

# SERVICE MANUAL

**NAD**

## SERVICE SAFETY PRECAUTIONS (UL)

1. Use exact replacement parts for critical locations marked "⚠"
2. Return lead dress to original position and re-install protective covers.
3. Before returning to customer, test for shock hazard; use either method A or B:
  - A. Leakage test "cold":
    1. Unplug the AC cord; turn power switch ON.
    2. Connect one lead of High Voltage Insulation Tester to both prongs of the AC plug.
    3. Touch other lead to all exposed metal parts.
    4. Impedance measurement must be 0.3-5.0 Megohms.
  - B. Leakage test, "live":
    1. Plug unit directly into the AC outlet: do not use isolation transformer.
    2. Connect one lead of the Leakage Current Tester to earth ground.
    3. Touch other lead to all exposed metal parts.
    4. Leakage measurement must be less than 0.5 milliamps.

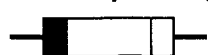
**314**

**STEREO INTEGRATED  
AMPLIFIER**

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# SERVICE SAFETY PRECAUTIONS

## 1. Replacing the fuses



This symbol located near the fuse indicates that the fuse used is fast operating type. For continued protection against fire hazard, replace with same type fuse. For fuse rating refer to the marking adjacent to the symbol.

| <u>Reference No</u> | <u>Part Number</u> | <u>Description</u>                    |
|---------------------|--------------------|---------------------------------------|
| F801-F802*AH        | N51003130-1A       | Fuse 3.15A 125V Time Leg LBC (UL/CSA) |
| F801-F802*C,B       | N51003130-1B       | Fuse 3.15A 250V Time Leg HBC (SEMKO)  |
| F803-F804*AH        | N51005030-1A       | Fuse 5A 125V Time Leg LBC (UL/CSA)    |
| F803-F804*C,B       | N51005030-1B       | Fuse 5A 250V Time Leg HBC (SEMKO)     |
| F901-F902*AH        | N51002510-1C       | Fuse 250mA 250V Time Leg LBC (UL/CSA) |
| F901-F902*C,B       | N51002510-1B       | Fuse 250mA 250V Time Leg LBC (SEMKO)  |

### NOTE :

- <\*AH > : USA, CANADIAN MODEL ONLY.

<\*B > : UK MODEL ONLY.

<\*C > : EUROPEAN MODEL ONLY.

## 2. Safety-check out

(Only U.S.A. model)

After correcting the original service problem perform the following safety check before releasing the set to the customer.

Connect the insulating-resistance tester between the plug of power supply cord and the screw on the back panel.

Specifications : 3.3 Mohm $\pm$ 10% at 500V.

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## SPECIFICATIONS

### POWER AMPLIFIER SECTION

|  |   |
|--|---|
| <b>CONTINUOUS AVERAGE POWER OUTPUT INTO 8 OHMS</b><br>(Min. power per channel, 20 Hz - 20 kHz, both channels driven, with no more than rated distortion) | <b>35 W (15.5 dBW)</b>                                    |
| Rated Distortion THD (20 Hz - 20 kHz)  | <b>0.03%</b>  |
| Clipping power<br>(Maximum continuous power per channel).  | <b>42 W</b>   |
| IHF dynamic headroom at 8 ohms   | <b>+5.5 dB</b>  |
| IHF dynamic power<br>(Maximum short term power per channel)  |   |
| 8 ohms:  | <b>120 W (21 dBW)</b>                                     |
| 4 ohms:  | <b>160 W (22 dBW)</b>                                     |
| 2 ohms:  | <b>200 W (23 dBW)</b>                                     |
| Slew rate  | <b>&gt; 20 V / <math>\mu</math>sec</b>                    |
| Damping factor<br>(ref. 8 ohms 50 Hz)  | <b>&gt; 100</b>   |
| Input Impedance  | <b>R = 18 kohms<br/>C = 560 pF</b>                        |
| Input sensitivity (for rated output into 8 ohms)   | <b>0.97 <math>\pm</math>0.06 V</b>                        |
| Voltage gain   | <b>x17 (24.6 dB)</b>                                      |
| Frequency response 20 Hz - 20 kHz  | <b><math>\pm</math>0.3 dB<br/>- 3 dB at 3 Hz / 70 kHz</b> |
| Signal / Noise ratio, A-weighted   | <b>100 dB ref. 1 W<br/>115 dB ref. 35 W</b>               |
| THD<br>(Total Harmonic Distortion, 20 Hz - 20 kHz, from 250 mW to rated output)  | <b>&lt; 0.03%</b>   |
| SMPTE I.M.<br>(Intermodulation Distortion, 60 Hz + 7 kHz, 4:1, from 250 mW to rated output)  | <b>&lt; 0.03%</b>   |
| IHF I.M.<br>(CCIF IM.Distortion, 19 + 20 kHz at rated output)  | <b>&lt; 0.03%</b>   |
| Net Weight   | <b>6.9 kg (15.2 lb)</b>                                   |
| Shipping Weight  | <b>8 kg (17.6 lb)</b>                                     |
| Dimensions   | <b>435mm x 110mm x 310mm<br/>(WxHxD)</b>                  |

## PREAMPLIFIER SECTION

### PHONO INPUT

Input impedance (R and C)  
 Input sensitivity (ref. rated power, 1 kHz)  
 Input overload at 20 Hz / kHz / 20 kHz  
 THD (20 Hz - 20 kHz) and IM dist.  
 RIAA accuracy  
 Signal / Noise ratio  
 (A-weighted with cartridge connected)

MM: 47 kohms + 200pF  
 MM: 2.5 ±0.3 mV  
 MM: 22 mV / 220 mV / 2.0 V  
 0.03% at 5 mV input  
 ± 0.5 dB  
 MM: 76 dB ref. 5 mV

### LINE LEVEL INPUTS

(CD, Video, Auxiliary, Tuner, Tape)

Input impedance (R and C)  
 Input sensitivity (ref. rated power)  
 Maximum input signal  
 Signal/ Noise ratio, A-weighted

20 kohms + 500 pF  
 170 ±10 mV  
 > 10V  
 88 dB ref. 1 W  
 103.5 dB ref. rated power  
 ±0.3 dB (tone defeat on)  
 ±0.5 dB (tone defeat off)

Frequency response, 20 Hz - 20 kHz

THD, SMPTE IM, IHF IM and TIM < 0.01% at 5 V out

### LINE LEVEL OUTPUTS

Preamp output impedance  
 Tape output impedance  
 Headphones output impedance

220 ohms  
 Source Z + 2 kohms  
 220 ohms  
 > 12 V  
 > 10 V  
 > 10 V into 600 ohms  
 > 500 mV into 8 ohms

preamp-out:  
 tape-out:  
 headphones-out:

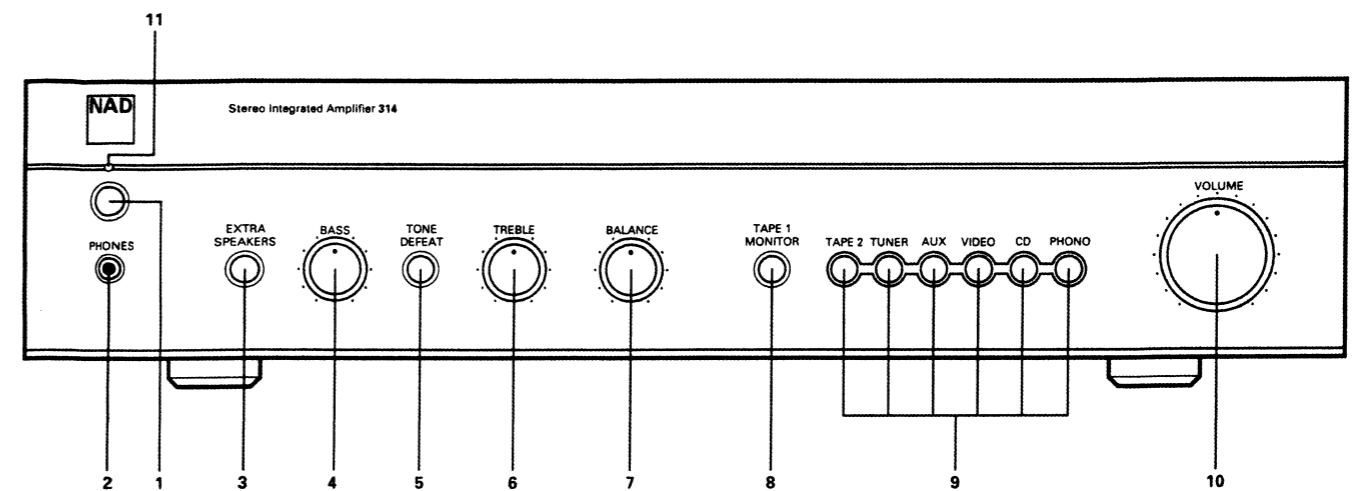
### CONTROLS

Treble  
 Bass  
 Infrasonic filter

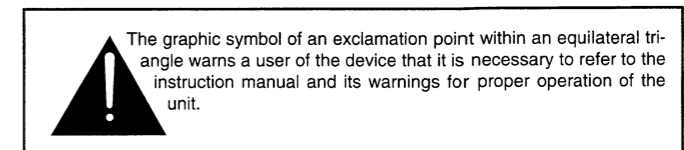
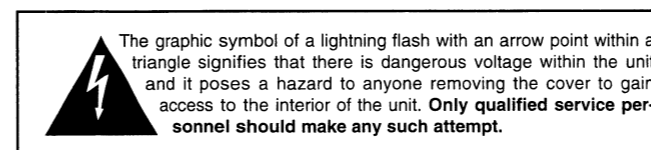
± 7 dB at 10 kHz  
 ± 10 dB at 50 Hz  
 -3 dB at 10 Hz  
 12 db / octave

