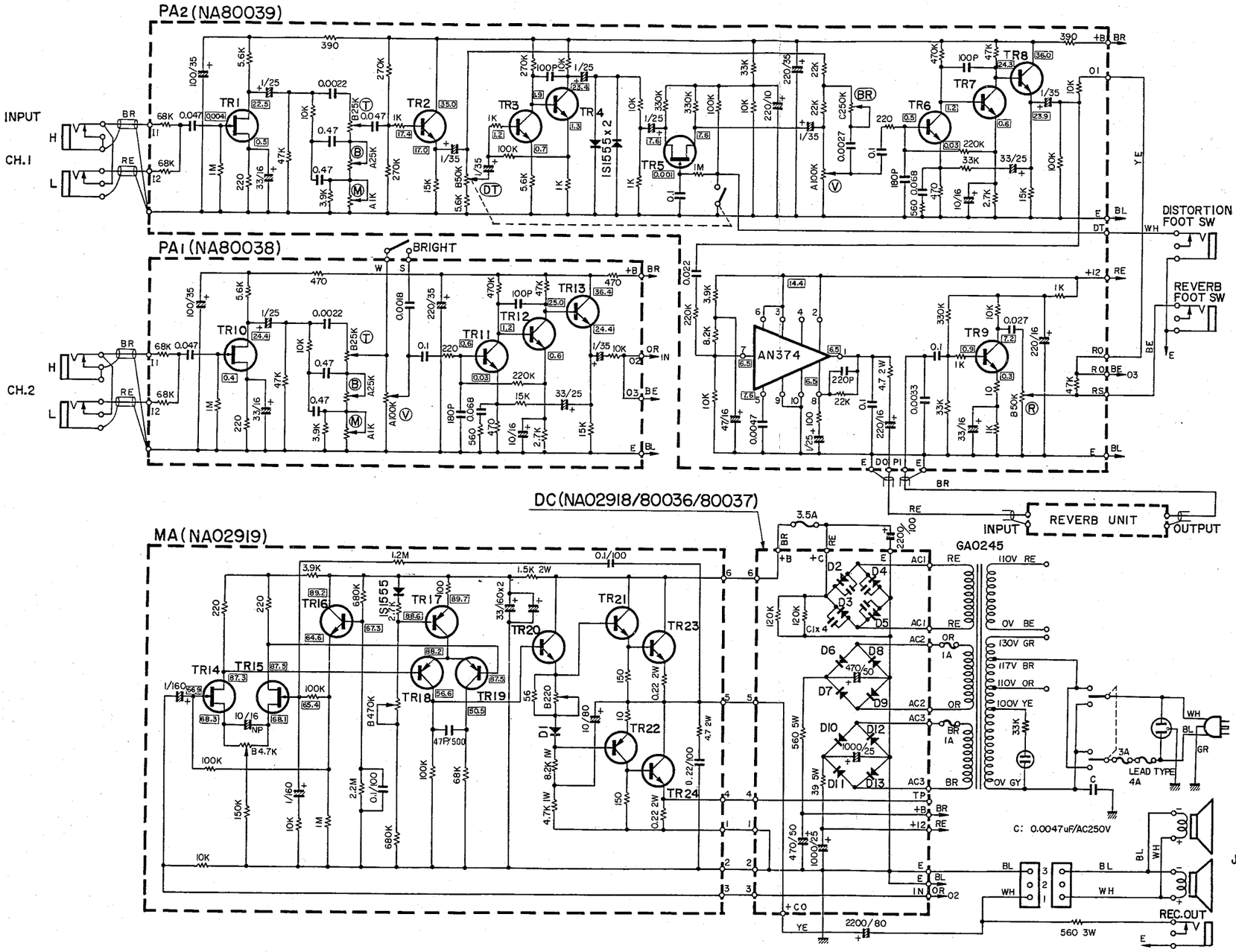


Figure 8. Frequency Response Curve

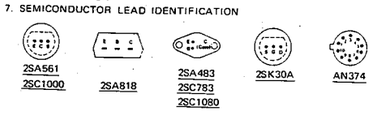
Noise Level

10. At no input condition noise level should be below −20dBm. When the Volume knob is turned from maximum to minimum, the noise level should be below −45dBm. 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 0dBm = 0.775V, except where specified.

