

RHYTHM SOUND MODULE

RM50

SERVICE MANUAL



RM50

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IMPORTANT NOTICE

This manual has been provided for the use of authorized Yamaha Retailers and their service personnel. It has been assumed that basic service procedures inherent to the industry, and more specifically Yamaha Products, are already known and understood by the users, and have therefore not been restated.

WARNING: Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components and failure of the product to perform as specified. For these reasons, we advise all Yamaha product owners that all service required should be performed by an authorized Yamaha Retailer or the appointed service representative.

IMPORTANT: The presentation or sale of this manual to any individual or firm does not constitute authorization, certification, recognition of any applicable technical capabilities, or establish a principle-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research, engineering, and service departments of Yamaha are continually striving to improve Yamaha products. Modifications are, therefore, inevitable and changes in specification are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

WARNING: Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss).

IMPORTANT: Turn the unit OFF during disassembly and parts replacement. Recheck all work before you apply power to the unit.

This product uses a lithium battery for memory back-up.

WARNING: Lithium batteries are dangerous because they can be exploded by improper handling. Observe the following precautions when handling or replacing lithium batteries.

- Leave lithium battery replacement to qualified service personnel.
- Always replace with batteries of the same type.
- When installing on the PC board, solder using the connection terminals provided on the battery cells. Never solder directly to the cells. Perform the soldering as quickly as possible.
- Never reverse the battery polarities when installing.
- Do not short the batteries.
- Do not attempt to recharge these batteries.
- Do not disassemble the batteries.
- Never heat batteries or throw them into fire.

ADVARSEL!

Lithiumbatteri. Eksplosionsfare.

Udsigtning må kun foretages af en sagkyndig, og som beskrevet i servicemanualen.

WARNING: CHEMICAL CONTENT NOTICE!

The solder used in the production of this product contains LEAD. In addition, other electrical/electronic and/or plastic (where applicable) components may also contain traces of chemicals found by the California Health and Welfare Agency (and possibly other entities) to cause cancer and/or birth defects or other reproductive harm.

DO NOT PLACE SOLDER, ELECTRICAL/ELECTRONIC OR PLASTIC COMPONENTS IN YOUR MOUTH FOR ANY REASON WHAT SO EVER!

Avoid prolonged, unprotected contact between solder and your skin! When soldering, do not inhale solder fumes or expose eyes to solder/flux vapor!.

If you come in contact with solder or components located inside the enclosure of this product, wash your hands before handling food.

■ SPECIFICATIONS

Tone generator:

AWM2: 16 bit linear waveform data, 48 kHz maximum sampling frequency
 Filter: Time variant IIR (infinite impulse response) digital filter, one filter per element
 Maximum simultaneous notes: 16
 Maximum simultaneous timbres: 16
 Note layering: 2 elements per voice, 2 voices per note

Memory:

Rhythm kits: 64 preset, 64 internal
 Voices: 500 preset, 500 variation, 128 internal
 Waveforms: 133 waveforms

Expansion slots:

Waveform cards: 3 slots
 Data cards: 1 slot
 Wave RAM: SYEMB06 512 kbyte Expansion Memory Board (optional)

Controls:

Rotary volume knob
 Panel switches: PLAY, EDIT, UTILITY, PAGE+, PAGE-, +1/YES, -1/NO, SHIFT, ▷, EXIT, SOUND

Displays:

LCD: 24-character × 2 line (with backlight)
 LED: red × 2 LED (EDIT, MIDI)

Terminals:

Audio output: STEREO OUT (L/MONO, R), INDIVIDUAL OUT × 6, PHONES
 Controller: TRIGGER INPUT × 6
 MIDI: IN, OUT, THRU

Power requirements:

US & Canadian models: 120V
 General model: 220–240V

Power consumption:

All models: 14W

Dimensions (W × D × H):

480 × 44 × 346.7 mm
 (18-7/8" × 1-3/4" × 13-5/8")

Weight:

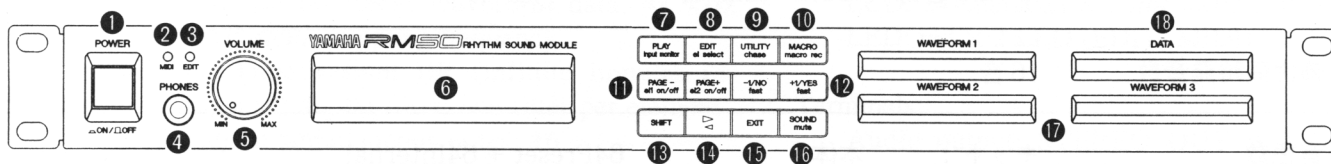
Approx. 5 kg (Approx. 11 lbs)

■ 総合仕様

音源	AWM2音源 (16bit/48kHz、リバーブ再生可)
最大同時発音数	16音
音色数	キット： 本体 64Preset + 64Internal データカード 64Card ※1キットには49MIDIノートと6トリガーインの設定可 ボイス： 本体 500Preset + 500Variation + 128Internal データカード 500Card variation + 128Card ウェーブカード 32Wavecard × 3slot ウェーブ： 133Preset max64 for each Wavecard max64 for Internal (拡張RAM)
レイヤー数	2レイヤー/ボイス 4レイヤー/キット
MIDI	ピッチベンド、コントロールチェンジコントロール (ボリューム、ピッチ、パン、ディケイ、バランス、フィルターカットオフ、LFOデプス) システムエクスクルーシブフルサポート
接続端子	TRIGGER INPUT × 6, INDIVIDUAL OUTPUT × 6, STEREO OUTPUT × 1, MIDI IN/OUT/THRU, PHONES
カードスロット	データカードスロット × 1、ウェーブカードスロット × 3
ディスプレイ	24文字 × 2行LCD (バックライト付)、EDITインジケーター、MIDIインジケーター
電源	AC100V・50/60Hz
消費電力	10W
寸法	480 (W) × 44 (H) × 346.7 (D)
重量	5Kg
付属品	取扱説明書、保証書

■ PANEL LAYOUT (パネルレイアウト)

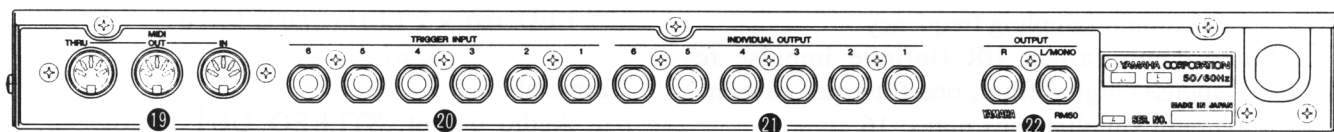
● Front Panel (フロントパネル)



- ① POWER switch
- ② MIDI lamp
- ③ EDIT lamp
- ④ PHONES jack
- ⑤ VOLUME control
- ⑥ Liquid crystal display panel (LCD)
- ⑦ [PLAY] key
- ⑧ [EDIT] key
- ⑨ [UTILITY] key
- ⑩ [MACRO] key
- ⑪ [PAGE -] and [PAGE +] keys
- ⑫ [+ 1/YES] and [- 1/NO] keys
- ⑬ [SHIFT] key
- ⑭ [▷] key
- ⑮ [EXIT] key
- ⑯ [SOUND] key
- ⑰ WAVEFORM slots 1-3
- ⑱ DATA slot

- ①パワースイッチ (POWER)
- ②MIDIモニターランプ
- ③EDITモードランプ
- ④ヘッドフォン端子 (PHONES)
- ⑤ボリューム (VOLUME)
- ⑥LCDパネル
- ⑦[PLAY] キー
- ⑧[EDIT] キー
- ⑨[UTILITY] キー
- ⑩[MACRO] キー
- ⑪[PAGE-], [PAGE+] キー
- ⑫[+ 1/YES], [- 1/NO] キー
- ⑬[SHIFT] キー
- ⑭[▷] キー
- ⑮[EXIT] キー
- ⑯[SOUND] キー
- ⑰ウェーブフォームカードスロット 1～3
- ⑱データカードスロット

● Rear Panel (リアパネル)



① MIDI terminals

② TRIGGER INPUT jacks

③ INDIVIDUAL OUTPUT jacks

④ OUTPUT jacks

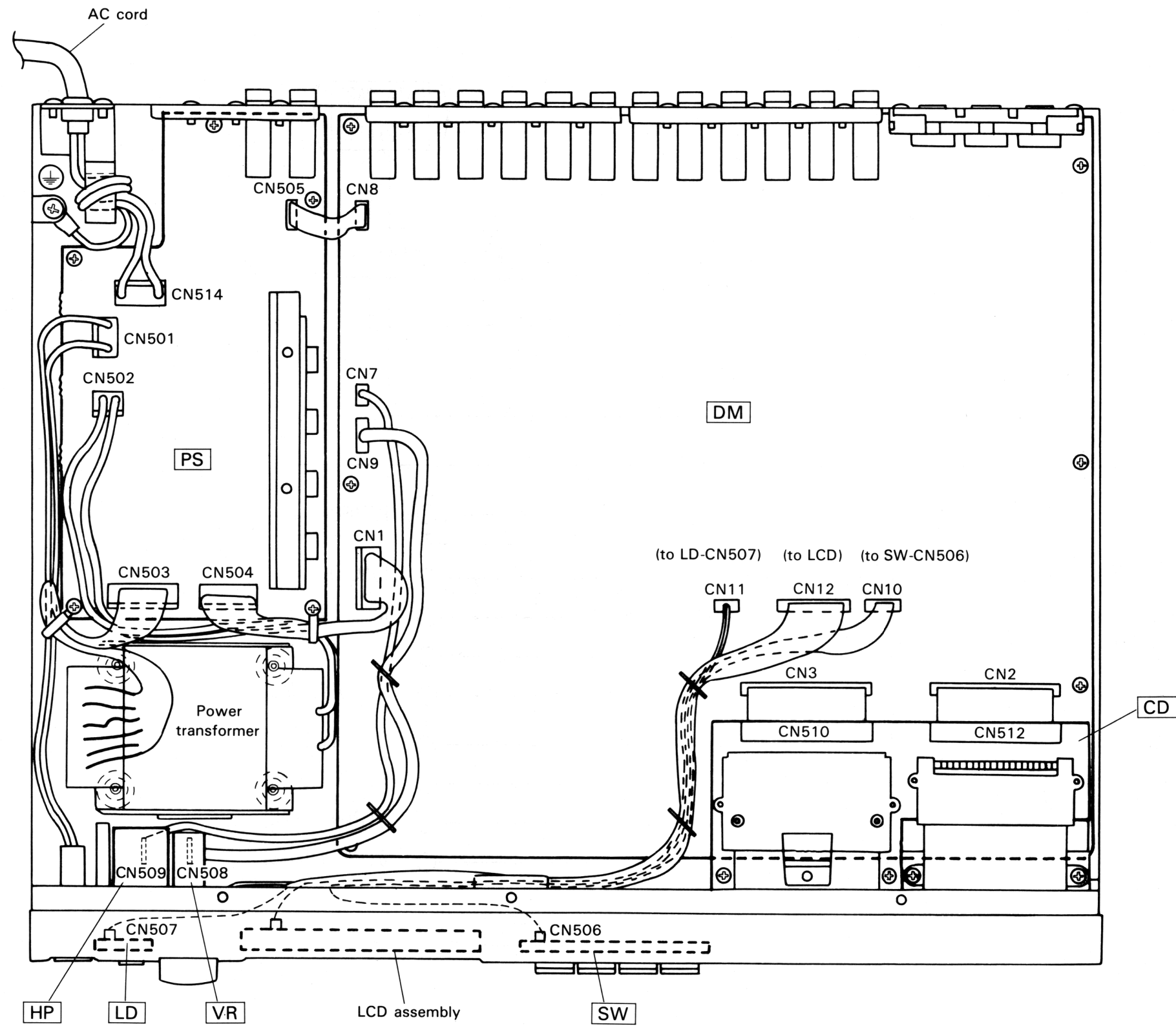
① MIDI端子 (IN, OUT, THRU)

② トリガー入力 [TRIGGER INPUT] 端子

③ インディビジュアルアウト [INDIVIDUAL OUTPUT] 端子

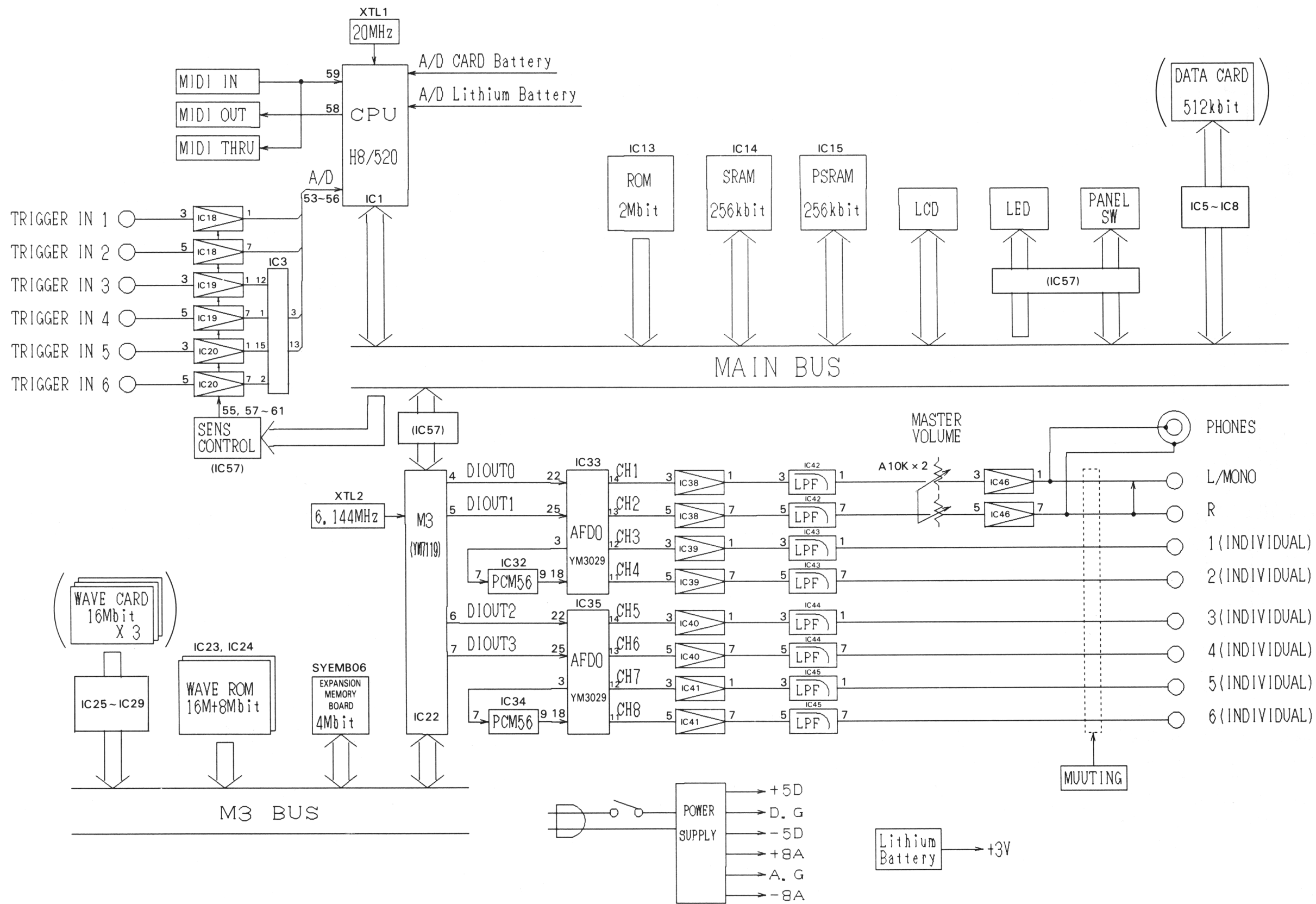
④ ステレオアウト [OUTPUT] 端子

■ CIRCUIT BOARD LAYOUT (ユニットレイアウト)



