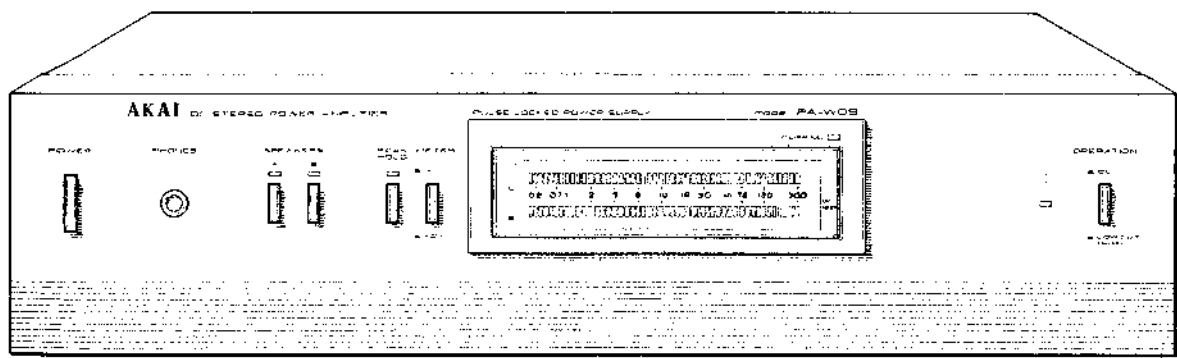
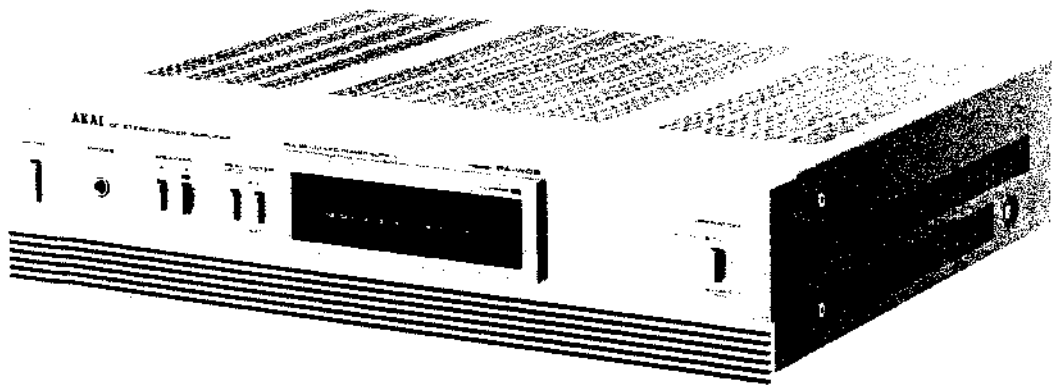


# AKAI SERVICE MANUAL



DC STEREO POWER AMPLIFIER

MODEL **PA-W09**



## DC STEREO POWER AMPLIFIER

### MODEL **PA-W09**

THIS MANUAL IS APPLICABLE TO BOTH SILVER AND BLACK PANEL MODEL

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SECTION 1

**SERVICE MANUAL**

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For basic adjustments, measuring methods, and operating principles, refer to GENERAL TECHNICAL MANUAL.

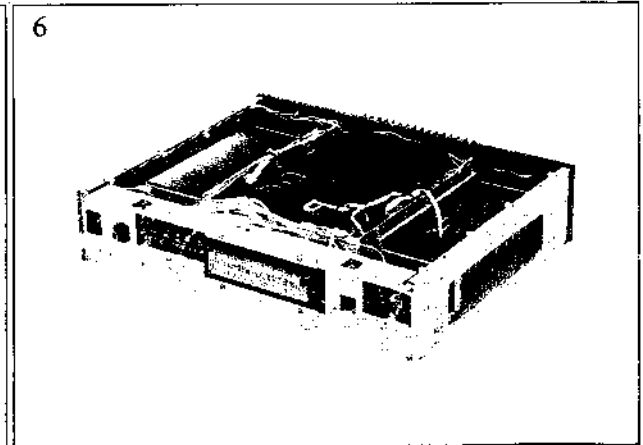
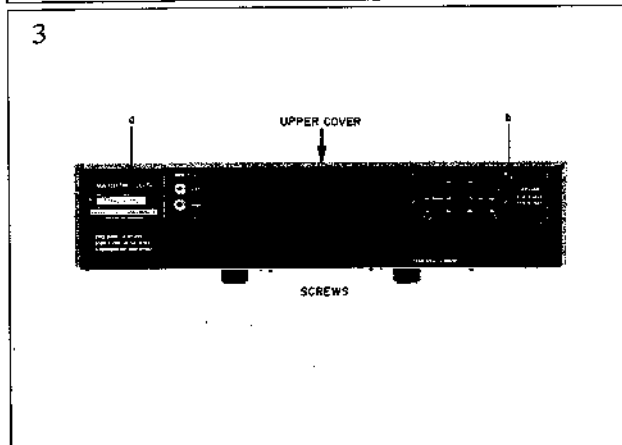
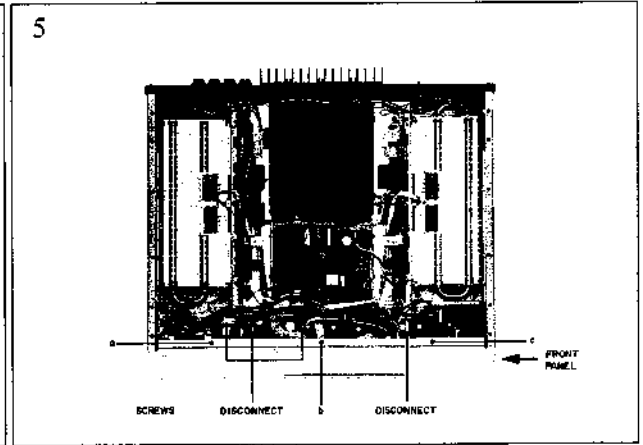
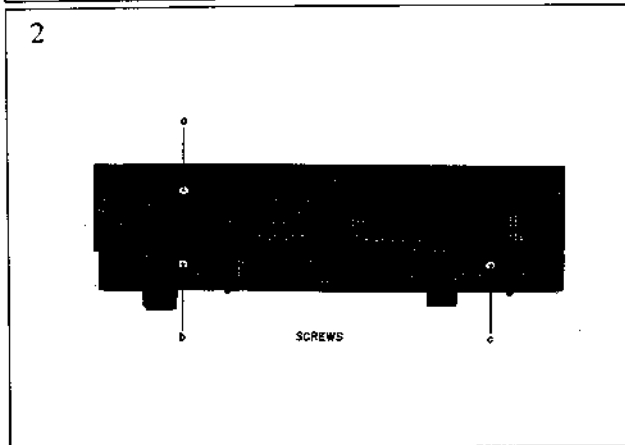
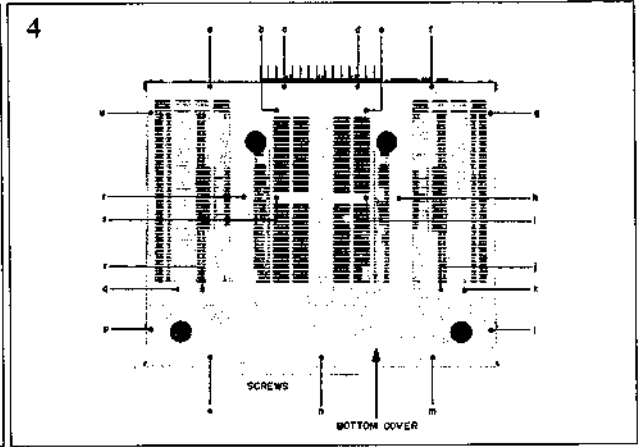
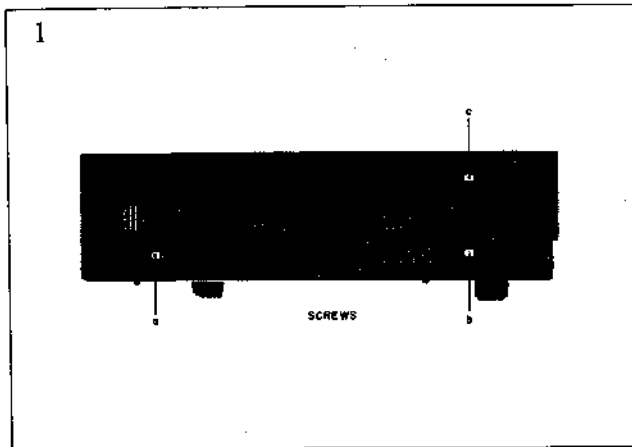
## I. TECHNICAL DATA

RATED POWER OUTPUT ( 2-CHANNEL DRIVEN)	120 Watts per channel, minimum RMS, at 8 ohms from 20 Hz to 20,000 Hz with no more than 0.008 T.H.D.
TOTAL HARMONIC DISTORTION	0.008% at rated power output
INTERMODULATION DISTORTION	0.008% at rated power output
SIGNAL TO NOISE RATIO (IHF "A")	118 dB
RASIDUAL NOISE (IHF "A"/AT 8 OHMS)	0.05 mV
POWER BANDWIDTH (IHF)	5 Hz to 90 kHz (at 8 ohms, T.H.D. 0.05%)
DAMPING FACTOR (IHF)	More than 150 (1 kHz, 8 ohms)
FREQUENCY RESPONSE	DC to 100 kHz +0 dB, -0.5 dB
INPUT SENSITIVITY/IMPEDANCE	1V/47 kohms
OUTPUT	A and B (4 to 16 ohms)/A + B (8 to 16 ohms)
SPEAKER HEADPHONE	8 to 16 ohms
SUBSONIC FILTER	12 dB/oct at 5 Hz
<b>MISCELLANEOUS</b>	
SEMICONDUCTORS	Transistors 49, Diodes 39, FETs 2, ICs 9
POWER REQUIREMENTS	120 V, 60 Hz for U.S.A. and Canada 220 V, 50 Hz for Europe except UK 240 V, 50 Hz for UK and Australia 110 V/220 V/240 V, 50/60 Hz for other countries
POWER CONSUMPTION	600 Watts: CSA and U/T models 350 Watts: AAL model 800 Watts: CEE model 1,100 Watts: UK and SAA models
DIMENSIONS	440 (W) x 112 (H) x 367 (D) mm (17.3 x 4.4 x 14.5 inches)
WEIGHT	9.1 kg (20.0 lbs)

\* For improvement purposes, specifications and design are subject to change without notice.

## II. DISMANTLING OF UNIT

In case of trouble, etc. necessitating dismantling, please dismantle in the order shown in the photographs. Reassemble in reverse order.



### III. CONTROLS

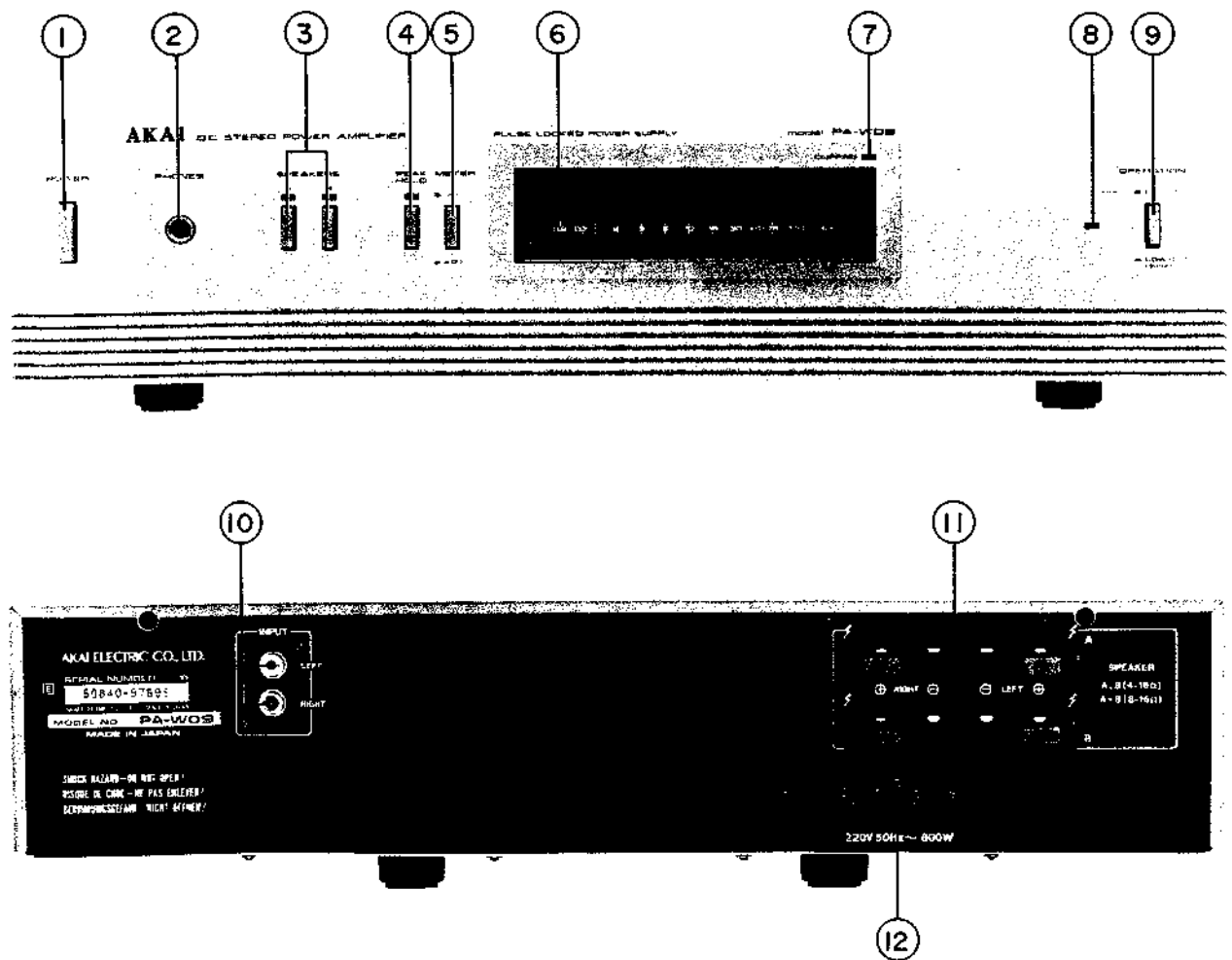


Fig. 1 Controls

- |  |  |
|--|--|
| 1. POWER SWITCH                                    | 8. DC OPERATION INDICATOR                              |
| 2. HEADPHONE JACK                                  | 9. DC/LOW CUT OPERATION SWITCH                         |
| 3. SPEAKER SYSTEM SELECTOR SWITCHES AND INDICATORS | 10. INPUT JACKS  |
| 4. PEAK HOLD SWITCH AND INDICATOR                  | 11. SPEAKER OUTPUT JACKS FOR A, B SPEAKER SYSTEMS      |
| 5. METER SWITCH                                    | 12. AC INLET (CEE, UK, SAA)<br>AC CORD (U/T, CSA, AAL) |
| 6. FLD BAR METER                                   |  |
| 7. CLIPPING INDICATOR                              |  |

