

DENON

Hi-Fi Integrated Amplifier

SERVICE MANUAL MODEL PMA-707 SOLID-STATE INTEGRATED AMPLIFIER



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NIPPON COLUMBIA CO., LTD.

SPECIFICATIONS

POWER AMPLIFIER SECTION

Rated Output Power:	Both channel driven (TUNER → SP OUT) 4 ohm 1 kHz DIN T.H.D. 1% : 40 W + 40 W 4 ohm 20 Hz — 20 kHz : 35 W + 35 W 8 ohm 20 Hz — 20 kHz : 25 W + 25 W
Total Harmonic Distortion:	0.05% (20 Hz — 20 kHz at -3 dB rated output 8 ohm Load)
Intermodulation Distortion:	Below 7 kHz / 60 Hz: 1/4 0.03% (at amplitude output equivalent to rated output)
Power Band Width:	10 Hz — 40 kHz (IHF T.H.D. 0.1%)
Frequency Response:	5 Hz — 150 kHz +0 dB -3 dB (at 1 W output)
Output Impedance:	0.18 ohm (1 kHz)
Output Terminals:	Speaker: A or B Load 4 — 16 ohm (IEC) A + B Load 8 — 16 ohm Headphone Stereo headphone

PRE AMPLIFIER SECTION

Pre Amplifier Output:	Maximum Output: 10 V (at 47 k ohm Load) Rated Output: 150 mV
Pre Amplifier Input:	Maximum Input: 160 mV (1 kHz)
Input Sensitivity/ Input Impedance:	PHONO MM: 2.5 mV 47 k ohm CD/VIDEO, 150 mV 30 k ohm TUNER/AUX
RIAA Deviation:	PHONO MM: within ±0.5 dB (20 Hz — 20 kHz)

Design and specifications are subject to change without prior notice.

NOTE: The following codes correspond to the appropriate models.

E2 for Europe, EK for U.K., and E1 for Asia.

This Service Manual is prepared based on E2 and black version.

GENERAL CHARACTERISTICS

SN Ratio (IHFA Weight):	PHONO MM: 72 dB (input terminals short-circuited for 2.5 mV input) CD/VIDEO, TUNER/AUX: 96 dB (input terminals short-circuited)
Tone Enhancer:	Low frequency 100 Hz ± 6 dB High frequency 10 kHz ± 6 dB
EQ Subsonic Filter Characteristics:	16 Hz (-12 dB/oct.)
AC OUTLET: (For U.S.A., Canada and Asia)	SWITCHED x 2, 100 W (Total) UNSWITCHED x 1, 250 W
POWER SOURCE:	Germany and France AC 220 V, 50 Hz; U.K. and Australia AC 240 V, 50 Hz; Asia AC 110/ 120/220/240 V, 50/60 Hz (Multiple)
POWER CONSUMPTION:	80 W (IEC) (Multiple)
DIMENSIONS:	434 mm (W) x 97.5 mm (H) x 270 mm (D) (including rubber feet, control knobs, and terminals)
WEIGHT:	5.2 kg

