STEREO INTEGRATED AMPLIFIER

AX-700/AX-700U

IMPORTANT NOTICE

This manual has been provided for the use of authorized Yamaha Retailers and their service personnel. It has been assumed that basic service procedures inherant to the industry, and more specifically Yamaha Products, are already known and understood by the users, and have therefore not been restated.

WARNING: Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components and failure of the product to perform as specified. For these reasons, we advise all Yamaha product owners that all service required should be performed by an authorized Yamaha Retailer or the appointed service representative.

IMPORTANT: The presentation or sale of this manual to any individual or firm does not constitute authorization, certification, recognition of any applicable technical capabilities, or establish a principle-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research, engineering, and service departments of Yamaha are continually striving to improve Yamaha products. Modifications are, therefore, inevitable and specifications are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

WARNING: Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss).

IMPORTANT: Turn the unit OFF during disassembly and parts replacement. Recheck all work before you apply power to the unit.

AX-700/700U

■ CONTENTS

100087

SINCE 1887 YAMAHA

NIPPON GAKKI CO., LTD. HAMAMATSU, JAPAN

3.3K-362 Printed in Japan '87.3

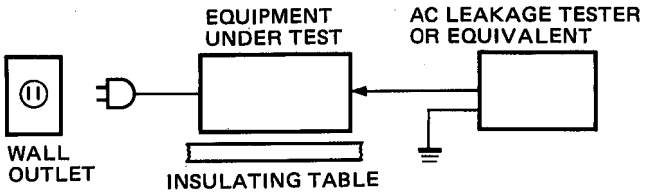
■ TO SERVICE PERSONNEL

1. Critical Components Information.
   Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.

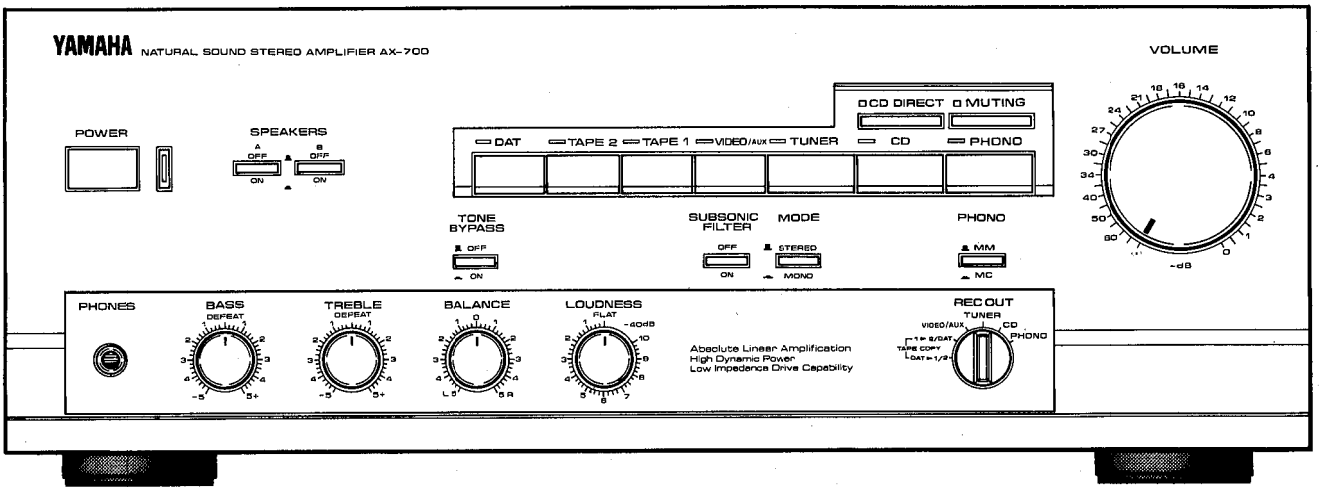
2. Leakage Current Measurement (For 120V Model Only).
   When service has been completed, it is imperative that you verify that all exposed conductive surfaces are properly insulated from supply circuits.

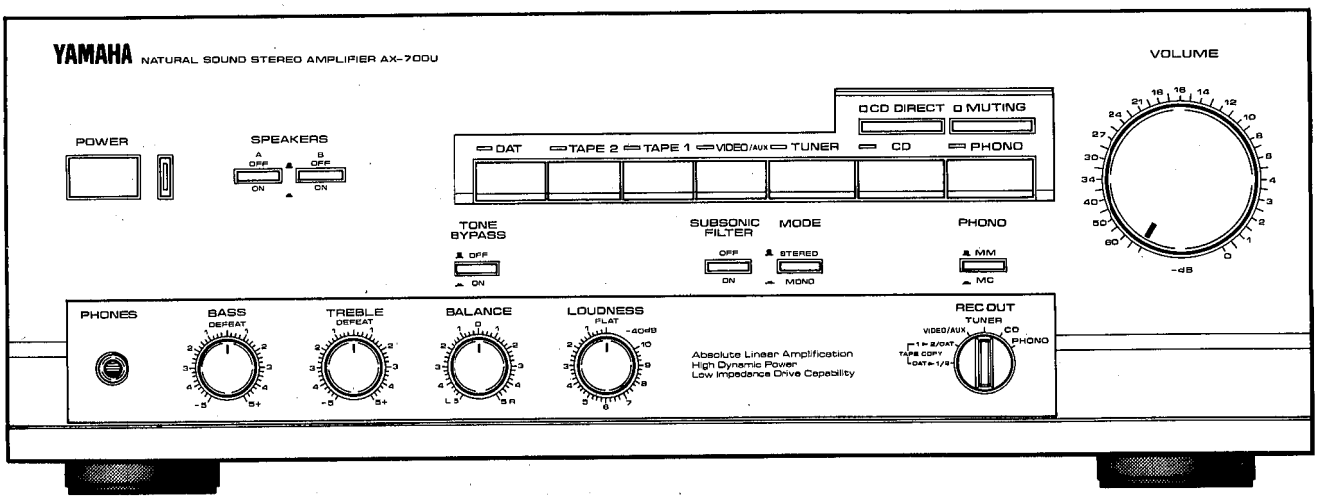
- Meter impedance should be equivalent to 1500 ohm shunted by 0.15μF.
- Leakage current must not exceed 0.5mA.
- Be sure to test for leakage with the AC plug in both polarities.
- **POLARIZATION**