# IV. PRINCIPAL PARTS LOCATION

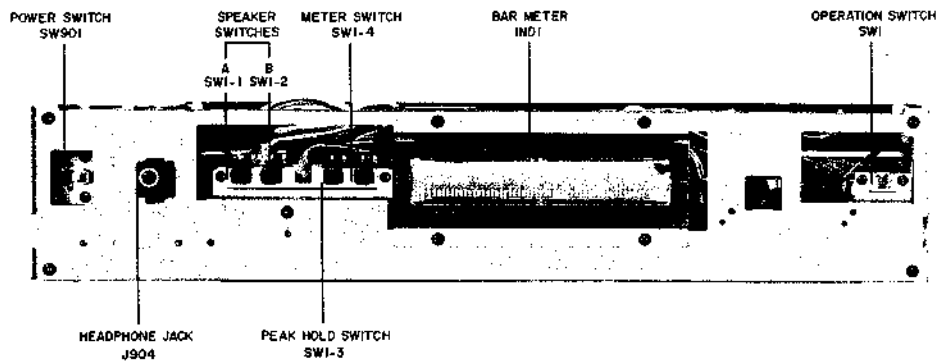


Fig. 2 Front View

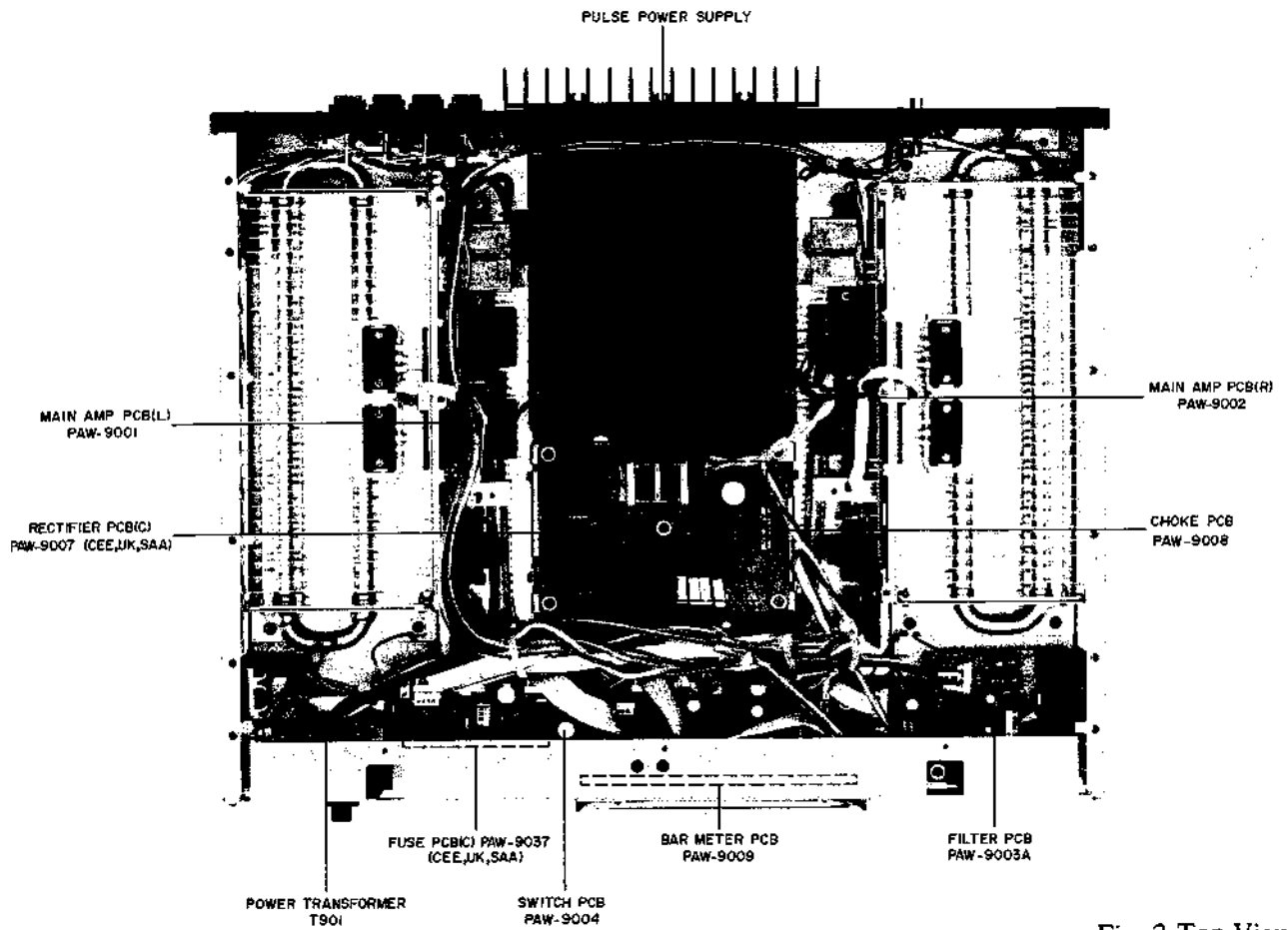


Fig. 3 Top View



## V. VOLTAGE CONVERSION

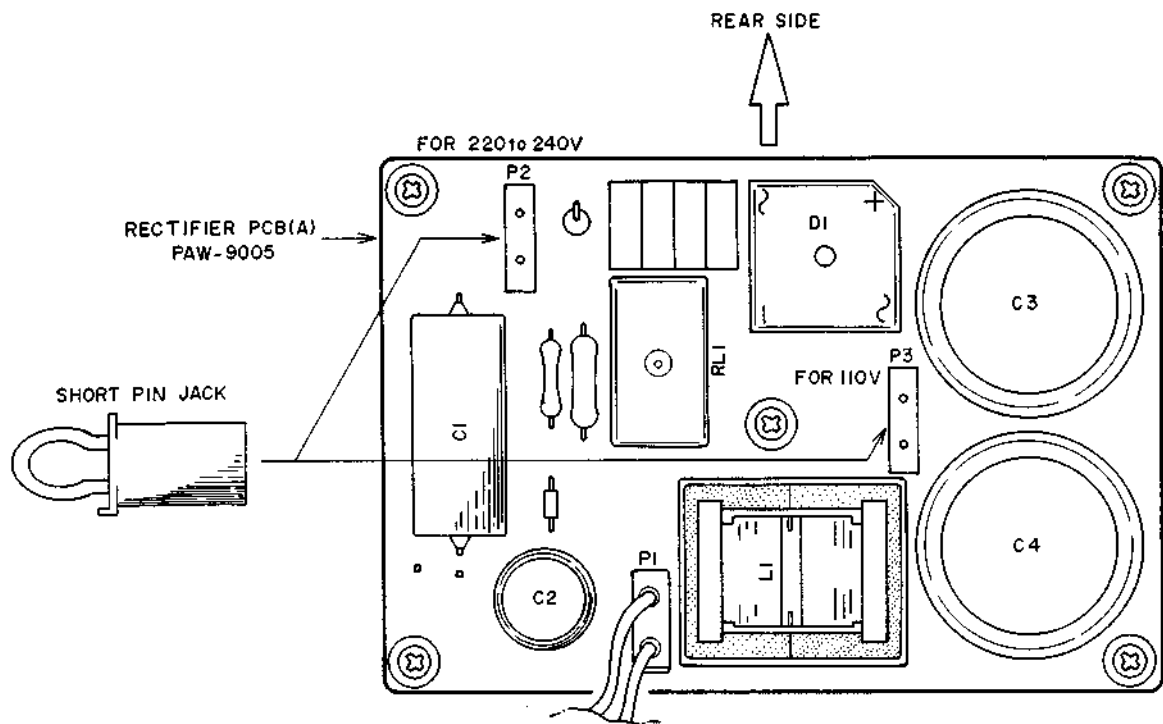


Fig. 4 Rectifier P.C Board (A) PAW-9005

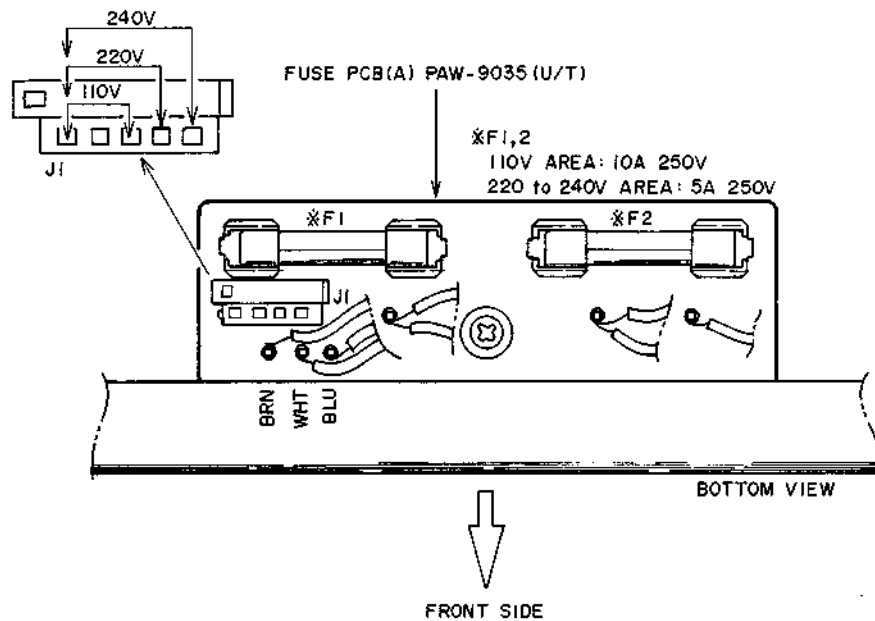


Fig. 5 Fuse P.C Board (A) PAW-9035

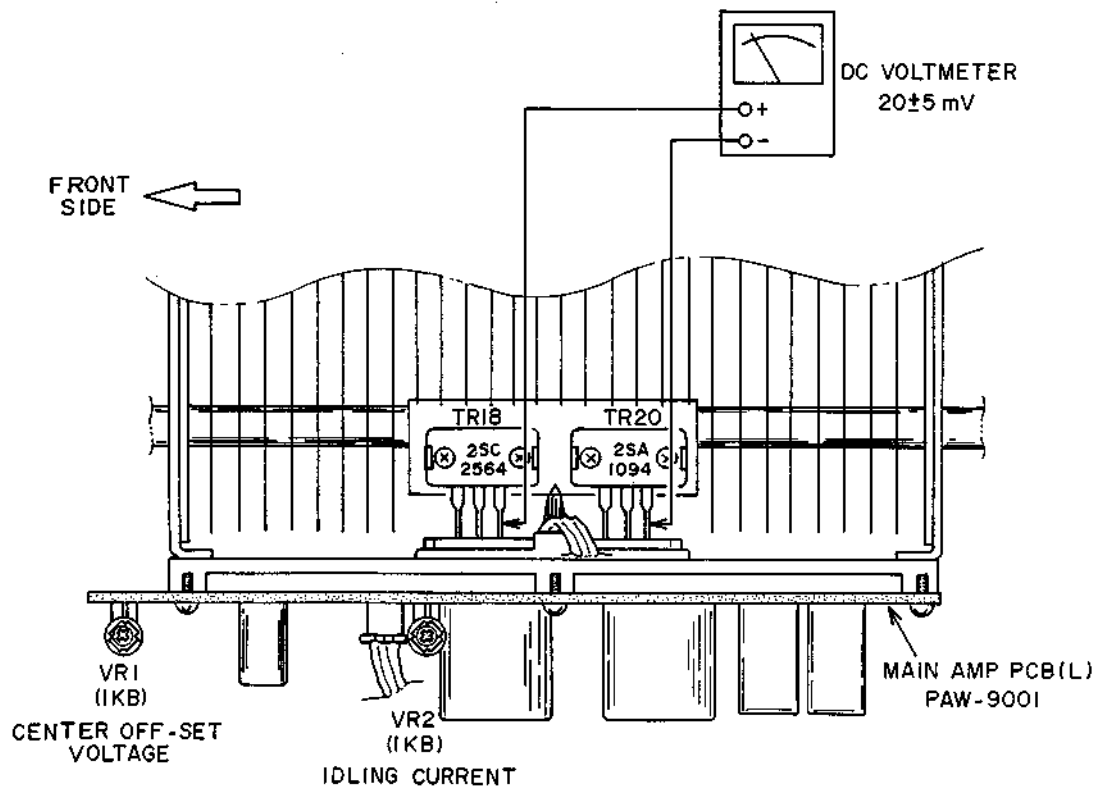
### 1. U/T Model (Refer to Figs. 4,5)

- 1) Switch OFF the power supply and remove the AC plug from mains supply.
- 2) Loosen holding screws and remove top panel and bottom plate.
- 3) Insert the short pin jack for each voltage area as shown in Fig. 4 and then plug in.
- 4) Change the fuses F1, 2 on Fuse P.C Board (A) PAW-9035 as shown in Fig. 5.
- 5) Connect line in J1 on Fuse P.C Board (A) PAW-9035 as shown in Fig. 5.

### 2. Models other than U/T

No voltage conversion.

## VI. ADJUSTMENT



R-ch is symmetric to L-ch except TR18, 20, it is omitted hear.

Fig. 6 Main Amp P.C Board (L) PAW-9001 and Instrument Connections

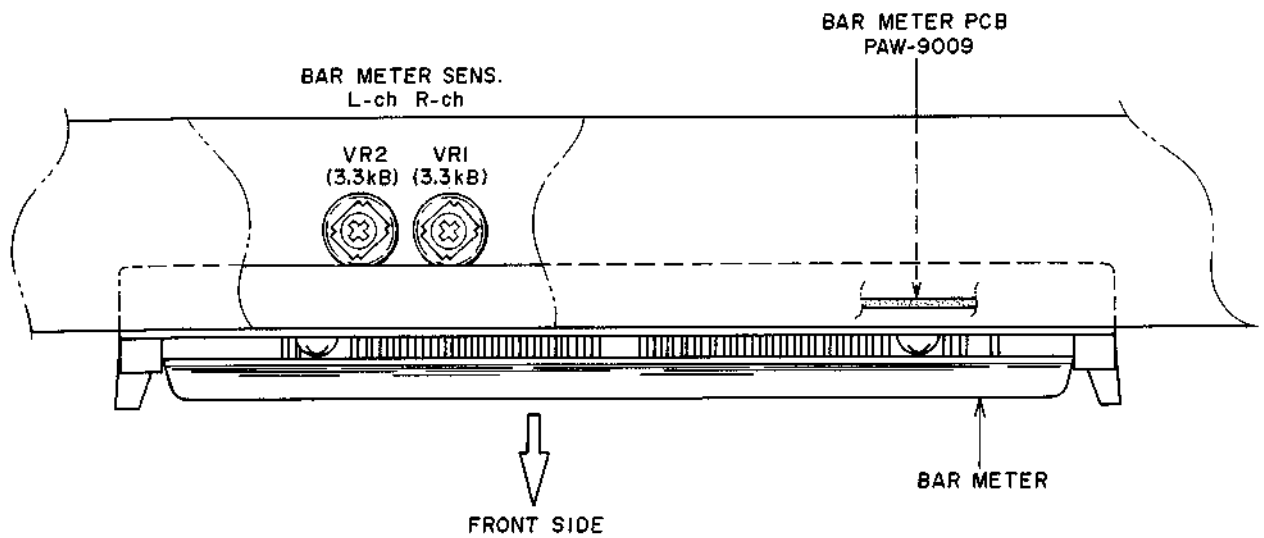


Fig. 7 Bar Meter P.C Board PAW-9009

Connection is the same for R-ch.

