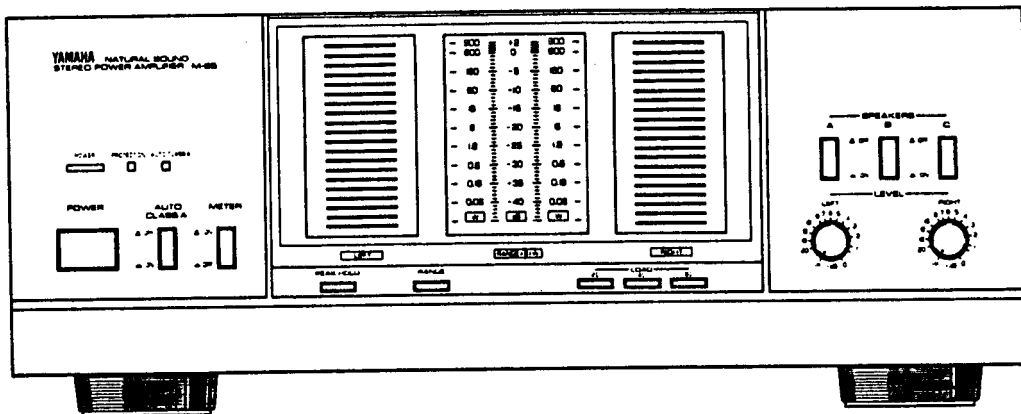


STEREO POWER AMPLIFIER M-85

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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SINCE 1887



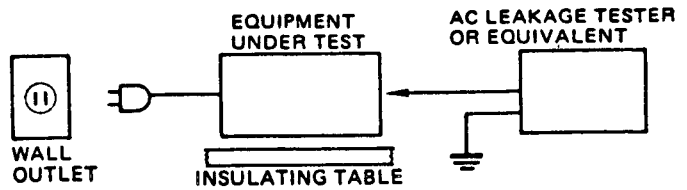
YAMAHA

NIPPON GAKKI CO., LTD. HAMAMATSU, JAPAN

2.9K-124 Printed in Japan '86.4

■ TO SERVICE PERSONNEL

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

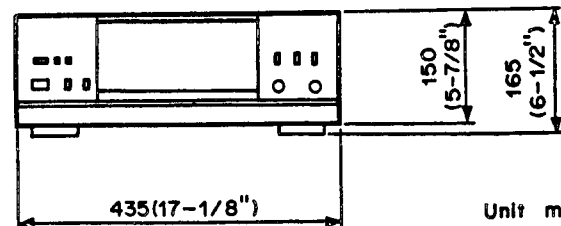
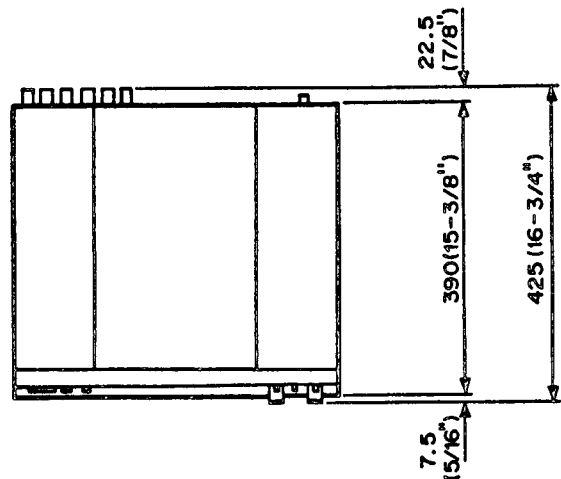
Power Consumption 600 W (U)
1100 W/1300 VA (C)
850 W (R)
1700 W (A.G.B.)

| | |
|------------------------|--|
| 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.

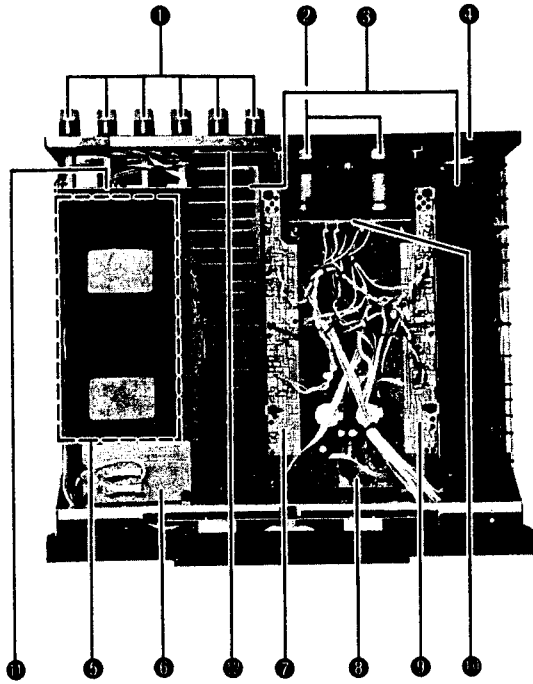
- (U) U.S.A. model
- (C) Canadian model
- (A) Australian model
- (G) European model
- (B) British model
- (R) Others model

■ DIMENSIONS



Unit mm (Inch)

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.

