STEREO POWER AMPLIFIER

MX-1000/U

SERVICE MANUAL

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 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.

■ CONTENTS

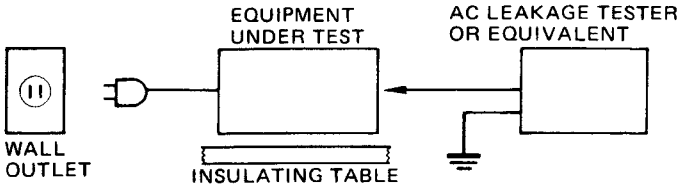
100195

YAMAHA
YAMAHA CORPORATION
P.O.Box 1, Hamamatsu, Japan
3.6k-473 Printed in Japan. '88.4

■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 (U, C models only)

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 ia a safety feature.

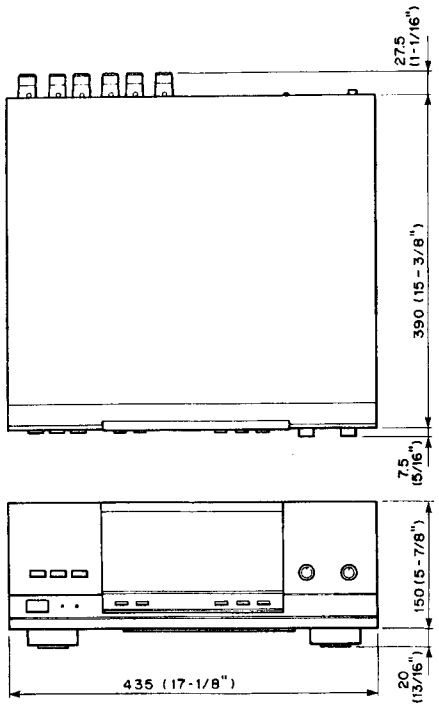
■SPECIFICATIONS

Minimum RMS Output Power per Channel	
20Hz ~ 20kHz	
0.003% THD, 8Ω	260W
0.007% THD, 6Ω	295W
0.02% THD, 4Ω	330W
Dynamic Power per Channel	
(by IHF Dynamic Headroom measuring method)	
8Ω	450W
6Ω	560W
4Ω	740W
2Ω	960W
1Ω	1000W
DIN Standard Output Power per Channel	
1kHz, 1% THD, 4Ω	450W (G)
Dynamic Headroom	
8Ω	2.38dB (U, C, R)
6Ω	2.78dB (U, C, R)
4Ω	3.51dB (U, C, R)
IEC Power (1kHz, 0.01% THD)	
8Ω	315W (G)
6Ω	375W (G)
4Ω	440W (G)
Power Band Width	
0.03% THD, 130W, 8Ω	10kHz ~ 60kHz
Damping Factor	
8Ω, 1kHz	130
Input Sensitivity/Impedance	
MAIN IN	1.62V/60kΩ
Frequency Response (20Hz ~ 20kHz)	
MAIN IN	+0, −0.2dB
Total Harmonic Distortion	
20Hz ~ 20kHz	
MAIN IN TO SP OUT (130W/8Ω)	0.003%
Intermodulation Distortion	
Rated Output /8Ω	0.003%
Signal to Noise Ratio (IHF-A Network)	
MAIN IN (Shorted)	126dB
MAIN IN (5.1kΩ terminated)	122dB
Residual Noise (IHF-A Network)	21μV
Channel Separation (Vol. −30dB)	
Input Shorted (1kHz/10kHz)	89dB/72dB
Power Supply	
	AC220/240V, 50Hz (B, G) AC110/120/220/240 V, 50/60Hz (R) AC240V, 50Hz (A) AC120V, 60Hz (U, C)
Power Consumption	1100W, 1300VA (U, C) 850W (R) 1700W (A, B, G)
AC Outlet	
Un Switched x 1	200W max. (U, C, R)
Dimensions (W x H x D)	435 x 170 x 425mm (17-1/8" x 6-11/16" x 16-3/4")
Weight	20.5kg (45 lbs 4 oz)

** Specifications are subject to change without notice.*

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

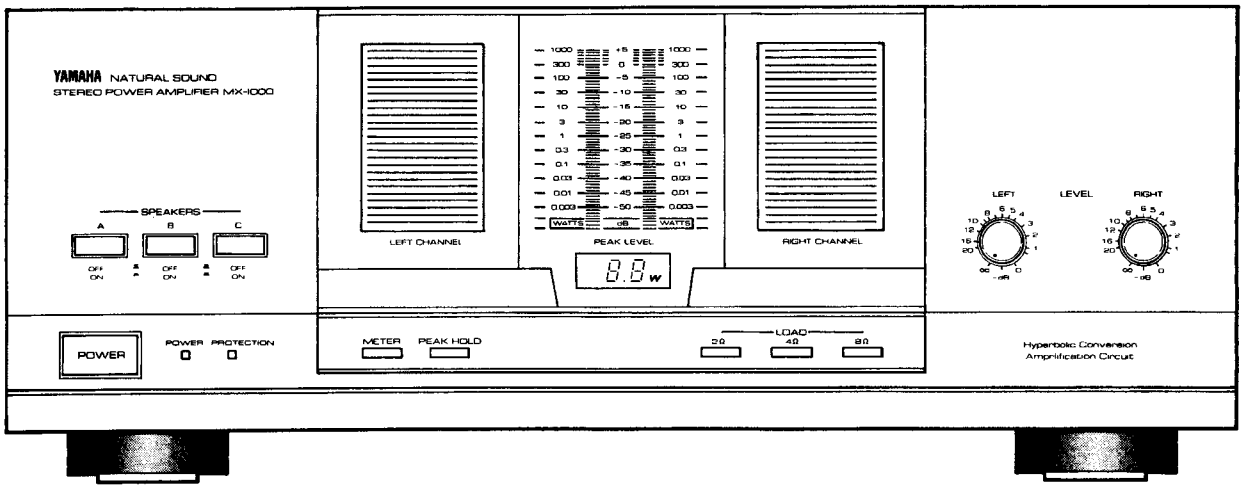
• DIMENSION



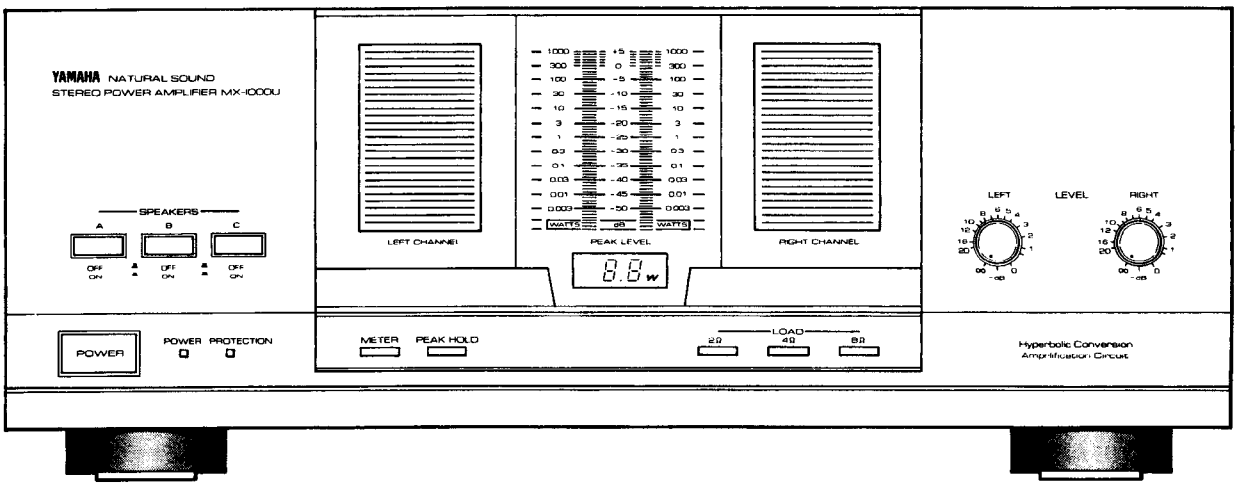
Unit: mm (inch)

■FRONT PANELS

● MX-1000 (General, European, British & Australian models)

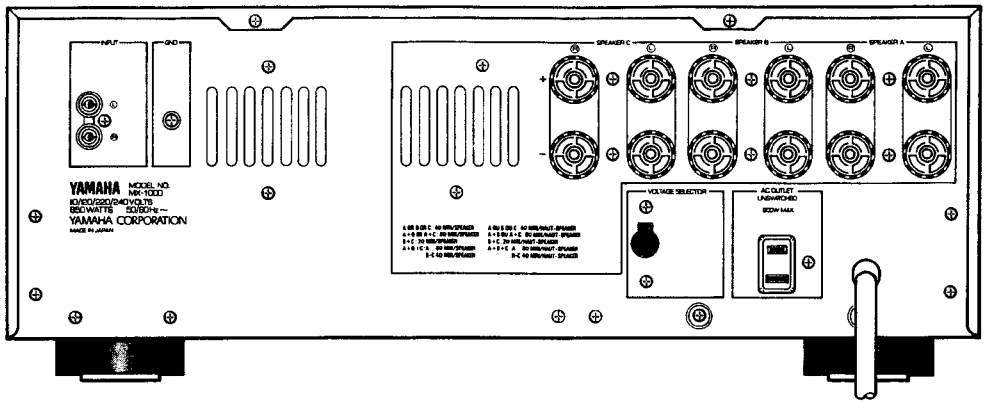


● MX-1000U (U.S.A. & Canadian models)

