

40B

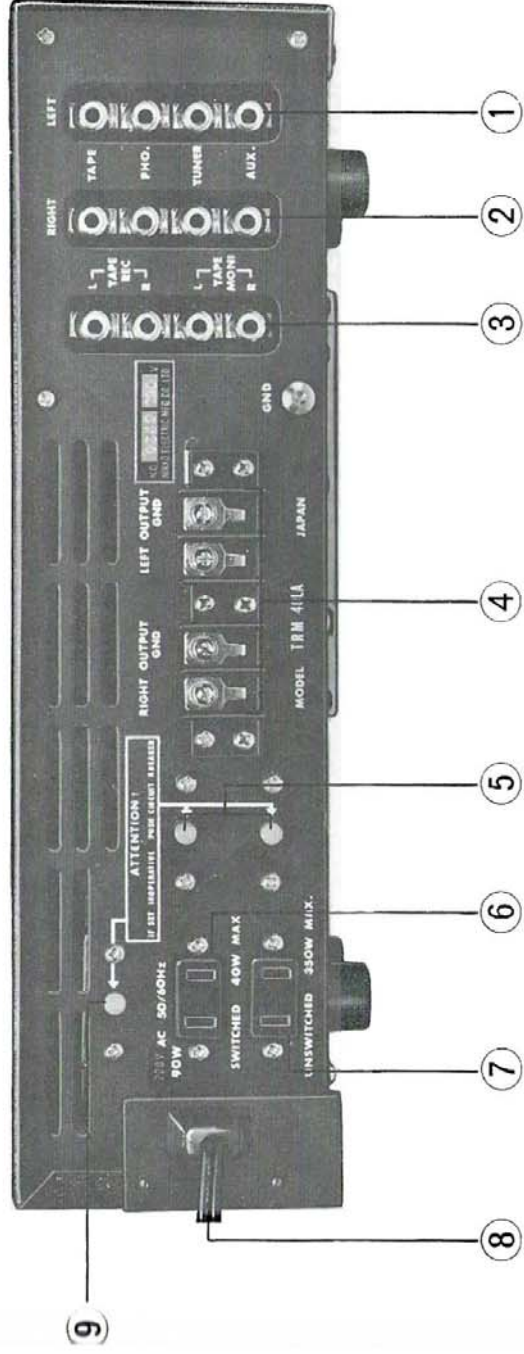
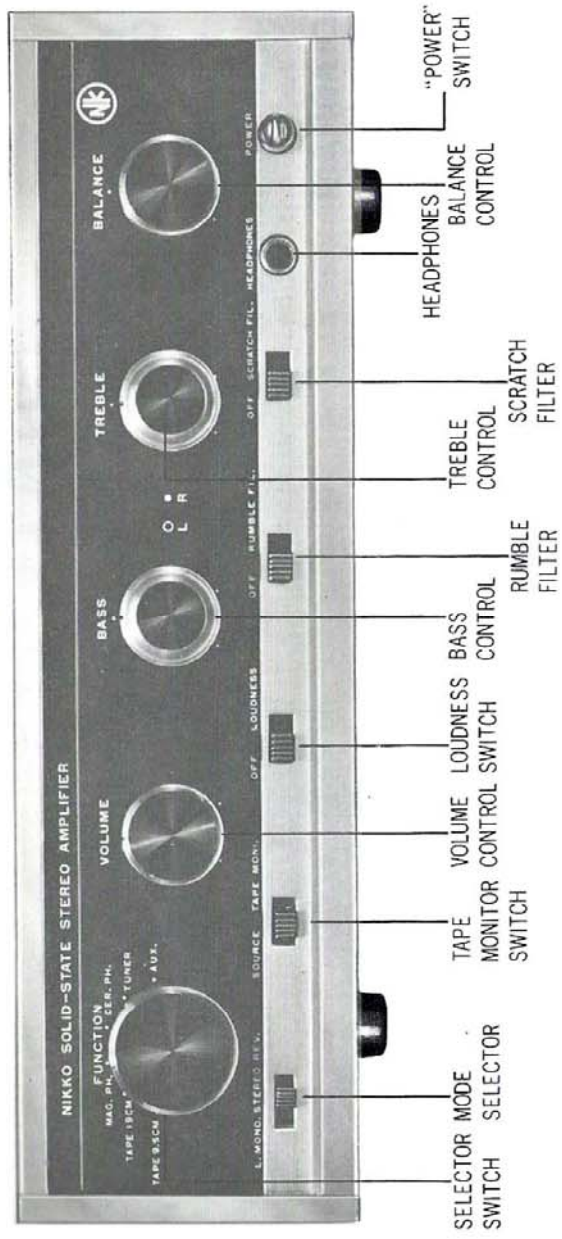
GENERAL INFORMATION
SCHEMATIC DIAGRAM
PARTS LIST

NIKKO

stereo pre-amp / amplifier model trm-40B



NIKKO ELECTRIC MFG. CO., LTD. 4-1, 3-CHOME, TAMAGAWA OKUSAWA-CHO, SETAGAYA-KU, TOKYO, JAPAN.
NIKKO ELECTRIC CORPORATION OF AMERICA 5001 LANKERSHIM BVD., NORTH HOLLYWOOD, CALIF. 91601



EXPLANATION OF REAR PANEL

1. Input Terminal Board (Left):
 TAPE: Tape Head Input
 PHONO: Phono Input
 TUNER: Tuner Input
 AUX: Auxiliary Input

2. Input Terminal Board (Right):
 Same as left input

3. Tape Monitor Terminal
 TAPE REC.

For recording direct from tape recorder. Connect tape recorder's jacks to Tape Out, then the program source (radio, Phono, etc.) is recorded on tape.

TAPE MONITOR

Plug audio cables in here from play back head available on "Sound on Sound" tape recorder.

4. Speaker Terminal Board

A. LEFT OUTPUT

Connection to Left Speaker

B. RIGHT OUTPUT

Connection to Right Speaker

C. GND

Connection to minus (-) side of both speakers.

5. CIRCUIT BREAKERS

Protect the secondary circuits from major damage due to overload or short from speaker terminals.

6. AC Outlet (switched)

This outlet is direct connecting with main power switch. 12 Maximum Capacity 100 Watts.

7. AC OUTLET (Unswitched)

This outlet is indirecting with main power switch. (Rather for Tuner Maximum Capacity: 350 Watts.)

8. POWER SUPPLY CORD

To AC Electrical receptacle.

9. CIRCUIT BREAKER

The primary circuit breaker protects the receiver from major damage due to overload or short amplifier

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1. GENERAL

1.1 GENERAL

The TRM 40 is a Solid State Pre-Amp/Amplifier and was first introduced on the market in April of 1963. Although many improvements have been incorporated since then, no major modification has been made. Because this model became very popular, it has been produced in a large quantity. The output power of this model is 44 watts. (IHF Music Power at 8 ohms.)

