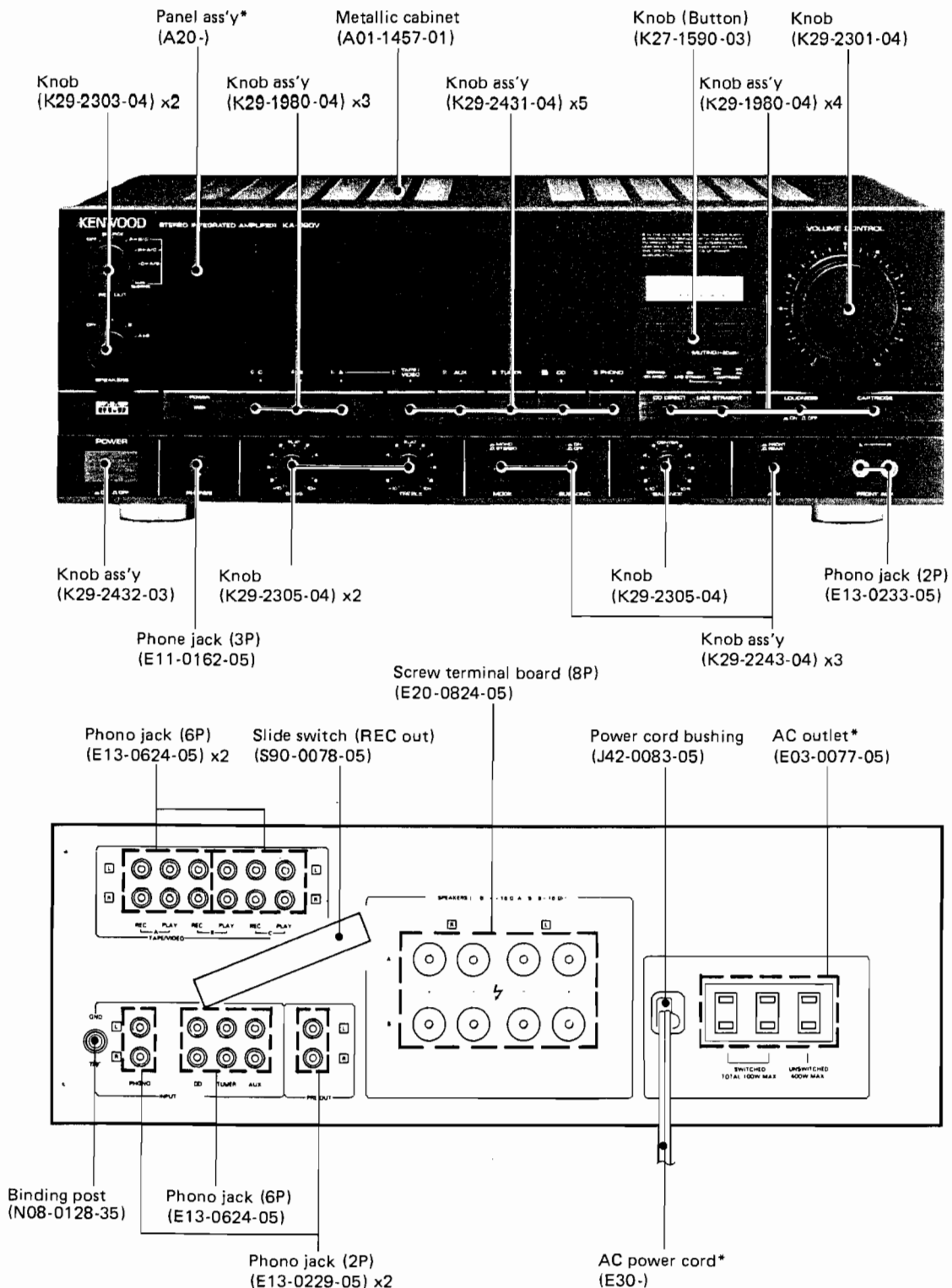


KENWOOD

KA-990V

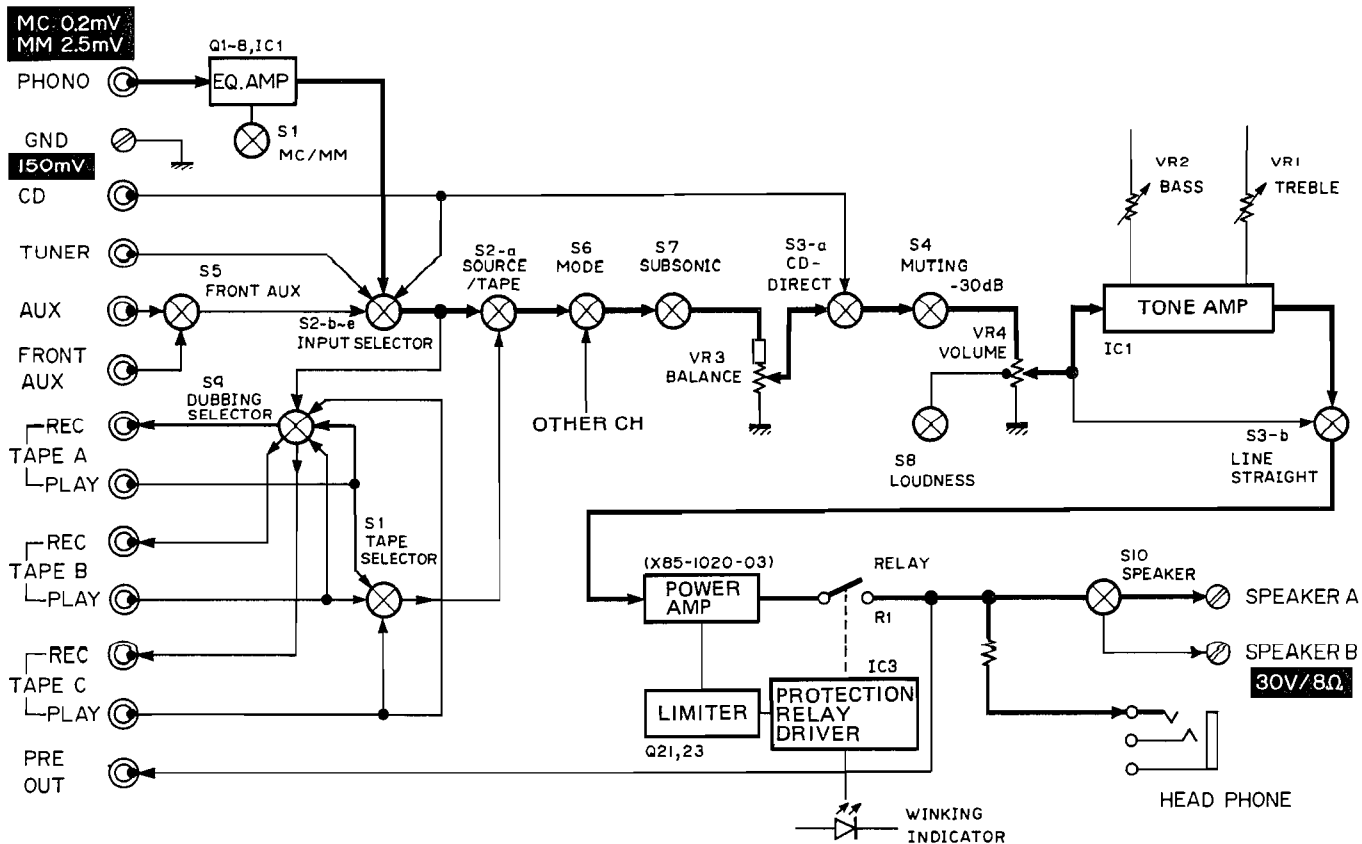
STEREO INTEGRATED AMPLIFIER



*Refer to parts list 10.

BLOCK LEVEL DIAGRAM/DISASSEMBLY FOR REPAIR

BLOCK LEVEL DIAGRAM

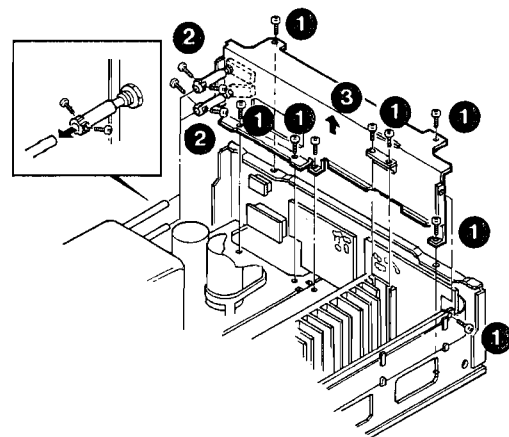


DISASSEMBLY FOR REPAIR

REPAIR ON THE REAR SIDE

For repair to the printed circuit board, etc. on the rear panel side, remove the shield plate in the following sequence.

1. Remove nine shield plate fitting screws. (①)
2. Loosen four screws of the remote switch shaft coupling (②) and remove the coupling from the extension shaft.
3. Extract the shield plate upward (③).



CIRCUIT DESCRIPTION

AUDIO (X09-2250-81)

| Components | Use/Function | Operation/Condition/Interchangeability |
|------------|----------------------------|--|
| Q1,Q2 | Constant current circuit | Constant current circuit of main class A initial stage differential circuit which increases CMRR. |
| Q3,Q4 | Bias circuit | Makes temperature compensation of the final transistor. |
| Q5~Q8 | Predriver | |
| Q9~Q12 | Driver | |
| Q13~Q16 | Low side power | Final transistor on the low output side |
| Q17~Q20 | Hi side power | Final transistor on the high output side |
| Q21~Q24 | Current limiter | Limits current of the final transistor during overloaded drive. (Q21, Q22 are high voltage resistant transistors.) |
| Q25~Q32 | Cascade boot strap circuit | Constitutes the VIG* circuit. Q25~Q28 constitute the constant current circuit and Q29~Q32 constitute cascade connection with base grounding. |
| Q33,Q34 | Constant current circuit | Constant current circuit of equalizer, initial stage FET differential circuit that increases CMRR. |
| Q35~Q40 | Constant voltage circuit | Constant voltage power supply circuit for main class A stage. Q35~Q38 constitute the control transistor and Q39 Q40 constitute the error amplifier. |
| Q41~Q44 | Constant voltage circuit | Constant voltage power supply circuit for equalizer amplifier. Q41, Q42 constitute the control transistor and Q43, Q44 constitute the error amplifier. |
| Q45 | Protection driver | Transmits the operation signals of current limiters Q21, Q22 to the protection IC (IC3). |
| Q46, Q47 | Constant current circuit | Ripple removing circuit inserted into line B to class A initial stage. |
| IC1, IC2 | DLD switching IC | DLD's Low-High switching circuit. |
| IC3 | Protection IC | Makes output relay control due to muting at the time of power ON/OFF, DC leakage to SP terminal, overload, etc. |

* VIG : See page 4.

CONTROL (X11-2200-81)

| Components | Use/Function | Operation/Condition/Interchangeability |
|------------|-----------------|--|
| Q2,Q3 | Winking circuit | The LED is lit at the time of power display or while the set is normally operating. The LED flickers until the amplifier is stabilized (around 5 seconds) after power ON and also when the protection circuit is actuated on occurrence of a fault to the power amplifier. |
| IC1 | Tone circuit IC | |

POWER AMPLIFIER (X85-1020-13)

| Components | Use/Function |
|------------|--|
| Q1,Q2 | Class A initial stage differential amplifier |
| Q3~Q6 | Class A initial stage cascade circuit |
| Q7~Q10 | 2nd stage differential amplifier |
| Q11~Q14 | 3rd stage differential amplifier |
| Q15,Q16 | Current mirror circuit |

PREAMPLIFIER (X85-1060-00)

| Components | Use/Function |
|------------|------------------------------------|
| IC1 | OP amplifier for EQ amplifier |
| Q1~Q4 | Initial stage cascade circuit |
| Q5~Q8 | Initial stage differential circuit |

CIRCUIT DESCRIPTION

Outline of VIG (Voltage Interface Gate) circuit (X09-2250-81)

When the power supply voltage of an amplifier varies, its varying component will appear in the output of the amplifier to a minor extent. It is a large cause for deterioration in the reproduced tone quality.

In the Class A (voltage amplification) stage it is more sensitive to voltage variation when it is closer to the initial stage, and consequently, strengthening of ripple filter and constant power supply, etc. were used. In the past, however, importance was not attached to the measures against voltage fluctuation because class B (power amplification) stage did not involve voltage gain. When an investigation was made, however, it was found out that class B stage is also considerably weak against voltage fluctuation and that major improvement can be obtained in the reproduced tone quality when this point is improved.

What improved the degree of influence of this Class B stage against fluctuations of the voltage fluctuation is the VIG circuit.

