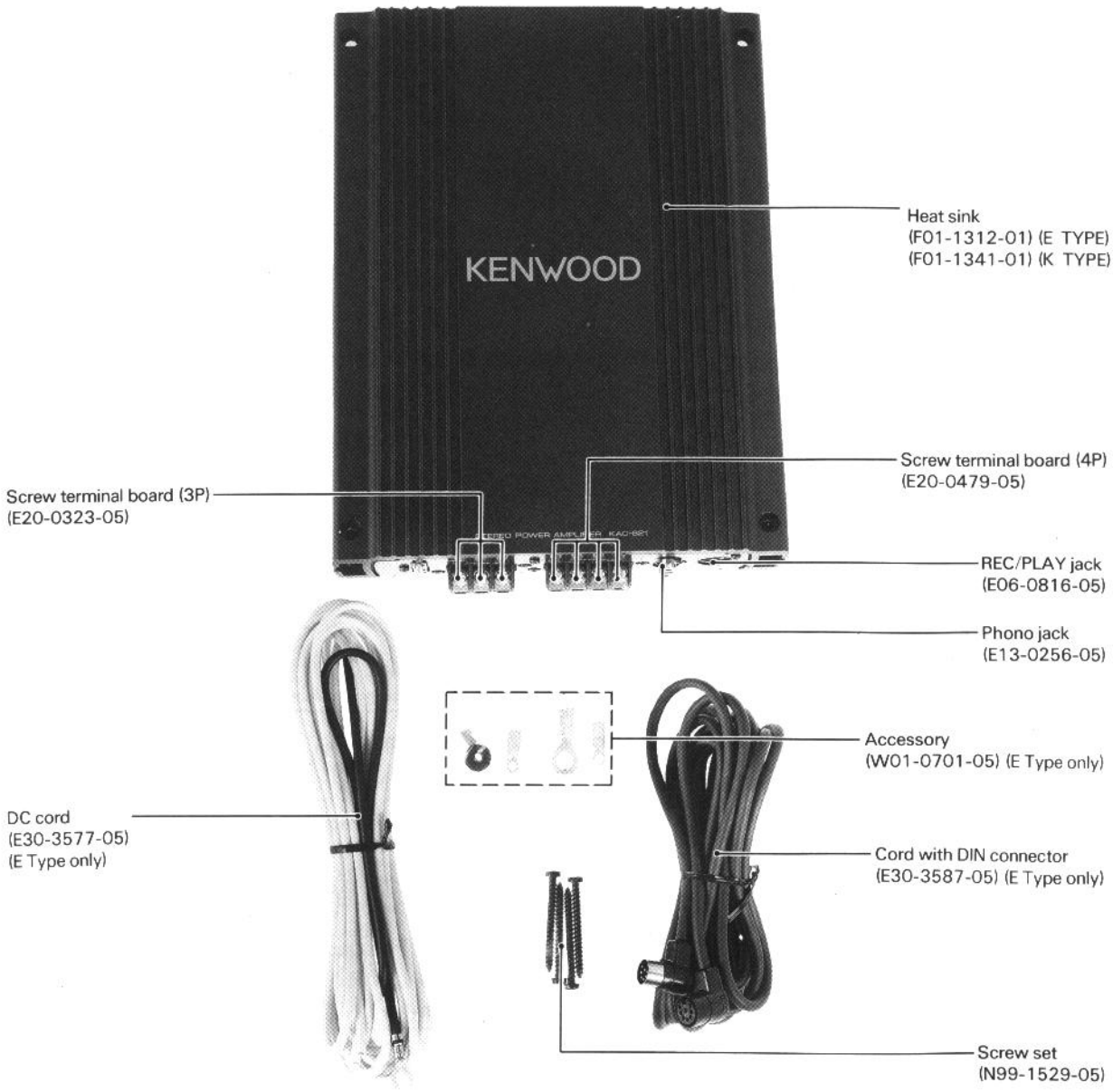
STEREO POWER AMPLIFIER

KAC-821

SERVICE MANUAL

KENWOOD

B51-6079-00(B)2984

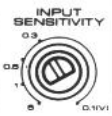


CONTENTS

USE OF THE OPERATION PANEL ACCORDING TO SYSTEM TYPE

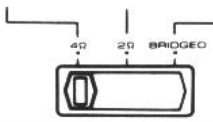
• Input sensitivity control
The input sensitivity control adjusts the input sensitivity within a range of 0.1 V to 5.0 V continuously, enabling expansion with various systems. This unit has been set for 0.3V.

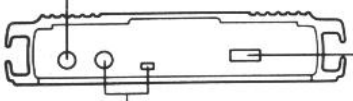
KENWOOD head unit preout level (MAX.)	Amplifier input sensitivity
300 mV	0.1 V
1 V	0.3~0.5 V

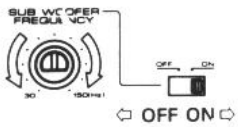


• Mode switch
Set this switch according to the impedance of the speakers or the output method, as shown below.

When 4-ohm speakers are connected
When 2-ohm speakers are connected
When using a bridged output (see below)