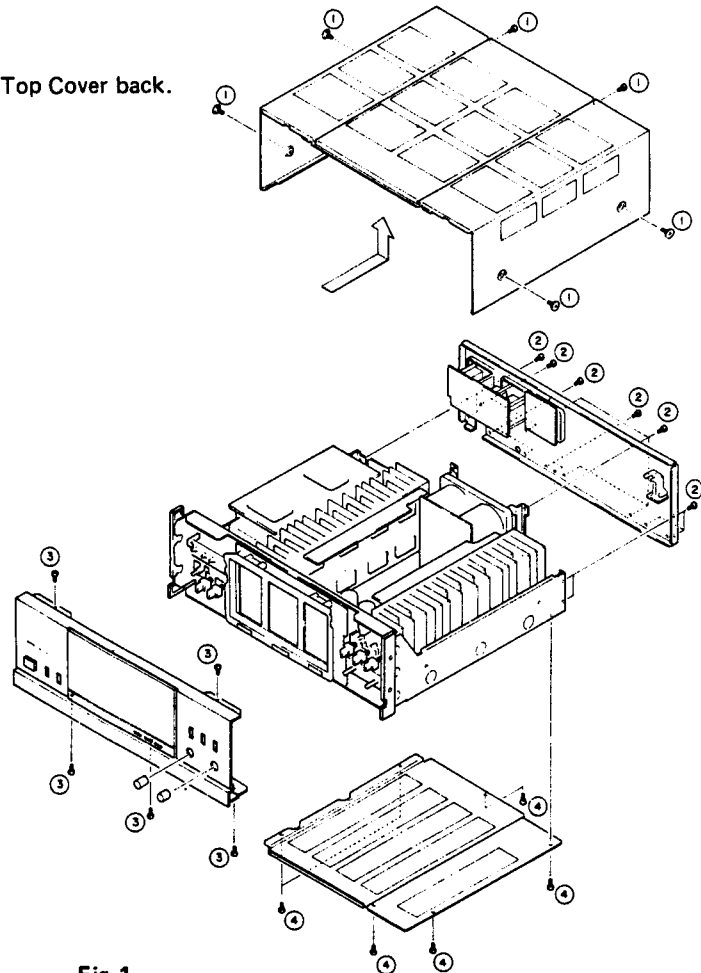
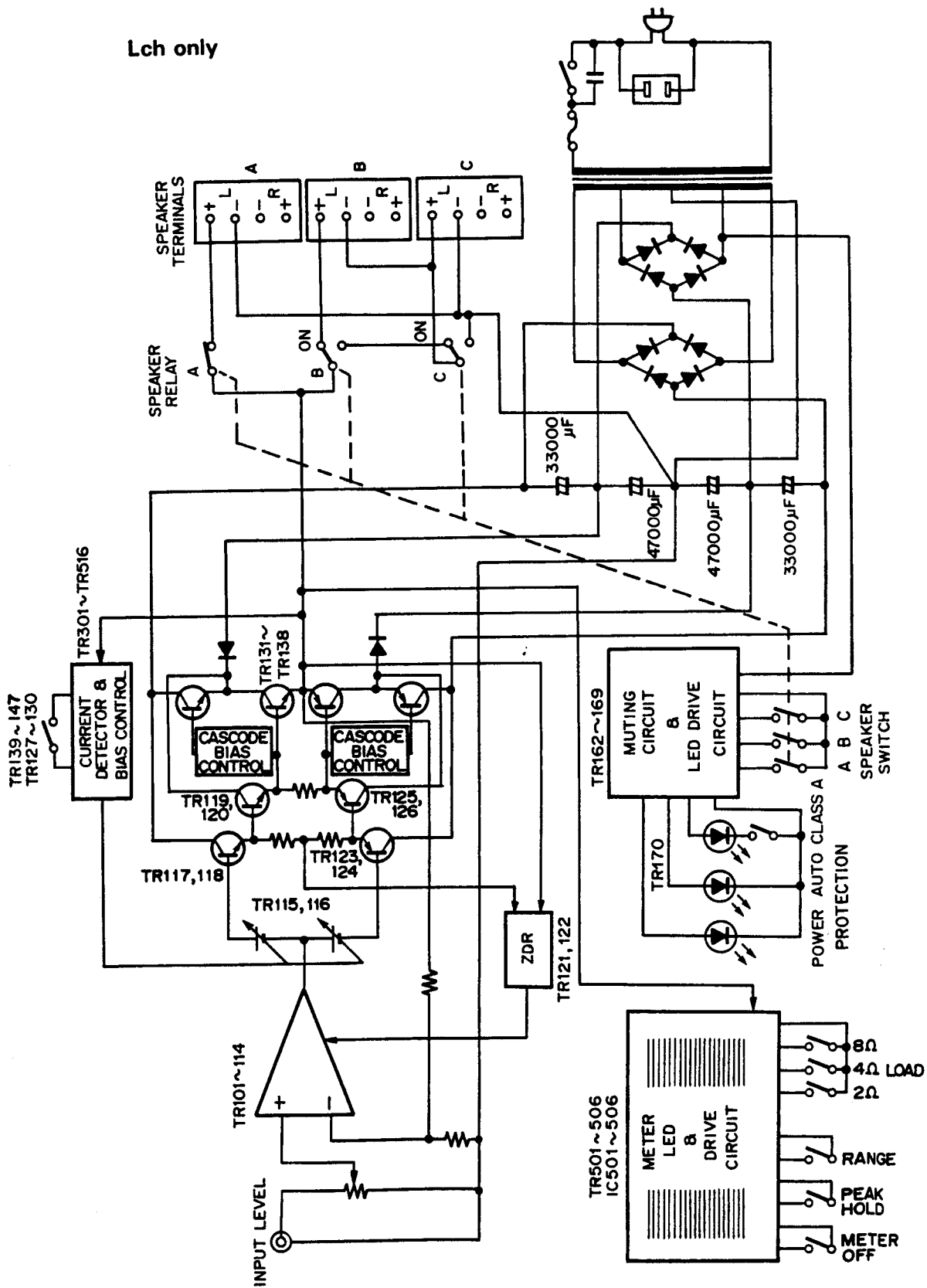
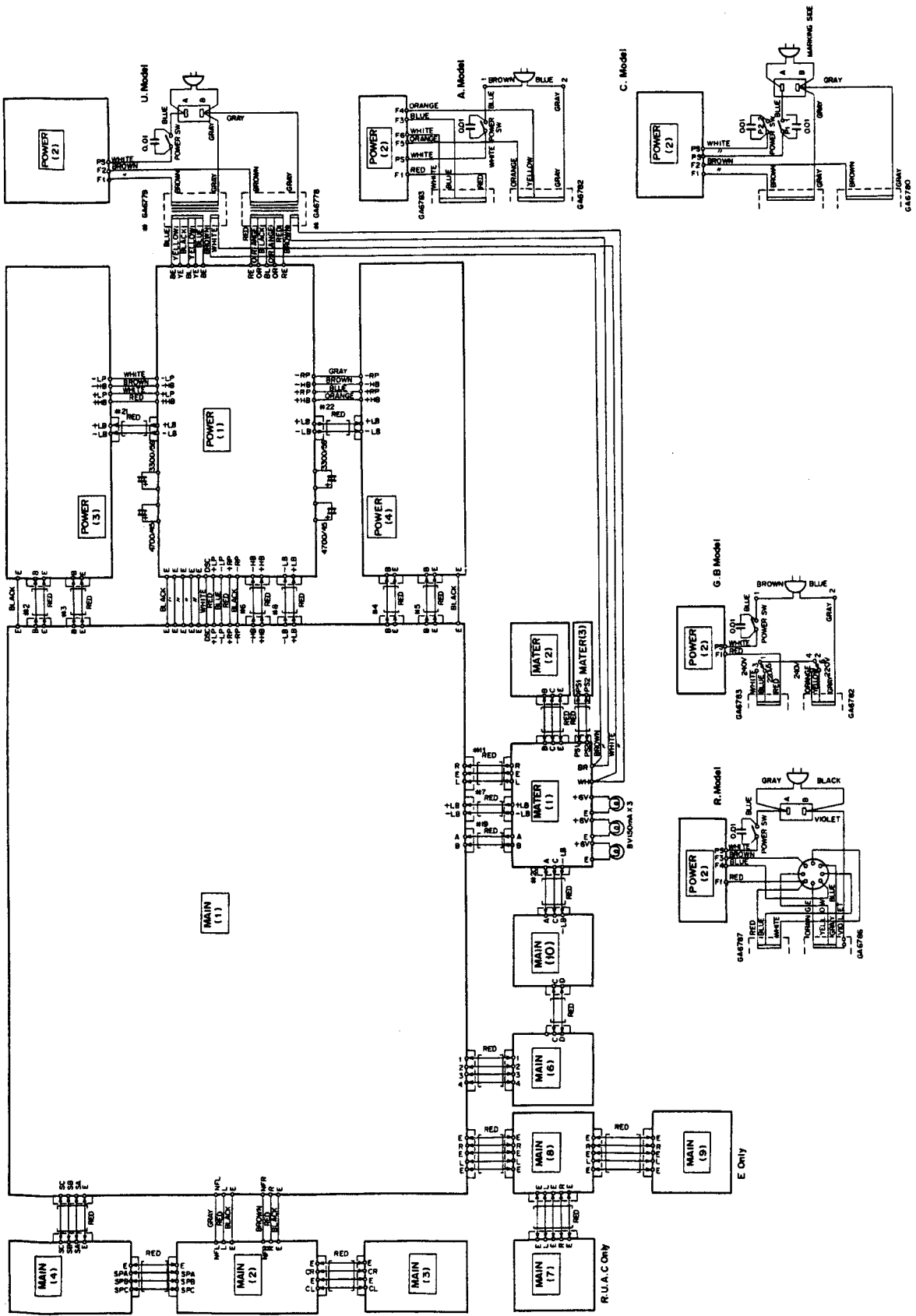