  This tuner product is equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. **(U.C model only)**



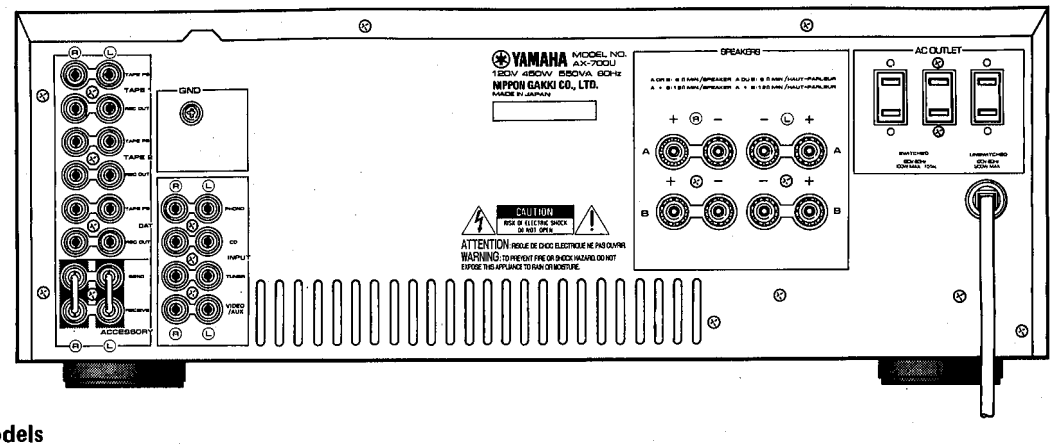
■ FRONT PANELS



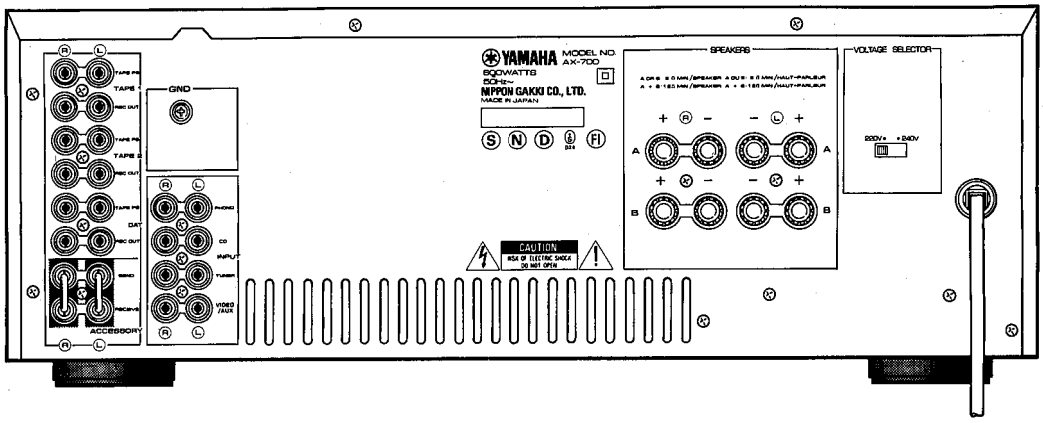


■ REAR PANELS

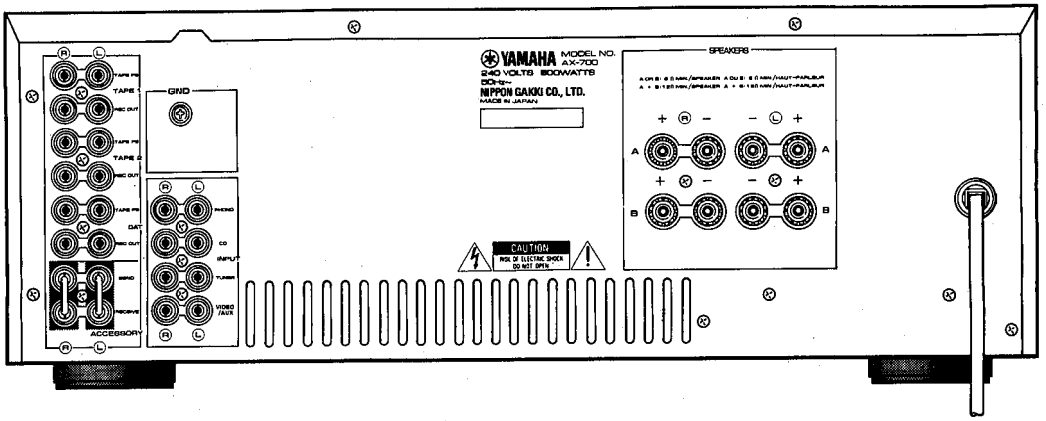
- **U.S.A. & Canadian models**



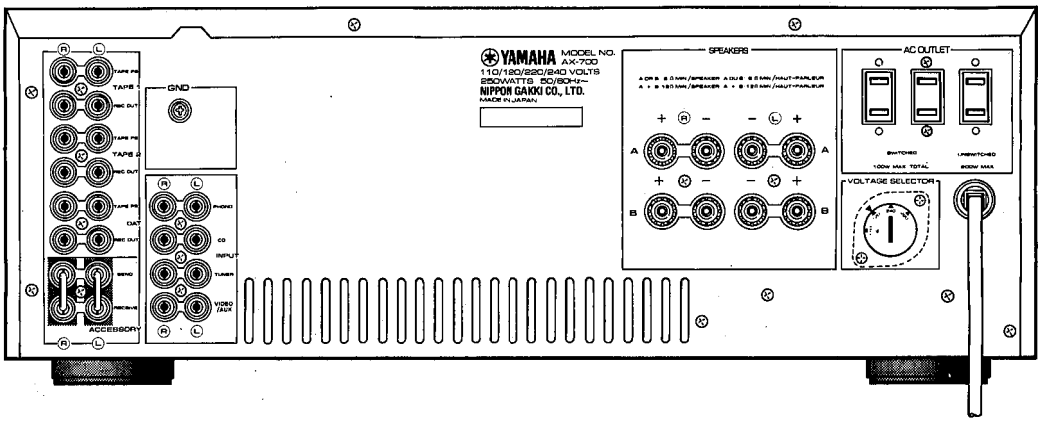
- **European & British models**



- **Australian model**



- **General model**



■ SPECIFICATIONS

■ AUDIO SECTION

Minimum RMS Output Power Per Channel
20Hz~20kHz, 0.005% THD, 8Ω . . 110W (R)(U)(C)
110W (A)(G)(B)
0.008% THD, 6Ω . . . . . 130W (R)(U)(C)

Dynamic Power Per Channel
8Ω 160W
6Ω 210W
4Ω 280W
2Ω 350W
1Ω 400W

Power Band Width
0.03%THD, 55W, 8Ω . . . . . 10Hz~50kHz

IEC Power
1kHz 0.01%THD8Ω . . . . . 120W (A)(G)(B)

Damping Factor
1kHz, 8Ω 100

Input Sensitivity/Impedance
Phono MC 160μV/220Ω
Phono MM 2.5mV/47kΩ
CD/etc. 150mV/47kΩ

Input Sensitivity (New IHF)
Phono MC 16μV
Phono MM 0.25mV
CD/etc. 15mV

Maximum Input Signal
Phono, 1kHz, 0.01% THD (MC) . . 10mV
(MM) . . 160mV

Output Level/Impedance
REC OUT 150mV/470Ω

Headphone Jack Rated Output/Impedance
0.0x% THD (xxΩ) 0.85V/8Ω

Frequency Response
20Hz~20kHz, CD/etc. . . . . $0\pm^{0}_{0.5}$ dB

RIAA Equalization Deviation
20Hz~20kHz Phono MC . . . . . 0±0.3dB
MM . . . . . 0±0.2dB
20Hz~100kHz Phono MC . . . . . 0±0.5dB
MM . . . . .

Total Harmonic Distortion (20Hz~20kHz)
Phono MC to Rec Out 3V 0.006%
Phono MM to Rec Out 3V 0.003%
CD/etc. to SP Out 55W/8Ω 0.005%

Intermodulation Distortion
CD/etc. to Rated Output/8Ω 0.002%
1W/8Ω 0.003%

Signal to Noise Ratio (IHF-A-Network)
Phono
MC (500μV Input Shorted) . . . 76dB
MM (5mV Input Shorted) 92dB
CD/etc. (Input Shorted) 106dB

Signal to Noise Ratio (New IHF)
Phono MC 75dB
MM 75dB
CD/etc. 86dB

Residual Noise (IHF-A-Network)
(TONE BYPASS ON) 150μV

Channel Separation (Vol. -30dB)
Phono Input Shorted, 1kHz 70dB
CD/etc. Input 5.1kΩ, 1kHz 65dB

Tone Control Characteristics
BASS boost/cut . . . . . 0±10dB (at 20Hz)
turnover frequency 350Hz
TREBLE boost/cut . . . . . 0±10dB (at 20kHz)
turnover frequency 3.5kHz

Filter Characteristics
Subsonic . . . . . 15Hz (-12dB/oct.)

Continuous Loudness Control (Level related equalization)
Attenuation . . . . . -40dB (at 1kHz)
Audio Muting . . . . . -20dB

■ GENERAL

Power Supply
U.S. & Canadian Models 120VAC, 60Hz
European & British Models 220V/240VAC, 50Hz
Australian Model 240VAC, 50Hz
Others Model 110/120/220/240VAC 50/60Hz

Power Consumption . . . . . 450W (U)
550VA (C)
250W (R)
600W (A,G,B)

AC Outlet
Switched x 1 . . . . . 100W Max (R)(U)(C)
Unswitched x 1 . . . . . 200W Max (R)(U)(C)

Dimensions (W x H x D) . . . . . 435x165x416mm (17-1/8"x6-1/2"x16-3/8")