## REAR PANEL / FRONT PANEL VIEW

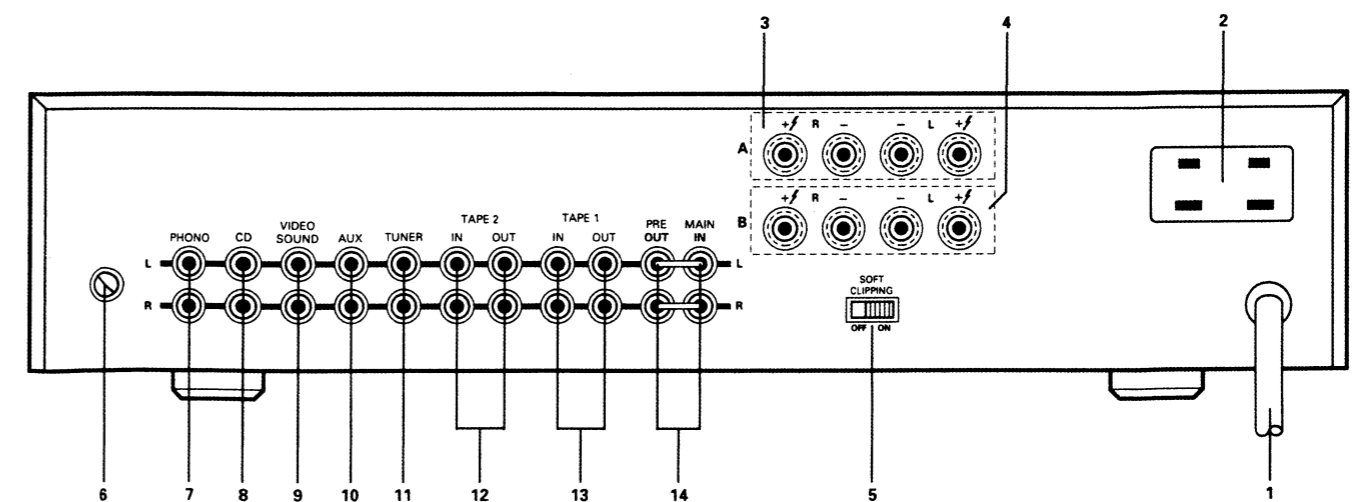
### FRONT PANEL



1. POWER
2. PHONES
3. EXTRA SPEAKERS
4. BASS
5. TONE DEFEAT
6. TREBLE
7. BALANCE
8. TAPE 1 MONITOR
9. INPUT SELECTOR (TAPE 2, TUNER, AUX, VIDEO, CD, PHONO)
10. VOLUME
11. POWER INDICATOR

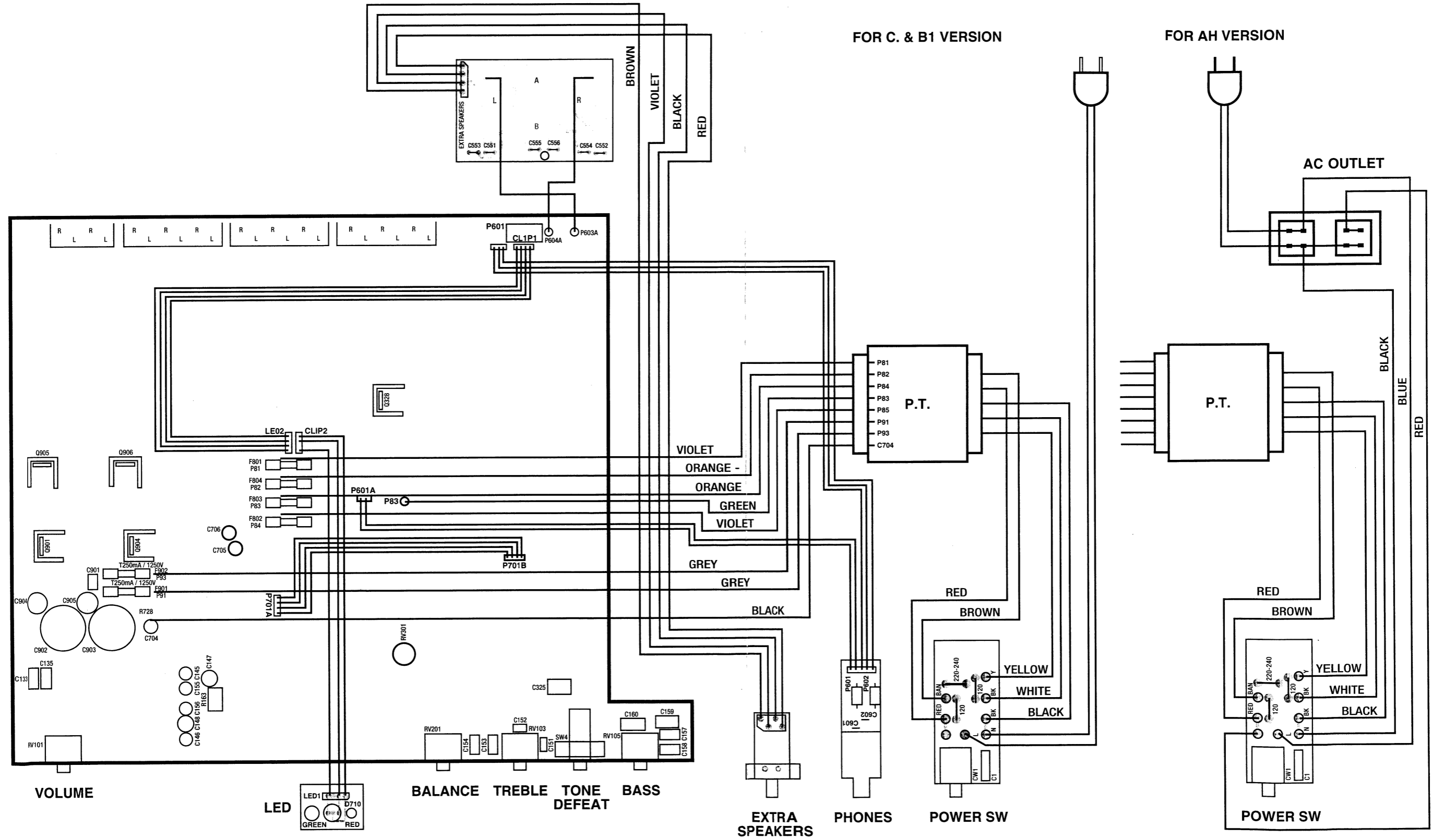


### REAR PANEL CONNECTIONS



1. AC LINE CORD
2. AC OUTLET (ONLY IN 120V MODEL)
3. SPEAKER TERMINALS "A"
4. SPEAKER TERMINAL "B"
5. SOFT CLIPPING
6. PHONO GROUND
7. PHONO INPUT
8. CD INPUT
9. VIDEO SOUND INPUT
10. AUXILIARY INPUT
11. TUNER INPUT
12. TAPE 2 INPUT/OUTPUT
13. TAPE 1 INPUT/OUTPUT
14. PREAMP OUT, MAIN IN

# WIRING DIAGRAM



## DISASSEMBLY INSTRUCTIONS

1. Remove machine screws M4.0 x 6.0 (① to ④) from the side panels. Remove tapping screw 3.0 x 8.0 (⑤) from the back panel. Refer to **Figure No. 1**.

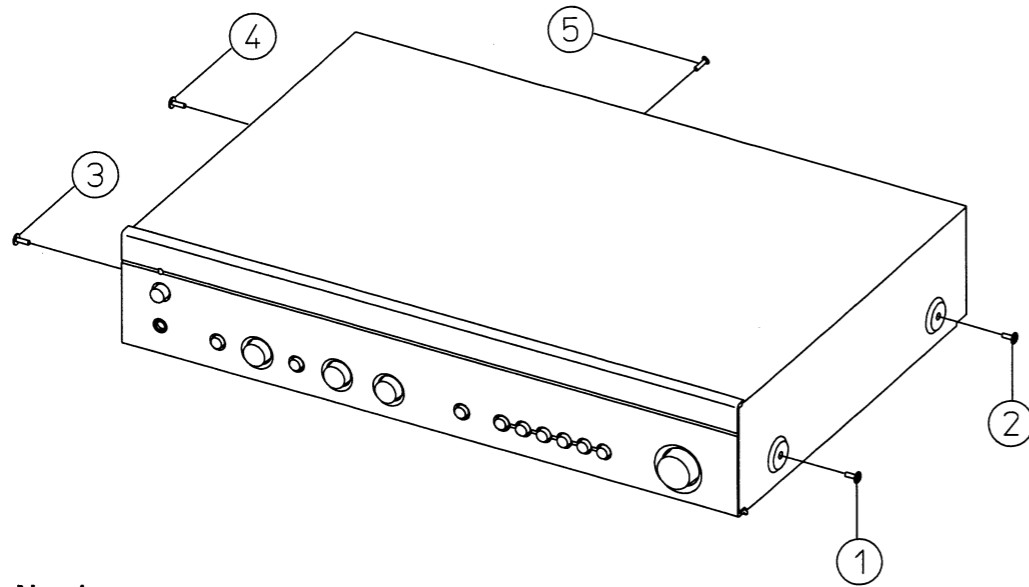


Figure No. 1.

