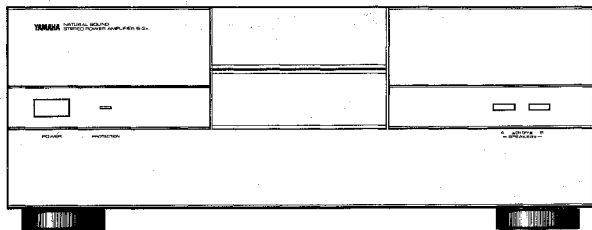


STEREO POWER AMPLIFIER

B-2x

SERVICE MANUAL



● FRONT PANEL

■ CONTENTS

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004609

SINCE 1887



YAMAHA

NIPPON GAKKI CO., LTD. HAMAMATSU, JAPAN

2.0K-151 ① Printed in Japan '88.1.

■ TO SERVICE PERSONNEL

1. Critical Components Information.

Components having special characteristics are marked Δ and must be replaced with parts having specifications equal to those originally installed.

2. Leakage Current Measurement (For 120V Model Only).

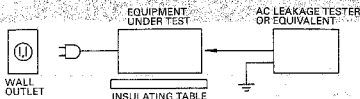
When service has been completed, it is imperative that you verify that all exposed conductive surfaces are properly insulated from supply circuits.

● Meter impedance should be equivalent to 1500 ohm shunted by $0.15 \mu F$.

● Leakage current must not exceed 0.5mA.

● Be sure to test for leakage with

AC plug in both polarities.



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 inherent 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 principal 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 changes in specification 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.

SPECIFICATIONS

CONTINUOUS POWER

8 Ω (20Hz~20KHz, T.H.D 0.002%)	170W+170W
6 Ω (20Hz~20KHz, T.H.D 0.002%)	200W+200W
4 Ω (20Hz~20KHz, T.H.D 0.003%)	240W+240W

DIN STANDARD OUT PUT POWER PER CHANNEL

1KHz 1%/10% THD 4 Ω	306W/350W (G)
----------------------------	---------------

DYNAMIC HEADROOM

8 Ω / 6 Ω / 4 Ω	1.88dB / 2.27dB / 2.70dB (U)
--------------------------------------	------------------------------

DYNAMIC POWER PER CHANNEL

1KHz 8 Ω / 6 Ω / 4 Ω / 2 Ω	262W / 337W / 447W / 625W (U)
--	-------------------------------

POWER BANDWIDTH

8 Ω (T.H.D 0.02%, 85W)	10Hz~100KHz
-------------------------------	-------------

INPUT SENSITIVITY/IMPEDANCE

(8 Ω , 170W, 1KHz)	1.3V/25K Ω
---------------------------	-------------------

QUENCY RESPONSE

(8 Ω , 1W) 10Hz	0dB
1KHz	0dB
100KHz	-1dB

TOTAL HARMONIC DISTORTION

10Hz~20KHz (8 Ω , 85W)	LESS THAN 0.002%
-------------------------------	------------------

IM DISTORTION RATIO

(8 Ω , 85W, 50KHz, 7KHz)	LESS THAN 0.002%
---------------------------------	------------------

CHANNEL SEPARATION

(INPUT SHORTED, VR:MAX, OUTPUT
CH 120W/8 Ω)

1KHz	MORE THAN 95dB
20KHz	MORE THAN 75dB

RESIDUAL NOISE

(INPUT SHOSTED, IHF A NET-WORK, RL=8 Ω)

S/N RATIO

(INPUT SHORTED, IHF A NET-WORK, RL=8 Ω)
LESS THAN 124dB

DAMPING FACTOR (8 Ω , 1KHz)

POWER SUPPLY

AC100V 50/60Hz (J)

110-120/220-240V 50/60 (R)

AC120V 60Hz (U)

AC220V 50Hz (G)

POWER CONSUMPTION

470W

540W (U)

1300W (G)

300W (MAX)

DIMENSIONS (W \times H \times D)

435 \times 164 \times 422mm

WEIGHT

25kg

* Specifications subject to change without notice.