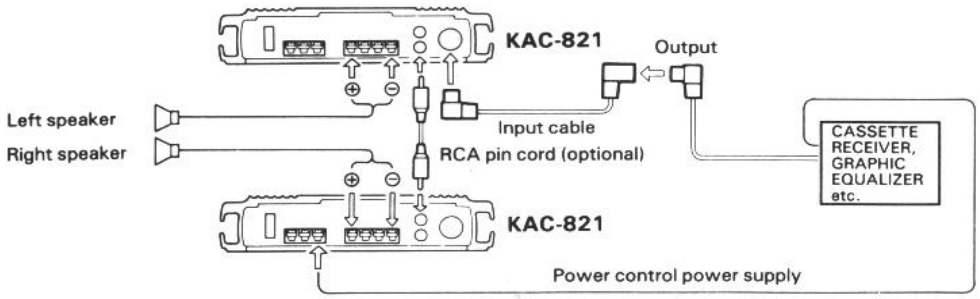




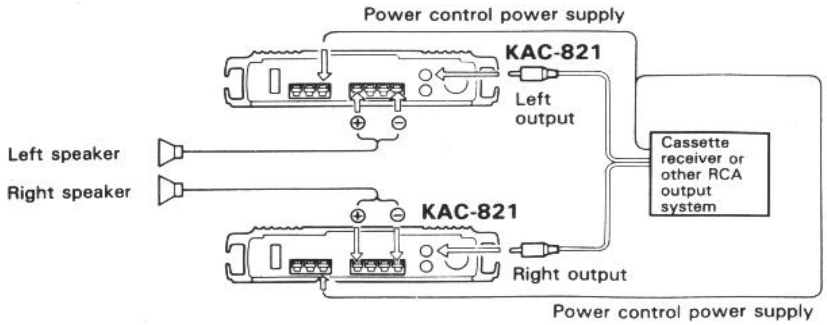
• Sub woofer system
By setting the switch on the right to ON, you can set the output of this unit for sub woofer output (manaural output). The control on the left can be used to adjust the sub woofer cut-off frequency.

■ This unit is provided with a bridged output function which enables you to double the unit's power output. (for 4 Ω speakers)

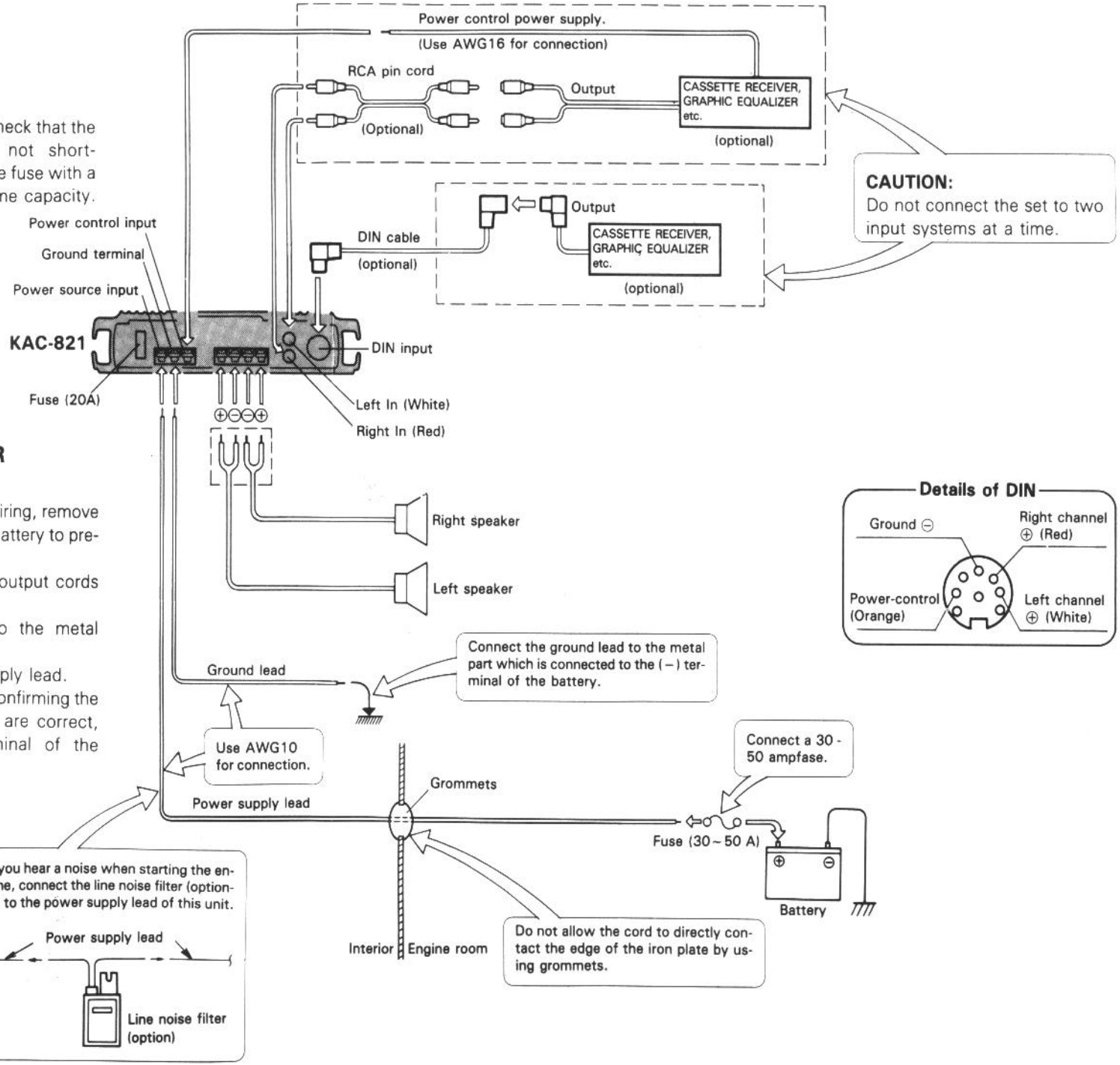
• When using a KENWOOD DIN output system:



• When using an RCA pin-plug cord output system:



