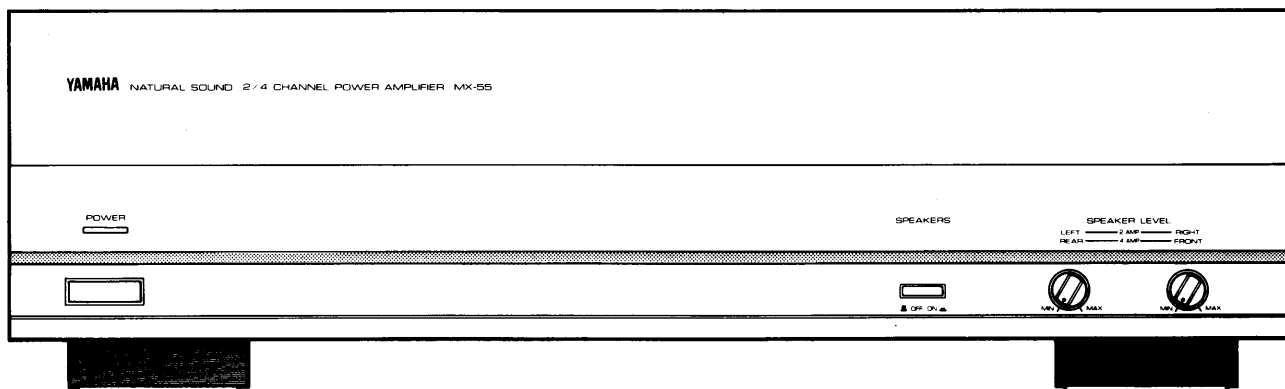


2/4 CHANNEL POWER AMPLIFIER MX-55

An AnalogAlley Scan

SERVICE MANUAL

MX-55



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 or 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).

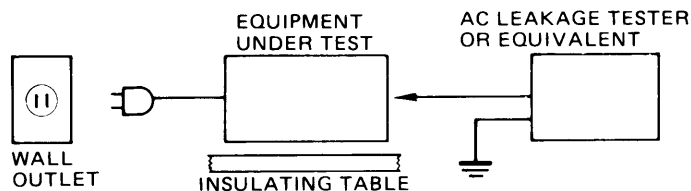
IMPORTANT: Turn the unit OFF during disassembly and parts replacement. Recheck all work before you apply power to the unit.

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TO SERVICE PERSONNEL	1	ADJUSTMENTS	4
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■ TO SERVICE PERSONNEL

1. Critical Components Information.
Components having special characteristics are marked \triangle 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 μ F.
 - Leakage current must not exceed 0.5mA.
 - Be sure to test for leakage with the AC plug in both polarities.



■ POLARIZATION

This amplifier 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.

■ SPECIFICATIONS

Minimum RMS Output Power Per Channel		
2CH, 20Hz ~ 20kHz, 0.003% THD, 8 Ω /6 Ω		70W/80W
4CH, 20Hz ~ 20kHz, 0.005% THD, 8 Ω /6 Ω		35W/40W

Dynamic Power Per Channel (by IHF Dynamic Headroom measuring method)

2CH, 8 Ω	106W
6 Ω	126W (R.U.C)/125W (W)
4 Ω	161W (R.U.C)/155W (W)
2 Ω	202W (R.U.C)/188W (W)
4CH, 8 Ω	52W
6 Ω	62W (R.U.C)/58W (W)
4 Ω	72W (R.U.C)/66W (W)
2 Ω	80W (R.U.C)/78W (W)

DIN Standard Output Power Per Channel		
1kHz, 1% THD, 4 Ω , 2CH/4CH		110W/50W (W)

Dynamic Headroom		
2CH, 8 Ω /6 Ω		1.8dB/1.97dB
4CH, 8 Ω /6 Ω		1.72dB/1.9dB

IEC Power		
2CH, 1kHz, 0.01% THD, 8 Ω /6 Ω		89W/104W (W)
4CH, 1kHz, 0.01% THD, 8 Ω /6 Ω		44W/51W (W)

Power Band Width		
0.03% THD, 4CH 17.5W, 8 Ω		5Hz ~ 100kHz

Damping Factor		
1kHz, 8 Ω		170

Input Sensitivity/Impedance		
MAIN IN, 2CH		1V/20k Ω
4CH		0.7V/20k Ω

Frequency Response		
20Hz ~ 20kHz, MAIN IN		+0, -0.3dB

Total Harmonic Distortion 20Hz ~ 20kHz		
MAIN IN to Sp Out 2CH 35W/8 Ω		0.002%
4CH 17.5W/8 Ω		0.003%

Intermodulation Distortion		
Rated Output 18 Ω		0.003%

Signal to Noise Ratio (IHF-A-Network)		
MAIN IN (Shorted) 2CH/4CH		122dB/119dB

Residual Noise (IHF-A-Network)		
		16 μ V

Channel Separation (Vol. -30dB)		
Input Shorted, 2CH, 1kHz/10kHz		110dB/90dB
4CH, 1kHz/10kHz		90dB/70dB

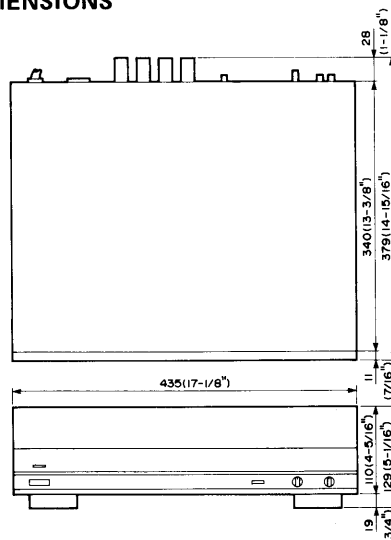
Gain Tracking Error (0dB ~ -60dB)		
		more than 2dB

Power Supply	
AC120V, 60Hz (U, C) AC110/120/220/240V, 60/50Hz(R) AC220V, 50Hz (W)	
Power Consumption	
400W 500VA (U, C) 400W (R) 600W (W)	
AC Outlet	
Un Switched x 1	200W max (U, C, R)
Dimension (W x H x D)	
435 x 129 x 379 mm (17-1/8" x 5-1/16" x 14-15/16")	
Weight	
10.5kg (23 lbs. 2 oz)	

*Specifications are subject to change without notice.

