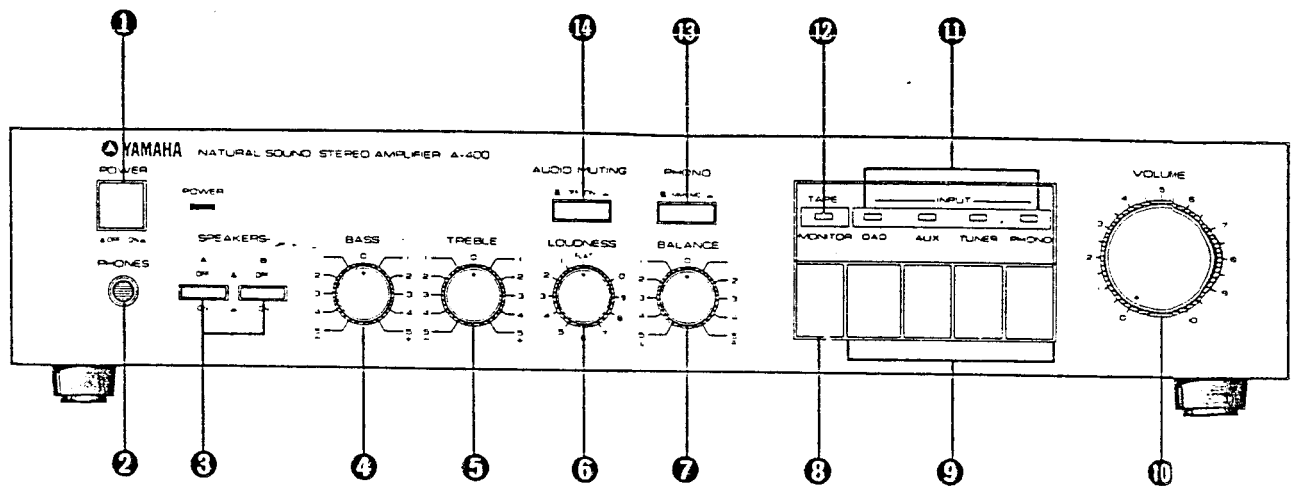


STEREO INTEGRATED AMPLIFIER

A-400

SERVICE MANUAL

FRONT PANEL



- ① POWER SWITCH
- ② HEADPHONES JACK
- ③ SPEAKER SWITCHES
- ④ BASS CONTROL
- ⑤ TREBLE CONTROL
- ⑥ LOUDNESS CONTROL

- ⑦ BALANCE CONTROL
- ⑧ TAPE MONITOR BUTTON
- ⑨ INPUT SELECTOR BUTTONS
- ⑩ VOLUME CONTROL
- ⑪ INPUT INDICATORS
- ⑫ TAPE MONITOR INDICATOR
- ⑬ PHONO SELECTOR
- ⑭ AUDIO MUTING SWITCH

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SINCE 1887



YAMAHA

NIPPON GAKKI CO., LTD. HAMAMATSU, JAPAN

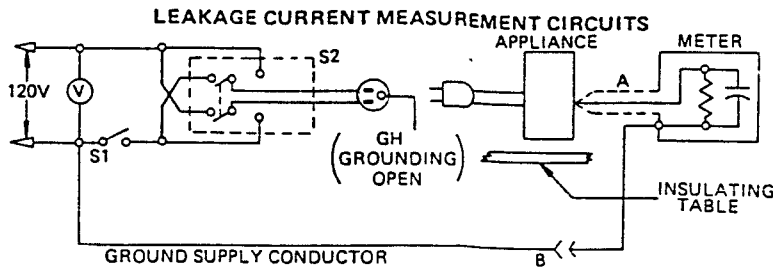
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TO SERVICE PERSONNEL

(Prepared in accordance with UL Standard 1270)

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.



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 0.5mA

SPECIFICATIONS

Continuous Power Per Channel		
20Hz ~ 20kHz (0.015% THD, 8Ω)		40W
1kHz (0.006% THD, 8Ω)		45W
DIN Standard Output Power		
Per Channel		
1kHz (1% THD, 8Ω)		50W (G)(B)(A)
Power Bandwidth		
0.05% THD, 20W (8Ω)		10Hz ~ 40kHz
Damping Factor		
(at 1kHz, 8Ω)		better than 37
Maximum Input Signal Level		
Phono MC		10mV
MM		180mV
Output Level/Impedance		
Rec Out		150mV/470Ω
Headphone Jack Rated Output/Impedance		
		0.6V/100Ω
Frequency Response		
AUX, Tape, Tuner		20Hz ~ 20kHz, -0.2dB
RIAA Equalization Deviation		
Phono MC		± 0.5dB
MM		± 0.3dB
Total Harmonic Distortion		
Phono MC to Rec Out (3V)		0.01%
MM to Rec Out (8V)		0.007%
AUX, Tape, Tuner to Sp Out (20W/8Ω)		0.015%
Intermodulation Distortion		
AUX, Tape, Tuner Rated Output/8Ω		0.02%
Signal-to-Noise Ratio (IHF A-Network)		
Phono MC (500μV, Input shorted)		76dB/71dB (G)
MM (5mV, Input shorted)		92dB/90dB (G)
AUX, Tape, Tuner (Input shorted)		97dB
Signal-to-Noise Ratio (New IHF)		
Phono MC		74dB
MM		78dB
AUX, Tape, Tuner		80dB