Chassis Construction: An aluminum chassis is used to mount the component parts and at the same time function as a heatsink.

Audio Section: Low noise germanium transistors are being used in the pre-amplifier, tone control, and the driver stage. The driver transformers used are bi-filler wound on a high quality iron core. These have been used to eliminate the dropping or falling off of high and low frequencies associated with other types of transformers. These specially wound transformers almost give the effect of a direct coupled circuit along with push-pull balancing of the signal at any condition while limiting it from over driving the power transistors. This section uses one compact circuit board with all parts mounted on it.

Power Output Section: Germanium alloy junction type transistors are being used for the output power stage. Even though the cut-off frequency is low, these transistors are excellent in the audio frequency range and most efficient in a push-pull type circuit.

This output stage has its B plus and B minus voltage symmetrically balanced between the power transistors and earth ground so that the speakers used can be directly coupled to the output transistors. There is no capacitor in series with the speakers as this not only cuts off a D. C. current but limits the low frequency characteristics and also causes a phase shift of the signal, thus causing a distorted output.

Circuit Breakers: There are three circuit breakers used in the amplifier. The primary circuit breaker trips when the trouble occurs within the amplifier and protects the power transformer, rectifier, and all major component parts. The secondary circuit breakers will trip if a short circuit of a speaker occurs. This is due to the breakers being in series with the speakers. The breakers used have been developed by Nikko to respond quickly to current overload condition. Their characteristics are similar to a quick action fuse. However, they are more convenient because they can be reset and need not be replaced like a fuse. See figure number 1 for characteristics.

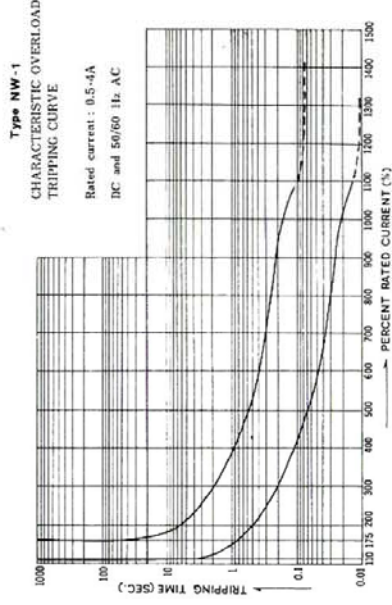


Fig. 1

1.2 TRM 40B STANDARD SPECIFICATIONS

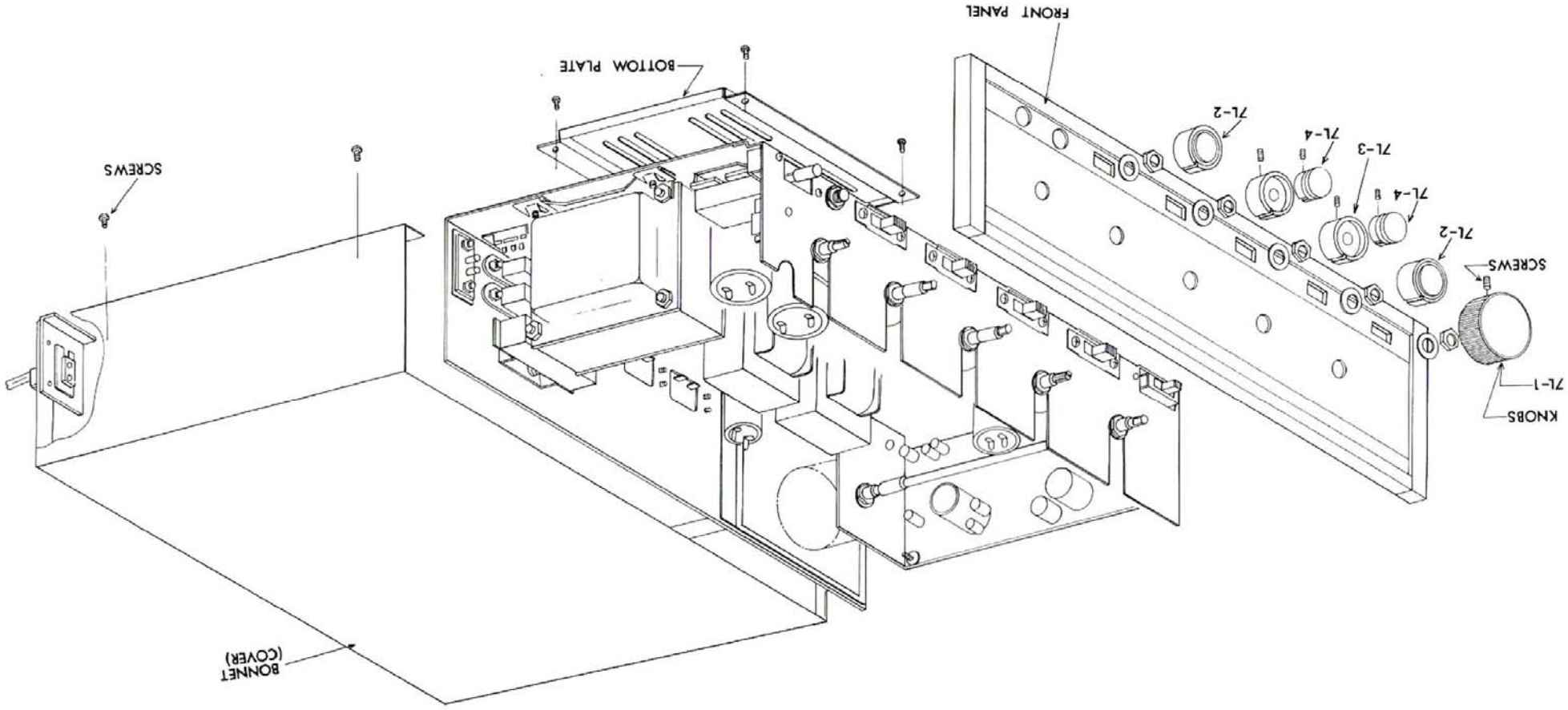
This standard specification is a guide line whether the unit is good or not. When you repair the unit and if the specifications undermentioned would be satisfied, the said unit suppose to be in good condition.