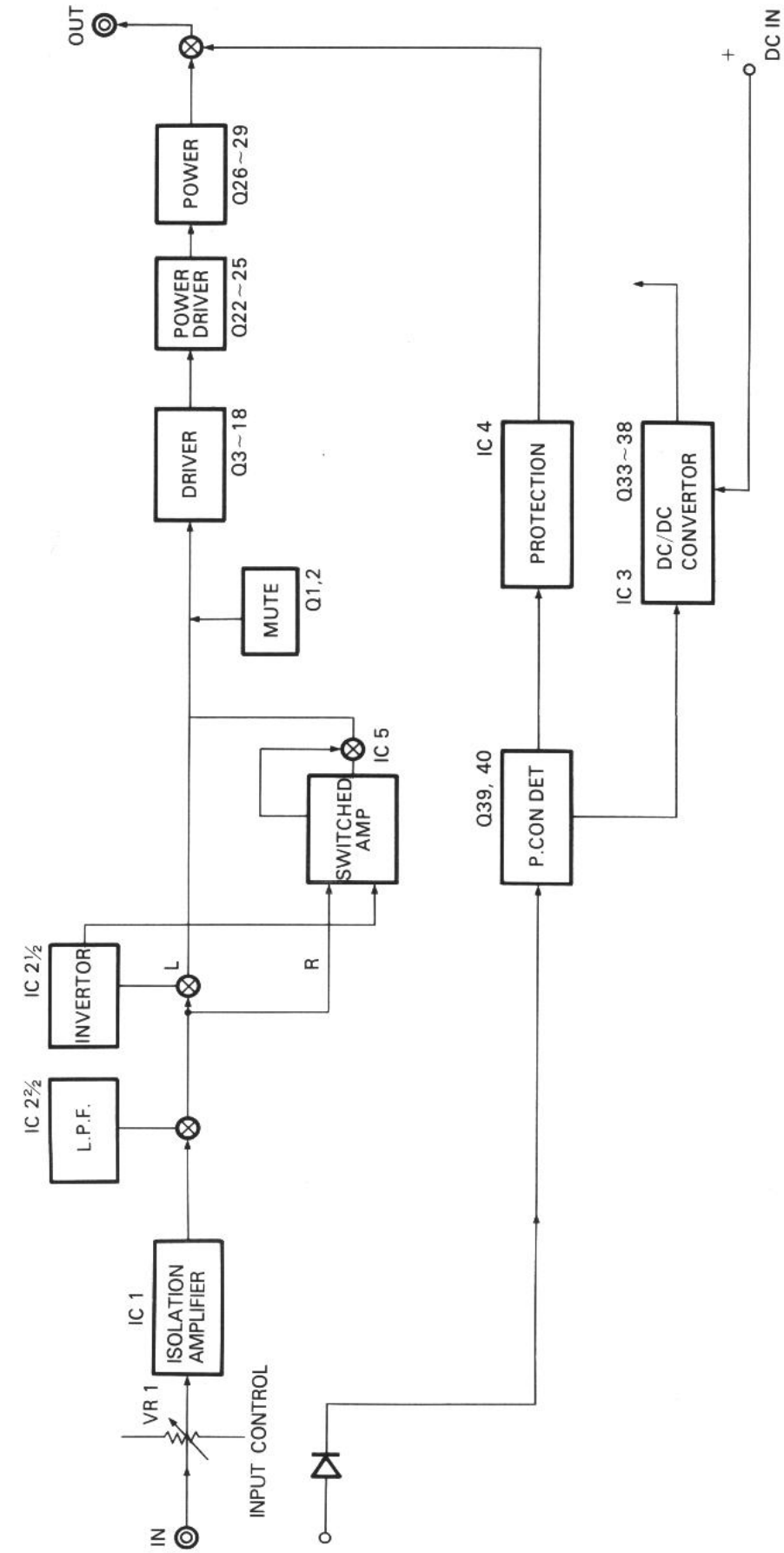
- If a fuse is blown, first check that the associated wires are not short-circuited then replace the fuse with a new one having the same capacity.



■ INSTALL MANNER

1. Before installation and wiring, remove the (–) terminal of the battery to prevent short-circuiting.
2. Connect the input and output cords of the system.
3. Connect the ground to the metal chassis of the car.
4. Connect the power supply lead.
5. Install the set and after confirming the installation and wirings are correct, connect the (–) terminal of the battery.

BLOCK DIAGRAM



CIRCUIT DESCRIPTION

Description of Component

Components	Use/Function	Operation/Condition/Interchangeability
Q1,2	Input mute	Operated at a timing earlier than the relay at amplifier OFF to turn OFF the relay with no signal.
Q3~6	Input differential amplifier	To one input terminal, an input is applied, and to the other input terminal, a negative feedback is applied, thus determining the amplifier gain.
Q7~10	Second-stage differential amplifier	
Q11~14	Third-stage differential amplifier	
Q15,16	Current mirror	Load on Q13 and Q14 in the third-stage differentiation.
Q17,18	Measure against heat	Gain Pc to prevent rise in temperature.
Q19	AVR	+20 V AVR
Q20,21	Temperature compensation	
Q22~25	Power drive stage	
Q26~29	Power stage	
Q30~32	Current detection	Detect overcurrent to control protection IC.
Q33~38	Switching power stage	
Q39	Power switch	When Q40 turns ON, Q39 turns ON to supply power.
Q40	Switch driver	Detects P-CON and then turns ON.
Q41	AVR	−20 V AVR
Q42	Mute drive	Receives the signal of IC4 pin 6 active "L", and then turns ON.
Q43	Switch drive	Channel selection of IC5
Q44,45	Switching driver	
IC1	Isolation amplifier	
IC2	Inversion circuit/subwoofer	BTL's inversion circuit/subwoofer LPF
IC3	Switching regulator controller	Provides a dead time to the switching wave.
IC4	Protection	Overload, DC offset and P-CON detection.
IC5	Switched operation amplifier	At the "BRIDGE" position, Q43 turns OFF to send the L-ch signal inversion to R-ch.

CIRCUIT DESCRIPTION

- **About "BRIDGE" position**

  When the position switch (S2) on the panel is set to "BRIDGE", the BTL output is engaged, thus permitting twice the output level.

  When S2 is with 4-ohms or 2-ohms, as regards signals, the L-ch signal goes to the driver as it is after passing an isolation amplifier (IC1), and the R-ch signal goes to the driver by way of a buffer of IC5.

  When S2 is set to "BRIDGE", Q43 turns OFF, and IC5 is switched so that the inversion of the L-ch signal by IC2 (1/2) is supplied to R-ch on and after the driver stage. As to L-ch, the L-ch signal is supplied as it is.

- **Subwoofer cutoff frequency**

  The subwoofer cutoff frequency can be varied between 30 Hz and 150 Hz by use of VR2.

