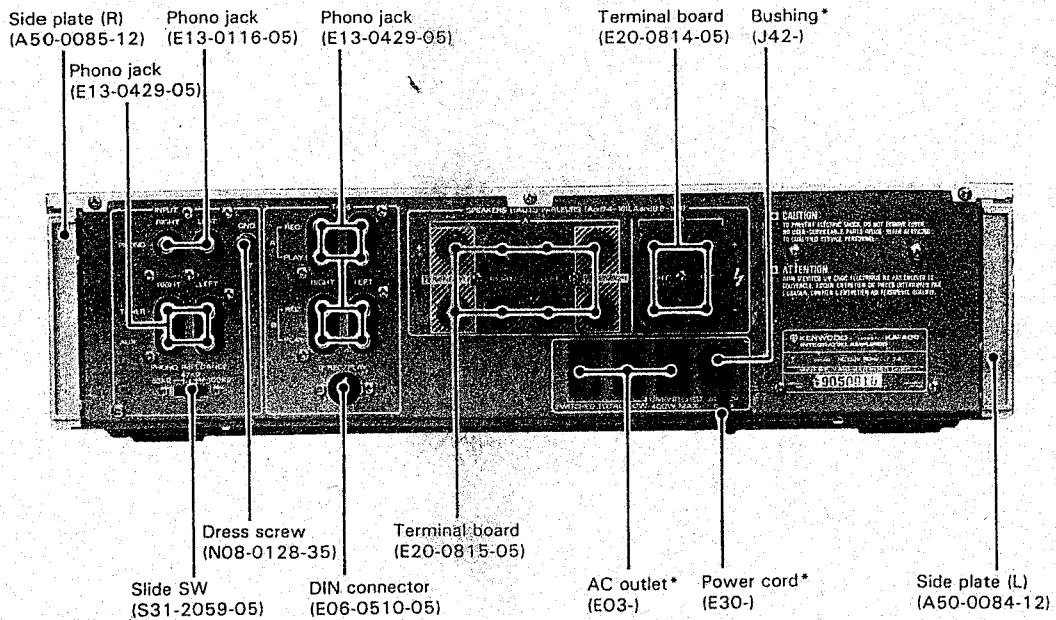
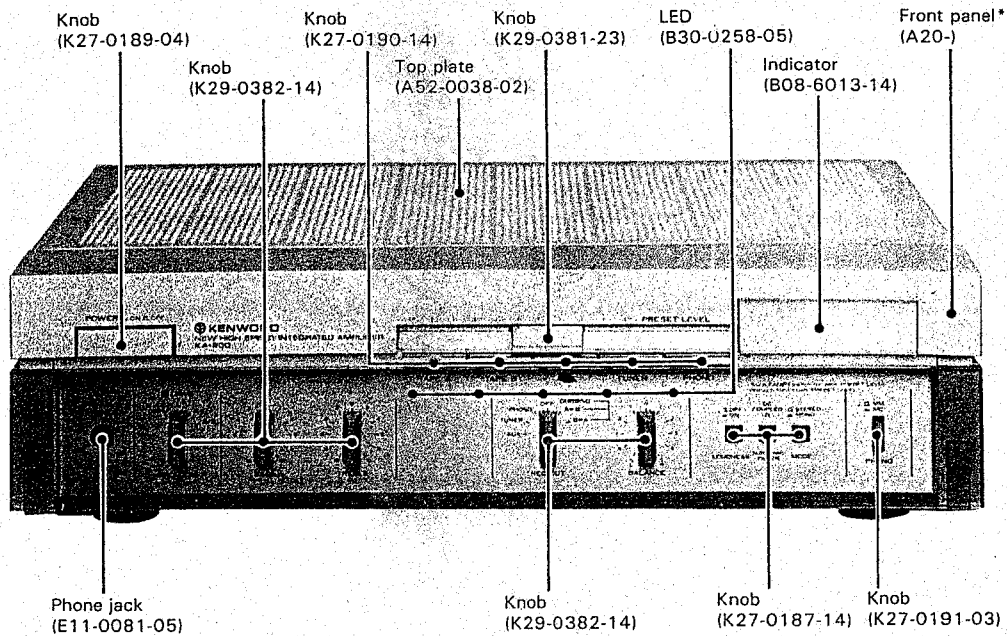


NEW HIGH SPEED INTEGRATED AMPLIFIER

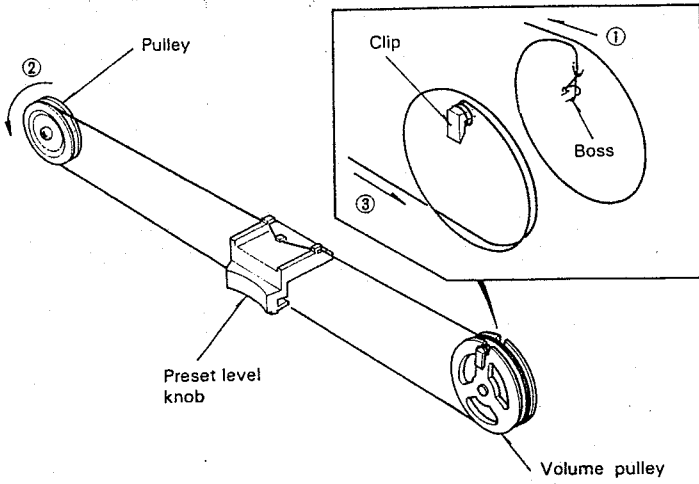
SERVICE MANUAL



*Refer to Parts List on page 12.

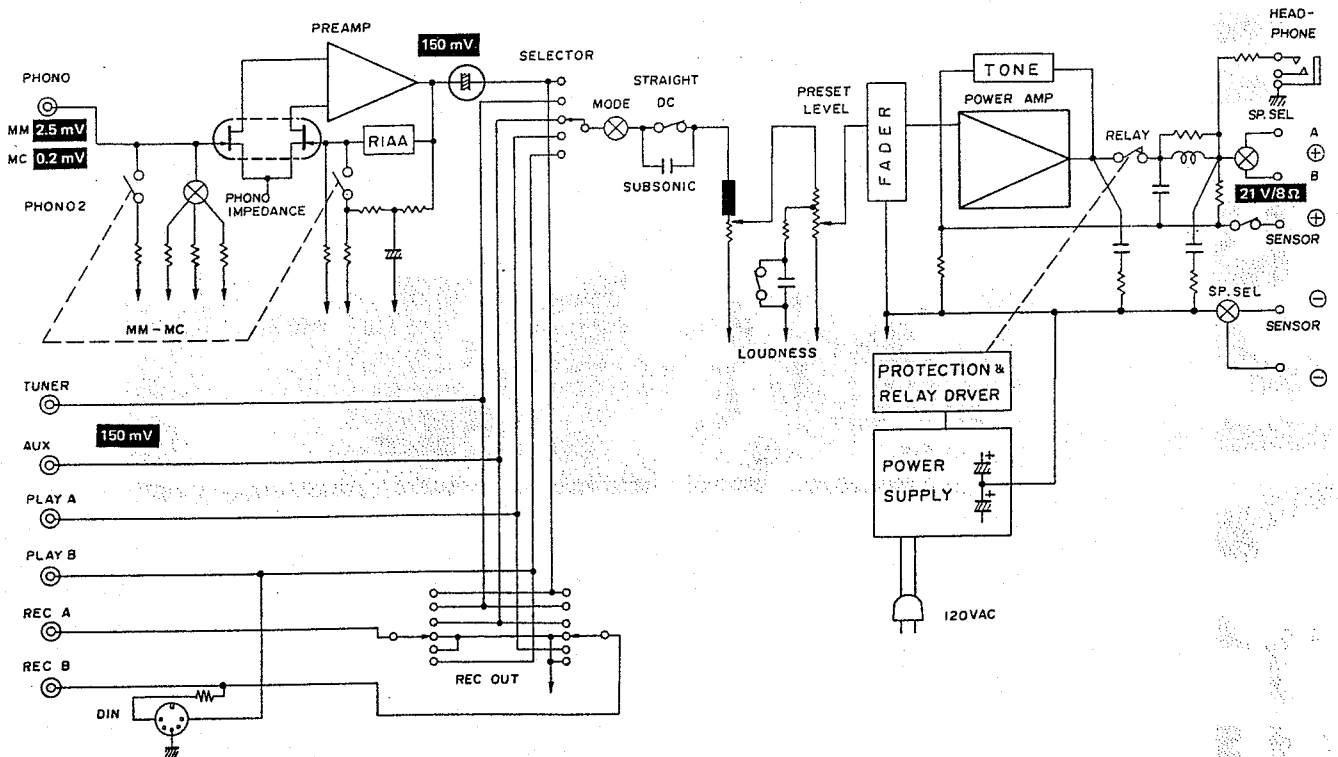
DIAL CORD STRINGING / BLOCK DIAGRAM

DIAL CORD STRINGING



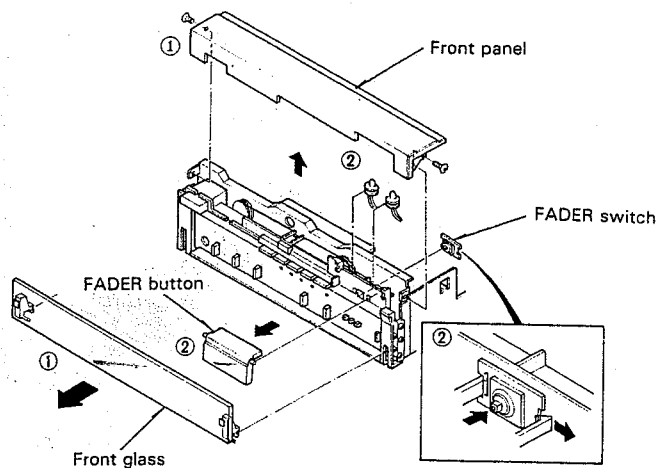
1. Tie the dial cord to the boss of volume pulley.
2. Set volume pulley to the volume shaft and turn it counterclockwise till it stops.
3. Dress the dial cord to volume pulley counterclockwise 1 turn starting from the upper side as shown (1).
4. Stretch and hook the dial cord to the pulley and dress it to the volume pulley from the lower side 1 and half turn (2 3)
5. Be sure to wind the end of the dial cord firmly to the clip of the volume pulley, so that it is tightly stretched.
5. Make sure that volume pulley is fully turned counterclockwise and fix the preset level knob by adhesive. Check that the groove of the preset level knob aligns with the 0 mark on the panel.