| | Nominal | Limit |
|--|----------------|----------------------------|
| 1. Input Sensitivity | Magnetic Phono |2.7mV \pm 3dB |
| (for Rated Output) | Ceramic Phono |160mV \pm 3dB |
| (3-3/4" 9.5cm) | Tape Head |1.8mV \pm 3dB |
| (7-1/2" 19cm) | Tape Head |1.8mV \pm 3dB |
| AUX. |170mV | \pm 3dB |
| 2. Gain Unbalance (at Tape Monitor) | | \pm 2dB |
| 3. Output | | |
| Continuous Power (Single Channel Driven) | | |
| (at 8ohm Load 1.0% Distortion) | |14W |
| Harmonic Distortion | | |
| (at 10W Output) | |1.0% |
| Recording Output |150mV | \pm 3dB |
| 4. Frequency Responce (-10dB Rated Output) | | |
| 20Hz to 20KHz | | \pm 2dB |
| 5. Noise Level (Volume Control Minimum) |1mV |3mV |
| 6. Control | | |
| Bass Control | | |
| at 70Hz |+14dB | \pm 3dB |
| |-10dB | \pm 3dB |
| Trable Control | | |
| at 10KHz |+14dB | \pm 3dB |
| 7. Loudness Control | | |
| at 70Hz |+11dB | \pm 3dB |
| at 10KHz |+7dB | \pm 3dB |
| 8. Rumble Filter | | |
| at 70Hz |-10dB | \pm 3dB |
| Scratch Filter | | |
| at 10KHz |-9dB | \pm 3dB |
| 9. Equalizer | | |
| Tape Head 70Hz |2dB | \pm 2dB |
| (NAB) 10KHz |-11dB | \pm 2dB |
| Phono 70Hz |+16dB | \pm 2dB |
| (RIAA) 10KHz |-15dB | \pm 2dB |