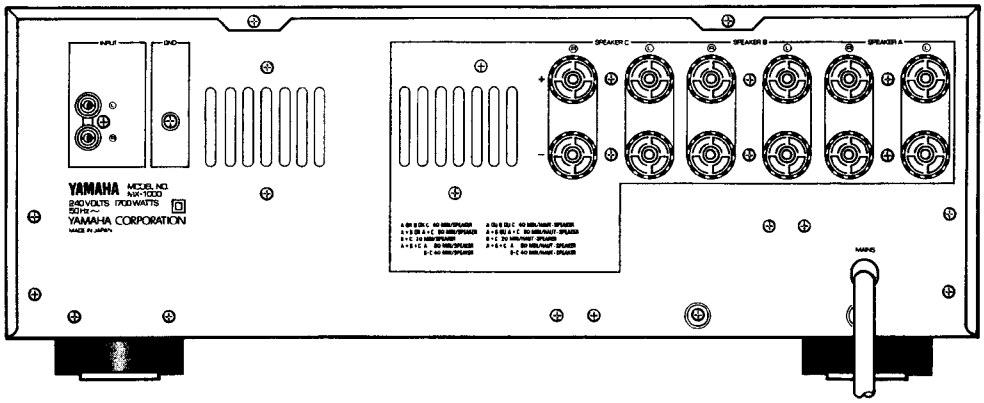


■ REAR PANELS

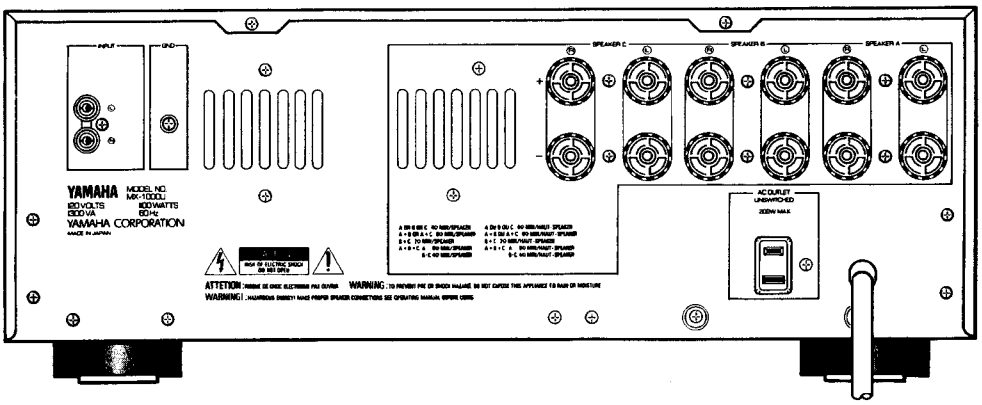
▼ General model



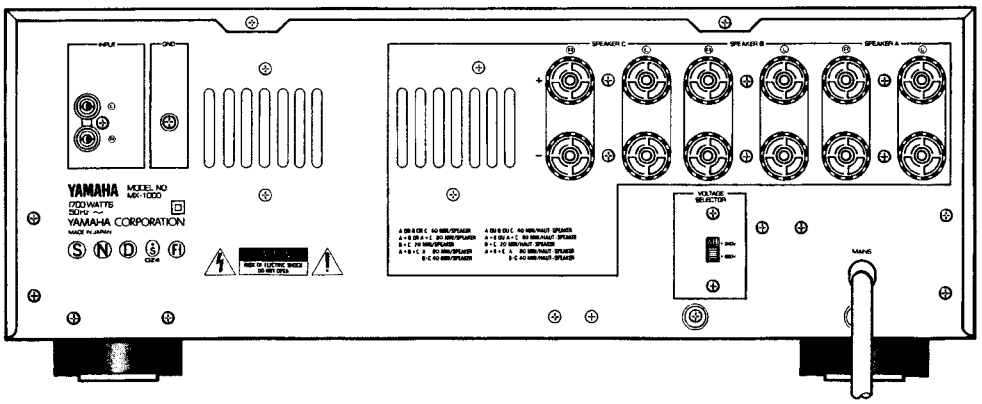
▼ Australian model



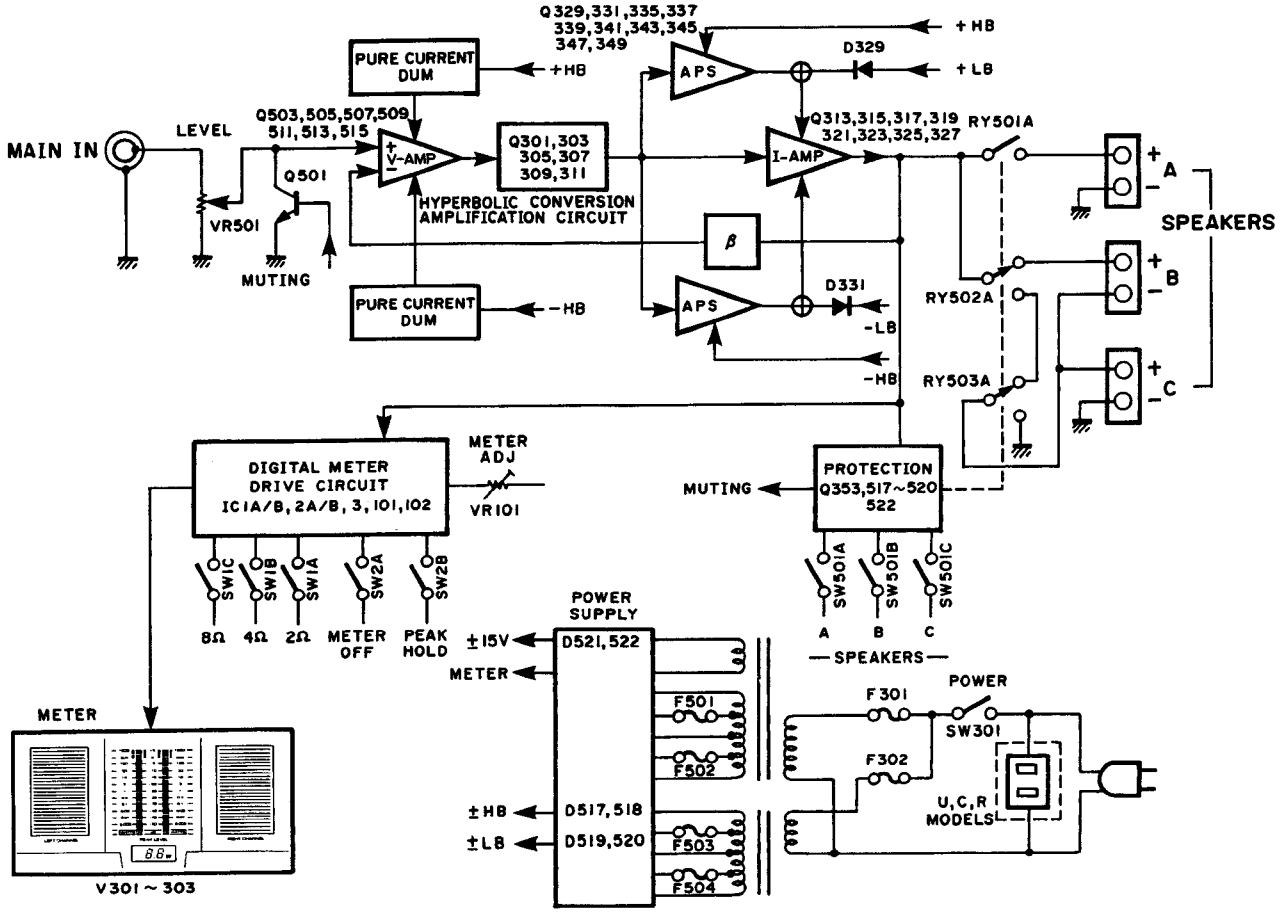
▼ U.S.A. & Canadian models



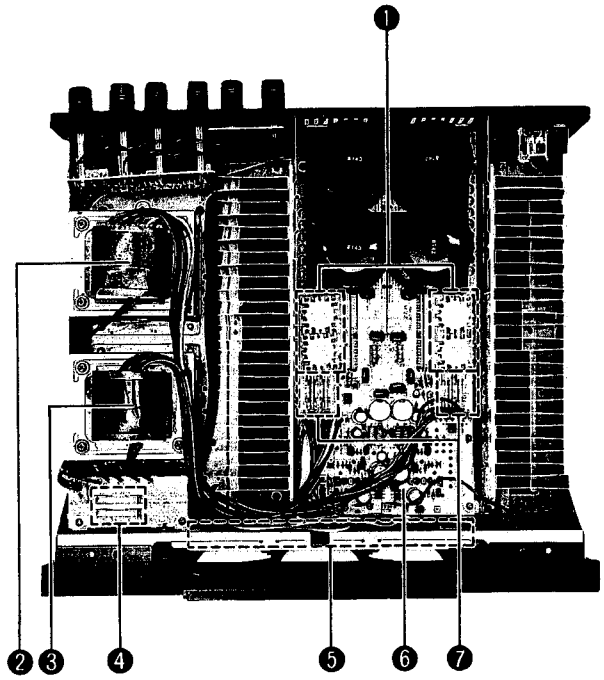
▼ British & European models



■BLOCK DIAGRAM



■INTERNAL VIEW



❶DIODE BRIDGE : D5FB20
POWER TRANSFORMER
U model : XE197001
C model : XE199001
R model : XE201001
B, G models: XE203001
A model : XE686001

❸POWER TRANSFORMER
U model : XE196001
C model : XE198001
R model : XE200001
B, G models: XE202001
A model : XE685001

❹FUSE
U, C models: 10A, 250V x 2
A, B, G models: T4A, 250V x 2
R models: 20A, 250V x 1

❺METER UNIT

❻MAIN CIRCUIT BOARD (1)

❼FUSE
U, C, R models: 7A, 125V x 4
A, B, G models: T6.3A, 250V x 4

■ DISASSEMBLY PROCEDURES

1. **Removal of Top Cover.**
   Remove 6 screws (①) in Fig. 1. and slide the Top Cover back.

2. **Removal of Bottom Cover.**
   Remove 6 screws (②) in Fig. 1.

3. **Removal of Front Panel.**
   Remove 5 screws (③) in Fig. 1.

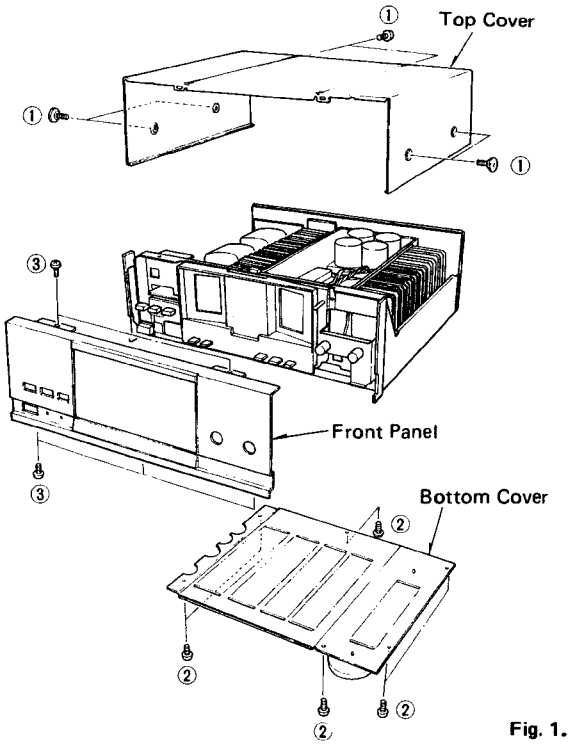


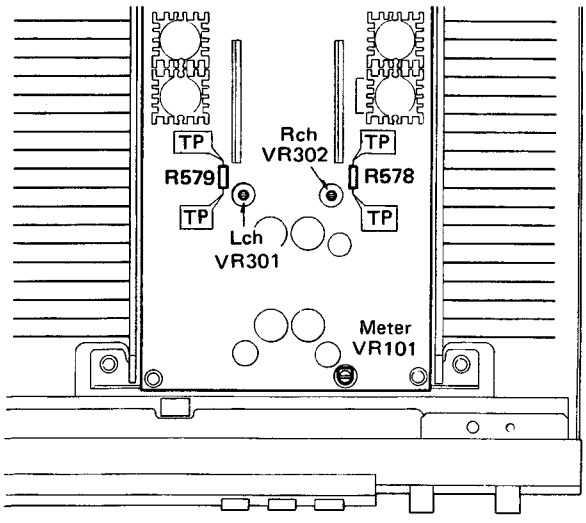
Fig. 1.

■ ADJUSTMENTS

- **IDLING CURRENT ADJUSTMENT**
  Wait 2 minutes after power ON to stabilize amplifier operation without signal.
  Adjust VR301 (Lch) and VR302 (Rch) so that the voltage across the terminals of R579 (Lch) and R578 (Rch) come to 10mV ± 1mV DC.

	Test Points	Adjustment Points	Rating
L ch	Across the terminals of R579	VR301	10mV ± 1mV DC.
R ch	Across the terminals of R578	VR302	

- **TEST POINTS**



- **METER LEVEL ADJUSTMENT**
  1) Set the controls to the following positions.
     LOAD selector : 8Ω
     Amplifier load : No load or 8Ω
     PEAK HOLD switch : OFF

  2) Apply a 1kHz sine wave signal from LINE IN so that SP. output voltage is 28.3V AC.

