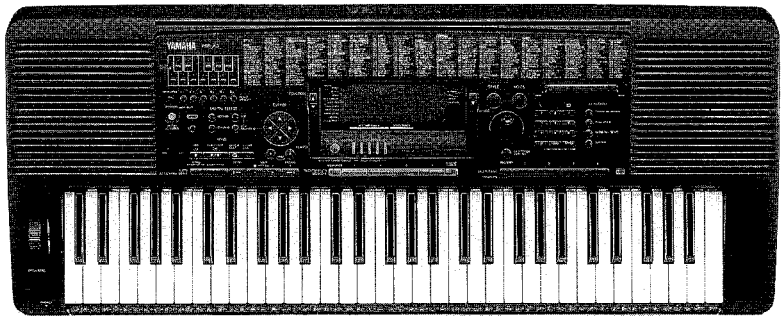
PORTATONE

PSR-A3

SERVICE MANUAL



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PK 001559

YAMAHA CORP.

HAMAMATSU, JAPAN

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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 principal-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.

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.

PSR-A3

■SPECIFICATIONS

Keyboards:
61 standard-size keys (C1~C6) with touch response.

Display:
Large multi-function LCD display

Setup:
Power: ON/OFF
Master Volume: MIN-MAX

Control & Ten Keys:
CURSOR▲▼◀ ▶, FUNCTION▲▼, MODE▼, [0]~[9], [+/YES], [–/NO], Data dial

Cartridge Slot

Demo:
Voice Demo:21 songs
Style Demo:8 songs

Mode:
NORMAL, SPLIT,SINGLE,FINGERED

Voice:
AWM 160 voices+9 Keyboard Percussion Kits
Polyphony: 32
Split Voice: Volume, Octave, Reverb Level, Chorus Level, Pan, Split Point
Dual Voice: Volume, Octave, Reverb Level, Chorus Level, Pan
Touch Response:Touch Sensitivity
Harmony/Echo: 22 types
Sustain
Others: Keyboard Volume, Octave, Reverb Level, Chorus Level, DSP Level, Pan

Auto Accompaniment:
140 styles
Accomp Track: RHYTHM1/2, BASS, CHORD1/2, PAD, PHRASE1/2
ACCOMP LARGE/SMALL
Accomp Track Settings: ON/OFF, Voice, Volume
Accompaniment Control: SYNC-START/STOP, START/STOP, INTRO, MAIN A/B (AUTO FILL), ENDING
Tempo
Fingering (FINGERED Mode): Normal, Bass, Full
Accompaniment Volume
Accompaniment Split Point

One Touch Setting:
560 One Touch Settings

Overall Controls:
Transpose, Metronome, Tuning

Pitch Bend Wheel:
Pitch Bend Range

Digital Effect:
Reverb:12 types, Reverb Return Level
Chorus: 9 types, Chorus Return Level
DSP: 45 types, DSP Return Level
DSP Variation

Scale Setting:
One-octave keyboard buttons, Scale Tuning
Accompaniment Scale Tuning

Scale Memory:
1~6

Registration Memory:
32 Registration Bank, 1~4, Accomp Freeze

Multi Pads:
36 Preset Multi Pad Kits+4 User Multi Pad Kits
4 Pads+Terminate

Song:
Song: 8 User Songs
Recording Tracks: ACCOMP, MELODY 1,2
Edit: Volume, Voice (MELODY TRACK), Song Clear
Minus One: 3 Modes
Minus One Right-hand Channel,
Minus One Left-hand Channel
Repeat

MIDI:
Remote Channel, Keyboard Out, Song Out, Accompaniment Out, External Clock, Local Control, Initial Data Send, Bulk Data Send

Auxiliary Jacks:
DC IN 10-12V, PHONES, SUSTAIN, AUX OUT R and L+R/L, MIDI IN/OUT

Amplifiers:
6.0 W + 6.0 W (when using PA-5B AC Power adaptor)
4.5 W + 4.5 W (when using batteries)
Phones output: 75Ω ±5% Impedance

Speakers:
12cm (4-3/4") x 2

Power Consumption:
22 W (when using PA-5B AC power adaptor)

Batteries:
Six SUM-1, "D" size, R-20 or equivalent batteries

Rated Voltage:
DC 10-12V

Dimensions (WxDxH):
973 x 397 x 146 mm (38-1/4" x 15-5/8" x 5-3/4")

Weight:
7.4 kg (16.2 lbs.) excluding batteries

Supplied Accessories:
- Music Cartridge
- Music Stand
- Owner's Manual

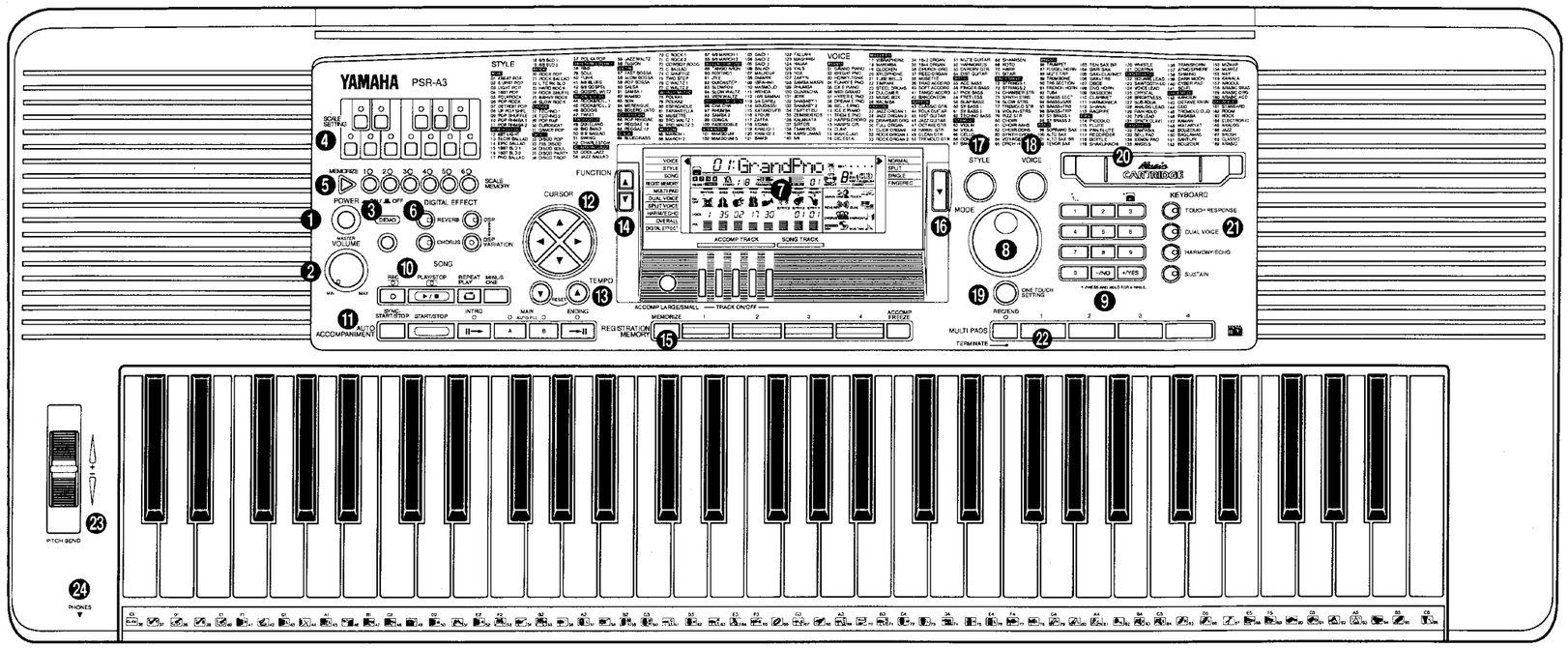
Optional Accessories:
- Headphones HPE-3, HPE-150
- AC Power Adaptor PA-5, PA-5B, PA-5C
- Footswitch FC4, FC5
- Music Cartridge

Output Level (at PHONES terminal):
-17 dBm ±2 dB (Select VOICE 30, press C3, D3, E3, F3 G3, A3 and B3 keys. when VOLUME: maximum, digital level: default, touch response: off, 30 Ω load)

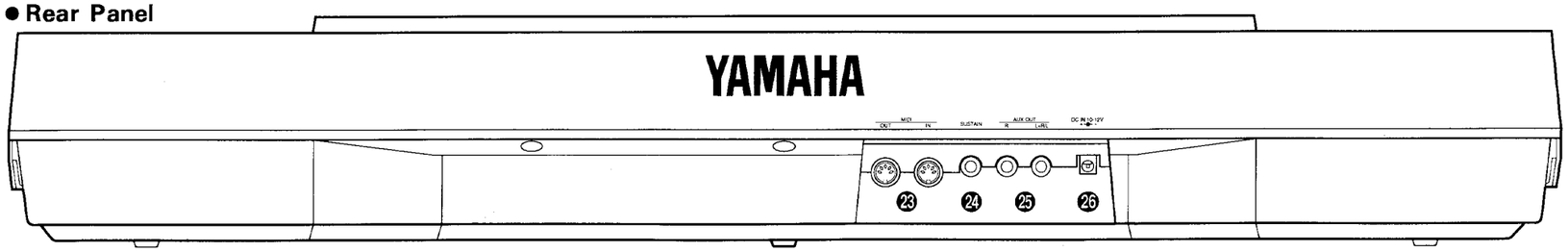
PSR-A3

■PANEL LAYOUT

● Front Panel



● Rear Panel



● Front Panel Controls

❶ POWER Switch

❷ MASTER VOLUME Control

❸ DEMO Button

❹ SCALE SETTING Buttons

❺ SCALE MEMORY Section
- MEMORIZE Button
- 1~6 Buttons

❻ DIGITAL EFFECT Section
- REVERB Button
- CHORUS Button
- DSP Button
- DSP VARIATION Button

❼ LCD Panel

❽ Data Dial

❾ Number [0]~[9] and [+/YES], [–/NO] Buttons

❿ SONG Section
- REC Button
- PLAY/STOP Button
- REPEAT PLAY Button
- MINUS ONE Button

⓫ AUTO ACCOMPANIMENT Section
- SYNC-START/STOP Button
- START/STOP Button
- INTRO Button
- MAIN A/B Button
- ENDING Button
- ACCOMP LARGE/SMALL Button
- TRACK ON/OFF Button

⓬ CURSOR ▲, ▼, ◀, ▶ Buttons

⓭ TEMPO ▲, ▼ Buttons

⓮ FUNCTION ▲, ▼ Buttons

⓯ REGISTRATION MEMORY Section
- MEMORIZE Button
- 1~4 Buttons
- ACCOMP FREEZE Button

⓰ MODE ▼ Button

⓱ STYLE Button

⓲ VOICE Button

⓳ ONE TOUCH SETTING Button

⓴ Music CARTRIDGE Slot

㉑ KEYBOARD Section
- TOUCH RESPONSE Button
- DUAL VOICE Button
- HARMONY/ECHO Button
- SUSTAIN Button