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■ BLOCK DIAGRAM (ブロックダイアグラム)



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■ DISASSEMBLY PROCEDURE (分解手順)

1. Front Panel Assembly Removal

1-1. Remove the three (3) screws marked (250) and the three (3) screws marked (220), then the front panel assembly can be removed. (Fig. 1)

2. Top Cover Assembly Removal

2-1. Remove the front panel assembly. (see procedure 1)

2-2. Remove the six (6) screws marked (270), then remove the right and left side angle brackets marked (260). (Fig. 1)

2-3. Remove the seven (7) screws marked (240), then the top cover assembly can be removed. (Fig. 1)

1. フロントパネルAss'yの外し方

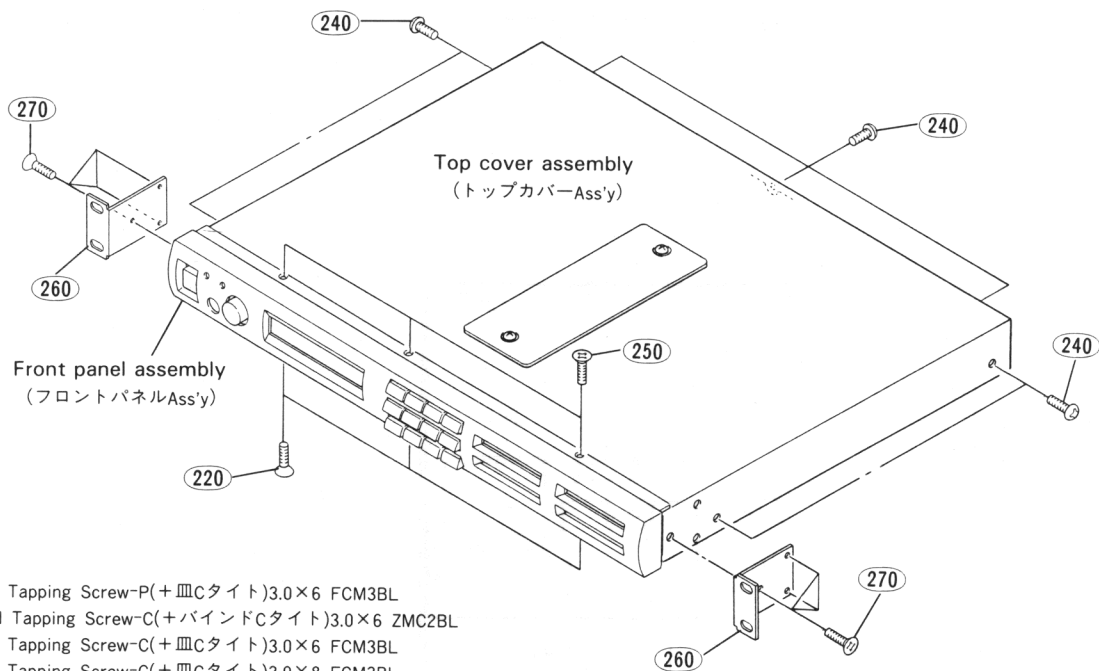
1-1 (250)のネジ3本と(220)のネジ3本を外し、フロントパネルAss'yを外します。(図1)

2. トップカバーAss'yの外し方

2-1 フロントパネルAss'yを外します。(1項参照)

2-2 (270)のネジを、左右それぞれ3本ずつ外して(260)のサイドアングル2個を外します。(図1)

2-3 (240)のネジ7本を外し、トップカバーAss'yを外します。(図1)



- 220 : Flat Head Tapping Screw-P(+皿Cタイト)3.0×6 FCM3BL
 240 : Bind Head Tapping Screw-C(+バインドCタイト)3.0×6 ZMC2BL
 250 : Flat Head Tapping Screw-C(+皿Cタイト)3.0×6 FCM3BL
 270 : Flat Head Tapping Screw-C(+皿Cタイト)3.0×8 FCM3BL

(Fig. 1)

3. CD Circuit Board Removal (PN 5/6)

3-1. Remove the front panel assembly. (see procedure 1)

3-2. Remove the top cover assembly. (see procedure 2)

3-3. Remove the four (4) screws marked (170), then remove the CD circuit board with the card guides. (Fig. 2 and Fig. 4)

3-4. Remove the three (3) screws marked (100a) and the one (1) screw marked (110), then remove the card guide-T marked (80a) and the card guide-B marked (90a) from the CD circuit board. (Fig. 3 and Fig. 4)

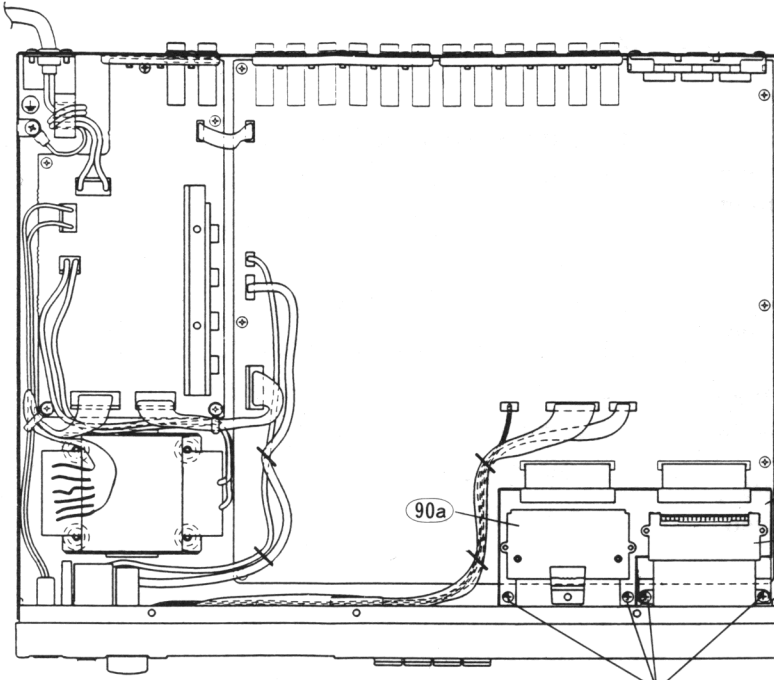
3. CDシートの外し方(PN5/6)

3-1 フロントパネルAss'yを外します。(1項参照)

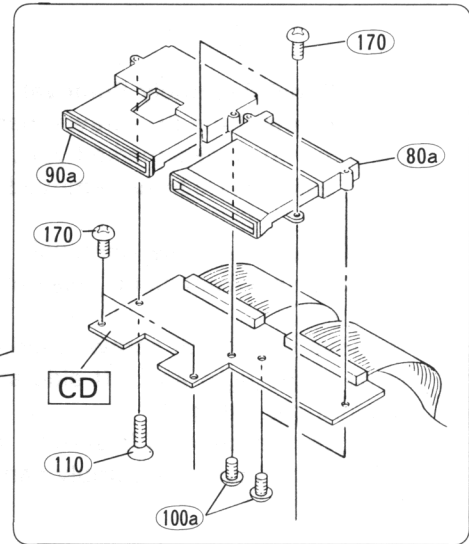
3-2 トップカバーAss'yを外します。(2項参照)

3-3 (170)のネジ4本を外し、(80a)のカードガイドT 1個と(90a)のカードガイドB 1個と共にCDシートを外します。(図2、図4)

3-4 (100a)のネジ3本と(110)のネジ1本を外し、(80a)のカードガイドT 1個と(90a)のカードガイドB 1個をCDシートから外します。(図3、図4)

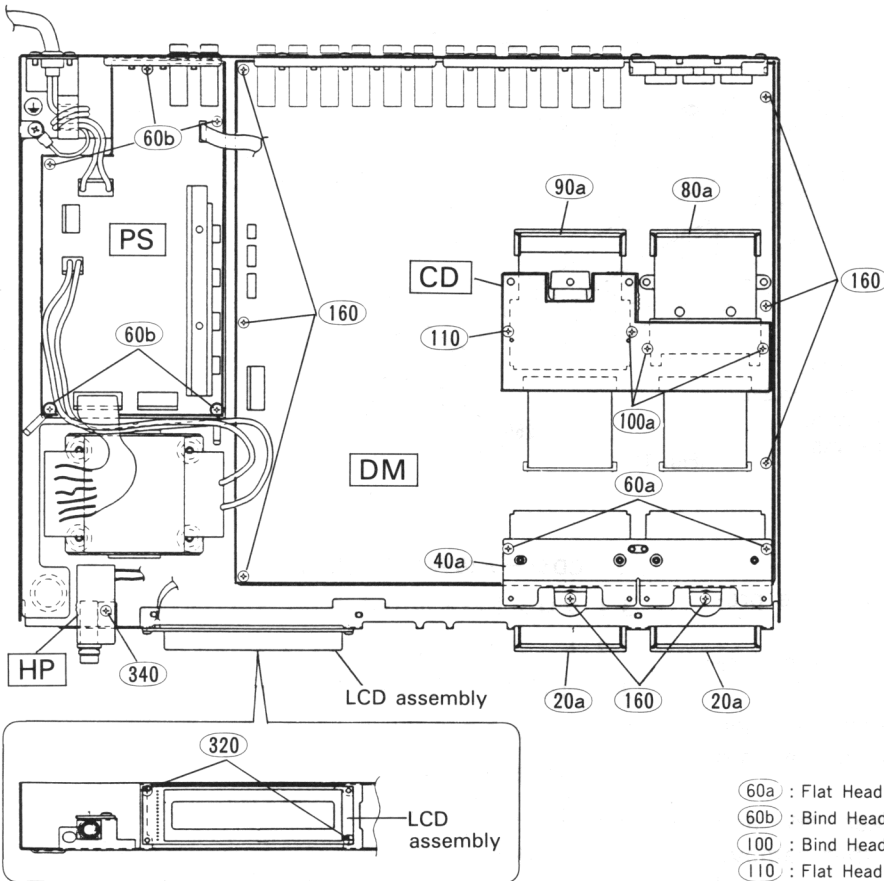


(Fig. 2)



(Fig. 3)

- ⑩⑩ : Bind Head Tapping Screw-P(+バインドPタイト)3.0×6 FCM3BL
- ⑪⑩ : Flat Head Tapping Screw-P(+皿Pタイト)3.0×8 FCM3BL
- ⑬⑦⑦ : Bind Head Tapping Screw-C(+バインドCタイト)3.0×6 ZMC2BL



(Fig. 4)

- ⑥⑥a : Flat Head Tapping Screw-P(+皿Pタイト)3.0×8 FCM3BL
- ⑥⑥b : Bind Head Tapping Screw-C(+バインドCタイト)3.0×6 ZMC2BL
- ⑩⑩ : Bind Head Tapping Screw-P(+バインドPタイト)3.0×6 FCM3BL
- ⑪⑩ : Flat Head Tapping Screw-P(+皿Pタイト)3.0×8 FCM3BL
- ⑬④④ : Bind Head Tapping Screw-P(+バインドPタイト)3.0×6 FCM3BL
- ⑬⑤⑤ : Bind Head Tapping Screw-C(+バインドCタイト)3.0×6 ZMC2BL
- ⑬⑥⑥ : Bind Head Tapping Screw-C(+バインドCタイト)3.0×6 ZMC2BL
- ⑬⑦⑦ : Bind Head Tapping Screw-C(+バインドCタイト)3.0×6 ZMC2BL
- ⑬⑧⑧ : Bind Head Tapping Screw-C(+バインドCタイト)3.0×6 ZMC2BL
- ⑬⑨⑨ : Bind Head Tapping Screw-C(+バインドCタイト)3.0×6 ZMC2BL

4. DM Circuit Board Removal

- 4-1. Remove the front panel assembly. (see procedure 1)
- 4-2. Remove the top cover assembly. (see procedure 2)
- 4-3. Remove the CD circuit board. (see procedure 3)
- 4-4. Remove the two (2) screws marked (60a), then remove the angle bracket marked (40a). (Fig. 4)
- 4-5. Remove the eight (8) screws marked (160), the six (6) screws marked (150) and the two (2) screws marked (140), then remove the DM circuit board with the card guides. (Fig. 4 and Fig. 5)
- 4-6. Remove the four (4) screws marked (30a), then remove the two (2) card guide-B marked (20a) from the DM circuit board. (Fig. 6)