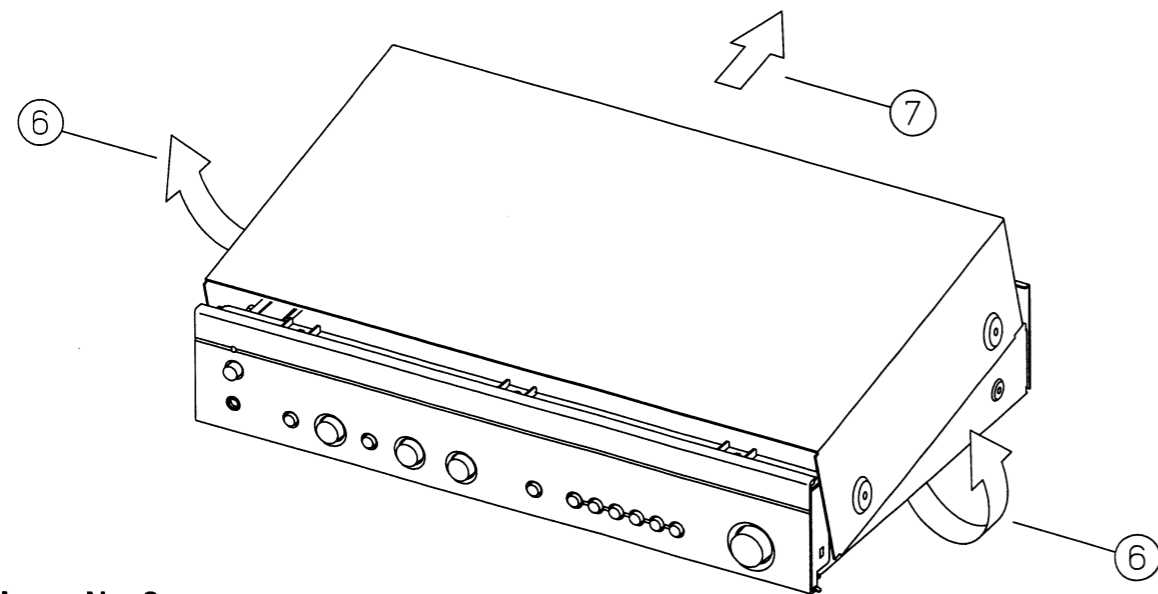


Figure No. 2.

2. Pull both sides of the TOP COVER slightly outwards and tilt approximately, 35° and then remove in the direction as shown in **Figure No. 2**.

## ALIGNMENT PROCEDURES

### INITIAL ADJUSTMENT (No load connected)

#### A. OUTPUT OFFSET VOLTAGE

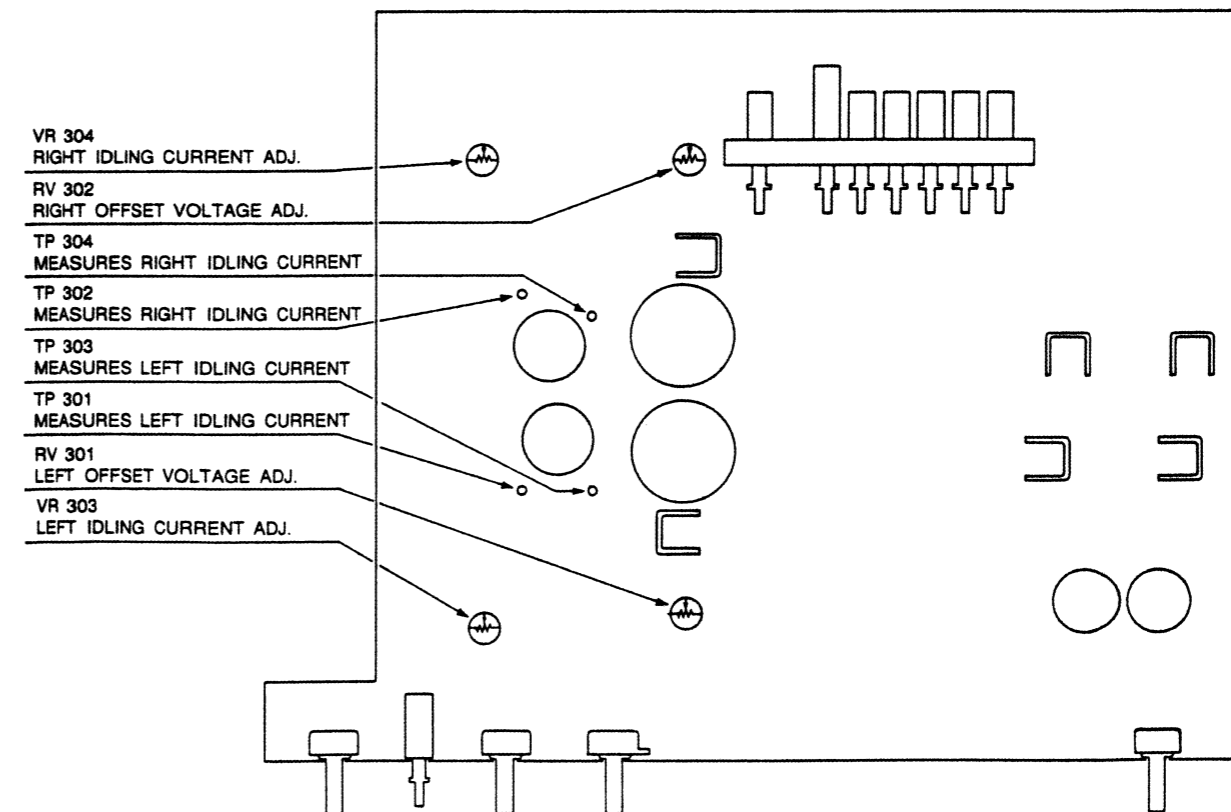
1. Connect a DC Millivoltmeter to L Channel speaker output terminals.
2. Turn unit "ON" and adjust RV301 (10 kohms) to get a reading of  $0V \pm 10$  mV.
3. Connect the DC Millivoltmeter to R Channel speaker output terminals and adjust RV302 (10 kohms) to get a reading of  $0V \pm 10$  mV.

#### B. IDLING CURRENT

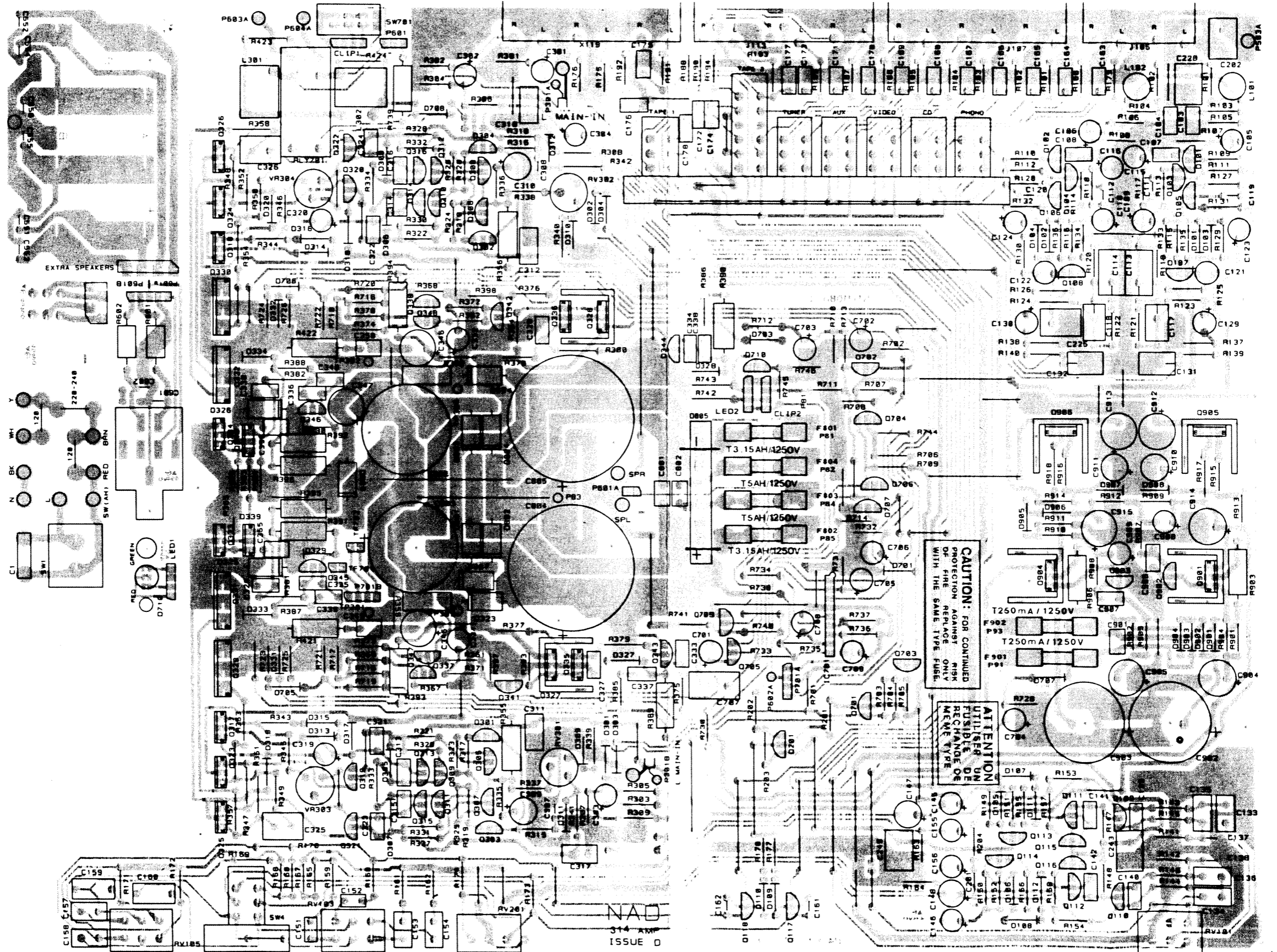
1. Connect a DC Millivoltmeter to TP301 and TP303 and adjust VR303 (1 kohms) for 5.7 – 6.4 mV reading on meter.
2. Connect a DC Millivoltmeter to TP302 and TP304 and adjust VR304 (1 kohms) for 5.7 – 6.4 mV reading on meter.
3. Leave power "ON" for minimum of 5 minutes, and check 1 and 2 for correct reading.

