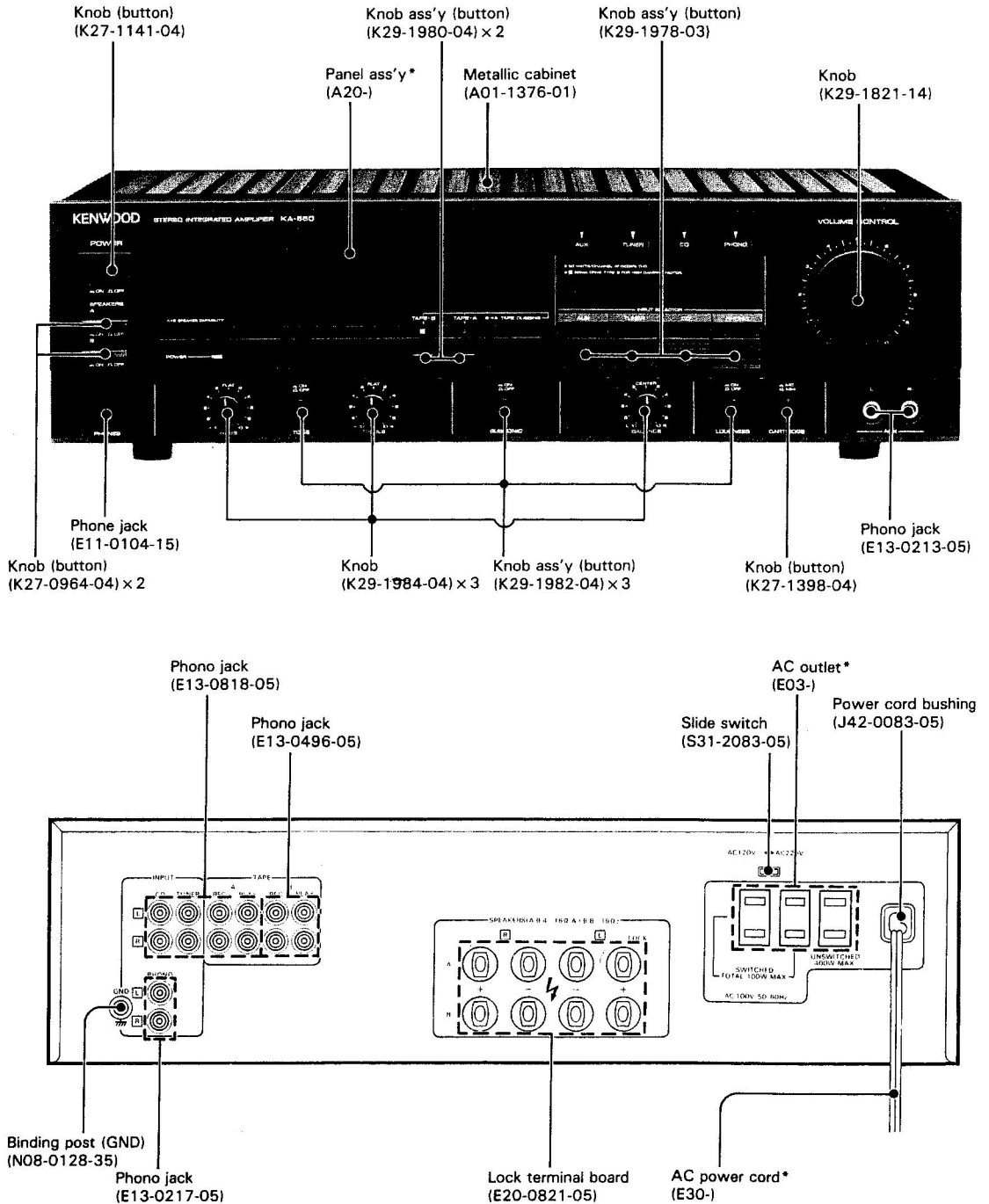


KENWOOD

KA-660

STEREO INTEGRATED AMPLIFIER



*Refer to Parts List on page 6.

DISASSEMBLY FOR REPAIR

REPLACEMENT OF PARTS ON AUDIO UNIT

1. Remove 2 screws at the chassis R (unified with the bottom plate) (1) and 3 screws at the rear panel (2).

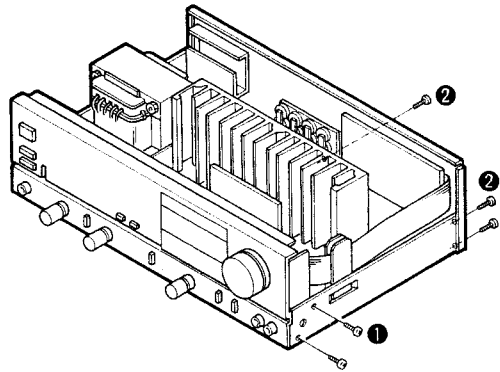


Fig. 1

2. Remove 6 screws at the bottom plate (3).
3. Slide and remove the bottom plate as shown by the arrow, being aware that parallel flat cable is sandwiched by pc boards (4).

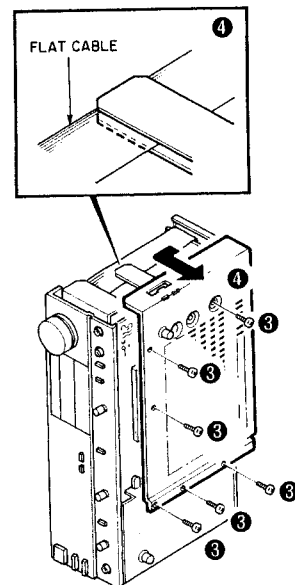


Fig. 2

REPLACEMENT OF PARTS ON MAIN AMP UNIT

4. Pull off BASS, TREBLE and BALANCE knobs (5).
Remove 3 screws at the top of the panel ass'y (6).
5. Remove 4 screws at the sides of the chassis, 2 on each side, (7) and 3 screws at the bottom side of the panel ass'y (8).

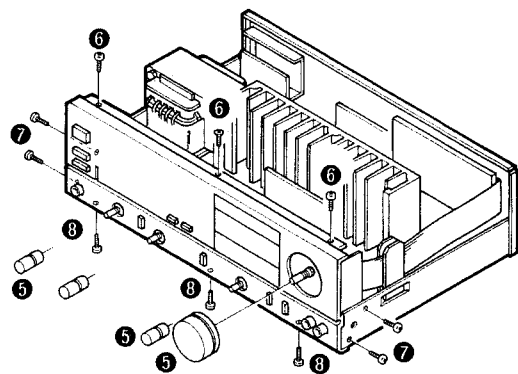
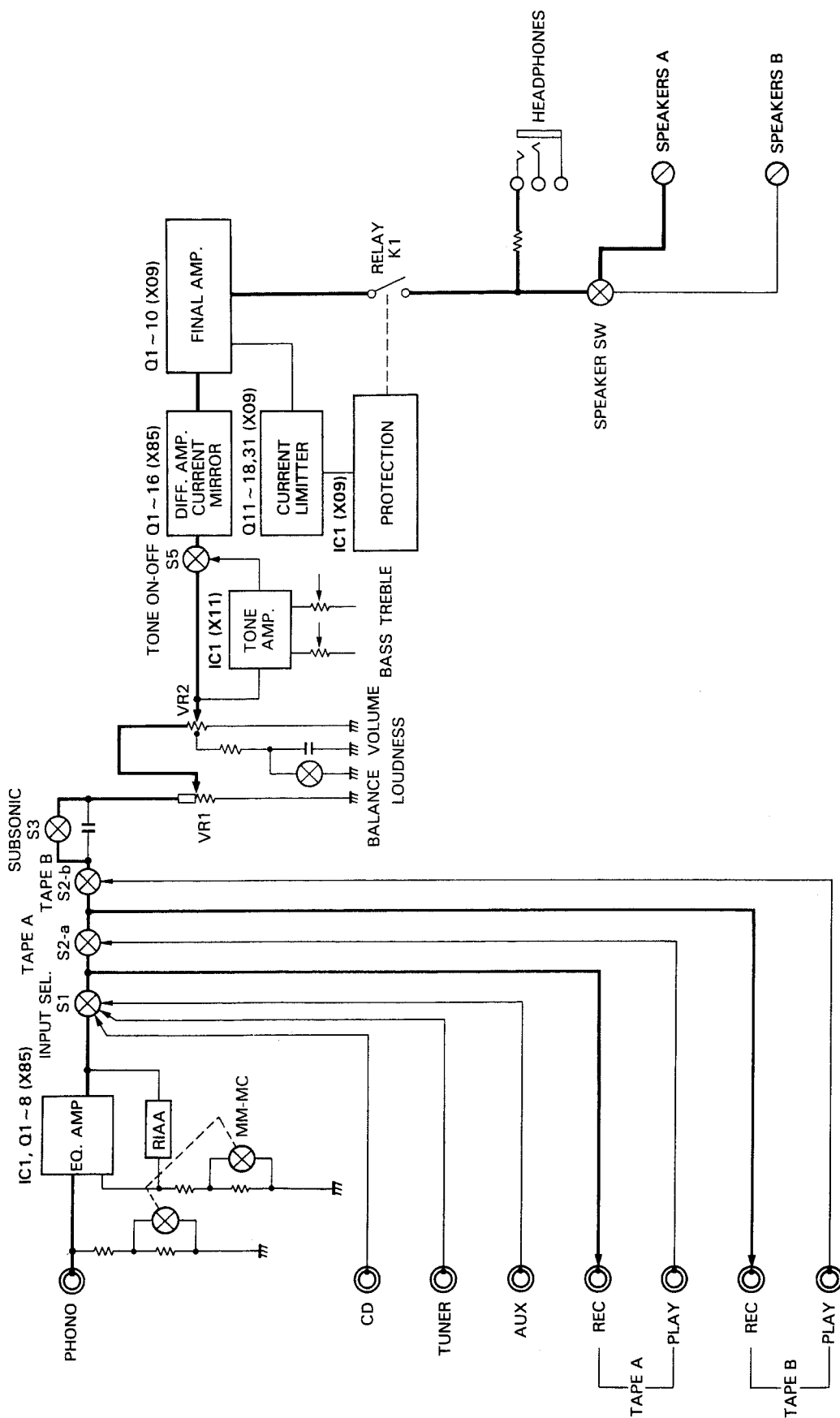


