

**Ibanez**

# SERVICE MANUAL

GUITAR AMPLIFIERS  
IBZ 60, IBZ 60EQ, IBZ 100, IBZ 100EQ

## INDEX

|                                |    |
|--------------------------------|----|
| FEATURES.....                  | 1  |
| OPERATING PRECAUTIONS.....     | 2  |
| HOW TO REMOVE THE SHASSIS..... | 3  |
| DISPOSITION OF PARTS.....      | 4  |
| BLOCK DIAGRAMS.....            | 5  |
| OPERATING INSTRUCTIONS.....    | 6  |
| ADJUSTMENT PROCEDURES.....     | 7  |
| PARTS LIST.....                | 8  |
| TROUBLE SHOOTING.....          | 9  |
| P.C.B.....                     | 10 |
| SCHEMATIC DIAGRAMS.....        | 11 |



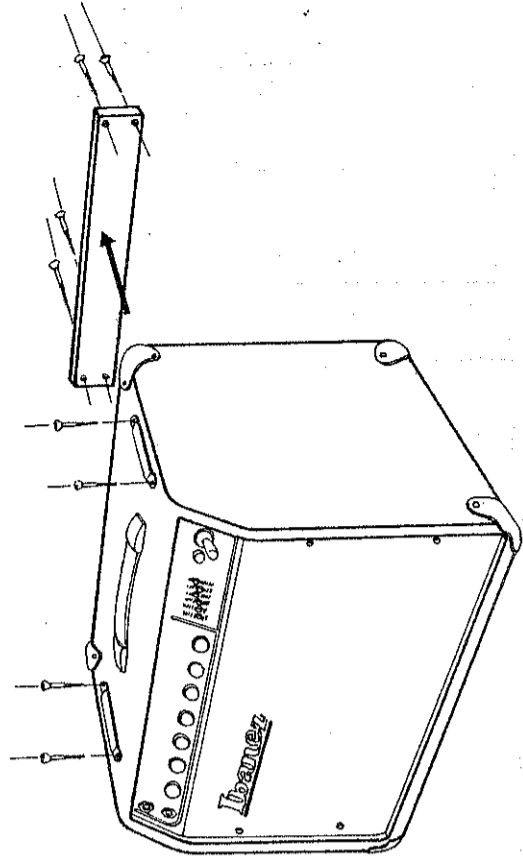
### 1. FEATURES

- Full-Scale three volume system supplied with Overdrive circuit. Enjoyable from normal to hard distortion sound. The foot switch add the extra use of exchange between channel No.1(Overdrive) and channel No.2(Normal).
- The newly developed speaker makes very clear sound in treble. Enjoy a rhythmical chord work.

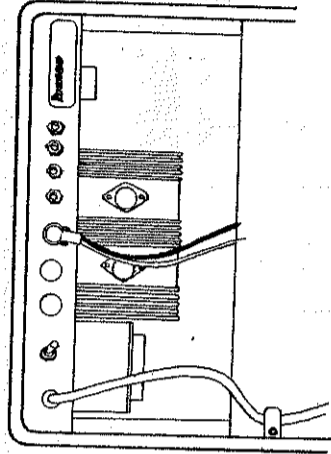
### 2. OPERATING PRECAUTIONS

Please be sure to use this instrument in standard voltage ( $\pm 7\%$ ). If not, it may cause some trouble of noise or unusual operation by power transistor and something else. Use the standard fuse only.