Fig. 1

■ BLOCK DIAGRAM



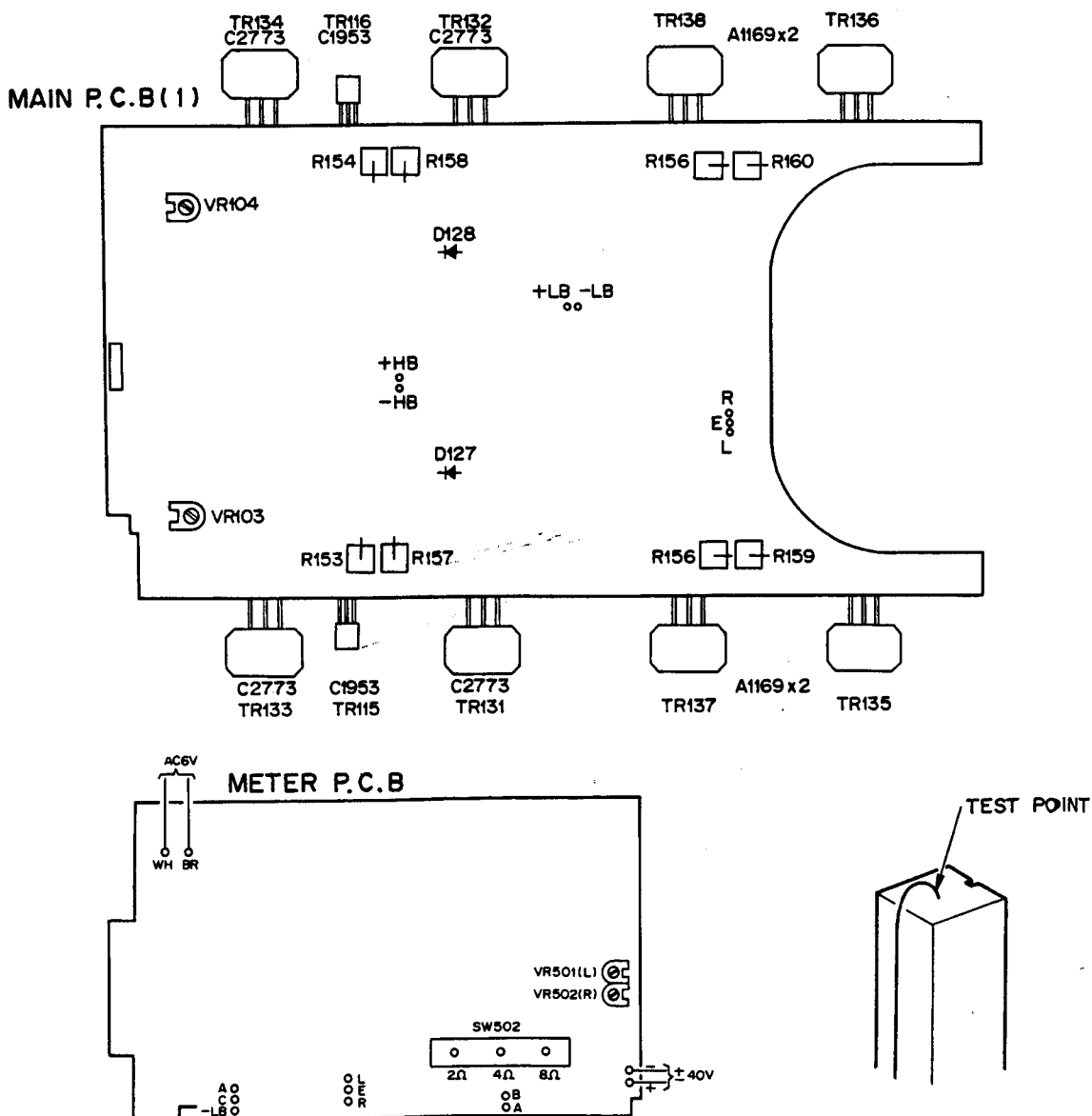
WIRING



■ 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

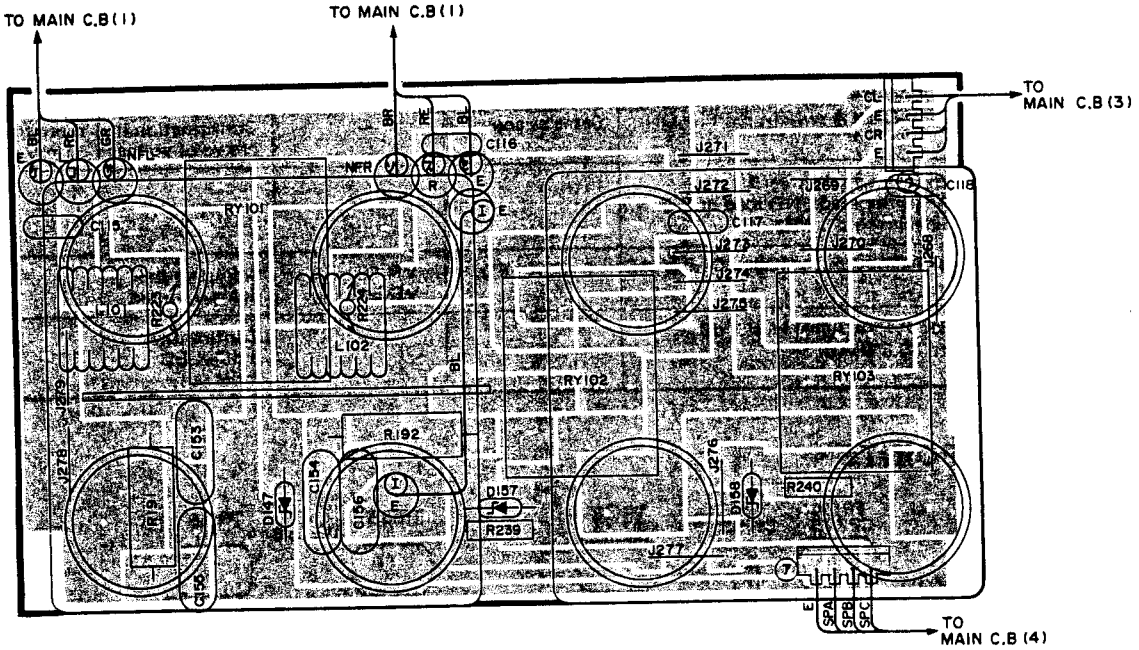
E

M-85

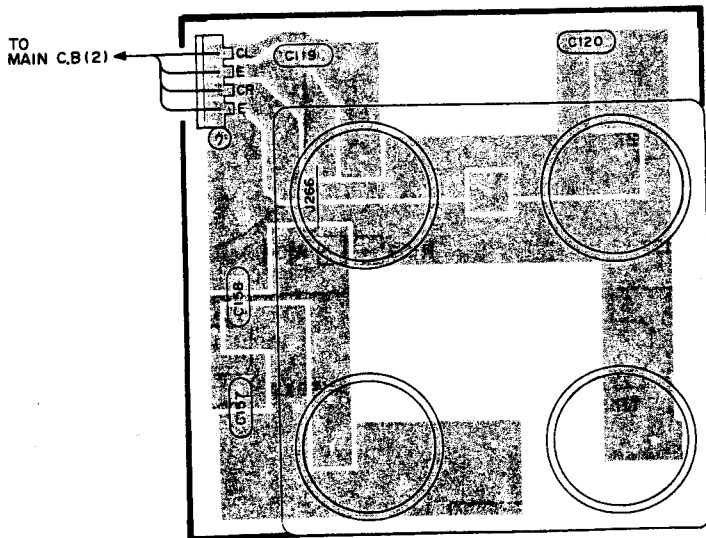
PRINTED CIRCUIT BOARD (Pattern Side)

Note) 文字面: Component Side

MAIN CIRCUIT BOARD (2)



MAIN CIRCUIT BOARD (3)



1

2

3

4

5

6

7

A

B

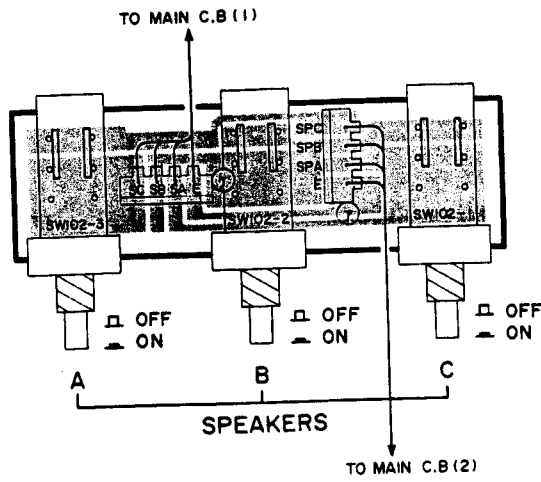
C

D

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

1

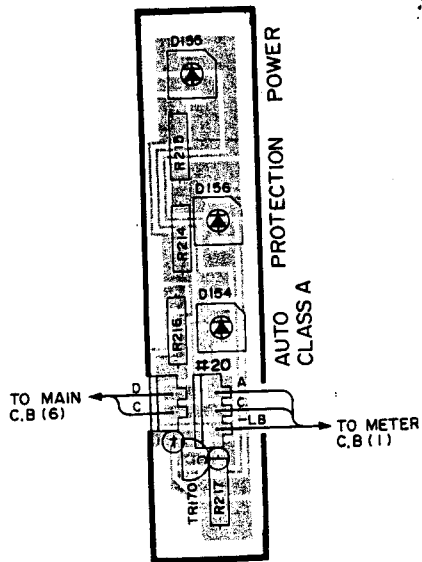
MAIN CIRCUIT BOARD (4)



2

3

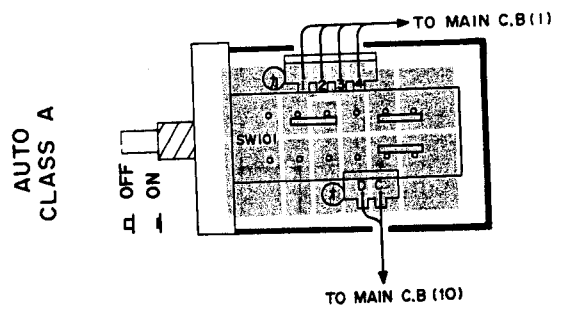
MAIN CIRCUIT BOARD (10)



4

5

MAIN CIRCUIT BOARD (6)



6

7

A

B

C

D

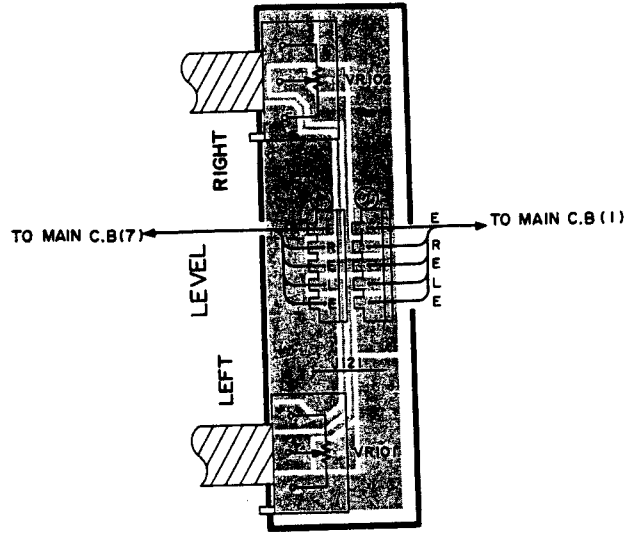
E

M-85

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

1

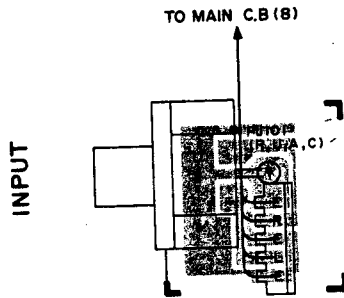
MAIN CIRCUIT BOARD (8)