㉒ MULTI PADS Section
- MULTI PADS 1~4
- REC/END, TERMINATE Button

㉓ PITCH BEND Wheel

㉔ PHONES Jack

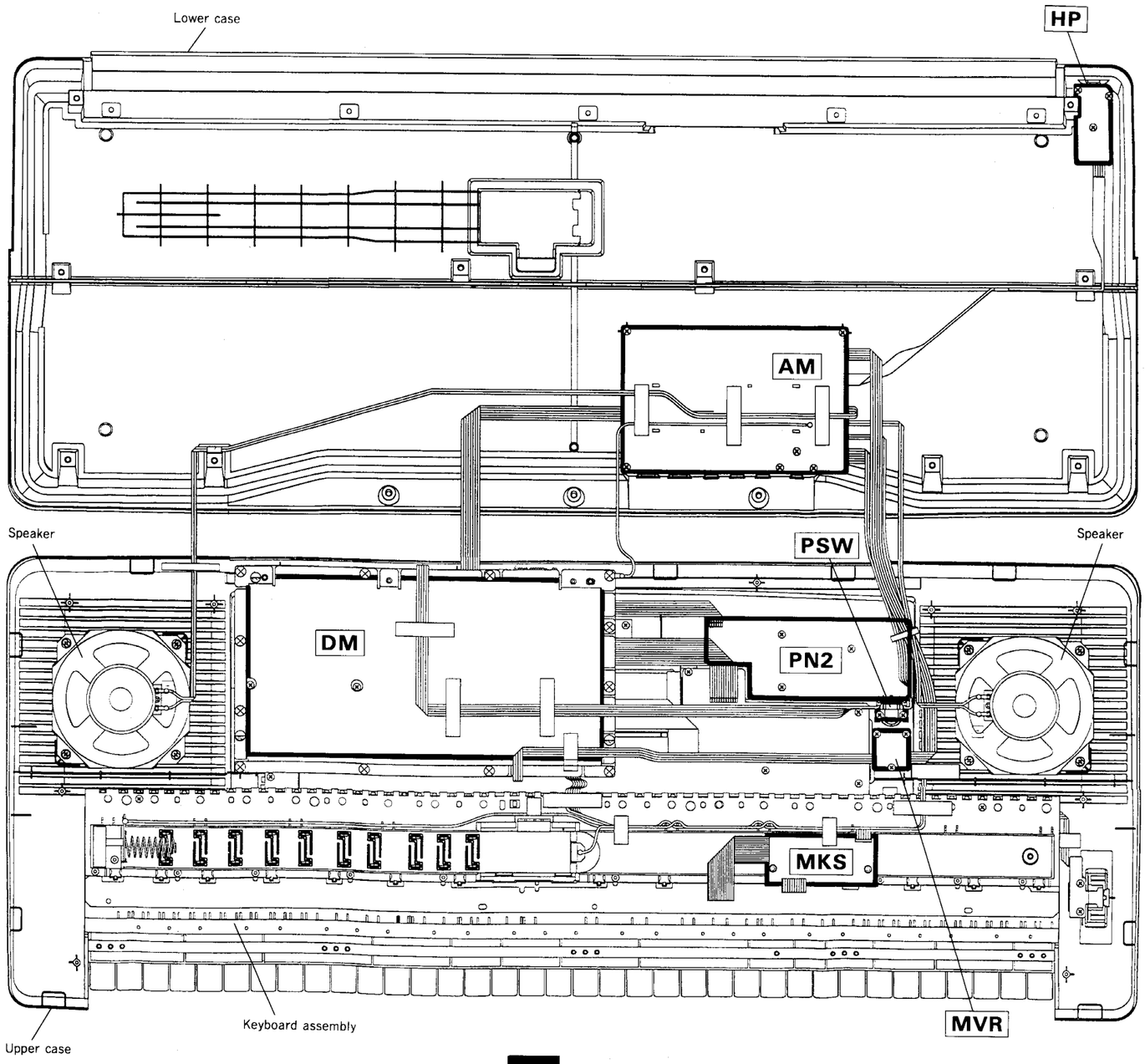
● Rear Panel Controls

㉕ MIDI OUT and IN Connectors

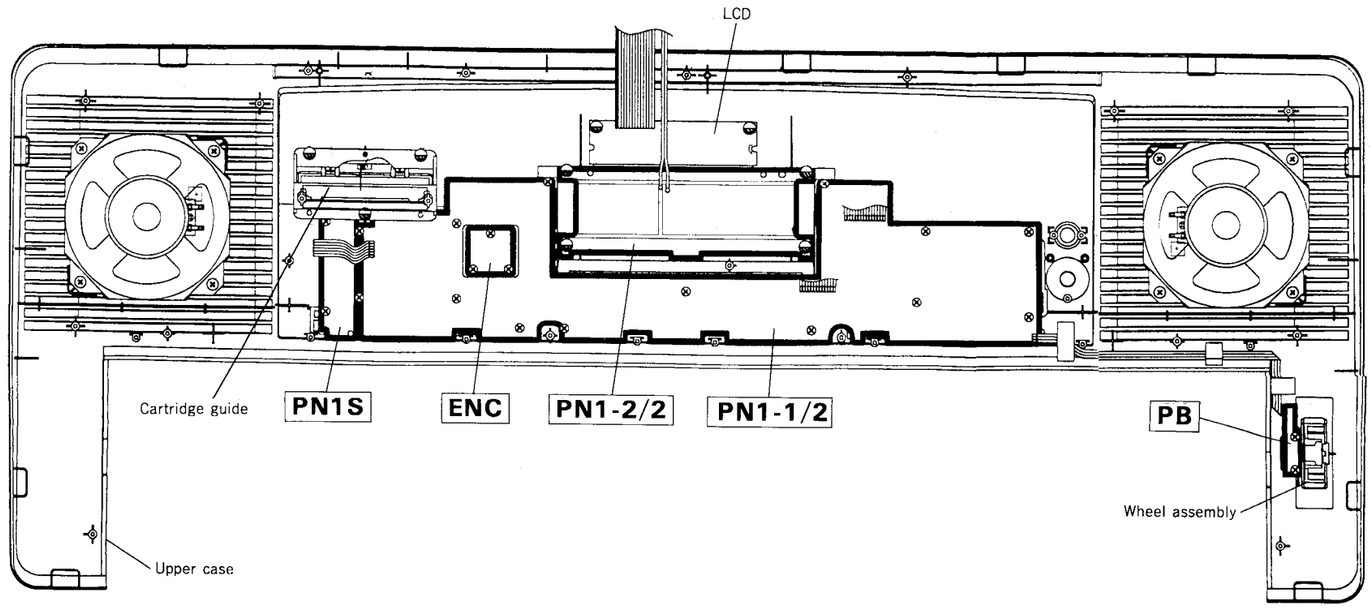
㉖ SUSTAIN Jack

㉗ AUX OUT R, L+R/L Jacks

㉘ DC IN 10-12V Jack

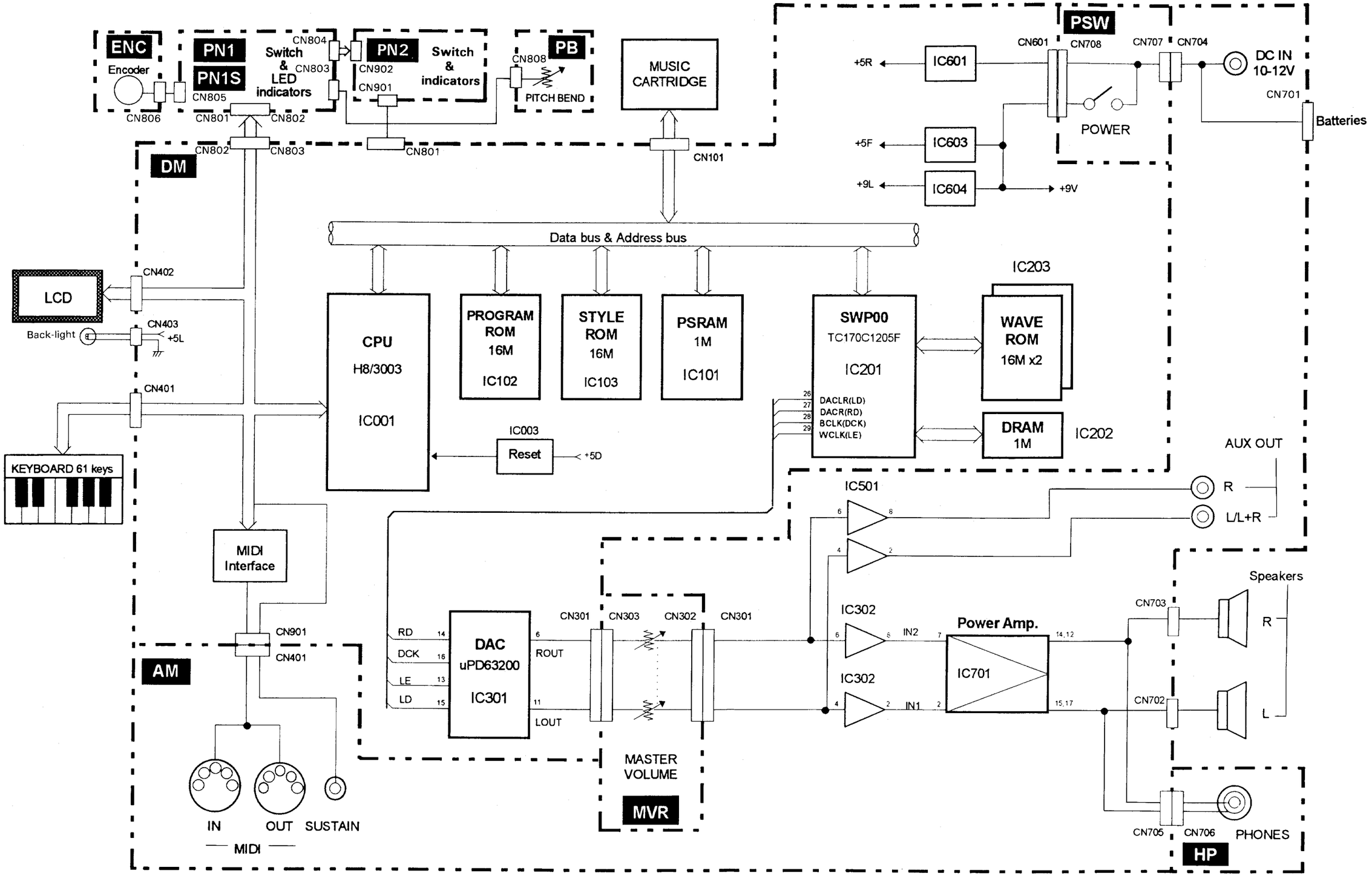


● DM, PN 2 , PSW and MVR circuit boards and keyboard assembly have been removed.



PSR-A3

■BLOCK DIAGRAM

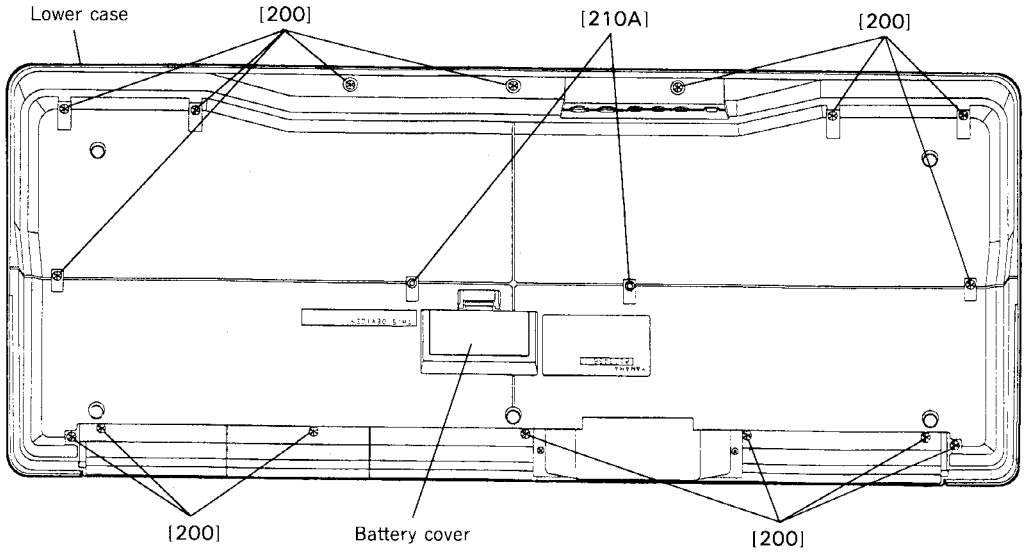


■DISASSEMBLY PROCEDURE

1 Lower Case Assembly

1-1 Remove the battery cover.

1-2 Remove the sixteen (16) screws marked as [200] and two (2) screws marked as [210A], then the lower case assembly can be removed. (Fig. 1)



[200]: Bind Head Tapping Screw-P 3.0X12 MFZN2Y (EP600300)
[210A]: Bind Head Tapping Screw-P 3.0X25 MFZN2Y (VK228100)

(Fig. 1)

2 DM Circuit Board

2-1 Remove the lower case assembly. (See procedure 1)

2-2 Remove the three (3) screws marked as [180A] and twelve (12) screws marked as [190], then remove the shield box (L). (Fig. 2)

2-3 Remove the two (2) screws marked as [170], then the DM circuit board can be removed. (Fig. 2)

3 Keyboard Assembly

3-1 Remove the lower case assembly. (See procedure 1)

3-2 Remove the two (2) screws marked as [210B], then the keyboard assembly can be removed. (Fig. 2)

4 MKS Circuit Board

4-1 Remove the lower case assembly. (See procedure 1)

4-2 Remove the two (2) screws marked as [30], then the MK circuit board can be removed. (Fig. 2)

※ The MKS circuit board is a part of the keyboard assembly.

5 Speakers

5-1 Remove the lower case assembly. (See procedure 1)

5-2 Remove the eight (8) screws marked as [160], then the right and left speakers can be removed. (Fig. 2)

6 MVR Circuit Board (MASTER VOLUME)

6-1 Remove the lower case assembly. (See procedure 1)

6-2 Pull off the MASTER VOLUME knob.

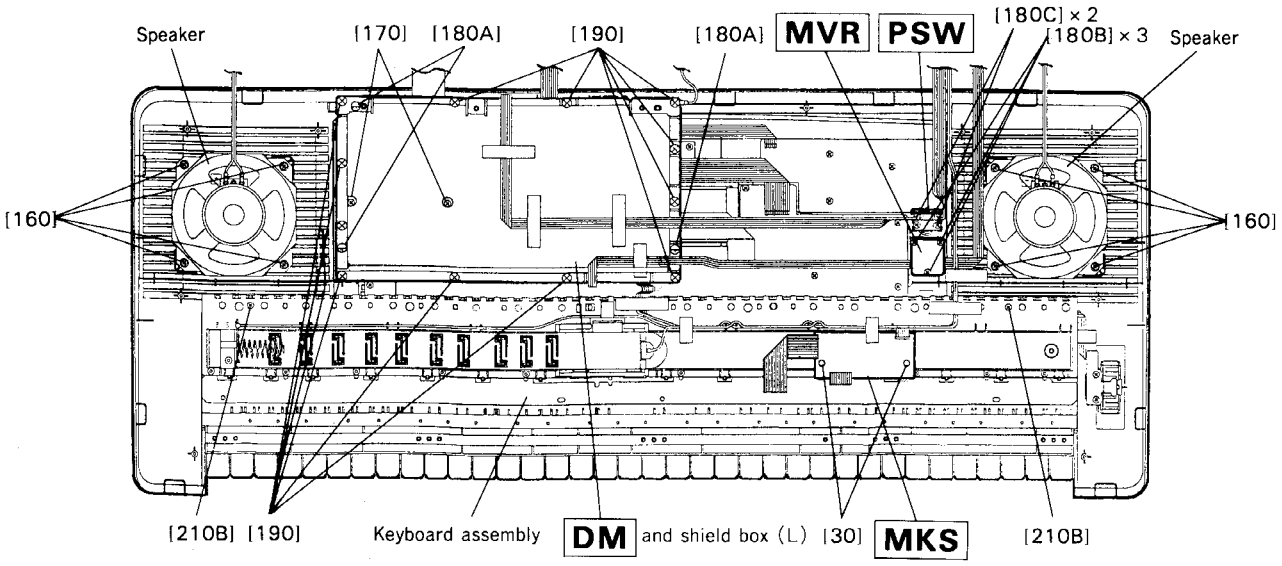
6-3 Remove the three (3) screws marked as [180B], then the MVR circuit board can be removed. (Fig. 2)

7 PSW Circuit Board (POWER Switch)

7-1 Remove the lower case assembly. (See procedure 1)

7-2 Remove the two (2) screws marked as [180C], then the PSW circuit board can be removed with the POWER switch knob. (Fig. 2)

7-3 Pull off the POWER switch knob from the PSW circuit board.



[30]: Bind Head Tapping Screw-P 3.0X8 MFZN2BL (EP630220)
[160]: Bind Head Tapping Screw-P 4.0X8 MFZN2BL (VB931600)
[170]: Bind Head Tapping Screw-P 3.0X16 MFZN2Y (EP600310)
[180A]: Bind Head Tapping Screw-P 3.0X8 MFZN2Y (EP600280)
[180B]: Bind Head Tapping Screw-P 3.0X8 MFZN2Y (EP600280)
[180C]: Bind Head Tapping Screw-P 3.0X8 MFZN2Y (EP600280)
[190]: Bind Head Tapping Screw-B 3.0X6 MFZN2Y (EP600130)
[210B]: Bind Head Tapping Screw-P 3.0X25 MFZN2Y (VK228100)

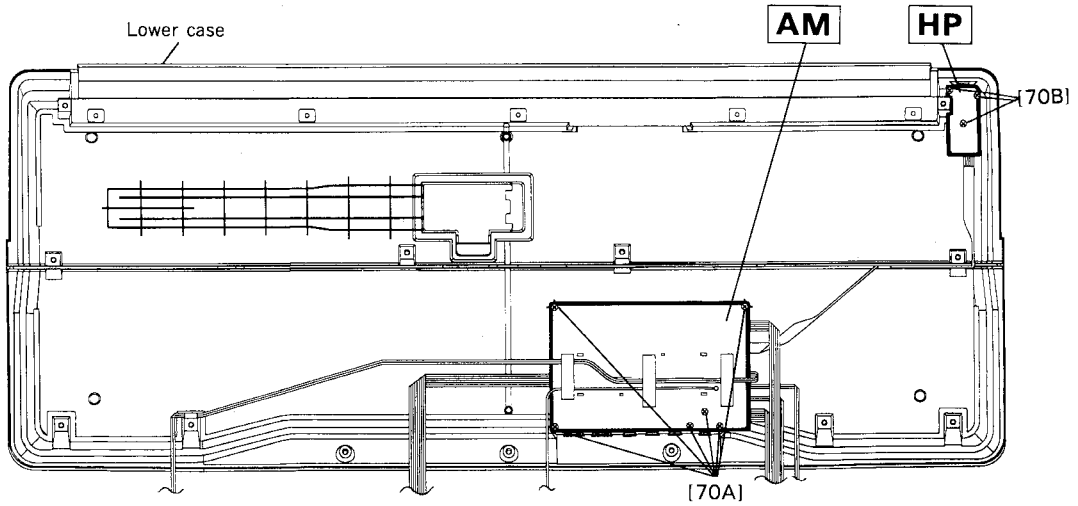
(Fig. 2)

8 AM Circuit Board

8-1 Remove the lower case assembly. (See procedure 1)
8-2 Remove the six (6) screws marked as [70A], then the AM circuit board can be removed. (Fig. 3)

9 HP Circuit Board

9-1 Remove the lower case assembly. (See procedure 1)
9-2 Remove the three (3) screws marked as [70B], then the HP circuit board can be removed. (Fig. 3)



[70A]: Bind Head Tapping Screw-P 3.0X8 MFZN2Y (EP600280)
[70B]: Bind Head Tapping Screw-P 3.0X8 MFZN2Y (EP600280)

(Fig. 3)

10 PN1-2/2 Circuit Board & LCD

10-1 Remove the lower case assembly. (See procedure 1)
10-2 Remove the DM circuit board. (See procedure 2)
10-3 Remove the four (4) screws marked as [150A], then the PN1-2/2 circuit board can be removed. (Fig. 4)
10-4 Remove the reflection tape and back-lit board.
10-5 Remove the two (2) screws marked as [150B], then remove the LCD. (Fig. 4)
NOTE) You should care the direction of the back-lit board when replacing it on the LCD.

