

The Harman Kardon Model HK1200/HK1400 STEREO LINE AMPLIFIER

Manual 190A

Technical Manual

HK1200/HK1400



The following marks found in the parts list of this manual identify the models as follows.

- BK** : North America area model Black version
- IB** : International model Black version
- WB** : Asia/Oceania model Black version

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harman/kardon

Parts and Service Office
240 Crossways Park West, Woodbury, N.Y. 11797
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SPECIFICATIONS

	Nominal	Limit		Nominal	Limit	
RMS Output Power	8 Ω, 1kHz THD 0.1%	33.5W	Channel Separation (at 10kHz)	65 dB	≥ 55 dB	
		48.4W				
	4 Ω, 1kHz THD 0.3%	49W		IM Distortion Ratio (at 1W)	0.065%	≤ 0.1% (Model : HK1200)
		75.4W			0.052%	≤ 0.1% (Model : HK1400)
High-instantaneous Current Capability (HCC)	37A	≥ 30A (Model : HK1200)	Damping Factor (at 1Hz)	55.7	≥ 45 (Model : HK1200)	
	43.5A	≥ 35A (Model : HK1400)		84.5	≥ 75 (Model : HK1400)	
Half Power Bandwidth (THD 0.1%)	<10Hz-100kHz	<10Hz-70kHz	DC Output Voltage (at 4Ω)	L channel	0mV ± 60mV	
				R channel	0mV ± 60mV	
Frequency Response (at -3dB down)	0.1Hz-420kHz	<1Hz- ≥ 350kHz (Model : HK1200)	Idling Current (at 8Ω)	75mA	75mA ± 5mA	
	0.1Hz-410kHz	<1Hz- ≥ 350kHz (Model : HK1400)		Dimensions (W x H x D)	17.4" x 4.1" x 13.7" (443 x 105 x 347 mm)	
Input Sensitivity (at 25W output)	Normal :	135mV >135mV±25mV/39kΩ±5kΩ (Model : HK1200)	Weight	18.3 lbs. / 8.3 kg	(Model : HK1200)	
	-10dB :	440mV >440mV±25mV/39kΩ±5kΩ (Model : HK1200)		15.0 lbs. / 6.8 kg	(Model : HK1400)	
	Normal :	135mV >135mV±25mV/39kΩ±5kΩ (Model : HK1400)		Power Supplies	North America area model	AC120V, 60 Hz
	-10dB :	442mV >442mV±25mV/39kΩ±5kΩ (Model : HK1400)			International and Asia/Oceania models	AC230/240V, 50/60Hz
Signal to Noise Ratio	100dB	≥ 90dB (Model : HK1200)	Power Consumption	110W	(Model : HK1200)	
	98.5dB	≥ 90dB (Model : HK1400)		130W	(Model : HK1200)	
				140W	(Model : HK1400)	
				160W	(Model : HK1400)	

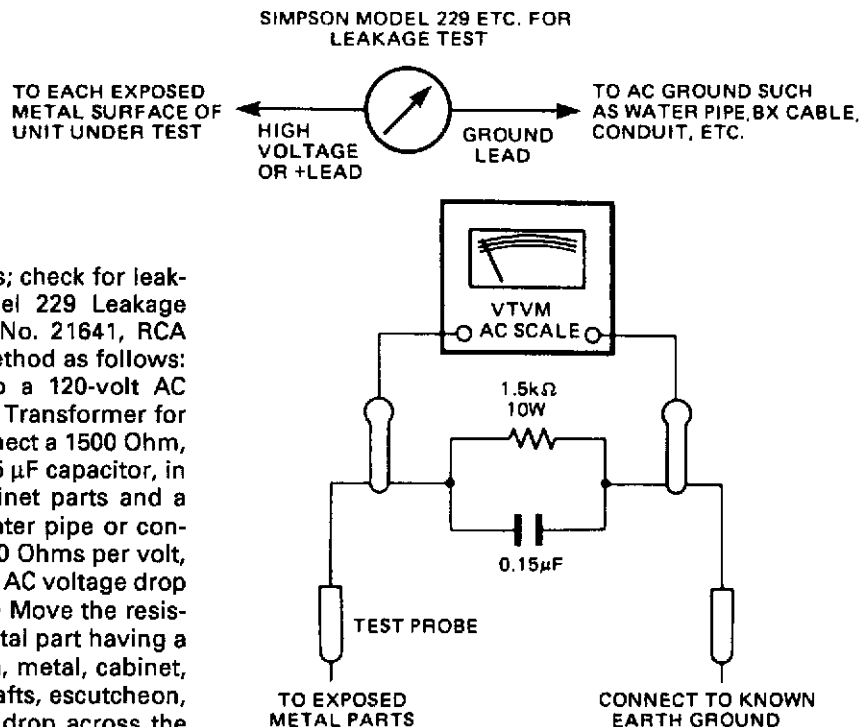
These specifications are service target specs.

Specifications and components are subject to change without notice. Overall performance will be maintained or improved.

LEAKAGE TEST (FOR SERVICE ENGINEERS IN THE U.S.A)

Before returning the unit to the user, perform the following safety checks:

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the unit.
2. Be sure that any protective devices such as nonmetallic control knobs, insulating fishpapers, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacity networks, mechanical insulators, etc. which were removed for servicing are properly reinstalled.
3. Be sure that no shock hazard exists; check for leakage current using Simpson Model 229 Leakage Tester, standard equipment item No. 21641, RCA Model WT540A or use alternate method as follows: Plug the power cord directly into a 120-volt AC receptacle (do not use an Isolation Transformer for this test). Using two clip leads, connect a 1500 Ohm, 10-watt resistor paralleled by a 0.15 μF capacitor, in series with all exposed metal cabinet parts and a known earth ground, such as a water pipe or conduit. Use a VTVM or VOM with 1000 Ohms per volt, or higher sensitivity to measure the AC voltage drop across the resistor. (See Diagram.) Move the resistor connection to each exposed metal part having a return path to the chassis (antenna, metal, cabinet, screw heads, knobs and control shafts, escutcheon, etc.) and measure the AC voltage drop across the resistor. (This test should be performed with the power switch in both the On and Off positions.)



A reading of 0.35 volt RMS or more is excessive and indicates a potential shock hazard which must be corrected before returning the unit to the owner.

DISASSEMBLY PROCEDURES (REFER TO PAGES 7,14 AND 20)**1 CABINET TOP (AB) REMOVAL**

Remove 6 screws (A) and then remove the Cabinet Top (AB).

2 FRONT PANEL ASS'Y (AA) REMOVAL

1. Remove the Cabinet Top (AB), referring to the previous step 1.
2. Remove 5 screws (B) and then remove the Front Panel Ass'y (AA).

3 PRE AMP P. C. BOARD (PCB-4) REMOVAL

1. Remove the Cabinet Top (AB), referring to the previous step 1.
 2. Remove the Front Panel Ass'y (AA), referring to the previous step 2.
 3. Remove 2 screws (C) and then remove the Rotary Knobs (150) and remove the Push Button (147).
 4. Remove 11 screws (D) and then remove the Pre Amp P. C. Board (PCB-4).
- At this time, unsolder the lead wires connected to the Pre Amp P. C. Board (PCB-4).

4 MAIN P. C. BOARD (PCB-1) REMOVAL

1. Remove the Cabinet Top (AB), referring to the previous step 1.
 2. Remove 5 screws (E) and then remove the Main P. C. Board (PCB-1).
- At this time, unsolder the lead wires connected to the Main P. C. Board (PCB-1).

5 POWER P. C. BOARD (PCB-8) REMOVAL

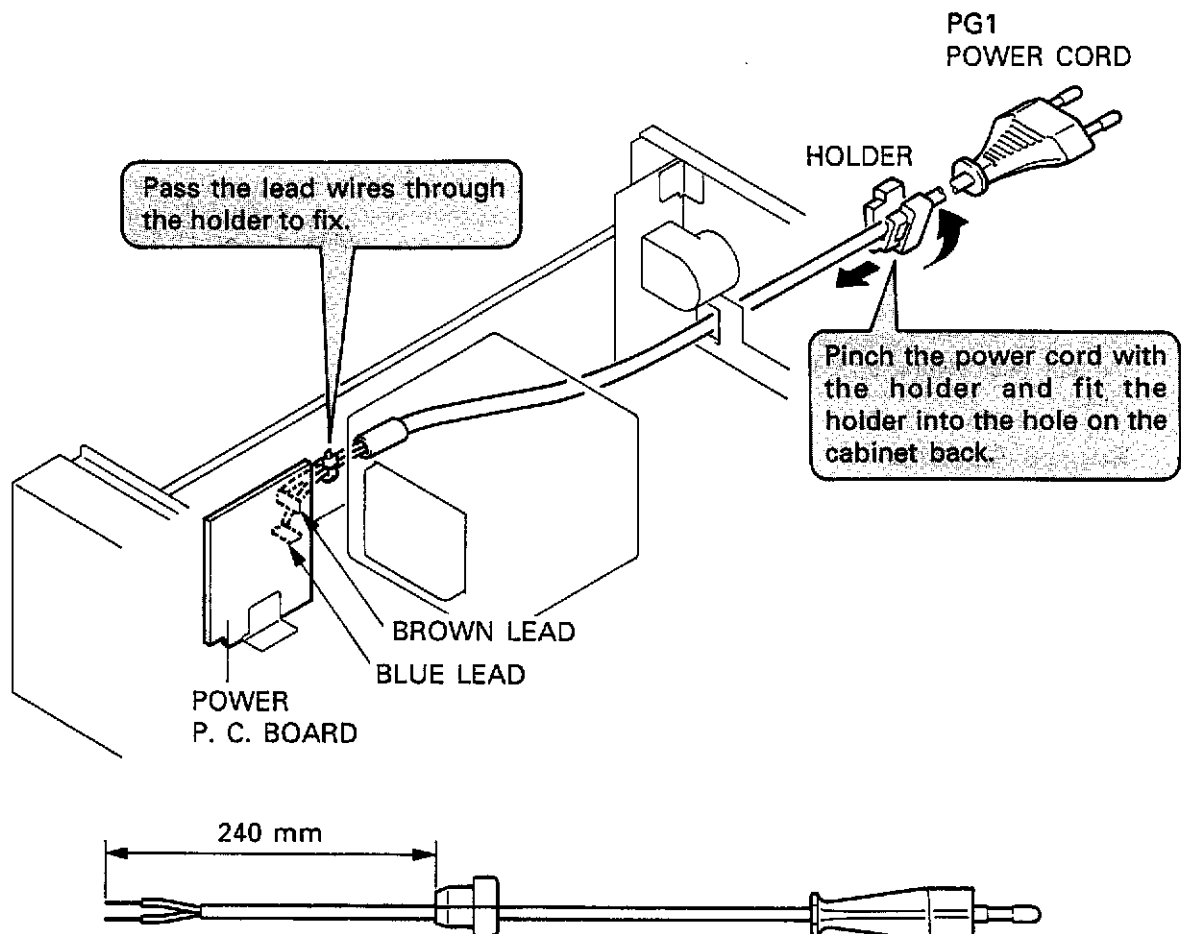
1. Remove the Front Panel Ass'y (AA), referring to the previous step 2.
 2. Remove 3 screws (F) and then remove the Power P. C. Board (PCB-8).
- If necessary unsolder the lead wire.

6 VOLUME P. C. BOARD (PCB-7) REMOVAL

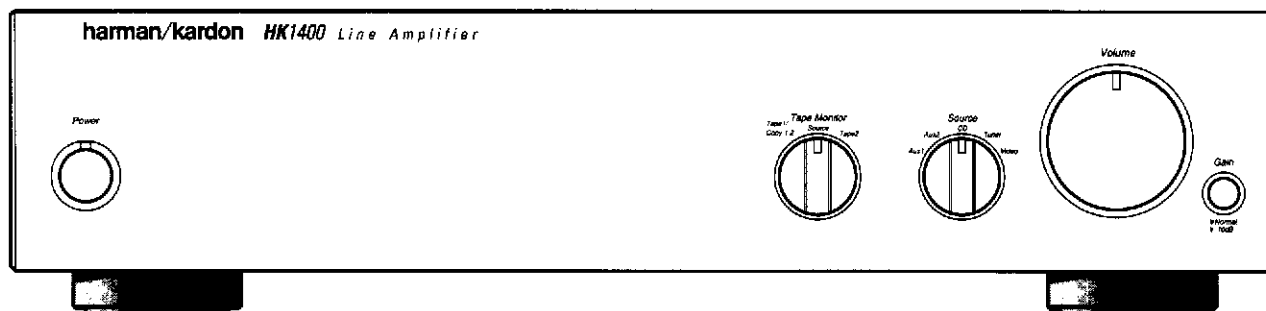
1. Remove the Front Panel Ass'y (AA), referring to the previous step 2.
 2. Pull out the Rotary Knob (149).
 3. Remove hexagon nut (G) and then remove the Volume P. C. Board (PCB-7).
- If necessary unsolder the lead wire.