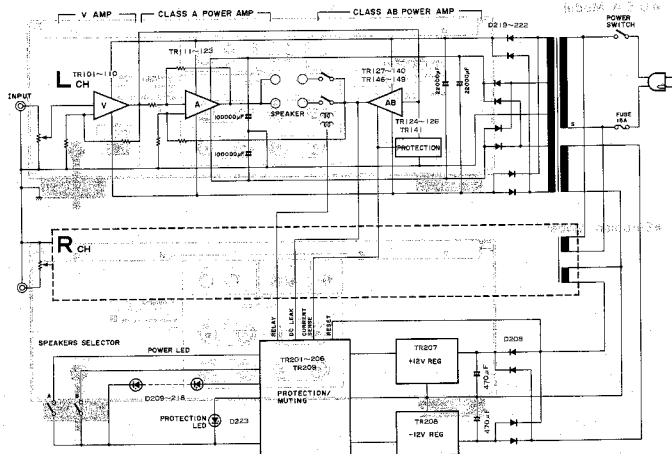
J.....Japanese Model

R.....General Model

U.....U.S.A Model

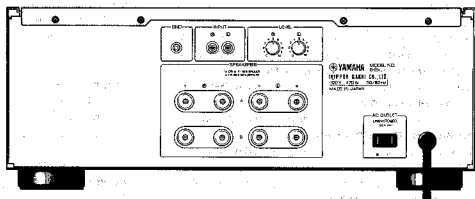
G.....European Model

BLOCK DIAGRAM

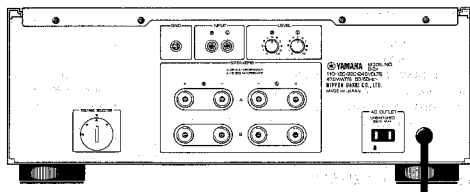


REAR PANELS

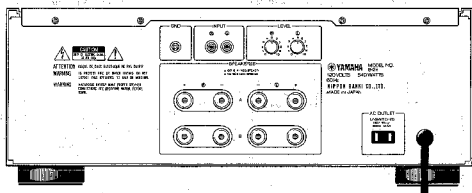
Japanese Model



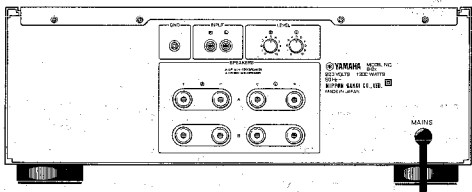
General Model



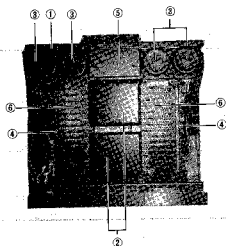
U.S.A. Model



European Model



NAME OF THE PARTS

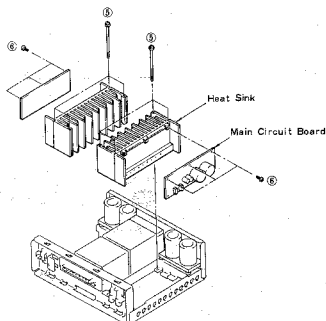
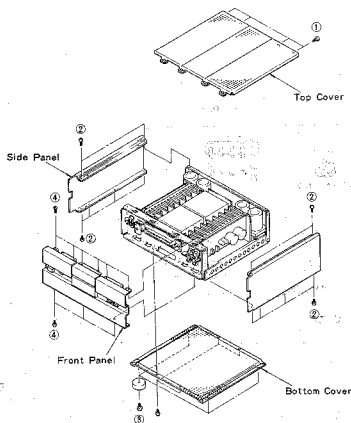


- ① AC Outlet
- ② Power Transformer
- ③ Electrolytic Cap.
- ④ Main Circuit Board
- ⑤ Relay Circuit Board
- ⑥ Heat Sink

DISASSEMBLY PROCEDURES

Remove parts in order to Disassembly as numbered.

1. Remove the top cover by removing screw ①.
2. Remove the side panel by removing screw ②.
3. Remove the Front panel and the bottom cover by removing screw ③ and ④.
4. Remove the Heat Sink by removing screw ⑤.
5. Remove the Main Circuit Board by removing screw ⑥.