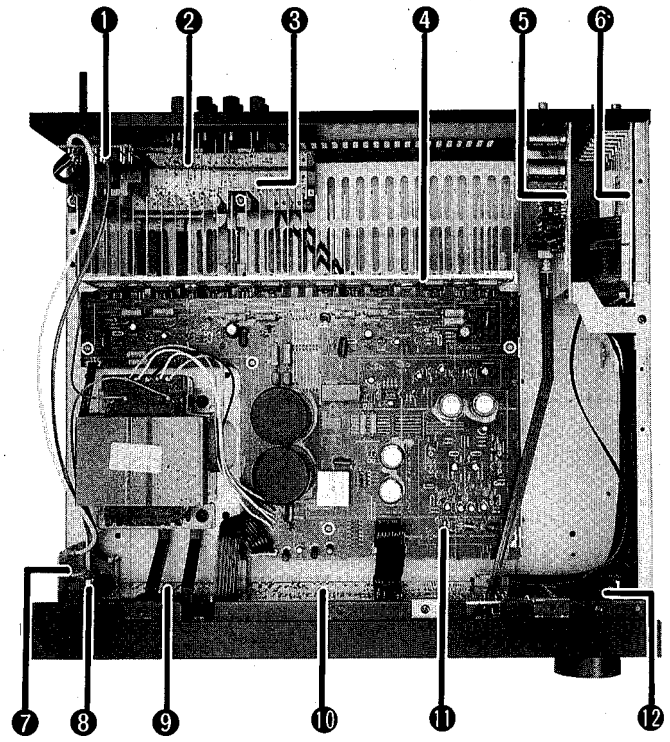
Weight . . . . . 11.5kg (25 lbs 5 oz)

CD/etc.; CD/VIDEO/TUNER/AUX/TAPE/VCR

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

Specifications subject to change without notice.

■ INTERNAL VIEW



❶ Main Circuit Board (6)
❷ Main Circuit Board (4)
❸ Main Circuit Board (3)
❹ Radiator Unit
❺ Function Circuit Board (1)
❻ Function Circuit Board (2)
❼ Main Circuit Board (7)
❽ Main Circuit Board (5)
❾ Main Circuit Board (2)
❿ Function Circuit Board (3)
⓫ Main Circuit Board (1)
⓬ Function Circuit Board (4)

■ DISASSEMBLY PROCEDURES

(Remove parts in disassembly order as numbered)

1. **Removal of Top Cover**
   Remove 6 screws (①) in Fig. 1, and slide the Top Cover back.
2. **Removal of Front Panel**
   Remove 6 screws (②, ③) in Fig. 1. and pull the Front Panel forward.
3. **Removal of Bottom Cover**
   Remove 9 screws (③, ④) in Fig. 1.

