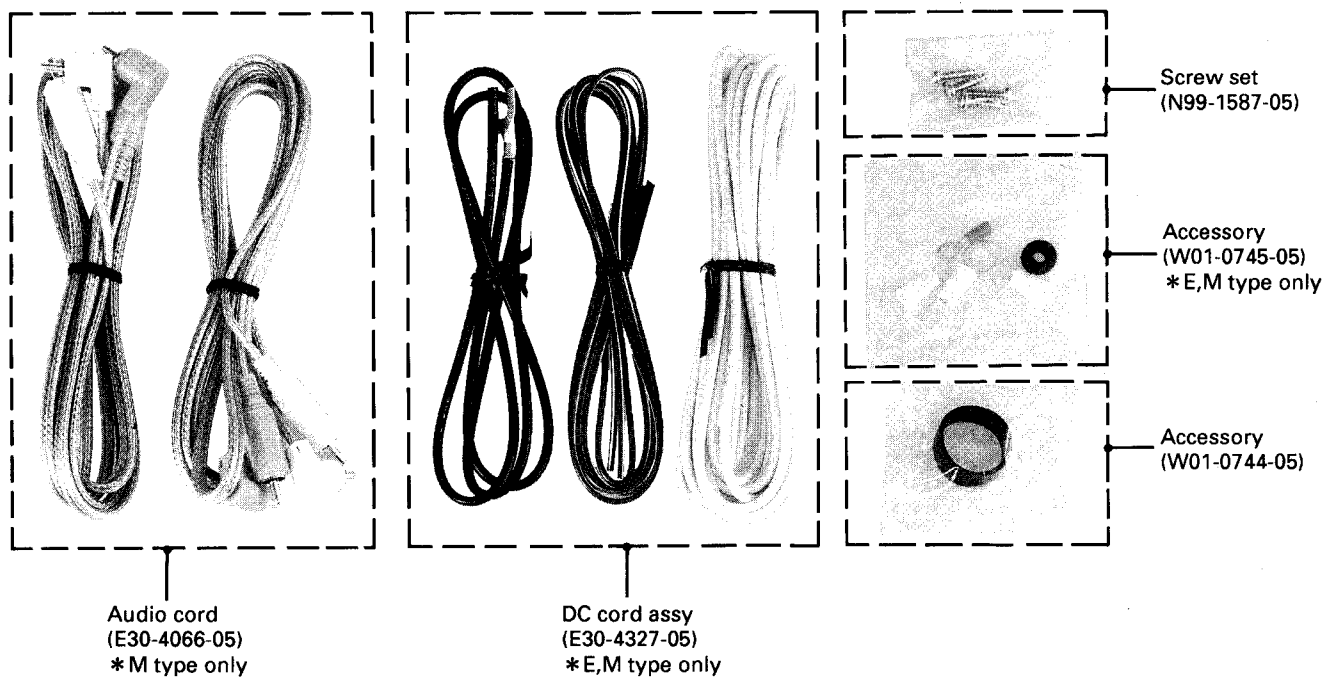
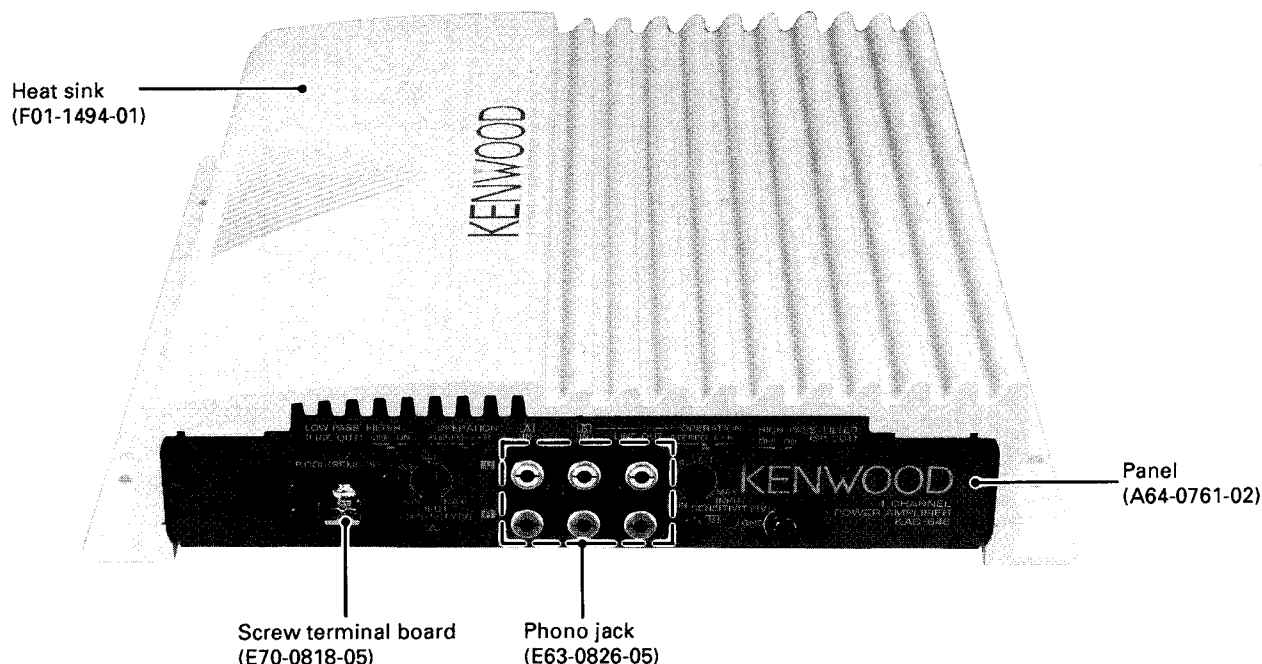