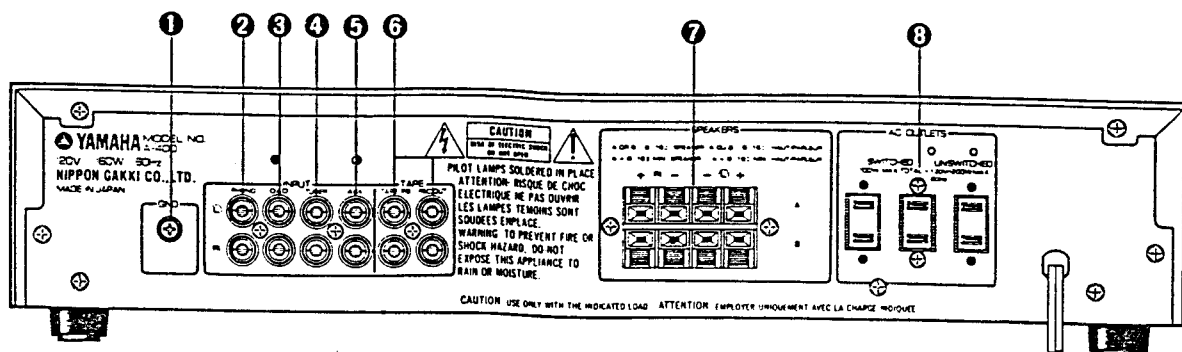
Residual Noise (IHF-A-Network)	less than 200μV
Channel Separation	
Phono MM, AUX, Tape	40Hz 68dB
	1kHz 60dB
	10kHz 60dB
Tone Control Characteristics	
Bass boost/cut	± 10dB (at 50Hz)
Bass turnover frequency	350Hz
Treble boost/cut	± 10dB (at 20kHz)
Treble turnover frequency	3.5kHz
Continuous Loudness Control (Level-related equalization)	
Attenuation	20dB (at 1kHz)
Audio Muting	-20dB
Gain Tracking Error (0 ~ -60dB)	3dB
Power Supplies	
U.S.A. and Canadian models	AC 120V, 60Hz
General model	AC 110/120/220/240V, 60/50Hz
European model	AC 220V, 50Hz
British and Australian models	AC 240V, 50Hz
Power Consumption	
U.S.A. model	160W
Canadian model	160W
General model	160W
British, Australian and European models	220W
AC Outlet	
Switched x 2	100W max.
Unswitched x 1	200W max.
Dimensions (WxHxD)	
	435 x 92 x 293mm (17-1/8x3-5/8x11-1/2")
Weight	5.3kg (11.7 lbs)

- (A) Australian model only.
- (G) European model only.
- (B) British model only.

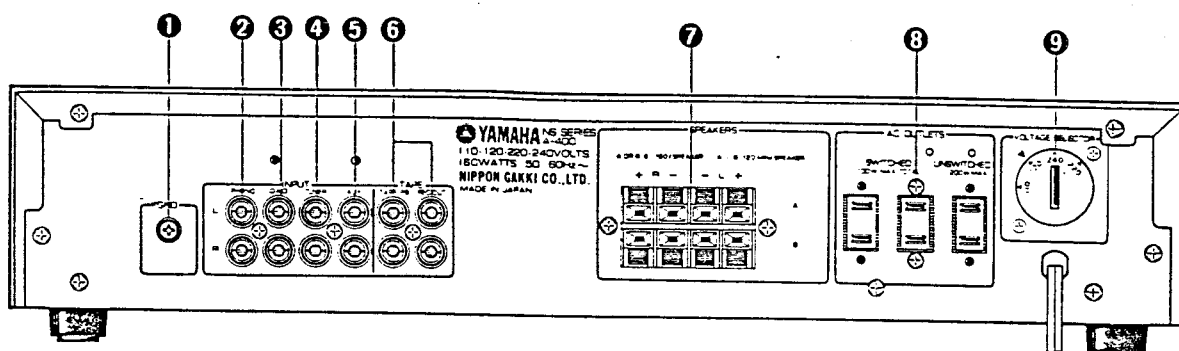
Specifications subject to change without notice.

