



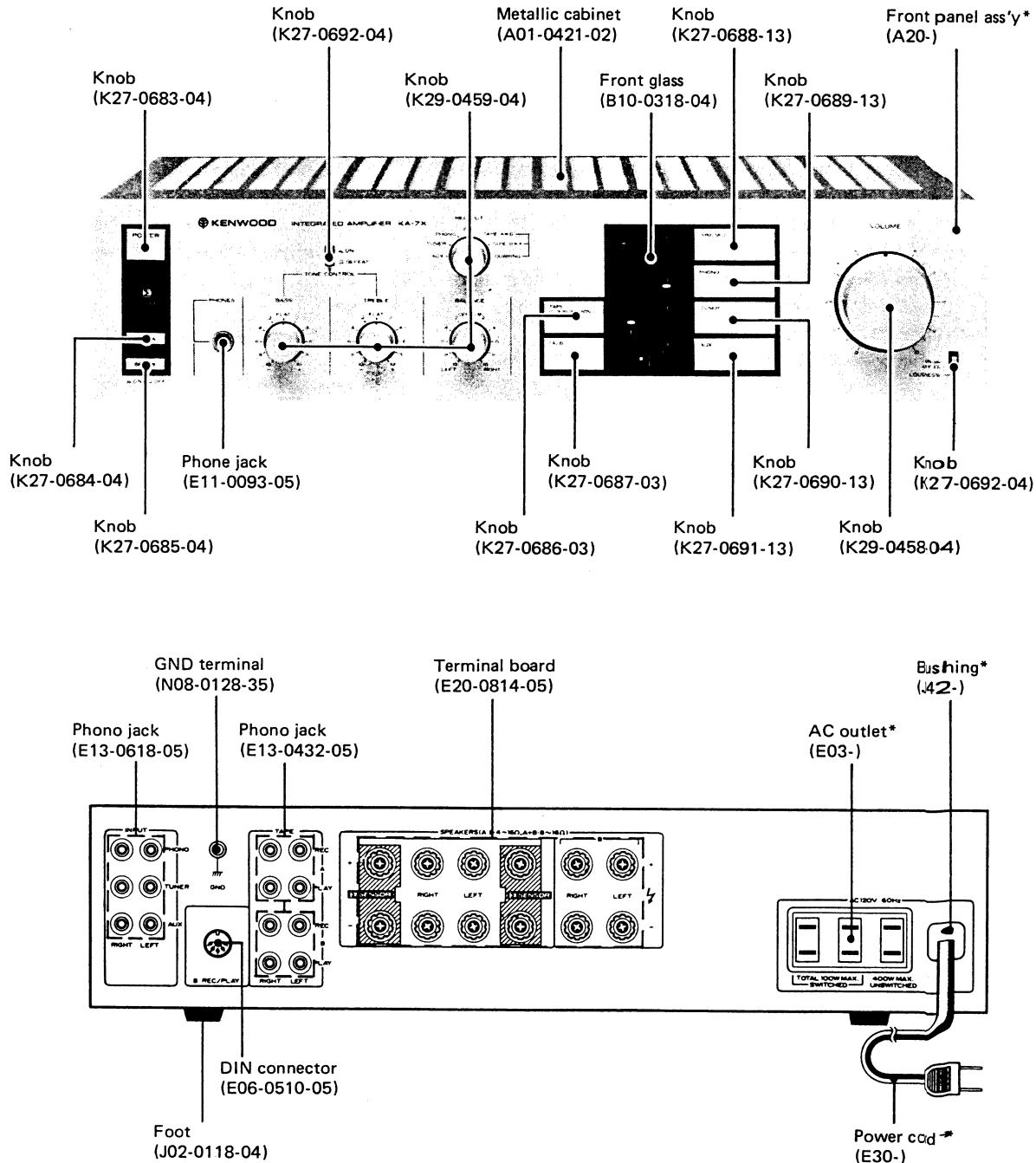
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# SERVICE MANUAL

**KENWOOD**

**KA-7X**

## INTEGRATED AMPLIFIER



\* Refer to parts list on page 8.  
Photo is U type.

## ADJUSTMENT/REGLAGE

No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	AMPLIFIER SETTING	ALIGNMENT POINTS	ALIGN FOR	FIG.
1	IDLE CURRENT	—	Connect a DC voltmeter across R113 (R114)	VOLUME : 0 POWER : ON	VR3 (L) VR4 (R)	After 5 minutes, adjust VR3 (VR4) for 8~20mV reading of the DC voltmeter.	(a)

**Power Amplifier Check**

After completing power amplifier repairs, be sure to confirm that waveforms are present as indicated below. Power amplifier operation is not normal if these waveforms cannot be observed.

**[ Test Conditions ]**

1. Apply a 50Hz sine wave to the AUX terminal.
2. Connect an 8 ohm dummy load to the speaker terminals.
3. Connect the (+) lead of the oscilloscope to pin 14 of X13-3520-10, and connect the (-) lead to pin 11 (L) or pin 12 (R) of X07-1940-10.
4. Set the volume control of the KA-7X to 0, the selector to AUX, and the REC OUT control to OFF, then turn on the power.
5. When the volume control of the KA-7X is turned up slowly, the waveform shown in Figure A should appear suddenly at a certain point. This is evidence that the high output circuit has begun operating. Stop turning the volume control at the point where this waveform appears.

6. Momentarily turn off the power to the KA-7X.
7. Connect the (+) lead of the oscilloscope to pin 15 of X13-3520-10, and connect the (-) lead to pin 13 (L) or pin 14 (R) of X07-1940-10.
8. Turn the power to the KA-7X back on.
9. The waveform shown in Figure B should appear. It is not possible to observe both waveform A and B at the same time. Be sure to observe them individually, and be sure that no other test equipment is connected to the amplifier at the same time as the oscilloscope.

**Note :**

A self-restoring thermal switch is built into the power transformer. This switch is activated to cut output of the transformer when its temperature rises beyond 150° C. The amount of time required for recovery is approximately 5 minutes.

No	ITEM	REGLAGE L'ENTREE	REGLAGE DE LA SORTIE	REGLAGE DE L'AMPLIFICATEUR	POINTS DE L'ALIGNEMENT	ALIGNER POUR	FIG.
1	COURANT DE POLARISATION	—	Connecter un voltmètre CC sur R113 (R114)	VOLUME : 0	VR3 (G) VR4 (D)	Après 5 minutes, égler VR3 (VR4) de façon à ce que le voltmètre de C.C. indique 8~20mV.	(a)

**Vérification de l'amplificateur de puissance**

Après avoir effectué les réparations de l'amplificateur de puissance, s'assurer que les ondes existent dans les conditions indiquées ci-dessous. Le fonctionnement de l'amplificateur est anormal si ces ondes ne peuvent être observées.

**[ Conditions d'essai ]**

1. Appliquer une onde sinusoïdale de 50Hz à la borne AUX.
2. Appliquer une charge "dummy" de 8 ohms aux bornes des enceintes.
3. Relier le fil d'alimentation (+) de l'oscilloscope à la broche 14 du X13-3520-10, et relier le fil d'alimentation (-) à la broche 11 (L) ou à la broche 12 (R) du X07-1940-10.
4. Placer le réglage de volume du KA-7X sur "0", le sélecteur sur AUX, et la commande de sortie d'enregistrement "REC OUT" sur "OFF" avant de mettre sous tension l'appareil.
5. Lorsque le réglage de volume du KA-7X est lentement tourné dans le sens d'une augmentation de volume, l'onde indiquée sur la figure A doit sudainement apparaître à un moment donné. Cette onde est la preuve que le

haut circuit de sortie a commencé à fonctionner. Arrêter le mouvement de la commande de réglage de volume au moment où l'onde décrite apparaît.

6. Mettre momentanément hors tension le KA-7X.
7. Relier le fil d'alimentation (+) de l'oscilloscope à la broche 15 du X13-3520-10, et relier le fil d'alimentation (-) à la broche 13 (L) ou à la broche 14 (R) du X07-1940-10.
8. Mettre de nouveau sous tension le KA-7X.
9. L'onde indiquée sur la figure B doit apparaître. Il est impossible d'observer les deux types d'ondes en même temps. Veiller à les observer séparément et s'assurer qu'aucun autre matériel d'essai est raccordé à l'amplificateur en même temps que l'oscilloscope.

**Remarque :**

Un commutateur thermique à auto-déclenchement est incorporé au transformateur de puissance. Ce commutateur est activé pour couper l'alimentation du transformateur lorsque sa température s'élève au dessus de 150° C. Cinq minutes sont environ nécessaires pour que le transformateur soit de nouveau mis sous tension.