# KAC-646

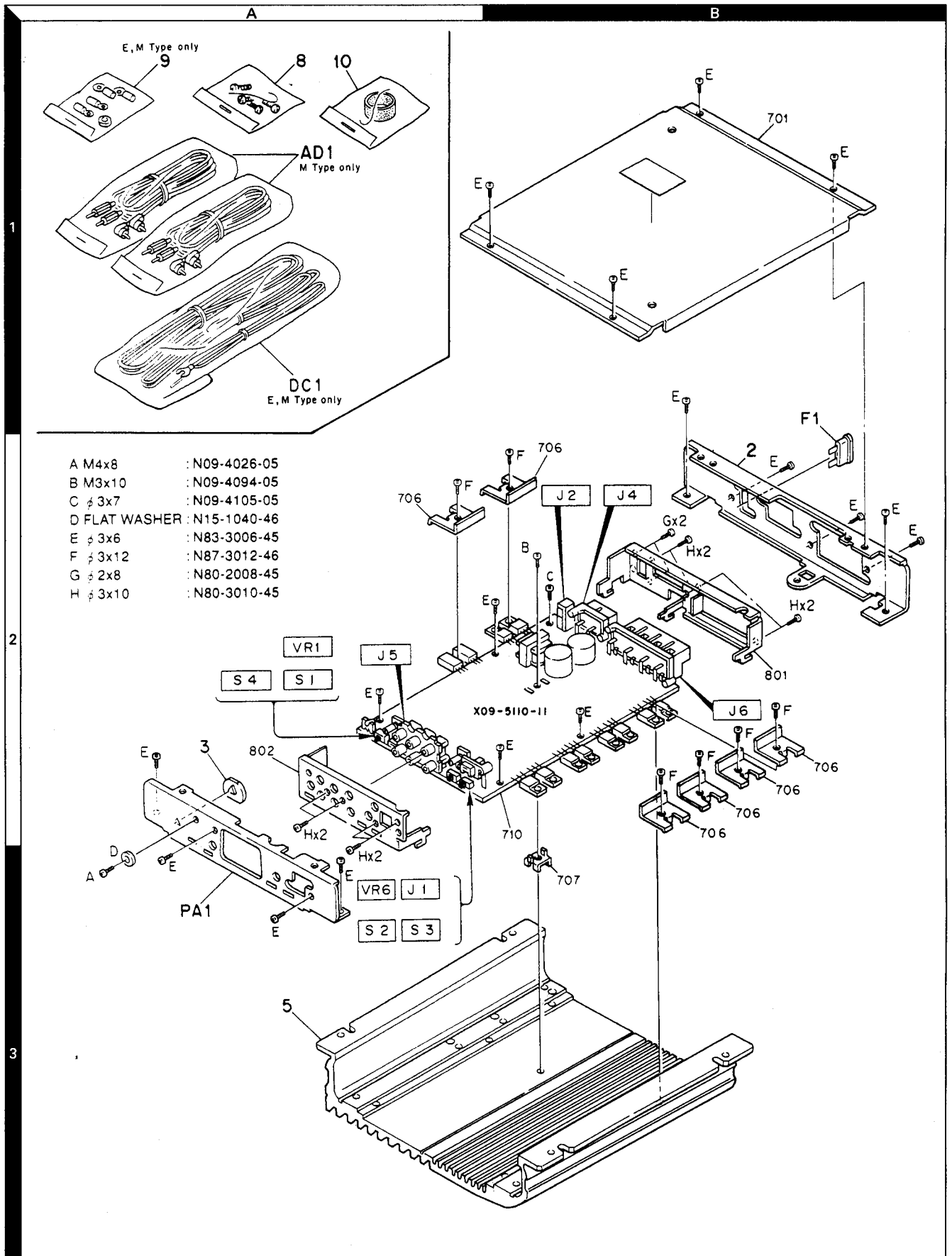
## SERVICE MANUAL

# KENWOOD

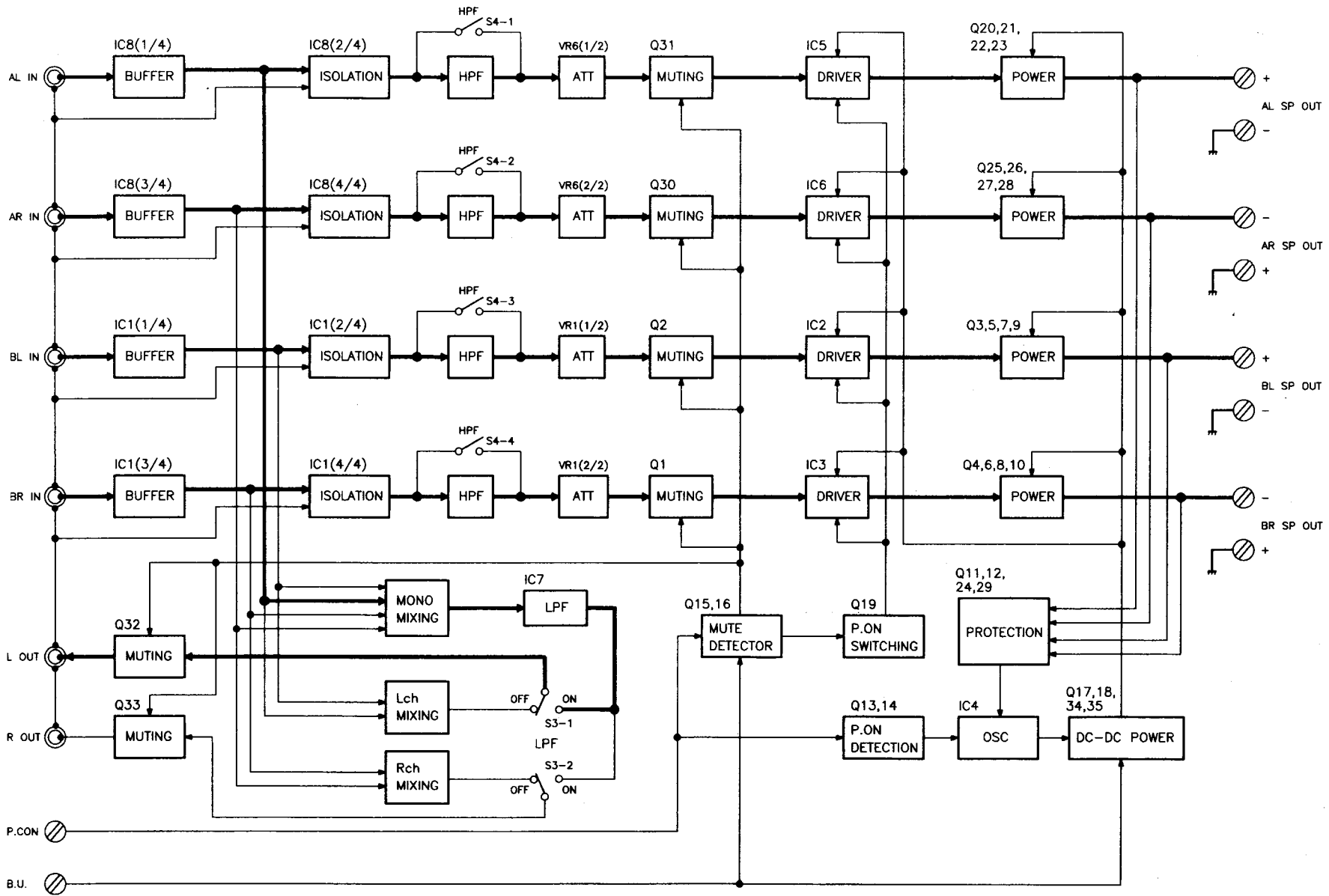
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B51-6985-00 (4) 1606



## EXPLODED VIEW



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



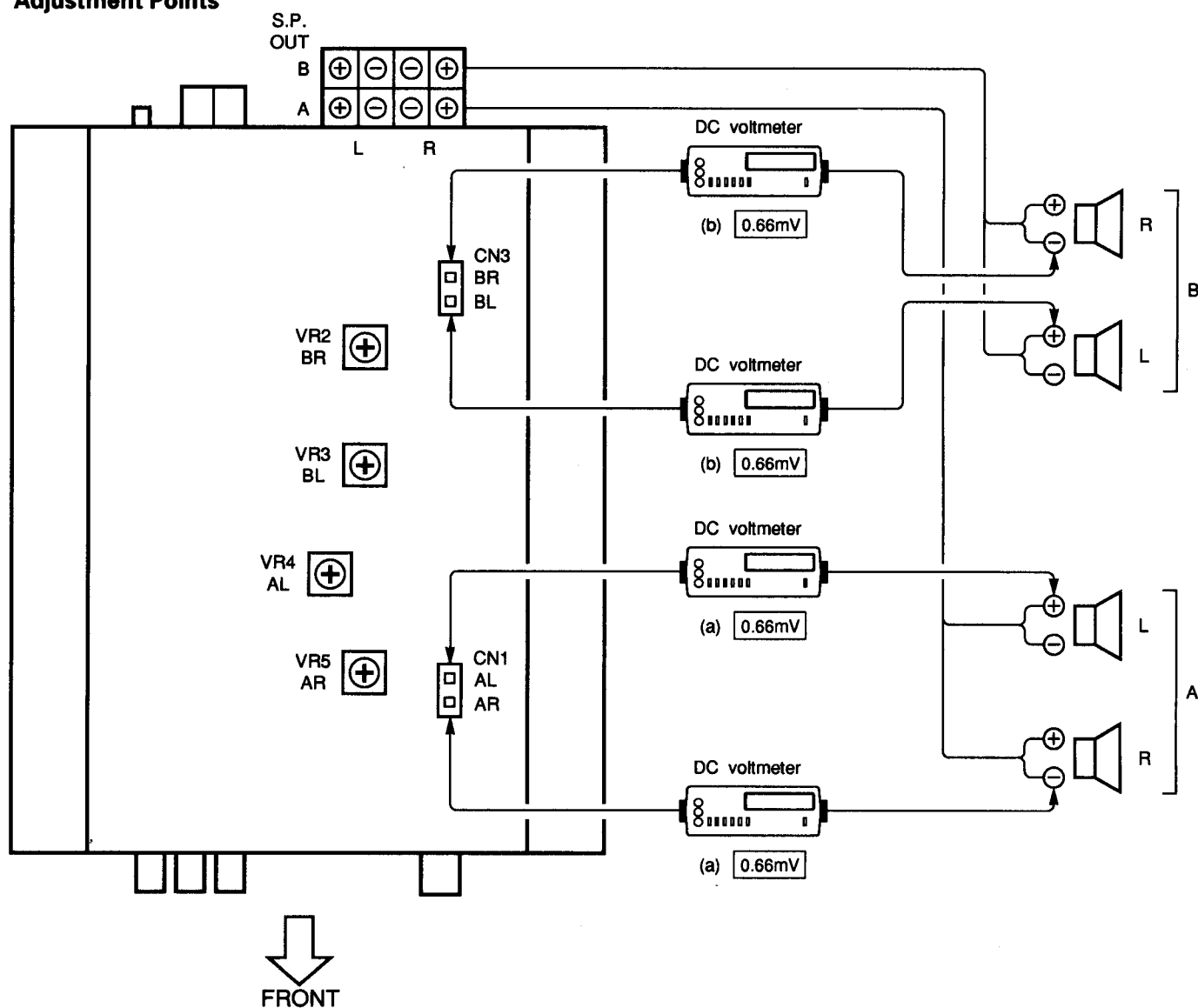
**BLOCK DIAGRAM**

**KAC-646**

## ADJUSTMENT

No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	ALIGNMENT POINTS	ALIGN FOR	FIG.
1	IDLE CURRENT A	-	Connect a DC voltmeter to CN1 and SP-OUT A	VR4 (L) VR5 (R)	0.66mV	(a)
2	IDLE CURRENT B	-	Connect a DC voltmeter to CN3 and SP-OUT B	VR3 (L) VR2 (R)	0.66mV	(b)