11 PN1-1/2 Circuit Board

11-1 Remove the lower case assembly. (See procedure 1)
11-2 Remove the DM circuit board. (See procedure 2)
11-3 Remove the keyboard assembly. (See procedure 3)
11-4 Remove the three (3) screws marked as [150C], then remove the cartridge guide. (Fig. 4)
11-5 Remove the eleven (11) screws marked as [150D] and two (2) screws marked as [150E], then the PN1-1/2 circuit board can be removed. (Fig. 4)

12 PN1S Circuit Board

12-1 Remove the lower case assembly. (See procedure 1)
12-2 Remove the DM circuit board. (See procedure 2)
12-3 Remove the keyboard assembly. (See procedure 3)
12-4 Remove the three (3) screws marked as [150C], then remove the cartridge guide. (Fig. 4)
12-5 Remove the two (2) screws marked as [150E] and two (2) screws marked as [150F], then the PN1S circuit board can be removed. (Fig. 4)

13 ENC Circuit Board

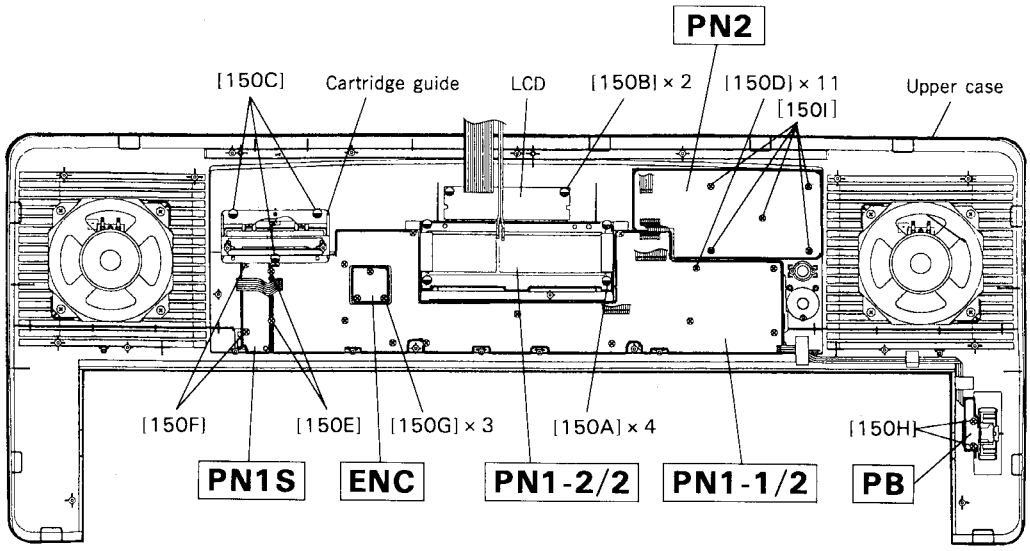
13-1 Remove the lower case assembly. (See procedure 1)
13-2 Remove the DM circuit board. (See procedure 2)
13-3 Pull off the encoder knob.
13-4 Remove the three (3) screws marked as [150G], then the ENC circuit board can be removed. (Fig. 4)

14 PB Circuit Board (PITCH BEND Wheel)

14-1 Remove the lower case assembly. (See procedure 1)
14-2 Remove the two (2) screws marked as [150H], then remove the PB circuit board with the wheel assembly. (Fig. 4)
14-3 Remove the wheel assembly from the PB circuit board.

15 PN2 Circuit Board

15-1 Remove the lower case assembly. (See procedure 1)
15-2 Remove the five (5) screws marked as [150I], then the PN2 circuit board can be removed. (Fig. 4)



[150A]-[150I]: Bind Head Tapping Screw-P 3.0X8 MFZN2Y (EP600280)

(Fig. 4)

■LSI PIN DESCRIPTION

• HD6413003TF12 <H8/3003> (XP133A00) CPU

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	VCC			57	A11	I/O	
2	PB0	I/O		58	A12	I/O	
3	PB1	I/O		59	A13	I/O	
4	PB2	I/O		60	A14	I/O	
5	PB3	I/O	Port B	61	A15	I/O	Address bus
6	PB4	I/O		62	A16	I/O	
7	PB5	I/O		63	A17	I/O	
8	PB6//DERQ0	I/O		64	A18	I/O	
9	PB7//DREQ1	I/O		65	A19	I/O	
10	VSS			66	P60//WAIT	I	Wait (connected to GEW8 C/S)
11	PC0	I		67	P61//BREQ		
12	PC1			68	P62//BACK		not used
13	PC2//TEND2			69	ϕ		
14	PC3//DREQ2		not used	70	/STBY	I	Stand-by mode signal
15	PC4			71	/RES	I	Reset
16	PC5			72	NMI	I	Non-maskable interrupt request
17	PC6			73	VSS		Ground
18	PC7			74	EXTAL		Clock (12 MHz)
19	/RES0		not used	75	XTAL		
20	P90/TXD0	O	MIDI OUT	76	VCC		Power supply (+5D)
21	P91/TXD1		not used	77	/AS		not used
22	P92/RXD0	I	MIDI IN	78	/RD	O	Read strobe
23	P93/RXD1			79	/HWR	O	Write strobe
24	P94//IRQ4		not used	80	/LWR		not used
25	P95//IRQ5			81	MD0	I	
26	VSS		Ground	82	MD1	I	Mode select
27	P40/D0	O	Test pin 1	83	MD2	I	
28	P41/D1	O	Test pin 2	84	AVCC		Power supply (+5D)
29	P42/D2			85	VREF	I	Reference voltage (+5D)
30	P43/D3			86	P70/AN0	I	(Piezo sensors)
31	P44/D4		not used	87	P71/AN0	I	(Lithium battery)
32	P45/D5			88	P72/AN2	I	
33	P46/D6			89	P73/AN3	I	Port 7/Analog signal input
34	P47/D7			90	P74/AN4	I	
35	VSS		Ground	91	P75/AN5	I	
36	D8	O		92	P76/AN6	I	
37	D9	O		93	P77/AN7	I	
38	D10	O		94	AVSS		Power supply (+5D)
39	D11	O	Data bus	95	P54/A20		
40	D12	O		96	P55/A21		Not used
41	D13	O		97	P56/A22		
42	D14	O		98	P57/A23		
43	D15	O		99	VSS		Ground
44	VCC		Power supply (+5D)	100	P80		Not used
45	A0	I/O		101	P81//CS3		
46	A1	I/O		102	P82/CS2	O	GEW8 (IC 13) chip select
47	A2	I/O		103	P83//CS1	O	SRAM (IC 8) chip select
48	A3	I/O	Address bus	104	P84//CS0	O	Main ROM (IC 9) chip select
49	A4	I/O		105	PA0	I/O	
50	A5	I/O		106	PA1	I/O	
51	A6	I/O		107	PA2	I/O	
52	A7	I/O		108	PA3	I/O	Port A
53	VSS		Ground	109	PA4	I/O	
54	A8	I/O		110	PA5	I/O	
55	A9	I/O	Address bus	111	PA6	I/O	
56	A10	I/O		112	PA7	I/O	

• TC170C120SF (XQ036A00) SWP00 (AWM Tone Generator) Standard Wave Processor

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	CA0	I	CPU address bus	51	MD1	I	Wave memory data bus
2	CA1	I		52	MD2	I	
3	CA2	I		53	MD3	I	
4	CA3	I		54	MD4	I	
5	CA4	I		55	MD5	I	
6	CA5	I		56	MD6	I	
7	VDD		(Power supply)	57	MD7	I	
8	CA6	I	CPU address bus	58	VDD		Power supply
9	CA7	I		59	MA0	O	Wave memory address bus
10	CA8	I		60	MA1	O	
11	CA9	I		61	MA2	O	
12	CA10	I		62	MA3	O	
13	CD0	I/O	CPU data bus	63	MA4	O	
14	CD1	I/O		64	MA5	O	
15	VSS		(Ground)	65	MA6	O	
16	CD2	I/O	CPU data bus	66	VSS		(Ground)
17	CD3	I/O		67	MA7	O	Wave memory address bus
18	CD4	I/O		68	MA8	O	
19	CD5	I/O		69	MA9	O	
20	CD6	I/O		70	MA10	O	
21	CD7	I/O		71	MA11	O	
22	VDD		Power supply	72	MA12	O	
23	CSN	I	Chip select	73	VDD		(Power supply)
24	WRN	I	Data write strobe	74	MA13	O	Wave memory address bus
25	RDN	I	Data read strobe	75	MA14	O	
26	DACLR	O	DAC output (L or L/R)	76	MA15	O	
27	DACR	O	DAC output (R)	77	MA16	O	
28	BCLK	O	Bit clock	78	MA17	O	
29	WCLK	O	Word clock	79	MA18	O	
30	VSS		Ground	80	VSS		(Ground)
31	RD0	I/O	DRAM data bus	81	MA19	O	Wave memory address bus
32	RD1	I/O		82	MA20	O	
33	RD2	I/O		83	MA21	O	
34	RD3	I/O		84	MA22	O	
35	RA0	O	DRAM address bus	85	MA23	O	
36	RA1	O		86	ICN	I	Initial clear
37	RA2	O		87	VSS		Ground
38	RA3	O		88	XIN	I	Crystal osc.
39	RA4	O		89	XOUT	O	Crystal osc.
40	VSS		(Ground)	90	VSS		Ground
41	VDD		(Power supply)	91	VDD		Power supply
42	RA5	O	DRAM address bus	92	MCLKO	O	Clock output
43	RA6	O		93	MCLKI	I	Master clock input
44	RA7	O		94	SYI	I	Synch. signal
45	RA8	O		95	SYSCLK	O	1/2 master clock
46	RASN	O	DRAM row address bus	96	NSYSON	I	NSYS expansion enable
47	CASN	O	DRAM column address bus	97	TESTON	I	Test pin
48	RWEN	O	DRAM write enable	98	ACIN	I	Test pin
49	MD0	I	Wave memory data bus	99	DCTEST	I	Test pin
50	VSS		Power supply	100	VDD		Ground

• μPD63200GS (XM145A00) DAC (Digital to Analog Converter)

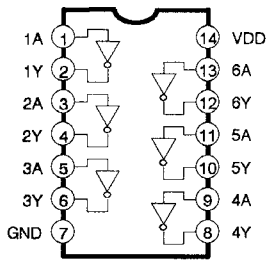
PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	4/8F	I	4/8 Fs selection	9	R. REF		Channel R voltage reference
2	D. GND		Digital ground	10	L. REF		Channel L voltage reference
3	16 BIT	I	16 bit/18 bit selection	11	L. OUT	O	Channel L output
4	D. VDD		Digital power supply	12	A. GND		Analog ground
5	A. GND		Analog ground	13	WDCK	I	Word clock
6	R. OUT	O	Channel R output	14	RSI	I	Channel R series input
7	A. VDD		Analog power supply	15	SI/LSI	I	Series input/Channel L series input
8	A. VDD		Analog power supply	16	CLK	I	Clock

● HD63B05V0D73P (XJ450A00) CPU

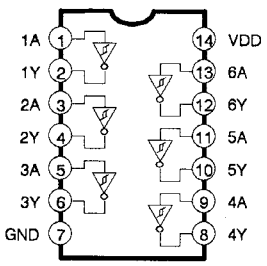
PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	/RES	I	Reset	21	C7	I/O	
2	/INT	I	Interrupt request	22	C6	I/O	
3	NUM	I	Non-maskable interrupt	23	C5	I/O	
4	A7	I/O		24	C4	I/O	Port C
5	A6	I/O		25	C3	I/O	
6	A5	I/O		26	C2	I/O	
7	A4	I/O	Port A	27	C1	I/O	
8	A3	I/O		28	C0	I/O	
9	A2	I/O		29	D0	I/O	
10	A1	I/O		30	D1	I/O	Port D
11	A0	I/O		31	D2	I/O	
12	B0	I/O		32	D3/TX	O	(Serial data output)
13	B1	I/O		33	D4/RX	I	(Serial data input)
14	B2	I/O		34	D5//CK	O	(Clock for serial operation)
15	B3	I/O	Port B	35	D6//INT2	I	(Interrupt request 2)
16	B4	I/O		36	/STBY	I	(Standby mode signal)
17	B5	I/O		37	TIMER	I	Timer
18	B6	I/O		38	XTAL	O	Clock
19	B7	I/O		39	EXTAL	I	
20	VSS		Ground	40	VCC		Power supply

■IC BLOCK DIAGRAM

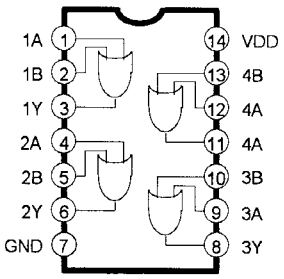
● **SN74HC04N** (IR000450)
Hex Inverter



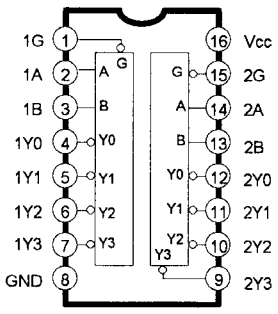
● **SN74HC14N** (IR001450)
Hex Inverter



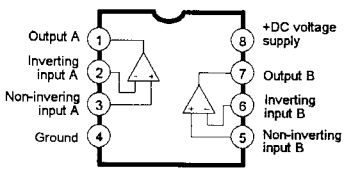
● **TC74AC32P** (XG658A00)
● **MC74AC32N** (XQ973A00)
Quad 2 Input OR



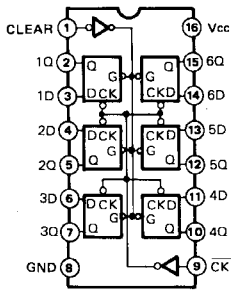
● **TC74HC139P** (IR013900)
Dual 2 to 4 Demultiplexer



● **μPC4570HA** (XB247A00)
Dual Operational Amplifier



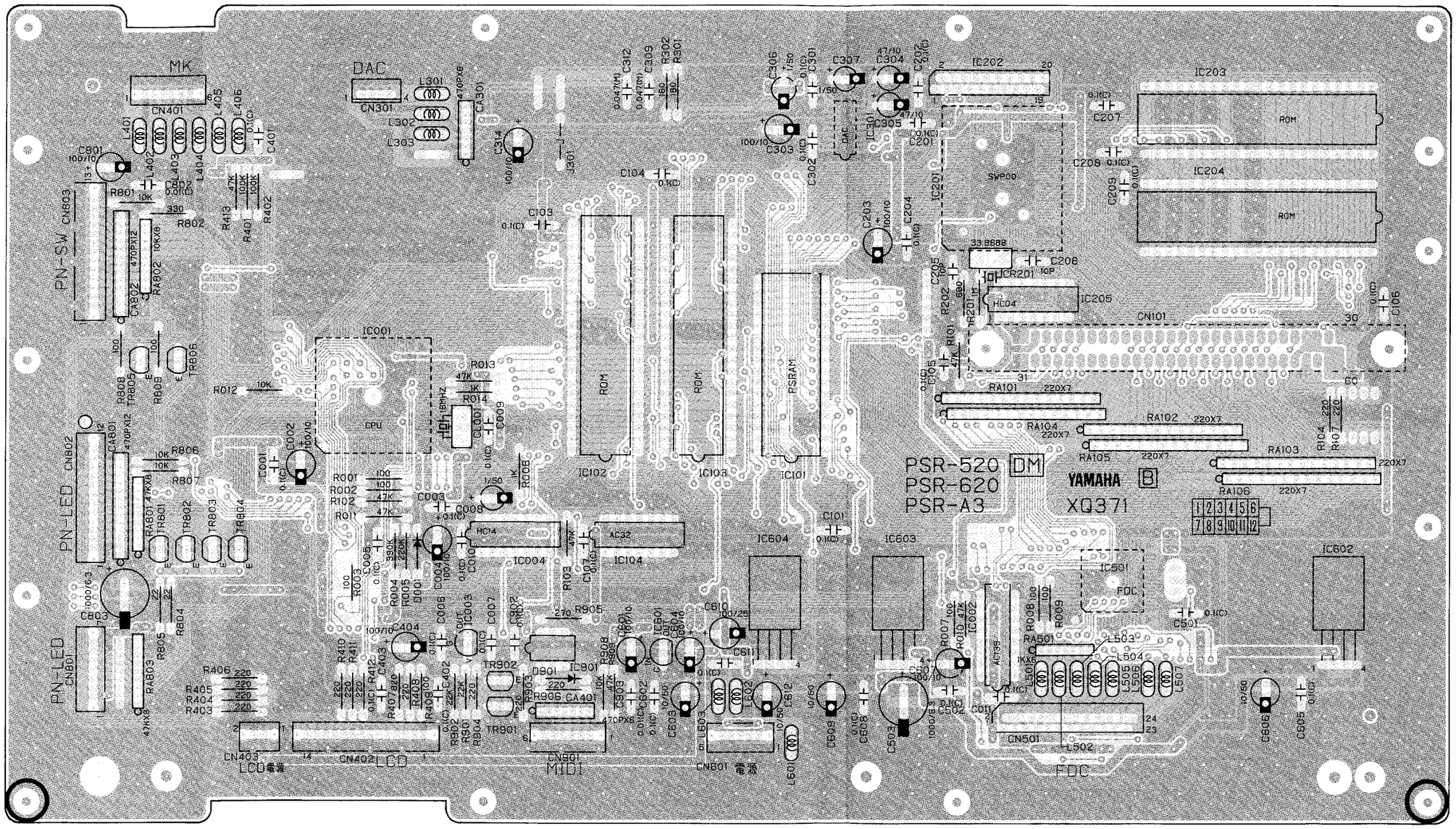
● **HD74HC174P** (IR017410)
Hex D-Type Flip Flop



