STEREO INTEGRATED AMPLIFIER

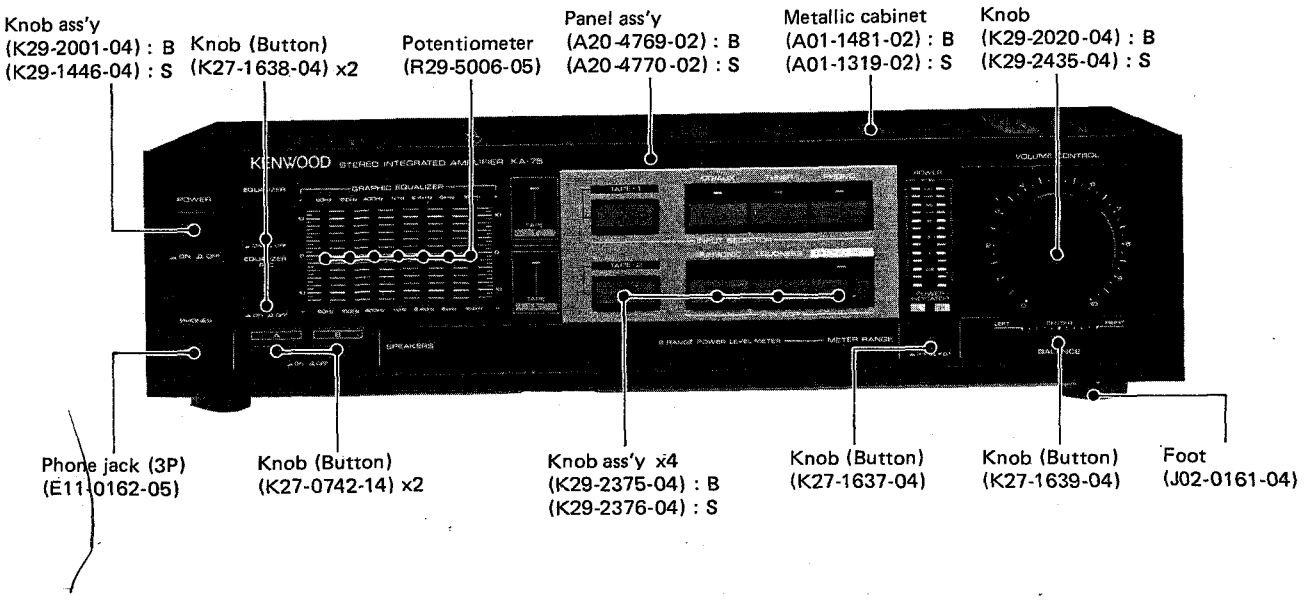
KA-75

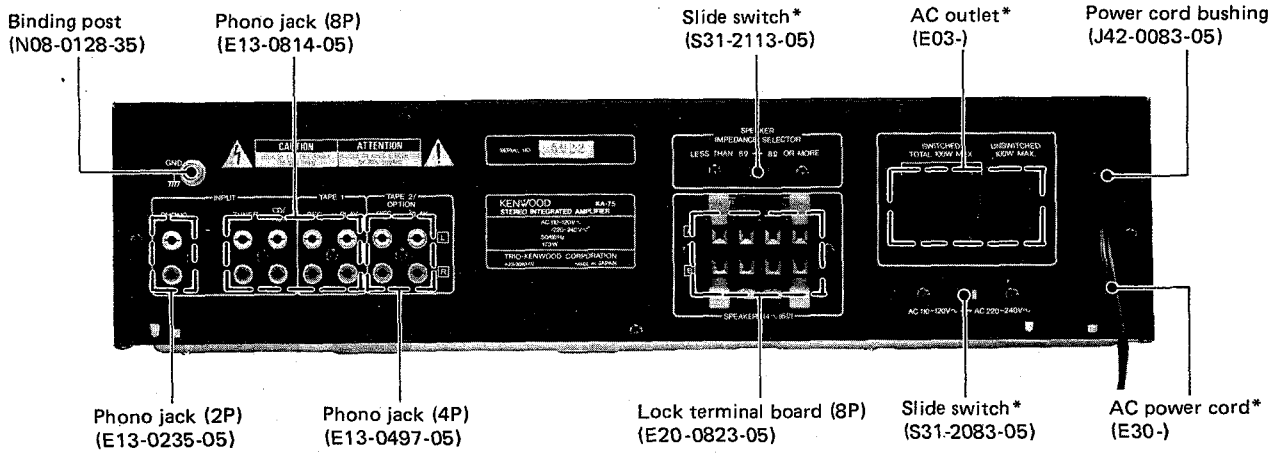
SERVICE MANUAL

KENWOOD

TRIO-KENWOOD CORPORATION

B51-1929-00(O)1475



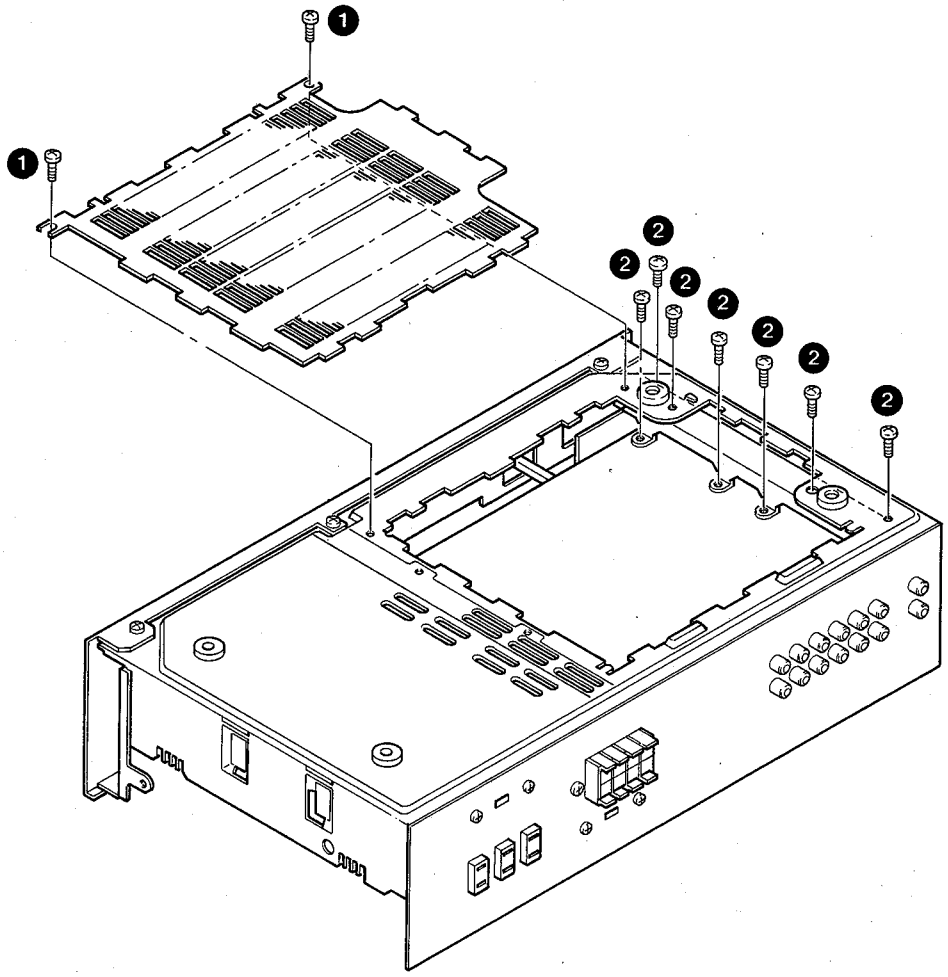


***Refer to parts list on page 8.**
Refer to specifications on page 5.
Photo is KA-75 (Black version).
S : Silver version.
B : Black version.

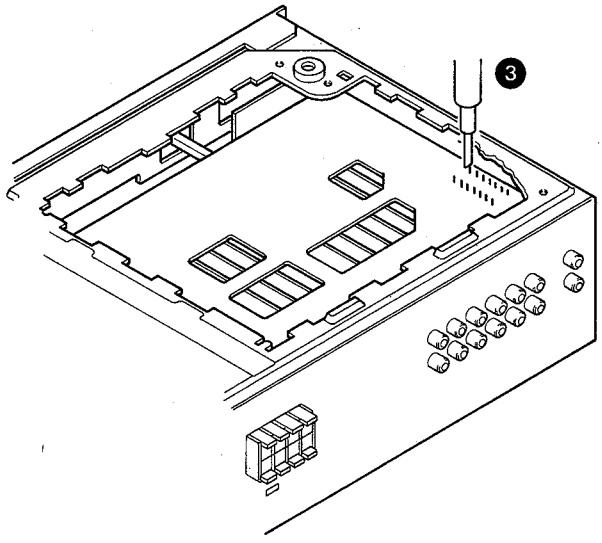
DISASSEMBLY FOR REPAIR

The soldering iron does not reach IC1 (X09-) even if the bottom plate is removed, thus remove the left-hand frame.