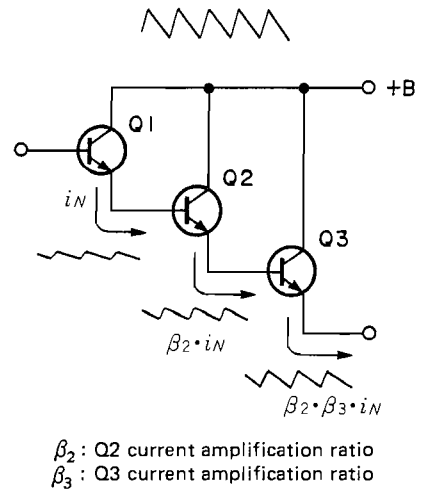


Fig. 1

1. Darlington connection circuit

The class B stage is of 3-stage Darlington connection. But the power variation component leaked from the power supply at Q1 as shown in Fig. 1 is multiplied by β_2 (current amplification ratio) times and is further multiplied by β_3 times by Q3. Therefore, the leakage of the power supply variation component from Q1, 2 becomes large, and countermeasures against it become necessary. As the collector resistance of a transistor and this leakage are inversely proportioning to each other, it becomes possible to take countermeasures by increasing the collector resistances of Q1, 2.

As the cascade connection circuit is a base grounded circuit, there is such a feature that the collector resistance is extremely high, and the objective can be accomplished by making cascade connecting through connection of base grounding transistor Q4 to Q1, 2 as shown in Fig. 2. This is the principle of VIG (Voltage Interface Gate).

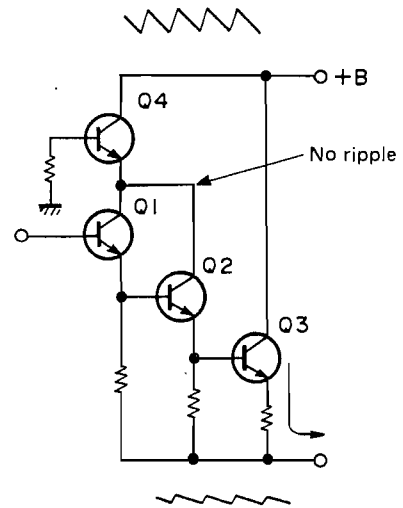


Fig. 2 Principle of VIG circuit

ADJUSTMENT/REGLAGE/ABGLEICH

ADJUSTMENT

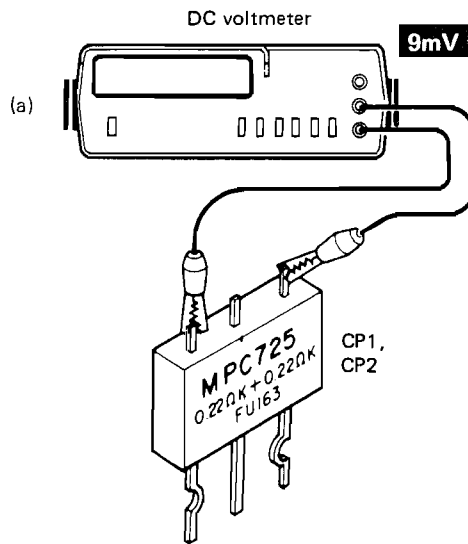
| No. | ITEM | INPUT SETTINGS | OUTPUT SETTINGS | AMPLIFIER SETTINGS | ALIGNMENT POINTS | ALIGN FOR | FIG. |
|-----|---------------|----------------|---|--------------------|------------------|-----------|------|
| 1 | IDLE CURRENT. | — | Connect a DC voltmeter across CP1 (L) CP2 (R) | VOLUME: 0 | VR1 (L) VR2 (R) | 9mV | (a) |

REGLAGE

| N° | ITEM | REGLAGE DE L'ENTREE | REGLAGE DE LA SORTIE | REGLAGE DE L'AMPLIFICATEUR | POINS L'ALIGNEMENT | ALIGNER POUR | FIG. |
|----|-------------------------|---------------------|--|----------------------------|--------------------|--------------|------|
| 1 | COURANT DE POLARISATION | — | Connecter un voltmètre de CC sur CP1 (G) CP2 (D) | VOLUME: 0 | VR1 (G) VR2 (D) | 9mV | (a) |

ABGLEICH

| NR. | GEGENSTAND | EINGANGS-EINSTELLUNG | AUSGANGS-EINSTELLUNG | VORSTÄRKER EINSTELLUNG | ABGLEICH-PUNKTE | ABGLEICHEN FÜR | ABB. |
|-----|---------------|----------------------|---|------------------------|-----------------|----------------|------|
| 1 | LEERLAUFSTROM | — | Einen Gleichspannungsmesser über CP1 (L) CP2 (R) anschließen. | VOLUME: 0 | VR1 (L) VR2 (R) | 9mV | (a) |



CIRCUIT DESCRIPTION

2. Practical circuit

It is not convenient for DC operation in the state where the base of Q4 is grounded. With KA-990V, therefore, bootstrap is made so that follow-up with the signal is made at KA-990V. Fig. 3 indicates its concrete example. Bootstrap is applied to the emitter of transistor Q3 through R1, D1. The collector voltage required for operation of Q1, 2 is produced by voltage drop of R1 and D1. Constant current circuit CC1 supplies current required for bootstrap to R1, D1, and at the same time, also supplies the base current of Q4, and thus it prevents inflow to the base of Q4 the power supply fluctuation component into the base of Q4 by the high internal resistance of CC1 itself.

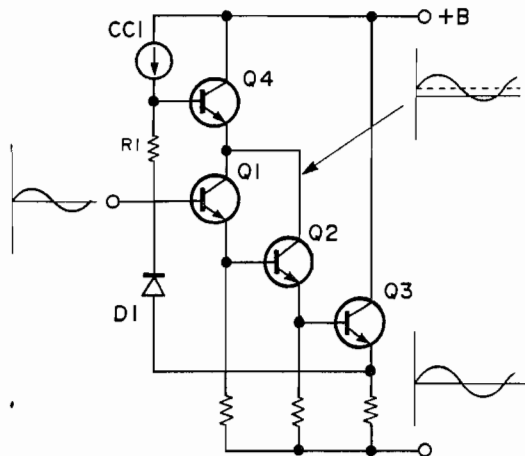


Fig. 3

A practical circuit of CC1 is shown in Fig. 4. Both bases of transistors Q5, 6 which constitute the constant current circuit are connected with constant current diodes D2 and R2, in order to increase the constant current property of Q5, 6.

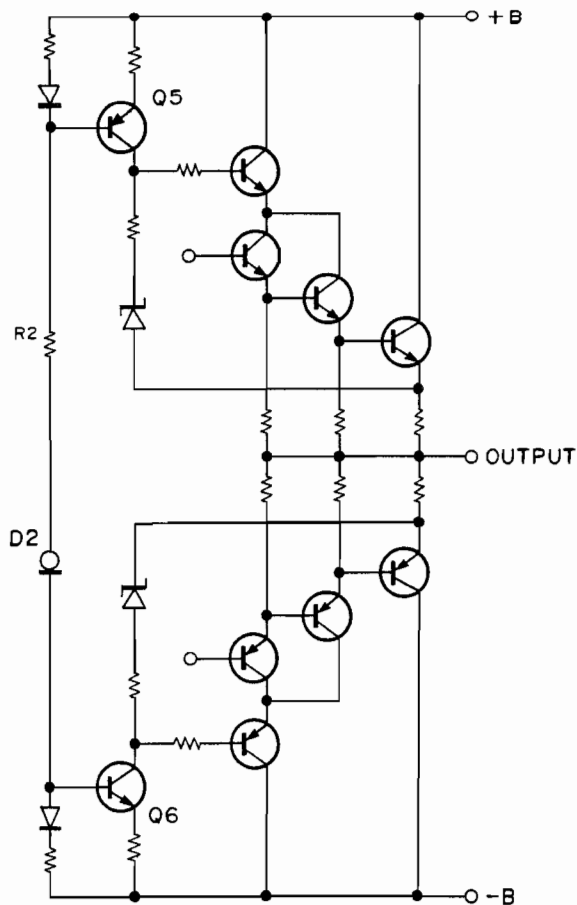
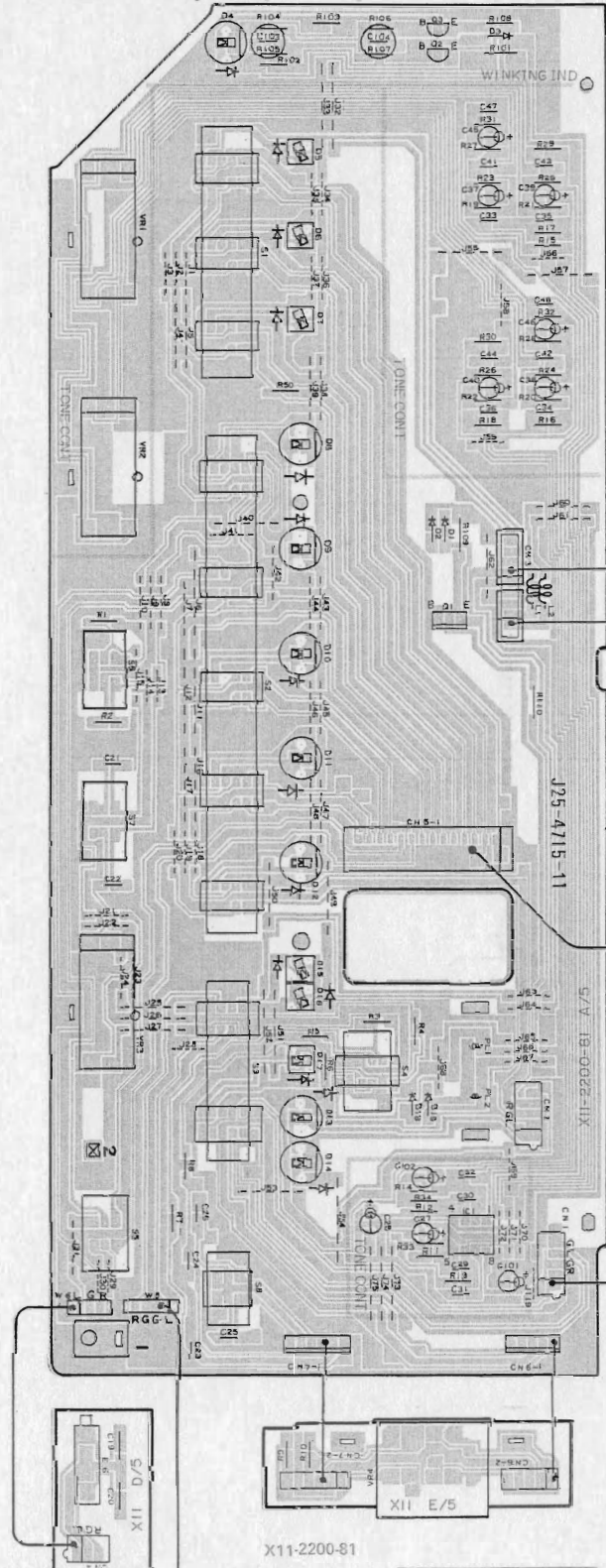


Fig. 4

PC BOARD

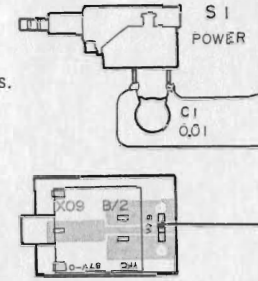
Refer to the schematic diagram for the values of resistors and capacitors.

CONTROL (X11-2200-81)
(A/5) Component side view

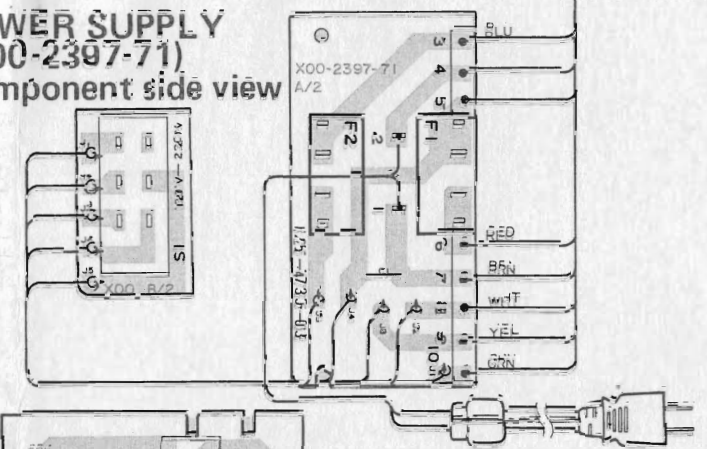


X11-2200-81

| | | | | | |
|-----|---|----|----|------|-------|
| IC1 | 1 | 0V | E | C | B |
| | 7 | 0V | Q1 | -29V | -26V |
| | | | Q3 | 2.2V | -2.7V |



