



Service Manual

Nakamichi

PA-5 PA-5E

Power Amplifier



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1. GENERAL

1.1. Voltage Selector

Voltage selector is installed on the rear panel for Other version of the Nakazichi PA-5.
This voltage selector can select 110 V, 120 V, 220 V or 240 V at customer's disposal.

1.2. Packing Materials, Owner's Manual and Auxiliary Parts

Part No.	Description	Qty
OF03904A	Outer Carton PA-5	1
OF03906A	Outer Carton PA-5E	1
OF03903A	Inner Carton PA-5	1
OF03905A	Inner Carton PA-5E	1
OF03908A	Packing	2
OD04531A	Owner's Manual (English)	1
OD04530A	Owner's Manual (English/German/French)	1
OB90137A	Power Cord PA-5 (U.S.A. & Others)	1
OB90139A	Power Cord PA-5 (Australia)	1
OB90138A	Power Cord PA-5E (Europe)	1
OB90154A	Power Cord PA-5E (Switzerland)	1
OB90140A	Power Cord PA-5E (UK)	1
OF03887A	Power Cord Band	1
OB90164A	Fuse 6A PA-5 (U.S.A., Canada & Others)	1
OB90166A	Fuse T2.5A PA-5 (Australia) & PA-5E	1

2. PARTS LOCATION FOR ELECTRICAL ADJUSTMENT

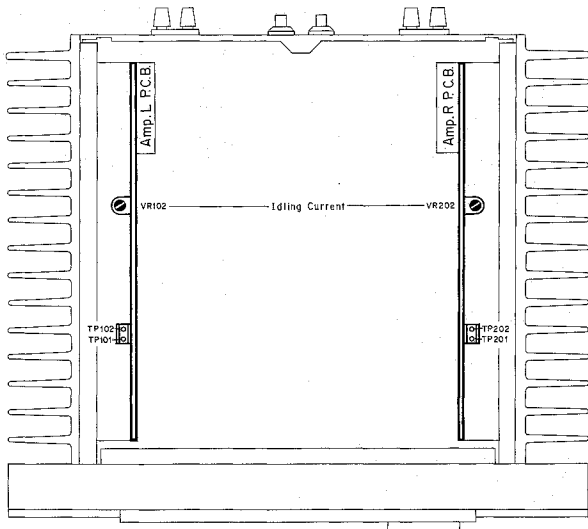


Fig. 2

3. ELECTRICAL ADJUSTMENTS

3.1. Preparation for Adjustment

- (1) Insert shorting pins into the Input Jacks.
- (2) Remove loads of the speaker terminals.
- (3) Before starting adjustment, allow twenty minutes or more after power is turned ON. In this case, the Tape Cover must be installed.

3.2. Idling Current Adjustment

- (1) Connect a DC voltmeter between TP101 and TP102 (TP201 and TP202) on the Amp. L (R) P.C.B. Assy.
- (2) Adjust VR102 (VR202) to obtain 40 mV on the DC voltmeter (Idling current: 40 mA).
- (3) Remove shorting pins from the Input Jacks.