### Adjustment Points

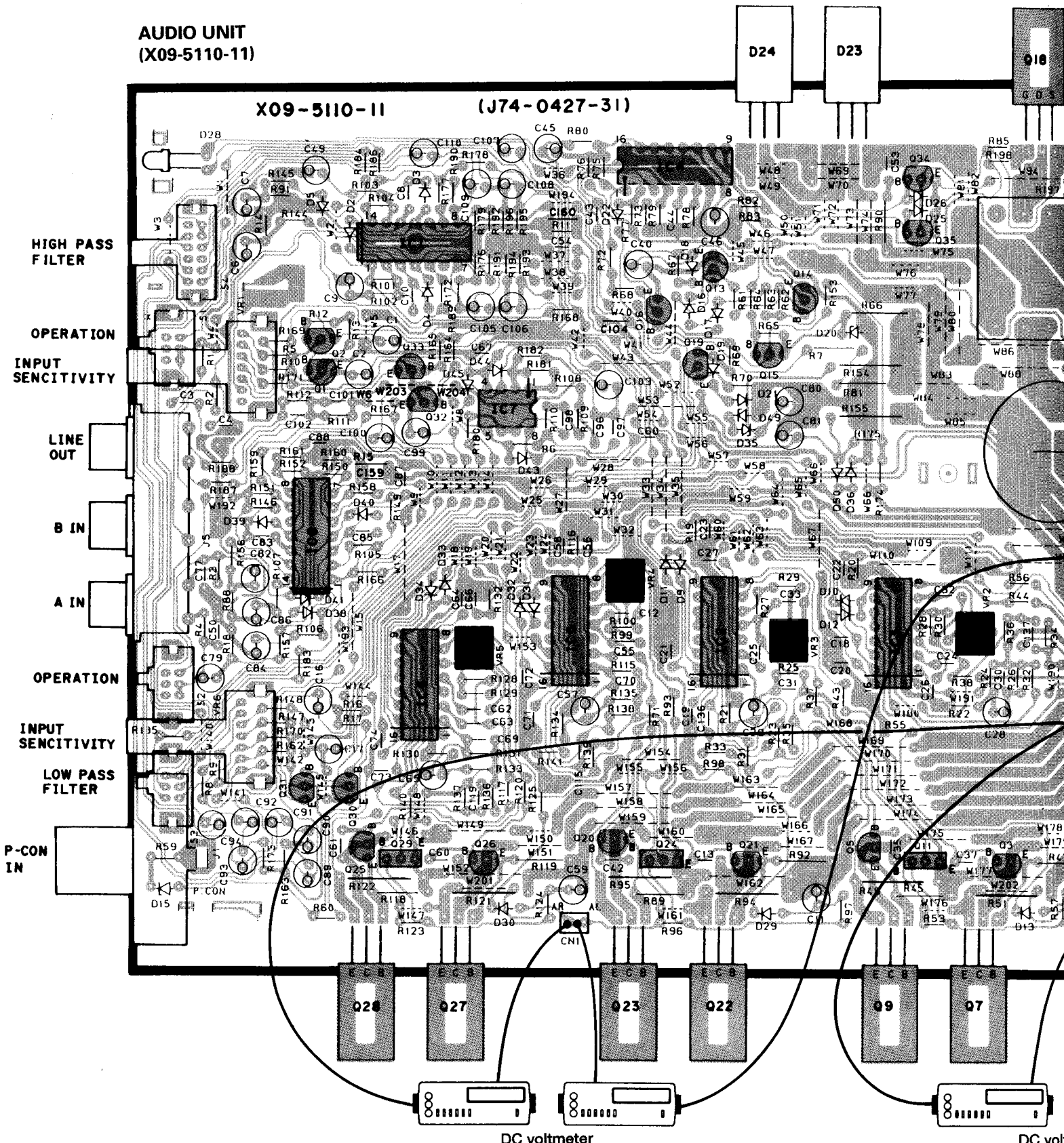


# PC BOARD (Component Side View)

AUDIO UNIT  
(X09-5110-11)

X09-5110-11

(J74-0427-31)

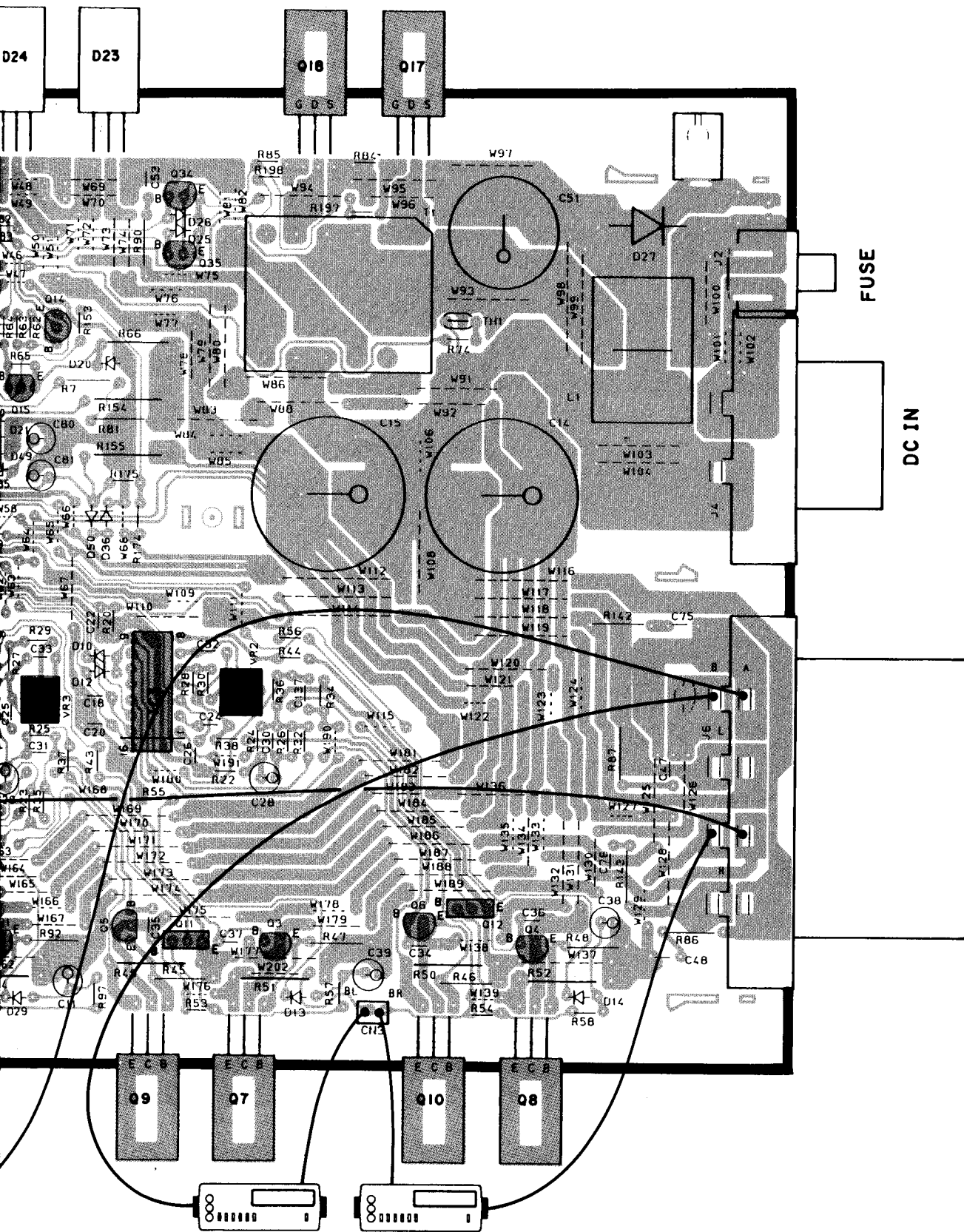


DC voltmeter

(a) Idle current A 0.66mV

DC vol

(b) Idle cur



Ref. No.	Address
Q1	3B
Q2	3C
Q3	5F
Q4	5G
Q5	5E
Q6	5G
Q7	6F
Q8	6G
Q9	6E
Q10	6G
Q11	5E
Q12	5G
Q13	2D
Q14	2E
Q15	3E
Q16	2D
Q17	1G
Q18	1F
Q19	3D
Q20	5D
Q21	5E
Q22	6D
Q23	6D
Q24	5D
Q25	5C
Q26	5C
Q27	6C
Q28	6C
Q29	5C
Q30	5C
Q31	5B
Q32	3C
Q33	3C
Q34	2E
Q35	2F
IC1	2C
IC2	4D
IC3	4E
IC4	2D
IC5	4D
IC6	4C
IC7	3C
IC8	4B