### FINAL ADJUSTMENT

Repeat procedure A and B for offset voltage and idling current alignment respectively.

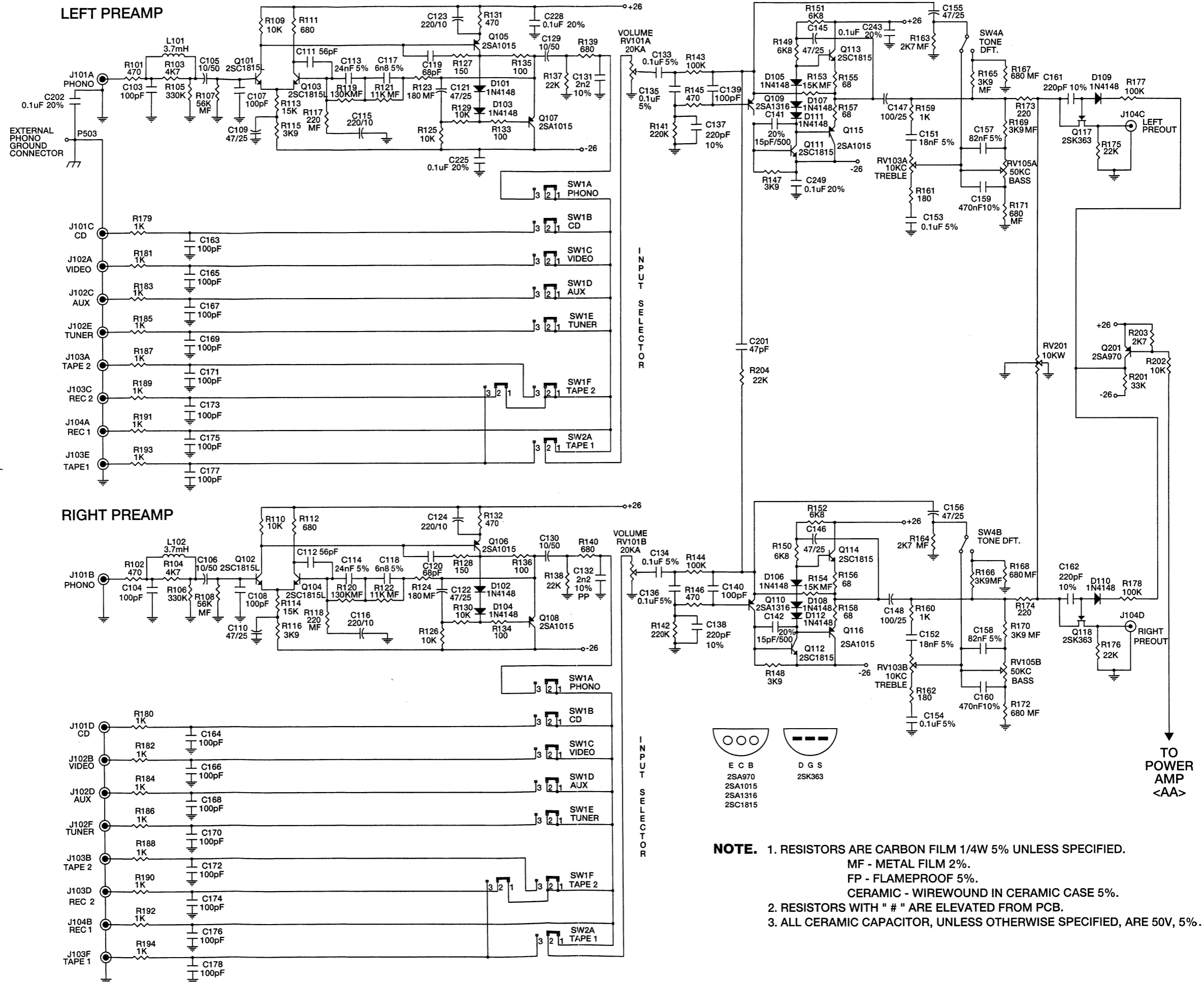


# PCB LAYOUT



# SCHEMATIC DIAGRAM

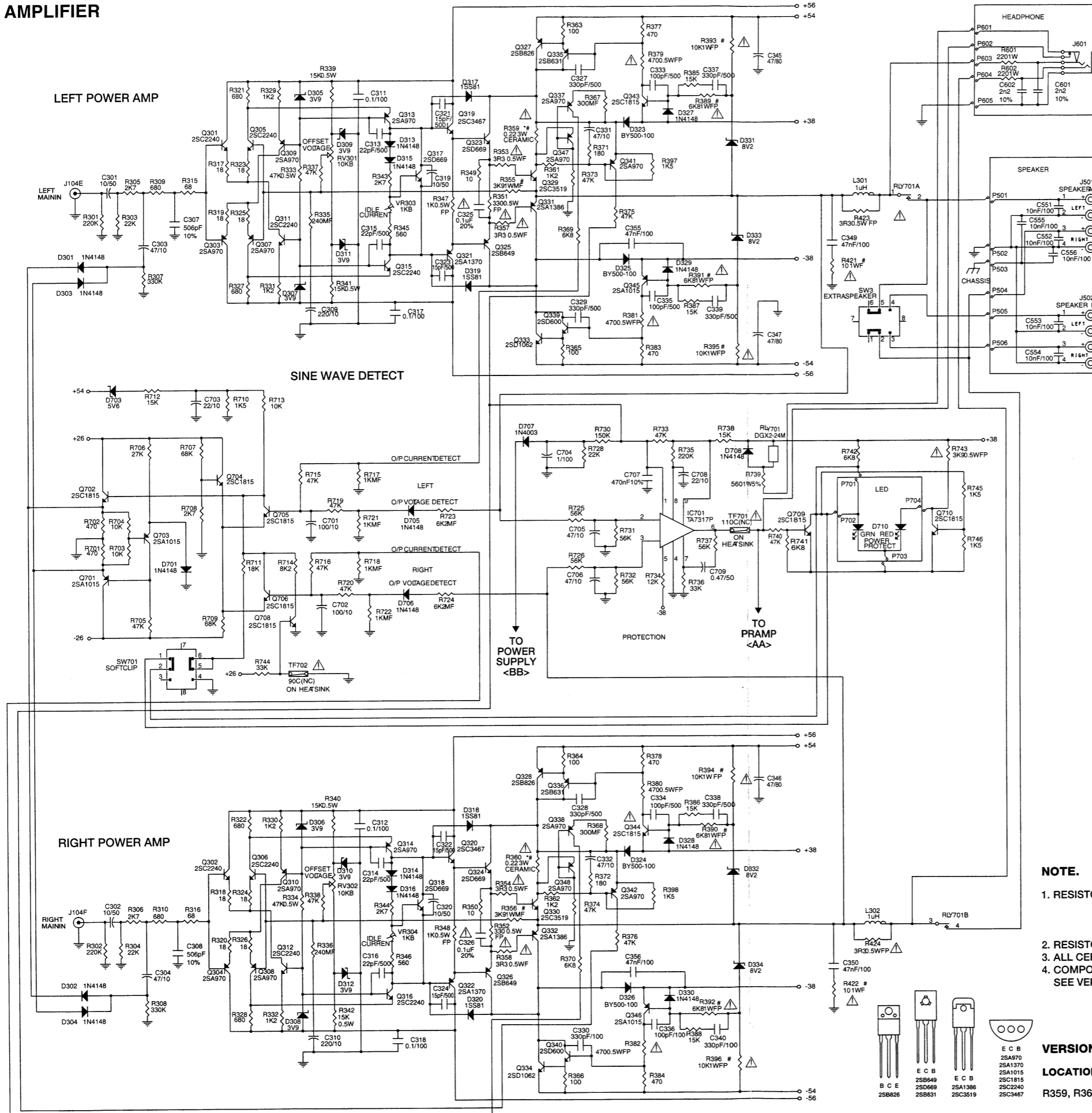
## PREAMP



**NOTE.** 1. RESISTORS ARE CARBON FILM 1/4W 5% UNLESS SPECIFIED.  
 MF - METAL FILM 2%.  
 FP - FLAMEPROOF 5%.  
 CERAMIC - WIREWOUND IN CERAMIC CASE 5%.  
 2. RESISTORS WITH " # " ARE ELEVATED FROM PCB.  
 3. ALL CERAMIC CAPACITOR, UNLESS OTHERWISE SPECIFIED, ARE 50V, 5%.