POWER SUPPLY (X00-2397-71)
Component side view

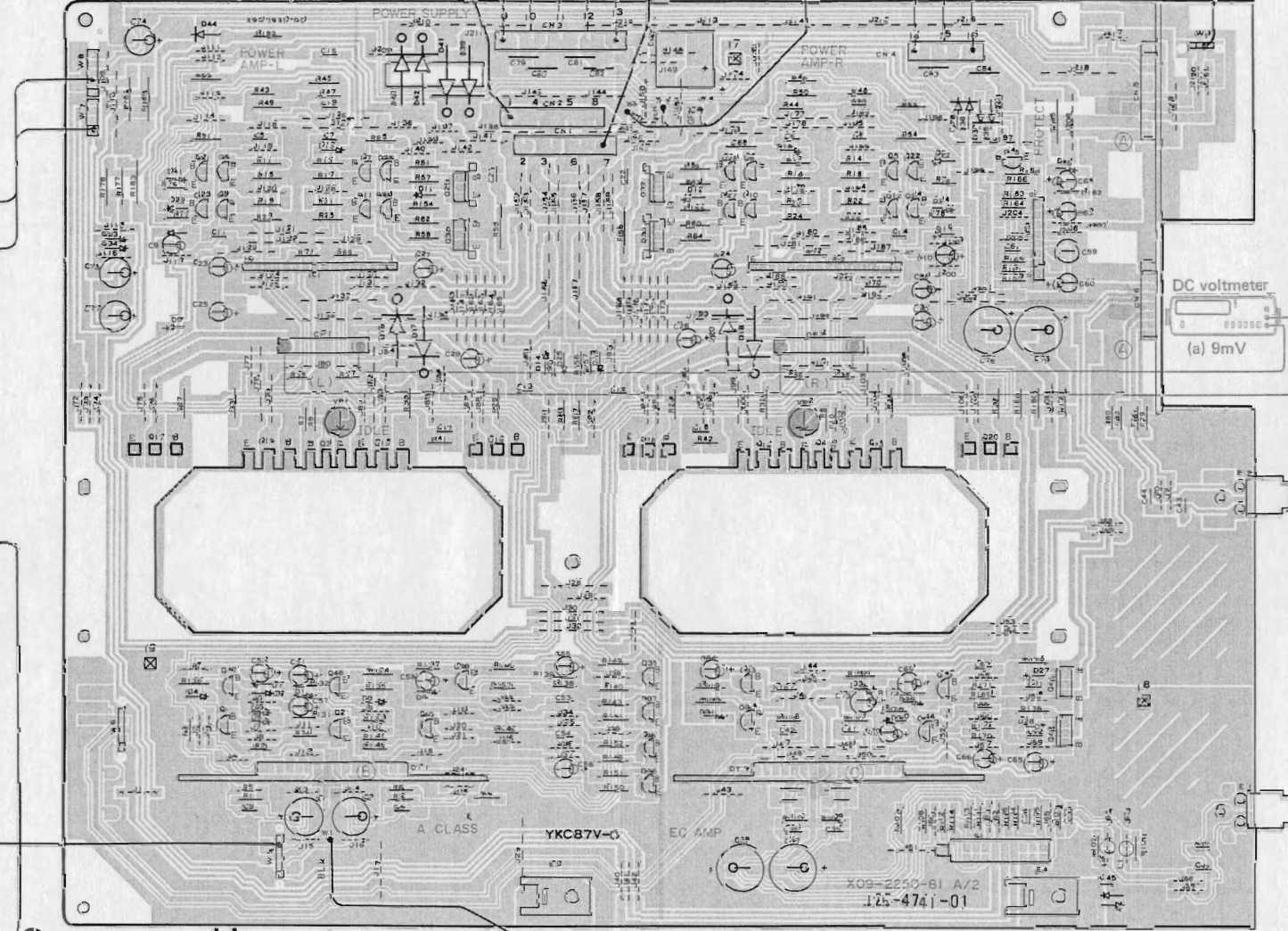


POWER TRANSFORMER

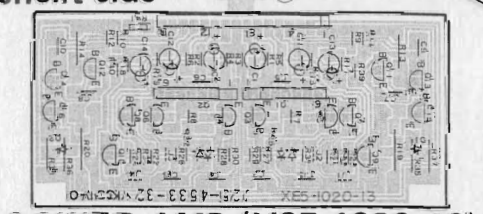
X09-2250-81

| | | | |
|--------|--------|-------|-------|
| Q1 | E | C | B |
| Q2 | -20.0V | -7.7V | - |
| Q6, Q8 | - | - | 1.8V |
| Q7, Q8 | - | - | -1.8V |

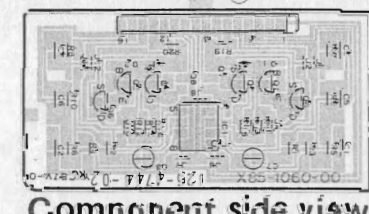
AUDIO (X09-2250-81)
(A/2) Component side view



Component side view



POWER AMP (X85-1020-13)



Component side view

PRE AMP (X85-1060-00)

X85-1060-00

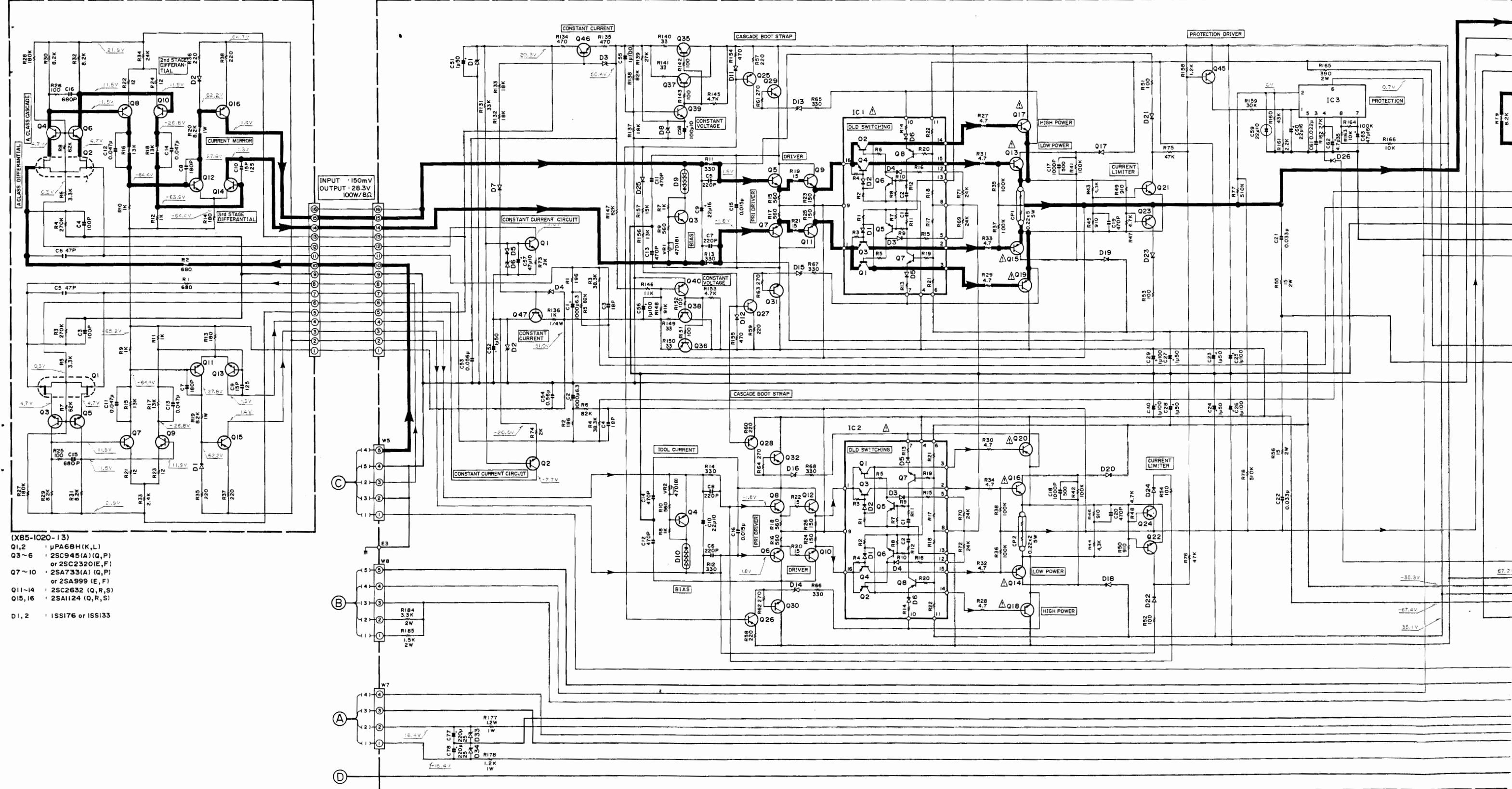
| | | | | | |
|-----|---|-------|-----|---|-------|
| IC1 | 1 | 0V | E | C | B |
| | 3 | 7.8V | Q3 | - | 7.8V |
| | 7 | 0V | Q33 | - | -8.5V |
| | 8 | 19.7V | Q34 | - | -8.4V |

X85-1020-13

| | | | | | |
|--------|--------|------|----------|---|--------|
| Q1, Q2 | G1 | G2 | E | C | B |
| | D1 | D2 | Q9, Q10 | - | -26.8V |
| | 4.7V | 4.7V | Q11, Q12 | - | 27.8V |
| | S1, S2 | | Q13, Q14 | - | 1.3V |
| | 0.3V | | Q15, Q16 | - | 1.4V |
| | | | | | 62.2V |

MAIN AMP UNIT (X85-1020-13)

AUDIUNIT (X09-2250-81) (A/2)

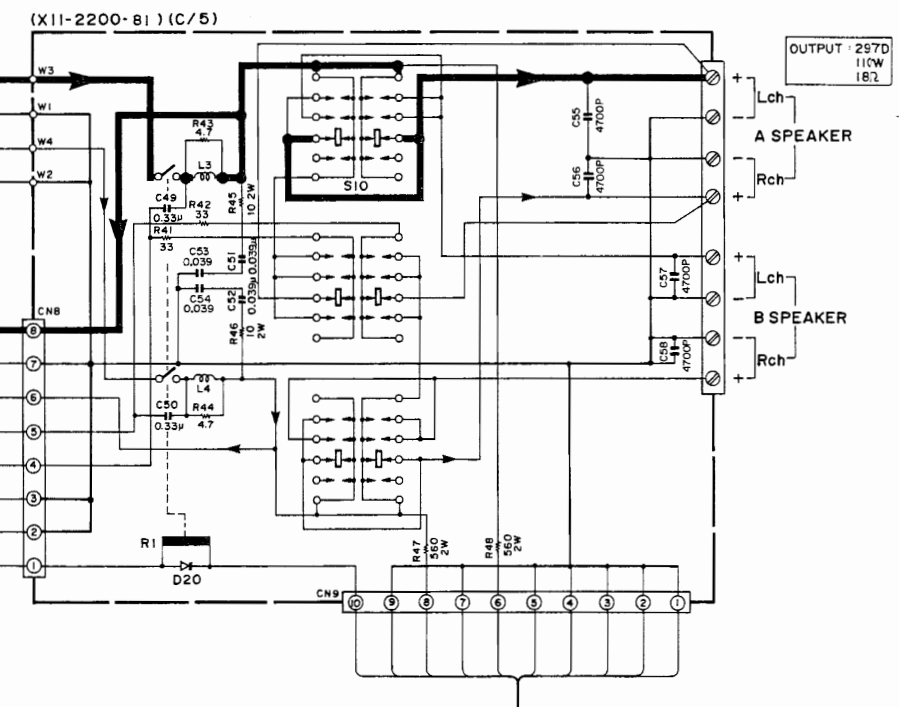
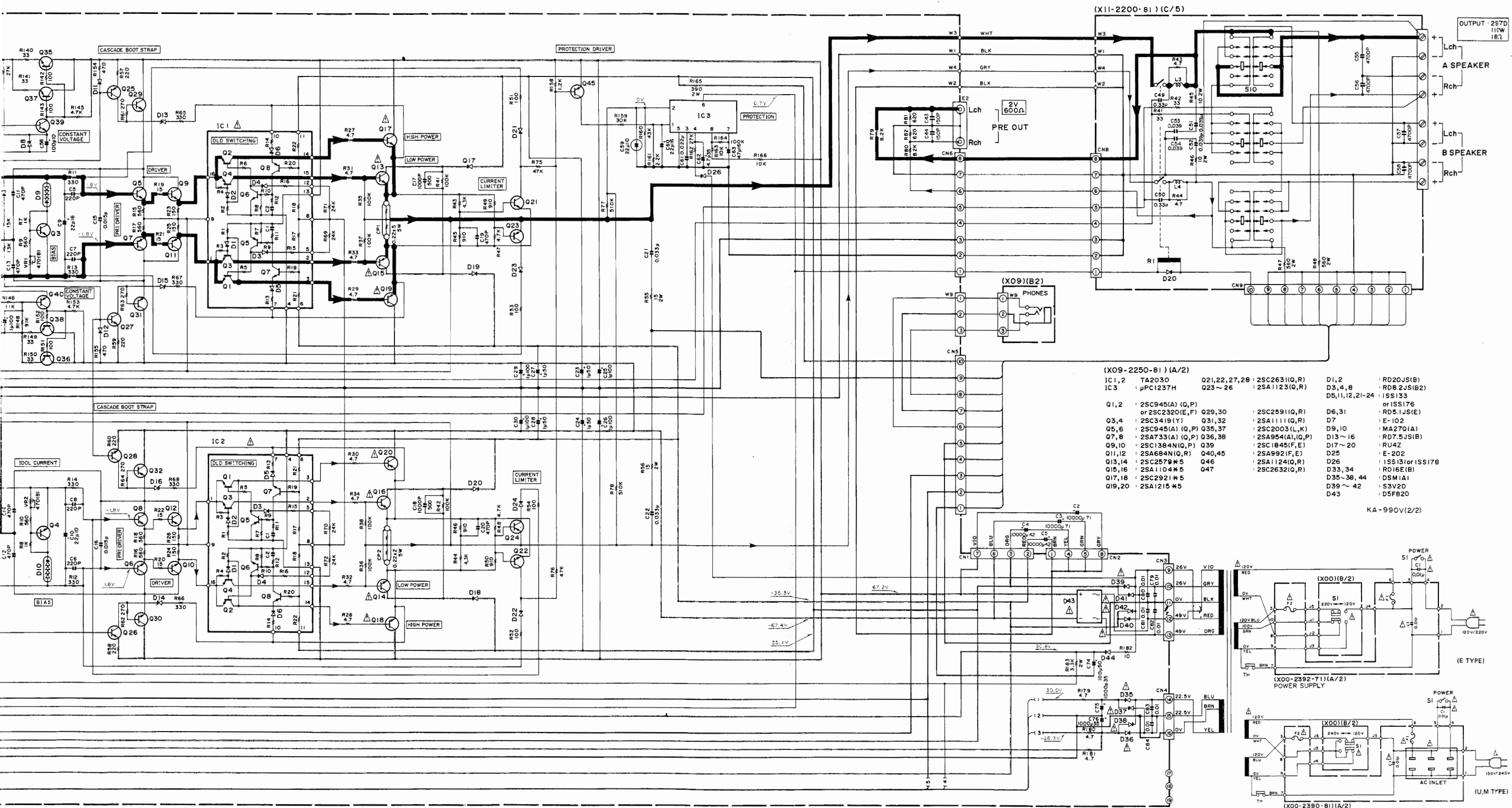