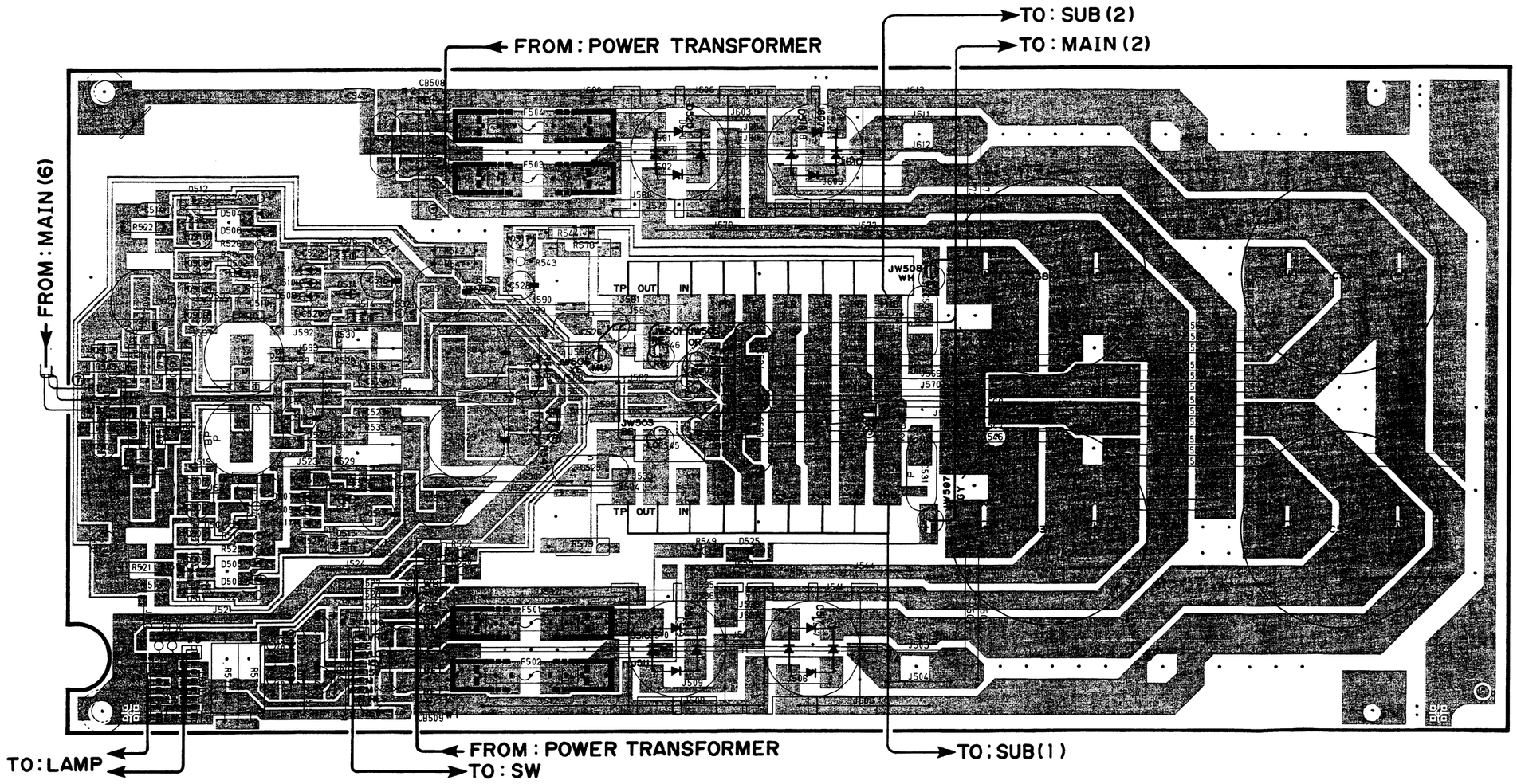
  3) Adjust VR101 so that 99.3W of the digital meter display.

  4) LOAD selector : 4Ω
     Confirm that 199.W of the digital meter display.

  5) Confirm that all segments fades out at no signal condition.

■ PRINTED CIRCUIT BOARD (Pattern side)

Main Circuit Board (1)



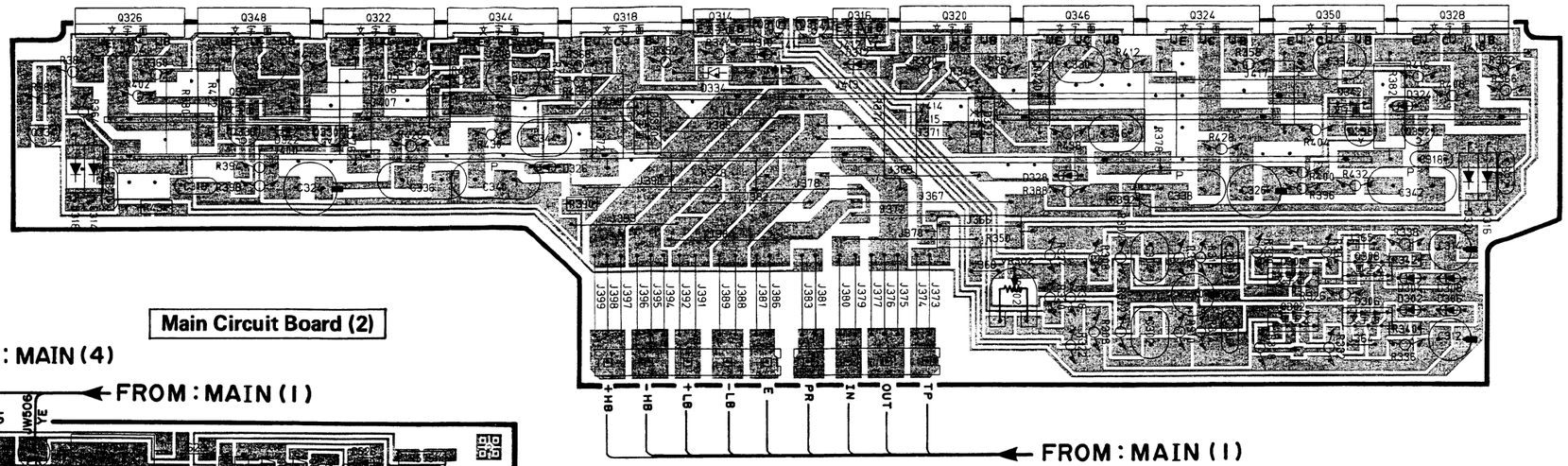
■ PRINTED CIRCUIT BOARD (Pattern side)

Note) 文字面： Component side

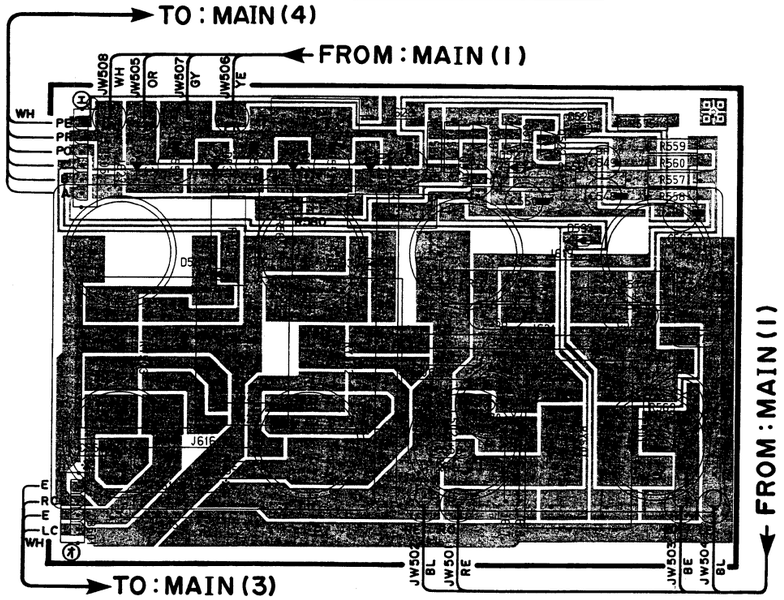
Note) * marked

	U, C, R, A	B, G
C563, 564	OPEN	Ⓟ 0.01/100
R573, 574	OPEN	2.2
C557～562	OPEN	Ⓟ 4700P/100

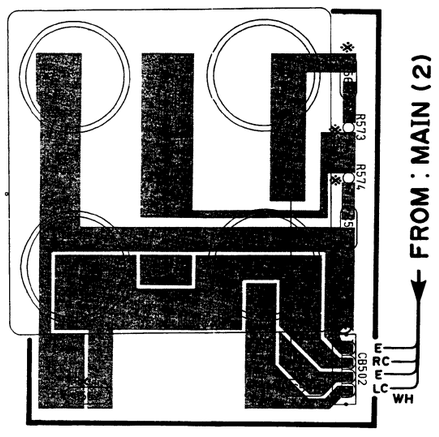
Sub Cricuit Board (2)



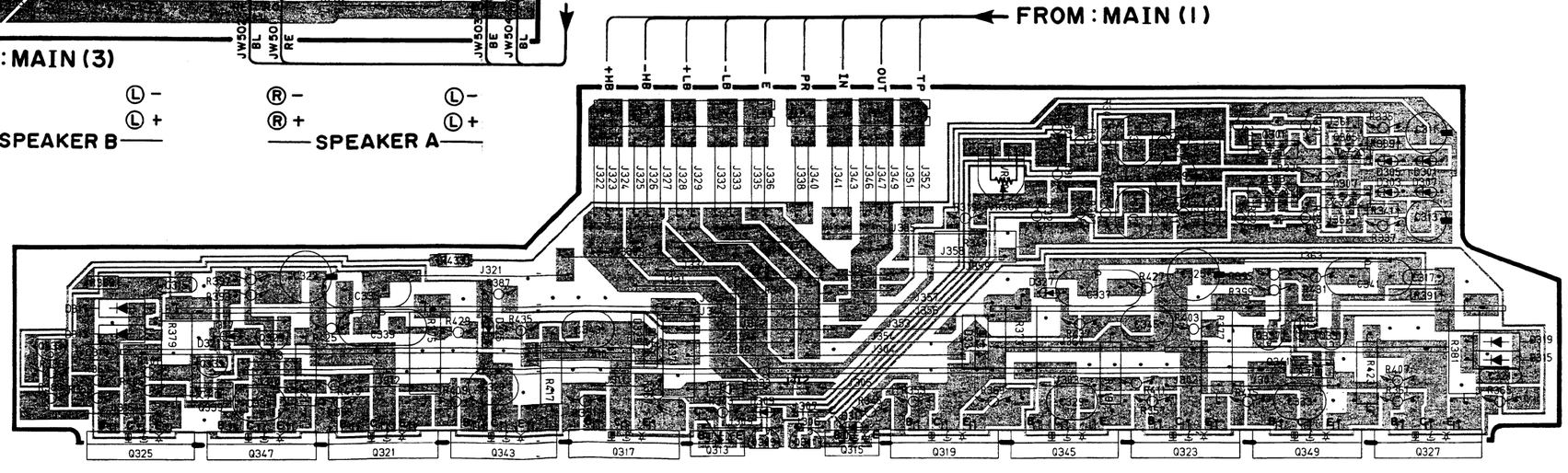
Main Circuit Board (2)



Main Circuit Board (3)



Sub Circuit Board (1)



Ⓡ−	Ⓛ−
Ⓡ+	Ⓛ+
SPEAKER C	

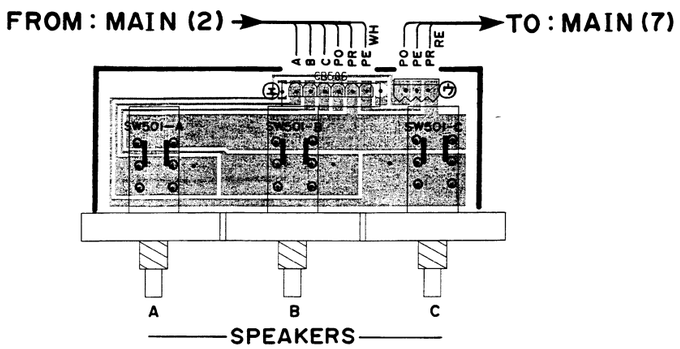
Ⓡ −	Ⓛ −
Ⓡ +	Ⓛ +
SPEAKER B	

Ⓡ−	Ⓛ−
Ⓡ+	Ⓛ+
SPEAKER A	

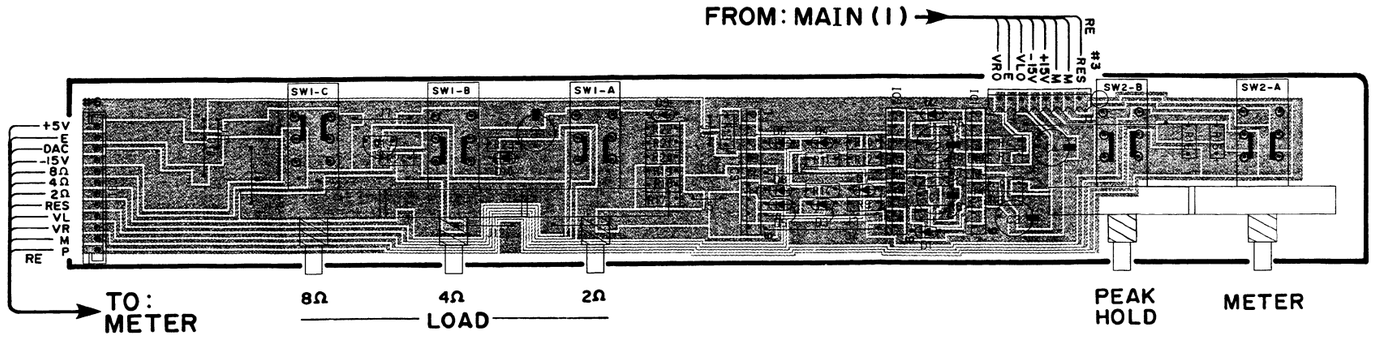
■ PRINTED CIRCUIT BOARD (Pattern side)