2

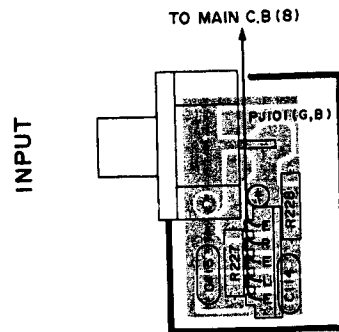
3

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



4

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



5

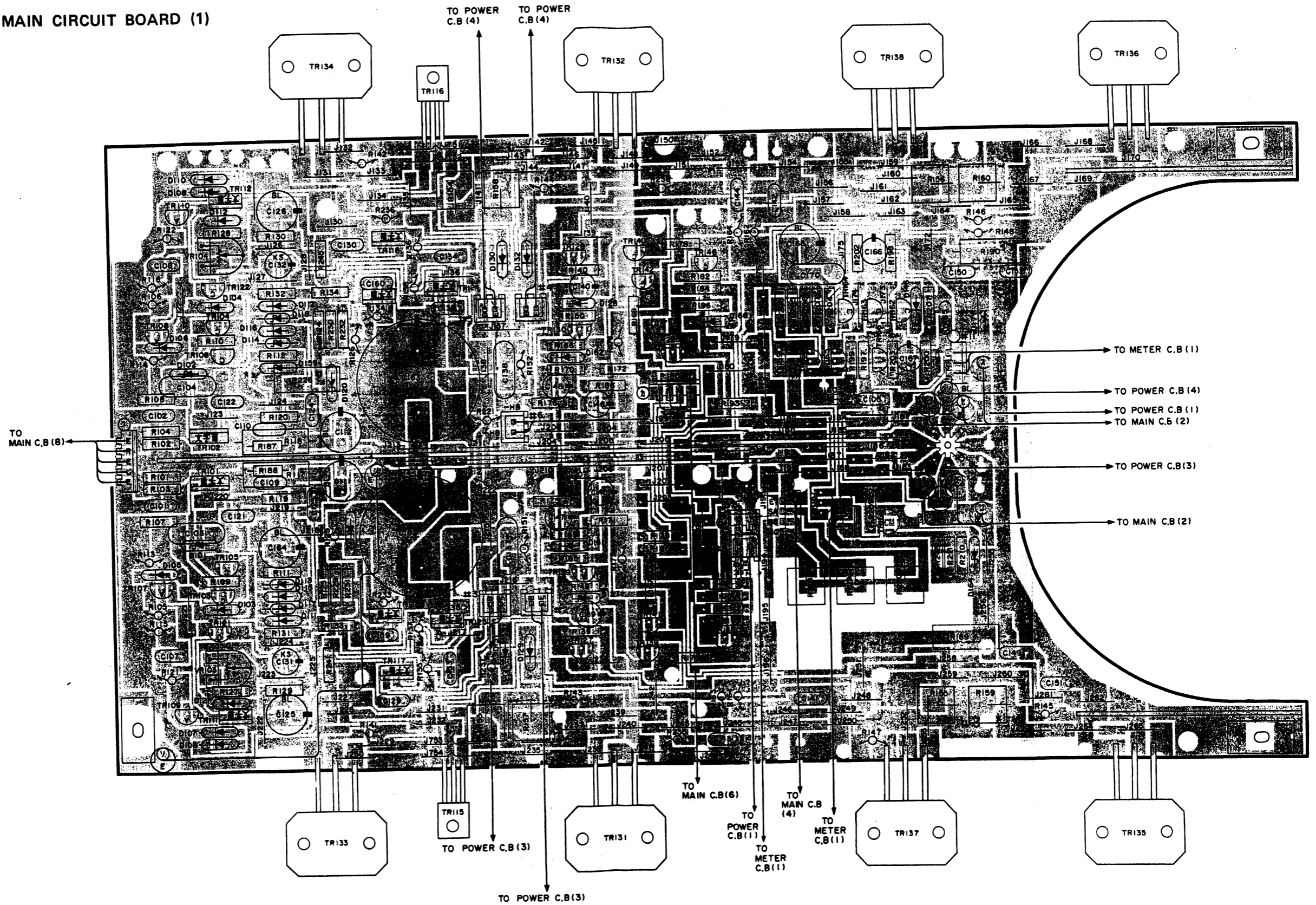
6

7

9

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

MAIN CIRCUIT BOARD (1)



A

B

C

D

E

F

G

H

I

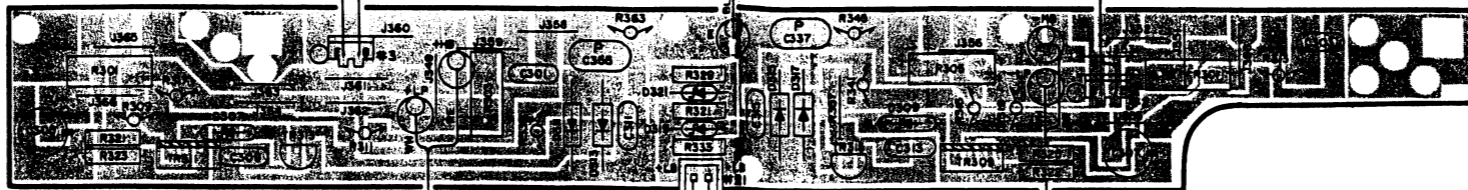
M-85

PRINTED CIRCUIT BOARD (Pattern Side)

Note) 文字面: Component Side

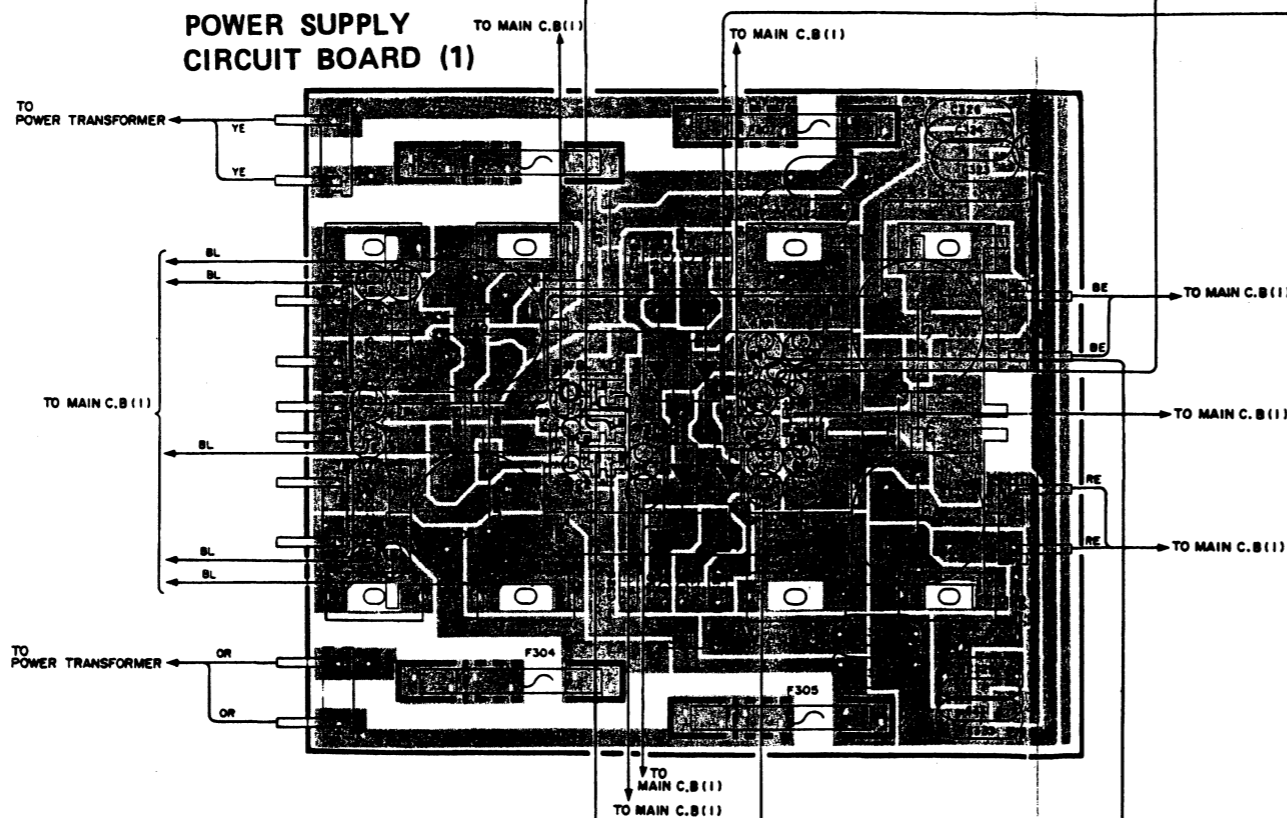
1

POWER SUPPLY CIRCUIT BOARD (3)



