

# CARVER

## Model CM-1090

### SERVICE MANUAL

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# SPECIFICATIONS

## MAGNETIC FIELD POWER AMPLIFIER

100 watts RMS per channel, both channels driven into 8 ohms from 20 Hz to 20 kHz with less than 0.1% THD.  
 150 watts RMS per channel, both channels driven into 4 ohms from 20 Hz to 20 kHz with less than 0.1% THD.

|                                       |                           |
|---------------------------------------|---------------------------|
| Frequency Response                    | : 20 Hz to 20 kHz (±1 dB) |
| Gain                                  | : 29 dB                   |
| S/N IHF A-Weighted, below rated power | : 90 dB                   |
| THD                                   | : <0.1% (20 Hz–20 kHz)    |
| IM Distortion (CCIR or SMPTE)         | : <0.5%                   |
| TIM                                   | : unmeasurable            |
| Amplifier Input Impedance             | : 27 kohm                 |

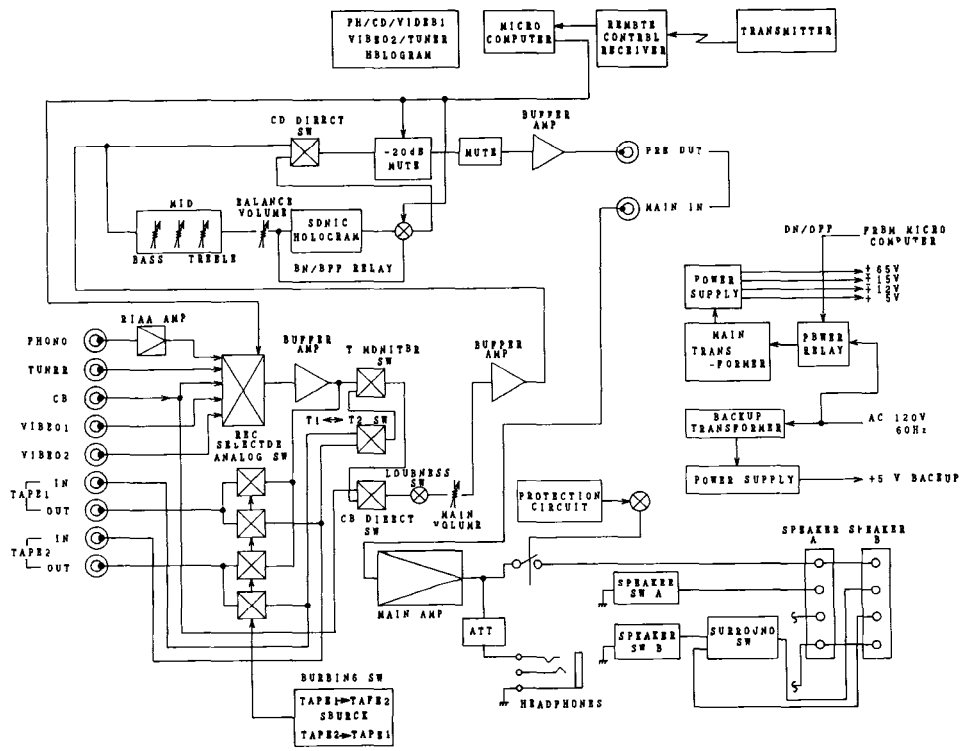
## PREAMP SECTION

|   |                               |
|---|-------------------------------|
| Frequency Response  | : 20 Hz to 20 kHz (±1 dB)     |
| Maximum Gain: Tuner, CD, Video 1 and 2, Tape 1 and 2, at Preamp Out                                   | : 16 dB (±2 dB)               |
| at Tape Out   | : 0 dB (±2 dB)                |
| Phono Gain at Tape Out  | : 34 dB (±2 dB)               |
| S/N IHF A-Weighted, below rated power output with an input of 150 mVRMS (CD, Video 1 & 2, Tape 1 & 2) | : 90 dB                       |
| Phono S/N IHF A-Weighted (at tape Out) below an input reference of 5 mVRMS at 1 kHz                   | : 78 dB                       |
| Tone Controls: Treble   | : ±7 dB (±2) at 10 kHz        |
| Midrange  | : ±6 dB (±2) at 1 kHz         |
| Bass  | : ±8 dB (±2) at 100 Hz        |
| Input Impedance, Preamp Inputs  | : 47 kohm                     |
| Preamp Output Impedance   | : 470 ohm                     |
| Sonic Hologram Generator Image Resolution   | : 5° horizontal, 20° vertical |

## GENERAL

|            |                     |
|------------|---------------------|
| Dimensions | : 4.5"H×19"W×14.5"D |
| Weight     | : 21 lbs            |

## BLOCK DIAGRAM



# ALIGNMENT PROCEDURE

## Amplifier

### Condition

1. SPEAKERS Selector: A position
2. SPEAKER A load: 8 ohm dummy

### IDLING

1. Set the VOLUME control to minimum
2. No input signal.
3. Preheat for 5 minutes
4. Connect the DC digital volt meter to the center and either of pins R739(L) / R740(R)
5. Adjust VR701(L) / VR702(R) until the voltage is  $+3 \sim -3$  mV

### OFFSET VOLTAGE

1. Set the VOLUME control to minimum.
2. No input signal.
3. Connect the DC digital volt meter to the center pin of R739(L) / R740(R) and chassis.
4. Check that the voltage is  $\pm 50$  mV.

## ALIGNMENT POINT

### MA-809A Main Amp P.C.Board

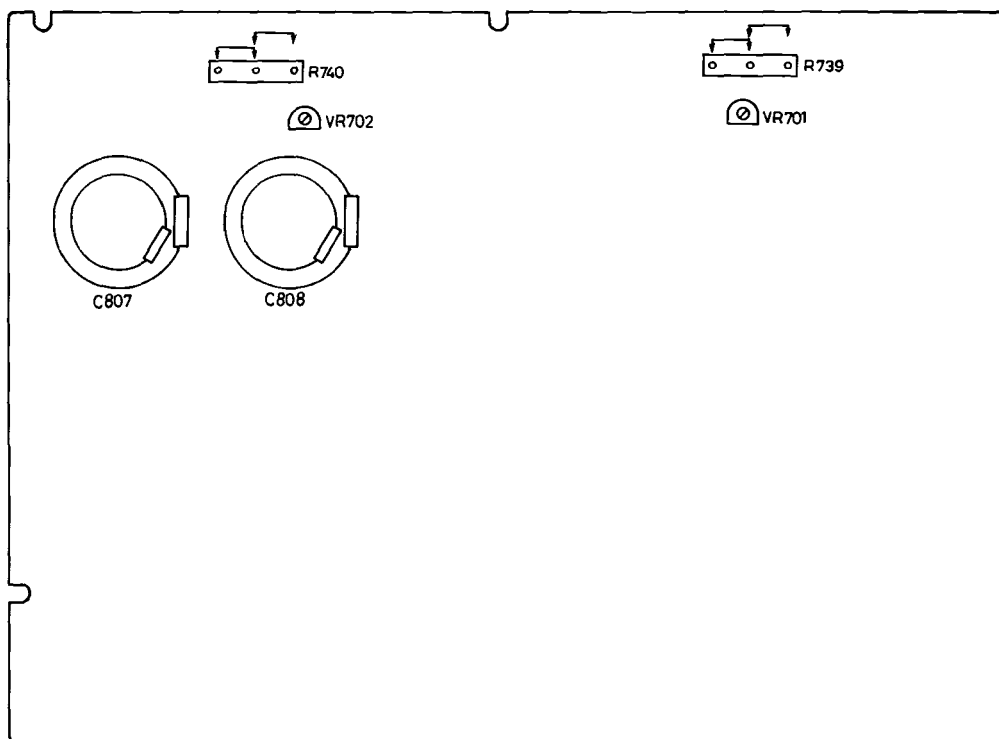


Fig.1

# VOLTAGE CONVERSION (EX Version only)

## 220 V/50 Hz Version

### Bill of Materials

| Q'ty | Part No      | Description               |
|------|--------------|---------------------------|
| 1    | 315-10512-00 | FUSE ABC4                 |
| 1    | 530-10089-00 | LABEL ABC4                |
| 1    | 530-10091-00 | LABEL 220 V AC 50 HZ      |
| 1    | 530-10147-00 | LABEL VOLTAGE CONVERSION  |
| 1    | 530-10013-00 | LABEL MILITARY CONVERSION |

### Direction for Change

1. Locate slide switches SW851 and SW852 on Backup P.C.Board and set each switch from Fig.2 to Fig.3

### BU-814A Backup P.C.Board

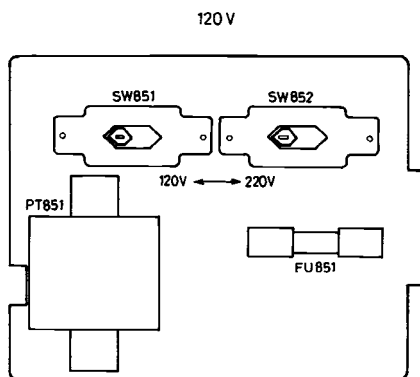


Fig.2

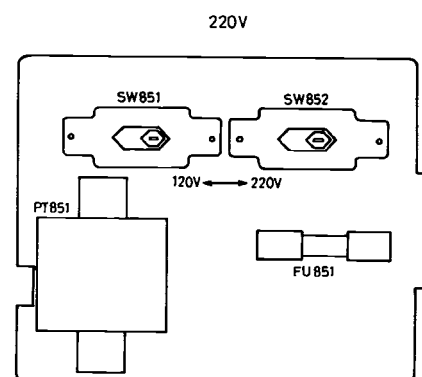
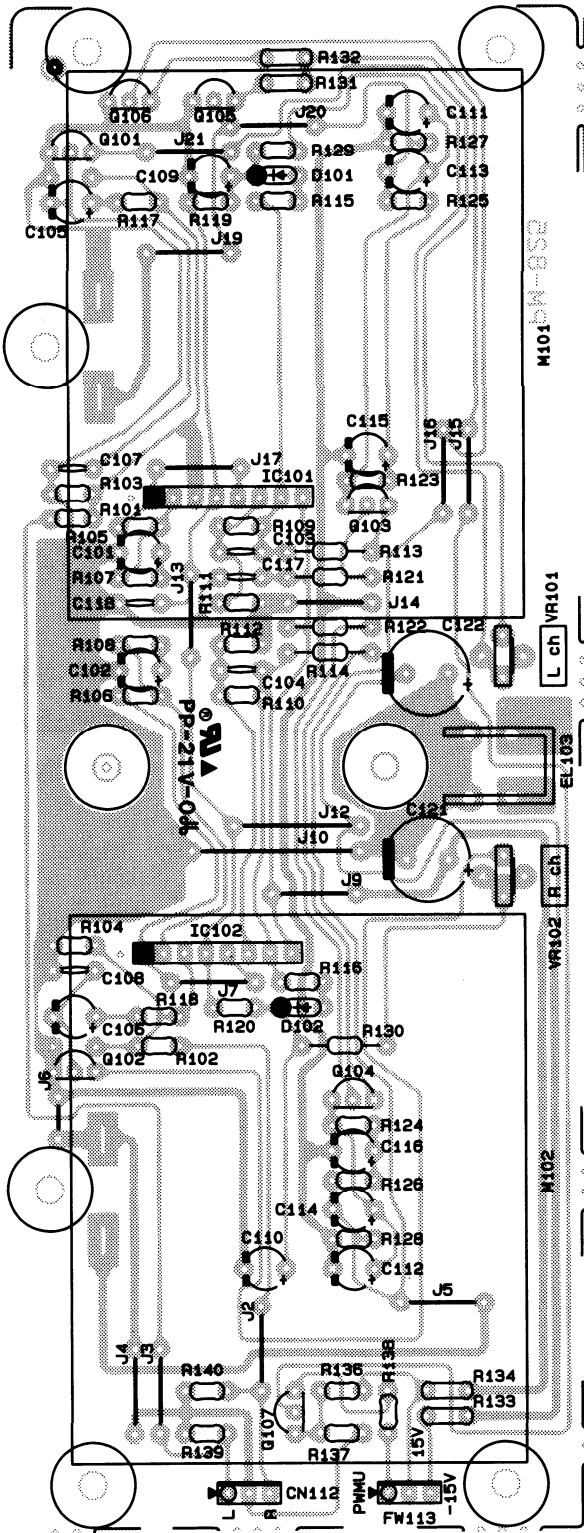


Fig.3

2. Change fuse FU851 on Backup P.C.Board from AGC7 to ABC4.
3. Apply label 530-10089-00 (ABC4) in place of existing label AGC7.
4. Apply label 530-10091-00 (220 V AC 50 HZ) in place of existing label 120 V AC 60 HZ
5. Using spray adhesive, mount label 530-10147-00 (VOLTAGE CONVERSION) to inside top cover
6. Apply label 530-10013-00 (MILITARY CONVERSION) to bottom of unit.

