

# SERVICE MANUAL

INTEGRATED STEREO AMPLIFIER

**SANSUI AU-20000**



**Sansui**

SANSUI ELECTRIC CO., LTD.

This service manual is designed for service engineers to repair, adjust, maintain and order the replacement parts of the AU-20000 correctly. When ordering the parts, use the stock number and parts name specifically referring to the Parts Location and Parts Lists. For general usage and maintenance of the unit, please refer to the Operating Instructions attached with the unit.

## TABLE OF CONTENTS

| <u>Section</u>                          | <u>Title</u>                                         | <u>Page</u> |
|-----------------------------------------|------------------------------------------------------|-------------|
| <b>1. SPECIFICATIONS</b>                |                                                      | <b>2</b>    |
| <b>2. ADJUSTMENTS</b>                   |                                                      | <b>3</b>    |
| 2-1.                                    | Driver Circuit Board Adjustment                      | 3           |
| 2-2.                                    | Power Meter Adjustment                               | 3           |
| <b>3. TROUBLESHOOTING</b>               |                                                      | <b>4</b>    |
| 3-1.                                    | Troubleshooting Chart                                | 4, 5        |
| <b>4. PARTS LOCATION AND PARTS LIST</b> |                                                      | <b>6</b>    |
| 4-1.                                    | F-2500 Input Circuit Board                           | 6           |
| 4-2.                                    | F-2503 Tape Copy Circuit Board                       | 6           |
| 4-3.                                    | F-2501 Equalizer Circuit Board                       | 7           |
| 4-4.                                    | F-2502 Main Volume Circuit Board                     | 8           |
| 4-5.                                    | F-2505 Flat Amplifier Circuit Board                  | 8           |
| 4-6.                                    | F-2488 Tone Control Circuit Board                    | 9           |
| 4-7.                                    | F-2495 Tone Amplifier Circuit Board                  | 9           |
| 4-8.                                    | F-2496 Meter Circuit Board                           | 10          |
| 4-9.                                    | F-2504 Filter Circuit Board                          | 10          |
| 4-10.                                   | F-2507 Driver Circuit Board                          | 11          |
| 4-11.                                   | F-2511 Protector Circuit Board                       | 12          |
| 4-12.                                   | F-2498 Filter Amplifier Circuit Board                | 12          |
| 4-13.                                   | F-2508 Regulated Power Supply Circuit Board          | 13          |
| 4-14.                                   | F-2510 Connector Circuit Board                       | 13          |
| 4-15.                                   | F-2512 Connector Circuit Board                       | 13          |
| 4-16.                                   | F-2497 Circuit Board for Installing Emitter Resistor | 14          |
| 4-17.                                   | F-2484 Meter Lamp Circuit Board                      | 14          |
| <b>5. FIGURES</b>                       |                                                      | <b>15</b>   |
| 5-1.                                    | Semiconductors                                       | 15          |
| 5-2.                                    | Connector & Pin Ass'y                                | 15          |
| 5-3.                                    | Power Supply Voltage changeover                      | 15          |
| <b>6. OTHER PARTS</b>                   |                                                      | <b>16</b>   |
| 6-1.                                    | Parts List (Front Side)                              | 16          |
| 6-2.                                    | Other Parts List                                     | 16          |
| <b>7. SCHEMATIC DIAGRAM</b>             |                                                      | <b>17</b>   |
| 7-1.                                    | Pre Amplifier Section                                | 17          |
| 7-2.                                    | Power Amplifier Section                              | 18          |
| <b>8. PACKING LIST</b>                  |                                                      | <b>19</b>   |
| <b>9. ACCESSORY PARTS LIST</b>          |                                                      | <b>19</b>   |

# 1. SPECIFICATIONS

## POWER OUTPUT

Min. RMS, both channels driven, from 20 to 20,000Hz, with no more than 0.05% total harmonic distortion

170 watts per channel into 8 ohms

170 watts per channel into 4 ohms

85 watts per channel into 16 ohms

Min. RMS, both channels driven, at 1,000Hz, with no more than 0.05% total harmonic distortion

180 watts per channel into 8 ohms

170 watts per channel into 4 ohms

LOAD IMPEDANCE ..... 4, 8, 16 ohms (SYSTEM A or B)

POWER BANDWIDTH ..... 20 to 20,000Hz at or below rated min. RMS power output and total harmonic distortion

TOTAL HARMONIC DISTORTION ..... less than 0.05% at or below rated min. RMS power output

INTERMODULATION DISTORTION (70Hz:7kHz=4:1 SMPTE method)

..... less than 0.05%

FREQUENCY RESPONSE (at 1 watt)

..... 10 to 50,000Hz  $\pm 0$ dB

DAMPING FACTOR ..... approximately 80 at 8 ohms load

INPUT SENSITIVITY AND IMPEDANCE

(1kHz for rated power output)

PHONO-1 ..... 1.5, 3, 6 mV/30, 50, 100 kilo-ohms

PHONO-2 ..... 1.5, 3, 6 mV/50 kiloohms (Max. input capability: 800 mV at 1 kHz, less than 0.1% total harmonic distortion and SENSITIVITY switch at 6 mV)

TUNER ..... 130 mV/50 kiloohms

AUX ..... 130 mV/50 kiloohms

TAPE-1, 2 PLAY (pin jacks)

..... 130 mV/50 kiloohms

TAPE-2 REC/PLAY (DIN socket)

..... 130 mV

MAIN IN ..... 700 mV/50 kiloohms

## OUTPUT LEVEL (1,000Hz)

TAPE-1, 2, 3 REC (pin jacks)

..... 130 mV

TAPE-2 REC/PLAY (DIN socket)

..... 30 mV

PRE OUT ..... 700 mV

## CHANNEL SEPARATION (1 kHz, at rated power output)

PHONO-1, 2 ..... better than 55dB

TUNER ..... better than 60dB

AUX ..... better than 60dB

TAPE-1, 2, 3 PLAY ..... better than 60dB

MAIN IN ..... better than 65dB

## HUM AND NOISE (IHF)

PHONO-1, 2 ..... better than 70dB

TUNER ..... better than 80dB

AUX ..... better than 80dB

TAPE-1, 2, 3 PLAY ..... better than 80dB

MAIN IN ..... better than 100dB

## CONTROLS

BASS .....  $\pm 10$ dB (30Hz)

MIDRANGE .....  $\pm 5$ dB (1 kHz)

TREBLE .....  $\pm 10$ dB (20 kHz)

LOW FILTER ..... -3dB (20, 40 Hz), 12dB/oct.

HIGH FILTER ..... -3dB (7 kHz), 6dB/oct.

..... -3dB (12 kHz), 12dB/oct.

MUTING ..... 0, -10, -30dB

## POWER REQUIREMENTS

POWER VOLTAGE ..... 100, 120, 220, 240V 50/60Hz

120V (Usable 110~130V)

(for U.S.A. & Canada only)

POWER CONSUMPTION.. 360 watts (rated)

1,110 watts (max.)

DEMENSIONS ..... 460 mm (18  $\frac{1}{8}$ " W

178 mm (7  $\frac{1}{16}$ " H

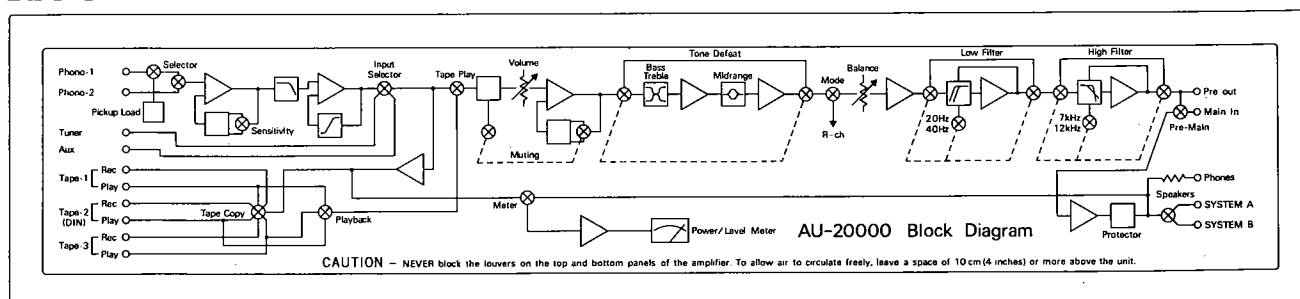
400 mm (15  $\frac{3}{4}$ " D

WEIGHT ..... 23.6 kg (52.0 lbs) net

26.4 kg (58.2 lbs) packed

\* Design and specifications subject to change without notice for improvements.

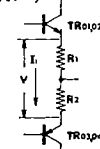
## BLOCK DIAGRAM



## 2. ADJUSTMENTS

### 2-1. Driver Circuit Board Adjustments

- Note:** 1. Master Volume.....Minimum  
 2. Room Temperature .....10~35°C  
 3. For adjustment, run the unit for more than 5 minutes after the power is switched on.

| STEP | SUBJECT      | EQUIPMENT     | MEASURE OUTPUT                            | ADJUST                     | ADJUST FOR   | CONDITION                                                                                                                                                                                                                                          |
|------|--------------|---------------|-------------------------------------------|----------------------------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.   | DC 0V        | DC Volt Meter | Speaker Terminal<br>Fig. 3                | F-2507<br>VR01<br>(Fig. 2) | 0V<br>±10mV  | VR02....Minimum<br>(Counterclockwise)<br>※ 2)<br> $I_1 = \frac{V}{R_1 + R_2}$ $= \frac{35}{0.94} \approx 35\text{mA}$ $R_1, R_2 = 0.47\Omega$ $V = 35\text{mV}$ |
| 2.   | Bias Current | DC Volt Meter | F-2510<br>2-4 (Connector Pin)<br>(Fig. 1) | F-2507<br>VR02<br>(Fig. 2) | 35mV<br>※ 1) |                                                                                                                                                                                                                                                    |

※ 1) Instead of measuring bias current, set the voltage to 35mV by VR02 between connector-pins 2 and 4 on both channels as Fig. 1, since there are no quick acting fuses in the power amplifier sections.

※ 2) On one channel, bias current,  $I_1$  is current which flows into one power transistor, 25C1585.

Nemaly, total current on one channel= $I_1 \times 3$

L-CH.....TR01, TR05, TR09

R-CH .....TR02, TR06, TR10

Fig. 1

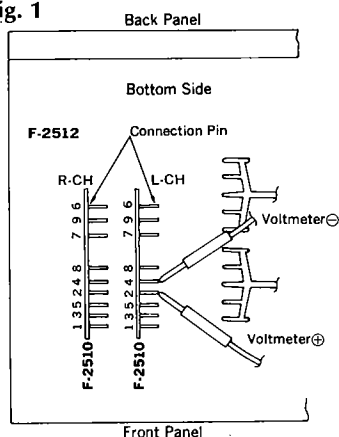


Fig. 2

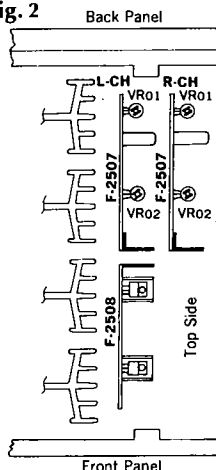
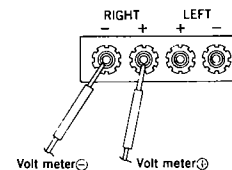


Fig. 3 Speaker Terminal



### 2-2. Power Meter Adjustments

- Note:** 1. Room Temperature.....23±5°C  
 2. Speaker load.....8Ω  
 3. Meter Position .....0dB  
 4. Master Volume .....Max.  
 5. Input .....AUX  
 6. Input Signal .....Sine Curve (1kHz)  
 7. For adjustment, run the unit for more than 5 minutes after the power is switched on.