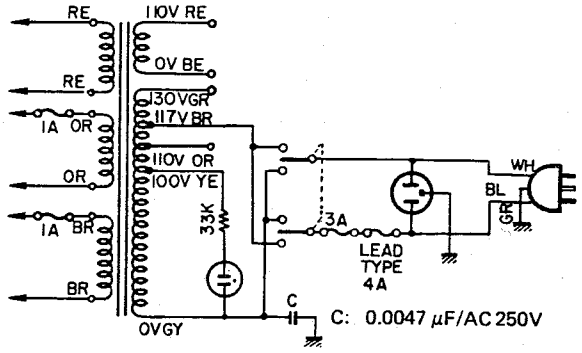


NOTES:
1. ALL RESISTORS IN OHMS ¼ WATT UNLESS OTHERWISE NOTED.
2. ALL CAPACITORS IN MFD. UNLESS OTHERWISE NOTED.
3. ALL VOLTAGES MEASURED WITH A VTVM, WITH ALL CONTROLS SET AT MINIMUM.
4. ABBREVIATIONS
   CONTROLS
   T: TREBLE — B: BASS
   M: MIDDLE — DT: DISTORTION
   V: VOLUME — BR: BRIGHT
   R: REVERB
   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
   TR1, 5, 10, 14, 15 : 2SK30A (FET)
   TR2-4, 6-8, 9, 11-13, 16 : 2SC1000
   TR17: 2SA561
   TR18, 19: 2SA818
   TR20, 21: 2SC783
   TR22: 2SA483
   TR23, 24: 2SC1080
6. DIODES
   D1: STV-3H (VARISTOR)
   D2/3: S5151
   D4/5: S5151R
   D6-9/10-13: MS-1
7. SEMICONDUCTOR LEAD IDENTIFICATION