1. Remove the 2 screws (❶) to remove the bottom plate.
2. Remove the 7 screws (❷) from the frame, and remove the frame taking care of the claws.



3. Solder IC1 (X09-) (❸).



CIRCUIT DESCRIPTION

Description of components

AUDIO (X09-2280-10)

Components	Application/Function	Operation/Condition/Compatibility
Q1, Q2	For muting	Driven by IC1 of X13-5350-10 and turned on when the input is changed or PHONO REC SW is operated. Interchangeable 2SD1302(S).
Q3~Q6	Final driver	
Q7~Q10	Final	Interchangeable models of these ones are 2SA1106 and 2SC2581. These have aluminum internal lead wires, while above interchangeable ones have gold wires. Tips of both groups are the same.
Q11, Q12	Portection (Detection of current)	Since detection level is affected by dispersion of hFE, a transistor at too high level cannot be used. At present, short-circuiting with output of about 2V can turn on protection. If sensitivity is too high, protection may works because of inductance of speaker when output is large.
Q13, Q14	For protection of BIAS	There are no interchangeable models.
Q15, Q16	For driving meter	Constant-current transistor operated by DC voltage obtained by detecting and rectifying output voltage. Interchangeable with common transistors.
Q17, Q18	Current mirror for driving meter LED of 4~6 points	Interchangeable with common transistors.
Q19	AVR (+ side)	Interchangeable with TO-220 in 40~50W class.
Q20	AVR (– side)	Interchangeable with TO-220 in 40~50W class.
Q21	Constant voltage for class A amplifier	Resistance to high voltage is necessary.
Q22, Q23	Protection	A thyristor is composed of Q22 and Q23. Thus, if protection works, they cannot be reset unless power switch is turned off temporarily. Interchangeable with common transistors.
Q24, Q25	For driving C-MOS for PHONO REC	See explanation of operation of circuit Interchangeable with common transistors.
Q26	For driving MUTE for PHONO REC	See explanation of operation of circuit. Interchangeable with common transistors.

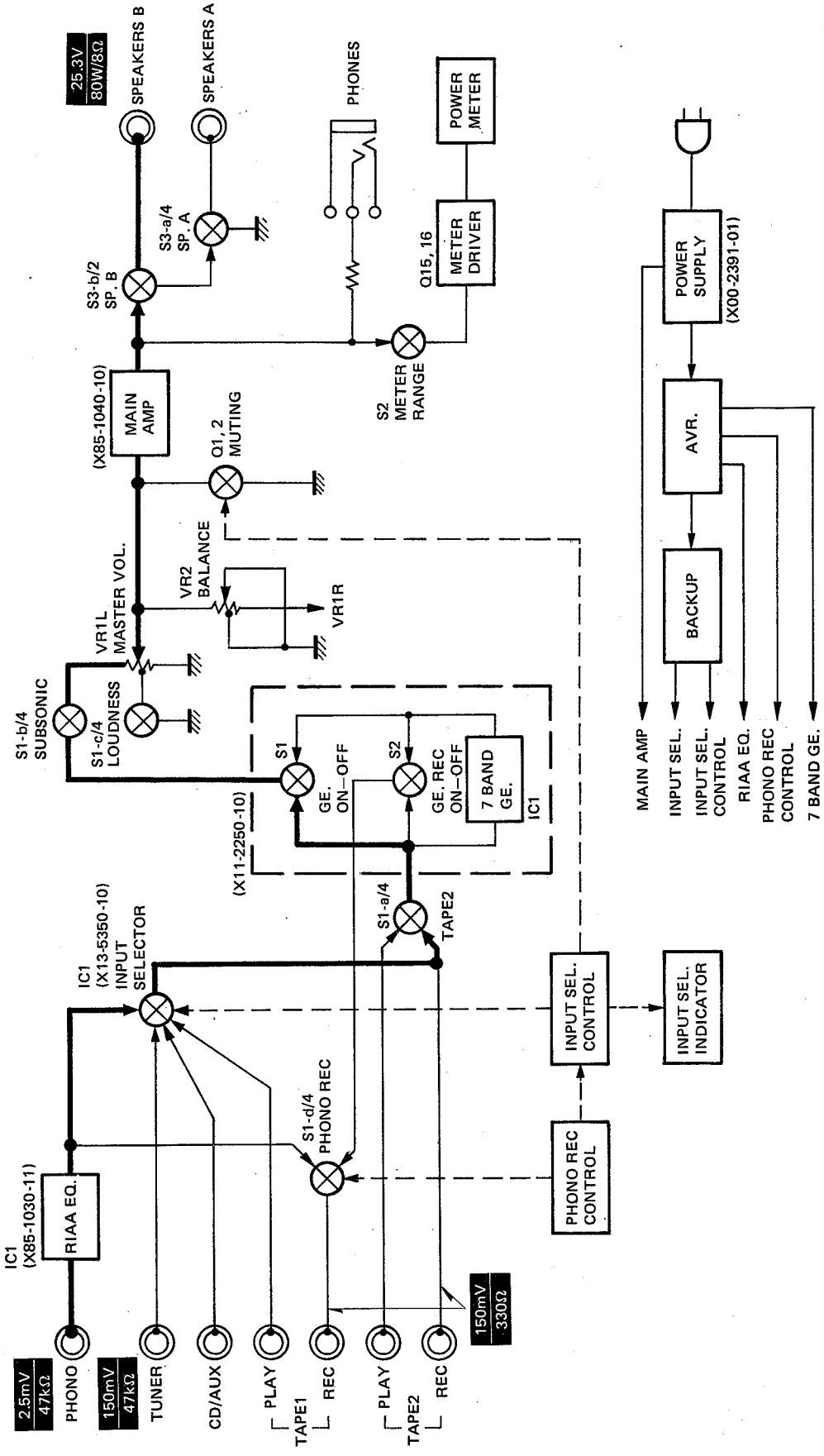
TONE (X11-2250-10)

Components	Application/Function	Operation/Condition/Compatibility
IC1,IC2	IC for 7 band graphic equalizer	Circuit supplied by manufacture is input composition type, but output composition type is used considering noises.

SWITCH (X13-5350-10)

Components	Application/Function	Operation/Condition/Compatibility
D1~D10	Electrostatic protection	Used to protect IC1 from outside voltage higher than source voltage. MA177 etc. or combination of multipurpose diodes may be used.
D11	For protection of inverse current of backup capacitor	Any one may be used.
D12	For preventing voltage drop caused by D11	Any one may be used.
Q1	For initializing	See explanation of operation of circuit. Common transistor may be used, but it must have hFE of about 100. If it is too high, backup period will be long.
IC1	C-MOS for input selector	Pins of this model is compatible with LC7815H, but latter cannot be used, since its withstand voltage is low.