BLOCK DIAGRAM

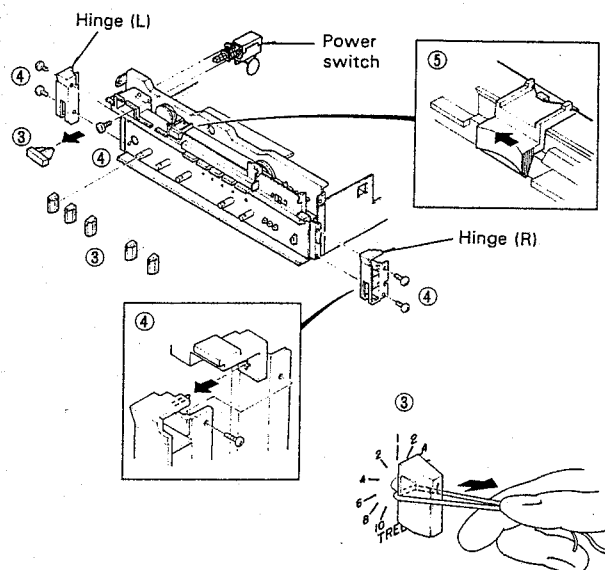


DISASSEMBLY FOR REPAIR

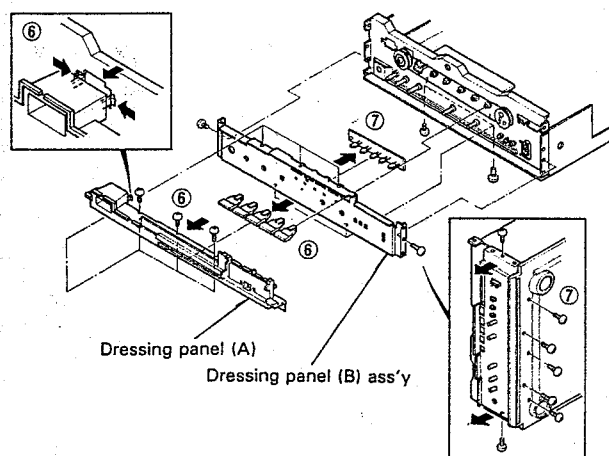
- ① Remove side plate, top plate, panel and the front-glass.
- ② Remove FADER button (parts name: Indicator) and FADER lamp. Now, you can remove the FADER switch (S4) pc board by spreading the claws outward and pushing the switch from the front.



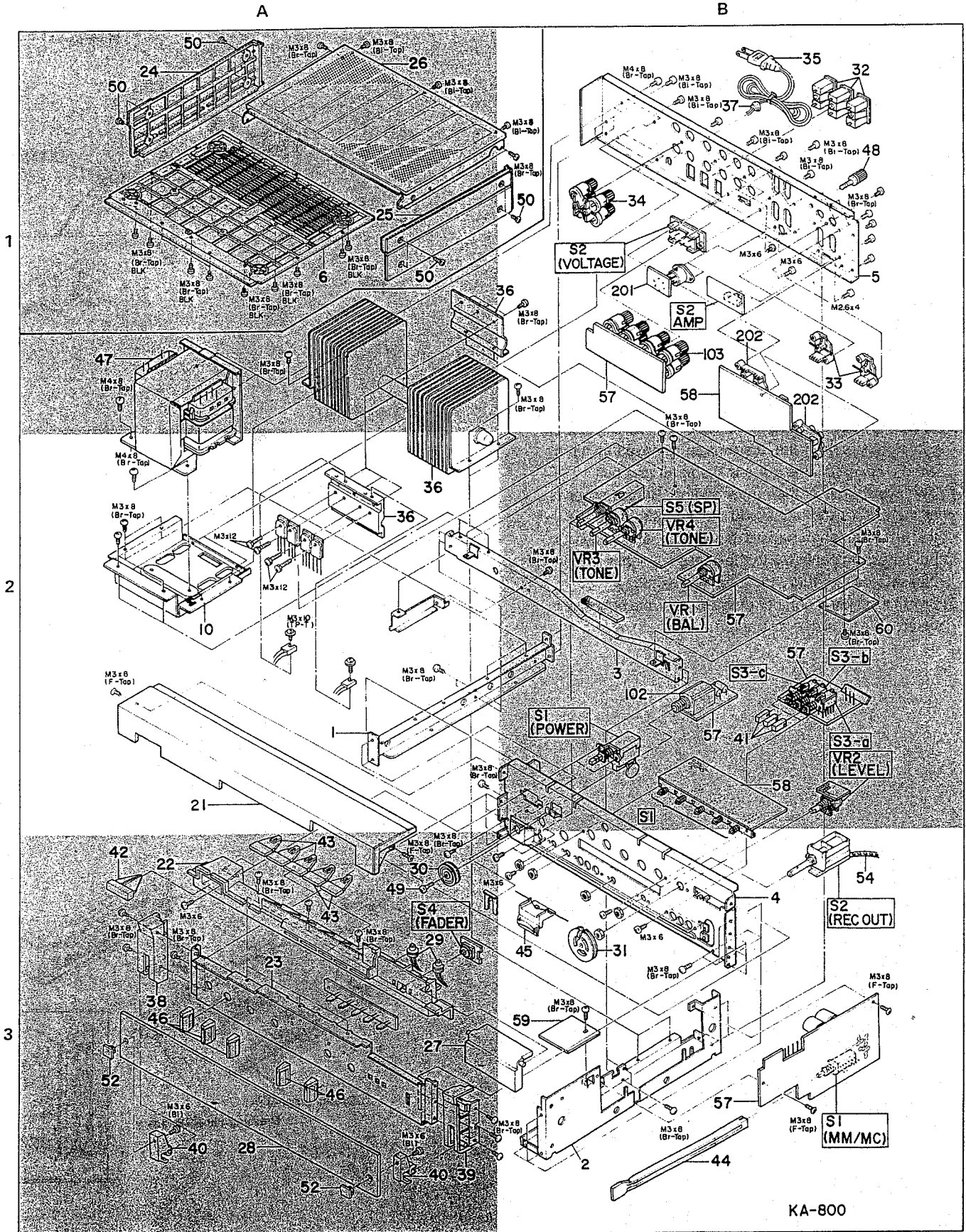
- ③ Remove the power switch button and knobs for BASS, TREBLE, BALANCE etc. by pulling them toward yourself. If they cannot be removed by hand, wind a covered wire around the shaft and pull.
- ④ Remove screws of the power switch. Remove screws at the side of the hinge and pull it to the direction of the arrow as shown. This hinge serves as a rivet to hold dressing panel (A) to the chassis. For this reason, please proceed after you remove this hinge.
- ⑤ Preset level knob can be removed after the adhesive is taken off and slid to the left.



- ⑥ Remove dressing panel (A) by pinching the claws inward and pushing it toward the front. Now, INPUT selector button can be removed.
- ⑦ Remove 5 screws at the front side of the bottom plate, also 2 screws at sides of dress panel ass'y and pull forward. Now LED pc board for INPUT selector can be removed.



EXPLODED VIEW



| | | | | | | |
|---|--------------|-------------|--------------------|-------------|----------------|-------------|
| 4 | M2.6x4: | N30-2604-46 | M3x8 (F-Tap): | N88-3008-46 | M3x12: | N30-3012-46 |
| | M3x6: | N30-3006-46 | M3x8 (Br-Tap): | N87-3008-46 | M4x8 (Br-Tap): | N87-4008-46 |
| | M3x6 (Bi): | N35-3006-41 | M3x8 (Bi-Tap): | N89-3008-46 | | |
| | M3x8 (TP-T): | N91-3008-46 | M3x8 (Br-Tap) BLK: | N87-3008-45 | | |

NOTE: Refer to Parts List on page 12.

CIRCUIT DESCRIPTION

What is Fader?!

When the power switch is turned ON, the INPUT LED lights (if none of the selector knob is pushed in, all SELECTOR LEDs will light); then, after a few seconds, the speaker protection relay is turned ON. When this occurs, sound volume gradually increases and the blue lamps built into the fader control knob increase in their brightness.