PSR-A3

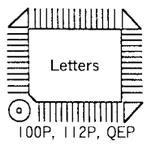
■CIRCUIT BOARDS

● DM Circuit Board



Components side

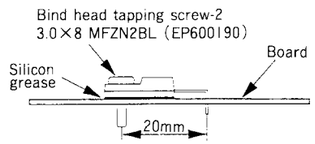
● IC101 or IC201 installation



● IC301 installation



● IC602, IC603 or IC604 installation



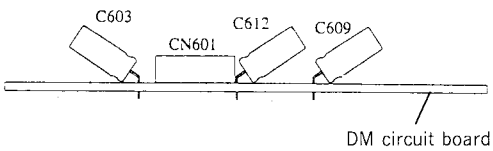
DM: 2NA-VT40040 ⚠0

Notes)

Circuit Board: DM (VT73900) XQ371B0

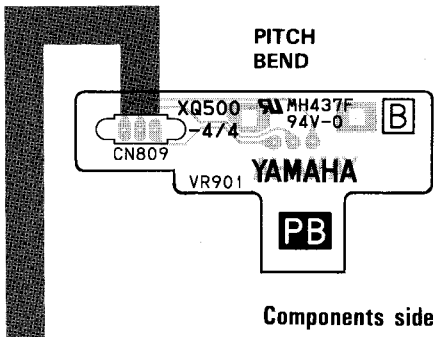
1. **IC**
   - IC 001: HD6413003TF16 (XQ799A00) CPU
   - IC 002: TC74HC139P (IR013900) DECODER
   - IC 003: IC-PST993C-T (XQ693A00) RESET
   - IC 004: SN74HC14N (IR001450) INVERTER
   - IC 101: TC518129APL-80 (XL788A00) PSRAM 1M
   - IC 102: (XR456A00) PROGRAM ROM
   - IC 103: (XR459A00) ROM STYLE
   - IC 104: TC74AC32P (XG658A00) OR or MC74AC32N (XQ973A00) OR
   - IC 201: TC170C120SF-003 (XQ036A00) SWP00
   - IC 202: MB81C4256A-70PS (XN978A00) DRAM 1M
   - IC 203: UPD23C16000WCZ-038 (XQ709B00) WAVE ROM1
   - IC 204: UPD23C8000WCZ-072 (XQ710B00) WAVE ROM2
   - IC 205: SN74HC04N (IR000450) INVERTER
   - IC 301: UPD63200GS (XM145A00) DAC
   - IC 601: TO-92 S-81250PG-T (XM993A00) REGULATOR +5V 0.1A
   - IC 602: PQ05RA1 (XL450A00) REGULATOR +5V
   - IC 604: PQ09RA1 (XQ774A00) REGULATOR +9V
2. **Transistor**
   - TR 801-804: 2SA1524-AC (VT507900) or Digital transistor, DTB123YS TP (VT455400)
   - TR 902: 2SC2603 E,F (IC260320)
3. **Digital Transistor**
   - TR 801-804: DTB123YS TP (VT455400) or Transistor, 2SA1524-AC (VT507900)
   - TR 805,806: DTC123JS TP (VK165500)
   - TR 901: DTC114ES (VD678700)
4. **Diode**
   - D 001,901: 1SS133,1SS176 (VB941200)
5. **Photo Coupler**
   - IC 901: PC-900V (VG181900)
6. **Ceramic Capacitor**
   - C 802,903: F 0.0100 50V Z (FG644100)
7. **Ceramic Cap. Array**
   - CA 301,401: 470Px6 50V M (VH285500)
   - CA 801,802: 470Px12 (VT487100)
   - CA 803: 470Px8 (VH285600
8. **Electrolytic Cap.**
   - C 601,604: 100.00 10.0V (UJ828100)
   - C 603,606,612: 10.00 16.0V (UJ867100)
   - C 610: 100.00 25.0V (UJ848100)
   - C 803: 1000 6.3V (UJ819100)
9. **Semiconductive Cera. Cap.**
   - C 001,602,605, 611,902: 0.1000 25V Z (VC694800)
10. **Carbon Resistor**
    - R 001-003,007-009, 409: 100.0 1/4 J (HF755100)
    - R 104,107,403-406, 408,410-412,903, 904,906: 220.0 1/4 J (HF755220)
    - R 006,014: 1.0K 1/4 J (HF756100)
    - R 010,011,013,101-103,413,909: 47.0K 1/4 J (HF757470)
    - R 012,801,806,807, 908: 10.0K 1/4 J (HF757100)
    - R 201: 1.0M 1/4 J (HF759100)
    - R 202: 680.0 1/4 J (HF755680)
    - R 301,302: 180.0 1/4 J (HF755180)
    - R 401,402: 100.0K 1/4 J (HF758100)
    - R 407: 820.0 1/4 J (HF755820)
    - R 802: 0.55 (VA078900)
    - R 804,805: 22.0 1/4 J (HF754220)
    - R 901,902: 22.0K 1/4 J (HF757220)
    - R 905: 270.0 1/4 J (HF755270)
11. **Metal Film Resistor**
    - R 004: 390.0K 1/4 F (VH011000)
    - R 005: 220.0K 1/4 F (VH010400)
12. **Resistor Array**
    - RA 101-106: RGLD7Y221J (VT455500) 220x7
    - RA 501: RGLE6X102J (VN927500) 1Kx6
    - RA 801,803: RGLE8X473J (VF238600) 47Kx8
    - RA 802: RGLE8X103J (VF771900) 10Kx8
13. **Coil**
    - L 301-303,401-406,601-603: FL5R200QNT (VB835000) or SBT-0260TF (VF968800)
14. **Quartz Crystal Unit**
    - CR 201: 33.8688M AT-49 (VT487600)
15. **Ceramic Resonator**
    - CL 001: 16M EFOEC1605T4 (VT487200) or 16.0M CST16.0 (VT630600)
16. **Connector**
    - CN 101: PSB4D30-2 (VT40210) to Music cartridge
17. **Base Post Connecor**
    - CN 301: PH -4P TE (VB390000) to MVR-CN303
18. **Wire Trap**
    - CN 401: 52147-6P TE (VF728300) to Keyboard
    - CN 402: 52147-14P TE (VK025800) to LCD
    - CN 403: 52147-2P TE (VK024600) to back-lit of LCD
    - CN 601: 52147-5P TE (VK024900) to PSW-CN708
    - CN 801: 52417-7P-TE (VK025100) to PN2-CN901
    - CN 802: 52147-12P TE (VK025600) to PN1(1/2)
    - CN 803: 52147-13P TE (VK025700) to PN1(1/2)
    - CN 901: 52147-6P TE (VF728300) to AM-CN401
19. **Jumper Wire**
    - J 301: 0.55 (VA078900)
    - R 802: 0.55 (VA078900)

● C603, C609 & C612 installing

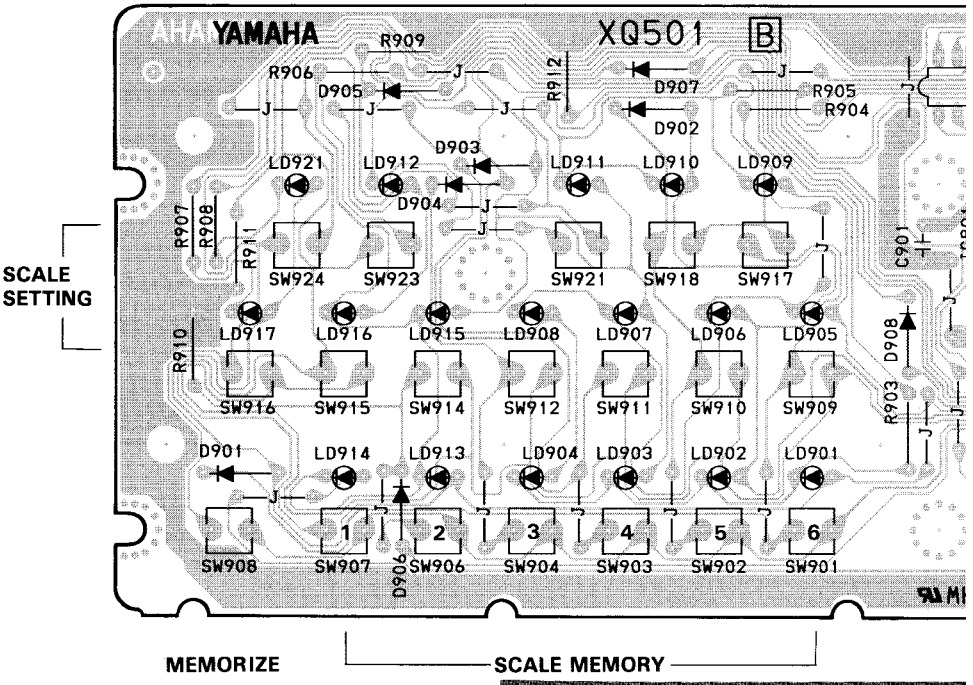


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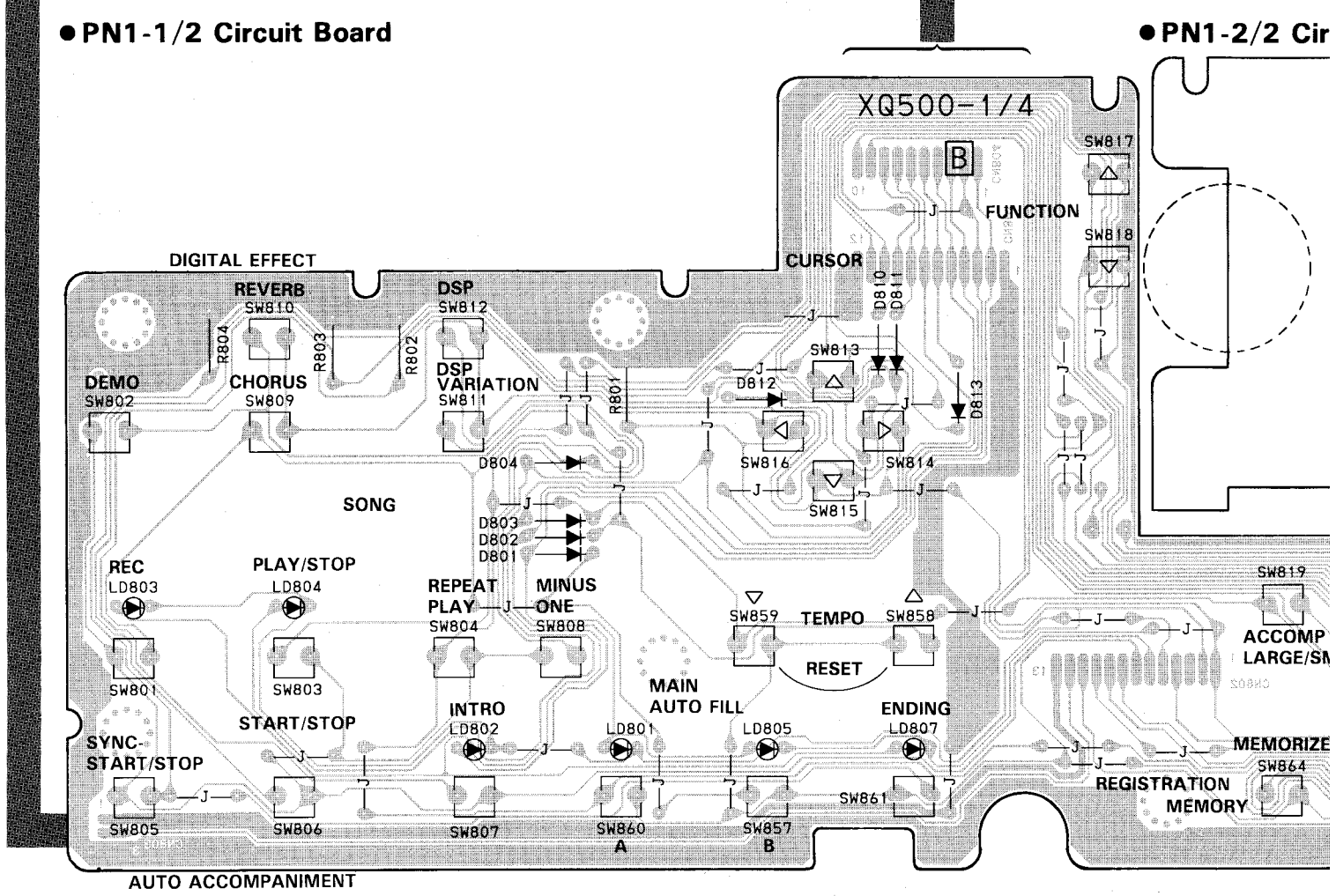
● PB Circuit Board