### 3. HOW TO REMOVE THE SHASSIS

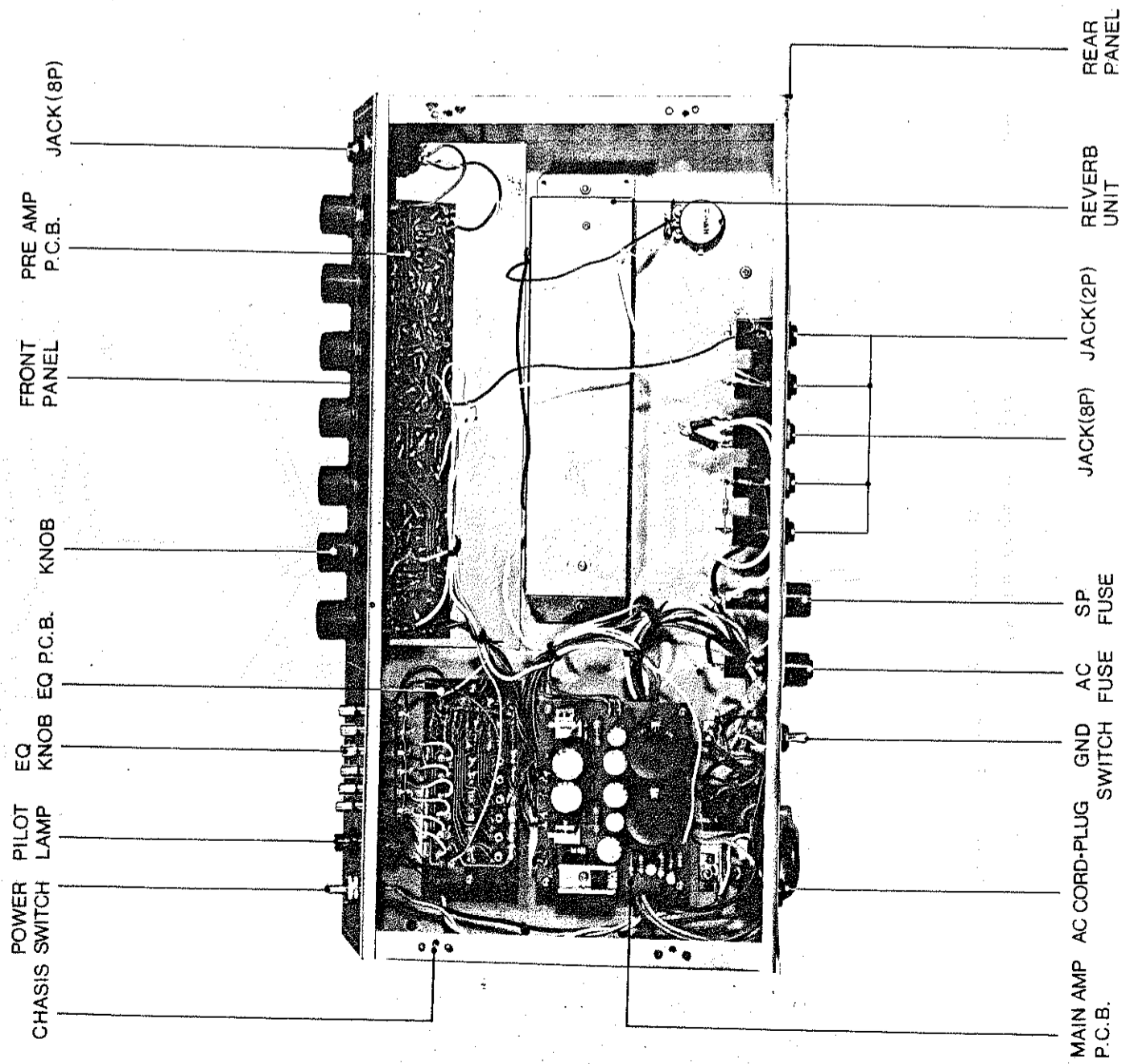


Remove the four screws on the top of body, also remove back of four screws to take off the back plate. Pull out the chassis from back side. Unplugs speaker Jack when pull out the chassis.

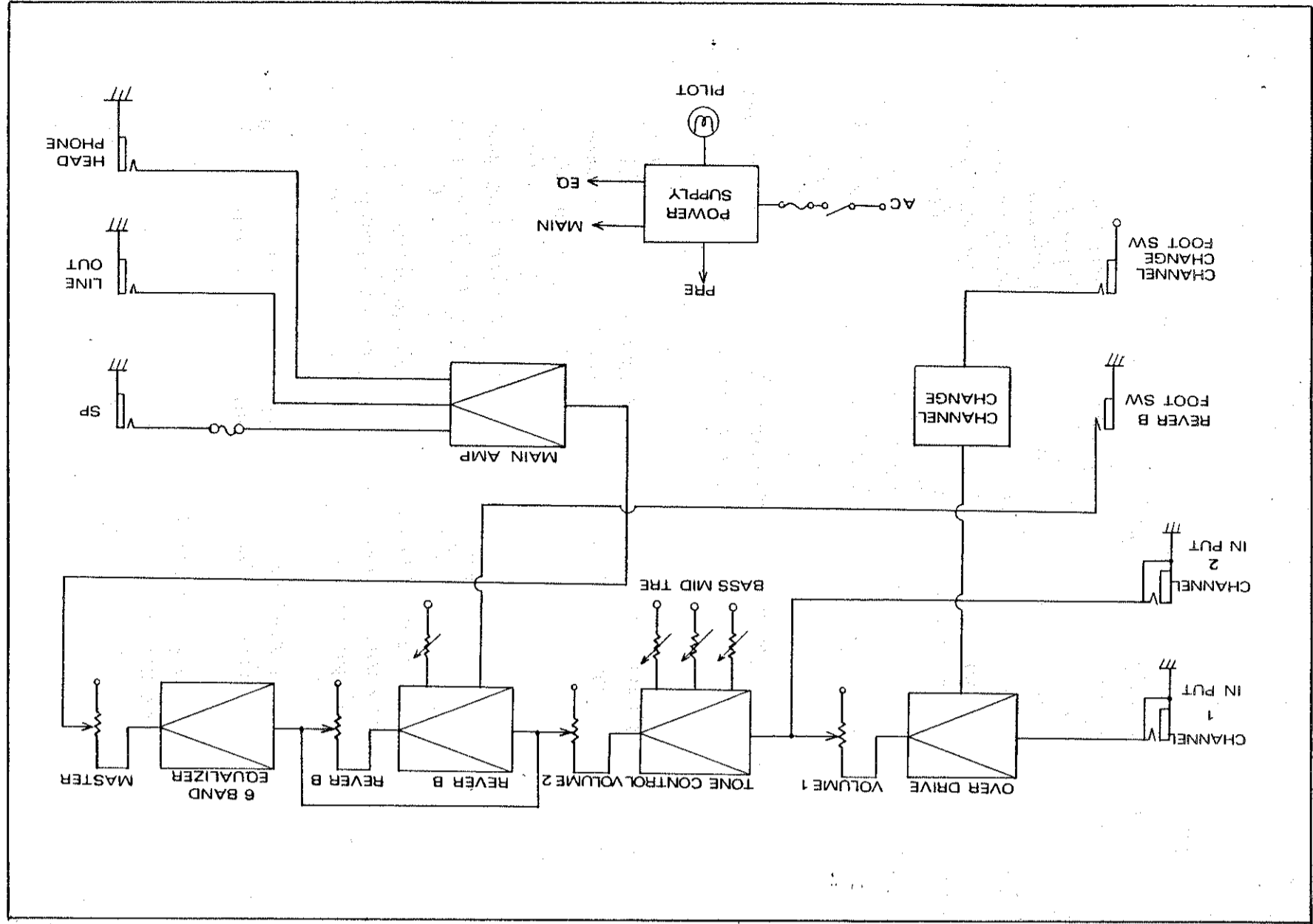


As shown the figure, disconnect the speaker Jack, and pull out the chassis to this side.