(U) U.S.A. Model
(C) Canadian Model
(W) European Model
(R) General Model

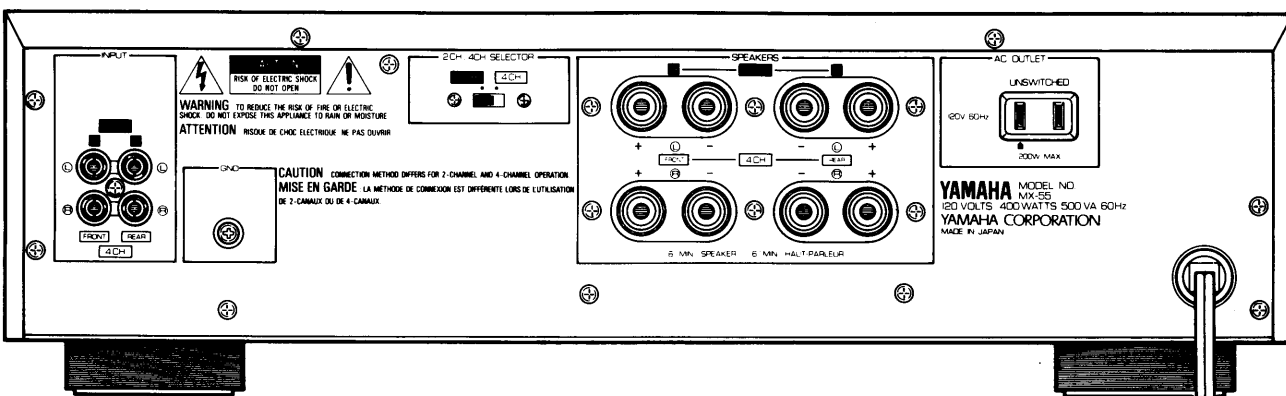
● DIMENSIONS



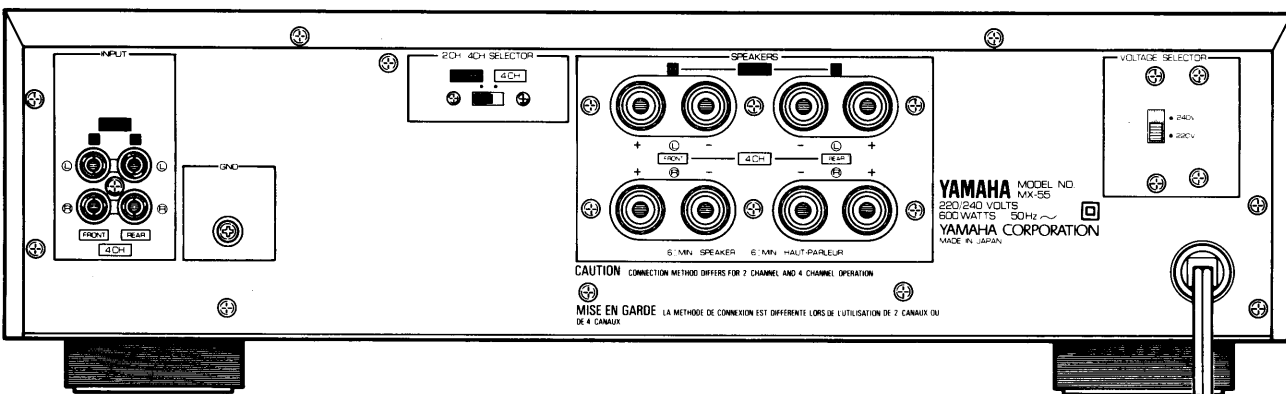
Unit: mm (inch)

REAR PANELS

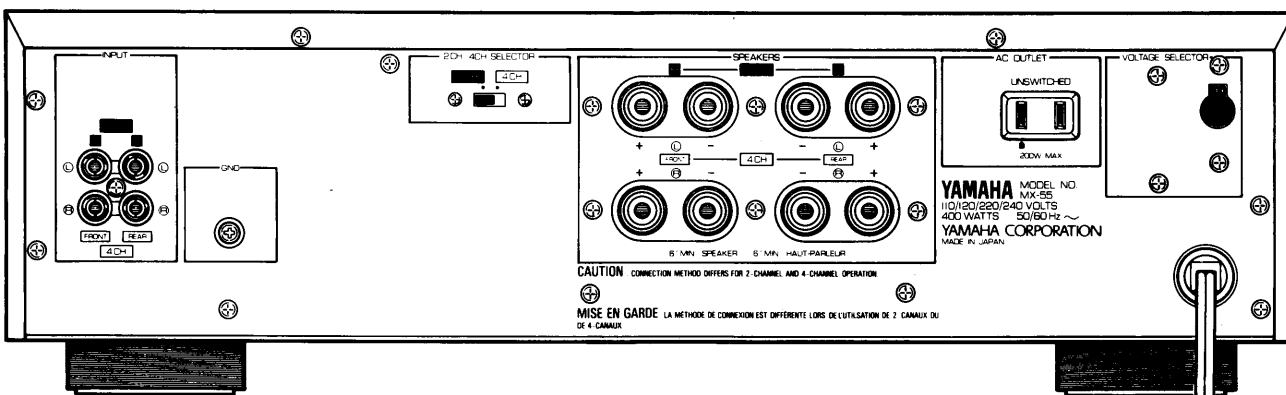
▼ U.S.A. & Canadian models



▼ European model

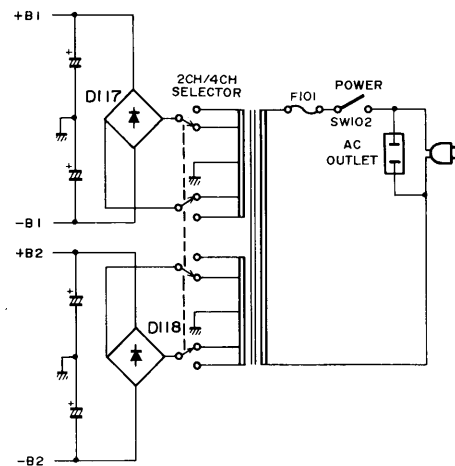
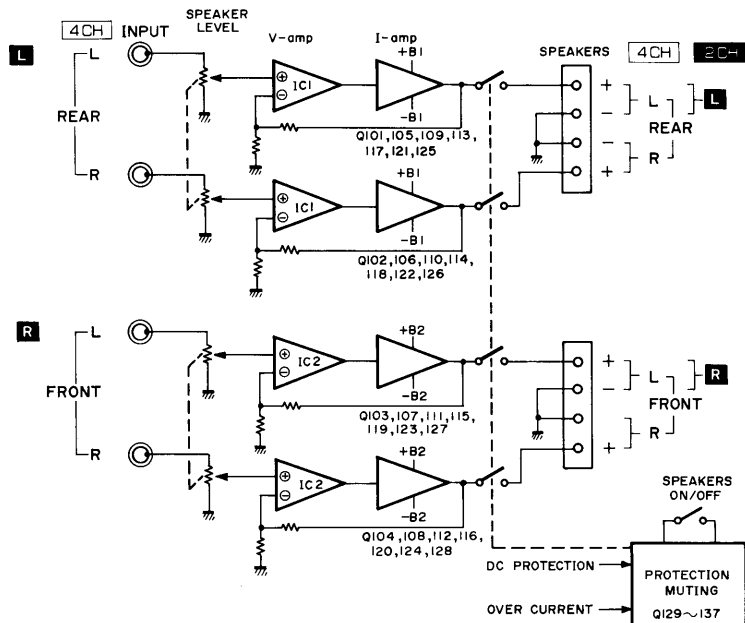


▼ General model

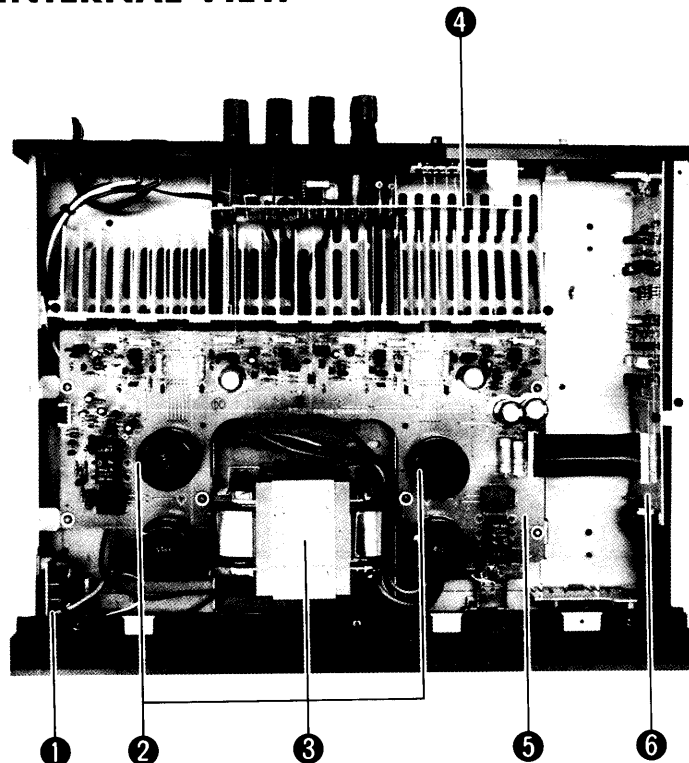


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BLOCK DIAGRAM



INTERNAL VIEW



- ① MAIN CIRCUIT BOARD (2)
- ② ELECTROLYTIC CAP.
- ③ POWER TRANSFORMER
 - U model: XE877001
 - C model: XE878001
 - R model: XE879001
 - W model: XE880001
- ④ SUB CIRCUIT BOARD (3)
- ⑤ MAIN CIRCUIT BOARD (1)
- ⑥ SUB CIRCUIT BOARD (1)

■ 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 Bottom Cover

Remove 11 screws (②) in Fig. 1.