BLOCK DIAGRAM

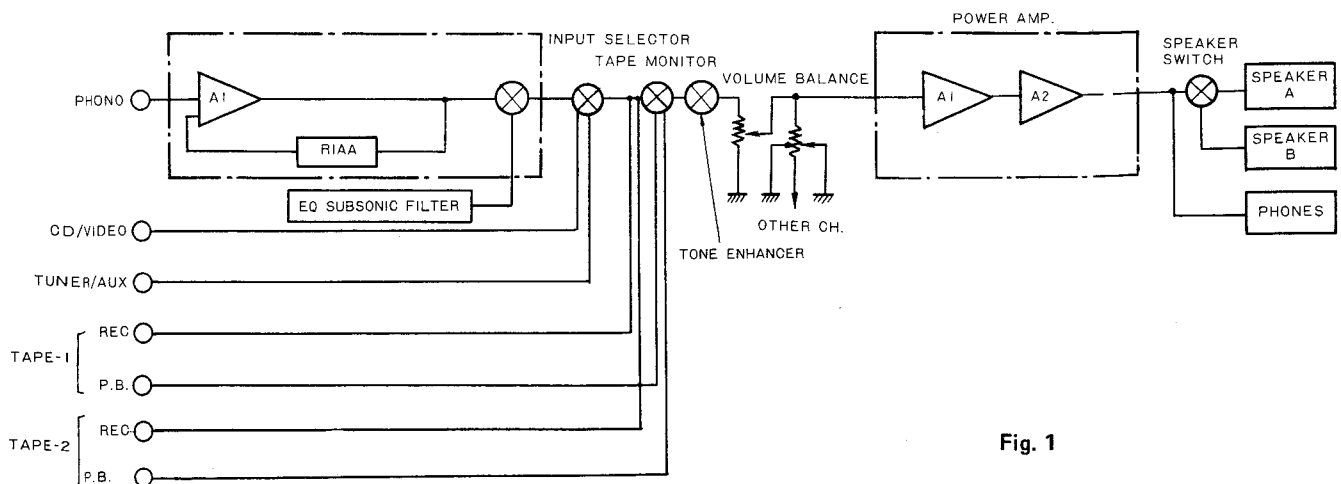


Fig. 1

CONTROLS AND DESCRIPTIONS

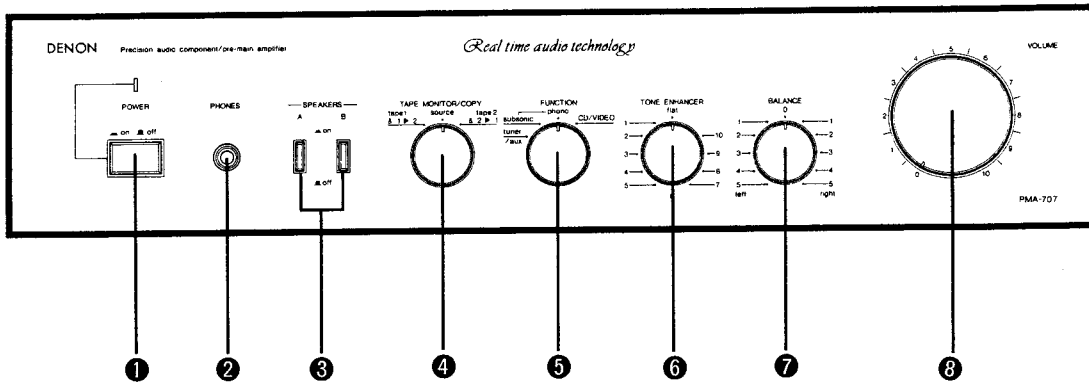
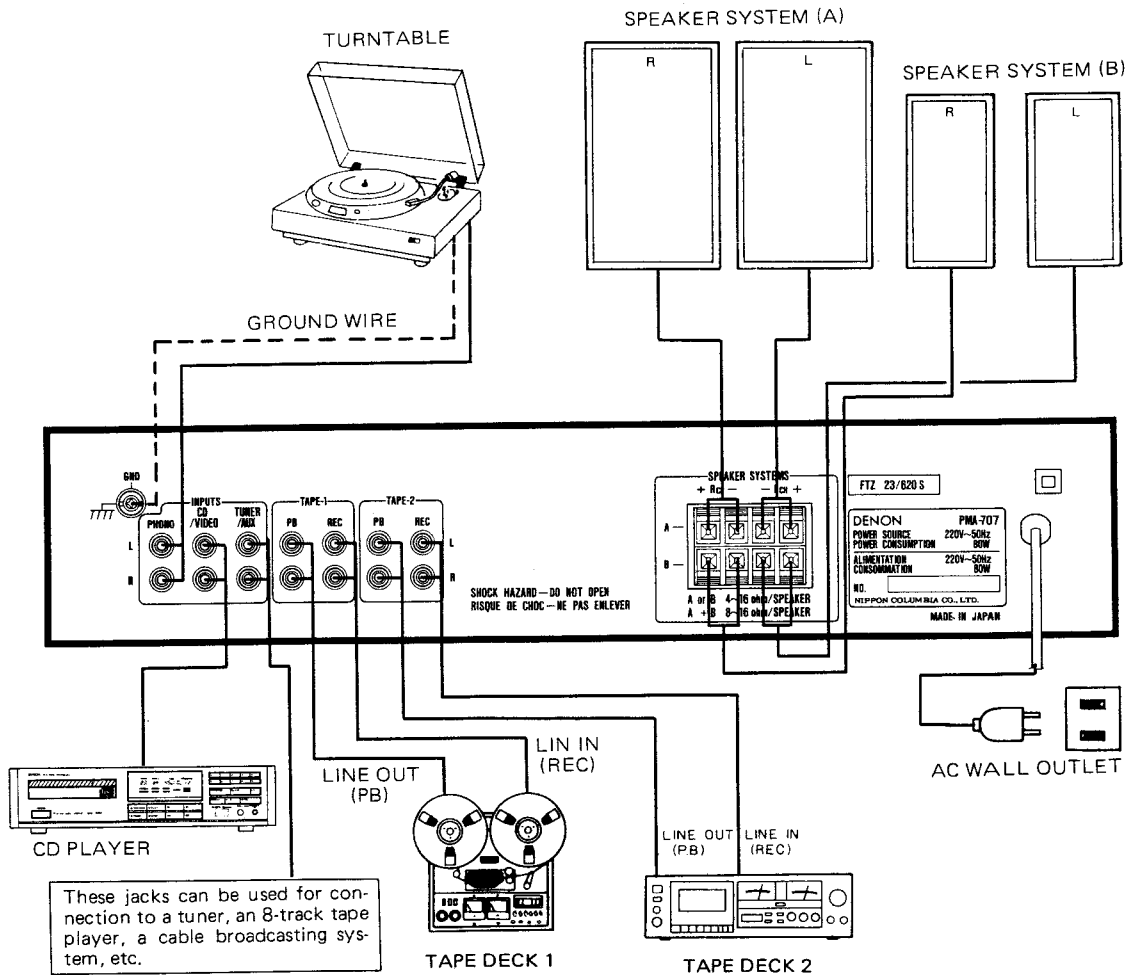


Fig. 2

- ① POWER (Power On-Off Switch)
- ② PHONES (Headphone Jack)
- ③ SPEAKERS (Speaker Changeover Switch)
- ④ TAPE MONITOR/COPY (Tape Monitor/Copy Switch)
- ⑤ FUNCTION (Input Selector Switch)
 - CD/VIDEO, ● Phono, ● subsonic, ● tuner/aux
- ⑥ TONE ENHANCER (Tone Enhancer Control)
- ⑦ BALANCE (Balance Control)
- ⑧ VOLUME (Volume Control)

CONNECTIONS



These jacks can be used for connection to a tuner, an 8-track tape player, a cable broadcasting system, etc.

Fig. 3

METHOD OF ADJUSTMENTS

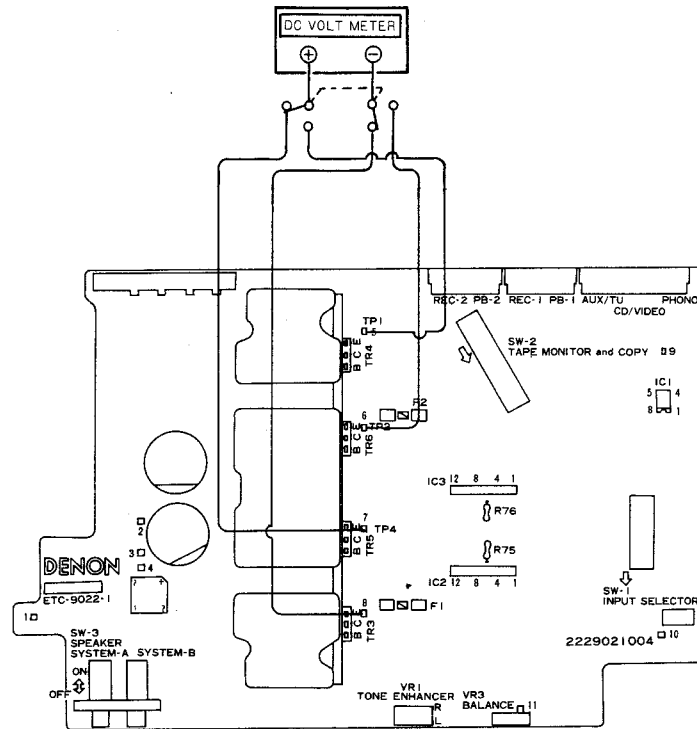


Fig. 4

IDLE CURRENT ADJUSTMENT (Fig. 4)

1. Keep the unit away from direct wind blown by an air-conditioner and an electric fan, and keep the unit under normal conditions. Adjust the range of ambient temperature to 15 – 30°C.
2. Set the following switches as follows:
 - POWER (power switch) to off
 - VOLUME (VOLUME CONTROL) to 0 (⤵)
 - SPEAKERS (speaker terminal) to no load (speakers disconnected)
3. Remove the top cover and connect a DC digital voltmeter to the test points of ETC9022 (Power Amp units) (between the positive terminal TP4 ⊕ and the negative terminal TP3 ⊖, and between the positive TP1 ⊕ and the negative terminal TP2 ⊖).
4. (1) Connect the power source cord to an AC outlet and turn on the power switch; read the measured value after 3 minutes or when the measured value is within a tolerance 2 mV ~ 20 mV (DC), adjust the idling current manually as follows.
 (2) When the voltmeter reads 1 mV (DC) or less under the condition of item (1), disconnect the 47 ohm from resistors R75 and R76.