5. PS Circuit Board Removal (PN1/6)

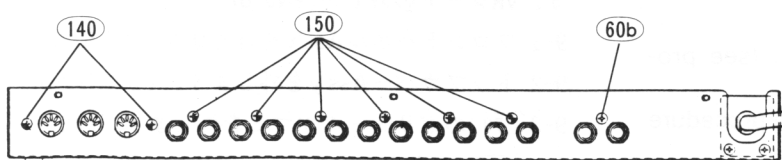
- 5-1. Remove the front panel assembly. (see procedure 1)
- 5-2. Remove the top cover assembly. (see procedure 2)
- 5-3. Remove the six (6) screws marked (60b), then the PS circuit board can be removed. (Fig. 4 and Fig. 5)

4. DMシートの外し方

- 4-1 フロントパネルAss'yを外します。(1項参照)
- 4-2 トップカバーAss'yを外します。(2項参照)
- 4-3 CDシートを外します。(3項参照)
- 4-4 (60a)のネジ2本を外し、(40a)のカードアングルを外します。(図4)
- 4-5 (160)のネジ8本と(150)のネジ6本と(140)のネジ2本を外し、(20a)のカードガイドB 2個と共にDMシートを外します。(図4、図5)
- 4-6 (30a)のネジ4本を外してDMシートより(20a)のカードガイドB 2個を外します。(図6)

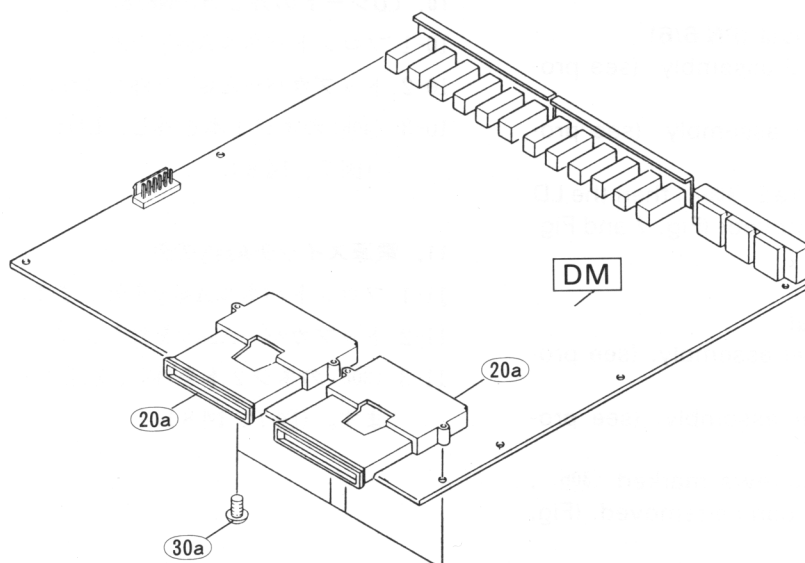
5. PSシートの外し方(PN1/6)

- 5-1 フロントパネルAss'yを外します。(1項参照)
- 5-2 トップカバーAss'yを外します。(2項参照)
- 5-3 (60b)のネジ6本を外し、PSシートを外します。(図4、図5)



(Fig. 5)

- (60b) : Bind Head Tapping Screw-C(+バインドCタイト)3.0×6 ZMC2BL
- (140) : Bind Head Tapping Screw-P(+バインドPタイト)3.0×6 FCM3BL
- (150) : Bind Head Tapping Screw-C(+バインドCタイト)3.0×6 ZMC2BL



(Fig. 6)

- (30) : Bind Head Tapping Screw-P(+バインドPタイト)3.0×6 FCM3BL

6. HP Circuit Board Removal (PN 4/6)

- 6-1. Remove the front panel assembly. (see procedure 1)
- 6-2. Remove the top cover assembly. (see procedure 2)
- 6-3. Remove the screw marked (340), then the HP circuit board can be removed. (Fig. 4)

7. LCD Assembly Removal

- 7-1. Remove the front panel assembly. (see procedure 1)
- 7-2. Remove the top cover assembly. (see procedure 2)
- 7-3. Remove the two (2) screws marked (320), then the LCD assembly can be removed. (Fig. 4)

8. SW Circuit Board Removal (PN 2/6)

- 8-1. Remove the front panel assembly. (see procedure 1)
- 8-2. Remove the top cover assembly. (see procedure 2)
- 8-3. Remove the four (4) screws marked (80b), then the SW circuit board can be removed. (Fig. 7 and Fig. 8)
- 8-4. Pull the twelve (12) knobs marked (90b) through (200) off the SW circuit board. (Fig. 7)

9. VR Circuit Board Removal (PN 3/6)

- 9-1. Remove the front panel assembly. (see procedure 1)
- 9-2. Remove the top cover assembly. (see procedure 2)
- 9-3. Pull the knob marked (70) off. (Fig. 7)
- 9-4. Remove the two (2) screws marked (60c), then the VR circuit board can be removed. (Fig. 7)
- 9-5. Loosen the hexagonal nut marked (A) and then remove the holder marked (20b) from the VR circuit board. (Fig. 7)

10. LD Circuit Board Removal (PN 6/6)

- 10-1. Remove the front panel assembly. (see procedure 1)
- 10-2. Remove the top cover assembly. (see procedure 2)
- 10-3. Remove the screw marked (40b), then the LD circuit board can be removed. (Fig. 7 and Fig. 8)

11. Power Switch Removal

- 11-1. Remove the front panel assembly. (see procedure 1)
- 11-2. Remove the top cover assembly. (see procedure 2)
- 11-3. Remove the two (2) screws marked (30b), then the power switch can be removed. (Fig. 7 and Fig. 8)

6. HPシートの外し方(AN4/6)

- 6-1 フロントパネルAss'yを外します。(1項参照)
- 6-2 トップカバーAss'yを外します。(2項参照)
- 6-3 (340)のネジ1本を外し、HPシートを外します。(図4)

7. LCD Ass'yの外し方

- 7-1 フロントパネルAss'yを外します。(1項参照)
- 7-2 トップカバーAss'yを外します。(2項参照)
- 7-3 (320)のネジ2本を外し、LCD Ass'yを外します。(図4)

8. SWシートの外し方(PN2/6)

- 8-1 フロントパネルAss'yを外します。(1項参照)
- 8-2 トップカバーAss'yを外します。(2項参照)
- 8-3 (80b)のネジ4本を外し、SWシートを外します。(図7、図8)
- 8-4 SWシートから(90b)～(200)のスイッチツマミ12個を外します。(図7)

9. VRシートの外し方(PN3/6)

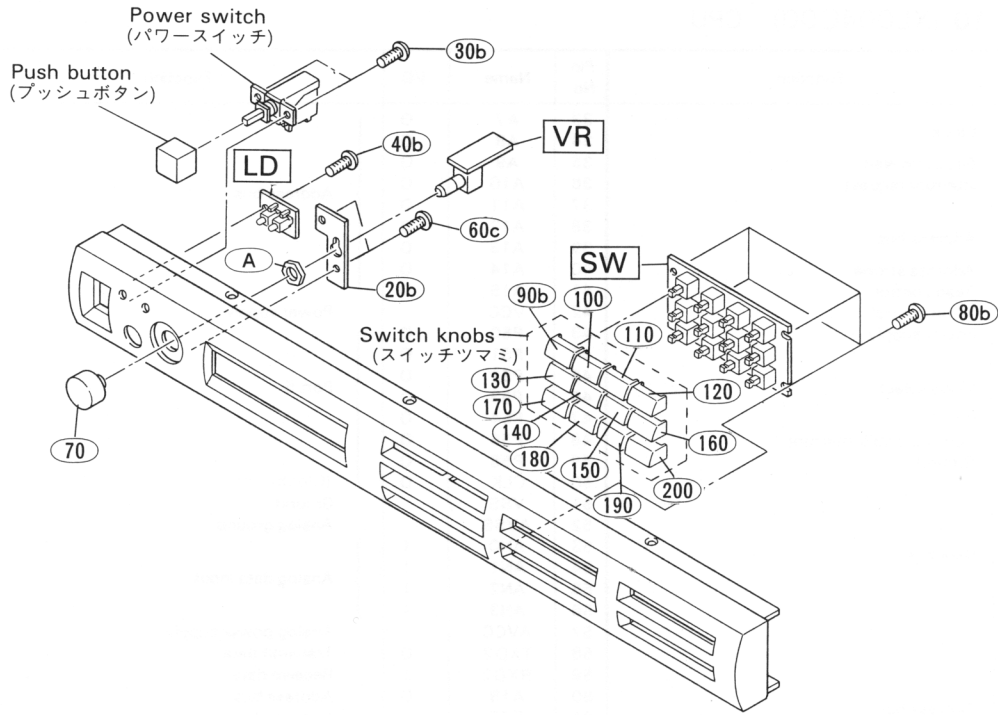
- 9-1 フロントパネルAss'yを外します。(1項参照)
- 9-2 トップカバーAss'yを外します。(2項参照)
- 9-3 (70)のボリュームツマミを外します。(図7)
- 9-4 (60c)のネジ2本を外し、VRシートを外します。(図7、図8)
- 9-5 (A)の六角ナット1個を緩め、VRシートから(20b)のVRアングルを外します。(図7)

10. LDシートの外し方(PN6/6)

- 10-1 フロントパネルAss'yを外します。(1項参照)
- 10-2 トップカバーAss'yを外します。(2項参照)
- 10-3 (40b)のネジ1本を外し、LDシートを外します。(図7、図8)

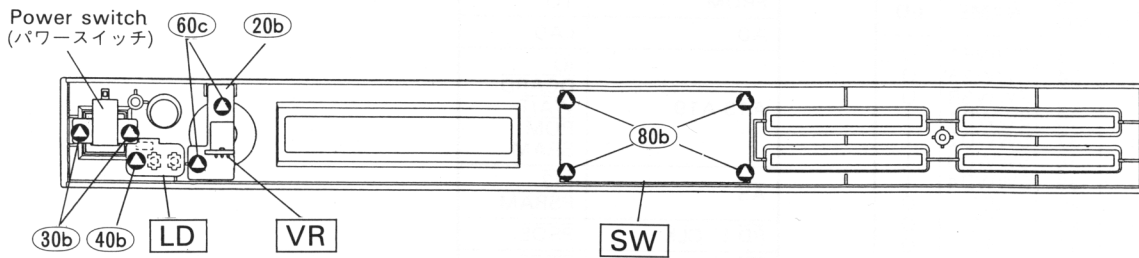
11. 電源スイッチAss'yの外し方

- 11-1 フロントパネルAss'yを外します。(1項参照)
- 11-2 トップカバーAss'yを外します。(2項参照)
- 11-3 (30b)のネジ2本を外し、電源スイッチAss'yを外します。(図7、図8)



(Fig. 7)

- ③① : Bind Head Tapping Screw-P(+バインドPタイト)3.0×6 FCM3BL
- ④① : Bind Head Tapping Screw-P(+バインドPタイト)3.0×6 FCM3BL
- ⑥① : Bind Head Tapping Screw-P(+バインドPタイト)3.0×6 FCM3BL
- ⑧① : Bind Head Tapping Screw-P(+バインドPタイト)3.0×6 FCM3BL



(Fig. 8)

- ③① : Bind Head Tapping Screw-P(+バインドPタイト)3.0×6 FCM3BL
- ④① : Bind Head Tapping Screw-P(+バインドPタイト)3.0×6 FCM3BL
- ⑥① : Bind Head Tapping Screw-P(+バインドPタイト)3.0×6 FCM3BL
- ⑧① : Bind Head Tapping Screw-P(+バインドPタイト)3.0×6 FCM3BL

■ LSI PIN DESCRIPTION (LSI端子機能表)

• HD6475208P-10 (XL004C00) CPU

Pin No.	Name	I/O	Function	Pin No.	Name	I/O	Function
1	EXTAL	I	Clock	33	A7	O	Address bus
2	XTAL	I		34	A8	O	
3	WAIT	I		35	A9	O	
4	IRQ0	O	36	A10	O		
5	A18	O	37	A11	O		
6	A17	O	38	A12	O		
7	A16	O	39	A13	O		
8	\overline{AS}	O	40	A14	O		
9	\overline{RD}	O	41	A15	O		
10	\overline{WR}	O	42	VCC		Power supply	
11	VCC		43	P50	O		
12	MDO	I	44	P51	O	Port 5	
13	MD1	I	45	P52	O		
14	MD2	I	46	P53	O		
15	\overline{RES}	I	47	P54	O		
16	NM1	I	48	P55	O	(Clock)	
17	VSS		49	P56	O		
18	D0	I/O	50	CLK	O	Ground	
19	D1	I/O	51	VSS			
20	D2	I/O	52	AVSS		Analog ground	
21	D3	I/O	53	AN0	I		
22	D4	I/O	54	AN1	I	Analog data input	
23	D5	I/O	55	AN2	I		
24	D6	I/O	56	AN3	I		
25	D7	I/O	57	AVCC		Analog power supply	
26	A0	O	58	TXD2	O		
27	A1	O	59	RXD2	I	Transmit data	
28	A2	O	60	A19	O		
29	A3	O	61	P73		Receive data	
30	A4	O	62	P74	O		
31	A5	O	63	P75	O	Address bus	
32	A6	O	64	Vss			
							Not used
							Port 7
							Ground