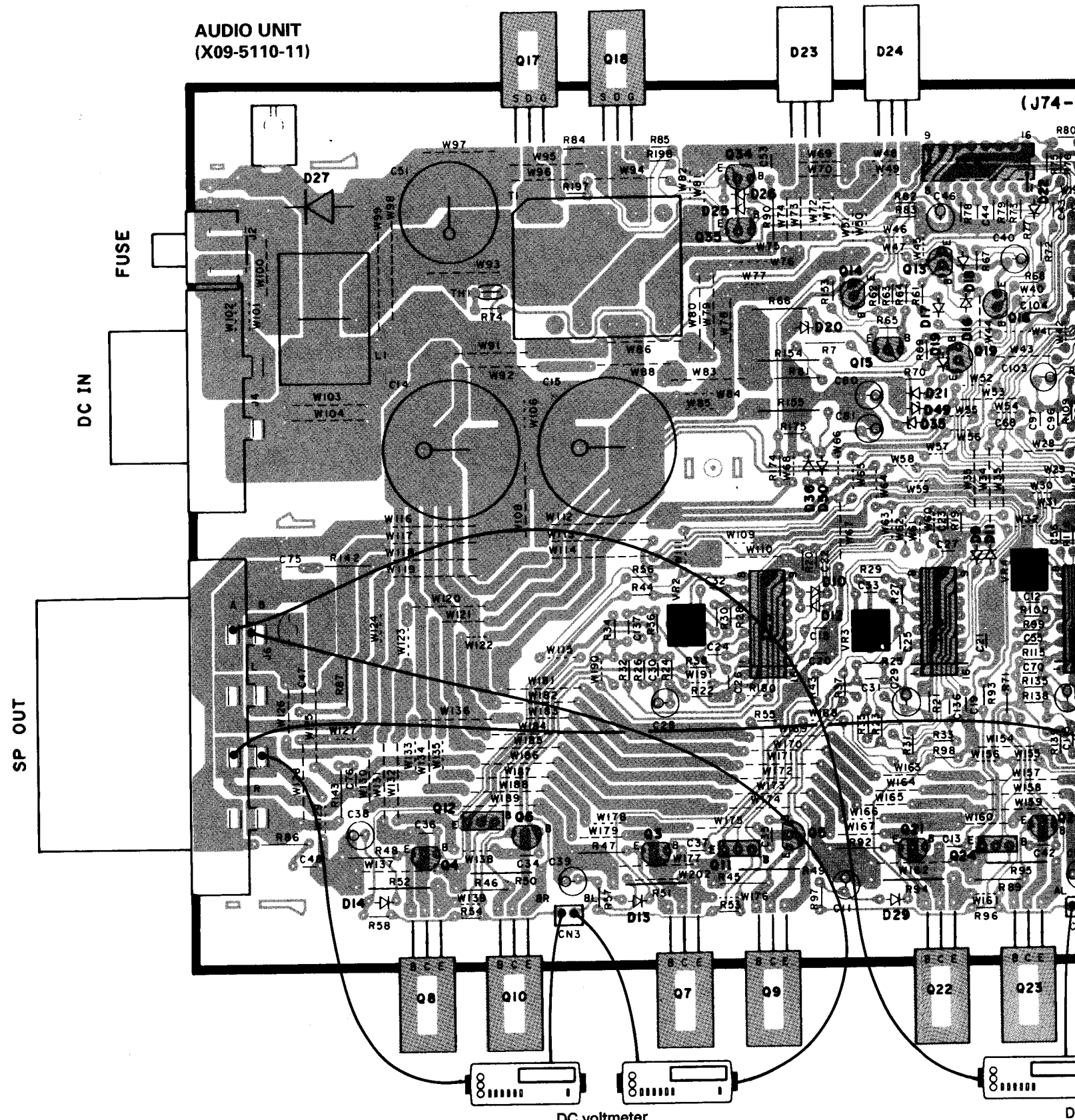
DC voltmeter

(b) Idle current B 0.66mV

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

# PC BOARD (Foil Side View)

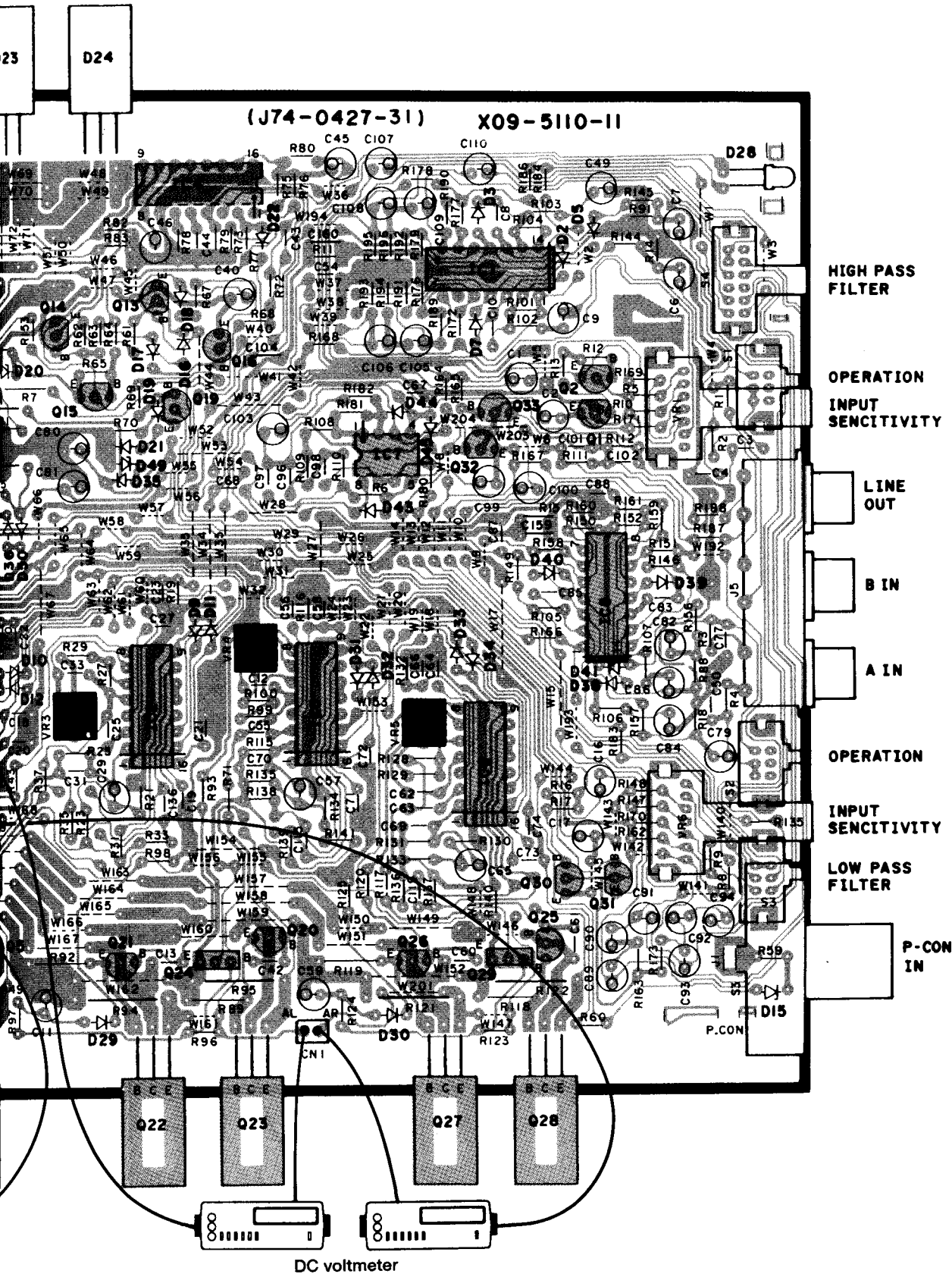
AUDIO UNIT  
(X09-5110-11)