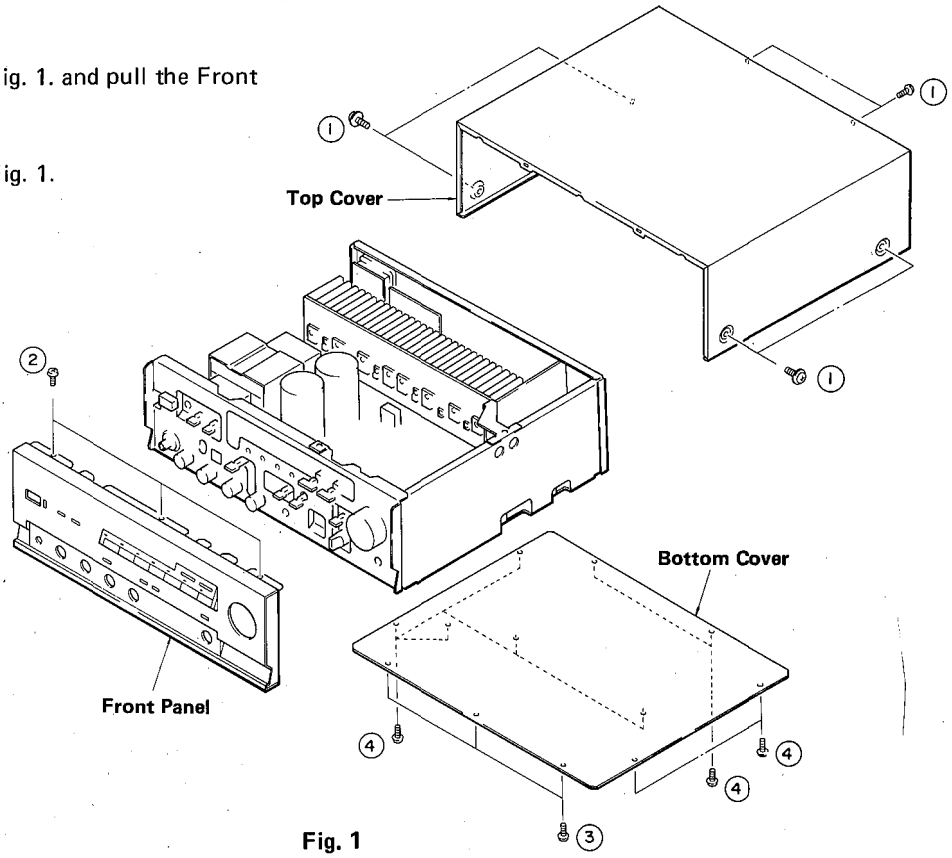


Fig. 1

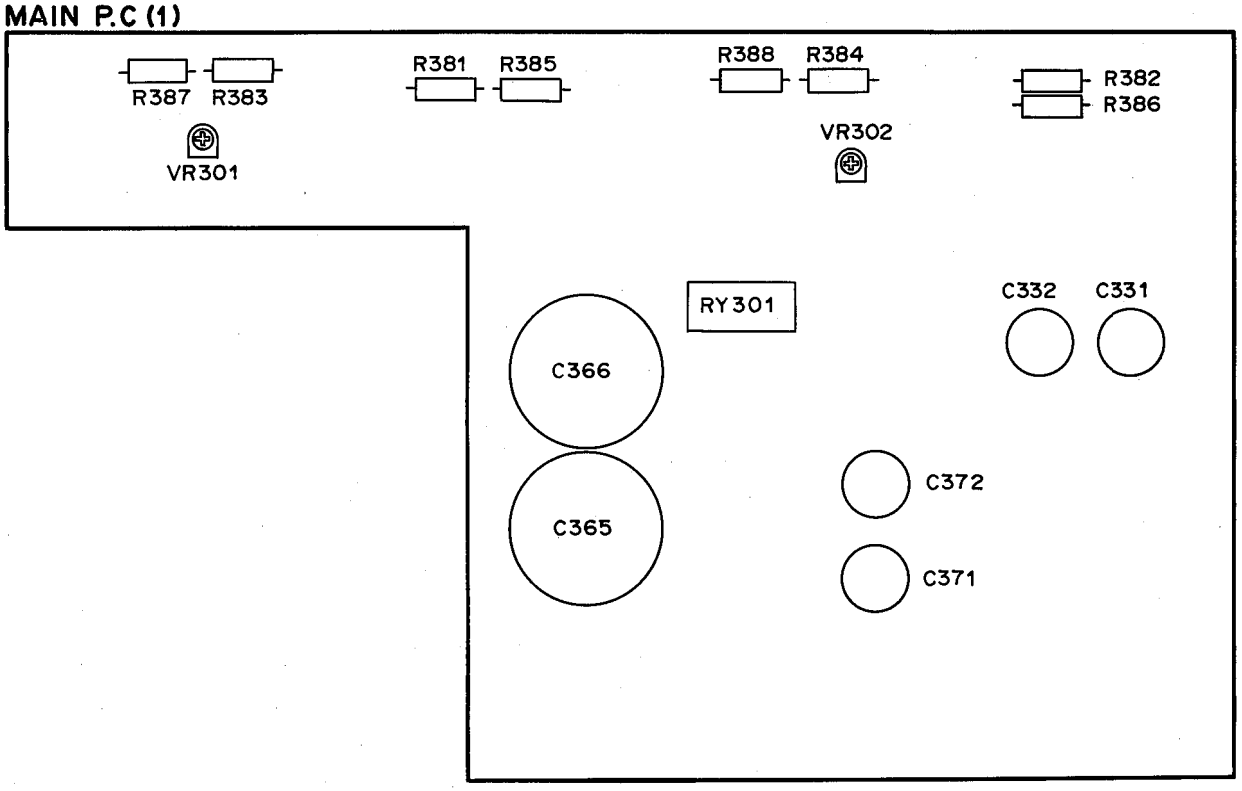
■ ADJUSTMENTS

• IDLING CURRENT ADJUSTMENT

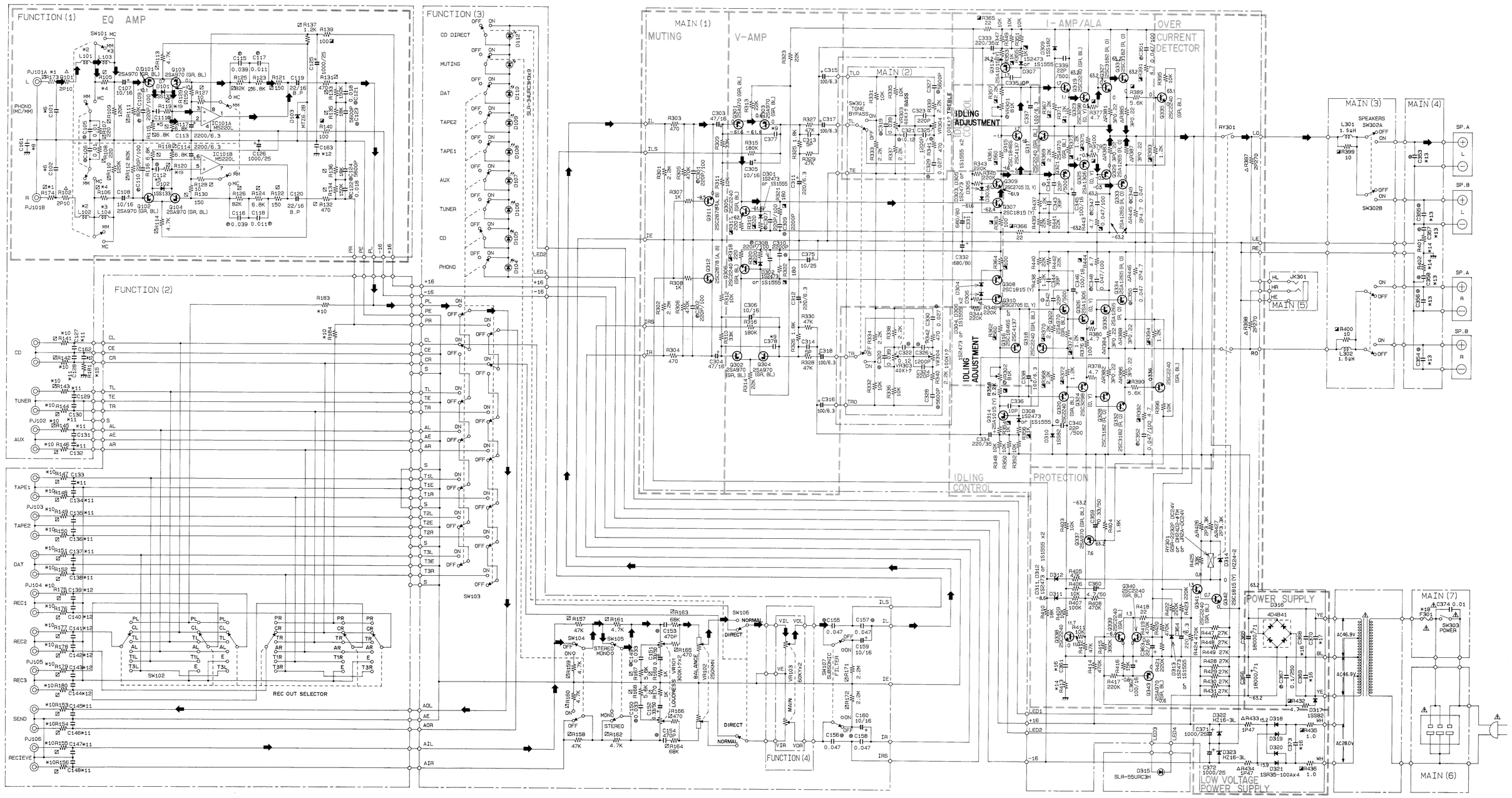
When replacing the power and drive transistors, adjust idling current.
After the power has been turned on, age about 2 minutes in non loaded condition.
Adjust VR301 (Lch) and VR302 (Rch) so that the voltage across the terminals of R381, 383, 385 or 387 and R382, 384, 386 or 388 comes to 10mV±2mV DC.