KAC-821

ADJUSTMENT/REGLAGE/ABGLEICH

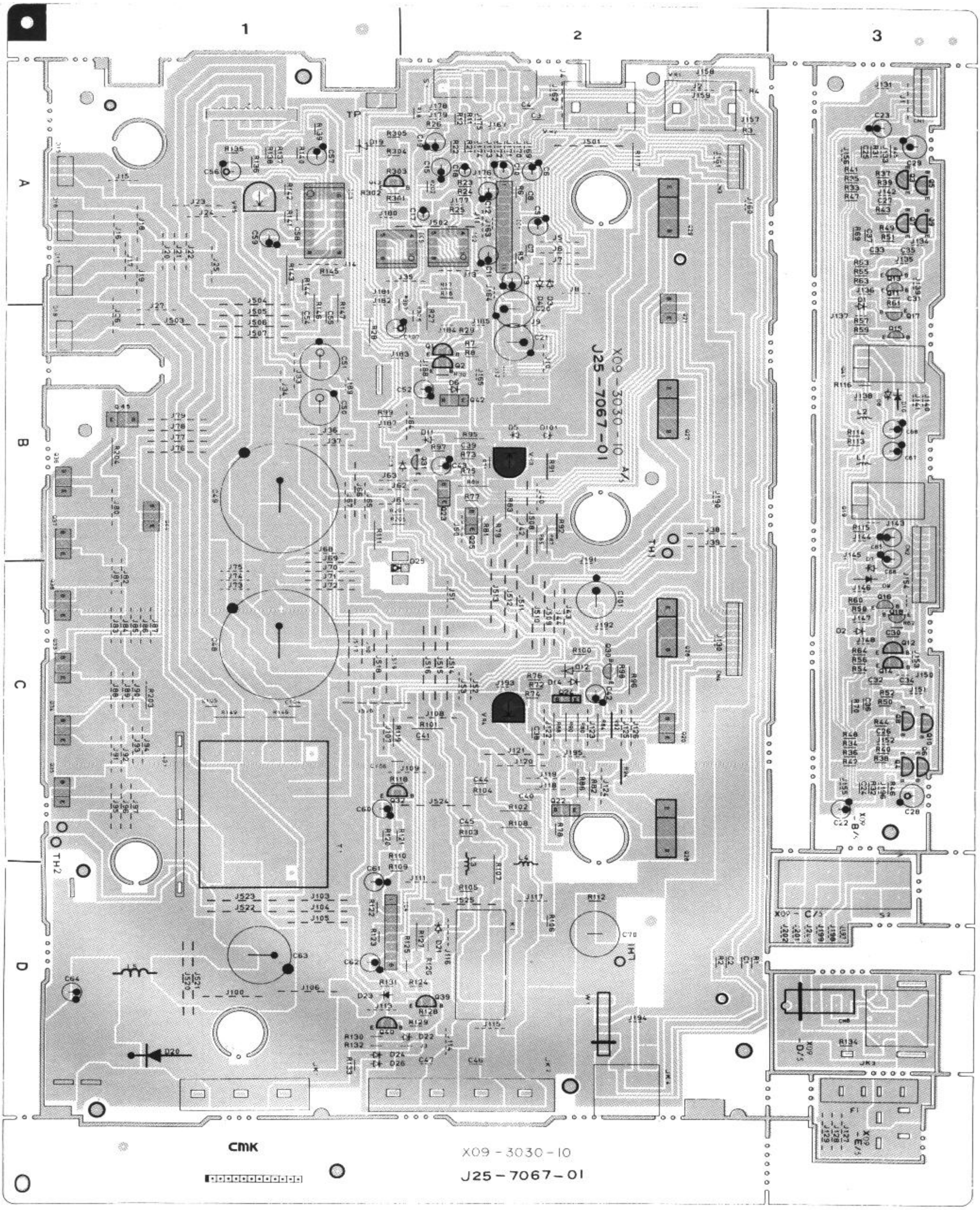
No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	AMPLIFIER SETTINGS	ALIGMENT POINTS	ALIGN FOR	FIG.
Connect a cassette deck.							
1	IDLE CURRENT	—	Connect a DC voltmeter to: TP1 (L, R)	VOLUME: 0	VR3 (L) VR4 (R)	2 mV	(a)

N°	ITEM	REGLAGE DE L'ENTREE	REGLAGE DE LA SORTIE	REGLAGE DE L'AMPLIFICATEUR	POINTS L'ALIGNEMENT	ALIGNER POUR	FIG.
Raccorder une Platine à cassette.							
1	COURANT DE POLARISATION	—	Raccorder un voltmètre CC à: TP1 (G, D)	VOLUME: 0	VR3 (G) VR4 (D)	2 mV	(a)

NR.	GEGENSTAND	EINGANGS-EINSTELLUNG	AUSGANGS-EINSTELLUNG	VERSTÄRKER EINSTELLUNG	ABGLEICH-PUNKTE	ABGLEICHEN FUR	ABB.
Ein Kassettendeck anschließen.							
1	LEERLAUFSTROM	—	Einen Gleichstrom-Voltmeter anschließen an: TP1 (L, R)	VOLUME: 0	VR3 (L) VR4 (R)	2 mV	(a)

(a) → page 10

PC BOARD (Component side view)