REAR PANELS

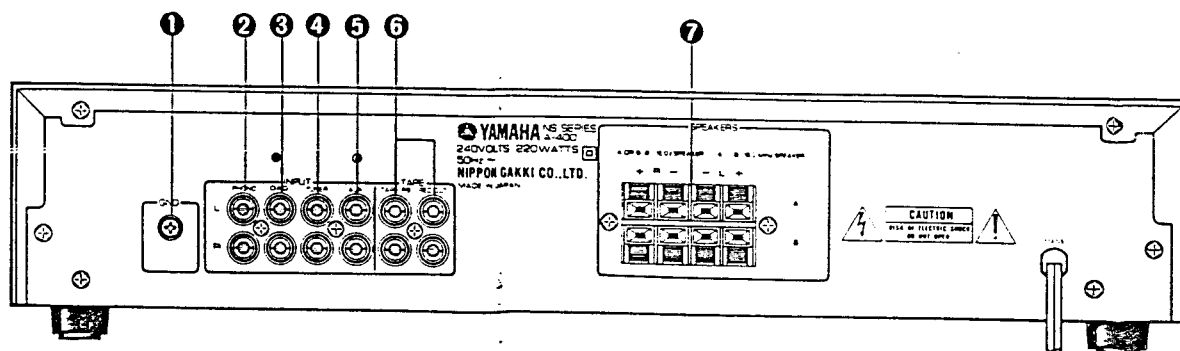
U.S. & CANADIAN MODELS



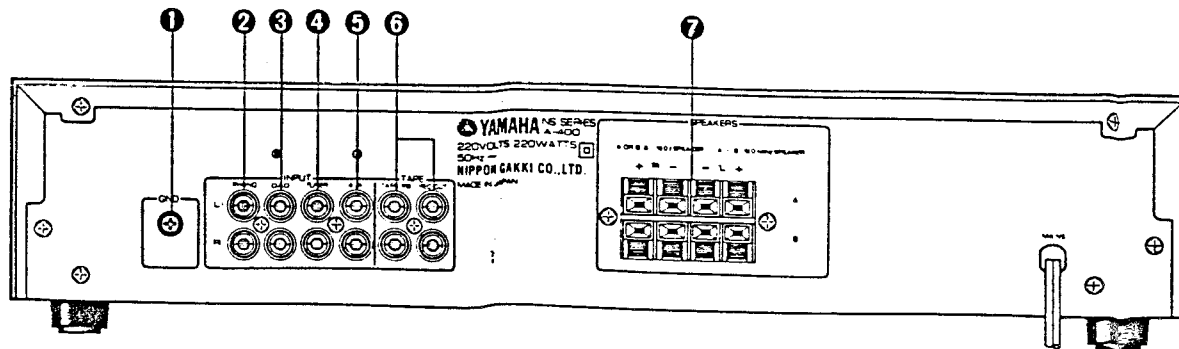
GENERAL MODEL



BRITISH & AUSTRALIAN MODELS

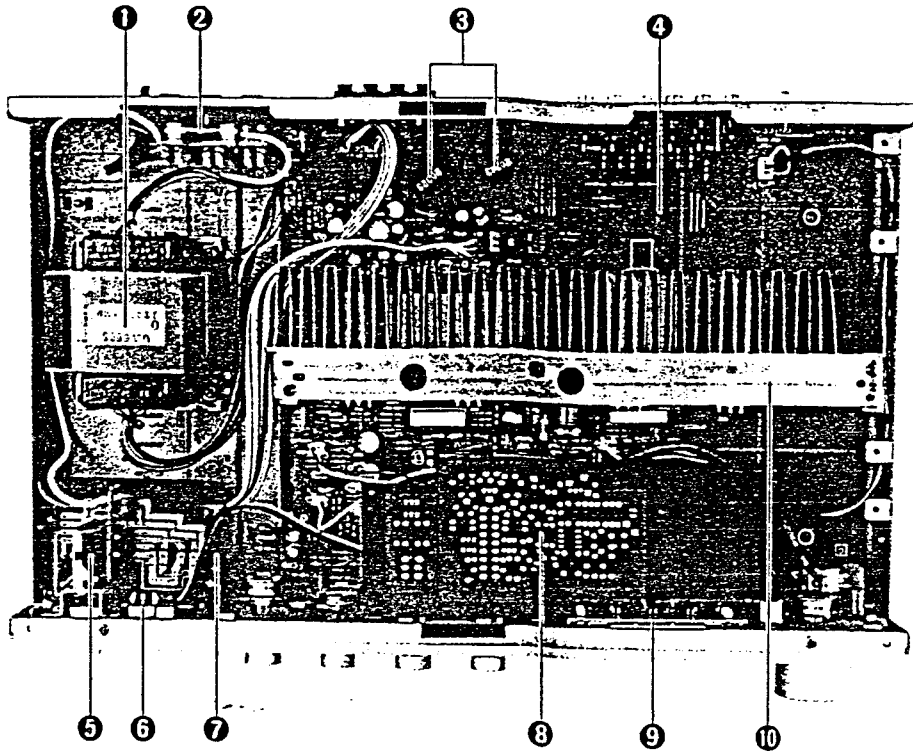


EUROPEAN MODEL



- 1 GND TERMINAL
- 2 PHONO INPUT JACKS
- 3 DAD INPUT JACKS
- 4 TUNER INPUT JACKS
- 5 AUX INPUT JACKS
- 6 TAPE PB/REC OUT JACKS
- 7 SPEAKER TERMINALS
- 8 AC OUTLETS
- 9 VOLTAGE SELECTOR

INTERNAL VIEW



1 POWER TRANSFORMER

U.S.A. & Canadian models: GA66070
 European model: GA66080
 British & Australian models: GA66090
 General model: GA66060

2 FUSE

3 ELECTROLYTIC CAPACITOR
 6800 μ F 50V: FZ00368

4 MAIN CIRCUIT BOARD

5 POWER SWITCH

6 POWER LED CIRCUIT BOARD

7 SPEAKER SWITCH CIRCUIT BOARD

8 EQUALIZER CIRCUIT BOARD

9 LED UNIT

10 HEAT SINK

DISASSEMBLY PROCEDURES

1. TOP COVER removal

Remove screws ① through ⑥ in fig. 1 and then remove the top cover.

2. BOTTOM COVER removal

Remove screws ① through ⑤ in fig. 2 and then remove the bottom cover.