- (X85-1020-13)
 Q1,2 μPA68H(K,L)
 Q3~6 2SC945(A)(Q,P)
 or 2SC2320(E,F)
 Q7~10 2SA733(A)(Q,P)
 or 2SA999(E,F)
 Q11~14 2SC2632(O,R,S)
 Q15,16 2SA1124(O,R,S)
 D1,2 1SS176 or 1SS133

- | | | | | | | | | | | | | |
|----------|-----------|--------|---------|---------|-----------|-----------|---------|--------|--------|------------|----------|--------|
| 2SA1123 | 2SC1384NC | 2SB772 | 2SA1111 | 2SC2167 | 2SA1104*5 | 2SA1215*5 | 2SC3419 | μPA68H | 2SK371 | NJM4560D-N | μPC1237H | TA2030 |
| 2SA1124 | 2SC1845 | 2SD882 | 2SC2591 | | 2SC2579*5 | 2SC2921*5 | | | | NJM55232D | | |
| 2SA684NC | 2SC2003 | | | | | | | | | | | |
| 2SA733 | 2SC2320 | | | | | | | | | | | |
| 2SA954 | 2SC2631 | | | | | | | | | | | |
| 2SA992 | 2SC2632 | | | | | | | | | | | |
| 2SA999 | 2SC945 | | | | | | | | | | | |

CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). Δ indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

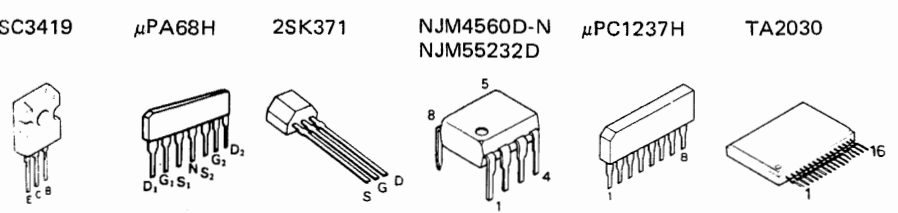
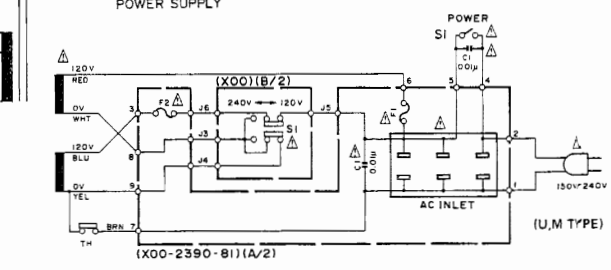
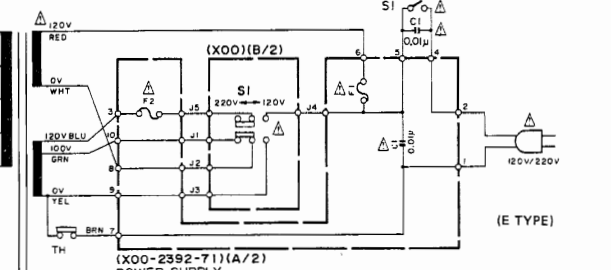
DC voltages are as indicated on the schematic diagram with the voltmeter with the red and black leads connected to the points indicated. Slightly different values may occur due to component tolerances or measurement errors. Les tensions c.c. indiquées sont des valeurs moyennes. Les écarts de mesure inhérents à la mesure individuelle.



(X09-2250-81) (A/2)

| | | | | | |
|--------|-----------------|--------------|-----------------|----------------|------------------|
| IC 1,2 | TA2030 | Q21,22,27,28 | 2SC2631(Q,R) | D1,2 | RD20J(SB) |
| IC 3 | μPC1237H | Q23~26 | 2SA1123(Q,R) | D3,4,8 | RD8.2J(SB2) |
| | | | | D5,11,12,21-24 | ISS133 |
| Q1,2 | 2SC945(A) (Q,P) | Q29,30 | 2SC2591(Q,R) | D6,31 | RD5.1J(SIE) |
| | or 2SC2320(E,F) | | 2SA1111(Q,R) | D7 | E-102 |
| Q3,4 | 2SC3419(Y) | Q31,32 | 2SC2003(L,K) | D9,10 | MA27Q(A) |
| Q5,6 | 2SC945(A) (Q,P) | Q35,37 | 2SA954(A),(Q,P) | D13~16 | RD7.5J(SB) |
| Q7,8 | 2SA733(A) (Q,P) | Q36,38 | 2SC1845(F,E) | D17~20 | RU4Z |
| Q9,10 | 2SC1384N(Q,P) | Q39 | 2SA684N(Q,R) | Q40,45 | E-202 |
| Q11,12 | 2SA684N(Q,R) | Q40,45 | 2SA1124(Q,R) | Q46 | ISS133 or ISS178 |
| Q13,14 | 2SC2579*5 | Q46 | 2SA1104*5 | Q47 | RD16E(B) |
| Q15,16 | 2SA1104*5 | Q47 | 2SC2632(Q,R) | D25 | DSM1A1 |
| Q17,18 | 2SC2921*5 | | | D26 | D35~38,44 |
| Q19,20 | 2SA1215*5 | | | D27 | D39~42 |
| | | | | D28 | S3V20 |
| | | | | D29 | D5FB20 |

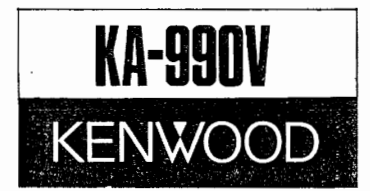
KA-990V(2/2)



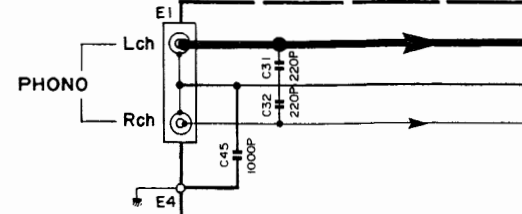
CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). Δ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

• DC voltages are as measured with a high impedance voltmeter with no signal input. Values may vary slightly due to variations between individual instruments or/and units.
 • Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance sans signal d'entrée. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.

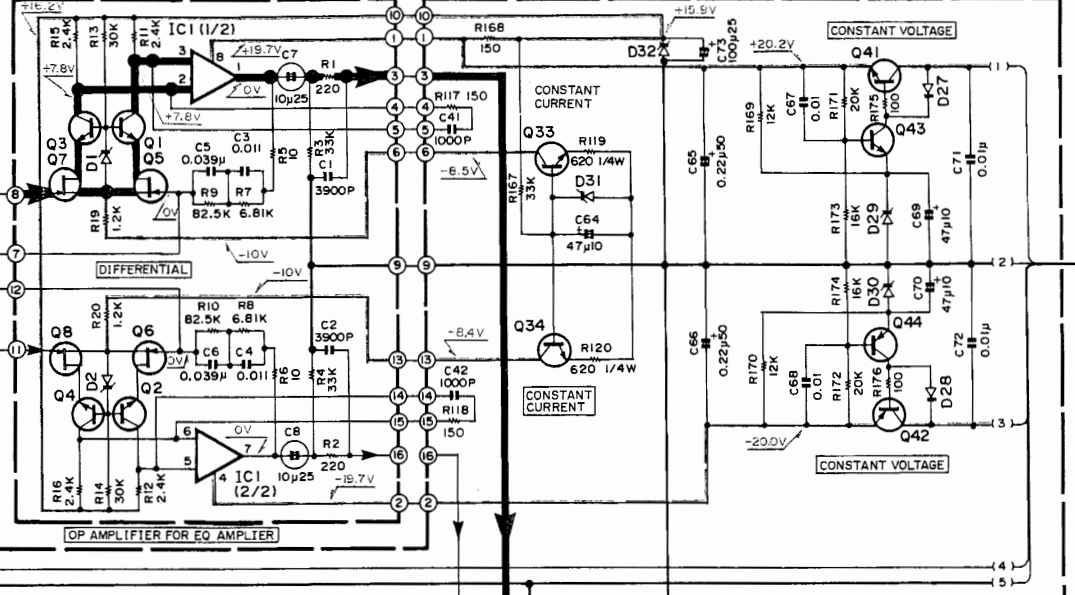
• Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Voltmeter ohne Eingangssignal gemessen. Dabei schwanken die Maßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u.U. geringfügig.



AUDIO UNIT (X09-2250-81) (A/2)

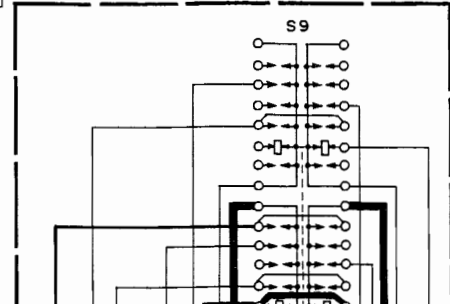


PRE AMP UNIT (X85-1060-00)

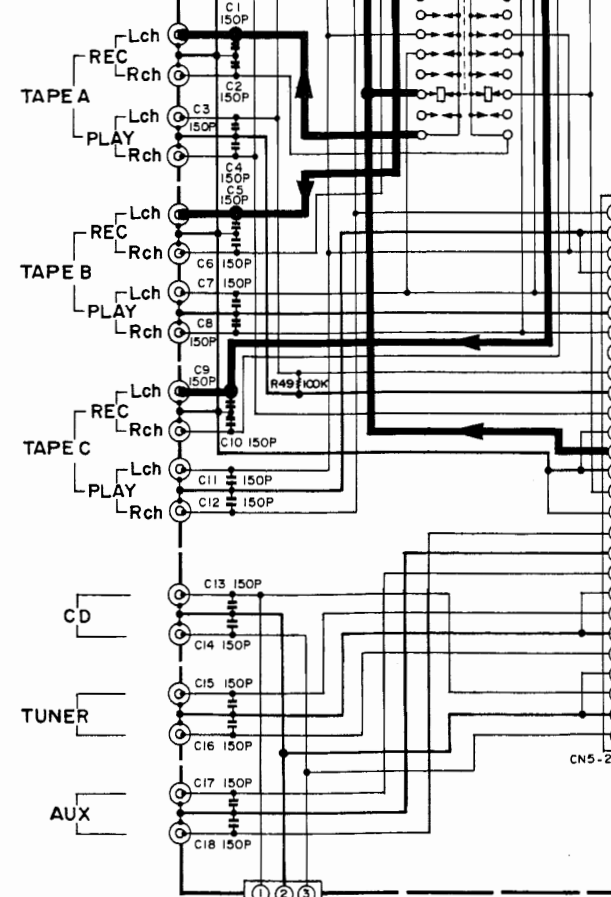


- (X09-2250-81) (A/2)
 Q33,34,43 : 2SC945 (A) (Q,P) or 2SC2320 (E,F)
 Q41 : 2SD882 (Q,P)
 Q42 : 2SB772 (Q,P)
 Q44 : 2SA733 (A) (Q,P) or 2SA999 (E,F)
 D27,28 : E-102
 D29,30 : RD8.2JS (B2)
 D31 : RD5.1JS (E)
 D32 : RD16E (B)