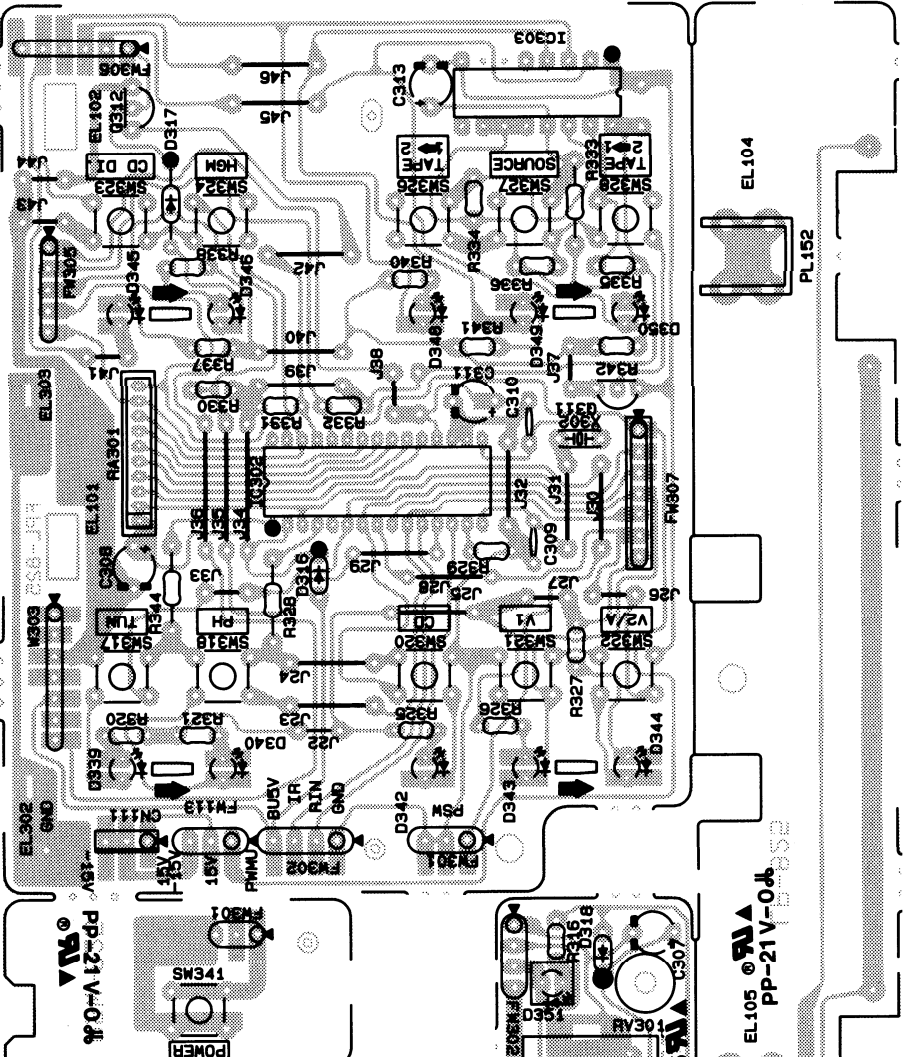
PCB COMPONENT SIDE VIEWS

PM-825 Power Meter P.C.Board

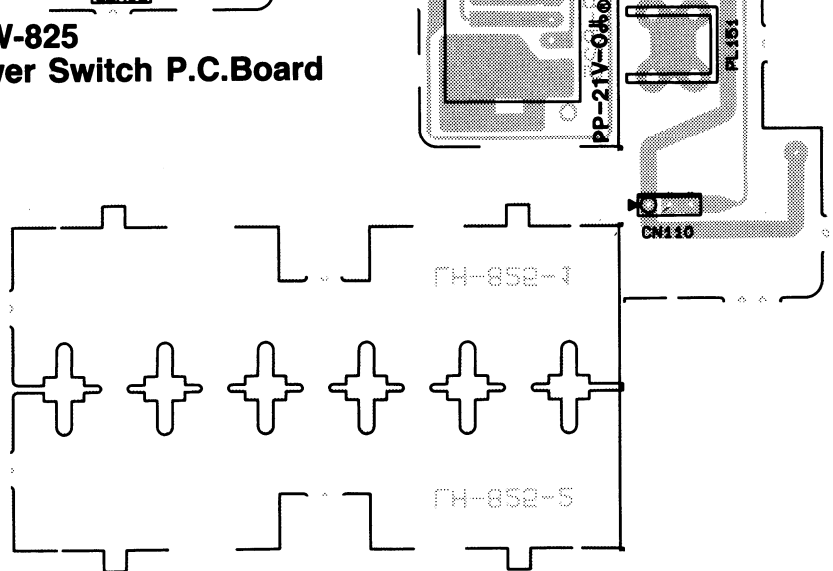


IR-825 Remocon Receiver P.C.Board

FPL-825 Micon P.C.Board



PSW-825 Power Switch P.C.Board

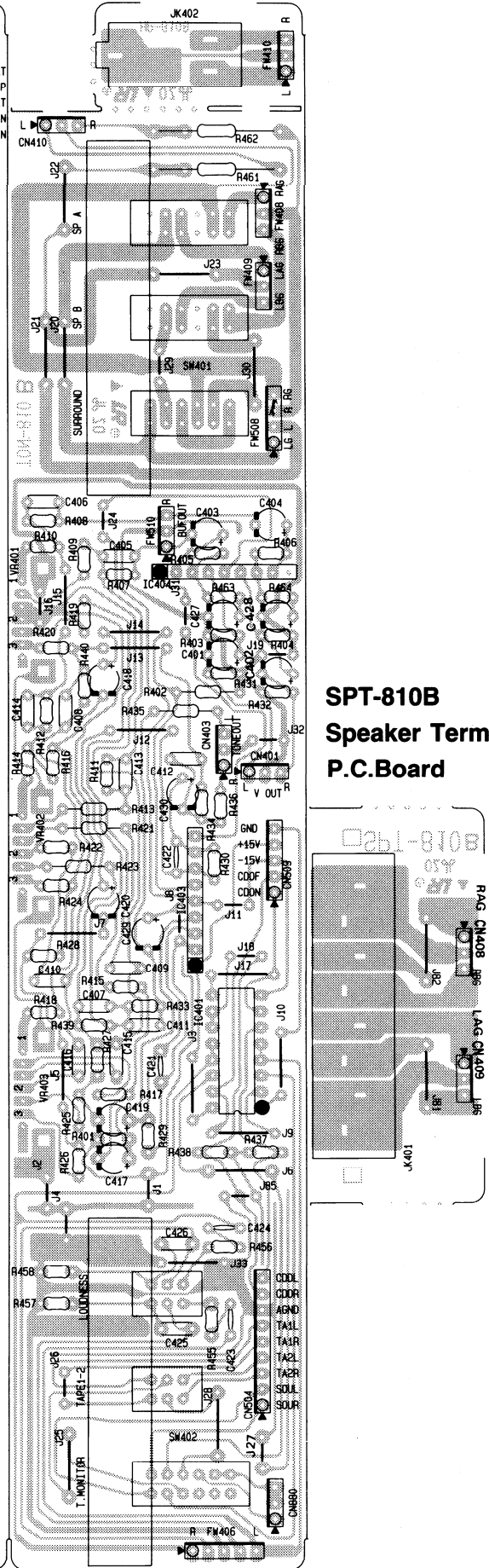
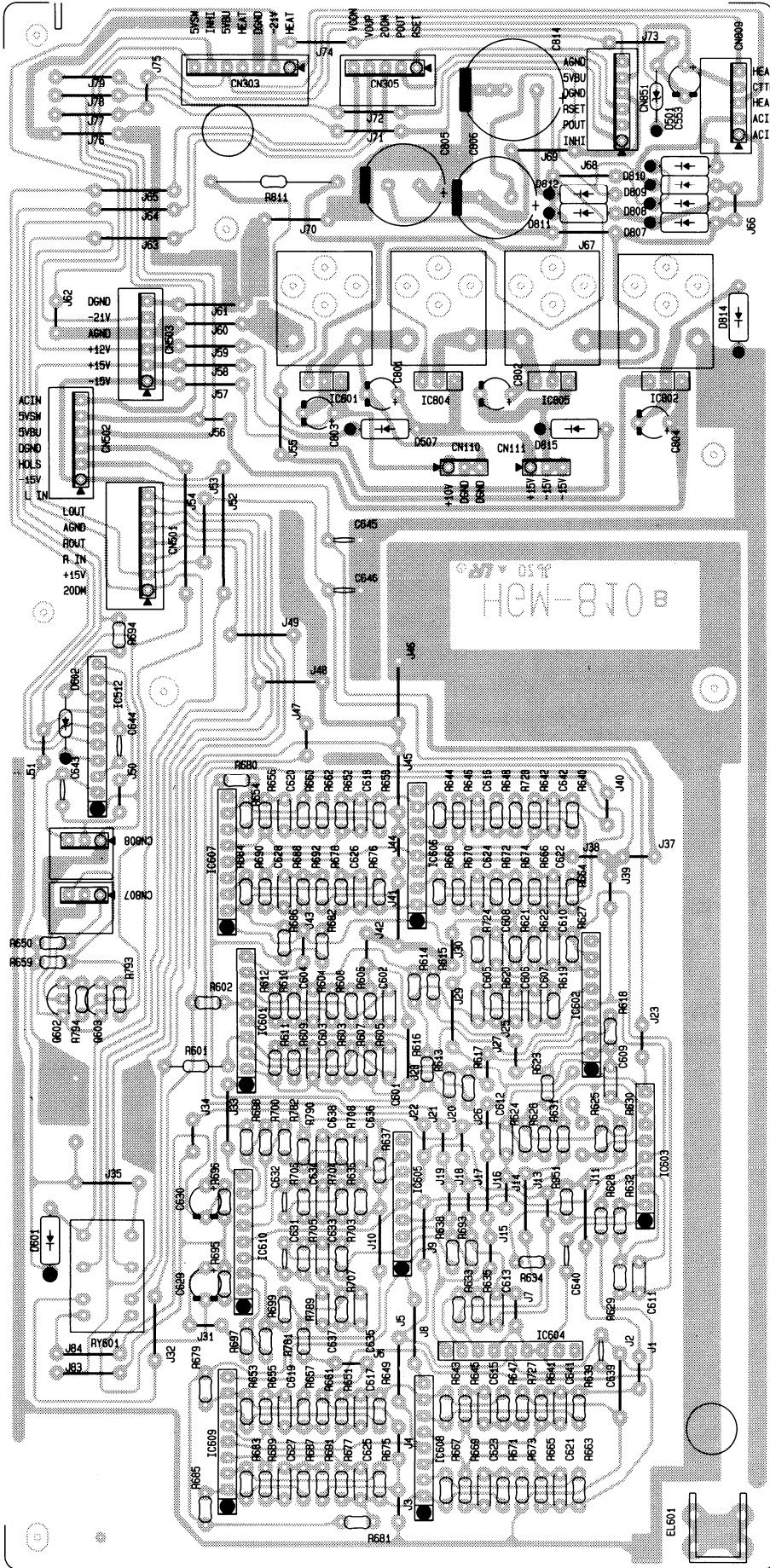


LH-825 LED Holder P.C.Board

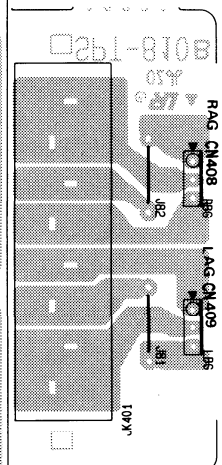
LP-825 Lamp P.C.Board

HGM-810B Hologram P.C.Board

HP-810B Headphone P.C.Board

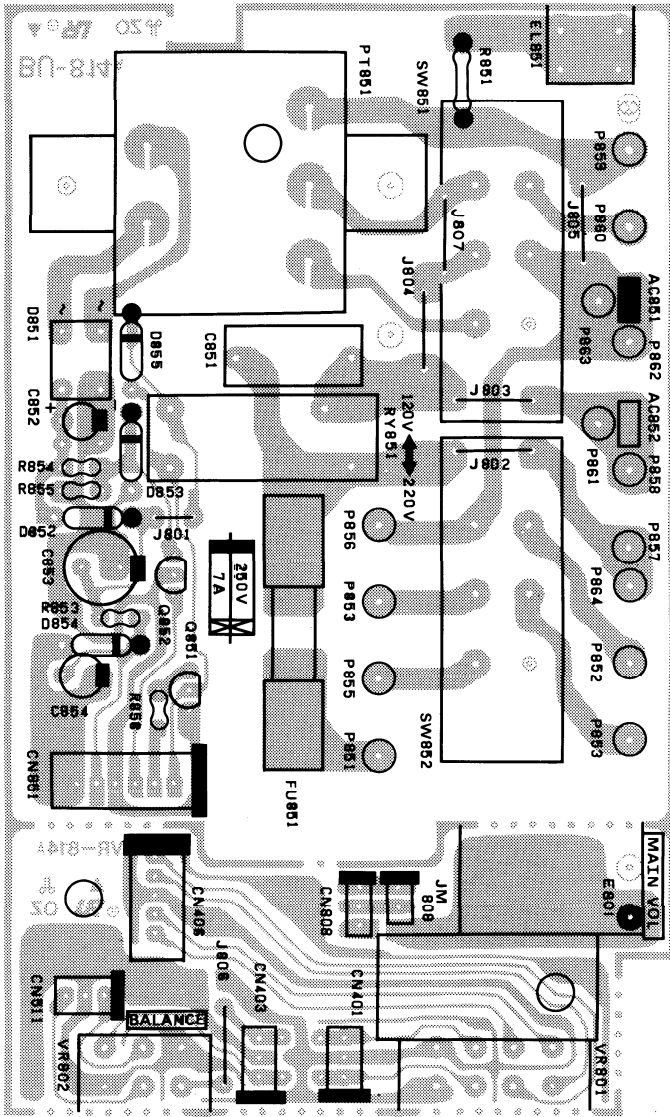


SPT-810B Speaker Terminal P.C.Board



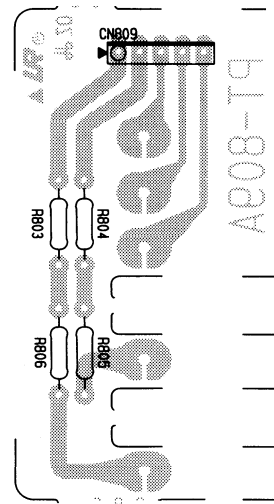
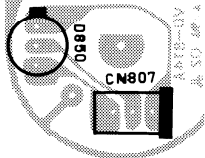
TON-810B Tone Control P.C.Board