4. MECHANISM ASS'Y AND PARTS LIST

Schematic Ref. No.	Part No.	Description	Qty	Schematic Ref. No.	Part No.	Description	Qty
		Synthesis Serial No.: B20701001 -		A01	HA04920A HA04921A	Front Panel Assy PA-5 Front Panel Assy PA-5E Serial No.: B20701001 -	1 1
01	HA04920A	Front Panel Assy PA-5	1				
	HA04921A	Front Panel Assy PA-5E	1				
02	BA0588A	Clipping LED P.C.B. Assy	2	01	0K04754A	Sub Front Panel	1
03	BA05687A	Power LED P.C.B. Assy	1	02	0H04681A	Lens A	2
04	0J05097A	Front Chassis	1	03	0E04753A	Front Panel PA-5	1
05	0B17004A	Power Switch	1		0H04766A	Front Panel PA-5E	1
06	0J05095A	Cushion A	2	04	HA04849A	Power Switch Knob Assy	1
07	BA05897A	Limitier F.C.B. Assy PA-5 (U.S.A. & Canada)	1	05	0J05000B	Power Switch Spring	1
	BA05898A	Limitier F.C.B. Assy PA-5 (Australia & Others) & PA-5E	1	06	0H04652B	Power Switch Guide	1
				07	0H04653B	Lens B	1
				L01	0E00866A	M2.6x4 @ Binding	5
08	0H04769A	Heat Sink LF	1				
09	0J05096A	Cushion B	2				
10	0H04768A	Side Cover L	1				
11	0H04769A	Heat Sink LR	1				
12	0J05101A	Upper Channel L	1				
13	0J05099A	Lower Channel L	1				
14	0J05103A	P.C.B. Holder	2				
15	BA05868A	Amp. L P.C.B. Assy	1				
16	0H04762A	Top Cover	1				
17	0J05094A	Cushion C	4				
18	0J05098A	Ground Plate	1				
19	0B12253A	Diode Bridge 15G4B41	1				
20	0B50061A	Power Transformer PA-5 (U.S.A. & Canada)	1				
	0B50062A	Power Transformer PA-5 (Others)	1				
	0B50062A	Power Transformer PA-5 (Australia & PA-5E)	1				
21	0B40366A	Electrolytic Capacitor 47000uF 80V	2				
22	0H04765A	Bottom Chassis	1				
23	0J05104A	Leg	4				
24	0H04761A	Heat Sink RF	1				
25	0H04764A	Side Cover R	1				
26	0H04762A	Heat Sink RR	1				
27	0J05100A	Lower Channel R	1				
28	0J05102A	Upper Channel R	1				
29	BA05696A	Amp. R P.C.B. Assy	1				
30	0M04377B	Caution Label	1				
31	HA04926A	Rear Panel Assy PA-5 (U.S.A.)	1				
	HA04923A	Rear Panel Assy PA-5 (Others)	1				
	HA04924A	Rear Panel Assy PA-5 (Australia)	1				
	HA04925A	Rear Panel Assy PA-5E	1				
	HA04954A	Rear Panel Assy PA-5 (Canada)	1				
32	0B70049A	Voltage Selector PA-5 (Others)	1				
33	0B08515A	Insu-Lock	20				
L01	0E00921A	BT 3x3 @ Binding (Black Chromate)	7				
L02	0E00668A	BT 3x8 @ Binding	8				
L03	0E00857A	BT 3x6 @ Binding	2				
L04	0E00896A	M 3x6 @ Binding	2				
L05	0E00970A	M 3x4 @ Binding (Black Chromate)	14				
L06	0E00688A	BT 3x12 @ Binding	4				
L07	0E03290A	M 4x15 @ Binding (Bronze)	29				
L08	0E03030A	M 3x6 @ Binding (Nickel)	4				
L09	0E00713A	M 3x6 @ Trias (Bronze)	9				
L10	0E0325A	M 4x8 @ Binding (Gold Plated)	5				
L11	0E03287A	M 4x6 @ Binding (Gold Plated)	4				
L12	0E03336A	M 5x6 @ Binding (Black Chromate)	4				
L13	0E03296A	M 4x4 @ Binding (Black Chromate)	7				
L14	0E00852A	BT 4x12 @ Binding (Black Chromate)	4				
L15	0E03336A	Nut Hex. M5 (Black Chromate)	4				
L16	0E00594A	M 3x8 @ Binding (Bronze)	4				
L17	0E00818A	M 3x8 @ Binding (Black Chromate) (PA-5 (Others))	2				
-	0E00752A	Eyelet 2x3 PA-5 (Canada)	2				