3. Removal of Front Panel

- Remove 2 SPEAKER LEVEL Knobs in Fig. 1.
- Remove 3 screws (③) in Fig. 1, and remove the Front Panel toward the front.

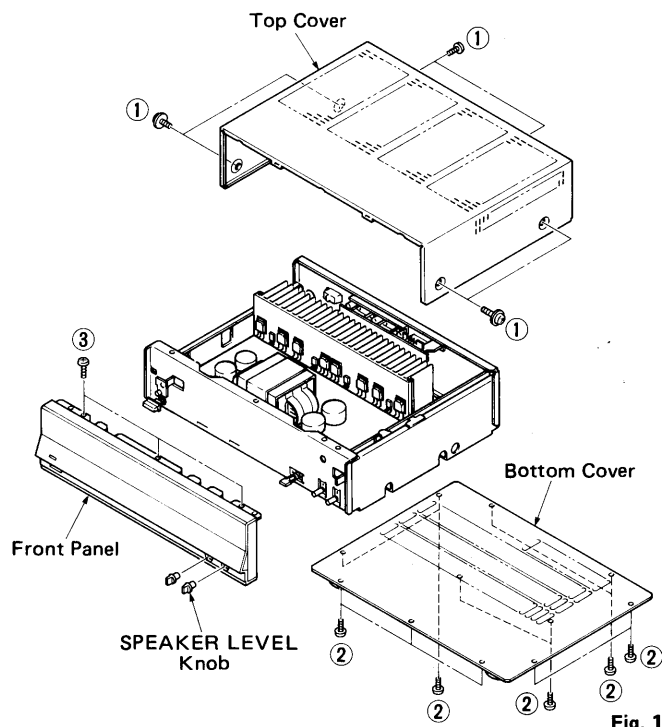


Fig. 1

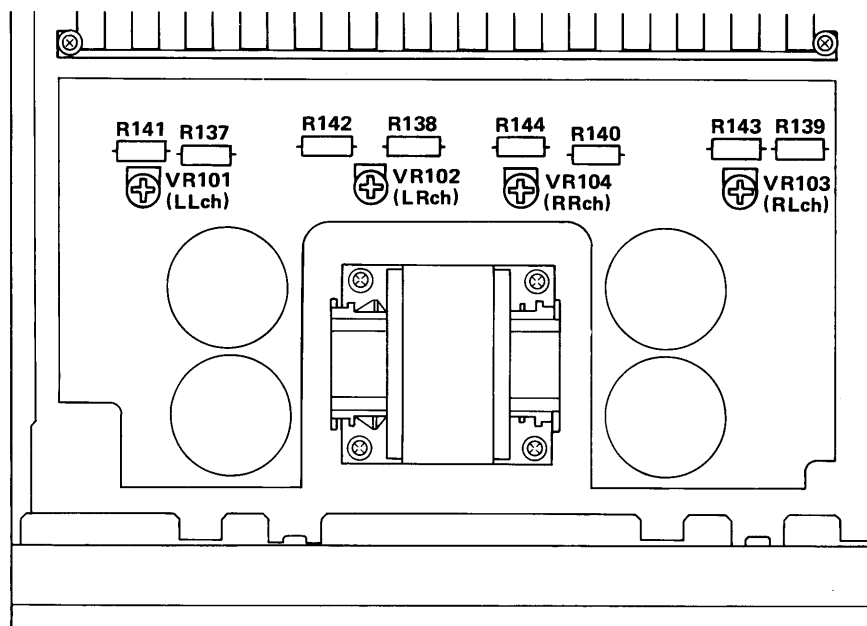
■ ADJUSTMENT

● Idling Current Adjustment

Wait 2 minutes after power ON to stabilize amplifier operation without signal.

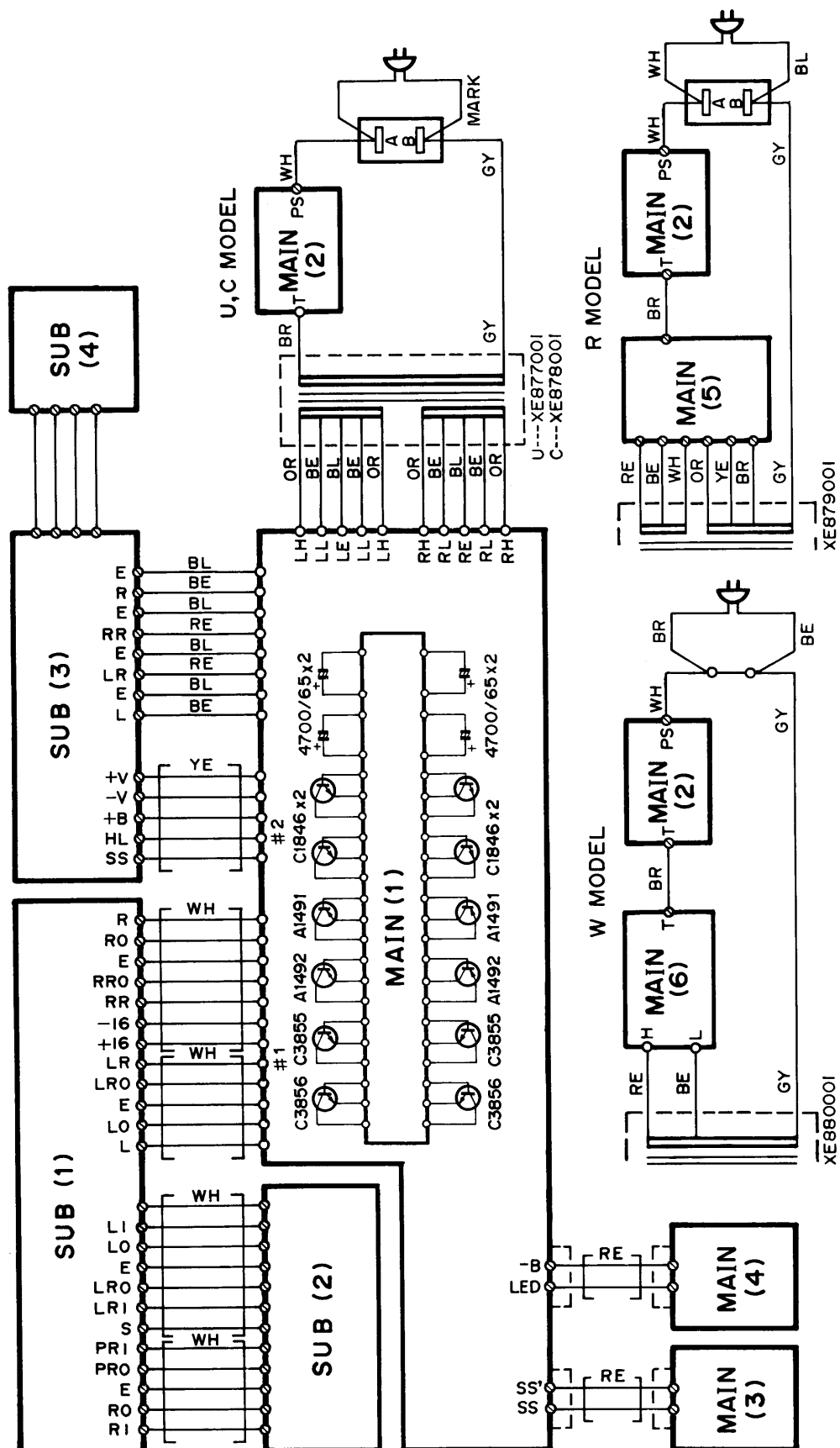
Test Points	Adjustment Points	Rating
R137 (either R141)	VR101 (LLch)	5mV \pm 1mV DC
R138 (either R142)	VR102 (LRch)	
R139 (either R143)	VR103 (RLch)	
R140 (either R144)	VR104 (RRch)	