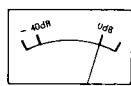
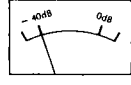
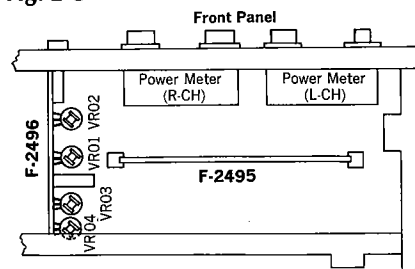
| STEP | SUBJECT                | OUTPUT LEVEL  | ADJUST                                            | METER POSITION                                                                                     |
|------|------------------------|---------------|---------------------------------------------------|----------------------------------------------------------------------------------------------------|
| 1.   | Power Meter Adjustment | 36.9V (0dB)   | F-2496 Fig. 2-3<br>R-CH.....VR04<br>L-CH.....VR03 | 0dB  Fig. 2-1   |
| 2.   | Same as above          | 369mV (-40dB) | F-2496 Fig. 2-4<br>R-CH.....VR02<br>L-CH.....VR01 | -40dB  Fig. 2-2 |

Fig. 2-3



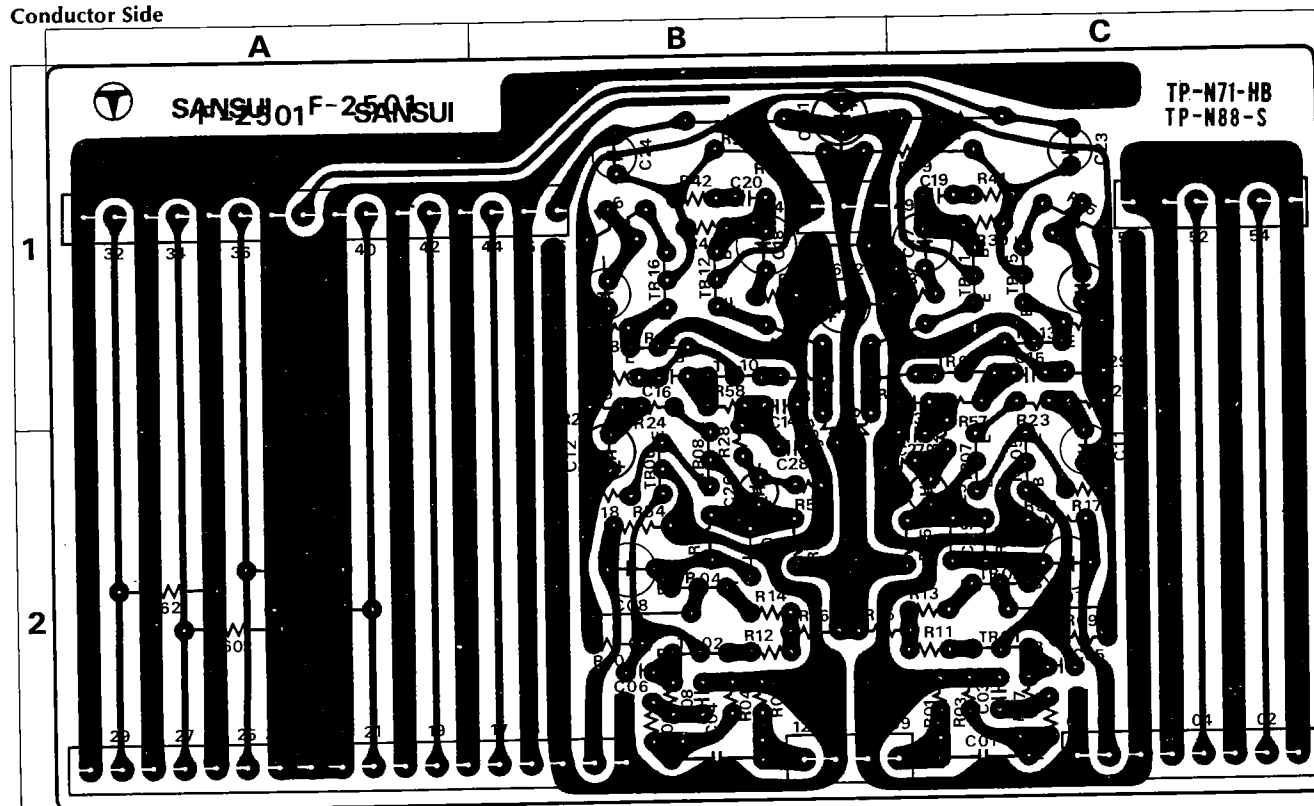
# 3. TROUBLESHOOTING

## 3-1. Troubleshooting Chart

| Symptom                                                 | Cause                                                                                                                                                                                                              |
|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1. Troubles on Power Supply Section</b>              |                                                                                                                                                                                                                    |
| 1-1. Voltage $\pm B$ not supplied to F-2496, F-2507     |                                                                                                                                                                                                                    |
| 1) Defective AC line of power section                   | 1. AC Fuse F701 open<br>2. Imperfect contact of AC switch, S702<br>3. R01 or R02 open on F-2511<br>4. Inoperative inrush absorber circuit                                                                          |
| 2) $\pm 85V$ , Input voltage not supplied to F-2508     | 5. F01 or F02 open on F-2511<br>6. Defective D03 or D04 on F-2511                                                                                                                                                  |
| 3) $\pm 35V$ not supplied to F-2496                     | 7. Defective D01 or D02 on F-2508<br>8. Defective TR01, TR02 or TR05~TR11 on F-2508<br>9. Defective ZD01 on F-2508                                                                                                 |
| 4) $\pm 65V$ not supplied to F-2507                     | 10. Defective D01 or D02 on F-2508<br>11. Defective TR03, TR04 or TR11~TR16<br>12. Defective ZD02 on F-2508                                                                                                        |
| <b>2. Troubles on Power Amplifier Section</b>           |                                                                                                                                                                                                                    |
| 2-1. Power Amplifier inoperative                        |                                                                                                                                                                                                                    |
| 1) AC Fuse, F701 opens                                  | 1. Power transistor shorted<br>2. TR01 opened on F-2497<br>3. TR10 or TR11 shorted on F-2507                                                                                                                       |
| 2) AC fuse, F701 not opened<br>(Protector lamp lighted) | 4. TR08 or TR09 shorted on F-2507<br>5. D06 or D07 shorted on F-2507<br>6. TR02, TR06 or TR07 shorted on F-2507                                                                                                    |
| 2-2. Inproper Bias Current                              | 7. VR01 or VR02 out of adjustment or defectiv on F-2507<br>8. TR01 shorted on F-2497                                                                                                                               |
| <b>3. Troubles on Power Meter Circuit</b>               |                                                                                                                                                                                                                    |
|                                                         | 1. VR01 or VR02 out of adjustment on F-2496<br>2. Defective IC01, IC02 on F-2496<br>3. Defective D01~D08 on F-2496<br>4. Defective TR01~TR04 on F-2496<br>5. Defective Meter switch S01<br>6. Defective Meter M701 |

# 4-3. F-2501 Equalizer Circuit Board (Stock No. 7550801)

Conductor Side

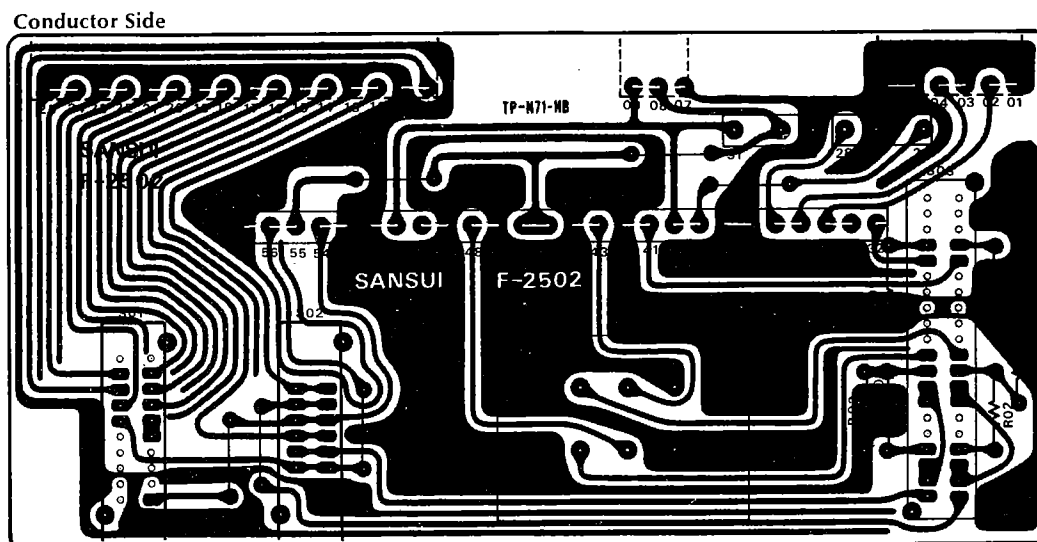


## Parts List

| Parts No. | Stock No.  | Description   | Position | Parts No. | Stock No. | Description             | Position  | Parts No. | Stock No. | Description   | Position  |
|-----------|------------|---------------|----------|-----------|-----------|-------------------------|-----------|-----------|-----------|---------------|-----------|
| TR01      | 0306071    | 25C1313 (G)   | 2C       | C01, 02   | 0600228   | 0.22 $\mu$ F 50V M.C.   | 2C, 2B    | R23, 24   | 0106391   | 390 $\Omega$  | 1C, 1B    |
|           | or         |               |          | C03, 04   | 0660330   | 33pF 50V C.C.           | 2C, 2B    | R25, 26   | 0106183   | 18k $\Omega$  | 2C, 2B    |
| TR02      | 0306072    | 25C1313 (H)   | 2B       | C05, 06   | 0660100   | 10pF 50V C.C.           | 2C, 2B    | R27, 28   | 0231153   | 15k $\Omega$  | 2C, 2B    |
|           | or         |               |          | C07, 08   | 0530470   | 47 $\mu$ F 6.3V E.C.    | 2C, 2B    | R29, 30   | 0231823   | 82k $\Omega$  | 1C, 1B    |
| TR03      | 0306071    | 25C1313 (G)   | 2C       | C09, 10   | 0660100   | 10pF 50V C.C.           | 2C, 2B    | R31, 32   | 0106681   | 680 $\Omega$  | 1B, C, 1B |
|           | or         |               |          | C11, 12   | 0510470   | 47 $\mu$ F 6.3V E.C.    | 2C, 2B    | R33, 34   | 0106681   | 680 $\Omega$  | 1C, 1B    |
| TR04      | 0306072    | 25C1313 (H)   | 2B       | C13, 14   | 0630476   | 0.0047 $\mu$ F 50V P.C. | 1C, 1B    | R35, 36   | 0231334   | 330k $\Omega$ | 1, 2B     |
|           | or         |               |          | C15, 16   | 0660330   | 33pF 50V C.C.           | 1C, 1B    | R37, 38   | 0106223   | 22k $\Omega$  | 1C, 1B    |
| TR05, 06  | 0306071    | 25C1313 (G)   | 2C       | C17, 18   | 0530470   | 47 $\mu$ F 6.3V E.C.    | 1C, 1B    | R39, 40   | 0231684   | 680k $\Omega$ | 1C, 1B    |
|           | or         |               |          | C19, 20   | 0630476   | 0.0047 $\mu$ F 50V P.C. | 1C, 1B    | R41, 42   | 0231563   | 56k $\Omega$  | 1C, 1B    |
| TR07, 08  | 0300470, 1 | 25A726 (F, G) | 2C, 2B   | C23, 24   | 0533339   | 3.3 $\mu$ F 25V E.C.    | 2C, 2B    | R43, 44   | 0231123   | 12k $\Omega$  | 1C, 1B    |
|           | or         |               |          | C25, 26   | 0533339   | 3.3 $\mu$ F 25V E.C.    | 2C, 2B    | R45, 46   | 0106101   | 100 $\Omega$  | 1C, 1B    |
| TR09      | 0306071    | 25C1313 (G)   | 1C       | C27, 28   | 0620221   | 220pF 50V P.C.          | 2C, 2B    | R49, 50   | 0231472   | 4.7k $\Omega$ | 1B, C, 1B |
|           | or         |               |          | C601      | 0515100   | 10 $\mu$ F 50V E.C.     | 1B        | R51, 52   | 0107473   | 47k $\Omega$  | 1C, 1B    |
| TR10      | 0306072    | 25C1313 (H)   | 1B       | C602      | 0515100   | 10 $\mu$ F 50V E.C.     | 1B        | R53, 54   | 0231103   | 10k $\Omega$  | 2B, C, 2B |
|           | or         |               |          | C901, 902 | 0519105   | 2.2 $\mu$ F 50V E.C.    | 1B        | R55, 56   | 0106224   | 220k $\Omega$ | 1C, 1B    |
| TR11      | 0306071    | 25C1313 (G)   | 1C       | R01, 02   | 0106224   | 220k $\Omega$           | 2C, 2B    | R57, 58   | 0106332   | 3.3k $\Omega$ | 1C, 1B    |
|           | or         |               |          | R03, 04   | 0106224   | 220k $\Omega$           | 2C, 2B    | R59, 60   | 0107474   | 470k $\Omega$ | 2A        |
| TR12      | 0306072    | 25C1313 (H)   | 1B       | R05, 06   | 0106222   | 2.2k $\Omega$           | 2C, 2B    | R61, 62   | 0107474   | 470k $\Omega$ | 2A        |
|           | or         |               |          | R07, 08   | 0106102   | 1k $\Omega$             | 2C, 2B    | Pin Ass'y | 2410710   | 3P (A Type)   |           |
| TR13, 14  | 0306071    | 25C1313 (G)   | 1C       | R09, 10   | 0231823   | 82k $\Omega$            | 2C, 2B    |           | 2410720   | 4P (A Type)   |           |
|           | or         |               |          | R11, 12   | 0106681   | 680 $\Omega$            | 2C, 2B    |           | 2410730   | 6P (A Type)   |           |
|           | 0306072    | 25C1313 (H)   | 1B       | R13, 14   | 0106681   | 680 $\Omega$            | 2C, 2B    |           | 2410740   | 8P (A Type)   |           |
| TR15, 16  | 0306071    | 25C1313 (G)   | 1C, 1B   | R15, 16   | 0231334   | 330k $\Omega$           | 2B, C, 2B |           | 2410750   | 10P (A Type)  |           |
|           | or         |               |          | R17, 18   | 0106223   | 22k $\Omega$            | 2C, 2B    |           |           |               |           |
|           | 0300470    | 25A726 (F, G) | 1C, 1B   | R19, 20   | 0231333   | 33k $\Omega$            | 2C, 2B    |           |           |               |           |
|           | 0300760, 1 | 25A917 (1, 2) | 1C, 1B   | R21, 22   | 0106561   | 560 $\Omega$            | 1C, 1B    |           |           |               |           |

※ Same rank transistors should be used in TR01, TR02, TR03, TR04, TR09, TR10, TR11 and TR12.  
For example, in case that 25C1313 (G) is used in TR01, TR02, use 25C1313 (G) in TR03, TR04.