• LC92011B-715 (XK935A00) Gate Array

PIN NO.	NAME	I/O	PIN NO.	NAME	I/O
1	\overline{RD}	I	33	SWWR1	O
2	CLK	I	34	SWW2R	O
3	A0	I	35	SWW3R	O
4	A13	I	36	SWWD1	I
5	A14	I	37	SWWD2	I
6	A15	I	38	SWWD3	I
7	A16	I	39	SWWD4	I
8	A17	I	40	LE1	O
9	A18	I	41	LE2	O
10	A19	I	42	LA0	O
11	D0	I/O	43	\overline{WRD}	O
12	D1	I/O	44	\overline{DCARD}	O
13	D2	I/O	45	\overline{CLSEL}	O
14	D3	I/O	46	ROM	O
15	D4	I/O	47	$\overline{LED1}$	O
16	D5	I/O	48	$\overline{LED2}$	O
17	Vss		49	Vss	
18	WA17	I	50	SRAM	O
19	WA18	I	51	IO	O
20	WA20	I	52	PSRAM	O
21	WA21	I	53	RDD	O
22	WA23	I	54	PSOE	O
23	WROM1	O	55	SENS1	O
24	VDD		56	VDD	
25	WROM2	O	57	SENS2	O
26	WRAM1	O	58	SENS3	O
27	WRAM2	O	59	SENS4	O
28	WCARD1	O	60	SENS5	O
29	WCARD2	O	61	SENS6	O
30	WCARD3	O	62	WAIT	O
31	WCSEL	O	63	\overline{AS}	I
32	M3	O	64	WR	I

FROM	TO
A0	LA0
A13-A19	\overline{IO} \overline{DCARD} WAIT ROM SRAM
\overline{AS}	M3 PSRAM
\overline{RD} L, CLK	PSOE
\overline{RD} L, CLK	PSOE
\overline{RD}	RDD
\overline{RD} H, CLK	RDD
\overline{WR}	WRD
\overline{WR} H, CLK	WRD
\overline{AS} H, CLK	\overline{CLSEL}
\overline{AS}	LE1
\overline{AS} L, CLK	LE2
WA17-WA23	WROM1 WROM2 WRAM1 WRAM2 WCSEL WCARD1 WCARD2 WCARD3

• YM7119 (XG995A00) M3 (AWM Tone generator & Digital Filter)

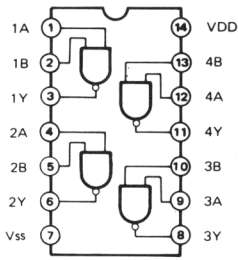
PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION	
1	INDV0	O	Individual output 0 (8 channels)	65	WA8	O	Wave memory address bus	
2	INDV1	O	Individual output 1 (8 channels)	66	WA9	O		
3	OPZ	I	MELIN input select (OPZ, PAN)	67	WA10	O		
4	DIOUT0	O	Stereo output (L & R)	68	WA11	O		
5	DIOUT1	O	Assignable output (ch.0 & ch.4)	69	WA12	O		
6	DIOUT2	O	Assignable output (ch.1 & ch.5)	70	WA13	O		
7	DIOUT3	O	Assignable output (ch.2 & ch.6)	71	WA14	O		
8	DIOUT4	O	Assignable output (ch.3 & ch.7)	72	NC			
9	MELIN	I	MEL formatted signal input	73	WA15	O		
10	LSB/MSB	I	Individual output mode select	74	WA16	O		
11	TTPAD0	I/O	(Ⓜ :MSB first, Ⓛ :LSB first)	75	WA17	O		
12	TTPAD1	I/O	Test pin	76	WA18	O		
13	NC				77	WA19		O
14	TTPAD2	I/O			78	WA20		O
15	TTPAD3	I/O			79	WA21	O	
16	TTPAD4	I/O			80	WA22	O	
17	TTPAD5	I/O			81	WA23	O	
18	NC				82	A0	I	
19	TTPAD6	I/O			83	A1	I	
20	TTPAD7	I/O			84	A2	I	
21	NC				85	A3	I	
22	TTPAD8	I/O			86	A4	I	
23	TTPAD9	I/O		87	A5	I		
24	NC			88	D0	I/O		
25	TTPAD10	I/O		89	NC			
26	TTPAD11	I/O		90	D1	I/O		
27	DIINO	I	Individual input 0 (8 channels)	91	D2	I/O	CPU data bus	
28	DIIN1	I	Individual input 1 (8 channels)	92	D3	I/O		
29	WD0	I/O	Wave memory data	93	D4	I/O		
30	WD1	I/O			94	D5		I/O
31	WD2	I/O			95	D6		I/O
32	WD3	I/O			96	D7		I/O
33	NC				97	S/HSC0		I
34	WD4	I/O			98	S/HSC1		I
35	WD5	I/O			99	S/HSC2	I	
36	WD6	I/O			100	S/HSC3	I	
37	WD7	I/O			101	S/HEN	O	
38	WD8	I/O			102	S/H0	O	
39	WD9	I/O			103	S/H1	O	
40	NC				104	S/H2	O	
41	NC				105	S/HRCA	I	
42	WD10	I/O			106	S/HRCB	I	
43	WD11	I/O		107	IC	I		
44	NC			108	Vss	Ground		
45	WD12	I/O		109	XTAL	O		
46	WD13	I/O		110	EXTAL	I		
47	WD14	I/O		111	NC			
48	Vss		Ground	112	FCLKOUT	O	Sync. signal on 2 chips mode	
49	VDD		Power supply	113	FCLKIN	I		
50	WD15	I/O		114	NC			
51	MSBW	O	Wave data MSB write signal	115	CLK3	O	6.144MHz clock	
52	LSBW	O	Wave data LSB write signal	116	VDD		Power supply	
53	OE	O	Output enable for wave data	117	SYWIN	I	Sync. signal for MEL format	
54	ODD/EVEN	I	Odd/Even select on 2 chips mode	118	CLKMEL	O	3.072MHz clock for MEL format	
55	SINGLE/DUAL	I	Wave memory single/dual mode	119	NC			
56	WA0	O	select (Ⓜ : dual-2 chips mode, Ⓛ : single-1 chip mode)	120	DACLE	O	Latch enable for PCM56 (DAC)	
57	WA1	O			121	SYWOUT	O	Sync pulse for MEL format
58	WA2	O	Wave memory address bus	122	SYW64	O	6.144MHz sync. signal	
59	WA3	O			123	IRQ	O	Interrupt request (open drain)
60	WA4	O			124	CS	I	Chip select
61	WA5	O			125	R/W	I	Read/Write control
62	WA6	O			126	CHPIN	I	EG lowest ch. detect
63	WA7	O			127	CHPOUT	O	EG lowest ch. detect
64	NC				128	KSYNC	I	Key on sync. signal from AFM

• **YM3029** (XF237A00) AFDO (Floating Point Converter)

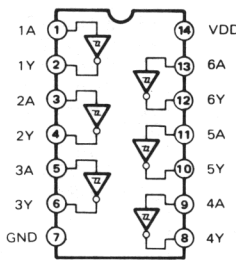
PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	DVDD		Digital power supply (+5V)	15	SHA	I	Sample and hold input (Channel A)
2	LE	O	Latch enable	16	EXG		} Exponent ground
3	DAB	O	Channel A/B data output	17	EXG		
4	SYW	I	Sync pulse	18	EXI	I	Exponent input
5	CLK	I	Clock	19	EXO	O	Exponent output
6	φ1	O	Clock for DAC	20	AVSS		Analog power supply (-5V)
7	DGND		Digital ground	21	AVDD		Analog power supply (+5V)
8	ADVDD		Analog power supply (+5V)	22	SI1	I	Serial data input 1 (Channel A)
9	AVSS		Analog power supply (-5V)	23	VLA0	I	} Volume level select (Channel A)
10	SHB	I	Sample and hold input (Channel B)	24	VLA1	I	
11	CH4	O	Output (Channel 4)	25	SI2	I	Serial data input 2 (Channel B)
12	CH3	O	Output (Channel 3)	26	VLB0	I	} Volume level select (Channel B)
13	CH2	O	Output (Channel 2)	27	VLB1	I	
14	CH1	O	Output (Channel 1)	28	4/2	I	Channel number select (4 or 2-channel)

■ **IC BLOCK DIAGRAM** (ICブロック図)

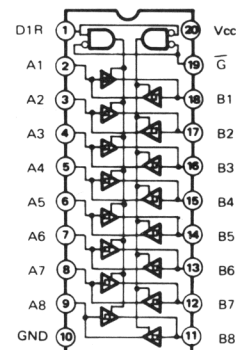
- **HD74HC00P** (IR000010)
Quad 2 Input NAND



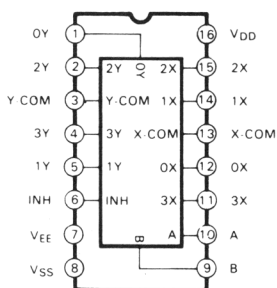
- **SN74HC14N** (IR001450)
Hex Inverter



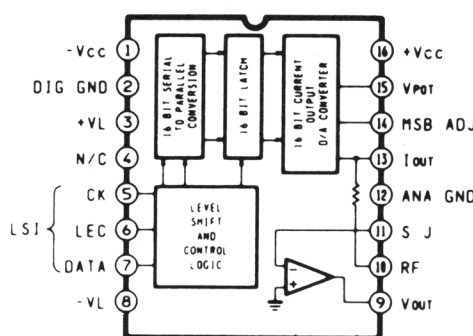
- **SN74HC245N** (IR024550)
- **TC74AC245P** (XH608A00)
Octal 3-State Bus Transceiver



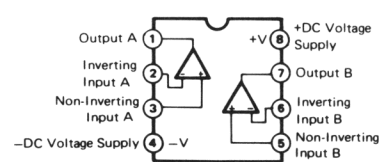
- **TC74HC4052AP** (IR405200)
Differential 4-Channel
Multiplexer/Demultiplexer



- **PCM56P-Y** (XH690A00)
Digital Analog Converter

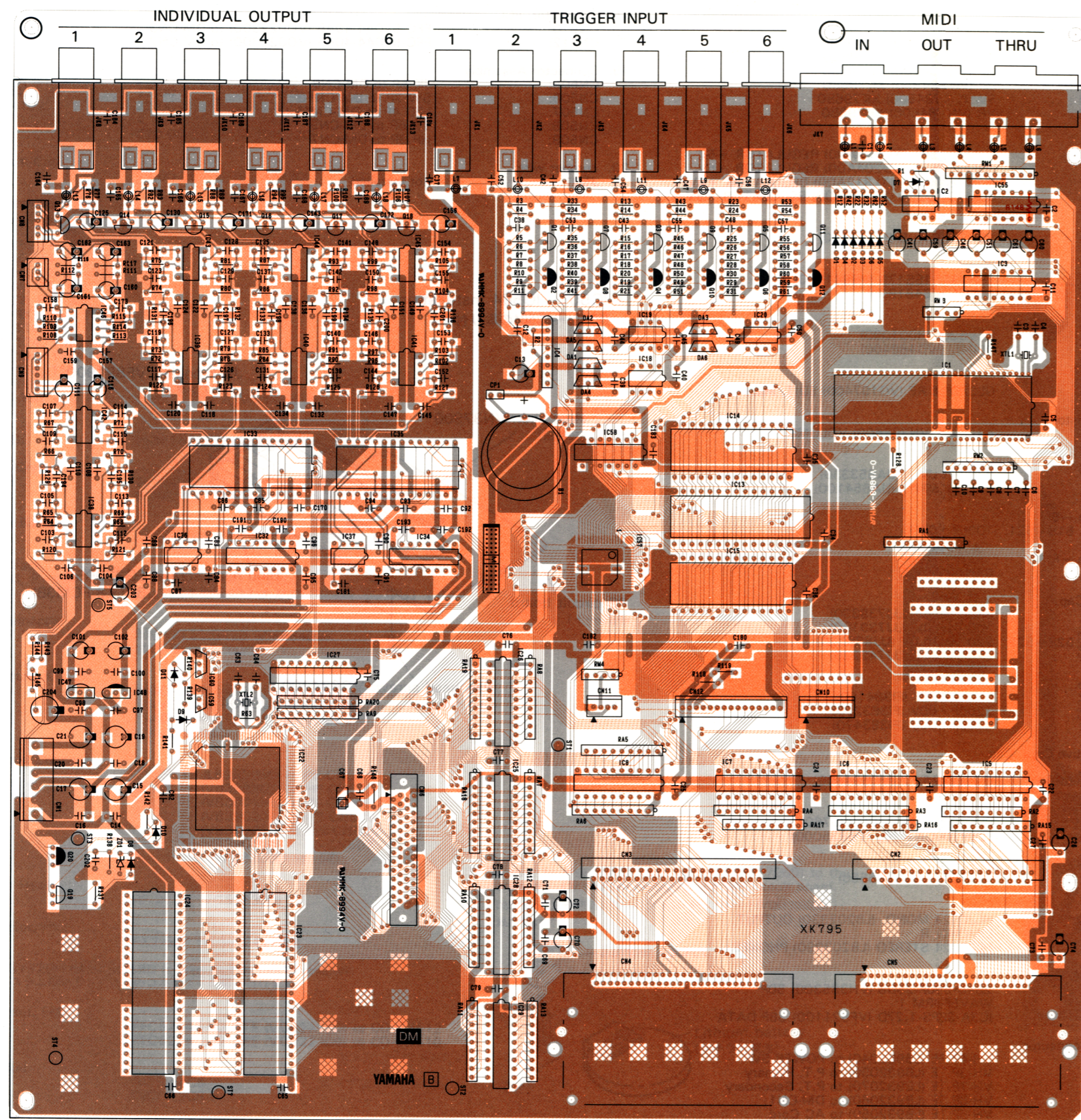


- **RC4558D-V** (IG001390)
- **NJM4556** (IG042500)
- **μPC4570C** (XC520A00)
- **XRA4560** (XJ630A00)
Dual Operational Amplifier



■ CIRCUIT BOARDS (シート基板図)

● DM Circuit Board



WAVEFORM 2

WAVEFORM 3

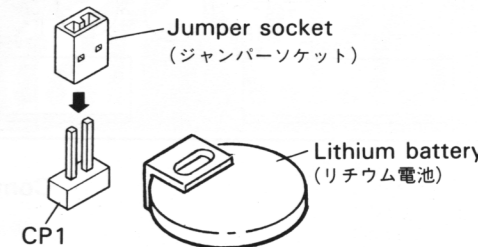
Components side (部品側)

Notes)