4.1. Synthesis

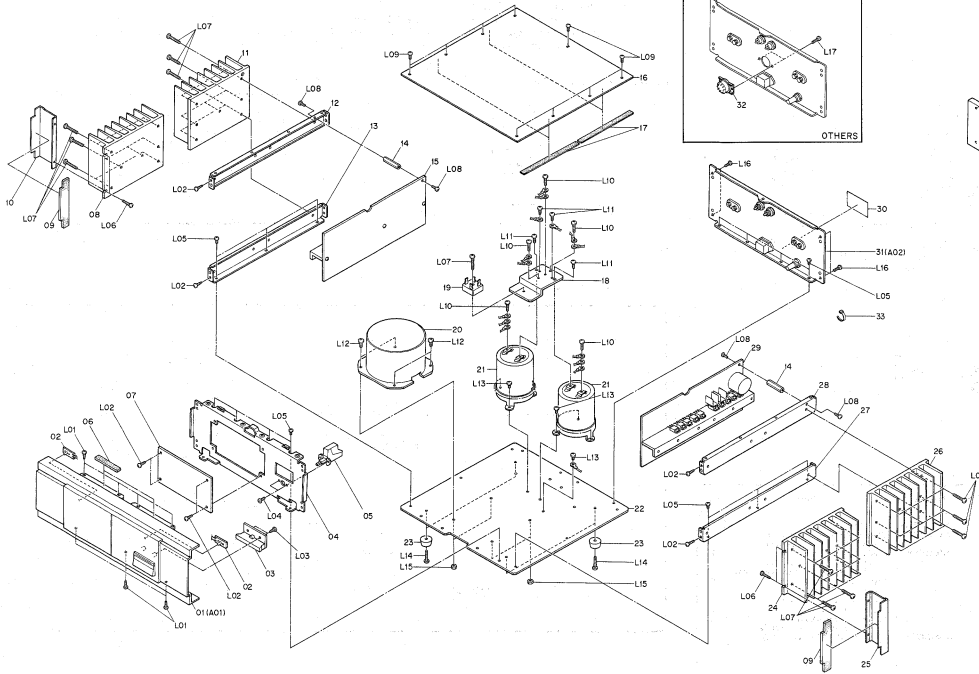


Fig. 4.1

4.2. Front Panel Assy (A01)

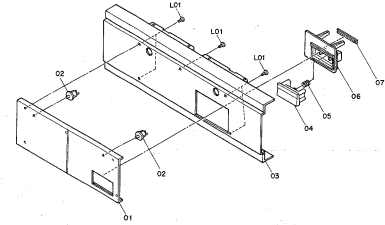


Fig. 4.2

4.3. Rear Panel Assy (A02)

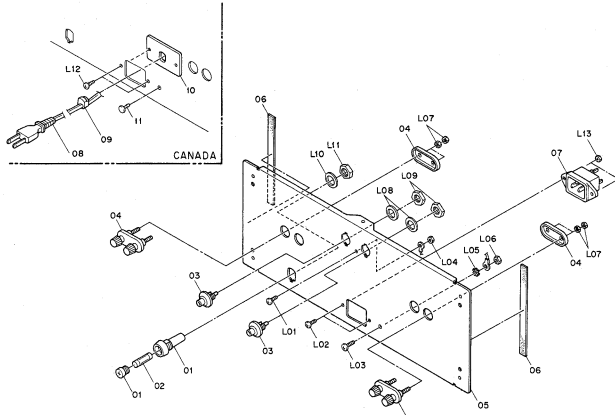


Fig. 4.3

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
A02	HA04926A	Rear Panel Assy PA-5 (U.S.A.)	1	L04	0E00972A	Nut Hex. M3	1
	HA04923A	Rear Panel Assy PA-5 (Others)	1	L05	0E00078A	Washer 4mm Toothed-Lock (except PA-5 (Canada))	1
	HA04924A	Rear Panel Assy PA-5 (Australia)	1	L06	0E00506A	Nut Hex. M4 (except PA-5 (Canada))	1
	HA04925A	Rear Panel Assy PA-5E (Australia)	1	L07	---	Nut for Speaker Output Terminal	8
HA04954A	Rear Panel Assy PA-5 (Canada) Serial No.: B20701001	1	L08	---	Washer for Pin Jack	2	
01	0B90093A	Fuse Holder PA-5 (U.S.A., Canada & Others)	1	L09	---	Nut for Pin Jack	2
	0B90094A	Fuse Holder PA-5 (Australia) & PA-5E	1	L10	---	Washer for Fuse Holder	1
	0B90164A	Fuse 6A PA-5 (U.S.A., Canada & Others)	1	L11	---	Nut for Fuse Holder	1
	0B90166A	Fuse T2.5A PA-5 (Australia) & PA-5E	1	L12	0E00921A	BT3x8 Binding (Black Chromate) PA-5 (Canada)	2
03	0B81364A	Pin Jack	2	L13	0E00507A	Nut Hex. M3 PA-5 (U.S.A.)	2
	0B81365A	Speaker Output Terminal	2				
	0H04710A	Rear Panel PA-5 (U.S.A.)	1				
	0H04756A	Rear Panel PA-5 (Others)	1				
05	0H04757A	Rear Panel PA-5 (Australia)	1				
	0H04758A	Rear Panel PA-5E (Australia)	1				
	0H04759A	Rear panel PA-5 (Canada)	1				
	0H04768A	Rear Panel PA-5E (Canada)	1				
06	0B90092A	AC Inlet PA-5 (U.S.A.)	2				
	0B90087A	AC Inlet PA-5 (Australia) & Others) & PA-5E	1				
08	0B90156A	Power Cord PA-5 (Canada)	1				
	0B90157A	Cord Bushing PA-5 (Canada)	1				
	10	0H04775A	Bushing Holder PA-5 (Canada)	1			
	11	0J05108A	Plug PA-5 (Canada)	1			
L01	0E00594A	M3x8 Binding (Bronze)	1				
	L02	0E00818A	M3x8 Binding (Black Chromate)	2			
	L03	0E03055A	M4x8 Binding (Black Chromate) (except PA-5 (Canada))	1			