Fig. 3

BLOCK DIAGRAM



6. Disconnect parallel cords from their connectors and take the panel ass'y forward (9 , 10).

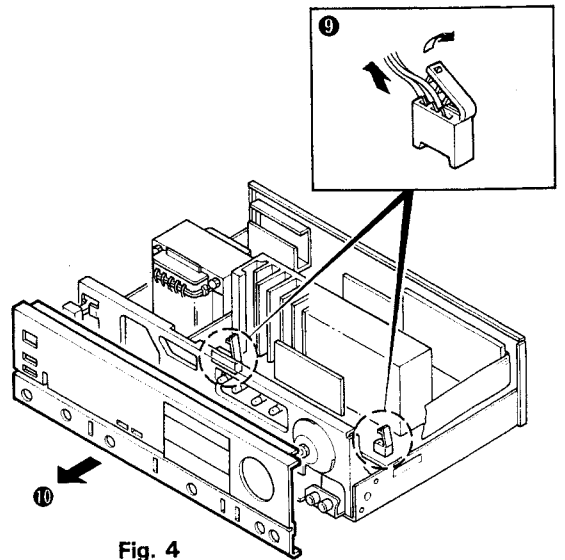


Fig. 4

REPLACEMENT OF FLAT CABLE

7. Pull both ends of the connector ends (11). Pull out the flat cable (12).
8. When plugging in the flat cable be sure the both ends are pulled up (13).
9. After the flat cable has been inserted, all the way, push the both ends of the connector (14). Make sure the flat cable is secured in the connector.

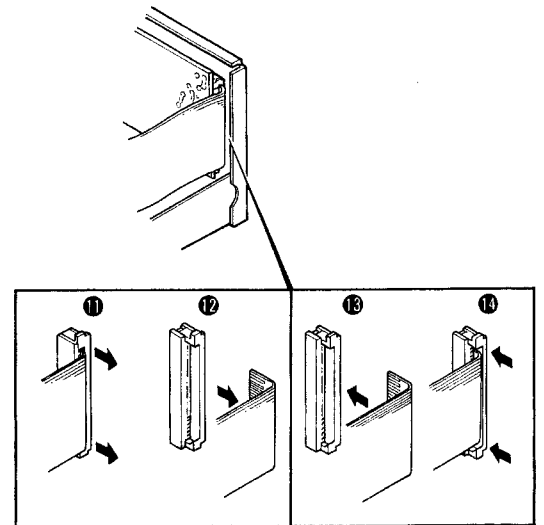


Fig. 5

REPLACEMENT OF PARTS ON CONTROL UNIT

10. Remove 2 screws retaining the escutcheon of the INPUT SELECTOR (15).
11. Pull the knobs off (16).
(Caution) Pull the knobs off at switch-off position. Pulling off at switch-on position will cause a lock malfunction. This switch is a short stroke type switch and for this reason, switch on-off position is not easily distinguished.
12. Remove 4 hexagonal nuts from the potentiometers (17).
13. Remove 2 screws retaining the selector switch (18).
14. Pull the sub chassis forward (10).
15. Remove 2 push rivets retaining the pc board (20).

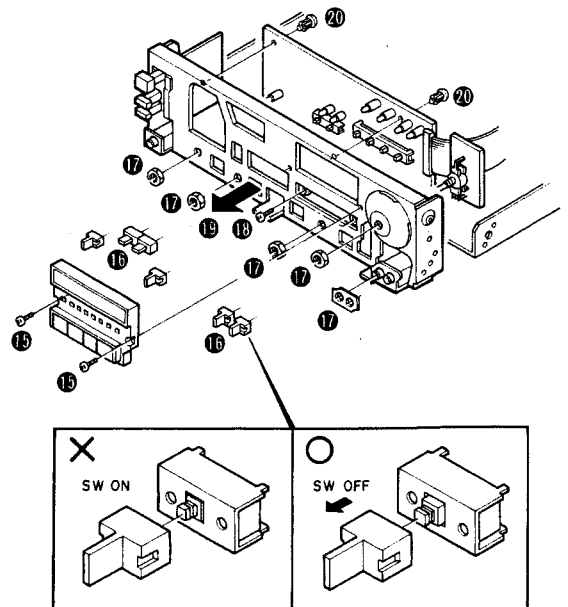


Fig. 6

CIRCUIT DESCRIPTION

PRE-AMP UNIT (X85-1010-10)

Components	Functions	Operations (Substitutions)
	Cascade amp.	
Q5-8	EQ circuit first-stage differential amp	
IC1	EQ circuit op-amp IC	

CONTROL UNIT (X11-2130-10)

Components	Functions	Operations (Substitutions)
IC1	Tone circuit op-amp	

AUDIO UNIT (X09-2130-10)

Components	Functions	Operations (Substitutions)
Q1, 2	Bias	
Q3-6	Driver	(2SA913, 2SC1913)
Q7-10	Final	
Q11-18, 31	Current limiter	Final protection circuit (Q17,18 for high voltage resistance) for over-load drive.
Q32, 33	Voltage regulator circuit	Voltage regulation circuit inserted into the B line towards the EQ circuit. (2SA1110, 2SC2590)
Q34, 35	PHONO shock noise prevention circuit Muting	When the B voltage of the EQ circuit drops by switching power ON, and when the drop of the -B voltage is slower than that of +B, chemical capacitors C27 and C28, which are inserted in the EQ and NF circuits, are changed and the time between the power ON and the stabilization of output in terms of DC increases. This circuit prevents shock noise or relay which could occur when MM/MC is switched later.
IC1	Protection IC	This circuit disconnects the relay when the amp is malfunctioning.
D11-14	Rectifier	(GP25, U05C (S))
D18, 19	AVR for increasing the voltage.	(RD22J (B), RD20J (B))
D22, 23	AVR for EQ.	(RD20J (B2))
D3, 4	Thermal compensation	

MAIN AMP UNIT (X85-1050-10)

Components	Functions	Operations (Substitutions)
Q1-4	Class A 1st stage differential amp	
Q5-8	2nd stage differential amp	
Q9, 10	Class A amp	
Q11-14	3rd stage differential amp	(2SC1904)
Q15, 16	Current mirror circuit	(2SA899)

ADJUSTMENT/REGLAGES/ABGLEICH

ADJUSTMENT

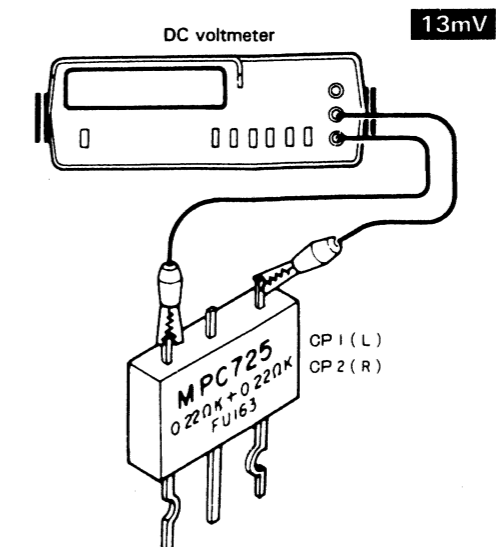
No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	AMPLIFIER SETTINGS	ALIGNMENT POINTS	ALIGN FOR	FIG.
1	IDLE CURRENT	-	Connect a DC voltmeter across CP1 (L) CP2 (R).	VOLUME: 0	VR1 (L) VR2 (R)	13mV	

REGLAGE

N°	ITEM	REGLAGE DE L'ENTREE	REGLAGE DE LA SORTIE	REGLAGE DE L'AMPLIFICATEUR	POINTS L'ALIGNEMENT	ALIGNER POUR	FIG.
1	COURANT DE POLARISATION	-	Connecter un voltmètre CC sur CP1 (C) CP2 (D).	VOLUME: 0	VR1 (C) VR2 (D)	13mV	