Note) 文字面 : Component side

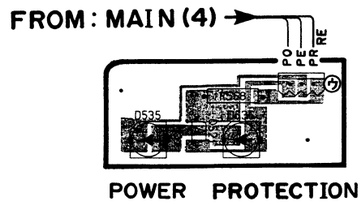
Main Circuit Board (4)



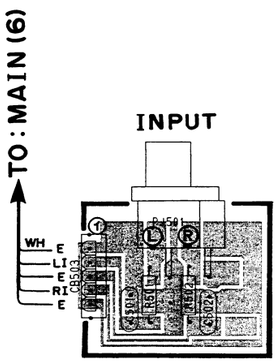
Switch Circuit Board



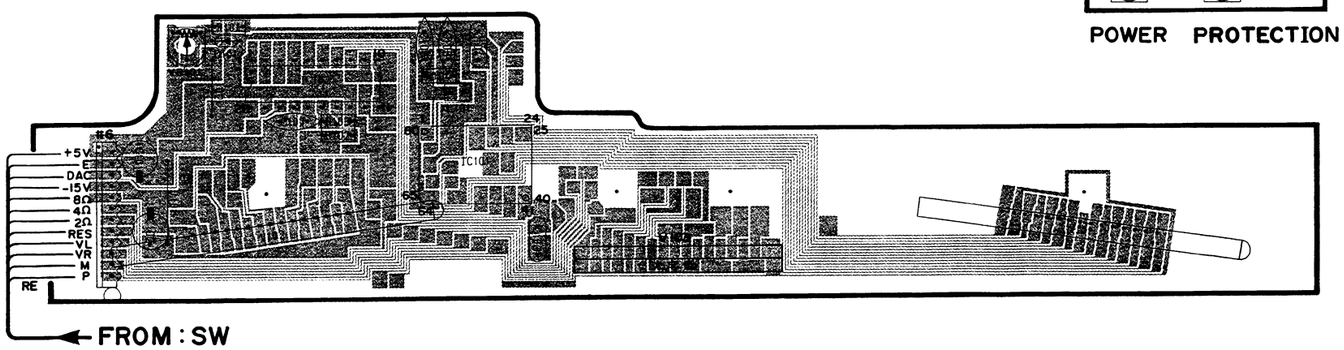
Main Circuit Board (7)

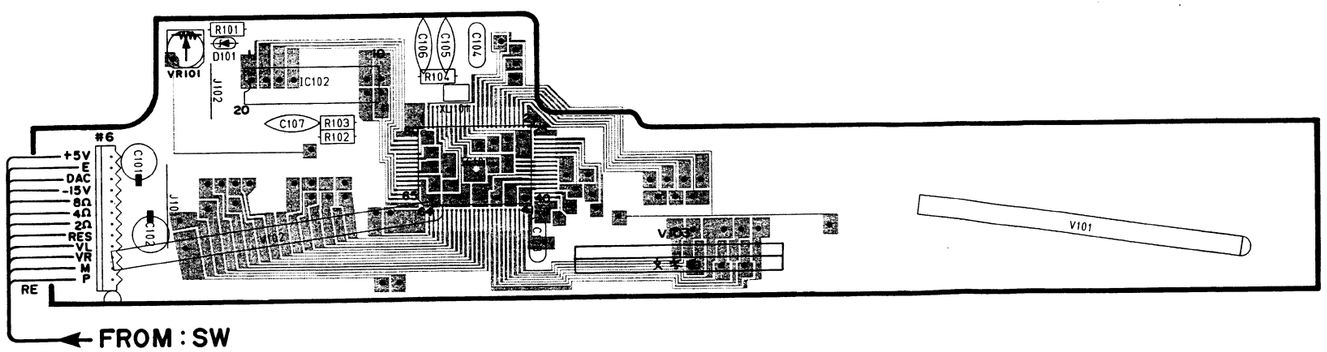


Main Circuit Board (5)

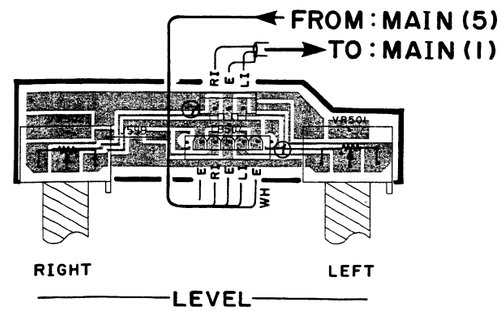


Meter Circuit Board



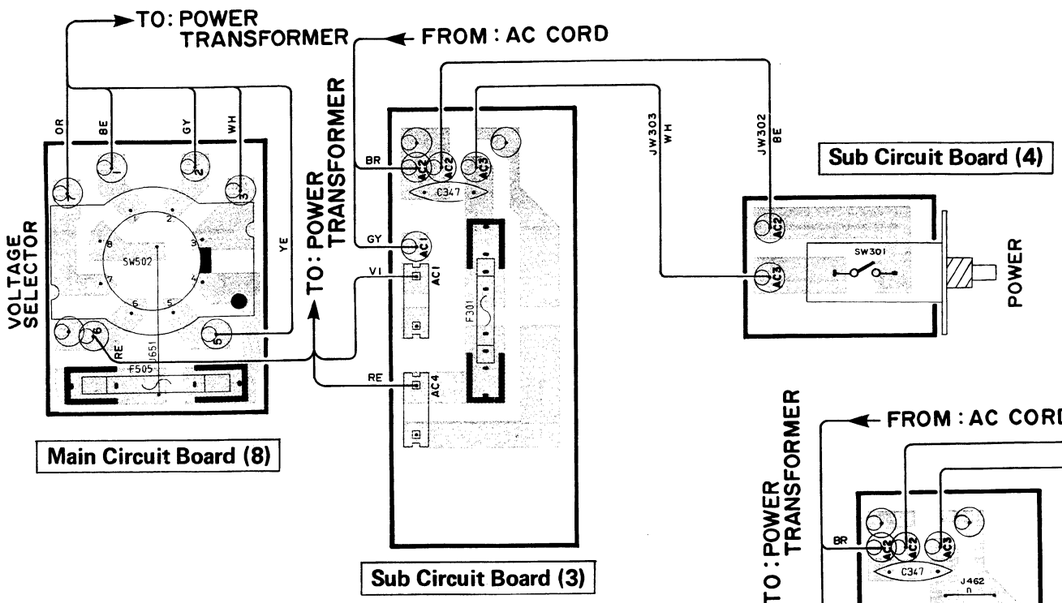


Main Circuit Board (6)

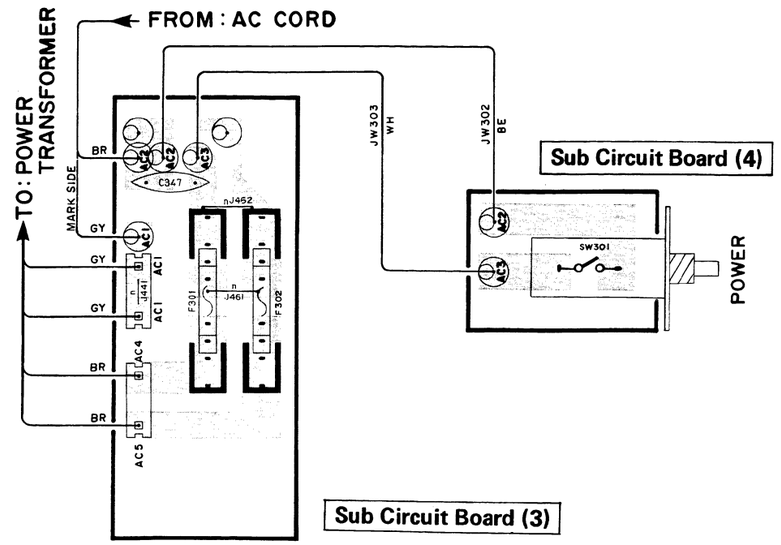


■PRINTED CIRCUIT BOARD (Pattern side)

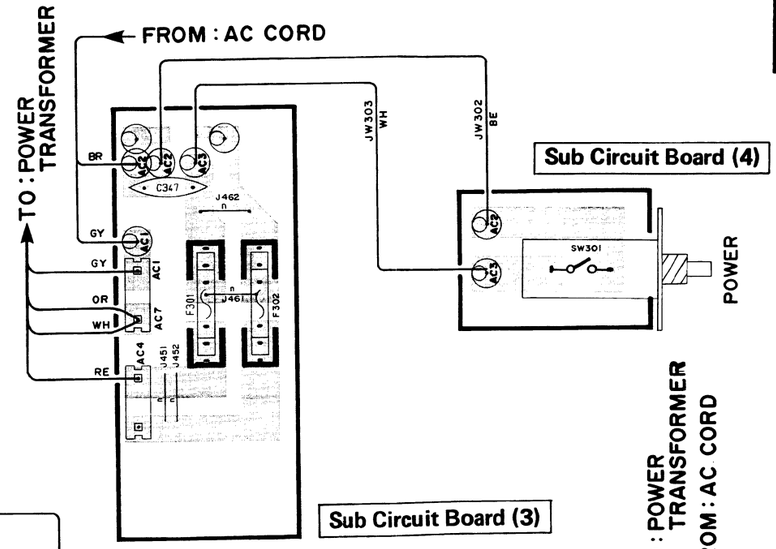
R MODEL



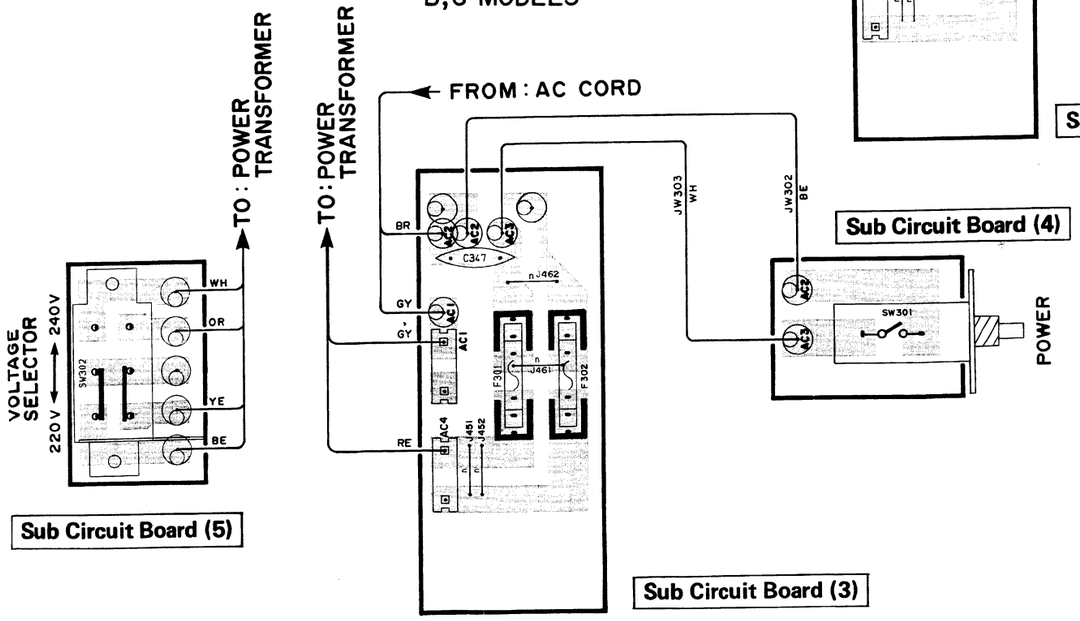
U MODEL



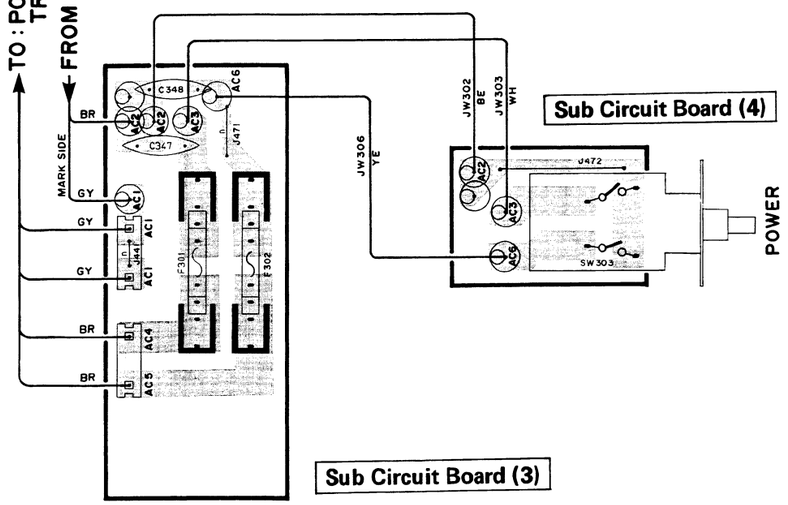
A MODEL



B,G MODELS



C MODEL



■ SCHEMATIC DIAGRAM

H.C.A.