**BU-814A Backup P.C.Board**



**VR-814A  
Volume Control P.C.Board**

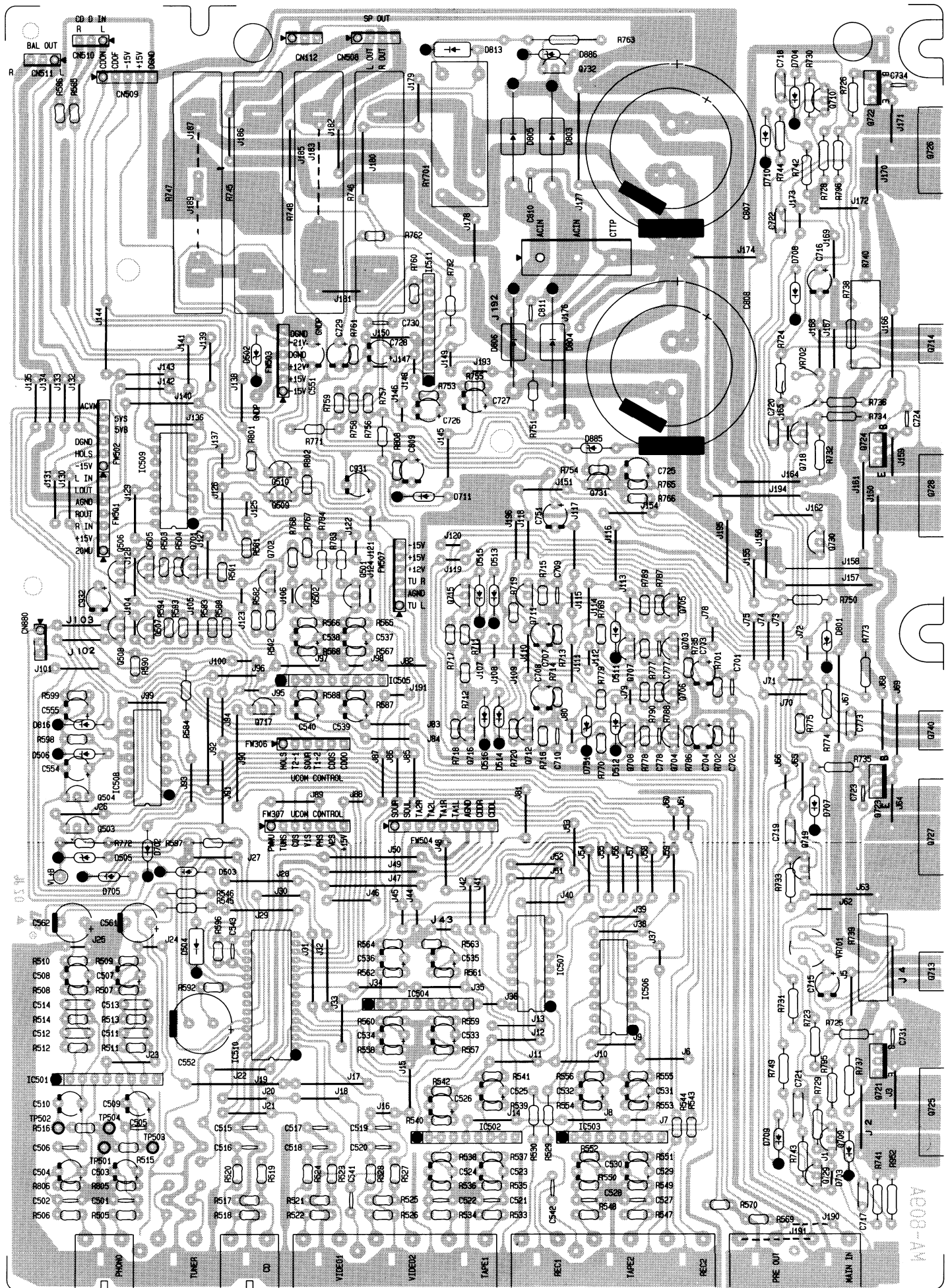
**VD-814A Main Volume  
LED P.C.Board**



**PT-809A Power Trans  
P.C.Board**



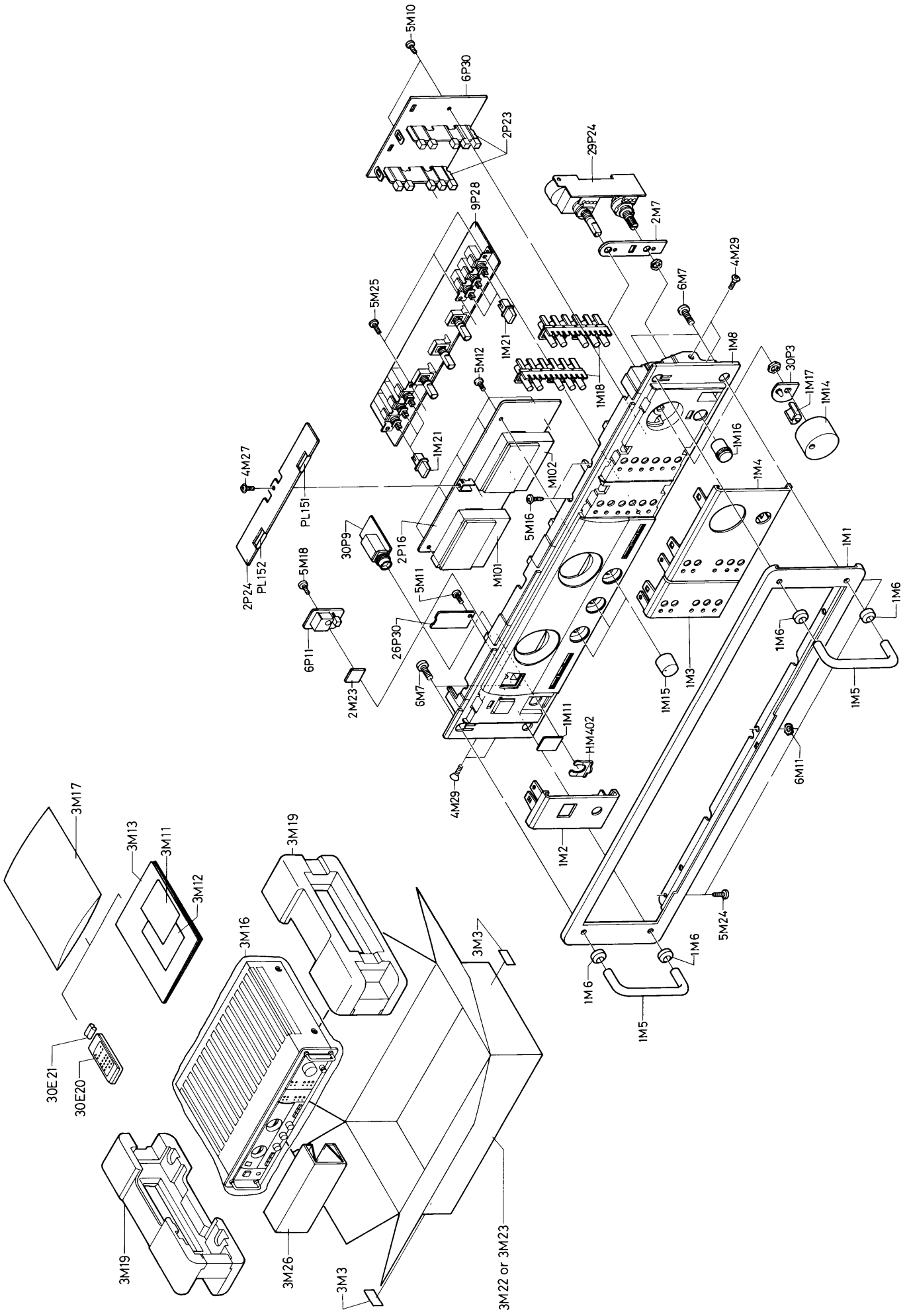
MA-809A Main Amp P.C. Board



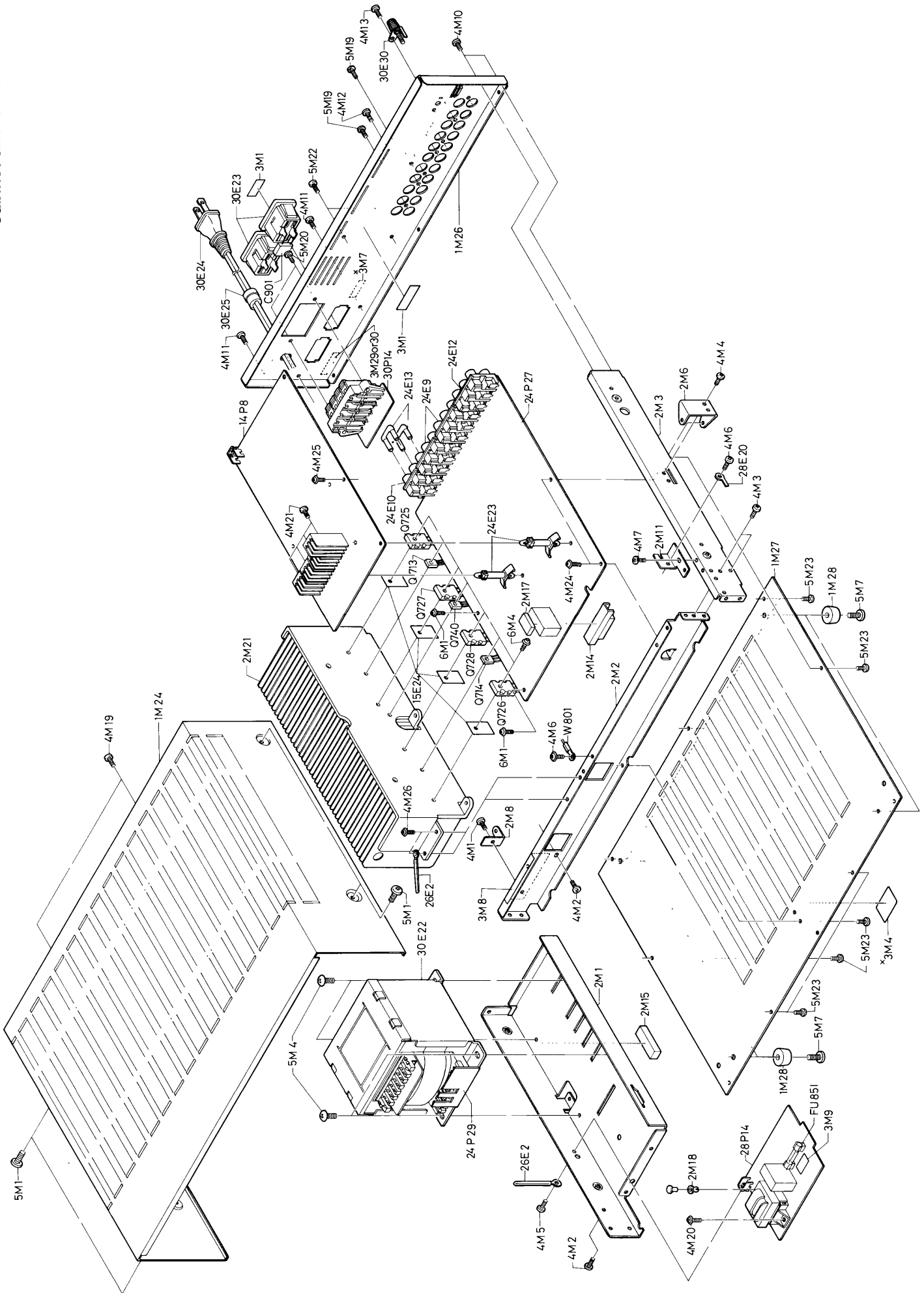


# EXPLODED VIEWS

## Front Panel and Packing



# Cabinet and Chassis



# PARTS LIST

Parts marked with \* vary according to destinations.  
For details, refer to the different parts list.

HCLDGRAM P.C. BOARD

| REF. NO.              | Q'TY | CARVER PART NO. | DESCRIPTION               |
|-----------------------|------|-----------------|---------------------------|
| <b>P.C. BOARD</b>     |      |                 |                           |
| 14E 8                 | 1    | HGM-8108        | PRINTED CIRCUIT BOARD     |
| <b>SEMICONDUCTORS</b> |      |                 |                           |
| 0501                  | 1    | Z050-040        | ZENER 0100E, 1/2W, 4V     |
| 0507*601              | 2    | 1N4002          | 0100E                     |
| 0602                  | 1    | Z050-057        | ZENER 0100E, 1/2W, 5.7V   |
| 0807*812, 814*815     | 8    | 1N4002          | 0100E                     |
| Q602*603              | 2    | 25C1815-Y*GR    | TRANSISTOR                |
| IC512                 | 1    | LB1641          | IC                        |
| IC601*610             | 10   | UPC4570HA-1     | IC                        |
| IC801                 | 1    | UPC78M10HF      | IC                        |
| IC802                 | 1    | UPC78M05HF      | IC                        |
| IC804                 | 1    | UPC78M15HF      | IC                        |
| IC805                 | 1    | UPC79M15HF      | IC                        |
| <b>CAPACITORS</b>     |      |                 |                           |
| C553                  | 1    | NS-25TW470M     | ELECTROLYTIC CAPACITOR    |
| C601*602              | 2    | MY-50VU332J     | MYLAR CAPACITOR           |
| C603*604              | 2    | MY-50VU473J     | MYLAR CAPACITOR           |
| C605                  | 1    | HE40SJY8681K    | CERAMIC CAPACITOR         |
| C606*607              | 2    | MY-50VU122J     | MYLAR CAPACITOR           |
| C608                  | 1    | MY-50VU272J     | MYLAR CAPACITOR           |
| C609                  | 1    | MY-50VU823J     | MYLAR CAPACITOR           |
| C610                  | 1    | ECQV1H124JZ     | METALLIZED FILM CAPACITOR |
| C611                  | 1    | MY-50VU683J     | MYLAR CAPACITOR           |
| C612*613              | 2    | MY-50VU562J     | MYLAR CAPACITOR           |
| C615*628              | 14   | MY-50VU102J     | MYLAR CAPACITOR           |
| C629*630              | 2    | NS-25TW47M      | ELECTROLYTIC CAPACITOR    |
| C631*632              | 2    | HE40SJY8221K    | CERAMIC CAPACITOR         |
| C633*634              | 2    | MY-50VU222J     | MYLAR CAPACITOR           |
| C635*638              | 4    | MY-50VU182J     | MYLAR CAPACITOR           |
| C639*640              | 2    | HE70SJYF103Z    | CERAMIC CAPACITOR         |
| C641*642              | 2    | MY-50VU102J     | MYLAR CAPACITOR           |
| C643*645              | 3    | HE70SJYF103Z    | CERAMIC CAPACITOR         |
| C646                  | 1    | NS-16TW471M     | ELECTROLYTIC CAPACITOR    |
| C650                  | 1    | NS-16TW470M     | ELECTROLYTIC CAPACITOR    |
| C801*804              | 4    | NS-50TW180M     | ELECTROLYTIC CAPACITOR    |
| C805*806              | 2    | NS-35TW102M-KF  | ELECTROLYTIC CAPACITOR    |
| C614                  | 1    | NS-35TW222M-KF  | ELECTROLYTIC CAPACITOR    |
| <b>RESISTORS</b>      |      |                 |                           |
| R601*602              | 2    | KA16ST203J      | CARBON RESISTOR           |
| R603*604              | 2    | KA16ST362J      | CARBON RESISTOR           |
| R605*606              | 2    | KA16ST392J      | CARBON RESISTOR           |
| R607*608              | 2    | KA16ST352J      | CARBON RESISTOR           |
| R609*610              | 2    | KA16ST822J      | CARBON RESISTOR           |
| R611*612              | 2    | KA16ST293J      | CARBON RESISTOR           |
| R613*618              | 6    | KA16ST392J      | CARBON RESISTOR           |
| R619*620              | 2    | KA16ST293J      | CARBON RESISTOR           |
| R621                  | 1    | KA16ST912J      | CARBON RESISTOR           |
| R622                  | 1    | KA16ST102J      | CARBON RESISTOR           |
| R623                  | 1    | KA16ST183J      | CARBON RESISTOR           |
| R624                  | 1    | KA16ST362J      | CARBON RESISTOR           |
| R625                  | 1    | KA16ST192J      | CARBON RESISTOR           |
| R626                  | 1    | KA16ST392J      | CARBON RESISTOR           |
| R627                  | 1    | KA16ST112J      | CARBON RESISTOR           |
| R628                  | 1    | KA16ST183J      | CARBON RESISTOR           |
| R629                  | 1    | KA16ST392J      | CARBON RESISTOR           |
| R630                  | 1    | KA16ST302J      | CARBON RESISTOR           |
| R631*633              | 3    | KA16ST392J      | CARBON RESISTOR           |
| R634                  | 1    | KA16ST162J      | CARBON RESISTOR           |
| R635                  | 1    | KA16ST302J      | CARBON RESISTOR           |
| R636                  | 1    | KA16ST682J      | CARBON RESISTOR           |
| R637                  | 1    | KA16ST273J      | CARBON RESISTOR           |
| R638                  | 1    | KA16ST682J      | CARBON RESISTOR           |
| R639*640              | 2    | KA16ST512J      | CARBON RESISTOR           |
| R641*642              | 2    | KA16ST752J      | CARBON RESISTOR           |
| R643*644              | 2    | KA16ST203J      | CARBON RESISTOR           |
| R645*646              | 2    | KA16ST752J      | CARBON RESISTOR           |
| R647*648              | 2    | KA16ST122J      | CARBON RESISTOR           |
| R649                  | 1    | KA16ST512J      | CARBON RESISTOR           |
| R650                  | 1    | KA16ST182J      | CARBON RESISTOR           |
| R651*652              | 2    | KA16ST752J      | CARBON RESISTOR           |
| R653*654              | 2    | KA16ST203J      | CARBON RESISTOR           |
| R655*656              | 2    | KA16ST752J      | CARBON RESISTOR           |
| R657                  | 1    | KA16ST122J      | CARBON RESISTOR           |
| R658                  | 1    | KA16ST512J      | CARBON RESISTOR           |
| R659                  | 1    | KA16ST681J      | CARBON RESISTOR           |
| R660                  | 1    | KA16ST122J      | CARBON RESISTOR           |
| R661*662              | 2    | KA16ST301J      | CARBON RESISTOR           |
| R663*664              | 2    | KA16ST512J      | CARBON RESISTOR           |
| R665*666              | 2    | KA16ST752J      | CARBON RESISTOR           |
| R667*668              | 2    | KA16ST203J      | CARBON RESISTOR           |
| R669*670              | 2    | KA16ST752J      | CARBON RESISTOR           |
| R671*672              | 2    | KA16ST122J      | CARBON RESISTOR           |
| R673*674              | 2    | KA16ST361J      | CARBON RESISTOR           |
| R675*676              | 2    | KA16ST512J      | CARBON RESISTOR           |
| R677*678              | 2    | KA16ST752J      | CARBON RESISTOR           |
| R679*682              | 4    | KA16ST103J      | CARBON RESISTOR           |
| R683*684              | 2    | KA16ST203J      | CARBON RESISTOR           |
| R685*686              | 2    | KA16ST752J      | CARBON RESISTOR           |
| R687*688              | 2    | KA16ST122J      | CARBON RESISTOR           |
| R689*690              | 2    | KA16ST752J      | CARBON RESISTOR           |
| R691*692              | 2    | KA16ST361J      | CARBON RESISTOR           |
| R693                  | 1    | KA16ST273J      | CARBON RESISTOR           |
| R694                  | 1    | KA16ST100J      | CARBON RESISTOR           |
| R695*696              | 2    | KA16ST473J      | CARBON RESISTOR           |
| R697*698              | 2    | KA16ST470J      | CARBON RESISTOR           |
| R699*700              | 2    | KA16ST511J      | CARBON RESISTOR           |
| R701*706              | 4    | KA16ST303J      | CARBON RESISTOR           |
| R707*708              | 2    | KA16ST193J      | CARBON RESISTOR           |
| R709*710              | 2    | KA16ST153J      | CARBON RESISTOR           |
| R724                  | 1    | KA16ST103J      | CARBON RESISTOR           |
| R727*728              | 2    | KA16ST361J      | CARBON RESISTOR           |
| R781*782              | 2    | KA16ST102J      | CARBON RESISTOR           |
| R793*794              | 2    | KA16ST103J      | CARBON RESISTOR           |
| R811                  | 1    | SA-2WT470J-LP   | METAL OXIDE RESISTOR      |
| R850                  | 1    | SA-2WT271J      | METAL OXIDE RESISTOR      |
| R951                  | 1    | KA16ST162J      | CARBON RESISTOR           |

| REF. NO.             | Q'TY | CARVER PART NO. | DESCRIPTION |
|----------------------|------|-----------------|-------------|
| <b>MISCELLANEOUS</b> |      |                 |             |
| 2E17*E19             | 2    | B3B-EH-A        | CONNECTOR   |
| CN303                | 1    | 52011-0710      | CONNECTOR   |
| CN305                | 1    | 52011-0510      | CONNECTOR   |
| CN501                | 1    | 52011-0710      | CONNECTOR   |
| CN502*503, 606       | 3    | 52011-0610      | CONNECTOR   |
| CN807                | 1    | B3B-EH-A        | CONNECTOR   |
| CN808                | 1    | 52011-0310      | CONNECTOR   |
| CN809                | 1    | 52011-0510      | CONNECTOR   |
| EL601                | 1    | M1698           | GND LUG     |
| RY601                | 1    | AG80239         | RELAY       |
| 14E17                | 33   | E050            | JUMP WIRE   |
| 14E22                | 39   | E100            | JUMP WIRE   |
| 14E27                | 3    | E125            | JUMP WIRE   |
| 14E29                | 2    | E200            | JUMP WIRE   |
| 20E26                | 1    | N45833-40       | HEAT SINK   |
| 20E27                | 3    | OSH-1625-MP     | HEAT SINK   |