Connection is the same for R-ch.

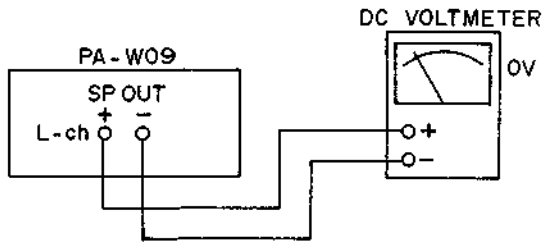


Fig. 8 Instrument Connections

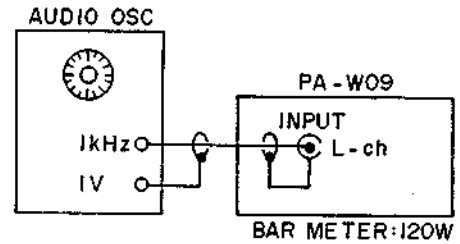


Fig. 9 Instrument Connections

Step	Adjustment Item	Adjustment Point	Result and remarks
1	Idling Current	VR2 (1 k $\Omega$ ) PAW-9001 (L-ch) VR2 (1 k $\Omega$ ) PAW-9002 (R-ch)	1) Connect a DC voltmeter between emitter of TR18 (2SC2564) and emitter of TR20 (2SA1094). 2) Adjust VR2 (1 k $\Omega$ ) so that voltmeter reads $20 \pm 5$ mV. NOTE: 1 It takes about 5 minutes for the Idling current to stabilize. 2 Refer to Fig. 6.
2	Center Off-set Voltage	VR1 (1 k $\Omega$ ) PAW-9001 (L-ch) VR1 (1 k $\Omega$ ) PAW-9002 (R-ch)	1) Connect a DC voltmeter to Speaker output terminals. 2) No signal input. 3) Adjust VR1 (1 k $\Omega$ ) so that voltmeter reads 0 V. NOTE: Refer to Figs. 6, 8.
3	Bar Meter Sensitivity	VR2 (3.3 k $\Omega$ ) (L-ch) VR1 (3.3 k $\Omega$ ) (R-ch) PAW-9009	1) Feed a signal of 1 kHz, 1 V to Input terminal. (No load) 2) Adjust VR2 (3.3 k $\Omega$ , L-ch), VR1 (3.3 k $\Omega$ , R-ch) so that Bar meter shows 120 W. NOTE: Refer to Figs. 7, 9.

## VII. CLASSIFICATION OF VARIOUS P.C BOARDS

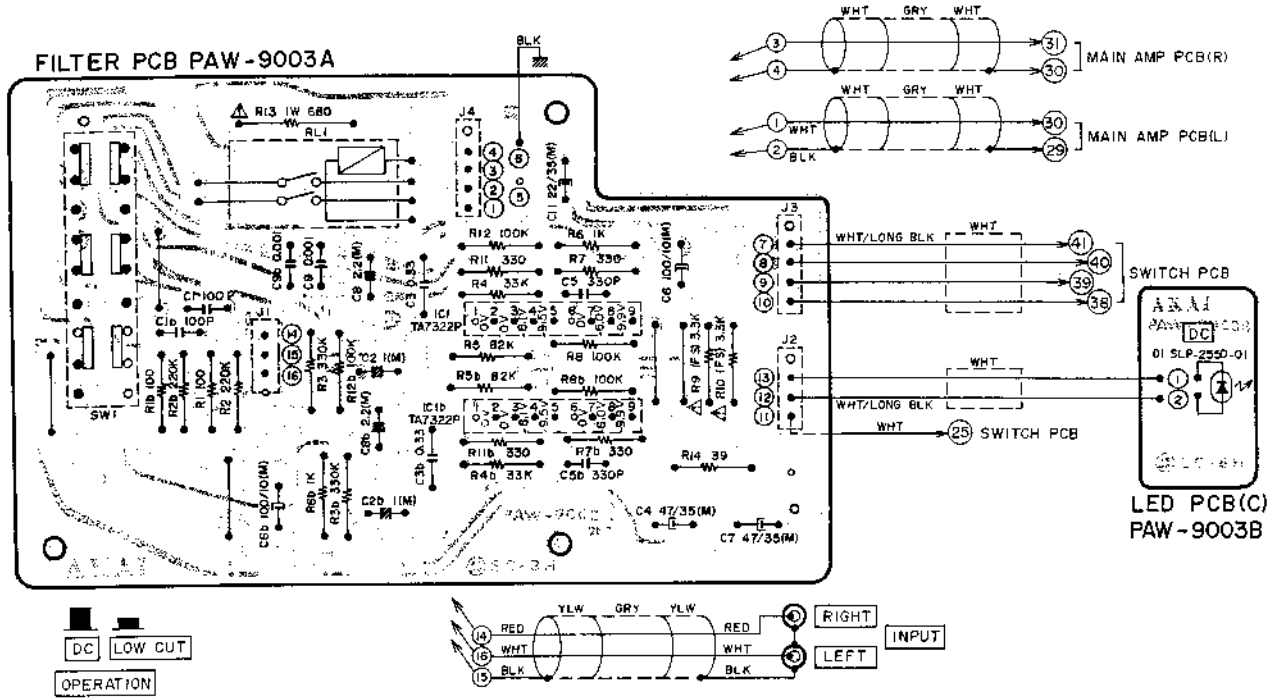
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### 1. P.C BOARD TITLES AND IDENTIFICATION NUMBERS

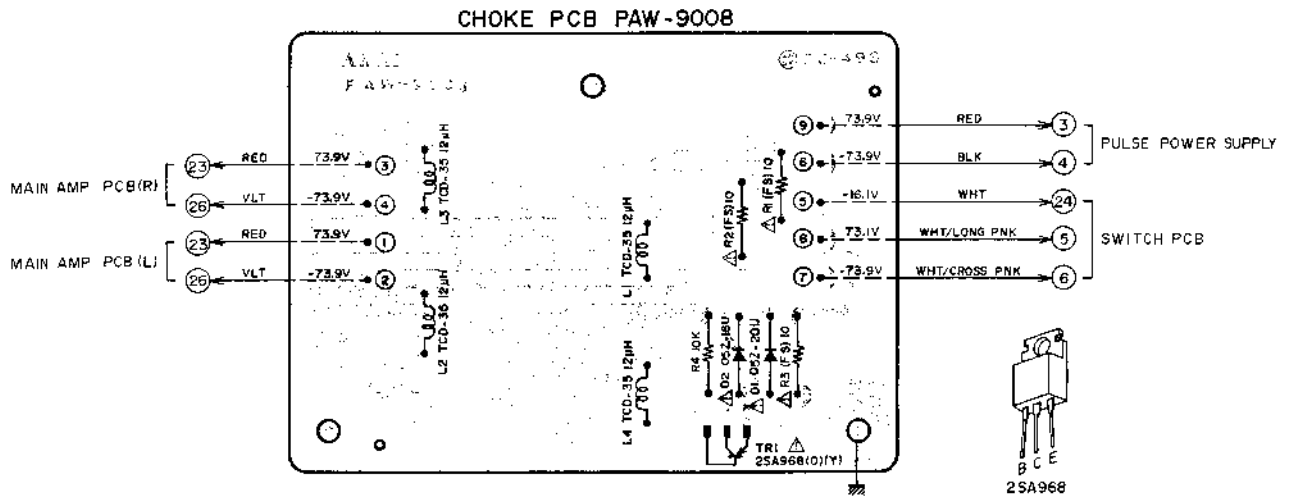
P.C Board Title	P.C Board Number
Main Amp P.C Board (L)	PAW-9001
Main Amp P.C Board (R)	PAW-9002
Filter P.C Board	PAW-9003A
LED P.C Board (C)	PAW-9003B
Switch P.C Board	PAW-9004
Rectifier P.C Board (A) (U/T)	PAW-9005
Rectifier P.C Board (B) (ALL/CSA)	PAW-9006
Rectifier P.C Board (C) (CEE, SAA, UK)	PAW-9007
Choke P.C Board	PAW-9008
Bar Meter P.C Board	PAW-9009
LED P.C Board (A)	PAW-9011A
LED P.C Board (B)	PAW-9011B
Transistor P.C Board (R)	PAW-9011D
Transistor P.C Board (L)	PAW-9011C
Fuse P.C Board (A) (U/T)	PAW-9035
Fuse P.C Board (B) (ALL, CSA)	PAW-9037
Fuse P.C Board (C) (CEE, SAA, UK)	PAW-9036