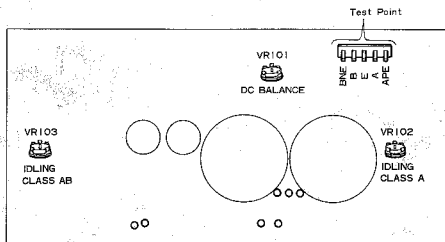


■ ADJUSTMENTS

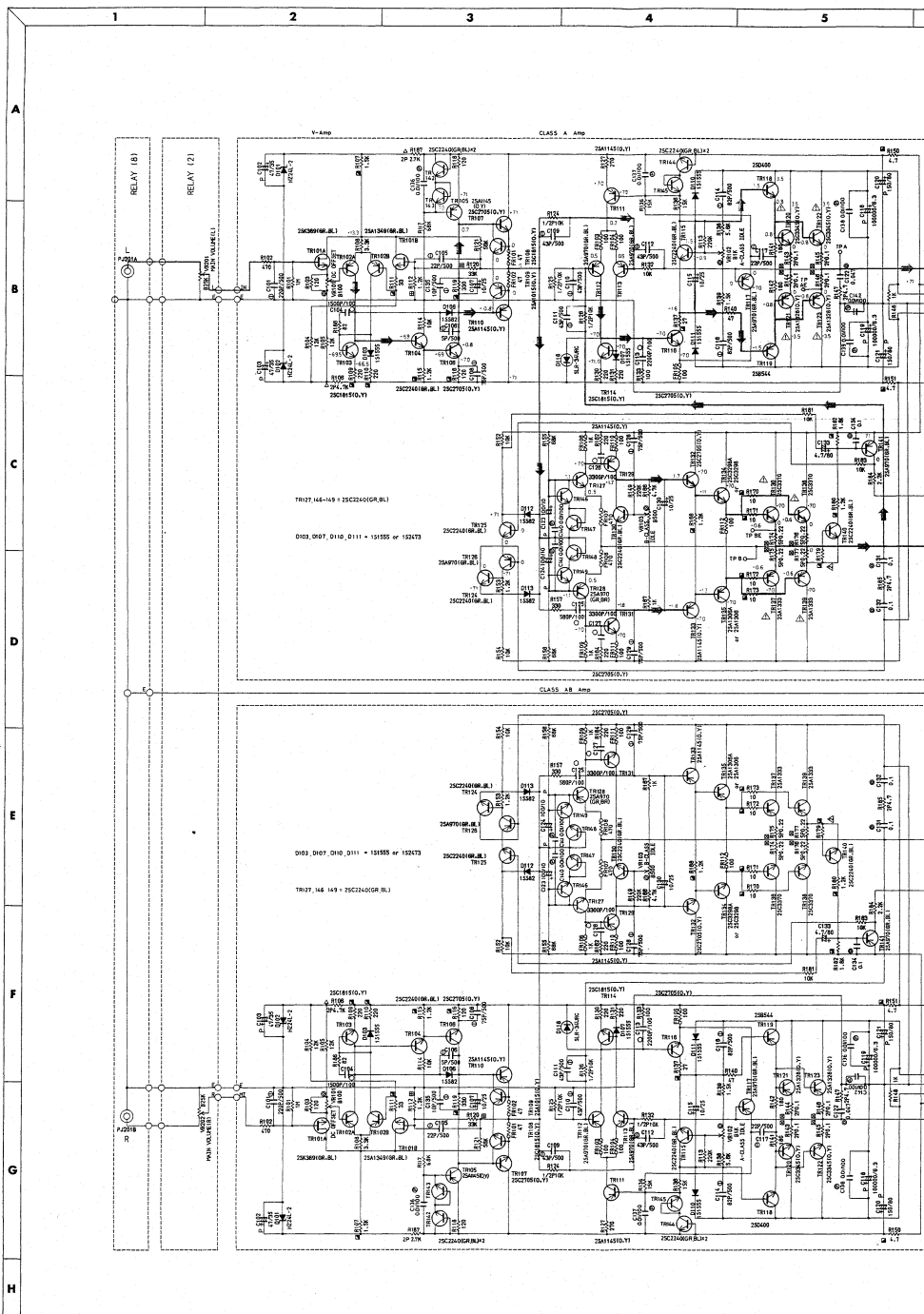
Before Adjustment

- Wait 3~4 minutes after power on to stabilize amplifier operation.
- Make sure that the MAIN VOLUME is minimum.