# 4-4. F-2502 Main Volume Circuit Board (Stock No. 7593651)



## Parts List

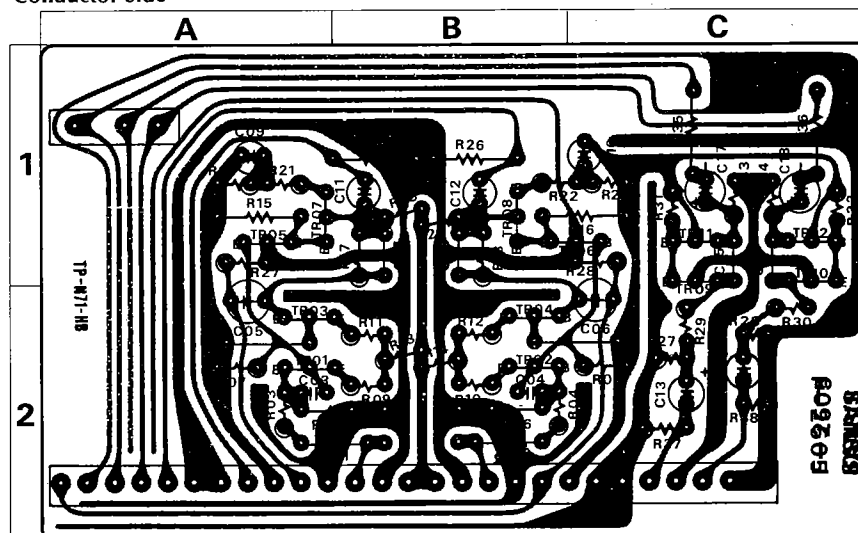
| Parts No.  | Stock No.  | Description            |
|------------|------------|------------------------|
| TR01, 02   | 0300470, 1 | 2SA726 (F, G)          |
| TR03, 04   | 0306360, 1 | 2SC1951 (1, 2)         |
| Transistor |            |                        |
| C01, 02    | 0515109    | 1 $\mu$ F 50V E.C.     |
| C03, 04    | 0660151    | 150 pF 50V C.C.        |
| C05, 06    | 0513479    | 4.7 $\mu$ F 25V E.C.   |
| C401       | 0515100    | 10 $\mu$ F 50A E.C.    |
| C402       | 0515100    | 10 $\mu$ F             |
| R01, 02    | 0107823    | 82k $\Omega$ 1/4W C.R. |

| Parts No. | Stock No. | Description   |
|-----------|-----------|---------------|
| R03, 04   | 0107103   | 10k $\Omega$  |
| R05, 06   | 0107123   | 12k $\Omega$  |
| R07, 08   | 0106184   | 180k $\Omega$ |
| R09, 10   | 0106274   | 270k $\Omega$ |
| R11, 12   | 0106183   | 18k $\Omega$  |
| R13, 14   | 0107561   | 560 $\Omega$  |
| VR01      | 1090180   | Volume        |
| S01       | 1170950   | Lever Switch  |

| Parts No. | Stock No. | Description            |
|-----------|-----------|------------------------|
| S02       | 1170880   | Lever Switch           |
| S03       | 1170990   |                        |
| 2410580   |           | 3P (D Type) Pin Ass'y  |
| 2410720   |           | 4P (A Type) Pin Ass'y  |
| 2420270   |           | 3P (A Type) Connector  |
| 2420290   |           | 6P (A Type) Connector  |
| 2410880   |           | 10P (B Type) Pin Ass'y |
| 2420300   |           | 8P (A Type) Connector  |
|           |           | 10P (B Type) Connector |

# 4-5. F-2505 Flat Amplifier Circuit Board (Stock No. 7593681)

Conductor Side

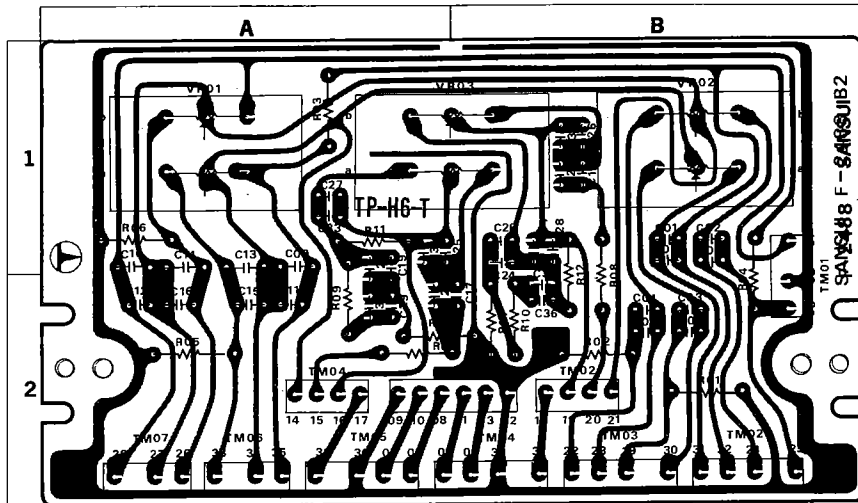


## Parts List

| Parts No. | Stock No.  | Description             | Position   |
|-----------|------------|-------------------------|------------|
| TR01, 02  | 0306071, 2 | 2SC1313 (G, H)          | 2A, 2B     |
| TR03, 04  | 0306071, 2 | 2SC1313 (G, H)          | 2A, 2B     |
| TR05, 06  | 0300470, 1 | 2SA726 (F, G)           | 1A, 1B, C  |
| TR07, 08  | 0300470, 1 | 2SA726 (F, G)           | 1A, 1B     |
| TR09, 10  | 0300470, 1 | 2SA726 (F, G)           | 1C         |
| TR11, 12  | 0306360, 1 | 2SC1951-1 (1, 2)        | 1C         |
| C01, 02   | 0600228    | 0.22 $\mu$ F 50V M.C.   | 2A, 2B, 2B |
| C03, 04   | 0660100    | 10 pF 50V C.C.          | 2A, 2B     |
| C05, 06   | 0530470    | 47 $\mu$ F 6.3V E.C.    | 1.2A, 1.2C |
| C07, 08   | 0660100    | 10 pF 50V C.C.          | 1B         |
| C09, 10   | 0510470    | 47 $\mu$ F 6.3V E.C.    | 1A, 1C     |
| C11, 12   | 0533100    | 10 $\mu$ F 25V E.C.     | 1B         |
| C13, 14   | 0515109    | 1 $\mu$ F 50V E.C.      | 2C         |
| C15, 16   | 0660151    | 150 pF 50V C.C.         | 1C         |
| C17, 18   | 0513479    | 4.7 $\mu$ F 25V E.C.    | 1C         |
| C401      | 0515100    | 10 $\mu$ F 50V E.C.     |            |
| C402      | 0515100    | 10 $\mu$ F              |            |
| R03, 04   | 0106222    | 2.2k $\Omega$           | 2A, 2B     |
| R05, 06   | 0106274    | 270k $\Omega$           | 2A, 2B, 2B |
| R07, 08   | 0106823    | 82k $\Omega$            | 2A         |
| R09, 10   | 0106681    | 680 $\Omega$            | 2B         |
| R11, 12   | 0106681    | 680 $\Omega$            | 2B         |
| R13, 14   | 0106334    | 330k $\Omega$ 1/4W C.R. | 2B         |
| R15, 16   | 0107223    | 22k $\Omega$            | 1A, 1B, C  |
| R17, 18   | 0106683    | 68k $\Omega$            | 1B         |
| R19, 20   | 0106561    | 560 $\Omega$            | 1C         |
| R21, 22   | 0106391    | 390 $\Omega$            | 1A, 1B, C  |
| R23, 24   | 0106183    | 18k $\Omega$            | 1B         |
| R25, 26   | 0107104    | 100k $\Omega$           | 1A, B, 1B  |
| R27, 28   | 0106473    | 47k $\Omega$            | 1A, 2C     |
| R29, 30   | 0106472    | 4.7k $\Omega$ 1/4W C.R. | 2C         |
| R31, 32   | 0106333    | 33k $\Omega$            | 1C         |
| R33, 34   | 0103472    | 4.7k $\Omega$ 1/4W C.R. | 1C         |
| R35, 36   | 0107561    | 560 $\Omega$            | 1C         |
| R37, 38   | 0106474    | 470k $\Omega$ 1/4W C.R. | 2C         |
| R39, 40   | 0106474    | 470k $\Omega$           |            |
| 2420280   |            | 4P (A Type) Connector   |            |
| 2420310   |            | 10P (A Type) Connector  |            |
| 2410580   |            | 3P (D Type) Pin Ass'y   |            |

# 4-6. F-2488 Tone Control Circuit Board (Stock No. 7561291)

Conductor Side

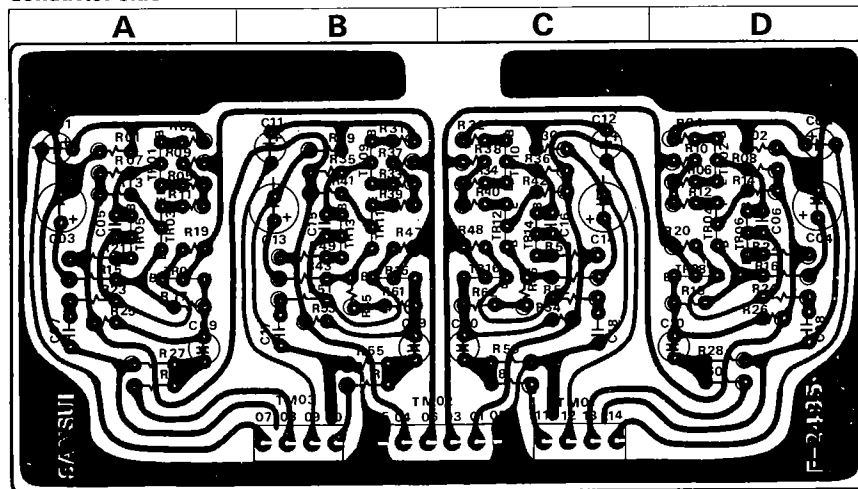


## Parts List

| Parts No. | Stock No.  | Description | Position   |
|-----------|------------|-------------|------------|
| C01, 02   | 0600396    | 0.0039μF    | 1 B        |
| C03, 04   | 0600157    | 0.015μF     | 2 B        |
| C05, 06   | 0600106    | 0.001μF     | 1 B        |
| C07, 08   | 0600226    | 0.0022μF    | 2 B        |
| C09, 10   | 0600477    | 0.047μF     | 1 A        |
| C11, 12   | 0600156    | 0.0015μF    | 2 A        |
| C13, 14   | 0600158    | 0.15μF      | 1 A        |
| C15, 16   | 0600227    | 0.0022μF    | 2 A        |
| C17, 18   | 0600157    | 0.015μF     | 2 B, 1 B   |
| C19, 20   | 0600277    | 0.027μF     | 1, 2A, 1 B |
| C25, 26   | 0600566    | 0.0056μF    | 1A, 1 B    |
| C27, 28   | 0600157    | 0.015μF     | 1A, 1 B    |
| C29, 30   | 0600566    | 0.0056μF    | 2A, 2 B    |
| R01, 02   | 0107561    | 560Ω        | 2 B        |
| R03, 04   | 0107822    | 8.2kΩ       | 1A, 1, 2B  |
| R05, 06   | 0107272    | 2.7kΩ       | 2A, 1 A    |
| R07, 08   | 0107822    | 8.2kΩ       | 2A, 1, 2B  |
| R09, 10   | 0107563    | 56kΩ        | 1, 2A, 2 B |
| R11, 12   | 0107223    | 22kΩ        | 1A, 1, 2A  |
| R13, 14   | 0107392    | 3.9kΩ       | 2A, B, 2 B |
| VR01      | 1090090, 1 | 50kΩ × 2    | 1 A        |
| VR02      | 1090110, 1 | 50kΩ × 2    | 1 B        |
| VR03      | 1090100, 1 | 50kΩ × 2    | 1A, B      |
| 2410580   |            | 3P (D Type) | Pin Ass'y  |
| 2410590   |            | 4P (D Type) |            |
| 2410720   |            | 4P (A Type) |            |
| 2410860   |            | 6P (B Type) |            |