## TDNE CONTROL P.C. BOARD

| REF. NO.              | Q'TY | CARVER PART NO. | DESCRIPTION               |
|-----------------------|------|-----------------|---------------------------|
| <b>P.C. BOARD</b>     |      |                 |                           |
| 9E28                  | 1    | TON-8108        | PRINTED CIRCUIT BOARD     |
| <b>SEMICONDUCTORS</b> |      |                 |                           |
| IC401                 | 1    | TC9214P         | IC                        |
| IC403*404             | 2    | NJM45655B       | IC                        |
| <b>CAPACITORS</b>     |      |                 |                           |
| C401-404              | 4    | NS-25TW47M      | ELECTROLYTIC CAPACITOR    |
| C405*406              | 2    | ECQV1H334JZ     | METALLIZED FILM CAPACITOR |
| C407*408              | 2    | MY-50VU123J     | MYLAR CAPACITOR           |
| C409*410              | 2    | MY-50VU823J     | MYLAR CAPACITOR           |
| C411*412              | 2    | ECQV1H334JZ     | METALLIZED FILM CAPACITOR |
| C413*414              | 2    | MY-50VU123J     | MYLAR CAPACITOR           |
| C415*416              | 2    | MY-50VU272J     | MYLAR CAPACITOR           |
| C417*420              | 4    | NS-25TW47M      | ELECTROLYTIC CAPACITOR    |
| C421*422              | 2    | HE40SJY8221K    | CERAMIC CAPACITOR         |
| C423*424              | 2    | HE40SJY8471K    | CERAMIC CAPACITOR         |
| C425*426              | 2    | MY-50VU473J     | MYLAR CAPACITOR           |
| C427*428              | 2    | NS-16TW101M     | ELECTROLYTIC CAPACITOR    |
| C429*430              | 2    | NS-25TW47M      | ELECTROLYTIC CAPACITOR    |
| <b>RESISTORS</b>      |      |                 |                           |
| R401*402              | 2    | KA16ST474J      | CARBON RESISTOR           |
| R403*404              | 2    | KA16ST104J      | CARBON RESISTOR           |
| R405*406              | 2    | KA16ST333J      | CARBON RESISTOR           |
| R407*408              | 2    | KA16ST562J      | CARBON RESISTOR           |
| R409*410              | 2    | KA16ST152J      | CARBON RESISTOR           |
| R411*412              | 2    | KA16ST562J      | CARBON RESISTOR           |
| R413*414              | 2    | KA16ST152J      | CARBON RESISTOR           |
| R415*416              | 2    | KA16ST103J      | CARBON RESISTOR           |
| R417*420              | 4    | KA16ST152J      | CARBON RESISTOR           |
| R421*422              | 2    | KA16ST222J      | CARBON RESISTOR           |
| R423*426              | 4    | KA16ST152J      | CARBON RESISTOR           |
| R427*428              | 2    | KA16ST103J      | CARBON RESISTOR           |
| R429*430              | 2    | KA16ST274J      | CARBON RESISTOR           |
| R431*432              | 2    | KA16ST104J      | CARBON RESISTOR           |
| R433*434              | 2    | KA16ST562J      | CARBON RESISTOR           |
| R435*436              | 2    | KA16ST471J      | CARBON RESISTOR           |
| R437*438              | 2    | KA16ST105J      | CARBON RESISTOR           |
| R439*440              | 2    | KA16ST562J      | CARBON RESISTOR           |
| R455*456              | 2    | KA16ST683J      | CARBON RESISTOR           |
| R457*458              | 2    | KA16ST153J      | CARBON RESISTOR           |
| R461*462              | 2    | SA-1WT681J      | METAL OXIDE RESISTOR      |
| R463*464              | 2    | KA16ST472J      | CARBON RESISTOR           |
| VR401-403             | 3    | VB114-203R21F4  | ROTARY POTENTIOMETER      |
| <b>SWITCHES</b>       |      |                 |                           |
| SW401                 | 1    | SW-1301279      | PUSH SWITCH               |
| SW402                 | 1    | SW-1301291      | PUSH SWITCH               |
| <b>MISCELLANEOUS</b>  |      |                 |                           |
| 1W 1                  | 1    | 4685263809-J-J  | 3-LEAD, FLAT CABLE        |
| 1W10                  | 1    | 4685265820-J-Z  | 5-LEAD, FLAT CABLE        |
| 1W12                  | 1    | 4685265833-J-Z  | 5-LEAD, FLAT CABLE        |
| 9E15                  | 13   | E050            | JUMP WIRE                 |
| 9E17                  | 20   | E100            | JUMP WIRE                 |
| CN401                 | 1    | M203-778        | MICRO SOCKET ASS'Y        |
| CN403                 | 1    | B3B-EH-A        | CONNECTOR                 |
| CN504                 | 1    | M209-774        | MICRO SOCKET ASS'Y        |
| FW408                 | 1    | M203-781        | MICRO SOCKET ASS'Y        |
| FW409                 | 1    | M203-782        | MICRO SOCKET ASS'Y        |
| FW508                 | 1    | M204-763        | MICRO SOCKET ASS'Y        |
| FW510                 | 1    | M203-780        | MICRO SOCKET ASS'Y        |
| FW800                 | 1    | 4685263840-J-Z  | 3-LEAD, FLAT CABLE        |

## SPEAKER TERMINAL P.C. BOARD

| REF. NO.             | Q'TY | CARVER PART NO. | DESCRIPTION           |
|----------------------|------|-----------------|-----------------------|
| <b>P.C. BOARD</b>    |      |                 |                       |
| 30E14                | 1    | SPT-8108        | PRINTED CIRCUIT BOARD |
| <b>MISCELLANEOUS</b> |      |                 |                       |
| CN408*409            | 2    | B3B-EH-A        | CONNECTOR             |
| JK401                | 1    | YK021-0027B     | SOCKET 2P (S.P.)      |

HEADPHONE P.C. BOARD

| REF. NO.               | Q'TY | CARVER PART NO. | DESCRIPTION           |
|------------------------|------|-----------------|-----------------------|
| P.C. BOARD<br>30E 9    | 1    | HP-8108         | PRINTED CIRCUIT BOARD |
| MISCELLANEOUS<br>JK402 | 1    | YK824-5010      | H.P. JACK             |

MAIN AMP P.C. BOARD

| REF. NO.                                 | Q'TY | CARVER PART NO. | DESCRIPTION            |
|--|------|-----------------|------------------------|
| P.C. BOARD<br>24E27                      | 1    | MA-809A         | PRINTED CIRCUIT BOARD  |
| <b>SEMICONDUCTORS</b>                    |      |                 |                        |
| D503                                     | 1    | 1N4148          | DIODE                  |
| D504                                     | 1    | 1N4002          | DIODE                  |
| D505                                     | 1    | Z050-070        | ZENER 0100E+1/2W+7.0V  |
| D506,511~<br>516,702~<br>705,707~<br>711 | 16   | 1N4148          | DIODE                  |
| D751                                     | 1    | Z050-215        | ZENER 0100E+1/2W+21.5V |
| D801                                     | 1    | Z050-060        | ZENER 0100E+1/2W 6.0V  |
| D803~806                                 | 4    | 1N5402-F        | DIODE                  |
| D813                                     | 1    | 1N4002          | DIODE                  |
| DB16                                     | 1    | 1N4148          | DIODE                  |
| D885,886                                 | 2    | Z050-127        | ZENER 0100E+1/2W+12.7V |
| 7501,502                                 | 2    | 2SC2878-A+B     | TRANSISTOR             |
| 9503                                     | 1    | RN-220A         | TRANSISTOR             |
| 9504                                     | 1    | RN-120A         | TRANSISTOR             |
| 9505                                     | 1    | RN-220A         | TRANSISTOR             |
| 9506                                     | 1    | RN-120A         | TRANSISTOR             |
| 9507                                     | 1    | RN-220A         | TRANSISTOR             |
| 9508                                     | 1    | RN-120A         | TRANSISTOR             |
| 9509                                     | 1    | RN-220A         | TRANSISTOR             |
| 9510                                     | 1    | RN-120A         | TRANSISTOR             |
| Q701,702                                 | 2    | 2SC2878-A+B     | TRANSISTOR             |
| Q703,704                                 | 2    | 2SC2240-Y+GR    | TRANSISTOR             |
| Q705,706                                 | 2    | 2SA970-Y+GR     | TRANSISTOR             |
| Q707,708                                 | 2    | 2SC2240-Y+GR    | TRANSISTOR             |
| Q709,710                                 | 2    | 2SC1815-Y+GR    | TRANSISTOR             |
| Q711,712                                 | 2    | 2SA1145-O+Y     | TRANSISTOR             |
| Q715,716                                 | 2    | 2SC2705-O+Y     | TRANSISTOR             |
| Q717                                     | 1    | RN-220A         | TRANSISTOR             |
| Q718,719                                 | 2    | 2SA1015-Y+GR    | TRANSISTOR             |
| Q721,722                                 | 2    | 2SC3298-O+Y     | TRANSISTOR             |
| Q723,724                                 | 2    | 2SA1306-O+Y     | TRANSISTOR             |
| Q729,730                                 | 2    | 2SC2240-Y+GR    | TRANSISTOR             |
| Q731                                     | 1    | 2SA970-Y+GR     | TRANSISTOR             |
| Q732                                     | 1    | 2SC1627A-O+Y    | TRANSISTOR             |
| IC501~505                                | 5    | NJM4565B        | IC                     |
| IC506,507                                | 2    | TC9214P         | IC                     |
| IC508                                    | 1    | TC4069UBP       | IC                     |
| IC509                                    | 1    | TC9214P         | IC                     |
| IC510                                    | 1    | LC7818          | IC                     |
| IC511                                    | 1    | TA7317P         | IC                     |
| <b>CAPACITORS</b>                        |      |                 |                        |
| C501,502                                 | 2    | HE405JY8101K    | CERAMIC CAPACITOR      |
| C503,504                                 | 2    | NS-16TW100M     | ELECTROLYTIC CAPACITOR |
| C505,506                                 | 2    | HE505JY8102K    | CERAMIC CAPACITOR      |
| C507,508                                 | 2    | NS-16TW100M     | ELECTROLYTIC CAPACITOR |
| C509,510                                 | 2    | NS-10TW101M     | ELECTROLYTIC CAPACITOR |
| C511,512                                 | 2    | MY-50VU562J     | MYLAR CAPACITOR        |
| C513,514                                 | 2    | MY-50VU182J     | MYLAR CAPACITOR        |
| C515~522                                 | 8    | HE405JY8101K    | CERAMIC CAPACITOR      |
| C523~526                                 | 4    | NS-25TW4R7M     | ELECTROLYTIC CAPACITOR |
| C527,528                                 | 2    | HE405JY8101K    | CERAMIC CAPACITOR      |
| C529~540                                 | 12   | NS-25TW4R7M     | ELECTROLYTIC CAPACITOR |
| C541,542                                 | 2    | HE125JYF473Z    | CERAMIC CAPACITOR      |
| C551                                     | 1    | NS-25TW470M     | ELECTROLYTIC CAPACITOR |
| C552                                     | 1    | NS-16TW102M-KF  | ELECTROLYTIC CAPACITOR |
| C554                                     | 1    | NS-25TW100M     | ELECTROLYTIC CAPACITOR |
| C555                                     | 1    | NS-50TW1R0M     | ELECTROLYTIC CAPACITOR |
| C561,562                                 | 2    | NS-16TW101M     | ELECTROLYTIC CAPACITOR |
| C571,572                                 | 2    | HE405JY8101K    | CERAMIC CAPACITOR      |
| C701,702                                 | 2    | HE405JY8391K    | CERAMIC CAPACITOR      |
| C703,704                                 | 2    | NS-25TW4R7M     | ELECTROLYTIC CAPACITOR |
| C707,708                                 | 2    | NS-10TW101M     | ELECTROLYTIC CAPACITOR |
| C709,710                                 | 2    | HE405JSL120K    | CERAMIC CAPACITOR      |
| C715,716                                 | 2    | NS-25TW100M     | ELECTROLYTIC CAPACITOR |
| C717~720                                 | 4    | MY-50VU472J     | MYLAR CAPACITOR        |
| C721,722                                 | 2    | MY-50VU102J     | MYLAR CAPACITOR        |
| C723,724                                 | 2    | HE405JSL101K    | CERAMIC CAPACITOR      |
| C725                                     | 1    | NS-50TW4R7M     | ELECTROLYTIC CAPACITOR |
| C726,727                                 | 2    | NS-25TW470M     | ELECTROLYTIC CAPACITOR |
| C728                                     | 1    | NS-25TW220M     | ELECTROLYTIC CAPACITOR |
| C729                                     | 1    | NS-50TW4R7M     | ELECTROLYTIC CAPACITOR |
| C730                                     | 1    | H11SEYF223Z     | CERAMIC CAPACITOR      |
| C731,734                                 | 2    | HE405JSL101K    | CERAMIC CAPACITOR      |
| C751                                     | 1    | NS-25TW470M     | ELECTROLYTIC CAPACITOR |
| C773                                     | 1    | MY-50VU223K     | MYLAR CAPACITOR        |
| C777,778                                 | 2    | HE405JY8391K    | CERAMIC CAPACITOR      |
| C807,808                                 | 2    | BC71822MC50CC4  | ELECTROLYTIC CAPACITOR |
| C809                                     | 1    | NS100TW1R0M     | ELECTROLYTIC CAPACITOR |
| C810,811                                 | 2    | H11SEYF223Z     | CERAMIC CAPACITOR      |
| C931,932                                 | 2    | NS-50TW1R0M     | ELECTROLYTIC CAPACITOR |
| <b>RESISTORS</b>                         |      |                 |                        |
| R501,502                                 | 2    | KA16ST471J      | CARBON RESISTOR        |
| R503,504                                 | 2    | KA16ST103J      | CARBON RESISTOR        |
| R505,506                                 | 2    | KA16ST561J      | CARBON RESISTOR        |
| R507,508                                 | 2    | KA16ST471J      | CARBON RESISTOR        |
| R509,510                                 | 2    | KA16ST513J      | CARBON RESISTOR        |
| R511,512                                 | 2    | KA16ST514J      | CARBON RESISTOR        |
| R513,514                                 | 2    | KA16ST433J      | CARBON RESISTOR        |
| R515,516                                 | 2    | KA16ST911J      | CARBON RESISTOR        |
| R517,518                                 | 2    | KA16ST104J      | CARBON RESISTOR        |

| REF. NO.             | Q'TY | CARVER PART NO. | DESCRIPTION            |
|----------------------|------|-----------------|------------------------|
| R519,520             | 2    | KA16ST102J      | CARBON RESISTOR        |
| R521,522             | 2    | KA16ST104J      | CARBON RESISTOR        |
| R523,524             | 2    | KA16ST102J      | CARBON RESISTOR        |
| R525,526             | 2    | KA16ST104J      | CARBON RESISTOR        |
| R527,528             | 2    | KA16ST102J      | CARBON RESISTOR        |
| R529,530             | 2    | KA16ST221J      | CARBON RESISTOR        |
| R533,534             | 2    | KA16ST561J      | CARBON RESISTOR        |
| R535,538             | 4    | KA16ST104J      | CARBON RESISTOR        |
| R539,540             | 2    | KA16ST471J      | CARBON RESISTOR        |
| R541,542             | 2    | KA16ST224J      | CARBON RESISTOR        |
| R543,546             | 4    | KA16ST221J      | CARBON RESISTOR        |
| R547,548             | 2    | KA16ST561J      | CARBON RESISTOR        |
| R549,552             | 4    | KA16ST104J      | CARBON RESISTOR        |
| R553,554             | 2    | KA16ST471J      | CARBON RESISTOR        |
| R555,560             | 6    | KA16ST224J      | CARBON RESISTOR        |
| R561,562             | 2    | KA16ST471J      | CARBON RESISTOR        |
| R563,564             | 2    | KA16ST473J      | CARBON RESISTOR        |
| R565,566             | 2    | KA16ST471J      | CARBON RESISTOR        |
| R567,572             | 6    | KA16ST104J      | CARBON RESISTOR        |
| R573,574             | 2    | KA16ST102J      | CARBON RESISTOR        |
| R581,582             | 2    | KA16ST432J      | CARBON RESISTOR        |
| R583                 | 1    | KA16ST105J      | CARBON RESISTOR        |
| R584                 | 1    | KA16ST682J      | CARBON RESISTOR        |
| R585,586             | 2    | KA16ST104J      | CARBON RESISTOR        |
| R587,588             | 2    | KA16ST471J      | CARBON RESISTOR        |
| R589,590             | 2    | KA16ST103J      | CARBON RESISTOR        |
| R592                 | 1    | KA16ST471J      | CARBON RESISTOR        |
| R593                 | 1    | KA16ST105J      | CARBON RESISTOR        |
| R596                 | 1    | KA16ST224J      | CARBON RESISTOR        |
| R597                 | 1    | KA16ST104J      | CARBON RESISTOR        |
| R598                 | 1    | KA16ST564J      | CARBON RESISTOR        |
| R599                 | 1    | KA16ST103J      | CARBON RESISTOR        |
| R701,702             | 2    | KA16ST561J      | CARBON RESISTOR        |
| R711,712             | 2    | KA16ST273J      | CARBON RESISTOR        |
| R713,714             | 2    | KA16ST621J      | CARBON RESISTOR        |
| R715,716             | 2    | KA16ST273J      | CARBON RESISTOR        |
| R717,720             | 4    | KA16ST121J      | CARBON RESISTOR        |
| R723,724             | 2    | KA25ST112J      | CARBON RESISTOR        |
| R725,726             | 2    | FR25ST220J-LP   | FLAME PROOF RESISTOR   |
| R728                 | 1    | KA25ST162J      | CARBON RESISTOR        |
| R729,732             | 4    | KA25ST102J      | CARBON RESISTOR        |
| R733,734             | 2    | KA25ST162J      | CARBON RESISTOR        |
| R735,736             | 2    | FR25ST220J-LP   | FLAME PROOF RESISTOR   |
| R737,738             | 2    | FR50ST221J-LP   | FLAME PROOF RESISTOR   |
| R739,740             | 2    | MPC725R22KX2LF  | CEMENT RESISTOR        |
| R741,742             | 2    | KA25ST122J      | CARBON RESISTOR        |
| R743,744             | 2    | KA25ST103J      | CARBON RESISTOR        |
| R745,748             | 4    | CE10WTR47K-M    | CEMENT RESISTOR        |
| R749,750             | 2    | KA25ST103J      | CARBON RESISTOR        |
| R751,753             | 3    | KA16ST563J      | CARBON RESISTOR        |
| R754                 | 1    | KA16ST473J      | CARBON RESISTOR        |
| R755                 | 1    | KA16ST563J      | CARBON RESISTOR        |
| R756                 | 1    | KA16ST473J      | CARBON RESISTOR        |
| R757                 | 1    | KA16ST104J      | CARBON RESISTOR        |
| R758,759             | 2    | KA16ST233J      | CARBON RESISTOR        |
| R760                 | 1    | KA16ST224J      | CARBON RESISTOR        |
| R761                 | 1    | KA16ST333J      | CARBON RESISTOR        |
| R762                 | 1    | KA16ST563J      | CARBON RESISTOR        |
| R763                 | 1    | SA-2WT152J-LP   | METAL OXIDE RESISTOR   |
| R765                 | 1    | KA16ST332J      | CARBON RESISTOR        |
| R766                 | 1    | KA16ST102J      | CARBON RESISTOR        |
| R767,768             | 2    | KA16ST104J      | CARBON RESISTOR        |
| R769,770             | 2    | KA16ST103J      | CARBON RESISTOR        |
| R771                 | 1    | KA16ST562J      | CARBON RESISTOR        |
| R772                 | 1    | KA16ST103J      | CARBON RESISTOR        |
| R773                 | 1    | KA25ST103J      | CARBON RESISTOR        |
| R774                 | 1    | KA25ST104J      | CARBON RESISTOR        |
| R775                 | 1    | KA16ST472J      | CARBON RESISTOR        |
| R777,778             | 2    | KA16ST221J      | CARBON RESISTOR        |
| R779                 | 1    | KA50S5392J      | CARBON RESISTOR        |
| R783,784             | 2    | KA16ST103J      | CARBON RESISTOR        |
| R785,786             | 2    | KA16ST273J      | CARBON RESISTOR        |
| R787,790             | 4    | KA16ST101J      | CARBON RESISTOR        |
| R795,796             | 2    | KA25ST332J      | CARBON RESISTOR        |
| R801                 | 1    | KA16ST682J      | CARBON RESISTOR        |
| R802                 | 1    | KA16ST103J      | CARBON RESISTOR        |
| R805,806             | 2    | KA16ST473J      | CARBON RESISTOR        |
| R808                 | 1    | KA16ST103J      | CARBON RESISTOR        |
| R952                 | 1    | KA25ST162J      | CARBON RESISTOR        |
| VR701,702            | 2    | SVR-06T38102    | SEMI-VARIABLE RESISTOR |
| <b>MISCELLANEOUS</b> |      |                 |                        |
| WB92                 | 1    | R-020-15        | CABLE ASS'Y            |
| 1W14                 | 1    | 4685266916-J-Z  | 6-LEAD, FLAT CABLE     |
| 1W15                 | 1    | 4685266814-J-Z  | 6-LEAD, FLAT CABLE     |
| 1W18                 | 1    | 4685267814-J-Z  | 7-LEAD, FLAT CABLE     |
| 1W29                 | 1    | 0155220812-J-J  | SOLOER-PLATED WIRE     |
| 1W30                 | 1    | 0155220812-E-J  | SOLOER PLATED WIRE     |
| 2E18                 | 1    | B38-EH-A        | CONNECTOR              |
| 2W11                 | 1    | 0075240015-B-J  | SOLOER PLATED WIRE     |
| CN508                | 1    | B48-EH-A        | CONNECTOR              |
| CN509                | 1    | 52011-0510      | CONNECTOR              |
| CN510                | 1    | B38-EH-A        | CONNECTOR              |
| CN511,880            | 2    | 52011-0310      | CONNECTOR              |
| F4306                | 1    | B68-E4-A        | CONNECTOR              |
| F4307                | 1    | B78-EH-A        | CONNECTOR              |
| F4504                | 1    | B98-E4-A        | CONNECTOR              |
| JP801-803            | 3    | 0075260805-C-C  | SOLOER PLATED WIRE     |
| PY701                | 1    | AJR32329        | RELAY                  |
| TP501-504            | 4    | RP-003          | TERMINAL PIN           |
| 23E25                | 1    | WE-3            | TERMINAL PIN           |

