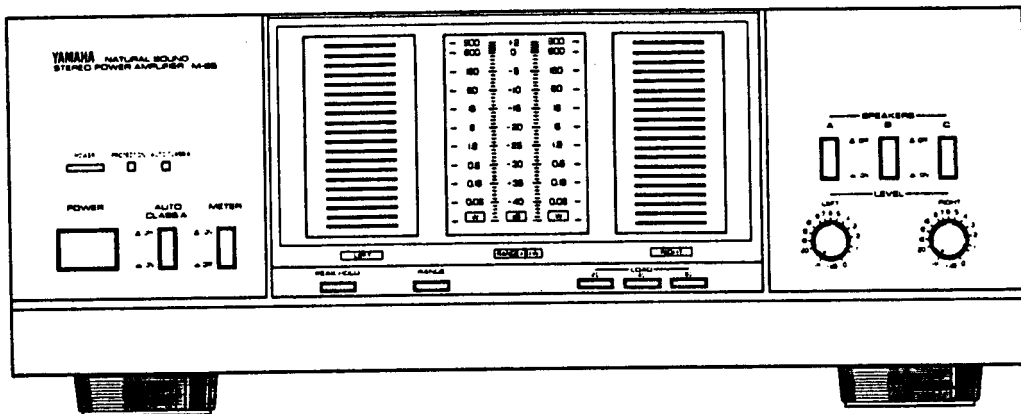


STEREO POWER AMPLIFIER M-85

SERVICE MANUAL

FRONT PANEL



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 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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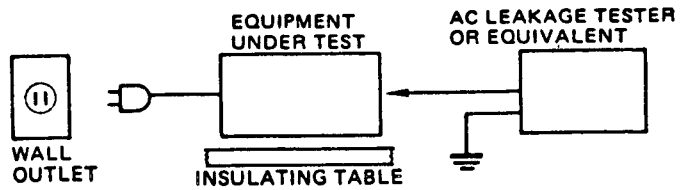
YAMAHA

NIPPON GAKKI CO., LTD. HAMAMATSU, JAPAN

2.9K-124 Printed in Japan '86.4

■ 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 μ F.
 - Leakage current must not exceed 0.5mA.
 - Be sure to test for leakage with the AC plug in both polarities.



■ SPECIFICATIONS

● AUDIO SECTION

Minimum RMS Output Power Per Channel

20 Hz ~ 20 kHz	
0.003% THD 8 ohms	260 W (U.C.)
	340 W (A.G.B.R.)
0.007% THD 6 ohms	295 W (U.C.)
	340 W (A.G.B.R.)
0.02% THD 4 ohms	330 W (U.C.)
	340 W (A.G.B.R.)

Dynamic Power Per Channel

(by IHF Dynamic Headroom measuring method)

8 ohms	430 W
6 ohms	510 W
4 ohms	660 W
2 ohms	850 W

DIN Standard Output Power Per Channel

1 kHz (1% THD 4 ohms)	450 W (A.G.B.)
-----------------------	----------------

Dynamic Headroom

8 ohms	2.18 dB (R.U.C.)
6 ohms	2.38 dB (R.U.C.)
4 ohms	3.11 dB (R.U.C.)

IEC Power

1 kHz 0.01% THD 8 ohms	310 W (A.G.B.)
6 ohms	375 W (A.G.B.)
4 ohms	440 W (A.G.B.)

Power Band Width 10 Hz ~ 60 kHz

Damping Factor

1 kHz 8 ohms	230 W (R.U.C.)
--------------	----------------

Input Sensitivity/Impedance

MAIN IN	1.55 V/20 k Ω
---------	----------------------

Frequency Response

MAIN IN	+0, -0.2 dB
---------	-------------

Total Harmonic Distortion

MAIN IN (130 W/8 Ω)	0.002%
-----------------------------	--------

Intermodulation Distortion

AUX/TAPE/TUNER (Rated Output/8 ohms)	0.003%
---	--------

Signal to Noise Ratio (IHF-A-Network)

MAIN IN (Shorted)	128 dB
MAIN IN (5.1 K ohms terminated)	122 dB

Residual Noise (IHF-A-Network) 16 μ V (R.U.C.)

Channel Separation (Vol -30 dB)

AUX/TAPE input short terminated (1 kHz/10 kHz)	89 dB/76 dB
---	-------------

Power Supply AC 120 V
60 Hz (U.C.)
AC 110/120/220/240 V
60/50 Hz (R)

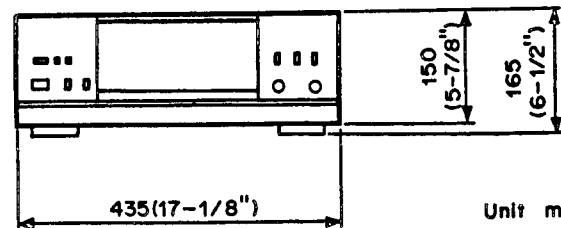
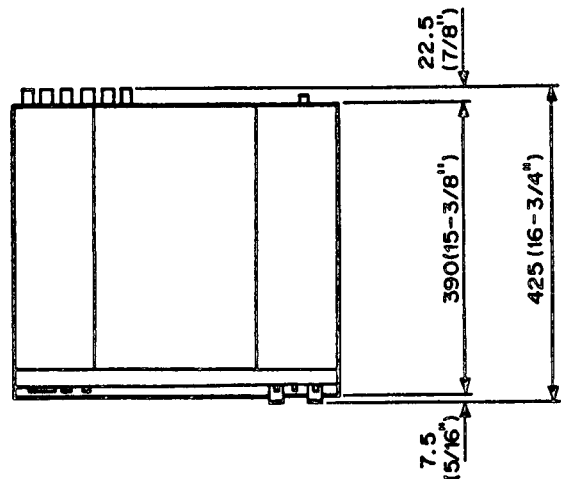
Power Consumption 600 W (U)
1100 W/1300 VA (C)
850 W (R)
1700 W (A.G.B.)

AC Outlet Unswitched	200 W (max) (R.U.C.)
Dimensions (W x H x D)	435 x 165 x 425 mm (17-1/8" x 6-1/2" x 16-3/4")
Weight	23 kg (50 lbs) (9.6 oz)

*Specifications subject to change without notice.

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

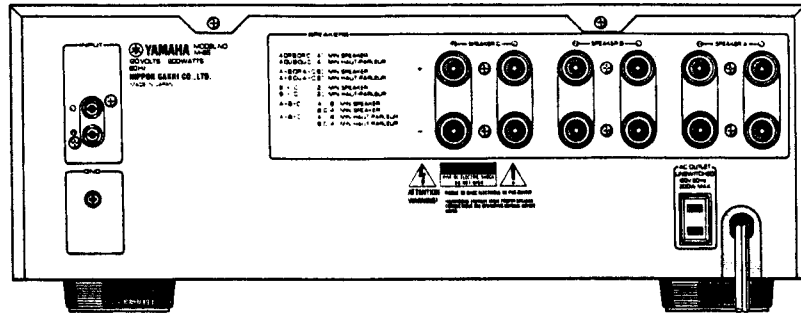
■ DIMENSIONS



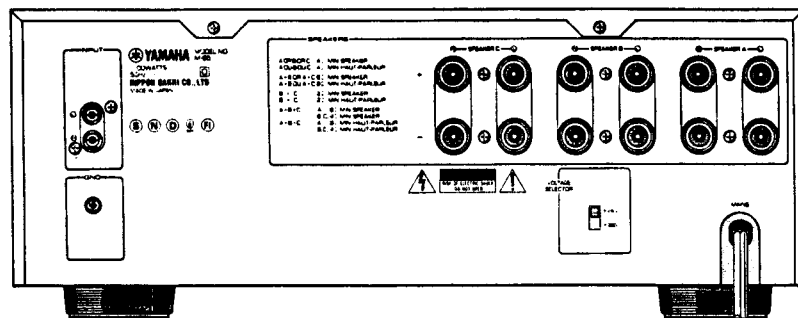
Unit mm (Inch)

■ REAR PANELS

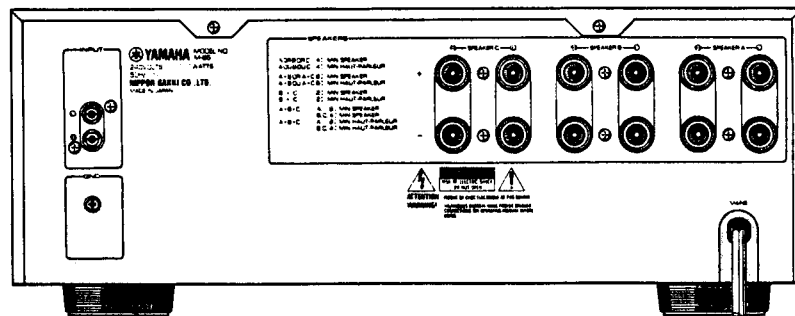
● U.S.A. & Canadian models



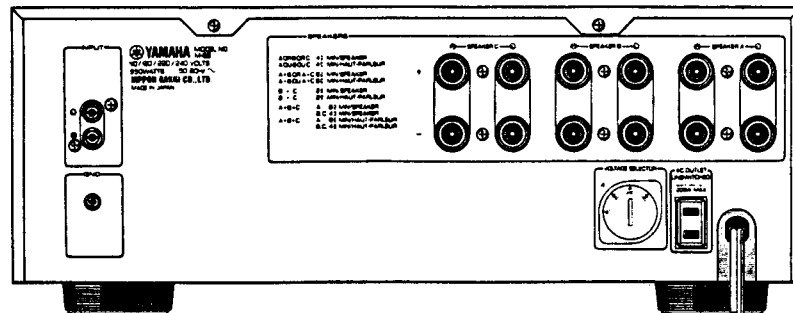
● European & British models



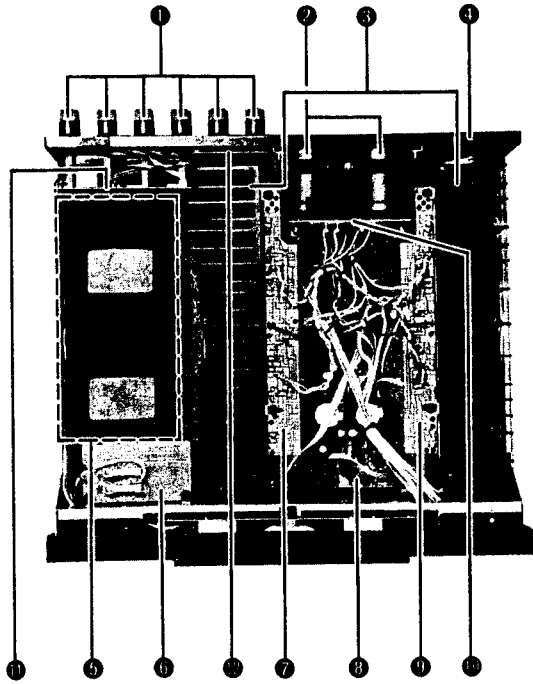
● Australian model



● Others model



INTERNAL VIEW



- ① SPEAKERS TERMINAL
- ② ELECTROLYTIC CAP.
- ③ HEAT SINK
- ④ AC OUTLET
- ⑤ POWER TRANSFORMER
- ⑥ POWER CIRCUIT BOARD (2)
- ⑦ POWER CIRCUIT BOARD (3)
- ⑧ MAIN CIRCUIT BOARD (1)
- ⑨ POWER CIRCUIT BOARD (4)
- ⑩ POWER CIRCUIT BOARD (1)
- ⑪ MAIN CIRCUIT BOARD (2)
- ⑫ MAIN CIRCUIT BOARD (3)

DISASSEMBLY PROCEDURES

1. Removal of Top Cover.
 - a. Remove 6 screws (①) in Fig. 1. and slide the Top Cover back.
2. Removal of Rear Panel.
 - a. Remove 16 screws (②) in Fig. 1.
3. Removal of Front Panel.
 - a. Remove 5 screws (③) in Fig. 1.
4. Removal of Bottom cover.
 - a. Remove 6 screws (④) in Fig. 1.