● PN2 Circuit Board

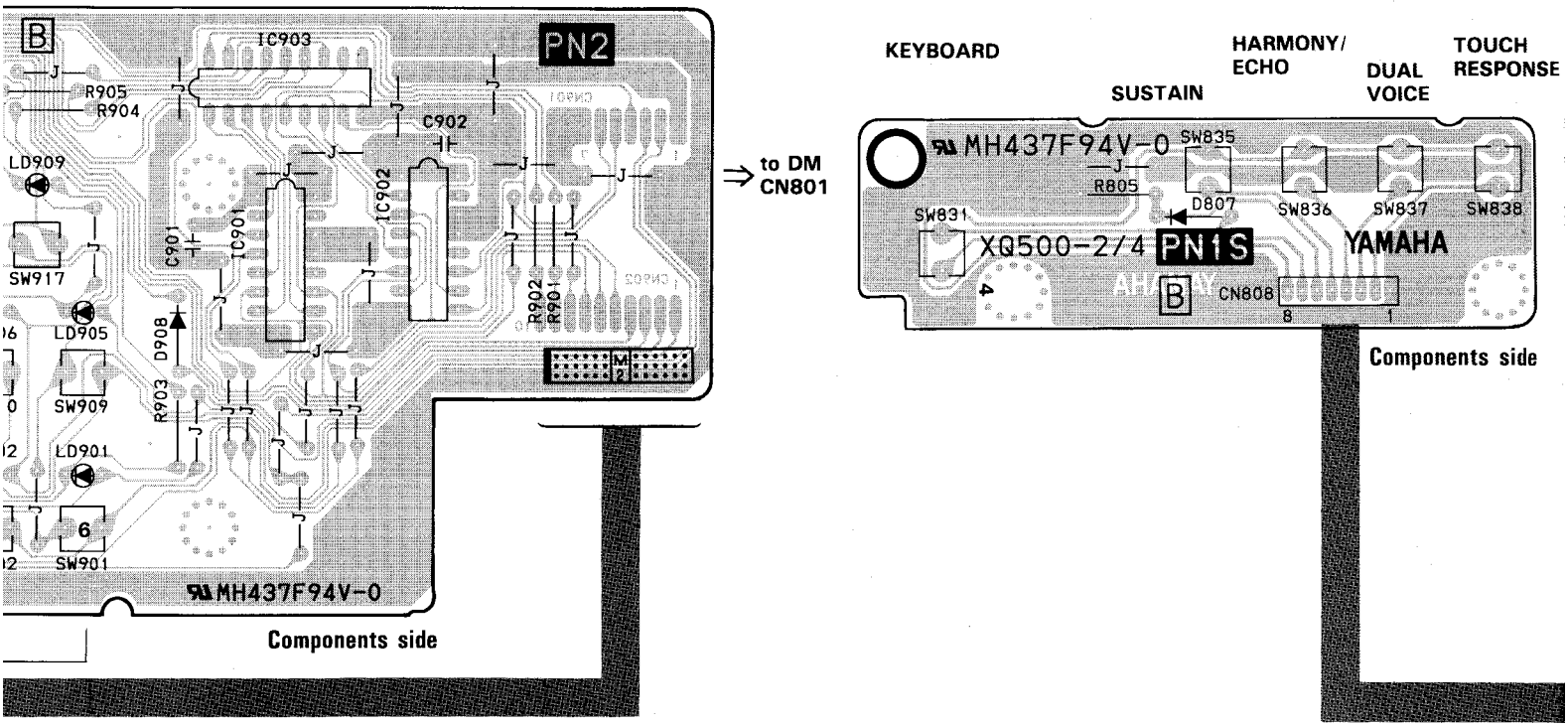


● PN1-1/2 Circuit Board

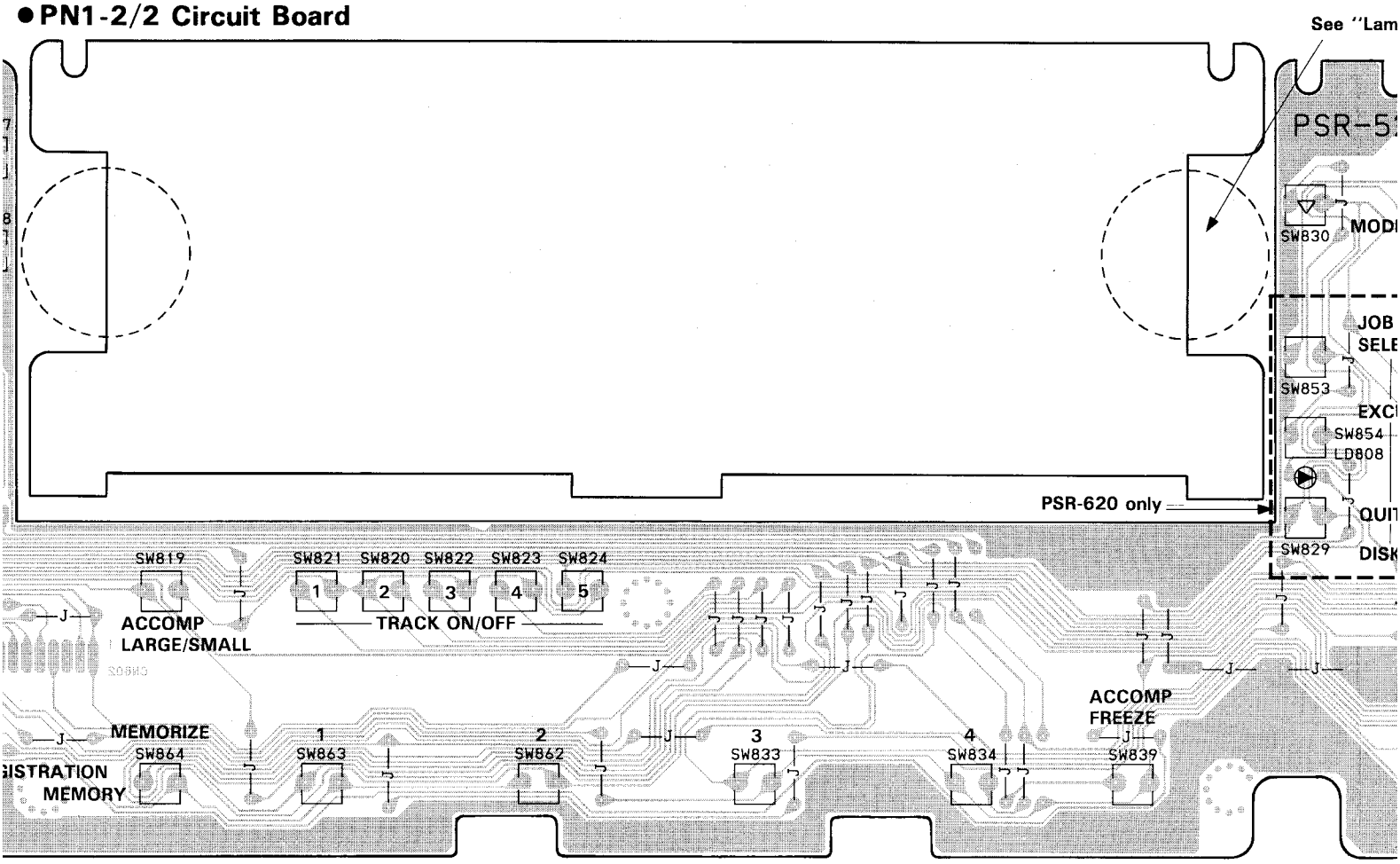


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●PN1S Circuit Board



●PN1-2/2 Circuit Board

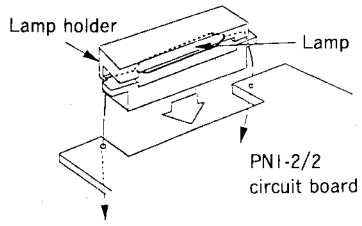


)UCH
:SPONSE

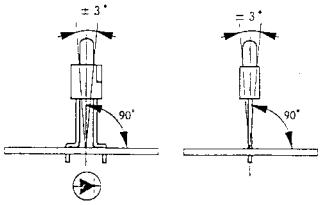
W838

s side

● Lamp installation (for LCD back-light)



● LED installation



Notes)

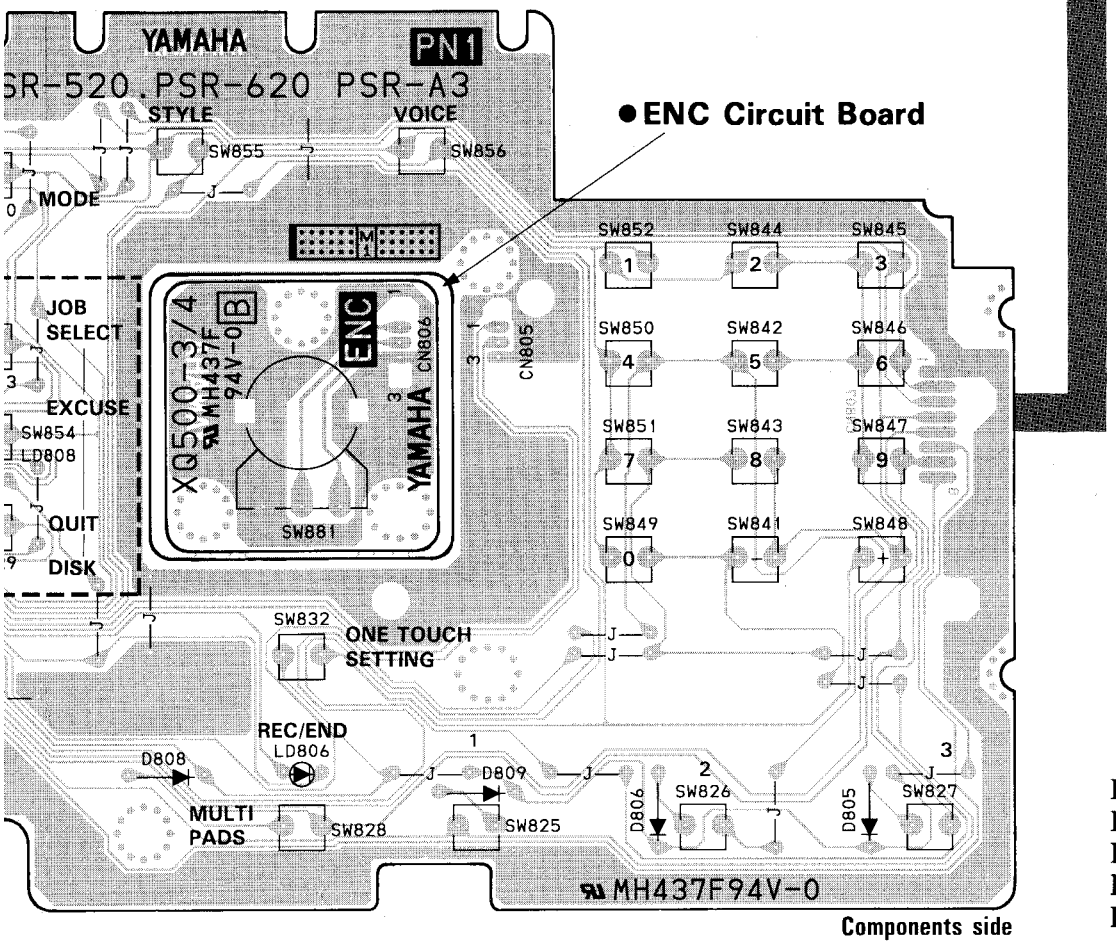
	Circuit Board:	PN1-1/2 (NX007510) XQ500B0 PN1-2/2 (NX007410) XQ500B0 PN1S (NX007420) XQ500B0 PB (NX007430) XQ500B0 ENC (NX007480) XQ500B0
1.	Diode	
	D 801-813:	1SS133,1SS176 (VB941200)
2.	LED	
	LED 801-807:	SLZ-190B-10-T2 (VT387900)
3.	Carbon Resistor	
	R 801-805:	10.0K 1/4 J (HF757100)
4.	Rotary Variable Resistor	
	VR 901:	B10K EVJ05DF25B14 (VT432100) PITCH BEND
5.	Light Touch Switch	
	SW 801-864:	EVQ 22C 05B (VT513600)
6.	Encoder	
	SW 881:	EVQ WP5 F15 24B (VQ371800)
7.	Lamp	
		0.1A HRT-6101A (VT488100) attached to PN1-2/2(for LCD back-light)
8.	Lamp Holder	
		(VT370200) attached to PN1-2/2
9.	Cable Holder	
	CN 809:	51048-3P TE (VI878100)
10.	Connector Assembly	
	W1:	PN1-PB 3P (VT43910) PN1(1/2)-CN803 to PB-CN809
	W2:	PN1-ENC 3P (VT43920) PN1(1/2)-CN805 to ENC-CN806
	W3:	PN1-PN1S 8P (VU02640) PN1(1/2)-CN807 to PN1S-CN808
	W4:	DM-PN1B 13P (VT44550) PN1(1/2)-CN802 to DM-CN803
	W5:	DM-PN1A 12P (VT44540) PN1(1/2)-CN801 to DM-CN802
	W6:	PN1-PN2 10P (VT44660) PN1(1/2)-CN804 to PN2-CN902

Notes)

	Circuit Board:	PN2 (VT401000) (XQ501B0)
1.	IC	
	IC 901,902:	HD74HC174P (IR017410) D-FF
2.	Transistor Array	
	IC 903:	AN90B22 (VH480900)
3.	Diode	
	D 901-908:	1SS133,1SS176 (VB941200) 1SS133,1SS176 HSS104 (VB631600)
4.	LED	
	LED 901-904, 913,914:	SLZ-190B-11-T1 (VI100100)
	LED 905-908, 915-917:	SLZ-190B-02-T1 (VT940900)
	LED 909-912, 921:	SLZ-190B-01 (VC341300)
5.	Carbon Resistor	
	R 901-908:	100.0 1/4 J (HF455100)(HF755100)
	R 909-912:	10.0K 1/4 J (HF457100)(HF757100)
6.	Monolithic Ceramic Cap.	
	C 901,902:	0.100 50V Z (VT439600)
7.	Tact Switch	
	SW 901-904,906-912,914-918, 921,923,924	SKHVBE091A (VQ320400)
8.	Connector Assembly	
	W1:	DM-PN2(VT44530) PN2 to DM-CN801
9.	Jumper Wire	
	J :	0.55(VA078900)

See "Lamp installation" described above.

● ENC Circuit Board



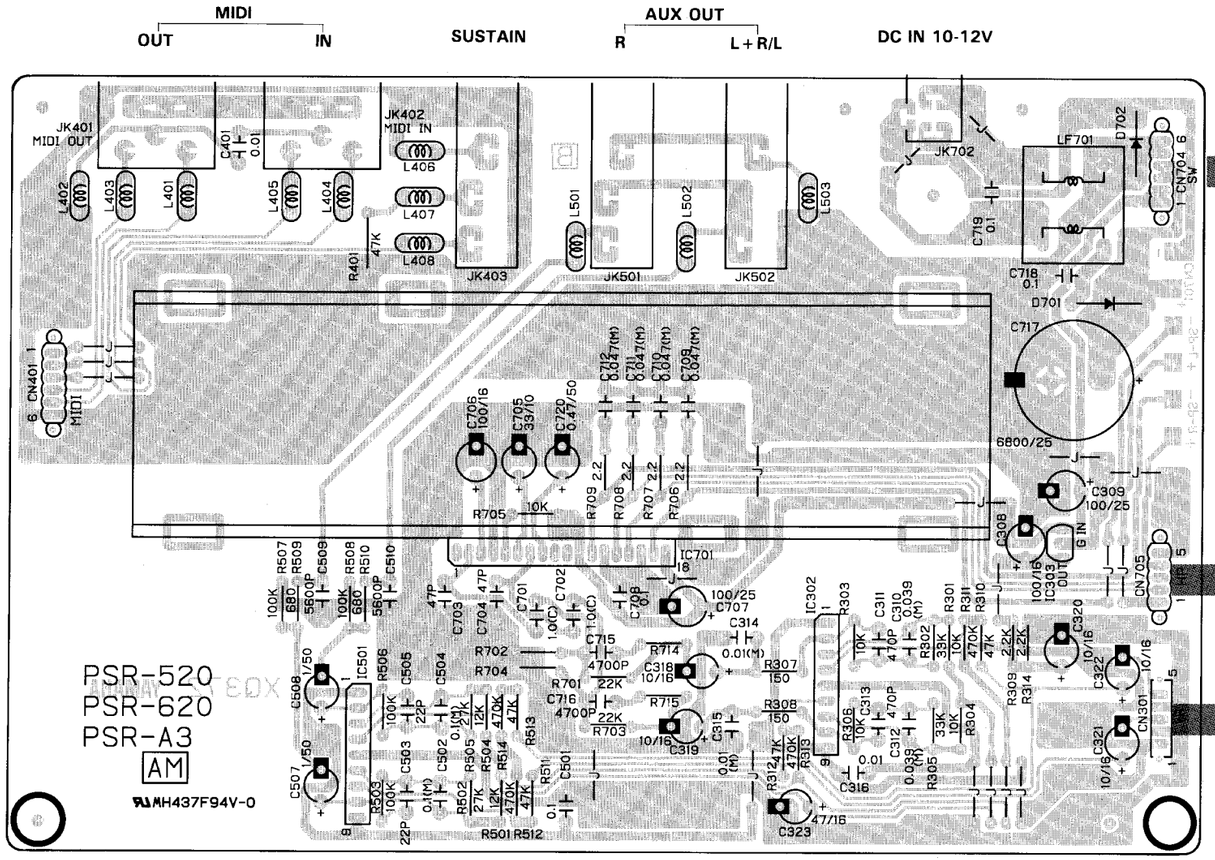
Components side

PN1 1/2
PN1 2/2
ENC
PNIS
PB
2NA-VT40030 ⚠2

PN2: 2NA-VT40090 ⚠0

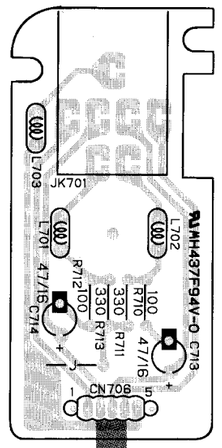
PSR-A3

● AM Circuit Board



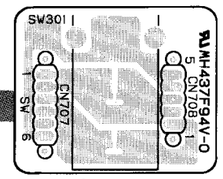
Components side

● HP Circuit Board



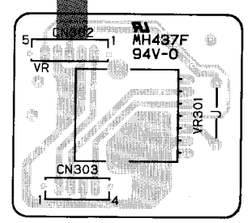
Components side

● PSW Circuit Board



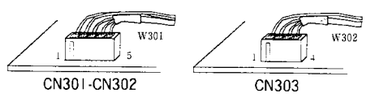
Components side

● MVR Circuit Board

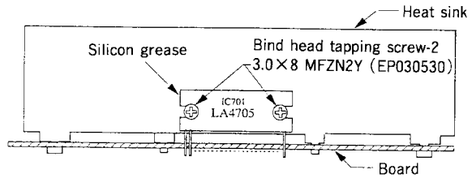


Components side

● W301 & W302 installation



● IC701 installation



AM: 2NA-VT40280 ⚠

Notes)

Circuit Board: AM (NX007360) XQ372B0
MVR (NX007370) XQ372B0
HP (NX007380) XQ372B0
PSW (NX007390) XQ372B0

1. IC

IC302,501:	UPC4570HA (XB247A00) OP AMP
IC303:	AN8009-(TA) (XR162A00) REGULATOR +9V
IC701:	LA4705NA 17W BTL (XQ619A00) POWER AMP

2. Diode

D 701,702:	20E1-FC4 (VL723600)

3. Mylar Capacitor

C 310,312:	0.0390 50V J (UA654390)
C 314,315:	0.0100 50V J (UA654100)
C 502,504:	0.10 50V J (VR168300)
C 709-712:	0.0470 50V J (UA654470)

4. Ceramic Capacitor

C 311,313:	B 470P 50V K (FG612470)
C 401:	F 0.0100 50V Z (FG644100)
C 503,505:	SL 22P 50V J (FG651220)
C 509,510:	B 5600P 50V K (FG613560)
C 703,704:	SL 47P 50V J (FG651470)
C 715,716:	B 4700P 50V K (FG613470)

5. Monolythic Ceramic Cap.

C 701,702:	1.000 25V Z (VT757800)

6. Electrolytic Cap.

C 308,706:	100.00 16.0V (UJ838100)
C 309:	100.00 25.0V (UJ848100)
C 318-322:	10.00 16.0V (UJ837100)
C 323,713,714:	47.00 16.0V (UJ837470)
C 507,508:	1.00 50.0V (UJ866100)
C 705:	33.00 10.0V (UJ827330)
C 706:	100.00 16.0V (UJ838100)
C 707:	100.00 25.0V (UJ848100)
C 717:	6800 25.0V (VT848900)
C 720:	0.47 50.0V (UJ865470)