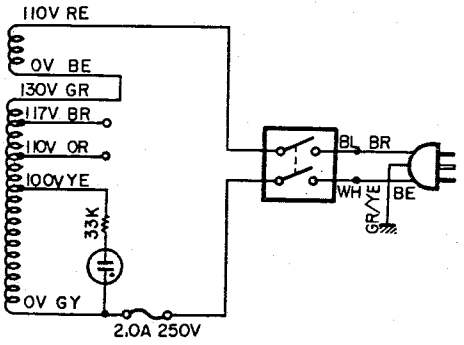


G100B-212 GUITAR AMPLIFIER SCHEMATIC DIAGRAM

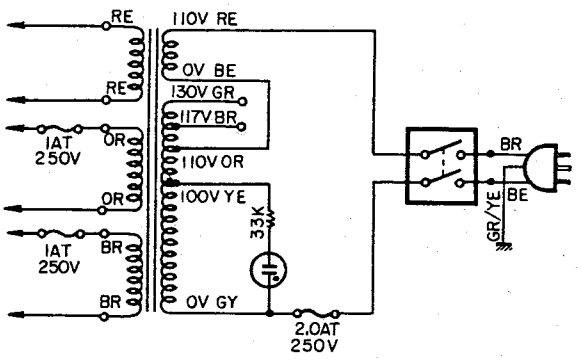
▼ FOR U.S./ CANADIAN MODEL



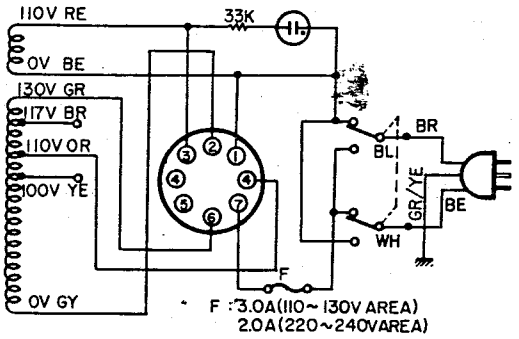
▼ FOR AUSTRALIAN MODEL



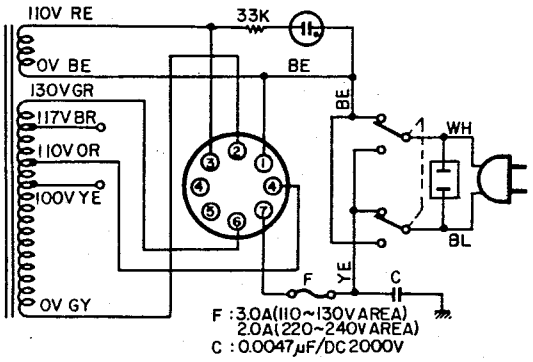
▼ FOR EUROPEAN MODEL



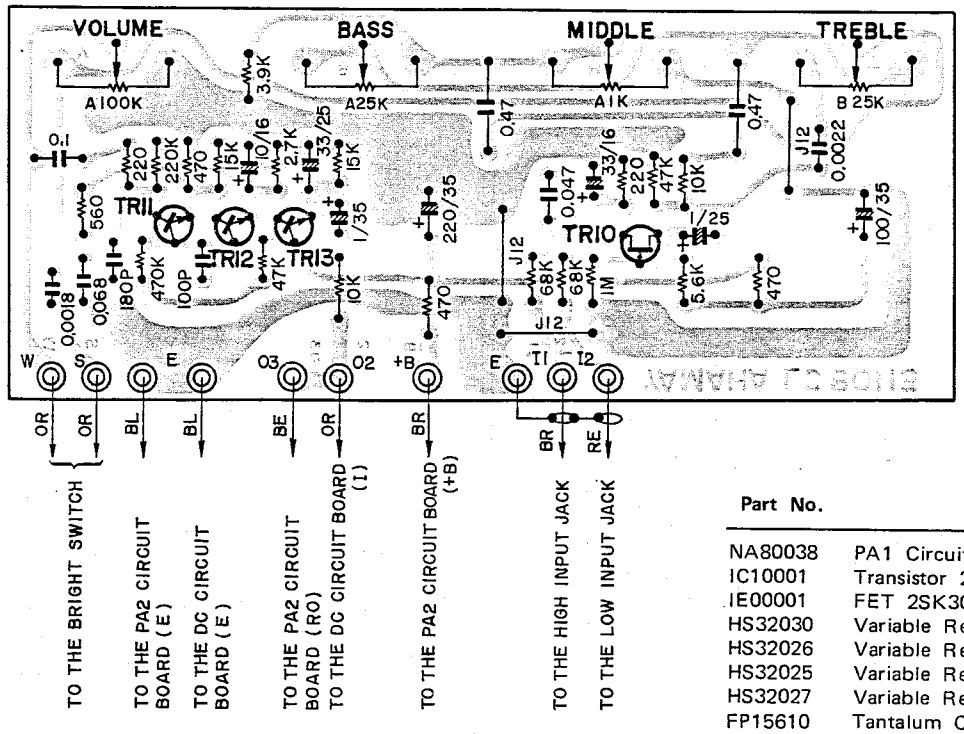
▼ FOR SOUTH AFRICAN MODEL



▼ FOR GENERAL MODEL

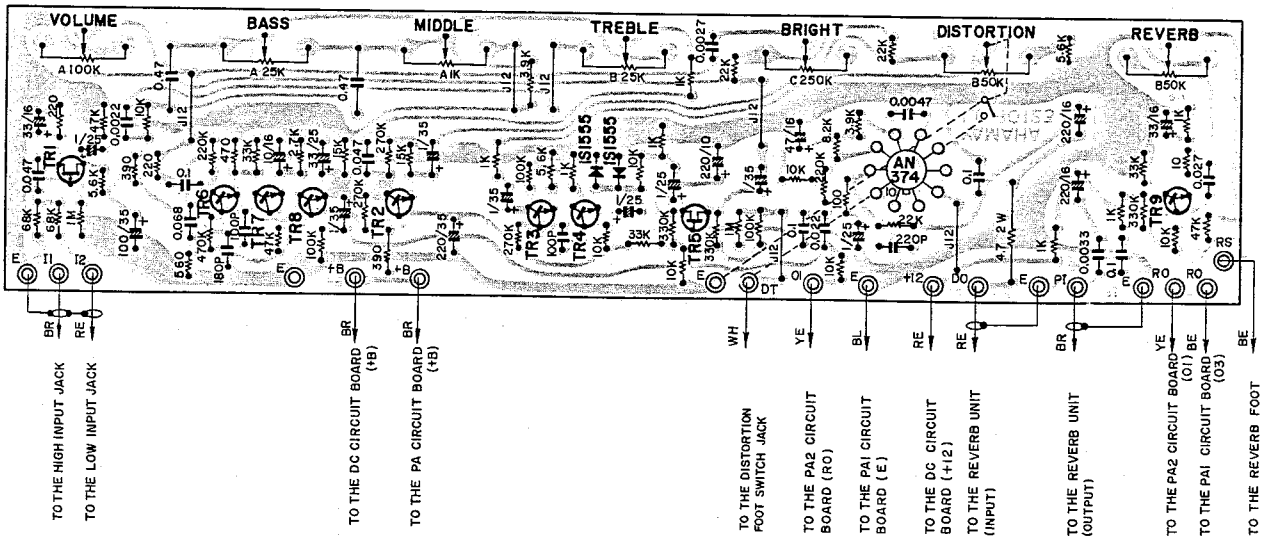


POWER CIRCUIT ARRANGEMENTS



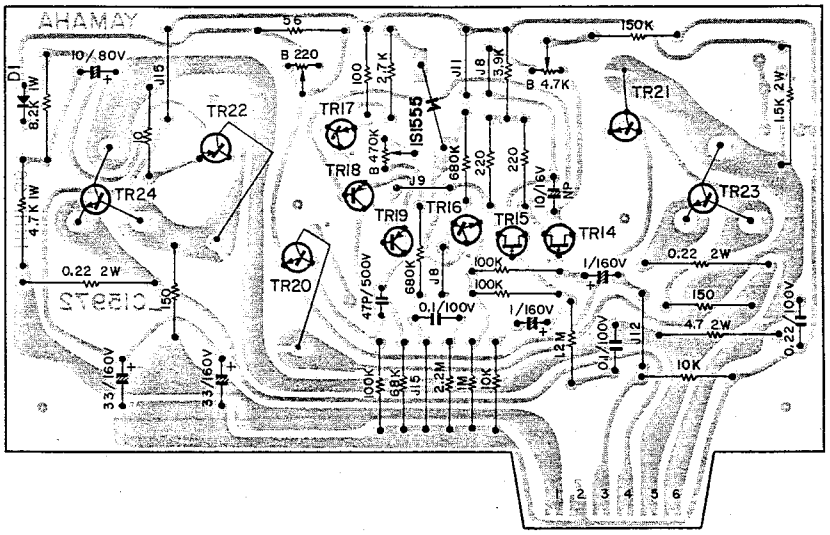
Part No.	Description
NA80038	PA1 Circuit Board Ass'y #80113
IC10001	Transistor 2SC1000
IE00001	FET 2SK30
HS32030	Variable Resistor A1kΩ, Middle
HS32026	Variable Resistor A25kΩ, Bass