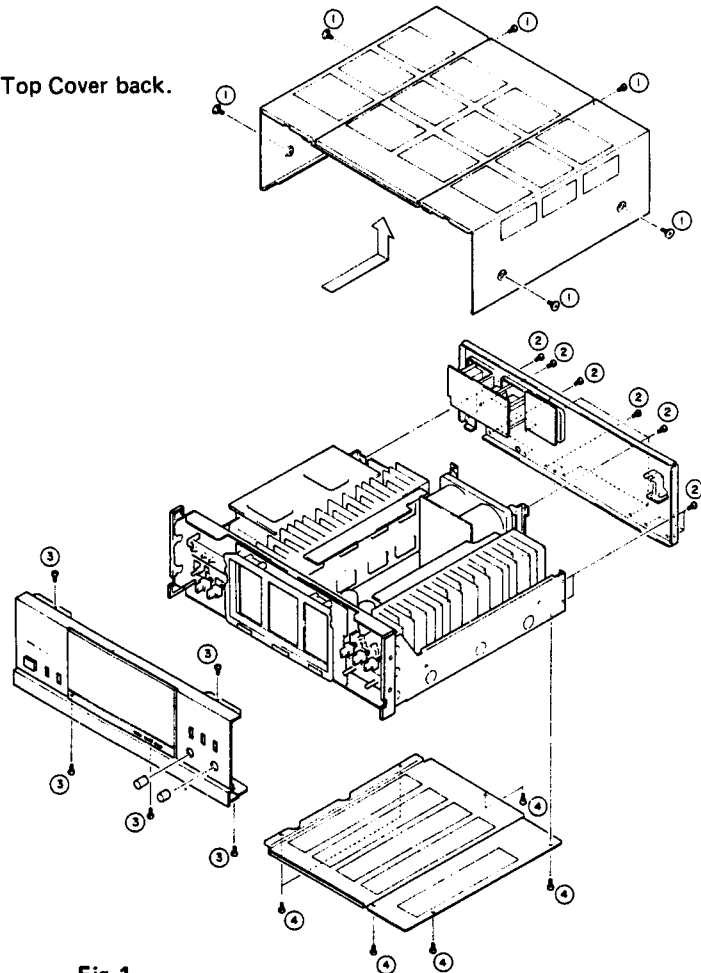
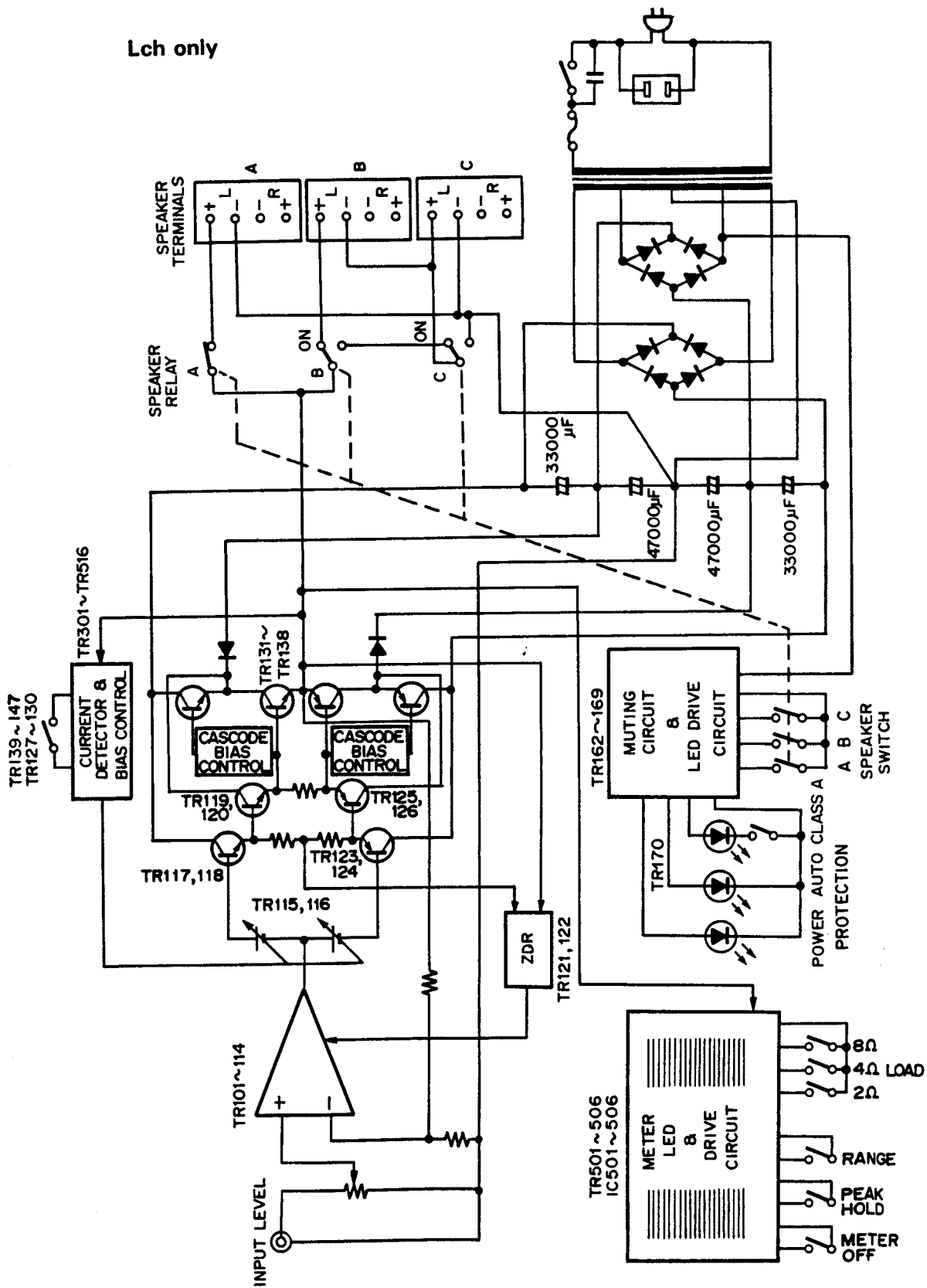
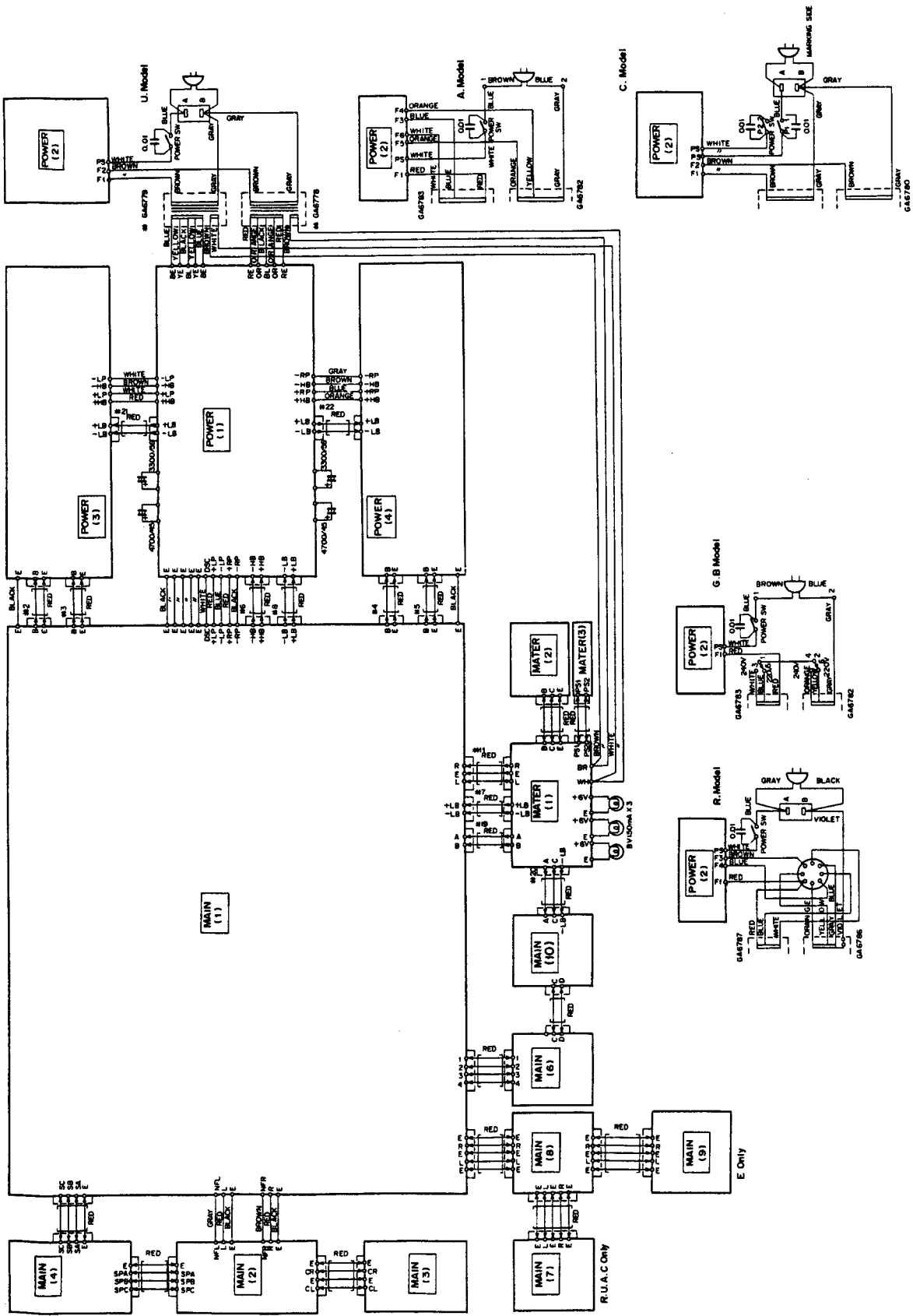