7. Semiconductive Cera. Cap.

C 316,501,708, 718,719:	0.1000 25V Z (VC694800)

8. Carbon Resistor

R 301,303,304, 306,705:	10.0K 1/4 J (HF757100)
R 302,305:	33.0K 1/4 J (HF757330)
R 307,308:	150.0 1/4 J (HF755150)
R 309,314:	2.2K 1/4 J (HF756220)
R 310,312,401, 511,513:	47.0K 1/4 J (HF757470)
R 311,313,512, 514:	470.0K 1/4 J (HF758470)
R 501,504:	12.0K 1/4 J (HF757120)
R 502,505,701, 703:	27.0K 1/4 J (HF757270)
R 503,506-508:	100.0K 1/4 J (HF758100)
R 509,510:	680.0 1/4 J (HF755680)
R 702,704:	4.7K 1/4 J (HF756470)
R 706-709:	2.2 1/4 J (HF753220)
R 710,712:	100.0 1/4 J (HF755100)
R 711,713:	330.0 1/4 J (HF755330)
R 714,705:	1.8K 1/4 J (HF756180)

9. Rotary Variable Resistor

VR 301:	A10Kx2 (VQ320200) MASTER VOLUME

10. Line Filter

LF 701:	SU10VD-10020 (VH227500)

11. Coil

L 401-408,501-503,701-703:	FL5R200QNT 20u (VB835000)

12. Push Switch

SW 301:	SDDLB1 (VQ670600) POWER switch

13. Phone Jack

JK 403:	YKB21-5012 BL (VB312600) SUSTAIN
JK 501:	YKB21-5012 BL (VB312600) AUX OUT R
JK 502:	YKB21-5014 BL (VC687500) AUX OUT L/L+R
JK 701:	YKB21-5006 (LB101870) PHONES

14. DIN Connector

JK 401:	5P YKF51-5050 (VJ107200) MIDI OUT
JK 402:	5P YKF51-5050 (VJ107200) MIDI IN

15. DC IN Connector

JK 702:	HEC2305 (VC664500) DC IN 10-12V

16. Cable Holder

CN 401:	51048-6P TE (VI878400) AM-CN401 to DM-CN901
CN 704:	51048-6P TE (VI878400) AM-CN704 to PSW-CN707
CN 705:	51048-5P TE (VI878300) AM-CN705 to HP-CN706
CN 706:	51048-5P TE (VI878300) HP-CN706 to AM-CN705
CN 707:	51048-6P TE (VI878400) PSW-CN707 to AM-CN704
CN 708:	51048-5P TE (VI878300) PSW-CN708 to DM-CN601

17. Connector Assembly

W 301:	AM-VR 5P (VT91420) AM-CN301 to MVR-CN302
W 302:	DM-VR 4P (VT91410) MVR-CN303 to DM-CN301
W 401:	DM-AM 6P (VT44580) AM-CN401 to DM-CN901
W 704:	AM-SW 6P (VT44600) AM-CN704 to PSW-CN707
W 705:	AM-HP 5P (VT96980) AM-CN705 to HP-CN706
W 706:	DM-SW 5P (VT95690) PSW-CN708 to DM-CN601

18. Jumper Wire

:	0.55 (VA078900)

■TEST PROGRAM

A. TYPE OF TEST PROGRAM MODE

There are three test modes as follows:

Mode 1: Hardware circuit test and each memory address line test
Mode 2: Hardware circuit test and entire memory address test
Mode 3: RAM backup function test

B. HOW TO ENTER THE TEST PROGRAM

While holding down white keys of the keyboard, turn on the POWER switch, then the test program is initiated. Pressing keys are as listed below.

Test mode	Pressing keys
Mode 1	C6 and B5
Mode 2	C6 and B5 and A5
Mode 3	C6 and B5 and C2

When the system enters the test on mode 2 or mode 3, then the data on RAM is overwritten.

C. TEST PROGRAM

Mode1/Mode2

Test order	Test Program
1	Keyboard detect CPU test
2	/NMI test
3	RAM test
4	PROGRAM ROM verify
5	WAVE ROM verify
6	Pitch bend wheel center test
7	Switch, LED/LCD, Version display, Music cartridge, Foot switch, Keyboard contact point, MIDI Pitch bend, DATA dial, DSP

There are some differences in each test between the test mode 1 and test mode 2.
It takes a few minutes to complete the initial tests on the test mode 2. After the initial tests have been performed, "TstMode2" message will appear on the display so you could perform other tests.

Mode 3

Test order	Test Program
1	Keyboard detect CPU test
2	RAM test
3	Backup battery test ("***: Voltage" is displayed)

D. EXIT

Turn the POWER off to quit the test.

1. INITIAL TESTS

The following tests will be performed automatically when the test program is initiated.

a Keyboard detect CPU test
b /NMI test
c RAM test
d PROGRAM ROM verify
e WAVE ROM verify
f Pitch bend wheel center test

The test results of each test are indicated on the display.

Test	OK	NG
Keyboard detect CPU	no change	no change
/NMI	no change	"Err""/NmiHard"
RAM(Mode 1/Mode 2)	no change	"Err""M=1 RAM"
RAM(Mode 3)	no change	"Err""M=3 RAM"
PROGRAM ROM	no change	"Err""M=1 ROM"
WAVE ROM	no change	"Err""M=1 WROM"
Pitch bend wheel center	no change	"Err""PbCenter"

If the entire tests listed above are OK, the display will show "TstMode1" or "TstMode2" message according to the activated test mode.

1-1. Keyboard Detect CPU Test

Checks to see if data is sent from the CPU for keyboard touch detection
If data is not sent from, or if abnormal data is sent, an test is NG.
If an error occurs during the keyboard contact detection, the system does not enter the test mode.
If the test is OK, the system will proceed to test the RAM test.

1-2. /NMI Test

If an error is detected during this test, the "Err""/NmiHard" error message will appear on the display.
When the test is first started, the error may occur. However, if the power is turned off and on again, and the test program is restarted, but the error is not displayed, it is operating normally.

1-3. RAM Test

If the test is OK on test mode 1 or test mode 2, then the system will proceed to the next test.
If the test is OK on test mode 3, then the system will display the version of ROM and then exit the test.
If an error is detected, press the [REPEAT PLAY] to proceed to test the next one, but the test function may not correctly work.

1-4. Program ROM Verify Check

Even when an error is detected, you can proceed to the next test by pressing the [REPEAT PLAY] key, however the test quality is not guaranteed.

1-5. Wave ROM Verify Check

If an error is detected, pressing [REPEAT PLAY] will proceed to the next test.

1-6. Pitch Bend Wheel Center Test

If the pitch bend value at the beginning of the test is not center, then "Err""PbCenter" will appear on the display to indicate an error occurs.

2. ROM VERSION DISPLAY MODE

In order to verify the ROM versions, press the key shown in the table below.

Key	ROM	Display
MODE	Program ROM	Pro Vr**. ***
STYLE#	Style ROM	S卜L Vr**. ***
VOICE#	Wave ROM	∀ro Vr**. ***
ONE TOUCH SETTING	Voice parameter ROM	PAr Vr**. ***

3. PANEL SWITCH AND LED TEST

Press the panel switches consecutively, if the switch is OK, a sine wave will sound. The level of the sine wave is 21 dB lower than the maximum level.
When a switch is pressed, the LED adjacent to the switch will light up.
If two or more switches are turned on simultaneously, the display will show "---"Push Sw".
Pressing [YES] key will sound a sine wave assigned to the L channel, and if you press [NO], a sine wave assigned to the R will output.
If you press the [FREEZE] key of the [REGISTRATION] function, the A/D converted value of the power will appear on the display. (the range of the value is 0 - 152.)

4. PITCH BEND WHEEL TEST

Rotate the pitch wheel upwards and check that a sine wave of C4 will sound.
Rotate the pitch wheel downwards and check that a sine wave of C3 will sound.
When the wheel is operated, the indicated value on the display will change in the range of "000" - "040" - "07F".

5. FOOT SWITCH TEST

Connect a foot switch to the [SUSTAIN] jack on the rear panel and press it on and off. When the foot switch is connected, "Pedal In" message will appear on the display.
Check that a sine wave of D3 sounds when the foot switch is off, and a sine wave of D4 will sound when the foot switch is turned on.
When the foot switch is off, the indicated value on the display is in the range of "2FF" to "3FF".
When the foot switch is on, the indicated value is "000" to "0FF".
If you disconnect the foot switch, the sine wave will not be heard and the display will show the "PedalOut" message.

6. KEYBOARD CONTACT POINT TEST

Play a scale on the keyboard with a steady and even touch, the corresponding velocity value is indicated on the display and the sounded signal will change depending on the velocity.
If a sine wave or a click is generated, the test is OK.

Velocity value	Output signal
1 - 10	Click
11- 126	Sine wave
127	Click

7. DSP TEST

If the DSP-LSI is defective, the sound played from the keyboard may be distorted or muted.

8. MIDI TEST

Connect the MIDI IN to the MIDI OUT via a MIDI cable, sine waves of A3 and A4 will sound alternately with a cycle of 250 msec. for voicing and muting.

9. ROTARY ENCODER TEST

Rotate the rotary encoder to the right, the displayed value will increase, and turning it counter-clockwise will decrease the number.

10. LCD TEST

Check that all dots change to white (OFF) when the [TEMPO DOWN] key is pressed.
When the [TEMPO UP] key is pressed, all dots will change to black (ON).

11. MUSIC CARTRIDGE TEST

Insert the supplied music cartridge to the slot, then the display will show the "Cart In" message and the test is initiated. If the test has been initiated on the test mode 2, when the test ends, the display will show a number regardless of the test results.
If you remove the cartridge, the "Cart Out" message will appear on the display and the test will end, then you can activate the other test.
If an error is detected during the test, press the [REPEAT PLAY] to perform to the other one.

12. SOUND OUTPUT TEST

Insert an appropriate phone plug into the PHONES jack and check that the correct signal is output from each of the PHONES L and R. If necessary, verify the frequency, output waveform, output level using a frequency counter, oscilloscope and AC voltmeter (with a JIS-C type filter).
Listed below are the specifications of the output during this test.(30 Ω load)

When MASTER VOLUME is set at maximum and the ACCOMP MAIN B switch is pressed:
PHONES (R): -21.0 dBm ±2 dB PHONES (L): -21.0 dBm ±2 dB

When MASTER VOLUME is set at minimum and the ACCOMP MAIN B switch is pressed:
PHONES (R): less than -86.0 dBm PHONES (L): less than -86.0 dBm

When MASTER VOLUME is set at maximum and the YES switch is pressed:
PHONES (R): -18.0 dBm ±2 dB PHONES (L): less than -68.0 dBm

When MASTER VOLUME is set at maximum and the NO switch is pressed:
PHONES (R): less than -68.0 dBm PHONES (L): -18.0 dBm ±2 dB

When MASTER VOLUME is set at minimum and no switch is pressed:
PHONES (R): less than -78.0 dBm PHONES (L): less than -78.0 dBm

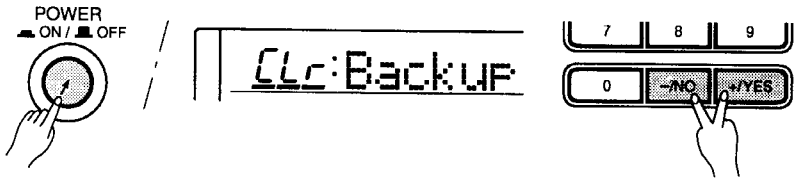
■INTIALIZATION

Except for the data listed below, all PSR-A3 panel settings are reset to their initial settings whenever the power is turned ON. The data listed below are backed up — i.e. retained in memory — as long as an AC adaptor is connected or a set of batteries is installed.

- Registration Memory data
- User Song data
- User Pad Kit data
- Scale Memory data
- Remote Channel
- Keyboard Out
- Song Out
- Accomp Out
- External Clock

■ Data Initialization

All data can be initialized and restored to the factory preset condition by turning ON the power while holding the **[–/NO]** and **[+/YES]** buttons. "CLr: Backup" will appear briefly on the display.



CAUTION

- ***All registration, user song, user pad kit and scale memory data, plus the other settings listed above, will be erased and/or changed when the data initialization procedure is carried out.***
- ***If the PSR-A3 has been "locked up" due to static electricity or other causes, turn the PSR-A3 OFF and execute the initialize operation.***

■MIDI DATA FORMAT

<Table-1> Parameter Change

SYSTEM

Address (H)			Size (H)	Data (H)	Parameter	Description	Default value(H)
00	00	00	4	0000 - 07FF	MASTER TUNE	-102.4 - +102.3[cent] 1st bit3-0 → bit15-12 2nd bit3-0 → bit11-8 3rd bit3-0 → bit7-4 4th bit3-0 → bit3-0	00 04 00 00
		01					
		02					
		03					
		04	1	00 - 7F	MASTER VOLUME	0 - 127	7F
		06	1	28 - 58	TRANSPOSE	-24 - +24[semitone]	40
		7D	1	00 - 01	DRUM SETUP RESET	00: Drum setup 1 01: Drum setup 2	—
		7E	1	00	XG SYSTEM ON		—
		7F	1	00	ALL PARAMETER RESET		—

EFFECT

Address (H)			Size (H)	Data (H)	Parameter	Description	Default value(H)
02	01	00	2	00-7F	REVERB TYPE MSB	Refer to Table-2	01(=HALL1)
				00-7F	REVERB TYPE LSB	Refer to Table-2	00
		02	1	00-7F	REVERB PARAMETER 1	Refer to Table-3	Depends on reverb type
		03	1	00-7F	REVERB PARAMETER 2	Refer to Table-3	Depends on reverb type
		04	1	00-7F	REVERB PARAMETER 3	Refer to Table-3	Depends on reverb type
		05	1	00-7F	REVERB PARAMETER 4	Refer to Table-3	Depends on reverb type
		06	1	00-7F	REVERB PARAMETER 5	Refer to Table-3	Depends on reverb type
		07	1	00-7F	REVERB PARAMETER 6	Refer to Table-3	Depends on reverb type
		08	1	00-7F	REVERB PARAMETER 7	Refer to Table-3	Depends on reverb type
		09	1	00-7F	REVERB PARAMETER 8	Refer to Table-3	Depends on reverb type
		0A	1	00-7F	REVERB PARAMETER 9	Refer to Table-3	Depends on reverb type
		0B	1	00-7F	REVERB PARAMETER 10	Refer to Table-3	Depends on reverb type
		0C	1	00-7F	REVERB RETURN	-∞dB...0dB...+6dB(0...64...127)	40
		0D	1	01-7F	REVERB PAN	L63...C...R63(1...64...127)	40
02	01	10	1	00-7F	REVERB PARAMETER 11	Refer to Table-3	Depends on reverb type
		11	1	00-7F	REVERB PARAMETER 12	Refer to Table-3	Depends on reverb type
		12	1	00-7F	REVERB PARAMETER 13	Refer to Table-3	Depends on reverb type
		13	1	00-7F	REVERB PARAMETER 14	Refer to Table-3	Depends on reverb type
		14	1	00-7F	REVERB PARAMETER 15	Refer to Table-3	Depends on reverb type
		15	1	00-7F	REVERB PARAMETER 16	Refer to Table-3	Depends on reverb type
02	01	20	2	00-7F	CHORUS TYPE MSB	Refer to Table-2	41(=CHORUS1)
				00-7F	CHORUS TYPE LSB	Refer to Table-2	00
		22	1	00-7F	CHORUS PARAMETER 1	Refer to Table-3	Depends on chorus type
		23	1	00-7F	CHORUS PARAMETER 2	Refer to Table-3	Depends on chorus type
		24	1	00-7F	CHORUS PARAMETER 3	Refer to Table-3	Depends on chorus type
		25	1	00-7F	CHORUS PARAMETER 4	Refer to Table-3	Depends on chorus type
		26	1	00-7F	CHORUS PARAMETER 5	Refer to Table-3	Depends on chorus type
		27	1	00-7F	CHORUS PARAMETER 6	Refer to Table-3	Depends on chorus type
		28	1	00-7F	CHORUS PARAMETER 7	Refer to Table-3	Depends on chorus type
		29	1	00-7F	CHORUS PARAMETER 8	Refer to Table-3	Depends on chorus type
		2A	1	00-7F	CHORUS PARAMETER 9	Refer to Table-3	Depends on chorus type
		2B	1	00-7F	CHORUS PARAMETER 10	Refer to Table-3	Depends on chorus type
		2C	1	00-7F	CHORUS RETURN	-∞dB...0dB...+6dB(0...64...127)	40
		2D	1	01-7F	CHORUS PAN	L63...C...R63(1...64...127)	40
		2E	1	00-7F	SEND CHORUS TO REVERB	-∞dB...0dB...+6dB(0...64...127)	00
02	01	30	1	00-7F	CHORUS PARAMETER 11	Refer to Table-3	Depends on chorus type
		31	1	00-7F	CHORUS PARAMETER 12	Refer to Table-3	Depends on chorus type
		32	1	00-7F	CHORUS PARAMETER 13	Refer to Table-3	Depends on chorus type
		33	1	00-7F	CHORUS PARAMETER 14	Refer to Table-3	Depends on chorus type
		34	1	00-7F	CHORUS PARAMETER 15	Refer to Table-3	Depends on chorus type
		35	1	00-7F	CHORUS PARAMETER 16	Refer to Table-3	Depends on chorus type
02	01	40	2	00-7F	VARIATION TYPE MSB	Refer to Table-2	05(=DELAY L,C,R)
				00-7F	VARIATION TYPE LSB	Refer to Table-2	00
		42	2	00-7F	VARIATION PARAMETER 1 MSB	Refer to Table-3	Depends on variation type
				00-7F	VARIATION PARAMETER 1 LSB	Refer to Table-3	Depends on variation type
		44	2	00-7F	VARIATION PARAMETER 2 MSB	Refer to Table-3	Depends on variation type
				00-7F	VARIATION PARAMETER 2 LSB	Refer to Table-3	Depends on variation type
		46	2	00-7F	VARIATION PARAMETER 3 MSB	Refer to Table-3	Depends on variation type
				00-7F	VARIATION PARAMETER 3 LSB	Refer to Table-3	Depends on variation type
		48	2	00-7F	VARIATION PARAMETER 4 MSB	Refer to Table-3	Depends on variation type
				00-7F	VARIATION PARAMETER 4 LSB	Refer to Table-3	Depends on variation type