BLOCK LEVEL DIAGRAM



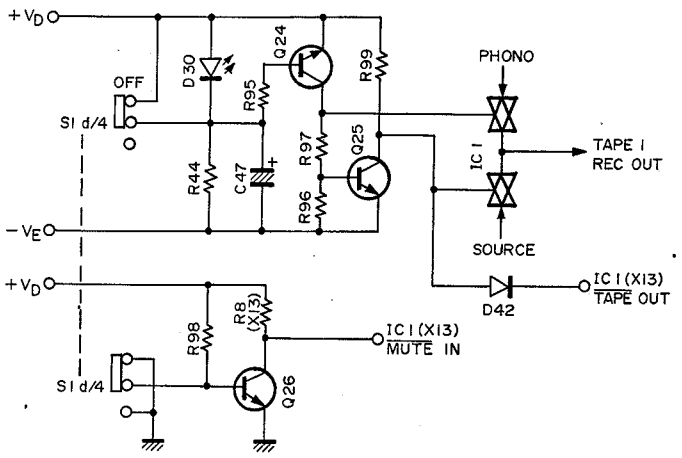
CIRCUIT DESCRIPTION

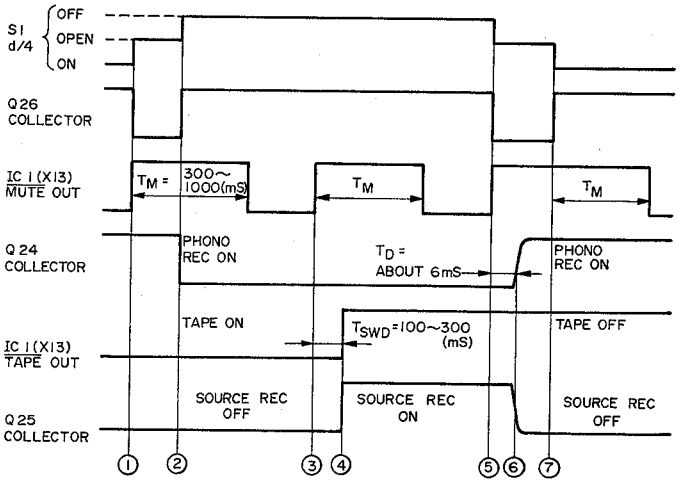
PHONO REC Circuit (X09-2280-10)

The PHONO REC circuit of KA-75 is switched remotely by thr C-MOS IC (IC1 : LC4966) for the effective use of space and higher performance. Therefore, this circuit controls the IC1 and prevents shock noises, too. Q26 in the lower part of the circuit at right above generates the muting signals and drives the $\overline{\text{MUTE}}$ in of IC1 (LC7816) of X13-5350-10.

The operation of each section will be explained below referring to the flow chart given at left below. If the selector is at TAPE1, and REC SW is turned on, Q24 and Q25 are turned on, and IC1 (X13-) $\overline{\text{TAPE}}$ out is set to low (−VE level).

1. If the contact is removed to turn off the PHONO REC SW (S1 d/4), the curren flows through R98 to the base of Q26. As the result, Q26 is turned on, and $\overline{\text{MUTE}}$ in terminal of IC1 (X13-)is set to low, and IC1 (X13-) outputs the MUTE out. The time to perform this operation is 300~1,000 msec.
2. The contact on off side of S1 comes in contact to turn off Q24 and Q25 are switch the IC1 to source side. However, the selector is at TAPE and IC1 (X13-) $\overline{\text{TAPE}}$ out is at low, the collector of Q25 is set to low, thus both IC1's are turned off.
3. If the selector SW is set to a position other than TAPE, IC1 (X13-) outputs the MUTE out.
4. IC1 (X13-) switches the LED output T_{SWD} (100~200 msec) after receiving the switching signal, thus the $\overline{\text{TAPE}}$ out is set to HI. Since Q25 has been turned off, IC1 turns on the source side.
5. If the contact is removed again to turn on PHONO REC SW (S1 d/4), Q26 is turned on at first similarly to step 1., and IC1 (X13-) $\overline{\text{MUTE}}$ out is output. At the same time, C47 is charged through the base of Q24 and R95.
6. After a certain time T_D (about 6 msec) which is a time constant determined by R94, R95 and C47, Q24 and Q25 are turned on, and IC1 is switched to the phone side. Time T_D is also the time from start of muting to switching, and it may be shortened becaused of the dispersion of the timing of S1 d/4, thus it should be longer. However, if the capacity of C47 is increased to lengthen this time, Q24 is turned on softly, thus shock noises is increased.
7. If the contact on ON side of S1 d/4 comes in contact, Q26 is turned off and the MUTE in is set to HI, and IC1 (X13-) keeps the $\overline{\text{MUTE}}$ out at HI position from the point of this time for T_M.





CIRCUIT DESCRIPTION/ADJUSTMENT

Initializing Circuit (X13-5350-10)

The input selector IC (IC1) is backed up by D11 and C1 but IC1 (LC7816) cannot keep the current position when VDD is below 3V. Therefore, the TUNER must be selected forcedly before this occurs.

Fig.1 shows the initializing circuit for the above operation, and Fig. 2 and Fig. 3 show the voltage at various points in that circuit. If the backup voltage is V, the terminal voltage VC of capacitor C2 is also V. If the power is turned on at this time, transistor Q1 is turned on for the time determined by R5, R6 and C2, and its output VO becomes a pulse of time width of T. Fig. 2 shows the poeration with V low, and Fig. 3 shows the poeration with V high. If T is 100~300 msec or wider, IC1 assumes it to be an input and turns the position to TUNER.

As explained above, the backup period is determined by the operating point of this circuit, and the lower the R5/R6 is, the longer the backup period is. However, if R5/R6 is too low, the output of VO becomes 0 even if V is 3V, and the position cannot be fixed. At present, the initilizing is performed when V is 4~6V. This dispersion is caused by the ambient temperature and hFE of Q1. That is, when the ambient temperature is high or hFE is high, the voltage at which the initializing starts is high and the backup period is short.

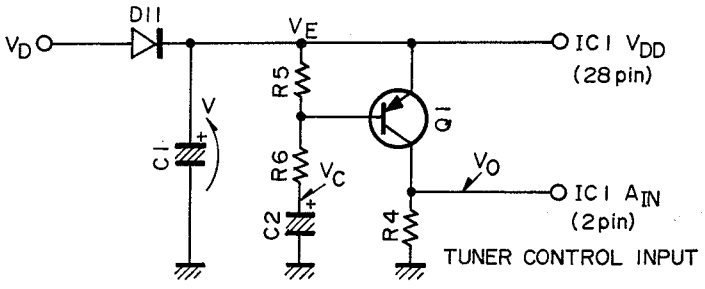


Fig. 1

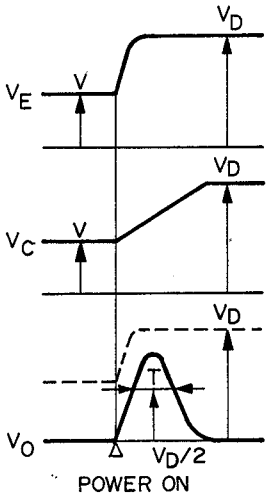


Fig. 2

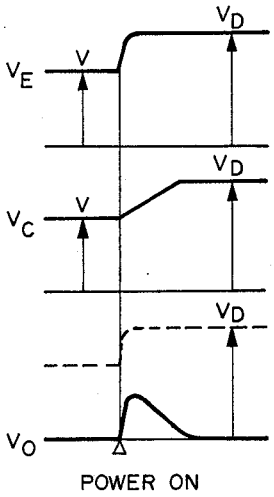


Fig. 3

ADJUSTMENT

Other models

No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	AMPLIFIER SETTINGS	ALIGNMENT POINTS	ALIGN FOR	FIG.
1	IDLE CURRENT (1)	–	Connect a DC voltmeter across CP1 (L) CP2 (R)	VOLUME: 0 S8:4Ω	VR3 (L) VR4 (R)	3mV	(a)
2	IDLE CURRENT (2)	–	Connect a DC voltmeter across CP1 (L) CP2 (R)	VOLUME: 0 S8:8Ω	VR3 (L) VR4 (R)	Less than 30mV	(a)

U.S.A. and CANADA models

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	VR3 (L) VR4 (R)	10mV	(a)

REGLAGE/ABGLEICH

REGLAGE

Autres modèles

N°	ITEM	REGLAGE DE L'ENTREE	REGLAGE DE LA SORTIE	REGLAGE DE L'AMPLIFICATEUR	POINS L'ALIGNEMENT	ALIGNER POUR	FIG.
1	COURANT DE POLARISATION (1)	–	Connecter un voltmètre de CC sur CP1 (G) CP2 (D)	VOLUME: 0 S8:4Ω	VR3 (G) VR4 (D)	3mV	(a)
2	COURANT DE POLARISATION (2)	–	Connecter un voltmètre de CC sur CP1 (G) CP2 (D)	VOLUME: 0 S8:8Ω	VR3 (G) VR4 (D)	moins de 30mV	(a)

ETATS-UNIS d'AMERIQUE et CANADA modèles

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	VR3 (G) VR4 (D)	10mV	(a)