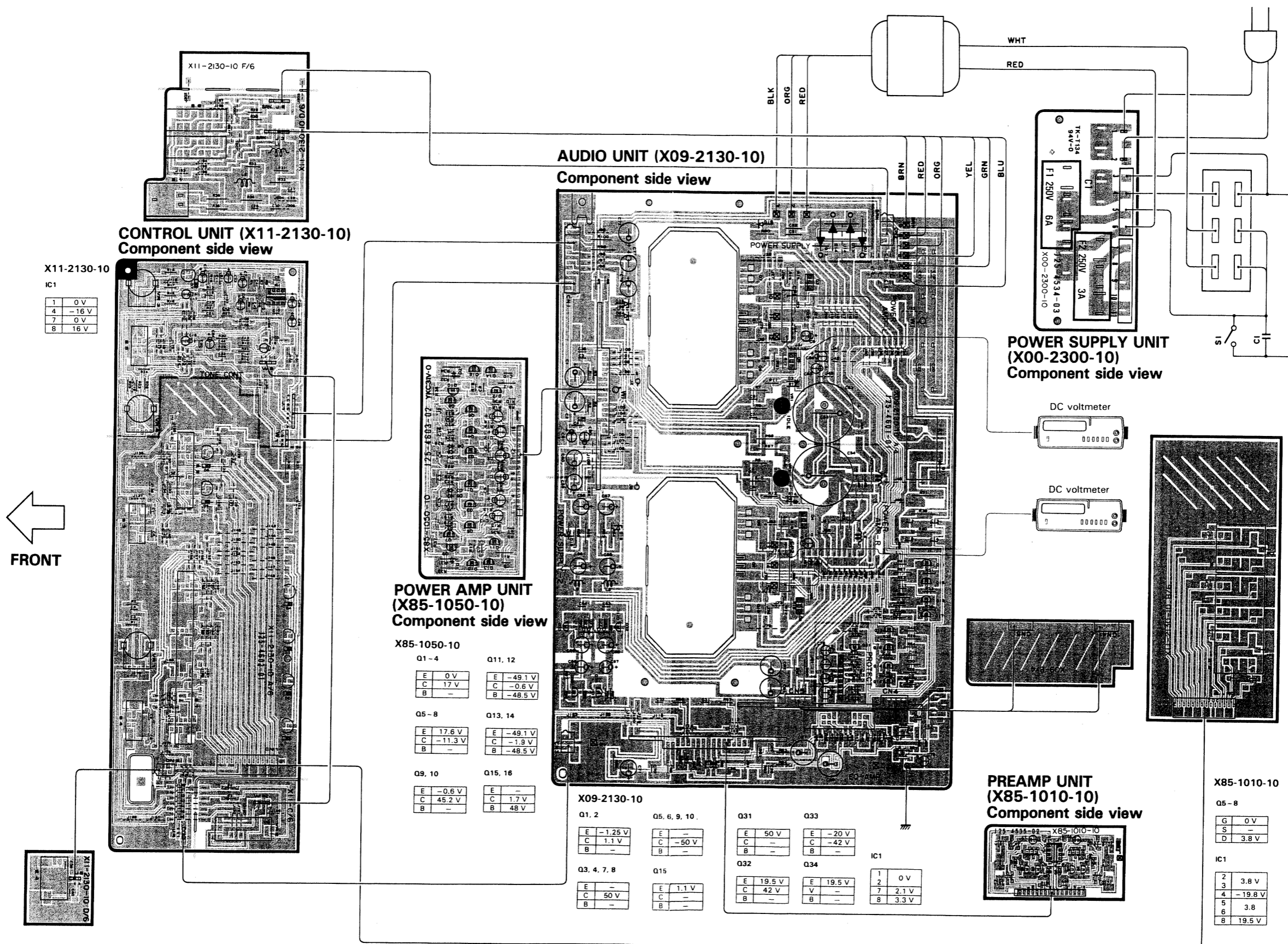
ABGLEICH

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)	13mV	



KA-660 KA-660

PC BOARD



X11-2130-10
IC1

1	0 V
4	-16 V
7	0 V
8	16 V

CONTROL UNIT (X11-2130-10)
Component side view

AUDIO UNIT (X09-2130-10)
Component side view

POWER AMP UNIT (X85-1050-10)
Component side view

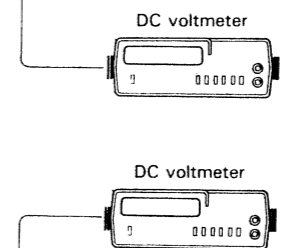
X85-1050-10

Q1 - 4		Q11, 12	
E	0 V	E	-49.1 V
C	17 V	C	-0.6 V
B	-	B	-48.5 V
Q5 - 8		Q13, 14	
E	17.6 V	E	-49.1 V
C	-11.3 V	C	-1.3 V
B	-	B	-48.5 V
Q9, 10		Q15, 16	
E	-0.6 V	E	-
C	45.2 V	C	1.7 V
B	-	B	48 V

X09-2130-10

Q1, 2		Q5, 6, 9, 10		Q31		Q33		IC1	
E	-1.25 V	E	-	E	50 V	E	-20 V	1	0 V
C	1.1 V	C	-50 V	C	-	C	-42 V	2	0 V
B	-	B	-	B	-	B	-	7	2.1 V
Q3, 4, 7, 8		Q15		Q32		Q34		8	3.3 V
E	-	E	1.1 V	E	19.5 V	E	19.5 V		
C	50 V	C	-	C	42 V	C	-		
B	-	B	-	B	-	B	-		

POWER SUPPLY UNIT (X00-2300-10)
Component side view



PREAMP UNIT (X85-1010-10)
Component side view

X85-1010-10

Q5 - 8		IC1	
G	0 V	2	3.8 V
S	-	3	-
D	3.8 V	4	-19.8 V
		5	3.8
		6	3.8
		8	19.5 V

Refer to the schematic diagram for the values of resistors and capacitors. The PC board drawing is viewing from the side easy to check.

KENWOOD

SPECIFICATION

EIA

Power Amplifier Section

Power Output

60 watts* per channel minimum RMS, both channels driven at 8 ohms from 20 Hz to 20,000 Hz with no more than 0.006% total harmonic distortion

Both Channels Driven into

8 ohms at 1 kHz 65 W + 65 W (Except USA, Europe, and U.K.)
4 ohms at 1 kHz 90 W + 90 W (Except USA, Europe, and U.K.)

Dynamic Power Output 145 watts at 4 ohms (Except USA, Europe, Australia, and U.K.)

Total Harmonic Distortion (AUX—SPKR 8 Ω)

at Rated Output,
20 Hz ~ 20,000 Hz 0.006%
at 1/2 Rated Output,
20 Hz ~ 20,000 Hz 0.004%
at Rated Output, 1,000 Hz 0.003%
(PHONO—SPKR 8 Ω : at -20 dB VOLUME Level)
at Rated Output,
20 Hz ~ 20,000 Hz 0.006%

Intermodulation Distortion

(60 Hz:7 kHz = 4:1) 0.006% at rated power into 8 ohms

Damping Factor 1,000, at 50 Hz into 8 ohms

Transient Response

Rise Time 3.5 μs
..... 1 μs to 100 kHz

Input Sensitivity/Impedance

Phono MM 2.5 mV/47 k ohms
Phono MC 0.2 mV/100 ohms

TUNER, AUX., TAPE PLAY,

CD 150 mV/47 k ohms

Signal-to-Noise Ratio (IHF-A)

Phono MM 86 dB for 2.5 mV input

Phono MC 68 dB for 250 μV input

TUNER, AUX., TAPE PLAY,

CD 107 dB

Maximum Input Level for Phono

MM 200 mV (RMS), T.H.D. 0.006% at 1 kHz

MC 15 mV (RMS), T.H.D. 0.006% at 1 kHz

Output Level/Impedance

TAPE REC (Pin) 150 mV/220 ohms

Frequency Response for Phono RIAA standard curve ±0.3 dB (20 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) +9 dB at 100 Hz

Subsonic Filter 18 Hz, 6 dB/oct.