	Test Points	Adjustment Points	Rating
Lch	Across the terminals of R381, 383, 385 or 387	VR301	10 mV±2 mV DC
Rch	Across the terminals of R382, 384, 386 or 388	VR302	10 mV±2 mV DC

MAIN P.C (1)



■ SCHEMATIC DIAGRAM



	1	2	3	4	5	6	7	8
IC101	0	-10.1	-10.1	-13.8	-10.1	-10.1	0	12.3

	R	U, C	A	B, G
※1	SHORT			22
※2	SHORT			15μH
※3	OPEN			470μH
※4	33			4.7K
※5	◎1500P			◎2700P
※6	OPEN			⊘150P/100
※8	OPEN			0.01
※9	OPEN		150P	
※10	SHORT			220

	R	U, C	A	B, G
※11	OPEN			220P
※12	OPEN			470P
※13	OPEN		◎ 0.01	
※14	OPEN		10	
※15	OPEN			4.7
※16	OPEN		0.1/250	
※17	0.1/250		OPEN	
※18	10A 250V		T4.0A 250V	
※19	100			180

RESISTOR

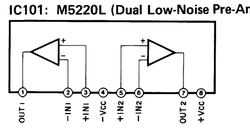
REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR
⊘	CARBON FILM RESISTOR (1/6W)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
⊠	METAL PLATE RESISTOR
◪	FIRE PROOF CARBON FILM RESISTOR
□	SEMENT MOLDED RESISTOR
⊘	SEMI VARIABLE RESISTOR

CAPACITOR

REMARKS	PARTS NAME	
NO MARK	ELECTROLYTIC CAPACITOR	⊣⊢
NO MARK	CERAMIC CAPACITOR	
◎	POLYESTEL FILM CAPACITOR	
○	POLYSTYRENE FILM CAPACITOR	
ⓘ	MICA CAPACITOR	⊣⊢
ⓟ	POLYPROPYLENE FILM CAPACITOR	
●	SEMICONDUCTIVE CERAMIC CAPACITOR	

■ IC BLOCK

IC101: M5220L (Dual Low-Noise Pre-Amp.)