A.P.S.

I- AMP

Idling ADJ

V- AMP

MUTING

POWER SUPPLY

MAIN(1)

MAIN(5)

MAIN(6)

MAIN(8)

TO SW SHEET #3

14.5V115mA X7

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

RESISTOR

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

R...XE201

R...XE200

A...XE686

A...XE685

B.G...XE203

B.G...XE202

U...XE197
C...XE199

MAIN

No	TR
Q501.502	2SC535(A.B.C)
Q503-506.517	2SA970(GR.BL)
Q507.508	2SC2240(GR.BL)
Q509.510	2SC1815(Y)
Q511-514	2SC3416
Q515.516	2SA1352
Q520	2SD400
Q518.519	2SC2603(E.F) or2SC3312(R.S.T) or2SC3330(S)
Q521 .522	2SA1115(E.F) or2SA1310(R.S.T) or2SA1317(S)

SUB

No	TR
Q301.302.307.308	2SA1349(GR.BL)
Q303.304.305.306	2SC3381(GR.BL)
Q309.310	2SA970(GR.BL)
Q311.312.333.334	2SC2240(GR.BL)
Q313.314	2SC3298B
Q315.316	2SA13068
Q329.330.337.338	2SA1145(O.Y)
Q331.332.335.336	2SC2705(O.Y)
Q339.340	2SC3421
Q341.342	2SA1358
Q317.318.321.322 Q325.326	2SC3280
Q319.320.323.324 Q327.328	2SA1301
Q343.344.347.348	2SC3281
Q345.346.349.350	2SA1302

MAIN

		U	C	R	A	B-G
#1	SP TERMINAL	VE79530				VE79580
#2	SP TERMINAL	VE79510				VE79570
#3	C557-562	OPEN				4700P/100
#4	R563.564	OPEN				0.01/100
#5	R573.574	OPEN				2.2
#6	F501-504	7A125V			16.3A250V	
#7	SW502	OPEN		SHORT	OPEN	
#8	F505	OPEN		10A250V	OPEN	

SUB

		U	C	R	A	B-G
#1	F301	10A250V		20A250V	T4A250V	
#2	F302	10A250V		OPEN	T4A250V	
#3	C348	OPEN	0.01	OPEN		
#4	SW301	KA80430	OPEN	KA80430		
#5	SW302	OPEN				VE96260
#6	SW303	OPEN	VE73470			

H.C.A.

A.P.S.

I-AMP

PROTECTION

Idling ADJ

MAIN(2)

MAIN(3)

MAIN(4)

MAIN(7)

SUB(3)

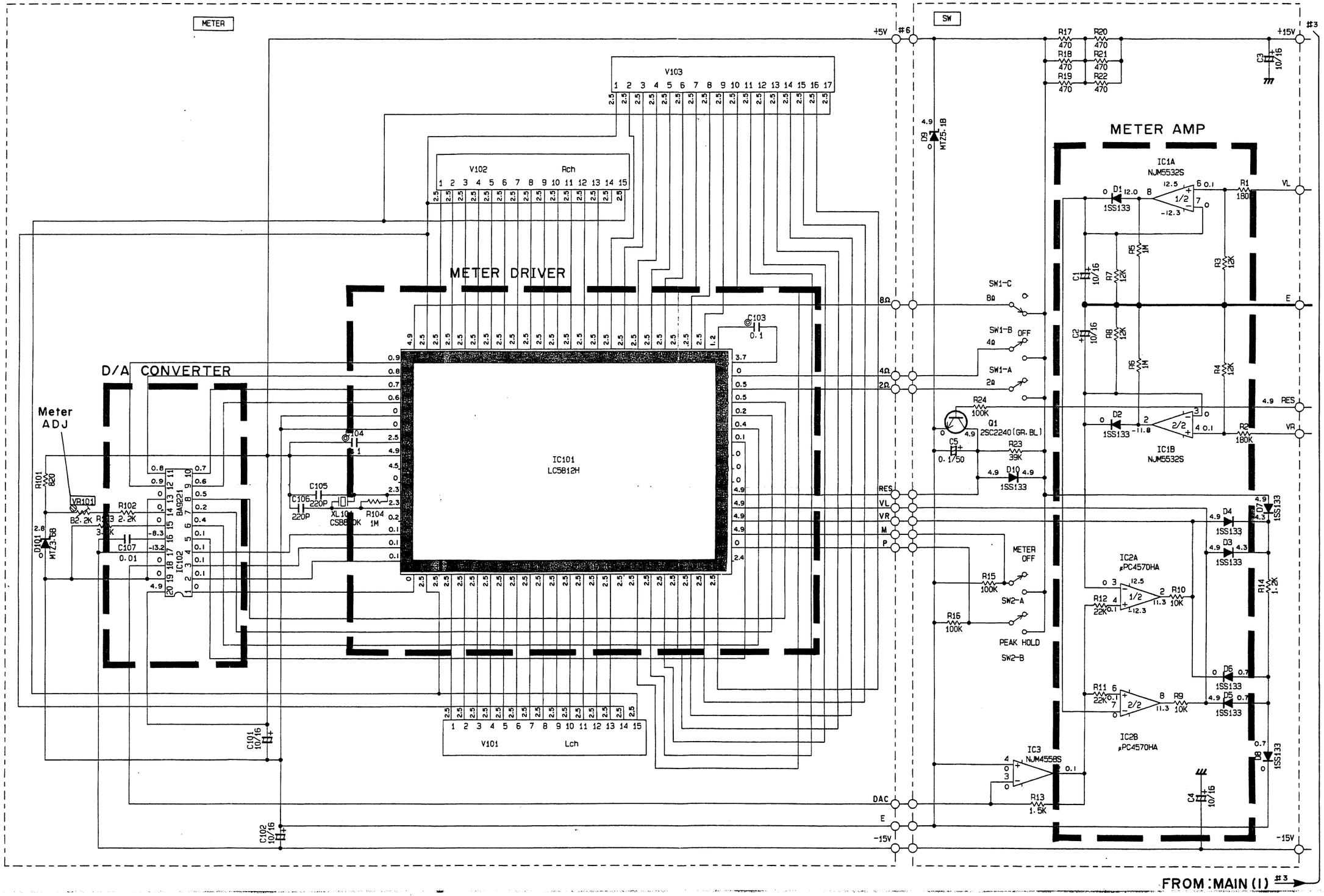
SUB(4)

MARKING

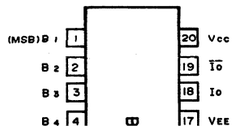
POWER

PROTECTION

* 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.

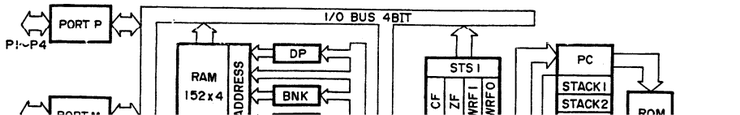


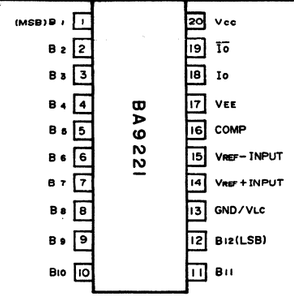
IC102: BA9221
12-Bit Multiplying D/A Converter

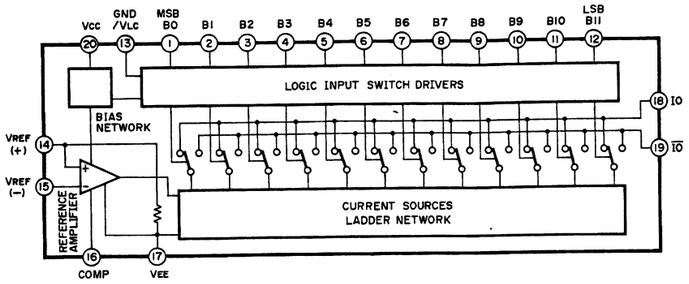


IC101: LC5812H
LCD Driver

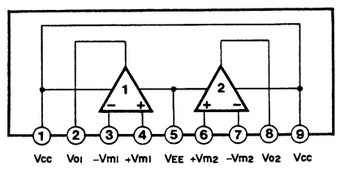
Pin No.	Pin Name	I/O	Function	Pin No.	Pin Name	I/O	Function
1	P4	I/O	D/A Converter (1pin)	40	CUP2		Capacitor terminal
2	COM2	O	LCD Common 2 output	41	CUP1		
3	COM3	O	Not used	42	seg	O	(V103, 9pin)



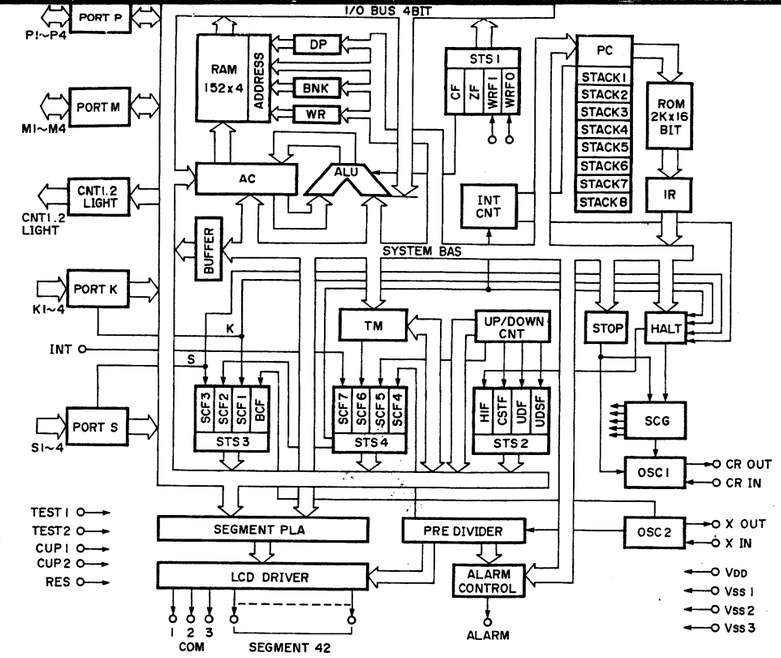




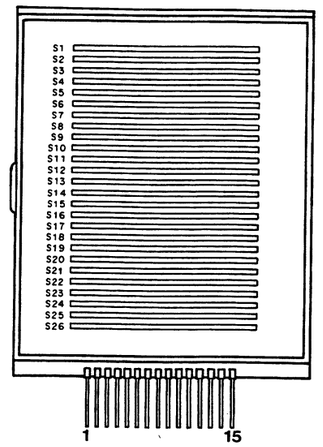
IC1: NJM5532S
IC2: μPC4570HA
IC3: NJM4558S
Dual Ope-Amp