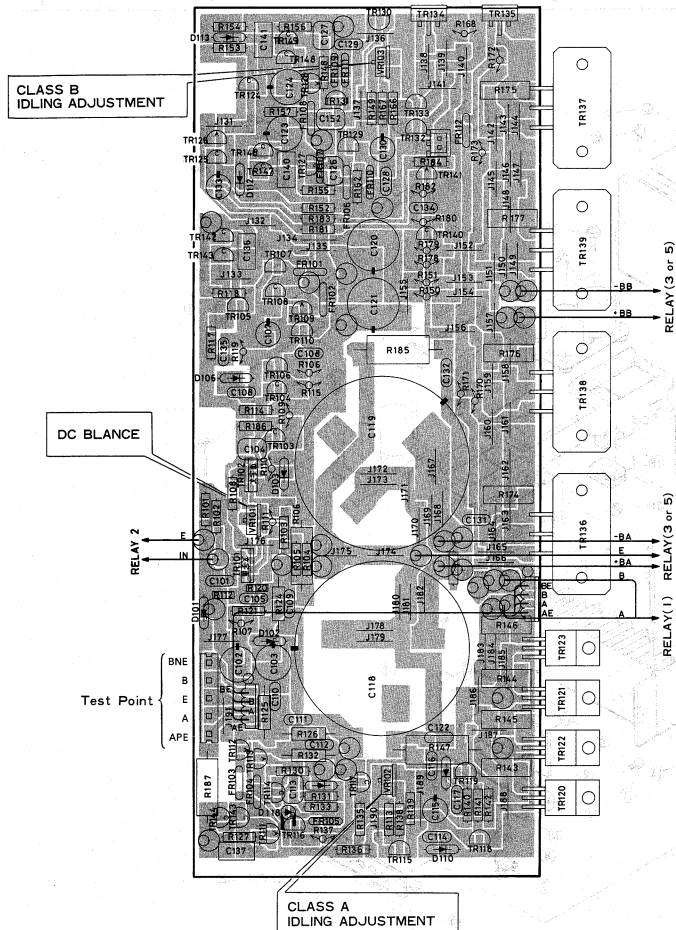
Step	Adjustment	Location	Test Equipment	Test point	Standard
1	DC BALANCE	VR101	DC-V Meter	Test point A—B	$0 \pm 10\text{mV}$
2	IDLING A CLASS AMP	VR102	DC-V Meter	Test point APE—A	$200\text{mV} \pm 10\text{mV}$
3	IDLING AB CLASS AMP	VR103	DC-V Meter	Test point BNE—B	$15\text{mV} \pm 3\text{mV}$



■ 総合回路図 (SCHEMATIC DIAGRAM)



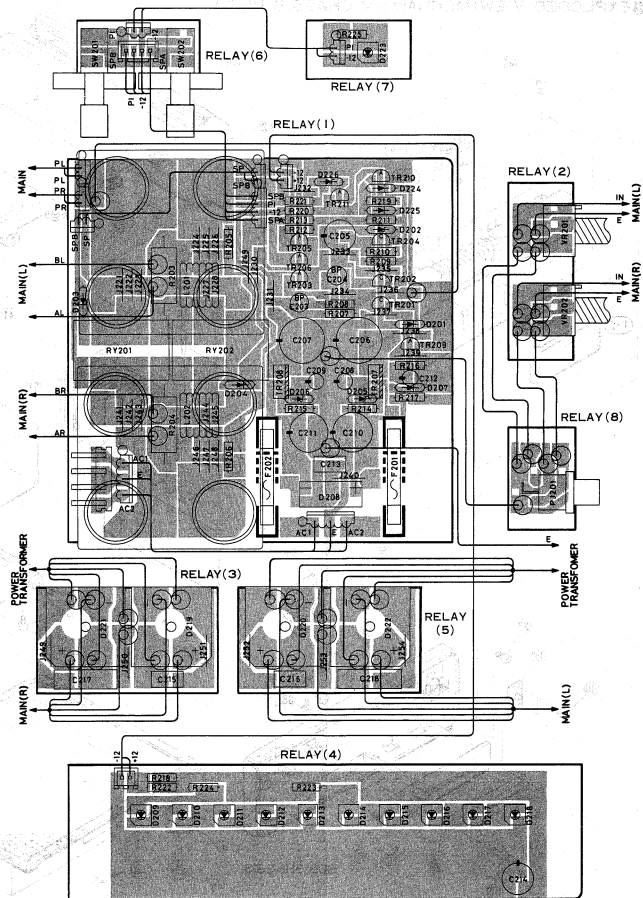
■PRINTED CIRCUIT BOARD PATTERN SIDE~MAIN