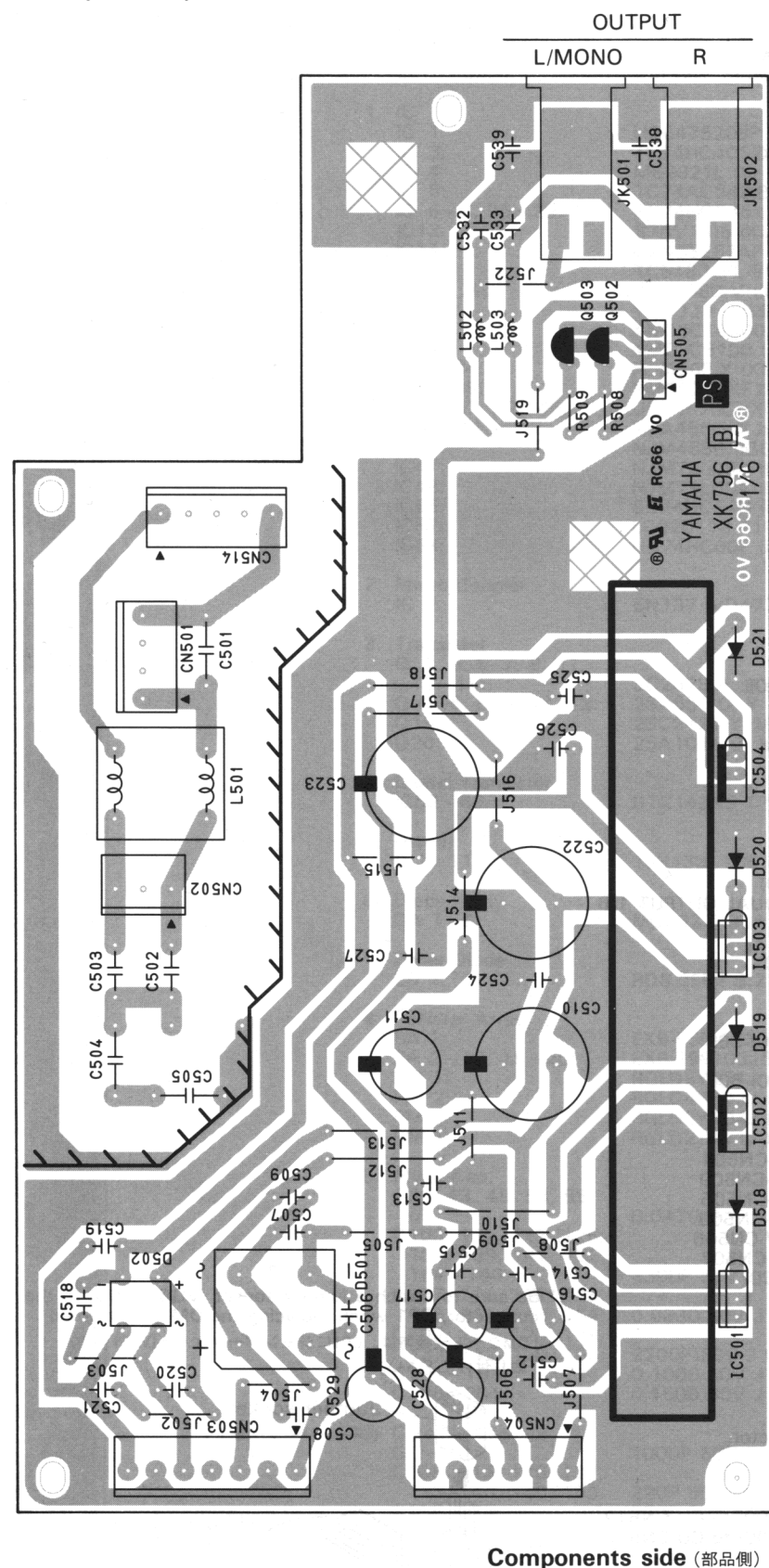
Circuit Board :	DM (VN784300) XK795B0
1. IC	
IC 1:	HD6475208P-10 (XL004C00) CPU (OTP)
IC 3:	TC74HC4052AP (IR405200) DEMULTIPLEXER
IC 4:	M62021L (XH970A00) RESET
IC 5:	TC74AC245P (XH608A00) TRANSCEIVER
IC 6-8, 25-29:	SN74HC245N (IR024550) TRANSCEIVER
IC13:	87AV1.05 (XL006C00) EPROM 2M (MAIN)
IC14:	CXK58257AP-70L (XL266A00) SRAM 256K
IC15:	TC51832PL-85 (XJ386A00) PSRAM 256K
IC18-20:	RC4558D-V (IG001390) OP AMP
IC22:	YM7119 (XG995A00) M3
IC23:	KM23C16000 (XK997A00) ROM 16M (VOICE1)
IC24:	KM23C8100 (XK996A00) ROM 8M (VOICE2)
IC32, 34:	PCM56P-Y (XH690A00) DAC
IC33, 35:	YM3029 (XF237A00) ADFC
IC36, 37, 42-45:	UPC4570C (XC520A00) OP AMP
IC38-41:	XRA4560 (XJ630A00) OP AMP
IC46:	NJM4556 (IG042500) OP AMP
IC47:	NJM78L05A (IG065510) REGULATOR +5V
IC48:	NJM79L05A (IG130500) REGULATOR -5V
IC55:	SN74HC14N (IR001450) INVERTER
IC57:	LC92011B-715 (XK935A00) GATE ARRAY
IC58:	HD74HC00P (IR000010) NAND
2. Photo Coupler	
IC 2:	6N137 (VD473200)
3. Transistor	
Q 1, 3, 5, 7, 9, 11, 13-18:	SC2878 A, B (IC287820)
Q 2, 4, 6, 8, 10, 12:	2SA950 O, Y (VN811700)
Q19:	2SC2120 Y (VN927600)
Q20:	2SA1015 O, Y (IA101590)
4. Digital Transistor	
IC59-60:	DTC143XS TP (VD488500)
5. Diode	
D 1-11:	1SS133, 1SS176 (VB941200)
6. Diode Array	
DA 1-6:	MC932 0.30AX2 (VL723900)
7. Zener Diode	
ZD 1:	RD8.2EB2 8.2V (IF005630)
8. Resistor Array	
RA 1:	EXB-F9E 473J5 (VL791000)
RA 2-13, 15-20:	EXB-F9E103J5 (VB187500)
RM 1:	RGLD5Y221J (VN889400)
RM 2:	RGLD4Y103J (VN889600)
RM 3:	RGLD2Y104J (VN889700)
RM 4:	RGLD2Y471J (VN889500)
9. Mylar Cap.	
C38, 43, 48, 53, 55, 57:	0.0470 50V J
C103, 112, 117, 126, 131, 139, 144, 152, 164-169:	3300P 50V J (UA653330)
C107, 114, 121, 128, 135, 141, 148, 154:	0.0330 50V J (UA654330)
C109, 115, 123, 129, 137, 142, 150, 155:	2200P 50V J (UA653220)
C194-195:	0.1000 50V J (UA655100)
C196-201:	0.1500 50V J
10. Ceramic Cap. -B	
C 7-10:	1000P 50V K
C105, 113, 119, 127, 133, 140, 146, 153:	220P 50V K
C158, 173:	390P 50V K
11. Ceramic Cap. -SL	
C 3-4, 63-64:	15P 50V J
C87, 181:	56P 50V J
12. Ceramic Cap. -F	
C37, 42, 47, 52, 54, 56, 184-189:	0.0100 50V Z

13. Electrolytic Cap.	
C13:	10.00 16.0V (UJ837100) VX
C15, 17, 19, 21:	100.00 16.0V (UJ838100)
C26, 72, 111, 116, 125, 130, 143, 156, 160-163, 171-172:	47.00 16.0V (UJ837470) VX
C41, 46, 51, 59-61:	2.20 50.0V (UJ866220)
C70, 74:	47.00 16.0V (UJ837470) O4SA
C101-102:	22.00 16.0V (UJ837220)
C203:	4.70 25.0V (UJ846470) VX
C204:	220.00 25.0V (UJ848220)
14. Tantalum Cap.	
C67:	22.00 16V M (FP737220)
15. Semiconductive Cera. Cap.	
C 1-2, 5-6, 11-12, 14, 16, 18, 20, 22-25, 27, 34-36, 39-40, 44-45, 49-50, 62, 65-66, 68-69, 71, 73, 75-79, 83-86, 88-100, 104, 106, 108, 110, 118, 120, 122, 124, 132, 134, 136, 138, 145, 147, 149, 151, 157, 159, 170, 180, 182-183, 190-193, 202:	0.1000 25V Z (VC694800)
16. Coil	
L 1-18:	FL5R200QNT 20μ (VB835000)
17. Quartz Crystal Unit	
XTL 1:	20.0000M AT-49 (VI927300)
XTL 2:	6.144M AT-49 (VH949900)
18. Lithium Battery	
B 1:	CR2450-HE4 (VF913300)
19. Phone Jack	
JK 1-6, 8-13:	HLJ0521 MONO. (LB202330)
	TRIGGER INPUT 1-6, INDIVIDUAL OUTPUT 1-6
20. DIN Connector	
JK 7:	DIN YKF51-5046 (VI466400)
	MIDI IN/OUT/THRU
21. Connector, IC Card	
CN 4:	264D-550P-28D8 (VH985300) 50P WAVEFORM 2
CN 5:	264D-550P-28D8 (VH985300) 50P WAVEFORM 3
22. Base Post Connector	
CN 1:	VH-6P TE (LB932060) to PS-CN504
CN 7:	PH-3P TE (VB389900) to HP-CN509
CN 8:	PH-5P TE (VB390100) to PS-CN505
CN 9:	PH-6P TE (VB390200) to VR-CN508
CN10:	PH-7P TE (VB390300) to SW-CN506
CN11:	PH-4P TE (VB390000) to LD-CN507
CN12:	PH-15P TE (VF283300) to LCD
23. Jumper Header	
CP 1:	RF-2P TE (VG518300)
24. Connector, FX2	
CN 6:	FX2-52P TE (VN242700)
	The SYSTEM RAM BOARD is attached to this connector. (* システムRAMボードはこのコネクタに取り付けます)
25. Connector, FFC	
CN 2:	FFC52045-4045TE (V0022100) to CD-CN512
CN 3:	FFC52045-4045TE (V0022100) to CD-CN510
26. IC Socket	
IC 1:	DICS-64CS
IC13:	DICF-32CS-E

* Be sure to attach a jumper socket (VG617000) to the connector, CP1 when replacing the DM circuit board.
(DMシート交換時は、CP1にジャンパーソケット(VG617000)を取り付けて下さい。)

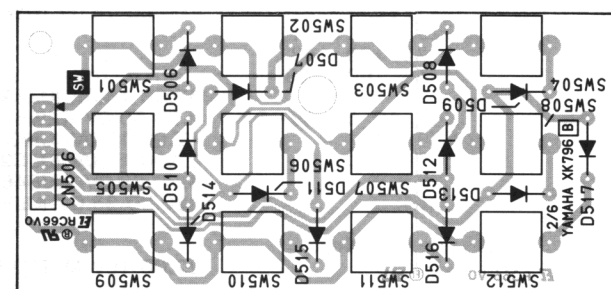


● PS (PN 1/6) Circuit Board



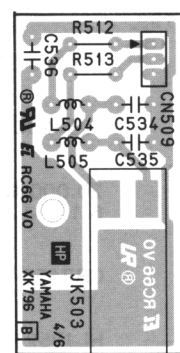
Components side (部品側)

● SW (PN 2/6) Circuit Board



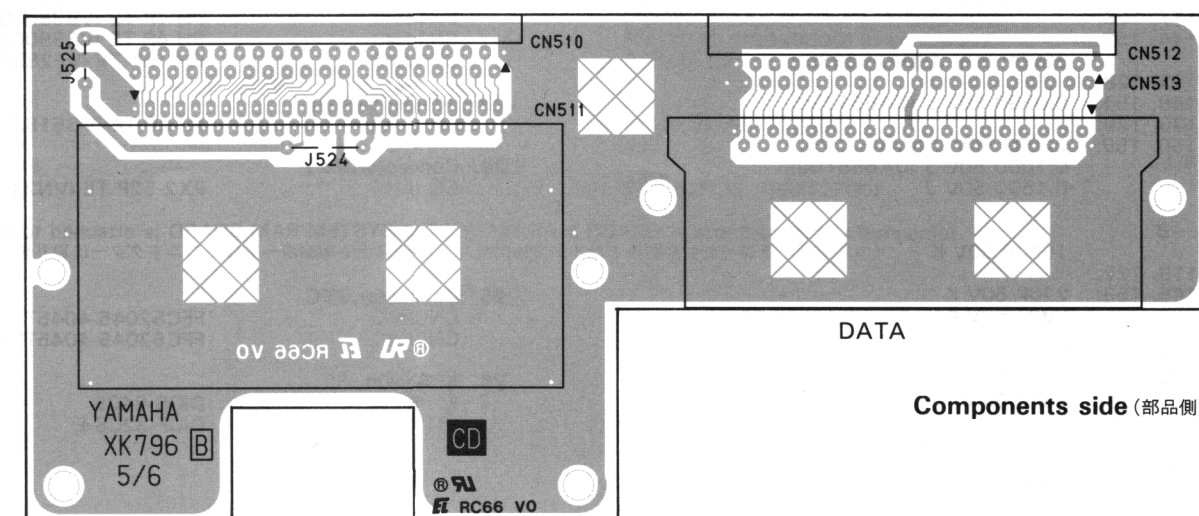
Components side (部品側)

● HP (PN 4/6) Circuit Board



Components side (部品側)

● CD (PN 5/6) Circuit Board



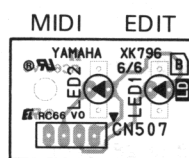
Components side (部品側)

● VR (PN 3/6) Circuit Board



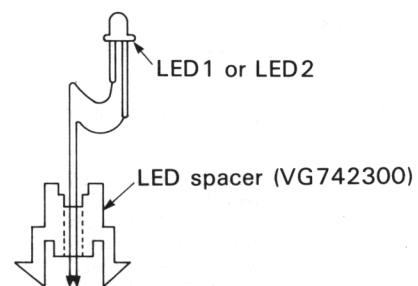
Components side (部品側)