# 4-7. F-2495 Tone Amplifier Circuit Board (Stock No. 7561301)

Conductor Side



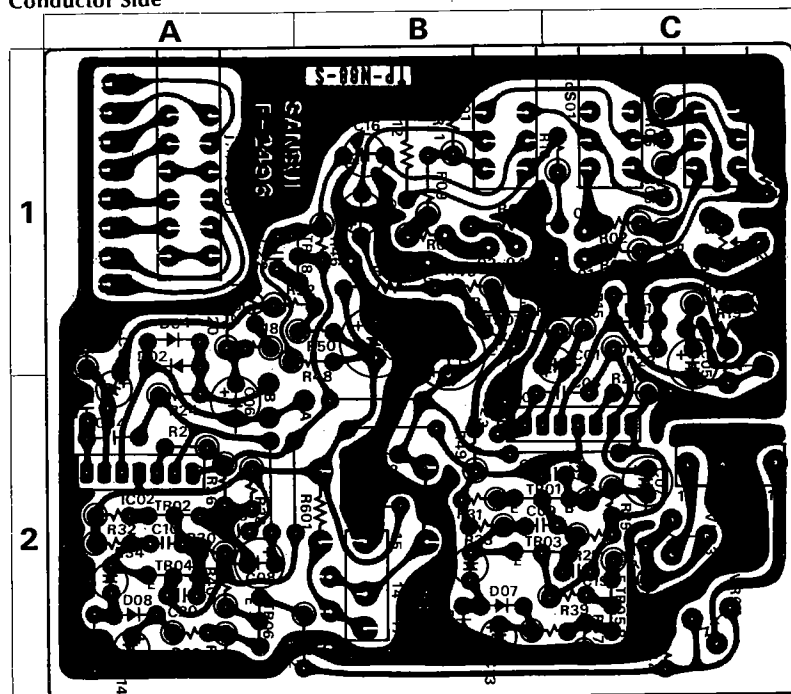
## Parts List

| Parts No. | Stock No.  | Description    | Position  |
|-----------|------------|----------------|-----------|
| TR01, 02  | 0300470, 1 | 2SA726 (F, G)  | A, D      |
| TR03, 04  | 0300470, 1 | 2SA726 (F, G)  | A, D      |
| TR05, 06  | 0306270, 1 | 2SC1708 (F, G) | A, D      |
| TR07, 08  | 0306270, 1 | 2SC1708 (F, G) | A, D      |
| TR09, 10  | 0300470, 1 | 2SA726 (F, G)  | B, C      |
| TR11, 12  | 0300470, 1 | 2SA726 (F, G)  | B, C      |
| TR13, 14  | 0306270, 1 | 2SC1708 (F, G) | B, C      |
| TR15, 16  | 0306270, 1 | 2SC1708 (F, G) | B, C      |
| C01, 02   | 0519101    | 1μF 50V E.C.   | A, D      |
| C03, 04   | 0510470    | 47μF 6.3V E.C. | A, D      |
| C05, 06   | 0660100    | 10pF 50V C.C.  | A, D      |
| C09, 10   | 0533479    | 4.7μF 25V E.C. | A, D      |
| C11, 12   | 0519101    | 1μF 50V E.C.   | B, C      |
| C13, 14   | 0510470    | 47μF 6.3V E.C. | B, C      |
| C15, 16   | 0660100    | 10pF 50V C.C.  | B, C      |
| C19, 20   | 0533479    | 4.7μF 25V E.C. | B, C      |
| R01, 02   | 0106224    | 220kΩ          | A, D      |
| R03, 04   | 0106102    | 1kΩ            | A, D      |
| R05, 06   | 0106101    | 100Ω           | A, D      |
| R07, 08   | 0106103    | 10kΩ           | A, D      |
| R09, 10   | 0106154    | 150kΩ          | A, D      |
| R11, 12   | 0106101    | 100Ω           | A, D      |
| R13, 14   | 0106103    | 10kΩ           | A, D      |
| R15, 16   | 0106472    | 4.7kΩ          | A, D      |
| R17, 18   | 0106153    | 15kΩ           | A, D      |
| R19, 20   | 0106683    | 68kΩ           | A, D      |
| R21, 22   | 0106182    | 1.8kΩ          | A, D      |
| R23, 24   | 0106183    | 18kΩ           | A, D      |
| R25, 26   | 0106104    | 100kΩ          | A, D      |
| R27, 28   | 0106105    | 1MΩ            | B, C      |
| R29, 30   | 0106102    | 1kΩ            | B, C      |
| R31, 32   | 0106101    | 100Ω           | B, C      |
| R33, 34   | 0106103    | 10kΩ           | B, C      |
| R35, 36   | 0106154    | 150kΩ          | B, C      |
| R37, 38   | 0106101    | 100Ω           | B, C      |
| R39, 40   | 0106103    | 10kΩ           | B, C      |
| R41, 42   | 0106472    | 4.7kΩ          | B, C      |
| R43, 44   | 0106222    | 2.2kΩ          | B, C      |
| R45, 46   | 0106683    | 68kΩ           | B, C      |
| R47, 48   | 0106182    | 1.8kΩ          | B, C      |
| R49, 50   | 0106183    | 18kΩ           | B, C      |
| R51, 52   | 0106104    | 100kΩ          | B, C      |
| R53, 54   | 0106105    | 1MΩ            | B, C      |
| R55, 56   | 0106102    | 1kΩ            | A, D      |
| R57, 58   | 0106101    | 100Ω           | B, C      |
| R59, 60   | 0106103    | 10kΩ           | A, D      |
| R61, 62   | 0106101    | 100Ω           | B, C      |
| 2420280   |            | 4P (A Type)    | Connector |
| 2420290   |            | 6P (A Type)    |           |



# 4-8. F-2496 Meter Circuit Board (Stock No. 7593621)

Conductor Side



## Parts List

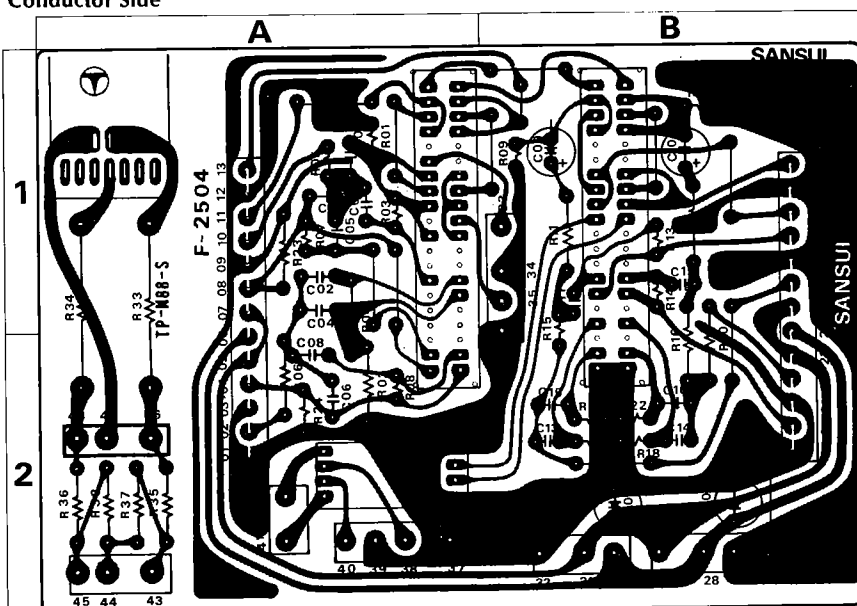
| Parts No. | Stock No.  | Description      | Position   |
|-----------|------------|------------------|------------|
| TR01, 02  | 0305951-3  | 2SC945 (Q, P, K) | 2B, C, 2A  |
| TR03, 04  | 0305951-3  | 2SC945 (Q, P, K) | 2B, C, 2A  |
| TR05, 06  | 0306071    | 25C1313 (G)      | Transistor |
|           | or         | or               | 2C, 2A     |
|           | 0306091    | 25C1312 (G)      |            |
| TR07, 08  | 0306071, 2 | 25C1313R (G, H)  | 1B         |

| Parts No. | Stock No. | Description | Position    |
|-----------|-----------|-------------|-------------|
| IC01, 02  | 0360280   | TA-7136PIC  | 2B, C, 2A   |
| D01, 02   | 0340130   | MV135A      | 1C, 1A      |
| D03, 04   | 0340130   | MV135A      | 1C, 1A      |
| D05, 06   | 0311160   | 1S2473D     | 2B, 2A      |
| D07, 08   | 0311160   | 1S2473D     | 2B, 2A      |
| ZD01, 02  | 0316330   | RD-15E (B)  | Zener Diode |

| Parts No. | Stock No. | Description           | Position               |
|-----------|-----------|-----------------------|------------------------|
| TH01, 02  | 0320030   | 31D27 Thermistor      | 1C, 1A                 |
| C01, 02   | 0515109   | 1μF 50V E.C.          | 1B, C, 1, 2A           |
| C03, 04   | 0460030   | 33pF 50V C.C.         | 2C, 2A                 |
| C05, 06   | 0511470   | 47μF 10V E.C.         | 1, 2C, 2A              |
| C09, 10   | 0660151   | 150pF 50V C.C.        | 2B, C, 2A              |
| C11, 12   | 0535109   | 1μF 50V E.C.          | 2B, 2A                 |
| C13, 14   | 0573688   | 0.68μF 35WV T.C.      | 2B, 2A                 |
| C15, 16   | 0515109   | 1μF 50V E.C.          | 1B                     |
| C23, 24   | 0660330   | 33pF 50V C.C.         | 2B, 2A                 |
| C401, 402 | 0513100   | 10μF 25V E.C.         | 1, 2B, 2B              |
| C901, 902 | 0660330   | 33pF 50V C.C.         |                        |
| R01, 02   | 0107104   | 100kΩ                 | 1C                     |
| R03, 04   | 0106122   | 1.2kΩ                 | 1C                     |
| R05, 06   | 0106183   | 18kΩ                  | 1C                     |
| R09, 10   | 0106822   | 8.2kΩ                 | 1B, 1C                 |
| R11, 12   | 0106101   | 100Ω                  | 1B                     |
| R15, 16   | 0106154   | 150kΩ                 | 1C, 1A                 |
| R17, 18   | 0106121   | 120Ω                  | 1C, 1A                 |
| R19       | 0107222   | 2.2kΩ                 | 1C                     |
| R20       | 0106222   | 2.2kΩ                 | 1A                     |
| R21, 22   | 0106104   | 100kΩ                 | 2C, 2A                 |
| R23, 24   | 0106100   | 10Ω                   | 1C, 2A                 |
| R25, 26   | 0106474   | 470kΩ                 | 2C, 2A                 |
| R27, 28   | 0106563   | 56kΩ                  | 2C, 2A                 |
| R29, 30   | 0106183   | 18kΩ                  | 2C, 2A                 |
| R31, 32   | 0106332   | 3.3kΩ                 | 2B, 2A                 |
| R33, 34   | 0106392   | 3.9kΩ                 | 2B, 2A                 |
| R35, 36   | 0106684   | 680kΩ                 | 2B, C, 2A              |
| R37, 38   | 0106274   | 270kΩ                 | 2C, 2A                 |
| R39, 40   | 0106182   | 1.8kΩ                 | 2C, 2A                 |
| R41, 42   | 0106101   | 100Ω                  | 2C, 2A, B              |
| R43, 44   | 0106272   | 2.7kΩ                 | 2C                     |
| R45, 46   | 0106334   | 330kΩ                 | 1B                     |
| R47, 48   | 0106474   | 470kΩ                 | 1B, 1A, B              |
| R49, 50   | 0106682   | 6.8kΩ                 | 2B, 1A, B              |
| R51, 52   | 0106561   | 560Ω                  | 1B, C, 1A, B           |
| R601      | 0202681   | 680Ω                  | 2B                     |
| R602      | 0202681   | 680Ω                  | 1B                     |
| VR01, 02  | 1035490   | 1MΩ (B)               | Semi-Variable Resistor |
| VR03, 04  | 1035310   | 1kΩ (B)               | 1, 2C, 1C              |
| S01       | 1131080   | SUE62 Push Switch     | 1A, BC                 |
|           | 2410580   | 3P (D Type) Pin Ass'y |                        |