5. MOUNTING DIAGRAMS AND PARTS LIST

- Mounting diagram shows a dip side view of the printed circuit board.
- Diode is 1SS53, 1S1555, or 1SS176 unless otherwise specified.
- Abbreviation for part name:

TR - Transistor, SID - Silicon Diode, ZD - Zener Diode
 RK - Carbon Resistor, RM - Metal Film Resistor, RF - Fail Safe Type Resistor, RC - Cement Resistor
 CE - Electrolytic Capacitor, CM - Mylar Capacitor, C - Mica Capacitor

5.1. Clipping LED P.C.B. Assy



Fig. 5.1

5.2. Power LED P.C.B. Assy

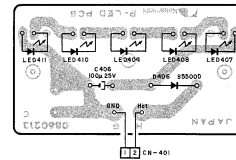


Fig. 5.2

5.3. Limiter P.C.B. Assy

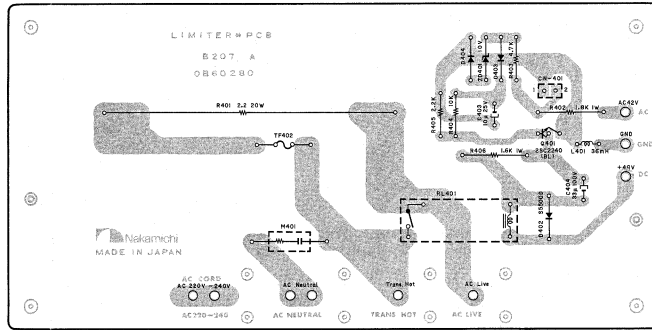
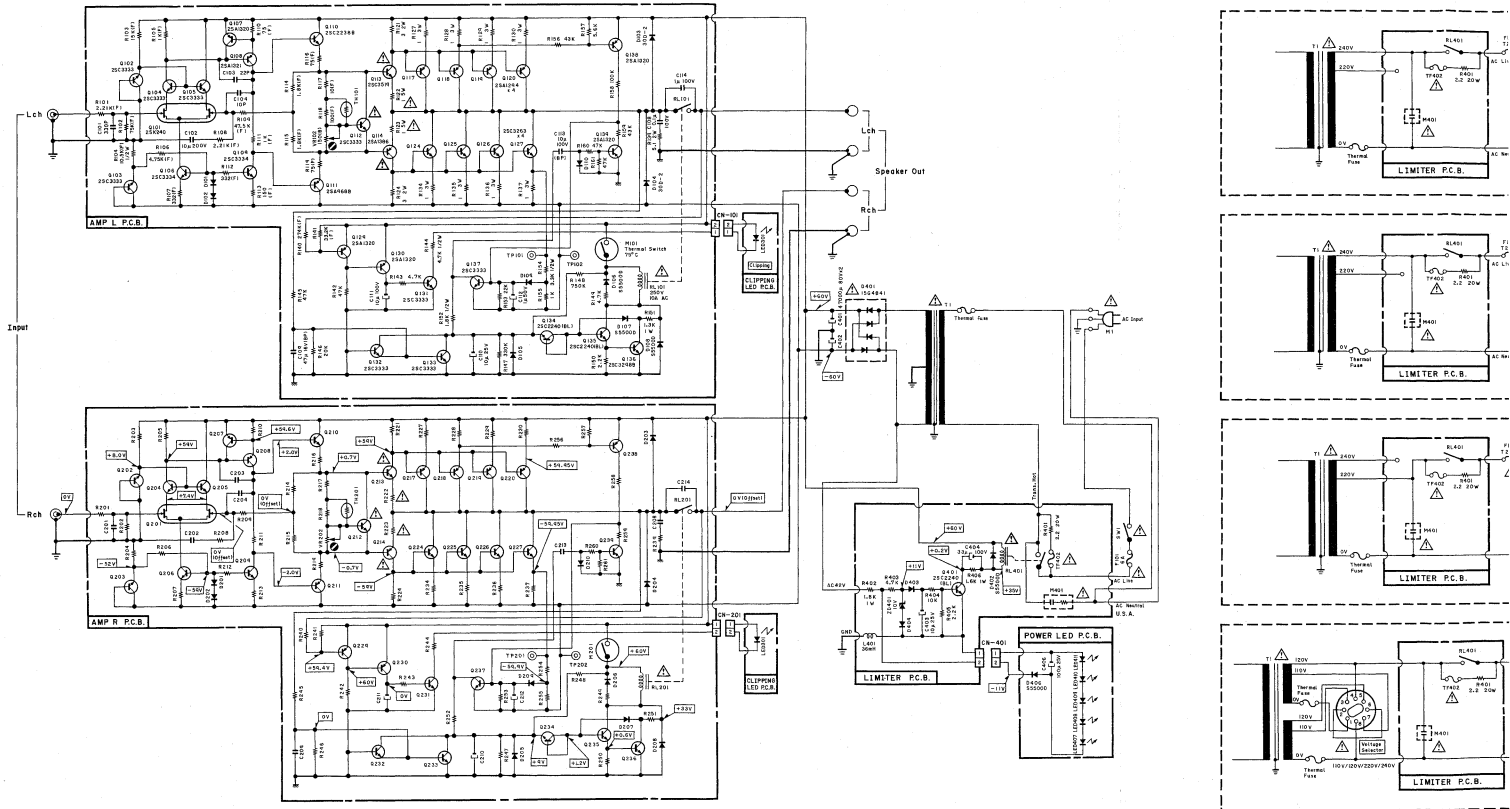