General

Power Consumption 220 W

AC Outlets Switched 2, Unswitched 1 (Except U.K., European, Australian countries)

Dimensions W: 440 mm (17-5/16")
H: 133 mm (5-1/4")
D: 222 mm (8-11/16")

STEREO INTEGRATED AMPLIFIER

IEC

Power Amplifier Section

Rated Power Output

8 ohms at 20 Hz to 20,000 Hz no more than 0.006% THD (FTC)	60 W + 60 W
4 ohms at 60 Hz to 12.5 kHz no more than 0.7% THD (IEC/NF)	90 W + 90 W

Total Harmonic Distortion

Rated Power Output into 8 ohms	0.006%
Intermodulation Distortion	0.006%
Frequency Response	1 Hz - 100 kHz +0 dB, -3 dB

S/N Weighted: Rated Output Power (IEC-A)

() = Unweighted at 50 mW (DIN)

Phono MM	86 dB (55 dB)
Phono MC	68 dB (60 dB)
TUNER, AUX., TAPE PLAY, CD	107 dB (57 dB)
Damping Factor at 8 ohms, 50 Hz	1,000
Transient Response	
Rise Time	3.5 μ s
Input Sensitivity/Impedance	
Phono MM	2.5 mV/47 k Ω
Phono MC	0.2 mV/100 Ω
TUNER, AUX., TAPE PLAY, CD	150 mV/47 k Ω

Tone Control

Bass 100 Hz	\pm 10 dB
Treble 10 kHz	\pm 10 dB
Loudness Control (-30 dB)	9 dB at 100 Hz

General

Power Consumption

IEC 220 W

Dimensions

W: 440 mm

H: 133 mm

D: 333 mm

Weight (Net)

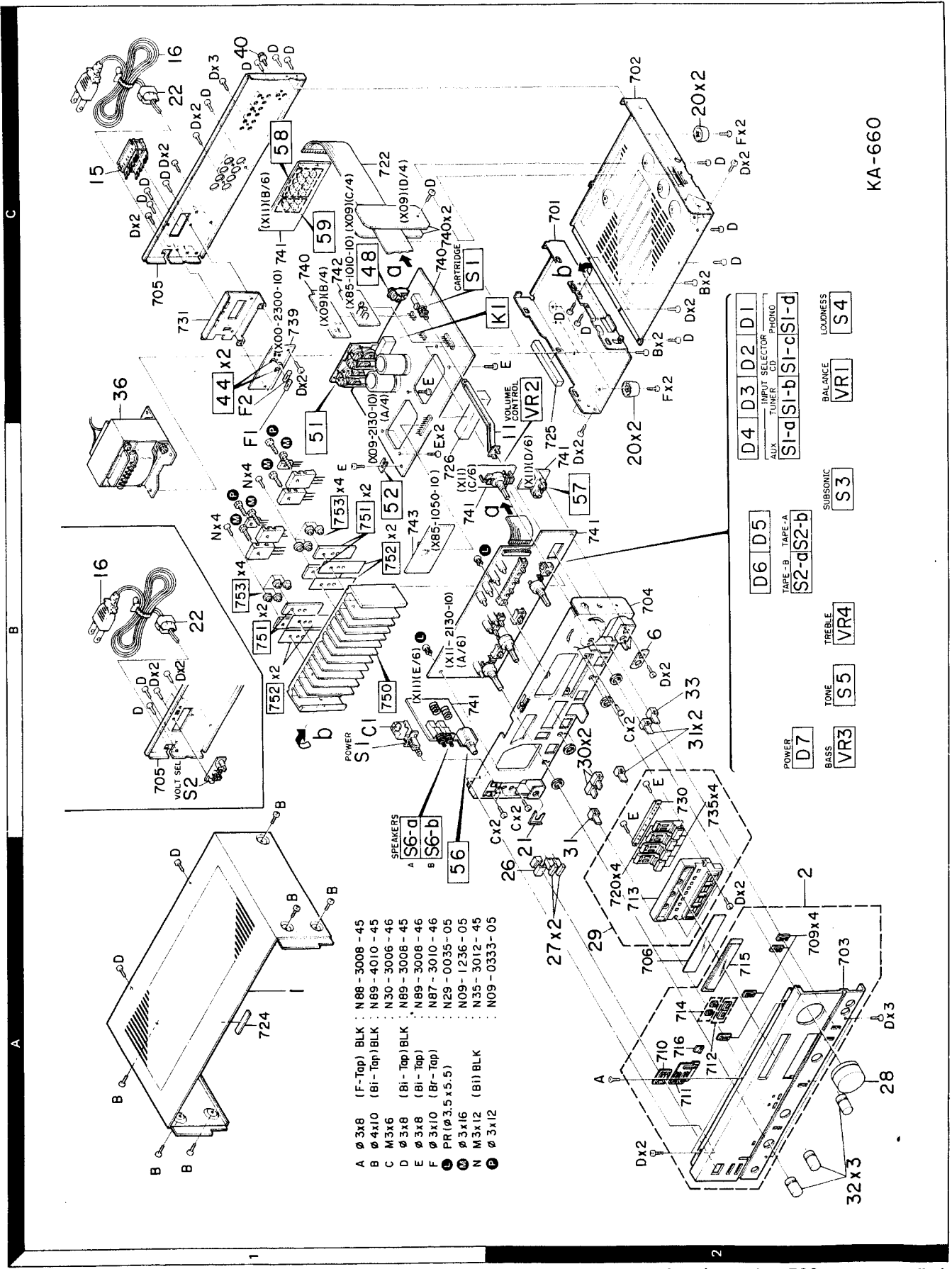
8.9 kg

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

EXPLODED VIEW



- A \emptyset 3x8 (F-Top) BLK : N88-3008-45
- B \emptyset 4x10 (B1-Top) BLK : N89-4010-45
- C M3x6 : N30-3006-46
- D \emptyset 3x8 (B1-Top) BLK : N89-3008-45
- E \emptyset 3x8 (B1-Top) : N89-3008-46
- F \emptyset 3x10 (B1-Top) : N87-3010-46
- G PR (\emptyset 3.5 x 5.5) : N29-0035-05
- H \emptyset 3x16 : N09-1236-05
- N M3x12 (B1) BLK : N35-3012-45
- O \emptyset 3x12 : N09-0333-05

POWER	D7	TAPE-B TAPE-A	D6 D5	AUX	S1-a	INPUT SELECTOR	D4 D3 D2 D1
BASS	VR3	S2-a	S2-b	TUNER	S1-b	PHONO	
TRIPLE	VR4	SUBSONIC		BALANCE	VR1	LOADNESS	S4
TONES	S5						

KA-660

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

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
KA-660						
1	1A		A01-1376-01	METALLIC CABINET		
2	2A	*	A20-4366-02	PANEL ASSY	KPUM	
2	2A	*	A20-4366-02	PANEL ASSY	UEXE	
2	2A	*	A20-4367-02	PANEL ASSY	T	
6	2B		B03-0229-14	DRESSING PLATE (FRONT AUX)		
-			B46-0092-03	WARRANTY CARD	K	
-			B46-0094-03	WARRANTY CARD	UE	
-			B46-0095-03	WARRANTY CARD	UE	
-			B46-0096-13	WARRANTY CARD	X	
-			B46-0121-03	WARRANTY CARD	P	
-			B46-0122-13	WARRANTY CARD	E	
-			B46-0123-03	WARRANTY CARD	T	
-		*	B50-5502-00	INSTRUCTION MANUAL (ENGLISH)	KPUM	
-		*	B50-5502-00	INSTRUCTION MANUAL (ENGLISH)	UEXE	
-		*	B50-5503-00	INSTRUCTION MANUAL (FRENCH)	PMXE	
-		*	B50-5504-00	INSTRUCTION MANUAL (SPANISH)	M	
-		*	B50-5506-00	INSTRUCTION MANUAL (ENGLISH)	T	
-		*	B50-5507-00	INSTRUCTION MANUAL (D.T.G)	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	
-			B58-0269-04	CAUTION CARD	K	
-			B59-0092-00	SERVICE DIRECTORY	UE	
△ C1	1B		C91-0023-05	CERAMIC 0.01UF AC250V	UMUE	
△ C1	1B		C91-0647-05	CERAMIC 0.01UF P	KPXT	
11	2B		D21-1068-03	EXTENSION SHAFT		
△ 15	1C		E03-0068-05	AC NUTLET	P	
△ 15	1C		E03-0069-05	AC NUTLET	KUMUE	
△ 16	1B, 1C		E30-0181-05	AC POWER CORD	K	
△ 16	1B, 1C		E30-0459-05	AC POWER CORD	E	
△ 16	1B, 1C		E30-0587-15	AC POWER CORD	T	
△ 16	1B, 1C		E30-0812-05	AC POWER CORD	UMUE	
△ 16	1B, 1C		E30-0974-05	AC POWER CORD	P	
△ 16	1B, 1C		E30-1341-05	AC POWER CORD	X	
△ F1	1B		F05-4022-05	FUSE (250V 4A)	UMUE	
△ F1	1B		F05-4025-05	FUSE (SEMKO) (250V T4A)	E	
△ F1	1B		F06-4024-05	FUSE (UL) (250V 4A)	KP	
△ F2	1C		F05-2023-05	FUSE (250V 2A)	UMUE	
△ F2	1C		F06-2021-05	FUSE (SEMKO) (250V T2A)	XTE	
-		*	H01-5321-04	ITEM CARTON CASE	KPUM	
-		*	H01-5321-04	ITEM CARTON CASE	UEXE	
-		*	H01-5322-04	ITEM CARTON CASE	T	
-		*	H10-1770-02	POLYSTYRENE FOAMED FIXTURE		
-		*	H10-1771-02	POLYSTYRENE FOAMED FIXTURE		
-			H25-0224-04	PROTECTION BAG (800X400)		
-			H25-0232-04	PROTECTION BAG (235X350)		
20	2B, 2C		J02-0127-05	FOOT		
21	2A		J21-3326-05	JACK MOUNTING HARDWARE		
△ 22	1B, 1C		J42-0083-05	POWER CORD BUSHING		
-			J61-0307-05	WIRE BAND		

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

6

△ indicates safety critical components.