4. DISPOSITION OF PARTS



5. BLOCK DIAGRAMS



## 6. OPERATING INSTRUCTION

- **OVERDRIVE**  
The input channel No.1 is designed for Hi-Gain. The input signal of CHANEL No.1 is run through as follow; INPUT VOL. No.1 TONE CONTROL CIRCUIT VOL. No.2 MASTER VOLUME.  
So these three volume controls make a variety of sound realizable.
- **TONE CONTROL**  
Treble, Middle and Bass: The frequency response - Flat at 0 Treble, at 10 Middle, at 0 Bass, the center frequency is 400Hz.
- **REVERB**  
Spring reverb unit - Transformer and reverb unit change the electric signals to the mechanical signals, and do the change in reverse, which effect as the reverb effect.
- **GRAPHIC EQ**  
The whole range of 6 bands EQ is boosted and cut by simulated inductor BPFs used OP Amps.
- **MAIN AMP**  
OCL system using differential amplifier circuit, S.E.P.P., semi complimentary. Using a DIODE (ST-V3) for the temperature maintenance. The transistor is protected by making fuse in series with speaker.
- **POWER SUPPLY**  
+45 50V DC for main Amp., +15V DC for Pre. Amp., 5V AC for Pilot Lamp by Bridge diode, Transistor, and Zener diode.

## 7. ADJUSTMENT PROCEDURES

No needs adjustment of IBZ Amp. under the strict quality controlled by IBANEZ. To re-adjusts the main circuit of IBZ for your own, first put on power and check the voltage of speaker. Please make sure the voltage range 0.3-1volt. It is no trouble for allowance voltage +0.1volt.  
Adjusts VR on the main circuit board without signal to make voltage 0volt. Please note about +0.1volt of drift caused by temperature and so on.

## 8. PART LIST

| PARTS NAME           | TYPE                  | PARTS NO.                      | REFERENECE NO. |
|----------------------|-----------------------|--------------------------------|----------------|
| BODY                 |                       | IB-160BD                       |                |
| CASE                 |                       | IB-160CA                       |                |
| CHASIS               |                       | IB-160CH                       |                |
| KNOB                 | MOLD                  | IB-160KH                       |                |
| JACK                 | 2P                    | IB-160J2                       |                |
| JACK                 | 8P                    | IB-160J8                       |                |
| FRONT PANEL          |                       | IB-160FP                       |                |
| REAR PANEL           |                       | IB-160RP                       |                |
| REVERB UNIT          |                       | IB-160RU                       |                |
| POWER TRANSFORMER    | 60W                   | IBE601(220V)<br>IBC601(117V)   |                |
| POWER TRANSFORMER    | 100W                  | IBE1001(220V)<br>IBC1001(117V) |                |
| DRIVER TRANSFORMER   |                       | IB-160DT                       |                |
| AC FUSE              | 1A (10W) 15A(10W)     | IB-160AF                       |                |
| SP FUSE              | 5A(60W), 6A(100W)     | IB-160FL, IB-160FD             |                |
| FUSE HOLDER          |                       | IB-160FH                       |                |
| GND SWITCH           |                       | IB-160GS                       |                |
| POWER SWITCH         |                       | IB-160PS                       |                |
| PILOT LAMP           | 12 $\phi$             | IB-160PL                       |                |
| P.C.B.               | PRE AMP               | IB-160PCA                      |                |
| P.C.B.               | MAIN AMP              | IB-160PCB                      |                |
| P.C.B.               | POWER SUPPLY          | IB-160PCC                      |                |
| HEAT SINK            |                       | IB-160HS                       |                |
| FOOT PEDAL           |                       | IB-160FP                       |                |
| CARBON FILM RESISTOR | 10Kohm 1/4W $\pm$ 5%  |                                | R1             |
| CARBON FILM RESISTOR | 470Kohm 1/4W $\pm$ 5% |                                | R2             |
| CARBON FILM RESISTOR | 30Kohm 1/4W $\pm$ 5%  |                                | R3             |
| CARBON FILM RESISTOR | 10Kohm 1/4W $\pm$ 5%  |                                | R4             |
| CARBON FILM RESISTOR | 1.5Kohm 1/4W $\pm$ 5% |                                | R5             |
| CARBON FILM RESISTOR | 100Kohm 1/4W $\pm$ 5% |                                | R6             |
| CARBON FILM RESISTOR | 390Kohm 1/4W $\pm$ 5% |                                | R7             |
| CARBON FILM RESISTOR | 1Mohm 1/4W $\pm$ 5%   |                                | R8             |
| CARBON FILM RESISTOR | 4.7Kohm 1/4W $\pm$ 5% |                                | R9             |
| CARBON FILM RESISTOR | 100Kohm 1/4W $\pm$ 5% |                                | R10            |
| CARBON FILM RESISTOR | 47Kohm 1/4W $\pm$ 5%  |                                | R11            |
| CARBON FILM RESISTOR | 10Kohm 1/4W $\pm$ 5%  |                                | R12            |
| CARBON FILM RESISTOR | 100Kohm 1/4W $\pm$ 5% |                                | R13            |
| CARBON FILM RESISTOR | 270ohm 1/4W $\pm$ 5%  |                                | R14            |