POWER CORD REPLACEMENT (FOR SERVICE ENGINEERS OTHER THAN NORTH AMERICA)

In order to prevent fire or shock hazard when replacing the power cord, follow the procedure below to replace the parts with the standard supply parts.



CONTROLS AND FUNCTIONS



(NOTE: HK1200 features are the same)

Power Switch

Pressing this switch will turn on the power and the POWER indicator lights up. Press the switch again to turn the power off.

Power Indicator

When the POWER switch is pressed, this indicator lights up in green.

Tape Monitor Selector

This selector is used when playing a tape deck, or monitoring during recording.

Tape 1/Copy 1→2: Select this position to play a tape or to monitor the recording on the tape deck connected to the TAPE 1 jacks. This is also the position to use to copy a tape from Tape 1 to Tape 2.

Source: Select this position to listen to a program source other than a tape.

Tape 2: Select this position to play a tape, or to monitor during recording on the tape deck connected to the TAPE 2 jacks.

Source Selector

This selector is used to select a program source other than a tape.

Aux 1: Select this position to listen to a source connected to the AUX 1 jacks.

Aux 2: Select this position to listen to a source connected to the AUX 2 jacks.

CD: Select this position to listen to a CD player connected to the CD jacks.

Tuner: Select this position to listen to a Tuner connected to the TUNER jacks.

Video: Select this position to listen to the sound of a TV, VCR or Laserdisc player connected to the VIDEO jacks.

Volume Control

This knob controls the sound level. Turning clockwise increases the sound volume, and turning counterclockwise decreases it. Set this control at a minimum level before turning the power on, changing the sound source or changing the GAIN switch to protect the speakers from being damaged by a sudden high level sound.

Gain Switch

The GAIN Switch changes both the input sensitivity (amount of amplification) and the input overload level of the preamplifier circuitry. The "Normal" position provides an input sensitivity that is typical of other high quality integrated amplifiers and preamplifiers. This mode has an input overload level of 2.5 Volts, which is high enough to use with nearly any high fidelity source. The "-10dB" position both decreases the input sensitivity and increases the input overload level by 10dB (approximately 3 times). This allows very strong input signals to be amplified without distortion. It also provides a wider dynamic range. Some listeners may prefer this position for listening to CD players, for example.

ALIGNMENT PROCEDURES (REFER TO PAGES 13,15,16 AND 19)

- **Conditions :**
 - Set the Source selector to the "CD" position.
 - Set the Volume control to minimum.
 - Make the adjustment at a room temperature of 77°F (25°C)

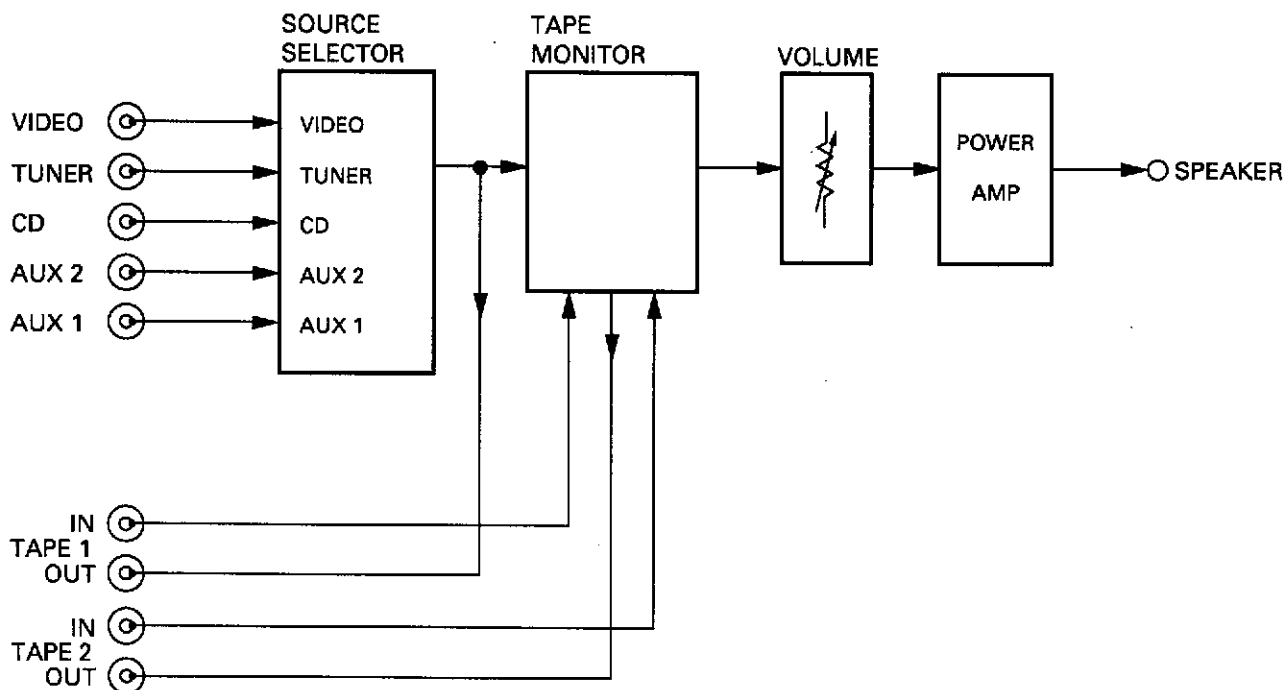
■ DC BALANCE ADJUSTMENT

Step	Connection Equipments	Adjustment	For
1	Connect the Digital Volt Meter to Speaker output.	VR403	0 mV
2	Connect the Digital Volt Meter to Speaker output.	VR404	0 mV

■ IDLING CURRENT ADJUSTMENT

Step	Connection Equipments	Adjustment	For
1	Connect the Digital Volt Meter to TP401 and TP402.	VR401	33 mV
2	Connect the Digital Volt Meter to TP403 and TP404.	VR402	33 mV

BLOCK DIAGRAM



GENERAL UNIT PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
AA	A443-PM1200A	FRONT PANEL ASSEMBLY (HK1200)	173	2219-8405	METAL FITTG, TAPE FUNCTION SWITCH (X2)
AA	A443-PM1400A	FRONT PANEL ASSEMBLY (HK1400)	175	2219-8390	METAL FITTG, POWER IN PCB IB WB
AB	A414-PM1200A	CABINET TOP ASSEMBLY (HK1200)	178	2219-8178	METAL FITTG, GAIN SHAFT
AB	A414-PM1400A	CABINET TOP ASSEMBLY (HK1400)	180	2222-7331	HEAT SINK, MAIN
AC	A424-PM1200B	CABINET BACK ASSEMBLY BK (HK1200)	185	2240-R0101	HOLDER, WIRING (X10)
AC	A424-PM1400B	CABINET BACK ASSEMBLY BK (HK1400)	186	2240-7409	HOLDER, TAPE FUNCTION SHAFT (X2)
AC	A424-PM1200A	CABINET BACK ASSEMBLY IB WB (HK1200)	188	2240-364	HOLDER, AC CORD
AC	A424-PM1400A	CABINET BACK ASSEMBLY IB WB (HK1400)	193	2362-901014	BOSS,THREAD, GND
025	1756-CSA	LABEL, CSA LABEL BK	196	2360-7026	SPECIAL BOSS, LED PCB (X2)
026	1756-05910	LABEL, FUSE CAUTION BK	198	2132-7136	SPACER, HEAT METAL (X4)
118	1756-21914	LABEL, DBP, LABEL IB	201	2224-7120	INSULATOR, HEAT METAL (X2)
131	1414-17401	CABINET TOP	204	2224-7137	INSULATOR, CABINET
133	1424-37701	CABINET BACK, BOTTOM	209	2459-3003511	RIVET,PLASTIC, SHAFT (X4)
134	1424-37604	CABINET BACK, REAR BK (HK1200)	210	2431-0151	FASTENER, BADGE (X2)
134	1424-37601	CABINET BACK, REAR BK (HK1400)	212	2672-7018	LEVER, POWER SHAFT
134	1424-37605	CABINET BACK, REAR IB (HK1200)	214	2601-7069	SHAFT, TAPE FUNCTION SHAFT (X2)
134	1424-37602	CABINET BACK, REAR IB (HK1400)	215	2601-7208	SHAFT, TAPE FUNCTION (X2)
134	1424-37606	CABINET BACK, REAR WB (HK1200)	216	2601-7210	SHAFT, GAIN
134	1424-37603	CABINET BACK, REAR WB (HK1400)	218	2601-7084	SHAFT, GAIN SHAFT
136	1443-14904	FRONT PANEL	220	2651-2101728	SPRING, GAIN
139	1714-02602	NAME PLATE, BADGE	221	2327-R0140102	SCREW,BND+ (4X10 mm) (X4) (HK1200)
141	1562-08202	FRAME, L	221	2347-400827	SCREW,BND T+ (4X8 mm) (X4) BK (HK1400)
142	1562-08302	FRAME, R	221	2327-R0140102	SCREW,BND+ (4X10 mm) (X4) IB WB (HK1400)
144	1732-08801	INDICATOR, POWER LED	223	2440-60	SPECIAL NUT, (X4) (HK1200)
146	1662-66902	PUSH BUTTON, POWER	223	2440-60	SPECIAL NUT, (X4) IB WB (HK1400)
147	1662-67002	PUSH BUTTON, GAIN	224	2401-0373	WASHER,METAL, BIAS PCB (X2)
149	1630-04902	ROTARY KNOB, MAIN	225	2327-R0130062	SCREW,BND+ (3X6 mm) (X4)
150	1632-21502	ROTARY KNOB, TAPE FUNCTION (X2)	226	2327-R0130062	SCREW,BND+ (3X6 mm) (X8)
155	1742-08302	ORNAMENT, POWER	228	2327-R0130082	SCREW,BND+ (3X8 mm)
156	1742-08402	ORNAMENT, GAIN	232	2347-R0130082	SCREW,BND T+ (3X6 mm) (X8) BK
159	1319-05001	LEG, BOTTOM (X4)	232	2347-R0130062	SCREW,BND T+ (3X6 mm) (X9) IB WB
161	2211-7328	CHASSIS, FRONT	234	2347-R0130062	SCREW,BND T+ (3X6 mm) (X30)
162	2111-1389	FELT, TOP COVER (X4)	236	2347-R0130064	SCREW,BND T+ (3X6 mm) (X7)
163	2219-8207	METAL FITTG, BOTTOM CENTER	238	2347-R0130084	SCREW,BND T+ (3X8 mm) (X14) BK
164	2219-8384	METAL FITTG, MAIN HEAT	238	2347-R0130084	SCREW,BND T+ (3X8 mm) (X13) IB WB
165	2219-8385	METAL FITTG, MAIN HEAT	240	2347-R0130102	SCREW,BND T+ (3X10 mm) (X5)
166	2219-8386	METAL FITTG, BOTTOM SIDE	241	2347-R0140064	SCREW,BND T+ (4X6 mm) (X4)
167	2219-8401	METAL FITTG, TRANS	244	2347-R0130082	SCREW,BND T+ (3X8 mm) (X7) (HK1200)
168	2219-8407	METAL FITTG, H.CENTER	244	2347-R0130082	SCREW,BND T+ (3X8 mm) (X8) (HK1400)
169	2219-8403	METAL FITTG, R.SIDE	246	2402-0374	WASHER,PLASTIC, PCB GND
171	2219-8019	METAL FITTG, POWER SWITCH PCB	247	2401-035	WASHER,METAL, POWER TRANSISTOR (X2)
172	2219-8348	METAL FITTG, TAPE FUNCTION SWITCH BOTTOM (X2)	249	2557-301429	SCREW,B SPW+, Q427-Q430 (X4)
			558	2224-7134	INSULATOR, Q427-Q430 (X4)