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
26	2A		K27-1141-04	KNØB (BUTTON) PØWER		
27	2A		K27-0964-04	KNØB (BUTTON) SPEAKERS		
28	2A		K29-1821-14	KNØB VØLUME		
29	2A		K29-1978-03	KNØB ASSY (BTN) INPUT SELECTØR		
30	2B		K29-1980-04	KNØB ASSY (BTN) TAPE		
31	2A, 2B		K29-1982-04	KNØB ASSY (BTN) TØNE, SUB-LØUD		
32	2A		K29-1984-04	KNØB BASS, TREBLE, BALANCE		
33	2B		K27-1398-04	KNØB (BUTTON) CARTRIDGE		
△ 36	1C	*	L01-6651-05	PØWER TRANSFORMER	KP	
△ 36	1C	*	L01-6652-05	PØWER TRANSFORMER	XT	
△ 36	1C	*	L01-6656-05	PØWER TRANSFORMER	UMUEE	
40	1C		NØR-012Ø-35	BINDING PNST (6ND)		
L	1B, 2B		N29-ØØ35-05	PUSH RIVET (Ø3.5X5.5)		
△ S1	1B		S40-1Ø73-05	PUSH SWITCH (PØWER)		
△ S2	1B		S31-2Ø83-05	SLIDE SWITCH (VØLTAGE SELECT)	UMUEE	
POWER SUPPLY UNIT (XØØ-23ØØ-1Ø)						
△ C1	1B		C91-ØØ23-05	CERAMIC 0.01ØF AC25ØV	UMUE	
△ C1	1B		C91-Ø647-05	CERAMIC 0.01ØF P	KPXTTE	
44	1C		J13-ØØ41-05	FUSE CLIP	KPUM	
44	1C		J13-ØØ41-05	FUSE CLIP	UE	
44	1C		J13-ØØ54-05	FUSE CLIP	XET	
AUDIO UNIT (XØ9-213Ø-1Ø)						
C1	.2		CEØ4FWØJ1Ø2M	ELECTRØ 1ØØØUF 6.3WV		
C3	.4		CC45FSL1H1ØØJ	CERAMIC 18PF J		
C5	-.8		CC45FSL1H331J	CERAMIC 33ØPF J		
C9	.1Ø		CEØ4FW1A22ØM	ELECTRØ 22ØUF 1ØWV		
C11	-.14		CF92FV1H393J	MF 0.039ØUF J		
C15	.16		CF92FV1H334J	MF 0.33ØUF J		
C19	-.22		CK45FF1H472Z	CERAMIC 47ØØPF Z		
C23	.24		CC45FSL1H221J	CERAMIC 22ØPF J	XTE	
C25	.26		CC45FSL1H1Ø1J	CERAMIC 1ØØPF J	KPUM	
C25	.26		CC45FSL1H1Ø1J	CERAMIC 1ØØPF J	UE	
C25	.26		CC45FSL1H121J	CERAMIC 12ØPF J	XTE	
C27	.28		CEØ4FWØJ222M	ELECTRØ 22ØØUF 6.3WV		
C31	-.34		CK45FB1H1Ø2K	CERAMIC 1ØØØPF K	XTE	
C31	.32		CK45FB1H1Ø2K	CERAMIC 1ØØØPF K	KPUM	
C31	.32		CK45FB1H1Ø2K	CERAMIC 1ØØØPF K	UE	
C35	.36		CC45FSL1HØ2ØC	CERAMIC 2.ØPF C		
C37	.38		CF92FV1H1Ø4J	MF 0.1ØØUF J		
C51	.52		CK45FE2H1Ø3P	CERAMIC 0.Ø1ØØUF P		
C53	.54		C9Ø-Ø492-05	ELECTRØ 1ØØØØUF 56WV		
C55	.56	*	CEØ4FW1J33ØM	ELECTRØ 33ØUF 63WV		
C57	.58		CEØ4FW1H47ØM	ELECTRØ 47ØUF 5ØWV		
C59	.6Ø		CEØ4FW1E1Ø1M	ELECTRØ 1ØØØUF 25WV		
C61	.62		CEØ4FW1J1Ø1M	ELECTRØ 1ØØØUF 63WV		
C63	.64		CF92FV1H1Ø3J	MF 0.Ø1ØØUF J		
C65	.66		CEØ4FW1E1Ø1M	ELECTRØ 1ØØØUF 25WV		
C67	.68		CEØ4FW1E47ØM	ELECTRØ 47ØUF 25WV		
C69	.7Ø		CF92FV1H1Ø3J	MF 0.Ø1ØØUF J		
C71			CEØ4FW1E1Ø1M	ELECTRØ 1ØØØUF 25WV		
C72			CEØ4FW1J1Ø1M	ELECTRØ 1ØØØUF 63WV		
C73			CEØ4FW1C47ØM	ELECTRØ 47ØUF 16WV		

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 6

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C74			CE04FW1V4R7M	ELECTR0 4.7UF 35WV		
C75			CE04HW1E100M	NP-ELEC 10UF 25WV		
C76			CE04FW1A220M	ELECTR0 22UF 10WV		
C77 ,78			CE04FW1E101M	ELECTR0 100UF 25WV		
C79			CE04FW1HOR1M	ELECTR0 0.1UF 50WV		
C80 ,81		*	CE04FW2AR22M	ELECTR0 0.22UF 100WV		
C82			CF92FV1H223J	MF 0.022UF J		
C83 ,84			CE04FW2AD10M	ELECTR0 1.0UF 100WV		
48	1C		E13-0217-05	PHONE JACK (2P) PHONE		
51	1B		E20-0821-05	LOCK TERMINAL BOARD(8P) SP		
52	1B		E23-0125-05	TERMINAL (GND)		
L1 ,2			L40-1011-47	SMALL FIXED INDUCTOR(100UH,K)	XTE	
L3 -6			L40-1011-14	SMALL FIXED INDUCTOR(100UH,K)		
M	1B		ND9-1236-05	TAPPING SCREW (ø3X16)		
P	1B		ND9-0333-05	TAPPING SCREW (ø3X12)		
CP1 ,2			R90-0187-05	MULTI-COMP 0.22X2 K 5W		
R7 -10			RD14AB2E101J	FL-PROOF RD 100 J 1/4W		
R15 -18			RD14AB2E101J	FL-PROOF RD 100 J 1/4W		
R19 -22			RD14AB2E4R7J	FL-PROOF RD 4.7 J 1/4W		
R27 -30		*	RD14AB2E102J	FL-PROOF RD 1.0K J 1/4W		
R39 ,40			RS14DB3D4R7J	FL-PROOF RS 4.7 J 2W		
R71		*	RS14DB3D152J	FL-PROOF RS 1.5K J 2W		
R80			RD14AB2E100J	FL-PROOF RD 10 J 1/4W		
R81 ,82			RD14AB2E4R7J	FL-PROOF RD 4.7 J 1/4W		
R83 ,84			RS14DB3A561J	FL-PROOF RS 560 J 1W		
R85 ,86			RS14DB3A102J	FL-PROOF RS 1.0K J 1W		
R87 ,88		*	RS14DB3D182J	FL-PROOF RS 1.8K J 2W		
R89 ,90			RS14DB3D331J	FL-PROOF RS 330 J 2W		
R95			RD14AB2E4R7J	FL-PROOF RD 4.7 J 1/4W		
R98			RD14AB2E101J	FL-PROOF RD 100 J 1/4W		
R99			RS14DB3D102J	FL-PROOF RS 1.0K J 2W		
R100		*	RS14DB3A103J	FL-PROOF RS 10K J 1W		
VR1 ,2			R12-0094-05	TRIMMING P0T. (470) IDLE ADJ		
K1	2C		S51-2060-05	MAGNETIC RELAY		
S1	1C		S40-6027-05	PUSH SWITCH (MC/MM)		
D1 ,2			1S5131	DIODE		
D1 ,2			1S5178	DIODE		
D3 ,4			MA27W(A)	VARIATOR		
D11 -14			S3V20	DIODE		
D15			DSM1A1	DIODE		
D16 ,17			1S5131	DIODE		
D16 ,17			1S5178	DIODE		
D18		*	RD22JS(B)	ZENER DIODE		
D19		*	RD20JS(B2)	ZENER DIODE		
D20 ,21			E-272	CONSTANT CURRENT DIODE		
D22 ,23		*	RD20JS(B2)	ZENER DIODE		
D24 ,25		*	RD16E(B)	ZENER DIODE		
IC1			UPC1237H	IC (PROTECTION)		
Q1 ,2		*	2SC3419(Y)	TRANSISTOR		
Q3 ,4			2SC2591(Q,R,S)	TRANSISTOR		
Q5 ,6			2SA1111(Q,R,S)	TRANSISTOR		
Q7 ,8		*	2SC3280*5	TRANSISTOR		