# 4-9. F-2504 Filter Circuit Board (Stock No. 7593671)

Conductor Side

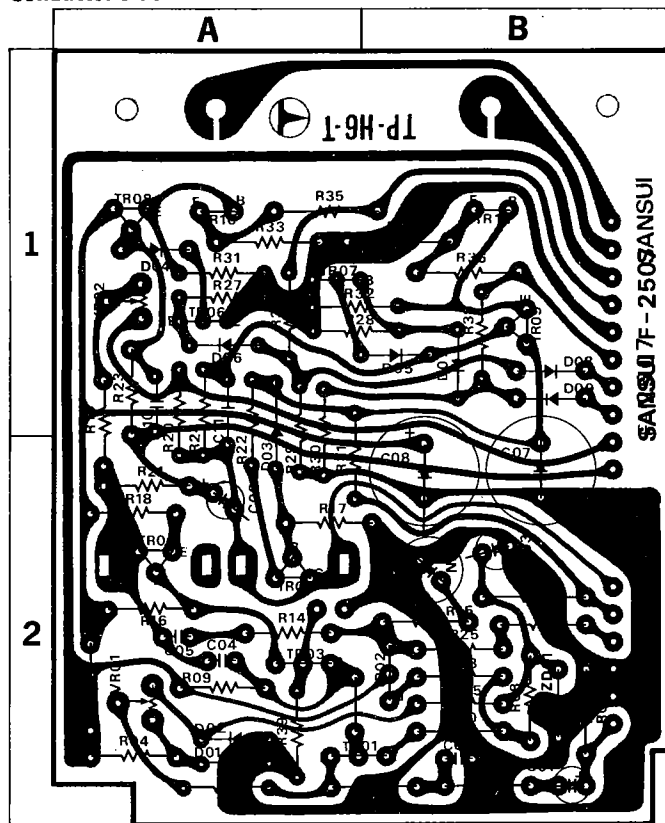


## Parts List

| Parts No. | Stock No. | Description              | Position  |
|-----------|-----------|--------------------------|-----------|
| C01, 02   | 0600397   | 0.039μF                  | 1A        |
| C03, 04   | 0600477   | 0.047μF                  | 1A        |
| C05, 06   | 0600397   | 0.039μF                  | 1A, 2A    |
| C07, 08   | 0600477   | 0.047μF                  | 1A, 2A    |
| C09, 10   | 0519106   | 4.7μF                    | 1B        |
| C11, 12   | 0600276   | 0.0027μF                 | 1B        |
| C13, 14   | 0600156   | 0.0015μF                 | 2B        |
| C15, 16   | 0600106   | 0.001μF                  | 2B        |
| C601      | 0515100   | 10μF                     | 2B        |
| C602      | 0515100   | 10μF                     | 2B        |
| R01       | 0106104   | 100kΩ                    | 1A        |
| R02       | 0107104   | 100kΩ                    | 2A        |
| R03       | 0106105   | 1MΩ                      | 1A        |
| R04       | 0107105   | 1MΩ                      | 1, 2A     |
| R05       | 0106683   | 68kΩ                     | 1A        |
| R06       | 0107683   | 68kΩ                     | 2A        |
| R07, 08   | 0106105   | 1MΩ                      | 1A, 2A    |
| R09, 10   | 0106104   | 100kΩ                    | 1B        |
| R11, 12   | 0107472   | 4.7kΩ                    | 1B        |
| R13, 14   | 0106105   | 1MΩ                      | 1B        |
| R15       | 0106123   | 12kΩ                     | 1, 2B     |
| R16       | 0107123   | 12kΩ                     | 1, 2A     |
| R17, 18   | 0106105   | 1MΩ                      | 2B        |
| R19, 20   | 0107102   | 1kΩ                      | 2B, 1, 2B |
| R21, 22   | 0106105   | 1MΩ                      | 2B        |
| R23       | 0107184   | 180kΩ                    | 1A        |
| R24       | 0106184   | 180kΩ                    | 2B        |
| R33, 34   | 0135221   | 220Ω                     | 5W Co.R.  |
| R35, 36   | 0107273   | 27kΩ                     | 1, 2A     |
| R37, 38   | 0107102   | 1kΩ                      | 2A        |
| RL01      | 1150320   | HA-224N 10MA 1600Ω Relay | 2A        |
| S01       | 1171000   | Lever Switch             |           |
| S02       | 1171000   | Lever Switch             |           |
| J01       | 2430240   | LJ178 Jack               |           |
|           | 2410580   | 3P (D Type)              | Pin Ass'y |
|           | 2410590   | 4P (D Type)              |           |
|           | 2410710   | 3P (A Type)              |           |
|           | 2410750   | 10P (A Type)             |           |

# 4-10. F-2507 Driver Circuit Board (Stock No. 7571261)

Conductor Side



## Parts List

| Parts No. | Stock No.  | Description    | Position |
|-----------|------------|----------------|----------|
| ※TR01     | 0306270, 1 | 25C1708 (F, G) | 2 A, B   |
|           | or         | or             |          |
|           | 0306290, 1 | 25C1400 (E, V) |          |
| ※TR02     | 0306270, 1 | 25C1708 (F, G) | 2 B      |
|           | or         | or             |          |
|           | 0306290, 1 | 25C1400 (E, V) |          |
| TR03      | 0300710, 1 | 25A847 (F, G)  | 2 A      |
|           | 0300700    | 25A818 (O)     |          |
|           | or         | or             |          |
| ※TR04     | 0300701    | 25A818 (Y)     | 2 A      |
|           | 0306260    | 25C1628 (O)    |          |
|           | or         | or             |          |
| ※TR05     | 0306261    | 25C1628 (Y)    | 2 A      |
|           | 0305951, 2 | 25C945 (Q, P)  |          |
|           | 0300510, 1 | 25A733 (Q, P)  |          |
| TR06      | 0306260    | 25C1628 (O)    | 1 A, B   |
| TR07      | 0306261    | 25C1628 (Y)    |          |
|           | or         | or             |          |
| ※TR08     | 0306350    | 25C1811-1 (I)  | 1 A      |
|           | or         | or             |          |
|           | 0306350    | 25C1811-1 (I)  |          |

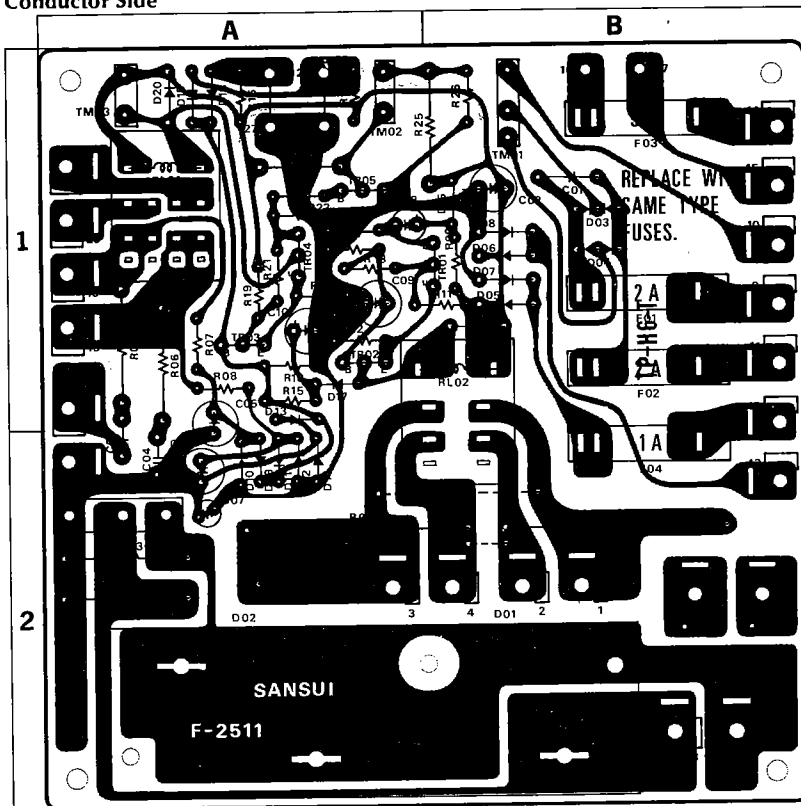
| Parts No. | Stock No.     | Description  | Position |
|-----------|---------------|--------------|----------|
| 0306351   | 25C1811-1 (2) |              | 1 A      |
| or        | or            |              |          |
| 0306411   | 25C1720 (B)   |              |          |
| ※TR09     | 0306412       | 25C1720 (V)  | 1 B      |
|           | 0300700       | 25A818 (O)   |          |
|           | or            | or           |          |
|           | 0300701       | 25A818 (Y)   | 1 B      |
|           | 0300770       | 25A896-1 (1) |          |
|           | or            | or           |          |
| ※TR10     | 0300771       | 25A896-1 (2) | 1 B      |
|           | or            | or           |          |
|           | 0300801       | 25A849 (B)   |          |
|           | 0300802       | 25A849 (V)   | 1 A      |
|           | 0306250       | 25C1669 (R)  |          |
|           | 0306251       | 25C1669 (O)  |          |
| ※TR11     | 0306252       | 25C1669 (Y)  | 1 B      |
|           | 0300690       | 25A839 (R)   |          |
|           | 0300691       | 25A839 (O)   |          |
|           | 0300692       | 25A839 (Y)   |          |

| Parts No. | Stock No. | Description           | Position |
|-----------|-----------|-----------------------|----------|
| D01       | 0311160   | 1S2473D               | 2 A      |
| D02       | 0311160   | 1S2473D               |          |
| D03       | 0340120   | VD1212                |          |
| D04       | 0311160   | 1S2473D               | 1 A, B   |
| D05       | 0311160   | 1S2473D               |          |
| D06       | 0311160   | 1S2473D               |          |
| D07       | 0311160   | 1S2473D               | 1 B      |
| D08       | 0311160   | 1S2473D               |          |
| D09       | 0311160   | 1S2473D               |          |
| ZD01      | 0316490   | RD-22E (B)            | 2 B      |
|           | or        | or                    |          |
|           | 0316500   | RD-22E (C)            |          |
| C01       | 0519102   | 3.3μF 50V E.C.        | 2 B      |
| C02       | 0660680   | 68pF 50V C.C.         |          |
| C03       | 0513330   | 33μF 25V E.C.         |          |
| C04       | 0660220   | 22pF 50V C.C.         | 2 A      |
| C05       | 0660209   | 2pF 50V C.C.          |          |
| C06       | 0530101   | 100μF 6.3V E.C.       |          |
| C07       | 0519903   | 100μF 80V E.C.        | 1, 2 B   |
| C08       | 0519903   | 100μF 80V E.C.        |          |
| C09       | 0515339   | 3.3μF 50V E.C.        |          |
| C10       | 0657473   | 47000pF 50V C.C.      | 1 A      |
| C11       | 0657473   | 47000pF 50V C.C.      |          |
|           |           |                       |          |
| R01       | 0107224   | 220kΩ                 | 2 B      |
| R02       | 0107222   | 2.2kΩ                 |          |
| R03       | 0107102   | 1kΩ                   |          |
| R04       | 0107333   | 33kΩ                  | 2 A, B   |
| R05       | 0107123   | 12kΩ                  |          |
| R06       | 0103822   | 8.2kΩ                 |          |
| R07       | 0107104   | 100kΩ                 | 2 A      |
| R08       | 0107822   | 8.2kΩ                 |          |
| R09       | 0107182   | 1.8kΩ                 |          |
| R10       | 0107470   | 47Ω                   | 2 B      |
| R11       | 0107331   | 330Ω                  |          |
| R12       | 0107470   | 47Ω                   |          |
| R13       | 0107681   | 680Ω                  | 2 A      |
| R14       | 0107182   | 1.8kΩ                 |          |
| R15       | 0107682   | 6.8kΩ                 |          |
| R16       | 0107333   | 33kΩ                  | 2 A, B   |
| R17       | 0107121   | 120Ω                  |          |
| R18       | 0107392   | 3.9kΩ                 |          |
| R19       | 0107102   | 1kΩ                   | 1, 2 A   |
| R20       | 0107560   | 56Ω                   |          |
| R21       | 0107121   | 120Ω                  |          |
| R22       | 0107391   | 390Ω                  | 1 A      |
| R23       | 0107391   | 390Ω                  |          |
| R24       | 0107104   | 100kΩ                 |          |
| R25       | 0107821   | 820Ω                  | 2 B      |
| R26       | 0107122   | 1.2kΩ                 |          |
| R27       | 0107122   | 1.2kΩ                 |          |
| R28       | 0107103   | 10kΩ                  | 1 A, B   |
| R29       | 0107103   | 10kΩ                  |          |
| R30       | 0107222   | 2.2kΩ                 |          |
| R31       | 0107222   | 2.2kΩ                 | 1 A, B   |
| R32       | 0103470   | 47Ω                   |          |
| R33       | 0103470   | 47Ω                   | 1 A, B   |
| R34       | 0103479   | 4.7Ω                  |          |
| R35       | 0103479   | 4.7Ω                  | 1 B      |
| R36       | 0107331   | 330Ω                  |          |
| R37       | 0107331   | 330Ω                  |          |
| R38       | 0107103   | 10kΩ                  | 2 A      |
| R39       | 0107103   | 10kΩ                  |          |
| R901      | 0107103   | 10kΩ                  |          |
| VR01      | 1035350   | 4.7kΩ (B)             | 2 A      |
| VR02      | 1035310   | 1kΩ (B)               |          |
|           | 2420290   | 2145-4A 6P (A Type)   |          |
|           | 2420310   | 2145-10A 10P (A Type) | Conector |
|           |           |                       |          |
|           |           |                       |          |

※ Same rank transistors should be used in TR01, TR02 and TR04, TR05 and TR08, TR09, TR10, TR11.  
For example, in case that 25A818 (O) is used in TR04, use 25C1628 (O) in TR05.