● Test Points



TOP VIEW

MX-55



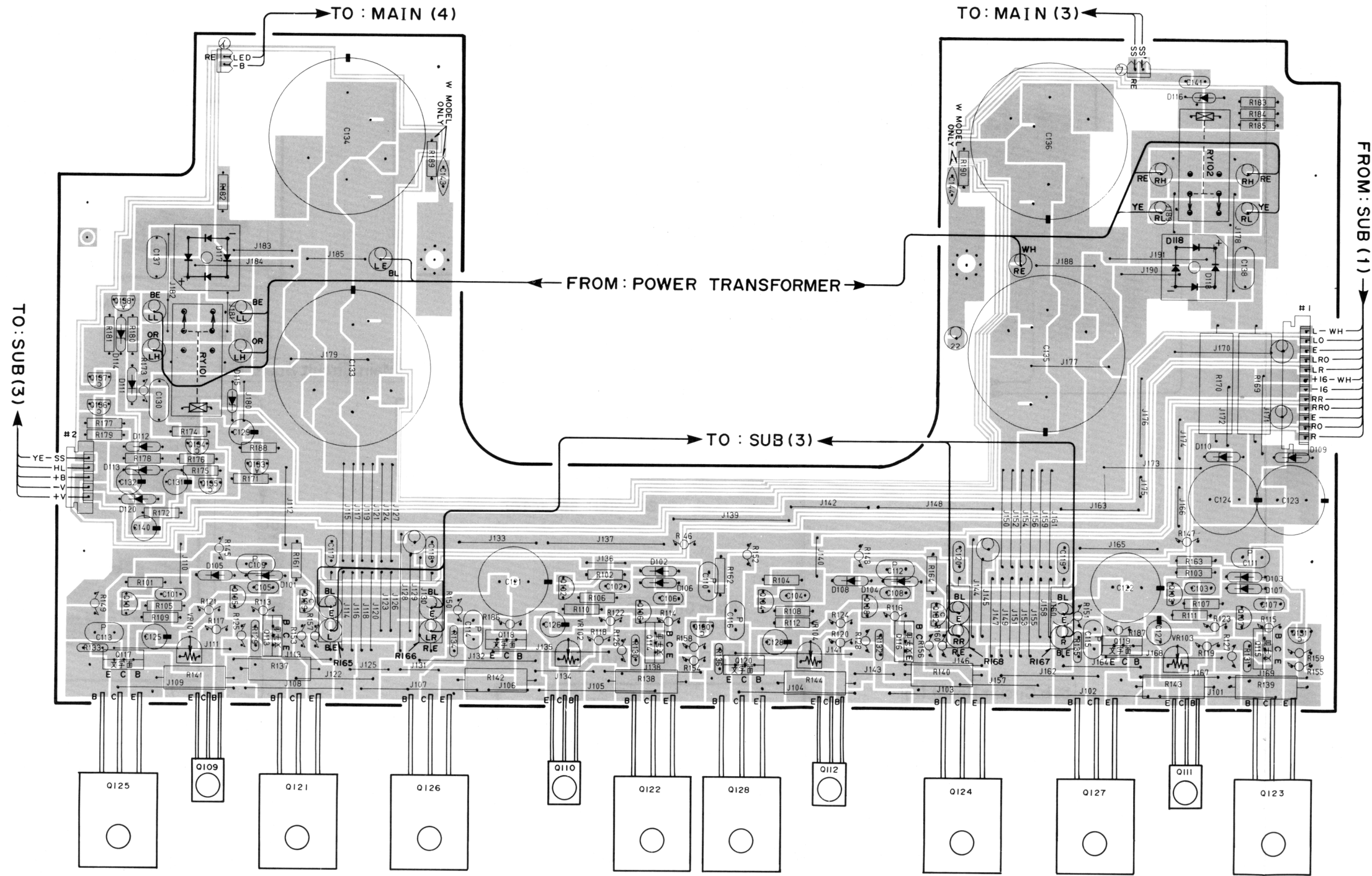
■ PRINTED CIRCUIT BOARD (Pattern side)

Note) 文字面 : Component side

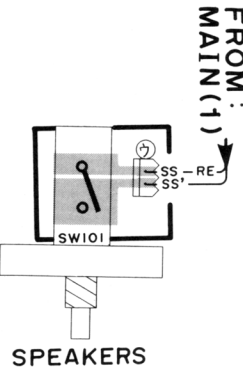
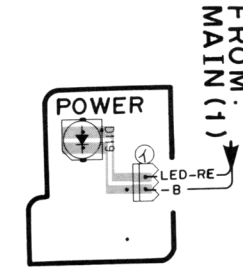
Main Circuit Board (1)

Main Circuit Board (4)

MX-55



Main Circuit Board (3)



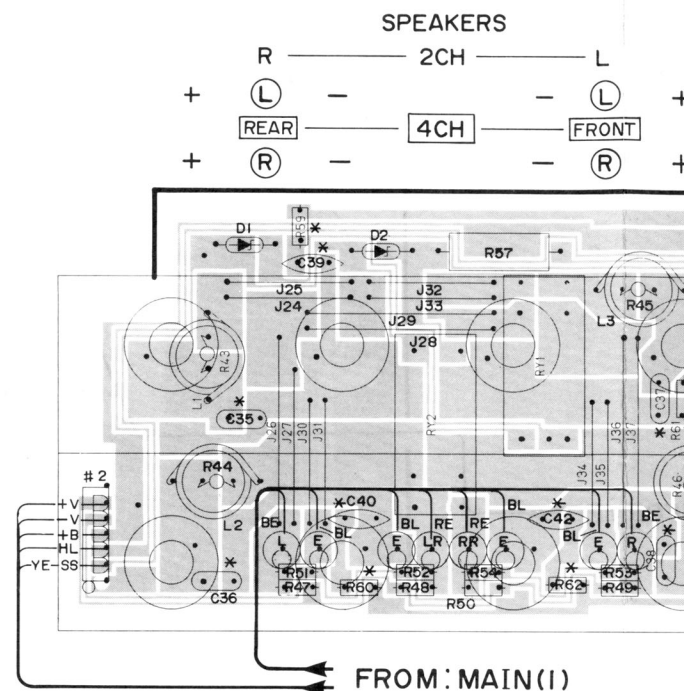
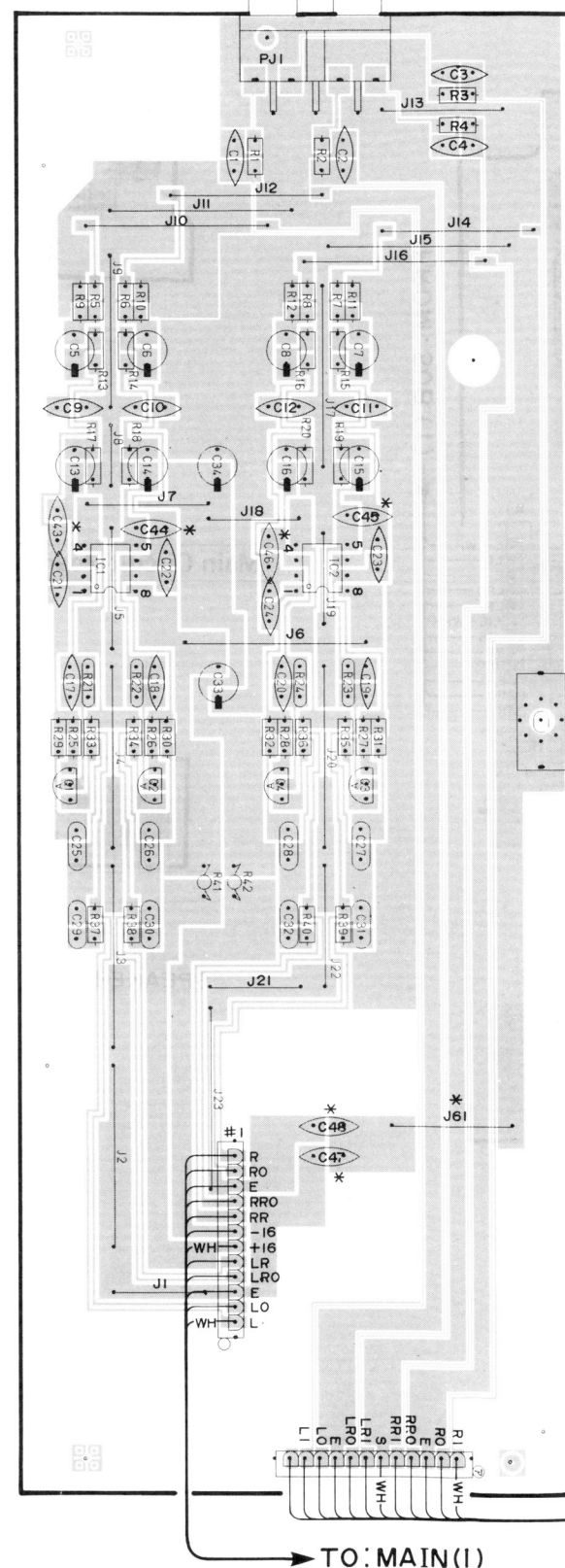
PRINTED CIRCUIT BOARD (Pattern side)