B-2x

B-2x

■PRINTED CIRCUIT BOARD PATTERN SIDE~RELAY



B-2x

B-2x

A

B

C

D

E

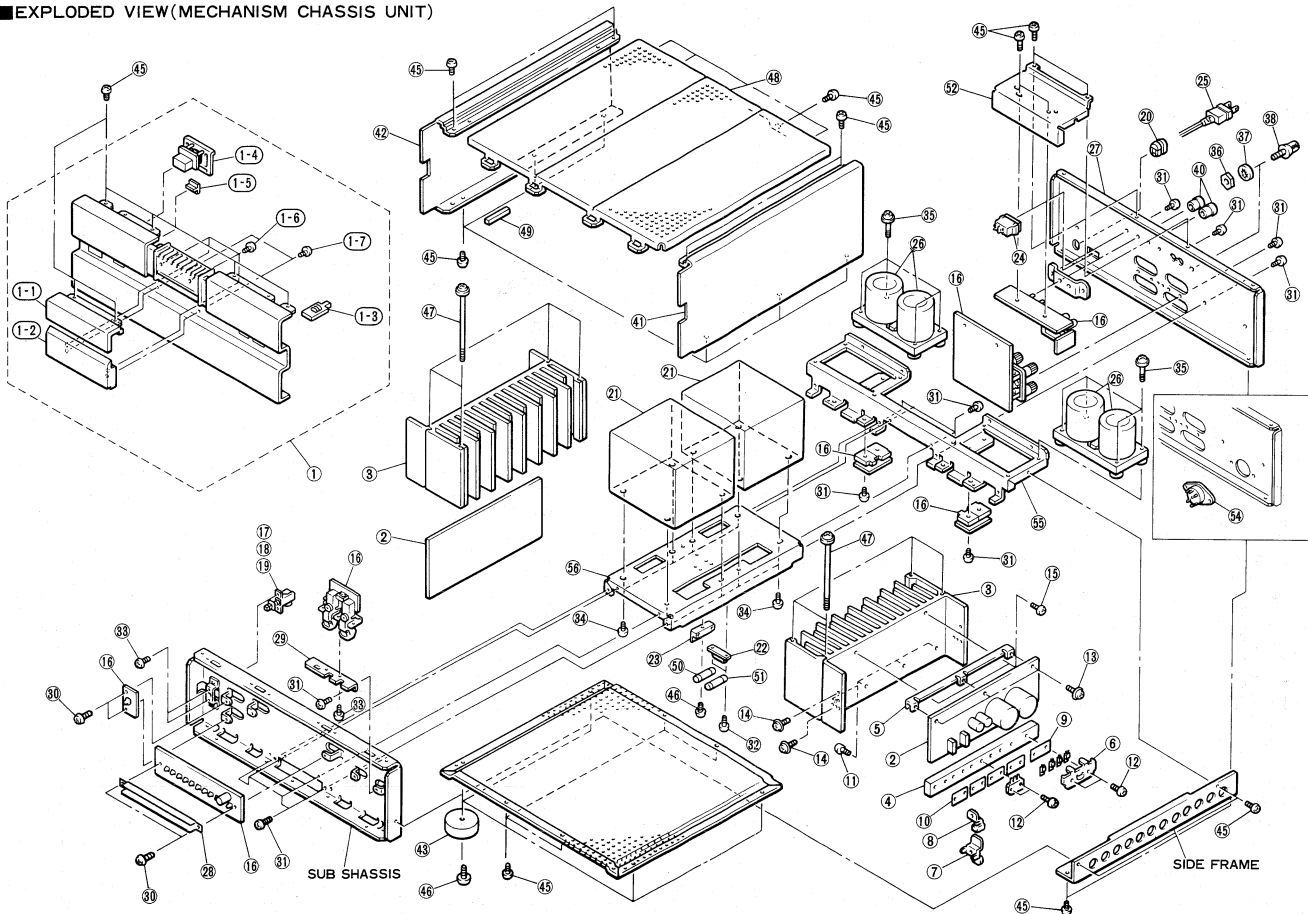
F

G

H

I

EXPLODED VIEW (MECHANISM CHASSIS UNIT)