● LD (PN 6/6) Circuit Board



Components side (部品側)

● LED1, LED2 installation (LED1, LED2の取り付け)

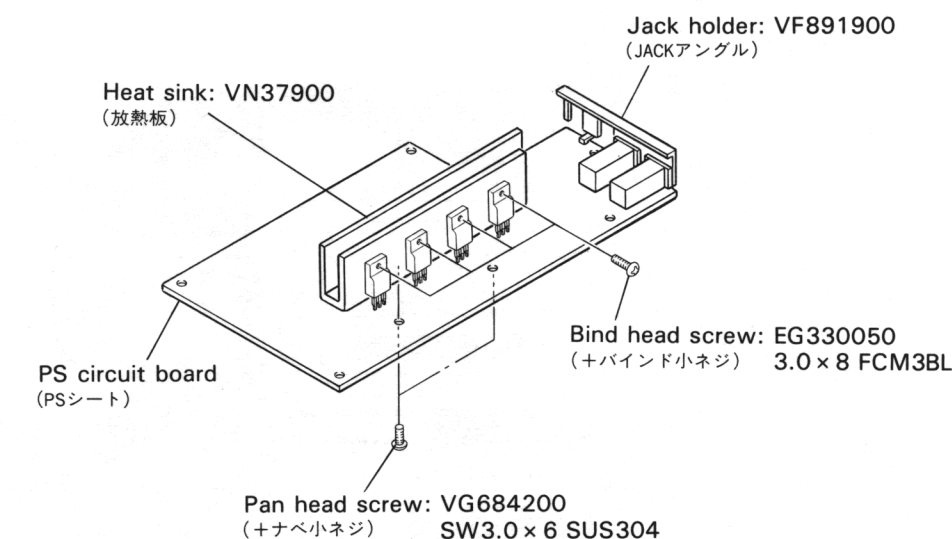


Notes)

- | | |
|-----------------|-----------------------|
| Circuit Board : | CD (VN784800) XK796B0 |
| Circuit Board : | PS (VN784400) XK796B0 |
| Circuit Board : | HP (VN784700) XK796B0 |
| Circuit Board : | LD (VN784900) XK796B0 |
| Circuit Board : | SW (VN784500) XK796B0 |
| Circuit Board : | VR (VN784600) XK796B0 |
- IC
IC501: NJM7805FA (XC719A00) REGULATOR +5V
IC502: NJM7905FA (XD204A00) REGULATOR -5V
IC503: NJM78M08FA (XL312A00) REGULATOR +8V
IC504: NJM79M08FA (XK995A00) REGULATOR -8V
 - Transistor
Q502~503: 2SC2878 A, B (IC287820)
 - Diode
D506~517: 1SS133, 1SS176 (VB941200)
D518~521: 11ES4 (VB481900)
 - Diode Stack
D501: S4VB20 (IH001090)
D502: DF04M (VD488400)
 - LED
LED 1~2: GL3HD18 RE (VG197400) EDIT, MIDI
 - Variable Resistor
VR501: A10KX2 (VN303600) VOLUME
 - Mylar Cap.
C532~533: 3300P 50V J (UA653330)
C534~535: 0.0100 50V J (UA654100)
 - Ceramic Cap.-B
C506~509, 518~521: 1000P 50V K
 - Ceramic Cap.-F
C538~539: 0.0100 50V Z
 - Electrolytic Cap.
C510: 3300 16.0V (UJ739330)
C511: 1000 16.0V (UJ739100)
C516~517, 528~529: 220.00 16.0V (UJ838220)
C522~523: 2200 25.0V (UJ749220)
 - Ceramic Cap.
C501: 0.010 400V (FI384100)
C502~503: 2200P 400V (FI383220)
C504~505: 4700P 400V (FI383470)
 - Semiconductive Cera. Cap.
C512~515, 524~527, 536: 0.1000 25V Z (VC694800)
 - Coil
L501: PLA3021A 3mH (GD900760)
L502~505: FL5R200QNT 20μ (VB835000)
 - Push Switch
SW501~512: KEC10901 (KA906550)
 - Phone Jack
JK501~502: HLJ0521 MONO. (LB202330) OUTPUT
L/MONO, R
JK503: HLJ0521 STEREO (LB203090) PHONES
 - Connector, IC Card
CN511: 264D-550P-28D8 (VH985300) 50P WAVEFORM 1
CN513: IC3A-38PS-1.27D (VF821100) 38P DATA
 - Base Post Connector
CN501: VH-4P TE (LB932040) to POWER SW
CN502: VH-3P TE (LB932030) to P.T. Primary
CN503: VH-7P TE (LB932070) to P.T. Secondary
CN504: VH-6P TE (LB932060) to DM-CN1
CN514: VH-5P TE (LB932050) to AC Cord

- Connector, FCC
CN510: FFC-52044-4045 (VO022300) to DM-CN3
CN512: FFC-52044-4045 (VO022300) to DM-CN2
- Connector Assembly
CN505: JK 5P to DM-CN8
CN506: SW 7P to DM-CN10
CN507: LED 4P to DM-CN11
CN508: VR 6P to DM-CN9
CN509: HP 3P to DM-CN7
- Jumper wire
J501: not installed

● IC501~IC504 installation (IC501~IC504の取り付け)



■ TEST PROGRAM

A. TESTS

- TEST 1: WAVE ROM 1 READ TEST
- TEST 2: WAVE ROM 2 READ TEST
- TEST 3: ROM CHECKSUM TEST
- TEST 4: SRAM READ /WRITE TEST
- TEST 5: PSRAM READ/WRITE TEST
- TEST 6: RAM BACKUP BATTERY TEST
- TEST 7: LCD TEST
- TEST 8: LED ON/OFF TEST
- TEST 9: PANEL SWITCH TEST
- TEST10: MIDI TEST
- TEST11: DATA CARD INSERT TEST
- TEST12: DATA CARD PROTECT SWITCH TEST
- TEST13: DATA CARD READ/WRITE TEST
- TEST14: DATA CARD BATTERY TEST
- TEST15: WAVEFORM CARD 1 INSERT TEST
- TEST16: WAVEFORM CARD 1 READ TEST
- TEST17: WAVEFORM CARD 2 INSERT TEST
- TEST18: WAVEFORM CARD 2 READ TEST
- TEST19: WAVEFORM CARD 3 INSERT TEST
- TEST20: WAVEFORM CARD 3 READ TEST
- TEST21: EXPANSION MEMORY BOARD
INSERT TEST (SYEMB06)
- TEST22: EXPANSION MEMORY BOARD
READ/WRITE TEST (SYEMB06)
- TEST23: 1 kHz SOUND OUTPUT (OUTPUT L)
TEST
- TEST24: 1 kHz SOUND OUTPUT (OUTPUT R)
TEST
- TEST25: 1 kHz SOUND OUTPUT (INDIVIDUAL
OUTPUT 1) TEST
- TEST26: 1 kHz SOUND OUTPUT (INDIVIDUAL
OUTPUT 2) TEST
- TEST27: 1 kHz SOUND OUTPUT (INDIVIDUAL
OUTPUT 3) TEST
- TEST28: 1 kHz SOUND OUTPUT (INDIVIDUAL
OUTPUT 4) TEST
- TEST29: 1 kHz SOUND OUTPUT (INDIVIDUAL
OUTPUT 5) TEST
- TEST30: 1 kHz SOUND OUTPUT (INDIVIDUAL
OUTPUT 6) TEST
- TEST31: 16 VOICES SOUND OUTPUT TEST
- TEST32: TRIGGER INPUT 1 (HIGH SENSITIVI-
TY) TEST
- TEST33: TRIGGER INPUT 1 (LOW SENSITIVI-
TY) TEST
- TEST34: TRIGGER INPUT 2 (HIGH SENSITIVI-
TY) TEST
- TEST35: TRIGGER INPUT 2 (LOW SENSITIVI-
TY) TEST
- TEST36: TRIGGER INPUT 3 (HIGH SENSITIVI-
TY) TEST
- TEST37: TRIGGER INPUT 3 (LOW SENSITIVI-
TY) TEST

- TEST38: TRIGGER INPUT 4 (HIGH SENSITIVI-
TY) TEST
- TEST39: TRIGGER INPUT 4 (LOW SENSITIVI-
TY) TEST
- TEST40: TRIGGER INPUT 5 (HIGH SENSITIVI-
TY) TEST
- TEST41: TRIGGER INPUT 5 (LOW SENSITIVI-
TY) TEST
- TEST42: TRIGGER INPUT 6 (HIGH SENSITIVI-
TY) TEST
- TEST43: TRIGGER INPUT 6 (LOW SENSITIVI-
TY) TEST
- TEST44: FACTORY SETTINGS
- TEST45: EXIT

B. HOW TO ENTER THE TEST PROGRAM

While pressing and holding down the [PLAY], [MACRO PLAY] and [SOUND] switches, turn on the power switch of the RM50. The RM50 will indicate that you have entered the Test Program by displaying the following messages.

```
RM50...<<.TEST ENTRY.>>...
V#.##.....'yy-mm-dd
```

```
[-]=AUTO... [+]=MANUAL.
[EXIT]=EXIT. [SOUND]=FACT
```

Use the [- 1/NO], [+ 1/YES], [SOUND] or [EXIT] panel switches to select the appropriate test mode. If you press [- 1], the auto test mode will be initiated. If you press [+ 1], the MANUAL test mode will be initiated. If you press [SOUND], the RM50 will run Test 44, "44 FACTORY SETTINGS", and then automatically exit the test mode and return to play mode (refer to Test 44 for details). If you press [EXIT], you will exit the test mode and return to play mode. The MANUAL mode is the preferred method of running the test program, because it allows you to select or jump to any test and execute it. AUTO mode automatically executes each test in a fixed order. Some of the tests in the AUTO mode are automatically executed due to the nature of the test.

C. PROCEEDING THROUGH THE TESTS

(*MOST OF THESE FUNCTIONS MAINLY PERTAIN TO THE MANUAL TEST MODE*)

When you enter the test program, the following display will appear.

```
01.. WAVE ROM. 1..... READ
.....
```

Use the [SOUND], [PAGE +], [PAGE -] or [EXIT] to move through the various tests of the test program.

[SOUND] will execute the currently selected test.

[PAGE +] will select the test which follows the current test and displays the test items.

[PAGE -] will select the test which precedes the current test and displays the test items.

[EXIT] will quit the currently executed test or abort the test program.

**TEST PROGRAM TEST 1-45
(MANUAL MODE OPERATION)**

TEST 1. WAVE ROM 1 READ TEST

```
01..WAVE ROM.1.....READ
.....
```

Performs a read test of WAVE ROM 1.

DISPLAY OF TEST RESULTS

```
OK 01..WAVE ROM.1.....READ
.....OK
```

```
NG 01..WAVE ROM.1.....READ
NUM=xx.W=yyyy.R=zzzz..NG
```

(where xx = error point, yyyy = write data, zzzz = read data)

TEST END

Ends after displaying the results.

TEST 2. WAVE ROM 2 READ TEST

```
02..WAVE ROM.2.....READ
.....
```

Performs a read test of WAVE ROM 2.

DISPLAY OF TEST RESULTS

```
OK 02..WAVE ROM.2.....READ
.....OK
```

```
NG 02..WAVE ROM.2.....READ
NUM=xx.W=xxxx.R=xxxx..NG
```

(where xx = error point, yyyy = write data, zzzz = read data)

TEST END

Ends after displaying the results.

TEST 3. ROM CHECKSUM TEST

```
03..ROM.....CHECK.SUM
.....
```

Performs a checksum test of the internal ROM of the CPU and the external ROM.

DISPLAY OF TEST RESULTS

```
OK 03..ROM.....CHECK.SUM
.....OK
```

```
NG 03..ROM.....CHECK.SUM
SUM=xxxx.....NG
```

(where xxxx = error address)

TEST END

Ends after displaying the results.

TEST 4. SRAM READ/WRITE TEST

```
04..SRAM.....R/W
.....
```

Performs a read/write test of SRAM.

DISPLAY OF TEST RESULTS

```
OK 04..SRAM.....R/W
.....OK
```

```
NG 04..SRAM.....R/W
ADDRESS=xxxx.....NG
```

(where xxxx = error address)

TEST END

Ends after displaying the results. All data in RAM is preserved.

TEST 5. PSRAM READ/WRITE TEST

```
05..PSRAM.....R/W
.....
```

Performs a read/write test of PSRAM.

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DISPLAY OF TEST RESULTS

```

OK  05..PSRAM.....R/W
     .....OK
  
```

```

NG  05..PSRAM.....R/W
     ADDRESS=xxxx.....NG
  
```

(where xxxx = error address)

TEST END

Ends after displaying the results. All data in RAM is preserved.

TEST 6. RAM BACKUP BATTERY TEST

```

06..INT. BATTERY.....
     .....
  
```

This test checks that the voltage of the RAM backup battery is greater than 2.8V and less than 3.5V.

DISPLAY OF TEST RESULTS

```

OK  06..INT. BATTERY.....
     #.##V.....OK
  
```

(where #.## = voltage)

```

NG  06..INT. BATTERY.....
     #.##V.....NG
  
```

(where #.## = voltage)

TEST END

Ends after displaying the test results.

TEST 7. LCD TEST

```

07..LCD.....
     .....
  
```

Check that all dots of the LCD blink.

TEST END

Press [+ 1/YES] or [- 1/NO] to end the test. When the [+ 1/YES] is pressed, "OK" will appear on the LCD. If the [- 1/NO] is pressed, "NG" will appear.

TEST 8. LED ON/OFF TEST

```

08..LED.....
     .....
  
```

Check that each of [MIDI] and [EDIT] LED alternately blinks then blink together and then turned off.

TEST END

Press [+ 1/YES] or [- 1/NO] to end the test. When the [+ 1/YES] is pressed, "OK" will appear on the LCD. If the [- 1/NO] is pressed, "NG" will appear.