A B C D E

GENERAL UNIT

EXPLODED VIEW

1

2

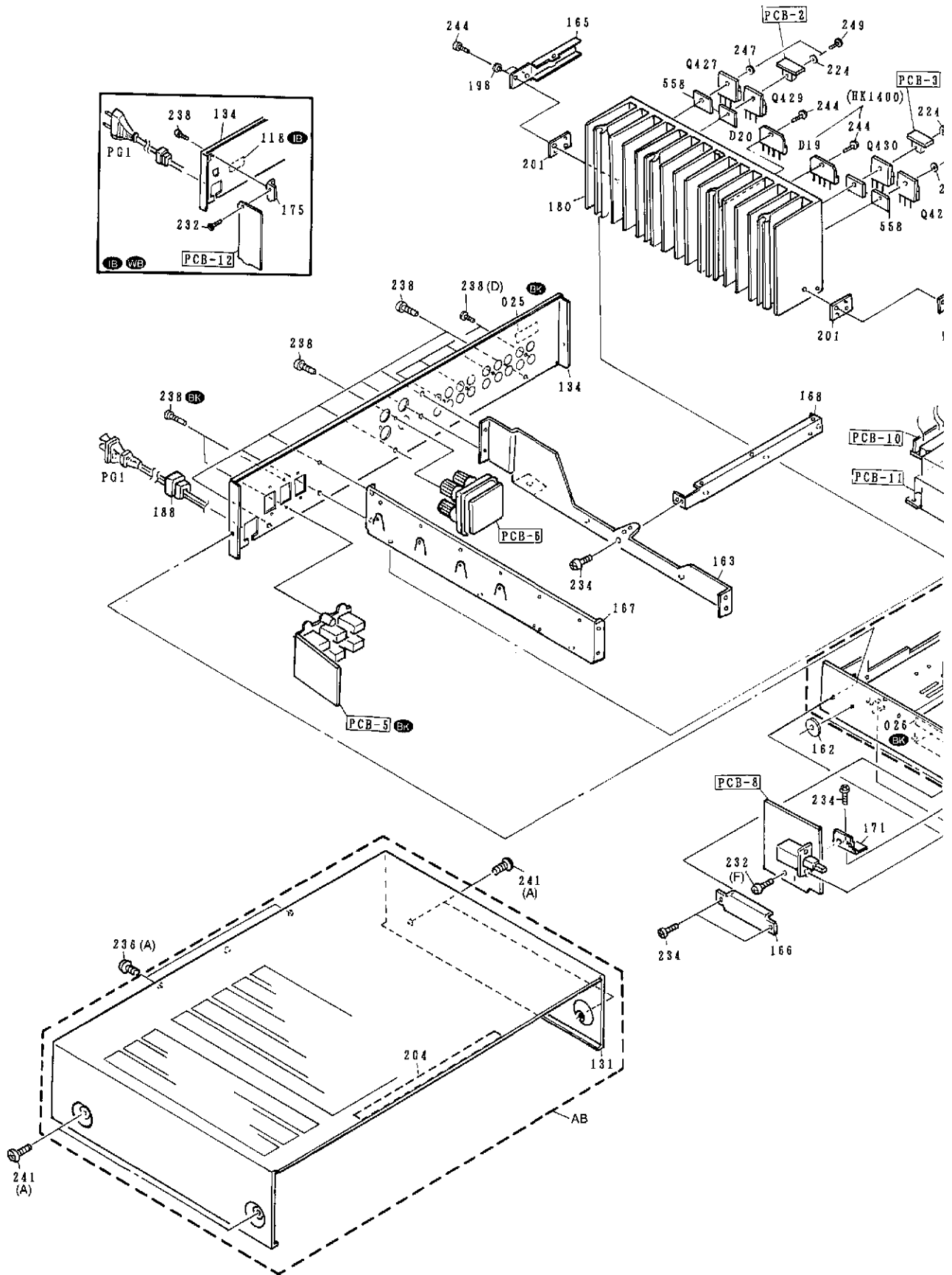
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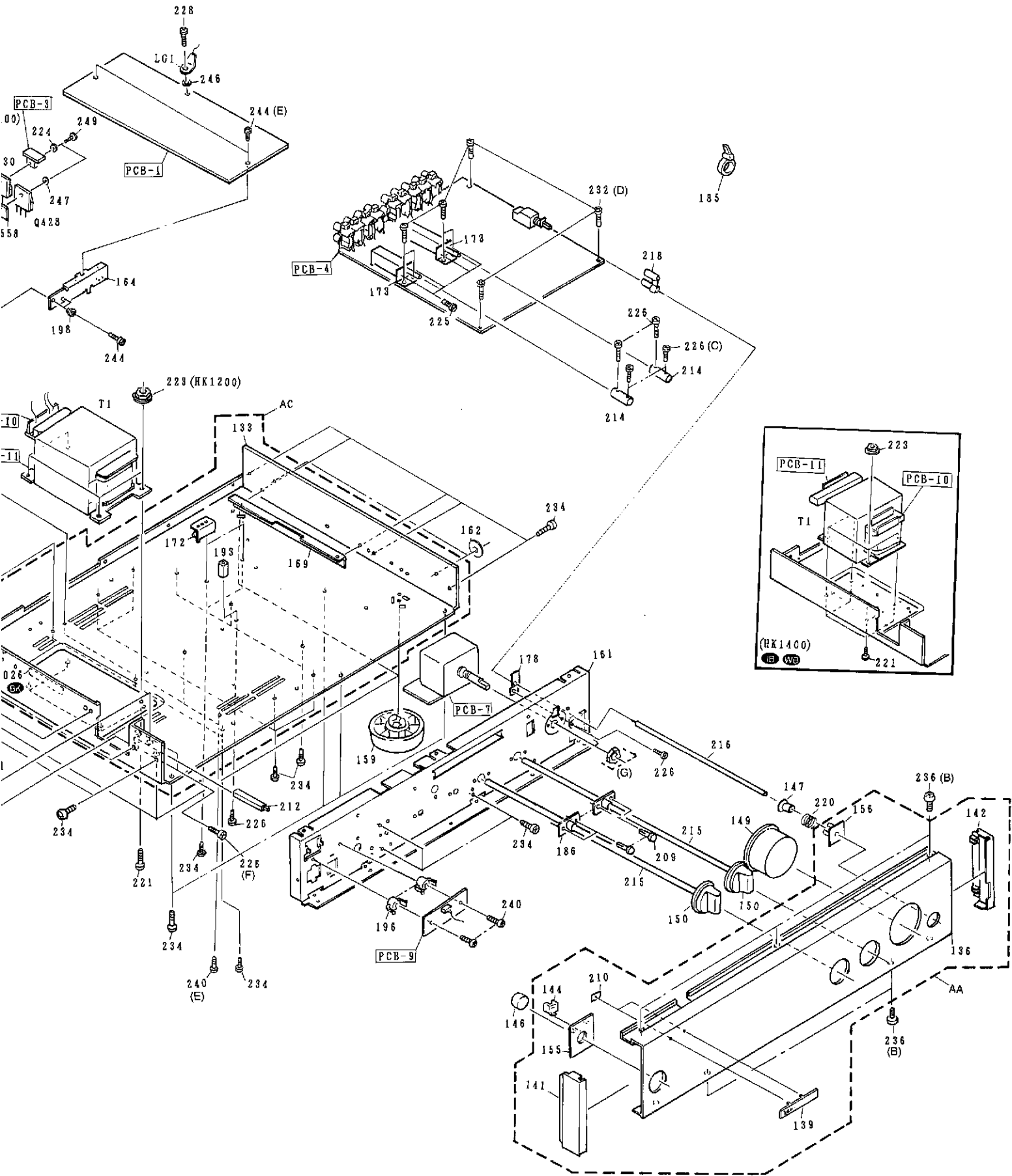
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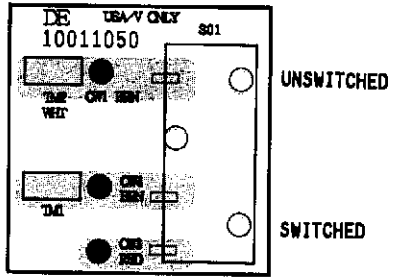


A B C D E

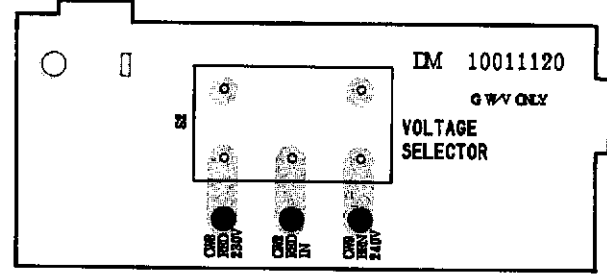
P. C. BOARDS (1)

1

PCB-5 (BK) AC OUTLET P.C. BOARD



PCB-12 (IB) (WB) VOLT SELECT P.C. BOARD



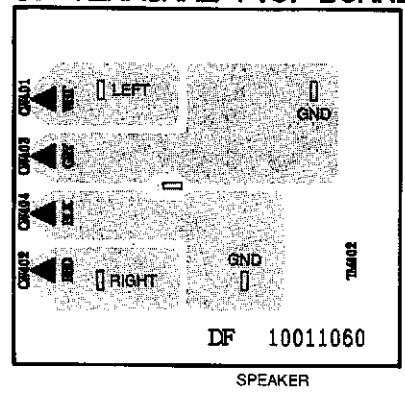
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3

PCB-2 BIAS (L) P.C. BOARD



PCB-6 SP TERMINAL P.C. BOARD



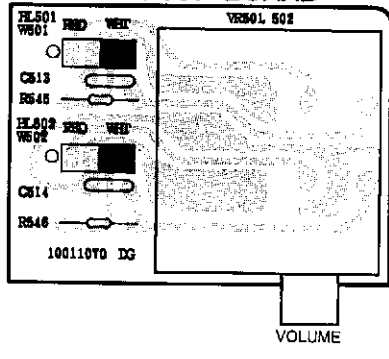
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PCB-3 BIAS (R) P.C. BOARD



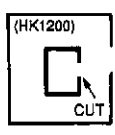
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PCB-7 VOLUME P.C. BOARD

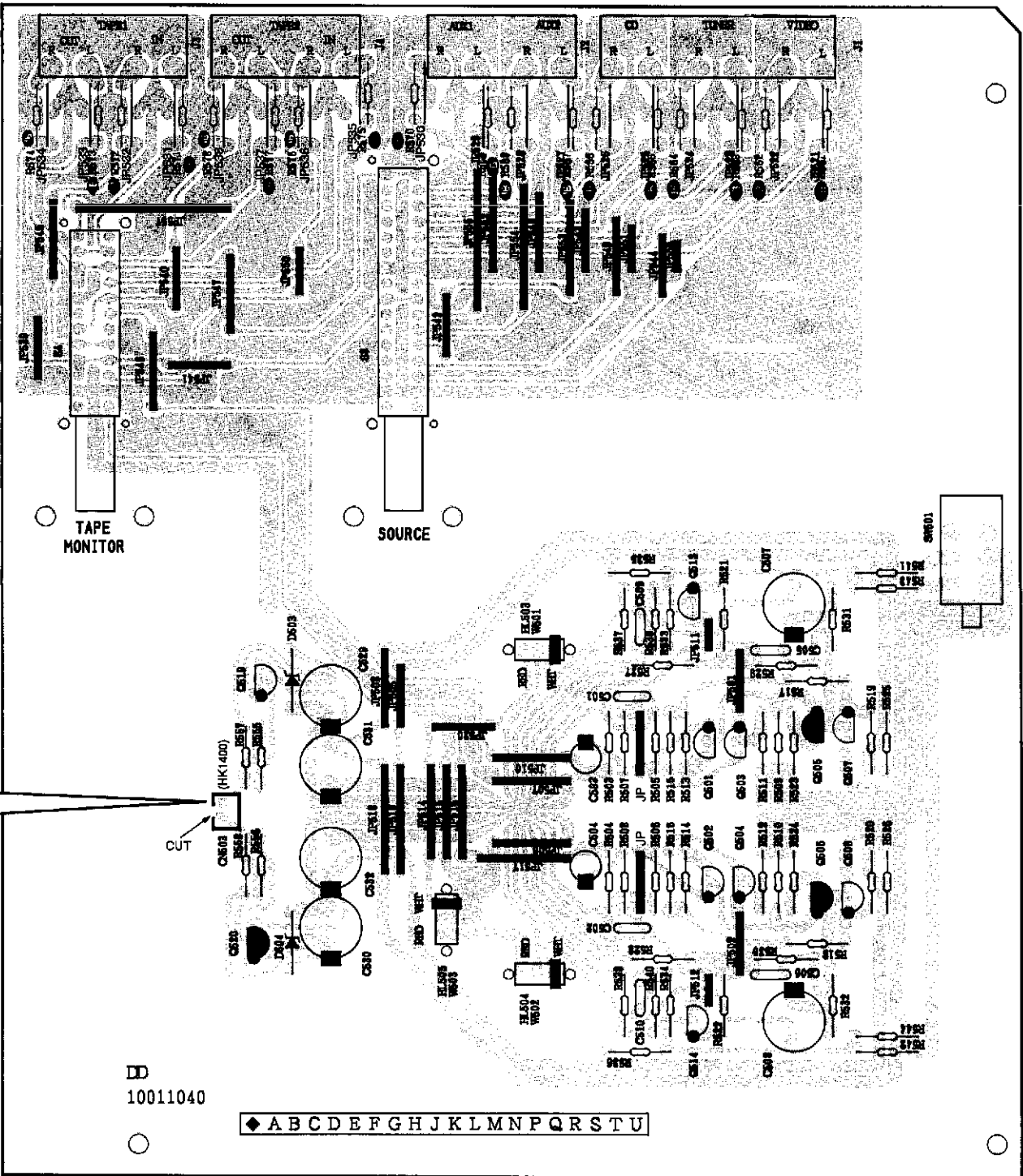


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7



PCB-4 PRE AMP P.C. BOARD



ID
10011040

◆ A B C D E F G H J K L M N P Q R S T U

Ser. No.	Ref. No.	Part No.	Description
PCB-6 SP TERMINAL P.C. BOARD			
MISCELLANEOUS			
672A	△ TM402	4214-241	TERMINAL, SPEAKER BK WB
672	△ TM402	4214-242	TERMINAL, SPEAKER IB