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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 mentionnes 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
△ Q9 ,10 Q11 ,12 Q13 -16 Q13 -16		*	2SA1301*5 2SC2320(E,F) 2SC945(A)(Q,P) 2SA733(A)(Q,P) 2SA999(E,F)	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR		
Q17 ,18 Q31 Q32 Q33 Q34 ,35 Q34 ,35			2SC2631(Q,R,S) 2SA992(F,E) 2SD882(Q,P) 2SB772(Q,P) 2SA733(A)(Q,P) 2SA999(E,F)	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR		
CONTROL UNIT (X11-2130-10)						
D1 -4 D5 ,6 D7	2B,2C 2B 2B		B30-0431-05 B30-0432-05 B30-0431-05	LED(LN21CPH) LED(LN31GCPH(U)) TAPE A/B LED(LN21CPH) PWR		
C1 ,2 C3 ,4 C5 ,6 C7 ,8 C9 ,10			CF92FV1H224J CC45FSL1H101J CF92FV1H273J CE04FW1H010MEL CC45FSL1H150J	MF CERAMIC MF ELECTRO CERAMIC	0.22UF J 100PF J 0.027UF J 1.0UF 50WV 15PF J	
C11 -14 C15 -18 C19 -22 C23 -26 C27 -30			CF92FV1H334J CE04FW1E100MEL CF92FV1H223J CE04FW1H010MEL CF92FV1H393J	MF ELECTRO MF ELECTRO MF	0.33UF J 10UF 25WV 0.022UF J 1.0UF 50WV 0.039UF J	XTE
C27 ,28 C27 ,28 C31 -40 C41 ,42 C43 ,44			CF92FV1H183J CF92FV1H183J CC45FSL1H151J CC45FSL1H101J CK45FB1H561K	MF MF CERAMIC CERAMIC CERAMIC	0.018UF J 0.018UF J 150PF J 100PF J 560PF K	KPUM UE XTE
S6 S7 S8 S9	1A 2B 1C 1C		E11-0104-15 E13-0213-05 E13-0818-05 E13-0496-05	PHONE JACK (3P) PHONES PHONE JACK (2P) AUX PHONE JACK (8P) CD, TUNER, TAPE A PHONE JACK (4P) TAPE B		
L1 ,2			L39-0080-15	PHASE-COMPENSATION COIL		
R29 ,30 R31 ,32 R33 ,34 R35 ,36 R37			RD14AB2E330JTS RD14AB2E4R7JTS RS14DB3D100J RS14DB3D561J RS14DB3D222J	FL-PROOF RD 33 J 1/4W FL-PROOF RD 4.7 J 1/4W FL-PROOF RS 10 J 2W FL-PROOF RS 560 J 2W FL-PROOF RS 2.2K J 2W		
R38 VR1 VR2 VR3 ,4	2C 2C 2B		RS14DB3D182J R06-5134-05 R06-5135-05 R06-3048-05	FL-PROOF RS 1.8K J 2W POTENTIOMETER(200KX2) POTENTIOMETER(100KX2) POTENTIOMETER(10KX2)	J 2W BALANCE VOLUME TONE	
S1 S2 S3 -5 S6	2B,2C 2B 2B,2C 1A	*	S42-4044-05 S42-2126-05 S40-2200-05 S42-2125-05	MULTI-PUSH SWITCH MULTI-PUSH SWITCH PUSH SWITCH MULTI-PUSH SWITCH	INPUT TAPE SUB, LOUD, TONE SPEAKER	
IC1			NJM4558D(A)	IC(8P AMP X2)		
PREAMP UNIT (X85-1010-10)						
C1 ,2 C3 ,4			CF92FV1H392J CF92FV1H113J	MF MF	3900PF J 0.011UF J	

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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
C5 .6 C7 .8			CF92FV1H393J CE04HW1E100MEL	MF NP-ELEC	0.039UF J 10UF 25WV	
R7 .8 R9 .10		*	RN14BK2C6811FTS RN14BK2C8252FTS	RN RN	6.81K F 1/6W 82.5K F 1/6W	
IC1 Q5 -8 Q5 -8			NJM4560D-N 2SK170(BL) 2SK170(V)	IC(OP AMP X2) FET FET		
POWER AMP UNIT (X85-1050-10)						
C1 .2 C3 -6 C7 .8 C9 .10 C11 -14			CE04FW1H2R2MEL CC45FSL1H101J CC45FSL1H331J CC45FSL1H150J CE04FW1H010MEL	ELECTRØ CERAMIC CERAMIC CERAMIC ELECTRØ	2.2UF 50WV 100PF J 330PF J 15PF J 1.0UF 50WV	
C15 .16 C17 .18			CK45FB1H152K CK45B1H561K	CERAMIC CERAMIC	1500PF K 560PF K	
R11 .12 R31 -34			RD14AB2E101JTS RD14AB2E221JTS	FL-PROOF RD FL-PROOF RD	100 J 1/4W 220 J 1/4W	
D1 -6 D1 -6 Q1 -4 Q5 -8 Q5 -8			1SS133 1SS176 2SC1845(F,E) 2SA733(A)(Q,P) 2SA999(E,F)	DIØDE DIØDE TRANSISTØR TRANSISTØR TRANSISTØR		
Q9 -14 Q15 .16			2SC2632(Q,R,S) 2SA1124(Q,R,S)	TRANSISTØR TRANSISTØR		

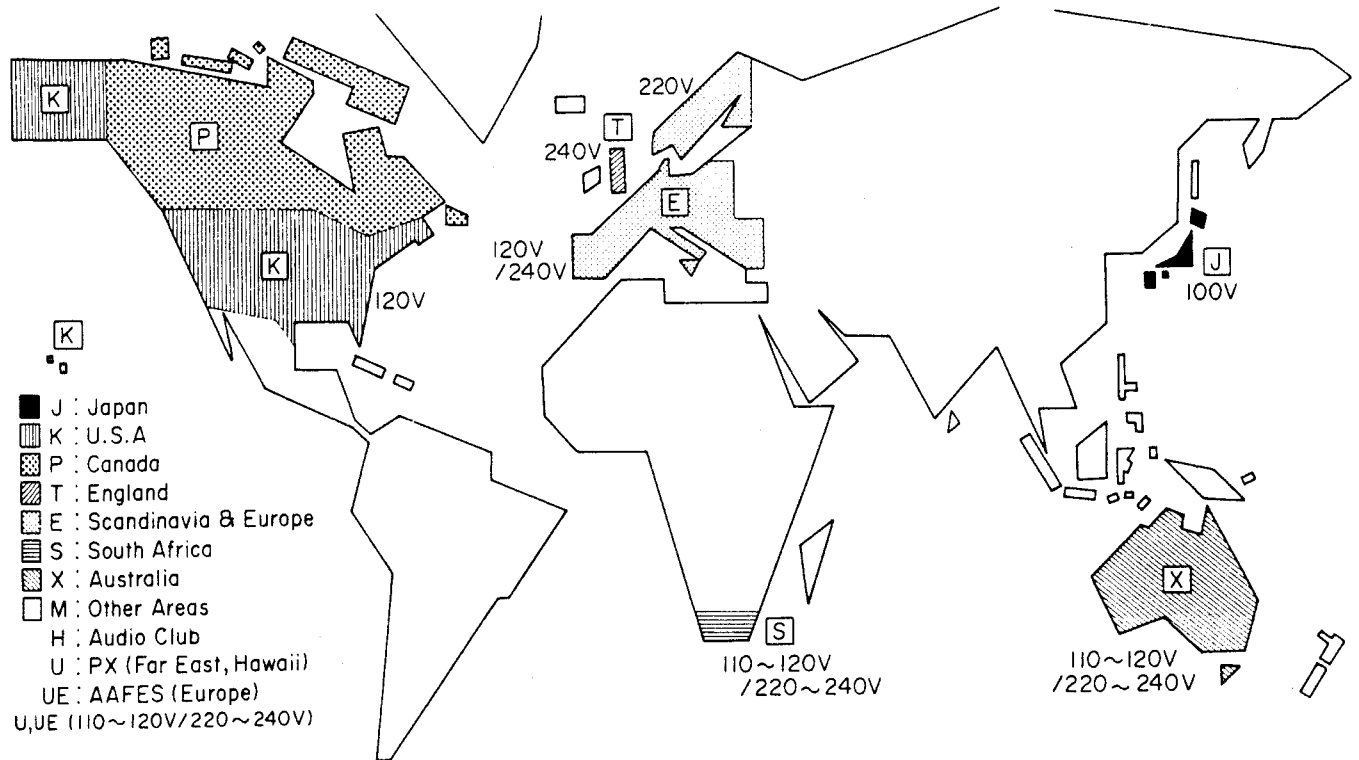
E: Scandinavia & Europe H: Audio Club K: USA P: Canada

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

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

 indicates safety critical components.

WORLD MAP & AREA CODE



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.