TEST 9. PANEL SWITCH TEST

```

09..SW.....
     .....
  
```

Press the panel switches consecutively from the [PLAY] switch to switch [SOUND], according to the order indicated by the LCD display.

```

09..SW.....
   [PLAY].....
  
```

(e.g. When checking [SHIFT])

If the switch is OK, a sine wave of 1kHz will output and you should proceed to test the next switch. If the wrong switch is pressed, and the error message NG will be displayed and no sound will be heard. At this time, if the correct switch is pressed then the proper code is received, you will be able to proceed to test the next switch. The display will indicate OK, if all switches are good.

DISPLAY OF TEST RESULTS

```

OK  09..SW.....
     .....OK
  
```

```

NG  09..SW.....
     [PLAY].....NG
  
```

TEST END

When switch [SOUND] is pressed, OK is displayed and the test will end.

TEST 10. MIDI TEST

```

10..MIDI.....
     .....
  
```

After connecting the MIDI IN to the MIDI OUT via a MIDI cable, execute the test.

DISPLAY OF TEST RESULTS

OK

```

10..MIDI.....
TX:50.....RX=50.....OK

```

NG

```

10..MIDI.....
TX:50.....RX=xx.....NG

```

(where xx = number of the received data)

TEST END

When fifty test codes has output, the test will end.

TEST 11. DATA CARD INSERT TEST

```

11..DATA.CARD.....INS
.....

```

Check that when you insert a RAM card (MCD64) into the DATA card slot, the message on the LCD changes from OFF to ON and that the OK result is displayed.

```

11..DATA.CARD.....INS
OFF.....

```

DISPLAY OF TEST RESULTS

OK

```

11..DATA.CARD.....INS
ON.....OK

```

NG (No change in display message)

TEST END

After displaying the result, the test will end. If the [EXIT] is pressed during the test, the test will be aborted.

TEST 12. DATA CARD PROTECT SWITCH TEST

```

12..DATA.CARD....PROTECT
.....

```

Use a RAM card to check that the card protect switch status is being read. Insert a RAM card with the memory protect turned on and then execute the test.

Check that when the switch is set from "protect on" to "protect off", the message on the display changes from ON to OFF and that the OK result is also displayed.

```

12..DATA.CARD....PROTECT
ON.....

```

DISPLAY OF TEST RESULTS

OK

```

12..DATA.CARD....PROTECT
OFF.....OK

```

NG (No change in display)

TEST END

After displaying the result, the test will end. If the [EXIT] is pressed during the test, the test will be aborted.

TEST 13. DATA CARD READ/WRITE TEST

```

13..DATA.CARD.....R/W
.....

```

This performs a read/write test of the RAM card. Insert a RAM card with the memory protect turned on and then execute the test.

DISPLAY OF TEST RESULTS

OK

```

13..DATA.CARD.....R/W
.....OK

```

NG

```

13..DATA.CARD.....R/W
NUM=xx.W=xxxx.R=xxxx..NG

```

(where xx = error point, yyyy = write data, zzzz = read data)

TEST END

After displaying the results, the test will end.

TEST 14. RAM BACKUP BATTERY TEST

```

14..DATA.CARD.....BATT
.....

```

Insert a RAM card with the memory protect turned on and then execute the test.

This test checks that the voltage of the RAM card backup battery is greater than 2.5V and less than 3.5V.

DISPLAY OF TEST RESULTS

OK

```

14..DATA.CARD.....BATT
#.##V.....OK

```

(where #.# = voltage)

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NG 14. . DATA. CARD. BATT
 #. ##V. NG
 (where #. # # = voltage)

TEST END
 Ends after displaying the test results.

TEST 15. WAVEFORM CARD 1 INSERT TEST

15. . WAVE. CARD. 1. INS

Check that when you insert a WAVEFORM CARD (W7704) into the WAVEFORM 1 slot, the message on the LCD changes from OFF to ON and that the OK result is displayed.

15. . WAVE. CARD. 1. INS
 OFF.

DISPLAY OF TEST RESULTS

OK 15. . WAVE. CARD. 1. INS
 ON. OK

NG (No change in display message)

TEST END
 After displaying the result, the test will end. If the [EXIT] is pressed during the test, the test will be aborted.

TEST 16. WAVEFORM CARD 1 READ TEST

16. . WAVE. CARD. 1. READ
 OFF.

This performs a read test of the WAVEFORM CARD 1.
 Insert a WAVEFORM CARD (W7704) and then execute the test.

DISPLAY OF TEST RESULTS

OK 16. . WAVE. CARD. 1. READ
 OK

NG 16. . WAVE. CARD. 1. READ
 NUM=xx. W=yyyy. R=zzzz. . NG

(where xx = error point, yyyy = write data, zzzz = read data)

TEST END
 After displaying the results, the test will end.

- TEST 17. WAVEFORM CARD 2 INSERT TEST
- TEST 18. WAVEFORM CARD 2 READ TEST
- TEST 19. WAVEFORM CARD 3 INSERT TEST
- TEST 20. WAVEFORM CARD 3 READ TEST

TESTS 17 through 20 can be performed in the same manner as TESTS 15 and 16.

TEST 21. EXPANSION MEMORY BOARD INSERT TEST (SYEMB06)

21. . WAVE. RAM. INS

Check that when you insert a expansion memory board (SYEMB06) into the slot, the message on the LCD changes from OFF to ON and that the OK result is displayed.

21. . WAVE. RAM. INS
 OFF.

DISPLAY OF TEST RESULTS

OK 21. . WAVE. RAM. INS
 ON. OK

NG (No change in display message)

TEST END
 After displaying the result, the test will end. If the [EXIT] is pressed during the test, the test will be aborted.

TEST 22. EXPANSION MEMORY BOARD READ/WRITE TEST (SYEMB06)

22. . WAVE. RAM. R/W

Performs a read/write test of the RAM of the expansion memory board. Insert a expansion memory board (SYEMB06) into the slot and then execute the test.

DISPLAY OF TEST RESULTS

OK 22. . WAVE. RAM. R/W
 OK

NG 22. . WAVE. RAM. R/W
 NUM=xx. W=xxxx. R=xxxx. . NG

(where xx = error point, yyyy = write data, zzzz = read data)

TEST END

After displaying the results, the test will end. All RAM data is preserved.

TEST 23. 1 kHz SOUND OUTPUT (OUTPUT L) TEST

23. . OUTPUT. 1KHz. L
.....

Check that the correct signal is output from OUTPUT L and PHONES (L) jacks.

ITEMS TO CHECK

Insert the appropriate 1/4" phone plugs into each output jack of OUTPUT L, OUTPUT R, INDIVIDUAL OUTPUTS 1 THROUGH 6 and PHONES (L/R) and check each output. If necessary, verify the frequency, output waveform, output level, and THD of each output using a frequency counter, oscilloscope, AC voltmeter (with JIS-C filter) and distortion meter. The volume control must be set at maximum for these checks.

While sounding, the LCD will display the following message:

23. . OUTPUT. 1KHz. L
OUTPUT. ON.

Listed below are the specifications and conditions of each output during this test.

- OUTPUT L: 1kHz ± 1.5Hz, sine wave, distortion 0.25% or less, -6.4dBm ± 2dB (stereo), -12.0dBm ± 2dB (monaural) (10k ohm load)
- OUTPUT R: less than -70dBm
- INDIV. 1: less than -80dBm
- INDIV. 2: less than -80dBm
- PHONES (L): 1kHz, sine wave, distortion 0.25% or less, -8.0dBm ± 2dB (150 ohm load)
- PHONES (R): less than -60dBm

TEST END

Press [+ 1/YES] or [- 1/NO] to end the test. When the [+ 1/YES] is pressed, "OK" will appear on the LCD. If the [- 1/NO] is pressed, "NG" will appear.

TEST 24. 1 kHz SOUND OUTPUT (OUTPUT R) TEST

24. . OUTPUT. 1KHz. R
.....

Check that the correct signal is output from OUTPUT R and PHONES (R) jacks.

ITEMS TO CHECK

Insert the appropriate 1/4" phone plugs into each output jack of OUTPUT L, OUTPUT R, INDIVIDUAL OUTPUTS 1 THROUGH 6 and PHONES (L/R) and check each output. If necessary, verify the frequency, output waveform, output level, and THD of each output using a frequency counter, oscilloscope, AC voltmeter (with JIS-C filter) and distortion meter. The volume control must be set at maximum for these checks.

While sounding, the LCD will display the following message:

24. . OUTPUT. 1KHz. R
OUTPUT. ON.

Listed below are the specifications and conditions of each output during this test.

- OUTPUT L: less than -70dBm
- OUTPUT R: 1kHz ± 1.5Hz, sine wave, distortion 0.25% or less, -6.4dBm ± 2dB (stereo) (10k ohm load)
- INDIV. 1: less than -80dBm
- INDIV. 2: less than -80dBm
- PHONES (L): less than -60dBm
- PHONES (R): 1kHz, sine wave, distortion 0.25% or less, +8.0dBm ± 2dB (150 ohm load)

TEST END

Press [+ 1/YES] or [- 1/NO] to end the test. When the [+ 1/YES] is pressed, "OK" will appear on the LCD. If the [- 1/NO] is pressed, "NG" will appear.

TEST 25. 1 kHz SOUND OUTPUT (INDIVIDUAL OUTPUT 1) TEST

25. . INDIV-OUT. 1KHz. 1
.....

Check that the correct signal is output from INDIVIDUAL OUTPUT 1 jack.

ITEMS TO CHECK

Insert the appropriate 1/4" phone plugs into each output jack of OUTPUT L, OUTPUT R, INDIVIDUAL OUTPUTS 1 THROUGH 6 and PHONES (L/R) and check each output. If necessary, verify the frequency, output waveform, output level, and THD of each output using a frequency counter, oscilloscope, AC voltmeter (with JIS-C filter) and distortion meter. The volume control must be set at maximum for these checks.

While sounding, the LCD will display the following message:

25.. INDIV-OUT. 1KHz..... 1
OUTPUT. ON.....

Listed below are the specifications and conditions of each output during this test.

- OUTPUT L: less than -70dBm
- OUTPUT R: less than -70dBm
- INDIV. 1: 1kHz ± 1.5Hz, sine wave, distortion 0.25% or less, -12.6dBm ± 2dB (10k ohm load)
- INDIV. 2: less than -80dBm

TEST END

Press [+ 1/YES] or [- 1/NO] to end the test. When the [+ 1/YES] is pressed, "OK" will appear on the LCD. If the [- 1/NO] is pressed, "NG" will appear.

TEST 26. 1 kHz SOUND OUTPUT (INDIVIDUAL OUTPUT 2) TEST

26.. INDIV-OUT. 1KHz..... 2
.....

Check that the correct signal is output from INDIVIDUAL OUTPUT 2 jack.

ITEMS TO CHECK

Insert the appropriate 1/4" phone plugs into each output jack of OUTPUT L, OUTPUT R, INDIVIDUAL OUTPUTS 1 THROUGH 6 and PHONES (L/R) and check each output. If necessary, verify the frequency, output waveform, output level, and THD of each output using a frequency counter, oscilloscope, AC voltmeter (with JIS-C filter) and distortion meter. The volume control must be set at maximum for these checks.

While sounding, the LCD will display the following message:

26.. INDIV-OUT. 1KHz..... 2
OUTPUT. ON.....

Listed below are the specifications and conditions of each output during this test.

- OUTPUT L: less than -70dBm
- OUTPUT R: less than -70dBm
- INDIV. 1: less than -80dBm
- INDIV. 2: 1kHz ± 1.5Hz, sine wave, distortion 0.25% or less, -12.6dBm ± 2dB (10k ohm load)

TEST END

Press [+ 1/YES] or [- 1/NO] to end the test. When the [+ 1/YES] is pressed, "OK" will appear on the LCD. If the [- 1/NO] is pressed, "NG" will appear.

TEST 27. 1 kHz SOUND OUTPUT (INDIVIDUAL OUTPUT 3) TEST

27.. INDIV-OUT. 1KHz..... 3
.....

Check that the correct signal is output from INDIVIDUAL OUTPUT 3 jack.

ITEMS TO CHECK

Insert the appropriate 1/4" phone plugs into each output jack of OUTPUT L, OUTPUT R, INDIVIDUAL OUTPUTS 1 THROUGH 6 and PHONES (L/R) and check each output. If necessary, verify the frequency, output waveform, output level, and THD of each output using a frequency counter, oscilloscope, AC voltmeter (with JIS-C filter) and distortion meter. The volume control must be set at maximum for these checks.

While sounding, the LCD will display the following message:

27.. INDIV-OUT. 1KHz..... 3
OUTPUT. ON.....

Listed below are the specifications and conditions of each output during this test.

- INDIV. 3: 1kHz ± 1.5Hz, sine wave, distortion 0.25% or less, -12.6dBm ± 2dB (10k ohm load)
- INDIV. 4: less than -80dBm
- INDIV. 5: less than -80dBm
- INDIV. 6: less than -80dBm

TEST END

Press [+ 1/YES] or [- 1/NO] to end the test. When the [+ 1/YES] is pressed, "OK" will appear on the LCD. If the [- 1/NO] is pressed, "NG" will appear.

TEST 28. 1 kHz SOUND OUTPUT (INDIVIDUAL OUTPUT 4) TEST

28.. INDIV-OUT. 1KHz..... 4
.....

Check that the correct signal is output from INDIVIDUAL OUTPUT 4 jack.

ITEMS TO CHECK

Insert the appropriate 1/4" phone plugs into each output jack of OUTPUT L, OUTPUT R, INDIVIDUAL OUTPUTS 1 THROUGH 6 and PHONES (L/R) and check each output. If necessary, verify the frequency, output waveform, output level, and THD of each output using a frequency counter, oscilloscope, AC voltmeter (with JIS-C filter) and distortion meter. The volume control must be set at maximum for these checks.

While sounding, the LCD will display the following message:

```
28.. INDIV-OUT. 1kHz. .... 4
OUTPUT. ON. ....
```

Listed below are the specifications and conditions of each output during this test.