## ABGLEICH/BLOCK &amp; LEVEL DIAGRAM

NR	GEGENSTAND	EINGANGSEINSTELLUNG	AUSGANGSEINSTELLUNG	VERSTÄRKEREINSTELLUNG	ABGLEICHEPUNKTE	ABGEICHEN FÜR	ABB.
1	LEERLAUF- STROM	-	Einen Gleichspannungsmesser über R113 (R114) anschließen.	VOLUME : 0	VR3 (L) VR4 (R)	Nach 5 Minuten, den VR3 (VR4) so regulieren, daß die Gleichspannungsmesser Ablesung 8~20mV ist.	(a)

**Überprüfung des Leistungsverstärkers**

Nach Abschluß von Reparaturen am Leistungsverstärker auf jeden Fall überprüfen, ob die Wellenformen wie nachstehend aufgeführt vorhanden sind. Falls diese Wellenformen nicht festzustellen sind, arbeitet der Leistungsverstärker nicht einwandfrei.

**[ Testbedingungen.]**

1. An die AUX-Buchse eine 50Hz-Sinuswelle anlegen.
2. Eine 8 ohm-Blindlast an die Lautsprecherklemmen anschließen.
3. Die (+)-Leitung des Oszilloskops an Stift 14 von X13-3520-10 anschließen, und die (-)-Leitung an Stift 11 (L) oder Stift 12 (R) von X07-1940-10 anschließen.
4. Den Lautstärkesteller des KA-7X auf 0, den Wahlschalter auf AUX und den REC OUT-Regler auf ON stellen, dann die Stromversorgung einschalten.