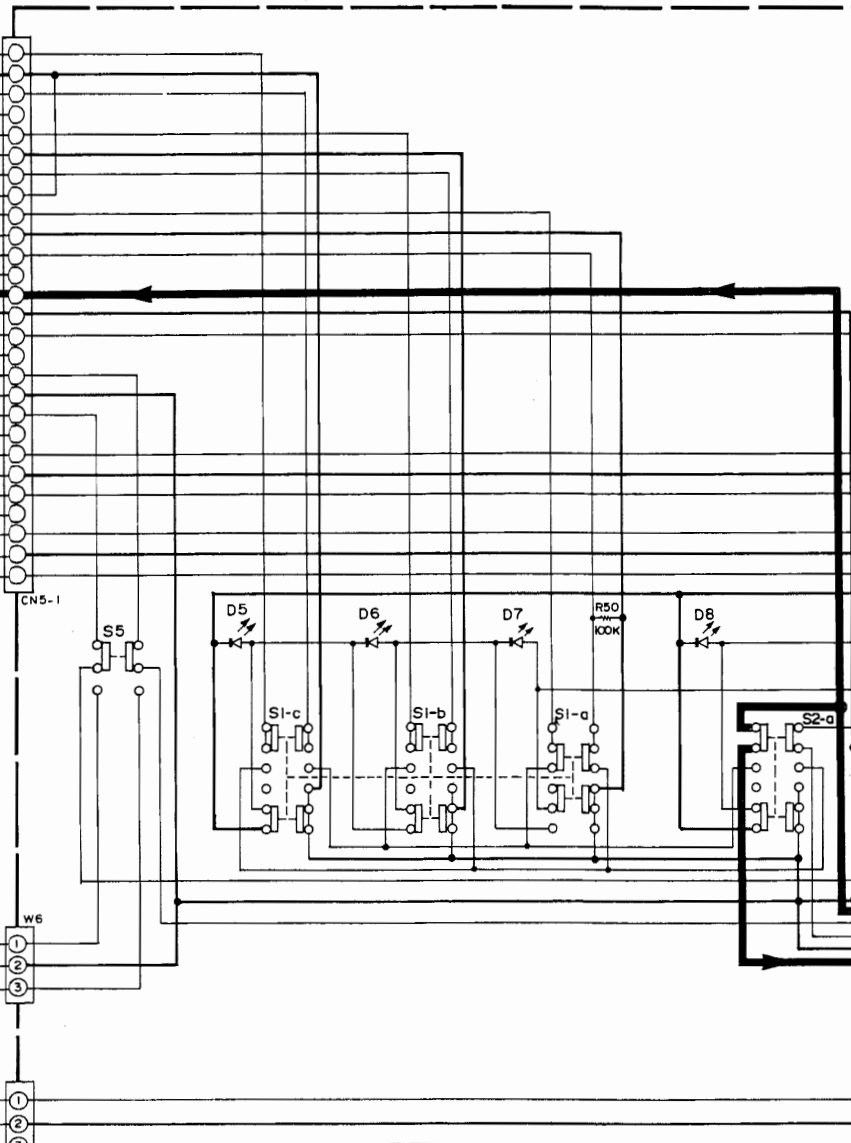
(X11-2200-81) (B/5)



INPUT : 150mV



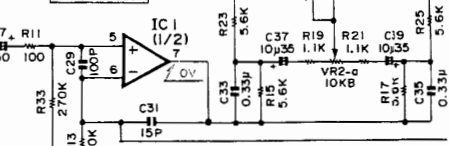
CONTROL UNIT (X11-2200-81) (A/5)



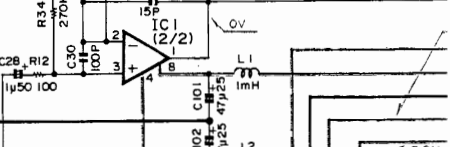
(X85-1060-00)

- IC1 : NJM5532D
 Q1~4 : 2SC945 (A) (Q,P) or 2SC2320 (E,F)
 Q5~8 : 2SK371 (BL) or 2SK371 (V)
 D1,2 : RD5.1JS (B)

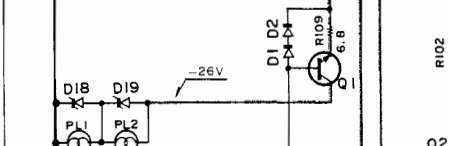
IC1 (1/2)



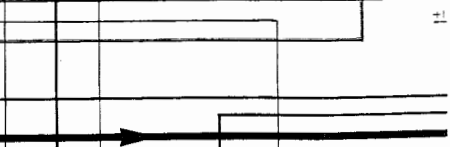
IC1 (2/2)



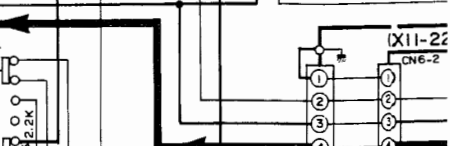
VR3-a



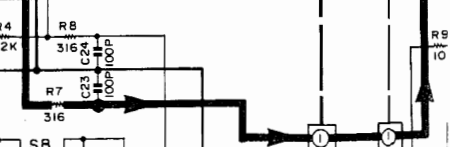
VR3-b



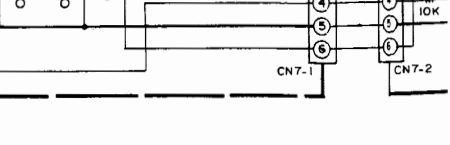
VR3-c



VR3-d

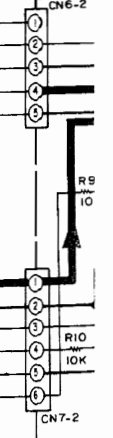


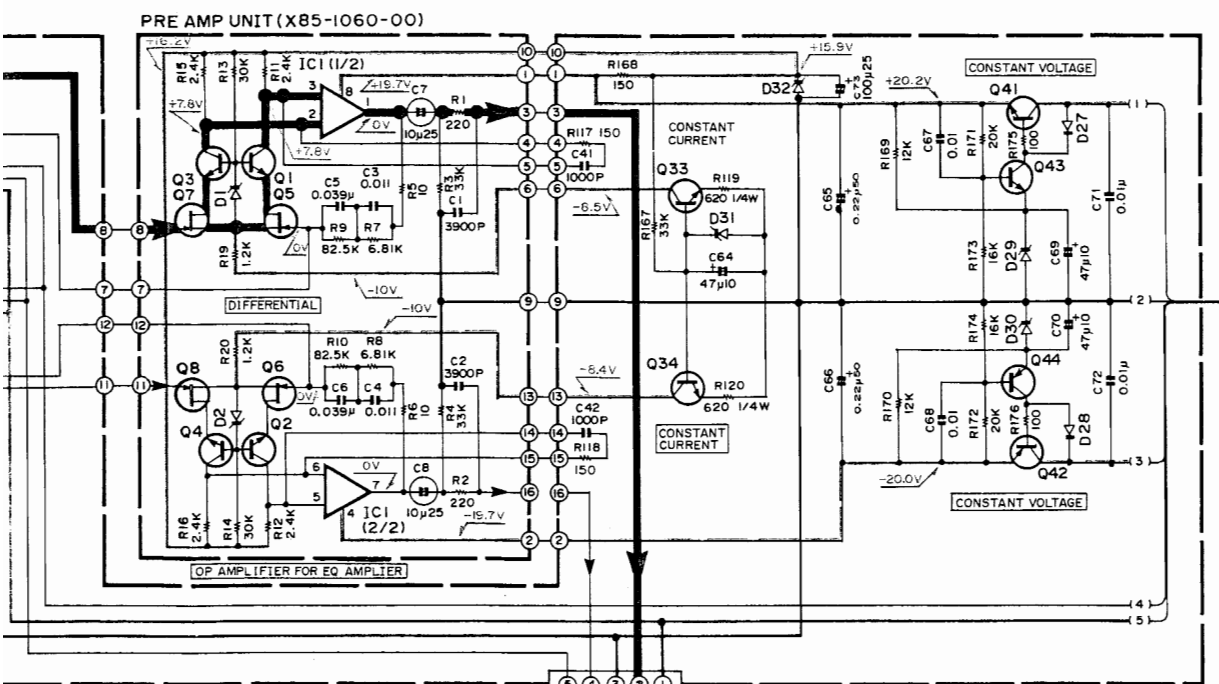
VR3-e



- (X11-2200-81) (B/5)
 IC1
 Q1
 Q2,3
 D1,2
 D3,20
 D4,8-1
 D5-7,15
 D16,19

(X11-2200-81) (D/5)

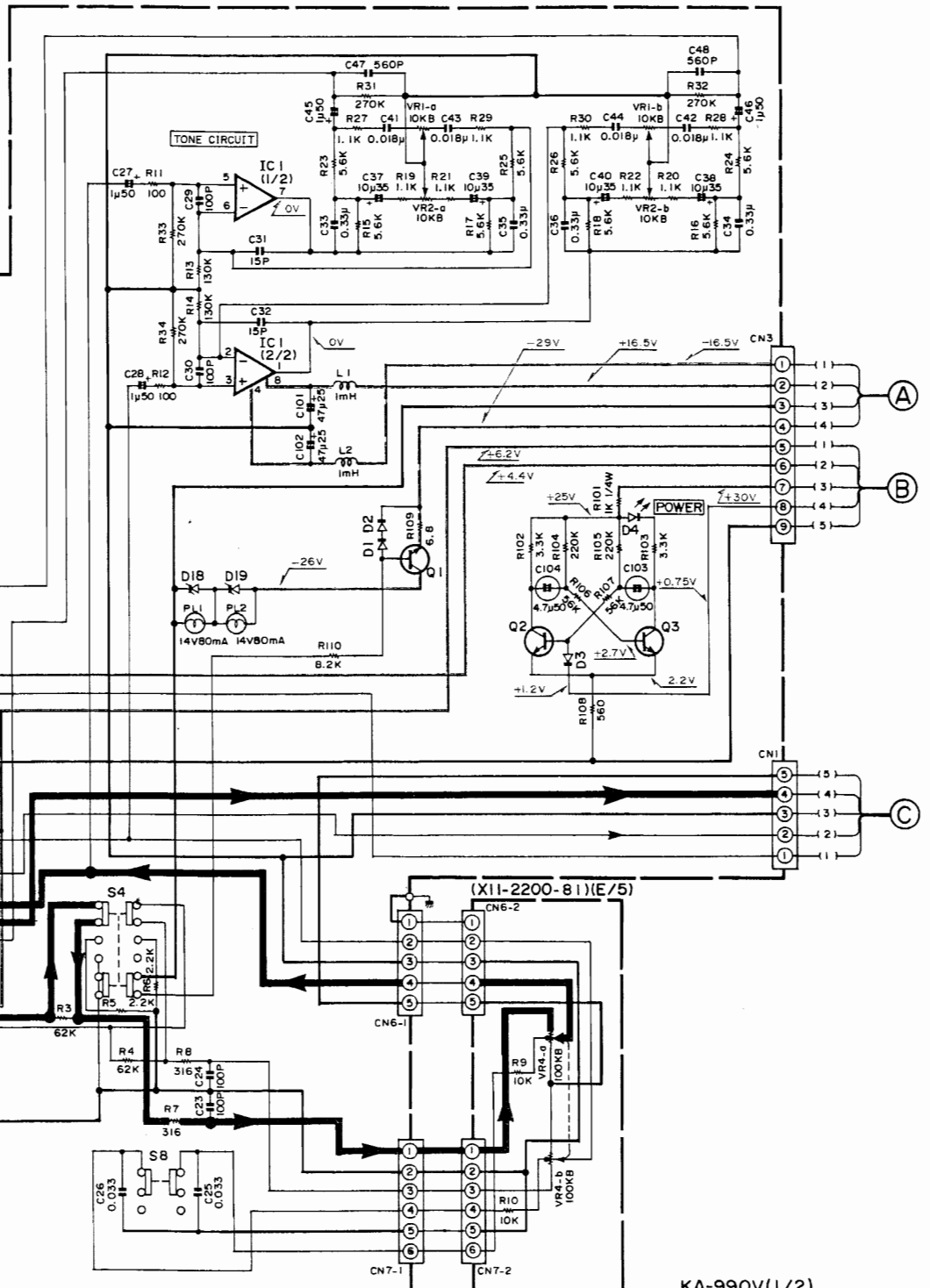




- (X09-2250-81) (A/2)
 Q33,34,43 : 2SC945 (A) (Q,P) or 2SC2320 (E,F)
 Q41 : 2SD882 (O,P)
 Q42 : 2SB772 (O,P)
 Q44 : 2SA733 (A) (Q,P) or 2SA999 (E,F)
 D27,28 : E-102
 D29,30 : RD8.2JS (B2)
 D31 : RD5.1JS (E)
 D32 : RD16E (B)

- (X85-1060-00)
 IC1 : NJM5532D
 Q1~4 : 2SC945 (A) (Q,P) or 2SC2320 (E,F)
 Q5~8 : 2SK371 (BL) or 2SK371 (V)
 D1,2 : RD5.1JS (B)

- (X11-2200-81) (A/5)
 IC1 : NJM4560D-N
 Q1 : 2SC2167 (O,Y)
 Q2,3 : 2SC945 (A) (Q,P) or 2SC2320 (E,F)
 D1,2 : ISSI33 or ISSI76
 D3,20 : ISSI31 or ISSI78
 D4,8~14 : B30-0431-05
 D5-7,15-17 : B30-1010-05
 D18,19 : RD13E (B2)