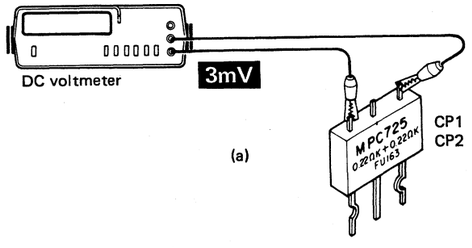
ABGLEICH

Andere model

NR.	GEGENSTAND	EINGANGS-EINSTELLUNG	AUSGANGS-EINSTELLUNG	VERSTÄRKER EINSTELLUNG	ABGLEICH-PUNKTE	ABGLEICHEN FÜR	ABB.
1	LEERLAUFSTROM (1)	–	Einen Gleichspannungs-messer über CP1 (L) CP2 (R) anschließen.	VOLUME: 0 S8:4Ω	VR3 (L) VR4 (R)	3mV	(a)
2	LEERLAUFSTROM (2)	–	Einen Gleichspannungs-messer über CP1 (L) CP2 (R) anschließen.	VOLUME: 0 S8:8Ω	VR3 (L) VR4 (R)	Weniger als 30mV	(a)

Amerika und KANADA

NR.	GEGENSTAND	EINGANGS-EINSTELLUNG	AUSGANGS-EINSTELLUNG	VERSTÄRKER EINSTELLUNG	ABGLEICH-PUNKTE	ABGLEICHEN FÜR	ABB.
1	LEERLAUFSTROM	–	Einen Gleichspannungs-messer über CP1 (L) CP2 (R) anschließen.	VOLUME: 0	VR3 (L) VR4 (R)	10mV	(a)



(a)

SPECIFICATIONS

Power Amplifier Section

Power Output

80 watts* per channel minimum RMS, both channels driven, at 8 ohms from 20 Hz to 20,000 Hz with no more than 0.09% total harmonic distortion

Both Channels Driven into
- **8 ohms at 1,000 Hz** . . . . . 85 W + 85 W (Except U.S.A., Europe and U.K.)
- **4 ohms at 1,000 Hz** . . . . . 78 W + 78 W (Except U.S.A., Europe and U.K.)

Music Power Output (8 ohms) . . . . . 145 W + 145 W (Except U.S.A., Europe and U.K.)

Total Harmonic Distortion

AUX → SPKR (8 Ω)/ Power in → SPKR (8 Ω)

(20 Hz to 20,000 Hz)
- **At Rated Output** 0.09%
- **At 1/2 Rated Output** 0.05%

(1,000 Hz)
- **At 1/2 Rated Output** 0.005%

Phono → SPKR (8 Ω)/ At –20 dB Volume Level

(1,000 Hz)
- **At Rated Output** 0.04%

Intermodulation Distortion (60 Hz : 7,000 Hz = 4 : 1)
- **At Rated Output** . . . . . 0.02% into 8 ohms

Damping Factor . . . . . 30 (50 Hz)

Frequency Response
- **Overall (AUX → SPKR)** . . . . . 10 Hz to 70,000 Hz, +0 dB, –3 dB
- **Phono "RIAA" Response (Phono → REC out)** . . . . . 30 Hz to 20 Hz, ±0.5 dB

Power Bandwidth . . . . . 10 Hz to 50,000 Hz 0.2% T.H.D. 8 ohms

Input Sensitivity/Impedance
- **Phono MM** . . . . . 2.5 mV/ 47 k ohms
- **Tuner, AUX., Tape Play** . . . . . 150 mV/ 33 k ohms

Signal-to-Noise Ratio (IHF-A)
- **Phono MM** . . . . . 75 dB at 2.5 mV
- **Phono MM** . . . . . 81 dB at 5.0 mV
- **Tuner, AUX., Tape Play** . . . . . 100 dB

Phono Maximum Input Level
- **MM** . . . . . 150 mV (Phono to Tape REC), 0.05% T.H.D. at 1,000 Hz

Output Level/Impedance
- **Tape REC (Pin)** . . . . . 150 mV/ 330 ohms

Tone Control
- **60 Hz, 150 Hz, 400 Hz, 1,000 Hz, 2,400 Hz, 6,000 Hz, 15,000 Hz** . . . . . ±10 dB

Filter
- **Subsonic** . . . . . 60 Hz, 6 dB/ oct

Loudness Control
- **At –30 dB Volume Level** . . . . . +8 dB at 100 Hz

General

Power Supply Voltage, Frequency . . . 120 V, 60 Hz (U.S.A. and Canada models), 220 V, 50 Hz (Europe model), 240 V, 50 Hz (U.K. model), 110 ~ 120 V/ 220 ~ 240 V, 50/ 60 Hz (Other countries)

Power Consumption . . . . . 2.5 A (U.S.A. and Canada models), 170 W (Other countries)

AC Outlet
- **Switched** . . . . . 100 W
- **Unswitched** . . . . . 100 W

Dimensions . . . . . W 420 mm H 109 mm D 282 mm

Weight
- **Net** . . . . . 6.6 kg
- **Gross** . . . . . 7.4 kg

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

Note :

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

KA-75 KA-75

PC BOARD

X13-5350-10

	B	C	E
Q1	15.4V [*1]	0V [*1]	15.5V

IC1

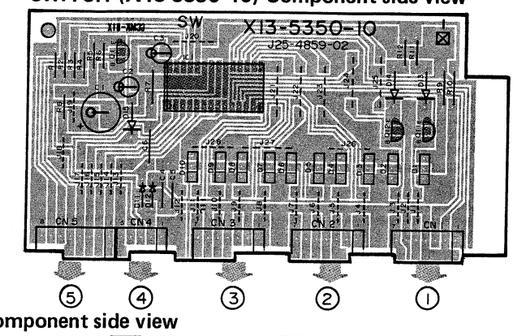
1	15.0V [*2]	21	0V [*2]
2–5	0V [*2]	22	15.5V
6	0V	23	−16.0V
7	15.5V	24	15.5V [*2]
8	15.5V [*2]	25, 26	0V [*2]
9–19	0V	27	−15.9V [*2]
20	−16.0V	28	15.5V

X09-2280-10

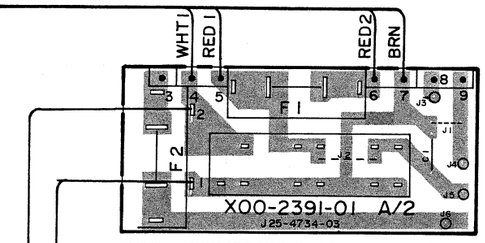
	B	C	E
Q1, Q2	0V (0.7V) *2	0V	0V
Q3, Q4	1.1V [0.7V]	56.2V (46.7V)	0.6V [0V]
Q5, Q6	−1.1V [0.7V]	−56.2V (−46.7V)	−0.6V [0V]
Q7, Q8	0.6V [0V]	56.2V (46.7V)	0V
Q9, Q10	−0.6V [0V]	−56.2V (−46.7V)	0V
Q11, Q12	0V	47.3V (39.2V) [0V]	0V
Q13, Q14	−0.5V [0.7V]	1.1V [0.7V]	−1.1V [0.7V]
Q15, Q16	0.4V [0V]	14.1V [0V]	0V
Q17, Q18	15.8V [1.0V]	0V	14.2V [0V]
Q19	16.4V [1.6V]	42.1V [44.3V]	16.2V [1.1V]
Q20	−16.2V	−36.5V [39.2V]	16.0V
Q21	47.6V (39.5V) [1.2V]	56.3V (46.8V)	47.0V (38.9V) [0.8V]
Q22	47.7V (39.5V) [0V]	0V [0.8V]	47.7V (39.5V) [0.8V]
Q23	0V [0.8V]	47.7V (39.5V) [0.8V]	0V
Q24	16.2V (15.6V) *3 [1.1V]	−15.8V (16.2V) *3 (−15.8V)	16.2V [1.1V]
Q25	−16.0V (−15.4V) *3	16.1V (15.3V) *4 −16.0V) *3	0V
Q26	0V (0.7V) *1	15.8V (0V) *1	0V

*1 : PHONO REC ON
*2 : PHONO REC or SELECTOR ON
*3 : PHONO REC ON
*4 : PHONO REC OFF TAPE-1 ON
( ) : PROTECTION WORKS
( ) : 8Ω = 4Ω