REMOVAL OF EACH SECTION

1. How to remove top cover (Fig. 5)

- 1) Remove the six screws holding the top cover in place.
- 2) Pull out the sides of the cover to free it, then lift off the cover.

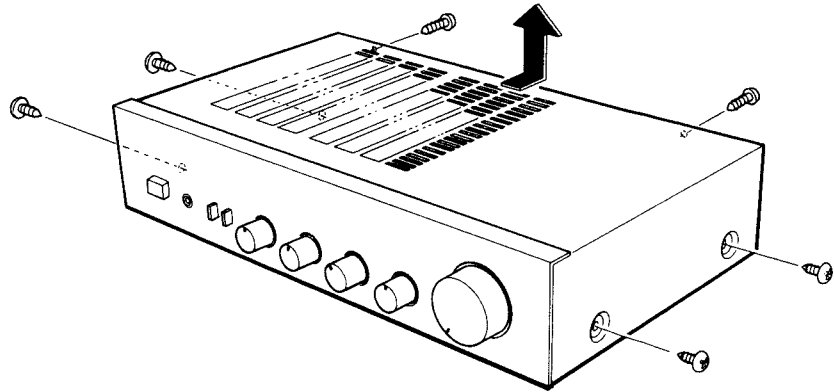


Fig. 5

2. How to remove the rear panel (Fig. 6)

- 1) Remove the twelve screws holding the rear panel in place.
- 2) Pull the rear panel toward you and remove it.

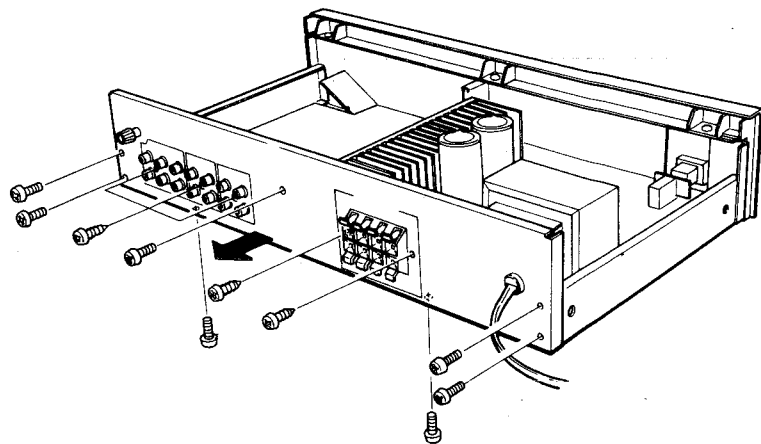


Fig. 6

3. How to remove the front panel (Fig. 7)

- 1) Pull off the five knobs.
- 2) Remove the six screws holding the front panel in place.
- 3) Pull the front panel toward you and remove it.