3) Filter P.C Board PAW-9003A, Led P.C Board (C) PAW-9003B



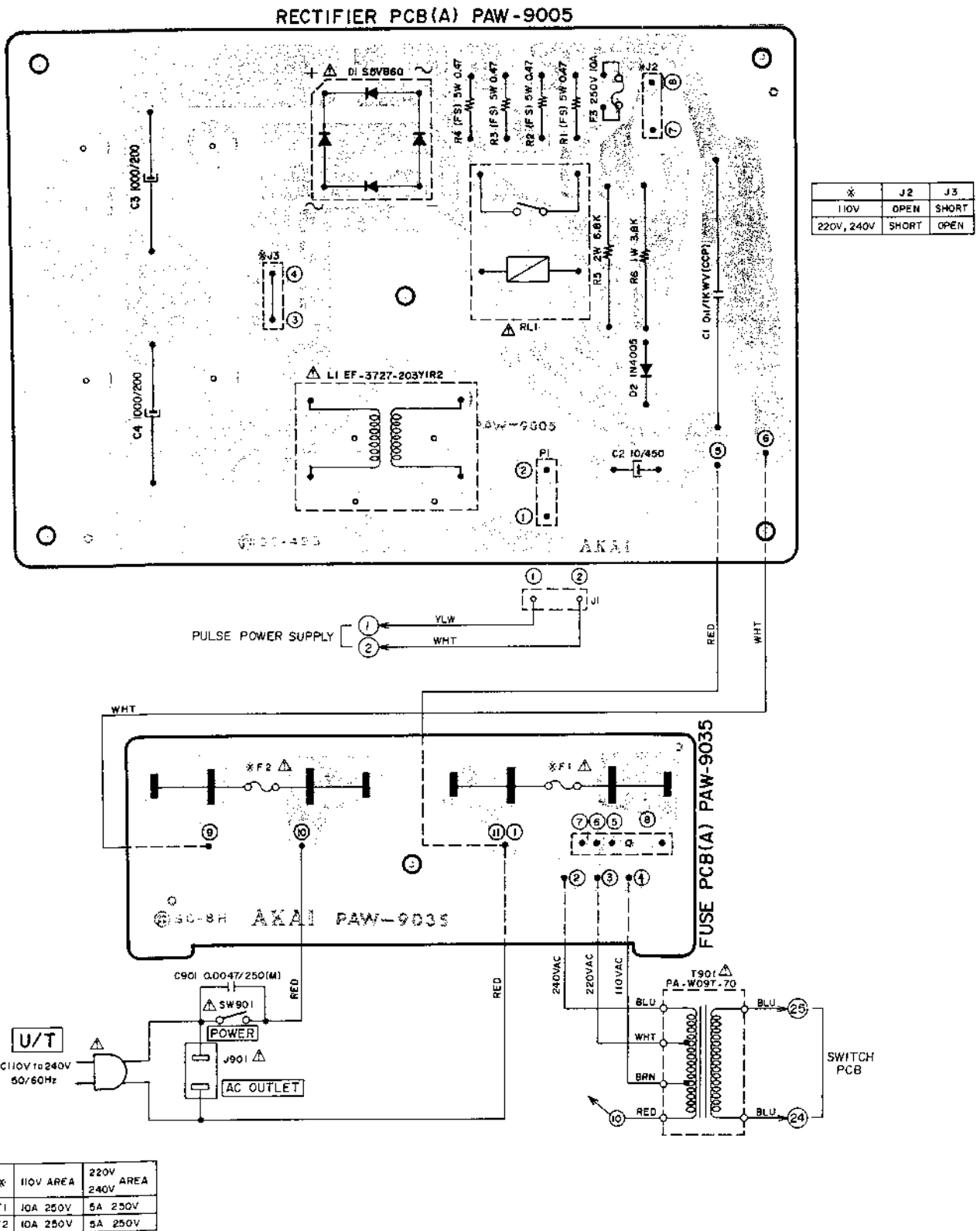
4) Choke P.C Board PAW-9008



WARNING: ⚠ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

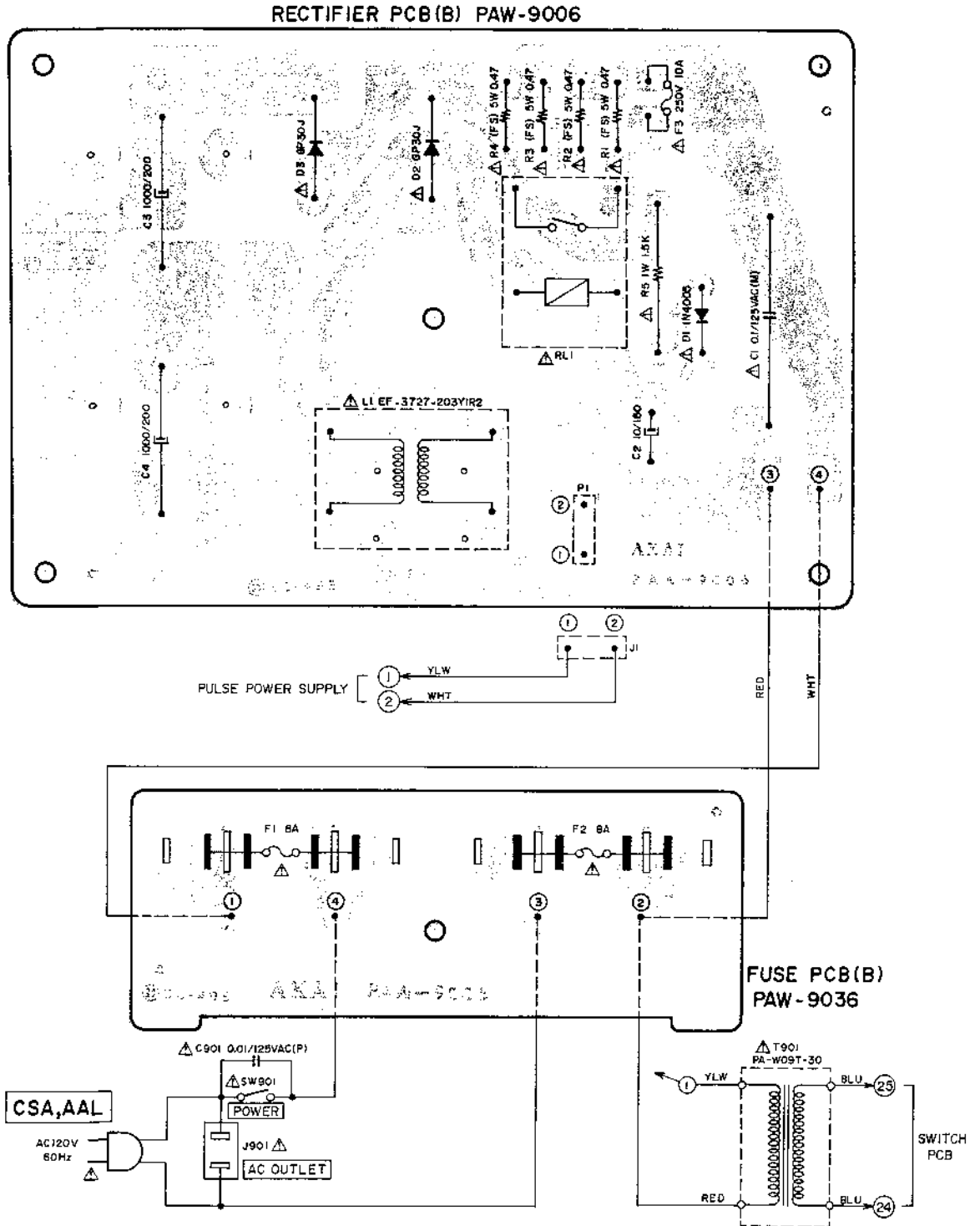
AVERTISSEMENT: ⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÛRETÉ. POUR MAINTENIR LE DEGRÉ DE SÛRETÉ DE L'APPAREIL, NE REMPLACER LES COMPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SÛRETÉ QUE PAR DES PIÈCES RECOMMANDÉES PAR LE FABRICANT

5) Rectifier P.C Board (A) PAW-9005, Fuse P.C Board (A) 9035 (U/T)



WARNING: Δ INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.  
 AVERTISSEMENT: Δ IL INDIQUÉ LES COMPOSANTS CRITIQUES DE SÛRETÉ. POUR MAINTENIR LE DEGRÉ DE SÛRETÉ DE L'APPAREIL, NE REMPLACER LES COMPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE, POUR LA SÛRETÉ QUE PAR DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.

6) Rectifier P.C Board (B) PAW-9006, Fuse P.C Board (B) PAW-9036 (CSA, AAL)

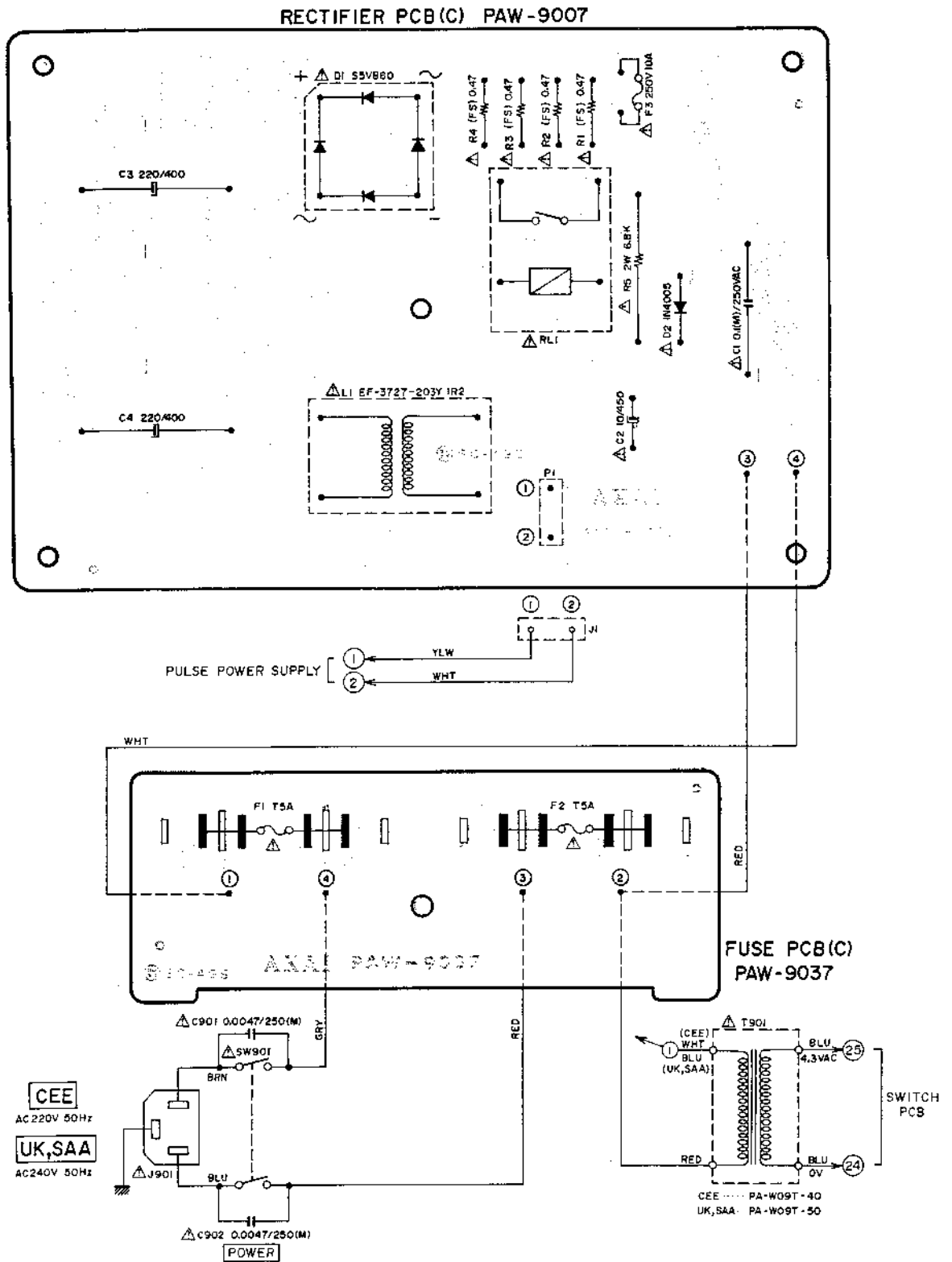


WARNING: Δ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT: Δ IL INDIQUÉ LES COMPOSANTS CRITIQUES DE SÛRETÉ. POUR MAINTENIR LE DEGRÉ DE SÛRETÉ DE L'APPAREIL, NE REMPLACER LES COMPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SÛRETÉ QUE PAR DES PIÈCES RECOMMANDÉES PAR LE FABRICANT



7) Rectifier P.C Board (C) PAW-9007, Fuse P.C Board (C) PAW-9037 (CEE, UK, SAA)



WARNING: Δ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

AVERTISSEMENT: Δ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÛRETÉ. POUR MAINTENIR LE DEGRÉ DE SÛRETÉ DE L'APPAREIL, NE REMPLACER LES COMPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SÛRETÉ QUE PAR DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.











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SECTION 2

**PARTS LIST**

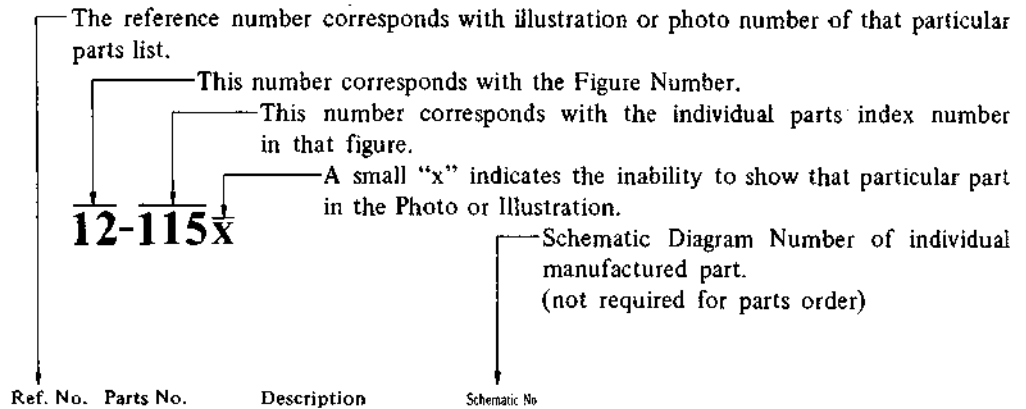
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2. MAIN AMP P.C BOARD (L) (PAW-9001) BLOCK . . . . .	28
3. MAIN AMP P.C BOARD (R) (PAW-9002) BLOCK . . . . .	29
4. SWITCH P.C BOARD (R) (PAW-9004) BLOCK . . . . .	30
5. BAR METER P.C BOARD (PAW-9009) BLOCK . . . . .	30
6. FILTER P.C BOARD (PAW-9003A) BLOCK . . . . .	30
7. RECTIFIER P.C BOARD (PAW-9005/9006/9007) BLOCK . . . . .	30
8. CHOKE P.C BOARD (PAW-9008) BLOCK . . . . .	30
9. ASSEMBLY BLOCK . . . . .	31
10. FINAL ASSEMBLY BLOCK . . . . .	32
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Resistor and Capacitor which is not listed in this parts list, please refer to COMMON LIST FOR SERVICE PARTS.

## HOW TO USE THIS PARTS LIST

1. This parts list is compiled by various individual blocks based on assembly process.
2. When ordering parts, please describe parts number, serial number, and model number in detail.
3. How to read list.



Ref. No.	Parts No.	Description	Schematic No.
<b>FLYWHEEL BLOCK #13</b>			
12-115x	800425	Flywheel Block Assy. Comp.	RDG #13
12-116	244506	Flywheel Only	RD-233
12-117x	244754	Felt, Flywheel	RD-275
12-118	251324	Main Metal Case	RD-236
12-119	253080	Main Metal	RD-237

4. The symbol numbers shown on the P.C. Board list can be matched with the Composite Views of components of the Schematic Diagram or Service Manual.
5. The indications of Resistors and Capacitors in the photos of P.C. Board are being eliminated.
6. The shape of the parts and parts name, etc. can be confirmed by comparing them with the parts shown on the Electrical Parts Table of P.C. Board.
7. Both the kind of part and installation position can be determined by the Parts Number. To determine where a parts number is listed, utilize Parts Index at end of Parts List.  
It is necessary first of all to find the Parts Number. This can be accomplished by using the Reference Number listed at right of parts number in the Parts Index. (meaning of ref. no. outlined in Item 3 above).
8. Utilize separate "Price List for Parts" to determine unit price. The most simple method of finding parts Price is to utilize the reference number.

### CAUTION:

1. When placing an order for parts, be sure to list the parts no., model no., and description. There are instances in which if any of this information is omitted, parts cannot be shipped or the wrong parts will be delivered.
2. Please be careful not to make a mistake in the parts no. If the parts no. is in error, a part different from the one ordered may be delivered.
3. Because parts number and parts unit supply in the Preliminary Service Manual (Basic Parts List) may be partially changed, please use this parts list for all future reference.

**WARNING:**   △ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMEMNDED PARTS.

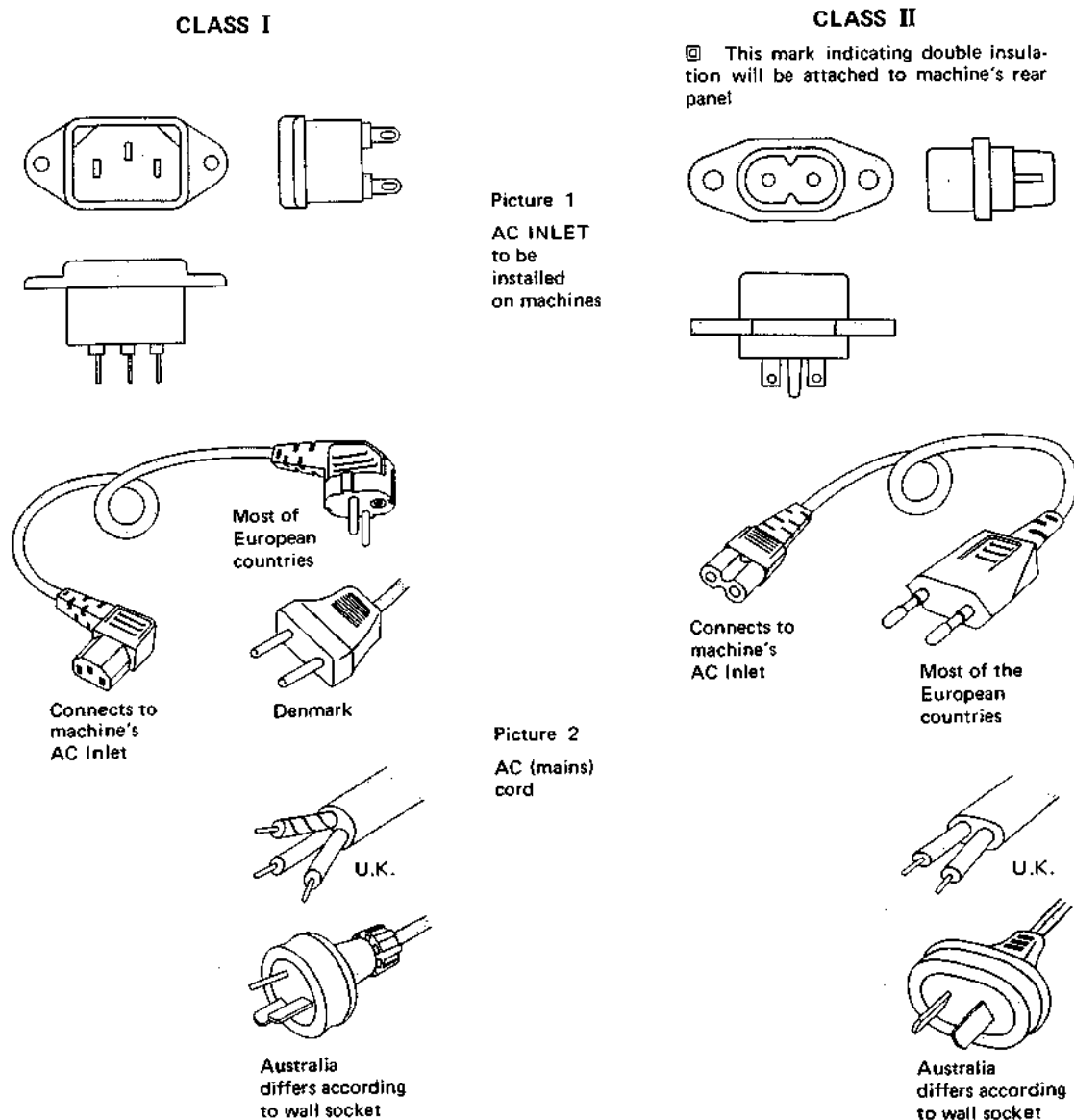
**AVERTISSEMENT:**   △ IL INDIQU LES COMPOSANTS CRITIQUES DE SURETE. POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL NE REMPLACER LES COMPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SECURITE QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT.