Fig. 1

■ BLOCK DIAGRAM



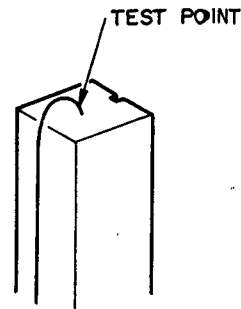
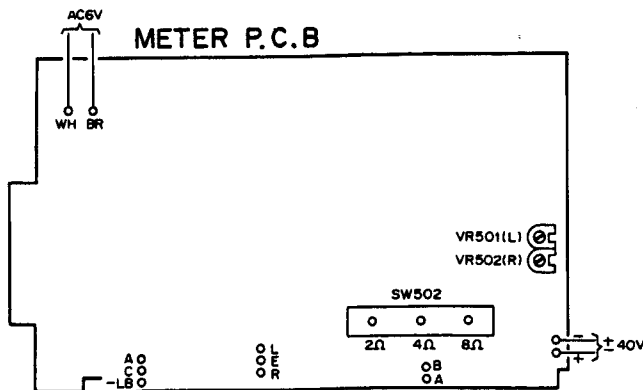
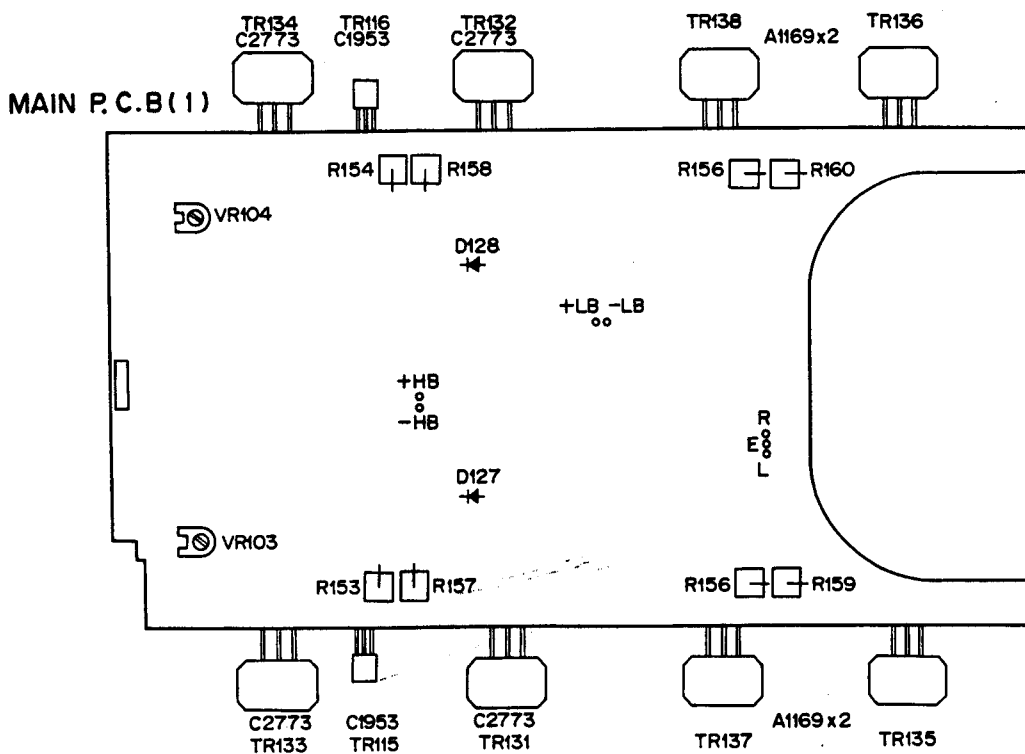
WIRING



■ ADJUSTMENTS

No.	Item	Condition/Procedure	Check point	Adjustment/Confirmation		Reference
1	Idling adjustment	Before adjustment, leave M-85 about 2 minutes with: (a) Power switch: ON (b) Auto-Class A switch: OFF (c) NO signal input	Voltage across R153, R155 -Lch R154, R156 -Rch	VR103 VR104	Adjust to 15.5 mV ±1 mV DC	R153-156: Emitter resistors of the power transistors (0.22 Ω)
2	Confirmation of Auto-A function	Auto-Class A switch: OFF → ON	Same as above	-	Confirmation increase of voltage	more than 31 mV DC
3	Meter level adjustment	Meter load selector: 2 Ω Amplifier load: NO load or 8 Ω Signal freq.: 1 kHz				
		Speaker output voltage: 34.5 V AC	0 dB - LED	VR 501 (L) VR 502 (R)	Adjust to the lights up point	
		Reduce the signal level 1 dB (to 30.8 V AC)		-	Confirm the 0 dB-LED fades out	

■ ADJUSTMENT POINTS



A

B

C

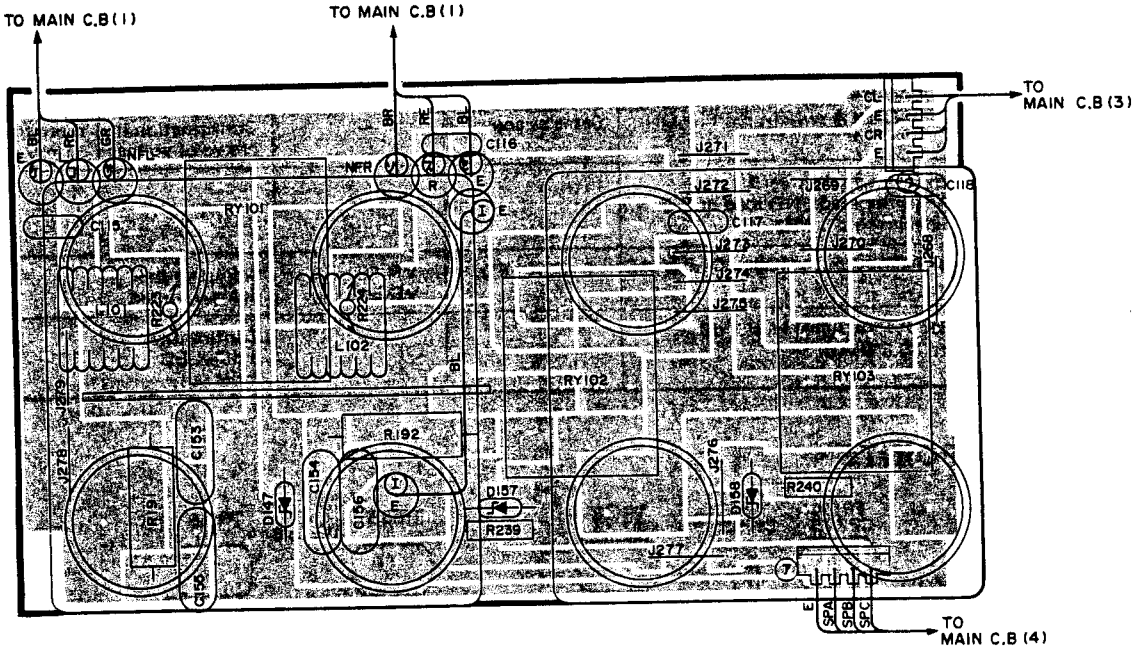
D

E

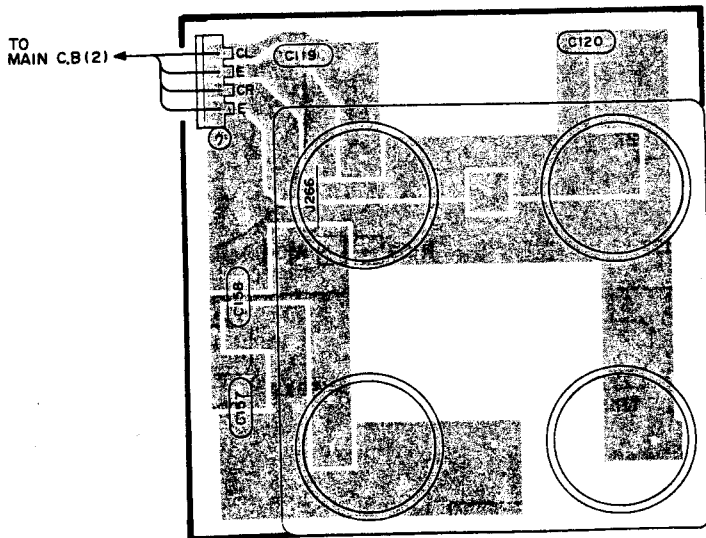
M-85

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

MAIN CIRCUIT BOARD (2)



MAIN CIRCUIT BOARD (3)



1

2

3

4

5

6

7

A

B

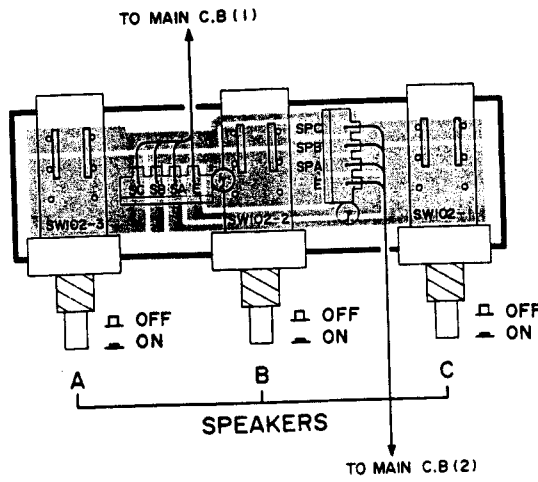
C

D

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

1

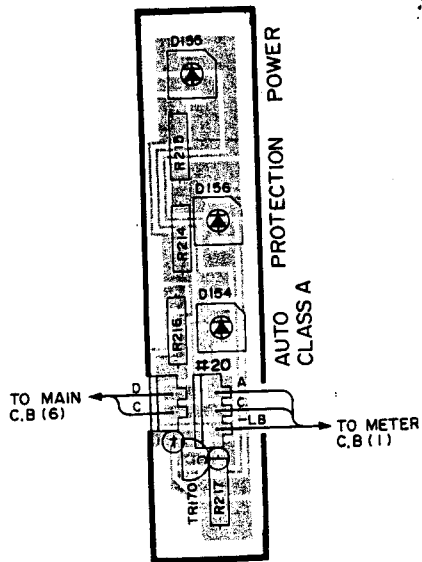
MAIN CIRCUIT BOARD (4)



2

3

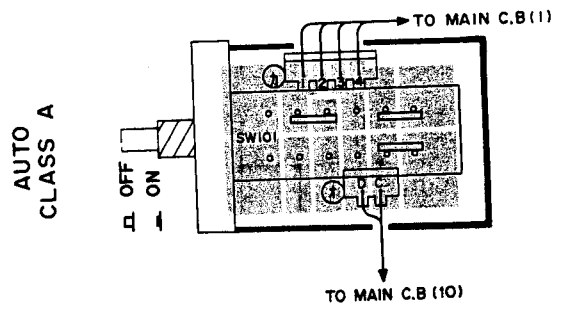
MAIN CIRCUIT BOARD (10)



4

5

MAIN CIRCUIT BOARD (6)



6

7

A

B

C

D

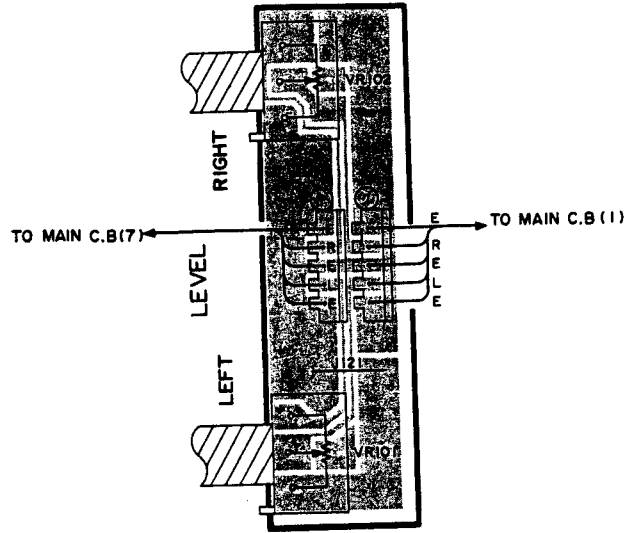
E

M-85

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

1

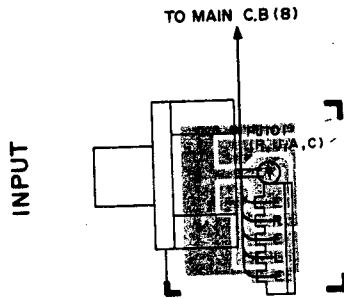
MAIN CIRCUIT BOARD (8)