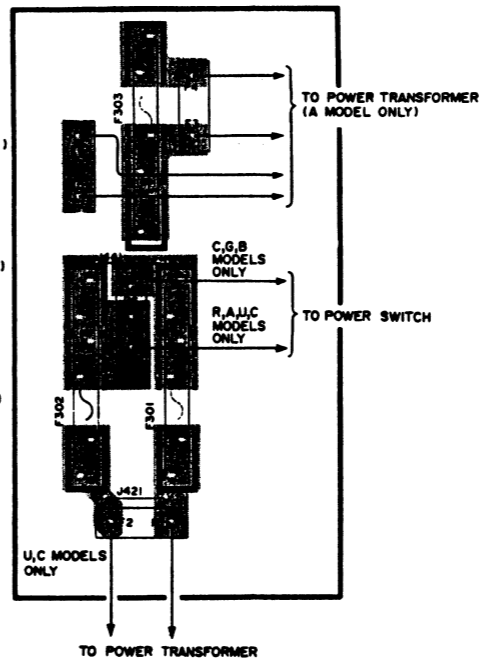
2

POWER SUPPLY CIRCUIT BOARD (1)



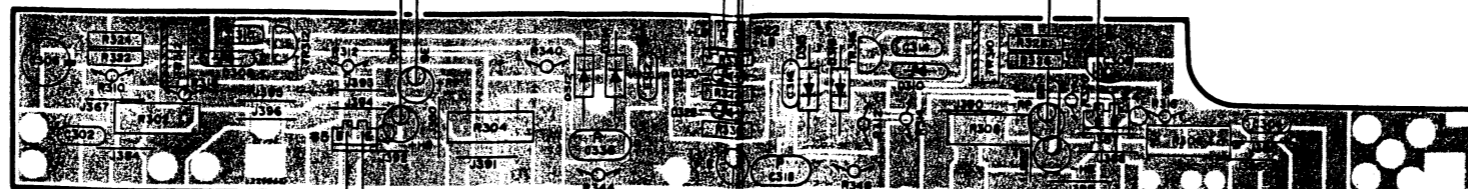
3

POWER SUPPLY CIRCUIT BOARD (2)



4

POWER SUPPLY CIRCUIT BOARD (4)



5

6

7

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)

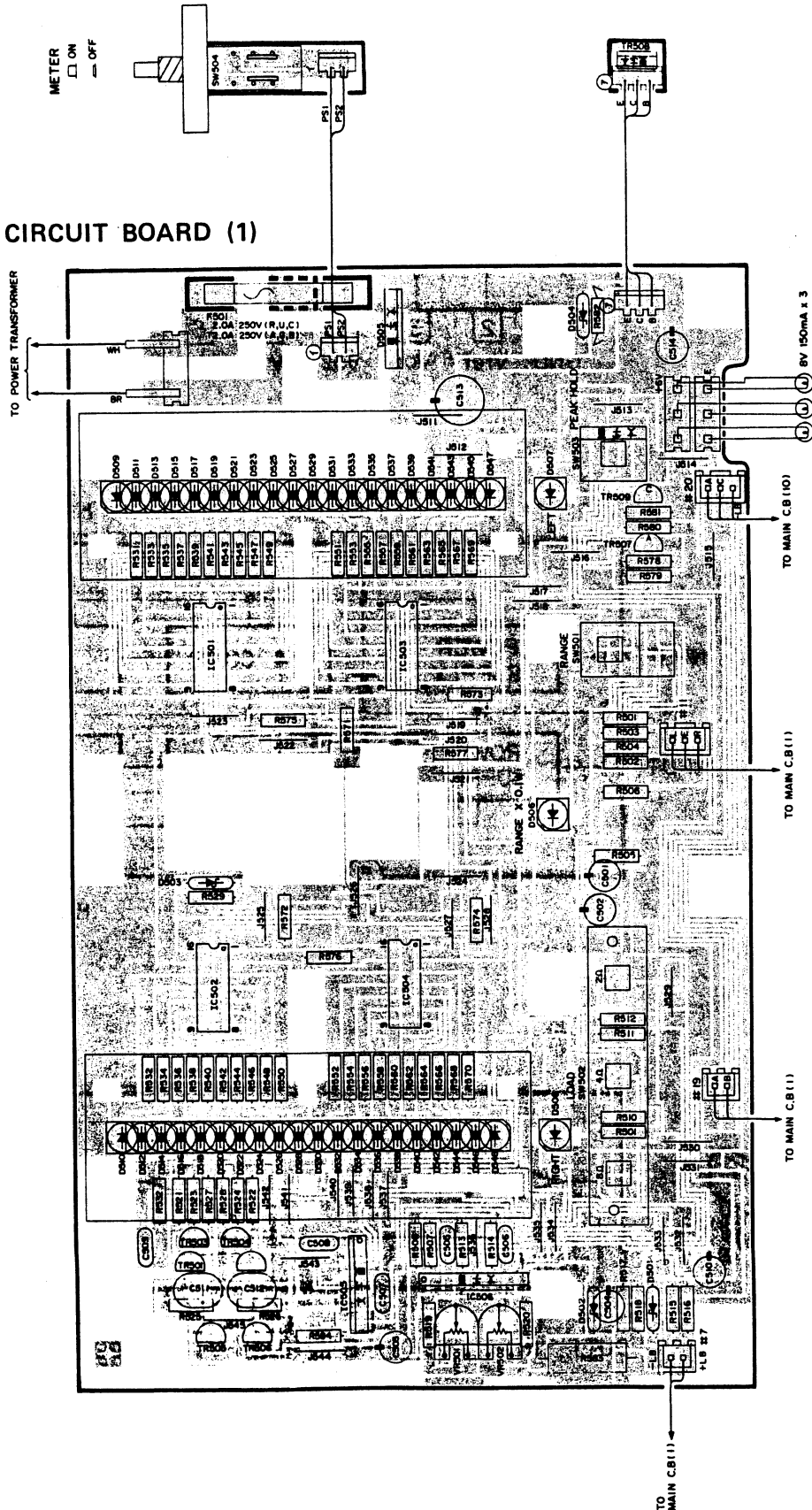
3

4

5

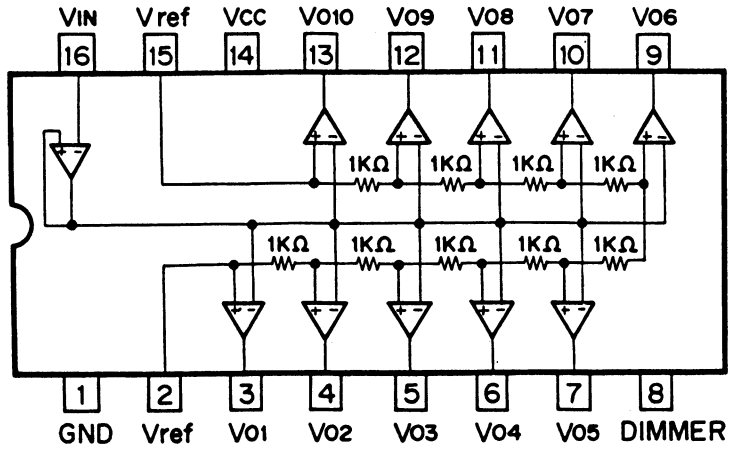
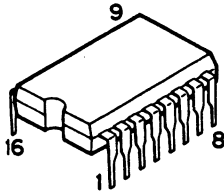
6

7

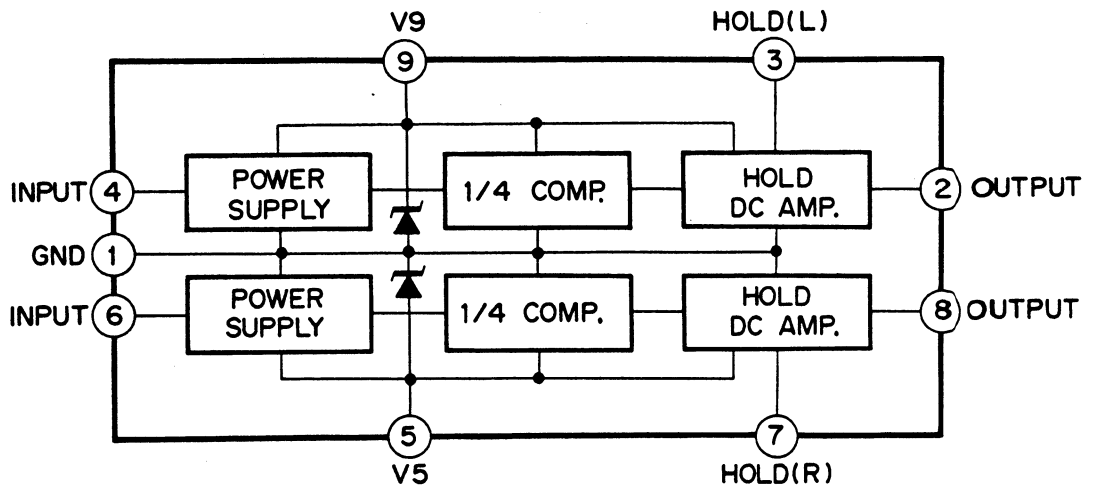
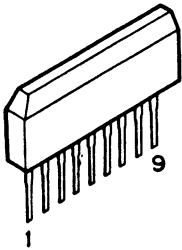