## POWER TRANSFORMER P.C. BOARD

| REF. NO.              | Q'TY | CARVER PART NO. | DESCRIPTION           |
|-----------------------|------|-----------------|-----------------------|
| P.C. BOARD<br>24E29   | 1    | PT-809A         | PRINTED CIRCUIT BOARD |
| RESISTORS<br>R803~806 | 4    | ER025FAJ1R0     | FLAME PROOF RESISTOR  |
| MISCELLANEOUS<br>1W11 | 1    | 4685265844-J-Z  | 5-LEAD, FLAT CABLE    |

## BACKUP P.C. BOARD

| REF. NO.                  | Q'TY | CARVER PART NO. | DESCRIPTION               |
|---------------------------|------|-----------------|---------------------------|
| P.C. BOARD<br>28E14       | 1    | BU-814A         | PRINTED CIRCUIT BOARD     |
| SEMICONDUCTORS<br>D861    | 1    | 1B4B42          | DIODE                     |
| D852                      | 1    | 1N4002          | DIODE                     |
| D853,854                  | 2    | Z040-057        | ZENER DIODE,2.5W,5.7V     |
| D855                      | 1    | 1N4002          | DIODE                     |
| Q851                      | 1    | 2SC1815-Y,GR    | TRANSISTOR                |
| Q852                      | 1    | 2SA1015-Y,GR    | TRANSISTOR                |
| CAPACITORS<br>C851        | 1    | YE103           | METALLIZED FILM CAPACITOR |
| C852                      | 1    | NS-50TW2R2M     | ELECTROLYTIC CAPACITOR    |
| C853                      | 1    | NS-16TW221M     | ELECTROLYTIC CAPACITOR    |
| C854                      | 1    | NS-16TW101M     | ELECTROLYTIC CAPACITOR    |
| RESISTORS<br>R853         | 1    | KA16ST221J      | CARBON RESISTOR           |
| R854                      | 1    | KA16ST103J      | CARBON RESISTOR           |
| R855                      | 1    | KA16ST223J      | CARBON RESISTOR           |
| R856                      | 1    | KA16ST102J      | CARBON RESISTOR           |
| COILS<br>PT851            | 1    | NPT-2794        | POWER TRANSFORMER         |
| MISCELLANEOUS<br>PB51,863 | 2    | RP-001          | TERMINAL PIN              |
| 1W13                      | 1    | 4685266833-J-Z  | 6-LEAD, FLAT CABLE        |
| 2W 6                      | 1    | R-31Y16Y34      | CABLE ASS'Y               |
| 2W 7                      | 1    | R-31Y16R28      | CABLE ASS'Y               |
| 2W 8                      | 1    | R-31Y16A30      | CABLE ASS'Y               |
| EL851                     | 1    | M1698           | GND LUG                   |
| RY851                     | 1    | AJR32117        | RELAY                     |
| 23E 7                     | 2    | CNT41-0013      | FUSE HOLDER               |
| 23E11                     | 6    | 1PS-1041-4      | JUMP WIRE                 |
| 23E16                     | 1    | 1PS-1041-2      | JUMP WIRE                 |

## VOLUME CONTROL P.C. BOARD

| REF. NO.              | Q'TY | CARVER PART NO. | DESCRIPTION           |
|-----------------------|------|-----------------|-----------------------|
| P.C. BOARD<br>29E24   | 1    | VR-814A         | PRINTED CIRCUIT BOARD |
| RESISTORS<br>VR801    | 1    | EUW-MHJF25B15   | ROTARY POTENTIOMETER  |
| VR802                 | 1    | V8B16-154MNIK4  | ROTARY POTENTIOMETER  |
| MISCELLANEOUS<br>1W 3 | 1    | 4685263813-J-Z  | 3-LEAD, FLAT CABLE    |
| 1W 4                  | 1    | 4685263821-J-Z  | 3-LEAD, FLAT CABLE    |
| CN401                 | 1    | B38-EH-A        | CONNECTOR             |
| CN403                 | 1    | MZ03-779        | MICRO SOCKET ASS'Y    |
| CN406                 | 1    | 52011-0510      | CONNECTOR             |
| JM808                 | 1    | MZ02-7B4        | MICRO SOCKET ASS'Y    |

## MAIN VOLUME LED P.C. BOARD

| REF. NO.               | Q'TY | CARVER PART NO. | DESCRIPTION           |
|------------------------|------|-----------------|-----------------------|
| P.C. BOARD<br>30E 3    | 1    | VO-814A         | PRINTED CIRCUIT BOARD |
| SEMICONDUCTORS<br>D850 | 1    | SPR-54MVWF      | LED                   |
| MISCELLANEOUS<br>CN807 | 1    | MZ03-777A       | MICRO SOCKET ASS'Y    |

## POWER METER P.C. BOARD

| REF. NO.                   | Q'TY | CARVER PART NO. | DESCRIPTION           |
|----------------------------|------|-----------------|-----------------------|
| P.C. BOARD<br>2E16         | 1    | PM-825          | PRINTED CIRCUIT BOARD |
| SEMICONDUCTORS<br>Q101,102 | 2    | 1SS176          | DIODE                 |
| Q101-104                   | 4    | 2SC1815-Y,GR    | TRANSISTOR            |
| Q105,106                   | 2    | 2SC2876-A,B     | TRANSISTOR            |
| Q107                       | 1    | 2SA1015-Y,GR    | TRANSISTOR            |
| IC101,102                  | 2    | NJM4558L        | IC                    |

| REF. NO.               | Q'TY | CARVER PART NO. | DESCRIPTION            |
|------------------------|------|-----------------|------------------------|
| CAPACITORS<br>C101,102 | 2    | NS-16TW220M     | ELECTROLYTIC CAPACITOR |
| C103,104               | 2    | HE405JSL470K    | CERAMIC CAPACITOR      |
| C105,106               | 2    | NS-16TW220M     | ELECTROLYTIC CAPACITOR |
| C107,108               | 2    | HE505JSL101K    | CERAMIC CAPACITOR      |
| C109,110               | 2    | NS-50TW4R7M     | ELECTROLYTIC CAPACITOR |
| C111-114               | 4    | NS-16TW101M     | ELECTROLYTIC CAPACITOR |
| C115,116               | 2    | NS-25TW470M     | ELECTROLYTIC CAPACITOR |
| C117,118               | 2    | HE705JYF103Z    | CERAMIC CAPACITOR      |
| C121,122               | 2    | NS-16TW221M     | ELECTROLYTIC CAPACITOR |
| RESISTORS<br>R101,102  | 2    | KA16ST155J      | CARBON RESISTOR        |
| R103,104               | 2    | KA16ST133J      | CARBON RESISTOR        |
| R105,106               | 2    | KA16ST473J      | CARBON RESISTOR        |
| R107,108               | 2    | KA16ST561J      | CARBON RESISTOR        |
| R109,110               | 2    | KA16ST203J      | CARBON RESISTOR        |
| R111,112               | 2    | KA16ST432J      | CARBON RESISTOR        |
| R113,114               | 2    | KA16ST202J      | CARBON RESISTOR        |
| R115,116               | 2    | KA16ST102J      | CARBON RESISTOR        |
| R117,118               | 2    | KA16ST101J      | CARBON RESISTOR        |
| R119,120               | 2    | KA16ST394J      | CARBON RESISTOR        |
| R121,122               | 2    | KA16ST180J      | CARBON RESISTOR        |
| R123-126               | 4    | KA16ST911J      | CARBON RESISTOR        |
| P127,128               | 2    | KA16ST470J      | CARBON RESISTOR        |
| R129,130               | 2    | KA16ST304J      | CARBON RESISTOR        |
| R131,132               | 2    | KA16ST103J      | CARBON RESISTOR        |
| R133,134               | 2    | KA16ST221J      | CARBON RESISTOR        |
| R136                   | 1    | KA16ST102J      | CARBON RESISTOR        |
| R137                   | 1    | KA16ST471J      | CARBON RESISTOR        |
| R138                   | 1    | KA16ST393J      | CARBON RESISTOR        |
| R139,140               | 2    | KA16ST103J      | CARBON RESISTOR        |
| VR101,102              | 2    | SVR-06539504    | SEMI-VARIABLE RESISTOR |
| MISCELLANEOUS<br>1W 7  | 1    | 4685263815-J-J  | 3-LEAD, FLAT CABLE     |
| 2E13                   | 1    | E150            | JUMP WIRE              |
| 2E14                   | 13   | E100            | JUMP WIRE              |
| 2E15                   | 1    | E200            | JUMP WIRE              |
| 2E27                   | 1    | MZ03-797        | CONNECTOR              |
| EL103                  | 1    | M1698           | GND LUG                |

## MICON P.C. BOARD

| REF. NO.                                      | Q'TY | CARVER PART NO. | DESCRIPTION             |
|---|------|-----------------|-------------------------|
| P.C. BOARD<br>6E30                            | 1    | FPL-825         | PRINTED CIRCUIT BOARD   |
| SEMICONDUCTORS<br>D316,317                    | 2    | 1SS176          | DIODE                   |
| Q339,340,<br>342-346,<br>348-350              | 10   | SLB-550U5F      | LED                     |
| Q311  | 1    | RN1204          | TRANSISTOR              |
| Q312  | 1    | 2SC1815-Y,GR    | TRANSISTOR              |
| IC302   | 1    | LC6546C-4186    | IC                      |
| IC303   | 1    | TC9135P         | IC                      |
| CAPACITORS<br>C308                            | 1    | S7-10TW221M     | ELECTROLYTIC CAPACITOR  |
| C309,310                                      | 2    | HE505JCH300J    | CERAMIC CAPACITOR       |
| C311  | 1    | NS-50TW1R0M     | ELECTROLYTIC CAPACITOR  |
| C313  | 1    | NS-50TW33M      | ELECTROLYTIC CAPACITOR  |
| RESISTORS<br>R320,321,<br>325-327             | 5    | KA16ST102J      | CARBON RESISTOR         |
| R328-330                                      | 3    | KA16ST103J      | CARBON RESISTOR         |
| R331,332                                      | 2    | KA16ST472J      | CARBON RESISTOR         |
| R333-335                                      | 3    | KA16ST104J      | CARBON RESISTOR         |
| R336  | 1    | KA16ST473J      | CARBON RESISTOR         |
| R337  | 1    | KA16ST271J      | CARBON RESISTOR         |
| R338  | 1    | KA16ST221J      | CARBON RESISTOR         |
| P340-342                                      | 3    | KA16ST271J      | CARBON RESISTOR         |
| Q344  | 1    | KA16ST103J      | CARBON RESISTOR         |
| RA301   | 1    | RA-SP-09104J    | BLOCK RESISTOR          |
| SWITCHES<br>S4317,318,<br>320-324,<br>326-328 | 10   | SDA-124HS       | TACT SWITCH             |
| MISCELLANEOUS<br>X302                         | 1    | CSA3-68MG       | CERAMIC OSCILLATOR UNIT |
| 1W 2  | 1    | 4685263934-J-J  | 3-LEAD, FLAT CABLE      |
| 1W 6  | 1    | 4685264835-J-J  | 4-LEAD, FLAT CABLE      |
| 1W 9  | 1    | 4685265815-J-Z  | 5-LEAD, FLAT CABLE      |
| 1W19  | 1    | 4685267827-J-Z  | 7-LEAD, FLAT CABLE      |
| 2E26  | 1    | MZ03-796        | CONNECTOR               |
| 6E25  | 9    | E050            | JUMP WIRE               |
| 6E26  | 13   | E100            | JUMP WIRE               |
| 6E27  | 3    | E150            | JUMP WIRE               |
| FW306   | 1    | MZ06-776        | MICRO SOCKET ASS'Y      |
| FW307   | 1    | MZ07-775        | MICRO SOCKET ASS'Y      |
| LE302,303                                     | 2    | 59BS169Z        | GND LUG                 |
| 28E20   | 1    | R-020-15        | CABLE ASS'Y             |

## POWER SWITCH P.C. BOARD

| REF. NO.            | Q'TY | CARVER PART NO. | DESCRIPTION           |
|---------------------|------|-----------------|-----------------------|
| P.C. BOARD<br>26E30 | 1    | PSW-825         | PRINTED CIRCUIT BOARD |
| SWITCHES<br>SW341   | 1    | SOA-124HS       | TACT SWITCH           |

## REMOCON RECEIVER P.C. BOARD

| REF. NO.                       | Q'TY   | CARVER PART NO.      | DESCRIPTION                  |
|--------------------------------|--------|----------------------|------------------------------|
| P.C. BOARD<br>6E11             | 1      | IR-825               | PRINTED CIRCUIT BOARD        |
| SEMICONDUCTORS<br>9318<br>0351 | 1<br>1 | 1SS176<br>SLB-55VR5F | DIODE<br>LED                 |
| CAPACITORS<br>C307             | 1      | S7-10TW470M          | ELECTROLYTIC CAPACITOR       |
| RESISTORS<br>R316              | 1      | KA16ST681J           | CARBON RESISTOR              |
| MISCELLANEOUS<br>RV301         | 1      | S9X1483-11           | REMOTE SIGNAL RECEIVING UNIT |

## LED HOLDER P.C. BOARD

| REF. NO.           | Q'TY | CARVER PART NO. | DESCRIPTION           |
|--------------------|------|-----------------|-----------------------|
| P.C. BOARD<br>2E23 | 2    | LH-825          | PRINTED CIRCUIT BOARD |

## LAMP P.C. BOARD

| REF. NO.              | Q'TY | CARVER PART NO. | DESCRIPTION           |
|-----------------------|------|-----------------|-----------------------|
| P.C. BOARD<br>2E24    | 1    | LP-825          | PRINTED CIRCUIT BOARD |
| MISCELLANEOUS<br>2E25 | 1    | M203-798        | MICRO SOCKET ASS'Y    |
| EL104,105             | 2    | M1698           | GND LUG               |