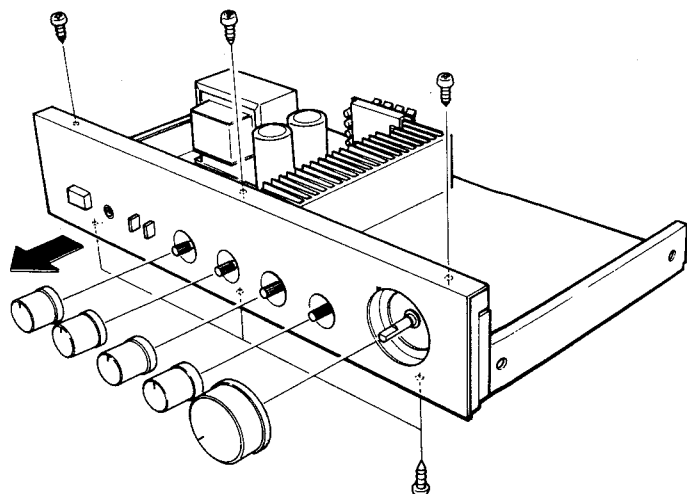


Fig. 7

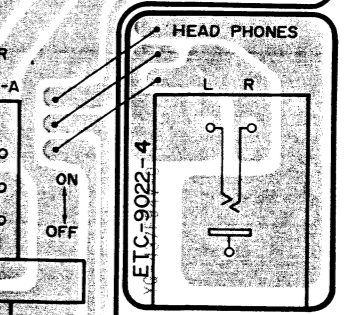
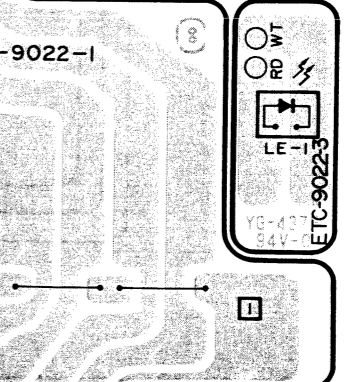
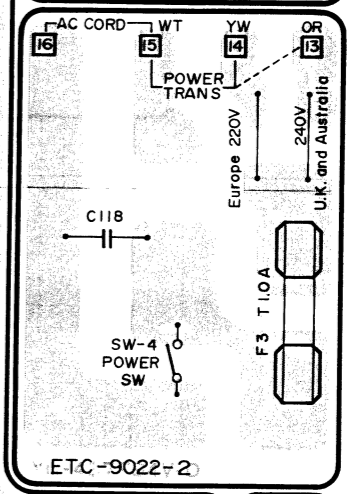
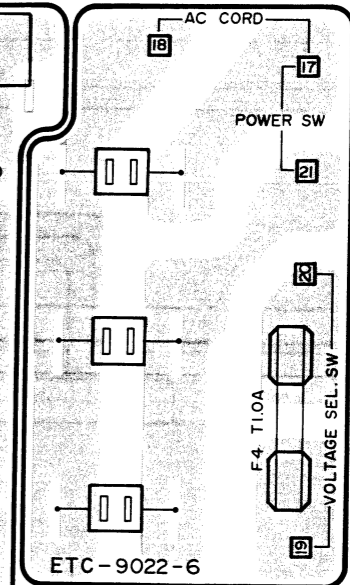
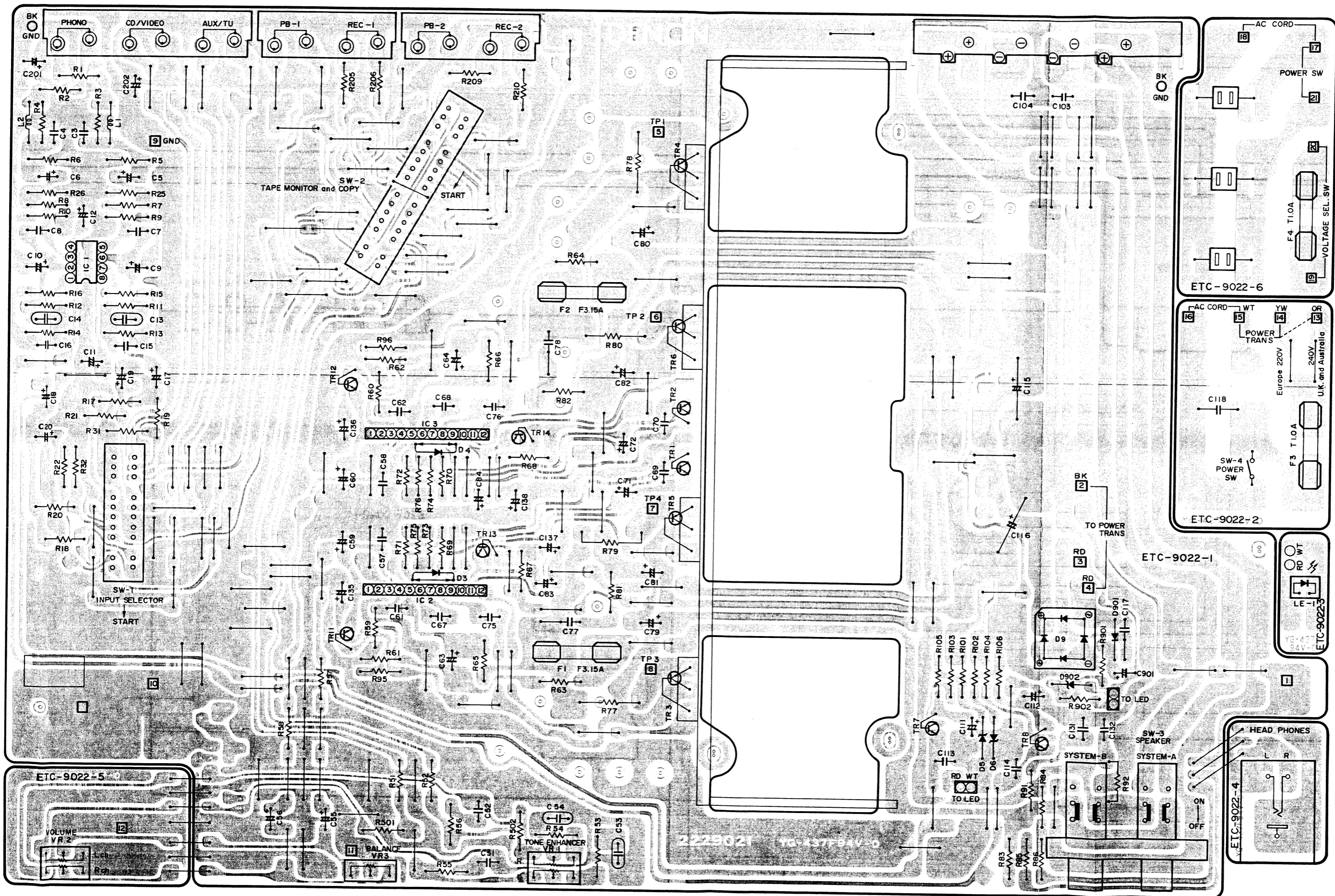
PRINTED WIRING BOARD PATTERNS AND PARTS LIST
ETC9002 POWER AMP UNIT PARTS LIST For E2, EK, EA