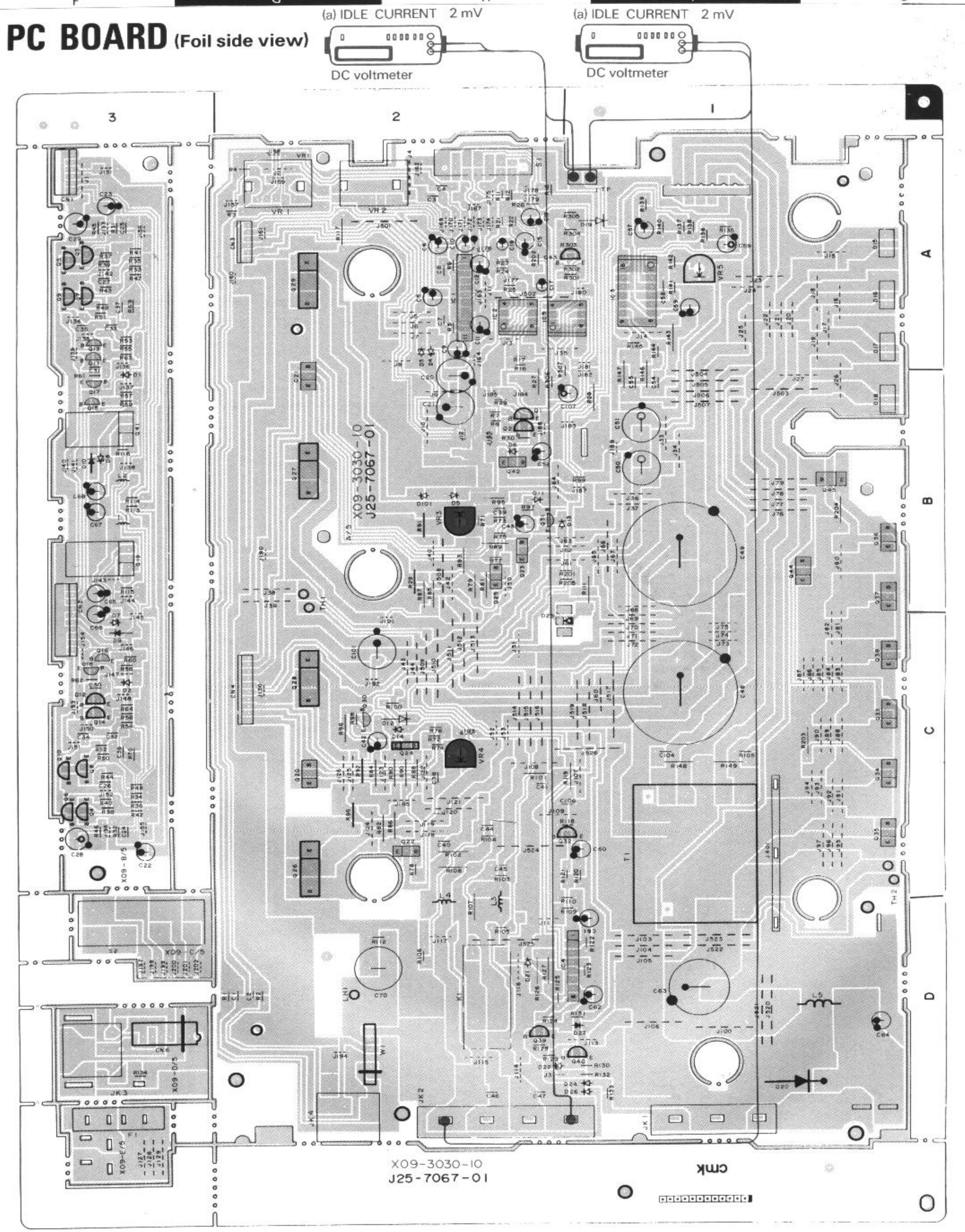


Ref. No.	Q 1	Q 2	Q 3	Q 4	Q 5	Q 6	Q 7	Q 8	Q 9	Q 10	Q 11	Q 12	Q 13	Q 14	Q 15	Q 16	Q 17	Q 18	Q 19	Q 20	Q 21	Q 22
Address	3C	3C	2E	5E	2E	5E	2E	4E	2E	4E	2E	4E	2E	4E	3E	4E	2E	4E	3E	4D	2D	5C

Ref. No.	Q 23	Q 24	Q 25	Q 26	Q 27	Q 28	Q 29	Q 30	Q 31	Q 32	Q 33	Q 34	Q 35	Q 36	Q 37	Q 38	Q 39	Q 40	Q 41	Q 42	Q 43	Q 44	Q 45
Address	3C	4C	3C	5D	3D	4D	2D	4D	3C	5C	4A	5A	5A	3A	4A	4A	6C	6C	3E	3C	2C	3A	3A

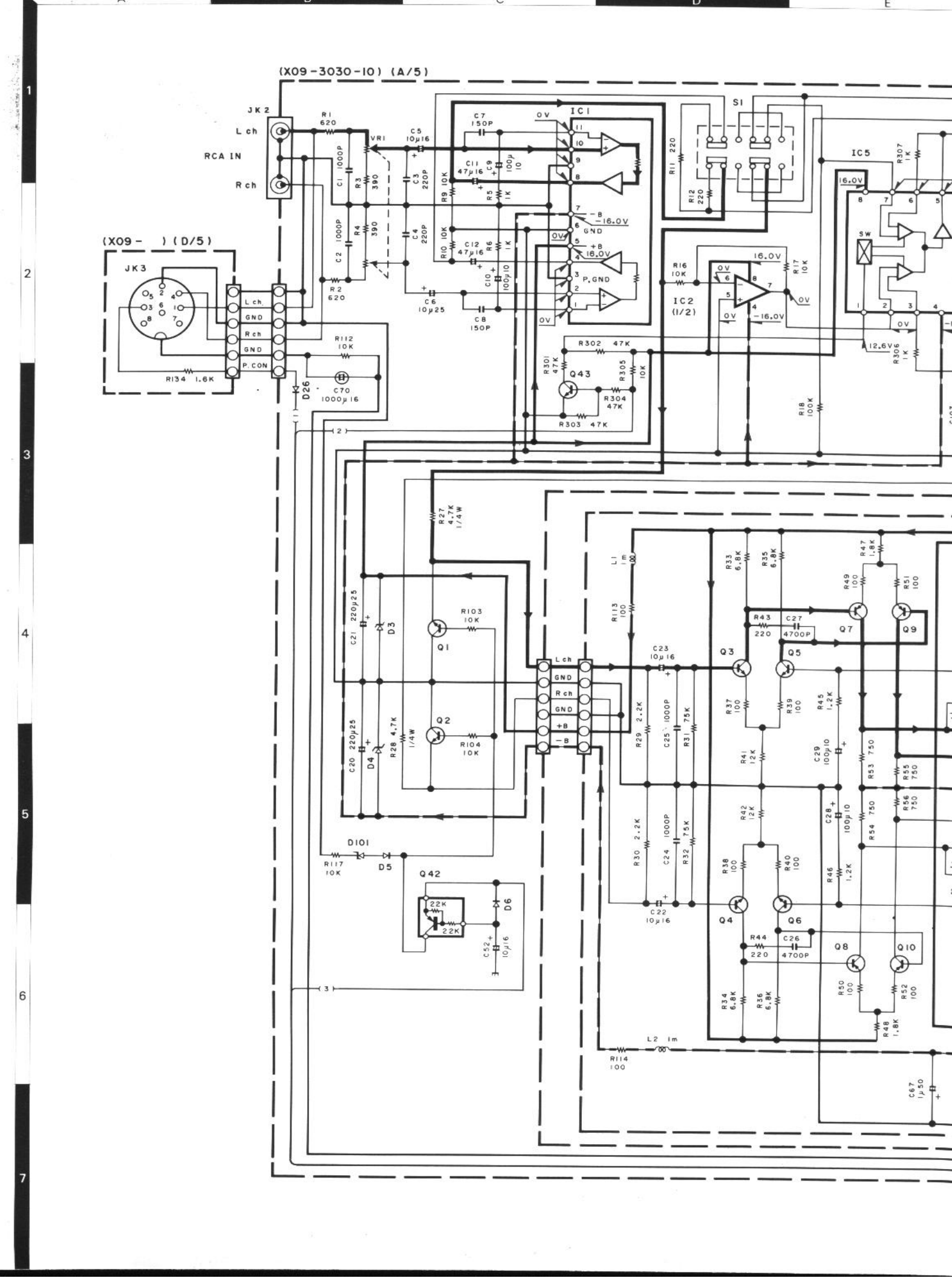
Ref. No.	IC 1	IC 2	IC 3	IC 4	IC 5
Address	2C	2C	2B	5C	2C