5. Indem man den Lautstärkesteller des KA-7X langsam höher dreht, sollte eine Wellenform wie in Abbildung A gezeigt plötzlich an einem bestimmten Punkt auftreten. Das ist der Beleg dafür, daß der Hochleistungs-Schaltkreis aktiviert wurde. Sobald diese Wellenform erscheint, hört man an dieser Stelle auf, den Lautstärkesteller weiter zu drehen.

6. Die Stromversorgung des KA-7X kurzzeitig ausschalten.
7. Die (+)-Leitung des Oszilloskops an Stift 15 von X13-3520-10 und die (-)-Leitung an Stift 13 (L) bzw. Stift 14 (R) von X07-1940-10 anschließen.
8. Die Stromversorgung des KA-7X wieder einschalten.
9. Die in Abbildung B gezeigte Wellenform sollte erscheinen. Es ist nicht möglich, beide Wellenformen A und B gleichzeitig zu beobachten. Man überprüft beide Wellenformen getrennt voneinander, dabei sicherstellen, daß währenddessen keinen weiteren Testgeräte außer dem Oszilloskop an den Verstärker angeschlossen sind.

**Bemerkung :**

Ein Rückstell-Thermoschalter ist in den Netztransformator eingebaut. Der Schalter wird aktiviert, wenn seine Temperatur über 150° ansteigt, wobei der Transformatorausgang abgetrennt wird. Die zur Erholung erforderliche Zeit beträgt ca. 5 Minuten.

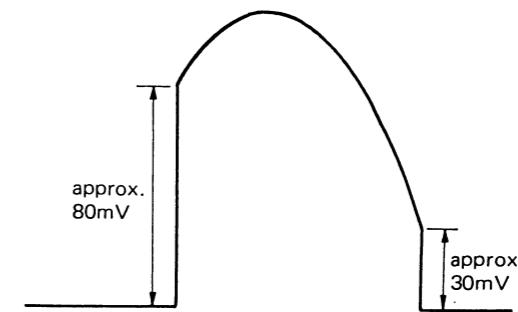


Fig. A

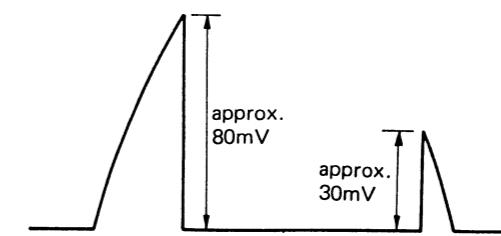
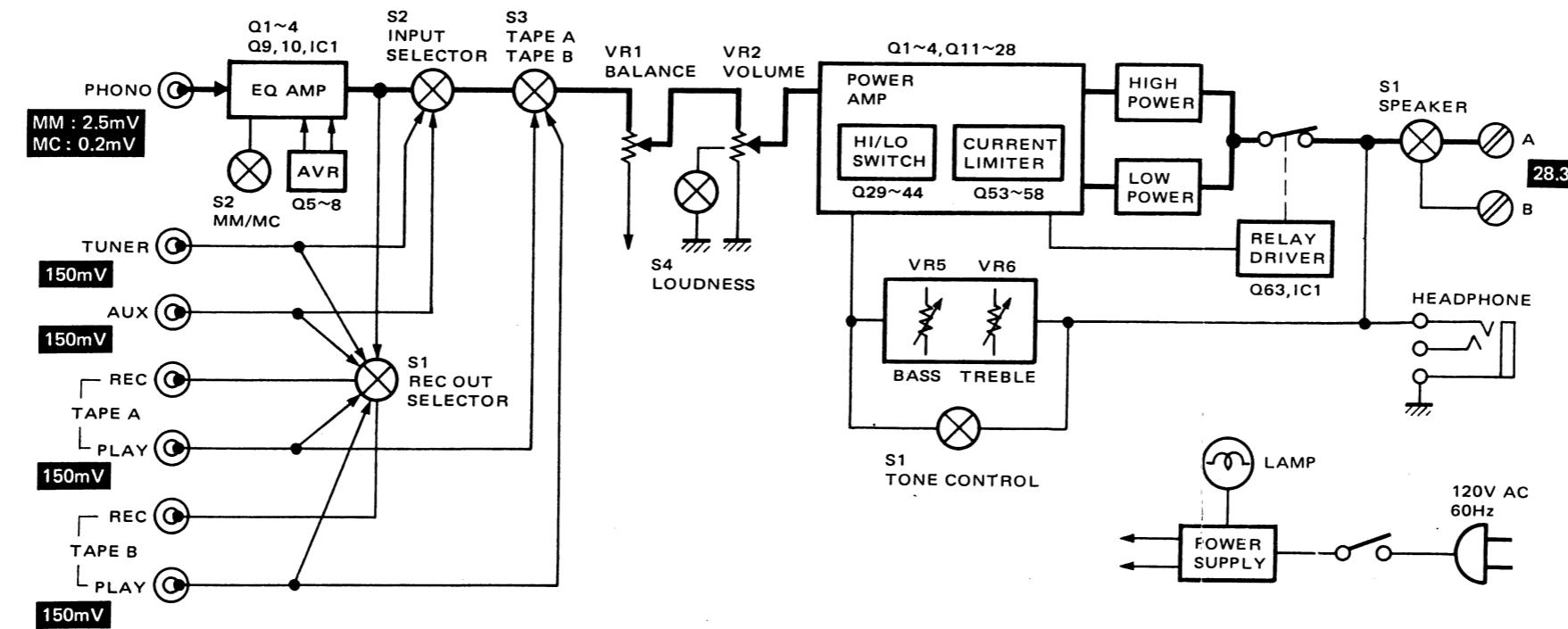
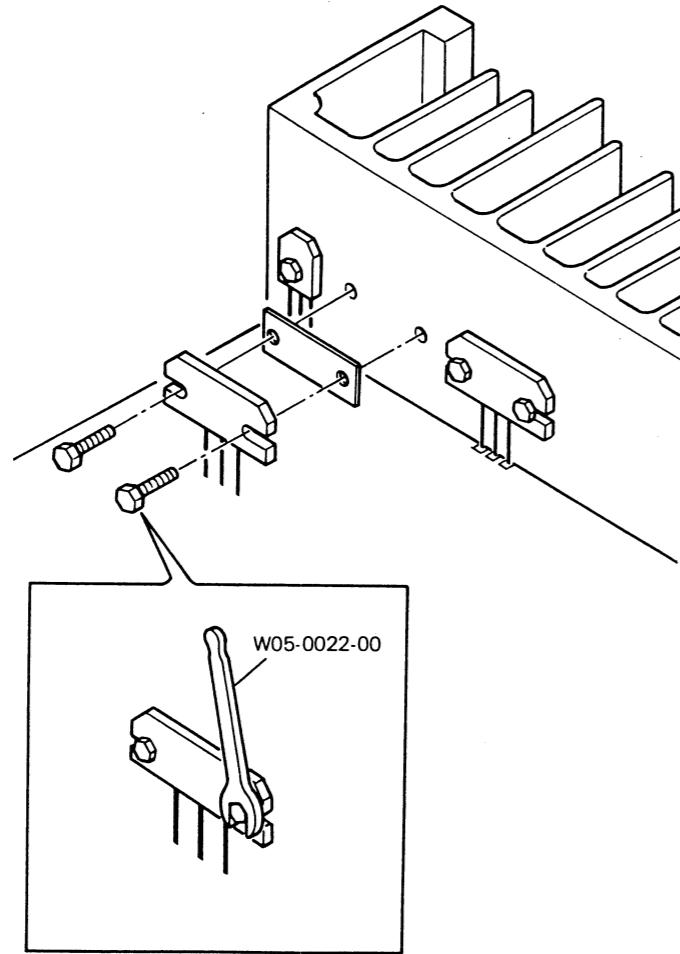
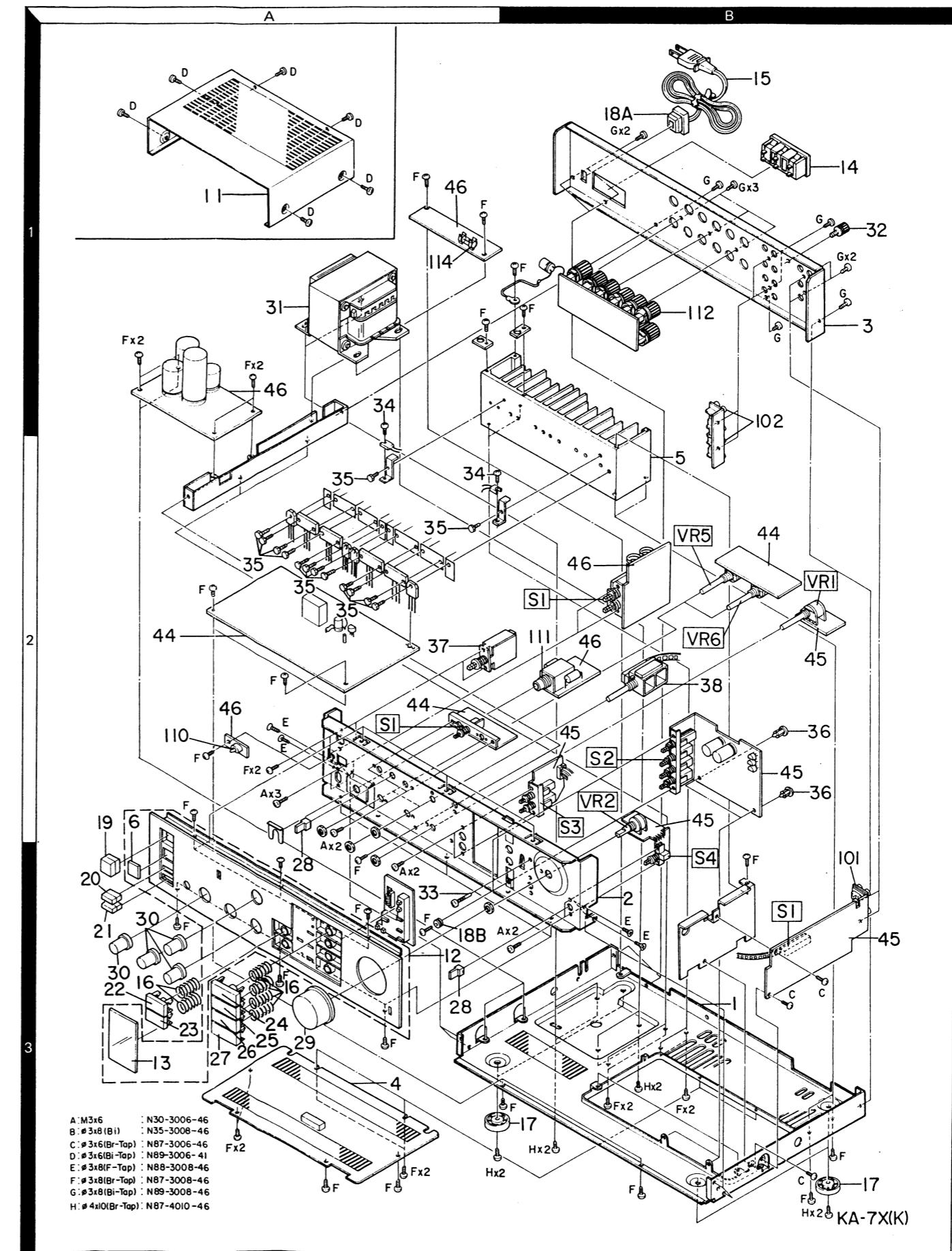