■PARTS LIST~MECHANISM CHASSIS UNIT

Ref. No.	Part No.	Description	部 品 名	Remarks	Common Model	Markets	ランク
1	NB:61:79:20	Panel Unit	パネルユニット				
1-1	BA:08:91:00	Sub Panel A	サブパネル A				
1-2	BA:08:91:10	Sub Panel B	サブパネル B				
1-3	NB:60:14:80	Push Button Assy	プッシュボタンASSY		B-70		
1-4	NB:61:82:30	" Assy	"		B-6		
1-5	CB:09:95:50	Lamp Lens	ランプレンズ		B-6		
1-6	ED:33:00:66	Binding Head Screw	3x6 FCM3-BI バインド小ネジ	PACK			
1-7	ED:33:00:86	Binding Head Screw	3x8 FCM3-BI バインド小ネジ	PACK			
2	NA:08:33:10	Main Circuit Board	メインシート				
3	BA:08:90:80	Heat Sink	放 熱 板				
4	BA:08:90:90	Block Tr	トリブロック				
5	AA:62:00:50	Circuit Board Holder	シートホルダー		A-2000		
6	AA:62:00:80	Holder Tr	トリホルダー		A-2000		
7	AA:62:00:90	"	"		A-2000		
8	AA:62:04:40	"	"		A-2000		
9	CB:62:62:20	Misc Circuit Board	マイカシート		A-2000		
10	IL:00:05:10	Misc Base	AC-243 マイカベース				
11	ED:34:01:06	Binding Head Screw	4x10 FCM3-BI バインド小ネジ	PACK			
12	ED:33:01:06	Binding Head Screw	3x10 FCM3-BI バインド小ネジ	PACK			
13	EK:36:50:80	BW Head Tapping Screw	3x8 FCM3-BI BWヘッドタッピングネジ				
14	ED:33:00:66	Binding Head Screw	3x6 FCM3-BI バインド小ネジ	PACK			
15	EI:33:00:86	Bind Tapping Screw	3x8 FCM3-BI バインドタッピングネジ	PACK			
16	NA:08:33:20	Relay Circuit Board	リレーシート				
17	KA:80:43:00	Push Switch	TV-8 ESB-997 プッシュスイッチ				
18	FI:38:41:00	Ceramic Cap	VA-1 0.01 セラコン			R	
19	CB:60:19:00	Cover	HY-0103 コンデンサーカバー			J	
20	CB:07:27:50	Cord Stopper	CM-22B コードストッパー			R,G	
"	CB:80:68:50	"	SR-6N3-4			J,U	
21	GA:67:10:00	Power Transformer	電源トランス			J,R,U	
"	GA:68:98:00	"	"			U	
"	GA:68:99:00	"	"			G	
"	GA:67:28:00	"	"			R	
22	LA:00:29:50	2P Relay Terminal	MA0092A 2 P 中継端子台			J,U,G	
23	LB:20:13:40	Fuse Holder	IPFH フェノール ヒューズホルダー			J	
"	LB:20:14:70	"	IPFHMフェノール			G	
24	LB:20:18:10	AC Outlet	S-i6498 単速 ACアウトレット				
25	MG:00:12:20	Power Cord	2m 15A 125V 電 源 コ ー ド			J	
"	MG:00:07:80	"	2m 6A 250V			R	
"	MG:00:09:10	"	2m 6A 250V			G	
"	MG:00:07:10	"	2.44m 13A 125V			U	
26	FZ:00:53:80	Electrolytic Cap	22000/80 ケミコンセット				
27	AA:62:05:60	Rear Panel	リヤパネル			J	
"	AA:62:05:70	"	"			R	
"	AA:62:61:30	"	"			U	
"	AA:62:61:40	"	"			G	
28	AA:62:06:20	L.E.D	LEDリフレクター				
29	AA:62:08:30	Switch Holder	スイッチホルダー				
30	EI:33:01:26	Bind Tapping Screw	3X12 FCM3-BI バインドタッピングネジ	PACK			
31	EI:33:00:86	"	3x8 FCM3-BI バインドタッピングネジ	PACK			
32	EI:33:01:48	"	3x14 FCM3-BI バインドタッピングネジ	PACK			
33	ED:33:00:66	Bind Head Screw	3x6 FCM3-BI バインド小ネジ	PACK			
34	EZ:00:13:20	Cap Screw	4x6 FCM3-BI カップスクリュー				
35	EX:60:00:80	Cup Screw	3x24 FCM3-BI 鉄カップネジ				

※New Parts (新規部品)

[illegible]

※New Parts (新規部品)

Carbon resistors of this amp. are 1/4 W.
There is no description about them in this parts list.
Use the "Part No." HJ350000 or equivalent.