■ IC BLOCK DIAGRAM

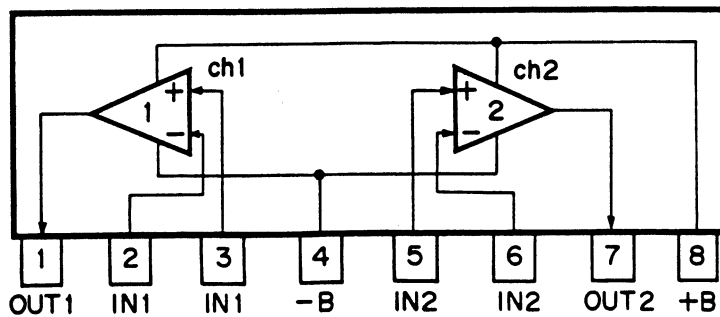
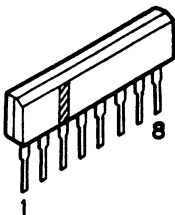
IC501~504
TA7612AP



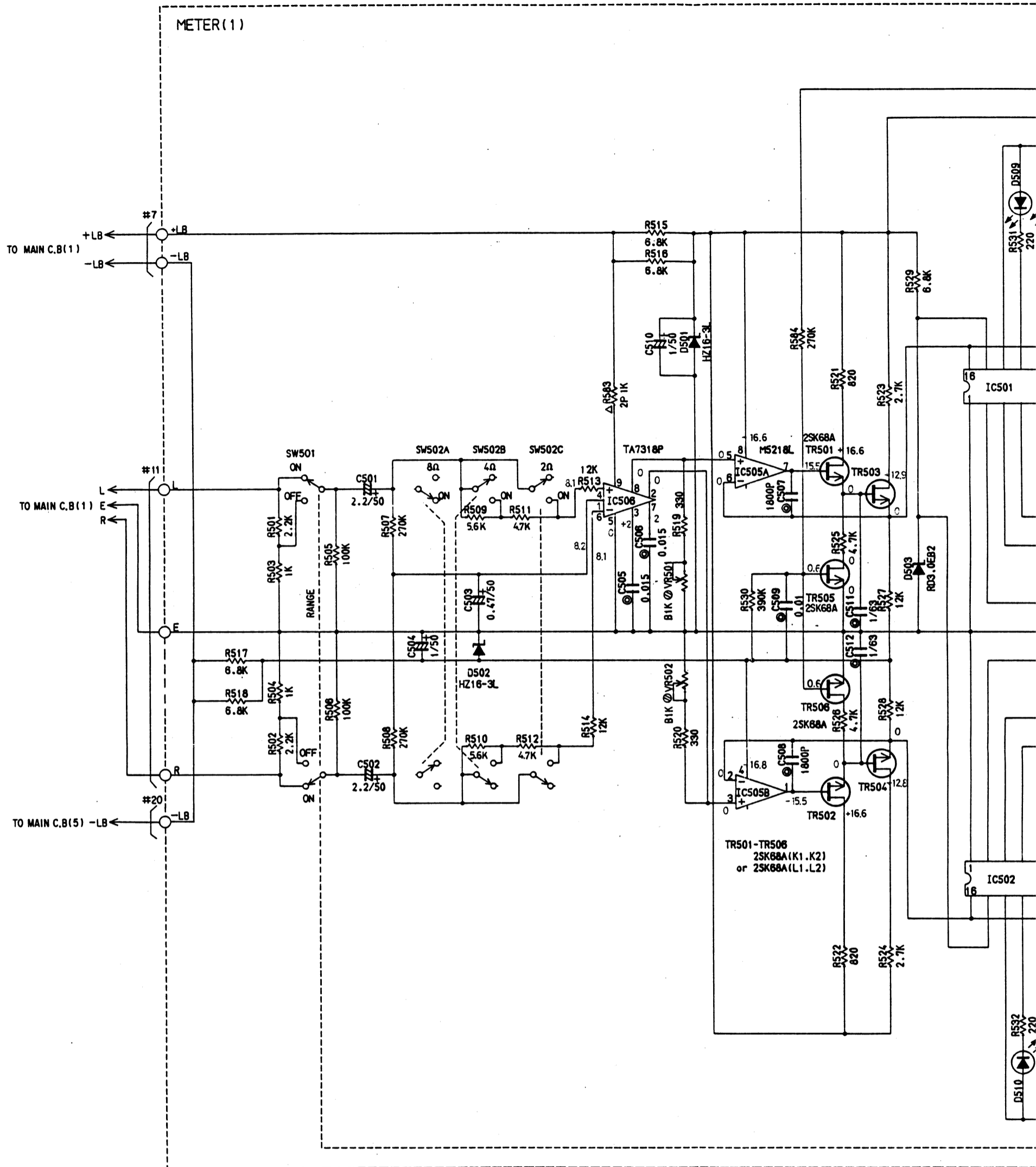
IC506
TA7318P



IC505
M5218L



■ SCHEMATIC DIAGRAM

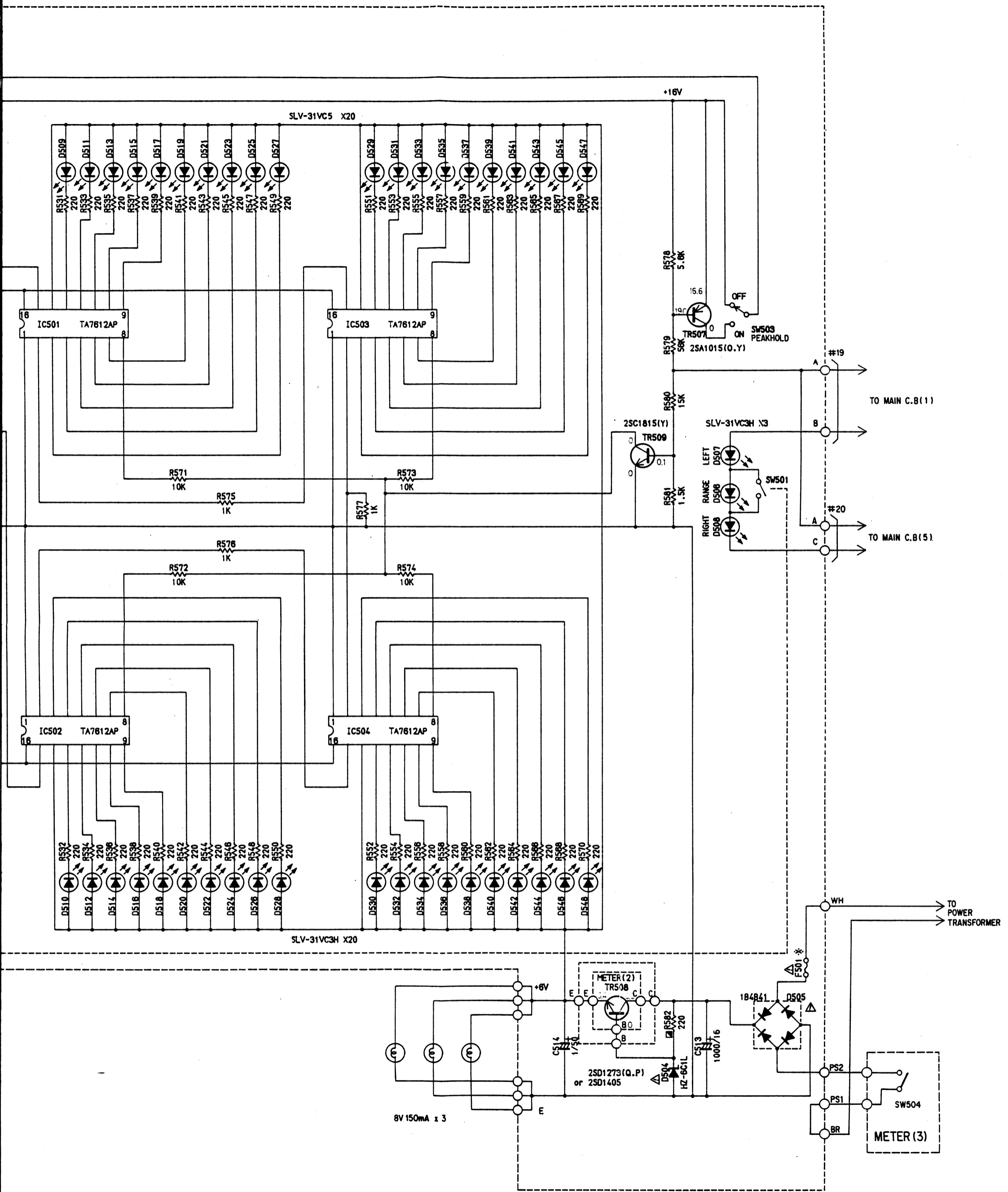


| CAPACITOR | |
|-----------|----------------------------------|
| REMARKS | PARTS NAME |
| NO MARK | ELECTROLYTIC CAPACITOR |
| NO MARK | CERAMIC CAPACITOR |
| ⊙ | POLYESTER FILM CAPACITOR (MYLAR) |
| ○ | POLYSTYRENE FILM CAPACITOR |
| ⊖ | MICA CAPACITOR |
| Ⓟ | POLY PROPYLENE FILM CAPACITOR |
| ● |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

| RESISTOR | |
|----------|---------------------------------|
| REMARKS | PARTS NAME |
| NO MARK | CARBON FILM RESISTOR (1/4W) |
| △ | 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