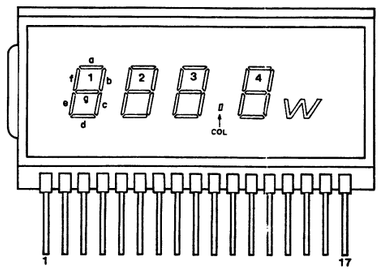
No.	Name	I/O	Function
1	P4	I/O	D/A Converter (1pin)
2	COM2	O	LCD Common 2 output
3	COM3	O	Not used
4	seg	O	Lch bar meter segment output (V101, 1pin)
5	seg	O	(V101, 2pin)
6	seg	O	(V101, 3pin)
7	seg	O	(V101, 4pin)
8	seg	O	(V101, 5pin)
9	seg	O	(V101, 6pin)
10	seg	O	(V101, 7pin)
11	seg	O	(V101, 8pin)
12	seg	O	(V101, 9pin)
13	seg	O	(V101, 10pin)
14	seg	O	(V101, 11pin)
15	seg	O	(V101, 12pin)
16	seg	O	(V101, 13pin)
17	seg	O	Not used
18	seg	O	Digital meter segment output (V103, 10pin)
19	seg	O	(V103, 11pin)
20	seg	O	(V103, 12pin)
21	seg	O	(V103, 13pin)
22	seg	O	(V103, 14pin)
23	seg	O	(V103, 15pin)
24	seg	O	(V103, 16pin)
25	TEST3		Test terminal (Not used)
26	K4	I	PEAK HOLD SW
27	K3	I	METER SW
28	K2	I	Comparator Rch
29	K1	I	Comparator Lch
30	RES	I	Reset input (at power ON)
31	INT	I	Not used
32	TEST2		Test terminal (Not used)
33	TEST1		
34	M4	I/O	D/A Converter (5pin)
35	M3	I/O	(6pin)
36	M2	I/O	(7pin)
37	M1	I/O	(8pin)
38	S2	I	LOAD 2Ω SW
39	S1	I	LOAD 4Ω SW
40	CUP2		Capacitor terminal
41	CUP1		
42	seg	O	Digital meter segment output (V103, 9pin)
43	seg	O	(V103, 8pin)
44	seg	O	(V103, 7pin)
45	seg	O	(V103, 6pin)
46	seg	O	(V103, 5pin)
47	seg	O	(V103, 4pin)
48	seg	O	(V103, 3pin)
49	seg	O	(V103, 2pin)
50	seg	O	Rch bar meter segment output (V102, 13pin)
51	seg	O	(V102, 12pin)
52	seg	O	(V102, 11pin)
53	seg	O	(V102, 10pin)
54	seg	O	(V102, 9pin)
55	seg	O	(V102, 8pin)
56	seg	O	(V102, 7pin)
57	seg	O	(V102, 6pin)
58	seg	O	(V102, 5pin)
59	seg	O	(V102, 4pin)
60	seg	O	(V102, 3pin)
61	seg	O	(V102, 2pin)
62	seg	O	(V102, 1pin)
63	COM1	O	LCD Common 1 output
64	S4	I	LOAD 8Ω SW
65	CNT1	O	D/A Converter (12pin)
66	CNT2	O	(11pin)
67	LIGHT	O	(10pin)
68	ALARM	O	(9pin)
69	Vss3		Power supply for LCD drive
70	Vss2		GND
71	Vss1		Power supply for LCD drive
72	VDD		+5V power supply
73	X IN	I	Not used
74	X OUT	O	
75	CR IN		Ceramic resonator (800 kHz)
76	CR OUT		
77	S3	I	Not used
78	P1	I/O	D/A Converter (4pin)
79	P2	I/O	(3pin)
80	P3	I/O	(2pin)



V101, 102 (Bar Meter)



V103: (Digital Meter)



Segment Matrix

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
COM 2	–	1a	1b	1c	2a	2b	2g	2c	3a	3b	3c	COL	4a	4b	4c	W	COM
COM 1	COM	1f	1g	1e	1d	2f	2e	2d	3f	3g	3e	3d	4f	4g	4e	4d	–

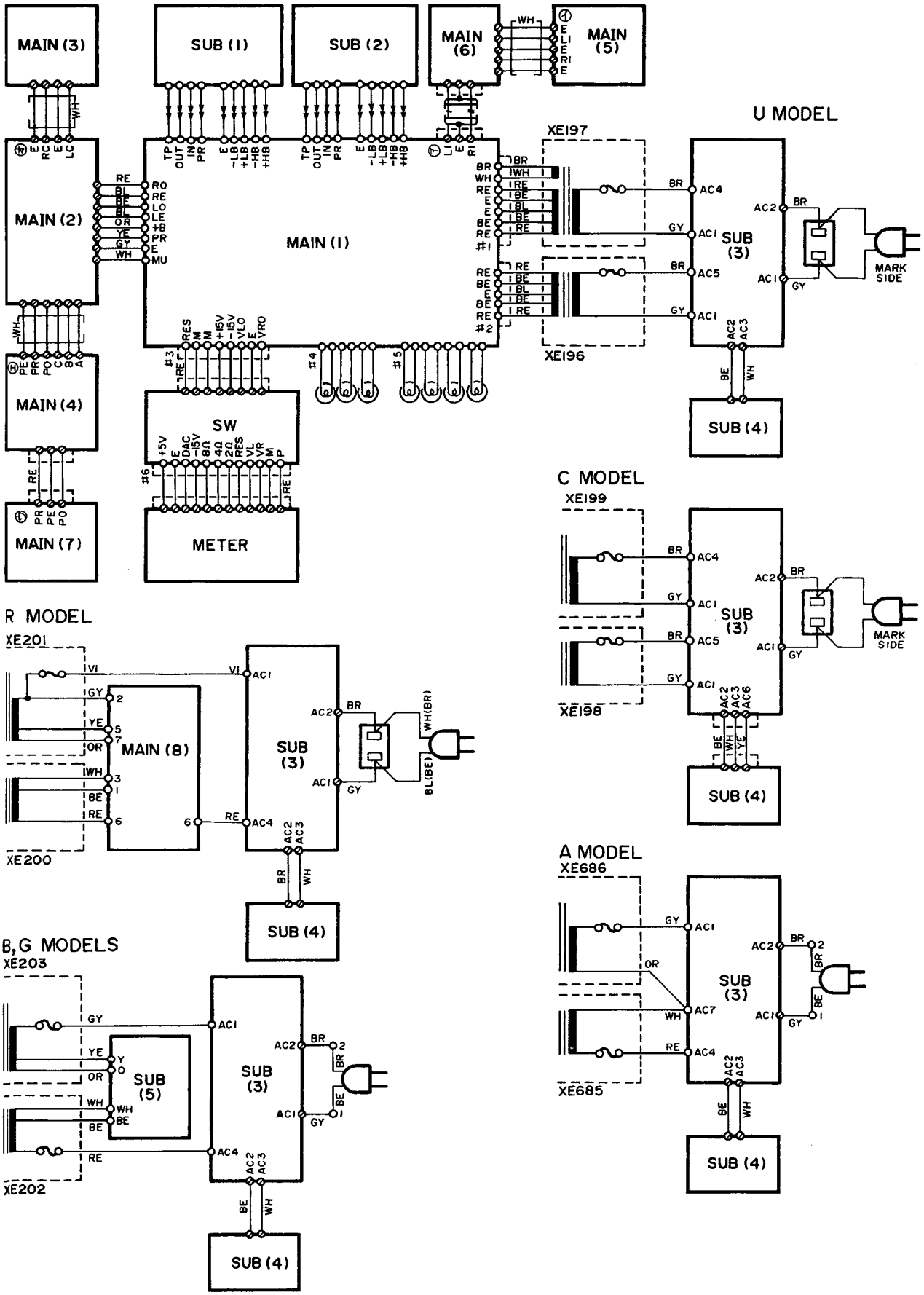
Segment Matrix

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
COM 1	S1	S3	S5	S7	S9	S11	S13	S15	S17	S19	S21	S23	S25	COM	–
COM 2	S2	S4	S6	S8	S10	S12	S14	S16	S18	S20	S22	S24	S26	–	COM

PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICS.

2SA1301 2SA1302 2SC3208 2SC3281	2SA1352 2SC3416	2SA1349 (GR, BL) 2SC3381 (GR, BL)	2SA970 (GR, BL) 2SA1115 (E, F) 2SA1310 (R, S, T) 2SC1815 (Y) 2SC2240 (GR, BL) 2SC2603 (E, F) 2SC3312 (R, S, T)	2SA1306 (B) 2SC3928 (B)	2SA1145 (O, Y) 2SC2705 (O, Y) 2SD400	2SA1358 2SC3421	5KF10B	1SR35-100A 1S1885 1SS133 MA185 MTZ5.2C MTZ6.2C RD4.3FB	D5FB20	SLV-56URC3H
NJM4558S NJM5532S μPC4570HA	BA9221	LC5812H								

■ WIRING


MAIN (3)
SUB (1)
SUB (2)
MAIN (6)
MAIN (5)
MAIN (2)
MAIN (1)
MAIN (4)
MAIN (7)
SW
METER
U MODEL
XE197
XE196
SUB (3)
SUB (4)
MARK SIDE
C MODEL
XE199
XE198
R MODEL
XE201
XE200
MAIN (8)
B,G MODELS
XE203
XE202
SUB (5)
A MODEL
XE686
XE685

PARTS LIST

■ELECTRICAL PARTS

■WARNING

Components having special characteristics are marked ⚠ 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. 24.

	Ref. No.	Part No.	Description		部品名	Remarks	Common Model	Markets	ランク
※		***NA 09 76 60***	***Main Circuit Board***		メインシート			U,C	
※		***NA 09 96 00***	〃		〃			R	
※		***NA 09 76 70***	〃		〃			A	
※		***NA 09 76 80***	〃		〃			B,G	
		FU 35 05 00	Mica Cap.	5pF 500V	マイカコン	C523,524			
		FU 35 16 80	〃	68pF 500V	〃	C519～522			
		FU 35 22 20	〃	220pF 500V	〃	C501,502,505,506,513,514			
※		VE 87 59 00	Polypropylene Film cap.	0.022μF 100V	ポリプロコン	C555,556			
※		VE 87 45 00	〃	0.047μF 100V	〃	C525,526,531～534,565,566			
※		VF 47 40 00	〃	3300pF 100V	〃	C509,510			
		UT 45 34 70	〃	4700pF 100V	〃	C557～562		B,G	
		UT 45 41 00	〃	0.01μF 100V	〃	C563,564		B,G	
		FA 15 51 00	Mylar Cap.	0.1μF 50V	マイラーコン	C544,545			
		FZ 00 06 70	Metallized Cap.	0.047μF 400V	MMコン	C540～543			
		UJ 11 82 20	Electrolytic Cap.	220μF 6.3V	ケミコン	C550			
		UJ 13 83 30	〃	330μF 16V	〃	C546,547			
		UJ 14 71 00	〃	10μF 25V	〃	C548			
		UJ 16 71 00	〃	10μF 50V	〃	C528			
		UJ 16 81 00	〃	100μF 50V	〃	C551～553			
		FM 11 62 20	〃	2.2μF 50V	BPコン	C527			
		UK 16 64 70	〃	4.7μF 50V	〃	C549			
		FZ 00 54 10	〃	100μF 6.3V	ブラックゲートコン	C517,518			
		UW 67 74 70	〃	47μF 63V	オーディオケミコン	C515,516			
		VE 80 27 00	〃	33μF 50V	BPコン	C503,504			
		VF 47 28 00	〃	47μF 50V	〃	C507,508			
※		VE 94 16 00	〃	820μF 110V	オーディオケミコン	C529,530			
※		VE 02 20 00	〃	10μF 100V	ケミコンDUOREX	C511			
		VC 79 37 00	Coil	1.5μH	コイル	L501,502			
		HU 57 54 70	Metal Film Resistor	470Ω 1/4W	金属皮膜抵抗	R501,502,505,506			
		HU 59 61 00	〃	1kΩ 1/4W	〃	R511,512			
		HU 57 72 70	〃	27kΩ 1/4W	〃	R509,510,535,536			
※		VF 63 53 00	Carbon Resistor	68Ω 1/4W	カーボン抵抗	R517,518			
		HJ 35 61 00	〃	1kΩ 1/4W	〃	R507,508			
		HJ 35 64 70	〃	4.7kΩ 1/4W	〃	R575			
		HJ 35 71 00	〃	10kΩ 1/4W	〃	R580			
		HJ 35 73 30	〃	33kΩ 1/4W	〃	R544			
		HJ 35 74 70	〃	47kΩ 1/4W	〃	R521,522,541,542,563			
		HJ 35 76 80	〃	68kΩ 1/4W	〃	R519,520			
		HJ 35 81 00	〃	100kΩ 1/4W	〃	R540,568			
		HJ 35 82 20	〃	220kΩ 1/4W	〃	R556,559,560			
		HJ 35 84 70	〃	470kΩ 1/4W	〃	R557,558			
		HJ 35 88 20	〃	820kΩ 1/4W	〃	R561			
		HL 31 61 00	Metal Oxide Film Resistor	1kΩ 1W	酸金抵抗	R578,579			
		HL 32 32 20	〃	2.2Ω 2W	〃	R571,572			
		HL 32 34 70	〃	4.7Ω 2W	〃	R545,546,576,577			
		HL 32 53 30	〃	330Ω 2W	〃	R564～566			
		HL 32 63 90	〃	3.9kΩ 2W	〃	R567			
		HL 32 71 00	〃	10kΩ 2W	〃	R527～530			
		HV 45 31 00	Flame Proof Carbon Resistor	1Ω 1/4W	不燃化カーボン抵抗	R547～549,554,555			
		HV 45 32 20	〃	2.2Ω 1/4W	〃	R573,574		B,G	
		HV 45 34 70	〃	4.7Ω 1/4W	〃	R551,553			