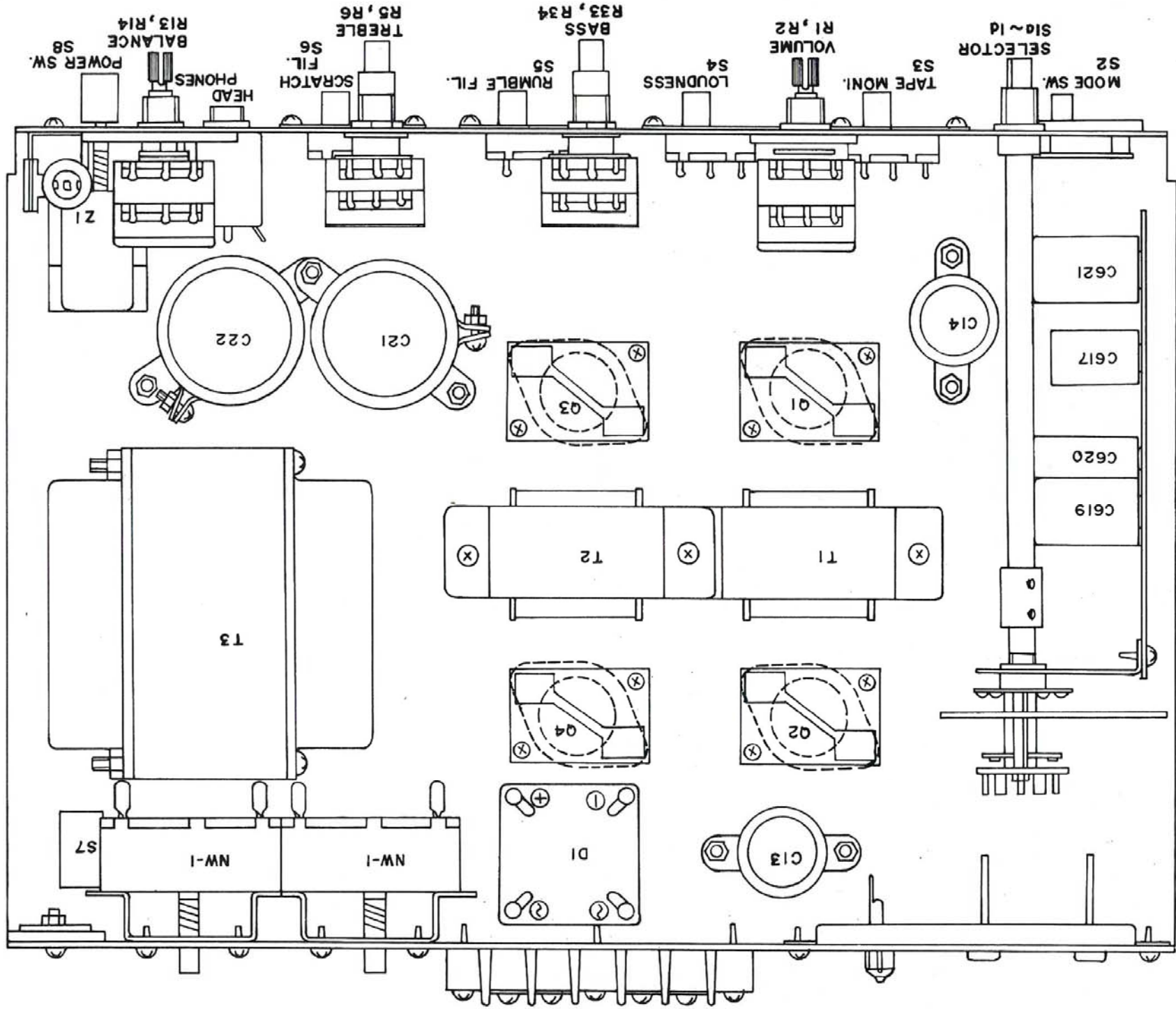
2. DIAGRAM

2.1 TRM 40B DISASSEMBLY PROCEDURE

REMOVING THE FRONT PANEL BONNET AND BOTTOM PLATE

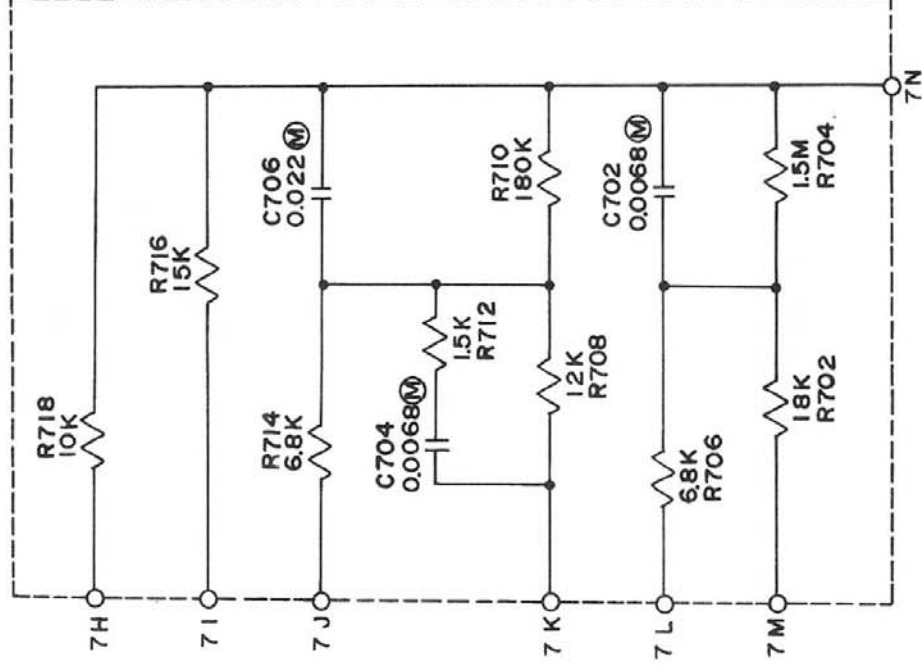
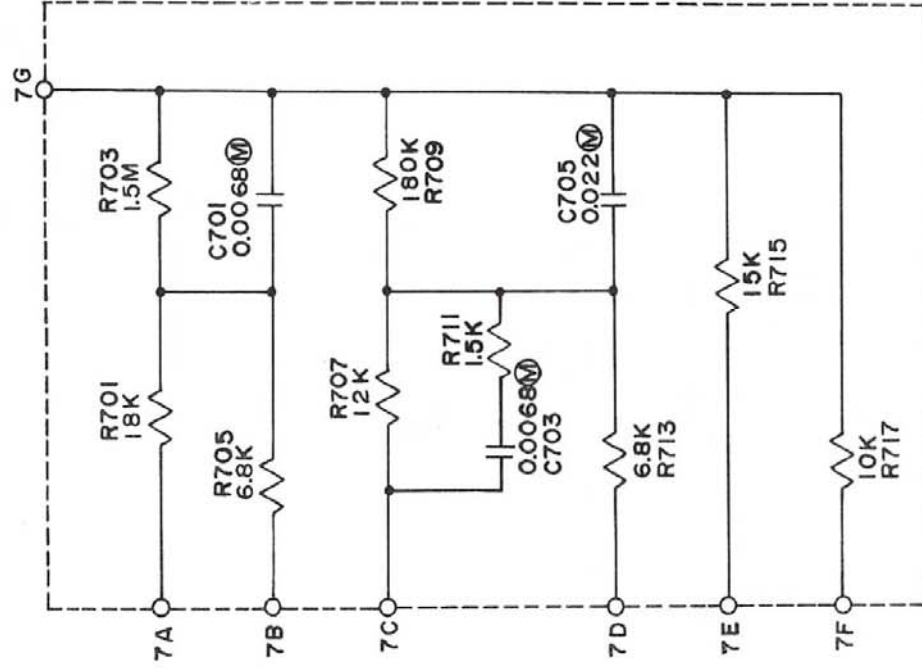


2.2 COMPONENT DIAGRAM

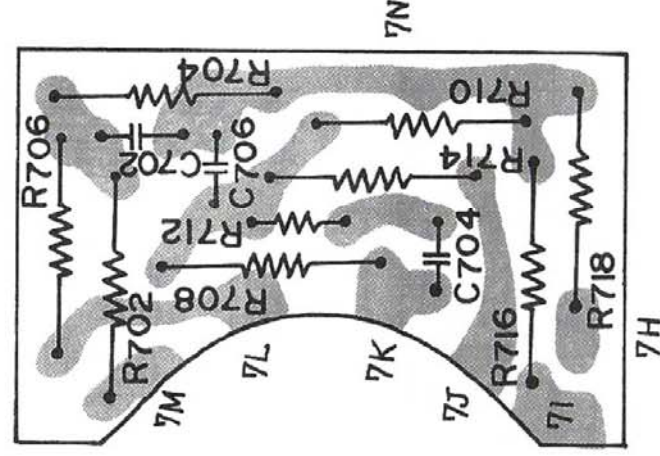
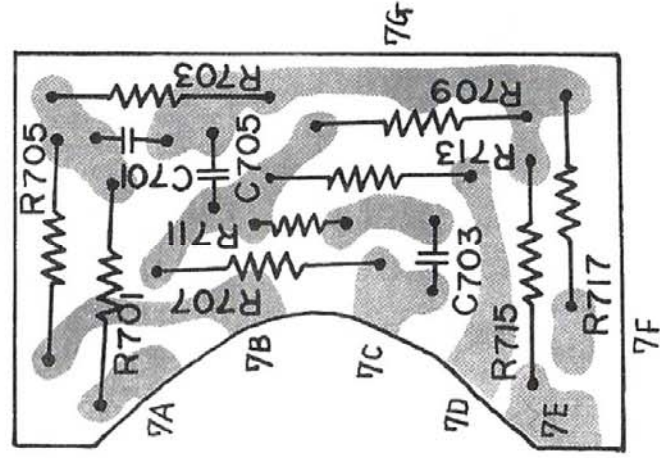