# 4-11. F-2511 Protector Circuit Board (Stock No. 7593711)

Conductor Side



## Parts List

| Parts No. | Stock No. | Description         | Position  |
|-----------|-----------|---------------------|-----------|
| TR01      | 0306131-3 | 2SC1364 (6, 7, 8)   | 1 B       |
| TR02      | 0306131-3 | 2SC1364 (6, 7, 8)   | 1 A       |
| TR03      | 0306131-3 | 2SC1364 (6, 7, 8)   | 1 A       |
| TR04      | 0306131-3 | 2SC1364 (6, 7, 8)   | 1 A       |
| TR05      | 0306131-3 | 2SC1364 (6, 7, 8)   | 1 A       |
| D01       | 0311440   | 5G5T (S)            | 2 B       |
| D02       | 0311450   | 5G5T (R)            | 2 A       |
| ※D03      | 0310530   | 1S1850              | Diode 1 B |
|           | or        | or (S-5 Type Black) |           |
|           | 0311420   | CO8P-2-N            |           |

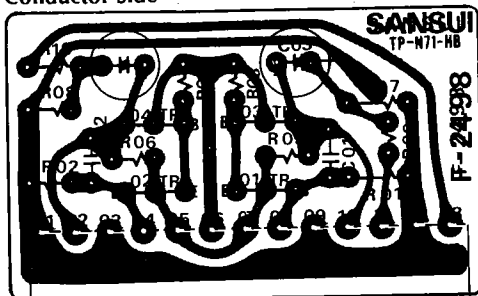
| Parts No. | Stock No. | Description         | Position |
|-----------|-----------|---------------------|----------|
| ※D04      | 0310540   | 1S1850R             | 1 B      |
|           | or        | or (S-5 Type Green) |          |
| D05       | 0311430   | CO8P-2-R            | 1 B      |
| D06       | 0310340   | 10D1 (1S2226)       | 1 B      |
| D07       | 0310340   | 10D1 (1S2226)       | 1 B      |
| D08       | 0310340   | 10D1 (1S2226)       | 1 B      |
| D09       | 0311160   | 1S2473D             | 2 A      |
| D10       | 0311160   | 1S2473D             | 2 A      |
| D11       | 0311160   | 1S2473D             | 2 A      |
| D12       | 0311160   | 1S2473D             | 2 A      |

| Parts No. | Stock No. | Description         | Position  |
|-----------|-----------|---------------------|-----------|
| D13       | 0311160   | 1S2473D             | 1 A       |
| D14       | 0311160   | 1S2473D             | 2 A       |
| D15       | 0311160   | 1S2473D             | 1 B       |
| D16       | 0310340   | 10D1 (1S2226)       | 1 B       |
| D17       | 0311160   | 1S2473D             | 1 A       |
| D18       | 0311160   | 1S2473D             | 1 A       |
| D19       | 0311160   | 1S2473D             | 1 A       |
| D20       | 0310340   | 10D1 (1S2226)       | 1 A       |
| C01       | 0659011   | 10000pF 500V C.C.   | 1 B       |
| C02       | 0515470   | 47μF 50V E.C.       | 1 B       |
| C03       | 0600108   | 0.1μF 50V M.C.      | 1, 2 A    |
| C04       | 0600108   | 0.1μF 50V M.C.      | 2 A       |
| C05       | 0530470   | 47μF 6.3V E.C.      | 1, 2 A    |
| C06       | 0530470   | 47μF 6.3V E.C.      | 2 A       |
| C07       | 0535109   | 1μF 50V E.C.        | 2 A       |
| C08       | 0519102   | 3.3μF 50V E.C.      | 1 A, B    |
| C09       | 0510470   | 47μF 6.3V E.C.      | 1 A       |
| C10       | 0515100   | 10μF 50V E.C.       | 1 A       |
| C901-904  | 0659011   | 10000pF 500V C.C.   |           |
| C905      | 0513100   | 10μF 25V E.C.       |           |
| R01       | 0137399   | 3.9Ω 7W Ce.R.       | 2 B       |
| R02       | 0137399   | 3.9Ω 7W Ce.R.       | 2 A, B    |
| R03       | 0202392   | 3.9kΩ 2W M.R.       | 2 A       |
| R04       | 0202392   | 3.9kΩ 2W M.R.       | 2 A       |
| R05       | 0132479   | 4.7Ω 2W Ce.R.       | 1 A       |
| R06       | 0132479   | 4.7Ω 2W Ce.R.       | 1 A       |
| R07       | 0113473   | 47kΩ 1A             | 1 A       |
| R08       | 0113473   | 47kΩ 1A             | 1 A       |
| R09       | 0113273   | 27kΩ 1B             | 1 B       |
| R10       | 0113182   | 1.8kΩ 1A            | 1 A       |
| R11       | 0113123   | 12kΩ 1A, B          | 1 A, B    |
| R12       | 0113100   | 10Ω 1A              | 1 A       |
| R13       | 0113100   | 10Ω 1A              | 1 A       |
| R14       | 0113104   | 100kΩ 1/4W S.R.     | 1 A       |
| R15       | 0113333   | 33kΩ 1A             | 1 A       |
| R16       | 0113333   | 33kΩ 1A             | 1 A       |
| R17       | 0113333   | 33kΩ 1A             | 1 A       |
| R18       | 0113104   | 100kΩ 1A            | 1 A       |
| R19       | 0113123   | 12kΩ 1A             | 1 A       |
| R20       | 0113220   | 22Ω 1A              | 1 A       |
| R21       | 0113100   | 10Ω 1A              | 1 A       |
| R22       | 0113122   | 1.2kΩ 1A            | 1 A       |
| R23       | 0103182   | 1.8kΩ 1/2W C.R.     | 1 A       |
| R24       | 0103182   | 1.8kΩ 1/2W C.R.     | 1 A       |
| R25       | 0113221   | 220Ω 1/4W S.R.      | 1 B       |
| RL01      | 1150101   | DC 19.2V 650Ω Relay | 1 A       |
| RL02      | 1150310   | DC 20.4V 650Ω Relay | 1, 2 B    |
| F01       | 0431240   | 2A 250V 6.35X31.8MM | 1 B       |
| F02       | 0431240   | 2A 250V 6.35X31.8MM | 1 B       |
| F03       | 0431280   | 5A 250V 6.35X31.8MM | 1 B       |
| F04       | 0431220   | 1A 250V 6.35X31.8MM | 2 B       |
|           | 2250170   | Fasten Tab          |           |
|           | 2310051   | Fuse Holder         |           |
|           | 2410580   | 3P (D Type)         | Pin Ass'y |
|           | 2410650   | 2P (D Type)         |           |

※ Please note the followings when replacing the diode D03 and D04.  
In case of using 1S1850 in D03, use 1S1850R in D04 and use CO8P-2-R against CO8P-2-N in D03.

# 4-12. F-2498 Filter Amplifier Circuit Board (stock No. 7593631)

Conductor Side

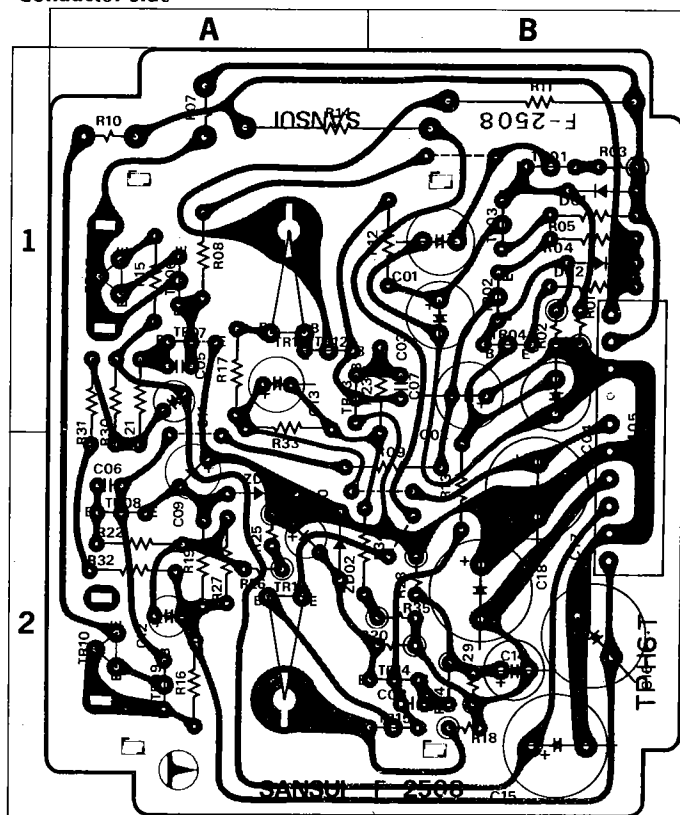


## Parts List

| Parts No. | Stock No. | Description           |
|-----------|-----------|-----------------------|
| TR01, 02  | 0300470   | 2SA726 (F, G)         |
| TR03, 04  | 0306270   | 2SC1708 (F, G)        |
| C01, 02   | 0660151   | 150pF 50V C.C.        |
| C03, 04   | 0519106   | 4.7μF 50V E.C.        |
| R01, 02   | 0106105   | 1MΩ                   |
| R03, 04   | 0106274   | 270kΩ                 |
| R05, 06   | 0106183   | 18kΩ 1/4W C.R.        |
| R07, 08   | 0106104   | 100kΩ                 |
| R09, 10   | 0106561   | 560Ω                  |
|           | 2420270   | 3P (A Type) Connector |
|           | 2420310   | 10P (A Type)          |