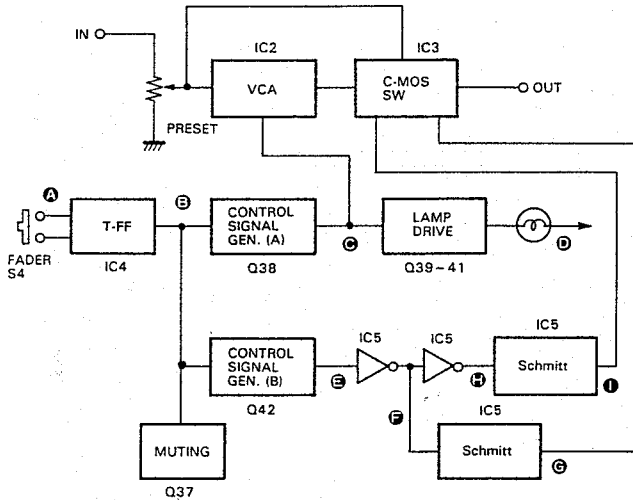
To decrease the volume to zero, lightly press the fader knob; volume will be decreased and the lamp will become dimmer. When the volume is zero, the lamp will be OFF.

When the fader control knob is pressed again, the volume gradually increases to the preset level along with the increase of brightness of the lamps.

To vary the volume, adjust the preset level knob.

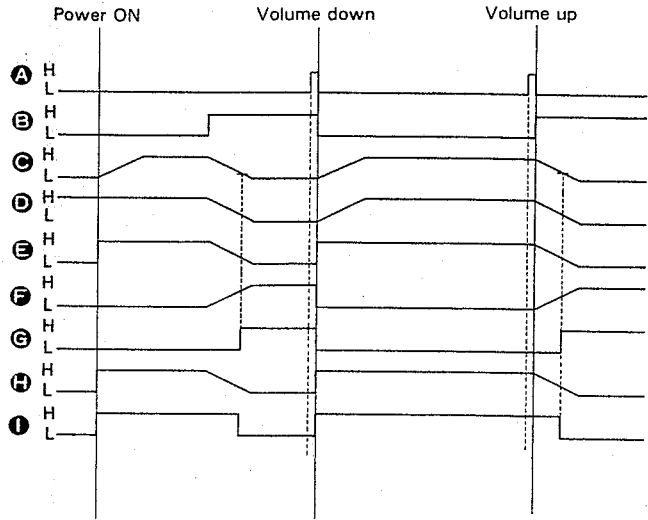
Fader circuit

A block diagram for the fader circuit is shown below.



< Block diagram of FADER >

The fader circuit is located between the volume control circuit and the power amplifier. The audio signal of the selected input (the volume level of which is preset by the preset level knob) is applied to the C-MOS switch IC directly, and is also applied to the C-MOS IC through VCA (Voltage Controlled Amplifier). The C-MOS switch IC selects one of these two signals according to the control signal.



< Timing Diagram >

Fader lamp operation

Immediately after power has been turned ON, the level at the output terminal 2 of the flip-flop IC (T-FF), IC4, is "H". However, the base level of Q38 is "L" until the protection relay is turned ON; this is because Q37 is OFF (see "Operation of Q37").

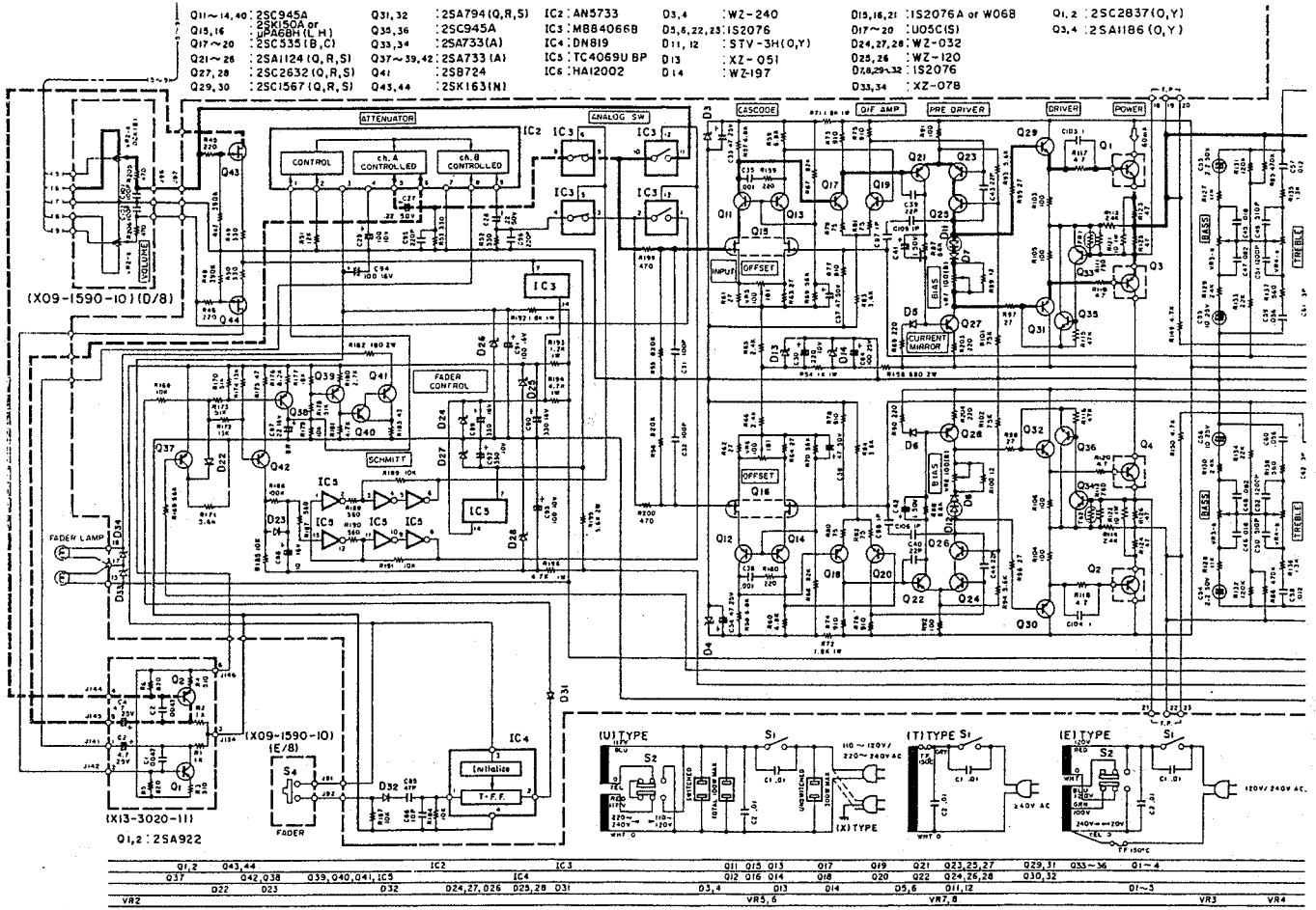
When the base level of Q38 is "L", Q38 is ON, Q39 is OFF and Q40 and Q41 are OFF. Therefore, the fader lamps are OFF. After a while, the protection relay and Q37 are turned ON. D22 is then reverse biased and the base level of Q38 becomes "H" because the output level of IC4 is "H". Q38 is therefore turned OFF.

Then, capacitor C87 connected to the collector of Q38 starts discharging, so that Q39~Q41 operate to gradually make the fader lamps brighter. The lamp current peaks when C87 is completely discharged and the fader control knob lights blue.

When fader switch S4 is pressed, the state of IC4 is inverted. All the states mentioned above are then inverted and the fader control knob becomes white.

The fader switch inverts the state of IC4 every time it is pressed.

CIRCUIT DESCRIPTION



Operation of Q37 (fader initializing transistor)

Immediately after the power has been turned ON, the base level of Q37 is "H" and Q37 is OFF. Q38 is ON at this time and so the fader lamps are OFF. Q42 is also ON so that operation of the fader circuit takes precedence.

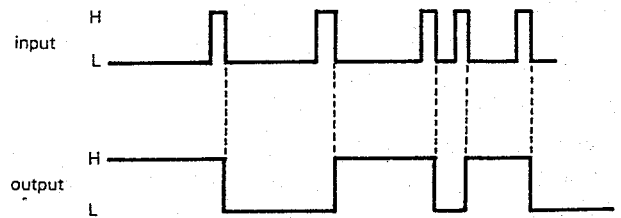
When the protection relay is turned ON, the base level of Q37 drops to "L" and Q37 is turned ON. D22 is then reverse biased to disconnect Q37 from other circuits.

When the power is turned OFF, the base level of Q37 becomes "H", the same condition as when the power was turned ON. Therefore, the power is immediately turned ON again and the fader circuit operates normally.

Thus, Q37 always allows the fader circuit to operate even if the power switch is turned ON and OFF repeatedly for some intervals.