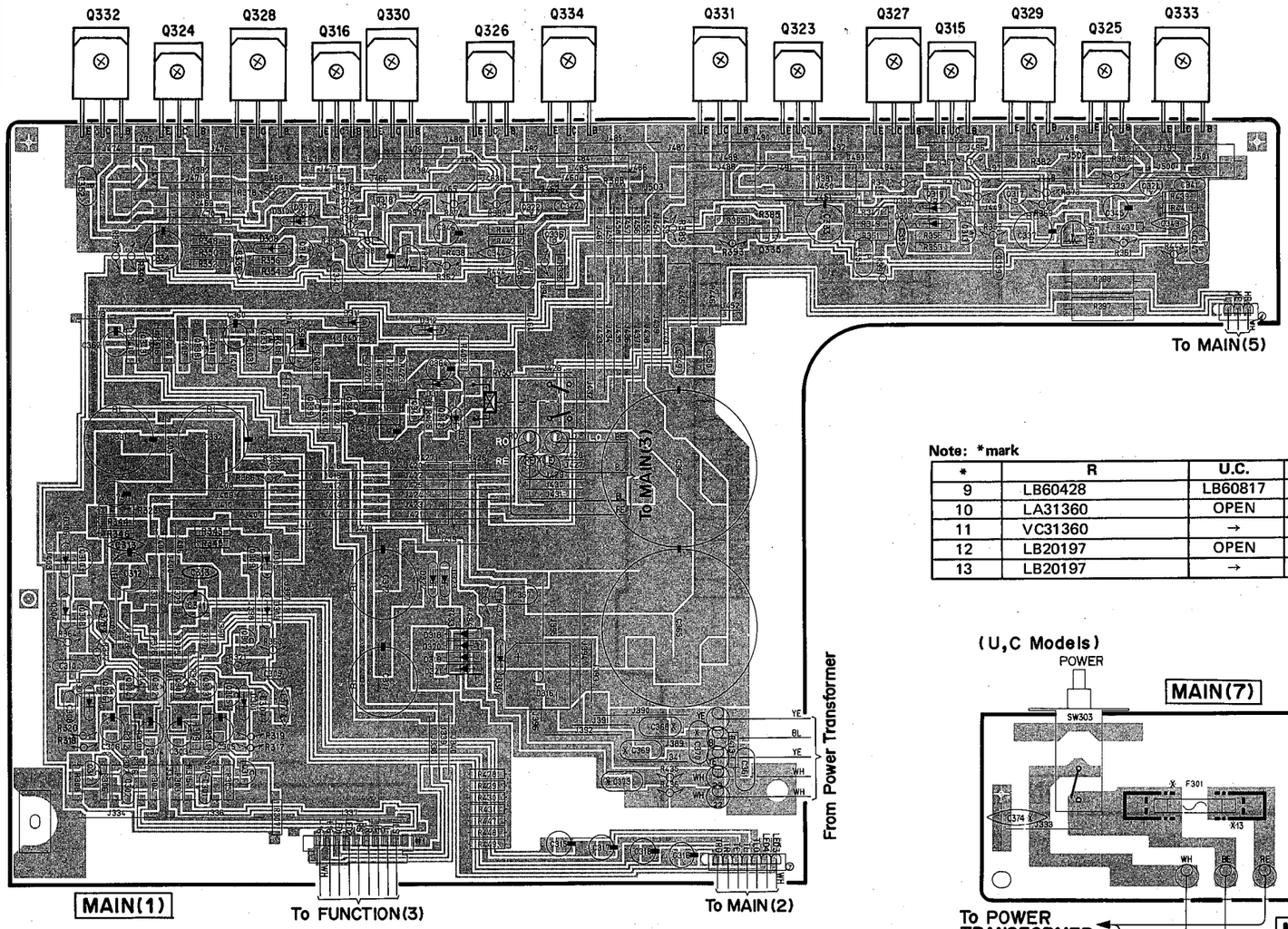


PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICS.

2SA970 2SA1015 2SC1815 2SC2240 2SC2878 2SC1815 (O, Y) 2SC2878 (A, B)	2SC2705	1S2473 1S1555 1SS82 HZ24-2 HZ16-3L	1SR35-100A	SLR-55URC3H SLR-34URC3H3	M5220L

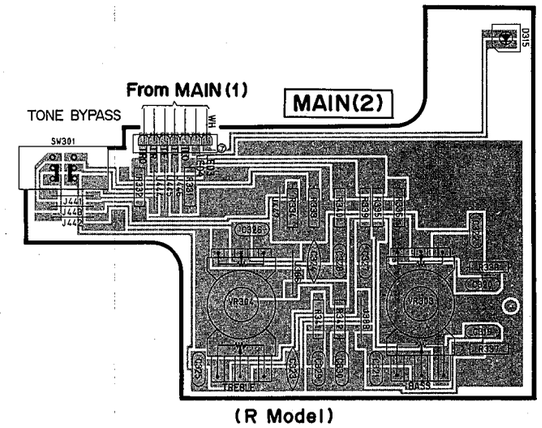
* All voltages are measured with a 10MΩ/DC electric volt meter.
* Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.
* Schematic diagram is subject to change without notice.

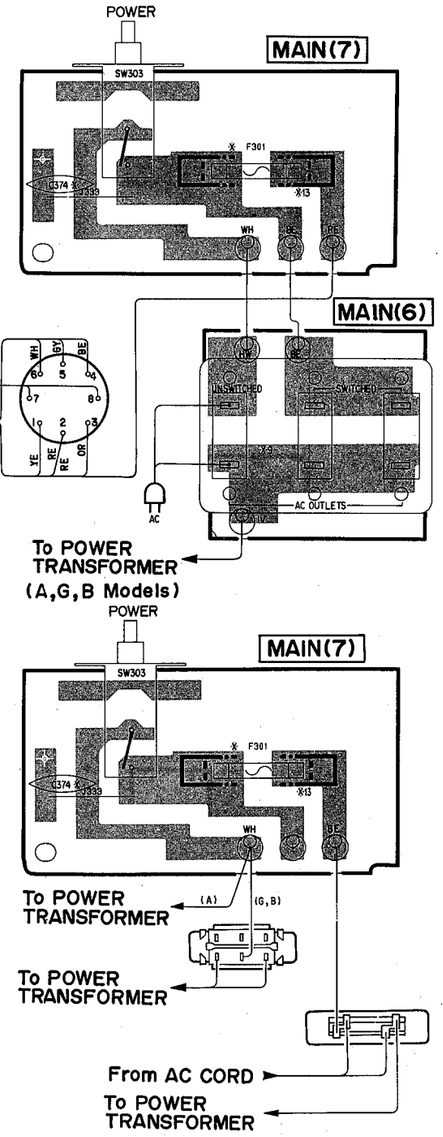
■ PRINTED CIRCUIT BOARD (Pattern Side) (Note) 文字面：Component Side