**POWER AMPLIFIER**

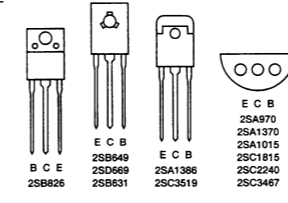


**NOTE.**

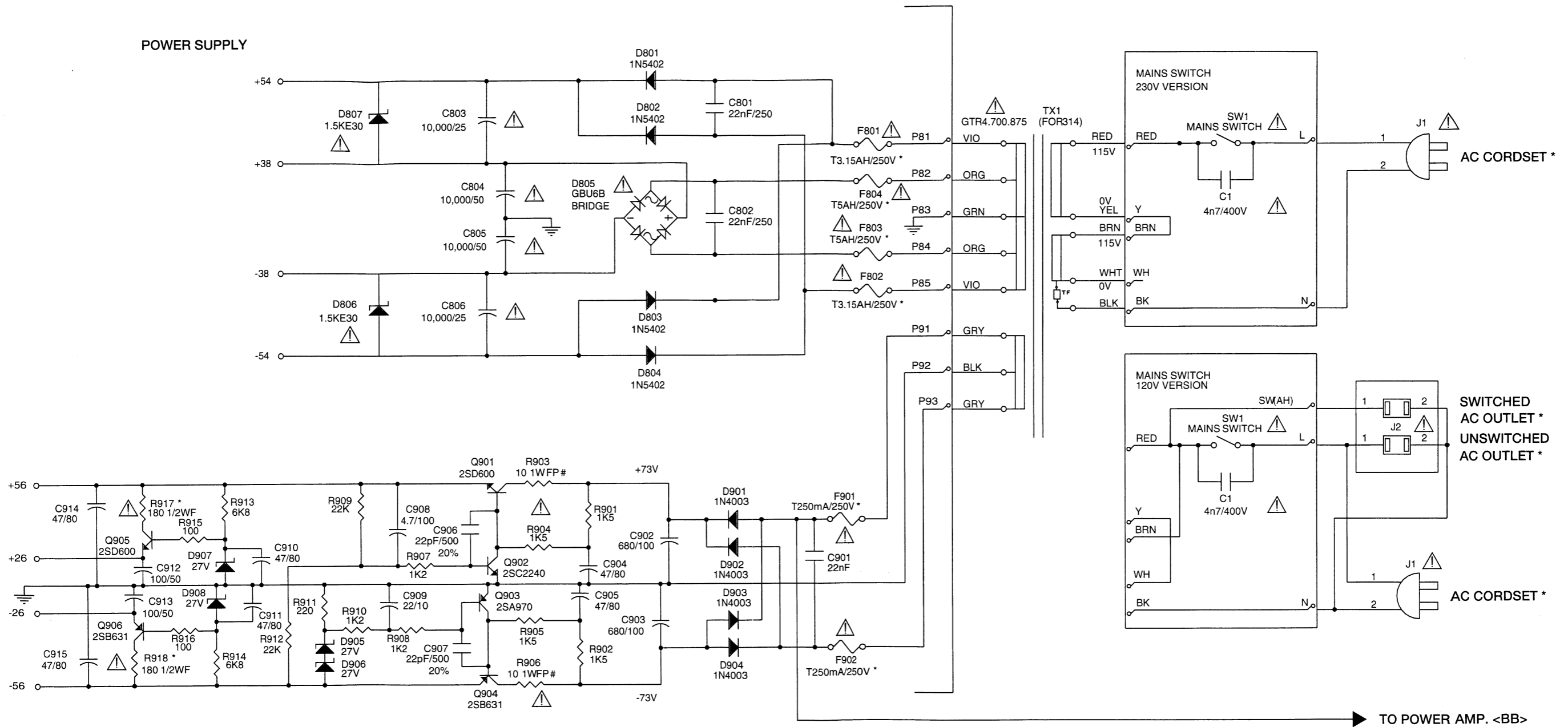
1. RESISTORS ARE CARBON FILM 1/4W 5% UNLESS SPECIFIED.  
MF - METAL FILM 2%.  
FP - FLAMEPROOF 5%.  
CERAMIC - WIREWOUND IN CERAMIC CASE 5%.
2. RESISTORS WITH " # " ARE ELEVATED FROM PCB.
3. ALL CERAMIC CAPACITOR, UNLESS OTHERWISE SPECIFIED, ARE 50V, 20%.
4. COMPONENT VALUES WITH " \* " ARE FOR C, B AND B1 VERSIONS.  
SEE VERSION DATA FOR AH VERSION.

**VERSION DATA.**

| LOCATION NUMBER | AH              | C/B/B1          |
|-----------------|-----------------|-----------------|
| R359, R360      | 0.22 2W CERAMIC | 0.22 3W CERAMIC |

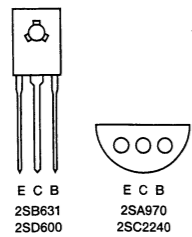


# POWER SUPPLY



## POWER SUPPLY

### VERSION DATA.



#### LOCATION NUMBER

- J1 - AC CORDEST
- J2 - AC OUTLET
- F801, F802
- F803, F804
- F901, F902
- R917, R918

#### AH

- UL - 1 POLARIZED DUAL POLARIZED
- T3 . 15A 125V UL/CSA
- T5A . 125V UL/CSA
- T250mA . 250V UL/CSA
- 180 1W FP

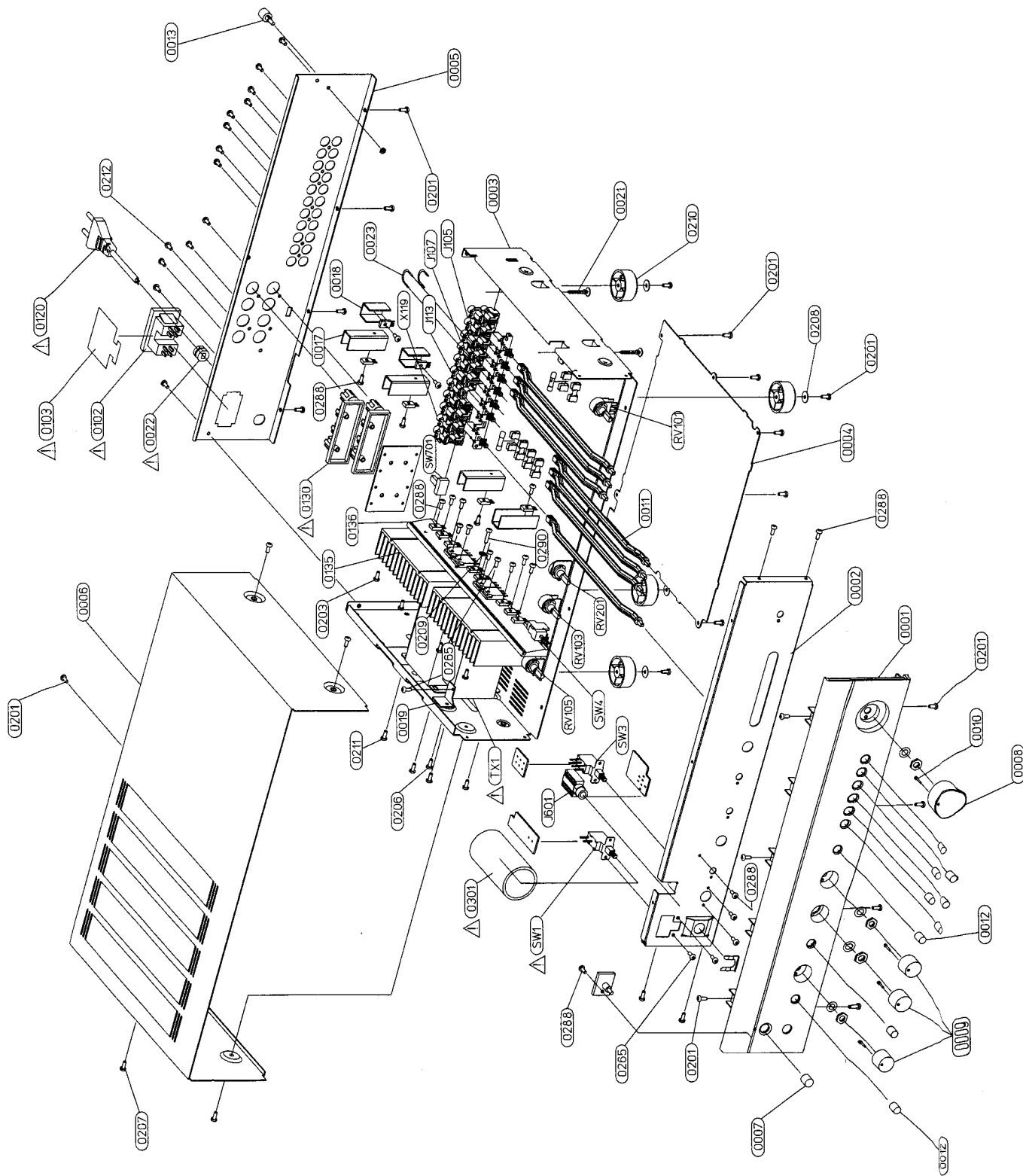
#### C/B/B1

- CEE-7/BS1363-3A/AS-3112
- NIL
- T3 . 15A HBC 250V SEMKO
- T5A . HBC 250V SEMKO
- T250mA . LBC 250V SEMKO
- 180 1W/2W F

### NOTE.

1. RESISTORS ARE CARBON FILM 1/4W 5% UNLESS SPECIFIED.  
MF - METAL FILM 2%.  
FP - FLAMEPROOF 5%.  
CERAMIC - WIREWOUND IN CERAMIC CASE 5%.
2. RESISTORS WITH " # " ARE ELEVATED FROM PCB.
3. COMPONENT VALUES WITH " \* " ARE FOR C, B AND B1 VERSIONS.  
SEE VERSION DATA FOR AH VERSION.
4. COMPONENTS WITH " Δ " ARE SAFETY CRITICAL PARTS.