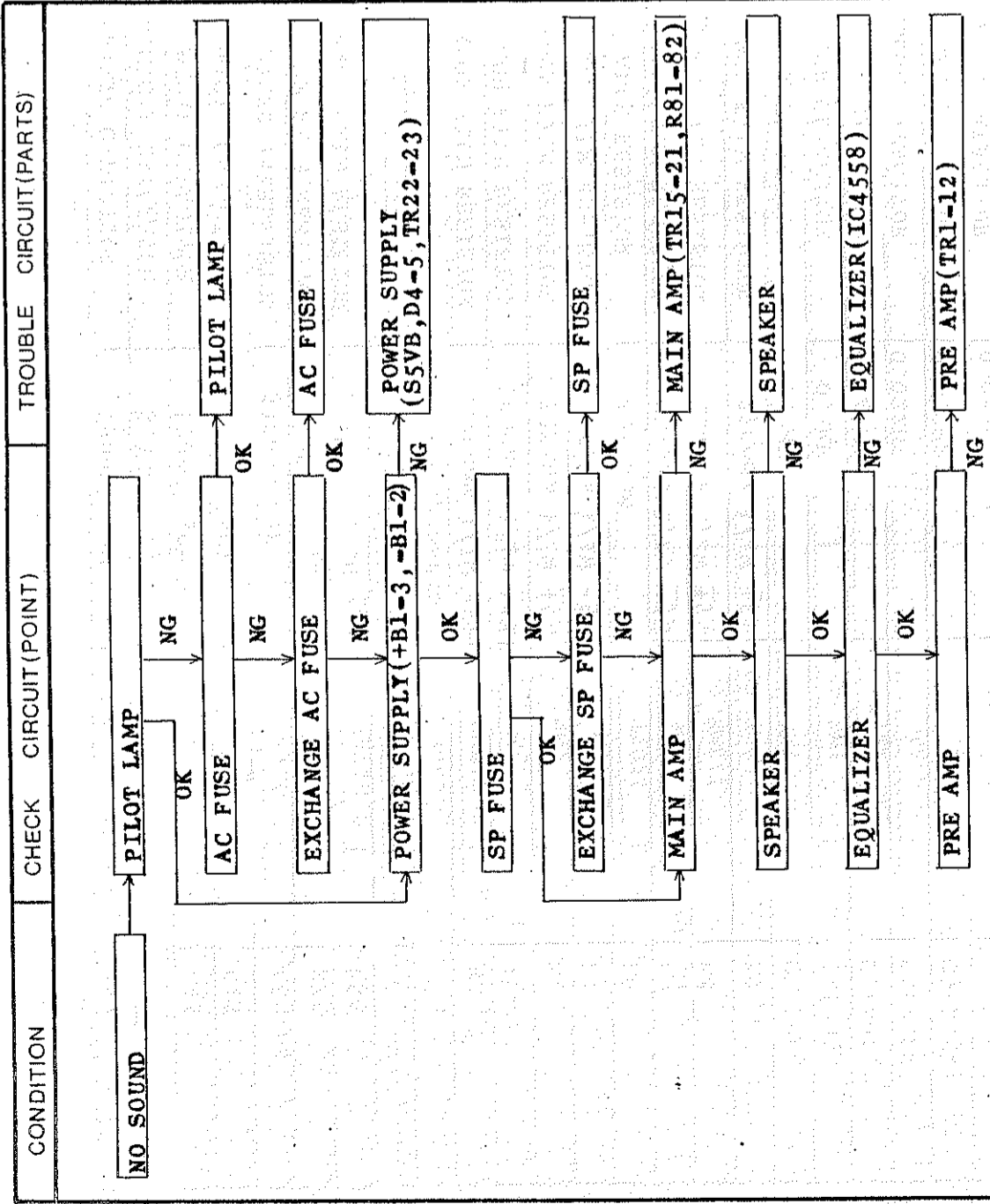
| PARTS NAME             | TYPE             | PARTS NO. | REFERENCE NO. |
|------------------------|------------------|-----------|---------------|
| CARBON FILM RESISTOR   | 10Kohm 1/4W ±5%  |           | R15-R16       |
| CARBON FILM RESISTOR   | 220Kohm 1/4W ±5% |           | R17           |
| VARIABLE RESISTOR      | 16φ 250KohmB     |           | R18           |
| CARBON FILM RESISTOR   | 68 1/4W ±5%      |           | R19           |
| CARBON FILM RESISTOR   | 1Mohm 1/4W ±5%   |           | R20           |
| CARBON FILM RESISTOR   | 10Kohm 1/4W ±5%  |           | R21-22        |
| CARBON FILM RESISTOR   | 47Kohm 1/4W ±5%  |           | R23           |
| CARBON FILM RESISTOR   | 30Kohm 1/4W ±5%  |           | R24           |
| CARBON FILM RESISTOR   | 1Kohm 1/4W ±5%   |           | R25           |
| CARBON FILM RESISTOR   | 100Kohm 1/4W ±5% |           | R26           |
| VARIABLE RESISTOR      | 16φ 10KohmB      |           | R27           |
| VARIABLE RESISTOR      | 16φ 250KohmA     |           | R28           |
| VARIABLE RESISTOR      | 16φ 250KohmB     |           | R29           |
| CARBON FILM RESISTOR   | 470Kohm 1/4W ±5% |           | R30           |
| CARBON FILM RESISTOR   | 470ohm 1/4W ±5%  |           | R31           |
| CARBON FILM RESISTOR   | 10Kohm 1/4W ±5%  |           | R32           |
| VARIABLE FILM RESISTOR | 16φ 250KohmB     |           | R33           |
| CARBON FILM RESISTOR   | 470Kohm 1/4W ±5% |           | R34           |
| CARBON FILM RESISTOR   | 10Kohm 1/4W ±5%  |           | R35           |
| CARBON FILM RESISTOR   | 100Kohm 1/4W ±5% |           | R36-37        |
| CARBON FILM RESISTOR   | 470ohm 1/4W ±5%  |           | R38-39        |
| CARBON FILM RESISTOR   | 30Kohm 1/4W ±5%  |           | R40           |
| CARBON FILM RESISTOR   | 470ohm 1/4W ±5%  |           | R41           |
| CARBON FILM RESISTOR   | 10Kohm 1/4W ±5%  |           | R42           |
| CARBON FILM RESISTOR   | 39Kohm 1/4W ±5%  |           | R43           |
| CARBON FILM RESISTOR   | 68Kohm 1/4W ±5%  |           | R44           |
| CARBON FILM RESISTOR   | 100Kohm 1/4W ±5% |           | R45           |
| CARBON FILM RESISTOR   | 10Kohm 1/4W ±5%  |           | R46           |
| CARBON FILM RESISTOR   | 22Kohm 1/4W ±5%  |           | R47           |
| CARBON FILM RESISTOR   | 2.7Kohm 1/4W ±5% |           | R48           |
| VARIABLE RESISTOR      | 16φ 250KohmB     |           | RM            |
| VARIABLE RESISTOR      | 16φ 250KohmB     |           | R49           |
| CARBON FILM RESISTOR   | 100Kohm 1/4W ±5% |           | R50           |
| CARBON FILM RESISTOR   | 10Kohm 1/4W ±5%  |           | R51           |
| CARBON FILM RESISTOR   | 22Kohm 1/4W ±5%  |           | R52           |
| CARBON FILM RESISTOR   | 560ohm 1/4W ±5%  |           | R53           |
| CARBON FILM RESISTOR   | 22Kohm 1/4W ±5%  |           | R54-55        |