- INDIV. 3: less than -80dBm
- INDIV. 4: 1kHz ±1.5Hz, sine wave, distortion 0.25% or less, -12.6dBm ±2dB (10k ohm load)
- INDIV. 5: less than -80dBm
- INDIV. 6: less than -80dBm

TEST END

Press [+1/YES] or [-1/NO] to end the test. When the [+1/YES] is pressed, "OK" will appear on the LCD. If the [-1/NO] is pressed, "NG" will appear.

TEST 29. 1 kHz SOUND OUTPUT (INDIVIDUAL OUTPUT 5) TEST

```
29.. INDIV-OUT. 1kHz. .... 5
.....
```

Check that the correct signal is output from INDIVIDUAL OUTPUT 5 jack.

ITEMS TO CHECK

Insert the appropriate 1/4" phone plugs into each output jack of OUTPUT L, OUTPUT R, INDIVIDUAL OUTPUTS 1 THROUGH 6 and PHONES (L/R) and check each output. If necessary, verify the frequency, output waveform, output level, and THD of each output using a frequency counter, oscilloscope, AC voltmeter (with JIS-C filter) and distortion meter. The volume control must be set at maximum for these checks.

While sounding, the LCD will display the following message:

```
29.. INDIV-OUT. 1kHz. .... 5
OUTPUT. ON. ....
```

Listed below are the specifications and conditions of each output during this test.

- INDIV. 3: less than -80dBm
- INDIV. 4: less than -80dBm
- INDIV. 5: 1kHz ±1.5Hz, sine wave, distortion 0.25% or less, -12.6dBm ±2dB (10k ohm load)
- INDIV. 6: less than -80dBm

TEST END

Press [+1/YES] or [-1/NO] to end the test. When the [+1/YES] is pressed, "OK" will appear on the LCD. If the [-1/NO] is pressed, "NG" will appear.

TEST 30. 1 kHz SOUND OUTPUT (INDIVIDUAL OUTPUT 6) TEST

```
30.. INDIV-OUT. 1kHz. .... 6
.....
```

Check that the correct signal is output from INDIVIDUAL OUTPUT 6 jack.

ITEMS TO CHECK

Insert the appropriate 1/4" phone plugs into each output jack of OUTPUT L, OUTPUT R, INDIVIDUAL OUTPUTS 1 THROUGH 6 and PHONES (L/R) and check each output. If necessary, verify the frequency, output waveform, output level, and THD of each output using a frequency counter, oscilloscope, AC voltmeter (with JIS-C filter) and distortion meter. The volume control must be set at maximum for these checks.

While sounding, the LCD will display the following message:

```
30.. INDIV-OUT. 1kHz. .... 6
OUTPUT. ON. ....
```

Listed below are the specifications and conditions of each output during this test.

- INDIV. 3: less than -80dBm
- INDIV. 4: less than -80dBm
- INDIV. 5: less than -80dBm
- INDIV. 6: 1kHz ±1.5Hz, sine wave, distortion 0.25% or less, -12.6dBm ±2dB (10k ohm load)

TEST END

Press [+1/YES] or [-1/NO] to end the test. When the [+1/YES] is pressed, "OK" will appear on the LCD. If the [-1/NO] is pressed, "NG" will appear.

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TEST 31. 16 VOICES SOUND OUTPUT TEST

```
31.. OUTPUT... 1KHz... 16
.....
```

ITEMS TO CHECK

When this test is executed, sine waves, 1kHz of channel 1 through 16 will sound every 0.5 seconds. Check that the correct signals are output from OUTPUT L jack. Insert the appropriate 1/4" phone plug into OUTPUT L jack and check the output by using an amplifier and speaker to monitor signal. The volume control should be set at comfortable listening level for these checks. During the test, the LCD will display the following message:

```
31.. OUTPUT... 1KHz... 16
OUTPUT. ON. CH=xx.....
```

(while sounding)

```
31.. OUTPUT... 1KHz... 16
OUTPUT. OFF.....
```

(while sound diminishing)

TEST END

Press [+ 1/YES] or [- 1/NO] to end the test. When the [+ 1/YES] is pressed, "OK" will appear on the LCD. If the [- 1/NO] is pressed, "NG" will appear.

TEST 32. TRIGGER INPUT 1 (HIGH SENSITIVITY) TEST

```
32.. TRIG-IN... HIGH... 1
.....
```

Apply a square wave of 0.2V, 25Hz to the TRIGGER INPUT 1 and check that the OUTPUT L using an oscilloscope. The volume control must be set at maximum for these checks. While executing the test, the LCD will display the following message:

```
32.. TRIG-IN... HIGH... 1
EXECUTING. !!!.....
```

TEST END

Press [+ 1/YES] or [- 1/NO] to end the test. When the [+ 1/YES] is pressed, "OK" will appear on the LCD. If the [- 1/NO] is pressed, "NG" will appear.

TEST 33. TRIGGER INPUT 1 (LOW SENSITIVITY) TEST

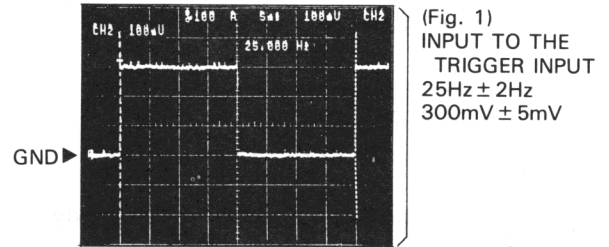
```
33.. TRIG-IN... LOW... 1
.....
```

Apply a square wave of 0.2V, 25Hz to the TRIGGER INPUT 1 and check that the OUTPUT L using an oscilloscope. The volume control must be set at maximum for these checks. While executing the test, the LCD will display the following message:

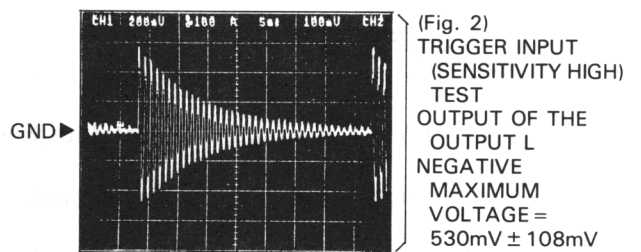
```
33.. TRIG-IN... LOW... 1
EXECUTING. !!!.....
```

TEST END

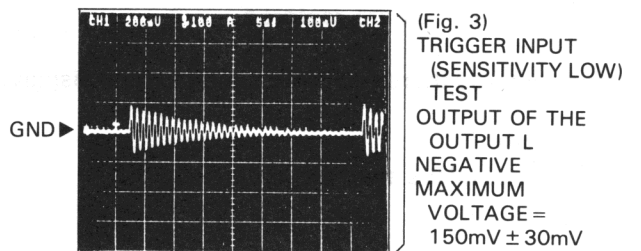
Press [+ 1/YES] or [- 1/NO] to end the test. When the [+ 1/YES] is pressed, "OK" will appear on the LCD. If the [- 1/NO] is pressed, "NG" will appear.



(Fig. 1)
INPUT TO THE TRIGGER INPUT
25Hz ± 2Hz
300mV ± 5mV



(Fig. 2)
TRIGGER INPUT (SENSITIVITY HIGH) TEST
OUTPUT OF THE OUTPUT L
NEGATIVE MAXIMUM VOLTAGE =
530mV ± 108mV



(Fig. 3)
TRIGGER INPUT (SENSITIVITY LOW) TEST
OUTPUT OF THE OUTPUT L
NEGATIVE MAXIMUM VOLTAGE =
150mV ± 30mV

- TEST 34. TRIGGER INPUT 2 (HIGH SENSITIVITY) TEST
- TEST 35. TRIGGER INPUT 2 (LOW SENSITIVITY) TEST
- TEST 36. TRIGGER INPUT 3 (HIGH SENSITIVITY) TEST
- TEST 37. TRIGGER INPUT 3 (LOW SENSITIVITY) TEST
- TEST 38. TRIGGER INPUT 4 (HIGH SENSITIVITY) TEST
- TEST 39. TRIGGER INPUT 4 (LOW SENSITIVITY) TEST
- TEST 40. TRIGGER INPUT 5 (HIGH SENSITIVITY) TEST
- TEST 41. TRIGGER INPUT 5 (LOW SENSITIVITY) TEST
- TEST 42. TRIGGER INPUT 6 (HIGH SENSITIVITY) TEST
- TEST 43. TRIGGER INPUT 6 (LOW SENSITIVITY) TEST

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TESTS 34 through 43 can be performed in the same manner as TESTS 32 and 33.

TEST 44. FACTORY SETTINGS

```
44..FACTORY SET.....
.....
```

This test is used to initialize the data listed below to the factory settings:

- System data
- Internal kit data
- Internal voice data
- Program change table
- etc.

```
44..FACTORY SET.....
SURE.?.....
```

When this test is executed, the following display will appear.

```
44..FACTORY SET.....
COMPLETE.....
```

If you press [+ 1/YES], the factory preset data will be restored.
 If you press [- 1/NO], they will not be restored.

DISPLAY OF TEST RESULTS

If factory settings are restored.

If not restored there will be no change in the display.

TEST END

The LCD displays the results.

TEST 45. EXIT TEST PROGRAM

```
45..EXIT.....
.....
```

When this test is executed, the following display will appear.

```
45..EXIT.....
SURE.?.....
```

If the [+ 1/YES] is pressed, the system will exit the test mode and return to play mode and the following message will appear on the LCD.

```
C01/Mode=rhythm.kit.....
KitE..I..1.Rock.1.....
```

If you press the [- 1/NO], test 45 will be aborted.

When the RM50 has returned to play mode, check that the noise levels of each output.

Listed below are the noise levels of each output during the play mode.

- OUTPUT L: less than - 80dBm
- OUTPUT R: less than - 80dBm
- INDIV. 1: less than - 86dBm
- INDIV. 2: less than - 86dBm
- INDIV. 3: less than - 86dBm
- INDIV. 4: less than - 86dBm
- INDIV. 5: less than - 86dBm
- INDIV. 6: less than - 86dBm
- PHONES (L): less than - 80dBm
- PHONES (R): less than - 80dBm

■ ERROR MESSAGES

MIDI

Bulk data error!

An error occurred while the RM50 was receiving a bulk data block. Check your connections and retry the bulk transmission operation.

MIDI overflow error!

The RM50 attempted to receive or transmit a quantity of MIDI data exceeding its handling capacity. Take steps to reduce the amount of data being communicated.

Bad device number!

The RM50 could not receive a bulk dump transmission because its device number does not match that of the transmitting device; or it attempted to send a dump while its own device number was set to "off". Check the device number settings of both devices, and retry the bulk dump operation.

SDS format error!

The RM50 received a MIDI sample dump using a format it is not capable of accepting.

Data Card

Save error!

The RM50 was unable to save data to the card in the DATA slot. Retry the save operation.

Load error!

The RM50 was unable to load data to the card in the DATA slot. Retry the load operation.

Format error!

The RM50 was unable to format the card in the DATA slot. Retry the Card Format operation.

Data card protected!

The RM50 could not write data to the card in the DATA slot, or perform a save or format operation, because the card is protected. Slide the write protect switch on the top edge of the card to the right and retry the operation.

No data card!

The RM50 could not access the Data Card Utility Group functions because there is no card in the DATA slot. Insert a card in the DATA slot before attempting to use these functions.

No data in this card!

The RM50 has attempted to load data from a data card bank which has been formatted but which contains no data. Select a different card bank or insert another card in the DATA slot, then retry the operation.

Wave RAM full!

The RM50 could not copy data into the wave RAM area because the available capacity is not sufficient to hold the selected waveform. Delete unneeded data from the wave RAM area to make room for the new waveform.

Unformatted data card!

The RM50 attempted to write data to an unformatted card bank. Use the Data Card Format operation (page 103) to format the bank in question.

Too many waves!

The RM50 could not copy data into the wave RAM area because the maximum waveform capacity of 64 waveforms has already been reached. (The maximum capacity may be less than 64 waveforms when multi-sample waveforms are loaded.) Delete unneeded data from the wave RAM area to make room for the new waveform.

Change card battery!

The lithium cell maintaining the contents of the card in the DATA slot is nearing the end of its lifetime. Store the contents of the card in the RM50, then change the battery.

No waveforms in RAM!

The RM50 could not access the Waveform Name or Waveform Delete functions because the wave RAM area does not contain any waveforms. You must copy waveforms into the wave RAM area before attempting to use these functions.

Wave RAM

No wave card!

The RM50 could not copy a waveform into the wave RAM area because the selected WAVEFORM slot does not contain a waveform card. Insert a waveform card in the slot, or change your slot selection.

No wave RAM module!

The RM50 could not access the Wave RAM Utility Group functions because no expansion memory has been installed for use as a wave RAM area. Install an optional SYEMB06 Expansion Memory Board in your RM50 before attempting to use these functions.

RM50

Edit Mode

Recall buffer empty!

The RM50 could not perform a recall operation because the selected data has not yet been edited. The recall operations are used to restore the original data for rhythm sets, pitched voices, or voices which have been edited. The unedited data is stored in a recall buffer until a new rhythm set, pitched voice, or voice is selected for editing. When a new selection is edited, however, the contents of the recall buffer are replaced by the original data for the new selection. The edited data for the previous selection becomes permanent and cannot be recalled. The recall functions can therefore be used to recall only the rhythm set, pitched voice, or voice which was edited last.

Copy to MX voice bank!

The RM50 could not copy a voice to the specified voice bank. Select either I-MX or C-MX as the destination bank.

Copy to internal kit!

The RM50 could not copy a rhythm kit to the specified kit bank. Select either I or C as the destination bank.

Can't edit this data!

The RM50 could not edit the selected rhythm kit, voice, or a voice variation. You cannot edit the parameters of preset rhythm kits or voices. You can change the Easy Edit parameters of voice variations; however, the other parameters cannot be edited. Select a rhythm kit or a user voice from either an internal or card bank for editing.

Miscellaneous

Change internal battery!

The RM50's internal lithium cell is nearing the end of its useful lifetime. You should save the contents of its memory either by saving them to a data card or dumping them to a device capable of storing them.