## OTHER PARTS

| REF. NO.              | Q'TY | CARVER PART NO. | DESCRIPTION        |
|-----------------------|------|-----------------|--------------------|
| MISCELLANEOUS<br>1W24 | 1    | 015Y160910MFMF  | WIRE               |
| 1W26                  | 1    | 015S220R15-E-E  | SOLDER PLATED WIRE |
| 1W27                  | 1    | 015S220A15-E-E  | SOLDER-PLATED WIRE |
| 1W28                  | 2    | 015S220N07-E-E  | SOLDER PLATED WIRE |
| 2W 1                  | 1    | 015S220044-E-E  | SOLDER PLATED WIRE |
| 2W 2                  | 1    | 015S220R42-E-E  | SOLDER PLATED WIRE |
| 2W 3                  | 1    | 015S220Y43-E-E  | SOLDER PLATED WIRE |
| 26E 3                 | 11   | BK-1            | CORD CLAMP         |
| 26E 4                 | 6    | NO.5167         | CORD CLAMP         |
| 26E 5                 | 1    | GT-M10W20       | GLASS TUBE         |

## EXPLODED VIEWS

| REF. NO.                   | Q'TY | CARVER PART NO. | DESCRIPTION               |
|----------------------------|------|-----------------|---------------------------|
| SEMICONDUCTORS<br>Q713,714 | 2    | 25C1846-Q,R     | TRANSISTOR                |
| Q725,726                   | 2    | 25C3281-R,D     | TRANSISTOR                |
| Q727,728                   | 2    | 25A1302-R,D     | TRANSISTOR                |
| Q740                       | 1    | 25C1846-Q,R     | TRANSISTOR                |
| CAPACITORS<br>C901         | 1    | YE103           | METALLIZED FILM CAPACITOR |
| COILS<br>39E22             | 1    | NPT-27745       | POWER TRANSFORMER         |
| MISCELLANEOUS<br>M101,102  | 2    | KL-258T-30      | METER                     |
| W801                       | 1    | R-020-15        | CABLE ASS'Y               |
| 1M 1                       | 1    | N21755-4        | FRONT PANEL               |
| 1M 2                       | 1    | N45635-2        | SUB PANEL L               |
| 1M 3                       | 1    | N45649-1        | SUB PANEL C               |
| 1M 4                       | 1    | N31127-1        | SUB PANEL R               |
| 1M 5                       | 2    | N44093A-BK1     | HANDLE                    |
| 1M 6                       | 4    | N44092-BK1      | HANDLE SPACER             |
| 1M 8                       | 1    | N10570-1        | FRONT BASE                |
| 1M11                       | 1    | N45788-1        | REMOTE GLASS              |
| 1M14                       | 1    | N31110-T-BK1    | KNOB 33                   |
| 1M15                       | 3    | N45691-BK       | KNOB 17                   |
| 1M16                       | 1    | N44260-T-9K1    | KNOB 12                   |
| 1M17                       | 1    | N45522          | LED CHIP                  |
| 1M18                       | 2    | N45668-65       | TACT BUTTON               |
| 1M21                       | 6    | N45431          | PUSH BUTTON               |
| 1M24                       | 1    | N21789          | CABINET                   |
| 1M26                       | 1    | N21842-2        | REAR PANEL                |
| 1M27                       | 1    | N21782          | 9DTTOM COVER              |
| 1M28                       | 4    | NO.7104         | FOOT                      |

| REF. NO.             | Q'TY | CARVER PART NO. | DESCRIPTION                    |
|----------------------|------|-----------------|--------------------------------|
| 2M 1                 | 1    | N21759          | SUPPORT CHASSIS (P.T)          |
| 2M 2                 | 1    | N21760          | CENTER CHASSIS                 |
| 2M 3                 | 1    | N31062A         | SIDE CHASSIS                   |
| 2M 6                 | 1    | N45688A         | FITTINGS(P.C.B.)               |
| 2M 7                 | 1    | N45687          | FITTINGS (POTENTIOMETER)       |
| 2M 8                 | 1    | N45453          | ANGLE S(HEAT SINK)             |
| 2M11                 | 1    | N45763          | FITTINGS (PCB)                 |
| 2M14                 | 1    | N45789B         | RT CUSHION                     |
| 2M15                 | 1    | N45772          | RT CUSHION                     |
| 2M17                 | 1    | N45742          | CUSHION                        |
| 2M18                 | 1    | RP-4060-NB      | NYLON PUSH RIVET (BLACK)       |
| 2M21                 | 1    | N31111-80       | HEAT SINK                      |
| 2M23                 | 1    | N45832          | SHIELD SHEET                   |
| 3M 1                 | 2    | N45335          | LABEL, SERIAL NO.              |
| 3M 3                 | 2    | N42235          | SHEET, SERIAL NUMBER           |
| 3M 4                 | 1    | N44043          | LABEL, SA1965(LIGHTNING FLASH) |
| 3M 7                 | 1    | N45487          | LABEL, UL                      |
| 3M 8                 | 1    | N41939          | LABEL, FUSE                    |
| 3M 9                 | 1    | N41941-702      | LABEL, FUSE                    |
| 3M11                 | 1    | N31136          | WARRANTY R                     |
| 3M12                 | 1    | N31137          | LIMITED WARRANTY               |
| 3M13                 | 1    | OM-968          | INSTRUCTION MANUAL             |
| 3M16                 | 1    | N41318-1        | POLYETHYLENE BAG               |
| 3M17                 | 1    | N40487          | POLYETHYLENE BAG (ACCESSORIES) |
| 3M19                 | 2    | N21790          | PACKING PAD                    |
| 3M22                 | 1    | N21792-5        | INNER CARTON                   |
| 3M23                 | 1    | N21792-6        | INNER CARTON                   |
| 3M26                 | 1    | N45776          | PAD (FRONT)                    |
| 3M29                 | 1    | N45382          | LABEL, CHINA                   |
| 3M30                 | 1    | N45468          | LABEL, JAPAN                   |
| 4M 1-M 7             | 10   | TSB+30X06-Y     | TAP SCREW S, BIND HEAD, Y      |
| 4M10-M13             | 6    | TSB+30X06-B     | TAP SCREW S, BIND HEAD, B      |
| 4M19-M21             | 7    | TSB+30X08-B     | TAP SCREW S, BIND HEAD, B      |
| 4M24-M27             | 6    | TSC+30X06-Y     | TAP SCREW S, WASHER FACED, Y   |
| 4M29                 | 4    | TSS+30X08-Y     | TAP SCREW S, FLAT HEAD, Y      |
| 5M 1                 | 4    | TSB+40X06-B     | TAP SCREW S, BIND HEAD, B      |
| 5M 4                 | 4    | TS1+40X08-Y     | TAP SCREW S, TRUSS, Y          |
| 5M 7                 | 4    | TSP+40X10-Y     | TAP SCREW S, PAN HEAD, Y       |
| 5M10-M13             | 9    | TBB+26X08-Y     | TAP SCREW B, BIND HEAD, Y      |
| 5M16                 | 2    | TB6+30X06-Y     | TAP SCREW B, BIND HEAD, Y      |
| 5M19-M20,<br>M22-M25 | 25   | TBB+30X08-B     | TAP SCREW B, BIND HEAD, B      |
| 6M 1                 | 2    | TBC+30X08-Y     | TAP SCREW B, WASHER FACED, Y   |
| 6M 4                 | 7    | TBC+30X12-Y     | TAP SCREW B, WASHER FACED, Y   |
| 6M 7                 | 4    | SSPS2+40X10-B   | SCREW-SP ASSY, PAN HEAD, B     |
| 6M11                 | 1    | 2TWX30-Y        | TOOTHED LOCK WACHER            |
| HM402                | 1    | MET41-0105      | SNAP PLATE                     |
| FU851                | 1    | FU-617C24T      | FUSE                           |
| PL151,152            | 2    | BQ141-35853A    | LAMP,12V,0.07A                 |
| 15E24                | 4    | AC262           | MICA                           |
| 24E 9                | 2    | YKC21-2229      | RCA JACK 6P                    |
| 24E10                | 1    | YKC21-2226      | RCA JACK 4P                    |
| 24E12                | 1    | YKC21-2339      | RCA JACK 6P                    |
| 24E13                | 2    | CNT31-0059      | SHORT PIN                      |
| 24E23                | 2    | KGLS-185        | LOCKING SUPPORT                |
| 26E 2                | 2    | VJR-3           | SNAKE LUG                      |
| 30E20                | 1    | RC-HR752        | REMOTE CONTRL TRANSMITTER      |
| 30E21                | 1    | UM-4-2          | BATTERY                        |
| 30E23                | 2    | AC-T055809      | AC OUTLET                      |
| 30E24                | 1    | ACC-022E5-4EE1  | LINE CORD                      |
| 30E25                | 1    | SR-4N-4         | CORD STOPPER                   |
| 30E30                | 1    | YK041-0004      | GROUND TERMINAL                |

## P.C. BOARD ASS'Y

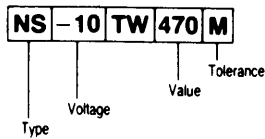
| REF. NO. | Q'TY | CARVER PART NO. | DESCRIPTION                  |
|----------|------|-----------------|------------------------------|
| 2P16     | 1    |                 | POWER METER P.C. BOARD       |
| 2P23     | 1    |                 | LED HOLDER P.C. BOARD        |
| 2P24     | 1    |                 | LAMP P.C. BOARD              |
| 6P11     | 1    |                 | REMOCON RECEIVER P.C. BOARD  |
| 6P30     | 1    |                 | MICRON P.C. BOARD            |
| 9P23     | 1    |                 | TONE CONTROL P.C. BOARD      |
| 14P 8    | 1    |                 | HOLOGRAM P.C. BOARD          |
| 24P27    | 1    |                 | MAIN AMP P.C. BOARD          |
| 24P29    | 1    |                 | POWER TRANSFORMER P.C. BOARD |
| 26P36    | 1    |                 | POWER SWITCH P.C. BOARD      |
| 23P14    | 1    |                 | BACKUP P.C. BOARD            |
| 29P24    | 1    |                 | VOLUME CONTROL P.C. BOARD    |
| 30P 3    | 1    |                 | MAIN VOLUME LED P.C. BOARD   |
| 30P 9    | 1    |                 | HEADPHONE P.C. BOARD         |
| 30P14    | 1    |                 | SPEAKER TERMINAL P.C. BOARD  |

# DIFFERENT PARTS LIST

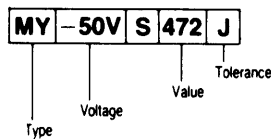
| Ref.No.           | Description                    | CM-1090(UL)    | CM-1090(EX)    |
|-------------------|--------------------------------|----------------|----------------|
| BACKUP P.C. BOARD |                                |                |                |
| SW851,852         | SWITCH                         | -              | SW-5220218     |
| OTHER PARTS       |                                |                |                |
| 1W26              | SOLDER PLATED WIRE             | 015S220R15-E-E | -              |
| 1W27              | SOLDER PLATED WIRE             | 015S220A15-E-E | -              |
| 1W28              | SOLDER PLATED WIRE             | 015S220N07-E-E | -              |
| 2W11              | SOLDER PLATED WIRE             | -              | 015S220T15-E-E |
| 2W12              | SOLDER PLATED WIRE             | -              | 015S220R13-E-E |
| 2W13              | SOLDER PLATED WIRE             | -              | 015S220O11-E-E |
| 2W14              | SOLDER PLATED WIRE             | -              | 015S220Y15-E-E |
| 2W15              | SOLDER PLATED WIRE             | -              | 015S220A12-E-E |
| 2W16              | SOLDER PLATED WIRE             | -              | 015S220N15-E-E |
| EXPLODED VIEWS    |                                |                |                |
| 3M 4              | LABEL, SA1965(LIGHTNING FLASH) | N44043         | -              |
| 3M 7              | LABEL, UL                      | N45487         | -              |

## Capacitors Description

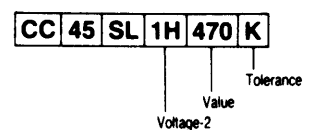
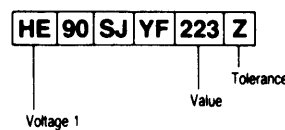
### • Electrolytic



### • Mylar - Styrol

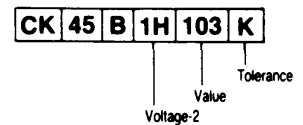


### • Ceramic



### • Electrolytic

| Type         | Voltage  | Value            | Tolerance   |
|--------------|----------|------------------|-------------|
| LL Low Leak  | -10 10V  | R47 0.47 $\mu$ F | K $\pm$ 10% |
| NP: Non-Pole | -50 50V  | 4R7 4.7 $\mu$ F  | M $\pm$ 20% |
| NS Standard  | 6R3 6.3V | 470 47 $\mu$ F   |             |
|              |          | 471 470 $\mu$ F  |             |
|              |          | 472 4700 $\mu$ F |             |



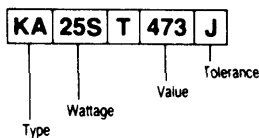
### • Mylar Styrol

| Type      | Voltage   | Value                  | Tolerance   |             |
|-----------|-----------|------------------------|-------------|-------------|
| MY Mylar  | -25V 25V  | 4R7 4.7pF              | G $\pm$ 2%  |             |
| ST Styrol | 125V 125V | 470 47pF               | J $\pm$ 5%  |             |
|           |           | -63T 63V               | 471 470pF   | K $\pm$ 10% |
|           |           | 472 4700pF             | M $\pm$ 20% |             |
|           |           | 473 0.047 $\mu$ F      |             |             |
|           |           | 474 0.47 $\mu$ F       |             |             |
|           |           | (1000pF=0.001 $\mu$ F) |             |             |

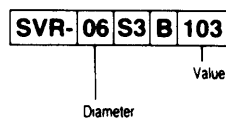
| Voltage-1 | Voltage-2 | Value                  | Tolerance       |
|-----------|-----------|------------------------|-----------------|
| HC 25V    | 1E 25V    | 4R7 4.7pF              | C: $\pm$ 0.25pF |
| HE 50V    | 1H 50V    | 470 47pF               | D: $\pm$ 0.5pF  |
| H 100V    | 2H 500V   | 471 470pF              | F: $\pm$ 1pF    |
| HK 250V   |           | 472 4700pF             | J: $\pm$ 5%     |
| HM 500V   |           | 473 0.047 $\mu$ F      | K: $\pm$ 10%    |
|           |           | 474 0.47 $\mu$ F       | M: $\pm$ 20%    |
|           |           | (1000pF=0.001 $\mu$ F) | Z +80~-20%      |