Sub Circuit Board (1)

INPUT
2CH L R
4CH REAR FRONT

Note) * marked

C43 ~ 48	OPEN	W
J61	OPEN	SHORT



Sub Circuit Board (4)

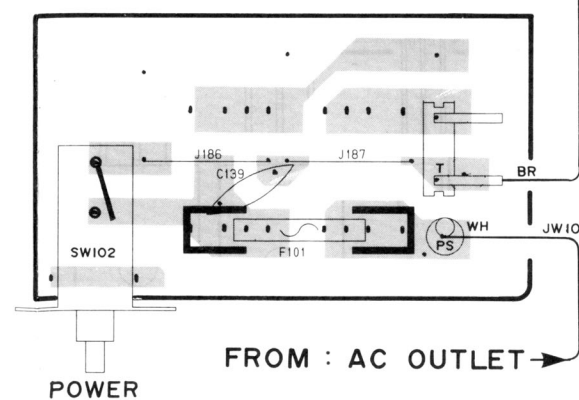
4CH 2CH
2CH/4CH SELECTOR

Note) * marked

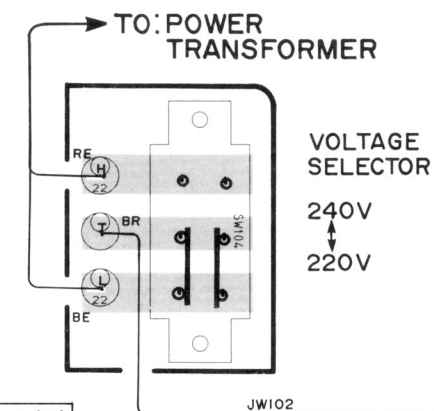
C39 ~ 42	U.C.R.	W
C35 ~ 38	OPEN	0.01
R59 ~ 62	OPEN	4700P
		2.2

Sub Circuit Board (3)

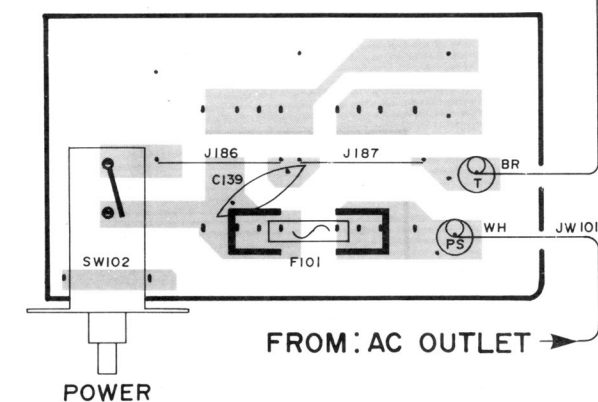
TO: POWER TRANSFORMER



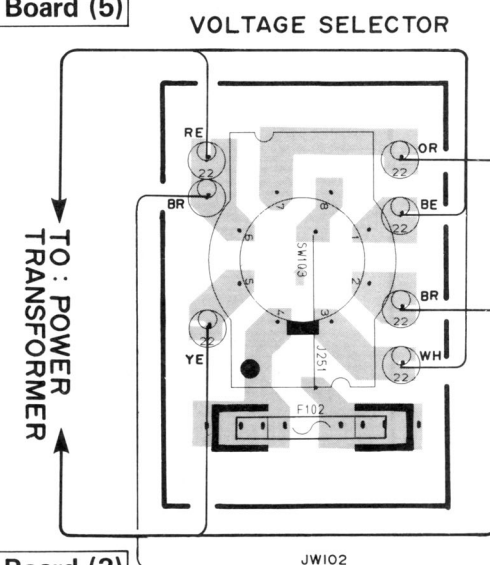
Main Circuit Board (6)



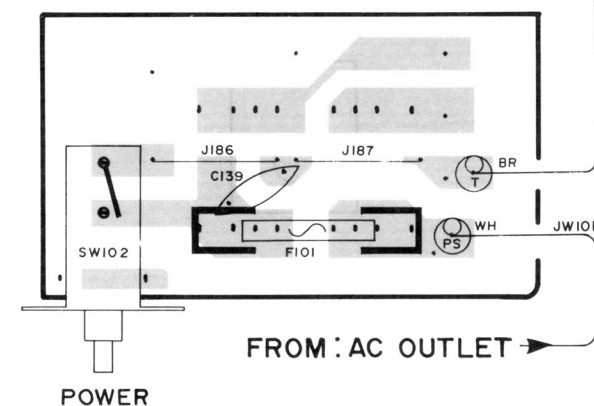
Main Circuit Board (2)



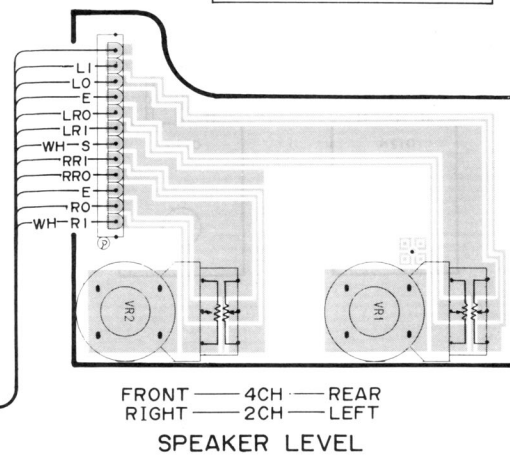
Main Circuit Board (5)