| PARTS NAME           | TYPE             | PARTS NO.     | REFERENCE NO. |
|----------------------|------------------|---------------|---------------|
| CARBON FILM RESISTOR | 100ohm 1/4W ±5%  |               | R56           |
| CARBON FILM RESISTOR | 220Kohm 1/4W ±5% |               | R57           |
| CARBON FILM RESISTOR | 100ohm 1/4W ±5%  |               | R58           |
| MILLER CAPACITOR     | 0.047MF          |               | C1            |
| MILLER CAPACITOR     | 0.047MF          |               | C2            |
| CHEMICAL CAPACITOR   | 3.3MF 50V        |               | C3            |
| MILLER CAPACITOR     | 0.047MF          |               | C4-5          |
| CHEMICAL CAPACITOR   | 3.3MF 50V        |               | C6            |
| MILLER CAPACITOR     | 0.047MF          |               | C7            |
| CHEMICAL CAPACITOR   | 1MF 50V          |               | C8            |
| MILLER CAPACITOR     | 0.047MF          |               | C9            |
| TRANSISTOR           | 2SC 1328         | 2SC1328       | TR12-13       |
| TRANSISTOR           | 2SD 389          | 2SD389        | TR14          |
| TRANSISTOR           | 2SA 564 or 722A  | 2SA564 or 722 | TR15-16       |
| TRANSISTOR           | 2SD 381          | 2SD381        | TR17-18       |
| TRANSISTOR           | 2SD 536          | 2SD536        | TR19          |
| TRANSISTOR           | SD 287           | 2SD287        | TR20-21       |
| TRANSISTOR           | 2SD 381          | 2SD381        | TR22          |
| TRANSISTOR           | 2SB 536          | 2SB536        | TR23          |
| VARIABLE RESISTOR    | 50KohmB          |               | R REV L       |
| CARBON FILM RESISTOR | 220ohm 1/2W ±5%  |               | R59           |
| CARBON FILM RESISTOR | 820ohm 1W        |               | R60           |
| CARBON FILM RESISTOR | 10Kohm 1/4W ±5%  |               | R61-62        |
| CARBON FILM RESISTOR | 820ohm 1W        |               | R63           |
| CARBON FILM RESISTOR | 1Kohm 1/4W ±5%   |               | R64           |
| CARBON FILM RESISTOR | 47Kohm 1/4W ±5%  |               | R65           |
| CARBON FILM RESISTOR | 3.9Kohm 1/4W ±5% |               | R66           |
| CARBON FILM RESISTOR | 39Kohm 1/4W ±5%  |               | R67           |
| CARBON FILM RESISTOR | 100ohm 1/4W ±5%  |               | R68           |
| CARBON FILM RESISTOR | 3.9Kohm 1/4W ±5% |               | R69           |
| CARBON FILM RESISTOR | 680ohm 1/4W ±5%  |               | R70           |
| CARBON FILM RESISTOR | 39Kohm 1/4W ±5%  |               | R71           |
| CARBON FILM RESISTOR | 150ohm 1/4W ±5%  |               | R72           |
| CARBON FILM RESISTOR | 22ohm 1/4W ±5%   |               | R73           |
| CARBON FILM RESISTOR | 3.9Kohm 1/2W ±5% |               | R74-75        |
| CARBON FILM RESISTOR | 1Kohm 1/4W ±5%   |               | R76           |
| CARBON FILM RESISTOR | 150ohm 1/2W ±5%  |               | R77           |