## Resistors Description

### • Fixed



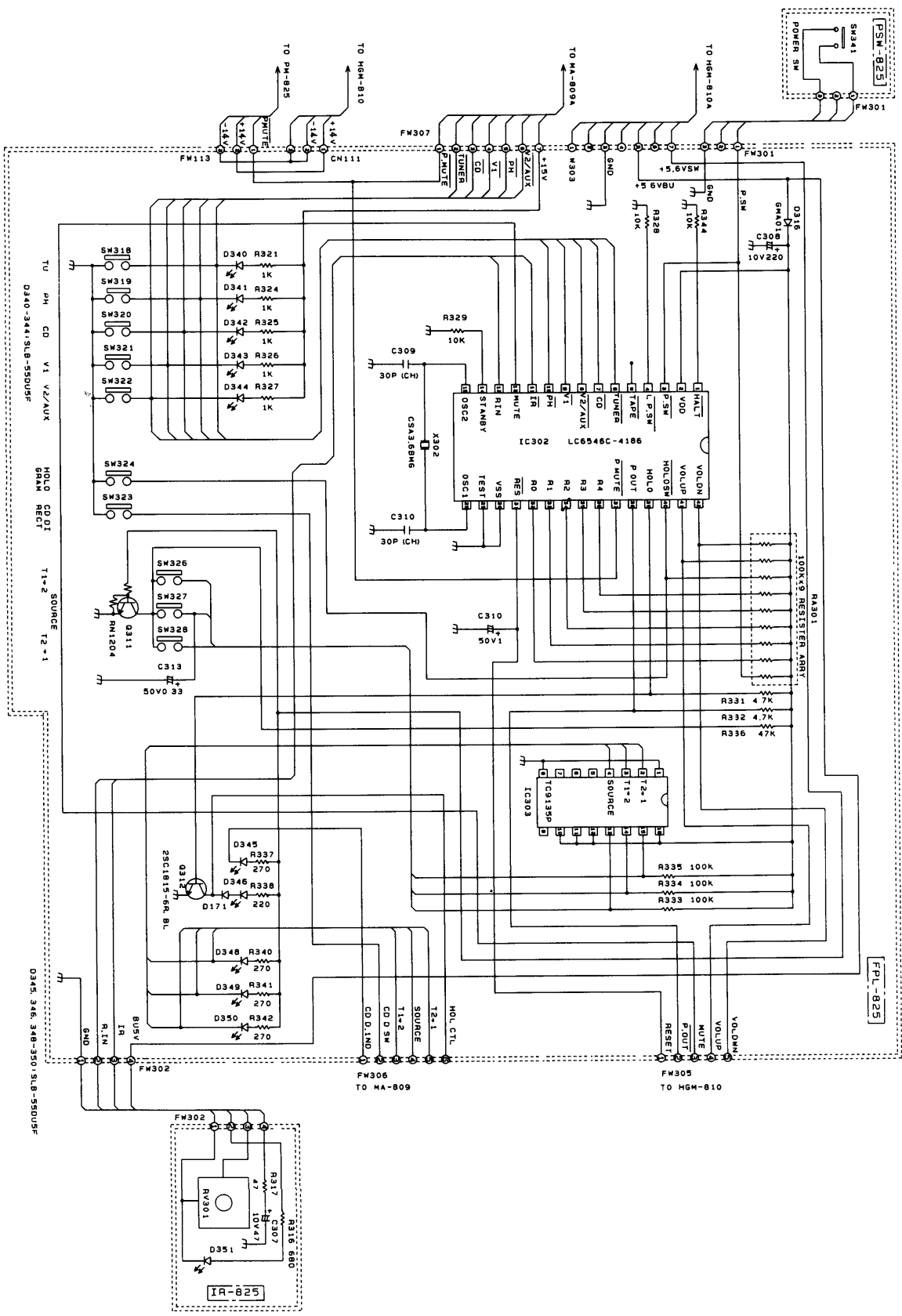
### • Semi-Variable

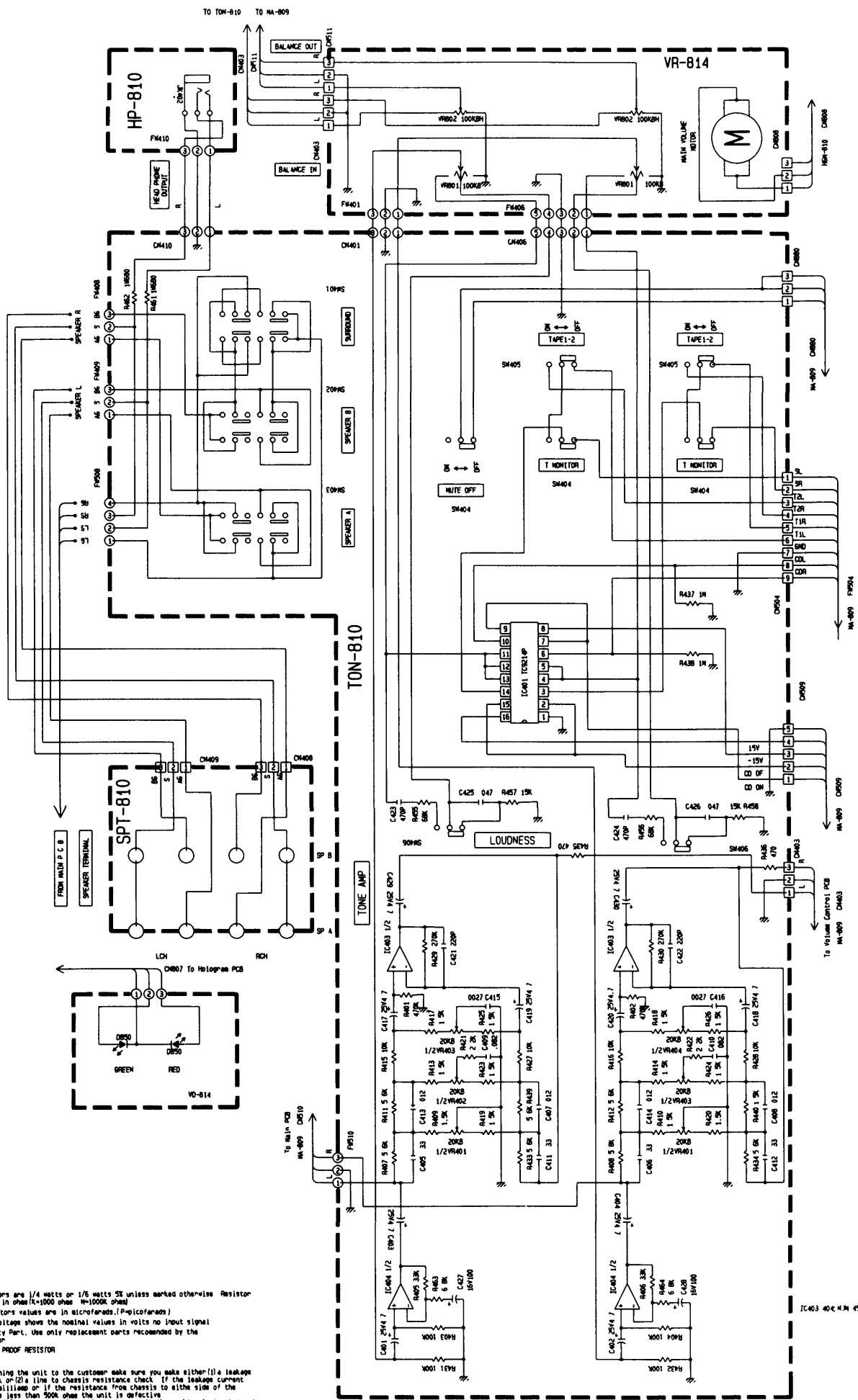


| Type           | Wattage  | Value             | Tolerance    | Diameter     |
|----------------|----------|-------------------|--------------|--------------|
| CE Cement Case | -2W 2W   | R47 0.47 $\Omega$ | M: $\pm$ 20% | 08 8 $\phi$  |
| FR Flame Proof | 10W 10W  | 4R7 4.7 $\Omega$  | K $\pm$ 10%  | 10 10 $\phi$ |
| KA Carbon      | 16S 1/6W | 470 47 $\Omega$   | J $\pm$ 5%   | 06 6 $\phi$  |
| MF Metal Film  | 20S 1/5W | 471 470 $\Omega$  | G $\pm$ 2%   |              |
| RF Fusible     | 25S 1/4W | 472 4.7k $\Omega$ | F $\pm$ 1%   |              |
| SA Metal Oxide | 50S 1/2W | 473 47k $\Omega$  | D $\pm$ 0.5% |              |
|                | 50X 1/2W | 474 470k $\Omega$ |              |              |
|                | S3W 3W   | 475 4.7M $\Omega$ |              |              |



# SCHEMATIC DIAGRAMS (UL Version only)





**NOTES**

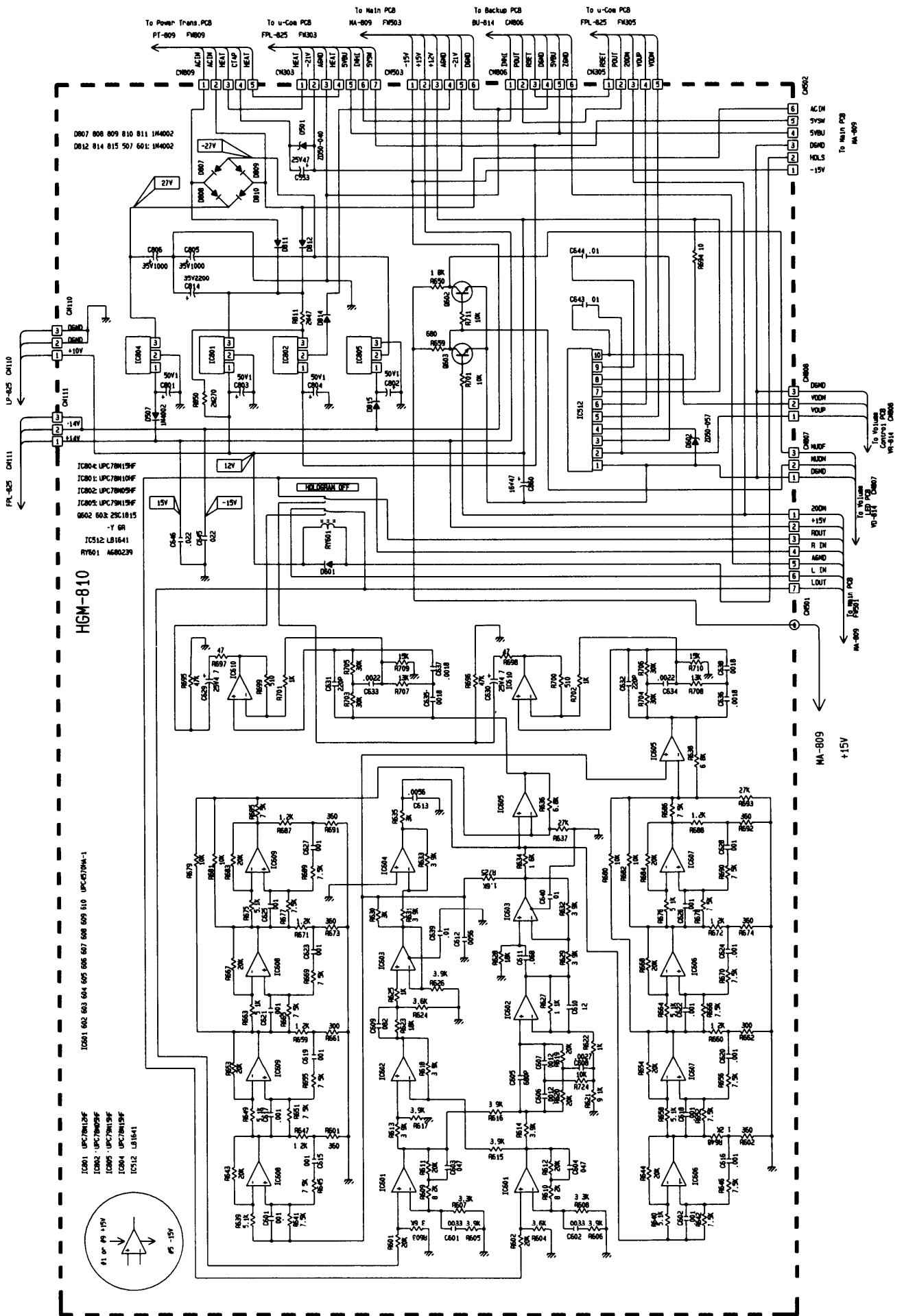
- 1 All resistors are 1/4 watts or 1/8 watts 5% unless marked otherwise. Resistor values are in ohms (1-1000 ohms), 10K (10,000 ohms), 100K (100,000 ohms).
- 2 All capacitors values are in microfarads (µF) or picofarads (pF).
- 3 Each D.C. voltage shows the nominal values in volts no input signal.
- 4 ⚡ is Safety Part. Use only replacement parts recommended by the manufacturer.
- 5 FR FLAME PROOF RESISTOR

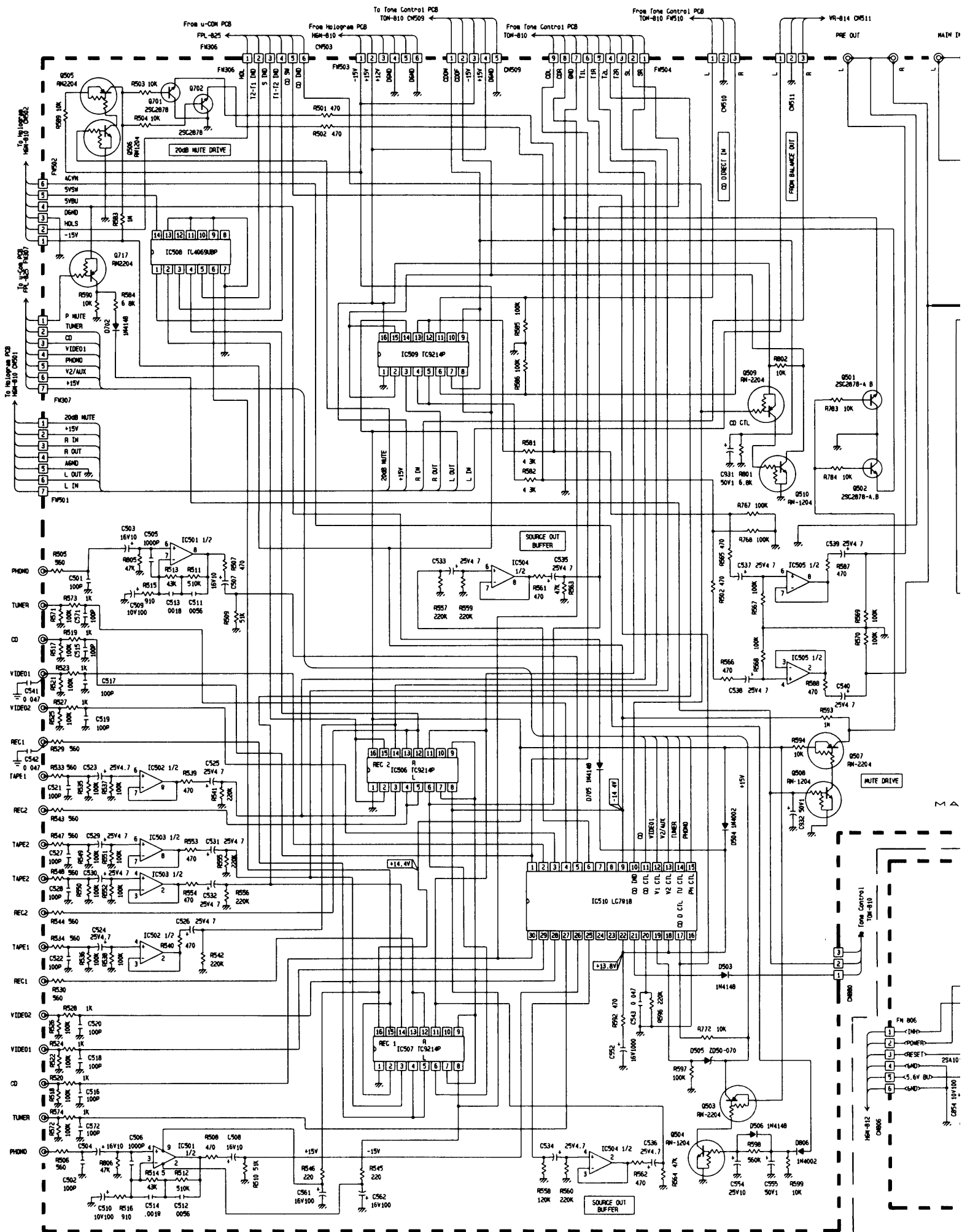
**CAUTION**

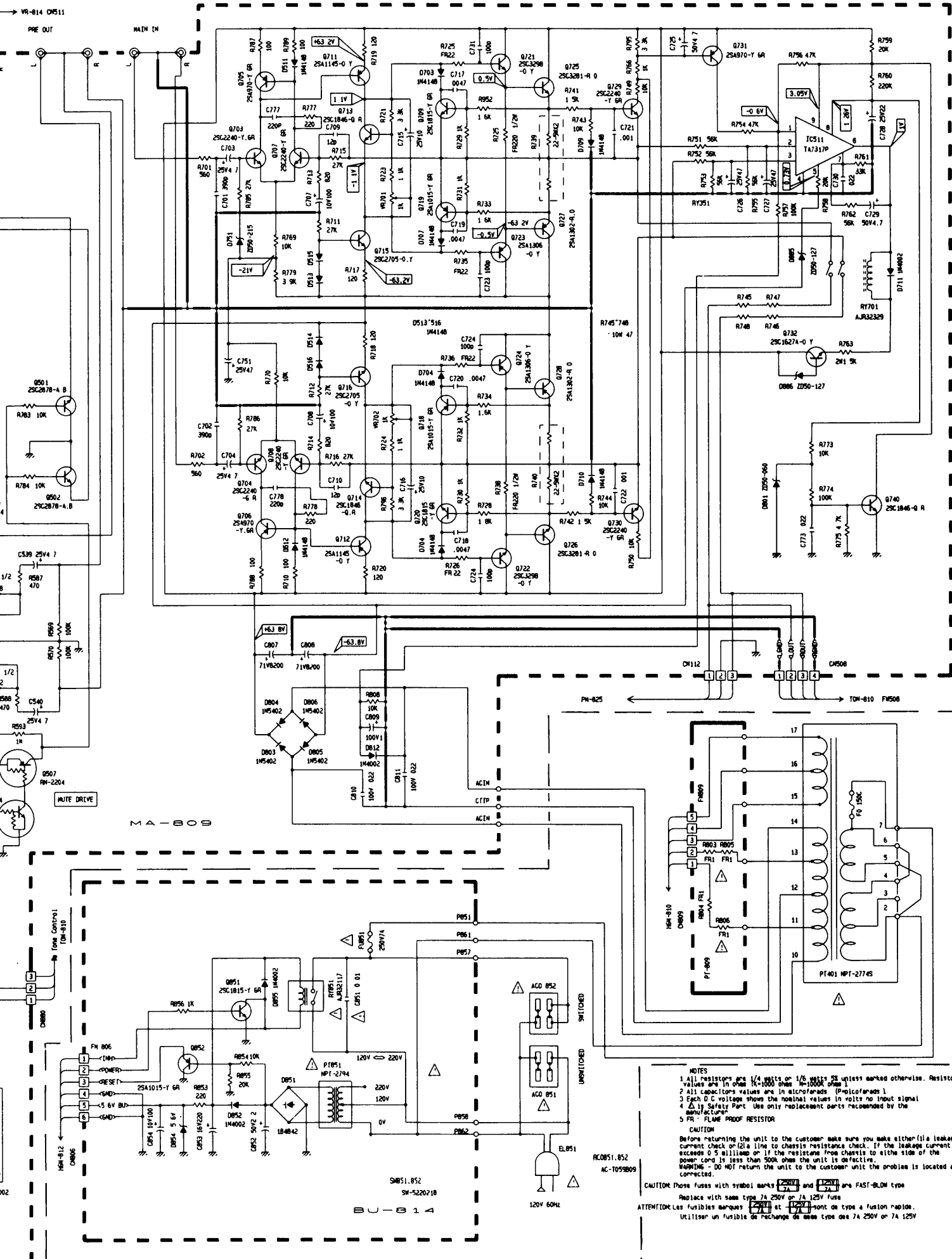
Before returning the unit to the customer make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamp or if the resistance from chassis to either side of the power cord is less than 500K ohms the unit is defective.