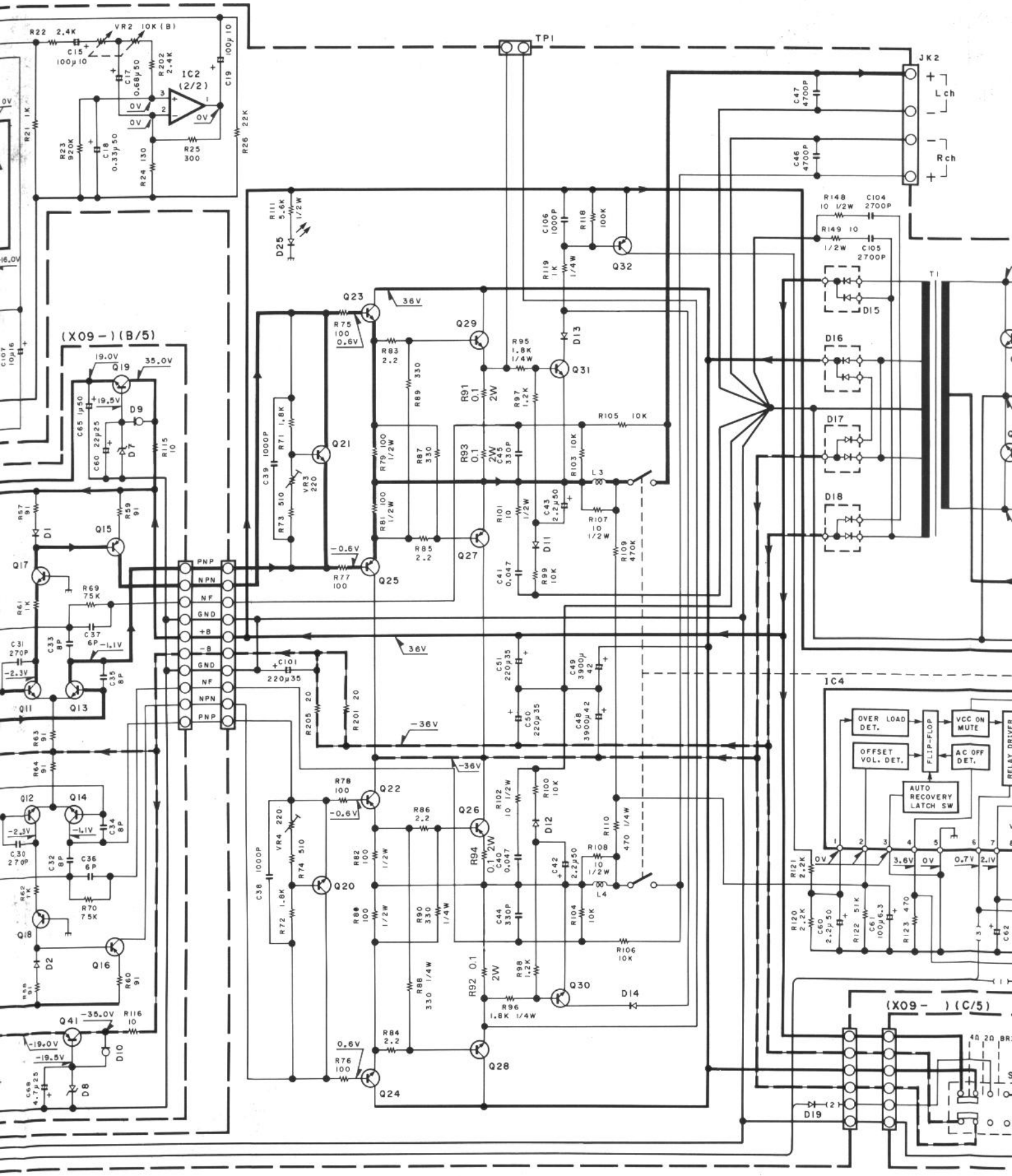
PC BOARD (Foil side view)



Ref. No.																										
Ref.	IC																									
No.	Q	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Address		3H	3H	2F	5F	2F	5F	2F	4F	2F	4F	2F	4F	2F	4F	3F	4F	2F	4F	3F	4G	2G	5H	3H	4H	3H

Ref. No.																										
Ref.	IC																					1	2	3	4	5
No.	Q	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45					
Address		5G	3G	4G	2G	4G	3H	5H	4J	4J	5J	3J	4J	4J	6H	6H	3F	3H	2H	3I	3J	2H	2H	2I	5H	2H