## AC INLET SYSTEM

This model is equipped with an AC INLET SYSTEM. Please refer to the AC INLET SYSTEM CHART below for the specific type. By the AC INLET SYSTEM, AC (mains) cord can be connected to and disconnected from the model because the model is provided with socket exclusively for AC (mains) cord on its main body. Please note, however, that certain models are not equipped with this system and has a built-in AC (mains) cord as before.

### AC INLET SYSTEM CHART



#### Parts List for AC (mains) Cord Set

Standard		Description	Type of AC Inlet	Parts No.
Class I	CEE	Cord Set CEE (3 cores)	3P	EW302993
	UK	Cord Set UK (3 cores)	3P	EW302994
	SAA	Cord Set SAA (3 cores)	3P	EW302996
	U/T	Cord Set U/T (3 cores)	3P	EW302646
Class II	CEE	Cord Set CEE (2 cores)	2P	EW638144
	UK	Cord Set UK (2 cores)	2P	EW302995
	SAA	Cord Set SAA (2 cores)	2P	EW302991
	U/T	Cord Set U/T (2 cores)	2P	EW302899

## 1. RECOMMENDED SPARE PARTS LIST

Because, if the parts listed below are on hand, almost any repair can be accomplished, we suggest that you stock these Recommended Spare Parts Items.

Parts No.	Description	Notes
BA329120	Bar Meter PC BLK PA-W09	
BA329118	Filter PC BLK PA-W09	
BA329142	Main Amp PC (L) BLK PA-W09	
BA329147	Main Amp PC (R) BLK PA-W09	
BA329114	SW PC BLK PA-W09	
BP329108	Pulse Power BLK STK-Z4605D30	CSA, AAL
BP329109	Pulse Power BLK STK-Z4605D50	UK, SAA
BP329107	Pulse Power BLK STK-Z4605D80	U/T, CEE
BT325746	△ Trans Power PA-W09T-30	CSA, AAL
BT325747	△ Trans Power PA-W09T-40	CEE
BT325748	△ Trans Power PA-W09T-50	UK, SAA
BT325749	△ Trans Power PA-W09T-70	U/T
ED322772	D LED SLP-155D-01 RED	
ED322773	D LED SLP255D-01 GRN	
ED300924	D Silicon GP080D 200/0.8A	
ED325766	D Silicon GP30J 600/3.0A	
ED323056	D Silicon H 1S2091	
ED214457	D Silicon H 1S2472	
ED316143	D Silicon H 1S2473HS F10	
ED325757	D Silicon S5VB60 600/6.0A	
ED560913	D Silicon V 1S2473VE	
ED570284	D Silicon 1N4005 600/1.0A	
ED323057	D Varister MV12	
ED309959	D Zener H HZ5 C3	
ED315372	D Zener H WZ-300	
ED323353	D Zener H 05Z12 L	
ED324936	D Zener H 05Z16 U	
ED323534	D Zener 05Z20 U	
EF300577	△ Fuse EAK T 250V 5A	CEE, UK, SAA
EF303349	△ Fuse ST6 125V 8A	CSA, AAL
EF325756	△ Fuse Thermo MT4227A 250V 10A	
EF313584	△ Fuse TLC A 250V 10A	U/T
EF575223	△ Fuse TLC A 250V 5A	U/T
EI325755	IC LC7550	
EI323564	IC TA7317P	
EI308865	IC TA7318P	
EI323054	IC TA7322P	
EJ296853	△ Socket Inlet CM-3 UCEB 3P	CEE, UK, SAA
EJ650261	△ Socket Outlet S-I6432 UC 2P	U/T, CSA, AAL
EJ301199	Phone J 3P 3P64M 6.3	

Parts No.	Description	Notes
EJ240581	Thermal Push X-Q2391 S 4P	
EM325752	IND FL BG-63 Graph	
EP249344	Relay Lead L24 (M) 2NO 24V	
EP325754	Relay Power G2W-1112P-V 1NO 100V	
EP325753	Relay Power G2Z-222P-US 2NO 48V	
ER325268	Coil LF EF3727 20 mH	
ER328069	R CB H SNP FS RDS 1/4W 2R7J	
ES325761	△ SW Push ESB-99295S 02-1 E	CEE, UK, SAA
ES325762	△ SW Push ESB-994T 01-1 UC	U/T, CSA, AAL
ES323786	SW Push J-K2083 2-06-02S	
ES325759	SW Push SUF42 4-Throw	
ES328091	SW Thermo OHD 75M	
ET311792	TR FET 2SK150 GR, Y, BL	
ET201463	TR 2SA1016 F, G	
ET325751	TR 2SA1094 O, Y	
ET323529	TR 2SA608K-NP E, F	
ET311845	TR 2SA899 B, V	
ET311844	TR 2SA949 O, Y AKAI	
ET311791	TR 2SA968 O, Y	
ET305463	TR 2SA970 GR, BL	
ET311865	TR 2SC1904 B, V	
ET312485	TR 2SC2229 O, Y AKAI	
ET311790	TR 2SC2238 O, Y	
ET307195	TR 2SC2240 GR, BL	
ET325750	TR 2SC2564 O, Y	
ET316171	TR 2SC536K-NP E, F	
ET322775	TR 2SC536K-NP E, F, G	
EV310077	R S-Fix V CR29R 3P 0.50W 102	
EV328084	R S-Fix V CR29R 3P 0.50W 332	
EW306428	△ AC Cord 2 Cores KP-205A, VFF UCJ	U/T
EW305691	△ AC Cord 2 Cores KP-8, SPT-1 UC	CSA, AAL

**2. MAIN AMP P.C BOARD (L) (PAW-9001)  
BLOCK**

SYMBOL NO.	PARTS NO.	DESCRIPTION
2-1	BA329142	MAIN AMP PC (L) BLK PA-W09
2-TR1	ET311792	TR FET 2SK150 GR,Y,BL
2-TR2	ET316171	TR 2SC536K-NP E,F
2-TR3,4	ET307195	TR 2SC2240 GR,BL
2-TR5,6	ET305463	TR 2SA970 GR,BL
2-TR7	ET311845	TR 2SA899 B,V
2-TR8	ET311865	TR 2SC1904 B,V
2-TR9	ET323529	TR 2SA608K-NP E,F
2-TR10	ET316171	TR 2SC536K-NP E,F
2-TR11	ET323529	TR 2SA608K-NP E,F
2-TR12	ET316171	TR 2SC536K-NP E,F
2-TR13	ET312485	TR 2SC2229 O,Y AKAI
2-TR14	ET311844	TR 2SA949 O,Y AKAI
2-TR15	ET311790	TR 2SC2238 O,Y
2-TR16	ET311791	TR 2SA968 O,Y
2-D1,2	ED323353	D ZENER H 05Z12L
2-D3 TO 6	ED316143	D SILICON H 1S2473HS F10
2-D7,8	ED323056	D SILICON H 1S2091
2-D9,10	ED214457	D SILICON H 1S2472
2-D11	ED309959	D ZENER H HZ5 C3
2-VR1,2	EV310077	R S-FIX V CR29R 3P 0.50W 102
2-RL1,2	EP325753	RELAY POWER G2Z-222P-US 2NO 48V
2-L1	EO324150	COIL FIX 2 2.2μH
2-J4-7	EJ325758	SOCKET TR S-12446 P 3P
2-R8	ER328066	R CB H SNP FS RDS 1/4W 822J
2-R14,15	ER328065	R CB H SNP FS RDS 1/4W 182J
2-R16,17	ER324337	R CB H SNP FS RDS 1/4W 560J
2-R18	ER321117	R CB H SNP FS RDS 1/4W 912J
2-R19	ER328065	R CB H SNP FS RDS 1/4W 182J
2-R20	ER324337	R CB H SNP FS RDS 1/4W 560J
2-R21	ER328067	R CB H SNP FS RDS 1/4W 331J
2-R29	ER328080	R CB H SNP FS RDS 1/2W 562J
2-R30	ER328065	R CB H SNP FS RDS 1/4W 182J
2-R31	ER328067	R CB H SNP FS RDS 1/4W 331J
2-R32	ER324337	R CB H SNP FS RDS 1/4W 560J
2-R37,38	ER238068	R CB H SNP FS RDS 1/4W 562J
2-R41,42	ER328069	R CB H SNP FS RDS 1/4W 2R7J
2-R44,45	ER327710	R CB H SNP FS RD 1/4W 151J
2-R47,48	ER328069	R CB H SNP RDS 1/4W 2R7J
2-R49,50	ER322590	R CT W R47+R47 5W
2-R52	ER380856	R OMF H 2W 100K
2-R53,54	ER346588	R OMF H 2W 102K
2-R55	ER409814	R OMF H 2W221K
2-R57	ER328071	R CB SNP FS RDS 1/4W 392J
2-C1	EC328070	C CE V F05 SL 101K 500DC
2-C6	EC325768	C CE V F05 SL 220K 500DC
2-C7	EC328081	C EC V CUT SM 221M 80DC
2-C8	EC325768	C CE V F05 SL 220K 500DC
2-C9	EC328081	C EC V CUT SM 221M 80DC
2-C11	EC325767	C CE V F05 SL 6R0D 500DC
2-C14	EC325767	C CE V F05 SL 6R0D 500DC
2-C15	EC325763	C EC V SNP VN 222M 75DC
2-C18	EC325763	C EC V SNP VN 222M 75DC

**3. MAIN AMP P.C BOARD (R) (PAW-9002)  
BLOCK**

SYMBOL NO.	PARTS NO.	DESCRIPTION
3-1	BA329147	MAIN AMP PC (R) BLK PW-W09
3-TR1	ET311792	TR FET 2SK150 GR,Y,BL
3-TR2	ET316171	TR 2SC536K-NP E,F
2-TR3,4	ET307195	TR 2SC2240 GR,BL
3-TR5,6	ET305463	TR 2SA970 GR,BL
3-TR7	ET311845	TR 2SA899 B,V
3-TR8	ET311865	TR 2SC1904 B,V
3-TR9	ET323529	TR 2SA608K-NP E,F
3-TR10	ET316171	TR 2SC536K-NP E,F
3-TR11	ET323529	TR 2SA608K-NP E,F
3-TR12	ET316171	TR 2SC536K-NP E,F
3-TR13	ET312485	TR 2SC2229 O,Y AKAI
3-TR14	ET311844	TR 2SA949 O,Y AKAI
3-TR15	ET311790	TR 2SC2238 O,Y
3-TR16	ET311791	TR 2SA968 O,Y
3-D1,2	ED323353	D ZENER H 05Z12 L
3-D3 TO 6	ED316143	D SILICON H 1S2473HS F10
3-D7,8	ED323056	D SILICON H 1S2091
3-D9,10	ED214457	D SILICON H 1S2472
3-D11	ED309959	D ZENER H HZ5 C3
3-VR1,2	EV310077	R S-FIX V CR 29R 3P 0.50W 102
3-RL1,2	EP325753	RELAY POWER G2Z-222P-US 2NO 48V
3-L1	EO324250	COIL FIX 22.2μH
3-J4-7	EJ325758	SOCKET TR S-12446 P 3P
3-R8	ER328066	R CB H SNP FS RDS 1/4W 822J
3-R14,15	ER328065	R CB H SNP FS RDS 1/4W 182J
3-R16,17	ER324337	R CB H SNP FS RDS 1/4W 560J
3-R18	ER321117	R CB H SNP FS RDS 1/4W 912J
3-R19	ER328065	R CB H SNP FS RDS 1/4W 182J
3-R20	ER324337	R CB H SNP FS RDS 1/4W 560J
3-R21	ER328067	R CB H SNP FS RDS 1/4W 331J
3-R29	ER328080	R CB H SNP FS RDS 1/2W 562J
3-R30	ER328065	R CB H SNP FS RDS 1/4W 182J
3-R31	ER328067	R CB H SNP FS RDS 1/4W 331J
3-R32	ER324337	R CB H SNP FS RDS 1/4W 560J
3-R37,38	ER328068	R CB H SNP FS RDS 1/4W 562J
3-R41,42	ER328069	R CB H SNP FS RDS 1/4W 2R7J
3-R44,45	ER327710	R CB H SNP FS RD 1/4W 151J
3-R47,48	ER328069	R CB H SNP FS RDS 1/4W 2R7J
3-R49,50	ER322590	R CT W R47+R47 5W
3-R52	ER380856	R OMF H 2W 100K
3-R53,54	ER346588	R OMF H 2W 102K
3-R55	ER409814	R OMF H 2W221K
3-R57	ER328071	R CB H SNP FS RDS 1/4W 392J
3-C1	EC328070	C CE V F05 SL 101K 500DC
3-C6	EC325768	C CE V F05 SL 220K 500DC
3-C7	EC328081	C EC V CUT SM 221M 80DC
3-C8	EC325768	C CE V F05 SL 220K 500DC
3-C9	EC328081	C EC V CUT SM 221M 80DC
3-C11	EC325767	C CE V F05 SL 6R0D 500DC
3-C14	EC325767	C CE V F05 SL 6R0D 500DC
3-C15	EC325763	C EC V SNP VN 222M 75DC
3-C18	EC325763	C EC V SNP VN 222M 750DC