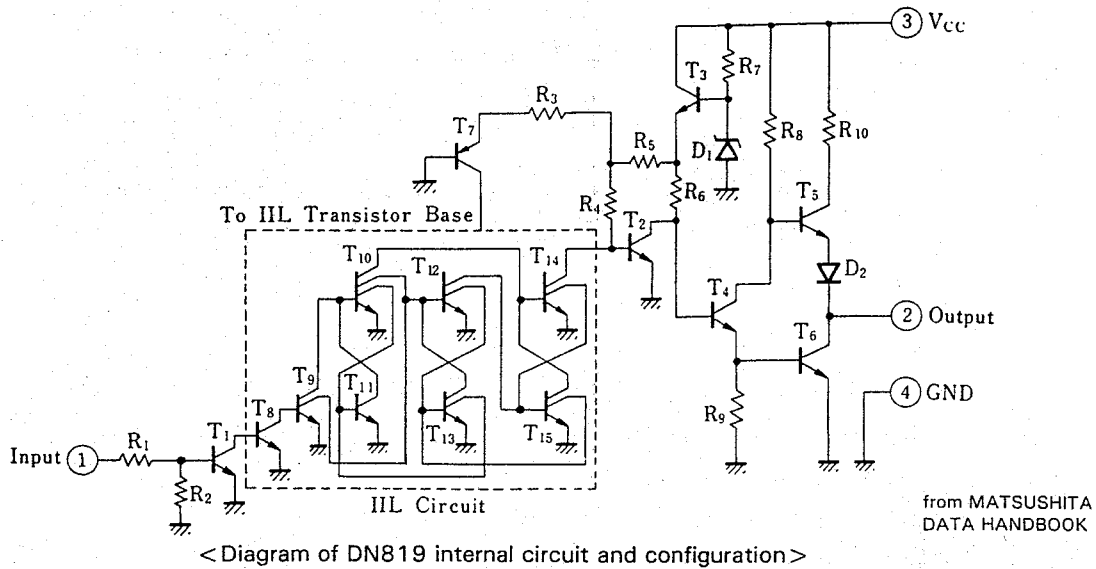
T-flip flop (DN819)

This type of flip flop is also called a trigger or toggle flip flop. There is one input terminal and one output terminal. A clock pulse signal is input and the output state is inverted every time a clock pulse is input. The initialized output state is "H". (See the schematic diagram below.)



< Timing diagram >

CIRCUIT DESCRIPTION



< Diagram of DN819 internal circuit and configuration >

C-MOS analog switch IC

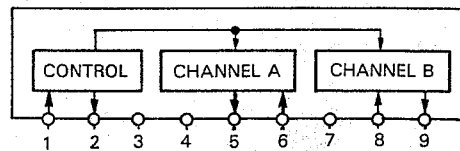
This IC includes four analog switches; each switch is turned ON when the corresponding control terminal is supplied with a positive voltage, and turned OFF when it is supplied with a negative voltage.

As described previously, the base level of Q42 is "L" when the power switch is turned ON and the relay doesn't work. Therefore, Q42 is ON and its collector level is "H". This "H" level is applied to pin 13 of IC5 (inverter) and "L" level is output from pin 12. This "L" level signal is applied to a Schmitt circuit consisting of two inverters where waveform shaping is performed. The signal is then applied to pins 12 and 13 of IC3 (analog switch IC) to turn the corresponding switches OFF. On the other hand, the "L" level signal at pin 12 of IC5 is inverted by the inverter, then applied to another Schmitt circuit. Its output is applied to pins 5 and 6 of IC3 to turn the remaining analog switches ON.

Thus, the fader circuit operates under this condition. Next, when both the power switch and the relay are turned ON, the output level at pin 2 of IC4 becomes "H". Therefore, Q42 is turned OFF and its collector level becomes "L". However, because C88 discharges gradually, the analog switches are not switched immediately after Q42 is turned OFF; it takes about 1 second to be switched. Thus, a direct signal from the volume control circuit is applied to the power amplifier.

Voltage controlled amplifier IC (AN5733)

The control voltage applied to pin 1 is amplified by the inverting amplifiers (Q16, 23 ~ 25) to drive Q33 and Q34, and is also amplified by the non-inverting amplifiers (Q15, 20 ~ 22) to drive Q32 and Q35. When the control voltage increases, the internal resistance of Q33 and Q34 increases so that the signal from Q28 is attenuated and then output to Q36 through Q40. At the same time, the internal resistance of Q32 and Q35 decreases so that the operating points of Q28, Q36 ~ Q40 are kept constant. When the control voltage decreases, the internal resistance of Q33 and Q34



< Block diagram of AN5733 >

decreases. Therefore, the audio signal is not attenuated, but is output as is. The internal resistance of Q32 and Q35 increases so that operation of Q28, Q36 ~ Q40 is stabilized.

Thus, Q32 through Q35 operate as variable resistors. When the control voltage is 4.1 V, attenuation is about 75 dB.

Voltage regulator using FET

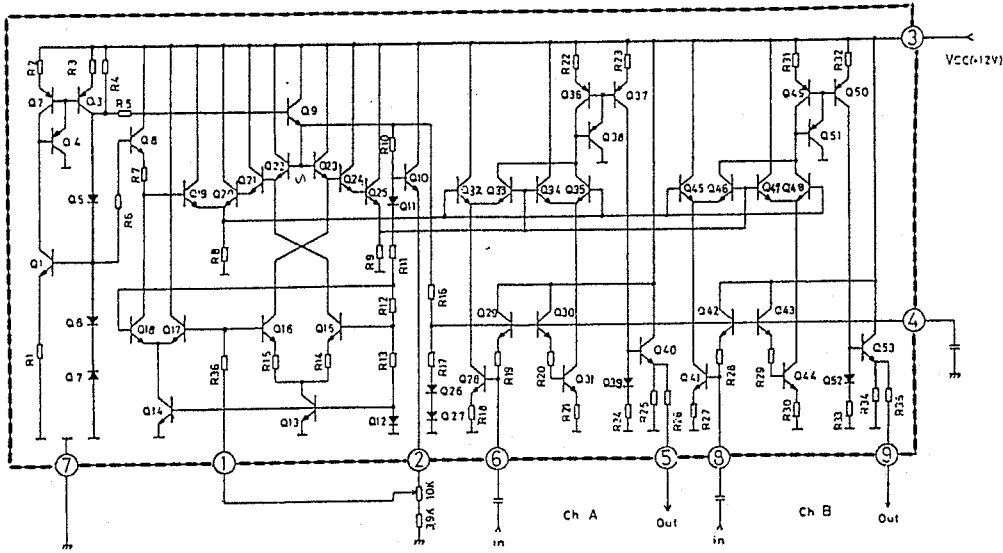
The figure below shows a junction type FET. When the gate is biased as shown above, the potential of the N layer is higher than that of the P layer and of a layer with high resistance called the depletion layer.

As bias voltage V_{GS} is increased, the thickness of the depletion layer is increased, causing the current from the source to the drain to be reduced.

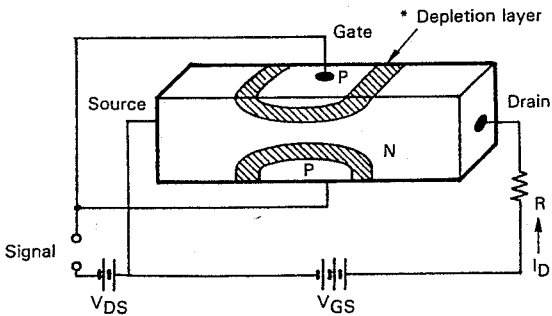
At a certain level, the depletion layer completely blocks the current flowing between the source and the drain; this is called the pinch-off state.

The following diagram shows the output characteristic of a circuit in which the gates are connected to the source.

CIRCUIT DESCRIPTION



< Diagram of AN5733 internal circuit >

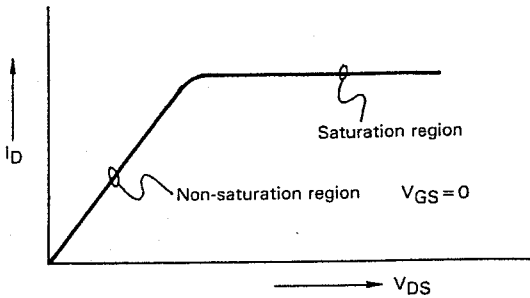


< Construction of FET >

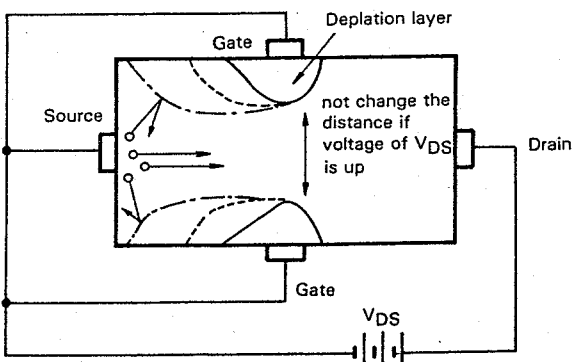
Within the non-saturated region, drain current increases in proportion to the drain-source voltage V_{DS} . It saturates, however, when V_{DS} exceeds a certain level. The circuit, therefore, shows a constant current characteristic, because the thickness of the depletion layer does not vary. Even if V_{DS} is further increased, the current is limited to a certain level by the depletion layer.

In the model KA-800, V_{DS} is set to about 19 V to operate the FET as a constant current source.

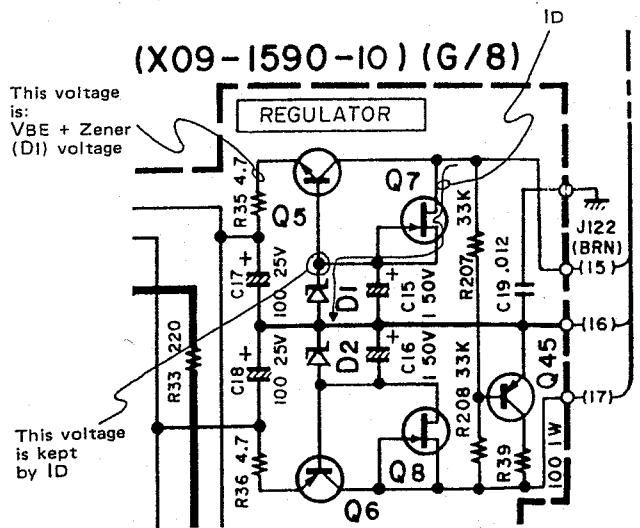
This constant current circuit is used in the preamplifier voltage regulators so that regulator output is kept constant even if the $B+$ varies.