# EXPLODED VIEW



## EXPLODED VIEW PARTS LIST

| <u>Item</u> | <u>Part No</u> | <u>Description</u>                  | <u>Qty</u> |
|-------------|----------------|-------------------------------------|------------|
| 0001        | N14630911-1    | FASCIA                              | 1          |
| 0002        | N14023890-0    | SUBFASCIA                           | 1          |
| 0003        | N14023880-0    | CHASSIS                             | 1          |
| 0004        | N14023810-0    | BASE COVER                          | 1          |
| 0005*AH     | N14023901-0    | REAR PANEL AH VERSION               | 1          |
| 0005*B,C    | 1402-3922-0    | REAR PANEL B VERSION                | 2          |
| 0006        | N14023840-0    | TOP COVER                           | 1          |
| 0007        | N2437510B-0    | DIA 9.5 GLOSS POWER BUTTON          | 1          |
| 0008        | N24375601-0    | KNOB 35.0MM (VOLUME)                | 1          |
| 0009        | N24375701-1    | KNOB 18.5MM (BASS,TREBLE,BAL)       | 3          |
| 0010        | N41520041-0    | POINTER                             | 4          |
| 0011        | N24376101-0    | BUTTON EXTENDER (INPUT SEL.)        | 7          |
| 0012        | N24376001-0    | LONG BUTTON 8.0MM (INPUT SEL.)      | 9          |
| 0013        | N41321181-0    | THUMB SCREW ASSY                    | 1          |
| 0017        | 5400-1161-0    | REGULATOR HEAT SINK                 | 4          |
| 0018        | N54000811-0    | 28V REGULATOR HEATSINK              | 2          |
| 0019        | N14023850-0    | PWR-SW PCB BRACKET                  | 1          |
| 0021        | 4152-0911-0    | PCB SUPPORT 12MM HIGH               | 2          |
| 0022        | △ N41519461-0  | STRAIN RELIEF BUSHING               | 1          |
| 0023        | N41321021-0    | U-SHORTING BAR 18MM                 | 2          |
| 0102*AH     | △ 2103-7701-1  | AC OUTLET 125V 15A AH VERSION       | 1          |
| 0103*AH     | △ N41519941-0  | AC OUTLET COVER PLATE AH VERSION    | 1          |
| 0120*AH     | △ N70093100-1  | AC CORD AH VERSION                  | 1          |
| 0120*B      | △ N70095100-1  | AC CORD W/FUSED PLUG (3A) B VERSION | 1          |
| 0120*C      | △ N70093110-0  | AC CORD C VERSION                   | 1          |
| 0130        | △ N21036004-0  | SPEAKER TERMINAL                    | 2          |
| 0135        | 5400-1081-1    | HEAT SINK EXTRUSION                 | 2          |
| 0136        | 5400-1091-1    | HEAT SINK BAR                       | 1          |
| 0201        | 2954-3008-3000 | TAPPING 3X8MM B-TITE (BLK.ZN)       | 35         |
| 0203        | 2950-3008-0000 | TAPPING 3X8 B-TITE PH (YEL.ZN)      | 4          |
| 0206        | 2904-3006-0000 | SCREW M3X6                          | 1          |
| 0207        | 2900-4006-3010 | M4X0.5PX6MM W/FLAT WASHER           | 4          |
| 0208        | 2842-3367-0    | METAL WASHER ID=3.3 OD=6.7          | 4          |
| 0209        | 2842-3316-0    | M. WASHER(104H-2)(ID=3.3D=16)       | 1          |
| 0210        | N41519371-1    | RUBBER FOOT 14.8MM HIGH             | 4          |
| 0211        | 2900-4010-0010 | SCREW M4X10 W/WASHER (YEL.ZN)       | 4          |
| 0212        | 2950-3008-3000 | SCREW 3X8 TAPPING                   | 4          |
| 0265        | 2904-3008-0000 | M3X8MM BINDING HEAD (YEL.ZN)        | 9          |
| 0288        | 2954-3008-0000 | TAPPING 3X8MM B-TITE (YEL.ZN)       | 23         |
| 0290        | 2954-3010-0000 | T3X10MM B-TITE (YEL.ZN)             | 1          |
| 0301        | △ N16600640-0  | POWER SWITCH SLEEVE ID=30 UL/CSA    | 23         |

| <u>Item</u> | <u>Part No</u> | <u>Description</u>                    | <u>Qty</u> |
|-------------|----------------|---------------------------------------|------------|
| J105        | 2113-1021-0    | 4P RCA JACK R/W AU HSP-204V-03        | 1          |
| J107        | N21038506-2    | 6P RCA JACK R/W NI HSP-206V-01        | 1          |
| J113        | N21038506-2    | 6P RCA JACK R/W NI HSP-206V-01        | 1          |
| J601        | 2113-1011-0    | PHONE JACK W/CLIP                     | 1          |
| X119        | N21038506-2    | 6P RCA JACK R/W NI HSP-206V-01        | 1          |
| RV101       | N47503666-0    | VR VOLUME 2x20k Ohm A W/WASHER & NUT  | 1          |
| RV103       | N47503646-0    | VR TREBLE 2x10k Ohm C W/WASHER & NUT  | 1          |
| RV105       | N47503676-0    | VR BASS 2x50k Ohm C W/WASHER & NUT    | 1          |
| RV201       | N47503656-0    | VR BALANCE 1x10k Ohm W W/WASHER & NUT | 1          |
| SW1     △   | 5200-3431-0    | POWER SWITCH W/M3 THREAD              | 1          |
| SW3         | 5200-3482-0    | SELECT SWITCH 2P2T W/M3 THREAD        | 1          |
| SW4         | N52003121-0-01 | 2P2T ALPS SPUN W/O FRAME              | 1          |
| SW701       | N52003131-0-01 | 2P2T SLIDE SWITCH 3.5T22KYGX          | 1          |
| TX1     △   | N18062101-2    | TRANSFORMER 314 W/M4 THREAD           | 1          |

**NOTE :** - The components identified by △ mark are critical for risk of fire and electrical shock.  
Replace only with part number specified.

- <\*AH > : USA, Canadian model only.
- <\*B > : UK model only.
- <\*C > : European model only.

# ELECTRICAL PARTS LIST

| Reference No       | Part Number   | Description               |
|--------------------|---------------|---------------------------|
| <b>PC BOARD</b>    |               |                           |
|                    | MI-10801-05-S | PCB ASSEMBLY              |
| <b>ICs</b>         |               |                           |
| IC701              | N31303550-0   | IC TA7317P                |
| <b>TRANSISTORS</b> |               |                           |
| Q101-Q104          | 4860-1720-5   | TR KTC31981 (GR)          |
| Q105-Q108          | N48600660-5   | TR 2SA1015 (GR)           |
| Q109-Q110          | N48600670-5   | TR 2SA1316 (BL)           |
| Q111-Q114          | 4860-0700-5   | TR 2SC1815 (GR)           |
| Q115-Q116          | N48600660-5   | TR 2SA1015 (GR)           |
| Q117-Q118          | N485363BL-5   | N-JFET 2SK363BL           |
| Q201               | N48600650-5   | TR 2SA970 (GR)            |
| Q301-Q302          | N485240GR-5   | TR 2SC2240(GR)            |
| Q303-Q304          | N48600650-5   | TR 2SA970 (GR)            |
| Q305-Q306          | N485240GR-5   | TR 2SC2240(GR)            |
| Q307-Q310          | N48600650-5   | TR 2SA970 (GR)            |
| Q311-Q312          | N485240GR-5   | TR 2SC2240(GR)            |
| Q313-Q314          | N48600650-5   | TR 2SA970 (GR)            |
| Q315-Q316          | N485240GR-5   | TR 2SC2240(GR)            |
| Q317-Q318          | N485669AC-5   | TR 2SD669A-C              |
| Q319-Q320          | N48600720-5   | TR 2SC3467 (E)            |
| Q321-Q322          | N48600680-5   | TR 2SA1370 (E)            |
| Q323-Q324          | N485669AC-5   | TR 2SD669A-C              |
| Q325-Q326          | N485649AC-5   | TR 2SB649A-C              |
| Q327-Q328          | N485B826R-5   | TR 2SB826 (R)             |
| Q329-Q330          | N48600730-5   | TR 2SC3519 (O,P,Y)        |
| Q331-Q332          | N48600690-5   | TR 2SA1386 (O,P,Y)        |
| Q333-Q334          | N48600750-5   | TR 2SD1062 (R)            |
| Q335-Q336          | N48600870-5   | TR2SB631K (EF)            |
| Q337-Q338          | N48600650-5   | TR 2SA970 (GR)            |
| Q339-Q340          | N48600740-5   | TR 2SD600K (E,F)          |
| Q341-Q342          | N48600650-5   | TR 2SA970 (GR)            |
| Q343-Q344          | 4860-0700-5   | TR 2SC1815 (GR)           |
| Q345-Q346          | N48600660-5   | TR 2SA1015 (GR)           |
| Q347-Q348          | N48600650-5   | TR 2SA970 (GR)            |
| Q701               | N48600660-5   | TR 2SA1015 (GR)           |
| Q702               | 4860-0700-5   | TR 2SC1815 (GR)           |
| Q703               | N48600660-5   | TR 2SA1015 (GR)           |
| Q704-Q707          | 4860-0700-5   | TR 2SC1815 (GR)           |
| Q709-Q710          | 4860-0700-5   | TR 2SC1815 (GR)           |
| Q901               | N48600740-5   | TR 2SD600K (E,F)          |
| Q902               | N485240GR-5   | TR 2SC2240(GR)            |
| Q903               | N48600650-5   | TR 2SA970 (GR)            |
| Q904               | N48600870-5   | TR 2SB631K (E,F)          |
| Q905               | N48600740-5   | TR 2SD600K (E,F)          |
| Q906               | N48600870-5   | TR 2SB631K (E,F)          |
| <b>DIODES</b>      |               |                           |
| D101-D112          | 4804-1480-2   | Diode 1N4148              |
| D301-D304          | 4804-1480-2   | Diode 1N4148              |
| D305-D312          | 4837-3B20-2   | Zener Diode 1/2W 3.8-4.0V |
| D313-D316          | 4804-1480-2   | Diode 1N4148              |
| D317-D320          | N48400550-0   | Diode 1SS81               |
| D323-D326          | N48400560-0   | Diode BY500-100 (G.I)     |