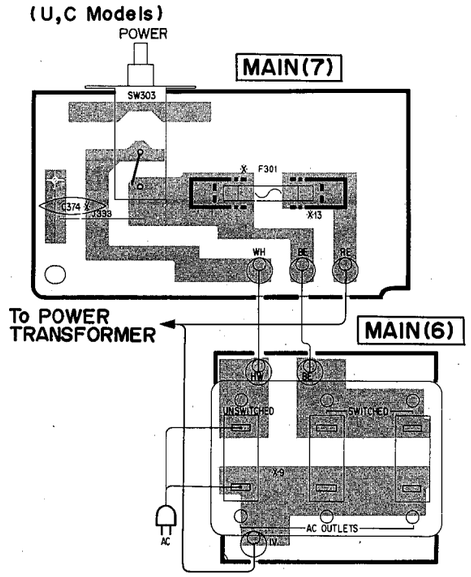


Note: *mark

*	R	U.C.	A	G.B
9	LB60428	LB60817	OPEN	→
10	LA31360	OPEN	→	→
11	VC31360	→	→	VC72080
12	LB20197	OPEN	→	→
13	LB20197	→	LB20106	→







Note: *marked

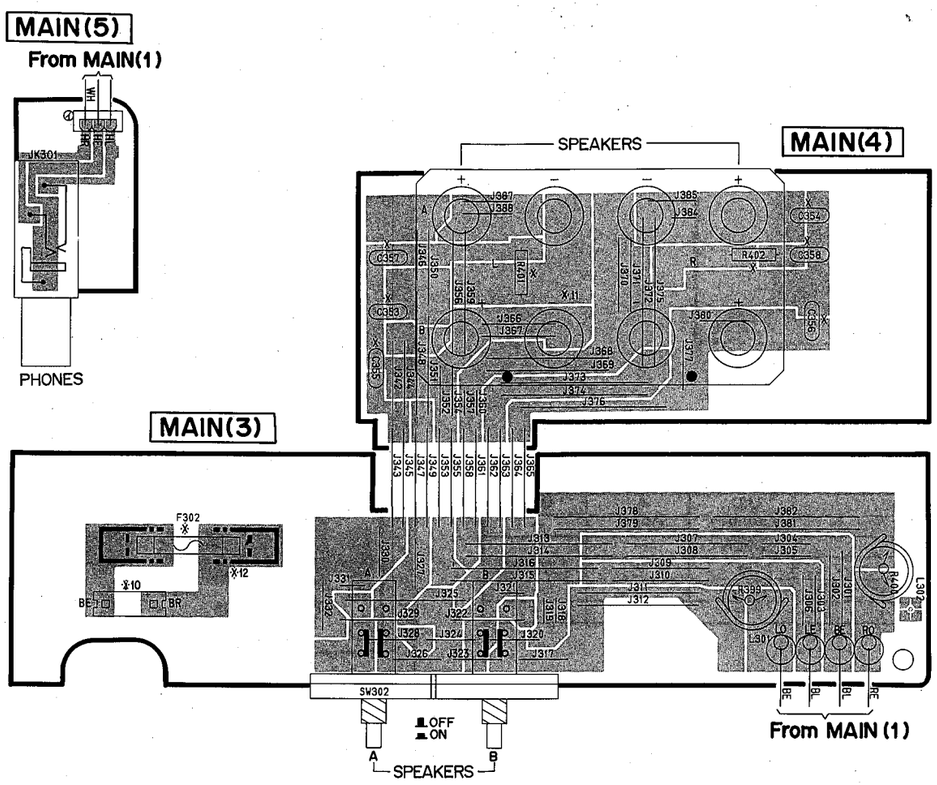
	R.U.A.C	G.B
C127~138. 145~148	OPEN	220P
R141~156, 175~180, 183, 184	SHORT	220
L101, 102	SHORT	15μH
L103, 104	OPEN	470μH
R105, 106	33	4.7K
C161	OPEN	0.01
C139~144, 162, 163	OPEN	470P
R181	OPEN	4.7
C101, 102	OPEN	150P/100 P
C111, 112	1500P	2200P
R173, 174	SHORT	22
J129	OPEN	SHORT

Note: *marked

	R	U.C	A	G.B
C361, 368, 369, 373	OPEN	→	0.1/250	→
C370	0.1/250	→	OPEN	→
C353~358	OPEN	→	0.01	→
C377, 378	OPEN	→	150P	→
R401, 402, 413	OPEN	→	10	→
F301	10A250V	→	T4A250V	→
F302	T5A250V	OPEN	→	→
C374	–	–	–	○

AX-700/700U

■ PRINTED CIRCUIT BOARD (Pattern Side) (Note) 文字面：Component Side



Note: *marked

*	R.U.A.C	G.B.
1	J101	R141
2	J102	R142
3	J103	R143
4	J104	R144
5	J105	R145
6	J106	R146
7	J107	R147
8	J108	R148
9	J109	R149
10	J110	R150
11	J111	R151
12	J112	R152
13	J113	R153
14	J114	R154
15	J115	R155
16	J116	R156
17	J125	L102
18	J126	L101
19	J117	R173
20	J118	R174
21	J119	R175
22	J120	R176
23	J121	R177
24	J122	R178
25	J123	R179
26	J124	R130
27	J127	R183
28	J128	R184