(b) Idle current B 0.66mV

(a) Idle c

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

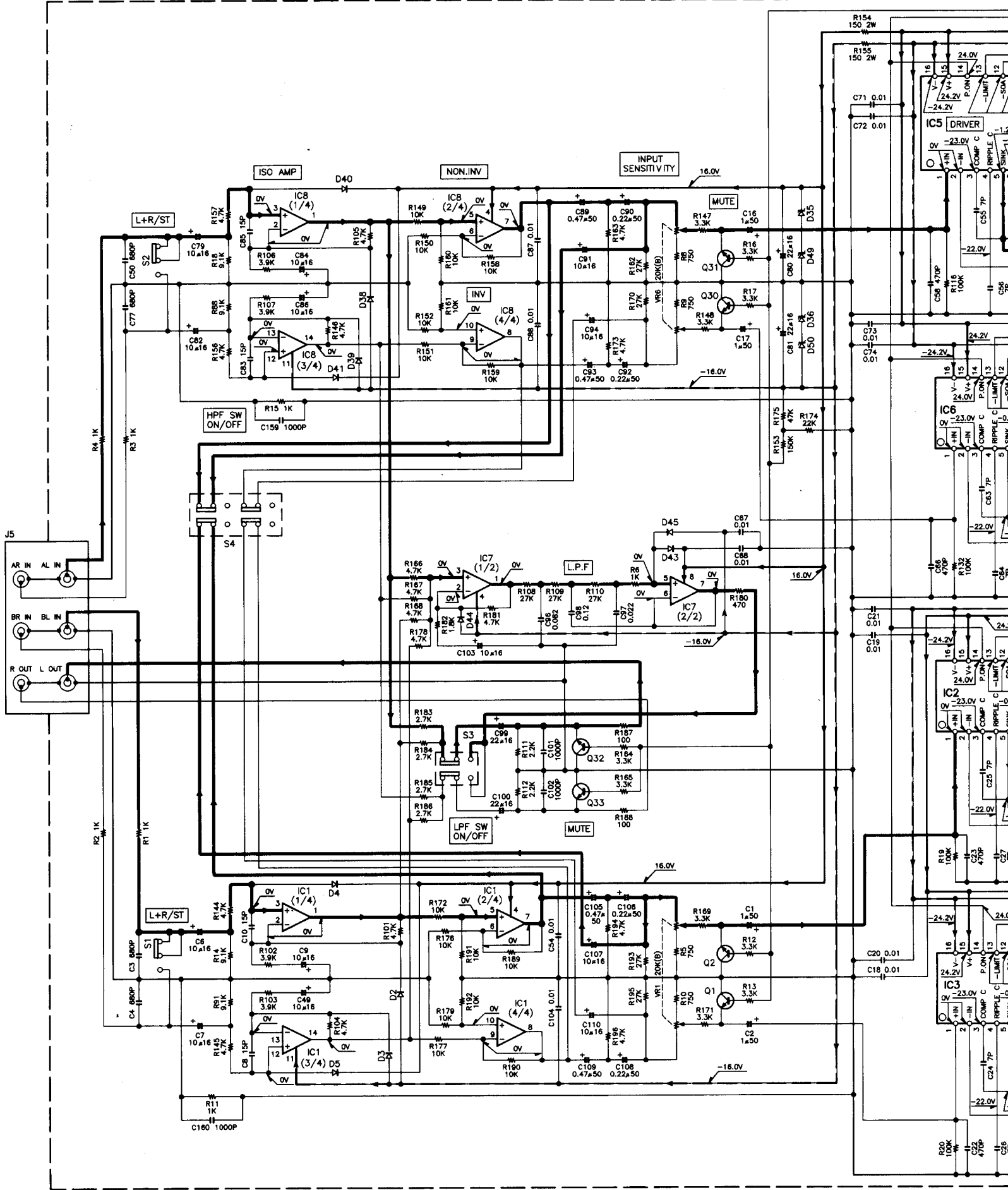


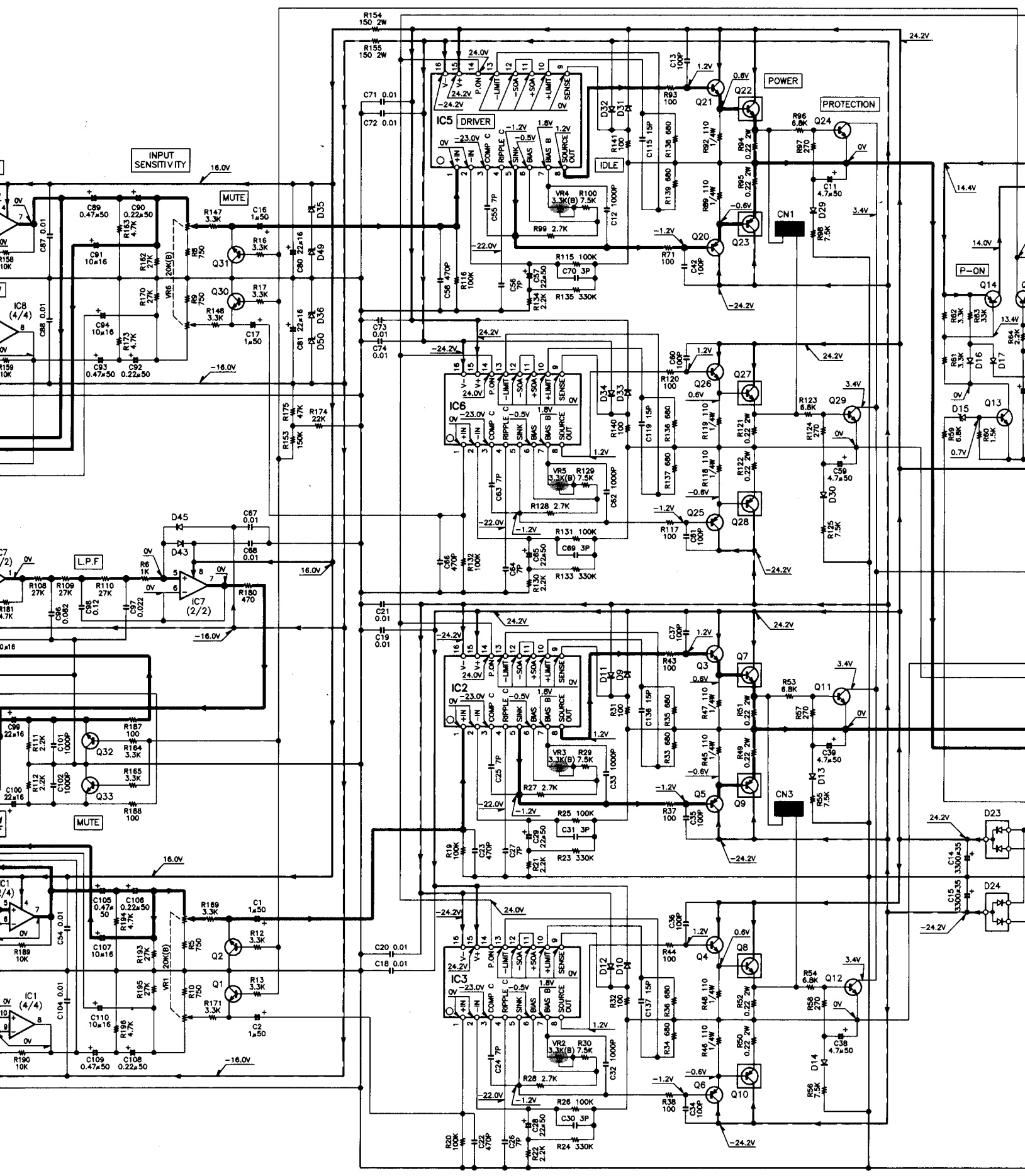
(a) Idle current A 0.66mV

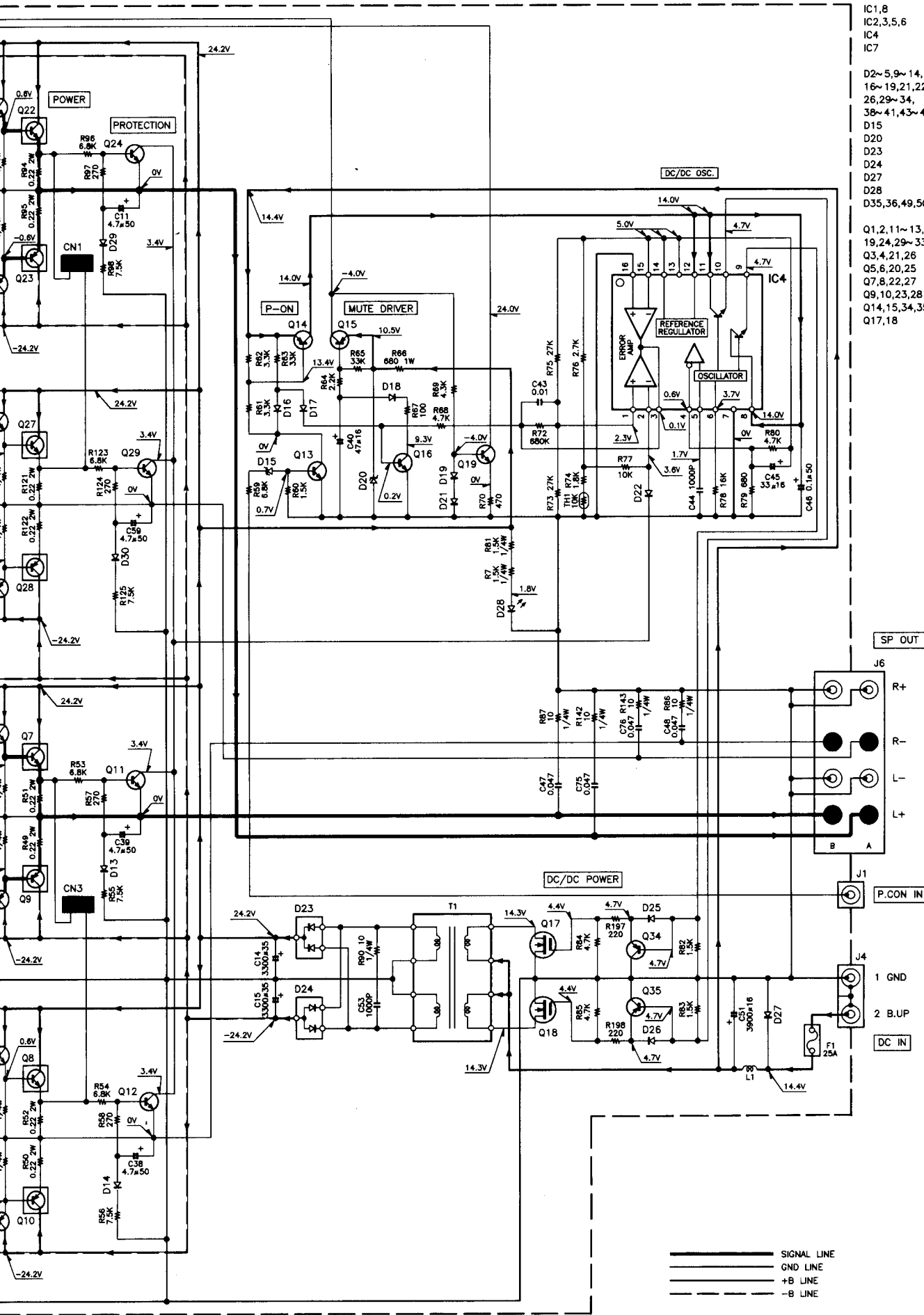
Ref. No.	Address
Q1	3R
Q2	3R
Q3	5N
Q4	5M
Q5	5O
Q6	5M
Q7	6N
Q8	6M
Q9	6O
Q10	6M
Q11	5O
Q12	5M
Q13	2O
Q14	2O
Q15	3O
Q16	2P
Q17	1M
Q18	1N
Q19	3P
Q20	5P
Q21	5O
Q22	6P
Q23	6P
Q24	5P
Q25	5Q
Q26	5Q
Q27	6Q
Q28	6Q
Q29	5Q
Q30	5Q
Q31	5R
Q32	3Q
Q33	3Q
Q34	2O
Q35	2N
IC1	2Q
IC2	4P
IC3	4O
IC4	2P
IC5	4P
IC6	4Q
IC7	3Q
IC8	4R



AUDIO UNIT  
(X09-5110-11)







- IC1,8 :  $\mu$ PC4574C
  - IC2,3,5,6 : LM391N-100
  - IC4 :  $\mu$ PC494C
  - IC7 :  $\mu$ PC4570C
- 
- D2~5,9~14, 16~19,21,22,25, 26,29~34, 38~41,43~45 : 1SS176
  - D15 : RD5.1JS(B)
  - D20 : RD10JS(B2)
  - D23 : D10LC20UR
  - D24 : D10LC20UR