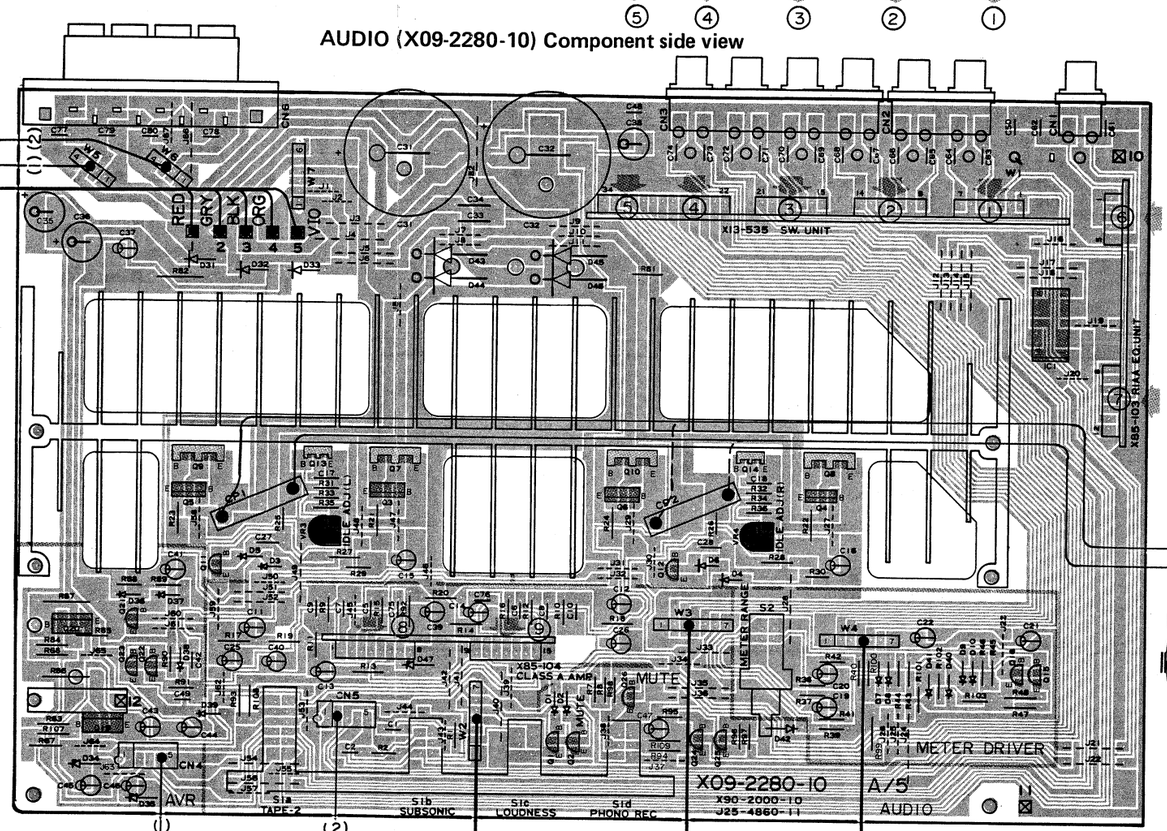
SWITCH (X13-5350-10) Component side view



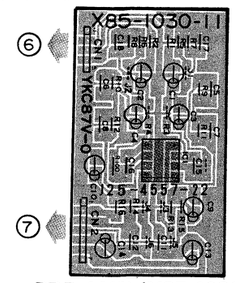
POWER SUPPLY (X00-2391-01) Foil side view



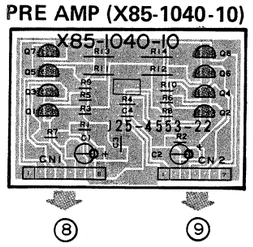
AUDIO (X09-2280-10) Component side view

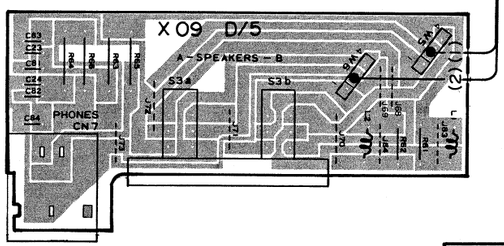


PRE AMP (X85-1030-11) Component side view

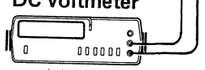


PRE AMP (X85-1040-10) Component side view



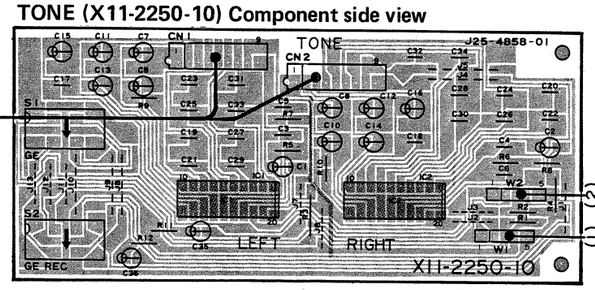


DC voltmeter



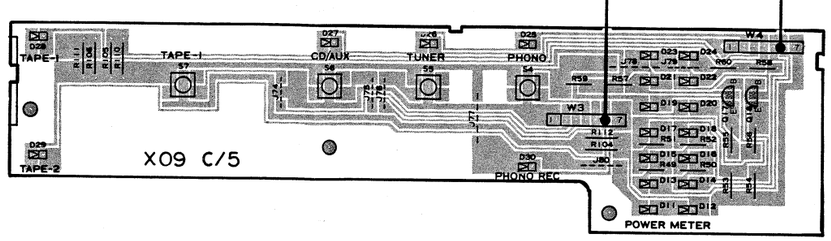
(a) 3mV

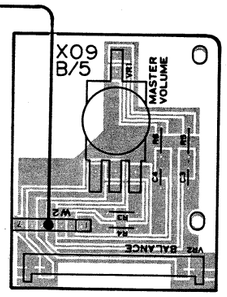
TONE (X11-2250-10) Component side view



X11-2250-10
IC1, 2

1–17	0V
18	15.8V
19	0V
20	−16V





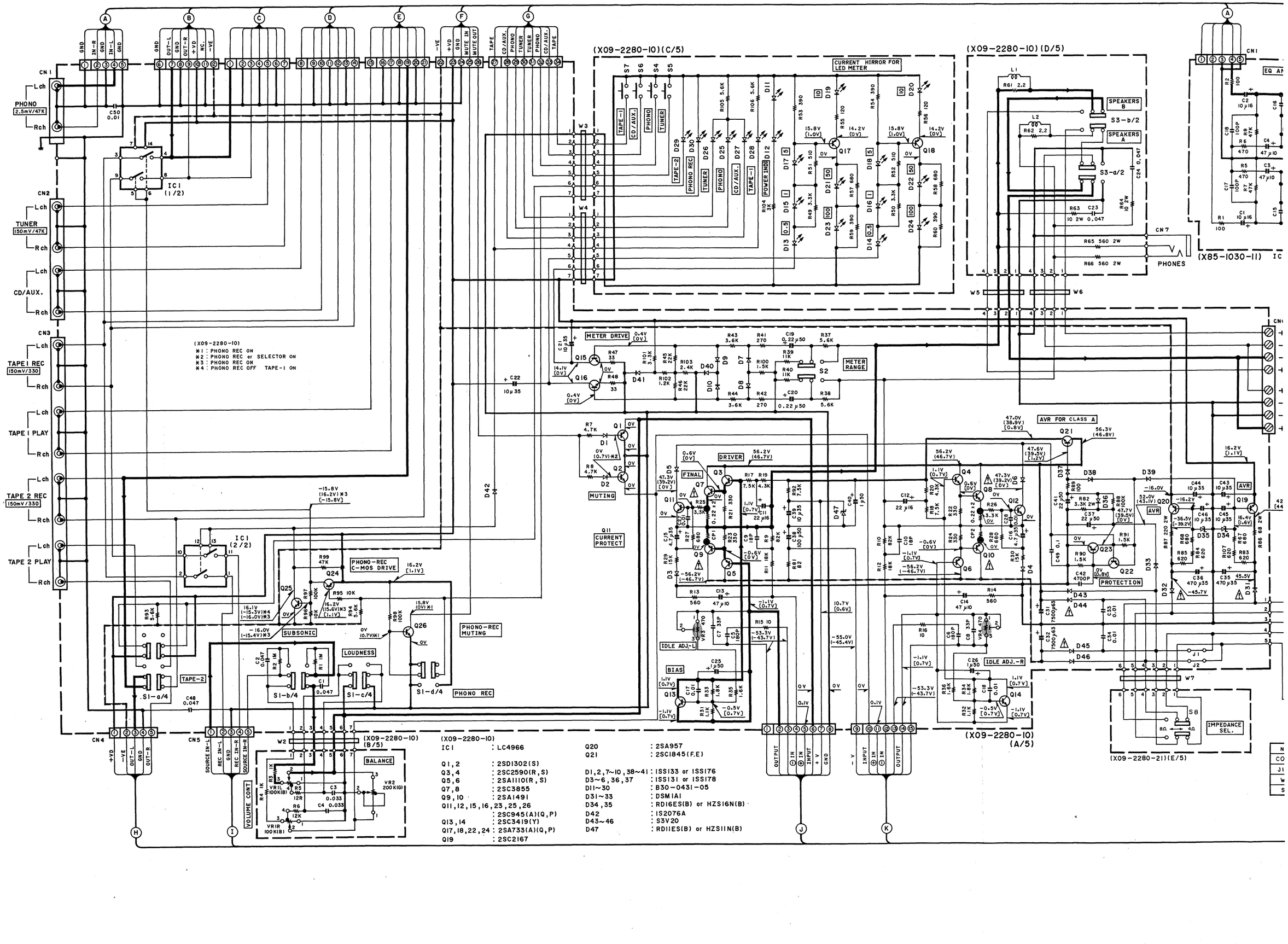
GRAPHIC EQUALIZER (R29-5006-05)