#### 4. SWITCH P.C BOARD (PAW-9004) BLOCK

SYMBOL NO.	PARTS NO.	DESCRIPTION
4-1	BA329114	SW PC BLK PA-W09
4-IC1	EI323564	IC TA7317P
4-TR1,2	ET201463	TR 2SA1016 F,G
4-TR3,TO5	ET322775	TR 2SC536-NP E,F,G
4-TR6	ET311791	TR 2SA968 O,Y
4-TR7	ET311790	TR 2SC2238 O,Y
4-D1,2	ED560913	D SILICON V 1S2473VE
4-D3	ED323057	D VARISTER MV12
4-D4,5	ED560913	D SILICON V 1S2473VE
4-D6,7	ED300924	D SILICON GP08D 200/0.8A
4-D8,9	ED315372	D ZENER H WZ-300
4-D10	ED316143	D SILICON H 1S2473HS F10
4-D11	ED323056	D SILICON H 1S2091
4-SW1	ES325759	SW PUSH SUF42 4-THROW
4-R30	ER322787	R CB H SNP FS RDS 1/4W 100J
4-C3,4	EC328076	C EC V F05 NP SM 470 16DC
4-C5	EC200994	C EC V F05 SM R47M 100DC
4-C7,8	ED204671	C CE V E 103P 500DC
4-C10	EC326588	C EC V CUT SM 102M 10DC
4-C11	EC328075	C EC V CUT SM 221M 100DC
4-C12	EC316187	C EC V CUT SM 012M 16DC
4-C13	EC316233	C EC V CUT SM 221M 35DC
4-C15	EC316233	C EC V CUT SM 221M 35DC
4-C17	EC321795	C CE V F05 FZ 473Z 50DC

#### 5. BAR METER P.C BOARD (PAW-9009) BLOCK

SYMBOL NO.	PARTS NO.	DESCRIPTION
5-1	BA329120	BAR METER PC BLK PA-W09
5-IC1	EI325755	IC LC7550
5-IC2	EI308865	IC TA7318P
5-TR1,2	ET323529	TR 2SA608K-NP E,F
5-D1	ED316143	D SILICON H 1S2473HS F10
5-IND1	EM325752	IND FL BG-63 GRAPH
5-VR1,2	EV328084	RD S-FIX V CR29R 3P 0.50W 332
5-R1	ER391634	R OMF H 1W 102K
5-R9	ER391634	R OMF H 1W 102K

#### 6. FILTER P.C BOARD (PAW-9003A) BLOCK

SYMBOL NO.	PARTS NO.	DESCRIPTION
6-1	BA329118	FILTER PC BLK PA-W09
6-IC1	EI323054	IC TA7322P
6-D2	ED316143	D SILICON H 1S2473HS F10
6-SW1	ES323786	SW PUSH J-K2083 2-06-02S
6-RL1	EP249344	RELAY LEAD L24 (M) 2NO 24V
6-R9,10	ER328082	R CB H SNP FS RDS 1/4W 332J
6-R13	ER356411	R OMF H 1W681K
6-C2	EC325272	C EC V F05 NP AWA 1R0M 50DC
6-C8	EC325320	C EC V F05 NP AWA 2R2M 50DC

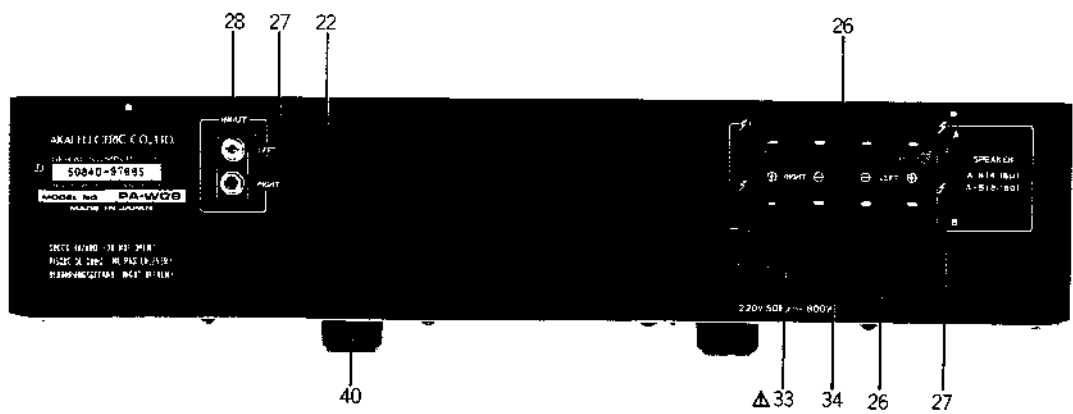
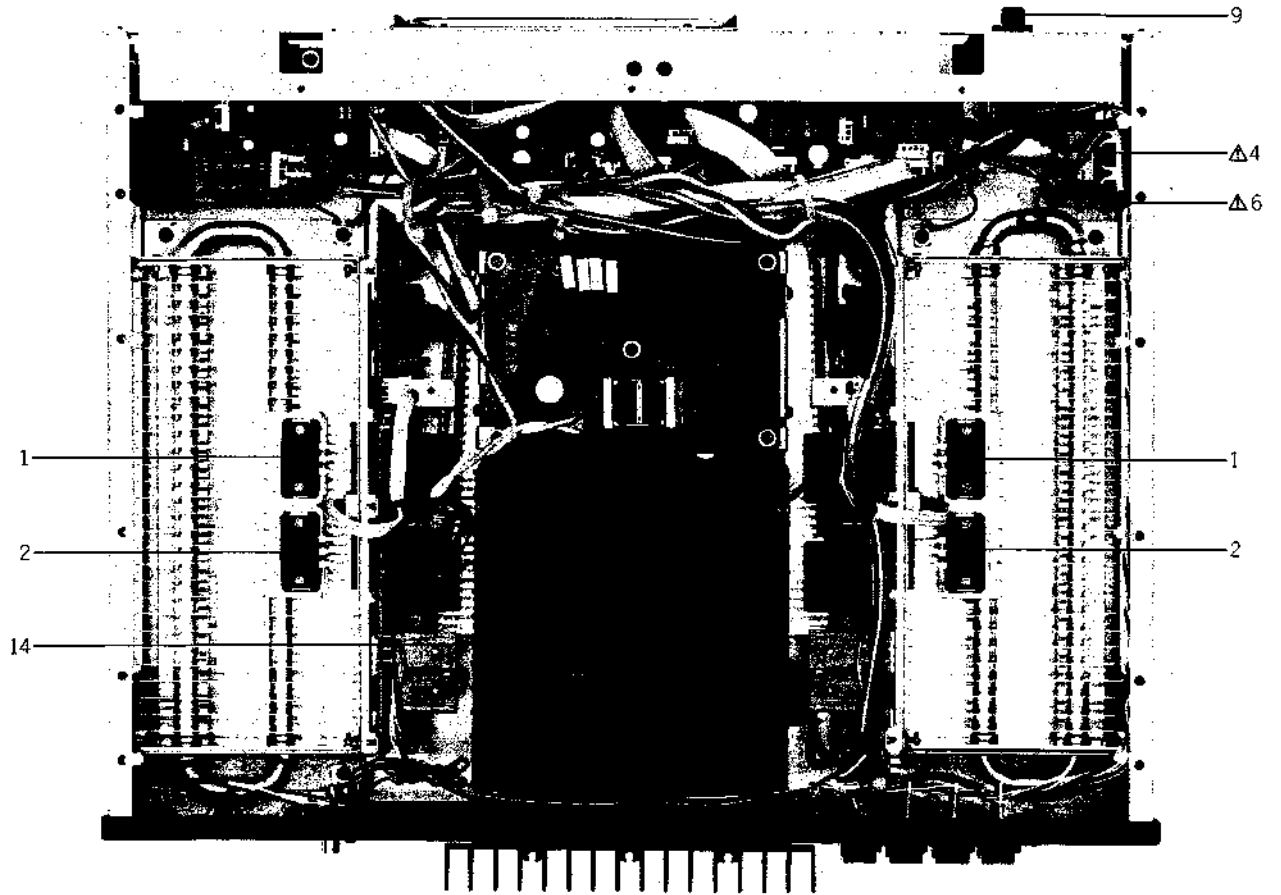
#### 7. RECTIFIER P.C BOARD (PAW-9005/9006/9007) BLOCK

SYMBOL NO.	PARTS NO.	DESCRIPTION
7-D1	ED325757	D SILICON S5VB60 600/6.0A (U/T,CEE,UK,SAA)
7-D1	ED570284	D SILICON 1N4005 600/1.0A (CSA,AAL)
7-D2	ED570284	D SILICON 1N4005 600/1.0A (U/T,CEE,UK,SAA)
7-D2,3	ED325766	D SILICON GP30J 600/3.0A (CSA,AAL)
7-RL1	EP325754	RELAY POWER G2W-1112P-V 1NO 100V
7-L1	ER325268	COIL LF EF3727 20MH
7-F3	EF325767	△ FUSE THERMO MT4227A 250V 10A
7-R1 TO 4	ER622978	R CT W F09 PLATE 5W R47K
7-R5	ER328085	R OMF H 2W 682K (U/T,CEE,UK,SAA)
7-R5	ER672208	R OMF H 1W 152J (CSA,AAL)
7-R6	ER328092	R OMF H 1W332K (U/T)
7-C1	EC323557	△ C OIL PMAP 104K 1KDC (U/T)
7-C1	EC326827	△ C MMY V ECQUE 104M 125AC (CSA,AAL)
7-C1	EC258298	△ C MP V 104M 250AC (CEE,UK,SAA)
7-C2	EC326608	C EC V SL 100 450DC (U/T,CEE,UK,SAA)
7-C2	EC302780	C EC V CUT SL 100 160DC (CSA,AAL)
7-C3,4	EC325764	C EC P 102/200DC (U/T,CSA,AAL)
7-C3,4	EC325765	C EC P 221/400DC (CEE,UK,SAA)

#### 8. CHOKE P.C BOARD (PAW-9008) BLOCK

SYMBOL NO.	PARTS NO.	DESCRIPTION
8-TR1	ET311791	TR 2SA968 O,Y
8-D1	ED323534	D ZENER 05Z20 U
8-D2	ED324936	D ZENER H 05Z16 U
8-L1 TO 4	ED325278	COIL FIX 2 TCD-35 12μH
8-R1 TO 3	ER322787	R CB H SNP FS RDS 1/4W 100J

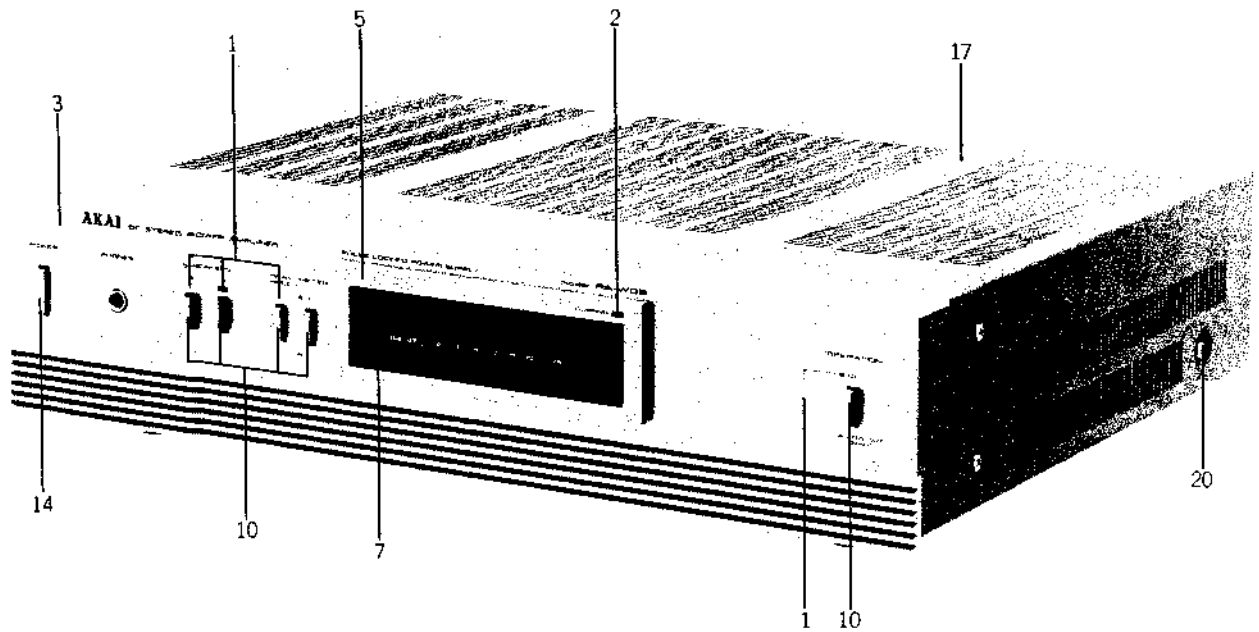
# 9. ASSEMBLY BLOCK



## ASSEMBLY BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
9-1	ET325750	TR 2SC2564 O,Y
9-2	ET325751	TR 2SA1094 O,Y
9-3X	ET316171	TR 2SC536K-NP E,F
9-4	ES325762	△ SW PUSH ESB-994T 01-1 UC (U/T,CSA,AAL)
9-5X	ES325761	△ SW PUSH ESB9929S 02-1 E (CEE,UK,SAA)
9-6	EC327382	△ C MP V 472M 250AC (U/T,CEE,UK,SAA)
9-7X	EC314688	△ C CE V FZ 103P 125AC (CSA,AAL)
9-8X	EC327382	△ C MP V 472M 250AC (CEE,UK,SAA)
9-9	EJ301199	PHONE J 3P 3P64M 6.3
9-10X	BT325749	△ TRANS POWER PA-W09T-70 (U/T)
9-11X	BT325746	△ TRANS POWER PA-W09T-30 (CSA,AAL)
9-12X	BT325747	△ TRANS POWER PA-W09T-40 (CEE)
9-13X	BT325748	△ TRANS POWER PA-W09T-50 (UK,SAA)
9-14	BP329107	PULSE POWER BLK STK-Z4605D80 (U/T,CEE)
9-15X	BP329108	PULSE POWER BLK STK-Z4605D30 (CSA,AAL)
9-16X	BP329109	PULSE POWER BLK STK-Z4605D50 (UK,SAA)
9-17X	ES328091	SW THERMO OHD75M
9-18X	EF313584	△ FUSE TLC A 250V 10A (F1,2) (U/T)
9-19X	EF575223	△ FUSE TLC A 250V 5A (F1,2) (U/T)
9-20X	EF303349	△ FUSE ST6 125V 8A (F1,2) (CSA,AAL)
9-21X	EF300577	△ FUSE EAK T 250V 5A (F1,2) (CEE,UK,SAA)
9-22	SP301524	REAR PANEL (F) (U/T)
9-23X	SP301527	REAR PANEL (G) (CSA,AAL)
9-24X	SP301539	REAR PANEL (H) (CEE)
9-25X	SP301540	REAR PANEL (I) (UK,SAA)
9-26	EJ240581	TERMINAL PUSH X-Q2391 S 4P
9-27	ZS522865	T2BR30x12 STL BNI
9-28	EJ308834	PIN J T5511-E S 2P
9-29X	EJ650261	△ SOCKET OUTLET S-16432 UC 2P (U/T,CSA,AAL)
9-30X	EW306428	△ AC CORD 2 CORES KP-205A, VFF UCJ (U/T)
9-31X	EW305691	△ AC CORD 2 CORES KP-8, SPT-1 UC (CSA,AAL)
9-32X	EZ631945	STRAIN RELIEF SR-4R-4N-4 (U/T,CSA,AAL)
9-33X	EJ296853	△ SOCKET INLET CM-3 UCEB 3P (CEE,UK,SAA)
9-34	ZS463353	T2BR30x08STL BNI (CEE,UK,SAA)
9-35X	EZ328570	CAP 3P INLET (CEE,UK,SAA)
9-36X	SP301516	BOTTOM PLATE (B)
9-37X	ZS325495	T2BR30x06STL CMT
9-38X	ZS447840	T2BR30x08STL CMT
9-39X	ZS462194	T2PAN30x08STL CMT PW080
9-40	SA312465	CIRCULAR FOOT (A) PART CA
9-41X	ZA565942	T2PAN40x08STL CMT