Fig. 5.3

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
LED001	EA05688A	Clipping LED P.C.B. Assy	D406 0B12252A LE12407 408, 409 410, 411 C406	BA05687A	Power LED P.C.B. Assy	BA05897A BA05898A	BA05897A	Limiter F.C.B. Assy PA-5 (U.S.A. & Canada)
	0B60214A	LED Red		0B0213C	Power LED P.C.B. SID S5500D		BA05898A	Limiter F.C.B. Assy PA-5 (Australia & Others) & PA-5E
	0B12280B	LED Cord		0B12252A	LED Green			
				0B01272A	CE 100u 25V		0B06280A	Limiter P.C.B. TR 25C2240 (BL)
				0B62493A	Power LED Cord		0B06142A	TR 25C2240 (BL)
				0J04998B	Power Reflector (1)		0B06232A	ZD 10V ED10E33
				0J04998C	Sheet		0B12252A	SID S5500D
				0E00857A	BT3x6 Binding		0B06181A	SID 15553
							L401	0E03819C
							R401	Inductor 60mH
							R402	RC 2.2 20W K
								0B24093A
								0B24094A
								RF 1.8K 1W J

6. SCHEMATIC DIAGRAM




- Notes: 1. Diode is 1SS53, 1S1555, or 1SS176 unless otherwise specified.
 2. Voltages shown in  are typical value with no input signal at 60 Hz.

Fig. 6

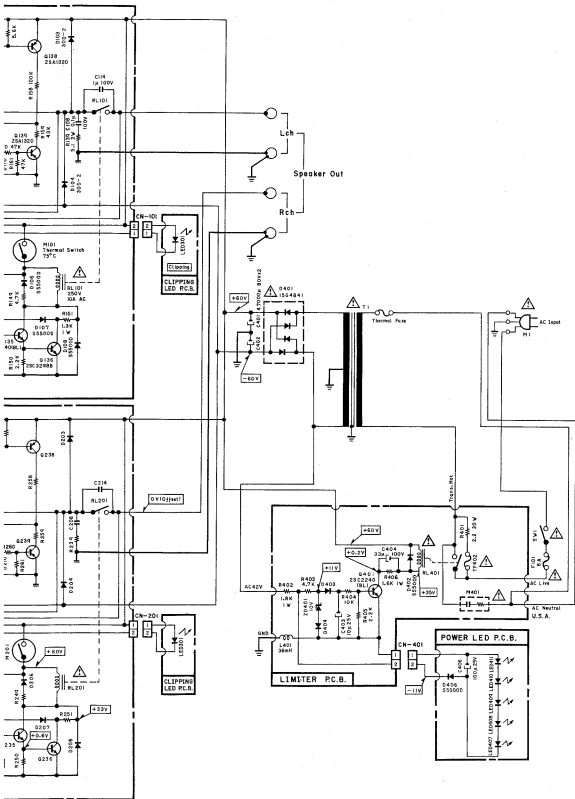
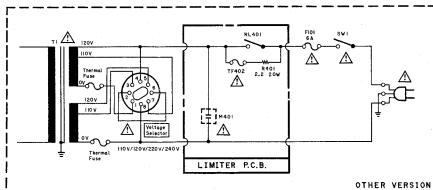
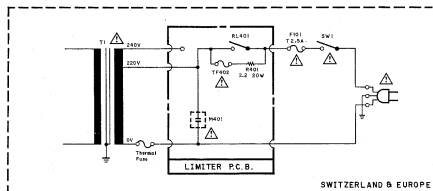
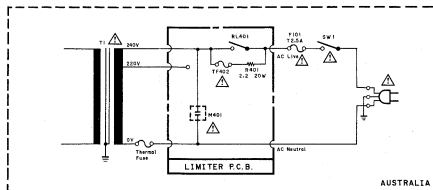
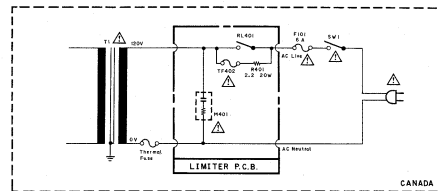
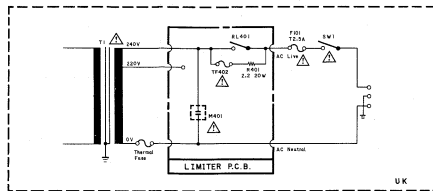