< Drain characteristics for $V_{GS} = 0$ >



< Variation of the depletion layer >



This voltage is: $V_{BE} + Zener$ (D1) voltage

This voltage is kept by I_D

ADJUSTMENT / REGLAGES / ABGLEICH

PC BOARD

POWER AMP OFFSET VOLTAGE ADJUSTMENT

1. Set the PRESET LEVEL to "0" and the SPEAKERS switch to "B".
2. Connect the DC voltmeter between the positive and negative speaker terminals.
3. Adjust the trimming pot VR5 (VR6) for a 0V reading of the DC voltmeter.

REGLAGE DE LA TENSION DE DECALAGE (OFFSET)

1. Régler PRESET LEVEL sur "0" et l'interrupteur SPEAKERS "B".
2. Brancher le voltmètre à CC aux bornes de sortie + et -.
3. Régler le potentiomètre ajustable VR5 (VR6) pour que la tension de sortie soit nulle.

OFFSET-SPANNUNG DER ENDVERSTÄRKER

1. Den PRESET LEVEL auf "0" einstellen und den schalter SPEAKERS auf B.
2. Den Gleichspannungsmesser zwischen den Lautsprecherklemmen + und - der endverstärker anschließen.
3. Die Regelstange durch das Unterplattenloch einführen und den halbeingebetteten Widerstand VR5 (VR6) so regulieren, daß die Gleichspannungsmesser-Ablesung 0V ist.

BIAS CURRENT ADJUSTMENT

1. Set the PRESET LEVEL to "0" and the SPEAKERS switch to "B".
2. Connect the DC voltmeter between the adjusting points 18 and 20 (21 and 23) of power amp pc board ass'y (X09- 1590- 10).
3. Adjust the BIAS CURRENT trimming pot VR7 (VR8), for a 51 mV reading of the voltmeter.

REGLAGE DU COURANT DE POLARISATION

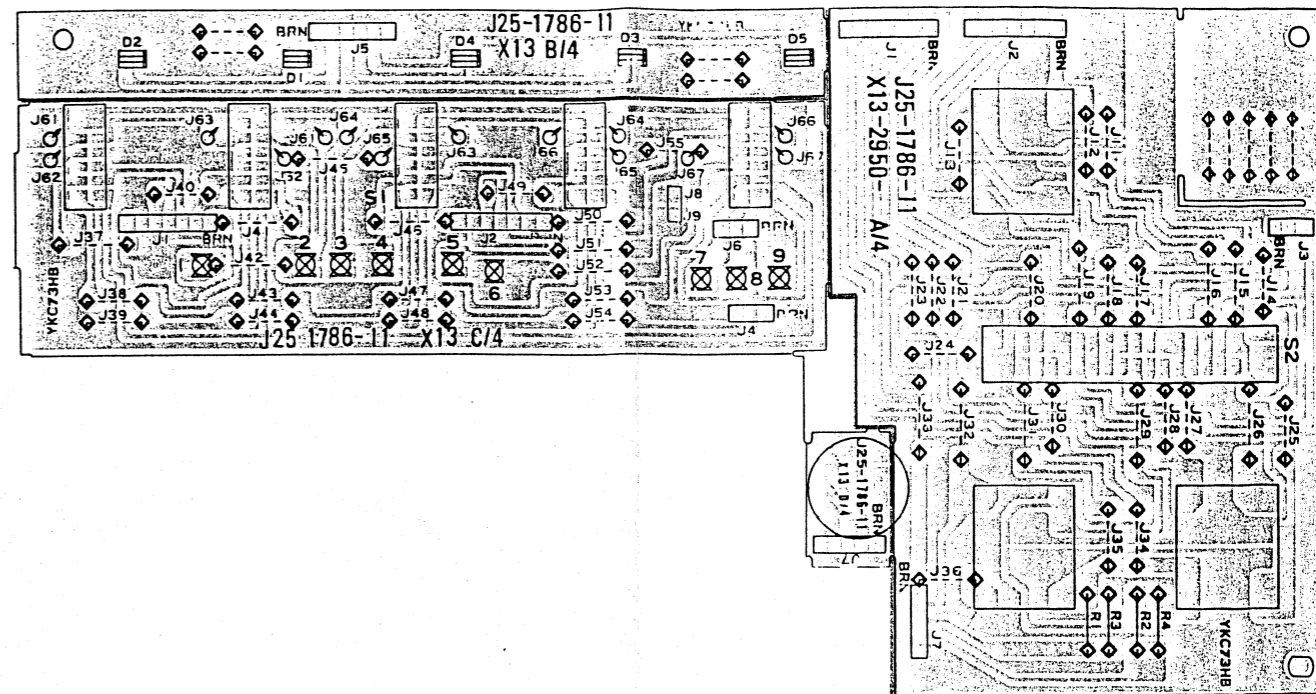
1. Régler PRESET LEVEL sur "0" et l'interrupteur SPEAKERS "B".
2. Brancher le voltmètre à CC aux points d'alignement. 18 et 20 (21 et 23), sur la plaque du circuit imprimé de l'ampli de puissance (X09- 1590- 10).
3. Régler le potentiomètre ajustable VR7 (VR8) de façon à ce que le voltmètre à CC indique 51 mV.

LEERLAUFS

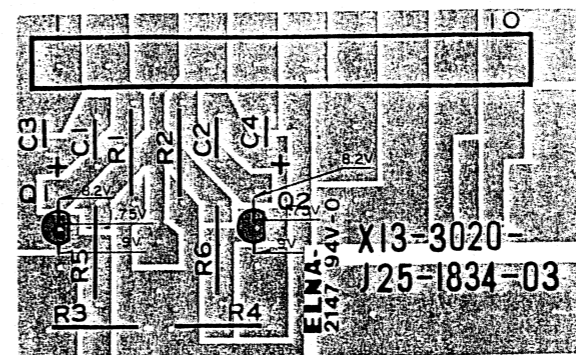
1. Den PRESET LEVEL auf "0" einstellen und den schalter SPEAKERS auf B.
2. Den Gleichspannungsmesser zwischen der Regulierungspunkte 18 und 20 (21 und 23) der endverstärker anschließen.
3. Den halbeingebetteten Widerstand VR7 (VR8) der Leistungsverstärker so regulieren, daß die Gleichspannungsmesser Ablesung 51 mV ist.

▼ SUB (X13-2950-10)

Refer to the schematic diagram for the value of resistors and capacitors.

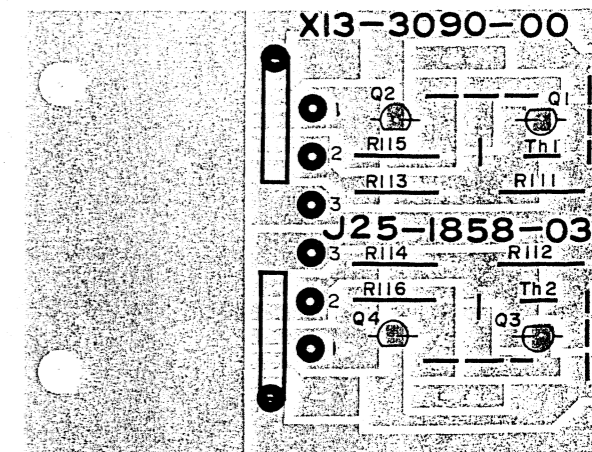


▼ SUB (X13-3020-11)