# 4-13. F-2508 Regulated Power Supply Circuit Board (Stock No. 7501341)

Conductor Side



| Parts No. | Stock No. | Description            | Position |
|-----------|-----------|------------------------|----------|
| C02       | 0519404   | 10 $\mu$ F 100V E.C.   | 1 B      |
| C03       | 0515470   | 47 $\mu$ F 50V E.C.    | 1 B      |
| C04       | 0515470   | 47 $\mu$ F 50V E.C.    | 1 B      |
| C05       | 0660101   | 100 $\mu$ F 50V C.C.   | 1 A      |
| C06       | 0660101   | 100 $\mu$ F 50V C.C.   | 2 A      |
| C07       | 0660101   | 100 $\mu$ F 50V C.C.   | 1 B      |
| C08       | 0660101   | 100 $\mu$ F 50V C.C.   | 2 B      |
| C09       | 0512330   | 33 $\mu$ F 16V E.C.    | 2 A      |
| C10       | 0512330   | 33 $\mu$ F 16V E.C.    | 2 A      |
| C11       | 0519403   | 2.2 $\mu$ F 100V E.C.  | 1 A      |
| C12       | 0516339   | 3.3 $\mu$ F 63VV E.C.  | 2 A      |
| C13       | 0515100   | 10 $\mu$ F 50V E.C.    | 1 A      |
| C14       | 0515100   | 10 $\mu$ F 50V E.C.    | 2 B      |
| C15       | 0519904   | 220 $\mu$ F 80V E.C.   | 2 B      |
| C16       | 0519904   | 220 $\mu$ F 80V E.C.   | 2 B      |
| C17       | 0515331   | 330 $\mu$ F 50V E.C.   | 2 B      |
| C18       | 0515331   | 330 $\mu$ F 50V E.C.   | 2 B      |
| C705      | 0601477   | 0.047 $\mu$ F 50V M.C. |          |
| C706      | 0601477   | 0.047 $\mu$ F 50V M.C. |          |
| C707      | 0601477   | 0.047 $\mu$ F 50V M.C. |          |
| C708      | 0601477   | 0.047 $\mu$ F 50V M.C. |          |
| R01       | 0106473   | 47k $\Omega$           | 1 B      |
| R02       | 0106473   | 47k $\Omega$           | 1 B      |
| R03       | 0106122   | 1.2k $\Omega$          | 1 B      |
| R04       | 0107122   | 1.2k $\Omega$          | 1 B      |
| R05       | 0107561   | 560 $\Omega$           | 1 B      |
| R06       | 0107561   | 560 $\Omega$           | 1 B      |
| R07       | 0162151   | 150 $\Omega$ 2 W Ce.R. | 1 A      |
| R08       | 0107822   | 8.2k $\Omega$          | 1 A      |
| R09       | 0107822   | 8.2k $\Omega$          | 2 A, B   |
| R10       | 0162151   | 150 $\Omega$ 2 W Ce.R. | 1 A      |
| R11       | 0155151   | 150 $\Omega$ 5 W Ce.R. | 1 B      |
| R12       | 0107123   | 12k $\Omega$           | 1 B      |
| R13       | 0107123   | 12k $\Omega$           | 2 B      |
| R14       | 0155151   | 150 $\Omega$ 5 W Ce.R. | 1 A, B   |
| R15       | 0107100   | 10 $\Omega$            | 1 A      |
| R16       | 0107100   | 10 $\Omega$            | 2 A      |
| R17       | 0107100   | 10 $\Omega$            | 1 A      |
| R18       | 0106100   | 10 $\Omega$            | 2 B      |
| R19       | 0107223   | 22k $\Omega$           | 2 A      |
| R20       | 0109103   | 10k $\Omega$           | 2 B      |
| R21       | 0107562   | 5.6k $\Omega$          | 1, 2 A   |
| R22       | 0107562   | 5.6k $\Omega$          | 2 A      |
| R23       | 0107562   | 5.6k $\Omega$          | 1 B      |
| R24       | 0106562   | 5.6k $\Omega$          | 2 B      |
| R25       | 0106123   | 12k $\Omega$           | 2 A      |
| R26       | 0106182   | 1.8k $\Omega$          | 2 A      |
| R27       | 0107473   | 47k $\Omega$           | 2 A      |
| R28       | 0106153   | 15k $\Omega$           | 2 B      |
| R29       | 0106183   | 18k $\Omega$           | 2 B      |
| R30       | 0107563   | 56k $\Omega$           | 1, 2 A   |
| R31       | 0107102   | 1k $\Omega$            | 1, 2 A   |
| R32       | 0107563   | 56k $\Omega$           | 2 A      |
| R33       | 0107333   | 33k $\Omega$           | 1, 2 A   |
| R34       | 0107102   | 1k $\Omega$            | 2 A, B   |
| R35       | 0106333   | 33k $\Omega$           | 2 A, B   |
| R901      | 0155121   | 120 $\Omega$ 5 W Ce.R. |          |
| R902      | 0155121   | 120 $\Omega$ 5 W Ce.R. |          |
|           | 2420310   | 10P (A Type) Connector |          |

## Parts List

| Parts No. | Stock No. | Description      | Position |
|-----------|-----------|------------------|----------|
| TR01      | 0300720   | 2SA850 (C, D)    | 1 B      |
| TR02      | 0306280   | 2SC1735 (C, D)   | 1 B      |
| TR03      | 0300720   | 2SA850 (C, D)    | 1 B      |
| TR04      | 0306280   | 2SC1735 (C, D)   | 1 B      |
| TR05      | 0308431   | 2SD381 (M, L, K) | 1 A      |
| TR06      | 0306280   | 2SC1735 (C, D)   | 1 A      |
| TR07      | 0306270   | 2SC1708 (F, G)   | 1 A      |
| TR08      | 0300710   | 2SA847 (F, G)    | 2 A      |
| TR09      | 0300720   | 2SA850 (C, D)    | 2 A      |
| TR10      | 0308431   | 2SD381 (M, L, K) | 2 A      |
| TR11      | 0308441   | 2SD382 (M, L, K) | 1 A      |
| TR12      | 0306280   | 2SC1735 (C, D)   | 1 A      |

| Parts No. | Stock No. | Description          | Position |
|-----------|-----------|----------------------|----------|
| TR13      | 0306071   | 2SC1313 (G, H)       | 1 A      |
| TR14      | 0300470   | 2SA726 (F, G)        | 2 B      |
| TR15      | 0300720   | 2SA850 (C, D)        | 2 B      |
| TR16      | 0308441   | 2SD382 (M, L, K)     | 2 A      |
| D01       | 0340120   | VD1212               | 1 B      |
| D02       | 0340120   | VD1212               | 1 B      |
| ZD01      | 0316340   | RD-15E (C)           | 2 A      |
| ZD02      | 0316340   | RD-15E (C)           | 2 A      |
| C01       | 0519404   | 10 $\mu$ F 100V E.C. | 1 B      |

# 4-14. F-2510 Connector Circuit Board (Stock No. 7593701)

## Parts List

| Parts No. | Stock No.   | Description |
|-----------|-------------|-------------|
| 2410760   | 3P (C Type) | Pin Ass'y   |
| 2410780   | 6P (C Type) |             |

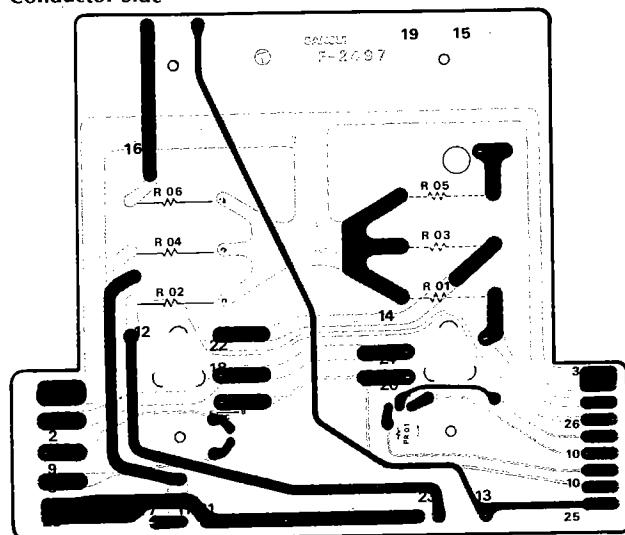
# 4-15. F-1512 Connector Circuit Board (Stock No. 7593721)

## Parts List

| Parts No. | Stock No. | Description          |
|-----------|-----------|----------------------|
| C01       | 0549401   | 470 $\mu$ F          |
| C02       | 0549401   | 470 $\mu$ F          |
| C03       | 0519404   | 10 $\mu$ F 100V E.C. |
| C04       | 0519404   | 10 $\mu$ F           |
|           | 2410730   | 6P (A Type)          |
|           | 2410750   | 10P (A Type)         |
|           | 2410880   | 10P (B Type)         |
|           | 2420320   | 3P (A Type)          |
|           | 2420340   | 6P (A Type)          |

# 4-16. F-2497 Circuit Board for Installing Emitter Resistor (Stock No. 7593691)

Conductor Side

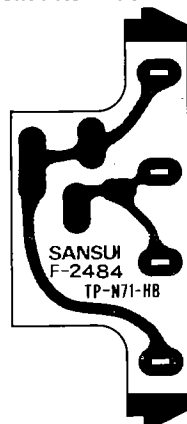


## Parts List

| Parts No. | Stock No. | Description       |
|-----------|-----------|-------------------|
| TR01      | 0306131-3 | 2SC1364 (6, 7, 8) |
| PR01      | 0320130   | Thermistor        |
| R01       | 0135478   | 0.47Ω             |
| R02       | 0135478   | 0.47Ω             |
| R03       | 0135478   | 0.47Ω             |
| R04       | 0135478   | 0.47Ω             |
| R05       | 0135478   | 0.47Ω             |
| R06       | 0135478   | 0.47Ω             |
| 2250051   |           | Fasten Tab        |

# 4-17. F-2484 Meter Lamp Circuit Board (Stock No. 7593611)

Conductor Side

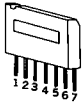


## Parts List

| Parts No. | Stock No. | Description |
|-----------|-----------|-------------|
| PL01, 02  | 0420050   | 7V 300mA    |
|           | 0420060   | 7V 300mA    |
|           | 2310051   | Fuse Holder |

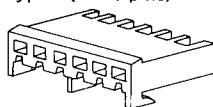
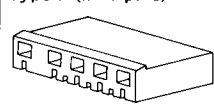
## 5. FIGURES

### 5-1. Semiconductors

| SEMICONDUCTORS                                                                             | COMPLETE<br>CIRCUIT<br>BOARD                                                                   | SEMICONDUCTORS                                                                         | COMPLETE<br>CIRCUIT<br>BOARD |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------|
| 2SA726<br>2SA847<br>2SA850<br>2SC1313<br>2SC1708<br>2SC1735                                | <br>BCE       | F-2508<br>F-2507<br>F-2498<br>F-2501<br>F-2495<br>F-2496<br>F-2502<br>F-2503<br>F-2505 |                              |
| 2SA733<br>2SC1400<br>2SC1364<br>2SC945<br>2SC1951<br>2SC1811<br>2SA917<br>2SA896<br>2SA849 | <br>ECB       | F-2497<br>F-2507<br>F-2511<br>F-2501<br>F-2502<br>F-2505<br>F-2496                     |                              |
| 2SD381                                                                                     | <br>BCE       | F-2508                                                                                 |                              |
| 2SA839<br>2SC1669<br>2SD382                                                                | <br>CBE       | F-2507<br>F-2508                                                                       |                              |
| 2SA818<br>2SC1628                                                                          | <br>EBC      | F-2507                                                                                 |                              |
| TA7136                                                                                     | <br>1234567 | F-2496                                                                                 |                              |
| 2SA908<br>2SB554<br>2SC1585<br>2SD424                                                      | <br>CBE     | POWER<br>TRANSISTOR                                                                    |                              |
| 2SC1720 (6)                                                                                | <br>123456  | F-2507                                                                                 |                              |

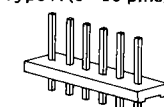
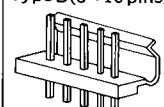
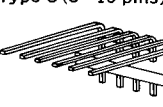
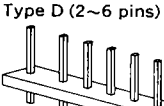
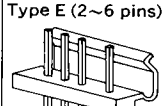
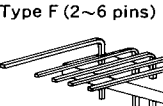
### 5-2. Connector & Pin Ass'y

#### Connector

| Type A (3~10 pins)                                                                 | Type B (2~6 pins)                                                                   | Stock No.                                                                              |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
|  |  | 2 Pins 2420250<br>3 Pins 2420220<br>4 Pins 2420230<br>5 Pins 2420210<br>6 Pins 2420240 |

NOTE: Since stock number of female connectors (type B) with wires are not shown in each parts list of Complete circuit board, please refer to the above parts list when ordering the connector.

#### Pin Ass'y

| Type A (3~10 pins)                                                                 | Type B (3~10 pins)                                                                  | Type C (3~10 pins)                                                                  |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |
| Type D (2~6 pins)                                                                  | Type E (2~6 pins)                                                                   | Type F (2~6 pins)                                                                   |
|  |  |  |

#### Abbreviations

|                                        |                                                  |
|----------------------------------------|--------------------------------------------------|
| <b>C.R.</b> : Carbon Resistor          | <b>BP.E.C.</b> : Bi-Polar Electrolytic Capacitor |
| <b>S.R.</b> : Solid Resistor           | <b>C.C.</b> : Ceramic Capacitor                  |
| <b>Ce.R.</b> : Cement Resistor         | <b>Mi.C.</b> : Mica Capacitor                    |
| <b>M.R.</b> : Metallized Film Resistor | <b>O.C.</b> : Oil Capacitor                      |
| <b>M.C.</b> : Mylar Capacitor          | <b>P.C.</b> : Polystyrene Capacitor              |
| <b>E.C.</b> : Electrolytic Capacitor   | <b>T.C.</b> : Tantalum Capacitor                 |

### 5-3. Power Supply Voltage changeover

\*In accordance with AC line voltage in your area, input AC voltages of this unit can be easily obtained by changing connections as shown in Fig. 5-1.