| <b>Reference No</b> | <b>Part Number</b> | <b>Description</b>          |
|---------------------|--------------------|-----------------------------|
| D327-D330           | 4804-1480-2        | Diode 1N4148                |
| D331-D334           | 4837-7A20-2        | Zener Diode 1/2W 7.9-8.3V   |
| D701                | 4804-1480-2        | Diode 1N4148                |
| D703                | 4837-5B10-2        | Zener Diode 1/2W 5.5-5.8V   |
| D705-D706           | 4804-1480-2        | Diode 1N4148                |
| D707                | N48040030-2        | Diode 1N4003                |
| D708                | 4804-1480-2        | Diode 1N4148                |
| D710                | N37003515-RG       | LED L-469EGW Red/Green 3mm  |
| D801-D804           | N48054020-L        | Diode 1N5402                |
| D805                | N48400570-0        | Bridge Diode GBU 6B         |
| D806-D807           | N48400580-0        | Diode 1.5KE30               |
| D901-D904           | N48040030-2        | Diode 1N4003                |
| D905-D908           | 4837-27V0-2        | Zener Diode 1/2W 26.2-27.6V |
| <b>COILS</b>        |                    |                             |
| L101-L102           | N18030013-0        | Toroid Inductor 3.7mH 20%   |
| L301-L302           | N18040500-0        | Spring Coil 1uH             |
| <b>CAPACITORS</b>   |                    |                             |
| C1                  | N89100049-0        | Cap 400V 4700pF             |
| C105-C106           | 157F-106M-5-IU     | CE 50V 10µF 20%             |
| C109-C110           | 157E-476M-5-IU     | CE 25V 47µF 20%             |
| C113-C114           | N89100052-0        | CP 50V 0.024µF 5%           |
| C115-C116           | 157C-227M-5-KW     | CE 10V 220µF 20%            |
| C117-C118           | N89100051-0        | CP 50V 6800pF 5%            |
| C121-C122           | 157E-476M-5-IU     | CE 25V 47µF 20%             |
| C123-C124           | 157C-227M-5-KW     | CE 10V 220µF 20%            |
| C129-C130           | 157F-106M-5-IU     | CE 50V 10µF 20%             |
| C131-C132           | N89100050-0        | CP 50V 2200pF 10%           |
| C133-C136           | 153F-104J-5-SY     | CM 50V 0.1µF 5%             |
| C145-C146           | 157E-476M-5-IU     | CE 25V 47µF 20%             |
| C147-C148           | 157E-107M-5-KW     | CE 25V 100µF 20%            |
| C151-C152           | 153F-183J-5-KP     | CM 50V 0.018µF 5%           |
| C153-C154           | 153F-104J-5-SY     | CM 50V 0.1µF 5%             |
| C155-C156           | 157E-476M-5-IU     | CE 25V 47µF 20%             |
| C157-C158           | 153F-823J-5-SY     | CM 50V 0.082µF 5%           |
| C159-C160           | N153F474K-5-17     | CM 50V 0.47µF 10%           |
| C202                | 153F-104M-5-SY     | CM 50V 0.1µF 20%            |
| C225                | 153F-104M-5-SY     | CM 50V 0.1µF 20%            |
| C228                | 153F-104M-5-SY     | CM 50V 0.1µF 20%            |
| C243                | 153F-104M-5-SY     | CM 50V 0.1µF 20%            |
| C249                | 153F-104M-5-SY     | CM 50V 0.1µF 20%            |
| C301-C302           | 157F-106M-5-IU     | CE 50V 10µF 20%             |
| C303-C304           | 157C-476M-5-IU     | CE 10V 47µF 20%             |
| C309-C310           | 157C-227M-5-KW     | CE 10V 220µF 20%            |
| C311-C312           | N153H104M-5-SY     | CM 100V 0.1µF 20%           |
| C317-C318           | N153H104M-5-SY     | CM 100V 0.1µF 20%           |
| C319-C320           | 157F-106M-5-IU     | CE 50V 10µF 20%             |
| C325-C326           | 153F-104M-5-SY     | CM 50V 0.1µF 20%            |
| C331-C332           | 157C-476M-5-IU     | CE 10V 47µF 20%             |
| C345-C347           | N157H476M-5-S5     | CE 100V 47µF 20%            |
| C349-C350           | N153H473M-5-OS     | CM 100V 0.047µF 20%         |
| C355-C356           | N153H473M-5-OS     | CM 100V 0.047µF 20%         |
| C701-C702           | 157C-107M-5-IU     | CE 10V 100µF 20%            |
| C703                | 157C-226M-5-IU     | CE 10V 22µF 20%             |
| C704                | N157H105M-5-IU     | CE 100V 1µF 20%             |
| C705-C706           | 157C-476M-5-IU     | CE 10V 47µF 20%             |