Fig. B



**KA-7X****KA-7X****KA-7X****REMOVAL OF POWER TRANSISTORS****Removal of Power Transistors**

To remove the power transistors, remove the solder from the leads. Remove the hex-head screw by the use of the flat hex-wrench (W05-0022-00).

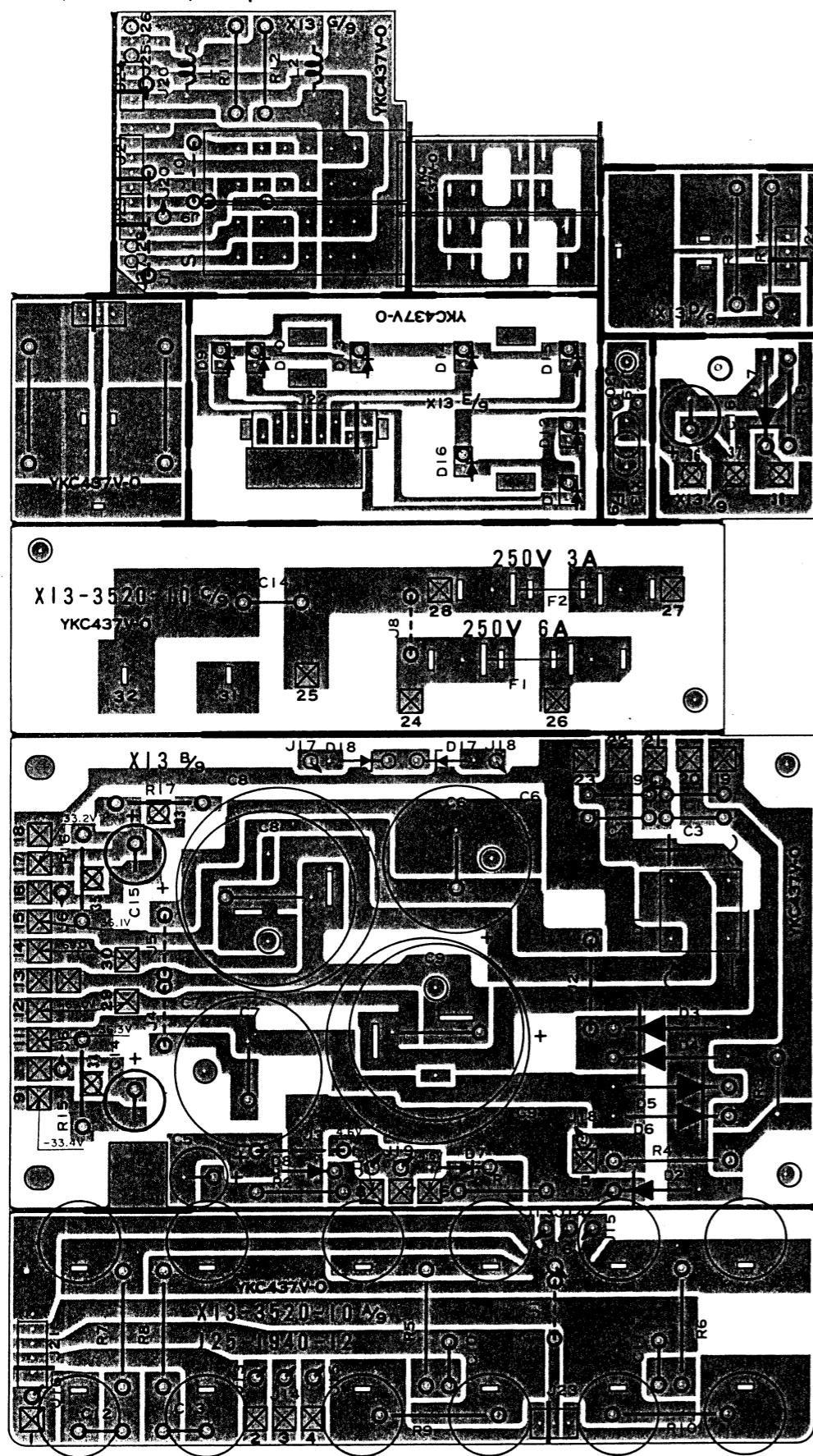
**EXPLODED VIEW**

# KA-7X KA-7X

## PC BOARD

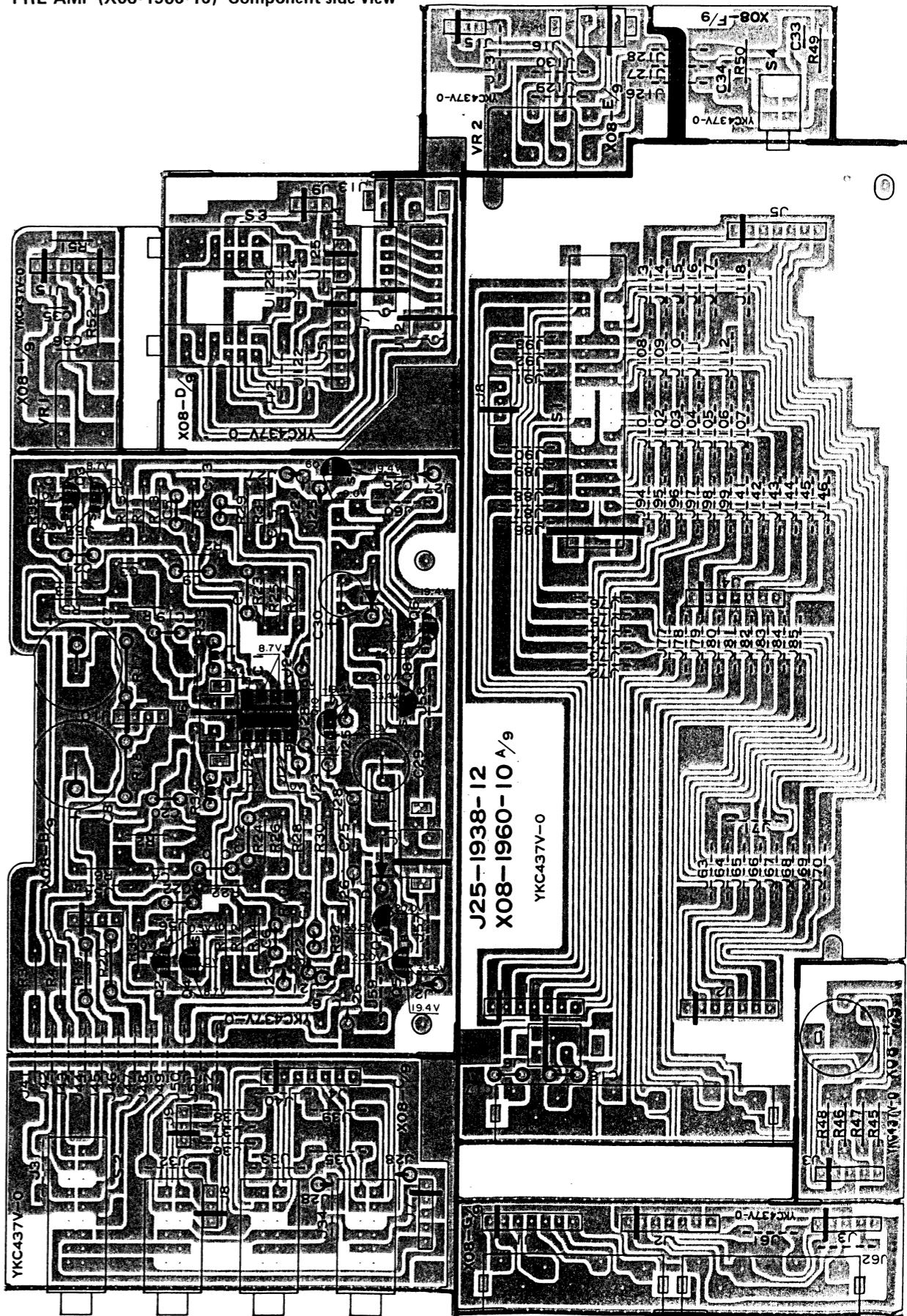
KA-7X

SUB (X13-3520-10) Component side view



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

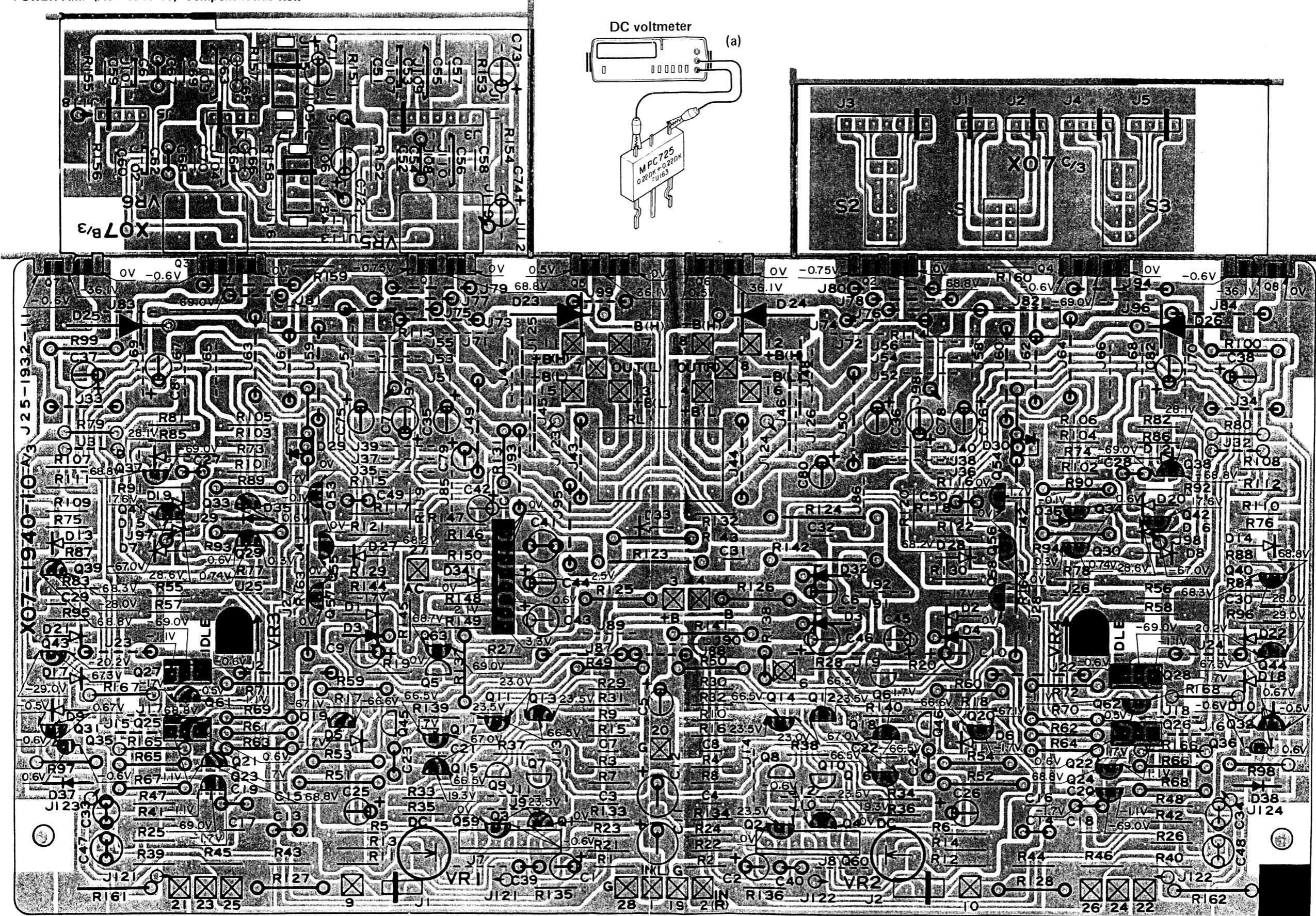
PRE AMP (X08-1960-10) Component side view