WHT
RED

FRONT

Component side view

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


(X09-2280-10)
*1 : PHONO REC ON
*2 : PHONO REC or SELECTOR ON
*3 : PHONO REC ON
*4 : PHONO REC OFF TAPE-1 ON
(X09-2280-10)
IC1 : LC4966
Q1,2 : 2SD1302(S)
Q3,4 : 2SC2590(R,S)
Q5,6 : 2SA1110(R,S)
Q7,8 : 2SC3855
Q9,10 : 2SA1491
Q11,12,15,16,23,25,26 : 2SC945(A)(Q,P)
Q13,14 : 2SC3419(Y)
Q17,18,22,24 : 2SA733(A)(Q,P)
Q19 : 2SC2167
Q20 : 2SA957
Q21 : 2SC1845(F,E)
D1,2,7~10,38~41 : 1SS133 or 1SS176
D3~6,36,37 : 1SS131 or 1SS178
D11~30 : B30-0431-05
D31~33 : DSM1A1
D34,35 : RD16ES(B) or HZS16N(B)
D42 : 1S2076A
D43~46 : S3V20
D47 : RD11ES(B) or HZS11N(B)
(X09-2280-10)(C/5)
(X09-2280-10)(D/5)
(X09-2280-10)(B/5)
(X09-2280-10)(A/5)
(X09-2280-21)(E/5)
(X85-1030-11) IC
CN1
CN2
CN3
CN4
CN5
CN7
PHONO 2.5mV/47K
TUNER 150mV/47K
CD/AUX.
TAPE 1 REC 150mV/330
TAPE 1 PLAY
TAPE 2 REC 150mV/330
TAPE 2 PLAY
PHONES
SPEAKERS B
SPEAKERS A
S3-b/2
S3-a/2
IC1 (1/2)
IC1 (2/2)
CURRENT HIRROR FOR LED METER
METER DRIVE
METER RANGE
DRIVER
FINAL
MUTING
Q11 CURRENT PROTECT
IDLE ADJ.-L
IDLE ADJ.-R
BIAS
AVR FOR CLASS A
AVR
PROTECTION
PHONO-REC C-MOS DRIVE
PHONO-REC MUTING
SUBSONIC
LOUDNESS
TAPE-2
PHONO REC
BALANCE
VOLUME CONT
IMPEDANCE SEL.
S1-a/4
S1-b/4
S1-c/4
S1-d/4
S2
S8
W1
W2
W3
W4
W5
W6
W7
SOURCE IN-L
REC IN-L
GND
REC IN-R
SOURCE IN-R
+VD
-VE
OUT-L
GND
OUT-R
INPUT
OUTPUT
+V
-V
GND

(X85-1030-11) IC1: AN6556 or M5218P

SWITCH UNIT (X13-5350-10)
IC1 : LC7816
Q1 : 2SA733A(Q)
D1~10 : MA156
D11, 12 : 1SS133

(U, M, UE) TYPE

(X00-2390-81)

(A, X) TYPE

(X00-2392-71)

(R29-5006-05)

(R29-5006-05)

TONE UNIT (X11-2250-10)
IC1, 2 : M5229P

(X00-2391-01)

(X09-2280-10)

NO.	K, P	M, U, UE
CODE	0-10	0-21
J1, 2	YES	NO
W7	NO	YES
S8	NO	YES

(X85-1040-10)
Q1~4 : 2SA992(F, E)
Q5~8 : 2SC1845(F, E)

2SA733(A) 2SC945(A)
2SA992 2SD1302
2SC1845

2SA1110
2SC2590

2SA957
2SC2167

2SA1491
2SC3855

2SC3419

M5229P

AN6556
M5218P

LC7816

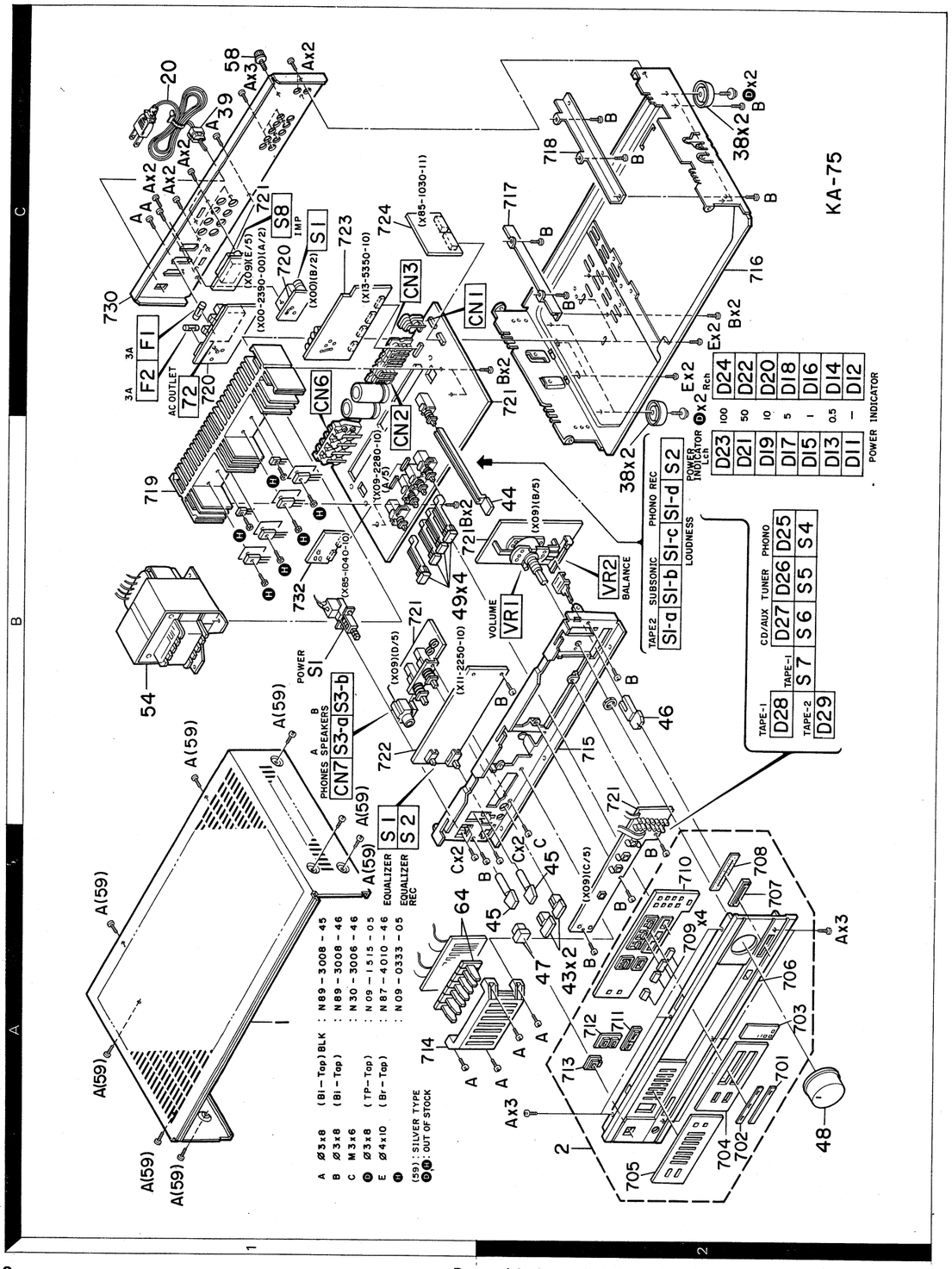
LC4966

CAUTION : For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ 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.