HS32025	Variable Resistor A100kΩ, Volume
HS32027	Variable Resistor B25kΩ, Treble
FP15610	Tantalum Capacitor 1μF/35V

PA1 CIRCUIT BOARD



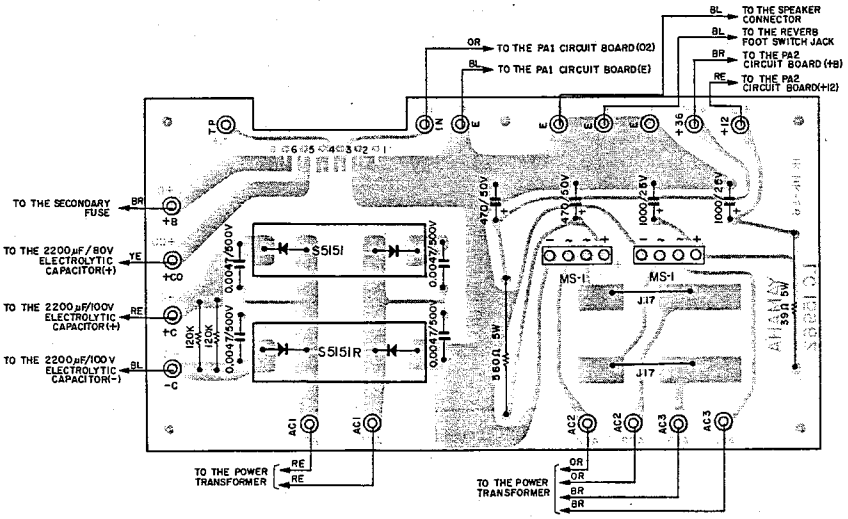
Part No.	Description
NA80039	PA2 Circuit Board Ass'y #80123
IC10001	Transistor 2SC1000
IE00001	FET 2SK30
IF00004	Diode 1S1555
IG00015	IC AN374
HS32030	Variable Resistor A1kΩ, Middle
HS32026	Variable Resistor A25kΩ, Bass
HS32025	Variable Resistor A100kΩ, Volume
HS32027	Variable Resistor B25kΩ, Treble
HS32028	Variable Resistor B50kΩ (w/Switch), Distortion
HS32022	Variable Resistor B50kΩ, Reverb
HS32029	Variable Resistor C250kΩ, Bright
HM52347	Cement Molded Resistor 4.7Ω 2W
FP15610	Tantalum Capacitor 1μF/35V