2

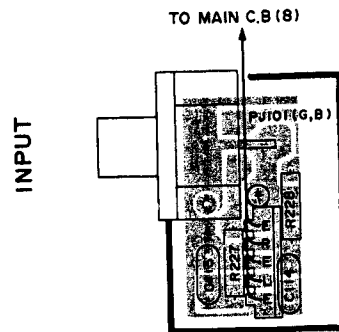
3

MAIN CIRCUIT BOARD (7) (R,U,A,C models)



4

MAIN CIRCUIT BOARD (9) (G,B models)



5

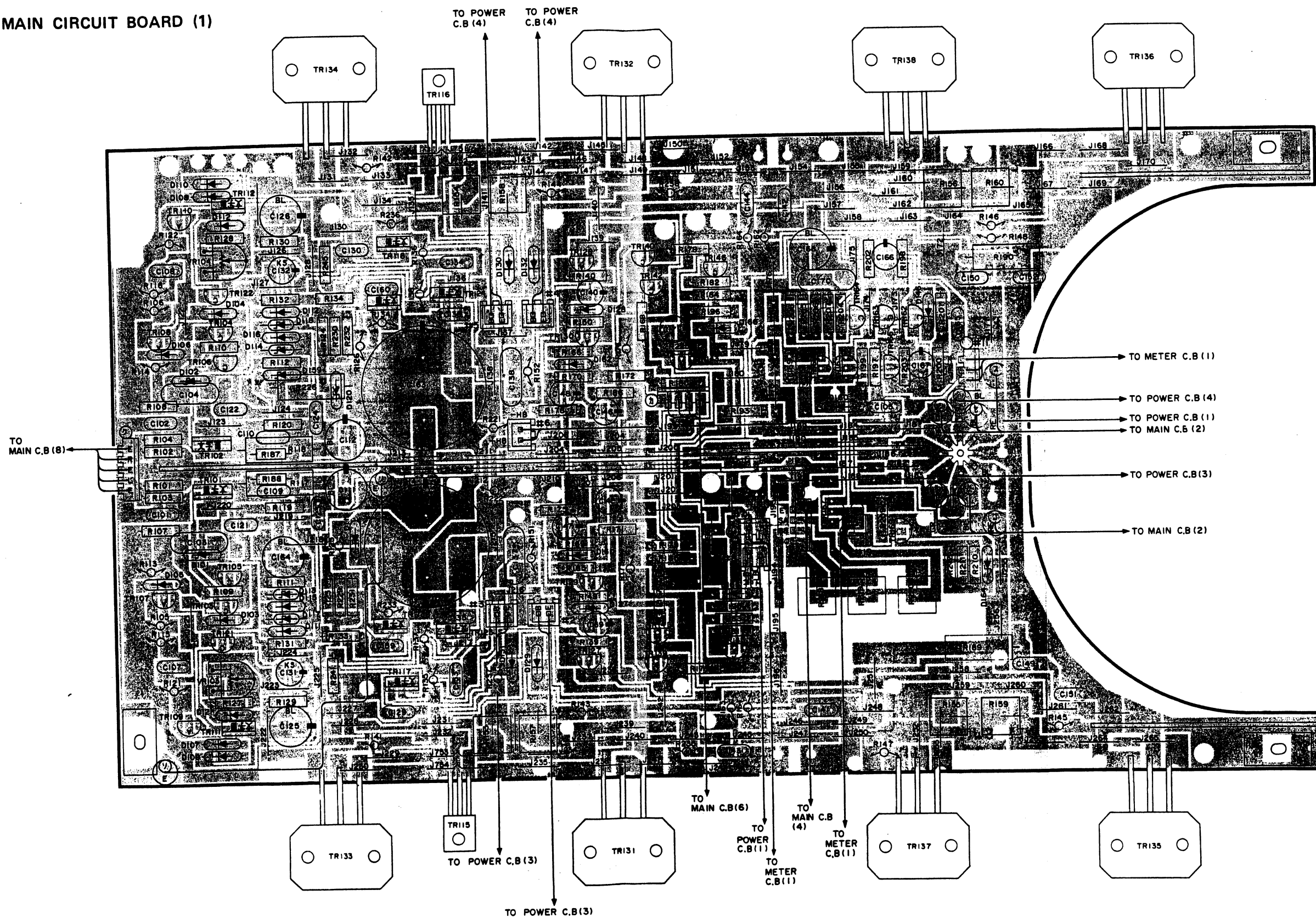
6

7

9

PRINTED CIRCUIT BOARD (Pattern Side) ^{Note)} 文字面 : Component Side

MAIN CIRCUIT BOARD (1)



A

B

C

D

PRINTED CIRCUIT BOARD (Pattern Side)

Note) 文字面 : Component Side

1

METER CIRCUIT BOARD (3)

METER CIRCUIT BOARD (2)

2

METER CIRCUIT BOARD (1)

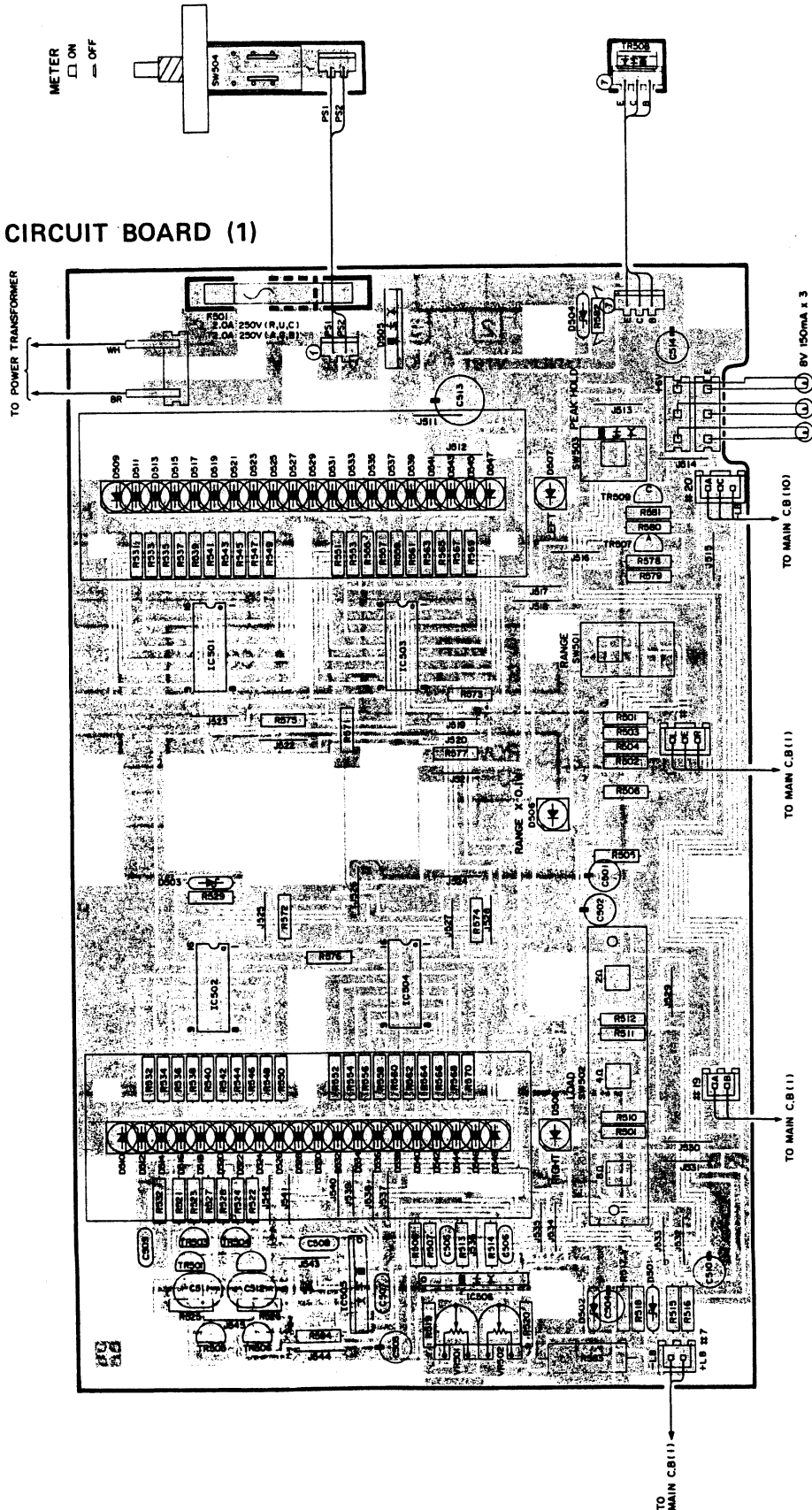
3

4

5

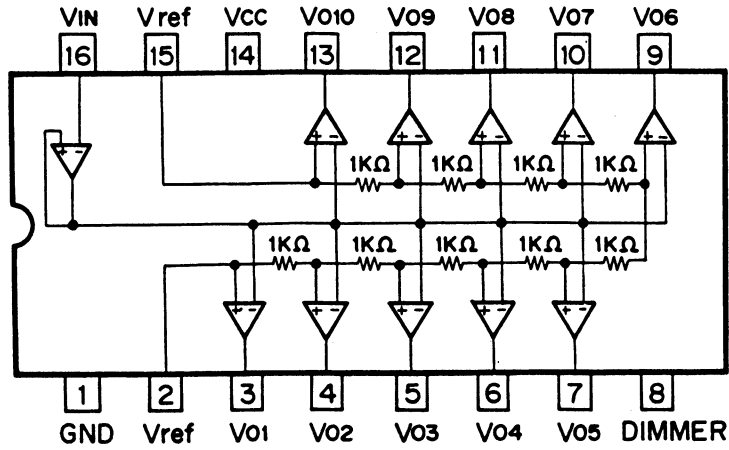
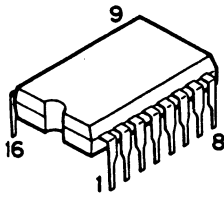
6