Address (H)			Size (H)	Data (H)	Parameter	Description	Default value(H)
		4A	2	00-7F	VARIATION PARAMETER 5 MSB	Refer to Table-3	Depends on variation type
				00-7F	VARIATION PARAMETER 5 LSB	Refer to Table-3	Depends on variation type
		4C	2	00-7F	VARIATION PARAMETER 5 MSB	Refer to Table-3	Depends on variation type
				00-7F	VARIATION PARAMETER 6 LSB	Refer to Table-3	Depends on variation type
		4E	2	00-7F	VARIATION PARAMETER 7 MSB	Refer to Table-3	Depends on variation type
				00-7F	VARIATION PARAMETER 7 LSB	Refer to Table-3	Depends on variation type
		50	2	00-7F	VARIATION PARAMETER 8 MSB	Refer to Table-3	Depends on variation type
				00-7F	VARIATION PARAMETER 8 LSB	Refer to Table-3	Depends on variation type
		52	2	00-7F	VARIATION PARAMETER 9 MSB	Refer to Table-3	Depends on variation type
				00-7F	VARIATION PARAMETER 9 LSB	Refer to Table-3	Depends on variation type
		54	2	00-7F	VARIATION PARAMETER 10 MSB	Refer to Table-3	Depends on variation type
				00-7F	VARIATION PARAMETER 10 LSB	Refer to Table-3	Depends on variation type
		56	1	00-7F	VARIATION RETURN	-∞dB...0dB...+6dB(0...64...127)	40
		57	1	01-7F	VARIATION PAN	L63...C...R63(1...64...127)	40
		58	1	00-7F	SEND VARIATION TO REVERB	-∞dB...0dB...+6dB(0...64...127)	00
		59	1	00-7F	SEND VARIATION TO CHORUS	-∞dB...0dB...+6dB(0...64...127)	00
		5A	1	00-01	VARIATION CONNECTION	"0:INSERTION,1:SYSTEM"	00
		5B	1	00-01	VARIATION PART	00H~0FH: Ch1~16 7F: Off	7F
02	01	70	1	00-7F	VARIATION PARAMETER 11	Refer to Table-3	Depends on variation type
		71	1	00-7F	VARIATION PARAMETER 12	Refer to Table-3	Depends on variation type
		72	1	00-7F	VARIATION PARAMETER 13	Refer to Table-3	Depends on variation type
		73	1	00-7F	VARIATION PARAMETER 14	Refer to Table-3	Depends on variation type
		74	1	00-7F	VARIATION PARAMETER 15	Refer to Table-3	Depends on variation type
		75	1	00-7F	VARIATION PARAMETER 16	Refer to Table-3	Depends on variation type

* VARIATION means PSR-A3 Dsp effect.

MULTI PART

Address (H)			Size (H)	Data (H)	Parameter	Description	Default value(H)
08	nn	07	1	00 - 05	PART MODE	00: NORMAL 01: Preset Drum Setup 02: Drum Setup 1 03: Drum Setup 2	00 (except 10Ch)/02 (10Ch)
	nn	11	1	00 - 7F	DRY LEVEL	0 - 127	7F
	nn	41	1	00 - 7F	SCALE TUNING C	-64 - +63[cent]	40
	nn	42	1	00 - 7F	SCALE TUNING C#	-64 - +63[cent]	40
	nn	43	1	00 - 7F	SCALE TUNING D	-64 - +63[cent]	40
	nn	44	1	00 - 7F	SCALE TUNING D#	-64 - +63[cent]	40
	nn	45	1	00 - 7F	SCALE TUNING E	-64 - +63[cent]	40
	nn	46	1	00 - 7F	SCALE TUNING F	-64 - +63[cent]	40
	nn	47	1	00 - 7F	SCALE TUNING F#	-64 - +63[cent]	40
	nn	48	1	00 - 7F	SCALE TUNING G	-64 - +63[cent]	40
	nn	49	1	00 - 7F	SCALE TUNING G#	-64 - +63[cent]	40
	nn	4A	1	00 - 7F	SCALE TUNING A	-64 - +63[cent]	40
	nn	4B	1	00 - 7F	SCALE TUNING A#	-64 - +63[cent]	40
	nn	4C	1	00 - 7F	SCALE TUNING B	-64 - +63[cent]	40

* nn: MIDI Channel(00-0F)

DRUM SETUP

Address (H)			Size (H)	Data (H)	Parameter	Description	Default value(H)
3n	rr	00	1	00 - 7F	PITCH COARSE	-64 - +63[semitone]	40
3n	rr	01	1	00 - 7F	PITCH FINE	-64 - +63[cent]	40
3n	rr	02	1	00 - 7F	LEVEL	0 - 127	Depends on note
3n	rr	04	1	00 - 7F	PAN	1(Left)-64(Center)-127(Right)	Depends on note
3n	rr	05	1	00 - 7F	REVERB SEND	0 - 127	Depends on note
3n	rr	06	1	00 - 7F	CHORUS SEND	0 - 127	7F
3n	rr	07	1	00 - 7F	VARIATION SEND	0 - 127	7F
3n	rr	0B	1	00 - 7F	FILTER CUTOFF FREQUENCY	-64 - 63	40
3n	rr	0C	1	00 - 7F	FILTER RESONANCE	-64 - 63	40
3n	rr	0D	1	00 - 7F	EG ATTACK	-64 - 63	40
3n	rr	0E	1	00 - 7F	EG DECAY1	-64 - 63	40

* n:Drum setup number (0H or 1H)
rr:note number(18H to 54H)

<Table-2> Effect map

The following types in the boxes can be controlled by the PSR-A3 settings. The numbers in the brackets are PSR-A3 panel effect numbers.
The blank indicates the content is the same as that of 00H.

REVERB TYPE

MSB \ LSB	00H	01H	02H	08H	09H	0AH	0BH	0CH
00H	NO EFFECT							
01H	[1]HALL1	HALL5		[2]HALL2	[3]HALL3	[4]HALL4		
02H	ROOM5	ROOM6	ROOM7	[5]ROOM1	[6]ROOM2	[7]ROOM3	[8]ROOM4	
03H	STAGE3	STAGE4		[9]STAGE1	[10]STAGE2			
04H	PLATE3			[11]PLATE1	[12]PLATE2			
05H	NO EFFECT							
:	:							
7FH	NO EFFECT							

CHORUS TYPE

MSB \ LSB	00H	01H	02H	08H	09H	0AH	0BH	0CH
00H	NO EFFECT							
01H	NO EFFECT							
:	:							
40H	NO EFFECT							
41H	CHORUS6	CHORUS7	[5]CHORUS5					
42H	CELESTE1	[4]CHORUS4	CELESTE2	[2]CHORUS2	[3]CHORUS3	[1]CHORUS1		
43H	FLANGER 5	[9]FLANGER4		[6]FLANGER1	[7]FLANGER2	[8]FLANGER3		
44H	NO EFFECT							
:	:							
7FH	NO EFFECT							

VARIATION TYPE

MSB \ LSB	00H	01H	02H	08H	09H	0AH	0BH	0CH
00H	NO EFFECT							
01H	[1]HALL1	HALL2		[2]HALL2	[3]HALL3	[4]HALL4		
02H	ROOM5	ROOM6	ROOM7	[5]ROOM1	[6]ROOM2	[7]ROOM3	[8]ROOM4	
03H	STAGE3	STAGE4		[9]STAGE1	[10]STAGE2			
04H	PLATE3			[11]PLATE1	[12]PLATE2			
05H	DELAY L,C,R2			[38]DELAY LCR				
06H	[39]DELAY L,R							
07H	[40]ECHO							
08H	[41]CROSS DELAY							
09H	[13]EARLY REF1	[14]EARLY REF2						
0AH	[15]GATE REVERB							
0BH	[16]REVERSE GATE							
0CH	NO EFFECT or THRU*							
:	:							
3FH	NO EFFECT or THRU*							
40	THRU							
41	CHORUS6	CHORUS7	[21]CHORUS5					
42	CELESTE1	[20]CHORUS4	CELESTE2	[18]CHORUS2	[19]CHORUS3	[17]CHORUS1	[32]ROTARY SP5	
43	FLANGER 5	[25]FLANGER4		[22]FLANGER1	[23]FLANGER2	[24]FLANGER3		
44	SYMPHONIC2			[26]SYMPHONIC				
45	ROTARY SP6			[28]ROTARY SP1				
46	TREMOLO3			[33]TREMOLO1		[31]ROTARY SP4		
47	AUTO PAN2			[36]AUTO PAN	[29]ROTARY SP2	[30]ROTARY SP3	[34]TREMOLO2	[35]GTR TREMOLO
48	[27]PHASER							
49	DISTORTION							
4A	OVER DRIVE							
4B	AMP SIMULATOR			[42]DIST.HARD	[43]DIST.SOFT			
4C	3-BAND EQ			[44]EQ DISCO	[45]EQ TEL			
4D	2-BAND EQ							
4E	AUTO WAH2			[37]AUTO WAH				
4F	THRU							
:	:							
7F	THRU							

*No effect or Thru is determined by either Variation connection is system or insertion.

<Table-3> Effect Parameter List

Only the following parameter numbers are effective.
Parameter values consists of 2-bytes. Enter 00H for MSB and appropriate value for LSB.
* Parameter number 10 Dry/Wet is effective only when Variation connection is insertion.

TYPE MSB(H)	Type	Parameter Number	Parameter	Value	Description
01	HALL	1	Reverb Time	0-69	0.3~30.0s
02	ROOM	2	Diffusion	0-10	
03	STAGE	3	Initial Delay	0-63	0.0~99.3ms
04	PLATE	4	HPF Cutoff	0-52	Thru~8.0kHz
		5	LPF Cutoff	34-60	1.0k~Thru
		10*	Dry/Wet	1-127	D63>W ~ D=W ~ D<W63
		11	Rev Delay	0-63	0.0~100.0ms
		12	Density	0-4	
		13	Rev/Er Balance	1-127	R<E63 ~ R=E ~ R63>E
		15	Feedback Level	1-127	-63~+63
05	DELAY L,C,R	1	Lch Delay	1-7200	0.1~720.0ms
		2	Rch Delay	1-7200	0.1~720.0ms
		3	Cch Delay	1-7200	0.1~720.0ms
		4	Feedback Delay	1-7200	0.1~720.0ms
		5	Feedback Level	1-127	-63~+63
		6	Cch Level	0-127	
		7	High Damp	1-10	0.1~1.0
		10*	Dry/Wet	1-127	D63>W ~ D=W ~ D<W63
		13	EQ Low Frequency	8-40	50Hz~2.0kHz
		14	EQ Low Gain	52-76	-12~+12dB
		15	EQ High Frequency	28-58	500Hz~16.0kHz
		16	EQ High Gain	52-76	-12~+12dB
06	DELAY L,R	1	Lch Delay	1-7200	0.1~720.0ms
		2	Rch Delay	1-7200	0.1~720.0ms
		3	Feedback Delay 1	1-7200	0.1~720.0ms
		4	Feedback Delay 2	1-7200	0.1~720.0ms
		5	Feedback Level	1-127	-63~+63
		6	High Damp	1-10	0.1~1.0
		10*	Dry/Wet	1-127	D63>W ~ D=W ~ D<W63
		13	EQ Low Frequency	8-40	50Hz~2.0kHz
		14	EQ Low Gain	52-76	-12~+12dB
		15	EQ High Frequency	28-58	500Hz~16.0kHz
		16	EQ High Gain	52-76	-12~+12dB
07	ECHO	1	Lch Delay1	1-3600	0.1~360.0ms
		2	Lch Feedback Level	1-127	-63~+63
		3	Rch Delay1	1-3600	0.1~360.0ms
		4	Rch Feedback Level	1-127	-63~+63
		5	High Damp	1-10	0.1~1.0
		6	Lch Delay2	1-3600	0.1~360.0ms
		7	Rch Delay2	1-3600	0.1~360.0ms
		8	Delay2 Level	0-127	
		10*	Dry/Wet	1-127	D63>W ~ D=W ~ D<W63
		13	EQ Low Frequency	8-40	50Hz~2.0kHz
		14	EQ Low Gain	52-76	-12~+12dB
		15	EQ High Frequency	28-58	500Hz~16.0kHz
		16	EQ High Gain	52-76	-12~+12dB
08	CROSS DELAY	1	L->R Delay	1-3600	0.1~360.0ms
		2	R->L Delay	1-3600	0.1~360.0ms
		3	Feedback Level	1-127	-63~+63
		4	Input Select	0-2	L,R,L&R(L,R is mono mix)
		5	High Damp	1-10	0.1~1.0
		10*	Dry/Wet	1-127	D63>W ~ D=W ~ D<W63
		13	EQ Low Frequency	8-40	50Hz~2.0kHz
		14	EQ Low Gain	52-76	-12~+12dB
		15	EQ High Frequency	28-58	500Hz~16.0kHz
		16	EQ High Gain	52-76	-12~+12dB