PA2 CIRCUIT BOARD



MA CIRCUIT BOARD

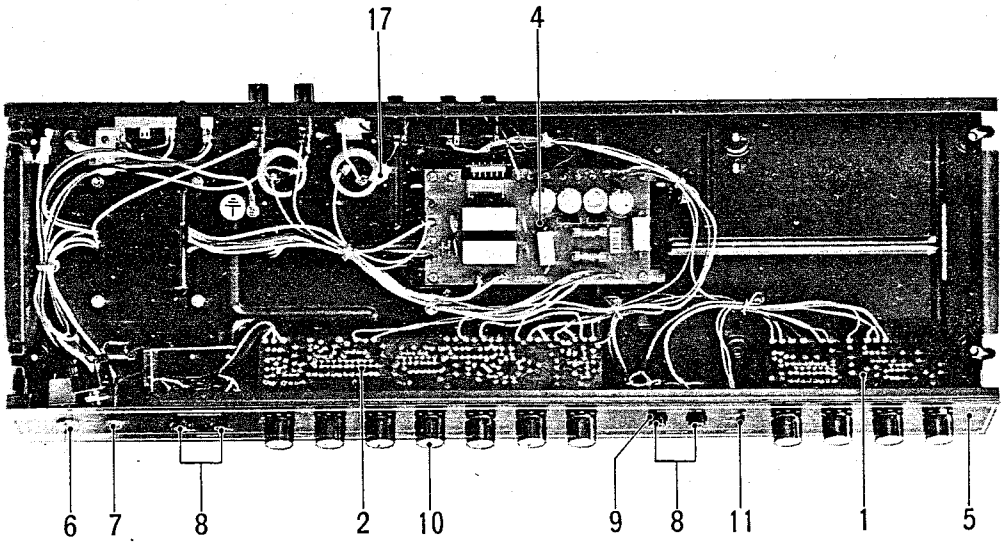
Part No	Description
NA02919	MA Circuit Board Ass'y #15972
IA04832	Transistor 2SA483
IA05612	Transistor 2SA561
IA08182	Transistor 2SA818
IC07832	Transistor 2SC783
IC10800	Transistor 2SC1080
IC10001	Transistor 2SC1000
IE00001	FET 2SK30A
IF00004	Diode 1S1555
IF00045	Varistor STV-3H
HT41001	Trimmer B220Ω
HT41004	Trimmer B4.7kΩ
HT41011	Trimmer B470kΩ
HM52222	Cement Molded Resistor 0.22Ω 2W
LB30011	Transistor Socket
BA00813	Heat-sinker
AA80074	Transistor Cover
AA80075	Circuit Board Cover