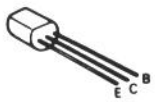

(X09-3030-10) (A/5)
(X09-) (D/5)
JK2
L ch
RCA IN
R ch
JK3
L ch
GND
R ch
GND
P. CON
R134 1.6K
R1 620
R2 620
R3 390
R4 390
C1 1000P
C2 1000P
C3 220P
C4 220P
C5 10μ16
C6 10μ25
C7 150P
C8 150P
C9 100μ 10
C10 100μ10
C11 47μ16
C12 47μ16
R5 1K
R6 1K
R9 10K
R10 10K
VR1
IC1
0V
-B -16.0V
GND
+B 16.0V
P.GND
S1
R11 220
R12 220
IC5
R307 1K
16.0V
SW
R16 10K
R17 10K
IC2 (1/2)
-16.0V
R18 100K
R306 1K
12.6V
R112 10K
C70 1000μ16
D26
R302 47K
R301 47K
R305 10K
R304 47K
R303 47K
Q43
R27 4.7K 1/4W
C21 220μ25
D3
R103 10K
Q1
C20 220μ25
D4
R28 4.7K 1/4W
Q2
R104 10K
D101
R117 10K
D5
Q42
22K
22K
D6
C52 10μ16
L1 1m
R113 100
L2 1m
R114 100
C23 10μ16
C22 10μ16
R29 2.2K
R30 2.2K
C25 1000P
C24 1000P
R31 75K
R32 75K
R33 6.8K
R35 6.8K
R34 6.8K
R36 6.8K
R37 100
R38 100
R39 100
R40 100
R41 12K
R42 12K
R43 220
R44 220
C27 4700P
C26 4700P
R45 1.2K
R46 1.2K
C29 100μ10
C28 100μ10
R47 1.8K
R48 1.8K
R49 100
R50 100
R51 100
R52 100
R53 750
R54 750
R55 750
R56 750
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
C67 1μ50
L ch
GND
R ch
GND
+B
-B


TP1
JK2
Lch
Rch
IC2 (2/2)
VR2 10K (B)
R22 2.4K
C15 100μ10
R202 2.4K
C17 0.68μ50
C18 0.33μ50
C19 100μ10
R21 1K
R23 920K
R24 130
R25 300
R26 22K
0V
(X09-)(B/5)
19.0V
35.0V
19.5V
Q19
D9
D7
C65 1μ50
C60 22μ25
R115 10
D1
Q15
Q17
R57 91
R59 91
R61 1K
R69 75K
C37 6P
C31 270P
C33 8P
C35 8P
-2.3V
-1.1V
Q11
Q13
R63 91
R64 91
Q12
Q14
C30 270P
C32 8P
C34 8P
C36 6P
R62 1K
R70 75K
Q18
Q16
D2
R58 91
R60 91
Q41
-35.0V
R116 10
-19.0V
-19.5V
D10
D8
C68 4.7μ25
C107 10μ16
PNP
NPN
NF
GND
+B
-B
GND
NF
NPN
PNP
C101 220μ35
R205 20
R201 20
36V
-36V
Q23
R75 100 0.6V
Q29
R83 2.2
R89 330
R95 1.8K 1/4W
D13
Q31
R91 0.1 2W
R97 1.2K
R105 10K
Q21
C39 1000P
R71 1.8K
R73 510
VR3 220
R79 100 1/2W
R87 330
R93 0.1 2W
C45 330P
R103 10K
L3
R81 100 1/2W
R85 2.2
Q27
R101 10 1/2W
C43 2.2μ50
R107 10 1/2W
R109 470K
D11
R99 10K
C41 0.047
-0.6V
R77 100
Q25
C51 220μ35
C50 220μ35
C49 3900μ42
C48 3900μ42
Q22
R78 100
-0.6V
R86 2.2
Q26
R102 10 1/2W
R100 10K
D12
R110 470 1/4W
R108 10 1/2W
L4
C42 2.2μ50
R82 100 1/2W
R94 0.1 2W
C40 0.047
VR4 220
R74 510
R72 1.8K
Q20
R88 100 1/2W
R90 330 1/4W
C44 330P
R104 10K
R106 10K
R88 330 1/4W
R92 0.1 2W
R98 1.2K
R96 1.8K 1/4W
Q30
D14
R84 2.2
0.6V
R76 100
Q28
Q24
C38 1000P
C106 1000P
R118 100K
R119 1K 1/4W
Q32
R111 5.6K 1/2W
D25
R148 10 1/2W
C104 2700P
R149 10 1/2W
C105 2700P
T1
D15
D16
D17
D18
C47 4700P
C46 4700P
IC4
OVER LOAD DET.
OFFSET VOL. DET.
FLIP-FLOP
VCC ON MUTE
AC OFF DET.
AUTO RECOVERY LATCH SW
RELAY DRIVER
0V
3.6V
0V
0.7V
2.1V
R121 2.2K
R120 2.2K
C60 2.2μ50
R122 51K
C61 100μ6.3
R123 470
C62
(X09-)(C/5)
D19

Q1,2	: 2SD1302
Q3~6,11~14,17,18,30,31	: 2SC1845
Q7~10,15,16	: 2SA992
Q19	: 2SD1266(Q,P)
Q20,21	: 2SC3419
Q22,25	: 2SA1110
Q23,24	: 2SC2590(Q,R)
Q26,27	: 2SA1694*5
Q28,29	: 2SC4467*5
Q32,39	: 2SA733(A)
Q33~38	: 2SC4064
Q40,43	: 2SC945(A)(Q,P)
Q41	: 2SB941(Q,P)
Q42	: DTA124EFF
Q44,45	: 2SD809

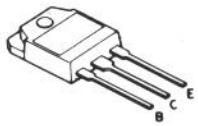
IC1	: KKM02
IC2	: μPC4570C
IC3	: μPC494C
IC4	: μPC1237HA
IC5	: M5201P