7

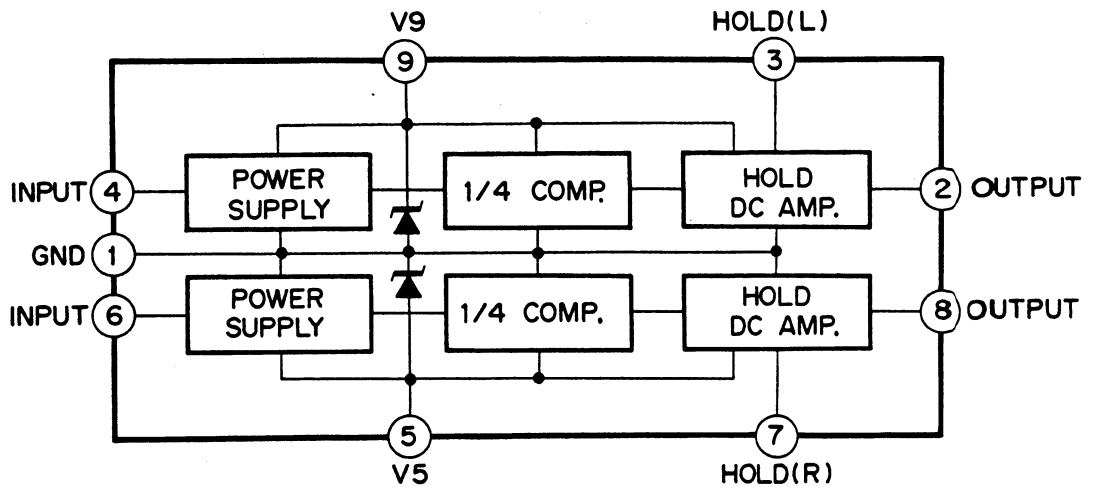
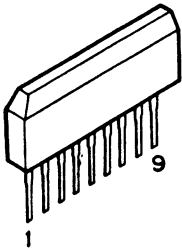


■ IC BLOCK DIAGRAM

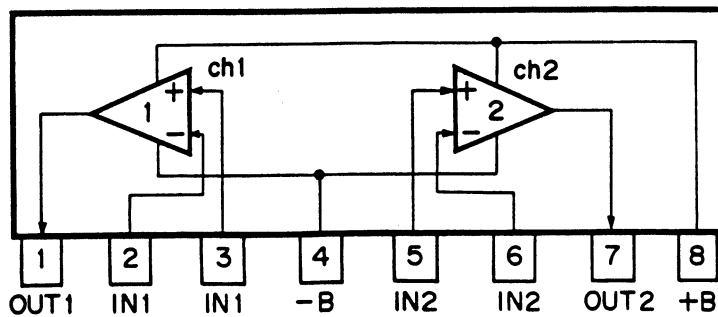
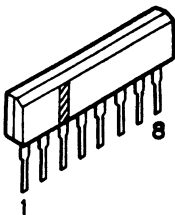
IC501~504
TA7612AP



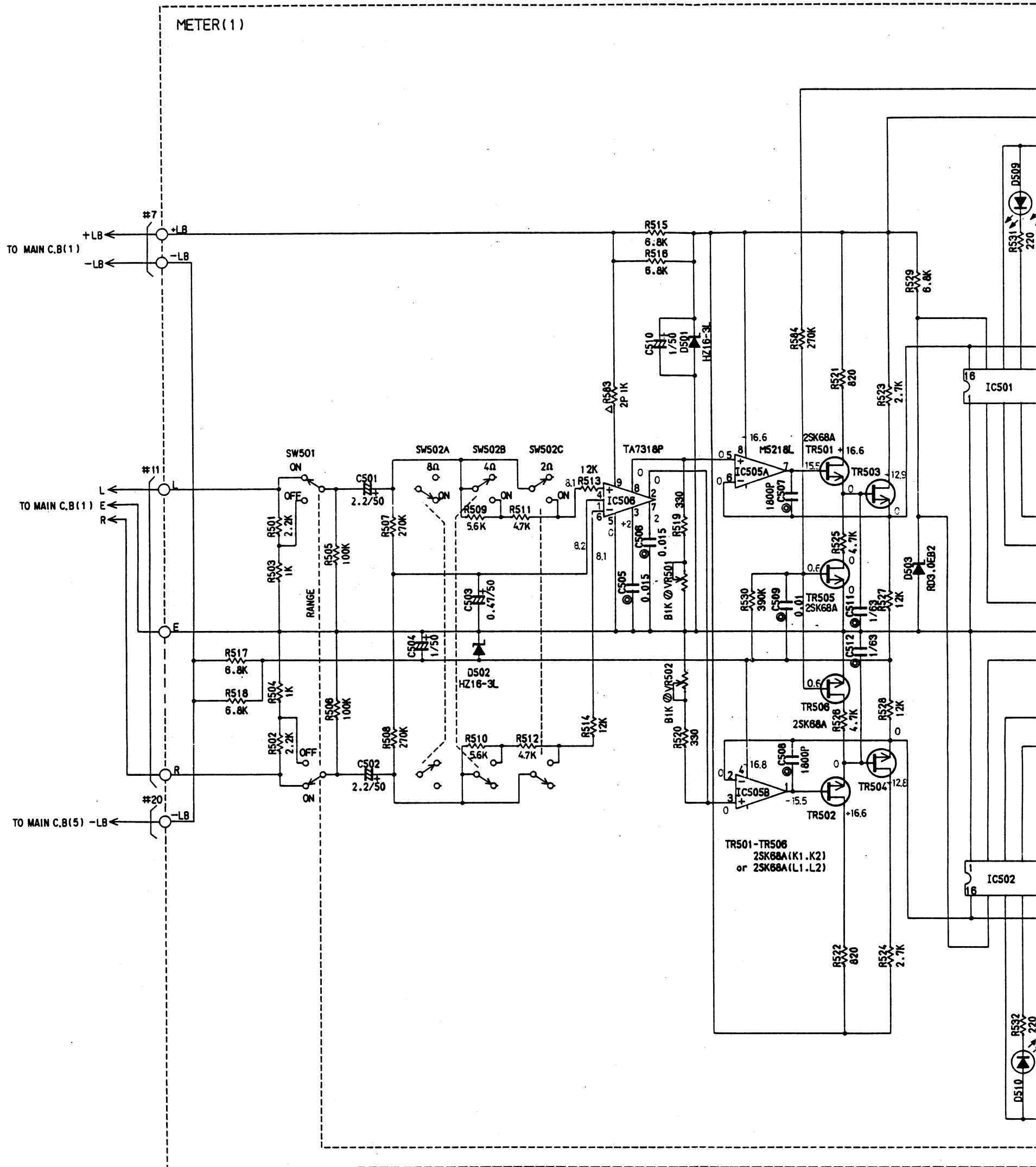
IC506
TA7318P



IC505
M5218L



■ SCHEMATIC DIAGRAM

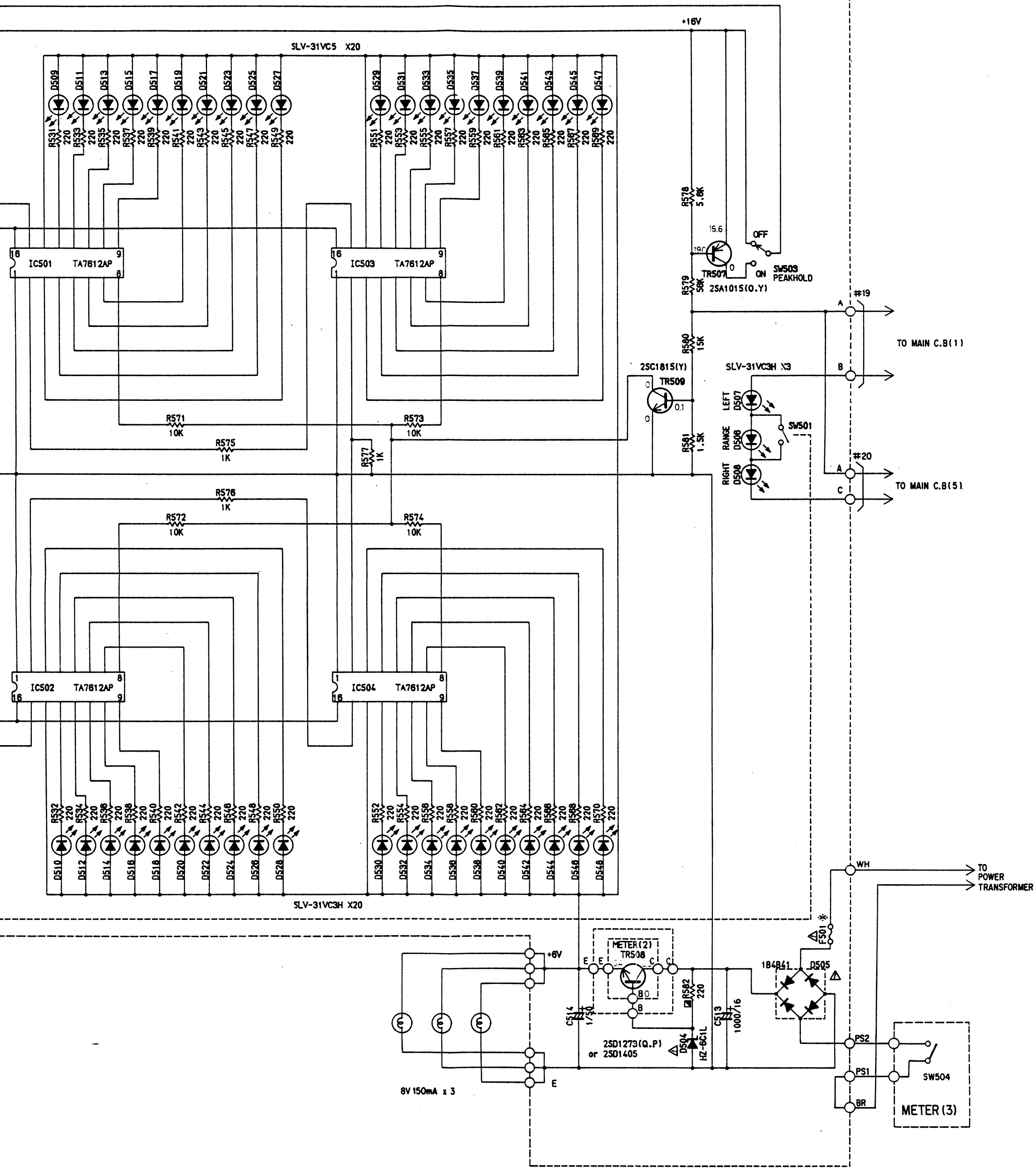


CAPACITOR	
REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
NO MARK	CERAMIC CAPACITOR
⊙	POLYESTER FILM CAPACITOR (MYLAR)
○	POLYSTYRENE FILM CAPACITOR
⊖	MICA CAPACITOR
Ⓟ	POLY PROPYLENE FILM CAPACITOR
●	SEMICONDUCTIVE CERAMIC CAPACITOR

RESISTOR	
REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (1/4 W)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
⊠	METAL PLATE RESISTOR
⊞	FIRE PROOF CARBON FILM RESISTOR
□	SEMENT MOLDED RESISTOR
⊘	SEMI VARIABLE RESISTOR