| PARTS NAME           | TYPE            | PARTS NO.     | REFERENCE NO. |
|----------------------|-----------------|---------------|---------------|
| CARBON FILM RESISTOR | 10ohm 1/2W ±5%  |               | R78           |
| CARBON FILM RESISTOR | 150ohm 1/2W ±5% |               | R79           |
| MILLER CAPACITOR     | 0.1MF           |               | C10           |
| CHEMICAL CAPACITOR   | 1MF 50V         |               | C11           |
| CHEMICAL CAPACITOR   | 47MF 50V        |               | C12           |
| MILLER CAPACITOR     | 0.1MF           |               | C13           |
| MICA CAPACITOR       | 250PF           |               | C14           |
| MILLER CAPACITOR     | 0.047MF         |               | C15           |
| MILLER CAPACITOR     | 0.1MF           |               | C16           |
| CERAMIC CAPACITOR    | 500PF           |               | C17           |
| MILLER CAPACITOR     | 0.047MF         |               | C18           |
| CHEMICAL CAPACITOR   | 3.3MF 50V       |               | C19           |
| CHEMICAL CAPACITOR   | 1MF 50V         |               | C20           |
| MILLER CAPACITOR     | 0.01MF          |               | C21           |
| CERAMIC CAPACITOR    | 250PF           |               | C22           |
| CHEMICAL CAPACITOR   | 1MF 50V         |               | C23           |
| CHEMICAL CAPACITOR   | 3.3MF 50V       |               | C24           |
| CHEMICAL CAPACITOR   | 1MF 50V         |               | C25           |
| MILLER CAPACITOR     | 0.47MF          |               | C26           |
| CHEMICAL CAPACITOR   | 1MF 50V         |               | C27-28        |
| VARIATOR             | VDD 1220        | VDD1220       | D1-2          |
| RECTIFIER            | 5A              | S5VB          | D3            |
| DIODE                | STV-3           | STV-3         |               |
| VARIATOR             | VD4 20133       | VD420133      |               |
| FET                  | 2SK30GR         | 2SK30GR       | TR1-2         |
| TRANSISTOR           | 2SA 564 or 722  | 2SA564 or 722 | TR3           |
| FET                  | 2SK30GR         | 2SK30GR       | TR4-9         |
| TRANSISTOR           | 2SA 564 or 722  | 2SA564 or 722 | TR10          |
| TRANSISTOR           | 2SC 1328        | 2SC1328       | TR11          |
| CARBON FILM RESISTOR | 10ohm 1/2W ±5%  |               | R80           |
| CARBON FILM RESISTOR | 0.5ohm 5 W ±5%  |               | R81-82        |
| OIL CAPACITOR        | 0.001MF 1500V   |               | C GND         |
| CHEMICAL CAPACITOR   | 3300MF 50V      |               | C31-C32       |
| CHEMICAL CAPACITOR   | 100MF 50V       |               | C33-C34       |
| CHEMICAL CAPACITOR   | 100MF 25V       |               | C35-C36       |
| CHEMICAL CAPACITOR   | 1000MF 16V      |               | C37-C38       |
| CHEMICAL CAPACITOR   | 1MF 50V         |               | C39           |

| PARTS NAME           | TYPE             | PARTS NO. | REFERENCE NO. |
|----------------------|------------------|-----------|---------------|
| CHEMICAL CAPACITOR   | 47MF 50V         |           | C40-41        |
| CERAMIC CAPACITOR    | 100PF 50V        |           | C42           |
| CHEMICAL CAPACITOR   | 3.3MF 50V        |           | C43           |
| CHEMICAL CAPACITOR   | 100MF 50V        |           | C44           |
| CHEMICAL CAPACITOR   | 3.3MF 50V        |           | C45           |
| OXIDIZED TALRESISTOR | 330ohm 2P        |           | R83-84        |
| CARBON FILM RESISTOR | 220Kohm 1/4W ±5% |           | R85           |
| CARBON FILM RESISTOR | 1Kohm 1/4W ±5%   |           | R86           |
| 60EQ,100EQ PARTS     |                  |           |               |
| CARBON FILM RESISTOR | 1.2Kohm 1/4W ±5% |           | R1            |
| CARBON FILM RESISTOR | 100Kohm 1/4W ±5% |           | R2-3          |
| CARBON FILM RESISTOR | 12Kohm 1/4W ±5%  |           | R4            |
| CARBON FILM RESISTOR | 22Kohm 1/4W ±5%  |           | R5            |
| VARIABLE RESISTOR    | 10KohmB          |           | R6            |
| CARBON FILM RESISTOR | 22Kohm 1/4W ±5%  |           | R7            |
| CARBON FILM RESISTOR | 12Kohm 1/4W ±5%  |           | R8            |
| CARBON FILM RESISTOR | 22Kohm 1/4W ±5%  |           | R9            |
| MILLER CAPACITOR     | 0.2MF            |           | C1(100)       |
| MILLER CAPACITOR     | 0.1MF            |           | C1(300)       |
| MILLER CAPACITOR     | 0.047MF          |           | C1(600)       |
| MILLER CAPACITOR     | 0.022MF          |           | C1(1.2K)      |
| MILLER CAPACITOR     | 0.022MF          |           | C1(2.5K)      |
| MILLER CAPACITOR     | 0.047MF          |           | C1(5K)        |
| MILLER CAPACITOR     | 0.01MF           |           | C2(100)       |
| MILLER CAPACITOR     | 0.047MF          |           | C2(300)       |
| MILLER CAPACITOR     | 0.022MF          |           | C2(600)       |
| MILLER CAPACITOR     | 0.01MF           |           | C2(1.2K)      |
| MILLER CAPACITOR     | 0.0047MF         |           | C2(2.5K)      |
| MILLER CAPACITOR     | 0.0033MF         |           | C2(5K)        |
| CHEMICAL CAPACITOR   | 1M 1V            |           | C3            |
| CHEMICAL CAPACITOR   | 3.3M 1V          |           | C4            |
| CHEMICAL CAPACITOR   | 1M 1V            |           | C5            |