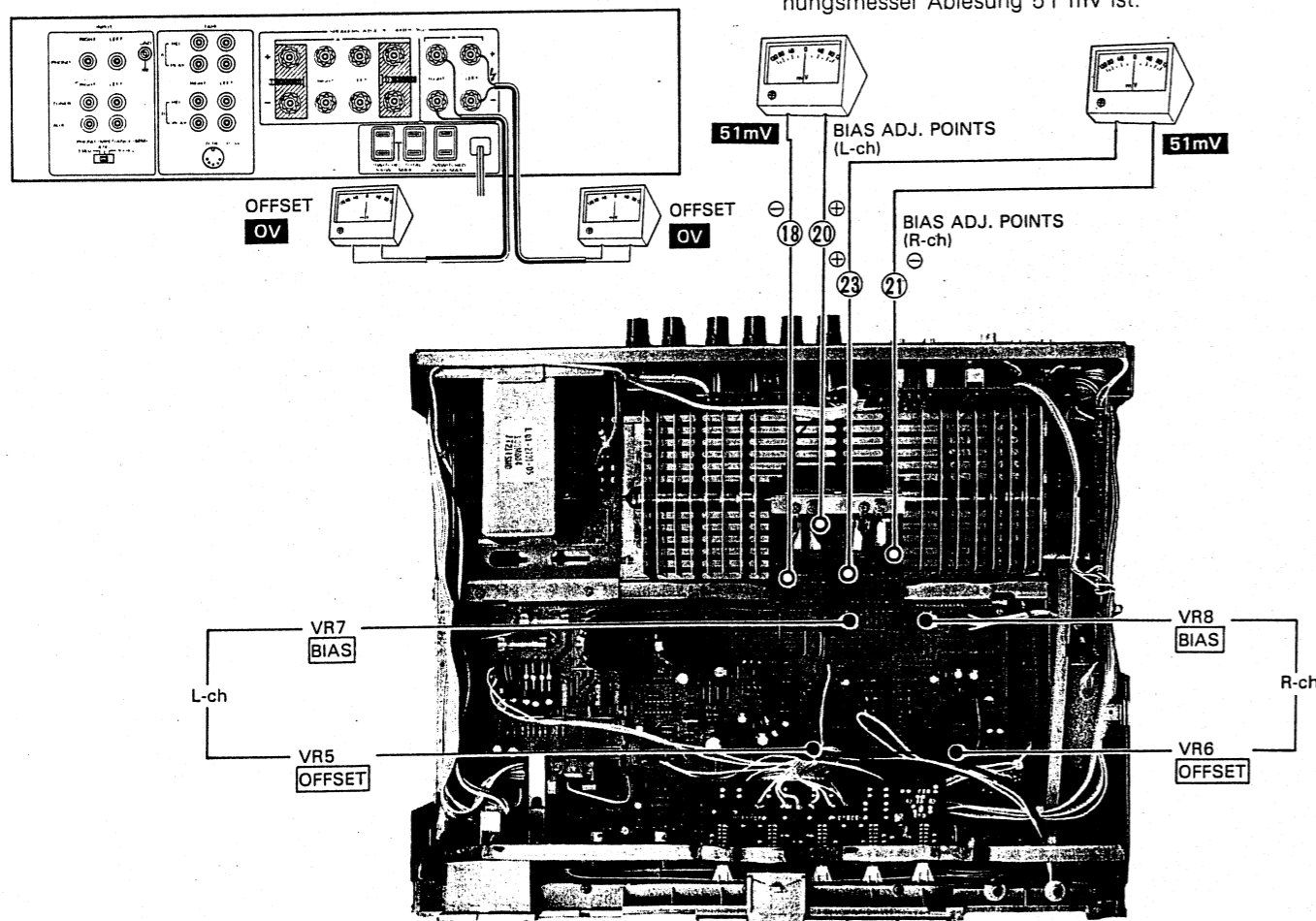


Q1,2:2SA992

▼ SUB (X13-3090-00)



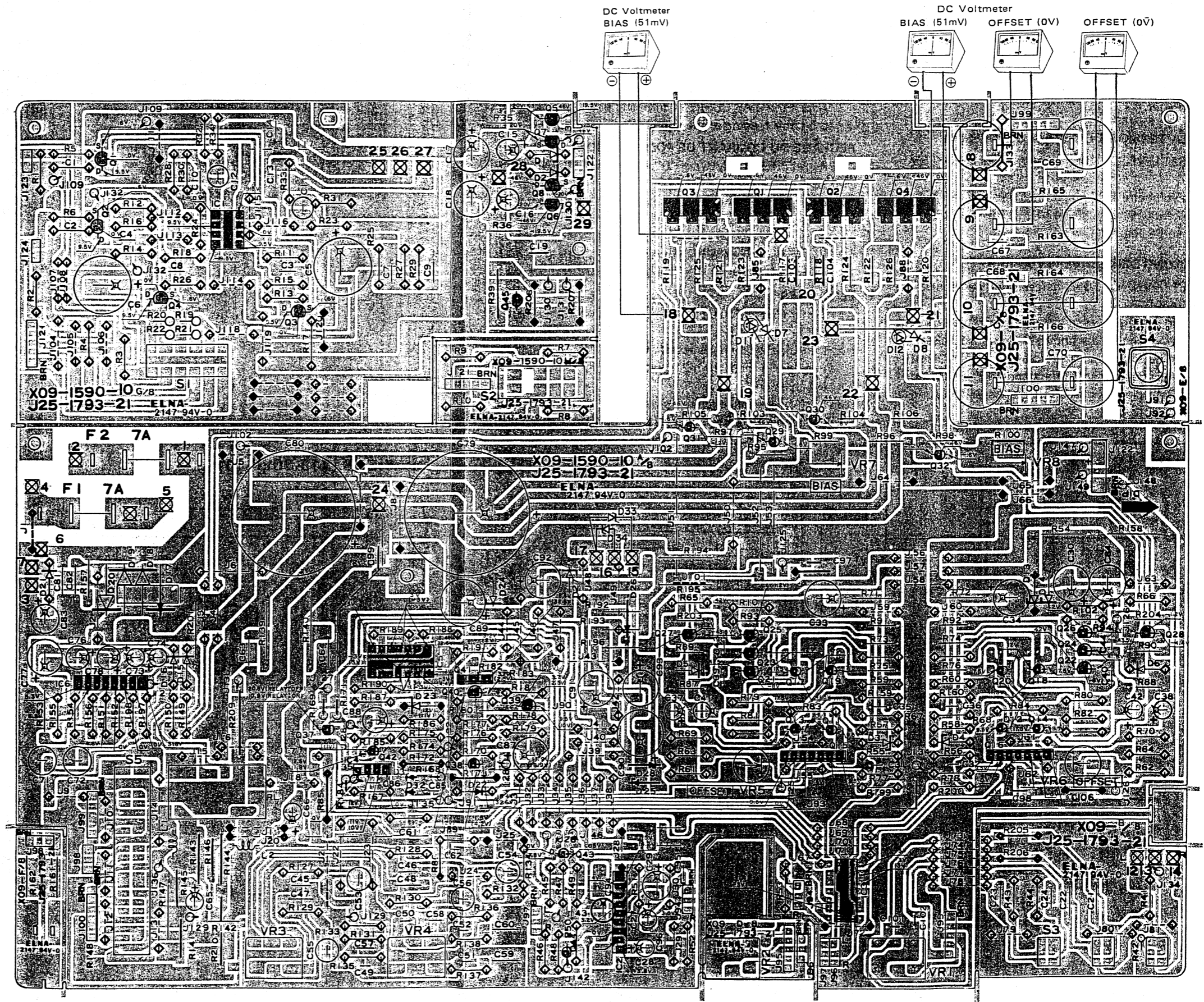
Q1,3:2SA733A
Q2,4:2SC945A



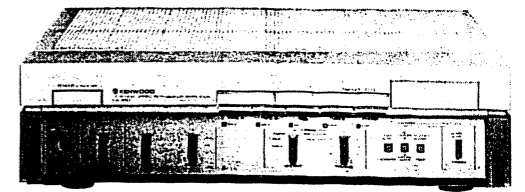
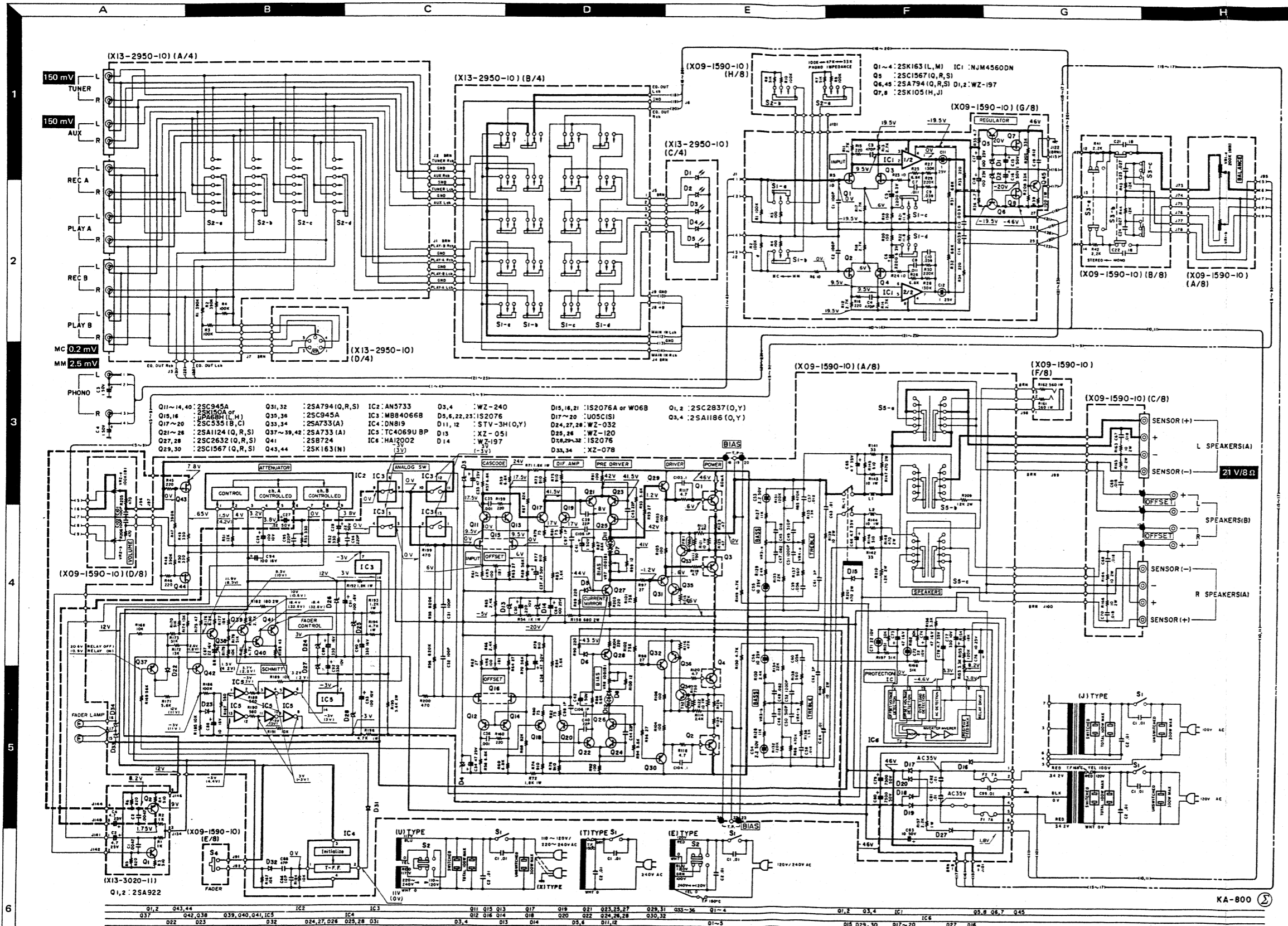
PC BOARD

Refer to the schematic diagram for the value of resistors and capacitors.