Fig. 6



WARNING:
Parts marked with the symbol  have critical characteristics.
Use **ONLY** replacement parts recommended by the manufacturer.

It is recommended that the unit be operated from a suitable DC supply or batteries during initial check-out procedures.

CAUTION:
Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamp, or if the resistance from chassis to either side of the power cord is less than 240 k ohms, the unit is defective.
WARNING — DO NOT return the unit to the customer until the problem is located and corrected.

7. WIRING DIAGRAM

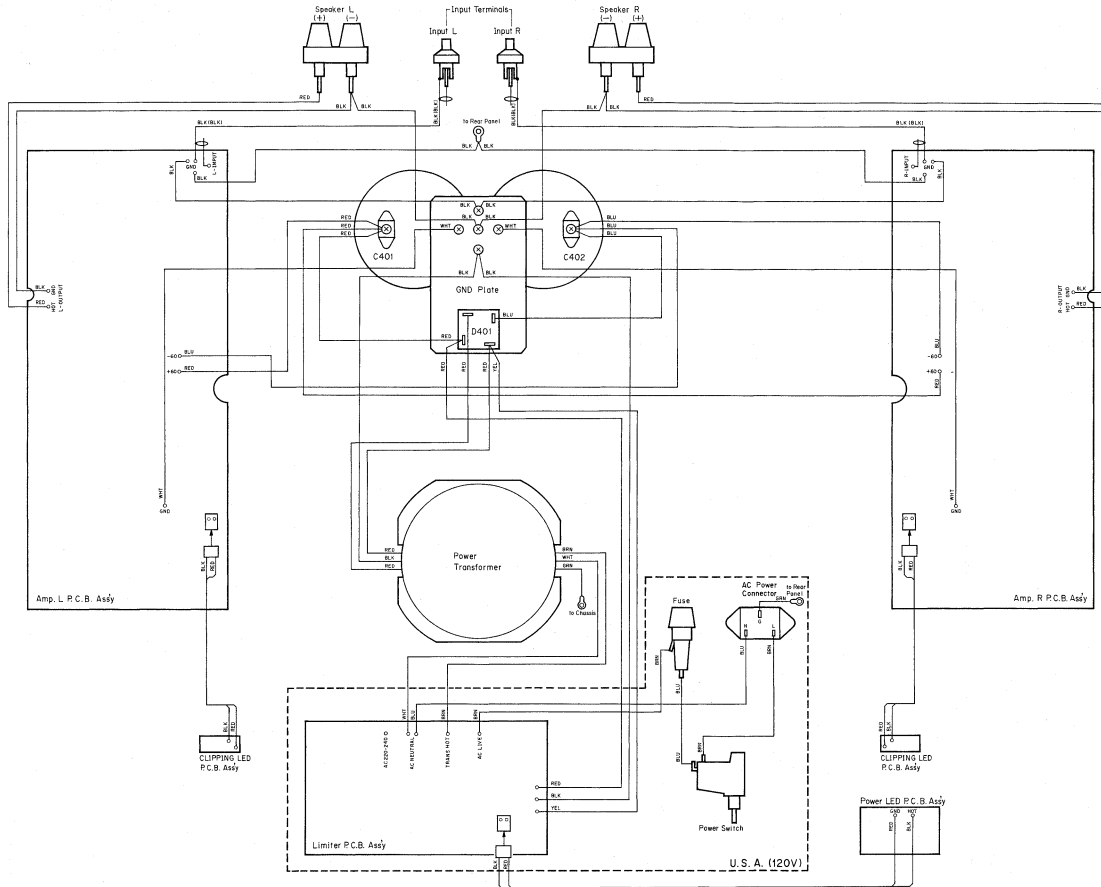
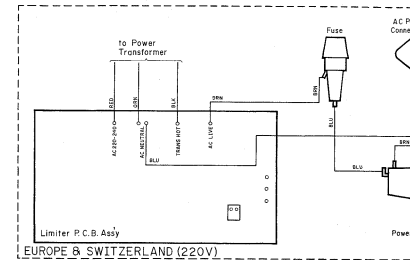
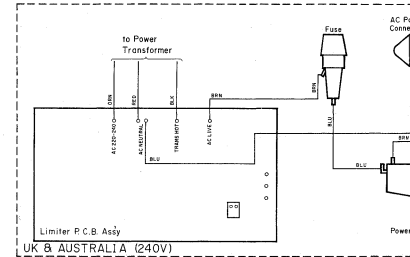