KA-75
KENWOOD

EXPLODED VIEW



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

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	Destination 仕向	Remarks 備考
			KA-75			
1	1A		A01-1319-02	METALLIC CABINET	M2A2	
1	1A		A01-1481-02	METALLIC CABINET	KPUM1	
1	1A		A01-1481-02	METALLIC CABINET	XA1UE	
2	2A	*	A20-4769-02	PANEL ASSY	KPUM1	
2	2A	*	A20-4769-02	PANEL ASSY	XA1UE	
2	2A	*	A20-4770-02	PANEL ASSY	M2A2	
-			B46-0092-03	WARRANTY CARD	K	
-			B46-0094-03	WARRANTY CARD	UUE	
-			B46-0095-03	WARRANTY CARD	UUE	
-			B46-0096-13	WARRANTY CARD	X	
-			B46-0121-03	WARRANTY CARD	P	
-		*	B50-6104-00	INSTRUCTION MANUAL(ENGLISH)		
-		*	B50-6105-00	INSTRUCTION MANUAL(FRENCH)	PM1M2X	
-		*	B50-6105-00	INSTRUCTION MANUAL(FRENCH)	A1A2	
-		*	B50-6106-00	INSTRUCTION MANUAL(SPANISH)	M1M2	
-		*	B50-6106-00	INSTRUCTION MANUAL(SPANISH)	A1A2	
-		*	B50-6107-00	INSTRUCTION MANUAL(ARABIC)	A1A2	
-		*	B50-6107-00	INSTRUCTION MANUAL(ARABIC)	M1M2	
-			B58-0223-04	CAUTION CARD (PRE-SET 120V)	U	
-			B58-0269-04	CAUTION CARD	KA1A2	
-			B58-0513-04	CAUTION CARD (PRESET220-240)	UE	
-			B59-0092-00	SERVICE DIRECTORY	UUE	
⚠ 20		1C		E30-0459-05	AC POWER CORD	A1A2
⚠ 20		1C		E30-0812-05	AC POWER CORD	UM1UE
⚠ 20		1C		E30-0812-05	AC POWER CORD	M2
⚠ 20		1C		E30-0974-05	AC POWER CORD	KP
⚠ 20		1C		E30-1341-05	AC POWER CORD	X
⚠ F1		1C		F05-2525-05	FUSE (SEMKO) (250V T2.5A)	X
⚠ F1		1C		F06-5022-05	FUSE (UL) (250V 5A)	KP
⚠ F1	,2	1C		F05-2521-05	FUSE (250V 2.5A)	UM1UE
⚠ F1	,2	1C		F05-2521-05	FUSE (250V 2.5A)	M2
⚠ F1		1C		F05-2525-05	FUSE (SEMKO) (250V T2.5A)	A1A2
-				G11-0163-04	SOFT TAPE (40X20X20)	
-		*		H01-7109-04	ITEM CARTON CASE	KPUM1
-		*		H01-7109-04	ITEM CARTON CASE	UE
-		*		H01-7109-04	ITEM CARTON CASE	XA1
-		*		H01-7174-04	ITEM CARTON CASE	M2A2
-				H10-3317-02	POLYSTYRENE FOAMED FIXTURE	
-		*		H11-0002-04	POLYSTYRENE FOAMED BOARD	
-				H25-0223-04	PROTECTION BAG (750X350)	
-				H25-0232-04	PROTECTION BAG (235X350)	
38		2B,2C		J02-0161-04	FOOT	
⚠ 39		1C		J42-0083-05	POWER CORD BUSHING	
-				J61-0307-05	WIRE BAND	
43		2A		K27-0742-14	KNOB (BUTTON) SPEAKERS	
44		1B	*	K27-1637-04	KNOB (BUTTON) METER	
45		2A	*	K27-1638-04	KNOB (BUTTON) GE	
46		2B	*	K27-1639-04	KNOB (BUTTON) BALANCE	
47		2A		K29-1446-04	KNOB ASSY POWER	M2A2
47		2A		K29-2001-04	KNOB ASSY POWER	KPUM1

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	47	2A		K29-2001-04	KNOB ASSY POWER	UE	
	47	2A		K29-2001-04	KNOB ASSY POWER	XA1	
	48	2A		K29-2020-04	KNOB VOLUME	KPUM1	
	48	2A		K29-2020-04	KNOB VOLUME	UE	
	48	2A		K29-2020-04	KNOB VOLUME	XA1	
	48	2A	*	K29-2435-04	KNOB VOLUME	M2A2	
	49	1B	*	K29-2375-04	KNOB ASSY TAPE	KPUM1	
	49	1B	*	K29-2375-04	KNOB ASSY TAPE	UE	
	49	1B	*	K29-2375-04	KNOB ASSY TAPE	XA1	
	49	1B	*	K29-2376-04	KNOB ASSY TAPE	M2A2	
⚠	54	1B	*	L01-7041-05	POWER TRANSFORMER	KP	
⚠	54	1B	*	L01-7045-05	POWER TRANSFORMER	UM1UE	
⚠	54	1B	*	L01-7045-05	POWER TRANSFORMER	XM2	
⚠	54	1B	*	L01-7045-05	POWER TRANSFORMER	A1A2	
	58	1C		N08-0128-35	BINDING POST (GND)		
	59	1A		N09-1473-05	TAPPING SCREW (M3X8) CASE	M2A2	
	D	2C		N09-1515-05	TAPPING SCREW (3X8)		
	64	1A		R29-5006-05	POTENTIOMETER (GE)		
⚠	S1	1B		S40-1073-05	PUSH SWITCH		
	POWER SUPPLY (X00-2391-01)						
⚠	C1			C91-0023-05	CERAMIC 0.01UF AC250V	UM1UE	
⚠	C1			C91-0023-05	CERAMIC 0.01UF AC250V	M2	
⚠	C1			C91-0647-05	CERAMIC 0.01UF P	KPX	
⚠	C1			C91-0647-05	CERAMIC 0.01UF P	A1A2	
⚠	72	1C	*	E03-0077-05	AC OUTLET	UM1UE	
⚠	72	1C	*	E03-0077-05	AC OUTLET	M2	
⚠	72	1C	*	E03-0078-05	AC OUTLET	KP	
	-			J13-0041-05	FUSE CLIP	KPUM1	
	-			J13-0041-05	FUSE CLIP	UEM2	
	-			J13-0054-05	FUSE CLIP	XA1A2	
	-			J61-0307-05	WIRE BAND	XA1A2	
⚠	S1	1C		S31-2083-05	SLIDE SWITCH (POWER TYPE)	UM1UE	
⚠	S1	1C		S31-2083-05	SLIDE SWITCH (POWER TYPE)	A1A2M2	
	AUDIO (X09-2280-10)						
	D11 -30	2B,2C		B30-0431-05	LED(LN21CPH)		
	C1 ,2			CF92FV1H473J	MF 0.047UF J		
	C3 ,4			CF92FV1H333J	MF 0.033UF J		
	C5 ,6			CC45FSL1H181J	CERAMIC 180PF J		
	C7 ,8			CC45FSL1H330J	CERAMIC 33PF J		
	C9 ,10			CC45FSL1H180J	CERAMIC 18PF J		
	C11 ,12			CE04KW1C220M	ELECTRO 22UF 16WV		
	C13 ,14			CE04KW1A470M	ELECTRO 47UF 10WV		
	C15 ,16			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
	C17 ,18			C91-0769-05	CERAMIC 0.01UF M		
	C19 ,20			CE04KW1HR22M	ELECTRO 0.22UF 50WV		
	C21 ,22			CE04KW1V100M	ELECTRO 10UF 35WV		
	C23 ,24			CK45FF1H473Z	CERAMIC 0.047UF Z		
	C25 ,26			CE04KW1H010M	ELECTRO 1.0UF 50WV		
	C27 ,28			C91-0769-05	CERAMIC 0.01UF M		
	C31 ,32			C90-1317-05	ELECTRO 7500UF 63WV		
	C33 ,34			CK45FE2H103P	CERAMIC 0.010UF P		