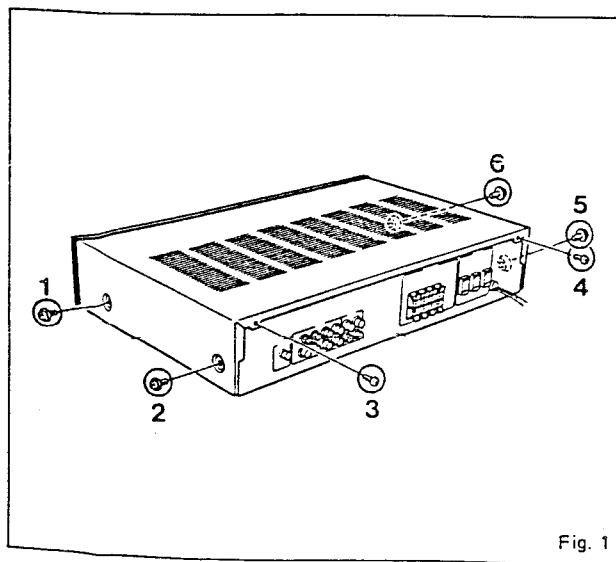


Fig. 1

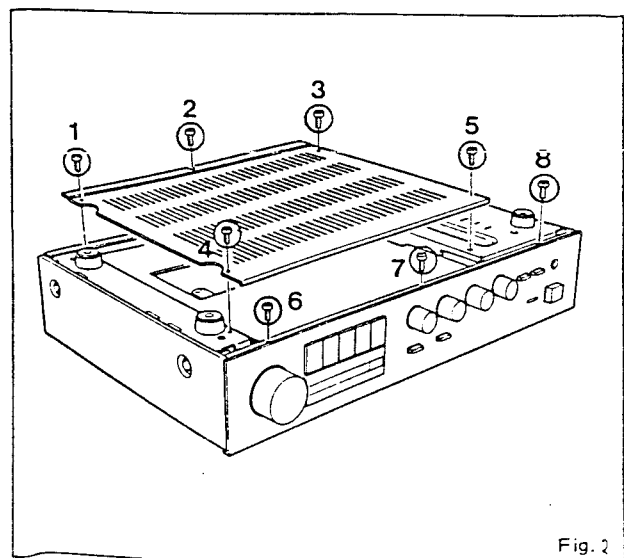


Fig. 2

3. FRONT PANEL removal

- a. Remove the knobs.
- * These are merely inserted, so you can remove them by pulling forward.
- b. Remove screws ⑥ through ⑧ in Fig. 2 and ① and ② in Fig. 3 and then remove the front panel.

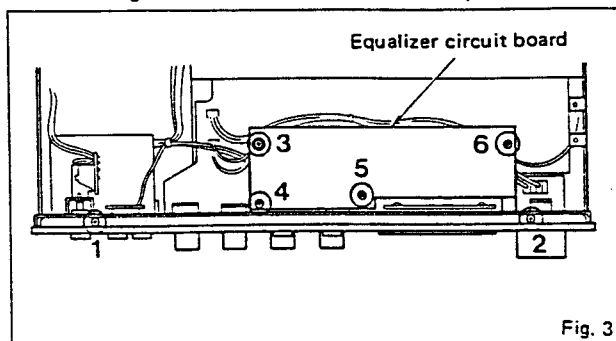


Fig. 3

4. EQUALIZER CIRCUIT BOARD removal

Remove screw ③ and plastic rivets ④ through ⑥ in fig. 3 and then remove the equalizer circuit board. In this condition, you can exchange almost all parts of equalizer, tone control and main amplifier circuit.

5. BASS, TREBLE, LOUDNESS and BALANCE control replacement

- a. Remove the front panel.
- b. Remove the equalizer circuit board.
- c. Remove the power LED circuit board by removing the LED holder and plastic rivet as shown in fig. 4.
- d. Remove screw ① and headphone jack attaching plate in fig. 4, and remove the speaker switch circuit board.
- e. Remove hexagonal nuts ⑦ through ⑩ in fig. 4.
- f. Remove screws ② through ⑥ in fig. 4 and then remove the sub frame.

In this condition, you can remove and replace each controls by unsoldering.

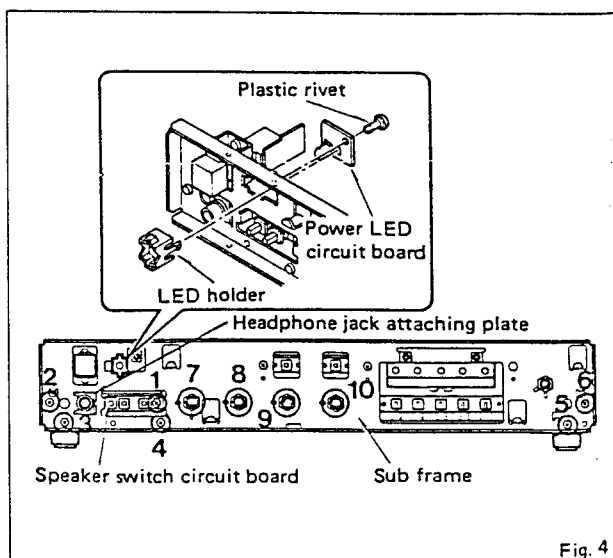


Fig. 4

6. MAIN CIRCUIT BOARD removal

- a. Disconnect the lead wires connected to the main circuit board.
- b. Remove screws (① through ④ in fig. 5) by which power transistors are screwed down.
- c. Remove screws ⑤ through ⑧ in fig. 5 and remove the heat sink.
- d. Remove the sub frame as given in procedure 5 control replacement).
- e. Remove screws ① through ⑤ in fig. 6.
- f. Remove screws ⑨ through ⑫ in fig. 5 and then remove the main circuit board.