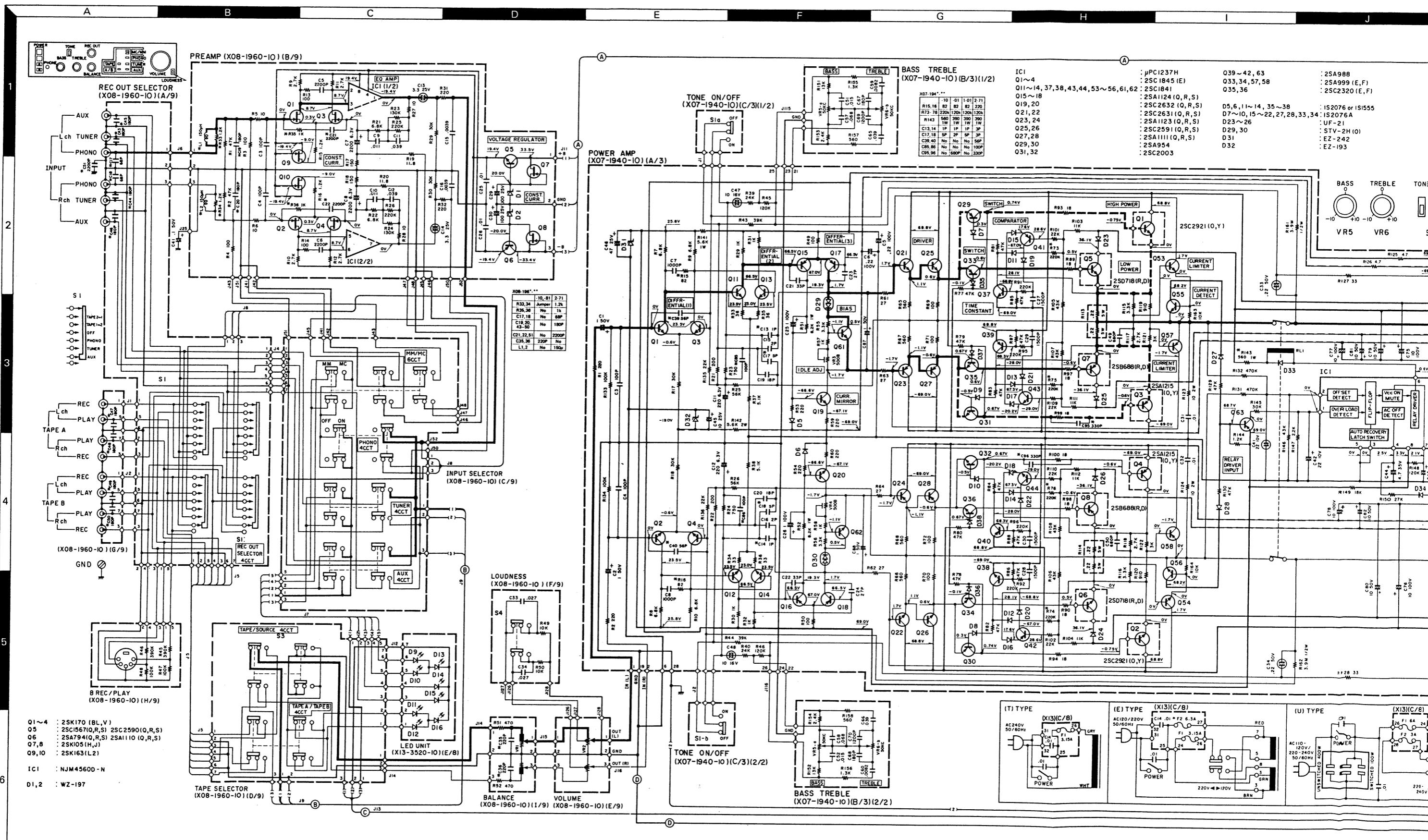


Refer to the schematic diagram for the values of resistors and capacitors.  
The PC board drawing is viewed from the side easy to check.

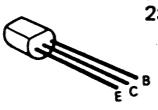
**KA-7X**
**KA-7X**  
**KA-7X**  
**PC BOARD**

POWER AMP (X07-1940-10) Component side view





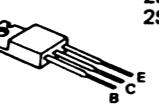
2SA954 2SC1841  
2SA988 2SC1845  
2SA998 2SC2003  
2SA999 2SC2320  
2SA1123 2SC2631  
2SA1124 2SC2632



2SA1110  
2SC2590



2SA1111  
2SC2591



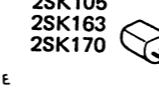
2SA1095  
2SC2565



2SB688  
2SD718



2SA1215  
2SC2921



2SK105  
2SK163



2SK170



NJM4560D-N

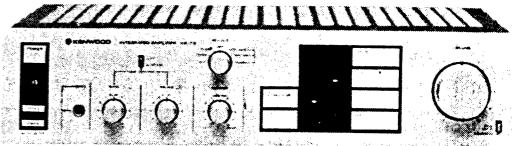
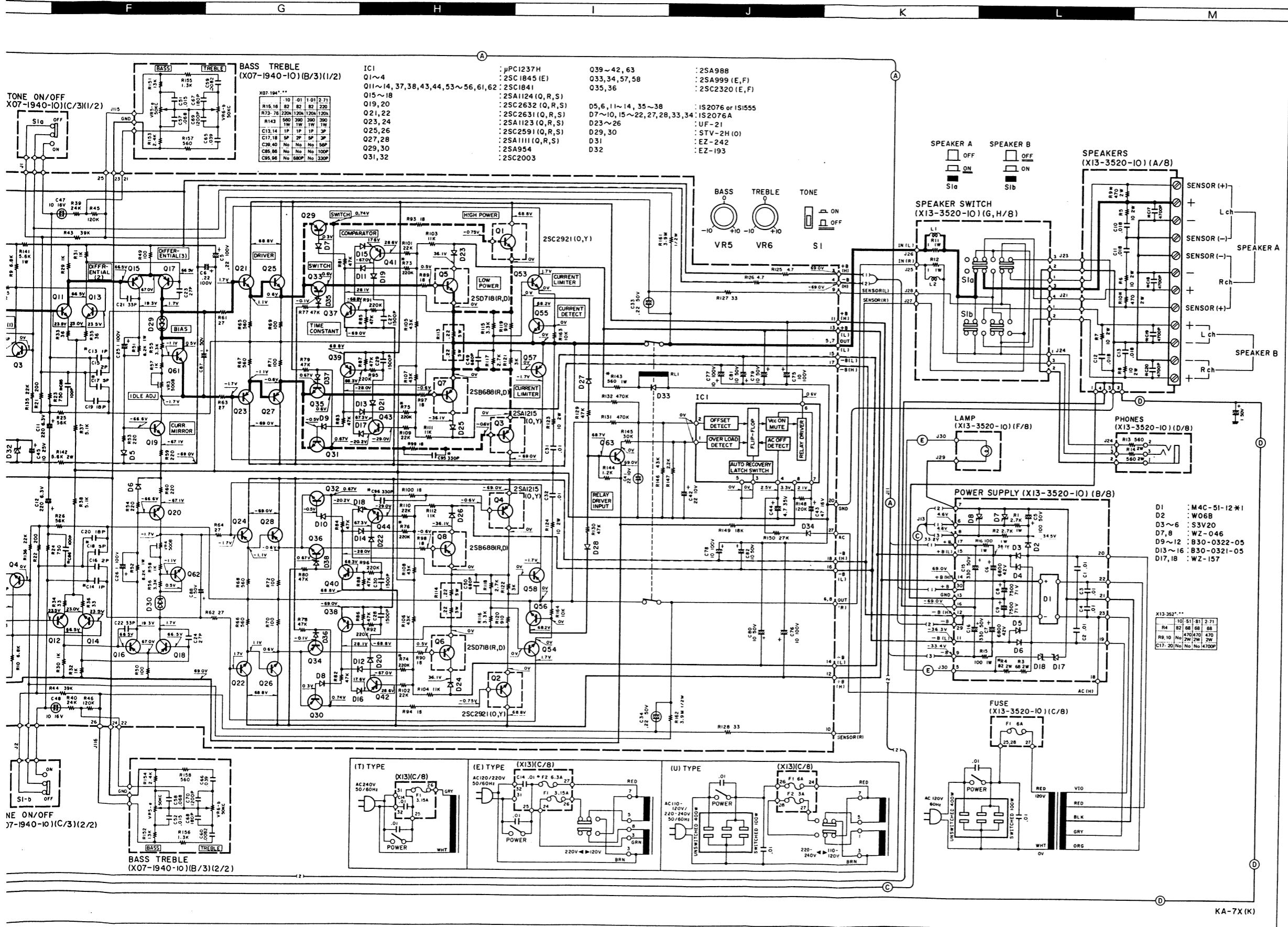