▼ AUDIO (X09-1590-10)



*Q33~36, Th1,2 and R111~116 drawn in X09-1590-10 are mounted on X13-3090-00 PC board.



SPECIFICATIONS

POWER AMPLIFIER SECTION
 Power output
50 watts* per channel minimum RMS, both channels driven, at 8 ohms from 20 Hz to 20,000 Hz with no more than 0.009% total harmonic distortion.

- Both Channels Driven into 8 ohms at 1,000 Hz 55 W + 55 W
- Total Harmonic Distortion (20 Hz to 20 kHz)
 AUX input to SPEAKER output 0.009% at rated power into 8 ohms
 0.007% at 1/2 rated power into 8 ohms
- Intermodulation Distortion 0.009% at rated power into 8 ohms (60 Hz : 7 kHz + 4 : 1)
- Damping Factor 100, at 100 Hz
- Transient Response
 Rise Time 1.0 μs
 Slew Rate ± 100 V/μs
- Frequency Response
 (DC COUPLED at ON) DC to 350 kHz, +0 dB, -3 dB
 (DC COUPLED at OFF) 18 Hz to 350 kHz, +0 dB, -3 dB
- Speaker Impedance Accept 4 ohms to 16 ohms
- Input Sensitivity/Impedance
 PHONO (MM) 2.5 mV/33 k ohms, 47 k ohms and 100 k ohms
 PHONO (MC) 0.2 mV/100 ohms
 TUNER, AUX, TAPE A, B 150 mV/47 k ohms
- Signal to Noise Ratio (IHF, A)
 PHONO (MM) 84 dB for 2.5 mV input
 90 dB for 5.0 mV input
 96 dB for 10 mV input
 PHONO (MC) 64 dB for 0.2 mV input
 70 dB for 0.4 mV input
 TUNER, AUX, TAPE A, B 105 dB for 150 mV input
- Maximum Input Level Phono (MM) 200 mV (RMS), T.H.D. 0.005% at 1,000 Hz
 (MC) 10 mV (RMS), T.H.D. 0.005% at 1,000 Hz
- Output Level/Impedance
 TAPE REC (Pin) 150 mV/220 ohms
 (DIN) 30 mV/80 k ohms
- Frequency Response for Phono RIAA standard curve ± 0.3 dB (30 Hz to 20,000 Hz)
- Tone Control
 Bass ± 10 dB at 100 Hz
 Treble ± 10 dB at 10 kHz
- Loudness Control (at -30 dB VOLUME Level) + 10 dB at 100 Hz
- Subsonic Filter 18 Hz, 6 dB/oct

GENERAL
 Power Requirements 60 Hz 120 V (U.S.A. and Canada Model) or 50/60 Hz 110-120 V/220-240 V
 Power Consumption 3 A (UL /CSA) 450 W (IEC)
 AC Outlets Switched 2, Unswitched 1
 Dimensions W 440 mm (17-5/16")
 H 123 mm (4-7/32")
 D 375 mm (14-3/4")
 Weight (Net) 8.5 kg (18.7 lb)

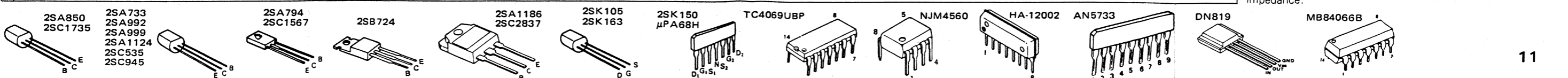
* Measured pursuant to Federal Trade Commission's Trade Regulation rule on Power Output Claims for Amplifier in U.S.A.

Kenwood follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.

Kenwood poursuit une politique de progrès constants en ce qui concerne le développement. Pour cette raison, les spécifications sont sujettes à modifications sans préavis.

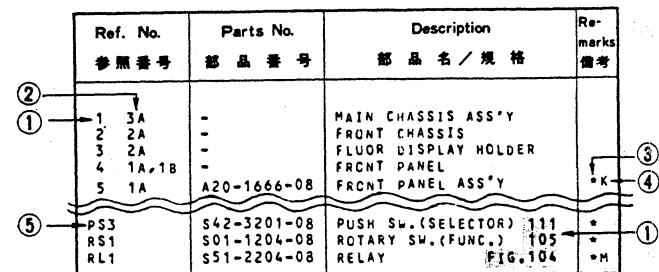
Kenwood strebt ständige Verbesserungen in der Entwicklung an. Daher bleiben Änderungen der technischen Daten jederzeit vorbehalten.

DC voltages are measured by VOM of 20 kΩ/V input impedance.



PARTS LIST

INSTRUCTION FOR PARTS LIST



- 1 Exploded view drawing No.
2 Position in exploded view.
3 Symbol of new parts
4 Area to which parts are shipped.
5 Reference No. in schematic diagram.
6 Abbreviation of "ceramic capacitor"

- Abbreviations of capacitors (Parts No. with initial letter "C")
ELECTRO Electrolytic capacitor
LL-ELEC Low leak electrolytic capacitor
NP-ELEC Non-pole electrolytic capacitor
MICA Mica capacitor
POLYSTY Polystyrene capacitor
MYLAR Mylar capacitor
CERAMIC Ceramic capacitor
TANTAL Tantalum capacitor
MF Metallized film capacitor
MP Metallized paper capacitor
OIL Oil capacitor

- Abbreviations of resistors (Parts No. with initial letters "R")
RC Carbon composition resistor
RD Carbon film resistor
FL-PROOF RD Flame-proof carbon film resistor
RW Wire wound power resistor
FL-PROOF RS Flame-proof metal oxide film resistor
RN Metal film resistor
FUZE-RESIST Resistor with fuse function
2B Rated wattage 1/8W
2E Rated wattage 1/4W
2H Rated wattage 1/2W
3A Rated wattage 1W
3D Rated wattage 2W
3F Rated wattage 3W
3G Rated wattage 4W
3H Rated wattage 5W

- All resistor values are indicated with the unit (Ω) omitted.
Abbreviations common to capacitors and resistors.
C ± 0.25pF (Used for capacitors only)
D ± 0.5pF (Used for capacitors only)
F ± 1%
G ± 2%
J ± 5%
K ± 10%
M ± 20%
P ± 80%, - 20% (Used for capacitors only)
Z ± 100%, - 0% (Used for capacitors only)
Resistors RD (carbon composition resistors) are not listed in the parts list. For values, refer to the schematic diagram.

- CODE's in X09-1590-10
K.P: X09-1590-10
U.M.X.H. [UE]: X09-1590-81
T.E: X09-1592-71

Table with 4 columns: Ref. No., Parts No., Description, Re-remarks. Contains parts list for KA-800 including components like metallic frame, front panel, push switch, speaker cord, and various capacitors and resistors.

PARTS LIST

Table with 4 columns: Ref. No., Parts No., Description, Re-remarks. Contains parts list for audio components including power cords, heat sink, carton boxes, and various capacitors.

Table with 4 columns: Ref. No., Parts No., Description, Re-remarks. Contains parts list for AUDIO (X09-1590-10) including various capacitors, resistors, and electronic components.