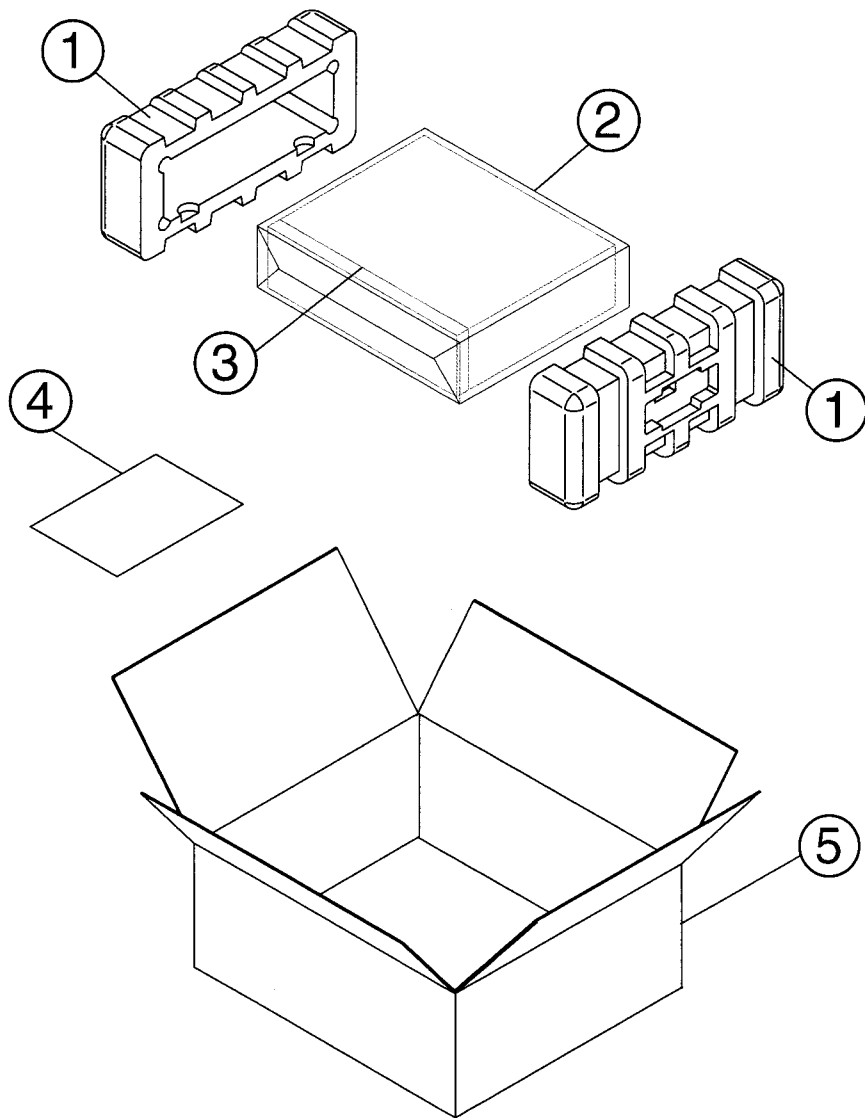
| <u>Reference No</u>  | <u>Part Number</u> | <u>Description</u>                   |
|----------------------|--------------------|--------------------------------------|
| C707                 | N153F474K-5-17     | CM 50V 0.47μF 10%                    |
| C708                 | 157C-226M-5-IU     | CE 10V 22μF 20%                      |
| C709                 | 157F-474M-5-IU     | CE 50V 0.47μF 20%                    |
| C801-C802            | N153R223M-5-KW     | CM 250V 0.022μF 20%                  |
| C803                 | N89100047-0        | CE 25V 10000μF 20%                   |
| C804-C805            | N89100048-0        | CE 50V 10000μF 20%                   |
| C806                 | N89100047-0        | CE 25V 10000μF 20%                   |
| C901                 | N153R223M-5-KW     | CM 250V 0.022μF 20%                  |
| C902-C903            | N89100046-0        | CE 100V 680μF 20%                    |
| C904-C905            | N157H476M-5-S5     | CE 100V 47μF 20%                     |
| C908                 | N157H475M-5-IU     | CE 100V 4.7μF 20%                    |
| C909                 | 157C-226M-5-IU     | CE 10V 22μF 20%                      |
| C910-C911            | N157H476M-5-S5     | CE 100V 47μF 20%                     |
| C912-C913            | 157F-107M-5-OW     | CE 50V 100μF 20%                     |
| C914-C915            | N157H476M-5-S5     | CE 100V 47μF 20%                     |
| <b>RESISTORS</b>     |                    |                                      |
| R107-R108            | 4715-563C-2        | RMF 56k Ohm 1/4W 2%                  |
| R117-R118            | 4715-221C-2        | RMF 220 Ohm 1/4W 2%                  |
| R119-R120            | 4715-134C-2        | RMF 130k Ohm 1/4W 2%                 |
| R121-R122            | 4715-113C-2        | RMF 11k Ohm 1/4W 2%                  |
| R123-R124            | 4715-181C-2        | RMF 180 Ohm 1/4W 2%                  |
| R153-R154            | 4715-153C-2        | RMF 15k Ohm 1/4W 2%                  |
| R163-R164            | 4715-272C-2        | RMF 2.7k Ohm 1/4W 2%                 |
| R165-R166            | 4715-392C-2        | RMF 3.9k Ohm 1/4W 2%                 |
| R167-R168            | 4715-681C-2        | RMF 680 Ohm 1/4W 2%                  |
| R169-R170            | 4715-392C-2        | RMF 3.9k Ohm 1/4W 2%                 |
| R171-R172            | 4715-681C-2        | RMF 680 Ohm 1/4W 2%                  |
| R335-R336            | 4715-241C-2        | RMF 240 Ohm 1/4W 2%                  |
| R347-R348            | △ N4717102J-2-P    | RFP 1K Ohm 1/2W 5%                   |
| R351-R352            | △ N4717331J-2-P    | RFP 330 Ohm 1/2W 5%                  |
| R353-R354            | △ N47183R3J-2-F    | RFU 3.3 Ohm 1W 5%                    |
| R355-R356            | 4718-392C-L        | RMF 3.9k Ohm 1W 2%                   |
| R357-R358            | △ N47183R3J-2-F    | RFU 3.3 Ohm 1W 5%                    |
| R359-R360*AH         | N4749R22J-1        | Res-Wire Wound 0.22 Ohm 2W 5%        |
| R359-R360*C,B        | 471A-022K-5-N      | RMF 0.22 Ohm 3W 10%                  |
| R367-R368            | 4715-301C-2        | RMF 300 Ohm 1/4W 2%                  |
| R379-R382            | △ N4717471J-2-P    | RFP 470 Ohm 1/2W 5%                  |
| R389-R392            | △ N4718682J-L-P    | RFP 6.8k Ohm 1W 5%                   |
| R393-R396            | △ N4718103J-L-P    | RFP 10k Ohm 1W 5%                    |
| R421-R422            | △ N4718100J-L-F    | RFU 10 Ohm 1W 5%                     |
| R423-R424            | △ N47173R3J-2-P    | RFP 3.3 Ohm 1/2W 5%                  |
| R717-R718            | 4715-102C-2        | RMF 1k Ohm 1/4W 2%                   |
| R721-R722            | 4715-102C-2        | RMF 1k Ohm 1/4W 2%                   |
| R723-R724            | 4715-622C-2        | RMF 6.2k Ohm 1/4W 2%                 |
| R743                 | △ N4717392J-2-P    | RFP 3.9k Ohm 1/2W 5%                 |
| R903                 | △ N4718100J-L-P    | RFP 10 Ohm 1W 5%                     |
| R906                 | △ N4718100J-L-P    | RFP 10 Ohm 1W 5%                     |
| R917-R918*AH         | △ N4718181J-L-P    | RFP 180 Ohm 1W 5%                    |
| R917-R918*C,B        | △ 4717-181J-2-F    | RFU 180 Ohm 1/2W 5%                  |
| <b>VARIABLE RES.</b> |                    |                                      |
| RV101                | N47503666-0        | VR Volume 2x20k Ohm A w/Washer & Nut |



| <u>Reference No</u>       | <u>Part Number</u> | <u>Description</u>                    |
|---------------------------|--------------------|---------------------------------------|
| RV103                     | N47503646-0        | VR Treble 2x10k Ohm C w/Washer & Nut  |
| RV105                     | N47503676-0        | VR Bass 2x50k Ohm C w/Washer & Nut    |
| RV201                     | N47503656-0        | VR Balance 1x10k Ohm W w/Washer & Nut |
| RV301-RV302               | N47561030-3-11     | Semi-Fix 10k Ohm                      |
| VR303-VR304               | N47561020-3-11     | Semi-Fix 1k Ohm                       |
| <b><u>RELAY</u></b>       |                    |                                       |
| RLY701                    | N45000120-0        | Relay 2P1T DGX2-24M                   |
| <b><u>SWITCHES</u></b>    |                    |                                       |
| SW1                   △   | 5200-3431-0        | Power Switch w/M3 Thread              |
| SW3                       | 5200-3482-0        | Extra Spk Switch 2P2T w/M3 Thread     |
| SW4                       | N52003121-0-01     | 2P2T ALPS SPUN w/o Frame              |
| SW701                     | N52003131-0-01     | 2P2T Slide Switch 3.5T22KYGX          |
| SW702                     | N52003141-0-01     | 7-Key ALPS SPUN 71K004-RN             |
| TF701               △     | N89100063-0        | Thermal Switch 110C UP72              |
| TF702               △     | N89100064-0        | Thermal Switch 90C UP72               |
| <b><u>FUSES</u></b>       |                    |                                       |
| F801-F802*AH       △      | N51003130-1A       | Fuse 3.15A 125V Time Leg LBC (UL/CSA) |
| F801-F802*C,B     △       | N51003130-1B       | Fuse 3.15A 250V Time Leg HBC (SEMKO)  |
| FH801-FH804               | N41321011-0        | Fuse Holder (5 x 20 mm)               |
| F803-F804*AH       △      | N51005030-1A       | Fuse 5A 125V LBC Time Leg (UL/CSA)    |
| F803-F804*C,B     △       | N51005030-1B       | Fuse 5A 250V HBC Time Leg (SEMKO)     |
| F901-F902*AH       △      | N51002510-1C       | Fuse 250mA 250V LBC Time Leg (UL/CSA) |
| F901-F902*C,B     △       | N51002510-1B       | Fuse 250mA 250V LBC Time Leg (SEMKO)  |
| FH901-FH902               | N41321011-0        | Fuse Holder (5 x 20 mm)               |
| <b><u>RCA JACKS</u></b>   |                    |                                       |
| J105                      | 2113-1021-0        | 4P RCA JACK R/W AU HSP-204V-03        |
| J107                      | N21038506-2        | 6P RCA JACK R/W NI HSP-206V-01        |
| J113                      | N21038506-2        | 6P RCA JACK R/W NI HSP-206V-01        |
| X119                      | N21038506-2        | 6P RCA JACK R/W NI HSP-206V-01        |
| <b><u>TRANSFORMER</u></b> |                    |                                       |
| TX1                   △   | N18062101-2        | Transformer 314 W/M4 Thread           |

**NOTE :** - The components identified by △ mark are critical for risk of fire and electrical shock.  
 Replace only with part number specified.  
 - <\*AH > : USA, Canadian model only.  
 - <\*B > : UK model only.  
 - <\*C > : European model only.

## PACKING DIAGRAM



## PACKING LIST

| <u>Item</u> | <u>Part No</u> | <u>Description</u> | <u>Qty</u> |
|-------------|----------------|--------------------|------------|
| 1           | 1490-1843-0    | POLYFOAM END CAP   | 2          |
| 2           | N14971332-1    | POLYBAG            | 1          |
| 3           | N14971442-0    | EPE BAG            | 1          |
| 4           | N43013600-0    | INSTRUCTION MANUAL | 1          |
| 5           | N14764001-0    | CARTON BOX         | 1          |

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