  - D27 : RM4ZLF-J1
  - D28 : B30-1342-05
  - D35,36,49,50 : RD7.5JS(B)

- Q1,2,11~13,16, 19,24,29~33 : 2SC945(A)(Q,P)
- Q3,4,21,26 : 2SC1627A
- Q5,6,20,25 : 2SA817A
- Q7,8,22,27 : 2SC4511+B
- Q9,10,23,28 : 2SA1725+B
- Q14,15,34,35 : 2SA733(A)(Q,P)
- Q17,18 : 2SK2421+B

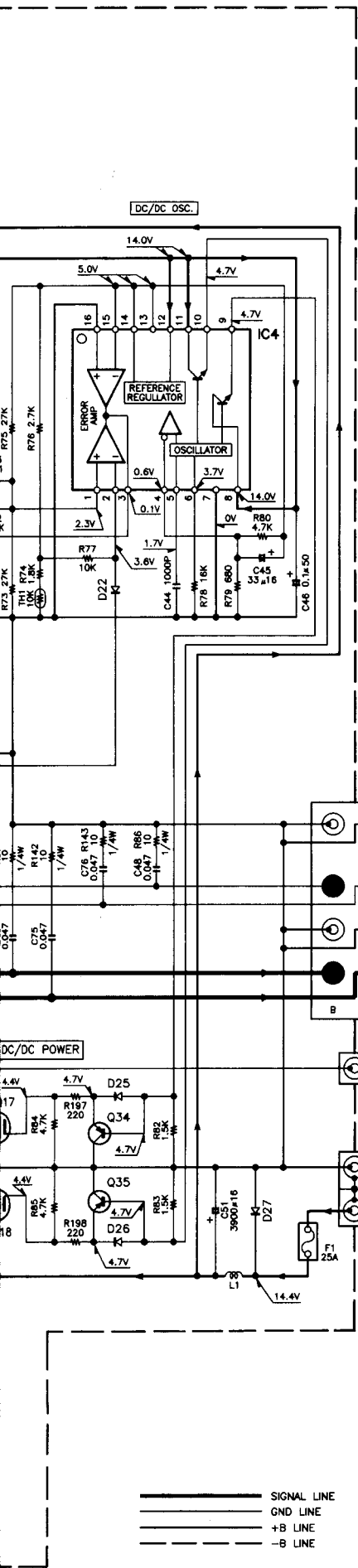
2SA  
2SA  
2SC  
2SC

14

UPC

**CAUTION:** For continued safe operation, please refer to the manufacturer's recommendations (not limited to parts list). **!** In case of abnormal components. To reduce the risk of electric shock, leakage-current measurements shall be performed on all parts are acceptable (before the supply circuit) before returned to the customer.

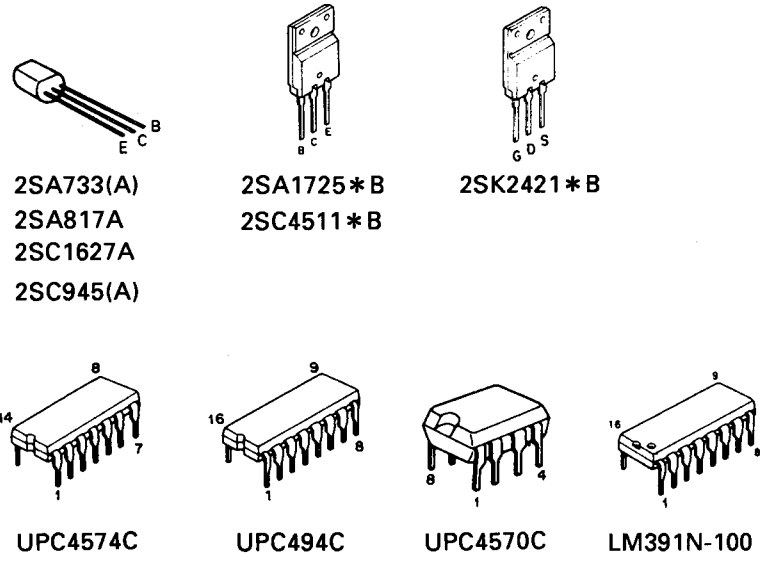
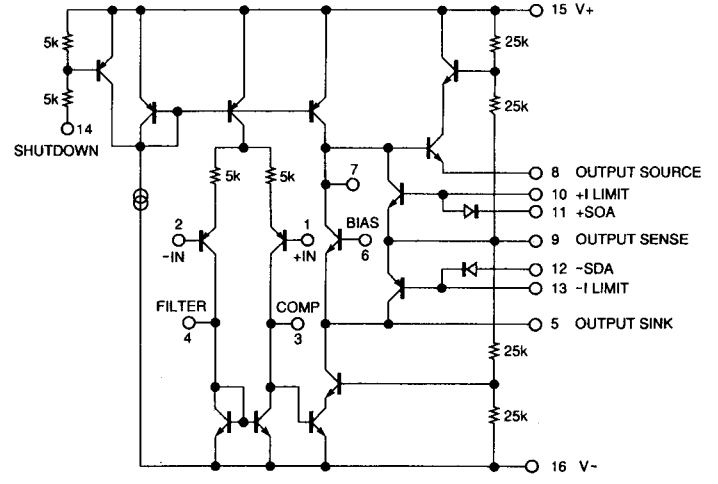
— SIGNAL LINE  
- - - GND LINE  
... +B LINE  
- · - · -B LINE