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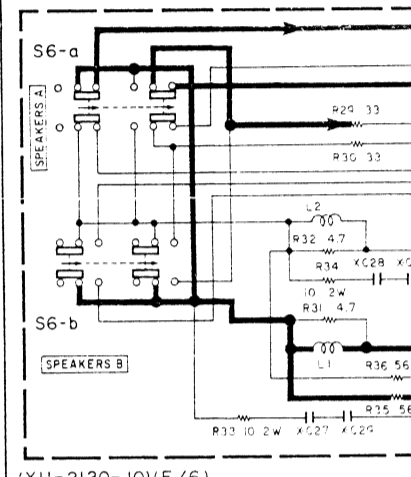
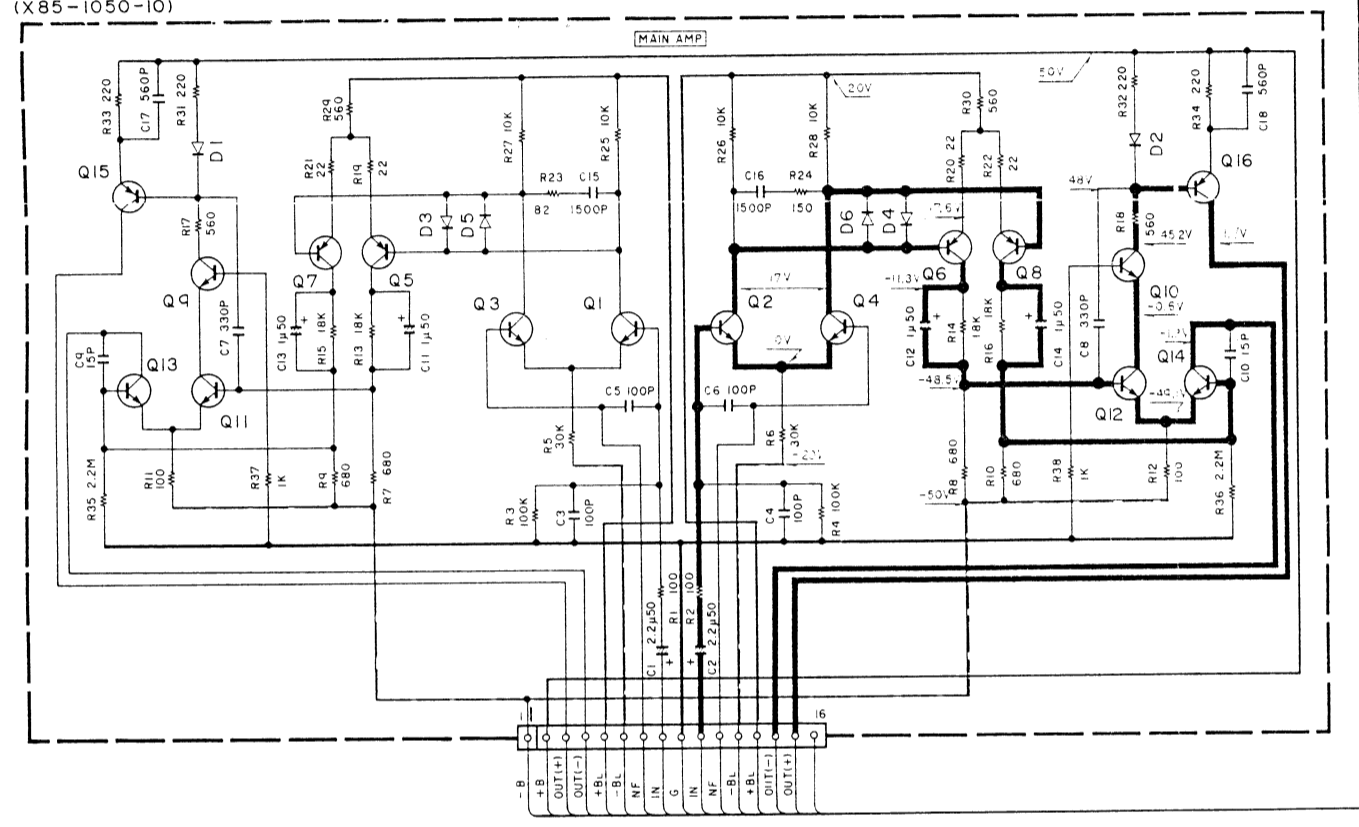
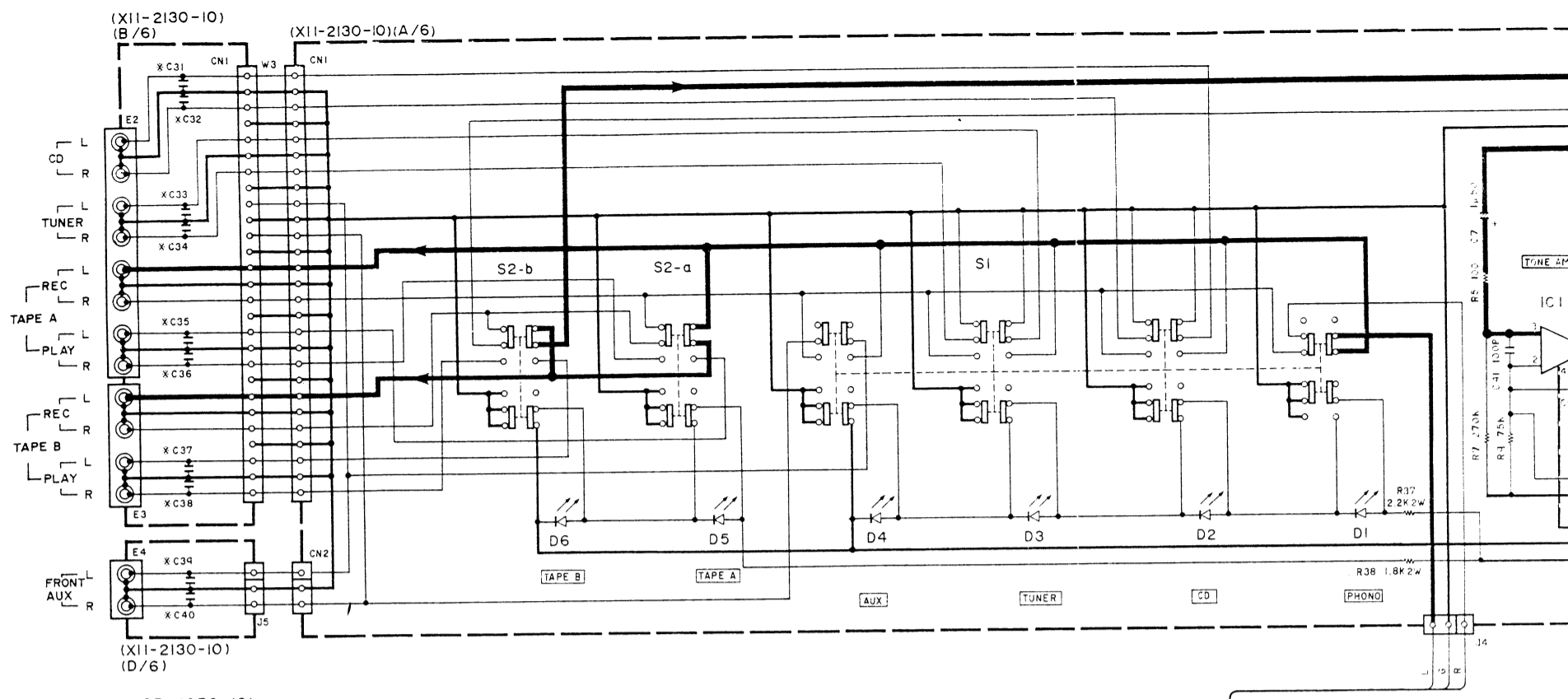
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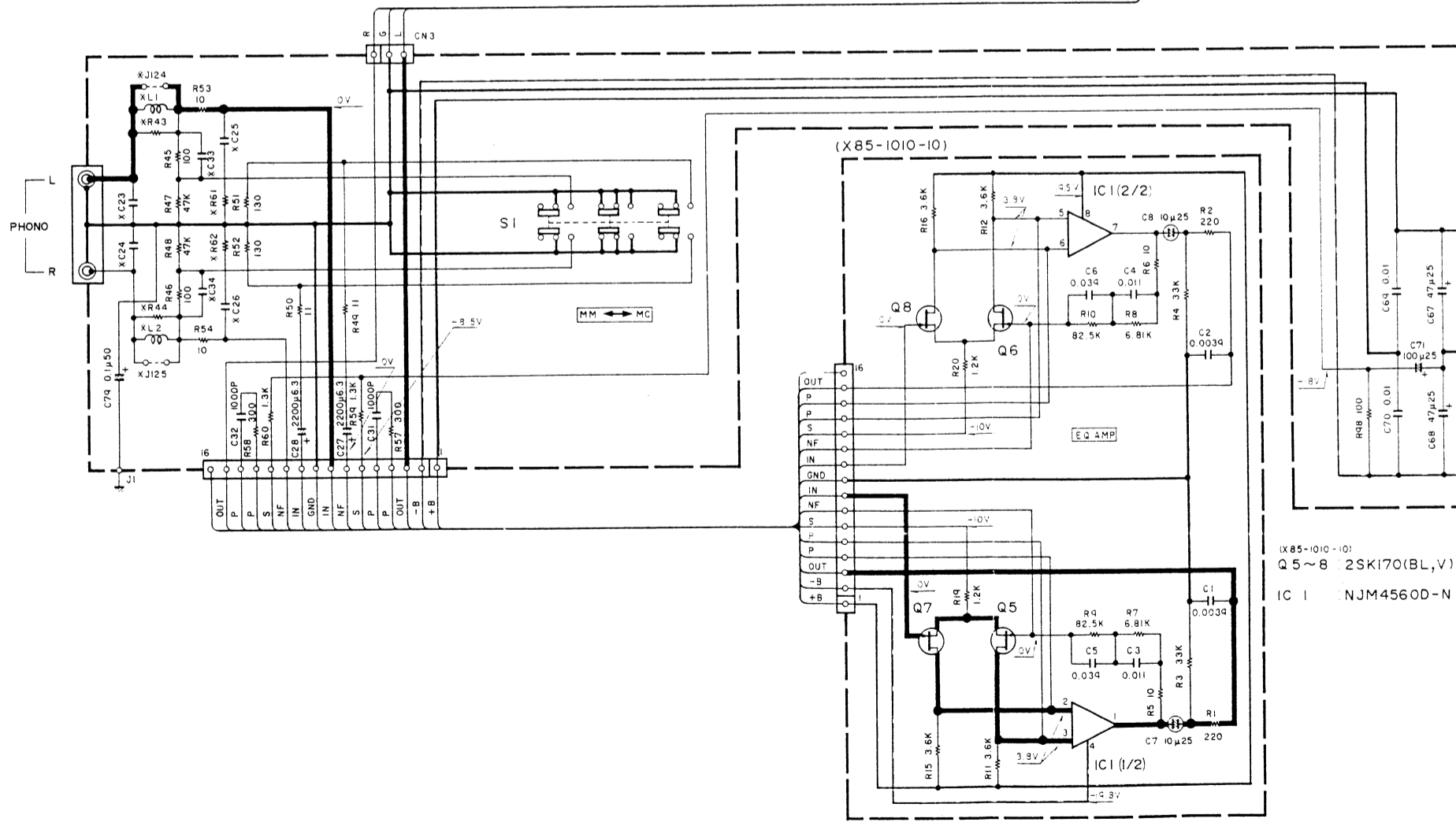
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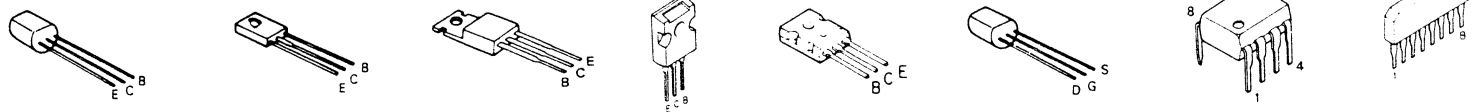