**WARNING:** DO NOT return the unit to the customer until the problem is located and corrected.

IC403 40K N.M. 456558







**NOTES**

- 1 All resistors are 1/4 watt or 1/2 watt 5% unless marked otherwise. Resistor values are in ohms (K=1000 ohms, M=1000K ohms).
- 2 All capacitor values are in microfarads (P=picofarads).
- 3 Each 0 V voltage shows the nominal values in volts no input signal.
- 4  $\Delta$  is Safety Part. Use only replacement parts recommended by the manufacturer.
- 5 FR - FLAME PROOF RESISTOR

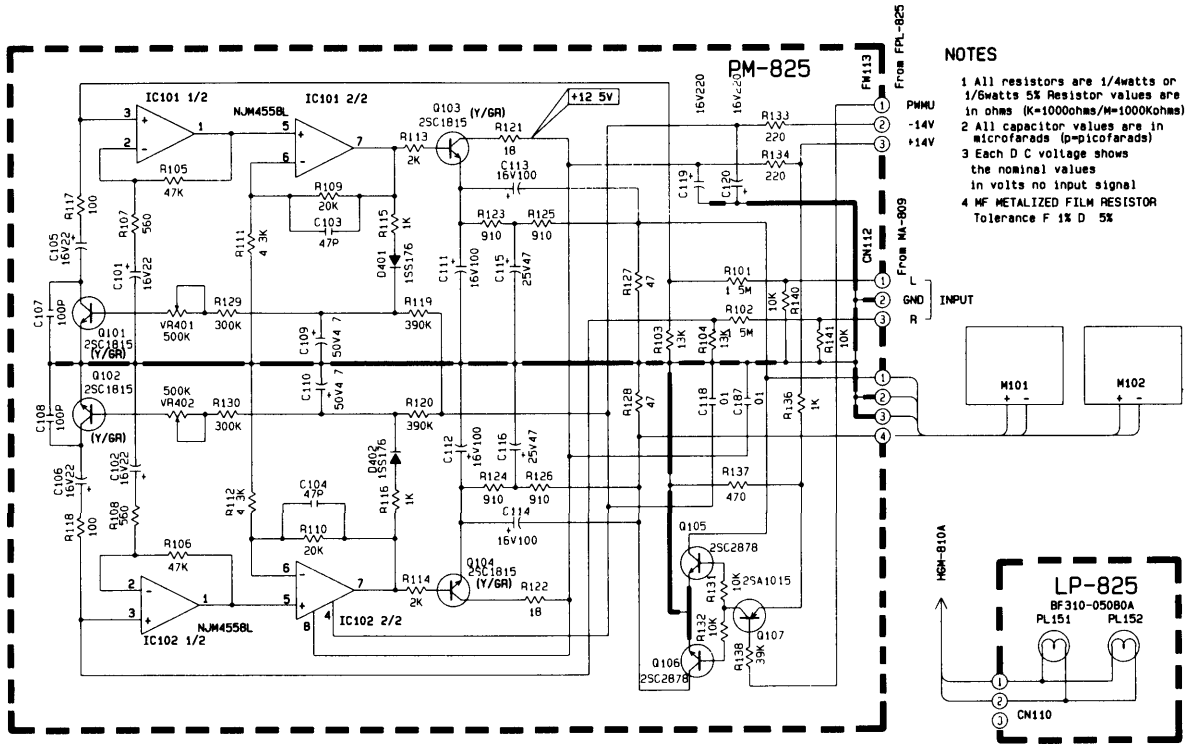
**CAUTION**

Before returning the unit to the customer make sure you make either (1) a leakage current check or (2) a chassis resistance check. If the leakage current exceeds 0.5 milliamperes or if the resistance from chassis to either side of the power cord is less than 500K ohms the unit is defective.

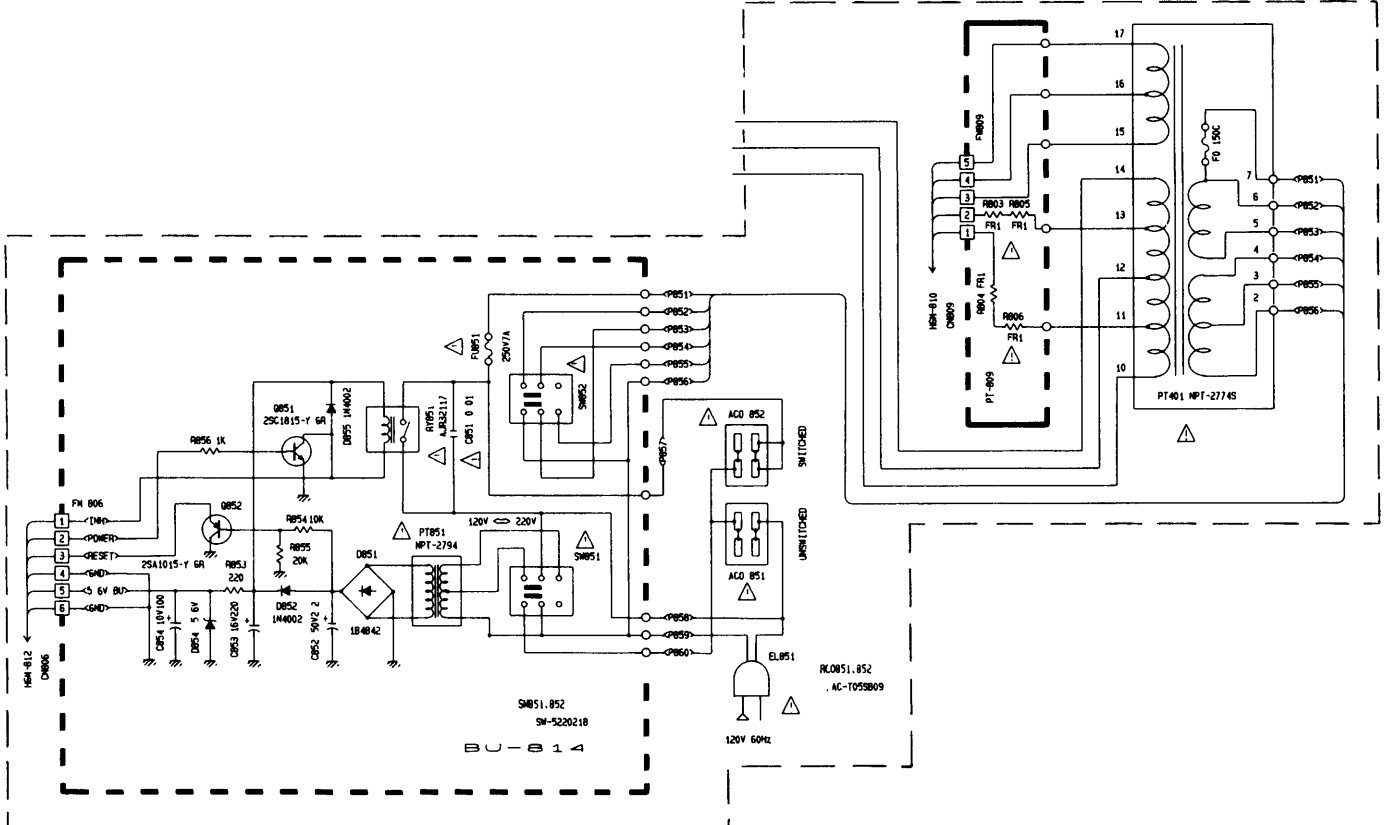
**WARNING - DO NOT** return the unit to the customer until the problem is located and corrected.

**CAUTION** Those fuses with symbol marks  $\frac{250V}{7A}$  and  $\frac{125V}{7A}$  are FAST-BLOW type. Replace with same type 7A 250V or 7A 125V fuse.

**ATTENTION** Les fusibles marqués  $\frac{250V}{7A}$  et  $\frac{125V}{7A}$  sont de type à fusion rapide. Utiliser un fusible de rechange de même type des 7A 250V ou 7A 125V.



- NOTES**
- 1 All resistors are 1/4watts or 1/6watts 5% Resistor values are in ohms (K=1000ohms/M=1000Kohms)
  - 2 All capacitor values are in microfarads (p=picofarads)
  - 3 Each D C voltage shows the nominal values in volts no input signal
  - 4 MF METALIZED FILM RESISTOR Tolerance F 1% D 5%



(EX Version only)

# CARVER CORPORATION SERVICE BULLETIN

Service Bulletin # CM-1090-1 | Model: CM-1090 | Serial nos. As needed

REASON: If the customer complains of excessive hiss with highly efficient speakers when the hologram is switched in, reduce the preamp output gain. Date: 6/14/90

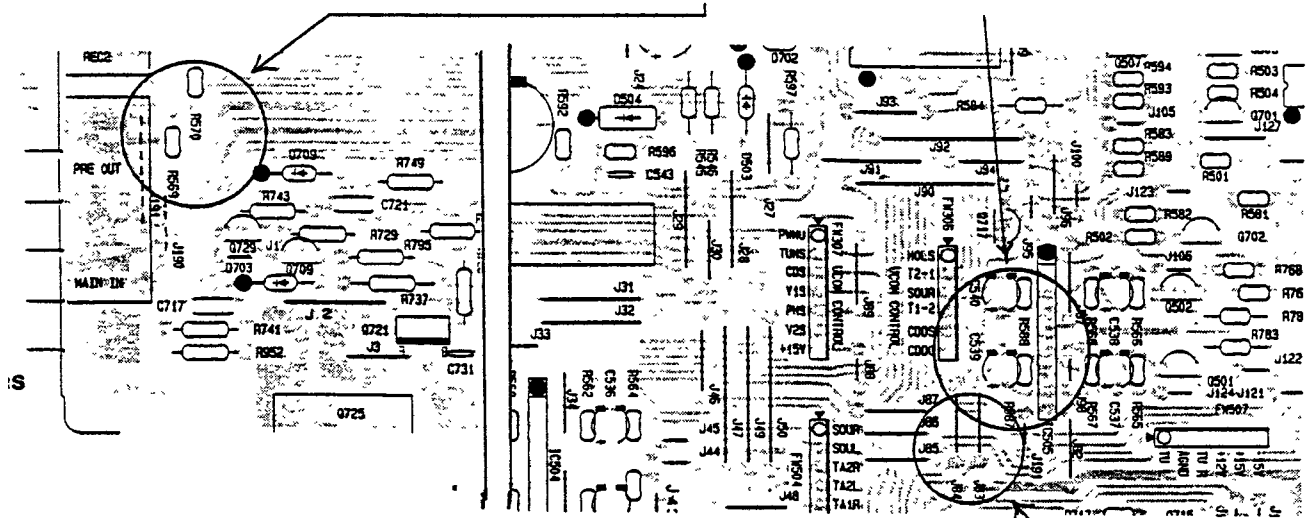
**DELETE**

On the Main Amp PC Board, replace R569/R570 and R587/R588 with resistors indicated on the following chart.

**ADD**

## PROCEDURE

| GAIN REDUCTION | R569/R570 | R587/R588                |
|----------------|-----------|--------------------------|
| 0dB            | 100K      | 470Ω (factory installed) |
| 6dB            | 5.1K      | 4.7K                     |
| 12dB           | 2.7K      | 7.5K                     |
| 18dB           | 1.2K      | 8.2K                     |



Engineering approval *Vic Richardson*

Service approval *B. Coffey*

Optional: To avoid removing PC boards to access R587/R588, remove J83/J84 from the foil side of the amp board and install resistors in their place using the values indicated on the chart.



# CARVER CORPORATION SERVICE BULLETIN

Below

Service Bulletin # CM-1090-2 | Model: CM-1090

Serial nos. 90996803736

REASON:

Date: 6/27/90

Protection relay trips and shuts off speaker outputs below full power.

DELETE

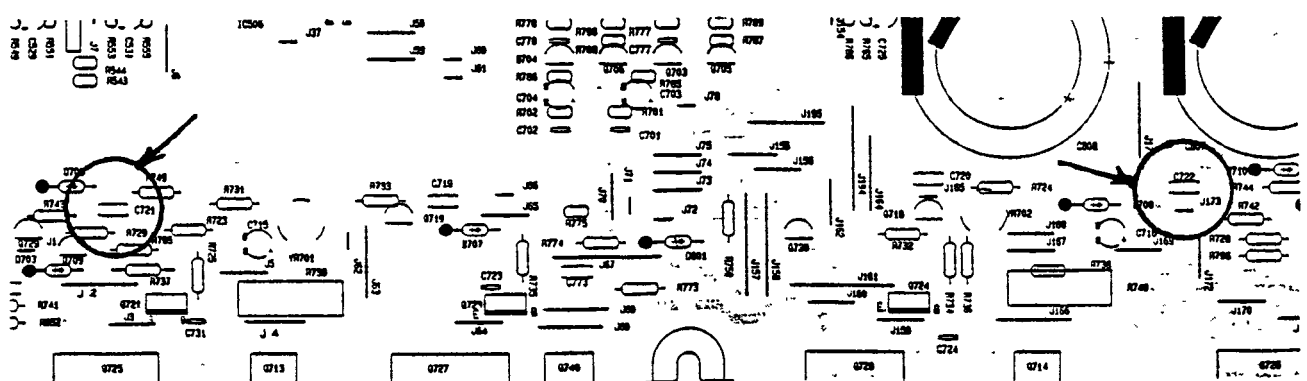
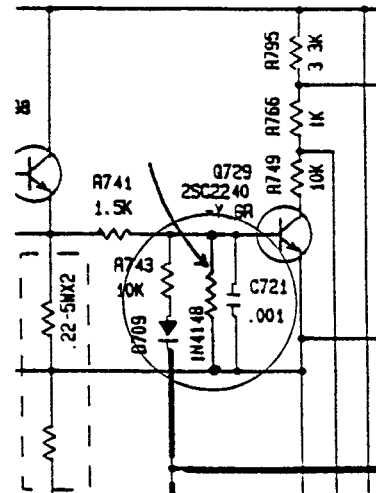
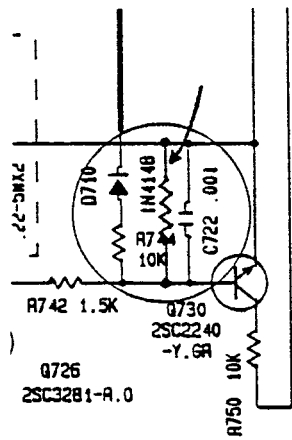
ADD

2

2.7K 1/4 watt resistor

## PROCEDURE

Solder 2.7K resistors on foil side of power amp board in parallel with C721 and C722.



Engineering approval *Vic Richardson* 6-27-90

Service approval *B. C. M.*

# CARVER CORPORATION SERVICE BULLETIN

Service Bulletin # CM-1090-3 | Model: CM-1090 | Serial nos. As required

REASON: Intermittent crackling noise in speakers. | Date: 10/03/90

| DELETE | ADD                           |
|--------|-------------------------------|
| QTY.   | DESCRIPTION                   |
| 1      | #18 bus wire 3in. (75mm) long |

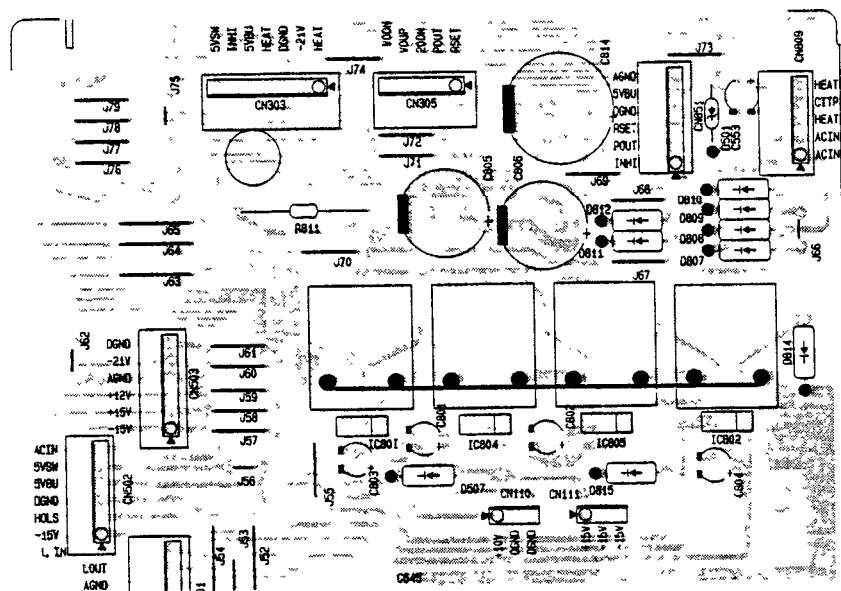
## PROCEDURE

Remove Hologram PCB HGM-810B from chassis.

Solder 18 ga. bus wire across all 8 mounting pins of the voltage regulator heat sinks as shown. Do not allow the bus wire to contact any of the foil conductors between the pins.

NOTE: Use a high wattage soldering iron to heat the pins sufficiently for a good solder connection. The integrity of these ground connections is critical.

### HGM-810B Hologram P.C.Board



Service Approval

Engineering approval