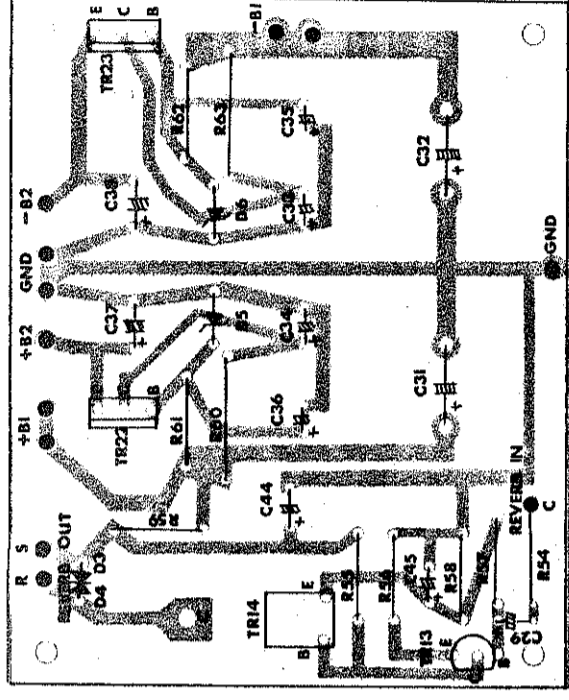
9. TROUBLE SHOOTING



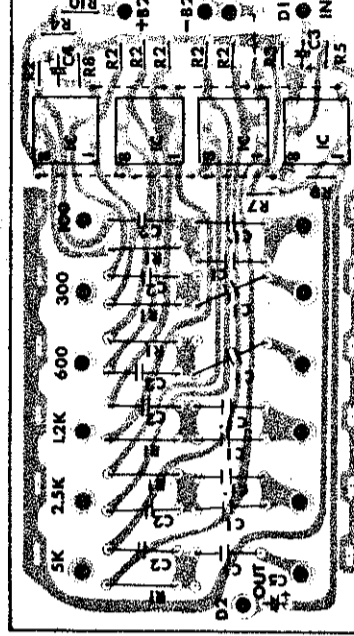
- Check of Main Amp.
- 1. Defect of TR17-21 on main amp. makes noisy sound like "BOO!"  
Check the transistor when you can hear noisy sound.
- 2. No sound from IBZ, please check following positions.
  - 1) POWER SUPPLY
  - 2) SP. FUSE
  - 3) SPEAKER
  - 4) RESISTOR (R81-82)
  - 5) HEAD PHONE JACK

■ Simple checking (Using Tester)  
Range at Ohm section. Check click sound from circuit board.  
SETTING MASTER VOL. 10

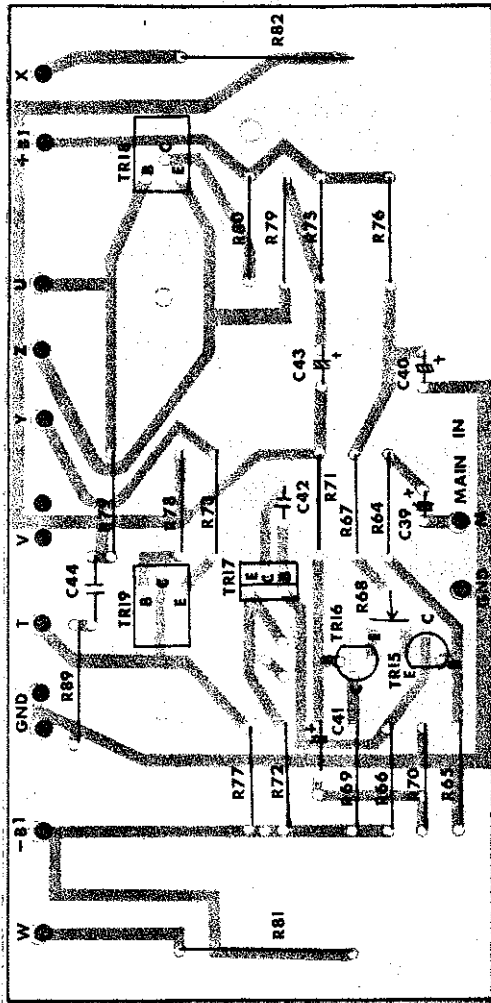
(POWER SUPPLY)



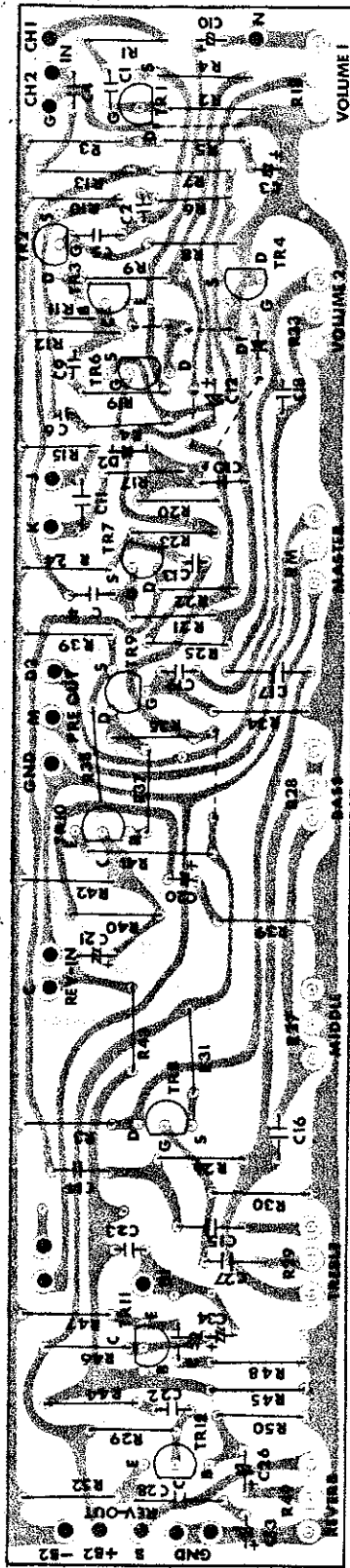
(EQUALIZER)