PCB-7 VOLUME P.C. BOARD			
CAPACITORS			
499	C513	5359-1015851	CAP,PPP 100P
499	C514	5359-1015851	CAP,PPP 100P
RESISTORS			
500	R545	5130-R030J102	RES,CBN 1/2P 1K
500	R546	5130-R030J102	RES,CBN 1/2P 1K
CONTROLS			
661	VR501/ 502	511B-303731	RES,V CBN 40 30K
MISCELLANEOUS			
682		2240-Z031	HOLDER, HL501, HL502 (X2)

PCB-8 POWER P.C. BOARD			
CAPACITORS			
653A	△ C1	5352-S010M103	CAP,MTL .01μ BK
653	△ C1	5352-1030958	CAP,MTL .01μ IB WB
RESISTOR			
654	△ R1	5130-R030J335	RES,CBN 1/2P 3.3M IB WB
MISCELLANEOUS			
691	△ CW2	4163-S5201300	CONNECTOR W/W
692	△ CW4	4163-S5101300	CONNECTOR W/W IB WB (HK1200)
692	△ CW4	4163-S5101160	CONNECTOR W/W IB WB (HK1400)
657A	△ F1	5732-01501252	FUSE, 2.5A 125/250V BK (HK1200)
657	△ F1	5732-01601122	FUSE, T1.25A/T1.25AL 250V IB WB (HK1200)
657A	△ F1	5732-402031	FUSE, 4A 125/250V BK (HK1400)
657	△ F1	5732-01601202	FUSE, T2A/T2AL IB WB (HK1400)
656	△ HF1	4472-04901	FUSE HOLDER, F1
656	△ HF2	4472-04901	FUSE HOLDER, F1
665	△ S1	4433-00401	SWITCH,PU-PW, POWER
686	△ TM3	4214-245	TERMINAL IB WB
686	△ TM4	4214-245	TERMINAL IB WB

PCB-9 LED P.C. BOARD			
CAPACITOR			
667	C26	5345-106C041	CAP,MINI ELE 10μ/16V
RESISTOR			
668	R53	5130-R030J122	RES,CBN 1/2P 1.2K
DIODE			
666	D24	5637-SLR33MC3	LED
MISCELLANEOUS			
689		2240-Z021	HOLDER, HL403

PCB-11 TRANS 2 P.C. BOARD			
CAPACITORS			
652	C2	5354-104593	CAP,MYL .1μ
652	C3	5354-104593	CAP,MYL .1μ

PCB-12 VOLT SELECT P.C. BOARD			
MISCELLANEOUS			
700	△ CW8	4163-S5201200	CONNECTOR W/W IB WB (HK1200)

Ser. No.	Ref. No.	Part No.	Description
700	△ CW8	4163-S5201300	CONNECTOR W/W IB WB (HK1400)
701	△ CW9	4163-S5101200	CONNECTOR W/W IB WB (HK1200)
701	△ CW9	4163-S5101300	CONNECTOR W/W IB WB (HK1400)
676	△ S2	4411-00501102	ROTRY SWITCH, VOLT SELECT IB WB

CHASSIS MISCELLANEOUS			
MISCELLANEOUS			
688	LG1	4211-4	LUG
674A	△ PG1	4161-71151	CORD W/PLUG, AC CORD BK
674	△ PG1	4161-7256	CORD W/PLUG, AC CORD IB WB
659A	△ T1	5584-T3301	XFORMER,POWER BK (HK1200)
659A	△ T1	5584-T3401	XFORMER,POWER BK (HK1400)
659	△ T1	5584-T3302	XFORMER,POWER IB WB (HK1200)
659	△ T1	5584-T3501	XFORMER,POWER IB WB (HK1400)
055	PCB-10	4551-10010100	P.C. BOARD, TRANS 1 P.C. BOARD (HK1200)
056	PCB-10	4551-10011100	P.C. BOARD, TRANS 1 P.C. BOARD (HK1400)

PACKING PARTS LIST			
021A	1113-02501	OWNER CARD, REPLY CARD BK	
022A	1116-03801	GUARANTY CARD, WARRANTY BK	
023A	1119-04501	ATTACH SHEET, SERVICE GUIDE BK	
024A	1119-01201	ATTACH SHEET, UL BK	
109A	1111-1160J152	OWNER'S GUIDE, IB BK WB	
109	1111-1150J152	OWNER'S GUIDE, IB IB	
113	1241-R0123351	POLYETHY BAG, OWNER GUIDE	
116	1756-03108	LABEL, (I) LABEL, CORTON BOX (X2) IB	
116B	1756-03101	LABEL, (IV) LABEL, CORTON BOX (X2) WB	
122	1241-R0160601	POLYETHY BAG, SET	
125	1221-28141	CARTON BOX	
126	1222-7390	CUSHION, R	
127	1222-7391	CUSHION, L	
128	1223-R0420055	SOFT SHEET	

ABBREVIATIONS IN PARTS LIST

CAPACITORS

CAP, MINI ELE : Electrolytic
 CAP, CER : Ceramic
 CAP, PPP : Polypropylene
 CAP, MYL : Mylar
 CAP, MCA : Mica
 470μ : 470μF
 6800P : 6800pF
 .047μ : 0.047μF

RESISTORS

RES, CBN 1/6P : Carbon 1/6W
 2.2K : 2.2kΩ
 220 : 220Ω


RES, FUSE : Fuse
 RES, CEM 5P : Cement 5W
 RES, MTL 1P : Metal 1W

TRANSISTORS

XISTOR : Transistor
 FET : Field Effect Transistor

CONTROLS

RES, V CBN : Variable Carbon Resistor
 RES, SEMI FIX : Semi - fixed Resistors

NOTE:
 SAFETY RELATED COMPONENT. USE ONLY EXACT REPLACEMENT PART AS SPECIFIED.

<u>Ser. No.</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
548	Q410	5613-2240(BL)	XISTOR,NPN R
560	Q411	5613-2240(BL)	XISTOR,NPN R
548	Q412	5613-2240(BL)	XISTOR,NPN R
549	Q413	5612-646A(C)	XISTOR,PNP A
549	Q414	5612-646A(C)	XISTOR,PNP A
550	Q415	5614-666A(C)	XISTOR,NPN A
550	Q416	5614-666A(C)	XISTOR,NPN A
551	Q417	5613-945(K)	XISTOR,NPN R
551	Q418	5613-945(K)	XISTOR,NPN R
546	Q419	5614-667A(C)	XISTOR,NPN A
552	Q420	5614-667A(C)	XISTOR,NPN A
553	Q421	5612-647A(C)	XISTOR,PNP A
553	Q422	5612-647A(C)	XISTOR,PNP A
553	Q423	5612-647A(C)	XISTOR,PNP A
553	Q424	5612-647A(C)	XISTOR,PNP A
552	Q425	5614-667A(C)	XISTOR,NPN A
552	Q426	5614-667A(C)	XISTOR,NPN A
556	Q427	5613-3181(O)	XISTOR,NPN R
556	Q428	5613-3181(O)	XISTOR,NPN R
557	Q429	5611-1264(O)	XISTOR,PNP R
557	Q430	5611-1264(O)	XISTOR,PNP R
548	Q437	5613-2240(BL)	XISTOR,NPN R
548	Q438	5613-2240(BL)	XISTOR,NPN R

DIODES

651	△ D20	5685-D5SB20	SILICON,BRIG
642	△ D21	5631-1S2471	DIODE,DET
642	△ D22	5631-1S2471	DIODE,DET
643	D23	5635-HZ6B-1L	DIODE,ZENER
644	D25	5631-1SS133	DIODE,DET
644	D26	5631-1SS133	DIODE,DET

CONTROLS

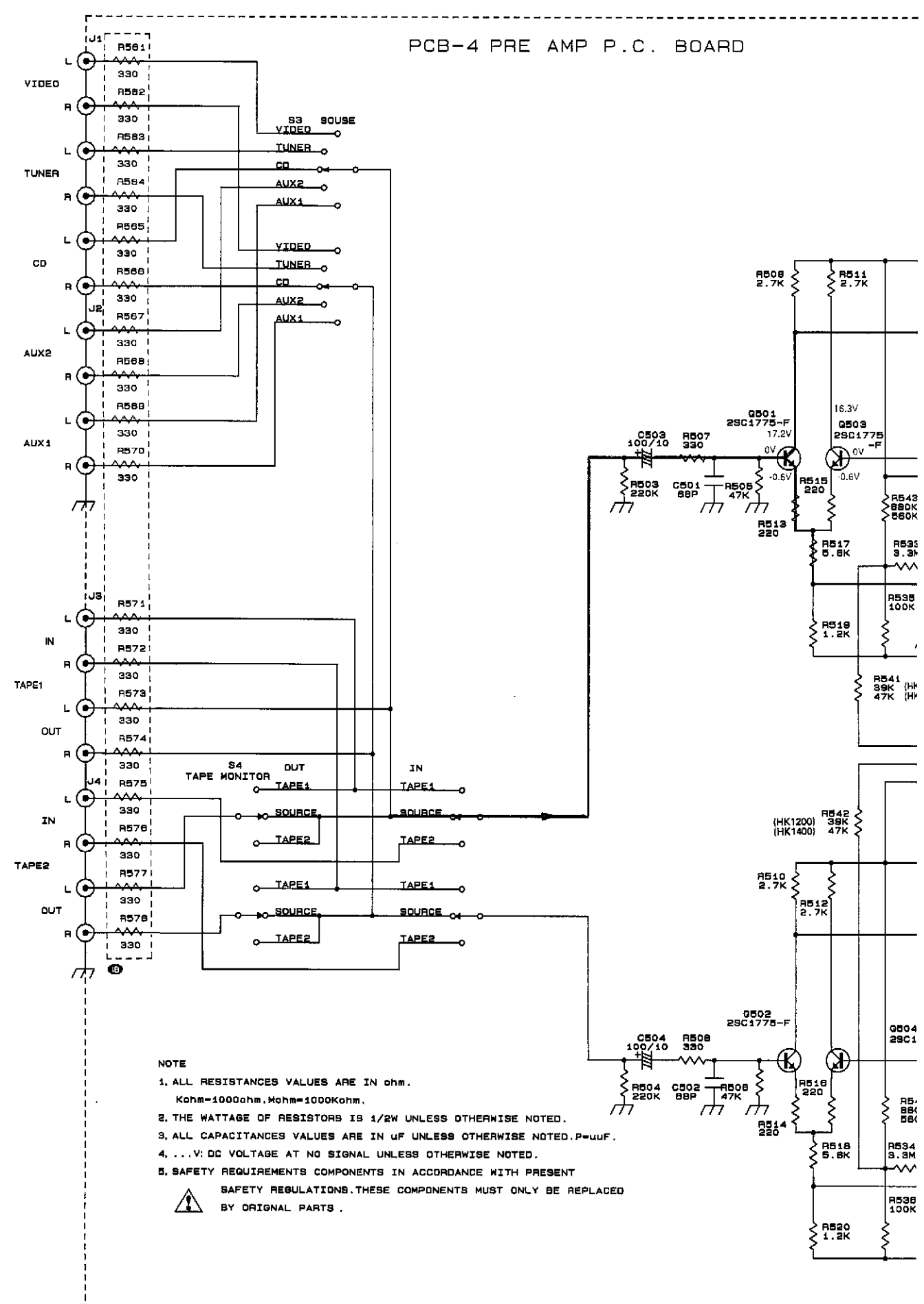
542	VR401	5101-S0801501	RES,SEMI FIX 500
542	VR402	5101-S0801501	RES,SEMI FIX 500
543	VR403	5101-S0801302	RES,SEMI FIX 3K
543	VR404	5101-S0801302	RES,SEMI FIX 3K