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

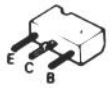


2SA1110
2SC2590

2SA1694*5
2SC4467*5



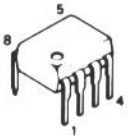
DTA124EFF



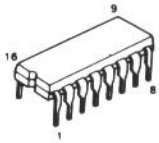
2SC3419

2SD809

NJM2068D-D

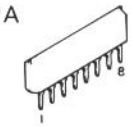


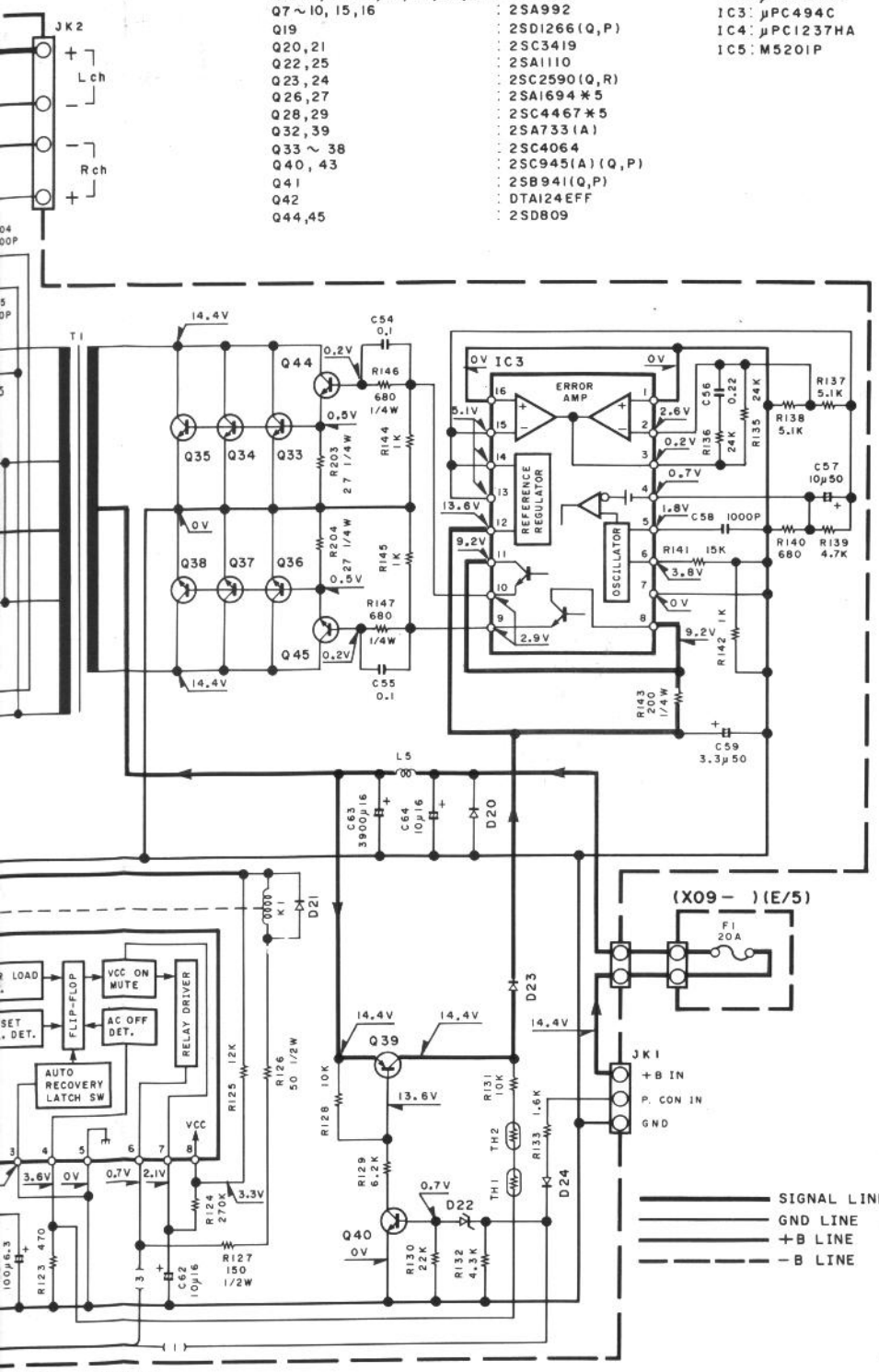
UPC494C

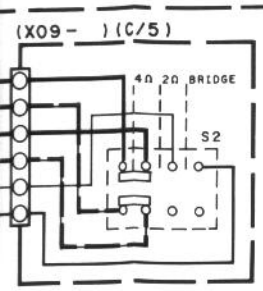


M5201P

UPC1237HA







D1,2,5,6,13,14,19,23,23,24,26	: 1SS176(8)
D3,4	: RD16JS(B)(8)
D7,8	: RD20JS(B)(8)
D9,10	: E-152
D11,12,21	: IS2076A
D15,16	: FMU21S
D17,18	: FMU21R
D20	: RM4ZLF-J1
D22,101	: RD5.1JS(B2)(8)
D25	: B30-1130(LED)

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 measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.
- Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.

KAC-821(K)

Y08-3900-10

KAC-821

KENWOOD

KAC-821

SPECIFICATIONS

Specifications subject to change without notice.

Audio section

Max Power Output (1 kHz, 4 Ω)
- Normal ..... 140 W + 140 W
- Bridged ..... 280 W

Power Output
- Normal (20 Hz ~ 20 kHz, 4 Ω, less than 0.5% THD) ..... 75 W + 75 W
- Bridged (1 kHz, 4 Ω, 0.5% THD) ..... 150 W

Output Power
- Normal (1 kHz, 2 Ω, 0.5% THD) ..... 75 W + 75 W

Frequency Response (– 3 dB) ..... 2 Hz ~ 100 kHz
Sensitivity (rated output) MAX. ..... 0.1 V
MIN. ..... 5.0 V
Signal to Noise Ratio ..... 105 dB
Input Impedance ..... 10 kΩ
Damping Factor (100 Hz) ..... More than 200
Sub Woofer Frequency ..... 30 ~ 150 Hz (variable)

General

Operating Voltage ..... 14.4 V (11 ~ 16 V allowable)
Current Consumption (MAX.) ..... 20 A
Dimensions (W × H × D) ..... 230 × 50 × 300 mm
(9-1/16 × 1-15/16 × 11-13/16 in.)
Weight ..... 3.5 kg (8.8 lb)

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.

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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