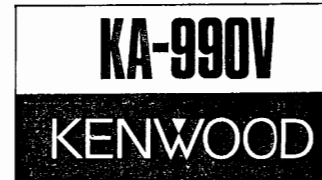


- | | | | |
|-----------|-----------|------------|--|
| 2SA1123 | 2SA1384NC | 2SC3419 | |
| 2SA1124 | 2SC1845 | | |
| 2SA684NC | 2SC2003 | | |
| 2SA773 | 2SC2320 | | |
| 2SA954 | 2SC2631 | | |
| 2SA992 | 2SC2632 | | |
| 2SA999 | 2SC945 | | |
| | | μPA68H | |
| 2SB772 | | | |
| 2SD882 | | | |
| | | 2SK371 | |
| 2SA1111 | | | |
| 2SC2591 | | | |
| | | NJM4560D-N | |
| | | NJM5532D | |
| 2SC2167 | | | |
| | | μPC1237H | |
| 2SA1104*5 | | | |
| 2SC2579*5 | | | |
| | | TA2030 | |
| 2SA1215*5 | | | |
| 2SC2921*5 | | | |

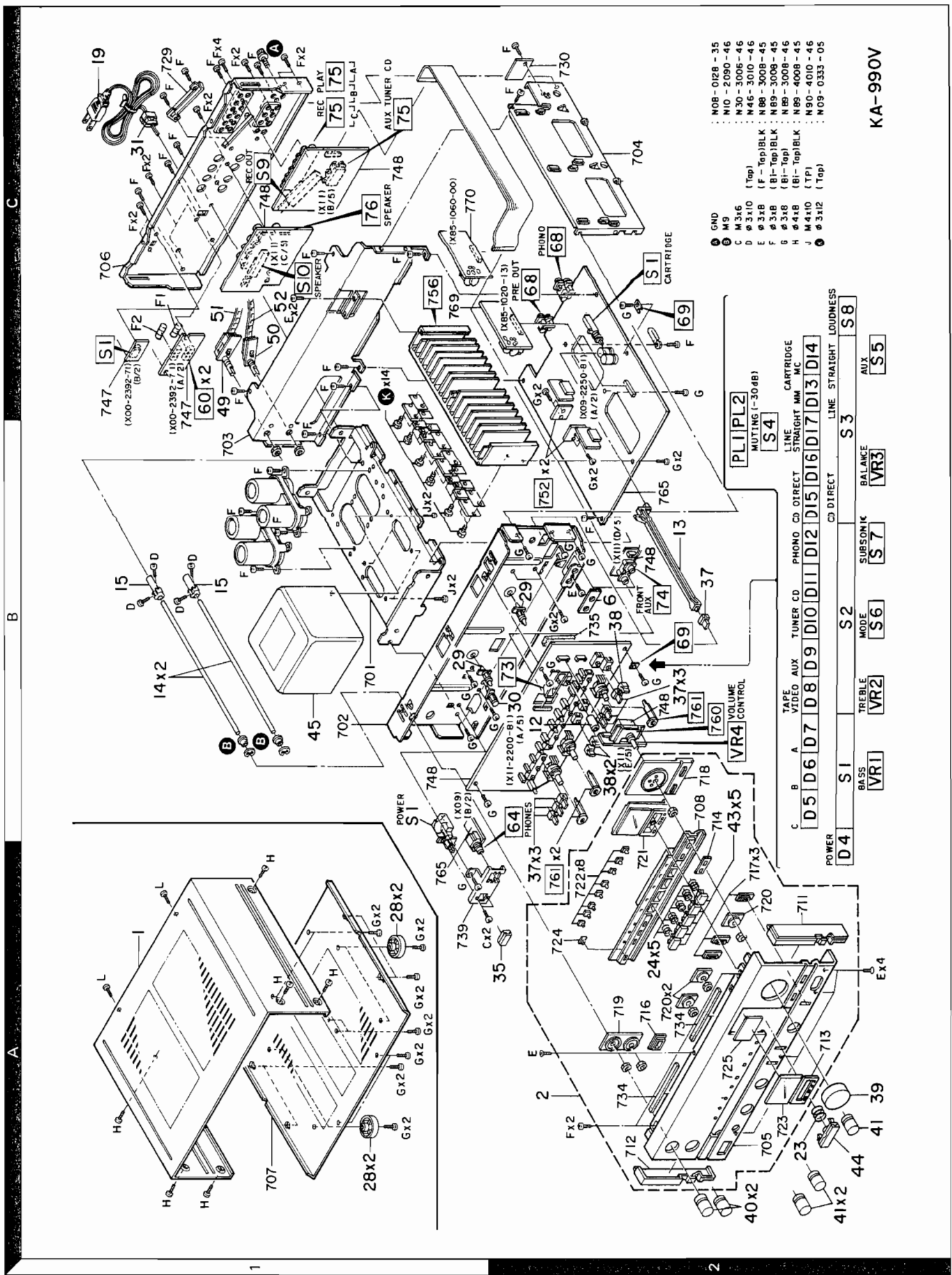
CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ΔIndicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

- DC voltages are as measured with a high impedance voltmeter with no signal input. Values may vary slightly due to variations between individual instruments or/and units.
- Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance sans signal d'entrée. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.
- Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Voltmeter ohne Eingangssignal gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u.U. geringfügig.

KA-990V(1/2)



EXPLODED VIEW



- N08-0128 - 35
- N10-2090 - 46
- N30-3006 - 46
- D # 310 (Top)
- E # 310 (F - Top)BLK
- F # 310 (B1 - Top)BLK
- G # 310 (B1 - Top)BLK
- H # 410 (B1 - Top)BLK
- J # 410 (B1 - Top)BLK
- M 410 (TP)
- N09-0128 - 35
- N10-2090 - 46
- N30-3006 - 46
- D # 310 (Top)
- E # 310 (F - Top)BLK
- F # 310 (B1 - Top)BLK
- G # 310 (B1 - Top)BLK
- H # 410 (B1 - Top)BLK
- J # 410 (B1 - Top)BLK
- M 410 (TP)
- N09-0128 - 35

| | | | | | | | |
|--------|-----------------|-----|-----------|------|-----------|------|----------|
| PLIPL2 | MUTING (1-30dB) | S4 | CARTRIDGE | LINE | STRAIGHT | MM | MC |
| D4 | POWER | S1 | BASS | D5 | D6 | D7 | D8 |
| S2 | MODE | S6 | SUBSONIC | D9 | D10 | D11 | D12 |
| S3 | BALANCE | VR3 | S7 | D15 | D16 | D17 | D13 |
| S8 | AUX | S5 | S8 | D14 | CD DIRECT | LINE | STRAIGHT |
| | | | | | | | LOUDNESS |

KA-990V

Parts with the exploded numbers larger than 700 are not supplied.

PARTS LIST

× New Parts

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| Ref. No. 参照番号 | Address 位置 | New Parts 新 | Parts No. 部品番号 | Description 部品名 / 規格 | Desti- nation 仕 向 | Re- marks 備考 |
|------------------|---------------|-------------------|-------------------|-------------------------------|-------------------------|--------------------|
| KA-990V | | | | | | |
| 1 | 1A | * | A01-1457-01 | METALLIC CABINET | | |
| 2 | 2A | * | A20-4684-02 | PANEL ASSY | UMUE | XTE |
| 2 | 2A | * | A20-4686-02 | PANEL ASSY | T | |
| 6 | 2B | | B03-1956-04 | DRESSING PLATE (FRONT AUX) | | |
| - | | | B46-0074-03 | WARRANTY CARD | UUE | |
| - | | | B46-0075-03 | WARRANTY CARD | UUE | |
| - | | | B46-0076-13 | WARRANTY CARD | X | |
| - | | | B46-0122-13 | WARRANTY CARD | E | |
| - | | | B46-0123-03 | WARRANTY CARD | T | |
| - | | * | B50-5984-00 | INSTRUCTION MANUAL (ENGLISH) | UMUE | XTE |
| - | | * | B50-5985-00 | INSTRUCTION MANUAL (FRENCH) | MXE | |
| - | | * | B50-5986-00 | INSTRUCTION MANUAL (SPANISH) | M | |
| - | | * | B50-5987-00 | INSTRUCTION MANUAL (ENGLISH) | T | |
| - | | * | B50-5988-00 | INSTRUCTION MANUAL (G,D,I) | E | |
| - | | | B58-0222-14 | CAUTION CARD (PRE-SET 220V) | UE | |
| - | | | B58-0223-04 | CAUTION CARD (PRE-SET 120V) | U | |
| - | | | B58-0245-33 | CAUTION CARD (FTZ) | E | |
| - | | | B59-0072-00 | SERVICE DIRECTORY | UUE | |
| △ C1 | | | C91-0023-05 | CERAMIC 0.01UF AC250V | UMUE | |
| △ C1 | | | C91-0647-05 | CERAMIC 0.01UF P | XTE | |
| C2 .3 | | * | C90-1329-05 | ELECTRO 1000UF 71WV | | |
| C4 .5 | | * | C90-1336-05 | ELECTRO 1000UF 56WV | | |
| 12 | 2B | | D21-1102-04 | EXTENSION SHAFT (MUTING) | | |
| 13 | 2B | | D21-1103-03 | EXTENSION SHAFT (CARTRIDGE) | | |
| 14 | 1B | * | D21-1107-14 | EXTENSION SHAFT (REC OUT, SP) | | |
| 15 | 1B | | D22-0047-04 | SHAFT COUPLING | | |
| △ 19 | 1C | | E30-0459-05 | AC POWER CORD | E | |
| △ 19 | 1C | | E30-0812-05 | AC POWER CORD | UMUE | |
| △ 19 | 1C | | E30-1341-05 | AC POWER CORD | X | |
| △ 19 | 1C | | E30-1416-05 | AC POWER CORD | T | |
| △ F1 | 1C | | F05-3121-05 | FUSE (SEMKO) (250V T3.15A) | XTE | |
| △ F1 .2 | 1C | | F05-3022-05 | FUSE (250V 3A) | UMUE | |
| 23 | 2A | | G01-0489-04 | COMPRESSION SPRING | | |
| 24 | 2A | | G01-1751-04 | COMPRESSION SPRING | | |
| - | | * | H01-7009-04 | ITEM CARTON CASE | UMUE | XTE |
| - | | * | H01-7011-04 | ITEM CARTON CASE | T | |
| - | | * | H10-1838-02 | POLYSTYRENE FOAMED FIXTURE | | |
| - | | | H25-0225-04 | PROTECTION BAG (850X450) | | |
| - | | | H25-0232-04 | PROTECTION BAG (235X350) | | |
| 28 | 1A | * | J02-0171-05 | FOOT | | |
| 29 | 1B, 2B | | J19-0515-05 | UNIT HOLDER | | |
| 30 | 2B | | J19-2536-05 | UNIT HOLDER | | |
| △ 31 | 1C | | J42-0083-05 | POWER CORD BUSHING | | |
| - | | | J61-0307-05 | WIRE BAND | | |
| 35 | 2A | | K29-2432-03 | KNOB ASSY (POWER) | | |
| 37 | 2A, 2B | | K29-1980-04 | KNOB ASSY (TAPE) | | |
| 38 | 2B | | K29-2243-04 | KNOB ASSY (AUX) | | |
| 39 | 2A | * | K29-2301-04 | KNOB (VOLUME) | | |
| 40 | 2A | * | K29-2303-04 | KNOB (REC OUT, SP) | | |
| 41 | 2A | * | K29-2305-04 | KNOB (TONE BALANCE) | | |
| 43 | 2B | * | K29-2431-04 | KNOB ASSY | | |