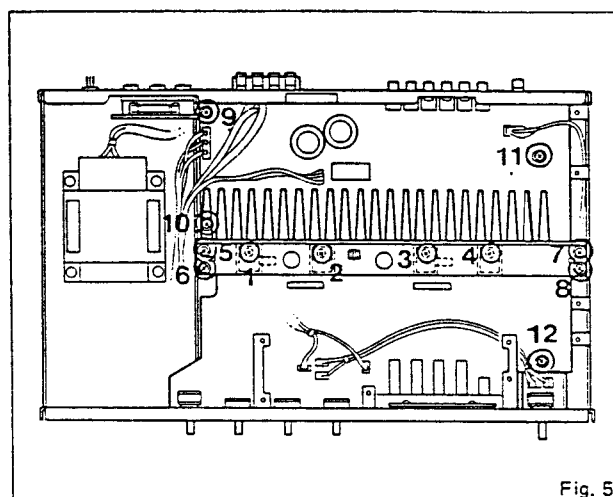


Fig. 5

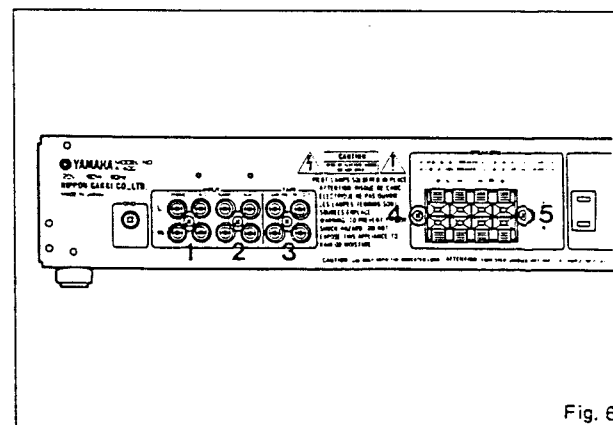
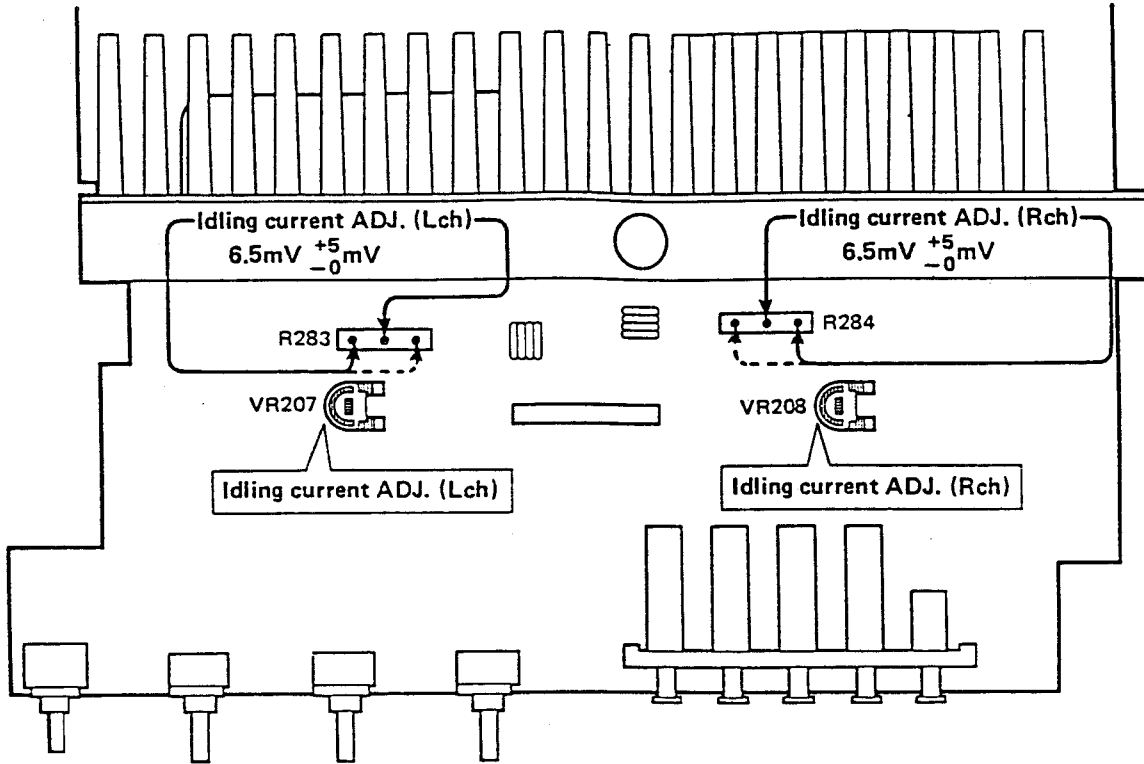


Fig. 6

ADJUSTMENTS

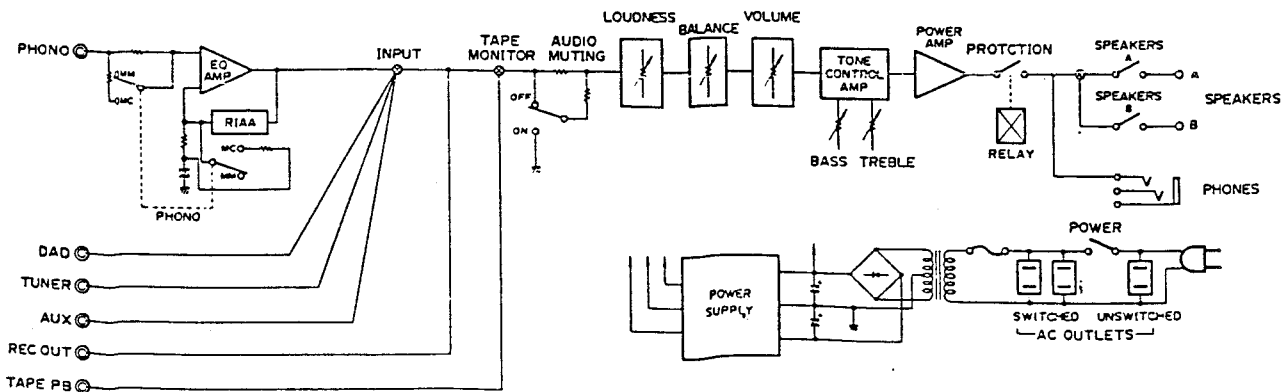


IDLING CURRENT adjustment

When replacing the power and drive transistors, adjust idling current. After the power has been turned on, age about 5 minutes in non loaded condition. Adjust VR207(Lch) and 208(Rch) so that the voltage between the center terminals of R283(Lch) and 284(Rch) and outside terminals of R283 and 284 come to 6.5 ± 0.5 mV DC.