Ref. No.	Part No.	Part Name & Descriptions	Ref. No.	Part No.	Part Name & Descriptions
SEMICONDUCTORS					
IC001	2630257001	M-5218P (MITSUBISHI) IC	C059	2544146004	1μF 50V ELECTROLYTIC
IC002	2630206007	μPC1225H (NEC) IC	C061	2533627000	100PF ±5% 50V CERAMIC
TR001	2730198015	2SC1815 (BL) TRANSISTOR	C063	2544133004	22μF 16V ELECTROLYTIC
TR003	2730237031	2SC2577 (O/Y) TRANSISTOR	C067	2533603008	10PF ±0.5PF 50V CERAMIC
TR005	2710136039	2SA1102 (O/Y) TRANSISTOR	C069	2531024003	0.01μF +80% 50V CERAMIC
TR007	2730198015	2SC1815 (BL) TRANSISTOR	C071	2544132005	10μF 16V ELECTROLYTIC
TR008	2710102005	2SA1015 (Y) TRANSISTOR	C072	2544132005	10μF 16V ELECTROLYTIC
TR011	2730198015	2SC1815 (BL) TRANSISTOR	C075	2533631009	150PF ±5% 50V CERAMIC
TR013	2710102005	2SA1015 (Y) TRANSISTOR	C076	2533631009	150PF ±5% 50V CERAMIC
D003	2760049011	1S2076A DIODE	C077	2531027000	0.1μF +80% 50V CERAMIC
D005	2760249002	HZ18-2 ZENER	C078	2531027000	0.1μF +80% 50V CERAMIC
D009	2760305001	S4VB20 DIODE	C079	2544146004	1μF 50V ELECTROLYTIC
D901	2760049011	1S2076A DIODE	C103	2531007004	3300PF ±10% 50V CERAMIC
D902	2760236031	HZ5C-1 ZENER	C111	2544164031	220μF 25V ELECTROLYTIC
LE001	3939165013	SEL1123R (RED) LED	C112	2544164031	220μF 25V ELECTROLYTIC
RESISTORS (not included Carbon Film ±5%, 1/4W Type)					
△ R067	2412314023	470 ohm ±5% 1/4W CARBON (NB)	C113	2531024003	0.01μF +80% 50V CERAMIC
△ R077	2442013080	0.22 ohm ±5% 1W METAL OXIDE (NB)	C114	2531024003	0.01μF +80% 50V CERAMIC
△ R081	2412322002	10 ohm ±5% 1/4W CARBON (NB)	C115	2544212006	10000μF 45V ELECTROLYTIC
△ R091	2412322002	10 ohm ±5% 1/4W CARBON (NB)	C116	2544212006	10000μF 45V ELECTROLYTIC
△ R095	2412314023	470 ohm ±5% 1/4W CARBON (NB)	C117	2531151002	4700PF +100% 500V CERAMIC
△ R103	2412314023	470 ohm ±5% 1/4W CARBON (NB)	△ C118	2538003014	4700PF ±20% 400V (AC) CERAMIC
VR001	2119008001	VARIABLE RESISTOR 100 kohm LOUD VR	C131	2531025002	0.022μF +80% 50V CERAMIC
VR002	2119006100	VARIABLE RESISTOR 100 kohm MAIN VR	C135	2544089022	100μF 50V ELECTROLYTIC
VR003	2110198004	VARIABLE RESISTOR 250 kohm BAL. VR	C201	2544146004	1μF 50V ELECTROLYTIC
CAPACITORS					
C003	2533627000	100PF ±5% 50V CERAMIC	SWITCHES FUSE INDUCTORS		
C005	2544132005	10μF 16V ELECTROLYTIC	SW001	2124509003	SLIDE SW (4-4) REMOTE INPUT
C007	2531004007	1000PF ±10% 50V CERAMIC	SW002	2124254002	SLIDE SW (REMOTE) TAPE MONI.
C009	2544127007	220μF 6.3V ELECTROLYTIC	SW003	2129513007	2P PUSH SW SP. SW
C011	2544146004	1μF 50V ELECTROLYTIC	△ SW004	2124409006	POWER SWITCH POWER
C013	2554178004	0.024μF ±5% 50V PLASTIC FILM	△ F001	2061040010	FUSE 3.15A (F) POWER OUT
C015	2531009002	6800PF ±10% 50V CERAMIC	△ F002	2061015029	FUSE 1.0A AC LINE
C017	2544147003	2.2μF 50V ELECTROLYTIC	L001	2359002003	INDUCTOR (390μH) PHONO-IN
C019	2544146004	1μF 50V ELECTROLYTIC	OTHER PARTS		
C051	2531062007	3900PF ±10% 50V CERAMIC	2229021004	P.W. BOARD	
C053	2551076002	0.022μF ±10% 50V PLASTIC FILM	2090008120	JUMPER WIRE P=10 mm	USED 135
C055	2544133004	22μF 16V ELECTROLYTIC	2090051009	0 ohm JUMPER TAPE	
C057	2533627000	100PF ±5% 50V CERAMIC	EP-5667H1	TERMINAL PIN	USED 15
			FEP-1261	JUMPER WIRE	USED 3
			2020022008	FUSE HOLDER	USED 6
			2030241057	1P CONTACT ASS'Y	USED 2
			2050190023	2P NH CONNECTOR BASE	
			4179002100	POWER RADIATOR	
			4129016104	BRACKET	USED 2
			4737002005	TAPPING SCREW(S) 3x6	USED 4
			4700012022	PAN SCREW WITH SW, W 3x12	USED 4
			2048167000	HEAD PHONE JACK	
			2050151004	8P PUSH TERMINAL	FOR SP
			2050150005	4P CONNECTOR BASE	USED 2
			2050152003	6P CONNECTOR BASE	
			2032115000	2P CONNECTOR CORD	

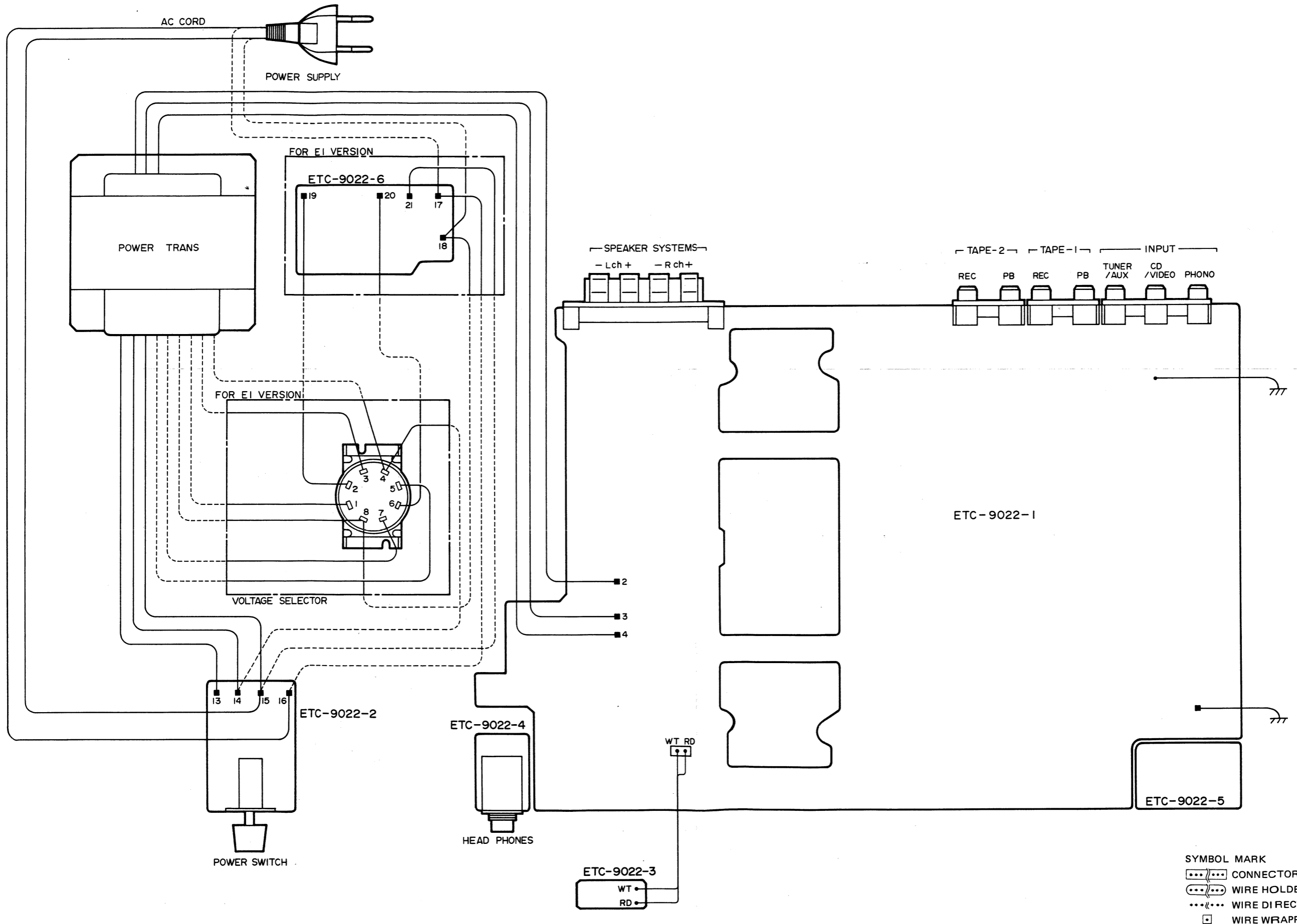
ETC9022B POWER AMP UNIT P/LIST For E1
 (Same as ETC9022 except the followings)