CAUTION

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



* marked

	R.U.C	A.E
F501	2.0A250V	T2.0A250V

A

B

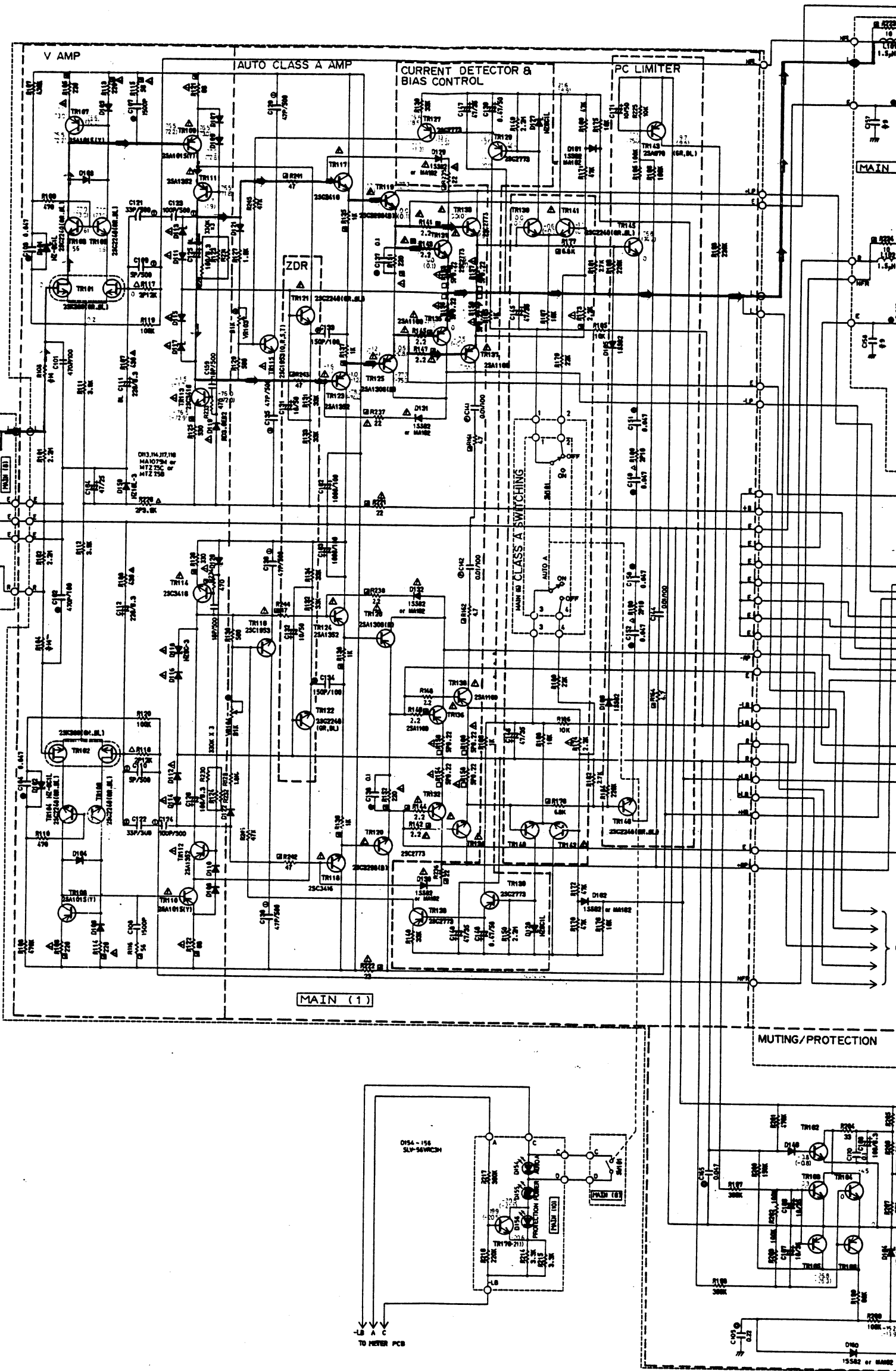
C

D

E

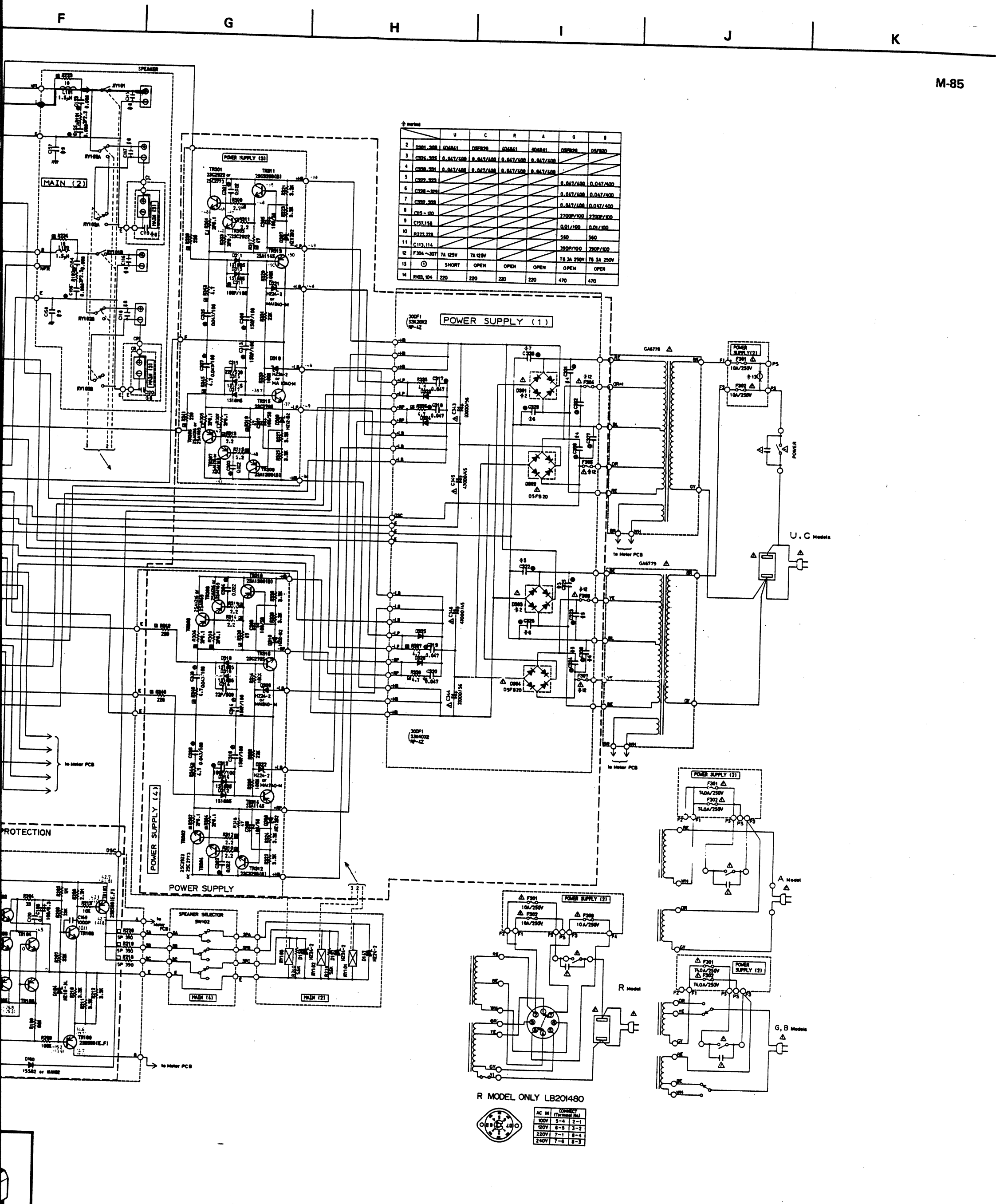
F

■ SCHEMATIC DIAGRAM



■ PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODE AND ICS.

2SA970 2SA1015 2SA1115 2SA1127 2SA1145 2SB560 2SB1815	2SC2240 2SC2603 2SC2634 2SC2705	2SK68A	2SA1306 2SC3298 2SD1273 2SD1405	2SA1352 2SC1953 2SC3298 2SC3416	2SA1265	2SA1169 2SC2922 2SA1216 2SC2773	2SK389
1S1185 1S1555 1S1885 1S2473 1SS82 HZ-6C1L HZ12-B2 HZ16-3L HZ24-2	RD3.OEB2 MTZ7.5B MTZ7.5C MA1075M MA1240M MA182	D5FB20	4D4B41	M5218L P	TA7318P	TA7612AP	



NO	QTY	U	C	R	A	G	B
2	10001-300	400A41	05F20	400A41	400A41	05F20	05F20
3	C201-325	0.047/100	0.047/100	0.047/100	0.047/100		
4	C202-325	0.047/100	0.047/100	0.047/100	0.047/100		
5	C203-325	0.047/100	0.047/100	0.047/100	0.047/100		
6	C204-324				0.047/100	0.047/100	
7	C205-320				0.047/100	0.047/100	
8	C151-100				2700P/100	2700P/100	
9	C152-158				0.01/100	0.01/100	
10	R222-228				500	500	
11	C113-114				250P/100	250P/100	
12	F304-307	7A 125V	7A 125V		7B 3A 250V	7B 3A 250V	
13	○	SHORT	OPEN	OPEN	OPEN	OPEN	
14	R103, 104	220	220	220	220	470	470

CAPACITOR	
REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
NO MARK	CERAMIC CAPACITOR
○	POLYESTER FILM CAPACITOR (MYLAR)
○	POLYSTYRENE FILM CAPACITOR
○	MICA CAPACITOR
P	POLY PROPYLENE FILM CAPACITOR
●	SEMICONDUCTIVE CERAMIC CAPACITOR

RESISTOR	
REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (1/4W)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
⊠	METAL PLATE RESISTOR
⊠	FIRE PROOF CARBON FILM RESISTOR
□	SEMI MOLDED RESISTOR
⊙	SEMI VARIABLE RESISTOR

CAUTION

• Components having special characteristics are marked **△** and must be replaced with parts having specifications as marked. * All voltages are measured with a 10MΩ/V DC electric voltmeter.

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 1/4 W are not included in the ELECTRICAL PARTS list. For the parts No. of the carbon resistor, refer to P. 25.