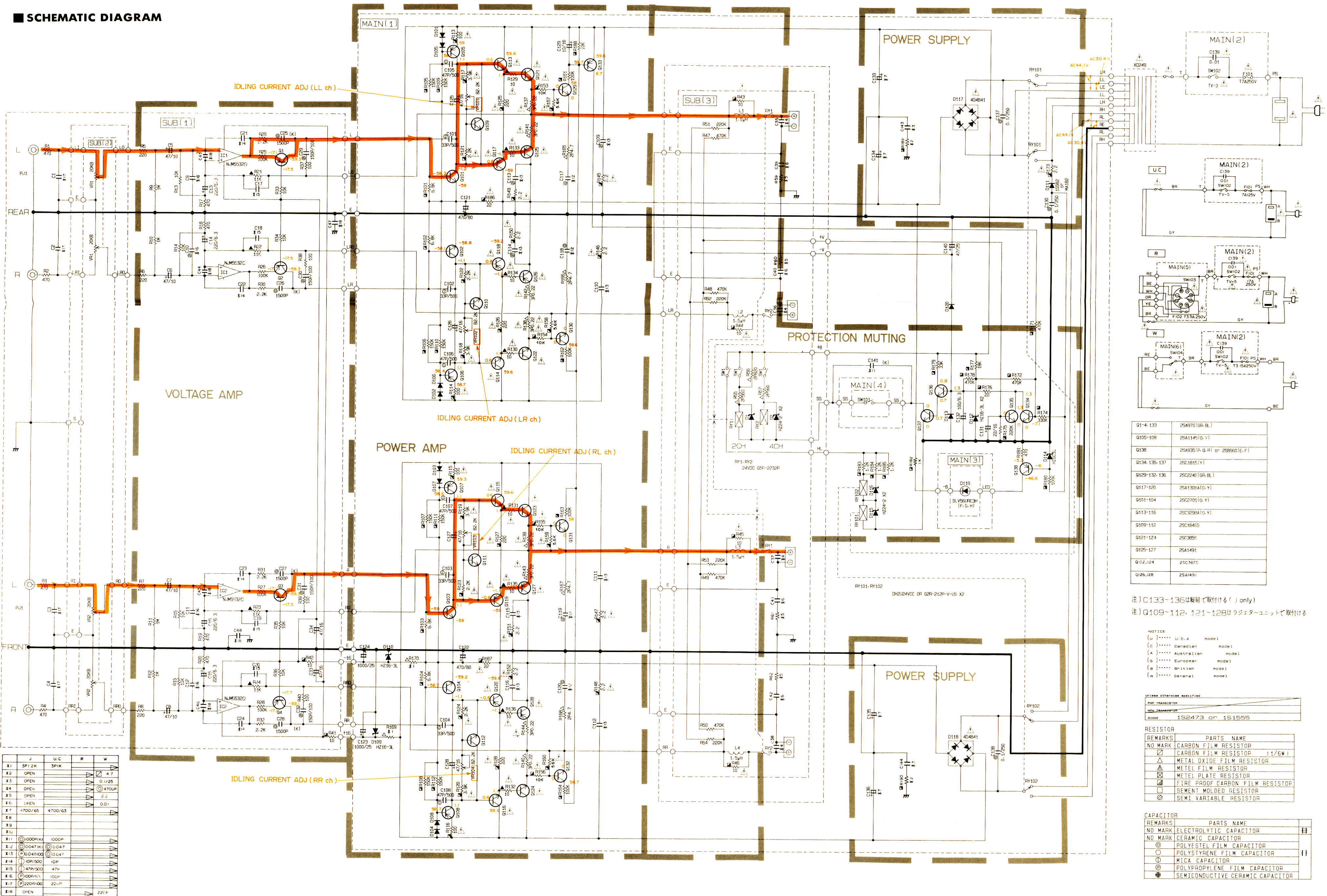
Main Circuit Board (2)



Sub Circuit Board (2)



SCHEMATIC DIAGRAM



	J	U.C	R	W
X1	3P1.2K	3PIK		
X2	OPEN			4.7
X3	OPEN			0.1/25
X4	OPEN			4700P
X5	OPEN			2.2
X6	OPEN			0.01
X7	4700/65	4700/63		
X8				
X9				
X10				
X11	1000P(K)	1000P		
X12	0.047(K)	0.047		
X13	0.047(M)	0.047		
X14	100P/500	10P		
X15	47P/500	47P		
X16	100P/100	100P		
X17	220P/100	22P		
X18	OPEN			22P

Q1-4-133	2SA970(GR, BL)
Q105-108	2SA1145(G, Y)
Q130	2SA935(P, G, R) or 2SB650(E, F)
Q134-135-137	2SC1815(Y)
Q129-132-136	2SC2240(GR, BL)
Q117-120	2SA1306A(D, Y)
Q101-104	29C2705(G, Y)
Q113-116	2SC3298A(D, Y)
Q109-112	2SC1846S
Q121-123	2SC3856
Q125-127	2SA1491
Q122, 124	2SC3655
Q126, 128	2SA1491

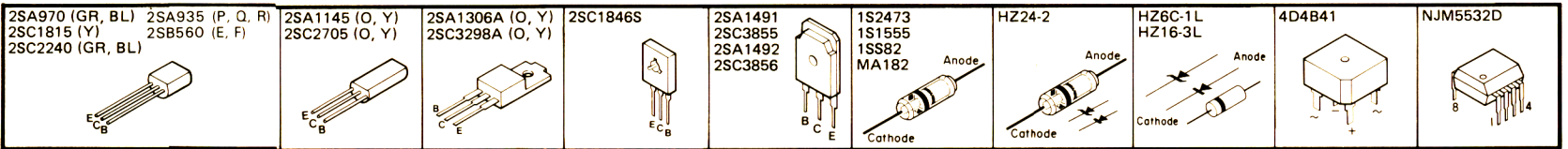
注) C133~136は組んで取付ける() only
注) Q109~112、121~128はラジエターユニットで取付ける

NOTICE
(u)..... U.S.A. model
(c)..... Canadian model
(A)..... Australian model
(s)..... European model
(b)..... British model
(n)..... German model

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	
	POLYESTER FILM CAPACITOR	
	POLYSTYRENE FILM CAPACITOR	
	MICA CAPACITOR	
	POLYPROPYLENE FILM CAPACITOR	
	SEMICONDUCTIVE CERAMIC CAPACITOR	

PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICs.



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

PARTS LIST

ELECTRICAL PARTS

■WARNING

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

● Carbon resistors (1/6W or 1/4W) are not included in the ELECTRICAL PARTS list. For the parts No. of the carbon resistor, refer to p.17.