Ref. No.	Part No.	Part Name & Descriptions	Ref. No.	Part No.	Part Name & Descriptions
CAPACITORS					
△ C118	2568003000	0.01μF ±20% 250V METALIZED (CHANGE)	OTHER PARTS		
FUSE					
△ F003	2061039063	FUSE 2A (CHANGE)	2090008120	JUMPER WIRE P=10mm	USED 113 (CHANGE)
△	2061039034	FUSE 1.0A (ADD)	5130886005	FUSE LABEL (T. 2A)	(ADD)
			2020022008	FUSE HOLDER	USED 8 (CHANGE)
			△ 2033922001	AC OUTLET (3P)	(ADD)

ETC9022 POWER AMP UNIT

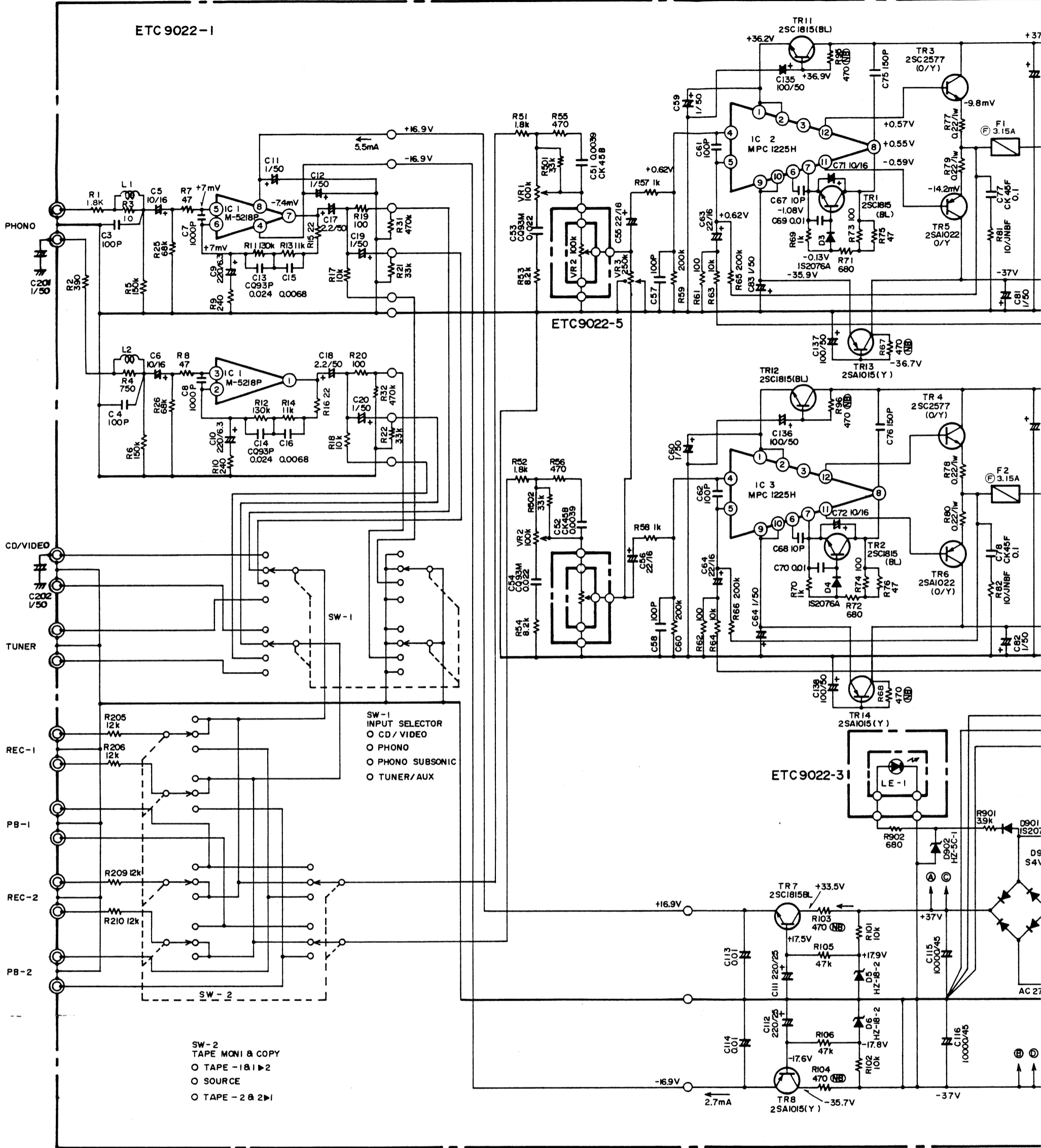


WIRING DIAGRAM
(This figure is the specifications of E2)