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PARTS LIST

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| Ref. No. 参照番号 | Address 位置 | New Parts 新 | Parts No. 部品番号 | Description 部品名 / 規格 | Desti- nation 仕 向 | Re- marks 備考 |
|-----------------------------------|---------------|-------------------|-------------------|---------------------------|-------------------------|--------------------|
| 44 | 2A | | K27-1590-03 | KN0B (BUTTON) (MUTING) | | |
| △ 45 | 1B | * | L01-6952-05 | POWER TRANSFORMER | XT UMUE E | |
| △ 45 | 1B | * | L01-6955-05 | POWER TRANSFORMER | | |
| △ 45 | 1B | * | L01-6956-05 | POWER TRANSFORMER | | |
| A | 1C | | N08-0128-35 | BINDING POST (GND) | | |
| B | 1B | | N10-2090-46 | HEXAGON NUT (M9) | | |
| 49 | 1C | * | S90-0092-05 | REMOTE SWITCH SHAFT | | |
| 50 | 1C | * | S90-0093-05 | REMOTE SWITCH SHAFT | | |
| 51 | 1C | * | S90-0094-05 | REMOTE WIRE | | |
| 52 | 1C | * | S90-0095-05 | REMOTE WIRE | | |
| △ - | | | S59-1055-05 | THERMAL SWITCH | | |
| △ S1 | 1B | | S40-1073-05 | PUSH SWITCH (POWER) | | |
| POWER SUPPLY (X00-2397-71) | | | | | | |
| △ C1 | | | C91-0023-05 | CERAMIC 0.01UF AC250V | UMUE XTE | |
| △ C1 | | | C91-0647-05 | CERAMIC 0.01UF P | | |
| △ 56 | | * | E03-0077-05 | AC OUTLET | UMUE | |
| 60 | 1C | | J13-0041-05 | FUSE CLIP | UMUE XTE | |
| 60 | 1C | | J13-0054-05 | FUSE CLIP | | |
| △ S1 | 1C | | S31-2083-05 | SLIDE SWITCH (POWER TYPE) | UMUEE | |
| AUDIO (X09-2250-81) | | | | | | |
| C1 ,2 | | | CE04KW0J102M | ELECTRO 1000UF 6.3WV | | |
| C3 ,4 | | | C91-0169-05 | POLYSTY 18PF K | | |
| C5 -8 | | | CC45FSL1H221J | CERAMIC 220PF J | | |
| C9 ,10 | | | CE04KW1C220M | ELECTRO 22UF 16WV | | |
| C11 -14 | | | CK45FB1H471K | CERAMIC 470PF K | | |
| C15 ,16 | | | CF92FV1H153J | MF 0.015UF J | | |
| C17 ,18 | | | CK45FB2H102K | CERAMIC 1000PF K | | |
| C19 ,20 | | | CK45FB1H471K | CERAMIC 470PF K | | |
| C21 ,22 | | | CF92FV1H333J | MF 0.033UF J | | |
| C23 ,24 | | | CE04KW1H010M | ELECTRO 1.0UF 50WV | | |
| C25 ,26 | | | CE04KW2A010M | ELECTRO 1.0UF 100WV | | |
| C27 ,28 | | | CE04KW1H010M | ELECTRO 1.0UF 50WV | | |
| C29 ,30 | | | CE04KW2A010M | ELECTRO 1.0UF 100WV | | |
| C31 ,32 | | | CC45FSL1H221J | CERAMIC 220PF J | | |
| C33 ,34 | | | CK45FB1H102K | CERAMIC 1000PF K | | |
| C35 ,36 | | | CC45FSL1H121J | CERAMIC 120PF J | | |
| C37 ,38 | | | CE04KW0J222M | ELECTRO 2200UF 6.3WV | | |
| C41 ,42 | | | CK45FB1H102K | CERAMIC 1000PF K | | |
| C43 ,44 | | | CC45FSL1H151J | CERAMIC 150PF J | | |
| C45 | | | CK45FB1H102K | CERAMIC 1000PF K | | |
| C51 ,52 | | | CE04KW1H010M | ELECTRO 1.0UF 50WV | | |
| C53 ,54 | | | CF92FV1H564J | MF 0.56UF J | | |
| C55 ,56 | | | CE04KW2A010M | ELECTRO 1.0UF 100WV | | |
| C57 | | | CE04KW1A470M | ELECTRO 47UF 10WV | | |
| C58 | | | CE04KW1A101M | ELECTRO 100UF 10WV | | |
| C59 | | | C90-1333-05 | NP-ELEC 10UF 25WV | | |
| C60 | | | CE04KW1C220M | ELECTRO 22UF 16WV | | |
| C61 | | | CF92FV1H223J | MF 0.022UF J | | |
| C62 | | | CE04KW1V4R7M | ELECTRO 4.7UF 35WV | | |
| C63 | | | CE04KW1C470M | ELECTRO 47UF 16WV | | |

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| Ref. No. 参照番号 | Address 位置 | New Parts 新 | Parts No. 部品番号 | Description 部品名 / 規格 | Desti- nation 仕向 | Re- marks 備考 |
|------------------|---------------|-------------------|-------------------|-------------------------------|------------------------|--------------------|
| C64 | | | CE04KW1A470M | ELECTRO 47UF 10WV | | |
| C65 ,66 | | | CE04KW1HR22M | ELECTRO 0.22UF 50WV | | |
| C67 ,68 | | | CF92FV1H103J | MF 0.010UF J | | |
| C69 ,70 | | | CE04KW1A470M | ELECTRO 47UF 10WV | | |
| C71 ,72 | | | CF92FV1H103J | MF 0.010UF J | | |
| C73 | | | CE04KW1E101M | ELECTRO 100UF 25WV | | |
| C74 | | | CE04KW1H101M | ELECTRO 100UF 50WV | | |
| C75 ,76 | | * | CE04KW1V102M | ELECTRO 1000UF 35WV | | |
| C77 ,78 | | | CE04KW1E221M | ELECTRO 220UF 25WV | | |
| C79 -84 | | | CK45FE2H103P | CERAMIC 0.010UF P | | |
| 64 | 2B | * | E11-0162-05 | PHONE JACK (3P) | | |
| 68 | 2C | | E13-0229-05 | PHONE JACK (2P)PHONE,PRE | | |
| 69 | 2C | | E23-0125-05 | TERMINAL | | |
| L1 ,2 | | | L40-1011-47 | SMALL FIXED INDUCTOR(100UH,K) | | |
| K | 1C | | N09-0333-05 | TAPPING SCREW (3X12) | | |
| CP1 ,2 | | | R90-0187-05 | MULTI-COMP 0.22X2 K 5W | | |
| R1 ,2 | | | RN14BK2C1960F5 | RN 196.0 F 1/6W | | |
| R3 ,4 | | * | RN14BK2C3032F5 | RN 30.3K F 1/6W | | |
| R11 -14 | | | RD14AB2E331J | FL-PROOF RD 330 J 1/4W | | |
| R15 -18 | | | RD14AB2E561J | FL-PROOF RD 560 J 1/4W | | |
| R19 -22 | | * | RD14AB2E150J | FL-PROOF RD 15 J 1/4W | | |
| R23 -26 | | | RD14AB2E151J | FL-PROOF RD 150 J 1/4W | | |
| R27 -34 | | | RD14AB2E4R7J | FL-PROOF RD 4.7 J 1/4W | | |
| R45 ,46 | | * | RD14AB2E911J | FL-PROOF RD 910 J 1/4W | | |
| R49 ,50 | | * | RD14AB2E911J | FL-PROOF RD 910 J 1/4W | | |
| R51 -54 | | | RD14AB2E101J | FL-PROOF RD 100 J 1/4W | | |
| R55 ,56 | | * | RS14DB3D150JTE | FL-PROOF RS 15 J 2W | | |
| R57 -60 | | | RD14AB2E221J | FL-PROOF RD 220 J 1/4W | | |
| R61 -64 | | | RD14AB2E271J | FL-PROOF RD 270 J 1/4W | | |
| R65 -68 | | | RD14AB2E331J | FL-PROOF RD 330 J 1/4W | | |
| R103,104 | | * | RN14BK2C100DFTS | RN 100.0 F 1/6W | | |
| R105,106 | | | RN14BK2C4752F5 | RN 47.5K F 1/6W | | |
| R111,112 | | | RN14BK2C1330F5 | RN 133.0 F 1/6W | | |
| R113,114 | | | RN14BK2C110R0F5 | RN 11.0 F 1/6W | | |
| R119 | | | RD14GB2E621J | FL-PROOF RD 620 J 1/4W | | |
| R120 | | | RD14AB2E621J | FL-PROOF RD 620 J 1/4W | | |
| R134,135 | | * | RD14AB2E471J | FL-PROOF RD 470 J 1/4W | | |
| R136 | | | RD14AB2E102J | FL-PROOF RD 1.0K J 1/4W | | |
| R140,141 | | | RD14AB2E330J | FL-PROOF RD 33 J 1/4W | | |
| R142,143 | | | RD14AB2E101J | FL-PROOF RD 100 J 1/4W | | |
| R149,150 | | | RD14AB2E330J | FL-PROOF RD 33 J 1/4W | | |
| R151,152 | | | RD14AB2E101J | FL-PROOF RD 100 J 1/4W | | |
| R154,155 | | * | RD14AB2E471J | FL-PROOF RD 470 J 1/4W | | |
| R165 | | * | RS14DB3D391JTE | FL-PROOF RS 390 J 2W | | |
| R168 | | | RD14AB2E151J | FL-PROOF RD 150 J 1/4W | | |
| R175,176 | | | RD14AB2E101J | FL-PROOF RD 100 J 1/4W | | |
| R177,178 | | | RS14DB3A122JTE | FL-PROOF RS 1.2K J 1W | | |
| R179-181 | | | RD14AB2E4R7J | FL-PROOF RD 4.7 J 1/4W | | |
| R182 | | | RD14AB2E100J | FL-PROOF RD 10 J 1/4W | | |
| R183,184 | | * | RS14DB3D332JTE | FL-PROOF RS 3.3K J 2W | | |
| R185 | | * | RS14DB3D152JTE | FL-PROOF RS 1.5K J 2W | | |
| VR1 ,2 | | | R12-0094-05 | TRIMMING PNT.(470) BIAS | | |

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|------------------|---------------|-------------------|-------------------|-------------------------|-------------------------|--------------------|
| S1 | 2C | | S40-6027-05 | PUSH SWITCH (CARTRIDGE) | | |
| D1 ,2 | | | RD20JS(B) | ZENER DIODE | | |
| D3 ,4 | | | RD8.2JS(B2) | ZENER DIODE | | |
| D5 | | | 1SS133 | DIODE | | |
| D5 | | | 1SS176 | DIODE | | |
| D6 | | | RD5.1JS(B) | ZENER DIODE | | |
| D7 | | | E-102 | CONSTANT CURRENT DIODE | | |
| D8 | | | RD8.2JS(B2) | ZENER DIODE | | |
| D9 ,10 | | * | MA27Q(A) | VARISTOR | | |
| D11 ,12 | | | 1SS133 | DIODE | | |
| D11 ,12 | | | 1SS176 | DIODE | | |
| D13 -16 | | * | RD7.5JS(B) | ZENER DIODE | | |
| D17 -20 | | | RU4Z | DIODE | | |
| D21 -24 | | | 1SS133 | DIODE | | |
| D21 -24 | | | 1SS176 | DIODE | | |
| D25 | | | E-202 | CONSTANT CURRENT DIODE | | |
| D26 | | | 1SS131 | DIODE | | |
| D26 | | | 1SS178 | DIODE | | |
| D27 ,28 | | | E-102 | CONSTANT CURRENT DIODE | | |
| D29 ,30 | | | RD8.2JS(B2) | ZENER DIODE | | |
| D31 | | | RD5.1JS(B) | ZENER DIODE | | |
| D32 -34 | | | RD16E(B) | ZENER DIODE | | |
| △ D35 -38 | | | DSM1A1 | DIODE | | |
| △ D39 -42 | | | S3V20 | DIODE | | |
| △ D43 | | | D5FB20 | DIODE | | |
| △ D44 | | | DSM1A1 | DIODE | | |
| △ IC1 ,2 | | | TA2030 | IC (LO/HI SWITCHING) | | |
| IC3 | | | UPC1237H | IC (PROTECTION) | | |
| Q1 ,2 | | | 2SC2320(E,F) | TRANSISTOR | | |
| Q1 ,2 | | | 2SC945(A) (Q,P) | TRANSISTOR | | |
| Q3 ,4 | | | 2SC3419(Y) | TRANSISTOR | | |
| Q5 ,6 | | | 2SC945(A) (Q,P) | TRANSISTOR | | |
| Q7 ,8 | | | 2SA733(A) (Q,P) | TRANSISTOR | | |
| Q9 ,10 | | | 2SC1384NC (Q,R) | TRANSISTOR | | |
| Q11 ,12 | | | 2SA684NC (Q,R) | TRANSISTOR | | |
| △ Q13 ,14 | | * | 2SC2579*5 | TRANSISTOR | | |
| △ Q15 ,16 | | * | 2SA1104*5 | TRANSISTOR | | |
| △ Q17 ,18 | | | 2SC2921*5 | TRANSISTOR | | |
| △ Q19 ,20 | | | 2SA1215*5 | TRANSISTOR | | |
| Q21 ,22 | | | 2SC2631 (Q,R) | TRANSISTOR | | |
| Q23 -26 | | | 2SA1123 (Q,R) | TRANSISTOR | | |
| Q27 ,28 | | | 2SC2631 (Q,R) | TRANSISTOR | | |
| Q29 ,30 | | | 2SC2591 (Q,R) | TRANSISTOR | | |
| Q31 ,32 | | | 2SA1111 (Q,R) | TRANSISTOR | | |
| Q33 ,34 | | | 2SC2320 (E,F) | TRANSISTOR | | |
| Q33 ,34 | | | 2SC945 (A) (Q,P) | TRANSISTOR | | |
| Q35 | | | 2SC2003 (L,K) | TRANSISTOR | | |
| Q36 | | | 2SA954 (L,K) | TRANSISTOR | | |
| Q37 | | | 2SC2003 (L,K) | TRANSISTOR | | |
| Q38 | | | 2SA954 (L,K) | TRANSISTOR | | |
| Q39 | | | 2SC1845 (F,E) | TRANSISTOR | | |
| Q40 | | | 2SA992 (F,E) | TRANSISTOR | | |
| Q41 | | | 2SD882 (Q,P) | TRANSISTOR | | |
| Q42 | | | 2SB772 (Q,P) | TRANSISTOR | | |