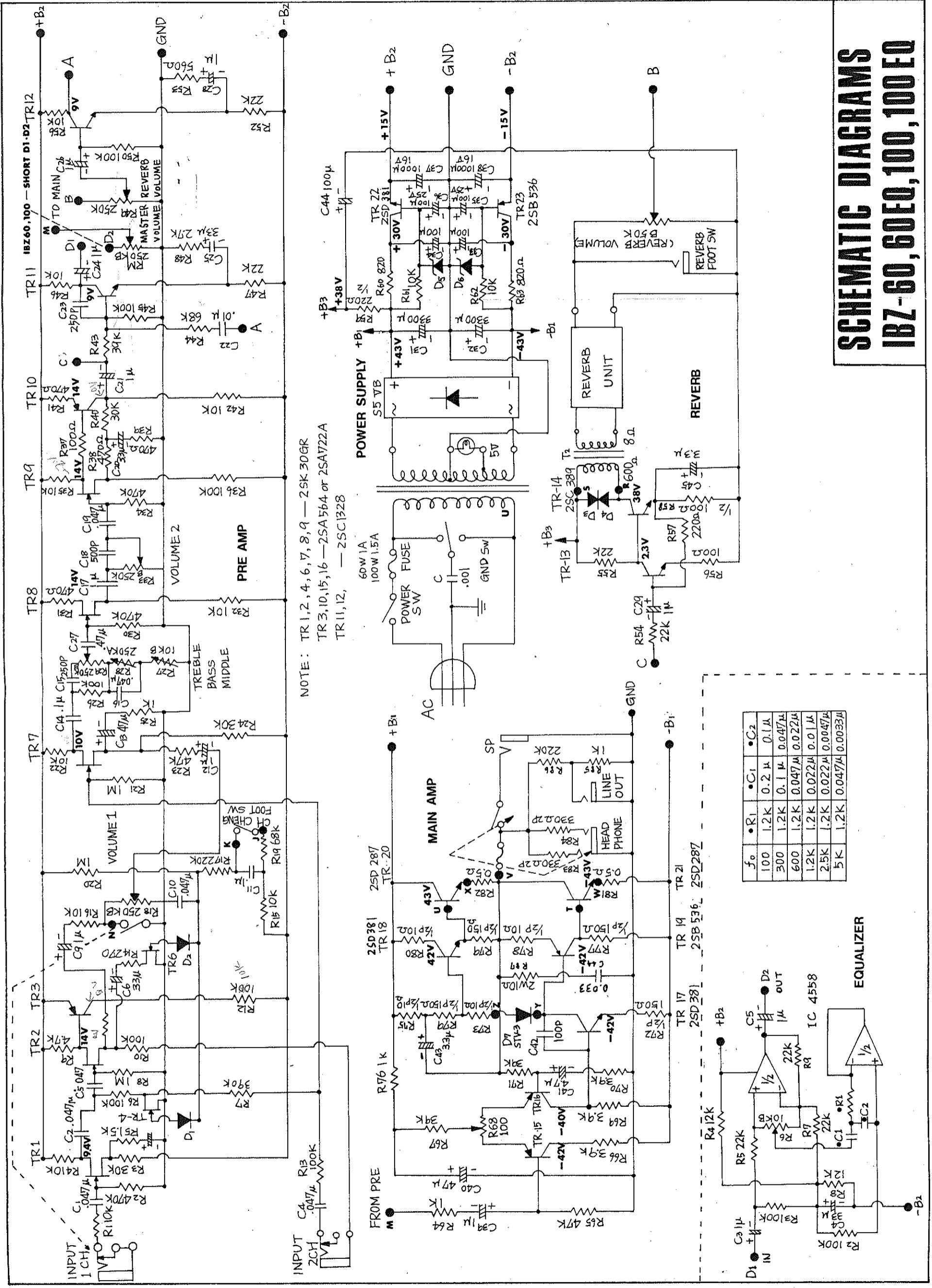
(MAIN AMP)



(PRE AMP)







NOTE: TR 1,2, 4,6,7,8,9 — 2SK30GR  
 TR 3,10,15,16 — 2SA564 or 2SA722A  
 TR 11,12, — 2SC1328

| f <sub>o</sub> | R <sub>1</sub> | C <sub>1</sub> | C <sub>2</sub> |
|----------------|----------------|----------------|----------------|
| 100            | 1.2K           | 0.2 μ          | 0.1 μ          |
| 300            | 1.2K           | 0.1 μ          | 0.047 μ        |
| 600            | 1.2K           | 0.047 μ        | 0.022 μ        |
| 1.2K           | 1.2K           | 0.022 μ        | 0.01 μ         |
| 2.5K           | 1.2K           | 0.022 μ        | 0.0047 μ       |
| 5K             | 1.2K           | 0.047 μ        | 0.0033 μ       |

# SCHEMATIC DIAGRAMS IBZ-60, 60EQ, 100, 100EQ