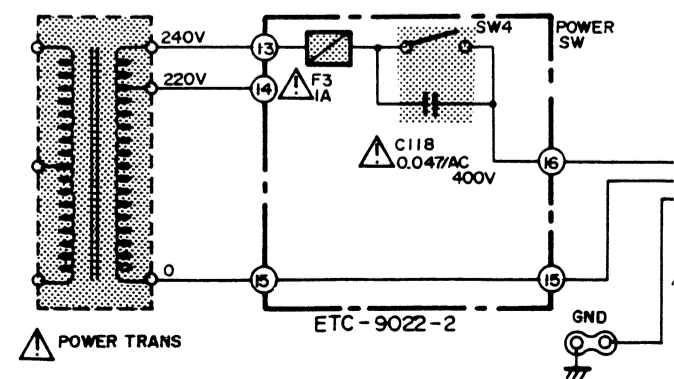
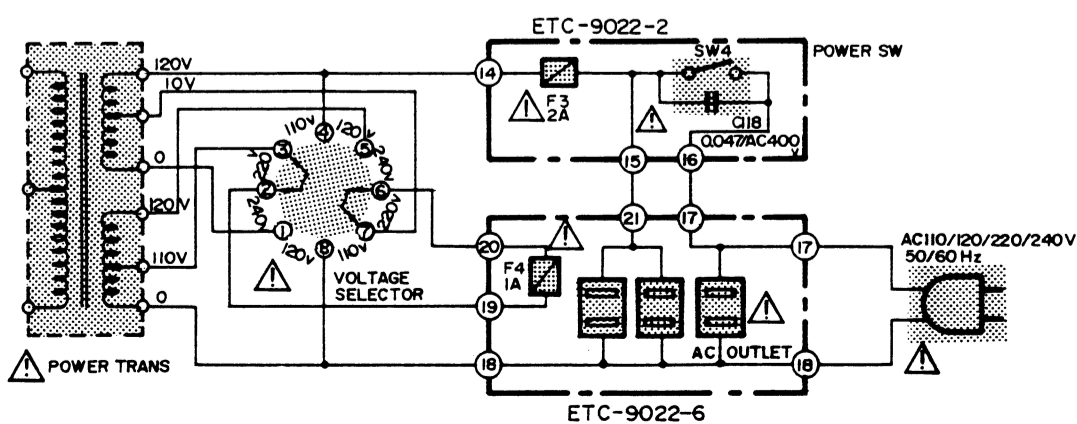
SYMBOL MARK
 [---] CONNECTOR BASE
 [---] WIRE HOLDER
 [---] WIRE DIRECT INSERT
 [■] WIRE WRAPPING

SCHEMATIC DIAGRAM

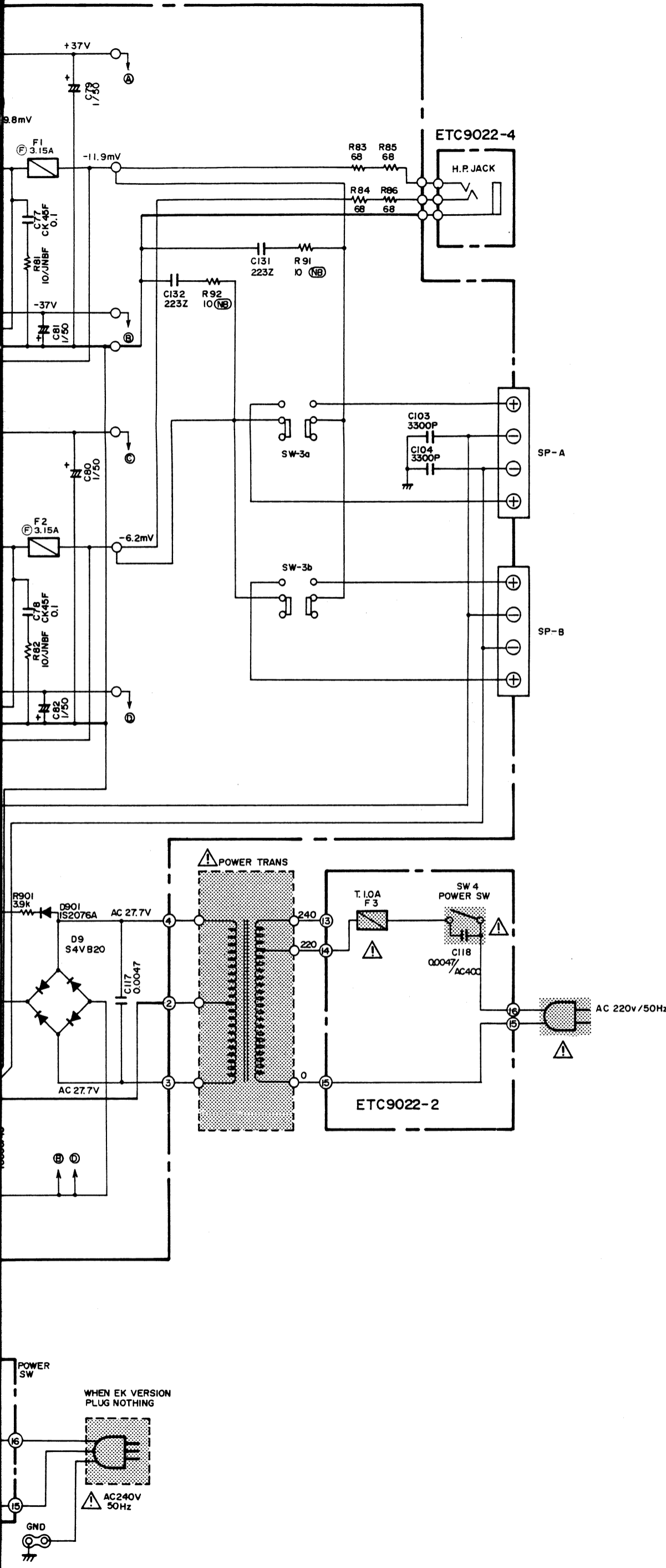


(E1)

(EK/EA)



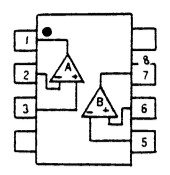
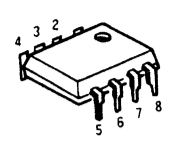
⚠ Means important safety item, which must be replaced, when necessary, by a part specified or meeting the specification by the manufacturer.



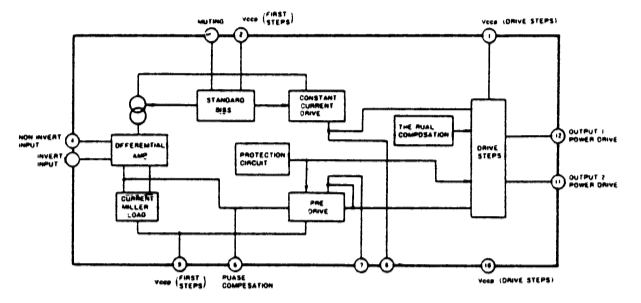
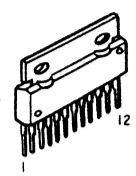
SEMICONDUCTORS

● IC's

M-5218P (JRC)



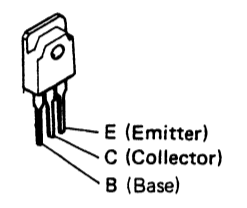
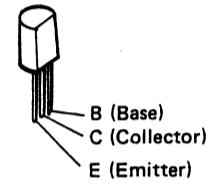
μPC1225H(NEC)