MISCELLANEOUS

693	CW5	4163-0140024	CONNECTOR W/W
694	CW6	4163-0140025	CONNECTOR W/W
695	CW7	4163-0140027	CONNECTOR W/W
699	CW401	4163-0130027	CONNECTOR W/W
697	CW402	4163-0130025	CONNECTOR W/W
698	CW403	4163-0130026	CONNECTOR W/W
696	CW404	4163-0130024	CONNECTOR W/W
702	CW405	4163-R0202121	CONNECTOR W/W
705	JL403	4132-R0202451	CORD,2C
706	JL404	4132-R0202161	CORD,2C
544	L401	5991-7125	SPRING COIL
544	L402	5991-7125	SPRING COIL
685	TM401	4214-11032	TERMINAL

SCHEMATIC DIAGRAM (1)

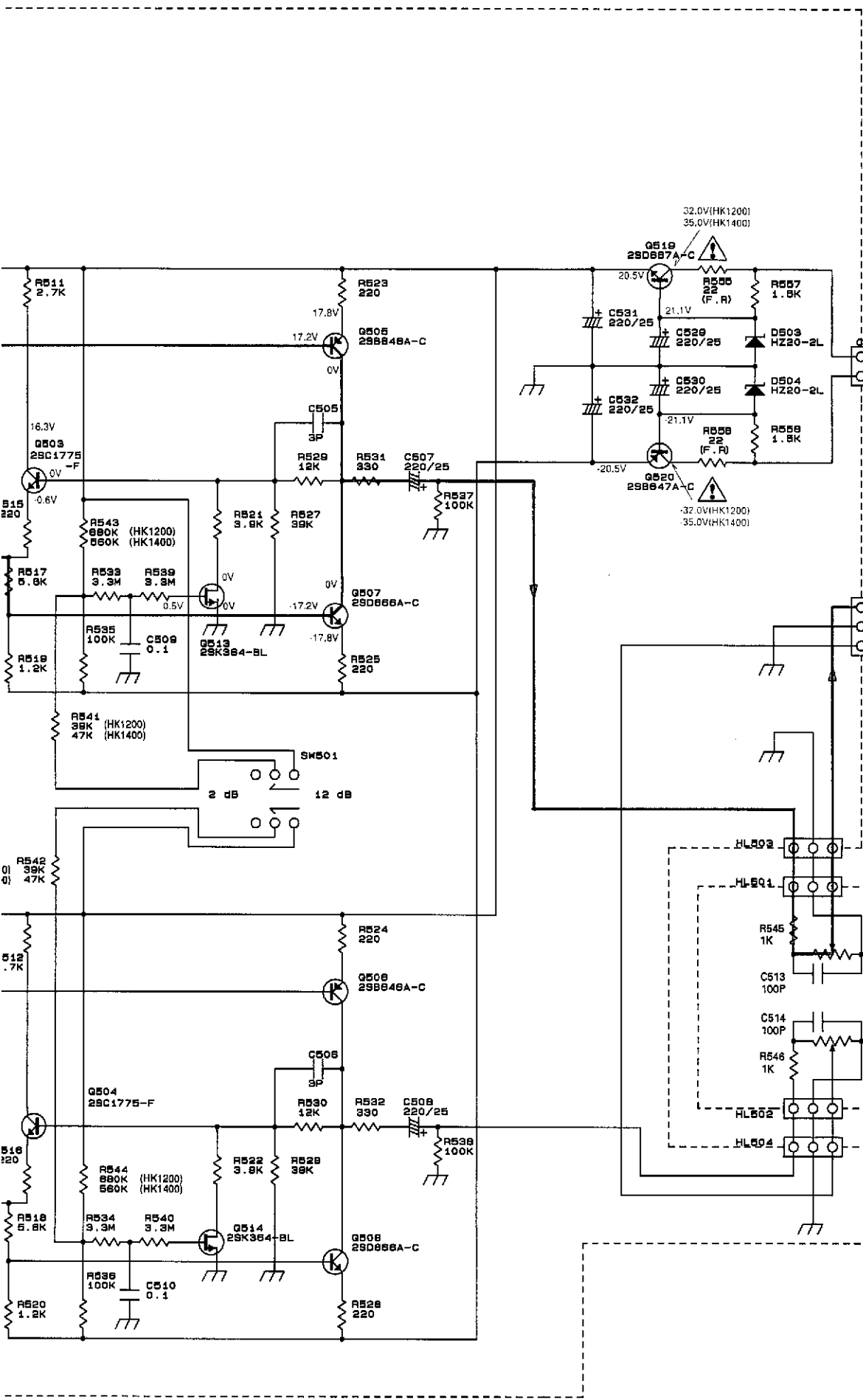
PCB-4 PRE AMP P.C. BOARD



NOTE

1. ALL RESISTANCES VALUES ARE IN ohm.
Kohm=1000ohm, Mohm=1000Kohm.
2. THE WATTAGE OF RESISTORS IS 1/2W UNLESS OTHERWISE NOTED.
3. ALL CAPACITANCES VALUES ARE IN uF UNLESS OTHERWISE NOTED. P=uuF.
4. ...V: DC VOLTAGE AT NO SIGNAL UNLESS OTHERWISE NOTED.
5. SAFETY REQUIREMENTS COMPONENTS IN ACCORDANCE WITH PRESENT SAFETY REGULATIONS. THESE COMPONENTS MUST ONLY BE REPLACED BY ORIGINAL PARTS.





HK1200 : Page 13
HK1400 : Page 19
SCHEMATIC
DIAGRAM (2)

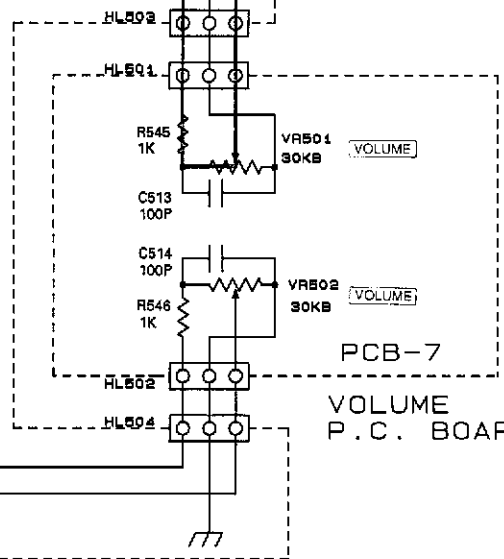


FROM MAIN AMP
FROM CW405
A

HK1200 : Page 13
HK1400 : Page 19
SCHEMATIC
DIAGRAM (2)



TO MAIN AMP
TO TM401
B



PCB-7
VOLUME
P.C. BOARD

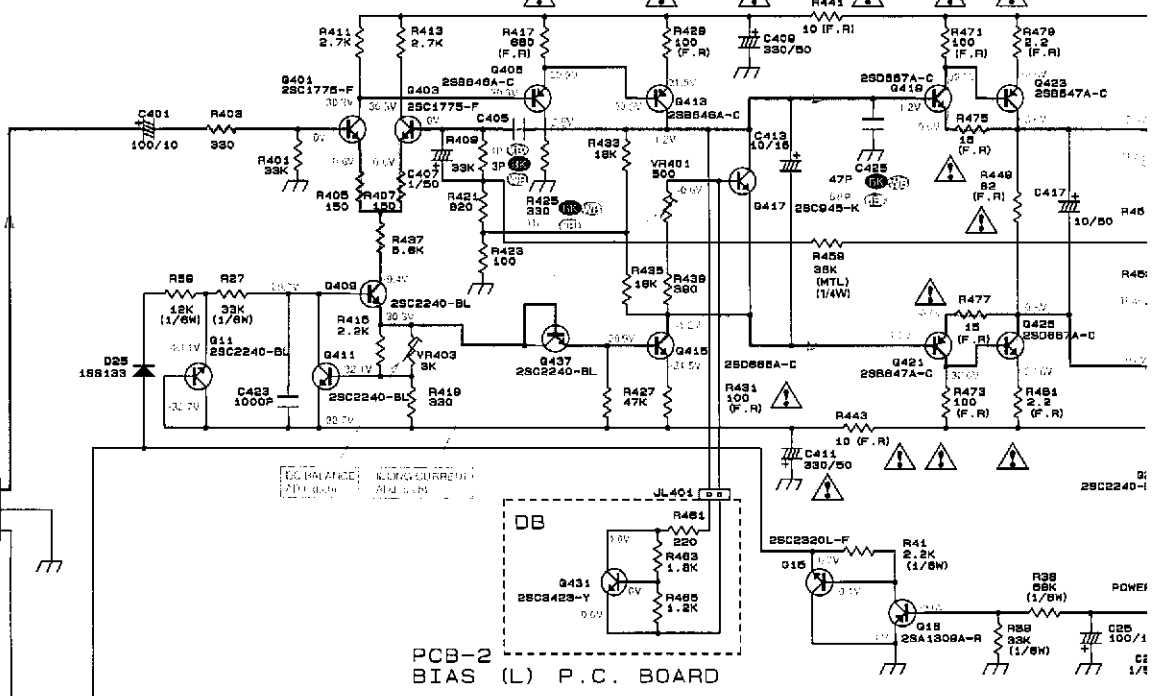
SCHEMATIC DIAGRAM (2) (MODEL : HK1200)

Page 10
SCHEMATIC
DIAGRAM (1)