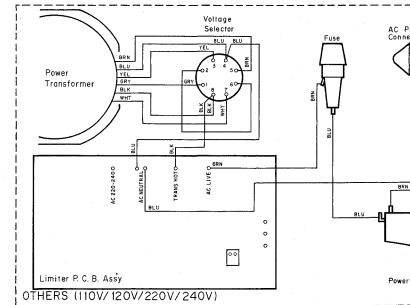
Fig. 7



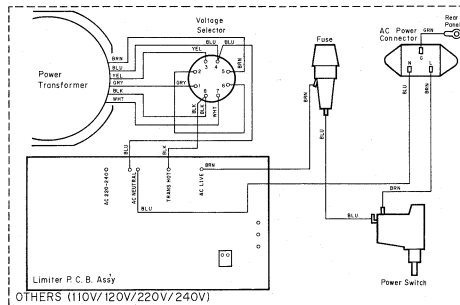
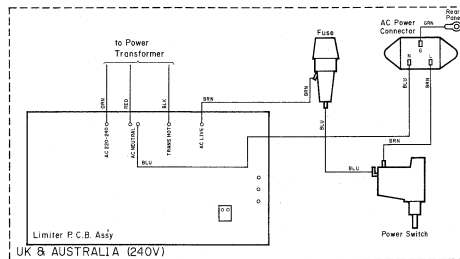
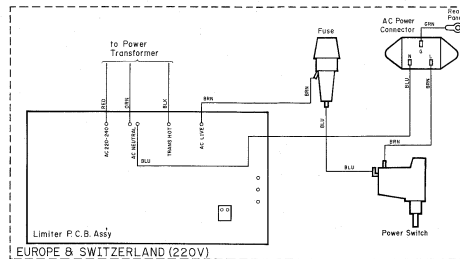
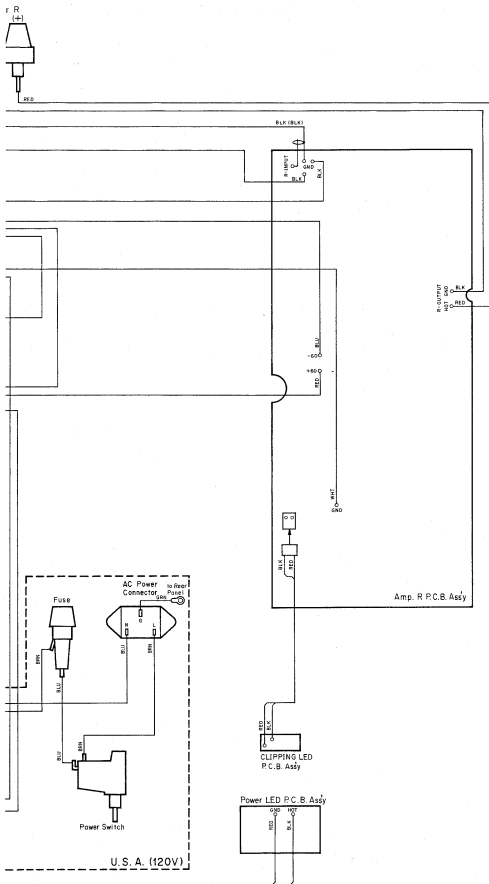
EUROPE & SWITZERLAND (220V)