	Test points	Adjustment points	Rating
Lch	Center terminal of R283 and outside terminal	VR207	6.5 ± 0.5 mV
Rch	Center terminal of R284 and outside terminal	VR208	6.5 ± 0.5 mV

BLOCK DIAGRAM (U.S.A. & Canadian models)



A
A-400

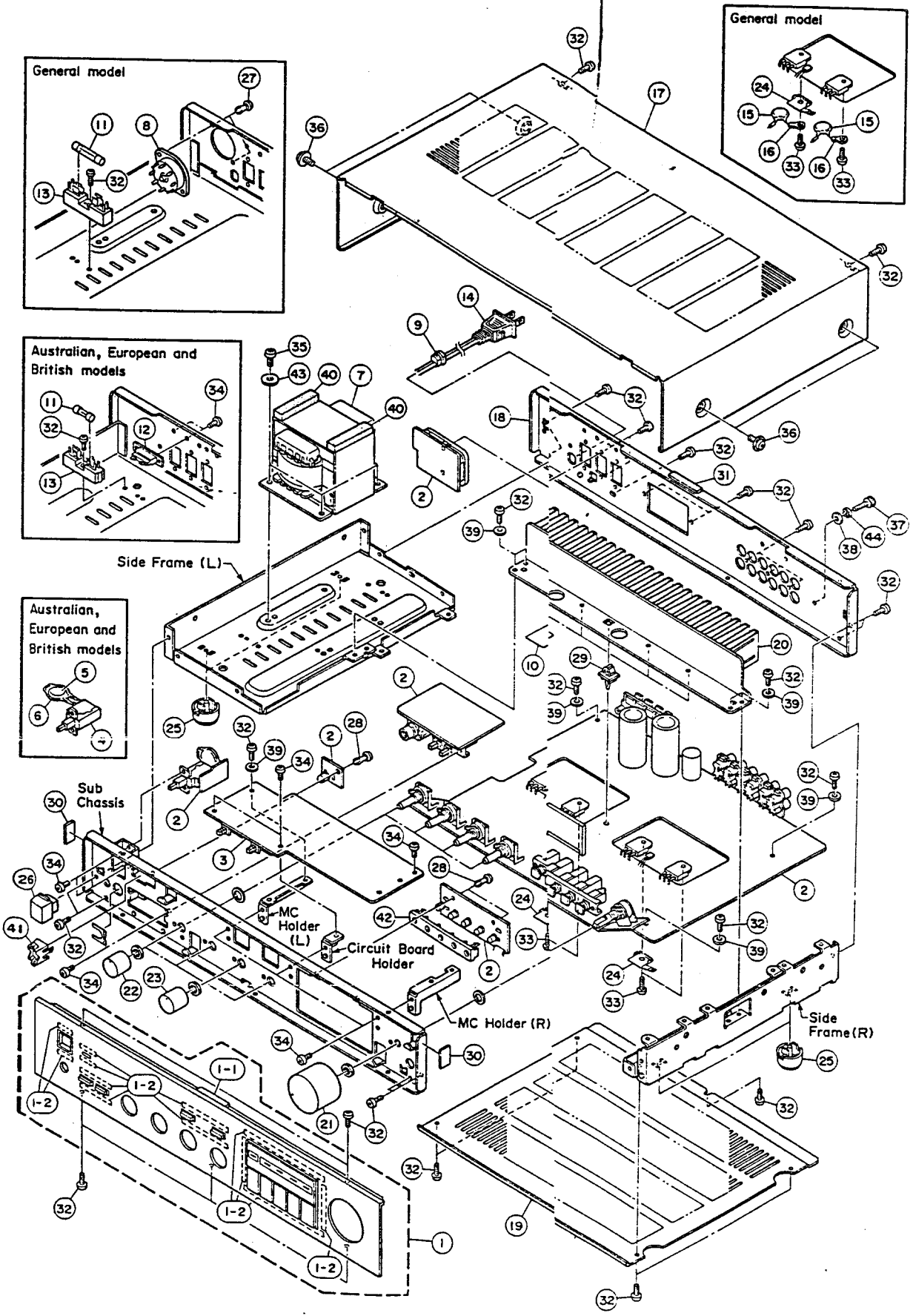
B

C

D

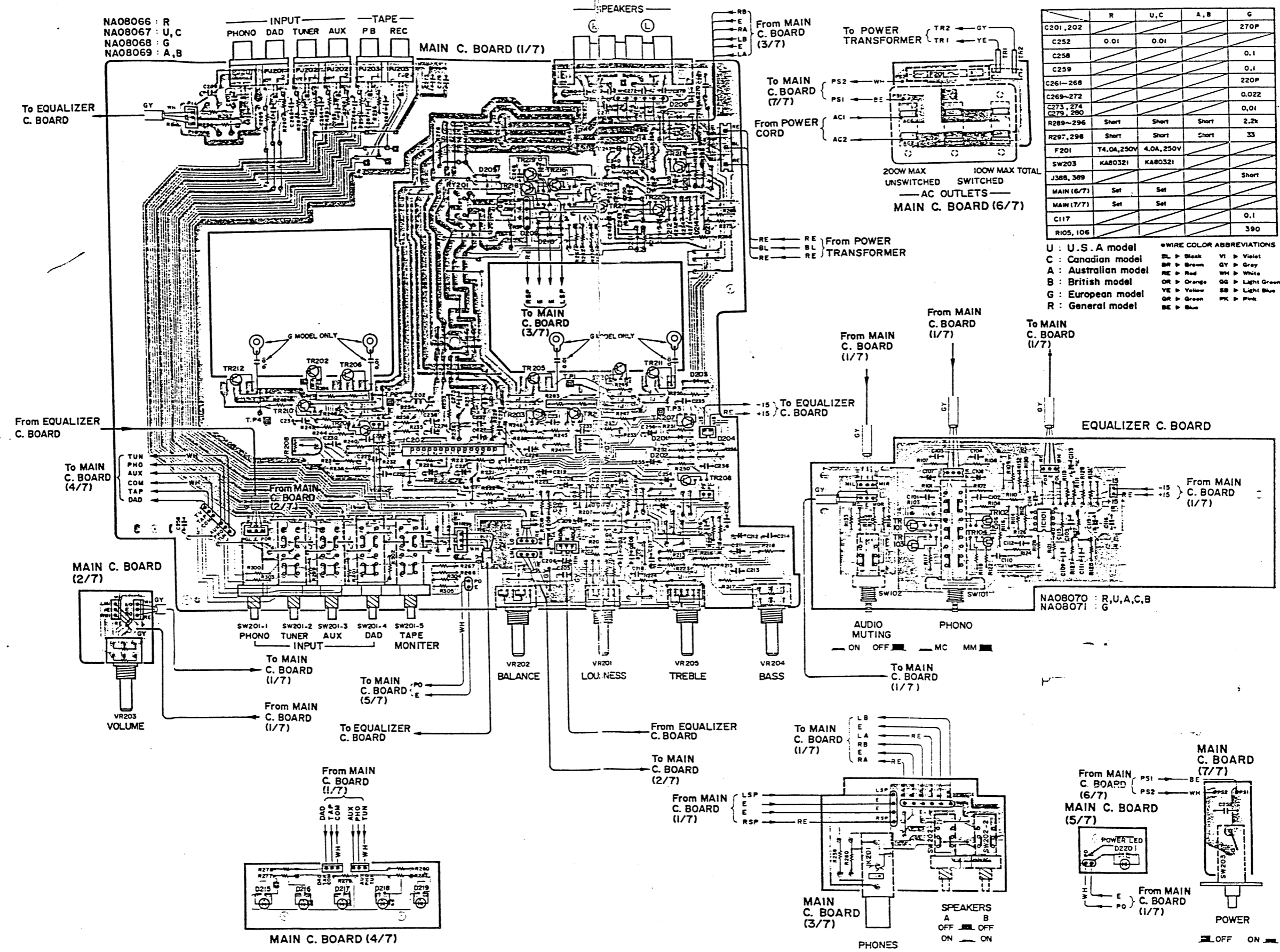
E

EXPLODED VIEW



Kopie v. Fotokopie, daher leider nicht besser möglich