μPC1237H



# INTEGRATED AMPLIFIER

**KA-7X**



## SPECIFICATIONS

Power output	
• 100 watts per channel minimum RMS, both channels driven, at 8 ohms from 20 Hz to 20,000 Hz with no more than 0.008% total harmonic distortion.	
Both Channel Driven into 8 ohms at 1 kHz	110 watts
Both Channel Driven into 4 ohms at 1 kHz	150 watts
Dynamic Power Output into 4 ohms	560 watts
Total Harmonic Distortion (20 Hz to 20,000 Hz)	
AUX input to SPEAKER output	0.008% at rated power into 8 ohms
Intermodulation Distortion (60 Hz: 7 kHz = 4:1)	0.008% at 1/2 rated power into 8 ohms
Damping Factor	0.008% at rated power into 8 ohms
Transient Response	1.000 at 100 Hz
Rise Time	1.8μs
Slew Rate	± 100 V/μs
Frequency Response	8 Hz to 150 kHz, -3 dB
Speaker Impedance	Accept 4 ohms to 16 ohms
Input Sensitivity/Impedance	
Phone (MM)	2.5 mV/4.7 kohms
Phone (MC)	0.2 mV/100 ohms
Tuner, AUX, Tape A, B	150 mV/4.7 kohms
Signal-to-Noise Ratio (IHF, A)	
Phone (MM)	86 dB for 2.5 mV input
Phone (MC)	92 dB for 5.0 mV input
Phono (MC)	98 dB for 10 mV input
Tuner, Aux, Tape A, B	69 dB for 0.25 mV input
Maximum Input Level	107 dB for 150 mV input
Phone (MM)	200 mV (RMS), T.H.D. 0.008% at 1,000 Hz
Phone (MC)	15 mV (RMS), T.H.D. 0.008% at 1,000 Hz
Output Level/Impedance	
Tape REC (Pin)	150 mV/330 ohms
(DIN)	30 mV/80 kohms
Phone Frequency Response	RIAA standard curve +0 dB, -0.3 dB (30 Hz to 20,000 Hz)
Tone Control	
Bass	± 10 dB at 100 Hz
Treble	± 10 dB at 10 kHz
Loudness Control	+10 dB at 100 Hz fat -30 dB VOLUME Level
GENERAL	
Power Requirements	60 Hz 120 V (U.S.A. & Canada Model) Model sold elsewhere incorporates switches to accommodate 50/60 Hz 110-120 V/220-240 V
Power Consumption	5.5 A
A.C. Outlets	Switched 2, Unswitched 1
Dimensions	W 440 mm (17-5/16") H 109 mm (4-19/64") D 340 mm (13-25/64")
Net Weight	9.5 kg (20.9 lb)

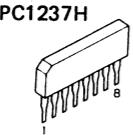
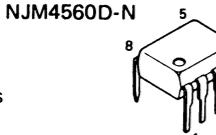
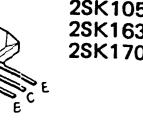
\* Measured pursuant to Federal Trade Commission's Trade Regulation rule on Power Output  
Claims for Amplifier in U.S.A.

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

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

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

- DC voltages are measured by a VOM of 20kΩ/V input impedance.
- Les tensions de courant continu sont mesurées par un multimètre d'une impédance d'entrée de 20kΩ/V.
- Die Gleichstrom-Spannungen werden durch ein Vielfachmeßgerät von 20kΩ/V Eingangs-Impedanz gemessen.



## 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	Parts No. 部品番号	Description 部品名／規格	Re- marks 備考
KA-7X UNIT			
1 38	NO STOCK	MAIN CHASSIS	
2 38	NO STOCK	SUB PANEL	
3 1B	NO STOCK	REAR PANEL	
4 3A	NO STOCK	BOTTOM PLATE	
5 2B	NO STOCK	HEAT SINK	
11 1A	A01-0421-02	METALLIC CABINET	*
12 3A	A20-3093-12	FRONT PANEL ASSY	*U
12 3A	A20-3093-12	FRONT PANEL ASSY	MH
12 3A	A20-3093-12	FRONT PANEL ASSY	[UE]
12 3A	A20-3093-12	FRONT PANEL ASSY	XE
12 3A	A20-3094-12	FRONT PANEL ASSY	*T
12 3A	A20-3127-12	FRONT PANEL ASSY	*K
12 3A	A20-3127-12	FRONT PANEL ASSY	P
-	B46-0055-30	WARRANTY CARD	P
-	B46-0060-00	WARRANTY CARD	T
-	B46-0061-30	WARRANTY CARD	K
-	B46-0062-30	WARRANTY CARD	UH
-	B46-0062-30	WARRANTY CARD	[UE]
-	B46-0063-13	WARRANTY CARD	UH
-	B46-0063-13	WARRANTY CARD	[UE]
-	B46-0064-20	WARRANTY CARD	X
-	B46-0078-03	WARRANTY CARD	E
-	B50-3448-00	INSTRUCTION MANUAL(E)	*K
-	B50-3448-00	INSTRUCTION MANUAL(E)	P
-	B50-3449-00	INSTRUCTION MANUAL(E)	*U
-	B50-3449-00	INSTRUCTION MANUAL(E)	MH
-	B50-3449-00	INSTRUCTION MANUAL(E)	[UE]
-	B50-3449-00	INSTRUCTION MANUAL(E)	X
-	B50-3450-00	INSTRUCTION MANUAL(F)	*M
-	B50-3450-00	INSTRUCTION MANUAL(F)	X
-	B50-3451-00	INSTRUCTION MANUAL(SP)	*H
-	B50-3452-00	INSTRUCTION MANUAL(E)	*T
-	B50-3453-00	INSTRUCTION MANUAL(4L)	*E
-	B59-0018-00	SERVICE STATIONS' LIST	UH
-	B59-0018-00	SERVICE STATIONS' LIST	[UE]
13 3A	B10-0318-04	FRONT GLASS	*
-	C26-1710-57	ELECTRO 1UF 50WV	
-	C91-0023-05	CERAMIC 0.01UF AC250V	UM
-	C91-0023-05	CERAMIC 0.01UF AC250V	HX
-	C91-0023-05	CERAMIC 0.01UF AC250V	[UE]
-	C91-0079-05	CERAMIC 0.01UF AC125V	KP
-	C91-0079-05	CERAMIC 0.01UF AC125V	TE
-	E23-0015-04	EARTH LUG	
14 1B	E03-0035-05	AC OUTLET	KU
14 1B	E03-0035-05	AC OUTLET	MH
14 1B	E03-0035-05	AC OUTLET	[UE]
14 1B	E03-0035-05	AC OUTLET	X
14 1B	E03-0045-05	AC OUTLET	P
15 1B	E30-0181-05	POWER CORD	KP
15 1B	E30-0459-05	POWER CORD	E
15 1B	E30-0587-15	POWER CORD	T
15 1B	E30-0649-05	POWER CORD	X
15 1B	E30-0683-05	POWER CORD	UM
15 1B	E30-0683-05	POWER CORD	[UE]
15 1B	E30-0683-05	POWER CORD	H
16 3A	G01-0453-04	COIL SPRING	*
-	H01-3351-04	CARTON BOX	*K
-	H01-3351-04	CARTON BOX	PU