Ref. No.	Part No.	Description	部 品 名	Remarks	Common Model	Markets	ランク
※	NA 09:99:30	Main Circuit Board	メ イン シ ー ト			U,C	
※	NA 09:99:40	"	"			R	
※	NA 09:99:50	"	"			W	
	FG 21 31 00	Ceramic Cap.	1000pF 50V セ ラ コ ン	C141			
	Fi 51 41 00	"	0.01μF DNS "	C139			△
	FZ 00 41 30	Semiconductive Ceramic Cap.	0.1μF 25V 半 導 体 セ ラ コ ン	C139		W	
	FU 35 13 30	Mica Cap.	33pF 500V マ イ カ コ ン	C101~104			
	FU 35 14 70	"	47pF 500V "	C105~108			
	FA 15 44 70	Mylar Cap.	0.047μF 50V マ イ ラ ー コ ン	C109~120			
	FZ 00 46 60	Metalized Mylar Cap.	0.1μF 250V M M コ ン	C130, 137, 138			
※	VG 19 20 00	Electrolytic Cap.	1000μF 25V ケ ミ コ ン	C123, 124			
	FZ 00 53 50	"	470μF 80V "	C121, 122			
※	VF 84 66 00	"	4700μF 63V ブ ロ ッ ク ケ ミ コ ン	C133~136			
	UJ 11 81 00	"	100μF 6.3V ケ ミ コ ン	C132			
	UJ 13 71 00	"	10μF 16V "	C129			
	UJ 13 72 20	"	22μF 16V "	C131			
	VE 01 78 00	"	47μF 16V "	C125~128			
	UJ 14 74 70	"	47μF 25V "	C140			
	HJ 35 34 70	Carbon Resistor	4.7Ω 1/4W カ ー ボ ン 抵 抗	R189, 190		W	
	HJ 35 42 20	"	22Ω 1/4W "	R176			
	HJ 35 54 70	"	470Ω 1/4W "	R181			
	HJ 35 61 00	"	1kΩ 1/4W "	R182			
	HJ 35 61 20	"	1.2kΩ 1/4W "	R183~185			
	HJ 35 66 80	"	6.8kΩ 1/4W "	R101~104			
	HJ 35 71 00	"	10kΩ 1/4W "	R188			
	HJ 35 71 80	"	18kΩ 1/4W "	R177			
	HJ 35 73 30	"	33kΩ 1/4W "	R179			
	HJ 35 81 00	"	100kΩ 1/4W "	R161~164, 180			
	HJ 35 81 50	"	150kΩ 1/4W "	R105~112			
	HJ 35 82 20	"	220kΩ 1/4W "	R175			
	HJ 35 83 30	"	330kΩ 1/4W "	R174			
	HJ 35 84 70	"	470kΩ 1/4W "	R171, 172, 178			
	HV 45 32 20	Flame Proof Carbon Resistor	2.2Ω 1/4W 不 燃 化 カ ー ボ ン 抵 抗	R145~152, 173			△
	HV 45 42 20	"	22Ω 1/4W "	R186, 187			△
	HV 45 51 00	"	100Ω 1/4W "	R113~116			△
	HV 45 52 20	"	220Ω 1/4W "	R125~128			△
	HV 45 62 20	"	2.2kΩ 1/4W "	R121~124			△
	HV 45 63 90	"	3.9kΩ 1/4W "	R117~120			△
	HV 45 65 60	"	5.6kΩ 1/4W "	R157~160			△
	HV 45 71 00	"	10 kΩ 1/4W "	R153~156			△
	HU 57 41 00	Metal Film Resistor	10Ω 1/4W 金 属 皮 膜 抵 抗	R129~136			△
	HL 32 34 70	Metal Oxide Film Resistor	4.7Ω 2W 酸 金 抵 抗	R165~168			
	HL 93 22 20	"	0.22Ω 3W "	R137~144			△
※	HL 73 61 00	"	1kΩ 3W "	R169, 170			
	VB 86 12 00	Pre-set Potentiometer	B2.2kΩ 半 固 定 抵 抗	VR101~104			
	iA 09 70 20	Transistor	2SA970(GR,BL) ト ラ ン ジ ス タ	Q133			
	iA 11 45 00	"	2SA1145(O,Y) "	Q105~108			
	iA 13 06 00	"	2SA1306A(O,Y) "	Q117~120			△
	iA 09 35 10	"	2SA935(P,Q,R) "	Q138	Inter-changeable		
	iB 05 60 20	"	2SB560(E,F) "	"			

※New Parts (新規部品) NR

2.

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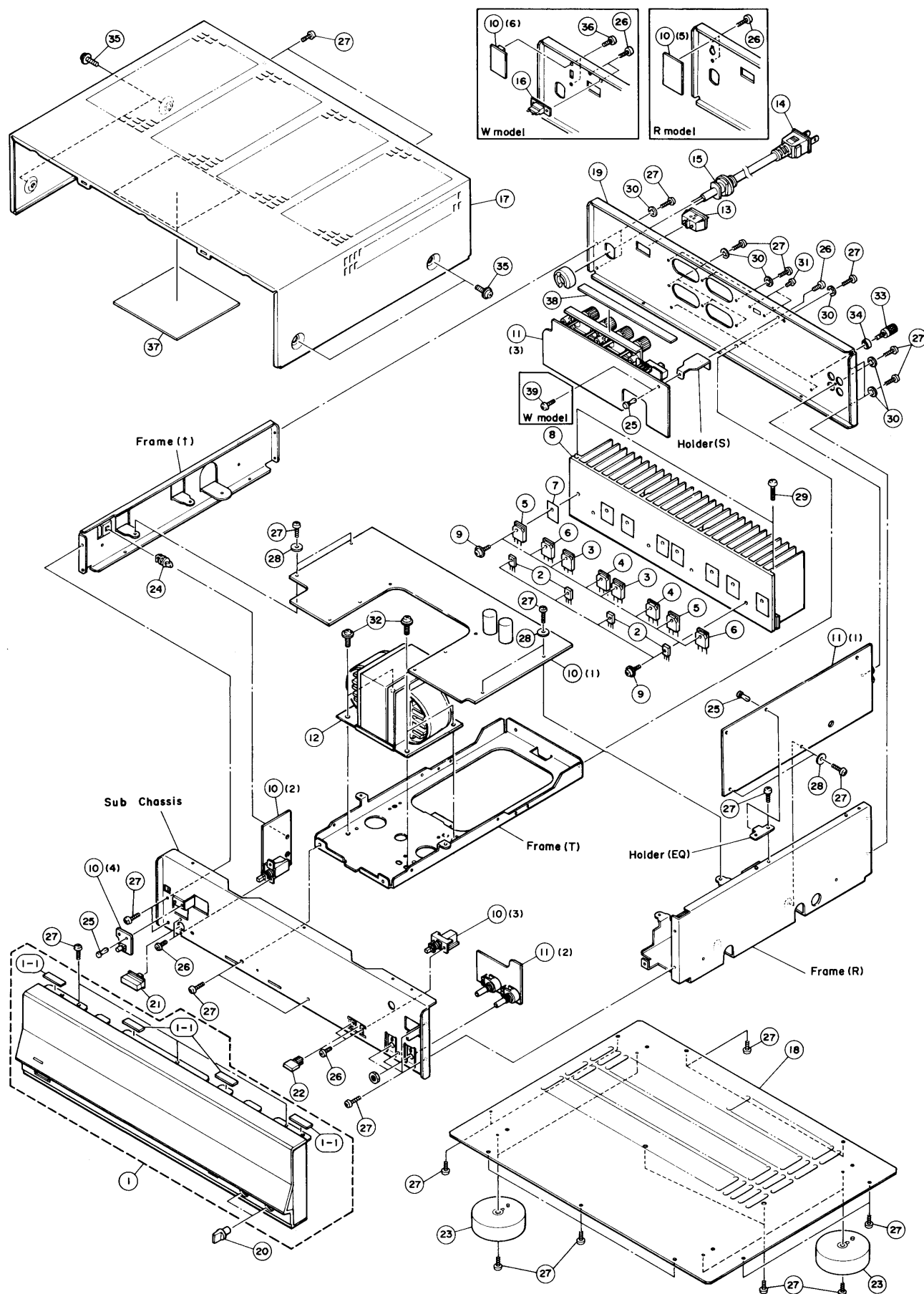
12