PRINTED CIRCUIT BOARD (Pattern Side)



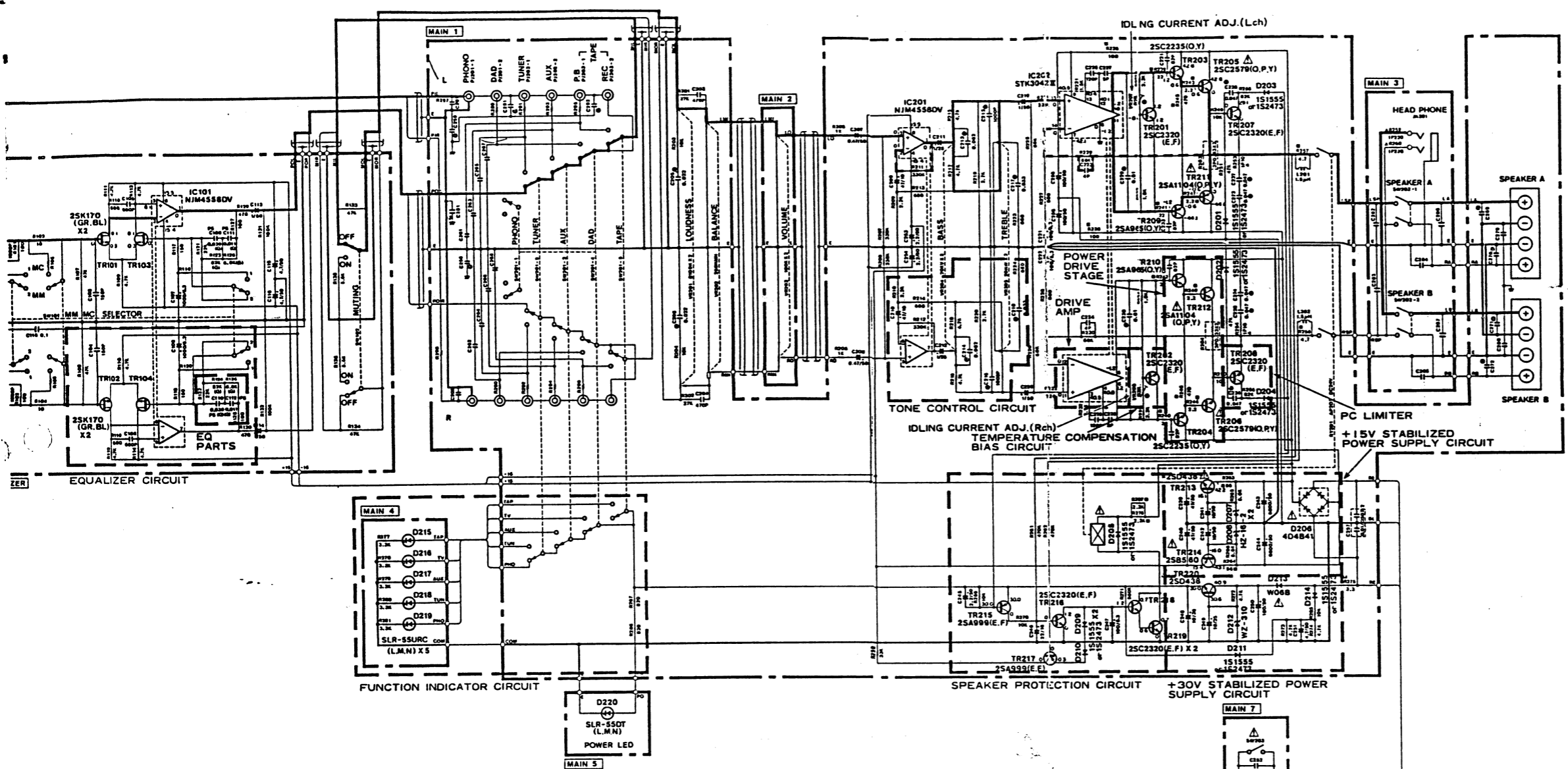
	R	U, C	A, B	G
C201, 202				270P
C252	0.01	0.01		
C258				0.1
C259				0.1
C261-268				220P
C269-272				0.022
C273, 274				0.01
C275, 280				
R289-296	Short	Short	Short	2.2k
R297, 298	Short	Short	Short	33
F201	T4.0A, 250V	4.0A, 250V		
SW203	K480321	K480321		
J388, 389				Short
MAIN (6/7)	Set	Set		
MAIN (7/7)	Set	Set		
C117				0.1
R105, 106				390