E : Scandinavia &amp; Europe H : Audiol Club K : USA P : Canada

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

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

Ref. No. 参照番号	Parts No. 部品番号	Description 部品名／規格	Re- marks 備考
-	H01-3351-04	CARTON BOX	MH [UE]
-	H01-3351-04	CARTON BOX	XE
-	H01-3351-04	CARTON BOX	*T
-	H10-1599-02	POLYSTYRENE FIXTURE	*
-	H20-0452-04	COVER (450x230x350)	
-	H25-0078-04	BAG (235x315)	
-	H25-0170-04	BAG (360x400)	
17 3B	J02-0118-04	FOOT	*
18A 1B	J42-0083-05	BUSHING	KP
18A 1B	J42-0083-05	BUSHING	UM
18A 1B	J42-0083-05	BUSHING	[UE]
18A 1B	J42-0083-05	BUSHING	HT
18A 1B	J42-0083-05	BUSHING	E
18A 1B	J42-0085-05	BUSHING	X
18B 3A	J42-0095-05	BUSHING	*
19 2A	K27-0683-04	KNOB(POWER)	*
20 3A	K27-0684-04	KNOB(SPKR.A)	*
21 3A	K27-0685-04	KNOB(SPKR.B)	*
22 3A	K27-0686-03	KNOB(TAPE(SOURCE/MON))	*
23 3A	K27-0687-03	KNOB((A/B))	*
24 3A	K27-0688-13	KNOB((MM/MC))	*
25 3A	K27-0689-13	KNOB(PHONO)	*
26 3A	K27-0690-13	KNOB(TUNER)	*
27 3A	K27-0691-13	KNOB(AUX)	*
28 3A	K27-0692-04	KNOB(TONE CONTROL,LOUD)	*
29 3A	K29-0458-04	KNOB(VOLUME)	*
30 3A	K29-0459-04	KNOB(BASS,TREB,BAL,REC)	*
31 1A	L01-2471-05	POWER TRANSFORMER	*K
31 1A	L01-2471-05	POWER TRANSFORMER	P
31 1A	L01-2472-05	POWER TRANSFORMER	*T
31 1A	L01-2475-05	POWER TRANSFORMER	*U
31 1A	L01-2475-05	POWER TRANSFORMER	MH
31 1A	L01-2475-05	POWER TRANSFORMER	
31 1A	L01-2475-05	POWER TRANSFORMER	X
31 1A	L01-2475-05	POWER TRANSFORMER	[UE]
31 1A	L01-2476-05	POWER TRANSFORMER	*E
32 1B	N08-0128-35	GND TERMINAL	
33 3A	N09-0292-05	SCREW	
34 1A,2A	N09-0394-05	SCREW(VARISTOR)	
35 2A	N09-1202-05	SCREW(POWER TRANSISTOR)	
36 2B	N29-0216-05	PUSH RIVET	
-	S31-2050-05	SLIDE SWITCH(VOLT.SEL.)	UM
-	S31-2050-05	SLIDE SWITCH(VOLT.SEL.)	HX
-	S31-2050-05	SLIDE SWITCH(VOLT.SEL.)	E
-	S31-2050-05	SLIDE SWITCH(VOLT.SEL.)	[UE]
37 2A	S40-1014-05	PUSH SWITCH (POWER)	UM
37 2A	S40-1014-05	PUSH SWITCH (POWER)	HX
37 2A	S40-1014-05	PUSH SWITCH (POWER)	[UE]
37 2A	S40-1015-05	PUSH SWITCH (POWER)	KP
37 2A	S40-1047-05	PUSH SWITCH (POWER)	*T
37 2A	S40-1047-05	PUSH SWITCH (POWER)	E
39 2B	S90-0056-05	REMOTE WIRE	*
Q1 /2	V03-2565-70	ZSC2565(0)	KP
Q1 /2	V03-2565-70	ZSC2565(0)	E
Q1 /2	V03-2921-10	ZSC2921(0)	UM
Q1 /2	V03-2921-10	ZSC2921(0)	HX
Q1 /2	V03-2921-10	ZSC2921(0)	[UE]
Q1 /2	V03-2921-10	ZSC2921(0)	E
Q3 /4	V01-1095-60	2SA1095(0)	T
Q3 /4	V01-1095-60	2SA1095(0)	KP
Q3 /4	V01-1095-60	2SA1095(0)	E

E : Scandinavia &amp; 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

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Ref. No. 参照番号	Parts No. 部品番号	Description 部品名／規格	Re- marks 備考	Ref. No. 参照番号	Parts No. 部品番号	Description 部品名／規格	Re- marks 備考
Q3 ,4	V01-1215-10	2SA1215(0)	UM	C75 ,78	C24-2010-67	ELECTRO 10UF 100WV	
Q3 ,4	V01-1215-10	2SA1215(C)	HX	C79 ,82	C24-1710-67	ELECTRO 10UF 50WV	
Q3 ,4	V01-1215-10	2SA1215(0)	[UE]	C85 ,86	C71-1710-15	CERAMIC 100PF J	E
Q3 ,4	V01-1215-10	2SA1215(0)	T	C87 ,88	C24-1710-57	ELECTRO 1UF 50WV	
Q5 ,6	V04-0718-20	2SD718(R)	*	C95 ,96	C52-1768-16	CERAMIC 680PF K	
Q7 ,8	V02-0688-20	2SB688(R)	*	C95 ,96	C71-1733-15	CERAMIC 330PF J	E
44 2A	X07-1940-01	POWER AMP PCB ASSY	*U	R29 ,32	R42-1210-25	FL-PROOF RD1K J 2E	
44 2A	X07-1940-01	POWER AMP PCB ASSY	MH	R43 ,44	R49-6239-33	RN 39K F 2E	
44 2A	X07-1940-01	POWER AMP PCB ASSY	[UE]	R49 ,52	R43-1210-15	FL-PROOF RD100 J 2E	
44 2A	X07-1940-01	POWER AMP PCB ASSY	XT	R51 ,52	R47-5456-25	FL-PROOF RS5.6K J 3A	
44 2A	X07-1940-10	POWER AMP PCB ASSY	*K	R53 ,54	R43-1222-15	FL-PROOF RD220 J 2E	
44 2A	X07-1941-01	POWER AMP PCB ASSY	*P	R59 ,60	R43-1222-15	FL-PROOF RD220 J 2E	
44 2A	X07-1942-71	POWER AMP PCB ASSY	*E	R61 ,64	R43-1227-05	FL-PROOF RD27 J 2E	
45 2B,3B	X08-1960-10	PRE AMP PCB ASSY	*K	R65 ,68	R43-1256-15	FL-PROOF RD560 J 2E	
45 2B,3B	X08-1960-10	PRE AMP PCB ASSY	P	R69 ,72	R43-1210-15	FL-PROOF RD100 J 2E	
45 2B,3B	X08-1960-81	PRE AMP PCB ASSY	*	R89 ,90	R43-1218-05	FL-PROOF RD18 J 2E	
45 2B,3B	X08-1960-81	PRE AMP PCB ASSY	MH	R93 ,94	R43-1218-05	FL-PROOF RD18 J 2E	
45 2B,3B	X08-1960-81	PRE AMP PCB ASSY	[UE]	R97 ,100	R43-1218-05	FL-PROOF RD18 J 2E	
45 2B,3B	X08-1960-81	PRE AMP PCB ASSY	X	R113,114	R90-0187-05	MULTI-COMP 0.22X2 K 3H	*
45 2B,3B	X08-1962-71	PRE AMP PCB ASSY	*E	R123,124	R47-5510-05	FL-PROOF RS10 J 30	
46 1A	X13-3520-10	SUB PCB ASSY	*K	R125,126	R43-1247-95	FL-PROOF RD4.7 J 2E	
46 1A	X13-3520-10	SUB PCB ASSY	P	R127,128	R43-1233-05	FL-PROOF RD33 J 2E	
46 1A	X13-3520-51	SUB PCB ASSY	*T	R141	R47-5456-25	FL-PROOF RS5.6K J 3A	
46 1A	X13-3520-81	SUB PCB ASSY	*	R142	R47-5556-25	FL-PROOF RS5.6K J 3D	
46 1A	X13-3520-81	SUB PCB ASSY	MH	R143	R47-5427-15	FL-PROOF RS270 J 3A	PE
46 1A	X13-3520-81	SUB PCB ASSY	[UE]	R143	R47-5456-15	FL-PROOF RS560 J 3A	K
46 1A	X13-3520-81	SUB PCB ASSY	X	R161,162	R40-8339-57	FL-PROOF RC3.9M M 2H	
46 1A	X13-3522-71	SUB PCB ASSY	*E	R161,162	R12-0302-05	TRIMMING POT. 500	
				R161,162	R06-4053-05	POTENTIOMETER	*
<b>POWER AMP (X07-1940-10)</b>							
C1 ,2	C25-1710-57	LL-ELEC 1UF 50WV		RL1	S51-2045-05	RELAY	
C3 ,4	C71-1710-15	CERAMIC 100PF J		S1	S40-2136-05	PUSH SWITCH	*
C5 ,6	C24-2022-47	ELECTRO 0.22UF 100WV		D5 ,6	V11-0271-05	1S2076	
C7 ,8	C52-1710-26	CERAMIC 0.001UF K		D7 ,10	V11-0273-05	1S2076A	
C11 ,12	C24-0822-77	ELECTRO 220UF 6.3WV		D11 ,14	V11-0271-05	1S2076	
C13 ,14	C71-1701-01	CERAMIC 1PF C	KP	D15 ,22	V11-0273-05	1S2076A	
C13 ,14	C71-1703-01	CERAMIC 3PF C	E	D23 ,26	V11-5102-30	UF-21	
C15 ,16	C71-1702-01	CERAMIC 2PF C		D27 ,28	V11-0273-05	1S2076A	
C17 ,18	C71-1703-01	CERAMIC 3PF C		D29 ,30	V11-5101-70	STV-2H(O)	
C17 ,18	C71-1705-01	CERAMIC 5PF C	KP	D31	V11-4109-40	EZ-242	
C19 ,20	C71-1718-05	CERAMIC 18PF J		D32	V11-4112-30	EZ-193	
C21 ,22	C71-1733-05	CERAMIC 33PF J		D33 ,34	V11-0273-05	1S2076A	
C23 ,24	C71-1727-05	CERAMIC 27PF J		D35 ,38	V11-0271-05	1S2076	
C25 ,26	C24-2010-57	ELECTRO 1UF 100WV		IC1	V30-0678-10	UPC1237H	
C27 ,30	C46-1715-26	MYLAR 0.0015UF K		Q1 ,4	V03-1845-40	2SC1845(E)	*
C31 ,32	C46-1710-36	MYLAR 0.01UF K		Q11 ,14	V03-1841-00	2SC1841	
C33 ,34	C26-1722-47	NP-ELEC 0.22UF 50WV		Q15 ,18	V01-1124-20	2SA1124(Q,R,S)	
C39 ,40	C71-1756-05	CERAMIC 56PF J		Q19 ,20	V03-2632-20	2SC2632(Q,R,S)	
C41	C26-1022-67	NP-ELEC 22UF 10WV		Q21 ,22	V03-2631-10	2SC2631(Q,R,S)	
C42	C24-1022-67	ELECTRO 22UF 10WV		Q23 ,24	V01-1123-10	2SA1123(Q,R,S)	
C43	C25-1247-67	LL-ELEC 47UF 16WV		Q25 ,26	V03-2591-20	2SC2591(Q,R,S)	
C44	C24-6547-57	ELECTRO 4.7UF 35WV		Q27 ,28	V01-1111-20	2SA1111(Q,R,S)	
C45	C24-1410-67	ELECTRO 10UF 25WV		Q29 ,30	V01-0954-00	2SA954	
C46	C24-1447-67	ELECTRO 47UF 25WV		Q31 ,32	V03-2003-00	2SC2003	
C47 ,48	C26-1210-67	NP-ELEC 10UF 16WV		Q33 ,34	V01-0999-10	2SA999(E,F)	
C49 ,50	C52-1768-16	CERAMIC 680PF K		Q35 ,36	V03-2320-10	2SC2320(E,F)	
C51 ,52	C46-1715-36	MYLAR 0.015UF K		Q37 ,38	V03-1841-00	2SC1841	
C57 ,58	C46-1768-36	MYLAR 0.068UF K		Q39 ,42	V01-0988-00	2SA988	
C59 ,60	C46-1782-26	MYLAR 0.0082UF K		Q43 ,44	V03-1841-00	2SC1841	
C65 ,66	C46-1739-36	MYLAR 0.039UF K		Q53 ,56	V03-1841-00	2SC1841	
C67 ,68	C47-1718-15	POLYSTY 180PF J		Q57 ,58	V01-0999-10	2SA999(E,F)	
C69 ,70	C46-1712-26	MYLAR 0.0012UF K		Q61 ,62	V03-1841-00	2SC1841	