- IC1,8 :  $\mu$ PC4574C
  - IC2,3,5,6 : LM391N-100
  - IC4 :  $\mu$ PC494C
  - IC7 :  $\mu$ PC4570C
- 
- D2~5,9~14, 16~19,21,22,25, 26,29~34, 38~41,43~45 : 1SS176
  - D15 : RD5.1JS(B)
  - D20 : RD10JS(B2)
  - D23 : D10LC20U
  - D24 : D10LC20UR
  - D27 : RM4ZLF-J1
  - D28 : B30-1342-05
  - D35,36,49,50 : RD7.5JS(B)
- 
- Q1,2,11~13,16, 19,24,29~33 : 2SC945(A)(Q,P)
  - Q3,4,21,26 : 2SC1627A
  - Q5,6,20,25 : 2SA817A
  - Q7,8,22,27 : 2SC4511\*B
  - Q9,10,23,28 : 2SA1725\*B
  - Q14,15,34,35 : 2SA733(A)(Q,P)
  - Q17,18 : 2SK2421\*B

### IC2,3,5,6:LM391N-100(X09-5110-11) DRIVER IC

#### EQUIVALENCE CIRCUIT



**CAUTION:** For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list).  $\triangle$  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. Values may vary slightly due to variations between individual instruments or/and units.

# KAC-646

## 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.

**KAC-646**  
**(X09-5110-11)**

Ref. No.	New Parts	Parts No.	Description	Destination
参照番号	新	部品番号	部品名/規格	仕向
<b>KAC-646</b>				
2	2B	* A84-0097-02	REAR PANEL	
PA1	3A	* A64-0761-02	PANEL	
3	2A	B19-0850-04	LIGHTING BOARD	
-		B46-0100-40	WARRANTY CARD	
-		* B64-0763-00	INST. MANUAL(ENG,FRE)	K
-		* B64-0764-00	INST. MANUAL(SPA)	K
-		* B64-0765-00	INST. MANUAL(ENG,FRE)	E
-		* B64-0766-00	INST. MANUAL(GER,DUT)	E
-		* B64-0767-00	INST. MANUAL(ITA,SPA)	E
-		* B64-0768-00	INST. MANUAL(POR)	E
-		* B64-0769-00	INST. MANUAL(ENG,FRE)	M
-		* B64-0770-00	INST. (SPA)	M
AD1	1A	E30-4066-05	AUDIO CORD	M
DC1	1A	E30-4327-05	DC CORD ASSY	EM
5	3A	* F01-1494-01	HEAT SINK	
F1	1B	F05-2531-05	FUSE (25A)	
-		H12-2587-04	PACKING FIXTURE	
-		* H12-2600-03	PACKING FIXTURE	
-		H25-0336-04	PROTECTION BAG (170X250X0.03)	
-		H25-0342-04	PROTECTION BAG (350X350X0.03)	
-		* H54-0585-03	ITEM CARTON CASE	
8	1A	N99-1587-05	SCREW SET	
A	3A	N09-4026-05	TAPPING SCREW (4X8,TP,S)	
B	2B	N09-4094-05	SEMS (MACHINE SCREW)	
C	2B	N09-4105-05	TAPTITE SCREW (3X7)	
D	3A	N15-1040-46	FLAT WASHER (4)	
E	2B	N83-3006-45	PAN HEAD TAPTITE SCREW	
F	2B	N87-3012-46	BRAZIER HEAD TAPTITE SCREW	
9	1A	W01-0745-05	ACCESSORY	EM
10	1A	* W01-0744-05	ACCESSORY (TUBE)	
<b>AUDIO UNIT (X09-5110-11)</b>				
D28		B30-1342-05	LED	
C1	,2	CE04DW1H010M	ELECTRO 1.0UF	50WV
C3	,4	CK45FB1H681K	CERAMIC 680PF	K
C6	,7	CE04DW1C100M	ELECTRO 10UF	16WV
C8		CC45FSL1H150J	CERAMIC 15PF	J
C9		CE04DW1C100M	ELECTRO 10UF	16WV
C10		CC45FSL1H150J	CERAMIC 15PF	J
C11		CE04DW1H4R7M	ELECTRO 4.7UF	50WV
C12		CK45FB1H102K	CERAMIC 1000PF	K
C13		CK45FB1H101K	CERAMIC 100PF	K
C14	,15	C90-1616-05	ELECTRO 3300UF	35WV
C16	,17	CE04DW1H010M	ELECTRO 1.0UF	50WV
C18	-21	CK45FF1H103Z	CERAMIC 0.010UF	Z
C22	,23	CK45FB1H471K	CERAMIC 470PF	K
C24	-27	CC45FSL1H070D	CERAMIC 7.0PF	D
C28	,29	CE04DW1H220M	ELECTRO 22UF	50WV
C30	,31	CC45FCH1H030C	CERAMIC 3.0PF	C
C32	,33	CK45FB1H102K	CERAMIC 1000PF	K
C34	-37	CK45FB1H101K	CERAMIC 100PF	K

Ref. No.	New Parts	Parts No.	Description	Destination
参照番号	新	部品番号	部品名/規格	仕向
C38	,39	CE04DW1H4R7M	ELECTRO 4.7UF	50WV
C40		CE04DW1C470M	ELECTRO 47UF	16WV
C42		CK45FB1H101K	CERAMIC 100PF	K
C43		CK45FF1H103Z	CERAMIC 0.010UF	Z
C44		CF92FV1H102J	MF-C 1000PF	J
C45		CE04DW1C330M	ELECTRO 33UF	16WV
C46		CE04DW1HOR1M	ELECTRO 0.1UF	50WV
C47	,48	CF92FV1H473J	MF-C 0.047UF	J
C49		CE04DW1C100M	ELECTRO 10UF	16WV
C50		CK45FB1H681K	CERAMIC 680PF	K
C51		C90-2760-05	ALUMINIUM ELECTROLYTIC C.	
C53		CF92FV1H102J	MF-C 1000PF	J
C54		CK45FF1H103Z	CERAMIC 0.010UF	Z
C55	,56	CC45FSL1H070D	CERAMIC 7.0PF	D
C57		CE04DW1H220M	ELECTRO 22UF	50WV
C58		CK45FB1H471K	CERAMIC 470PF	K
C59		CE04DW1H4R7M	ELECTRO 4.7UF	50WV
C60	,61	CK45FB1H101K	CERAMIC 100PF	K
C62		CK45FB1H102K	CERAMIC 1000PF	K
C63	,64	CC45FSL1H070D	CERAMIC 7.0PF	D
C65		CE04DW1H220M	ELECTRO 22UF	50WV
C66		CK45FB1H471K	CERAMIC 470PF	K
C67	,68	CK45FF1H103Z	CERAMIC 0.010UF	Z
C69	,70	CC45FCH1H030C	CERAMIC 3.0PF	C
C71	-74	CK45FF1H103Z	CERAMIC 0.010UF	Z
C75	,76	CF92FV1H473J	MF-C 0.047UF	J
C77		CK45FB1H681K	CERAMIC 680PF	K
C79		CE04DW1C100M	ELECTRO 10UF	16WV
C80	,81	CE04DW1C220M	ELECTRO 22UF	16WV
C82		CE04DW1C100M	ELECTRO 10UF	16WV
C83		CC45FSL1H150J	CERAMIC 15PF	J
C84		CE04DW1C100M	ELECTRO 10UF	16WV
C85		CC45FSL1H150J	CERAMIC 15PF	J
C86		CE04DW1C100M	ELECTRO 10UF	16WV
C87	,88	CK45FF1H103Z	CERAMIC 0.010UF	Z
C89		CE04DW1HR47M	ELECTRO 0.47UF	50WV
C90		CE04DW1HR22M	ELECTRO 0.22UF	50WV
C91		CE04DW1C100M	ELECTRO 10UF	16WV
C92		CE04DW1HR22M	ELECTRO 0.22UF	50WV
C93		CE04DW1HR47M	ELECTRO 0.47UF	50WV
C94		CE04DW1C100M	ELECTRO 10UF	16WV
C96		CF92FV1H823J	MF-C 0.082UF	J
C97		CF92FV1H223J	MF-C 0.022UF	J
C98		CF92FV1H124J	MF-C 0.12UF	J
C99	,100	CE04DW1C220M	ELECTRO 22UF	16WV
C101	,102	CK45FB1H102K	CERAMIC 1000PF	K
C103		CE04DW1C100M	ELECTRO 10UF	16WV
C104		CK45FF1H103Z	CERAMIC 0.010UF	Z
C105		CE04DW1HR47M	ELECTRO 0.47UF	50WV
C106		CE04DW1HR22M	ELECTRO 0.22UF	50WV
C107		CE04DW1C100M	ELECTRO 10UF	16WV
C108		CE04DW1HR22M	ELECTRO 0.22UF	50WV
C109		CE04DW1HR47M	ELECTRO 0.47UF	50WV
C110		CE04DW1C100M	ELECTRO 10UF	16WV
C115		CC45FSL1H150J	CERAMIC 15PF	J