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

WIRE COLOR ABBREVIATIONS
 BL ▶ Black
 BR ▶ Brown
 RE ▶ Red
 OR ▶ Orange
 YE ▶ Yellow
 GR ▶ Green
 BK ▶ Blue
 VI ▶ Violet
 GY ▶ Gray
 WH ▶ White
 GG ▶ Light Green
 LB ▶ Light Blue
 PK ▶ Pink

1
2
3
4
5
6

CHEMATIC DIAGRAM

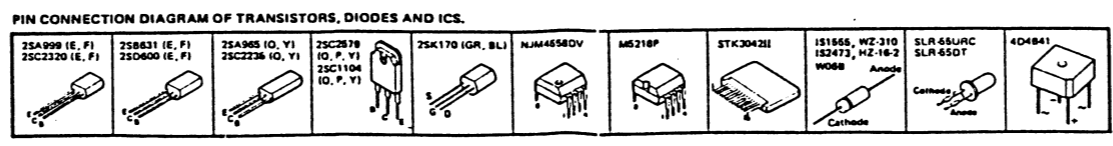
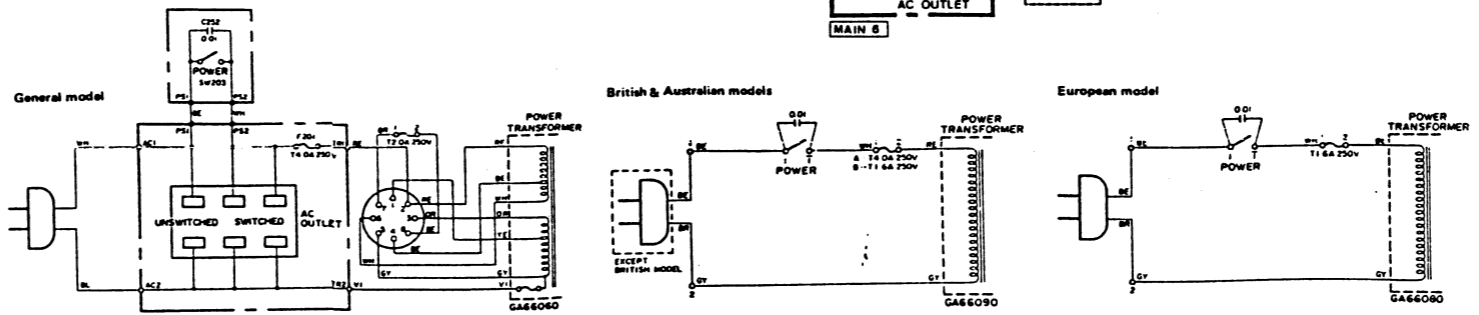
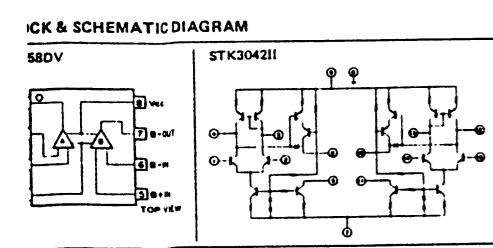


OR

CS	PARTS NAME
MC	MIC CAPACITOR
MF	METAL FILM CAPACITOR
MP	METAL PAPER CAPACITOR
MY	MYLAR CAPACITOR
NY	NYLON CAPACITOR
RY	RYLENE CAPACITOR
SY	SEMI CONDUCTOR
TR	TRANSISTOR
IC	IC
RES	RESISTOR
VR	VARIABLE RESISTOR
SW	SWITCH
LED	LED
DI	DIODE
TR	TRANSISTOR
IC	IC
RES	RESISTOR
VR	VARIABLE RESISTOR
SW	SWITCH
LED	LED
DI	DIODE

This schematic diagram is for U.S. and Canadian models. The following parts and values differ from each model, so refer to the corresponding column.

	R	U, C	G	A, B
C101, 102	1000p	1000p	0.013	1000p
C103, 104	150p	150p	330p	150p
C117			0.1	
R103, 104	10	10	470	10
R105, 106			390	
C201, 202			270p	
C258, 259			0.1	
C261 ~ 268			220p	
C269 ~ 272			0.022	
C273, 274			0.01	
C279, 280			0.01	
R289 ~ 296	Short	Short	2.2k	Short
R297, 298	Short	Short	33	Short
MAIN 6	Set	Set		
MAIN 7	Set	Set		



WARNING

△ Marked: Critical components by UL Standard 1270. Replace only with same type parts.

* All voltages are measured with a 10MΩ/V DC electric volt meter.

* Schematic diagram is subject to change without notice.

WIRING DIAGRAM (Parts Side)