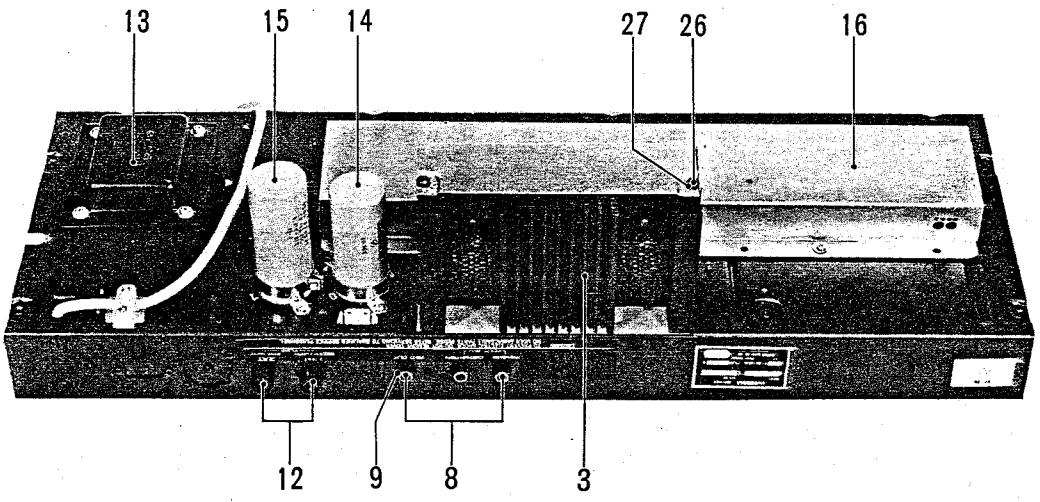


DC CIRCUIT BOARD

Part No.	Description
NA02918	DC Circuit Board Ass'y #15962 for General, South African, Australian Models
NA80036	DC Circuit Board Ass'y #15962 for U.S./ Canadian Model
NA80037	DC Circuit Board Ass'y #15962 for European Model
IH00012	Diode MS-1
IH00021	Diode S5151
IH00022	Diode S5151R
HM55439	Cement Molded Resistor 39Ω 5W
HM55556	Cement Molded Resistor 560Ω 5W
KB00033	Fuse 1A 250V (U.S./Canadian Model only)
KB00073	Miniature Fuse 1AT 250V (European Model only)