● TRANSISTORS

2SA1015(Y)
2SC1815(BL)

2SA1102(O/Y)
2SC2577(O/Y)

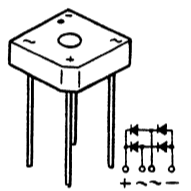
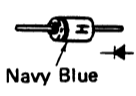


● DIODES

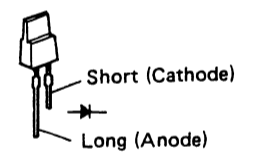
1S2076A

HZ5C-1
HZ18-2

S4VB20



SEL1123R (Red)



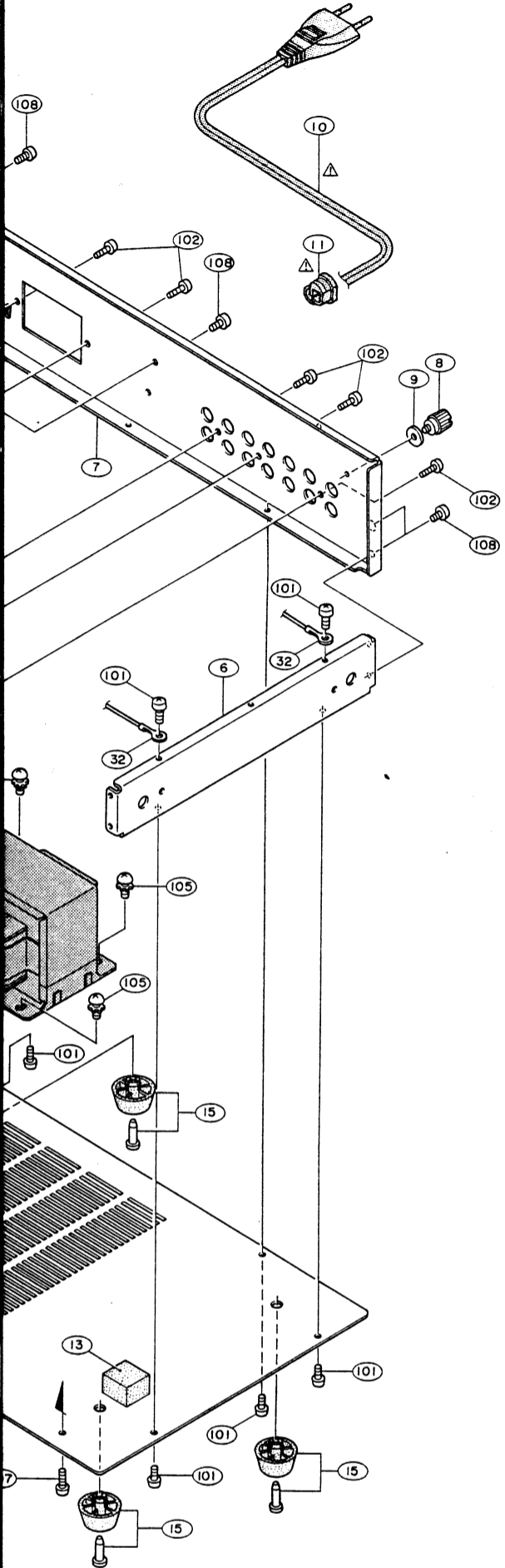
	R1, R2	L1, L2	R3, R4	C7, C8
E2	1.8K	Yes	750	1000P
EK/EA	1.8K	Yes	750	1000P
E1	390	No	Jumper	No

NOTES
ALL RESISTANCE VALUES IN OHM K = 1,000 OHM M = 1,000,000 OHM
ALL CAPACITANCE VALUES IN MICRO FARAD P = MICRO-MICRO FARAD
EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITIO
CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

⚠ Means important safety item, which must be replaced, when necessary, by a part specified or meeting the specification by the manufacturer.

DENON

ADDENDUM LIST



Ref. No.	Part Name & Descriptions	Part No.		
		EK for U.K.	EA for Australia	E1 for Asia
4	Power Amp Unit Assy	ETC9022-1	ETC9022-1	ETC9022B-1
5	Power SW Unit	ETC9022-2	ETC9022-2	ETC9022B-2
7	Back Panel	1059027101	1059027101	1059033001
⚠ 10	AC Cord	2062020000	2062012018	2006031026
⚠ 11	Cord Bush	4450053001	MD-2982H	4450028007
⚠ 16	Power Trans	2339522008	2339522008	2339527003
21	LED Unit	ETC9022-3	ETC9022-3	ETC9022B-3
⚠ 31	Volume Unit	ETC9022-5	ETC9022-5	ETC9022B-5
⚠ 50	Voltage Sel. Switch	-	-	2120186006
⚠ 51	AC Outlet Unit	-	-	ETC9022B-6
52	Notice Sheet	-	5130209006	-
53	Earth Label	5130140000	5130140000	-
54	Caution Sheet	5130364006	-	-
55	Voltage Label	5130362008	5130362008	-
56	Blind Sheet	5230348006	5130348006	-
57	Notice Sheet	-	5130210008	-
58				
103	Tapping Screw 4x8 For Power/Trans	4700030017	47300030017	4737004003
110	Tooth Washer φ3	4753001051 (4)	4753001051 (4)	-
111	Tooth Washer φ4	4753100004 (2)	4753100004 (2)	-
112	Pan Screw 3x6	-	-	4737002005
205	Control Card	-	-	-

NIPPON COLUMBIA CO., LTD.

No. 14-14, 4-CHOME AKASAKA,
MINATO-KU, TOKYO 107, JAPAN
TEL: 03-584-8111
TLX: JAPANOLA J22591
CABLE: NIPPONCOLUMBIA TOKYO

Printed in Japan

Q'ty	Ref. No.	Part No.	Part Name & Descriptions	Q'ty
15 2	104	4700026005	TAPPING SCREW WITH W.(S) 3x8	7
	105	4700030017	TAPPING SCREW WITH W.(S) 4x8 TWB	4
20 5 4	106	4700012022	PAN SCREW WITH S.W.W 3x12	4
	107	4737002021	TAPPING SCREW(S) 3x8 (B)	3
	108	4737002034	TAPPING SCREW(S) 3x6 (B)	7
	109			
	PACKING & ACCESSORIES (not included EXPLODED VIEW)			
	201	5050075006	CABINET COVER	1
	202	5039112003	CUSHION	2
	*203	5019102020	CARTON CASE	1
	204	5119134008	INST. MANUAL	1
	*205	5138295009	CONTROL CARD	1
	206	5040079012	STYLEN PAPER	1
	207			