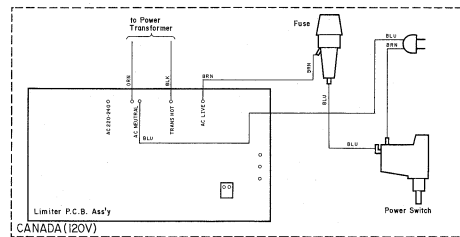
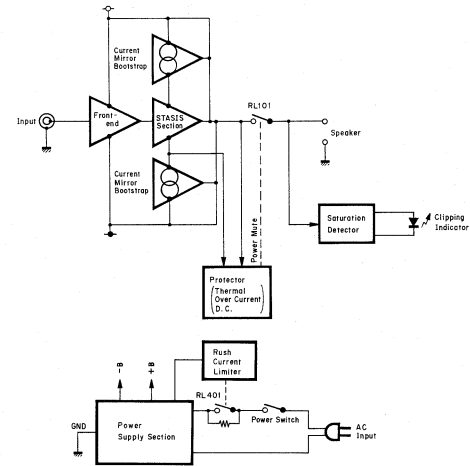
UK & AUSTRALIA (240V)



OTHERS (110V/120V/220V/240V)



8. BLOCK DIAGRAM



Notes: 1. Table of wire colors

BRN - Brown	GRN - Green	WHT - White
RED - Red	BLU - Blue	BLK - Black
ORN - Orange	VIO - Violet	
YEL - Yellow	GRY - Gray	

2. Component side view of the P.C.B. is illustrated unless otherwise specified.

3. Wire tube color is shown in ().

9. SPECIFICATIONS

Continuous Average Power	100 W x 2 (8 ohms, both channels driven, 20-20,000 Hz, 0.1% THD)
Output (NEW IHF)	
Dynamic Power per Channel	150 W (8 ohms)
Dynamic Head Room	1.7 dB (8 ohms)
(New IHF)	
Power Bandwidth (Half	5 Hz - 50 kHz
Rated Power, 0.1% THD)	
Damping Factor (NEW IHF)	Greater than 60/60/60
20 Hz/1 kHz/20 kHz	
Input Sensitivity/Impedance	1.4 V/75 k ohms (rated power)
(New IHF)	140 mV (1 W output)
Frequency Response	20-20,000 Hz +0, -0.5 dB
(1 W, NEW IHF)	7-150,000 Hz +0, -3 dB
Signal to Noise Ratio	Better than 120 dB
(Input Shorted, Rated Power, IHF-A-WTD)	
Residual Noise Level	Less than 25 μ V
(IHF-A-WTD)	
Total Harmonic Distortion	Less than 0.1%
(Rated Power, 20-20,000 Hz)	
Intermodulation Distortion	Less than 0.1%
(Rated Power, 60 Hz: 7 kHz, 4:1)	
Stereo Separation	100/90/70 dB
(Input Shorted)	
100 Hz/1 kHz/10 kHz	
Output Complement	10 transistors per channel
Output Current Capability	12 A continuous, 35 A peak (per channel)
Power Supply	450 W toroidal transformer, 94,000 μ F total filter capacitance
Power Source	120, 220, 240, 110-120/220-240 V AC; 50/60 Hz (According to country of sale)
Power Consumption	450 W max.
Dimensions	435 (W) x 135 (H) x 368 (D) mm 17-1/8 (W) x 5-5/16 (H) x 14-1/2 (D) inches
Approximate Weight	16 kg; 35 lbs., 4 oz.

- Specifications and design are subject to change for further improvement without notice.
- STASIS manufactured under license from Threshold Corporation.
- STASIS is a trademark of Threshold Corporation.

Service Manual

Nakamichi PA-5, PA-5E

Nakamichi Corporation

Tokyo Office
Shinjuku Daiichi Seimei Bldg.
2-7-1 Nishishinjuku, Tokyo
Phone (03) 342-4461
Telex : 2324721 (NAKAM J)

Nakamichi U.S.A. Corporation

19701 South Vermont Avenue
Torrance, California 90502
Phone : (213) 538-8150

Nakamichi GmbH

Stephanienstrasse 6, 4000 Düsseldorf 1
Phone : (0211) 359036