PARTS LIST

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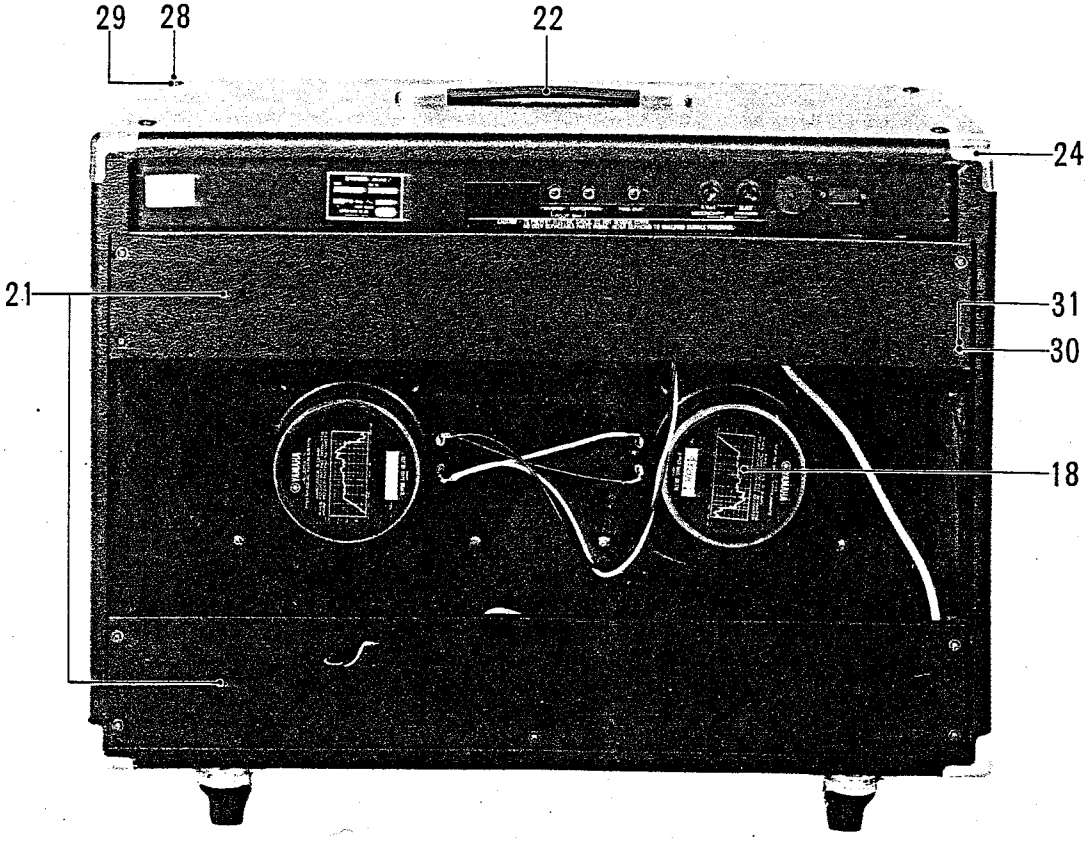
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Ref. No.	Part No.	Description		Remarks	Common Models	
1	305400NA800380	PA1 Circuit Board #80113	PA1シート			
2	305400NA800390	PA2 Circuit Board #80123	PA2シート			
3	305400NA029190	MA Circuit Board #15972	MAシート			
4	305400NA029180	DC Circuit Board #15962	DCシート	General, South African, Australian Models		
4	305400NA800360	DC Circuit Board #15962	DCシート	U.S./Canadian Model		
4	305400NA800370	DC Circuit Board #15962	DCシート	European Model		
5	305400AA801230	Control Panel	パネル			
6	401000KA300050	Power Switch	トグルスイッチ	except for European, Australian Models		
6	401000KA300010	Power Switch	トグルスイッチ	European, Australian Models		
	401000FC013470	Metalized Polyester Capacitor 0.0047μF/250V	コンデンサ	U.S./Canadian Model		
	401000FQ083470	Oil Capacitor 0.0047μF/DC2000V	コンデンサ	General Model		
7	401000JB000360	Neon Lamp	ネオンブラケットランプ			
8	401000LB200630	Phone Jack	イヤホーンジャック			
9	305600CB062010	Phone Nut	ホーンナット			
10	305400CB800820	Knob	ツマミ			
11	401000KA400250	Slide Switch	スライドスイッチ			
	401000LB300250	AC Socket	3P ACソケット	U.S./Canadian Model		
	401000LB200300	AC Socket	ACソケット	General Model		
	401000LB200250	Voltage Selector	電圧切換器	General, South African Models		
	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		
	401000KB000350	Fuse 2A 250V	ヒューズ	General, South African, Australian(220~240V Area)Models		
	401000KB000360	Fuse 3A 250V	ヒューズ	General, U.S./Canadian (110~ 130V Area) Models		
	401000KB000370	Fuse 3.5A 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		
	401000KB000760	Miniature Fuse 3.15AT	ミニヒューズ	European Model		
	401000KB000860	Lead Type Fuse 4A 250V	リード付ヒューズ	U.S./Canadian Model		
13	401000GA024500	Power Transformer	電源トランス			
14	401000FL189220	Electrolytic Capacitor 2200μF/80V	電解コンデンサ			
15	401000FL499220	Electrolytic Capacitor 2200μF/100V	電解コンデンサ			
16	401000JH000090	Reverb Unit	リバーブユニット			
17	401000HM535560	Cement Molded Resistor 560Ω 3W	セメント抵抗			
18	305400JA305900	Speaker	スピーカー			
19	30541200000010	Cabinet Ass'y	外装組立			
20	30541200000100	Speaker Grille	前板			
21	30541200000200	Back Cover	裏板			
22	305400NB801540	Handle Ass'y	取手 Ass'y			
23	305400CB800840	YAMAHA Plate	ネームプレート			
24	305400AA800790	Corner Protector	コーナー金具			
25	401000NB021390	Caster	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		
29	401000EK800030	Washer 5φ, Amp Unit	山形ワッシャ	FCM3-BL		
30	401000EQ335200	⊕Round Head Wood Screw 3.5x20, Back Cover	丸木ネジ	FCM3-BL		
31	401000EV203040	Washer 4S, Back Cover	平座金	FCM3-BL		
	401000EF250250	⊕Oval Head Screw M5x25, Handle 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, Corner Protector	トラスタッピンネジ	FCrM3-2b		
	401000EA060200	⊕Pan Head Screw 6x20, Caster	ナベ小ネジ	ZMC2-Y		
	401000EA060350	⊕Pan Head Screw 6x35, Caster	ナベ小ネジ	ZMC2-Y		