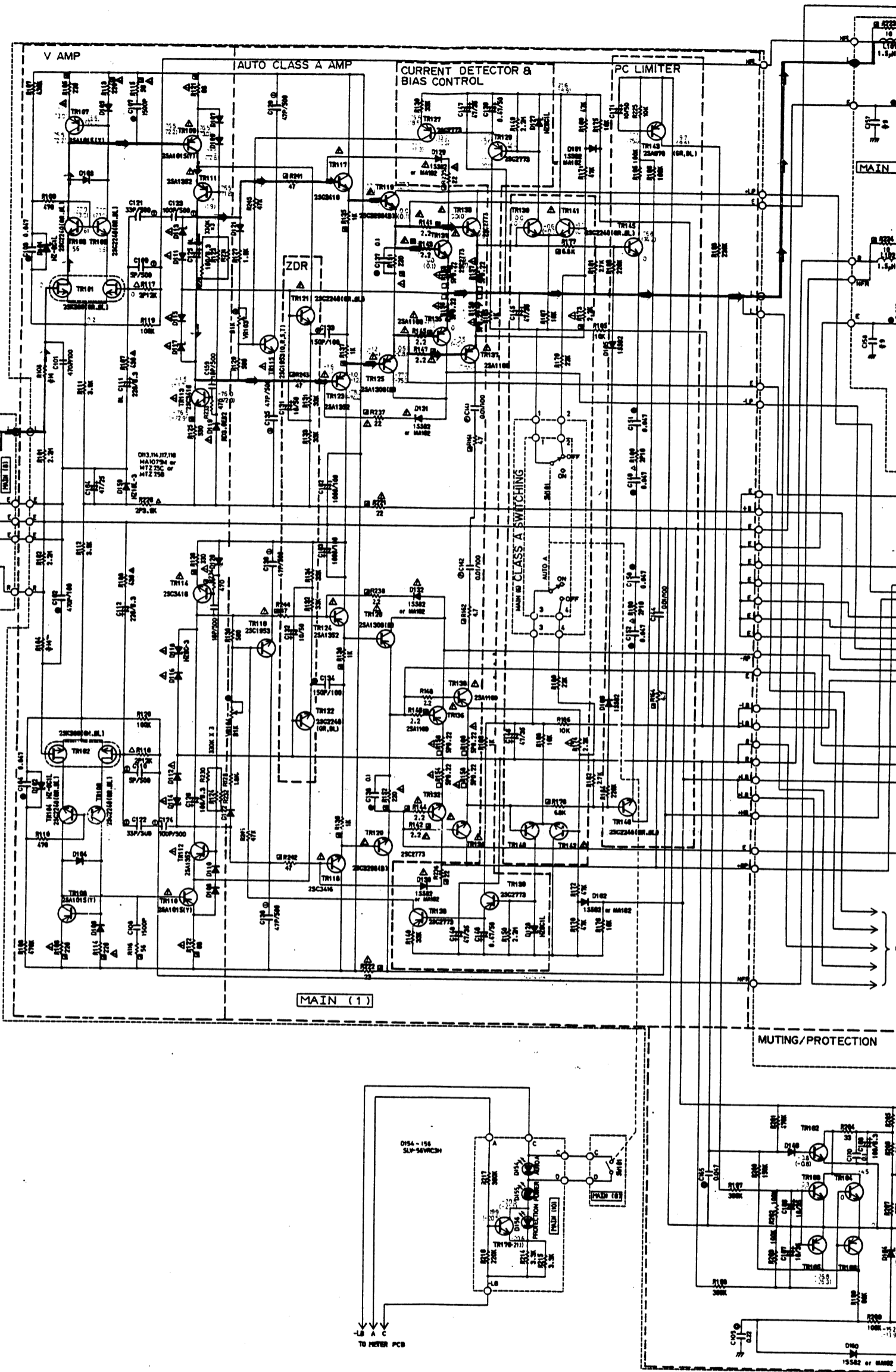
C

D

E

F

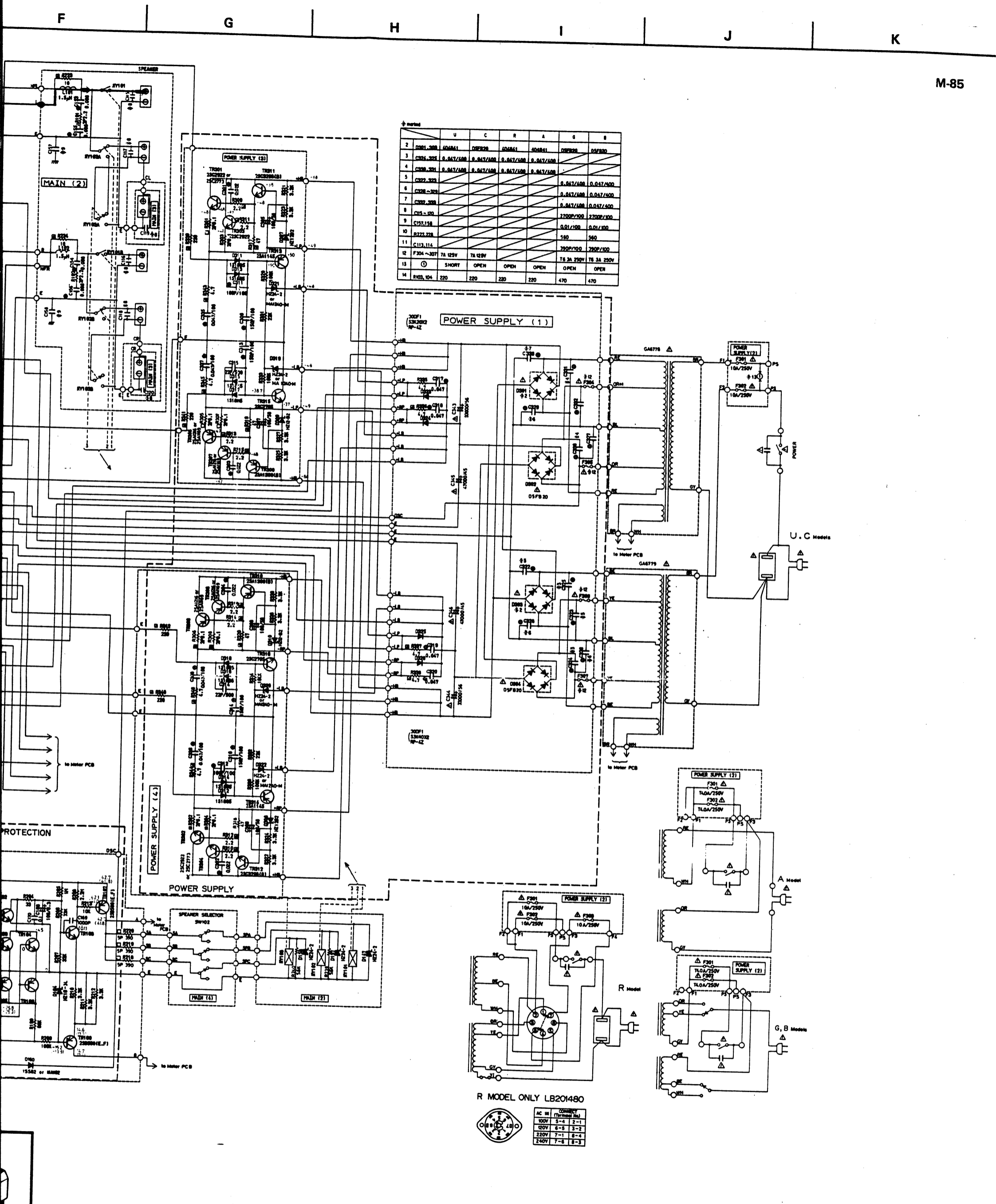
■ SCHEMATIC DIAGRAM



■ 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 2SA1216 2SC2922 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 | |
| | | | | | | | |