✖

✖

13

EXPLODED VIEW



MECHANISM PARTS

Ref. No.	Part No.	Description	部 品 名	Remarks	Common Model	Markets	ランク
※ 1	VF 84 75 00	Panel Unit	パ ネ ル ユ ニ ッ ト	Titan			
※ //	VF 84 76 00	//	//	Black			
※ 1-1	VE 22 26 00	Cushion	ク ッ シ ョ ン				
2	VC 39 81 00	Transistor	ト ラ ン ジ ス タ ー	Q109~112			
※ 3	iX 60 97 30	Pair Transistor	ベ ア ー ト ラ ン ジ ス タ ー	Q126, 128	} Pair		
※ 4	iX 60 97 40	//	//	Q122, 124			
※ 5	iX 60 97 56	//	//	Q125, 127	} Pair		
※ 6	iX 60 97 60	//	//	Q121, 123			
7	VB 43 50 00	Insulation Base	放 熱 シ ー ト				
※ 8	VF 84 43 00	Radiator	ラ ジ エ タ ー				
9	EZ 00 07 60	Cup Screw	3×12 FCRM-BI Bタイトカップスクリュー				
※ 10	NA 09 99 30	Main Circuit Board	メ イ ン シ ー ト			U, C	
※ //	NA 09 99 40	//	//			R	
※ //	NA 09 99 50	//	//			W	
※ 11	NA 09 99 60	Sub Circuit Board	サ ブ シ ー ト			U, C, R	
※ //	NA 09 99 70	//	//			W	
※ 12	XE 87 70 01	Power Transformer	電 源 ト ラ ン ス			U	△
※ //	XE 87 80 01	//	//			C	△
※ //	XE 87 90 01	//	//			R	△
※ //	XE 88 00 01	//	//			W	△
13	LB 20 30 60	AC Outlet	A C ア ウ ト レ ッ ト			U, C, R	△
14	MG 00 22 20	Power Cord	2m 10A 125V 電 源 コ ー ド			U, C	△
//	MG 00 16 30	//	2m 6A 250V //			R	△
//	MG 00 23 20	//	2m 2.5A 250V //			W	△
15	CB 62 02 00	Cord Stopper	CM-22C コ ー ド ス ッ ト バ ー			U, C	
//	CB 62 01 90	//	CM-22B //			R, W	
16	VD 61 41 00	Terminal Board	2P 中 継 端 子 台			W	
※ 17	VD 94 72 00	Top Cover	ト ッ プ カ バ ー	Black			
※ //	VE 78 21 00	//	//	Titan			
※ 18	VD 91 68 00	Bottom Cover	ボ ト ム カ バ ー				
※ 19	VF 62 95 00	Rear Panel	リ ア パ ネ ル			R	
※ //	VF 62 96 00	//	//			U, C	
※ //	VF 62 97 00	//	//			W	
※ 20	VD 91 74 00	Knob	φ12 ツ マ ミ	Black SPEAKER LEVEL			
※ //	VD 91 79 00	//	φ12 //	Titan SPEAKER LEVEL			
※ 21	VD 91 83 00	Button (P)	7×25 ボ タ ン (P)	Black POWER			
※ //	VD 91 84 00	//	7×25 //	Titan POWER			
22	CB 66 07 90	Button	3×14 ボ タ ン	Black SPEAKERS	AX-900		
※ //	VD 91 88 00	//	3×14 //	Titan SPEAKERS			
23	CB 66 09 50	Leg Ass'y	脚	Black	AX-900		
//	VE 18 53 00	//	//	Titan	AX-900		
24	CB 60 37 30	Support	サ ポ ー ト				
25	CB 60 56 20	Plastic Rivet	プ ラ ス チ ッ ク リ ベ ッ ト				
26	ED 33 00 66	Binding Head Screw	3×6 FCRM3-BI バ イ ン ド 小 ネ ジ	PACK			
27	Ei 33 00 86	Binding Head Tapping Screw	3×8 FCRM3-BI バ イ ン ド タ ッ ピ ン グ ネ ジ	PACK			
28	EV 20 30 36	Plain Washer	φ3 FCRM3-BI 平 座 金	PACK			
29	EA 04 00 86	Pan Head Screw	4×8 ZMC2-Y ナ ベ 子 ネ ジ	PACK			
30	EV 41 30 36	Toothed Lock Washer	φ3 FCRM3-BI 内 歯 付 座 金	PACK			
31	ED 32 60 46	Binding Head Screw	2.6×4 FCRM3-BI バ イ ン ド 小 ネ ジ	PACK			
32	EZ 00 13 20	Cup Screw	4×8 FCRM3-BI カ ッ プ ス ク リ ュ ー				
33	AA 62 73 10	Ground Terminal Screw	3×13 FNM3-BI ア ー ス 端 子 ネ ジ				
34	EV 90 13 60	Sems Plain Washer	φ3.6×φ10×+0.8 FNM3-3g セ ム ス 平 座 金				
35	EZ 00 13 20	Cup Screw	4×8 FCRM3-BI カ ッ プ ス ク リ ュ ー	Black			

※New Parts (新規部品) NR

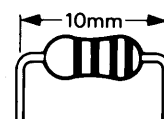
※New Parts (新規部品) NR

Parts List for Carbon Resistor

Value	1/4W Type Part No.	1/6W Type Part No.	Value	1/4W Type Part No.	1/6W Type Part No.
1.0 Ω	HJ353100	HF853100	12K Ω	HJ357120	HF857120
1.8 "	HJ353180	*	15 "	HJ357150	HF857150
2.2 "	HJ353220	HF853220	18 "	HJ357180	HF857180
3.3 "	HJ353330	HF853330	22 "	HJ357220	HF857220
4.7 "	HJ353470	HF853470	27 "	HJ357270	HF857270
5.6 "	HJ353560	HF853560	33 "	HJ357330	HF857330
10 "	HJ354100	HF854100	39 "	HJ357390	HF857390
15 "	HJ354150	HF854150	47 "	HJ357470	HF857470
22 "	HJ354220	HF854220	56 "	HJ357560	HF857560
27 "	HJ354270	HF854270	68 "	HJ357680	HF857680
33 "	HJ354330	HF854330	82 "	HJ357820	HF857820
39 "	HJ354390	HF854390	91 "	HJ357910	HF857910
47 "	HJ354470	HF854470	100 "	HJ358100	HF858100
56 "	HJ354560	HF854560	120 "	HJ358120	HF858120
68 "	HJ354680	HF854680	150 "	HJ358150	HF858150
82 "	HJ354820	HF854820	180 "	HJ358180	HF858180
100 "	HJ355100	HF855100	220 "	HJ358220	HF858220
110 "	HJ355110	HF855110	270 "	HJ358270	HF858270
120 "	HJ355120	HF855120	330 "	HJ358330	HF858330
150 "	HJ355150	HF855150	390 "	HJ358390	HF858390
160 "	HJ355160	*	470 "	HJ358470	HF858470
180 "	HJ355180	HF855180	560 "	HJ358560	HF858560
220 "	HJ355220	HF855220	680 "	HJ358680	HF858680
270 "	HJ355270	HF855270	820 "	HJ358820	HF858820
330 "	HJ355330	HF855330	1.0M Ω	HJ359100	HF859100
390 "	HJ355390	HF855390	1.2 "	HJ359120	*
470 "	HJ355470	HF855470	1.5 "	HJ359150	HF859150
510 "	*	HF855510	1.8 "	HJ359180	HF859180
560 "	HJ355560	HF855560	2.2 "	HJ359220	HF859220
680 "	HJ355680	HF855680	3.3 "	HJ359330	HF859330
820 "	HJ355820	HF855820	3.9 "	HJ359390	*
910 "	HJ355910	HF855910	4.7 "	HJ359470	HF859470
1.0K Ω	HJ356100	HF856100			
1.2 "	HJ356120	HF856120			
1.5 "	HJ356150	HF856150			
1.8 "	HJ356180	HF856180			
2.0 "	HJ356200	HF856200			
2.2 "	HJ356220	HF856220			
2.4 "	HJ356240	HF856240			
2.7 "	HJ356270	HF856270			
3.0 "	HJ356300	HF856300			
3.3 "	HJ356330	HF856330			
3.6 "	HJ356360	HF856360			
3.9 "	HJ356390	HF856390			
4.7 "	HJ356470	HF856470			
5.1 "	HJ356510	HF856510			
5.6 "	HJ356560	HF856560			
6.8 "	HJ356680	HF856680			
8.2 "	HJ356820	HF856820			
9.1 "	HJ356910	HF856910			
10 "	HJ357100	HF857100			

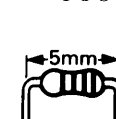
1/4W Type

HJ35○○○○



1/6W Type

HF85○○○○



MX-55

YAMAHA



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