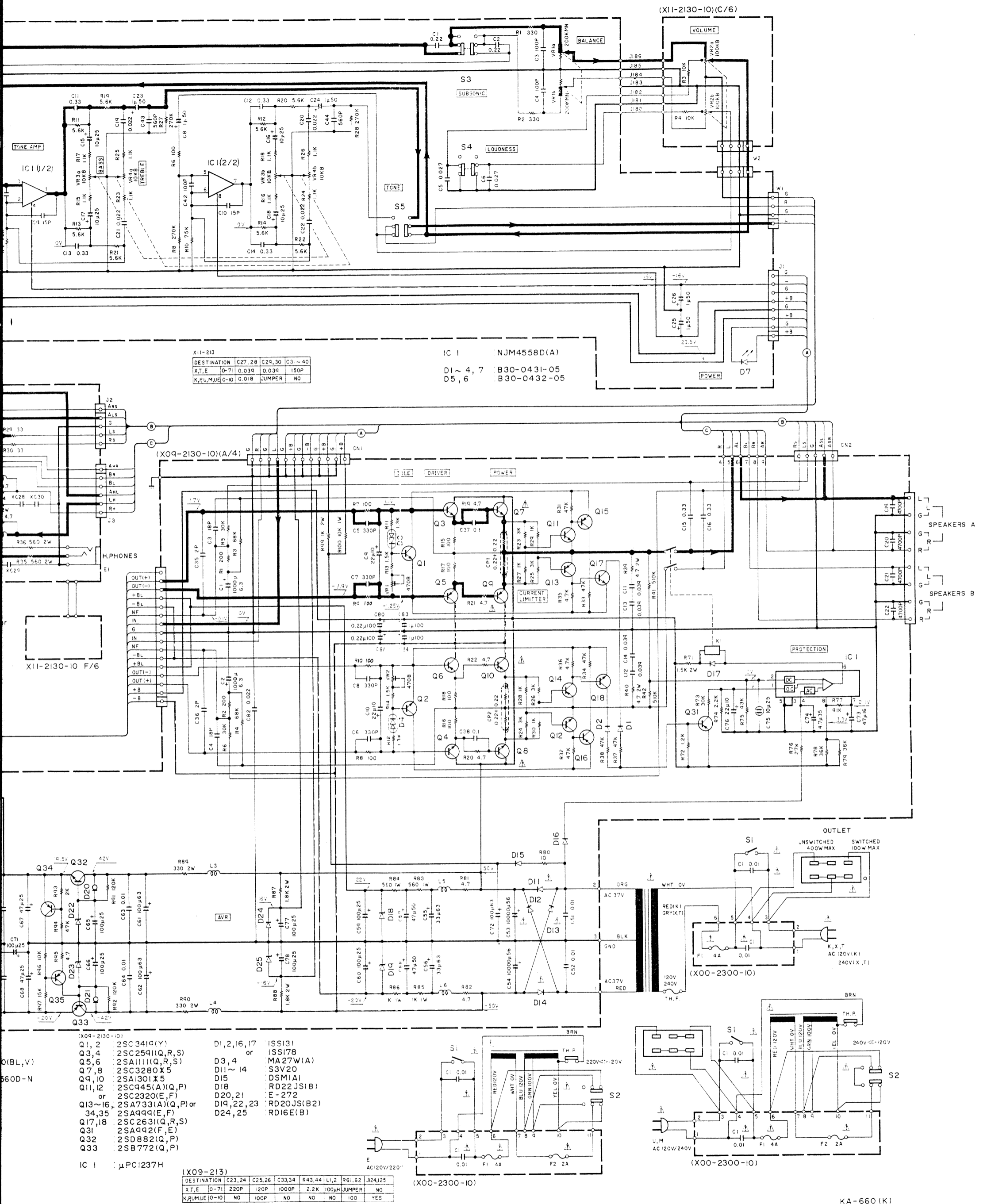
- Q1 ~ 4 : 2SC1845(F, E)
- Q5 ~ 8 : 2SA733(A)(Q, P) or 2SA999(E, F)
- Q9 ~ 14 : 2SC2632(Q, R, S)
- Q15, 16 : 2SA1124(Q, R, S)
- D1 ~ 6 : ISS176 or ISS133



- (X85-1010-10)
- Q5 ~ 8 : 2SK170(BL, V)
- IC 1 : NJM4560D-N

- 2SA1124
- 2SA733 (A)
- 2SA992
- 2SA999
- 2SA1845
- 2SC2320
- 2SC2631
- 2SC2632
- 2SC945 (A)
- 2SC1845
- 2SB772
- 2SD882
- 2SA1111
- 2SC2591
- 2SC3419
- 2SA1301*5
- 2SC3280*5
- 2SK170
- NJM4558D (A)
- NJM4560D-N
- μPC1237H





X11-213				
DESTINATION	C27,28	C29,30	C31-40	
X,T,E	0-71	0.039	0.039	150P
K,P,U,M,UE	0-10	0.018	JUMPER	NO

IC 1 NJM4558D(A)
 D1-4, 7 B30-0431-05
 D5, 6 B30-0432-05

X09-213								
DESTINATION	C23,24	C25,26	C33,34	R43,44	L1,2	R61,62	J124,25	
X,T,E	0-71	220P	120P	1000P	2.2K	100µH	JUMPER	NO
K,P,U,M,UE	0-10	NO	100P	NO	NO	NO	100	YES

- (X09-2130-10)
- Q1, 2 2SC341Q(Y)
 - Q3, 4 2SC2591(Q,R,S)
 - Q5, 6 2SA1111(Q,R,S)
 - Q7, 8 2SC3280X5
 - Q9, 10 2SA1301X5
 - Q11, 12 2SC945(A)(Q,P) or 2SC2320(E,F)
 - Q13-16, 2SA733(A)(Q,P) or 2SA999(E,F)
 - Q17, 18 2SC2631(Q,R,S)
 - Q31 2SA992(F,E)
 - Q32 2SD882(Q,P)
 - Q33 2SB772(Q,P)
- IC 1 µPC1237H

- D1, 2, 16, 17 1SS131 or 1SS178
- D3, 4 MA27W(A)
- D11-14 S3V20
- D15 DSM1A1
- D18 RD22JS(B)
- D20, 21 E-272
- D19, 22, 23 RD20JS(B2)
- D24, 25 RD16E(B)

DC voltages are to be measured with a high impedance voltmeter with no signal input. Values may vary slightly due to variations between individual instruments and units.

Les tensions DC doivent être mesurées avec un volt-mètre 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.

DC voltages are to be measured with a high impedance voltmeter with no signal input. Values may vary slightly due to variations between individual instruments and units.

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.