E: Europe K: North America M: Other Areas  
W: Without Europe

△ 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.

(X09-5110-11)

Ref. No.	New Parts	Parts No.	Description	Destination
参照番号	新	部品番号	部品名 / 規格	仕向
C119		CC45FSL1H150J	CERAMIC 15PF	J
0136, 137		CC45FSL1H150J	CERAMIC 15PF	J
C159	*	C91-2130-05	MF-C 1000PF	J
C160		CF92FV1H102J	MF-C 1000PF	J
J1	*	E70-0818-05	SCREW TERMINAL BOARD(P.CON)	
J4		E70-0810-05	SCREW TERMINAL BOARD(POWER)	
J5	*	E63-0826-05	PHONE JACK(6P)	
J6	*	E70-0819-05	SCREW TERMINAL BOARD	
J2		J13-0602-05	FUSE HOLDER	
L1	*	L33-1032-05	CHOKE COIL	
T1	*	L19-0545-05	TRANSFORMER FOR CONVERTER	
G 2B		N80-2008-45	PAN HEAD TAPTITE SCREW	
H 2B		N80-3010-45	PAN HEAD TAPTITE SCREW	
R49 -52		RS14KB3DR22J	FL-PROOF RS 0.22	J 2W
R66		RS14KB3A681J	FL-PROOF RS 680	J 1W
R94 ,95		RS14KB3DR22J	FL-PROOF RS 0.22	J 2W
R121, 122		RS14KB3DR22J	FL-PROOF RS 0.22	J 2W
R149-152	*	R92-2144-05	METAL FILM 10K	D 1/6W
R154, 155		RS14KB3D151J	FL-PROOF RS 150	J 2W
R158-161	*	R92-2144-05	METAL FILM 10K	D 1/6W
R172	*	R92-2144-05	METAL FILM 10K	D 1/6W
R176, 177	*	R92-2144-05	METAL FILM 10K	D 1/6W
R179	*	R92-2144-05	METAL FILM 10K	D 1/6W
R189-192	*	R92-2144-05	METAL FILM 10K	D 1/6W
VR1	*	R31-0205-05	VARIABLE RESISTOR	
VR2 -5		R12-1618-05	TRIMMING POT.(3.3K 7b)	
VR6	*	R31-0205-05	VARIABLE RESISTOR	
S1 -3	*	S62-0842-05	SLIDE SWITCH	
S4		S62-0841-05	SLIDE SWITCH	
D2 -5		1SS176	DIODE	
D9 -14		1SS176	DIODE	
D15		RD5.1JS(B)	ZENER DIODE	
D16 -19		1SS176	DIODE	
D20		RD10JS(B2)	ZENER DIODE	
D21 ,22		1SS176	DIODE	
D23		D10LC20U	DIODE	
D24		D10LC20UR	DIODE	
D25 ,26		1SS176	DIODE	
D27		RM4ZLF-J1	DIODE	
D29 -34		1SS176	DIODE	
D35 ,36		RD7.5JS(B)	ZENER DIODE	
D38 -41		1SS176	DIODE	
D43 -45		1SS176	DIODE	
D49 ,50		RD7.5JS(B)	ZENER DIODE	
IC1		UPC4574C	IC(OP AMP X4)	
IC2 ,3		LM391N-100	ANALOGUE IC	
IC4		UPC494C	IC(SWITCHING REGULATOR)	
IC5 ,6		LM391N-100	ANALOGUE IC	
IC7		UPC4570C	IC(OP AMP X2)	
IC8		UPC4574C	IC(OP AMP X4)	
Q1 ,2		2SC945(A)(Q,P)	TRANSISTOR	
Q3 ,4		2SC1627A	TRANSISTOR	

Ref. No.	New Parts	Parts No.	Description	Destination
参照番号	新	部品番号	部品名 / 規格	仕向
Q5 ,6		2SA817A	TRANSISTOR	
Q7 ,8	*	2SC4511*B	TRANSISTOR	
Q9 ,10	*	2SA1725*B	TRANSISTOR	
Q11 ,12		2SC4038(Q,R,S)	TRANSISTOR	
Q13		2SC945(A)(Q,P)	TRANSISTOR	
Q14 ,15		2SA733(A)(Q,P)	TRANSISTOR	
Q16		2SC945(A)(Q,P)	TRANSISTOR	
Q17 ,18	*	2SK2421*B	FET	
Q19		2SC945(A)(Q,P)	TRANSISTOR	
Q20		2SA817A	TRANSISTOR	
Q21		2SC1627A	TRANSISTOR	
Q22	*	2SC4511*B	TRANSISTOR	
Q23	*	2SA1725*B	TRANSISTOR	
Q24		2SC4038(Q,R,S)	TRANSISTOR	
Q25		2SA817A	TRANSISTOR	
Q26		2SC1627A	TRANSISTOR	
Q27	*	2SC4511*B	TRANSISTOR	
Q28	*	2SA1725*B	TRANSISTOR	
Q29		2SC4038(Q,R,S)	TRANSISTOR	
Q30 -33		2SC945(A)(Q,P)	TRANSISTOR	
Q34 ,35		2SA733(A)(Q,P)	TRANSISTOR	
TH1		ERT-D2ZHL103S	THERMISTOR	

E: Europe K: North America M: Other Areas  
W: Without Europe

△ indicates safety critical components.

## SPECIFICATIONS

Specifications subject to change without notice.

### Audio Section

Max Power Output (4 $\Omega$ )	
4 Channel Mode .....	50W x 4
3 Channel Mode .....	50W x 2 + 140W
2 Channel Mode .....	140W x 2
Rated Power Output (4 $\Omega$ )	
4 Channel Mode .....	25W x 4 (20Hz~20kHz, less than 0.08% THD)
3 Channel Mode .....	25W x 2 (1kHz, 0.08% THD) + 70W x 1 (1kHz, 0.8%)
2 Channel Mode .....	70W x 2 (1kHz, 0.8%THD)
Rated Power Output (2 $\Omega$ )	
4 Channel Mode .....	35W x 4 (1kHz, 0.8%THD)
Frequency Response .....	10Hz~45kHz (+0, -1dB)
Signal to Noise Ratio .....	100dB
Sensitivity (MAX.) .....	0.15V (rated output)
Sensitivity (MIN.) .....	4.0V (rated output)
Input Impedance .....	10k $\Omega$
Damping Factor (100Hz) .....	More than 100
High Pass Filter Frequency .....	150Hz (12dB/oct.)
Low Pass Filter Frequency .....	80Hz (12dB/oct.)

### General

Operating Voltage .....	14.4V (11~16V allowable)
Current Consumption (1kHz, 10% THD) .....	20A
Dimensions (W x H x D) .....	220 x 52 x 250mm (8-11/16 x 2-1/16 x 9-13/16 in.)
Weight .....	2.6kg (5.7 lb)

### 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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