※New Parts（新規部品）NR

	Ref. No.	Part No.	Description		部品名	Remarks	Common Model	Markets	ランク	
		HV 45 41 00	Flame Proof Carbon Resistor	10Ω 1/4W	不燃化カーボン抵抗	R569,570				
		HV 45 42 20	//	22Ω 1/4W	//	R525,526				
		HV 45 51 00	//	100Ω 1/4W	//	R531~534				
		HV 45 52 20	//	220Ω 1/4W	//	R513~516,550,552				
		HV 45 58 20	//	820Ω 1/4W	//	R523,524				
		HV 45 66 80	//	6.8kΩ 1/4W	//	R543				
		HV 45 71 00	//	10kΩ 1/4W	//	R539				
※		VE 64 25 00	Potentiometor	B60kΩ	可変抵抗器	VR501,502				
		iA 09 70 00	Transistor	2SA970(GR,BL)	トランジスター	Q503~506,517				
		iA 11 15 10	//	2SA1115(E,F)	//	Q521,522 } Inter-changeable				
		iX 60 31 70	//	2SA1310(R,S,T)	//	// } Inter-changeable				
		iA 13 52 00	//	2SA1352	//	Q515,516				
		iC 05 35 40	//	2SC535(A,B,C)	//	Q501,502				
		iC 18 15 20	//	2SC1815(Y)	//	Q509,510				
		iC 22 40 00	//	2SC2240(GR,BL)	//	Q507,508				
		iC 26 03 10	//	2SC2603(E,F)	//	Q518,519 } Inter-changeable				
		iX 60 31 80	//	2SC3312(R,S,T)	//	// } Inter-changeable				
		iC 34 16 00	//	2SC3416	//	Q511~514				
		iD 04 00 30	//	2SD400	//	Q520				
		iF 00 34 50	Diode	1SS133	ダイオード	D501~512,526,527				
		VC 39 84 00	//	MA185	//	D513,514				
		iH 00 14 30	//	1SR35-100A	//	D521,522,525,528~531				
		iF 01 07 50	Zener Diode	MTZ6.2C	ツェナーダイオード	D515				
		iF 00 90 90	//	MTZ24C	//	D532~534				
		iF 00 44 40	LED(Red)	SLV-56URC3H	LED	D535,536				
		iH 00 11 30	Diode Bridge	D5FB20	ダイオードブリッジ	D517~520				
		KA 80 46 60	Push Switch		プッシュスイッチ	SW501				
		VA 96 18 00	Voltage Selector		電圧切替器	SW502		R		⚠
		KC 00 14 10	Relay	JC2aD DC24V	リレー	RY501				
		KC 00 19 20	//	MS4U	//	RY502,503				
※		VE 64 24 00	Pin Jack	2P	ピンジャック	PJ501				
		KB 00 14 90	Fuse	10A 250V	ヒューズ	F505		R		⚠
		KB 00 17 60	//	T6.3A 250V	//	F501~504		A,B,G		⚠
		KB 00 15 20	//	7A 125V	//	F501~504		U,C,R		⚠
		VA 72 54 00	Holder	4P	パラレルホルダー	CB501,502				
		VA 72 55 00	//	5P	//	CB503,504				
		VA 72 56 00	//	6P	//	CB505,506				
		VD 00 49 00	Base Pin	6P	PHベースピン	CB511				
		VD 00 51 00	//	8P	//	CB507,510				
※		LB 60 50 60	//	8P	SVベースピン	CB509				
※		LB 60 50 70	//	6P	//	CB508				
※		VE 79 57 00	Speaker Terminal	4P	SPターミナル			B,G		
※		VE 79 61 00	//	4P	//			U,C,R,A		
		VE 79 58 00	//	4P	//			B,G		

※New Parts (新規部品) NR

	Ref. No.	Part No.	Description		部品名	Remarks	Common Model	Markets	ランク
※		VE 79 63 00	Speaker Terminal	4P	SPターミナル			U,C,R,A	
		LB 20 10 60	Fuse Holder Pin	YSH403T	ヒューズホルダーピン			A,B,G	
		LB 20 19 70	〃	23165081	〃			U,C,R	
		BB 07 07 00	Ground Plate		アース金具				
		BB 07 04 10	Bus Bar	ℓ=55	バスバー				
		BB 07 04 20	〃	ℓ=100	〃				
		BB 06 62 90	Washer		アースワッシャー				
※		***NA 09 77 80***	***Meter Circuit Board***		メーターシート				
		FG 21 22 20	Ceramic Cap.	220pF 50V	セラコン	C105,106			
		FG 24 41 00	〃	0.01μF 50V	〃	C107			
		FA 15 51 00	Mylar Cap.	0.1μF 50V	マイラーコン	C103,104			
		UJ 13 71 00	Electrolytic Cap.	10μF 16V	ケミコン	C101,102			
		GG 00 07 60	Ceramic Resonator	CSB800K	セラミック振動子	XL101			
		VB 86 12 00	Pre-Set Potentiometer	B2.2kΩ	半固定抵抗	VR101			
		iF 00 88 10	Zener Diode	MTZ3.6B	ツェナーダイオード	D101			
※		iG 10 60 00	IC	BA9221	IC	IC102			
※		XD 98 40 01	〃	LC5812H	〃	IC101			
※		VE 82 71 00	LCD Unit		LCD表示器	V101,102			
※		VE 82 70 00	〃		〃	V103			
		VE 77 46 00	Reflector		リフレクター				
		VE 77 47 00	〃		〃				
		CB 06 88 80	Plastic Rivet		プラスチックリベット				
		VE 77 51 00	Sheet,B		シート B				
		VE 77 53 00	〃 ,D		〃 D				
※		***NA 09 78 00***	***Switch Circuit Board***		スイッチシート				
		UJ 13 71 00	Electrolytic Cap.	10μF 16V	ケミコン	C1～4			
		UJ 16 51 00	〃	0.1μF 50V	〃	C5			
		iC 22 40 00	Transistor	2SC2240(GR,BL)	トランジスター	Q1			
		iF 00 34 50	Diode	1SS133	ダイオード	D1～8,10			
		iF 01 06 90	Zener Diode	MTZ5.1B	ツェナーダイオード	D9			
		XA 42 60 01	IC	NJM5532S	IC	IC1			
		iG 07 68 00	〃	NJM4558S	〃	IC3			
		XB 24 70 01	〃	μPC4570HA	〃	IC2			
※		VE 64 22 00	Push Switch	2-2	プッシュスイッチ	SW2			
※		VE 64 23 00	〃	2-2	〃	SW1			
※		LB 94 51 20	Short Plug	12P i-Type	i型ショートプラグ	CB1			

※New Parts（新規部品）NR

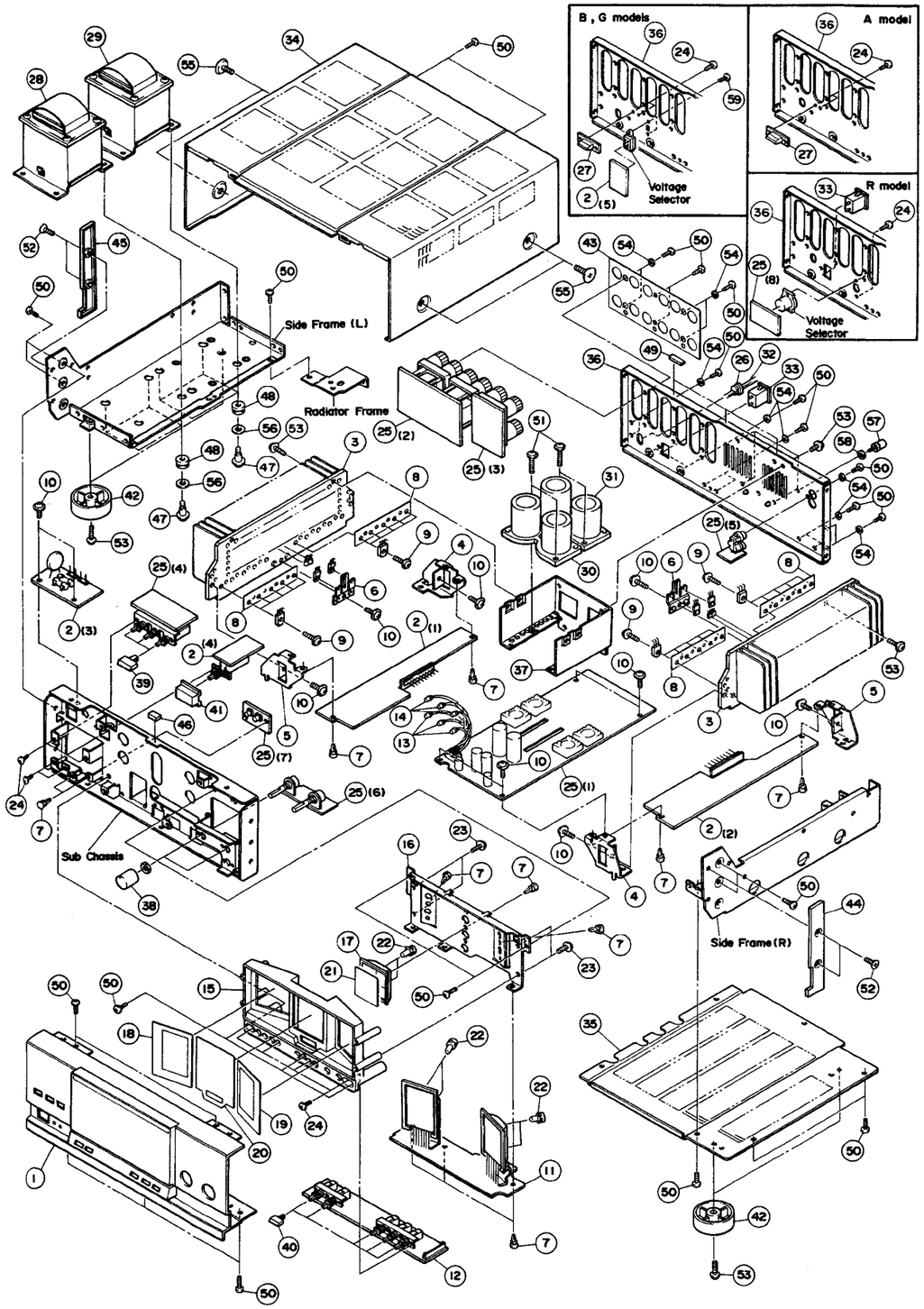
	Ref. No.	Part No.	Description		部品名	Remarks	Common Model	Markets	ランク
※		NA 09 76 90	Sub Circuit Board		サブシート			U	
※		NA 09 77 00	〃		〃			C	
※		NA 09 77 10	〃		〃			R	
※		NA 09 77 20	〃		〃			A	
※		NA 09 77 30	〃		〃			B,G	
		Fi 51 41 00	Ceramic Cap.	0.01μF DNS	セラコン	C347			△
		Fi 51 41 00	〃	0.01μF	〃	C348		C	
		UJ 16 81 00	Electrolytic Cap.	100μF 50V	オーディオケミコン	C323～326			
		FZ 00 64 10	〃	22μF 25V	ブラックゲートコン	C311～314			
		FZ 00 54 10	〃	100μF 6.3V	〃	C309,310			
※		VF 47 40 00	Polypropylene Film Cap.	3300pF 100V	ポリプロコン	C301～304			
		UT 45 21 00	〃	100pF 100V	〃	C319～322			
		UT 45 21 50	〃	150pF 100V	〃	C315～318			
		UT 45 22 20	〃	220pF 100V	〃	C305～308			
※		VF 27 98 00	〃	0.01μF 100V	〃	C327～330			
※		VE 87 59 00	〃	0.022μF 100V	〃	C331～334,343～346			
※		VE 87 45 00	〃	0.047μF 100V	〃	C335～342			
※		HL 32 68 20	Metal Oxide Film Resistor	8.2kΩ 2W	酸金抵抗	R347～350			
※		VE 86 93 00	〃	0.1Ω 2W	〃	R417～424			
		HL 93 22 20	〃	0.22Ω 3W	〃	R371～382			
		HV 45 32 20	Flame Proof Carbon Resistor	2.2Ω 1/4W	不燃化カーボン抵抗	R351～362,409～416			
		HV 45 34 70	〃	4.7Ω 1/4W	〃	R425～432,435～438			
		HV 45 42 20	〃	22Ω 1/4W	〃	R343～346			
		HV 45 44 70	〃	47Ω 1/4W	〃	R405～408			
		HV 45 46 80	〃	68Ω 1/4W	〃	R367～370			
		HV 45 51 00	〃	100Ω 1/4W	〃	R301～304			
		HV 45 52 20	〃	220Ω 1/4W	〃	R363～366			
		HV 45 61 00	〃	1kΩ 1/4W	〃	R309～316,325～334,401～404			
		HV 45 61 50	〃	1.5kΩ 1/4W	〃	R305～308			
		HV 45 62 70	〃	2.7kΩ 1/4W	〃	R385,386			
		HV 45 63 30	〃	3.3kΩ 1/4W	〃	R393～400			
		HV 45 64 70	〃	4.7kΩ 1/4W	〃	R383,384			
		HV 45 71 00	〃	10kΩ 1/4W	〃	R321～324,335～338			
		HV 45 71 50	〃	15kΩ 1/4W	〃	R317～320			
		HV 45 72 20	〃	22kΩ 1/4W	〃	R387,388			
		HT 37 03 90	Pre-Set Potentiometer	B20kΩ	半固定抵抗	VR301,302			
		iA 09 70 00	Transistor	2SA970(GR,BL)	トランジスター	Q309,310			
		iA 11 45 00	〃	2SA1145(O,Y)	〃	Q329,330,337,338			
		iC 22 40 00	〃	2SC2240(GR,BL)	〃	Q311,312,333,334			
		iC 27 05 00	〃	2SC2705(O,Y)	〃	Q331,332,335,336			
		iA 13 49 00	Dual Transistor	2SA1349(GR,BL)	デュアルトランジスター	Q301,302,307,308			
		iC 33 81 00	〃	2SC3381(GR,BL)	〃	Q303～306			
		iA 13 06 50	Pair Transistor	2SA1306(B)	ペアトランジスター	Q315,316 } Pair			
		iC 32 98 50	〃	2SC3298(B)	〃	Q313,314 }			
		iX 60 35 80	〃	2SA1358	〃	Q341,342 } Pair			
		iX 60 35 90	〃	2SC3421	〃	Q339,340 }			
		iX 60 81 10	〃	2SA1301	〃	Q319,320,323,324,327,328 } Pair			
		iX 60 81 20	〃	2SC3280	〃	Q317,318,321,322,325,326 }			
※		iX 61 21 20	〃	2SA1302	〃	Q345,346,349,350 } Pair			
※		iX 61 21 30	〃	2SC3281	〃	Q343,344,347,348 }			