## 10. FINAL ASSEMBLY BLOCK



### FINAL ASSEMBLY BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
10-1	ED322773	D LED SLP-255D-01 GRN
10-2	ED322772	D LED SLP-155D-01 RED
10-3	BD329151	FRONT PANEL BLK PA-W09
10-4X	BD329153	FRONT PANEL BLK PA-W09-BL
10-5	SP326809	SUB PANEL
10-6X	SP326810	SUB PANEL (BL)
10-7	SZ328033	BAR METER FILTER (B)
10-8X	SE328045	ESCUTCHEON
10-9X	SE325231	ESCUTCHEON (B)
10-10	SB322557	BUTTON
10-11X	SB322558	BUTTON (BL)
10-12X	ZG322566	SP
10-13X	SE322578	ESCUTCHEON (A)
10-14	SB322576	BUTTON (A)
10-15X	SB322577	BUTTON (A-BL)
10-16X	ZG322579	SP (A)
10-17	SP328040	UPPER PLATE (A) (EXCEPT AAL)
10-18X	SP328042	UPPER PLATE (B) (AAL)
10-19X	SP328041	UPPER PLATE (A-BL)
10-20	ZS322570	ST BID40x08STL NI3
10-21X	ZS322580	ST BID40x08STL BNI
10-22X	ZS308846	T2BR30x08STL BZN PROJECTION
10-23X	ZW305013	R V POP32 (AAL)
10-24X	EW315169	CORD RR-165 PIN-PIN/2P



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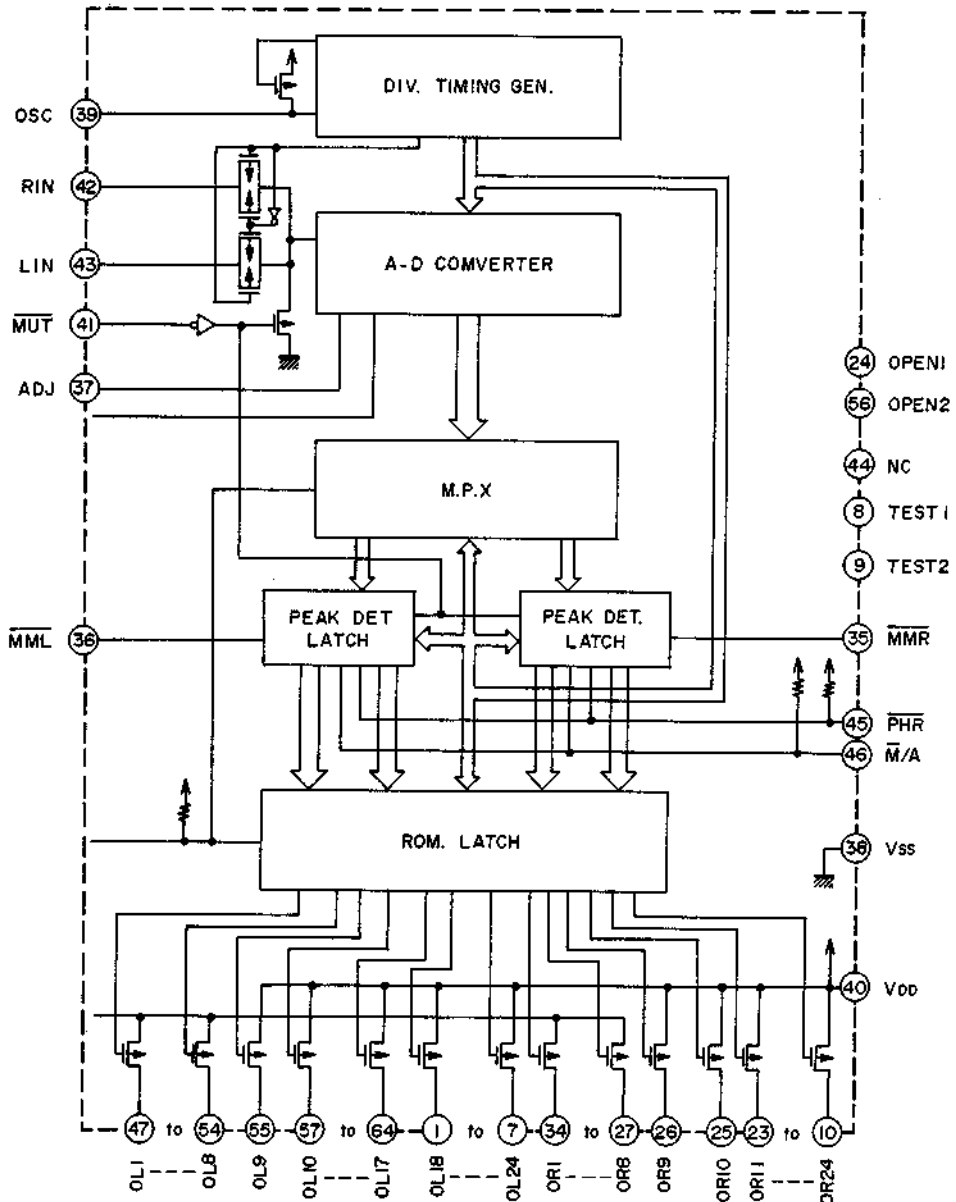
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BA329114	4-1	EC328081	2-C9	EP249344	6-RL1	ER391634	5-R9	EW306691	9-31X
BA32118	6-1	EC328081	3-C7	EP325753	2-RL1, 2	ER409814	2-R55	EW306428	9-30X
BA329120	5-1	EC328081	3-C9	EP325753	3-RL1, 2	ER409814	3-R55	EW315169	10-24X
BA329142	2-1	ED214457	2-D9, 10	EP325754	7-RL1	ER622978	7-R1 to 4	EZ328570	9-35X
BA329147	3-1	ED214457	3-D9, 10	ER321117	2-R18	ER672208	7-R5	EZ631945	9-32X
BD329151	10-3	ED300924	4-D6, 7	ER321117	3-R18	ES323786	6-SW1	SA312465	9-40
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BP329107	9-14	ED309959	3-D11	ER322590	3-R49, 50	ES325761	9-5X	SB322558	10-11X
BP329108	9-15X	ED315372	4-D8, 9	ER322787	4-R30	ES325762	9-4	SB322576	10-14
BP329109	9-16X	ED316143	2-D3 to 6	ER322787	8-R1 to 3	ES328091	9-17X	SB322577	10-15X
BT325746	9-11X	ED316143	3-D3 to 6	ER324337	2-R16, 17	ET201463	4-TR1, 2	SE322578	10-13X
BT325747	9-12X	ED316143	4-D10	ER324337	2-R20	ET305463	2-TR5, 6	SE325231	10-9X
BT325748	9-13X	ED316143	5-D1	ER324337	2-R32	ET305463	3-TR5, 6	SE328045	10-8X
BT325749	9-10X	ED316143	6-D2	ER324337	3-R16, 17	ET307195	2-TR3, 4	SP301516	9-36X
EC200994	4-C5	ED322772	10-2	ER324337	3-R20	ET307195	3-TR3, 4	SP301524	9-22
EC204671	4-C7, 8	ED322773	10-1	ER324337	3-R32	ET311790	2-TR15	SP301527	9-23X
EC258298	7-C1	ED323056	2-D7, 8	ER325268	7-L1	ET311790	3-TR15	SP301539	9-24X
EC302780	7-C2	ED323056	3-D7, 8	ER327710	2-R44, 45	ET311790	4-TR7	SP301540	9-25X
EC314688	9-7X	ED323056	4-D11	ER327710	3-R44, 45	ET311791	2-TR16	SP326809	10-5
EC316187	4-C12	ED323057	4-D3	ER328065	2-R14, 15	ET311791	3-TR16	SP326810	10-6X
EC316233	4-C13	ED323353	2-D1, 2	ER328065	2-R19	ET311791	4-TR6	SP328040	10-17
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EC323557	7-C1	ED324936	8-D2	ER328065	3-R19	ET311792	3-TR1	SZ328033	10-7
EC325272	6-C2	ED325757	7-D1	ER328065	3-R30	ET311844	2-TR14	ZG322566	10-12X
EC325320	6-C8	ED325766	7-D2, 3	ER328066	2-R8	ET311844	3-TR14	ZG322579	10-16X
EC325763	2-C15	ED560913	4-D1, 2	ER328066	3-R8	ET311845	2-TR7	ZS308846	10-22X
EC325763	2-C18	ED560913	4-D4, 5	ER328067	2-R21	ET311845	3-TR7	ZS322570	10-20
EC325763	3-C15	ED570284	7-D1	ER328067	2-R31	ET311865	2-TR8	ZS322580	10-21X
EC325763	3-C18	ED570284	7-D2	ER328067	3-R21	ET311865	3-TR8	ZS325495	9-37X
EC325764	7-C3, 4	EF300577	9-21X	ER328067	3-R31	ET312485	2-TR13	ZS447840	9-38X
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EC325767	3-C14	EI308865	5-IC2	ER328069	3-R41, 42	ET316171	3-TR2	ZW305013	10-23X
EC325768	2-C6	EI323054	6-IC1	ER328069	3-R47, 48	ET316171	3-TR10		
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EC325768	3-C6	EI325755	5-IC1	ER328071	3-R57	ET316171	9-3X		
EC325768	3-C8	EJ240581	9-26	ER328080	2-R29	ET322775	4-TR3 to 5		
EC326588	4-C10	EJ296853	9-33X	ER328080	3-R29	ET323529	2-TR9		
EC326608	7-C2	EJ301199	9-9	ER328082	6-R9, 10	ET323529	2-TR11		
EC326827	7-C1	EJ308834	9-28	ER328085	7-R5	ET323529	3-TR9		
EC327382	9-6	EJ325758	2-J4-7	ER328092	7-R6	ET323529	3-TR11		
EC327382	9-8X	EJ325758	3-J4-7	ER346588	2-R53, 54	ET323529	5-TR1, 2		
EC328070	2-C1	EJ650261	9-29X	ER346588	3-R53, 54	ET325750	9-1		
EC328070	3-C1	EM325752	5-IND1	ER356411	6-R13	ET325751	9-2		
EC328075	4-C11	EO324150	2-L1	ER380856	2-R52	EV310077	2-VR1, 2		
EC328076	4-C3, 4	EO324150	3-L1	ER380856	3-R52	EV310077	3-VR1, 2		
EC328081	2-C7	EO325278	8-L1 to 4	ER391634	50R1	EV328084	5-VR1, 2		

SECTION 3

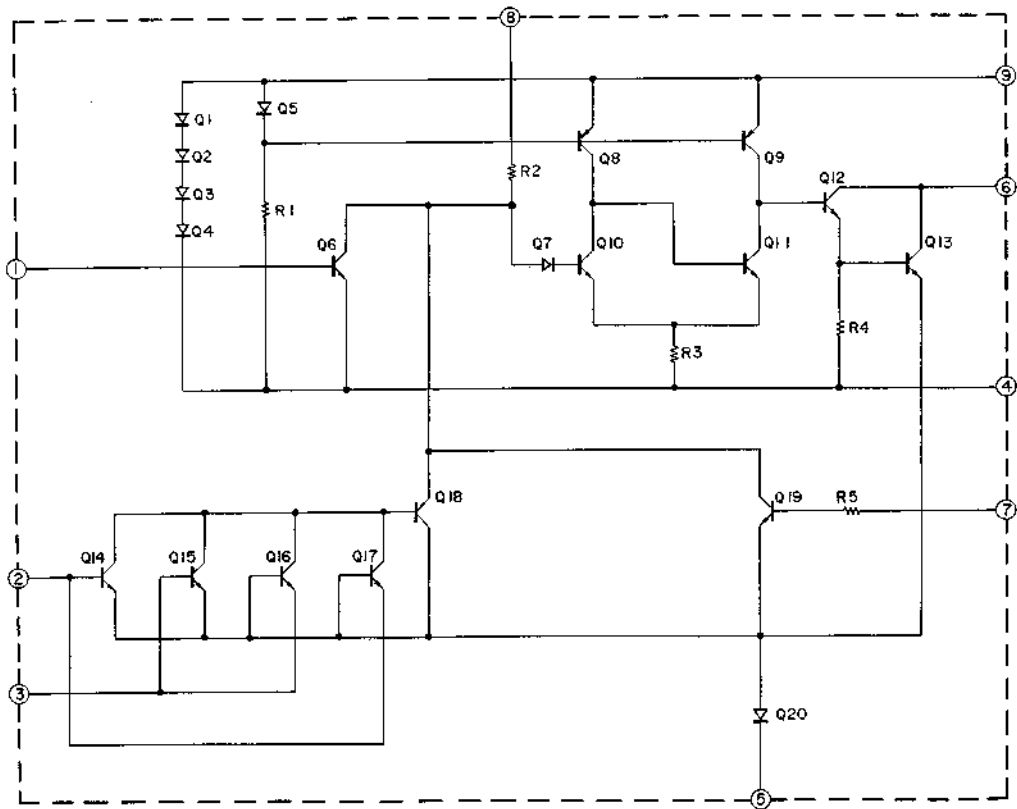
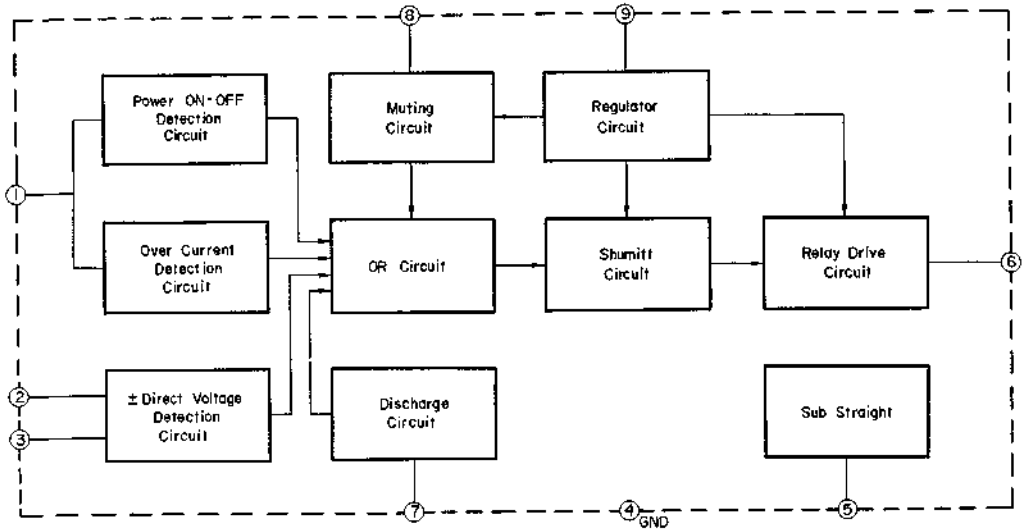
# SCHEMATIC DIAGRAM