■ PARTS LIST~ELECTRICITY

Ref. No.	Part No.	Description	部 品 名	Remarks	Common Model	Markets	ランク
	NA-08-33-10	Main Circuit Board	メ イン シ ー ト				
FF 12-25-60	Stylole Capacitor	560P 100V	ド ウ ハ ク ス チ コ ン	C125			
FF 12-32-20	"	2200P 100V	"	C113			
FF 12-33-30	"	3300P 100V	"	C126,127			
FF 12-31-50	"	1500P 100V	"	C104			
FU 35-05-00	FE Mica Capacitor	5P 500V	F E ミ ャ イ カ コ ン	C106			
FU 35-12-20	"	22P 500V	"	C105,117,135			
FU 35-14-30	"	43P 500V	"	C109-112			
FU 35-17-50	"	75P 500V	"	C108,128,129			
FU 35-18-20	"	82P 500V	"	C114,116			
FU 35-22-20	"	220P 500V	"	C101			
FV 06-74-70	Electrolytic Cap	47 μ 35V	ブ ラ ス チ ャ ッ ケ ミ コ ン	C102,103			
FV 02-81-00	"	100 μ 10V	"	C123,124			
FV 08-81-50	"	150 μ 80V	"	C120,121			
FZ 00-59-50	"	100000 μ 6.3V	"	C118,119			
FT 85-41-00	Polypropylene Film Cap	0.01 μ 100V	ポ リ プ ロ コ ン	C142			
FZ 00-54-20	Electrolytic Cap	10 μ 25V	ブ ラ ッ ク ゲ ー ト (F) コ ン デ ン サ	C107,115,130			
FZ 00-54-30	Polypropylene Film Cap	0.01 μ 100V	ポ リ プ ロ コ ン	C136-141			
FZ 00-49-40	Mylar Capacitor	0.1 μ 50V	ド ウ リ ー ド マ イ ラ ー	C131,132,134			
FZ 00-55-80	"	0.047 μ 50V	"	C122			
UW 68-64-70	Electrolytic Cap	4.7 μ 80V	小 型 ケ ミ コ ン 直 立 型	C133			
HV 45-34-70	Flame Proof Resistor	4.7 Ω ERD-25FV	不 燃 化 カ ー ボ ン 抵 抗	R150,151			
HV 45-41-00	"	10 Ω ERD-25FV	"	R170-173			
HV 45-43-30	"	33 Ω ERD-25FV	"	R111			
HV 45-42-70	"	27 Ω ERD-25FV	"	R137			
HV 45-51-20	"	120 Ω ERD-25FV	"	R116			
HV 45-52-20	"	220 Ω ERD-25FV	"	R109,110			
HV 45-53-30	"	330 Ω ERD-25FV	"	R119			
HV 45-53-90	"	390 Ω ERD-25FV	"	R179			
HV 45-61-20	"	1.2K Ω ERD-25FV	"	R115,168,180			
HV 45-61-50	"	1.5K Ω ERD-25FV	"	R107			
HV 45-61-80	"	1.8K Ω ERD-25FV	"	R178,182			
HL 32-62-70	Metal Oxide Resistor	2.7K Ω 2P	酸 金 板 抵 抗	R187			
HL 32-64-70	"	4.7K Ω 2P	"	R106			
HZ 00-39-30	Carbon Resistor	4.7 Ω	カ ー ボ ン 抵 抗	R147,185			
HZ 00-39-40	"	10K Ω	"	R124-126,132			
HZ 00-24-00	Metal Plate Resistor	0.22 Ω 5P	金 属 板 抵 抗	R174-177			
HZ 00-38-30	"	0.1 Ω 2P	"	R143-146			
HU 27-61-20	Metal Film Resistor	1.2K Ω	金 属 皮 膜 抵 抗	R112			
HU 27-73-30	"	33K Ω	"	R120			
HT 18-02-40	Metal Grose VR	B500 Ω	メ タ ル グ レ ー ス VR タ テ	VR103			
HT 18-02-50	"	B1K Ω	"	VR102			
HT 18-03-70	"	B100 Ω	"	VR101			
HW 79-44-70	Fuse Resistor	47 Ω	ヒ ュ ー ズ 抵 抗	FR101,102			
HW 79-51-00	"	100 Ω	"	FR103-105,110-112			
HW 79-54-70	"	470 Ω	"	FR107,108			
HW 79-61-00	"	1K Ω	"	FR106,109			
IA 09-70-00	Transistor	2SA970 GR.BL	ト ラ ン ジ ス タ	TR117,126,128,141			
IA 10-15-50	"	2SA1015 μ Y	"	TR109			
IA 11-45-00	"	2SA1145 μ Y	"	TR105,110,111,129,133			