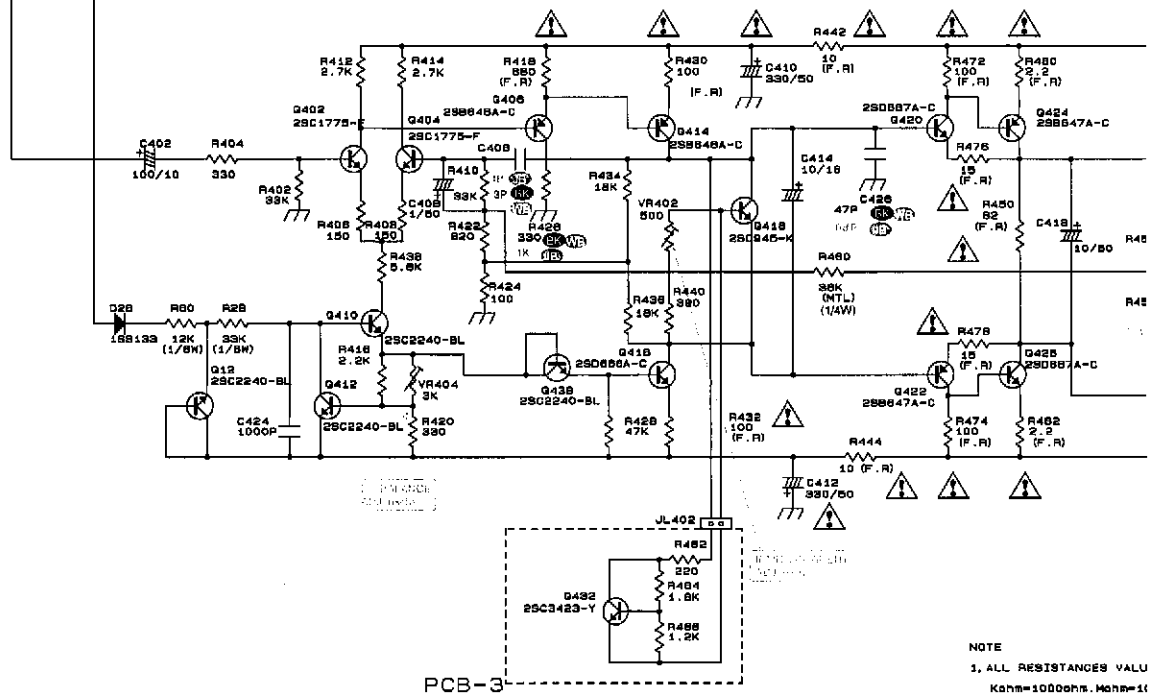


TM401
L IN
R IN

PCB-1 MAIN AMP P.C. BOARD

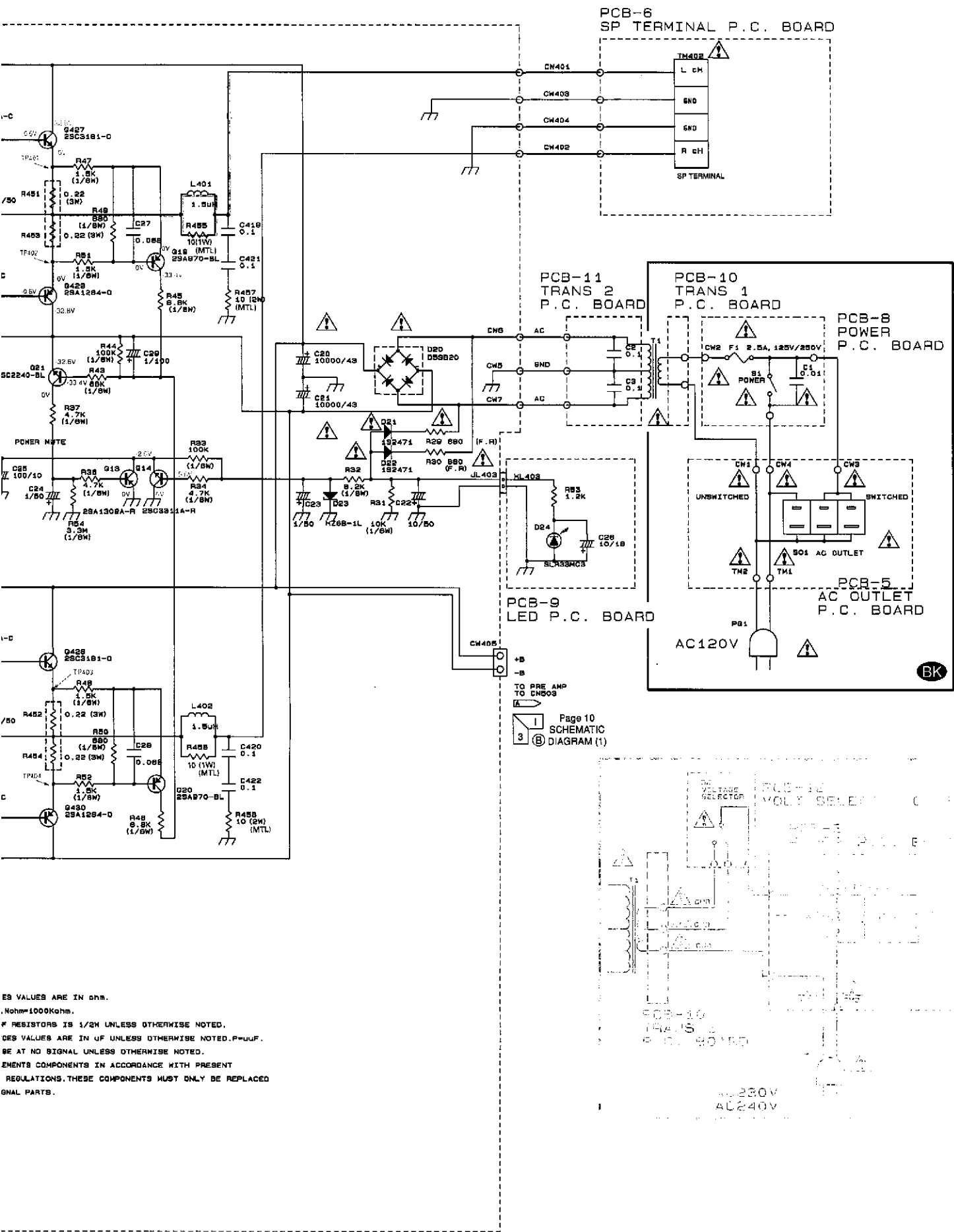


PCB-2 BIAS (L) P.C. BOARD



PCB-3 BIAS (R) P.C. BOARD

- NOTE**
1. ALL RESISTANCES VALU
Kohm=1000ohm, Mohm=10
 2. THE CAPTAGE OF RESIS
 3. ALL CAPACITANCES VAL
 4. . . . V: DC VOLTAGE AT N
 5. SAFETY REQUIREMENTS
SAFETY REGULA
BY ORIGINAL PA

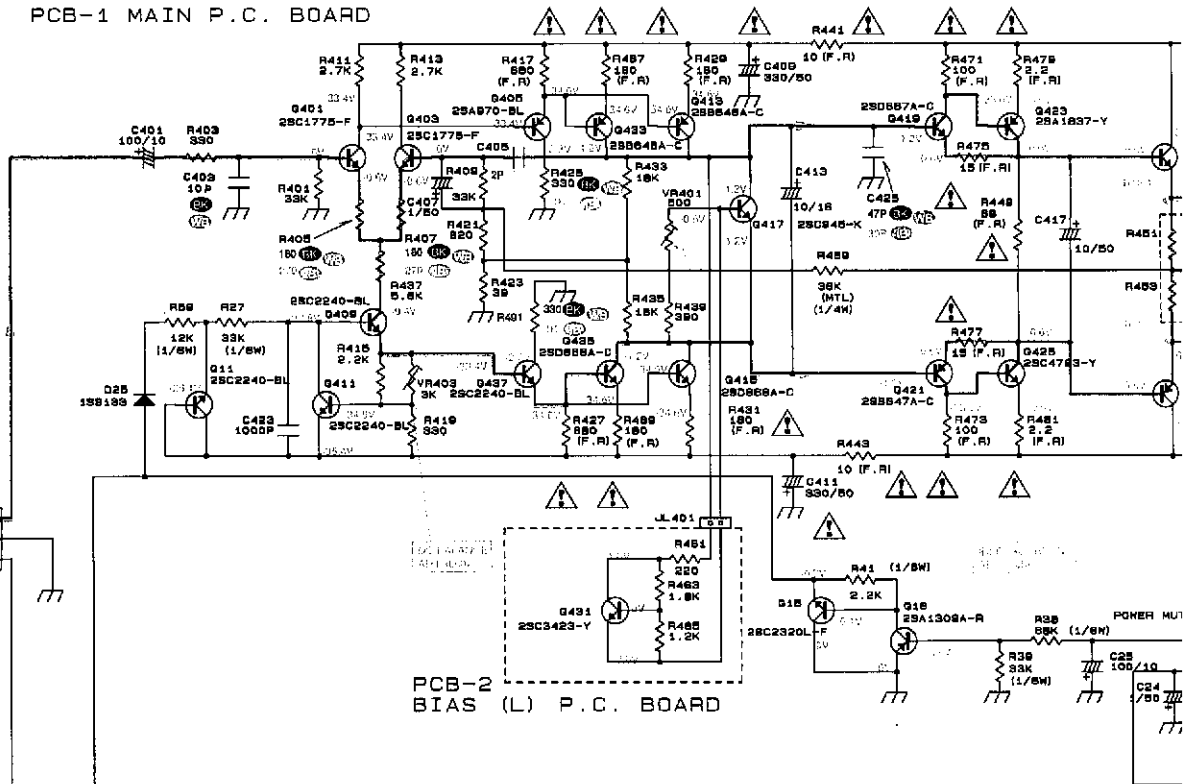


Page 10
 SCHEMATIC
 DIAGRAM (1)

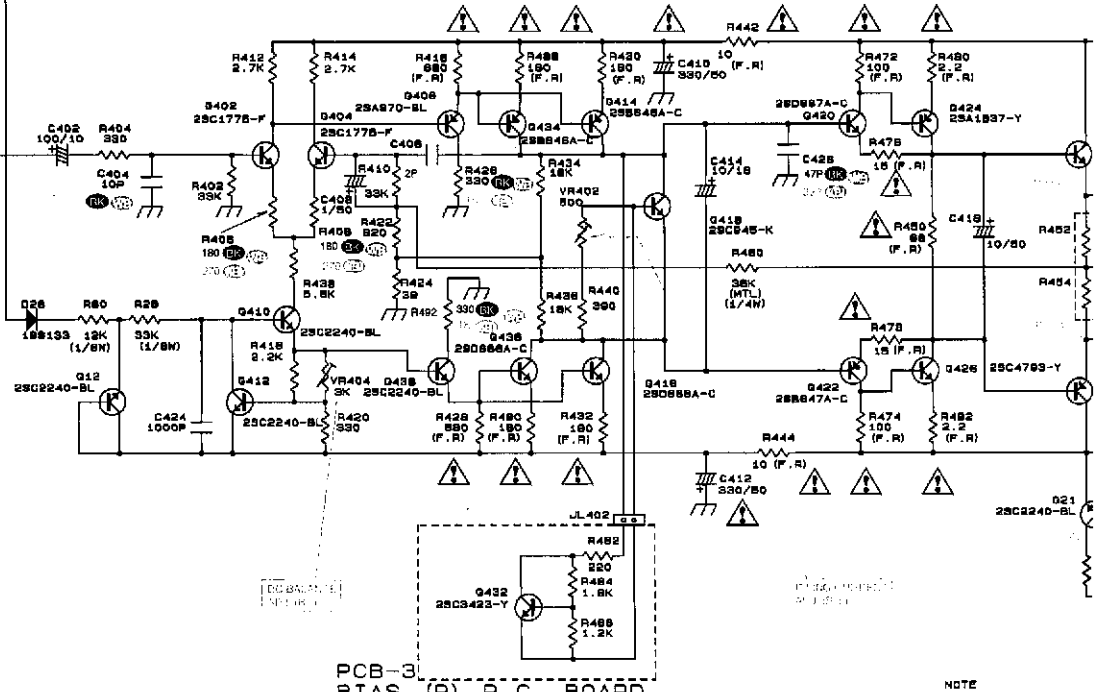
RES VALUES ARE IN OHMS.
 K=1000, M=1000000.
 F RESISTORS IS 1/2W UNLESS OTHERWISE NOTED.
 CAP VALUES ARE IN UF UNLESS OTHERWISE NOTED. P=POUF.
 BE AT NO SIGNAL UNLESS OTHERWISE NOTED.
 REPLACE COMPONENTS IN ACCORDANCE WITH PRESENT
 REGULATIONS. THESE COMPONENTS MUST ONLY BE REPLACED
 WITH ORIGINAL PARTS.

SCHEMATIC DIAGRAM (2) (MODEL : HK1400)

PCB-1 MAIN P.C. BOARD

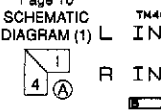


PCB-2 BIAS (L) P.C. BOARD



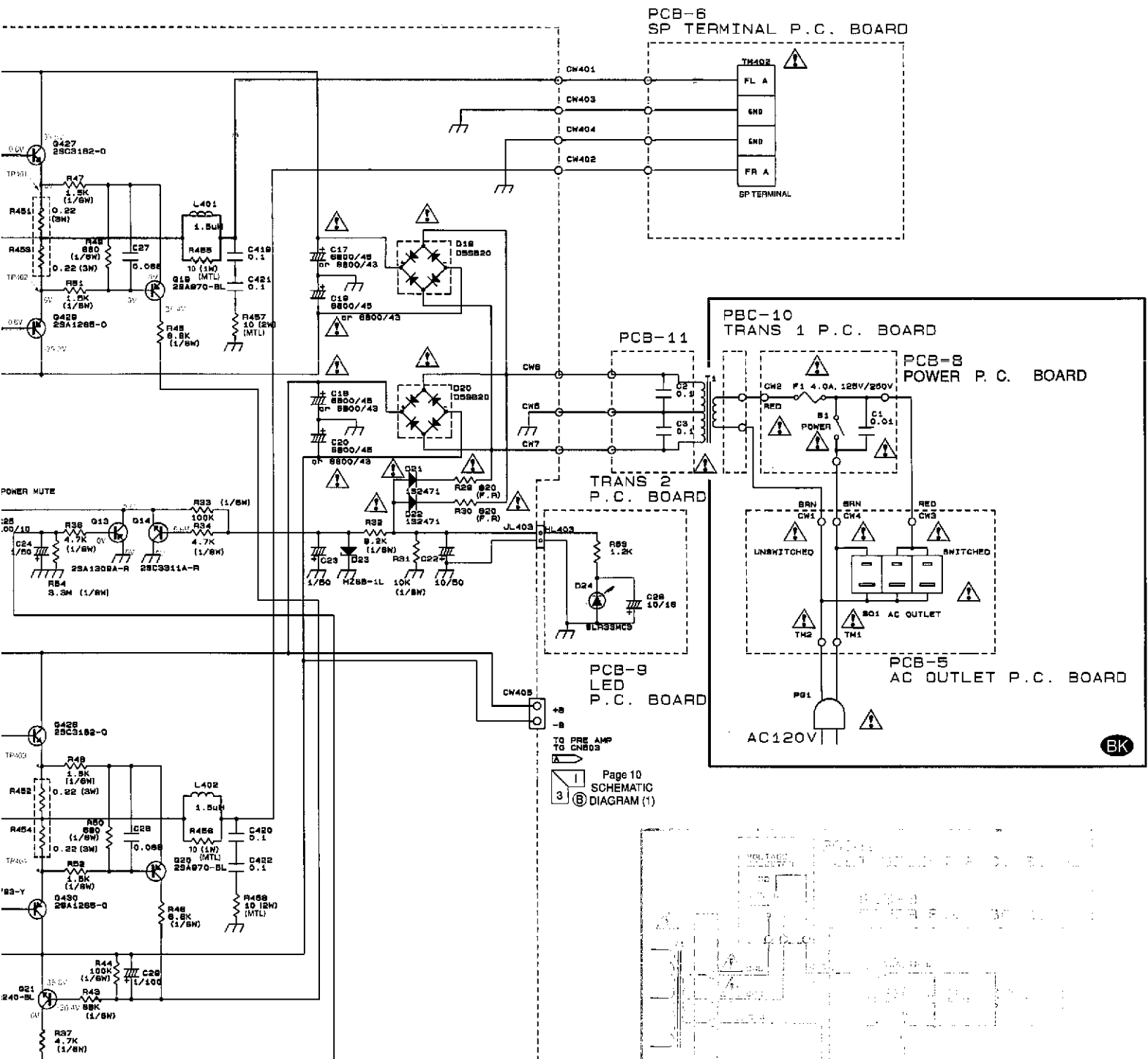
PCB-3 BIAS (R) P.C. BOARD

Page 10
SCHEMATIC
DIAGRAM (1)