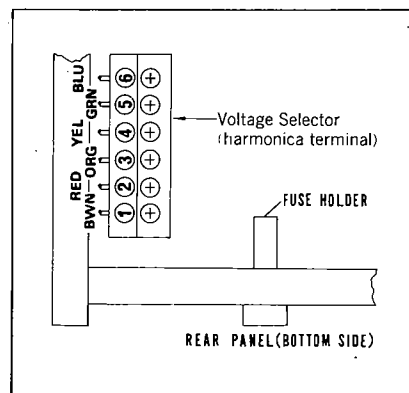
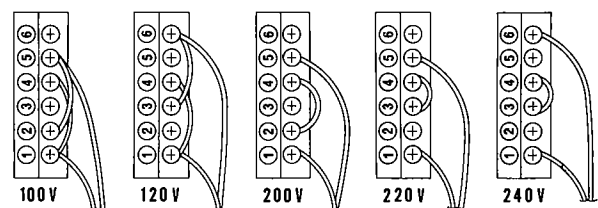
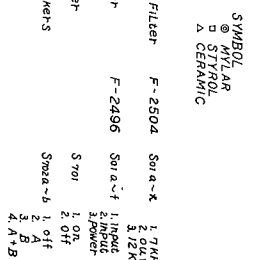


Fig. 5-1



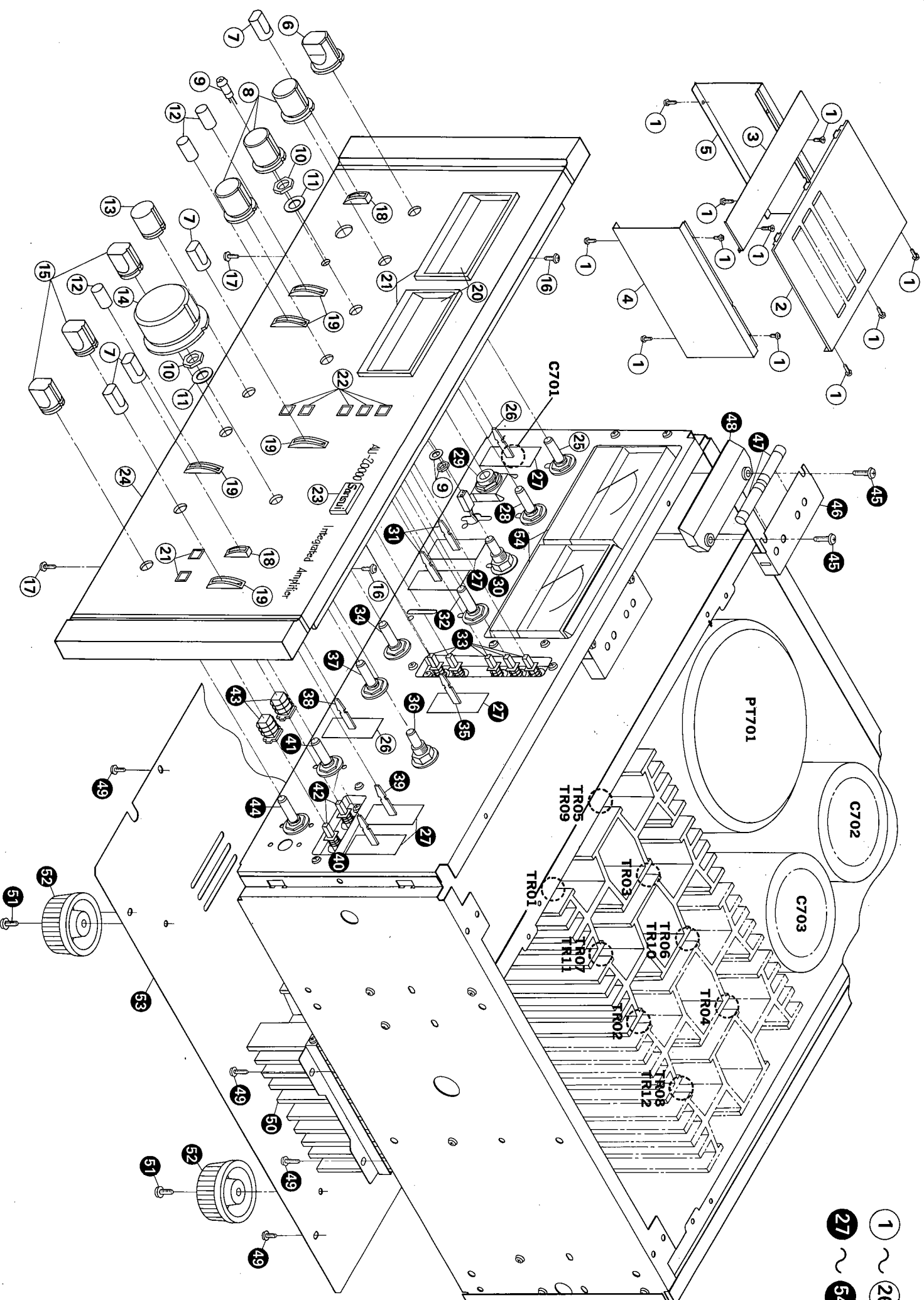
\* La présentation et les spécifications sont susceptibles d'être modifiées sans préavis par suite d'améliorations éventuelles.



# 6. OTHER PARTS

## 6-1. Parts List (Front Side)

| Parts No. | Stock No.  | Description                         |
|-----------|------------|-------------------------------------|
| 1         | 5109222    | Binding Head Tapping Screw, M3 x 8  |
| 2         | 5006411    | Metal Bonnet (2)                    |
| 3         | 5006500    | Metal Bonnet (1)                    |
| 4         | 5309700    | Side Plate (Right)                  |
| 5         | 5309690    | Side Plate (Left)                   |
| 6         | 5318260    | C-6 Type Knob, Speakers             |
| 7         | 5326510    | E-2 Type Knob, lever switch         |
| 8         | 5318250    | B-6 Type Knob, Triple Tone Control  |
| 9         | 7726080    | Light Emitted Diode Ass'y (A)       |
| 10        | 5110781    | Hex. Nut, M9                        |
| 11        | 5120084    | Plain Washer, 9 $\phi$              |
| 12        | 5326520    | E-3 Type Knob, lever switch         |
| 13        | 5318270    | D-6 Type Knob, Balance              |
| 14        | 5318230    | Z-5 Type Knob, Volume               |
| 15        | 5318280    | F-6 Type Knob, rotary volume        |
| 16        | 5166610    | Flat Countersunk Head Screw, M3 x 6 |
| 17        | 5109222    | Binding Head Tapping Screw, M3 x 8  |
| 18        | 5286731    | Lever Guide (1)                     |
| 19        | 5286741    | Lever Guide (2)                     |
| 20        | 5446250    | Meier Glass                         |
| 21        | 5309760    | Meier Hood                          |
| 22        | 5286721    | Knob Guide                          |
| 23        | 5336580    | SANSUI Mark                         |
| 24        | 7007250    | Front Panel                         |
| 25        | 1102630    | Rotary Switch Y-244, Speakers       |
| 26        | 1170330    | Lever Switch, Power                 |
| 27        | 5047470    | Mosking, lever switch               |
| 28        | 1090090, 1 | 50k $\Omega$ x 2 Bass Volume        |
| 29        | 2430240    | Headphone Jack                      |
| 30        | 1090100, 1 | 50k $\Omega$ x 2 Midrange Volume    |
| 31        | 1171000    | Lever Switch, Filters               |
| 32        | 1090110, 1 | 50k $\Omega$ x 2 Treble Volume      |
| 33        | 1131080    | Push Switch (SUE-62)                |
| 34        | 1090180    | 100k $\Omega$ x 2 Balance Volume    |
| 35        | 1170090    | Lever Switch, Muting                |
| 36        | 1015160    | 50k $\Omega$ x 2 Volume             |
| 37        | 1101720    | Rotary Switch SRA-125, Mode         |
| 38        | 1170960    | Lever Switch, Tape Playback         |
| 39        | 1170880    | Lever Switch, Tape Play             |
| 40        | 1170950    | Lever Switch, Input Selector        |
| 41        | 1102670    | Rotary Switch SRA-244, Tape Copy    |
| 42        | 1131070    | Push Switch (SUE24)                 |
| 43        | 5326530    | Push Switch Knob                    |
| 44        | 1101730    | Rotary Switch SRA-123, Sensitivity  |
| 45        | 5101147    | Binding Head Screw, M3 x 14         |
| 46        | 5286780    | Illumination Cover                  |
| 47        | 0420050    | 7V 300mA Fuse Type Lamp             |
| 48        | 5446240    | Illumination Plate                  |
| 49        | 5109222    | Binding Head Tapping Screw, M3 x 8  |
| 50        | 5937151    | Heat Sink                           |
| 51        | 5101163    | Binding Head Screw, M4 x 10         |
| 52        | 5517050    | Leg                                 |
| 53        | 5058382    | Bottom Plate                        |
| 54        | 4300910    | Power Meter                         |



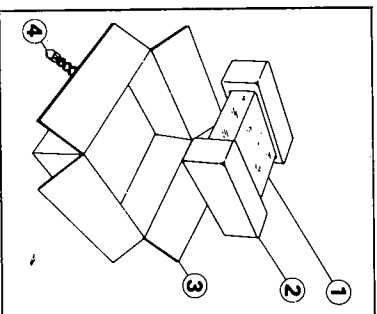
## 6-2. Other Parts List

| Parts No. | Stock No.                                                             | Description                                             |
|-----------|-----------------------------------------------------------------------|---------------------------------------------------------|
| TR01, 02  | { 0306310-3<br>or<br>(0308470, 1<br>2SD424 (R, O)<br>2SA908 (R, O, Y) | 2SC1585 (R, O, Y)                                       |
| TR03, 04  | { 0303300<br>or<br>(0300730-2<br>2SB554 (R, O)<br>2SC1585 (R, O, Y)   | Transistor                                              |
| TR05, 06  | { 0308470, 1<br>or<br>(0300730-2<br>2SD424 (R, O)<br>2SA908 (R, O, Y) | Transistor                                              |
| TR07, 08  | { 0303300<br>or<br>2SB554 (R, O)                                      | Transistor                                              |
| TR09, 10  | { 0306310-3<br>or<br>(0308470, 1<br>2SD424 (R, O)<br>2SA908 (R, O, Y) | Transistor                                              |
| TR11, 12  | { 0303300<br>or<br>(0300730-2<br>2SB554 (R, O)                        | Transistor                                              |
| C706      | 0601477                                                               | 0.047 $\mu$ F                                           |
| C707      | 0601477                                                               | 0.047 $\mu$ F 50V C.C.                                  |
| C708      | 0601477                                                               | 0.047 $\mu$ F                                           |
| R01       | 0104100                                                               | 10 $\Omega$                                             |
| R02       | 0104100                                                               | 10 $\Omega$                                             |
| R03       | 0104100                                                               | 10 $\Omega$                                             |
| R04       | 0104100                                                               | 10 $\Omega$                                             |
| PT701     | 4002400                                                               | Power Transformer                                       |
| F701      | { 0431320<br>or<br>(0431390                                           | 10A 250V (AC 100~120V) AC<br>6A 250V (AC 220~240V) Fuse |
|           | 2230051                                                               | Ground Terminal                                         |
|           | 2300060                                                               | Fuse Holder                                             |
|           | 2450060                                                               | AC Outlet                                               |
|           | 3800250                                                               | Power Cord                                              |
|           | 3910190                                                               | Cord Clip, power cord                                   |
|           | 2210280                                                               | 4P Speaker Terminal                                     |



## 8. PACKING LIST

| Parts No. | Stock No. | Description       |
|-----------|-----------|-------------------|
| 1         | 9116650   | Vinyl Cover       |
| 2         | 9027890   | Styrofoam Packing |
| 3         | 9009130   | Carton Case       |
| 4         | 5966080   | Curly Stopper     |



## 9. ACCESSORY PARTS LIST

| Parts No. | Stock No. | Description                      |
|-----------|-----------|----------------------------------|
| 1         | 9209370   | Operating Instructions           |
| 2         | 2410560   | Short Pin Plug                   |
| 3         | 9296090   | Caution Sheet                    |
| 4         | 9396700   | Caution Tug                      |
| 5         | 9396880   | Caution Tug (For Short Pin Plug) |
| 6         | 9566930   | Schematic Diagram                |

**Sansui**

SANSUI ELECTRIC CO., LTD.  
14-1, 2-chome, Izumi, Suginami-ku, Tokyo 168, Japan.  
TELEPHONE: (03) 323-1111 / TELEX: 232-2076

SM051

Printed in Japan (16720M)