TOP VIEW

2.4 EQUALIZER CIRCUIT DIAGRAM

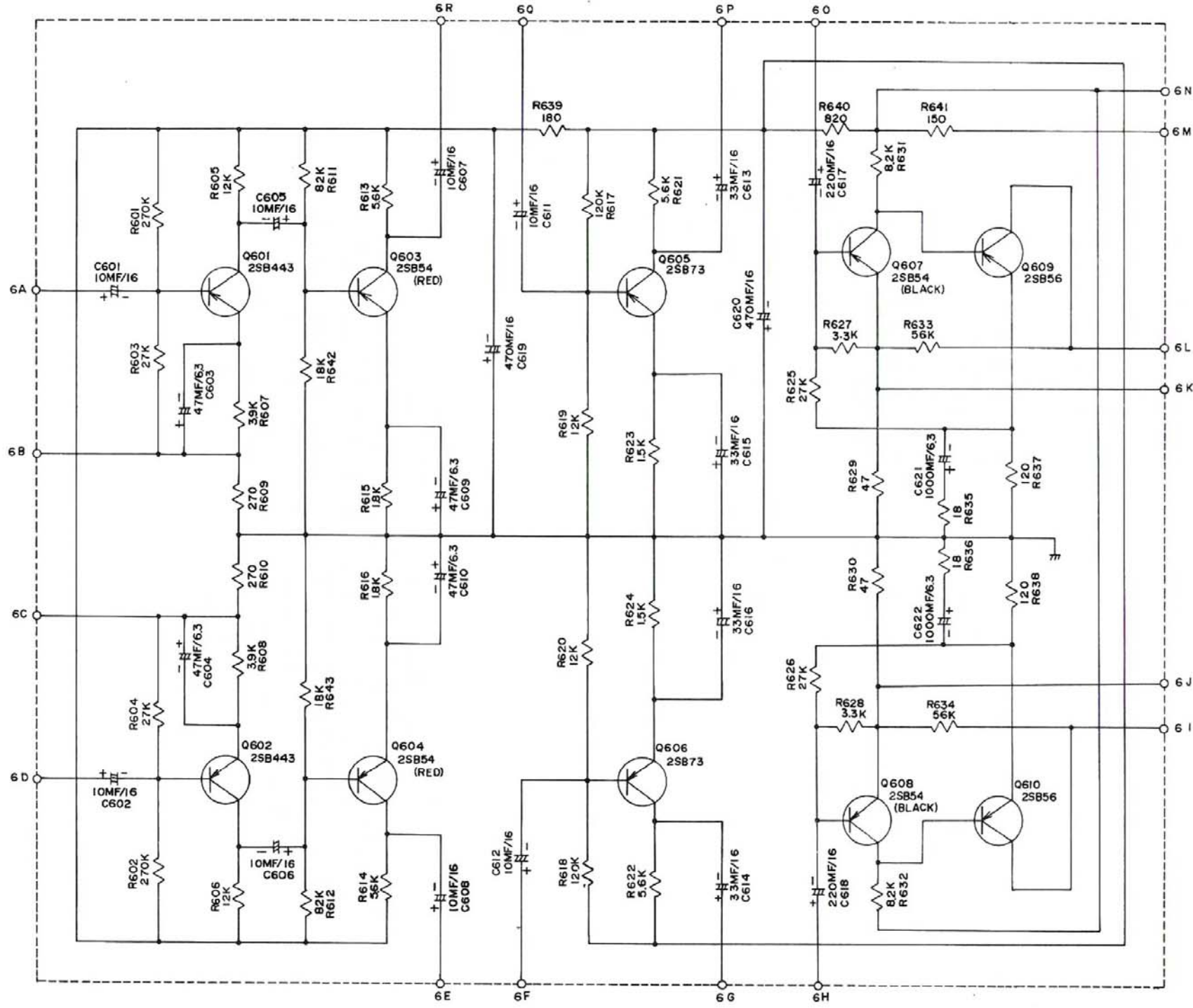


EQUALIZER PRINTED CIRCUIT BOARD

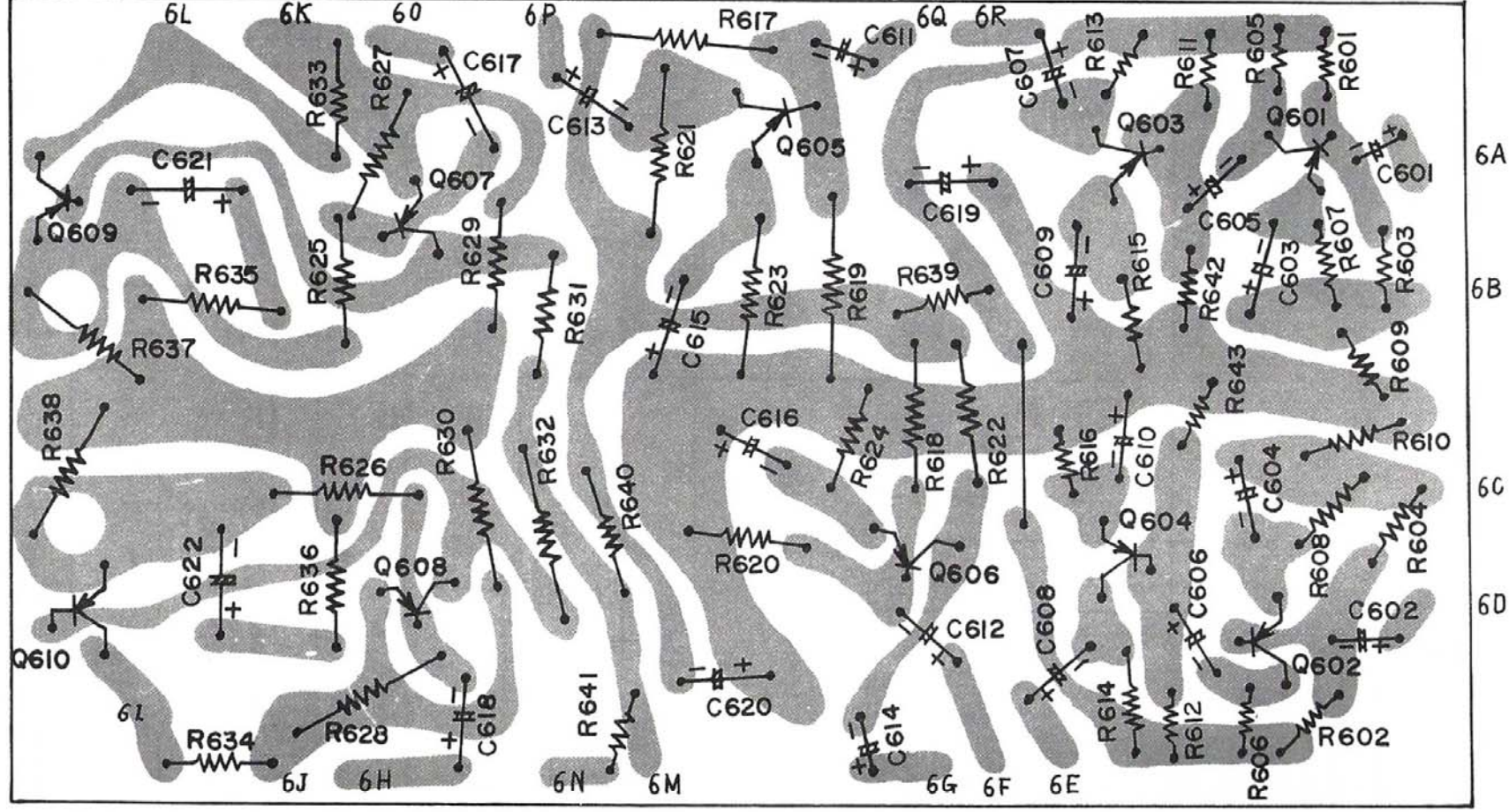


TOP VIEW

2.5 AUDIO AMPLIFIER CIRCUIT DIAGRAM

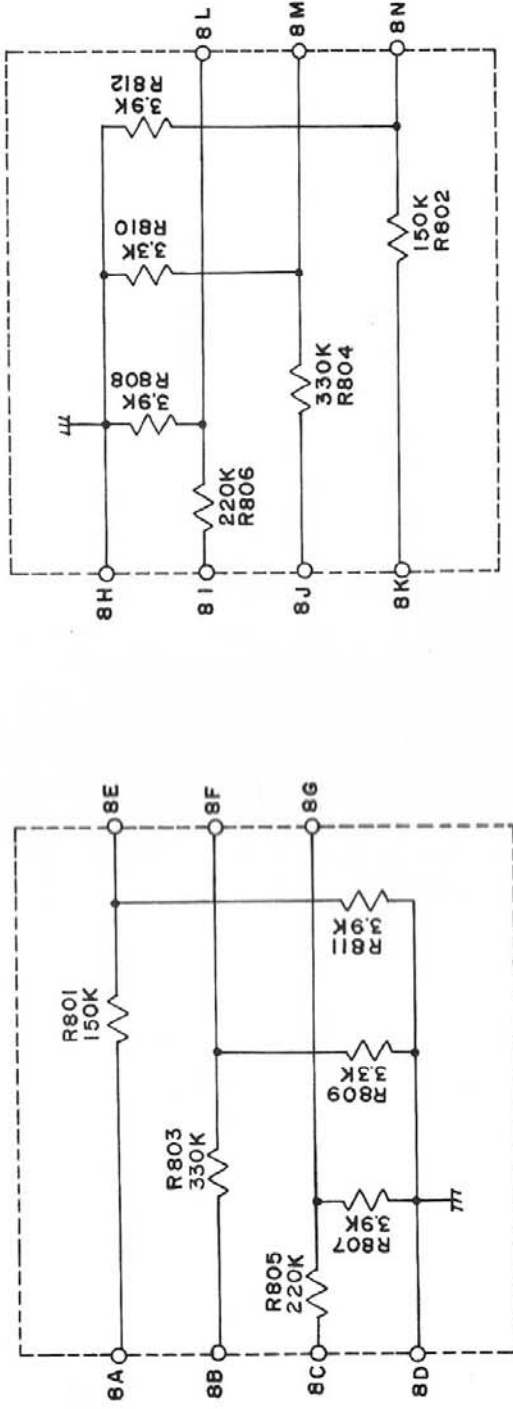


AUDIO AMPLIFIER PRINTED CIRCUIT BOARD

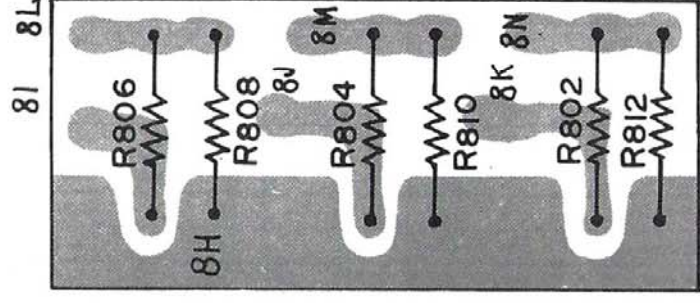
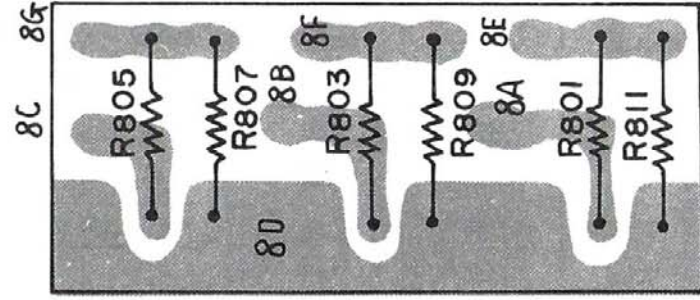


TOP VIEW

2.6 PIN TERMINAL CIRCUIT DIAGRAM



PIN TERMINAL PRINTED CIRCUIT BOARD



TOP VIEW

2.8 TRANSISTOR AND COMPLEMENT

TRANSISTOR COMPLEMENT

| TYPE | DESCRIPTION | CLASS OF SERVICE | Maximum Ratings (Ta = 25°C) (Absolute Values) | | | | | | | | | | | | | Electrical characteristics (Typical Value) (Ta = 25°C) | | | | | |
|-------|----------------|-----------------------------|---|----------------------|----------------------|----------------------|-----------------------|---------------------|-----------------|-----------------------|----------------------|---------------------|----------------------|------------------------|---------------------------|--|------|----|-----|-----|--|
| | | | V _{CE0} (V) | V _{BE0} (V) | I _{CE} (mA) | I _{BE} (mA) | P _{tot} (mW) | T _j (°C) | h _{FE} | h _{FE} (min) | f _β (MHz) | Q _β (pF) | Q _{cb} (pF) | h _{ie} (real) | Collector Cut-off Current | Emitter Cut-off Current | Name | | | | |
| Z5B54 | PNP Ge Alloyed | Small Signal Amp/Driver | -30 | -12 | -150 | 150 | 150 | 75 | -6 | 1 | 140 | 10 | 1 | 35 | - | -14 | -30 | - | -12 | (T) | |