For POWER AMP

K : X07-1940-10

E : X07-1942-71

For PRE AMP

K : X08-1960-10 U : X08-1960-81

E : X08-1962-71

## PARTS LIST

★ New Parts

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Ref. No. 参照番号	Parts No. 部品番号	Description 部品名／規格	Re- marks 備考
Q63	V01-0988-00	ZSA988	
<b>PRE AMP (X08-1960-10)</b>			
C3 -4	C71-1710-15	CERAMIC 100PF J	
C5 -6	C52-1722-26	CERAMIC 0.0022UF K	
C7 -8	C24-0822-87	ELECTRO 2200UF 6.3WV	
C9 -10	C46-1711-35	MYLAR 0.01UF J	
C11 -12	C46-1739-35	MYLAR 0.039UF J	
C13 -14	C26-1433-57	NP-ELEC 3.3UF 25WV	
C15 -16	C46-1739-26	MYLAR 0.0039UF K	
C17 -18	C71-1768-05	CERAMIC 68PF J	E
C19 -20	C71-1718-15	CERAMIC 180PF J	E
C21 -22	C52-1722-26	CERAMIC 0.0022UF K	E
C25 -26	C46-1710-36	MYLAR 0.01UF K	
C29 -30	C24-1610-77	ELECTRO 100UF 25WV	
C33 -34	C46-1727-36	MYLAR 0.027UF K	
C35 -36	C71-1722-15	CERAMIC 220PF J	KU
C41	C24-1710-47	ELECTRO 0.1UF 50WV	
C43 -50	C71-1718-15	CERAMIC 180PF J	E
C51	C52-1722-26	CERAMIC 0.0022UF K	E
-	E06-0510-05	DIN CONNECTOR	
101 38	E13-0432-05	PHONO JACK (4P)	
102 18	E13-0618-05	PHONO JACK (6P)	
L1 -2	L40-1511-43	INDUCTOR	E
R17 -18	R48-2215-15	RN 150 J 2E	
R19 -20	R48-2118-93	RN 11.8 F 2E	
VR1	RO6-5062-05	POTENTIOMETER (BAL)	
VR2	RO6-5087-05	POTENTIOMETER (VOL)	
S1	S90-0038-05	SLIDE SWITCH	
S2	S42-4018-05	PUSH SWITCH (4KEY)	*
S3	S42-2055-05	PUSH SWITCH (2KEY)	*
S4	S40-2122-05	PUSH SWITCH	*
D1 -2	V11-4100-30	WZ-197	
I01	V30-0344-40	NJM4560D-N	
Q1 -4	V09-0158-20	2SK170(BL)	*
Q5	V03-2590-30	2SC2590(Q,R,S)	
Q6	V01-1110-30	2SA1110(Q,R,S)	
Q7 -8	V09-0127-40	2SK105(H,J)	
Q9 -10	V09-0144-21	2SK163(L2)	
<b>SUB (X13-3520-10)</b>			
110 2A	B30-0320-05	LAMP (0.08A,14V)	*
D9 -12	B30-0322-05	LED (SLP-253B)	*
D13 -16	B30-0321-05	LED (PR7531K)	*
-	C91-0079-05	CERAMIC 0.01UF AC125V	TE
C1 -4	C54-2710-39	CERAMIC 0.01UF P	
C5 -7	C24-1710-77	ELECTRO 100UF 50WV	
C6 -7	C90-0468-05	ELECTRO 6800UF 42WV	
C8 -9	C90-0567-05	ELECTRO 7500UF 71WV	*
C10 -13	C46-1718-36	MYLAR 0.018UF K	
C15 -16	C24-1733-77	ELECTRO 330UF 50WV	
C17 -20	C52-1747-26	CERAMIC 0.0047UF K	E
111 2B	E11-0093-05	PHONE JACK	
112 1B	E20-0814-05	TERMINAL BOARD(SPEAKER)	*
F1	F05-3122-05	FUSE	TE
F1	F05-6021-05	FUSE	U
F1	F05-6027-05	FUSE	K
F2	F05-3022-05	FUSE	U
F2	F05-6322-05	FUSE	E
114 1A	J13-0041-05	FUSE HOLDER	KU

For SUB

K : X13-3550-10 U : X13-3550-81

T : X13-3550-51 E : X13-3552-71

Ref. No. 参照番号	Parts No. 部品番号	Description 部品名／規格	Re- marks 備考
114 1A	J13-0054-05	FUSE HOLDER	TE
L1 -2	L39-0085-05	COIL	
R1 -2	R47-5427-25	FL-PROOF RS2.7K J 3A	
R3	R47-5568-05	FL-PROOF RS68 J 3D	
R4	R47-5568-05	FL-PROOF RS68 J 3D	UT
R4	R47-5582-05	FL-PROOF RS82 J 3D	E
R5 -8	R47-5510-05	FL-PROOF RS10 J 3D	K
R9 -10	R47-5547-15	FL-PROOF RS470 J 3D	UT
R9 -10	R47-5547-15	FL-PROOF RS470 J 3D	E
R11 -12	R47-5401-05	FL-PROOF RS1 J 3A	
R13 -14	R47-5556-15	FL-PROOF RS560 J 3D	
R15 -16	R47-5410-15	FL-PROOF RS100 J 3A	
S1	S42-2056-05	PUSH SWITCH	*
D1	V11-2101-40	M4C-51-12*1	
D2	V11-0295-05	W06B	
D3 -6	V11-1300-10	S3V20	
D7 -8	V11-4112-00	WZ-046	
D17 -18	V11-4103-80	WZ-157	

## 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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