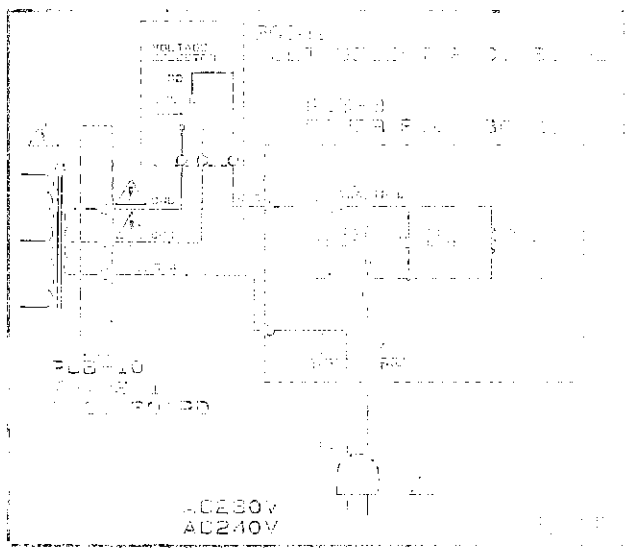


- NOTE
1. ALL RESISTANCES :
Kohm=100ohm, Moh
 2. THE WATTAGE OF R1
 3. ALL CAPACITANCES
 4. . . . V: DC VOLTAGE
 5. SAFETY REQUIREMENT
SAFETY RE:
BY ORIGINAL

1
2
3
4
5
6
7



Page 10
SCHEMATIC
DIAGRAM (1)



STANCES VALUES ARE IN ohm .
 10ohm.Mohm=1000Kohm.
 ARE OF RESISTORS IS 1/2W UNLESS OTHERWISE NOTED.
 CITANCES VALUES ARE IN uP UNLESS OTHERWISE NOTED.P-uuP.
 VOLTAGE AT NO SIGNAL UNLESS OTHERWISE NOTED.
 EQUIREMENTS COMPONENTS IN ACCORDANCE WITH PRESENT
 SAFETY REGULATIONS.THESE COMPONENTS MUST ONLY BE REPLACED
 Y ORIGINAL PARTS.

WIRING DIAGRAM (MODEL : HK1200)

1

2

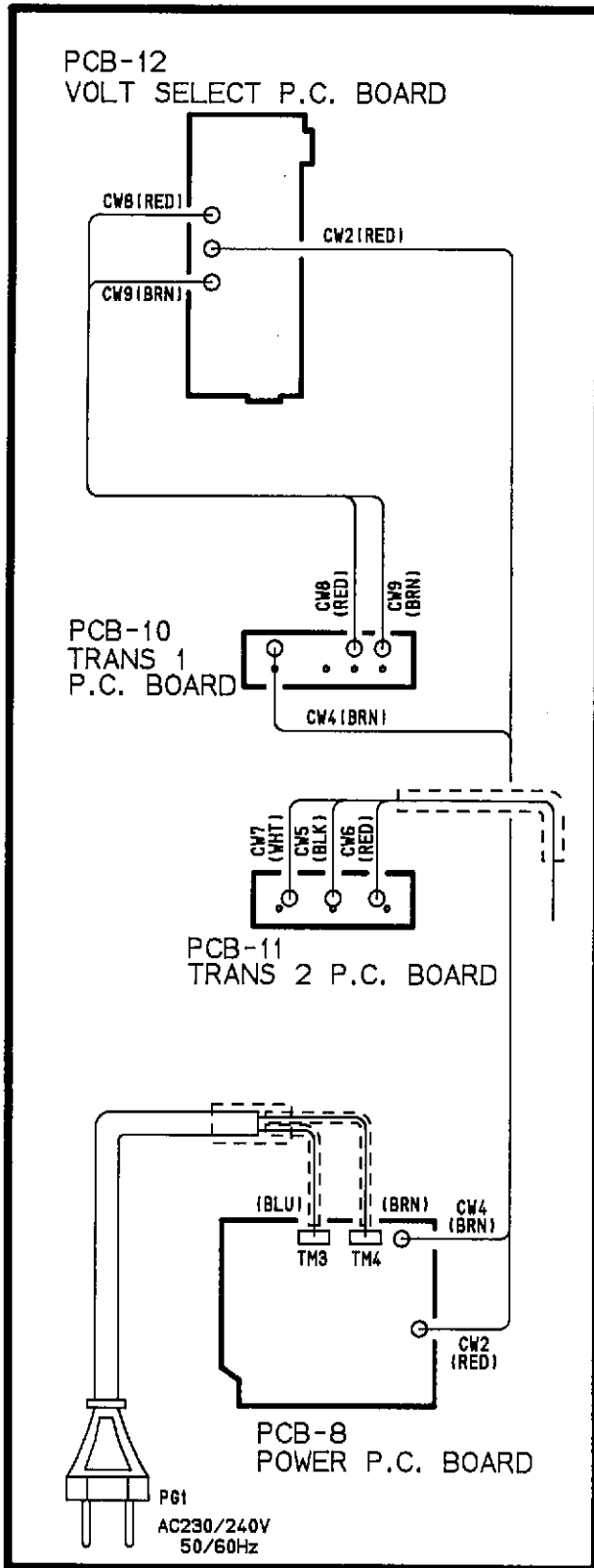
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4

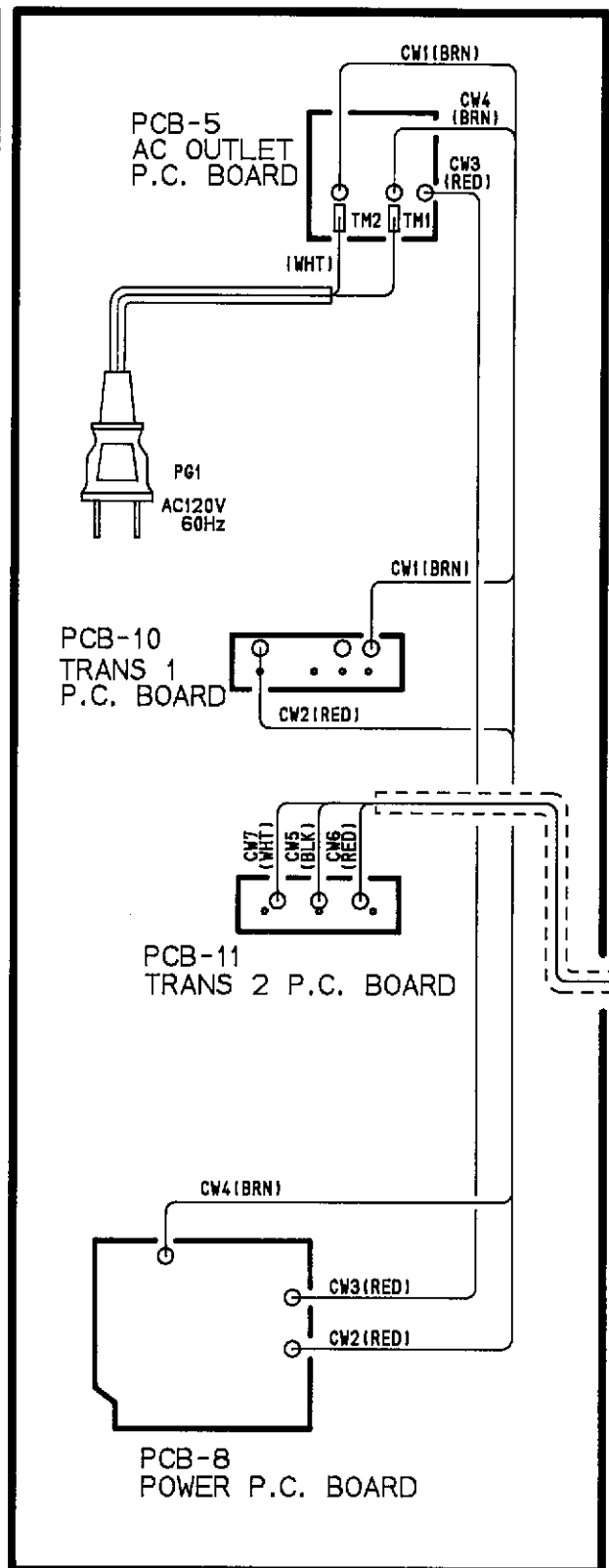
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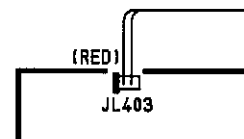
7