| Z5B56 | PNP Ge Alloyed | Small Signal Amp. | -30 | -12 | -150 | 150 | 75 | -1 | -50(c) | 80 | 1 | 35 | 120 | -14 | -30 | 14 | 12 | - | -12 | (T) | |
| Z5B73 | PNP Ge Alloyed | Low Noise Small Signal Amp. | -10 | -10 | -2 | 2 | 85 | -4 | 0.5 | 65 | 6 | - | - | -7 | -10 | -7 | -10 | - | -12 | (H) | |
| Z5B75 | PNP Ge Alloyed | Small Signal Amp Driver | -25 | -12 | -100 | 100 | 85 | -6 | 1 | 55 | 7 | 2 | - | -14 | -25 | -12 | -12 | - | -12 | (H) | |
| Z5B77 | PNP Ge Alloyed | Small Signal Amp. | -25 | -12 | -100 | 100 | 85 | -1.5 | 50 | 85 | 2 | - | - | -12 | -25 | -12 | -12 | - | -12 | (H) | |
| Z5B28 | PNP Ge Alloyed | Audio Driver Medium | -25 | -10 | -200 | 150 | 85 | -1.0 | 70 | 6 | 2 | - | - | -10 | -15 | - | - | - | - | (N) | |
| Z5B37 | PNP Ge Alloyed | Hi-Fi Power Amp. | -40 | -10 | -7A | 30W | 100 | -4 | 1A | 90 | - | - | 300KHz | -1.5mA | -30 | -2mA | -10 | - | -10 | (H) | |
| Z5B61 | PNP Ge Alloyed | Hi-Fi Power Amp. | -80 | -1 | -5A | 12W | 100 | -2 | 1 | 85-230 | - | 5 | - | -500 | -40 | -100 | 1.0 | - | -10 | (H) | |
| Z5B43 | PNP Ge Alloyed | Low Noise Small Signal Amp. | -18 | -12 | -10 | 100 | 100 | -6 | 1 | 150 | 4 | 3 | - | -10 | -12 | -10 | -12 | - | -12 | (H) | |
| Z5B02 | PNP Ge Alloyed | Low Noise Small Signal Amp. | -10 | -10 | -15 | 80 | 85 | -6 | 1 | 150 | 4 | 50 | 15 | 10 | -12 | 6 | -12 | - | -12 | (H) | |
| Z5B03 | PNP Ge Alloyed | Low Noise Small Signal Amp. | -25 | -12 | -20 | 20 | 100 | 75 | -6 | 1 | 180 | 3.5 | 50 | 40 | 12000 | 15 | 15 | 12 | -6 | (S) | |