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|------------------------------|---------------|-------------------|-------------------|-------------------------------|-------------------------|--------------------|
| Q43 | | | 2SC2320(E,F) | TRANSISTOR | | |
| Q43 | | | 2SC945(A)(Q,P) | TRANSISTOR | | |
| Q44 | | | 2SA733(A)(Q,P) | TRANSISTOR | | |
| Q44 | | | 2SA999(E,F) | TRANSISTOR | | |
| Q45 | | | 2SA992(F,E) | TRANSISTOR | | |
| Q46 | | | 2SA1124(Q,R) | TRANSISTOR | | |
| Q47 | | | 2SC2632(Q,R) | TRANSISTOR | | |
| CONTROL (X11-2200-81) | | | | | | |
| 73 | 2B | * | A33-0093-04 | REFLECTOR | | |
| D4 | 2A | | B30-0431-05 | LED(LN21CPH) | | |
| D5 -7 | 2B | | B30-1010-05 | LED(SLP-281F-50U) | | |
| D8 -14 | 2B,2C | | B30-0431-05 | LED(LN21CPH) | | |
| D15 -17 | 2B | | B30-1010-05 | LED(SLP-281F-50U) | | |
| PL1 ,2 | 2B,2C | | B30-1025-05 | LAMP (14V 0.08A) | | |
| C1 -20 | | * | C91-0747-05 | CERAMIC 150PF K | | |
| C21 ,22 | | | CF92FV1H224J | MF 0.22UF J | | |
| C23 ,24 | | | CC45FSL1H101J | CERAMIC 100PF J | | |
| C25 ,26 | | | CF92FV1H333J | MF 0.033UF J | | |
| C27 ,28 | | | CE04KW1H010M | ELECTRO 1.0UF 50WV | | |
| C29 ,30 | | | CC45FSL1H101J | CERAMIC 100PF J | | |
| C31 ,32 | | | CC45FSL1H150J | CERAMIC 15PF J | | |
| C33 -36 | | | CF92FV1H334J | MF 0.33UF J | | |
| C37 -40 | | | CE04KW1V100M | ELECTRO 10UF 35WV | | |
| C41 -44 | | | CF92FV1H183J | MF 0.018UF J | | |
| C45 ,46 | | | CE04KW1H010M | ELECTRO 1.0UF 50WV | | |
| C47 ,48 | | | CK45FB1H561K | CERAMIC 560PF K | | |
| C49 ,50 | | | CF92FV1H334J | MF 0.33UF J | | |
| C51 -54 | | | CF92FV1H393J | MF 0.039UF J | | |
| C55 -58 | | | CK45FF1H472Z | CERAMIC 4700PF Z | | |
| C101,102 | | | CE04KW1E470M | ELECTRO 47UF 25WV | | |
| C103,104 | | | C90-1335-05 | NP-ELEC 4.7UF 50WV | | |
| 69 | 2B | | E23-0125-05 | TERMINAL (GND) | | |
| 74 | 2B | * | E13-0233-05 | PHONE JACK (2P)FRONT AUX | | |
| 75 | 1C | | E13-0624-05 | PHONE JACK (6P)REC PLAY,AUX | | |
| 76 | 1C | * | E20-0824-05 | SCREW TERMINAL BOARD(8P) SP | | |
| - | | | J61-0307-05 | WIRE BAND | | |
| L1 ,2 | | | L40-1021-14 | SMALL FIXED INDUCTOR(1.0MH,K) | | |
| L3 ,4 | | | L39-0080-15 | PHASE-COMPENSATION COIL | | |
| R7 ,8 | | * | RN14BK2C3160FTS | RN 316.0 F 1/6W | | |
| R41 ,42 | | | RD14AB2E330JTS | FL-PROOF RD 33 J 1/4W | | |
| R43 ,44 | | | RD14AB2E4R7JTS | FL-PROOF RD 4.7 J 1/4W | | |
| R45 ,46 | | | RS14DB3D100JTE | FL-PROOF RS 10 J 2W | | |
| R47 ,48 | | | RS14DB3D561JTE | FL-PROOF RS 560 J 2W | | |
| R101 | | | RD14AB2E102JTS | FL-PROOF RD 1.0K J 1/4W | | |
| R109 | | | RD14AB2E6R8JTS | FL-PROOF RD 6.8 J 1/4W | | |
| R110 | | * | RD14AB2E82JTS | FL-PROOF RD 8.2K J 1/4W | | |
| VR1 ,2 | 2B | * | R06-3050-05 | POTENTIOMETER(10K) BASS,TREB | | |
| VR3 | 2B | * | R06-5143-05 | POTENTIOMETER(200K) BALANCE | | |
| VR4 | 2B | * | R10-5021-05 | POTENTIOMETER(100K) VOLUME | | |
| K1 | | | S51-2045-05 | MAGNETIC RELAY | | |
| S1 | 2B | | S42-3093-05 | MULTIPLE PUSH SWITCH(A,B,C) | | |

E: Scandinavia & Europe H: Audio Club K: USA

P: Canada

S: South Africa T: England U: PX(Far East, Hawaii)

UE: AAFES(Europe) X: Australia M: Other Areas

⚠ indicates safety critical components.

PARTS LIST

* New Parts

Parts without Parts No. are not supplied.

Les articles non mentionnés dans le Parts No. ne sont pas fournis.

Teile ohne Parts No. werden nicht geliefert.

| Ref. No. 参照番号 | Address 位置 | New Parts 新 | Parts No. 部品番号 | Description 部品名 / 規格 | Desti- nation 仕 向 | Re- marks 備考 |
|--------------------------------|---------------|-------------------|-------------------|---------------------------------|-------------------------|--------------------|
| S2 | 2B | * | S42-5045-05 | MULTIPLE PUSH SWITCH(OPERATION) | | |
| S3 | 2B | * | S42-2135-05 | MULTIPLE PUSH SWITCH(CD,LINE) | | |
| S4 | 2B | | S40-4062-05 | PUSH SWITCH (MUTING) | | |
| S5 | -8 | | S40-2200-05 | PUSH SWITCH | | |
| S9 | 1C | | S90-0078-05 | SLIDE SWITCH (REC OUT) | | |
| S10 | 1C | | S90-0062-05 | SLIDE SWITCH (SPEAKER) | | |
| D1 | ,2 | | 1SS133 | DIODE | | |
| D1 | ,2 | | 1SS176 | DIODE | | |
| D3 | | | 1SS131 | DIODE | | |
| D3 | | | 1SS178 | DIODE | | |
| D18 | ,19 | | RD13E(B2) | ZENER DIODE | | |
| D20 | | | 1SS131 | DIODE | | |
| D20 | | | 1SS178 | DIODE | | |
| IC1 | | * | NJM4560D-A | IC | | |
| Q1 | | | 2SC2167(O,Y) | TRANSISTOR | | |
| Q2 | ,3 | | 2SC2320(E,F) | TRANSISTOR | | |
| Q2 | ,3 | | 2SC945(A)(Q,P) | TRANSISTOR | | |
| POWER AMP (X85-1020-13) | | | | | | |
| C3 | ,4 | | CC45FSL1H101J | CERAMIC 100PF J | | |
| C5 | ,6 | | CC45FSL1H47DJ | CERAMIC 47PF J | | |
| C7 | ,8 | | CC45FSL1H181J | CERAMIC 180PF J | | |
| C9 | ,10 | | CC45FSL1H15DJ | CERAMIC 15PF J | | |
| C11 | -14 | | CK45FF1H473Z | CERAMIC 0.047UF Z | | |
| C15 | ,16 | | CK45FB1H681K | CERAMIC 680PF K | | |
| R13 | ,14 | | RD14AB2E181JTS | FL-PROOF RD 180 J 1/4W | | |
| R19 | ,20 | * | RS14DB3A822JTE | FL-PROOF RS 8.2K J 1W | | |
| R35 | -38 | | RD14AB2E221JTS | FL-PROOF RD 220 J 1/4W | | |
| D1 | ,2 | | 1SS133 | DIODE | | |
| D1 | ,2 | | 1SS176 | DIODE | | |
| Q1 | ,2 | | LPA68H(K,L) | DUAL FET | | |
| Q3 | -6 | | 2SC2320(E,F) | TRANSISTOR | | |
| Q3 | -6 | | 2SC945(A)(Q,P) | TRANSISTOR | | |
| Q7 | -10 | | 2SA733(A)(Q,P) | TRANSISTOR | | |
| Q7 | -10 | | 2SA999(E,F) | TRANSISTOR | | |
| Q11 | -14 | | 2SC2632(Q,R,S) | TRANSISTOR | | |
| Q15 | ,16 | | 2SA1124(Q,R,S) | TRANSISTOR | | |
| PRE AMP (X85-1060-00) | | | | | | |
| C1 | ,2 | * | CQ93HP2A392J | MYLAR 3900PF J | | |
| C3 | ,4 | * | CQ93HP2A113G | MYLAR 0.011UF G | | |
| C5 | ,6 | * | C91-0790-05 | FILM 0.039UF J | | |
| C7 | ,8 | * | C90-1332-05 | ELECTRO 10UF 25WV | | |
| R5 | ,6 | * | RN14BK2C10R0FTS | RN 10.0 F 1/6W | | |
| R7 | ,8 | | RN14BK2C6811FTS | RN 6.81K F 1/6W | | |
| R9 | ,10 | | RN14BK2C8252FTS | RN 82.5K F 1/6W | | |
| D1 | ,2 | | RD5.1JS(B) | ZENER DIODE | | |
| IC1 | | | NJM5532D | IC(OP AMP X2) | | |
| Q1 | -4 | | 2SC2320(E,F) | TRANSISTOR | | |
| Q1 | -4 | | 2SC945(A)(Q,P) | TRANSISTOR | | |
| Q5 | -8 | * | 2SK371(BL) | FET | | |
| Q5 | -8 | * | 2SK371(V) | FET | | |

E: Scandinavia & Europe H: Audio Club K: USA

P: Canada

S: South Africa

T: England

U: PX(Far East, Hawaii)

UE: AAFES(Europe)

X: Australia

M: Other Areas

⚠ indicates safety critical components.

SPECIFICATIONS

Power Output

110 watts per channel minimum RMS, both channels driven at 8ohms from 20Hz to 20,000Hz with no more than 0.004% total harmonic distortion

| | |
|---|--|
| Maximum Continuous Power Output (DIN) 1kHz at 4ohms | 140W + 140W |
| Maximum Continuous Power Output (DIN) 1kHz at 8ohms | 115W + 115W |
| Maximum Continuous Power Output (IEC/NF) from 63Hz to 12,500Hz, 0.7% Total Harmonic Distortion at 8ohms | 115W + 115W |
| Total Harmonic Distortion | |
| (20Hz-20,000Hz, 8ohms) | 0.004% at 110W |
| (1kHz, 8ohms) | 0.002% at 110W |
| Inter Modulation Distortion | 0.004% at rated power into 8 ohms |
| Frequency Response | 1Hz to 180kHz / +0dB, -3dB |
| Phono Frequency Response | RIAA Standard curve ± 0.3 dB (20Hz to 20kHz) |
| Damping Factor (50Hz into 8ohms) | 1,000 |
| Signal to Noise Ratio (IHF-A) | |
| PHONO (MM) | 88dB |
| PHONO (MC) | 70dB |
| TUNER/CD/AUX/TAPE/VIDEO | 108dB |
| Signal to Noise Ratio at Unweighted, 50mW Output (DIN) | |
| PHONO (MM) | 60dB |
| PHONO (MC) | 61dB |
| TUNER/CD/AUX/TAPE/VIDEO | 62dB |
| Input Sensitivity/Impedance | |
| PHONO (MM) | 2.5mV/ 47 kohms, 340 pF |
| PHONO (MC) | 0.2mV/100 ohms, 560 pF |
| TUNER/CD/AUX/TAPE | 150mV/ 47 kohms |
| Phono Maximum Input Level | |
| (MM) | 200mV, 0.003% T.H.D. at 1kHz |
| (MC) | 15mV, 0.003% T.H.D. at 1kHz |
| Output Level/Impedance | |
| TAPE REC | 150mV/330 ohms |
| PRE OUT | 2 V/600 ohms |
| Channel Separation (DIN) at 1,000Hz | |
| PHONO (Terminated with 2.2kohms) | 60dB |
| AUX (Terminated with 47kohms + 250pF) | 55dB |
| Tone Controls | |
| TREBLE | ± 10 dB at 10kHz |
| BASS | ± 10 dB at 100Hz |
| Subsonic Filter | 6dB/oct. at 18Hz |
| Loudness Control (at ~ 30 dB Volume Level) | +9dB at 100Hz |
| Transient Response Risetime | 1.7 μ s |
| General | |
| Power Requirements | 120/220V, 50/60Hz |
| | 240V, 50/60Hz |
| | 110-120V/220-240V, 50/60Hz |
| | European Model |
| | Australia and U.K. Models |
| | Other Models |
| Power Consumption | 220W |
| Dimensions | W 440mm (17-5/16") |
| | H 158mm (6-1/4") |
| | D 420mm (16-9/16") |
| Weight (Net) | 13.5kg (3.0lb) |
| (IHF '66) | |

Note:

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

Note:

Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on, the Europe (E) 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.

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