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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	Destination 仕向	Remarks 備考
	C35 ,36			CE04KW1V471M	ELECTRO 470UF 35WV		
	C37			CE04KW1H220M	ELECTRO 22UF 50WV		
	C38			CE04KW1H101M	ELECTRO 100UF 50WV		
	C39			CE04KW1V100M	ELECTRO 10UF 35WV		
	C40			CE04KW1H010M	ELECTRO 1.0UF 50WV		
	C41			CE04KW1H220M	ELECTRO 22UF 50WV		
	C42			CF92FV1H472J	MF 4700PF J		
	C43 -46			CE04KW1V100M	ELECTRO 10UF 35WV		
	C48			CK45FF1H473Z	CERAMIC 0.047UF Z		
	C49			CF92FV1H104J	MF 0.10UF J		
	C50			CK45FF1H103Z	CERAMIC 0.010UF Z		
	CN1	1C		E13-0235-05	PHONO JACK (2P)PHONO		
	CN2	1B		E13-0497-05	PHONO JACK (4P)TUNER/CD		
	CN3	1C		E13-0814-05	PHONO JACK (8P)TAPE		
	CN6	1C		E20-0823-05	LOCK TERMINAL BOARD(8P)SP		
	CN7	1B		E11-0162-05	PHONE JACK (3P)PHONES		
	L1 ,2			L39-0085-05	PHASE-COMPENSATION COIL		
	H	1B		N09-0333-05	TAPPING SCREW (3X12)		
	CP1 ,2			R90-0187-05	MULTI-COMP 0.22X2 K 5W		
	R21 -24			RD14AB2E331J	FL-PROOF RD 330 J 1/4W		
	R61 ,62			RD14AB2E2R2J	FL-PROOF RD 2.2 J 1/4W		
	R63 ,64			RS14DB3D100J	FL-PROOF RS 10 J 2W		
	R65 ,66			RS14DB3D561J	FL-PROOF RS 560 J 2W		
	RB1			RD14AB2E820J	FL-PROOF RD 82 J 1/4W		
	RB2			RS14DB3D332J	FL-PROOF RS 3.3K J 2W		
	RB6			RS14DB3D680J	FL-PROOF RS 68 J 2W		
	RB7			RS14DB3D221J	FL-PROOF RS 220 J 2W		
	VR1	2B	*	RD6-5151-05	POTENTIOMETER(100K B)VOLUME		
	VR2	2B	*	R13-5080-05	POTENTIOMETER(200K G)BALANCE		
	VR3 ,4			R12-0094-05	TRIMMING POT.(47Ω) BIAS		
	S1	1B	*	S42-4048-05	MULTIPLE PUSH SWITCH(SELECTOR)		
	S2	1B		S40-2193-05	PUSH SWITCH (METER RANGE)		
	S3	1B	*	S42-2138-05	MULTIPLE PUSH SWITCH(SPEAKERS)		
	S4 -7	2B		S40-1064-05	PUSH SWITCH		
	S8	1C		S31-2113-05	SLIDE SWITCH (IMPEDANCE)	UM1UEX	
	S8	1C		S31-2113-05	SLIDE SWITCH (IMPEDANCE)	A1A2M2	
	D1 ,2			1SS133	DIODE		
	D1 ,2			1SS176	DIODE		
	D3 -6			1SS131	DIODE		
	D3 -6			1SS178	DIODE		
	D7 -10			1SS133	DIODE		
	D7 -10			1SS176	DIODE		
⚠	D31 -33			DSM1A1	DIODE		
	D34 ,35		*	HZS16N(B)	ZENER DIODE		
	D34 ,35		*	RD16ES(B)	ZENER DIODE		
	D36 ,37			1SS131	DIODE		
	D36 ,37			1SS178	DIODE		
	D38 -41			1SS133	DIODE		
	D38 -41			1SS176	DIODE		
	D42			1S2076A	DIODE		
⚠	D43 -46			S3V20	DIODE		

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D47		*	HZS11N(B)	ZENER DIODE		
D47			RD11ES(B)	ZENER DIODE		
IC1		*	LC4966	IC(CMOS LOGIC BILATERAL SW)		
Q1 ,2			2SD1302(S)	TRANSISTOR		
Q3 ,4			2SC2590(R,S)	TRANSISTOR		
Q5 ,6			2SA1110(R,S)	TRANSISTOR		
⚠ Q7 ,8		*	2SC3855	TRANSISTOR		
⚠ Q9 ,10		*	2SA1491	TRANSISTOR		
Q11 ,12			2SC945(A)(Q,P)	TRANSISTOR		
Q13 ,14			2SC3419(Y)	TRANSISTOR		
Q15 ,16			2SC945(A)(Q,P)	TRANSISTOR		
Q17 ,18			2SA733(A)(Q,P)	TRANSISTOR		
Q19			2SC2167	TRANSISTOR		
Q20			2SA957	TRANSISTOR		
Q21			2SC1845(F,E)	TRANSISTOR		
Q22			2SA733(A)(Q,P)	TRANSISTOR		
Q23			2SC945(A)(Q,P)	TRANSISTOR		
Q24			2SA733(A)(Q,P)	TRANSISTOR		
Q25 ,26			2SC945(A)(Q,P)	TRANSISTOR		
TONE (X11-2250-10)						
C1 ,2			CE04KW1H3R3M	ELECTRO 3.3UF 50WV		
C3 -6			CK45FB1H561K	CERAMIC 560PF K		
C7 ,8			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C9 ,10			CE04KW1H0R1M	ELECTRO 0.1UF 50WV		
C11 ,12			CE04KW1HR47M	ELECTRO 0.47UF 50WV		
C13 ,14			CE04KW1H0R1M	ELECTRO 0.1UF 50WV		
C15 ,16			CE04KW1HR22M	ELECTRO 0.22UF 50WV		
C17 ,18			CF92FV1H303J	MF 0.030UF J		
C19 ,20			CF92FV1H823J	MF 0.082UF J		
C21 ,22			CF92FV1H123J	MF 0.012UF J		
C23 ,24			CF92FV1H333J	MF 0.033UF J		
C25 ,26			CF92FV1H512J	MF 5100PF J		
C27 ,28			CF92FV1H133J	MF 0.013UF J		
C29 ,30			CF92FV1H202J	MF 2000PF J		
C31 ,32			CF92FV1H472J	MF 4700PF J		
C33 ,34			CK45FB1H821K	CERAMIC 820PF K		
C35 ,36			CE04KW1H3R3M	ELECTRO 3.3UF 50WV		
S1 ,2	1B	*	S40-2351-05	PUSH SWITCH (GE)		
IC1 ,2		*	M5229P	IC(7CH GRAPHIC EQULIZER)		
SWITCH (X13-5350-10)						
C1			CE04KW1C102M	ELECTRO 1000UF 16WV		
C2			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C3			CE04KW1H3R3M	ELECTRO 3.3UF 50WV		
C4 -6			C91-0769-05	CERAMIC 0.01UF M		
D1 -10			MA156	DIODE		
D11 ,12			1SS133	DIODE		
IC1		*	LC7816	IC		
Q1			2SA733(A)(Q)	TRANSISTOR		
PRE AMP (X85-1030-11)						
C1 ,2			CE04FW1C100M	ELECTRO 10UF 16WV		
C3 ,4			CE04FW1A470M	ELECTRO 47UF 10WV		
C5			CF92FV1H123J	MF 0.012UF J		
C6			CF92FV1H123J	MF 0.012UF J		

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C7			CF92FV1H332J	MF 3300PF J		
C8			CF92FV1H332J	MF 3300PF J		
C9 ,10			CE04KW1V100M	ELECTRO 10UF 35WV		
C11 ,12			CK45FF1H103Z	CERAMIC 0.010UF Z		
C15 ,16			CK45FB1H561K	CERAMIC 560PF K		
C17 ,18			CC45FSL1H101J	CERAMIC 100PF J		
IC1			AN6556	IC(OP AMP X2)		
IC1			M5218P	IC(OP AMP X2)		
PRE AMP (X85-1040-10)						
C1 ,2			CE04FW1H3R3M	ELECTRO 3.3UF 50WV		
C3 ,4			CC45FSL1H221J	CERAMIC 220PF J		
R11 ,12			RD14AB2E271J	FL-PROOF RD 270 J 1/4W		
R13 ,14			RD14AB2E181J	FL-PROOF RD 180 J 1/4W		
Q1 -4			2SA992(F,E)	TRANSISTOR		
Q5 -8			2SC1845(F,E)	TRANSISTOR		

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SPECIFICATION :
Refer to specifications on page 5.

Note :
Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on, the U.S.A. (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.

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