* (H) HITACHI (T) TOSHIBA (S) SANYO (N) NEC (F) FUJITSU

SILICON RECTIFIER COMPLEMENT

| Type | Peak Inverse Voltage (V) | AC Input Voltage (V) | Output Current (max mA) | Inverse Current (A/Hz) | Surge Current (A/Hz) | Junction Temperature (°C) | CES Type |
|---------|--------------------------|----------------------|-------------------------|------------------------|----------------------|---------------------------|----------|
| SE-05 | 400 | 120 | 500 | 10 | 15 | -55 ~ +130 | 1S1021 |
| S-2E | 200 | 75 | 500 | 35 | 40 | 120 | 1S1221 |
| SPN-01 | 100 | 36 | 1A | Full Wave Bridge Stack | | | |
| SR-1-DM | 100 | 50 | 1A | 50 | 80 | 40 ~ +100 | |
| S-2A-20 | 200 | 75 | 1.5A | 80 | 80 | 150 | 1S921 |
| S-2A-10 | 100 | 75 | 1.5A | 80 | 15 | 15 | |

(O) ORIGIN
(S) SHINDENGEN
(M) MITSUBISHI

3. PARTS LIST FOR TRM 40B 3.1 AMP PCB ASSEMBLY

| Parts No. | Description | Symbol | Parts No. | Description | Symbol |
|-----------|-------------------|----------------------|-----------|--------------------|--|
| 461008 | PC TRM 40A | | 1-311563 | RES 56K ohm R1/4 | R633,634 |
| 1-311180 | RES 18 ohmR1/4 | R635,636 | 1-311823 | RES 82K ohm R1/4 | R611,612 |
| 1-3111470 | RES 47 ohmR1/4 | R629,630 | 1-311124 | RES 120K ohm R1/4 | R617,618 |
| 1-311121 | RES 120 ohmR1/4 | R637,638 | 1-311274 | RES 270K ohm R1/4 | R601,602 |
| 1-311151 | RES 150 ohmR1/4 | R641 | 210108 | E-CAP 1000MF/3.15V | C621,632 |
| 1-311181 | RES 180 ohmR1/4 | R639 | 210476 | E-CAP 47MF/3.15V | C603,604,609, 610 |
| 1-311271 | RES 270 ohmR1/4 | R609,610 | 214106 | E-CAP 10MF/16V | C601,602,605, 606,607,608,611, 612 |
| 1-311821 | RES 820 ohmR1/4 | R640 | 214336 | E-CAP 33MF/16V | C613,614,615, 616 |
| 1-311152 | RES 1.5K ohmR1/4 | R623,624 | 214227 | E-CAP 220MF/16V | C617,618 |
| 1-311182 | RES 1.8K ohmR1/4 | R615,616 | 214477 | E-CAP 470MV/16V | C619,620 |
| 1-311332 | RES 3.3K ohmR1/4 | R627,628 | 510017 | TR 25B 443 | Q601,602 |
| 1-311392 | RES 3.9K ohmR1/4 | R607,608 | 510012 | TR 25B 54 (RED) | Q603,604 |
| 1-311562 | RES 5.6K ohmR1/4 | R613,614,621, 622 | 510027 | TR 25B 54 (BLK) | Q607,608 |
| 1-311822 | RES 8.2K ohm R1/4 | R631,632 | 510007 | TR 25B 561 (VEL) | Q609,610 |
| 1-311123 | RES 12K ohm R1/4 | R605,606,619, 620 | 510002 | TR 25B 73 | Q605,606 |
| 1-311183 | RES 18K ohm R1/4 | R642,643 | | | |
| 1-311273 | RES 27K ohm R1/4 | R603,604,625, 626 | | | |

3.2 EQUALIZER PCB ASSEMBLY

| Parts No. | Description | Symbol | Parts No. | Description | Symbol |
|-----------|------------------|----------|-----------|-------------------|----------------------|
| 461079 | PC-1079 | | 2-311682 | RES 6.8K ohm R1/4 | R705,706,713, 714 |
| 2-311155 | RES 1.5M ohmR1/4 | R703,704 | 2-311152 | RES 1.5K ohmR1/4 | R711,712 |
| 2-311184 | RES 180K ohmR1/4 | R709,710 | 2-311681 | RES 680 ohmR1/4 | C705,706 |
| 2-311183 | RES 18K ohmR1/4 | R701,702 | 1-262223 | M-CAP 0.022MF | C701,702,703, 704 |
| 2-311153 | RES 15K ohmR1/4 | R715,716 | 1-262682 | M-CAP 0.0068MF | |
| 2-311123 | RES 12K ohmR1/4 | R707,708 | | | |
| 1-311103 | RES 10K ohmR1/4 | R717,718 | | | |

3.3 PIN TERMINAL ASSEMBLY

| Parts No. | Description | Symbol | Parts No. | Description | Symbol |
|-----------|------------------|----------------------|-----------|-------------------|----------|
| 444041 | PIN TER 4P | | 1-311154 | RES 150K ohm R1/4 | R801,802 |
| 461067 | PC 461067 | | 1-311224 | RES 220K ohm R1/4 | R805,806 |
| 1-311332 | RES 3.3K ohmR1/4 | R809,810 | 1-311334 | RES 330K ohm R1/4 | R803,804 |
| 1-311392 | RES 3.9K ohmR1/4 | R807,808,811, 812 | 272101 | C-CAP 100PF | C801,802 |

3.4 CHASSIS ASSEMBLY

| Parts No. | Description | Symbol | Parts No. | Description | Symbol |
|-----------|------------------|----------|-----------|--------------------|--------------|
| 712042 | SHFT | | 206108 | E-CAP 1000MF/25V | C13,14 |
| 402027 | SLD SW SL-13 | | 262122 | M-CAP 0.0012MF | C15,16 |
| 450006 | UL SKT (B) | | 262333 | M-CAP 0.033MF | C17,18,19,20 |
| 790167 | POLLY FOOT | | 297472 | 0-CAP 0.0047MF | C24,25 |
| 110007 | T-1-7 | T3 | 297103 | 0-CAP 0.01MF | C23 |
| 101006 | T-0-7 | T1,2 | 1-311398 | RES 3.9 ohm R1/4 | R21,22,23,24 |
| 405030 | ROTRV 2-4-6 | | 1-311101 | RES 100 ohm R1/4 | R32 |
| 490017 | NW-1 1.25A | | 1-311562 | RES 5.6K ohm R1/4 | R15,16 |
| 512201 | TR 2SB 337 | Q1,2,3,4 | 333158 | Ω-RES 1.5 ohm R1/4 | R25,26,27,28 |
| 501032 | Ø SPN-01 | D1 | 1-344561 | M-RES 560 ohm R1/4 | R17,18,19,20 |
| 206338 | E-CAP 3300MF/25V | C21,22 | | | |