※New Parts（新規部品）NR

	Ref. No.	Part No.	Description		部品名	Remarks	Common Model	Markets	ランク
		VC 39 84 00	Diode	MA185	ダイオード	D309～312			
		iF 00 34 50	〃	1SS133	〃	D301～308			
		iH 00 02 40	〃	1S1885	〃	D313～320			
※		VE 86 95 00	〃	5KF10B	〃	D329～332			
		iF 00 88 60	Zener Diode	MTZ12B	ツェナーダイオード	D321～324			
		iF 00 90 90	〃	MTZ24C	〃	D325～328			
※		VF 60 06 00	〃	RD4.3FB	〃	D333,334			
		KA 80 43 00	Push Switch	TV-8	プッシュスイッチ	SW302		U,R,A,B,G	
※		VE 73 47 00	〃	TV-8 SDDF	〃	SW303		C	
※		VE 96 26 00	Slide Switch		スライドスイッチ	SW301		B,G	
※		VD 37 09 00	Fuse	10A 250V	ヒューズ	F301,302		U,C	△
		KB 00 07 90	〃	T4A 250V	〃	F301,302		A,B,G	△
※		VE 87 63 00	〃	20A 250V	〃	F301		R	△
		LB 20 10 60	Fuse Holder Pin	YSH403T	ヒューズホルダーピン			A,B,G	
		LB 20 19 70	〃	2316581				U,C,R	
		LA 00 25 80	Lapping Terminal	P=10 2P i-Type	i型ラッピング端子板				
		LA 00 23 30	〃	P=7.5 4P i-Type	〃				
		LA 00 23 40	〃	P=7.5 5P i-Type	〃				
		BB 07 04 10	Bus Bar	ℓ=55	バスバー				
		BB 07 04 20	〃	ℓ=100	〃				
		BB 07 04 30	〃	ℓ=150	〃				

※New Parts（新規部品）NR

■ EXPLODED VIEW



■ MECHANISM PARTS

Note) φ : Diameter

	Ref. No.	Part No.	Description		部品名	Remarks	Common Model	Markets	ランク	
※	1	VE 92 08 00	Panel Unit		パネルユニット	MX-1000U		U,C		
※	〃	VE 92 09 00	〃		〃	MX-1000		R,A,B,G		
※	2	NA 09 76 90	Sub Circuit Board		サブシート			U		
※	〃	NA 09 77 00	〃		〃			C		
※	〃	NA 09 77 10	〃		〃			R		
※	〃	NA 09 77 20	〃		〃			A		
※	〃	NA 09 77 30	〃		〃			B,G		
※	3	VE 77 22 00	Radiator		ラジエター					
	4	VE 77 63 00	Radiator Frame(L)		ラジエターフレーム(L)					
	5	VE 77 64 00	〃 (R)		〃 (R)					
	6	VE 77 65 00	Transistor Frame		トランジスターフレーム					
	7	CB 06 88 80	Plastic Rivet		プラスチックリベット					
	8	VE 77 66 00	Sheet		放熱シート					
	9	EZ 00 13 50	Cup Screw	3×14 FCRM3-BI	カップBタイトネジ					
	10	EX 60 02 40	BW Head Tapping Screw	3×8(φ10) FCM3-BI	BWヘッドタッピングネジ					
※	11	NA 09 77 80	Meter Circuit Board		メーターシート					
※	12	NA 09 78 00	Switch Circuit Board		スイッチシート					
※	13	VF 51 82 00	Pilot Lamp	115mA 14.5V	パイロットランプ					
※	14	VF 51 83 00	〃	115mA 14.5V	〃					
※	15	VE 77 20 00	Meter Sub Panel		メーターサブパネル					
※	16	VE 77 48 00	Meter Frame		メーターフレーム					
※	17	VE 77 45 00	Display Reflector		ディスプレイリフレクター					
※	18	VE 77 58 00	Plate,(L)		プレート(L)					
※	19	VE 77 59 00	〃 (R)		〃 (R)					
※	20	VE 77 60 00	〃 (D)		〃 (D)					
	21	VE 77 52 00	H Sheet		Hシート					
※	22	VE 92 91 00	Lamp Cap.		ランプキャップ					
	23	EK 33 00 30	BW Head Tapping Screw	3×10(φ8) FCM3-BI	BWヘッドタッピングネジ					
	24	ED 33 00 66	Binding Head Screw	3×6 FCRM3-BI	バインド小ネジ	PACK				
※	25	NA 09 76 60	Main Circuit Board		メインシート			U,C		
※	〃	NA 09 76 70	〃		〃			A		
※	〃	NA 09 76 80	〃		〃			B,G		
※	〃	NA 09 96 00	〃		〃			R		
	26	CB 62 01 90	Cord Stopper	CM-22B	コードストッパー			R,A		
	〃	CB 07 27 50	〃	SR-4N-4	〃			B,G		
	〃	CB 80 68 50	〃	SR-6N3-4	〃			U,C		
	27	VD 61 41 00	Terminal Plate	2P	中継端子台			A,B,G		
※	28	XE 19 60 01	Power Transformer		電源トランス			U		⚠
※	〃	XE 19 80 01	〃		〃			C		⚠
※	〃	XE 20 00 01	〃		〃			R		⚠
※	〃	XE 20 20 01	〃		〃			B,G		⚠
※	〃	XE 68 50 01	〃		〃			A		⚠
※	29	XE 19 70 01	〃		〃			U		⚠
※	〃	XE 19 90 01	〃		〃			C		⚠
※	〃	XE 20 10 01	〃		〃			R		⚠
※	〃	XE 20 30 01	〃		〃			B,G		⚠
※	〃	XE 68 60 01	〃		〃			A		⚠
※	30	VE 90 54 00	Electrolytic Cap. Set	40000μF 50V	ケミコンセット	C537,538 Pair				
※	31	VE 90 55 00	〃	47000μF 63V	〃	C535,536 Pair				
	32	VE 01 31 00	Power Cord	13A 125V	電源コード			U,C		⚠
	〃	MG 00 16 30	〃	6A 250V	〃			R		⚠
	〃	MG 00 23 10	〃	7.5A 250V	〃			A		⚠
	〃	MG 00 09 10	〃	6A 250V	〃			B,G		⚠

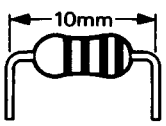
※New Parts (新規部品) NR

	Ref. No.	Part No.	Description		部品名	Remarks	Common Model	Markets	ランク	
	33	LB 20 30 60	AC Outlet		ACアウトレット			U,C,R		⚠
	34	AA 62 19 80	Top Cover		トップカバー		M-80			
	35	AA 62 20 30	Bottom Cover		ボトムカバー		M-80			
※	36	VE 77 24 00	Rear Panel		リヤパネル	MX-1000		R		
※	//	VE 77 25 00	//		//	MX-1000U		U,C		
※	//	VE 77 26 00	//		//	MX-1000		A		
※	//	VE 77 27 00	//		//	MX-1000		B,G		
	37	AA 62 33 50	Holder, Capacitor		ケミコン金具					
	38	BA 08 58 70	Knob		ツマミ	LEVEL	A-05			
	39	VE 77 40 00	Button		ボタン	SPEAKERS				
	40	CB 66 07 90	//		//	METER,LOAD	AX-900			
	41	VE 18 99 00	//		//	POWER	//			
	42	CB 66 09 50	Leg		レッグ		//			
※	43	VE 79 35 00	Speaker Sheet		SPシート					
※	44	VE 77 36 00	Side Cover (R)		サイドカバー(R)					
※	45	VE 77 37 00	// (L)		// (L)					
	46	CB 60 13 40	Spacer		スペーサー		T-6			
	47	AA 60 38 50	Special Screw		ダンツキネジ		A-6			
	48	CB 09 99 10	Rubber Cushion		防振ゴム		//			
	49	VD 60 83 00	Dumper Top		ダンパートップ		CDX-1100			
	50	Ei 33 00 86	Binding Head Tapping Screw	3×8 FCRM3-BI	バインドタッピングネジ	PACK				
	51	EK 33 00 40	BW Head Tapping Screw	3×24(φ8) FCRM3-BI	BWヘッドタッピングネジ					
	52	EB 34 01 00	Flat Head Screw	4×10 FCRM3-BI	皿小ネジ					
	53	EK 33 60 10	BW Head Tapping Screw	3×8(φ8) FCM3-BI	BWヘッドタッピングネジ					
	54	EV 41 30 36	Toothed Lock Washer	φ3 FCRM3-BI	内歯付座金	PACK				
	55	AX 60 01 50	Screw	4×8 FCRM3-BI	化粧ネジ					
	56	EV 22 06 00	Plain Washer	φ6×φ13×1.0 FCM3-BI	平座金					
	57	AA 62 73 10	Ground Terminal	3×13	GNDターミナル					
	58	EV 90 13 60	Plain Washer	φ3.6×φ10×0.8 FNM3-3g	平座金					
	59	EJ 32 60 86	Pan Head Tapping Screw	2.6×8 ZMCZ-BI	ナベタッピングネジ	PACK		B,G		
		CB 06 92 51	Binding Tie	BK-1	インシュロックタイ	PACK				

※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	12KΩ	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	1.0MΩ	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
1.0KΩ	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○○○○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