1
2
3
4
5
6
7
8



| U | C | R | A | G | B | | |
|----|-----------|-----------|-----------|-----------|-----------|------------|------------|
| 2 | 0.001-300 | 400A41 | 0.0020 | 400A41 | 400A41 | 0.0020 | 0.0020 |
| 3 | C201-325 | 0.047/100 | 0.047/100 | 0.047/100 | 0.047/100 | | |
| 4 | C202-324 | 0.047/100 | 0.047/100 | 0.047/100 | 0.047/100 | | |
| 5 | C221-325 | | | | | 0.047/100 | 0.047/100 |
| 6 | C203-324 | | | | | 0.047/100 | 0.047/100 |
| 7 | C204-324 | | | | | 0.047/100 | 0.047/100 |
| 8 | C151-320 | | | | | 2700P/100 | 2700P/100 |
| 9 | C152-158 | | | | | 0.01/100 | 0.01/100 |
| 10 | R221-228 | | | | | 500 | 500 |
| 11 | C113-114 | | | | | 2700P/100 | 2700P/100 |
| 12 | F304-307 | 7A 125V | 7A 125V | | | T6 3A 250V | T6 3A 250V |
| 13 | ⊙ | SHORT | OPEN | 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 Δ and must be replaced with parts having specifications...
 • All voltages are measured with a 10MΩ/V DC electric volt-meter

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. | マイラコン | C507,508 | | | |
| | UA 25:41:00 | " | " | C509 | | | |
| | FA 15:41:50 | " | " | C505,506 | | | |
| | UA 75:61:00 | " | " | C511,512 | | | |
| | UJ 43:91:00 | Electrolytic Cap. | ケミコン | C513 | | | |
| | UH 16:54:70 | " | " | C503 | | | |
| | UH 16:61:00 | " | " | C504,510,514 | | | |
| | UH 16:62:20 | " | " | C501,502 | | | |
| | HL 32:61:00 | Metal Oxide Film Resistor | 酸金抵抗 | R583 | | | |
| | HV 45:52:20 | Flame Proof Carbon Resistor | 不燃化カーボン抵抗 | R582 | | | |
| | HT 37:03:40 | Pre-Set Potentiometer | 半固定抵抗 | VR501,502 | | | |
| | iA 10:15:71 | Transistor | トランジスター | TR507 | | | |
| | iC 18:15:01 | " | " | TR509 | | | |
| | iD 12:73:00 | " | " | TR508 Inter | | | |
| | iD 14:05:00 | " | " | changeable | | | |
| | IE 10:05:00 | " | F E T | TR501,502,505,506 | | | |
| | IE 10:05:20 | " | " | TR503,504 | | | |
| | iG 03:06:00 | IC | I C | IC501~504 | | | |
| | iG 03:07:00 | " | " | IC506 | | | |
| | iG 05:82:00 | " | " | IC505 | | | |
| | iF 00:15:10 | Zener Diode | ツェナーダイオード | D504 | | | |
| | iF 00:20:80 | " | " | D501,502 | | | |
| | iF 00:18:40 | " | " | D503 | | | |
| | iF 00:77:10 | LED | L E D | D509~548 | | | |
| | iF 00:81:70 | " | " | D506~508 | | | |
| | iH 00:08:10 | Diode | ダイオードブリッジ | D505 | | | |
| | KA 80:45:10 | Push Switch | プッシュスイッチ | SW501 | | | |
| | KA 80:45:20 | " | " | SW502 | | | |
| | KA 80:45:30 | " | " | SW503 | | | |
| * | VA 87:19:00 | " | " | SW504 | | | |
| | KB 00:07:50 | Fuse | ヒューズ | F501 | | A.G.B | △ |
| | KB 00:10:30 | " | " | " | | R.U.C | △ |
| | LA 00:21:20 | Wrapping Terminal | ラッピング端子板 | | | | |
| | LA 00:28:50 | Wrapping Terminal L Type | L型ラッピング端子板 | | | | |
| | LB 20:18:80 | Fuse Holder | ヒューズホルダーピン | | | | |
| | LB 91:80:20 | Base Pin I-Type | XHベースピンI型 | | | | |
| | LB 91:80:30 | " | " | | | | |
| | 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. | マイラコン | C301~304 | | | |
| | FC 36:44:70 | " | " | C317~320 | | | |
| | FU 35:12:20 | FE Mica Cap. | F E マイカコン | C315,316 | | | |
| | FZ 00:06:70 | MM Ceramic Cap. | M M コン | C324,325,330,331 | | R.U.A.C | |
| * | FZ 00:06:70 | " | " | C332,333,326~329 332,333 | | G.B | |
| | UT 45:21:00 | Polipropylene Film Cap. | ポリプロコン | C311,312 | | | |
| | UT 45:21:50 | " | " | C309,310,313,314 | | | |
| | UT 45:44:70 | " | " | C335~338 | | | |
| | UJ 16:81:00 | Electrolytic Cap. | ケミコン | C305~308 | | | |
| | HV 45:32:20 | Frame Proof Resistor | 不燃化カーボン抵抗 | R309~316 | | | |
| | HV 45:34:70 | " | " | R335~338,343~346 | | | |
| | HV 45:44:70 | " | " | R317~320 | | | |
| | HV 45:52:20 | " | " | R339~342 | | | |
| | HZ 00:38:30 | Metal Plate Resistor | 金属板抵抗 | R301~308 | | | |
| | iA 11:45:00 | Transistor | トランジスタ | TR313,314 | | | |
| | iC 27:05:00 | " | " | TR315,316 | | | |
| * | iA 13:06:50 | " | " | TR309,310 | | | |
| * | iC 32:98:50 | " | " | TR311,312 | | | |
| | iH 00:02:40 | Diode | ダイオード | D311~318 | | | |
| | iH 00:09:60 | " | " | D323~326 | | | |
| | iH 00:13:50 | " | " | " | Inter-changeable | | |
| | iH 00:13:60 | " | " | " | " | | |
| | iF 00:72:10 | Zener Diode | ツェナーダイオード | D319~322 | Inter- | | |
| | iF 00:19:40 | " | " | " | changeable | | |
| | iF 00:23:50 | " | " | D307,308,309,310 | | | |
| | iH 00:11:30 | Diode Bridge | ダイオードブリッジ | D302,304 | | | △ |
| | iH 00:11:30 | " | " | D301,303 | | GB.C | △ |
| | iH 00:11:60 | " | " | " | | R.U.A | △ |
| | KB 00:13:90 | Fuse | ヒューズ | F301,302 | | R.U.C | △ |
| | KB 00:07:90 | " | " | " | | A.G.B | △ |
| | KB 00:14:90 | " | " | F303 | | R | △ |
| | KB 00:17:60 | " | " | F304~307 | | GB | △ |
| | KB 00:15:20 | " | " | " | | 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 | L型ラッピング端子板 | | | | |
| | LA 00:24:10 | " | " | | | | |
| | LB 10:18:20 | Base Pin I-Type | XHベースピンI型 | | | | |
| | LA 00:21:40 | Wrapping Terminal I Type | 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

1
2
3
4
5
6
7

A model G, B models Others model

Sub rear panel

Electrolytic cap stay

Sub chassis

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 | |
| * // | GA:67:80:30 | // | // | | | C | |
| * // | GA:67:82:20 | // | // | | | A.G.B | |
| * // | GA:67:86:30 | // | // | | | R | |
| * 9-2 | GA:67:79:30 | // | // | | | U | |
| * // | GA:67:81:30 | // | // | | | C | |
| * // | GA:67:83:30 | // | // | | | A.G.B | |
| * // | GA:67:87:30 | // | // | | | R | |
| 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 | |
| * // | LB:20:30:60 | // | // | | | U.C | |
| 15 | MG:00:16:30 | Power Cord | 電源コード | 6A 250V 2m | | R | |
| * // | MG:00:23:80 | // | // | 13A 125V 1.98m | | U.C | |
| * // | MG:00:09:20 | // | // | 7.5A 250V 2.5m | | A | |
| * // | MG:00:14:90 | // | // | 7.5A 250V 2.5m | Interchangeable | A | |
| * // | MG:00:23:10 | // | // | 7.5A 250V 2m | | A | |
| * // | MG:00:09:10 | // | // | 6A 250V 2m | | G.B | |
| 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 | 3x8 FCM3-BI | PACK | | |
| 23 | ED:33:00:66 | // | // | 3x6 FCM3-BI | PACK | | A.G.B |
| 24 | EV:20:31:06 | Plain Washer | 平座金 | φ6-φ13.1=t2MC2-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 | 3x10 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)

23

22

| 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)

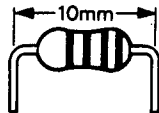
CO-11

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