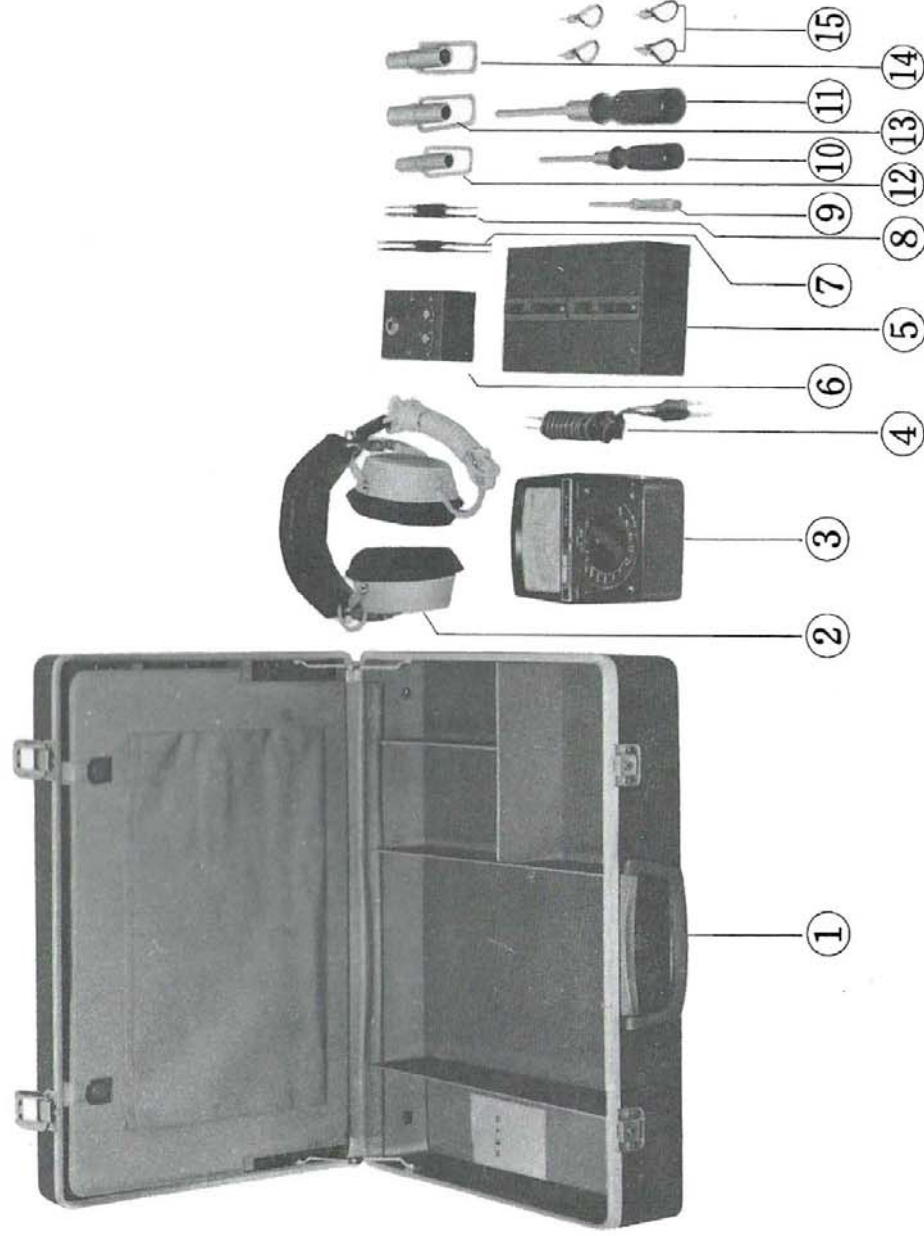
3.5 FRONT PANEL ASSEMBLY

| Parts No. | Description | Symbol | Parts No. | Description | Symbol |
|-----------|------------------|--------|-----------|--------------------|---------------|
| 702116 | FRONT PLT | | 1-311472 | RES 4.7K ohm R1/4 | R3,4,7,8,9,10 |
| 716064 | SLEEVE | | 1-311104 | RES 100K ohm R1/4 | R11,12 |
| 790152 | PUSH BUTTON (B) | | 374151 | M-MES 150 ohm R1/4 | R29,30 |
| 432007 | UR 20KA X 2CT | | 262222 | M-CAP 0.0022MF | C1,2 |
| 433001 | UR 50KA X 2 | | 262332 | M-CAP 0.0033MF | C5,6 |
| 432009 | UR 10K HB X 2 | | 262104 | M-CAP 0.1MF | C7,8 |
| 455001 | EAR JACK | | 262224 | M-CAP 0.22MF | C11,12 |
| 580004 | PL-4 | Z1 | 262334 | M-CAP 0.33MF | C3,4,9,10 |
| 1-311821 | RES 820 ohm R1/4 | R31,35 | 402017 | SLD SW SL-63 | |

3.6 FINAL ASSEMBLY

| Parts No. | Description | Symbol | Parts No. | Description | Symbol |
|-----------|-------------|--------|-----------|------------------|--------|
| 718021 | KNOB 7L-1 | | 702281 | COV | |
| 718022 | KNOB 7L-2 | | 880178 | STYROL BOX (COV) | |
| 718023 | KNOB 7L-3 | | 880177 | STYROL BOX (BTM) | |
| 718024 | KNOB 7L-4 | | 880260 | CARTON BOX | |
| 772001 | COV SASS | | | | |

4. SERVICE TOOL



| | | |
|----|-------------------------------------|---|
| 1 | TOOL BOX..... | 1 |
| 2 | HEAD PHONES..... | 1 |
| 3 | CIRCUIT TESTER..... | 1 |
| 4 | TEST LEADES..... | 2 |
| 5 | DUMMY LOAD BOX..... | 1 |
| 6 | HEAEPHONE CONVERTER..... | 1 |
| 7 | ALIGNMENT TOOL(M. P. X.)..... | 2 |
| 8 | ALIGNMENT TOOL(FRONT. END)..... | 2 |
| 9 | TINY SCREW DRIVER..... | 1 |
| 10 | SMALL SIZE CROSS SCREW DRIVER..... | 1 |
| 11 | MEDIAM SIZE CROSS SCREW DRIVER..... | 1 |
| 12 | VOLUME WRENCH(8— 10)..... | 1 |
| 13 | VOLUME WRENCH(11— 12)..... | 1 |
| 14 | VOLUME WRENCH(13— 14)..... | 1 |
| 15 | SHORTED PIN JACK..... | 4 |