Ref. No.	Part No.	Description	部 品 名	Remarks	Common Model	Markets	ランク
*	NA 09 02 00	Main Circuit Board Ass'y		メ イ ン シ ー ト		R.U.A.C	
*	NA 09 02 10	"		"		G.B	
	FC 36 46 80	Mylar Cap.	0.068 μ F 50V	マ イ ラ コ ン	C153~156		
	FC 44 31 00	"	1000pF 50V	"	C169		
	UA 55 31 50	"	1500pF 50V	"	C107, 108		
	FC 44 44 70	"	0.047 μ F 50V	"	C149~152, 165		
	FZ 00 49 40	"	0.1 μ F 50V	"	C137, 138, 170		
	FZ 00 55 80	"	0.047 μ F 50V	"	C103, 104		
	UA 25 52 20	"	0.22 μ F 50V	"	C105		
	UT 45 21 00	Polypropylene Film Cap.	100pF 100V	ポ リ プ ロ コ ン	C123, 124		
	UT 45 21 50	"	150pF 100V	"	C133, 134		
	UT 45 23 90	"	390pF 100V	"	C113, 114		
	UT 45 24 70	"	470pF 100V	"	C101, 102		
	UT 46 32 70	"	2700pF 100V	"	C115~120	G.B	
	UT 45 41 00	"	0.01 μ F 100V	"	C141~144		
	UT 45 41 00	"	0.01 μ F 100V	"	C157, C158	G.B	
	FU 35 05 00	FE Mica Cap.	5pF 500V	F E マ イ カ コ ン	C109, 110		
	FU 35 11 80	"	18pF 500V	"	C159, 160		
	FU 35 13 30	"	33pF 500V	"	C121, 122		
	FU 35 14 70	"	47pF 500V	"	C129, 130, 135, 136		
	UH 15 71 00	Electrolytic Cap.	10 μ F 35V	ケ ミ コ ン	C166, 167		
	UH 15 74 70	"	47 μ F 35V	"	C145~148		
	UH 16 54 70	"	0.47 μ F 50V	"	C139, 140		
	UJ 16 71 00	"	10 μ F 50V	"	C171		
	UM 07 71 00	Electrolytic Cap.	10 μ F 50V	オ ー デ ィ オ ケ ミ コ ン	C131, 132		
	FZ 00 54 10	"	100 μ F 6.3V	ブ ラ ッ ク ゲ ー ト コ ン	C125, 126, 168		
	FZ 00 61 30	"	220 μ F 6.3V	"	C111, 112		
	FZ 00 58 00	"	47 μ F 25V	B P コ ン	C164		
	FZ 00 59 70	"	1000 μ F 100V	オ ー デ ィ オ コ ン	C162, 163		
	GD 90 03 70	Coil	1.5 μ H	コ イ ル	L101, 102		
	HL 32 32 20	Metal Oxide Film Resistor	2.2 Ω 2W	酸 金 抵 抗	R191, 192		
	HL 32 41 00	"	10 Ω 2W	"	R189, 190		
	HL 32 63 90	"	3.9K Ω 2W	"	R226		
	HL 32 71 20	"	12K Ω 2W	"	R117, 118		
	HM 55 53 90	Cement Moulded Resistor	390 Ω 5W	セ メ ン ト 抵 抗	R218~220		
	HU 57 54 30	Metal Film Resistor	430 Ω	金 属 被 膜 抵 抗	R187, 188		
	HJ 35 54 70	Carbon Film Resistor	470 Ω 1/4W	カ ー ボ ン 抵 抗	R103, 104	G.B	
	HV 45 52 20	Flame Proof Carbon Resistor	220 Ω 1/4W	不 燃 化 カ ー ボ ン 抵 抗	"	R.U.A.C	
	HV 45 62 70	"	2.7K Ω 1/4W	"	R181, 182		
	HV 45 66 80	"	6.8K Ω 1/4W	"	R177, 178		
	HV 45 44 70	"	47 Ω 1/4W	"	R241~244		
	HV 45 32 20	"	2.2 Ω 1/4W	"	R141~148		
	HV 45 34 70	"	4.7 Ω 1/4W	"	R161~164		
	HV 45 41 00	"	10 Ω 1/4W	"	R223, 224		
	HV 45 42 20	"	22 Ω 1/4W	"	R221, 222, 235~238		
	HV 45 45 60	"	56 Ω 1/4W	"	R115, 116		
	HV 45 46 80	"	68 Ω 1/4W	"	R121, 122		
	HV 45 52 20	"	220 Ω 1/4W	"	R105, 106, 113, 114, 151, 152		
	HV 45 53 30	"	330 Ω 1/4W	"	R125, 126		
	HV 45 54 70	"	470 Ω 1/4W	"	R233, 234		

* New Parts (新規部品)

Ref. No.	Part No.	Description	部品名		Remarks	Common Model	Markets	ランク
	HV 45:61:00	Flame Proof Carbon Resistor	1K Ω	1/4W	不燃化カーボン抵抗	R135~138		
	HV 45:62:20	//	2.2K Ω	1/4W	"	R173~174		
	HZ 00:44:70	Cement Moulded Resistor	0.22 Ω	5W	セメント抵抗	R153~160		
*	VA 99:40:00	Potentiometer	20K-B		可変抵抗	VR101,102		
	HT 37:03:40	Pre-Set Potentiometer	1K-B		半固定抵抗	VR103,104	Inter-changeable	
	HT 77:00:30	//	1K-B		"	"		
	iA 09:70:00	Transistor	2SA970 (GR.BL)		トランジスター	TR143		
	iA 10:15:71	//	2SA1015(Y)		"	TR107~110		
	iA 11:15:10	//	2SA1115 (E.F)		"	TR127~130,165,166	Inter-changeable	
	iA 11:27:00	//	2SA1127 (R.S.T)		"	"		
	iA 13:52:00	//	2SA1352		"	TR111,112,123,124		
	iB 05:60:00	//	2SB560 (E.F)		"	TR167,169		
	iC 22:40:00	//	2SC2240 (GR.BL)		"	TR103-106,121,122,145,146		
	iC 26:03:10	//	2SC2603 (E.F)		"	TR139-142,162-164,168,170	Inter-changeable	
	iC 26:34:00	//	2SC2634 (R.S.T)		"	"		
	iC 34:16:00	//	2SC3416		"	TR113,114,117,118		
	iE 10:45:00	Dual FET	2SK389 (GR.BL)		デュアル F E T	TR101,102		
	iF 00:06:70	Diode	1S2473		ダイオード	D103-112,115,116,121,122,146	Inter-changeable	
	iF 00:00:40	//	1S1555		"	"		
	iF 00:14:00	//	1SS82		"	D129-132,160-162,165,166	Inter-changeable	
*	VA 99:39:00	//	MA182		"	"		
	iF 00:19:40	Zener Diode	HZ24-2		ツェナーダイオード	D147,157,158		
	iF 00:15:10	//	HZ6C1L		"	D101,102,127,128		
	iF 00:20:80	//	HZ16-3L		"	D159,164		
	iF 00:18:40	//	RD3.0EB2		"	D119,120		
	iF 00:64:70	//	MTZ7.5B		"	D113,114,117,118	Inter-changeable	
	iF 00:80:30	//	MTZ7.5C		"	"		
	iF 00:68:20	//	MA1075M		"	"		
	iF 00:44:40	LED (Red)	SLV-56URC3H		L E D (赤)	D154~156		
	KA 80:46:60	Push Switch	SUN2-2		プッシュスイッチ	SW102		
*	VA 87:20:00	//	NS4-2		"	SW101		
	KC 00:14:10	Relay	JC2a DC24V		リレー	RY101		
	KC 00:19:20	//	MS4U DC24V		"	RY102,103		
	LB 20:19:50	Pin Jack	2P		ピンジャック	PJ101		
	LA 00:53:20	Speaker Terminal			スピーカターミナル			
	LA 00:53:40	//	4P		"			R.U.A.C
	LA 00:53:70	//	4P		"			G.B
	LB 91:80:20	Base Pin			X H ベースピン			
	BB 07:04:10	Bus Bar	l=55		バスバー		A-700	
	BB 07:04:20	//	l=100		"		A-700	
	BB 07:04:30	//	l=145		"		A-700	
	BB 06:83:70	Ground Terminal			アース金具			
	BB 07:07:00	//			"		M-80	

* New Parts (新規部品)

Ref. No.	Part No.	Description	部品名	Remarks	Common Model	Markets	ランク
	NA 09:01:80	Meter Circuit Board Ass'y	メーターシート			R.U.C	
	NA 09:01:90	"	"			A.G.B	
	UA 25:31:80	Mylar Cap.	1800P 50V	マイラコン	C507,508		
	UA 25:41:00	"	0.01μF 50V	"	C509		
	FA 15:41:50	"	0.015μF 50V	"	C505,506		
	UA 75:61:00	"	1μF 63V	"	C511,512		
	UJ 43:91:00	Electrolytic Cap.	1000μF 16V	ケミコン	C513		
	UH 16:54:70	"	0.47μF 50V	"	C503		
	UH 16:61:00	"	1μF 50V	"	C504,510,514		
	UH 16:62:20	"	2.2μF 50V	"	C501,502		
	HL 32:61:00	Metal Oxide Film Resistor	1KΩ 2W	酸金抵抗	R583		
	HV 45:52:20	Flame Proof Carbon Resistor	220Ω 1/4W	不燃化カーボン抵抗	R582		
	HT 37:03:40	Pre-Set Potentiometer	1KΩ-B	半固定抵抗	VR501,502		
	iA 10:15:71	Transistor	2SA1015(Y)	トランジスター	TR507		
	iC 18:15:01	"	2SC1815(Y)	"	TR509		
	iD 12:73:00	"	2SD1273(Q.P)	"	TR508	Inter	
	iD 14:05:00	"	2SD1405	"	"	changeable	
	IE 10:05:00	"	2SK68A	F E T	TR501,502,505,506		
	IE 10:05:20	"	2SK68A(L1,L2)	"	TR503,504		
	iG 03:06:00	IC	TA7612AP	I C	IC501~504		
	iG 03:07:00	"	TA7318P	"	IC506		
	iG 05:82:00	"	M5218L	"	IC505		
	iF 00:15:10	Zener Diode	HZ6C1L	ツェナーダイオード	D504		
	iF 00:20:80	"	HZ16-3L	"	D501,502		
	iF 00:18:40	"	RD3.0EB2	"	D503		
	iF 00:77:10	LED	SLV-31VC5	L E D	D509~548		
	iF 00:81:70	"	SLV-31VC3H	"	D506~508		
	iH 00:08:10	Diode	1B4B41	ダイオードブリッジ	D505		
	KA 80:45:10	Push Switch	SF1201-4	プッシュスイッチ	SW501		
	KA 80:45:20	"	SF1202-03	"	SW502		
	KA 80:45:30	"	SF1201-2	"	SW503		
*	VA 87:19:00	"		"	SW504		
	KB 00:07:50	Fuse	T2.0A 250V	ヒューズ	F501	A.G.B	△
	KB 00:10:30	"	2.0A 250V	"	"	R.U.C	△
	LA 00:21:20	Wrapping Terminal	P=5 3P	ラッピング端子板			
	LA 00:28:50	Wrapping Terminal L Type	P=10 2P	L型ラッピング端子板			
	LB 20:18:80	Fuse Holder	PC-FH1	ヒューズホルダーピン			
	LB 91:80:20	Base Pin I-Type	2P	XHベースピンI型			
	LB 91:80:30	"	3P	"			
	CB 63:05:40	Reflector, LED		LEDリフレクター			

*New Parts (新規部品)