PARTS LIST

| Ref. No. 参照番号 | Parts No. 部品番号 | Description 部品名 / 規格 | Re- marks 備考 |
|------------------|-------------------|-------------------------|--------------------|
| C94 | C25-1210-77 | ELECTRO 100UF 16WV | |
| C95 ,96 | C71-1722-15 | CERAMIC 220PF J | |
| C97 ,98 | C71-1701-02 | CERAMIC 1PF C | |
| C99 | C55-1710-38 | CERAMIC 0.01UF Z | |
| C101,102 | C71-1710-15 | CERAMIC 100PF J | |
| C103,104 | C46-1710-45 | MYLAR 0.1UF K | |
| C105,106 | C71-1701-02 | CERAMIC 1PF C | |
| 102 2B | E11-0081-05 | PHONE JACK | * |
| 103 1B | E20-0814-05 | TERMINAL BOARD | * |
| F1 ,2 | F05-6322-05 | FUSE (6.3A) | TE |
| F1 ,2 | F05-7025-05 | FUSE (7A) | UM |
| F1 ,2 | F05-7025-05 | FUSE (7A) | HX |
| F1 ,2 | F05-7025-05 | FUSE (7A) | UE |
| F1 ,2 | F05-7026-05 | FUSE (7A) | KP |
| - | J13-0055-05 | FUSE HOLDER | |
| L1 ,2 | L39-0085-05 | COIL | |
| R19 ,20 | R48-2215-15 | METAL 150 J 2E | |
| R21 ,22 | R48-2118-83 | METAL 11.8 J 2E | |
| R35 ,36 | R43-1247-95 | FL-PROOF RD4.7 J 2E | |
| R39 | R47-5410-15 | FL-PROOF RS100 J 3A | |
| R54 | R47-5410-25 | FL-PROOF RS1K J 3A | |
| R71 ,72 | R47-5418-25 | FL-PROOF RS1.8K J 3A | |
| R73 -76 | R43-1291-15 | FL-PROOF RD910 J 2E | |
| R87 ,88 | R43-1256-25 | FL-PROOF RD5.6K J 2E | |
| R89 ,90 | R43-1222-15 | FL-PROOF RD220 J 2E | |
| R91 ,92 | R43-1210-15 | FL-PROOF RD100 J 2E | |
| R95 -98 | R43-1227-05 | FL-PROOF RD27 J 2E | |
| R99 ,100 | R43-1212-05 | FL-PROOF RD12 J 2E | |
| R103-106 | R43-1210-15 | FL-PROOF RD100 J 2E | |
| R117-120 | R43-1247-95 | FL-PROOF RD4.7 J 2E | |
| R121,122 | R47-5410-05 | FL-PROOF RS10 J 3A | |
| R123-126 | R92-0203-05 | CEMENT 0.47 K 3H | |
| R139,140 | R47-5510-05 | FL-PROOF RS10 J 3D | |
| R141,142 | R43-1233-05 | FL-PROOF RD33 J 2E | |
| R143,144 | R47-5410-05 | FL-PROOF RS10 J 3A | |
| R145,146 | R43-1251-15 | FL-PROOF RD510 J 2E | |
| R147,148 | R47-5547-15 | FL-PROOF RS470 J 3D | |
| R153 | R47-5433-25 | FL-PROOF RS3.3K J 3A | |
| R157 | R47-5422-25 | FL-PROOF RS2.2K J 3A | |
| R158 | R47-5568-15 | FL-PROOF RS680 J 3D | |
| R161,162 | R47-5456-15 | FL-PROOF RS560 J 3A | |
| R163-166 | R47-5510-05 | FL-PROOF RS10 J 3D | |
| R182 | R47-5518-15 | FL-PROOF RS180 J 3D | |
| R183 | R43-1243-05 | FL-PROOF RD43 J 2E | |
| R192 | R47-5418-25 | FL-PROOF RS1.8K J 3A | |
| R193 | R47-5412-25 | FL-PROOF RS1.2K J 3A | |
| R194 | R47-5447-25 | FL-PROOF RS4.7K J 3A | |
| R195 | R47-5556-25 | FL-PROOF RS5.6K J 3D | |
| R196 | R47-5447-25 | FL-PROOF RS4.7K J 3A | |
| R201 | R47-5547-15 | FL-PROOF RS470 J 3D | |
| R203,204 | R43-1222-15 | FL-PROOF RD220 J 2E | |
| R209,210 | R47-5512-25 | FL-PROOF RS1.2K J 3D | |
| VR1 | R06-5062-05 | POTENTIOMETER BAL | * |
| VR2 | R06-5063-05 | POTENTIOMETER LEVEL | * |
| VR3 ,4 | R06-4051-05 | POTENTIOMETER TONE | * |
| VR5 ,6 | R12-0502-05 | TRIMMING POT OFFSET | |
| VR7 ,8 | R12-0077-05 | TRIMMING POT BAIS | |
| RL1 | S51-2045-05 | RELAY | * |
| S1 | S40-4033-05 | PUSH SWITCH MM/MC | * |

| Ref. No. 参照番号 | Parts No. 部品番号 | Description 部品名 / 規格 | Re- marks 備考 |
|--------------------------|-------------------|----------------------------|--------------------|
| S2 | S31-2059-05 | SLIDE SWITCH IMPEDANCE | |
| S3 | S42-3046-05 | PUSH SWITCH | * |
| S4 | S40-1012-05 | PUSH SWITCH FADER | |
| S5 | S29-1129-05 | ROTARY WAFER SW SP | * |
| D1 ,2 | V11-4100-30 | WZ-197 | |
| D3 ,4 | V11-0287-05 | WZ-240 | |
| D5 ,6 | V11-0271-05 | 1S2076 | |
| D7 ,8 | V11-0271-05 | 1S2076 | |
| D11 ,12 | V21-0015-05 | STV-3H(O,Y) | |
| D13 | V11-4103-60 | XZ-051 | |
| D14 | V11-4100-30 | WZ-197 | |
| D15 ,16 | V11-0273-05 | 1S2076A,W06B | |
| D17 -20 | V11-2100-10 | U05C(S) | |
| D21 | V11-0273-05 | 1S2076A,W06B | |
| D22 ,23 | V11-0271-05 | 1S2076 | |
| D24 | V11-4172-26 | WZ-032 | |
| D25 ,26 | V11-4100-40 | WZ-120 | |
| D27 ,28 | V11-4172-26 | WZ-032 | |
| D31 ,32 | V11-0271-05 | 1S2076 | |
| D33 ,34 | V11-4110-70 | XZ-078 | |
| IC1 | V30-0344-40 | NJM4560D-N | * |
| IC2 | V30-0514-10 | AN5733 | |
| IC3 | V30-0516-10 | MB84066B | |
| IC4 | V30-0515-10 | DN819 | |
| IC5 | V30-0297-20 | TC4069UBP | |
| IC6 | V30-0291-10 | HA12002 | |
| Q1 -4 | V09-0144-60 | 2SK163(L,M) | |
| Q5 | V03-0507-05 | 2SC1567(Q,R,S) | |
| Q6 | V01-0221-05 | 2SA794(Q,R,S) | |
| Q7 ,8 | V09-0127-40 | 2SK105(H,J) | |
| Q11 -14 | V03-0405-05 | 2SC945(A) | |
| Q15 ,16 | V09-0145-30 | UPA68H(L,M),2SK105A(GR,BL) | |
| Q17 -20 | V03-0402-05 | 2SC535(B,C),2SC785(R,O) | |
| Q21 -26 | V01-1124-10 | 2SA1124(Q,R,S) | |
| Q27 ,28 | V03-2632-10 | 2SC2632(Q,R,S) | |
| Q29 ,30 | V03-0507-05 | 2SC1567(Q,R,S) | |
| Q31 ,32 | V01-0221-05 | 2SA794(Q,R,S) | |
| Q33 ,34 | V01-0733-90 | 2SA733(A) | |
| Q35 ,36 | V03-0405-05 | 2SC945(A) | |
| Q37 -39 | V01-0733-90 | 2SA733(A) | |
| Q40 | V03-0405-05 | 2SC945(A) | |
| Q41 | V02-0724-00 | 2SB724 | |
| Q42 | V01-0733-90 | 2SA733(A) | |
| Q43 ,44 | V09-0144-40 | 2SK163(N) | |
| Q45 | V01-0221-05 | 2SA794(Q,R,S) | |
| TH1 ,2 | V22-0027-05 | 5TP-41L | |
| SUB (X13-2950-10) | | | |
| D1 -5 | B30-0258-05 | LED | * |
| 201 1B | E06-0510-05 | DIN CONNECTOR | |
| 202 1B | E13-0429-05 | PHONO JACK | * |
| S1 | S42-5020-05 | PUSH SWITCH | * |
| S2 | S90-0038-05 | SLIDE SWITCH (REC OUT) | * |
| SUB (X13-3020-11) | | | |
| C1 ,2 | C52-1747-26 | CERAMIC 0.0047UF K | |
| C3 ,4 | C25-1447-57 | ELECTRO 4.7UF 25WV | |
| Q1 ,2 | V01-0992-00 | 2SA992 | |
| SUB (X13-3090-00) | | | |
| Q1 ,2 | V01-0733-90 | 2SA733 | |
| Q3 ,4 | V03-0405-05 | 2SC945 | |
| TH1 ,2 | V22-0027-05 | 5TP-41L | |

SEMICONDUCTOR SUBSTITUTION

| SEMICONDUCTOR SUBSTITUTION | |
|----------------------------|--------------|
| SEMICONDUCTOR | SUBSTITUTION |
| 2SA733(A) | 2SA999 |
| 2SA794(Q,R,S) | 2SA850 * |
| 2SC945 | 2SC2320 |
| 2SC1567(Q,R,S) | 2SC1735 * |
| 2SK150A(GR,BL) | μPA68H |
| WZ-032 | XZ-033 |
| WZ-120 | XZ-122 |
| WZ-197 | XZ-200 |
| WZ-140 | YZ-140 |
| WZ-240 | XZ-245 |
| 1S2076 | 1S1555 |

* Caution: when using the substitution, make sure the transistor leads are inserted in the correct position.

Note:
Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on, the U.S. (K) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

| Region | Code |
|---------------------------|-----------|
| U.S.A. | K |
| Canada | P |
| PX (Far East) | U |
| PX (Europe) | <u>UE</u> |
| Australia | X |
| Europe & Scandinavia | E |
| England | T |
| South Africa | S |
| Other Areas | M |
| Audio Club | H |

There is no plan for producing units of S type.

A product of
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