Ref. No.	Part No.	Description	部 品 名	Remarks	Common Model	Markets	ランク
IA	13 49:00	Dual Transistor	2SA1349 GR,BL	デュアルトランジスタ	TR102		
IA	09 70:10	Transistor	2SA970 BL	トランジスタ	TR112,113	Interchangeable	
IA	09 70:20	"	2SA970 GR	"	TR112,113		
IC	18 15:10	"	2SC1815 ϕ Y	"	TR103,108,114		
IC	22 40:00	"	2SC2240 GR,BL	"	TR104,124,125,127,130,132,133		
IC	22 40:00	"	2SC2240 GR,BL	"	TR115,130		
IC	27 05:00	"	2SC2705 ϕ Y	"	TR106,107,116,131,132		
IE	10 45:00	Dual EFT	2SK389 GR,BL	デュアル E F T	TR101		
IX	80 30:50	Transistor	2SA1333	トランジスタ	TR137,139		
IX	80 30:60	"	2SC3370	"	TR136,138		
IX	80 22:40	Transistor	2SA1306A	"	TR135		
IX	80 22:50	"	2SC3298A	"	TR134		
IX	80 22:80	"	2SA1328	"	TR121,123		
IX	80 22:70	"	2SC3345	"	TR120,122		
IB	05 44:00	"	2SB544	"	TR119		
ID	04 00:00	"	2SD400	"	TR118		
IF	00 00:40	Diode	1S1555	ダイオード	D103,107,110,111	Interchangeable	
IF	00 06:70	"	1S2473	"	D103,107,110,111		
IF	00 13:80	"	1S582	"	D106,112,113		
IF	00 20:90	Zener Diode	HZ24L-2	ツェナーダイオード	D101,102		
IF	00 23:80	LED (RED)	SLR-34URC	L E D	D118		
LA	00 20:40	Wrapping Terminal Type 1	P=5 5P	I型ラッピング端子板			
LB	91 80:20	XH Base Pin I Model	2P	XHベースピンI型			
CB	06 92:50	Binding Tie	BK-1	インシュロックタイ			
NA	08 33:20	Protection Circuit Board		リレーシート			
FZ	00 54:30	Polypropylene Film Cap	0.01 μ F 100V	ポリプロコン	C213,215,216		
FZ	00 54:40	"	0.01 μ F 250V	"	C217,218		
FV	03 82:20	Electrolytic Cap	220 μ F 16V	プラスチックケミコン	C206,207		
FV	64 81:00	"	100 μ F 25V	"	C214		
FV	06 72:20	"	22 μ F 50V	"	C205		
UW	86 62:20	"	2.2 μ F 50V	小型ケミコン自立型	C204		
FM	11 71:00	"	10 μ F 50V	B・Bコン	C203		
UW	83 81:00	Electrolytic Cap	100 μ 16V	小型ケミコン自立型	C208,209		
UW	85 84:70	"	470 μ 35V	"	C210,211		
UJ	16 82:20	"	2.2 μ 50V	"	C212		
GD	90 03:70	Coil	1.5 μ H	クウシンコイル	L201,202		
HZ	00 39:30	Carbon Resistor	4.7 Ω RM2W	カーボン抵抗	R203,204		
HS	41 20:70	Rotary VR	B25K Ω	ロータリーVR	VR201,202		
IA	09 70:00	Transistor	2SA970 GR,BL	トランジスタ	TR203,205,206,209-211	Interchangeable	
IB	05 07:00	"	2SB507	"	TR208		
IC	22 40:00	"	2SC2240 GR,BL	"	TR201,202,204		
ID	03 13:00	"	2SD313 E,F	"	TR207		
IF	00 00:40	Diode	1S1555	ダイオード	D201,203,204,224,225	Interchangeable	
IF	00 06:70	"	1S2473	"	D201,203,204,224,225		
IF	00 14:00	"	1S582	"	D207		
IF	00 15:10	Zener Diode	HZ-6C1L	ツェナーダイオード	D202,226		
IF	00 23:50	"	HZ12-B2	"	D205,206		
IF	00 42:70	LED (RED)	SLR-55URC3H	L E D (赤)	D223		

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