Ref. No.	Part No.	Description	部品名	Remarks	Common Model	Markets	ランク
	NA 08:45:80	Power Circuit Board Ass'y	電源シート		M-80	G.B	
	NA 08:45:70	"	"		"	U	
	NA 08:45:90	"	"		"	R	
	NA 08:46:00	"	"		"	A	
	NA 08:48:80	"	"		"	C	
	FC 36:42:20	Mylar Cap.	0.022μF 50V	マイラコン	C301~304		
	FC 36:44:70	"	0.047μF 50V	"	C317~320		
	FU 35:12:20	FE Mica Cap.	22pF 500V	F E マイカコン	C315,316		
	FZ 00:06:70	MM Ceramic Cap.	0.047μF 400V	M M コン	C324,325,330,331	R.U.A.C	
*	FZ 00:06:70	"	0.047μF 400V	"	C332,333,326~329 332,333	G.B	
	UT 45:21:00	Polipropylene Film Cap.	100pF 100V(J)	ポリプロコン	C311,312		
	UT 45:21:50	"	150pF 100V(J)	"	C309,310,313,314		
	UT 45:44:70	"	0.047μF 100V(J)	"	C335~338		
	UJ 16:81:00	Electrolytic Cap.	100μF 50V	ケミコン	C305~308		
	HV 45:32:20	Frame Proof Resistor	2.2Ω 1/4W	不燃化カーボン抵抗	R309~316		
	HV 45:34:70	"	4.7Ω 1/4W	"	R335~338,343~346		
	HV 45:44:70	"	47Ω 1/4W	"	R317~320		
	HV 45:52:20	"	220Ω 1/4W	"	R339~342		
	HZ 00:38:30	Metal Plate Resistor	0.1Ω 2W	金属板抵抗	R301~308		
	iA 11:45:00	Transistor	2SA1145(Y)	トランジスタ	TR313,314		
	iC 27:05:00	"	2SC2705(Y)	"	TR315,316		
*	iA 13:06:50	"	2SA1306B	"	TR309,310		
*	iC 32:98:50	"	2SC3298B	"	TR311,312		
	iH 00:02:40	Diode	1S1885	ダイオード	D311~318		
	iH 00:09:60	"	30DF1	"	D323~326		
	iH 00:13:50	"	S3K40	"	"	Inter-changeable	
	iH 00:13:60	"	RP4Z(LF-J4)	"	"	"	
	iF 00:72:10	Zener Diode	MA1240-M	ツェナーダイオード	D319~322	Inter-	
	iF 00:19:40	"	HZ24-2	"	"	changeable	
	iF 00:23:50	"	HZ12-B2	"	D307,308,309,310		
	iH 00:11:30	Diode Bridge	D5FB20	ダイオードブリッジ	D302,304		△
	iH 00:11:30	"	D5FB20	"	D301,303	GB.C	△
	iH 00:11:60	"	4D4B41	"	"	R.U.A	△
	KB 00:13:90	Fuse	250V 10A	ヒューズ	F301,302	R.U.C	△
	KB 00:07:90	"	250V T4.0A	"	"	A.G.B	△
	KB 00:14:90	"	250V 10A	"	F303	R	△
	KB 00:17:60	"	250V T6.3A	"	F304~307	GB	△
	KB 00:15:20	"	125V 7A	"	"	UC	△
	LB 20:18:80	Fuse Holder Pin		ヒューズホルダーピン			
	LA 00:23:50	Wrapping Terminal L Type	2P P=5	L型ラッピング端子板			
	LA 00:24:10	"	2P P=10	"			
	LB 10:18:20	Base Pin I-Type	2P	XHベースピンI型			
	LA 00:21:40	Wrapping Terminal I Type	2P P=10	I型ラッピング端子板			
	BB 07:04:40	Bus Bar		バスバー			
	BB 06:95:10	Plate		ランド金具			

*New Parts (新規部品)

A B C D E M-85

M-85
MECHANISM EXPLODED VIEW

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MECHANISM PARTS

Ref. No.	Part No.	Description	部品名	Remarks	Common Model	Markets	ランク
* 1	NB:63:38:90	Panel Unit	パネルユニット				
2	NB:62:03:80	Sub Panel Ass'y	サブパネル Ass'y		M-80		
3	AA:62:20:80	Spring	スプリング		//		
4	CB:63:00:10	Reflector	リフレクター		C-80		
5	CB:63:03:50	Push Button	プッシュボタン	POWER	M-80		
6	KA:80:25:50	Push Switch	プッシュスイッチ		//	R.U.A.G.B	
* //	KA:80:47:60	//	//		//	C	
7	CB:09:52:60	Cover	コンデンサカバー	SB-0833	//	R.U.C	
* //	CB:64:46:70	//	//	HY-0105	//	A.G.B	
8	Fi:38:41:00	Ceramic Cap.	セラコン	0.01 VA-1	//		
* 9-1	GA:67:78:30	Power Transformer	電源トランス			U	Δ
* //	GA:67:80:30	//	//			C	Δ
* //	GA:67:82:20	//	//			A.G.B	Δ
* //	GA:67:86:30	//	//			R	Δ
* 9-2	GA:67:79:30	//	//			U	Δ
* //	GA:67:81:30	//	//			C	Δ
* //	GA:67:83:30	//	//			A.G.B	Δ
* //	GA:67:87:30	//	//			R	Δ
10	LB:20:14:80	Voltage Selector	電圧切換器			R	
11	CB:07:27:50	Cord Stopper	コードストッパー	SR-4N-4		U.G.C.B	
* //	CB:62:01:90	//	//	CM-22B		R.A	
12	KA:40:13:30	Slide Switch	スライドスイッチ	SS-12	Voltage Selector	G.B	
13	LA:00:29:50	2P Relay Terminal	2 P 中継端子台	MA0092A		A.G.B	
14	LB:20:18:10	AC Outlet	A C アウトレット	S-i6498		R	Δ
* //	LB:20:30:60	//	//			U.C	Δ
15	MG:00:16:30	Power Cord	電源コード	6A 250V 2m		R	Δ
* //	MG:00:23:80	//	//	13A 125V 1.98m		U.C	Δ
* //	MG:00:09:20	//	//	7.5A 250V 2.5m		A	Δ
* //	MG:00:14:90	//	//	7.5A 250V 2.5m	Interchangeable	A	Δ
* //	MG:00:23:10	//	//	7.5A 250V 2m		A	Δ
* //	MG:00:09:10	//	//	6A 250V 2m		G.B	Δ
16	CB:06:92:50	Binding Tie	インシュロックタイ	BK-1			
17	AA:62:33:30	Side Frame (L)	サイドフレーム(L)		M-80		
18	AA:60:38:50	Special Screw	段付ネジ				
20	CB:06:88:80	Plastic Rivet	プラスチックリベット	No-1027		R	
21	CB:09:99:10	Rubber Cushion	防振ゴム				
22	Ei:33:00:86	Binding Head Screw	鉄バインドタッピンネジ	3×8 FCM3-BI	PACK		
23	ED:33:00:66	//	//	3×6 FCM3-BI	PACK		A.G.B
24	EV:20:31:06	Plain Washer	平座金	φ6-φ13.1=1ZMC2-BI			
* 25	NA:09:01:80	Meter Circuit Board	メーターシート			R.U.C	
* //	NA:09:01:90	//	//			A.G.B	
26	JB:00:11:00	Pilot Lamp	パイロットランプ	8V150mA L=300			
27	CB:63:05:30	Lamp Reflector	ランプリフレクター		M-80		
28	CB:63:05:50	Diffusing Plate	ディフュージングプレート		M-80		
29	CB:63:03:20	Meter Sheet	メーターシート		M-80		
30	CB:63:07:50	Lamp Cap.	ランプキャップ				
31	CB:63:03:40	Diffusing Film	ディフュージングフィルム		M-80		
32	CB:63:02:90	Meter Cover	メーターカバー		M-80		
33	CB:63:03:90	Reflector	リフレクター		M-80		
35	ED:33:01:06	Binding Head Screw	鉄バインド小ネジ	3×10 FCM3-BI	PACK		
36	NA:08:45:70	Power Circuit Board	電源シート			U	
* //	NA:08:45:80	//	//			G.B	
* //	NA:08:45:90	//	//			R	
* //	NA:08:46:00	//	//			A	
* //	NA:08:48:80	//	//			C	

* New Parts (新規部品)

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Ref. No.	Part No.	Description	部 品 名	Remarks	Common Model	Markets	ランク
37	FZ 00:60:10	Electrolytic Cap. Set	47000 μ F/45V	ケミコンセット			
38	FZ 00:60:20	"	33000 μ F/56V	"			
80	EX 60:00:80	Cup Screw	3X24(ϕ 8) FCRM3-BI	カップスクリュー			
101	BA 09:05:80	Heat Sink (L)		ヒートシンク (L)		U.C	
	BA 09:02:40	" (L)		" (L)		R.A.G.B	
102	BA 09:05:90	" (R)		" (R)		U.C	
	BA 09:00:40	" (R)		" (R)		R.A.G.B	
103	iL 00:06:00	Mica Base	MT-200	マイカベース			
104	EZ 00:13:50	Cup Screw	3X14(ϕ 8) FCRM3-BI	カップスクリュー			
* 41	NA 09:02:00	Main Circuit Board		メインシート		R.U.A.C	
* //	NA 09:02:10	"		"		G.B	
42	AA 62:19:80	Top Cover		トップカバー	M-80		
43	AA 62:20:10	Side Frame(R)		サイドフレーム(R)	"		
44	AA 62:20:30	Bottom Cover		ボトムカバー	"		
45	AA 62:20:40	Stay Heat Sink		ヒートシンクステー	"		
46	AA 62:96:30	Rear Panel		リヤパネル		R	
	AA 62:96:40	"		"		U.C	
	AA 62:96:50	"		"		A	
	AA 62:96:60	"		"		G.B	
47	CB 65:29:50	Sheet		シ ー ト	M-65		
48	NB 62:03:20	Leg Ass'y		脚	M-80		
49	NB 62:04:60	Button Ass'y		ボ タ ン Ass'y	"		
50	BA 08:58:70	Knob		ツ マ ミ			
51	CB 60:14:40	Voltage Selection Stopper		V S ス ト ッ パ ー		G.B	
52	CB 06:88:80	Plastic Rivet	No.1027	プラスチックリベット			
53	CB 63:03:70	Side Plate		サイドプレート	Left	M-80	
54	CB 63:03:80	"		"	Right	"	
55	CB 63:07:60	Dumper (M)		ダ ン バ ー	"		
56	CB 60:13:40	Spacer		ス ペ ー サ ー			
57	CB 63:07:80	Dumper (H)		ダ ン バ ー	M-80		
90	CB 62:20:60	Anti-Vibration Tape		防 振 テ ー プ			
58	ED 33:00:66	Binding Head Screw	3x6 FCM3-BI	鉄バインド小ネジ	PACK		
59	Ei 33:00:86	Binding Head	3x8 FCM3-BI	鉄バインドタッピンネジ	PACK		
60	EK 36:50:80	BW Head Tapping Screw	3x8(ϕ 10)ZMC2-BI	鉄BWヘッドタッピン			
61	EX 60:00:30	BW Head Screw	4x132 FCM3-BI	B W ヘ ッ ド 小 ネ ジ			
62	EB 34:01:00	Flat Head Screw	4x10 FCM3-BI	鉄 皿 小 ネ ジ			
63	EK 33:00:30	BW Head Tapping Screw	3x10(ϕ 8)FCM3-BI	鉄BWヘッドタッピンネジ			
64	AX 60:01:50	Screw	4x8 FCM3-BI	化 粧 ネ ジ			
65	EZ 00:14:00	Ground Terminal Screw	3x13.5 MFNi-II	ア ー ス 端 子 ネ ジ			
66	EV 90:13:60	Toothed Lock Washer	3.6x10x0.8FNM3-3g	鉄セムス平座金			
67	iA 11:69:00	Transistor	2SA1169	ト ラ ン ジ ス タ	TR135~138		
68	iC 27:73:00	"	2SC2773	"	TR131~134		
69	iX 60:32:60	"	2SA1216	"	TR305~308	Inter-changeable	
70	iA 11:69:00	"	2SA1169	"	"		
71	iX 60:32:70	"	2SC2922	"	TR301~304	Inter-changeable	
72	iC 27:73:00	"	2SC2773	"	"		
73	iA 13:06:50	"	2SA1306B	"	TR125, 126		
74	iC 32:98:50	"	2SC3298B	"	TR119, 120		
75	iC 19:53:50	"	2SC1953	"	TR115, 116		
91	CB 61:90:40	Rubber		押 え ゴ ム			
92	CB 63:37:80	Rubber Cushion		防 振 ゴ ム			
105	EV 41:30:36	Toothed Lock Washer	ϕ 3 FCM3-BI	歯 付 座 金	PACK		

*New Parts (新規部品)

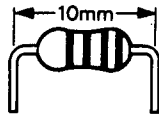
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Parts List for Carbon Resistor

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	*	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	*
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○○○○



10mm

1/6W Type

HF85○○○○



5mm