1. SCHEMATIC DIAGRAM OF ICs
2. PA-W09 NO. 2-1 1620228A SCHEMATIC DIAGRAM
3. PA-W09 NO. 2-2 1620229A BAR METER SCHEMATIC DIAGRAM

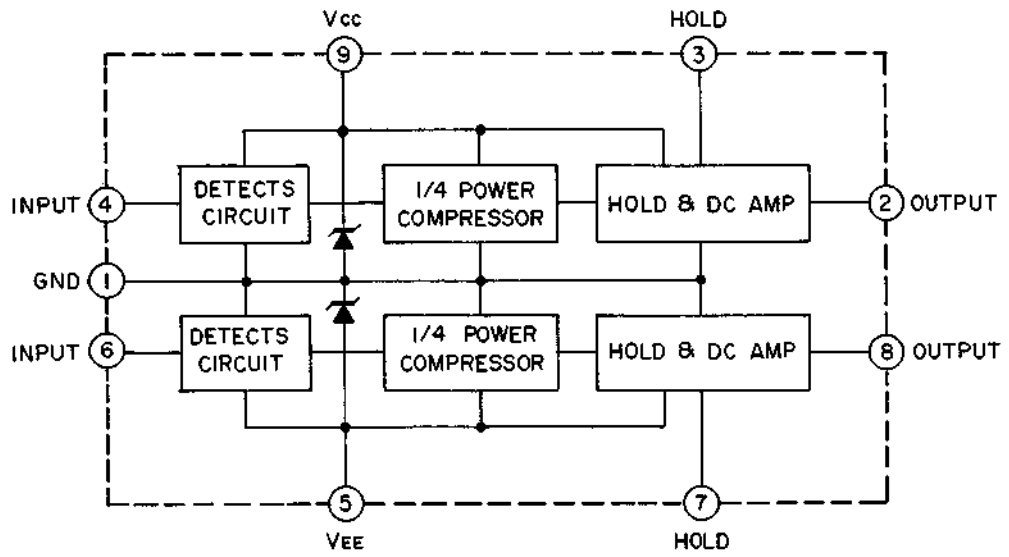
LC7550



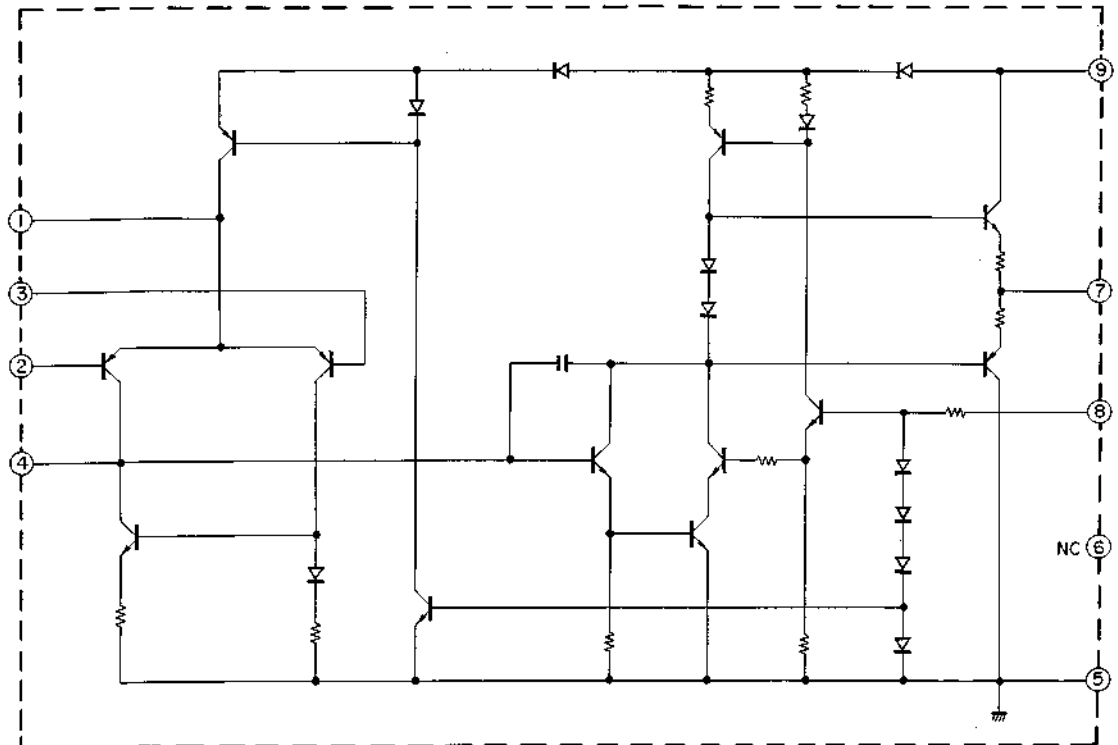
TA7317P

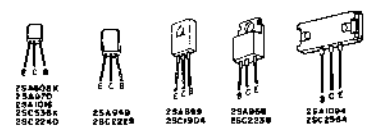
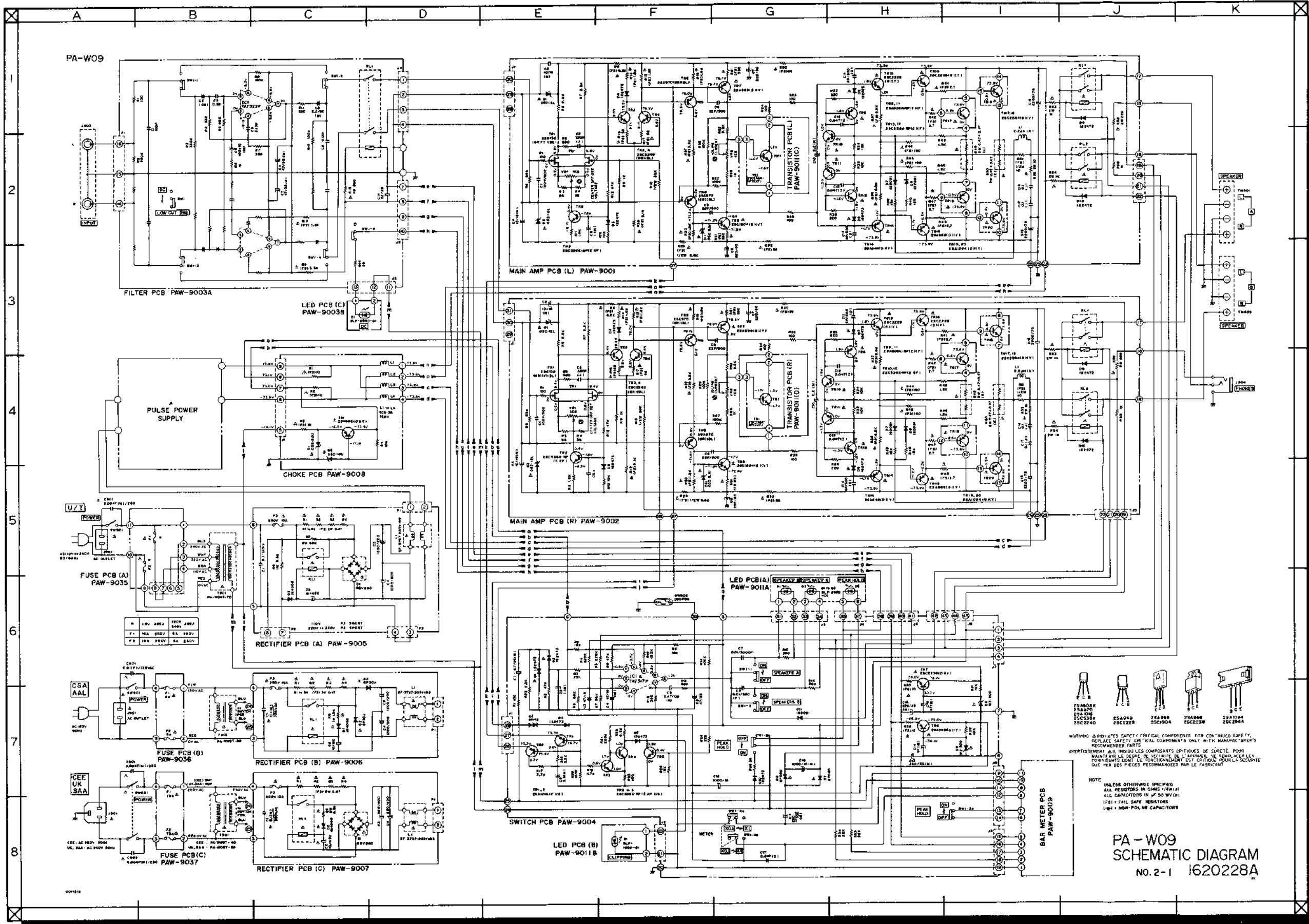


TA7318P



TA7322P





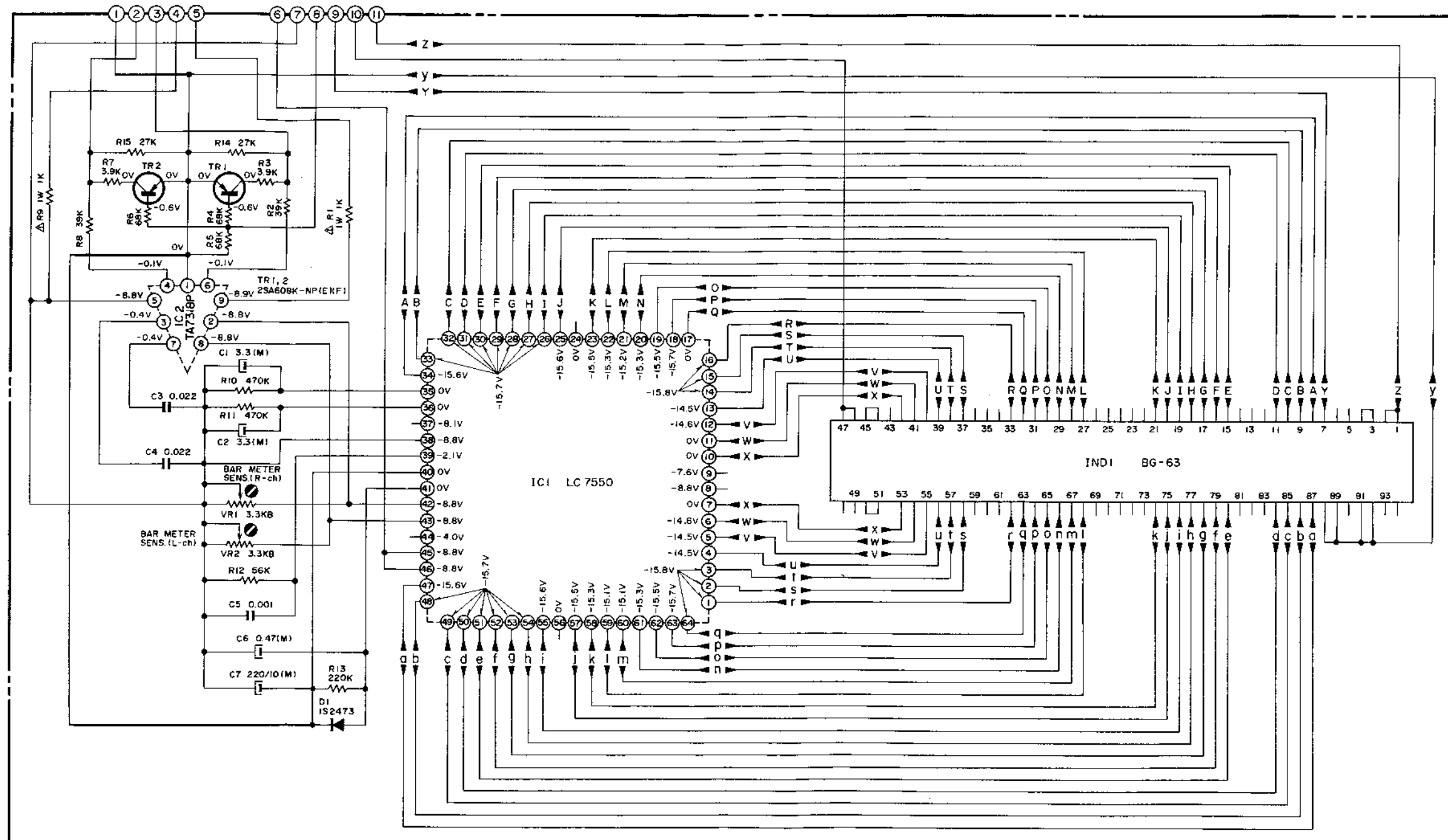
WARNING: INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

AVERTISSEMENT: IL INDIQUE LES COMPOSANTS CRITIQUES DE SURETE. POUR MAINTENIR LE DROIT DE SECURITE DE L'APPAREIL, SE REMPLIR LES COMPOSANTS CRITIQUES QUAND LE FONCTIONNEMENT EST CRITIQUE AVEC LA SECURITE QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT.

NOTE: UNLESS OTHERWISE SPECIFIED, ALL RESISTORS IN OHMS (R), ALL CAPACITORS IN  $\mu$ F (50 MV/1K), (F) = FAIL SAFE RESISTORS, (C) = NON-POLAR CAPACITORS.

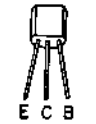
PA-W09  
SCHEMATIC DIAGRAM  
NO. 2-1 1620228A

PA-W09



BAR METER PCB PAW-9009

NOTE  
UNLESS OTHERWISE SPECIFIED  
ALL RESISTORS IN OHMS (1/4W(J))  
ALL CAPACITORS IN  $\mu$ F 50V(V(J))



2SA608K

PA-W09  
BAR METER  
SCHEMATIC DIAGRAM

NO.2-2 1620229A

WARNING:  $\Delta$  INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY,  
REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S  
RECOMMENDED PARTS  
AVERTISSEMENT:  $\Delta$  IL INDIQU LES COMPOSANTS CRITIQUES DE SURETE. POUR  
MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL, NE REMPLACER LES  
COMPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SECURITE  
QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT

001130

2C