IB WB



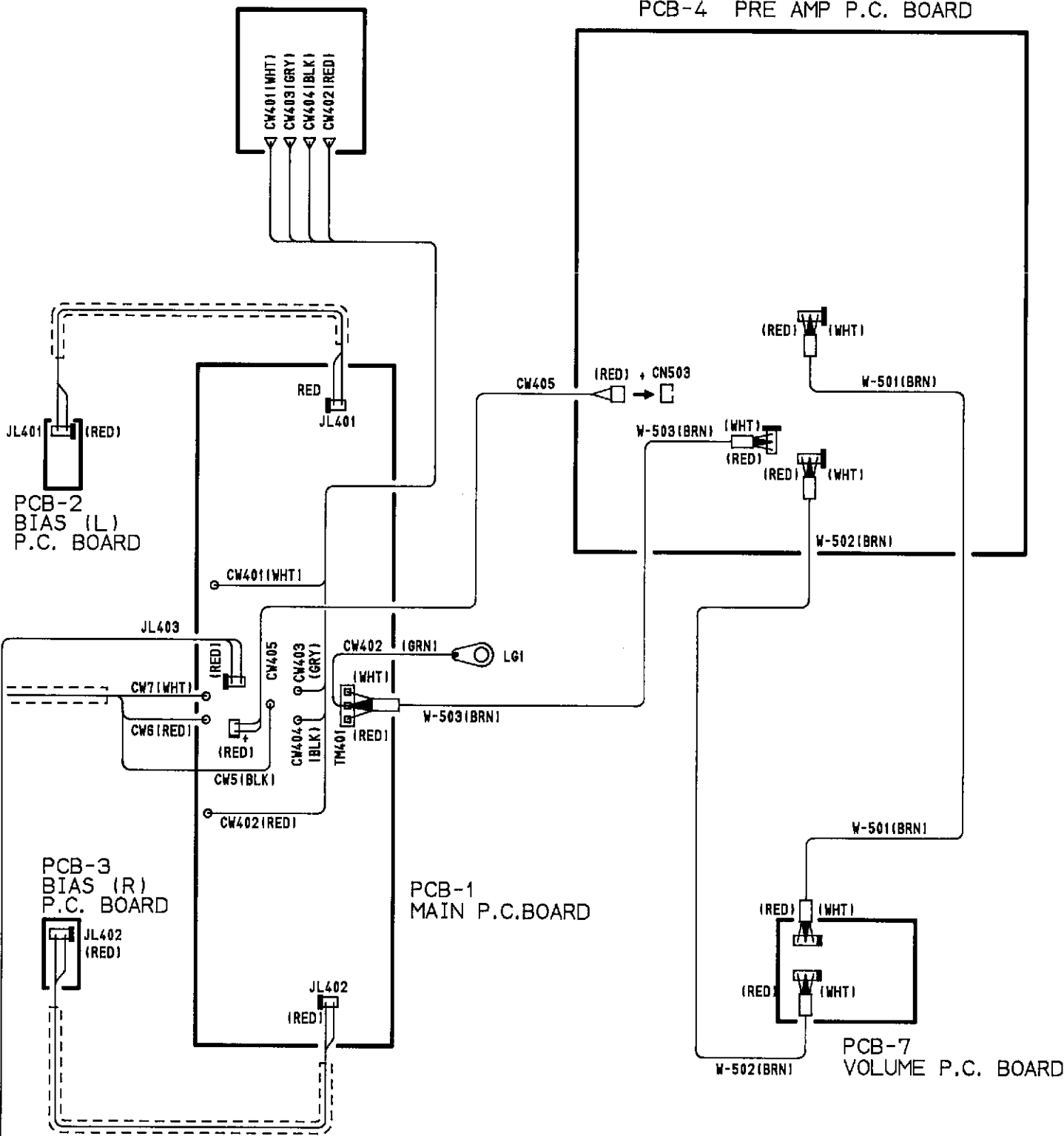
BK



PCB-9 LED P.C. BOARD

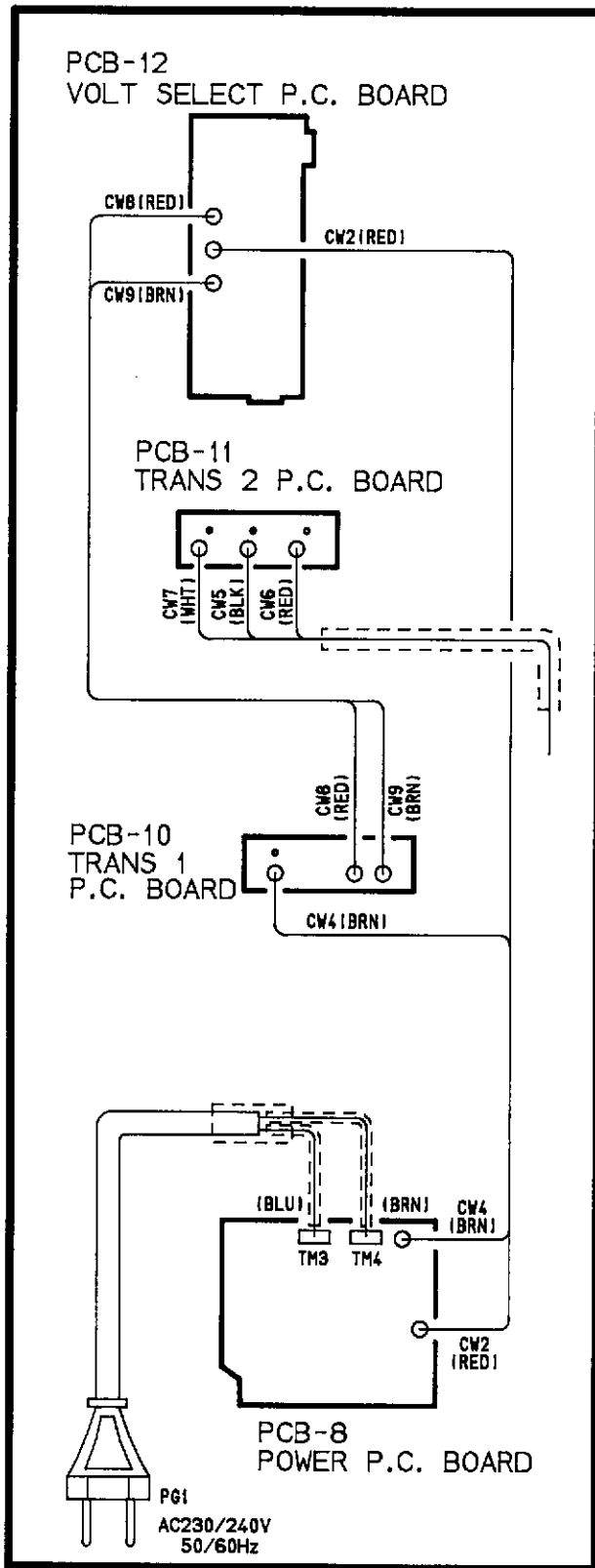
PCB-6 SP TERMINAL P.C. BOARD

PCB-4 PRE AMP P.C. BOARD

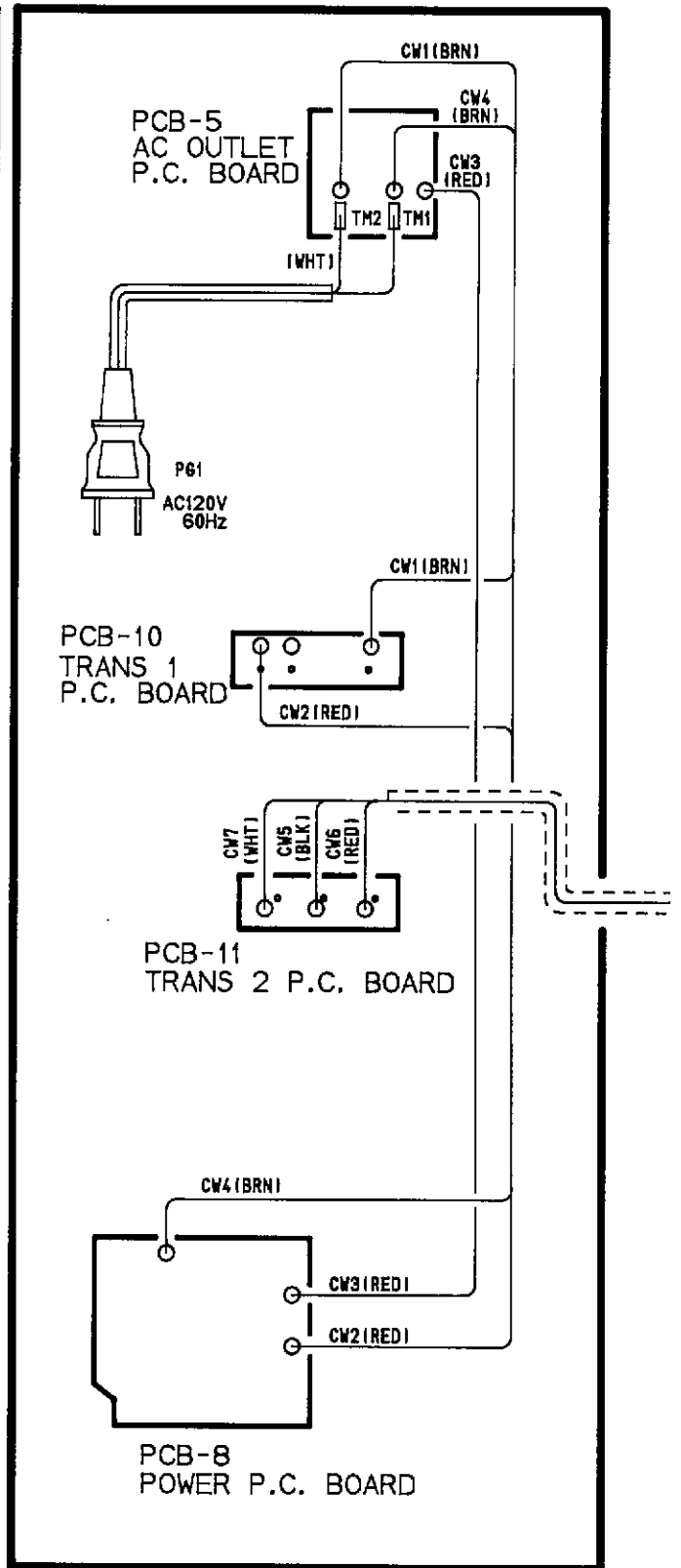


WIRE COLOR ABBREVIATIONS	
RED:Red	WHT:White
BRN:Brown	BLK:Black
BLU:Blue	GRY:Gray

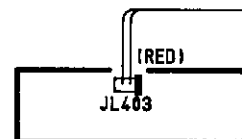
WIRING DIAGRAM (MODEL : HK1400)



IB WB



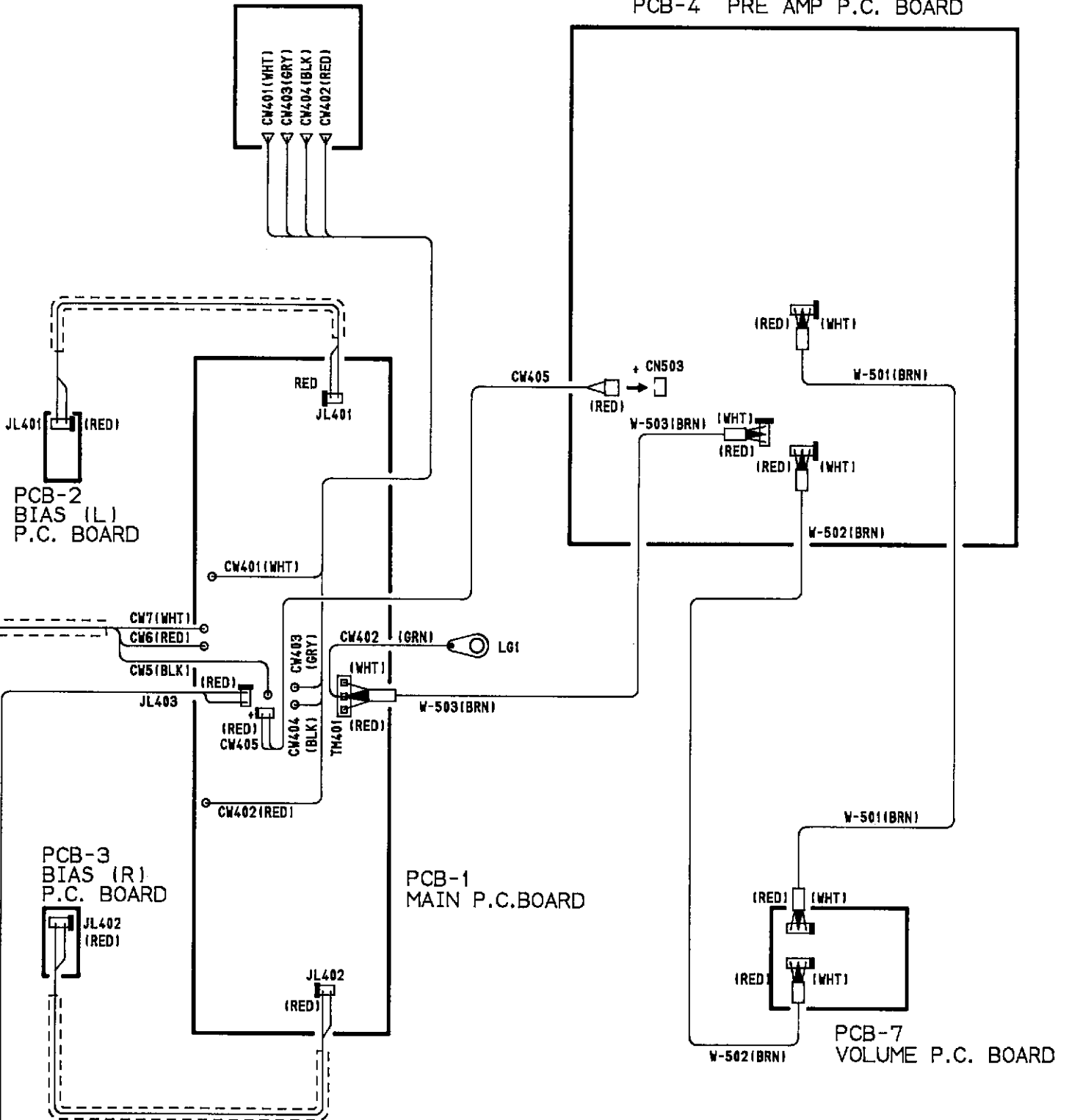
BK



PCB-9 LED P.C. BOARD

PCB-6 SP TERMINAL P.C. BOARD

PCB-4 PRE AMP P.C. BOARD



WIRE COLOR ABBREVIATIONS	
RED:Red	WHT:White
BRN:Brown	BLK:Black
BLU:Blue	GRY:Gray