TYPE MSB(H)	Type	Parameter Number	Parameter	Value	Description
09	EARLY REF	1	Type	0-5	S-H, L-H, Rdm, Rvs, Plt, Spr
		2	Room Size	0-127	
		3	Diffusion	0-10	0~10
		4	Initial Delay	0-127	0.0~200.0ms
		5	Feedback Level	1-127	-63~+63
		6	HPF Cutoff	0-52	Thru~8.0kHz
		7	LPF Cutoff	34-60	1.0k~Thru
		10*	Dry/Wet	1-127	D63>W ~ D=W ~ D<W63
		11	Liveness	0-10	
		12	Density	0-3	
		13	High Damp	1-10	0.1~1.0
0A	GATE REVERB	1	Type	0-1	TypeA, TypeB
0B	REVERSE GATE	2	Room Size	0-127	
		3	Diffusion	0-10	
		4	Initial Delay	0-127	0.0~200.0ms
		5	Feedback Level	1-127	-63~+63
		6	HPF Cutoff	0-52	Thru~8.0kHz
		7	LPF Cutoff	34-60	1.0k~Thru
		10*	Dry/Wet	1-127	D63>W ~ D=W ~ D<W63
		11	Liveness	0-10	
		12	Density	0-3	
		13	High Damp	1-10	0.1~1.0
41	CHORUS	1	LFO Frequency	0-127	0.00~39.7Hz
42	CELESTE	2	LFO PM Depth	0-127	
		3	Feedback Level	1-127	-63~+63
		4	Delay Offset	0-127	0.0~50.0ms
		6	EQ Low Frequency	8-40	50Hz~2.0kHz
		7	EQ Low Gain	52-76	-12~+12dB
		8	EQ High Frequency	28-58	500Hz~16.0kHz
		9	EQ High Gain	52-76	-12~+12dB
		10*	Dry/Wet	1-127	D63>W ~ D=W ~ D<W63
		15	Input Mode	0-1	mono/stereo
43	FLANGER	1	LFO Frequency	0-127	0.00~39.7Hz
		2	LFO Depth	0-127	
		3	Feedback Level	1-127	-63~+63
		4	Delay Offset	0-127	0.0~50.0ms
		6	EQ Low Frequency	8-40	50Hz~2.0kHz
		7	EQ Low Gain	52-76	-12~+12dB
		8	EQ High Frequency	28-58	500Hz~16.0kHz
		9	EQ High Gain	52-76	-12~+12dB
		10*	Dry/Wet	1-127	D63>W ~ D=W ~ D<W63
		14	LFO Phase Difference	4-124	-180°~+180° (resolution 3°)
		15	Input Mode	0-1	mono/stereo
44	SYMPHONIC	1	LFO Frequency	0-127	0.00~39.7Hz
		2	LFO Depth	0-127	
		3	Delay Offset	0-127	0.0~50.0ms
		6	EQ Low Frequency	8-40	50Hz~2.0kHz
		7	EQ Low Gain	52-76	-12~+12dB
		8	EQ High Frequency	28-58	500Hz~16.0kHz
		9	EQ High Gain	52-76	-12~+12dB
		10*	Dry/Wet	1-127	D63>W ~ D=W ~ D<W63
45	ROTARY	1	LFO Frequency	0-127	0.00~39.7Hz
	SPEAKER	2	LFO Depth	0-127	
		6	EQ Low Frequency	8-40	50Hz~2.0kHz
		7	EQ Low Gain	52-76	-12~+12dB
		8	EQ High Frequency	28-58	500Hz~16.0kHz
		9	EQ High Gain	52-76	-12~+12dB
		10*	Dry/Wet	1-127	D63>W ~ D=W ~ D<W63

TYPE MSB(H)	Type	Parameter Number	Parameter	Value	Description
46	TREMOLO	1	LFO Frequency	0-127	0.00~39.7Hz
		2	AM Depth	0-127	
		3	PM Depth	0-127	
		6	EQ Low Frequency	8-40	50Hz~2.0kHz
		7	EQ Low Gain	52-76	-12~+12dB
		8	EQ High Frequency	28-58	500Hz~16.0kHz
		9	EQ High Gain	52-76	-12~+12dB
		14	LFO Phase Difference	4-124	-180°~+180° (resolution 3°)
		15	Input Mode	0-1	mono/stereo
47	AUTO PAN	1	LFO Frequency	0-127	0.00~39.7Hz
		2	L/R Depth	0-127	
		3	F/R Depth	0-127	
		4	PAN Direction	0-5	L<->R, L->R, L<-R, Lturn, Rturn, L/R
		6	EQ Low Frequency	8-40	50Hz~2.0kHz
		7	EQ Low Gain	52-76	-12~+12dB
		8	EQ High Frequency	28-58	500Hz~16.0kHz
		9	EQ High Gain	52-76	-12~+12dB
48	PHASER	1	LFO Frequency	0-127	0.00~39.7Hz
		2	LFO Depth	0-127	
		3	Phase Shift Offset	0-127	
		4	Feedback Level	1-127	-63~+63
		6	EQ Low Frequency	8-40	50Hz~2.0kHz
		7	EQ Low Gain	52-76	-12~+12dB
		8	EQ High Frequency	28-58	500Hz~16.0kHz
		9	EQ High Gain	52-76	-12~+12dB
		10*	Dry/Wet	1-127	D63>W ~ D=W ~ D<W63
		11	Stage	6-10	
49 4A	DISTORTION OVERDRIVE	1	Drive	0-127	
		2	EQ Low Frequency	8-40	50Hz~2.0kHz
		3	EQ Low Gain	52-76	-12~+12dB
		4	LPF Cutoff	34-60	1.0k~Thru
		5	Output Level	0-127	
		7	EQ Mid Frequency	28-54	500Hz~10.0kHz
		8	EQ Mid Gain	52-76	-12~+12dB
		9	EQ Mid Width	10-120	1.0~12.0
		10*	Dry/Wet	1-127	D63>W ~ D=W ~ D<W63
		11	Edge(Clip Curve)	0-127	0:Mild ~ 127:Sharp
4B	AMP SIMULATOR	1	Drive	0-127	
		2	AMP Type	0-3	Off,Stack,Combo,Tube
		3	LPF Cutoff	34-60	1.0k~Thru
		4	Output Level	0-127	
		10*	Dry/Wet	1-127	D63>W ~ D=W ~ D<W63
		11	Edge(Clip Curve)	0-127	0:Mild ~ 127:Sharp
4C	3-BAND EQ	1	EQ Low Gain	52-76	-12~+12dB
		2	EQ Mid Frequency	28-54	500Hz~10.0kHz
		3	EQ Mid Gain	52-76	-12~+12dB
		4	EQ Mid Width	10-120	1.0~12.0
		5	EQ High Gain	52-76	-12~+12dB
		6	EQ Low Frequency	8-40	50Hz~2.0kHz
		7	EQ High Frequency	28-58	500Hz~16.0kHz
4D	2-BAND EQ	1	EQ Low Frequency	8-40	50Hz~2.0kHz
		2	EQ Low Gain	52-76	-12~+12dB
		3	EQ High Frequency	28-58	500Hz~16.0kHz
		4	EQ High Gain	52-76	-12~+12dB
4E	AUTO WAH	1	LFO Frequency	0-127	0.00~39.7Hz
		2	LFO Depth	0-127	
		3	Cutoff Frequency Offset	0-127	50Hz~14.0kHz
		4	Resonance	10-120	1.0~12.0
		6	EQ Low Frequency	8-40	50Hz~2.0kHz
		7	EQ Low Gain	52-76	-12~+12dB
		8	EQ High Frequency	28-58	500Hz~16.0kHz
		9	EQ High Gain	52-76	-12~+12dB
		10*	Dry/Wet	1-127	D63>W ~ D=W ~ D<W63

■ GM System Level 1

The existing MIDI protocol allows performance and other data to be transferred between different instruments, even if they are from different manufacturers. This means, for example, that sequence data that was originally created to control a tone generator from manufacturer A can also be used to control a different tone generator from manufacturer B. Since the voice allocation in different devices from different manufacturers is usually different, however, appropriate program change data must be transmitted to select the right voices.

The General MIDI protocol was developed to minimize confusion and the need for re-programming when playing software created by one MIDI device on another. This has been achieved by defining a standard voice allocation in which the same or similar voices are accessed by the same program change numbers or MIDI channels. The current standard recognized by the International MIDI Association is known as "GM System Level 1." The PSR-A3 voice allocation complies with the GM System Level 1 standard.

[Portable Keyboard]
Model: PSR-A3

MIDI Implementation Chart

Date: 1995. 5. 18
Version: 1.00

Function		Transmitted	Recognized	Remarks
Basic	Default	1~16 CH	1~16 CH (*1)	
Channel	Changed	1~16 CH	1~16 CH (*1)	
Mode	Default	Mode 3	(*1)	
	Messages	×	×	
	Altered	**********	×	
Note Number	: True voice	0~127 **********	0~127 0~127	
Velocity	Note on	O 9nH, v=1~127	O 9nH, v=1~127	
	Note off	× 9nH, v=0	× 9nH, v=0 or 8nH	
After	key's	×	×	
Touch	Ch's	×	×	
Pitch Bender		O	O	
Control Change	0, 32	O	O	Bank select MSB, LSB (*2)
	1	× (*3)	O	Modulation
	6, 38	O	O	Data entry MSB, LSB
	7	O	O	Volume
	10	O	O	Pan
	11	× (*3)	O	Expression
	64	O	O	Sustain
	66	× (*3)	O	Sostenuto
	67	× (*3)	O	Soft pedal
	71	× (*3)	O	Harmonic content
	72	× (*3)	O	Release time
	73	× (*3)	O	Attack time
	74	× (*3)	O	Brightness
	84	× (*3)	O	Portamento control
	91	O	O	Reverb send level
	93	O	O	Chorus send level
	94	O	O	DSP send level
	96, 97	× (*3)	O	Data increment, decrement
	98, 99	× (*3)	O	NRPN LSB, MSB (*4)
	100, 101	O	O	RPN LSB, MSB (*5)
	120	O (*6)	O	All sound off
	121	×	O	Reset all controllers (*7)
Program Change	: True #	O 0~127 **********	O 0~127 0~127 (*8)	
System Exclusive		O	O	(*10)
System	: Song Position	×	×	
	: Song Select	×	×	
Common	: Tune	×	×	
System	: Clock	O	O (*9)	
Real Time	: Commands	O	O (*9)	Start, stop
Aux	: Local ON/OFF	×	×	
	: All Notes Off	×	O	
Messages	: Active Sense	O	O	
	: Reset	×	×	

Mode 1: OMNI ON, POLY
Mode 2: OMNI ON, MONO
Mode 3: OMNI OFF, POLY
Mode 4: OMNI OFF, MONO

O: Yes
×: No

*1 PSR-A3 ordinarily functions as 16 MIDI channel multi-timbral tone generator controlled by MIDI reception data. Panel voices and the other panel settings are not affected by the MIDI message, excepting the followings:

MIDI Master Tuning
System Exclusive Message for controlling Reverb, Chorus and Dsp

The Remote Channel can be designated by the panel settings. The designated channel on the PSR-A3 can be controlled by an external device and receive all the data excepting the following control change data:

Data entry, MSB, LSB
Portamento control
Data increment
Data decrement
NRPN LSB, MSB
RPN LSB, MSB

*2 Bank Select MSB
The bank select MSB is used for melody voice and rhythm voice switching.

MSB 00H: Melody voice.
MSB 7FH: Rhythm voice.

Transmission: Transmitted when changing the voice, style and song.
Reception: All channels except10 channel receive this message. (10 channel is fixed at rhythm voice.). But when 10 channel is set for the remote channel or receives XG System On message, 10 channel receives this message and the rhythm voice can change to the melody voice.

Bank Select LSB
This message is used to correspond to the panel voice numbers higher than 128.

Bank Select LSB=00H: program change numbers 0~127 correspond to the panel voice numbers 1~128.
Bank Select LSB=01H: program change numbers 0~12 correspond to the panel voice numbers 129~141.
Bank Select LSB=96H~99H: Oriental voices (refer to the Panel Voice List on page 90).

Transmission: Transmitted when changing the voice, style and song.
Reception: This message can be received only at the channel designated as the remote channel or the panel voice.

No voice change will occur when only a bank select is received. When a program change is received the latest bank select value is used.

*3 These Control Change messages are not transmitted by the PSR-A3 panel operation, but may be transmitted by the accompaniment style playing.

*4 NRPN transmission/reception
The following parameters are supported.

NRPN MSB	NRPN LSB	Data entry MSB	Data entry LSB	Parameter Name/Range	Default
01H	08H	mmH	- -	Vibrato Rate mm : 00H - 40H - 7FH (-64 - 0 - +63)	40H
01H	09H	mmH	- -	Vibrato Depth mm : 00H - 40H - 7FH (-64 - 0 - +63)	40H
01H	0AH	mmH	- -	Vibrato Delay mm : 00H - 40H - 7FH (-64 - 0 - +63)	40H
01H	20H	mmH	- -	Filter Cutoff Freq. mm : 00H - 40H - 7FH (-64 - 0 - +63)	40H
01H	21H	mmH	- -	Filter Resonance mm : 00H - 40H - 7FH (-64 - 0 - +63)	40H
01H	63H	mmH	- -	EG Attack Time mm : 00H - 40H - 7FH (-64 - 0 - +63)	40H
01H	64H	mmH	- -	EG Decay Time mm : 00H - 40H - 7FH (-64 - 0 - +63)	40H
01H	66H	mmH	- -	EG Release Time mm: 00H - 40H - 7FH (-64 - 0 - +63)	40H
14H	rrH	mmH	- -	Drum Filter Cutoff Freq. mm: 00H - 40H - 7FH (-64 - 0 - +63)	40H
rr: drum instrument note number					
15H	rrH	mmH	- -	Drum Filter Resonance mm: 00H - 40H - 7FH (-64 - 0 - +63)	40H
rr: drum instrument note number					
16H	rrH	mmH	- -	Drum EG Attack Rate mm: 00H - 40H - 7FH (-64 - 0 - +63)	40H
rr: drum instrument note number					
17H	rrH	mmH	- -	Drum EG Decay Rate mm: 00H - 40H - 7FH (-64 - 0 - +63)	40H
rr: drum instrument note number					
18H	rrH	mmH	- -	Drum Instrument Pitch Course mm: 00H - 40H - 7FH (-64 - 0 - +63)	40H
rr: drum instrument note number					
19H	rrH	mmH	- -	Drum Instrument Pitch Fine mm: 00H - 40H - 7FH (-64 - 0 - +63)	40H
rr: drum instrument note number					
1AH	rrH	mmH	- -	Drum Instrument Level mm: 00H - 7FH (0 - 127)	Depends on note
rr: drum instrument note number					
1CH	rrH	mmH	- -	Drum Instrument Panpot mm: 00H - 40H - 7FH (L - Center - R)	Depends on note
rr: drum instrument note number					
1DH	rrH	mmH	- -	Drum Instrument Reverb Send Level mm: 00H - 7FH (0 - 127)	Depends on note
rr: drum instrument note number					
1EH	rrH	mmH	- -	Drum Instrument Chorus Send Level mm: 00H - 7FH (0 - 127)	Depends on note
rr: drum instrument note number					
1FH	rrH	mmH	- -	Drum Instrument DSP Send Level mm : 00H - 7FH (0 - 127)	7FH
rr: drum instrument note number					

Data entry LSB is ignored.

*5 RPN transmission/reception
The following parameters are supported.

RPN MSB	RPN LSB	Data entry MSB	Data entry LSB	Parameter Name/Range	Default
00H	00H	mmH	- -	Pitch bend Sensitivity mm: 00H - 02H - 0CH (0 - 2 - 12)	02H
00H	01H	mmH	- -	Fine Tuning mm: 00H - 40H - 7FH (-64 - 0 - +63)	40H
00H	02H	mmH	- -	Course Tuning mm: 00H - 40H - 7FH (-64 - 0 - +63)	40H
7FH	7FH	- -	- -	RPN Null Clears current RPN and NRPN number settings.	- -

Data entry LSB is ignored.

*6 Not transmitted when Song and Accompaniment is playing.

*7 Pitch Bend, modulation, expression, sustain, sostenuto and softpedal are returned to their defult values.
Clears current RPN and NRPN number settings.
Resets portament source note number.

*8 129~160 voice numbers are selectable through an appropriate Bank Select setting (Refer to *2).

*9 When the External Clock is turned ON by PSR-A3 panel setting, Clock, Start/Stop message will be received.
The start/stop of the song recording and playback will be controlled by the external device. The initial set up data is transmitted before the song playback, so that the start may be delayed.

*10 Exclusive

The following system exclusive parameters are supported.

<GM system ON> F0H, 7EH, 7FH, 09H, 01H, F7H

All parameters except MIDI master Tuning and Dsp setting are reset to their default values.
Remote Channel setting is canceled.
This message requires approximately 50ms to execute, so sufficient time should be allowed before the next message is sent.

<DISK ORCHESTRA ON> F0H, 43H, 73H, 01H, 14H, F7H

This message switches PSR-A3 to Disk Orchestra defualt settings.
Remote Channel setting is canceled.
This message requires approximately 50ms to execute, so sufficient time should be allowed before the next message is sent.

<DISK ORCHESTRA OFF> F0H, 43H, 73H, 01H, 13H, F7H

This message switches Disk Orchestra ON to OFF.
All parameters except MIDI master Tuning are reset to their default values.
This message requires approximately 50ms to execute, so sufficient time should be allowed before the next message is sent.

<MIDI Master Volume> F0H, 7FH, 7FH, 04H, 01H, ll, mm, F7H

Allows the volume of all channels to be changed simultaneously.
"mm" is used as the MIDI Master Volume value ("ll" is ignored).
The defalut value for "mm" is 7FH.

<MIDI Master Tuning>

F0H, 43H, 1nH, 27H, 30H, 00H, 00H, mm, ll, cc, F7H
"mmll" is used as the MIDI Master Tuning value.
The tuning value is represented as follows:

T=M-128 (28<=M<=228), T=-100 (M<28), T=100 (M>228)

Where T is the actual tuning value in cents.
M is decimal value represented by 1-byte using bits 0..3 of "mm" as the MSB and bits 0..3 of "ll" as the LSB.

The default values of "mm" and "ll" are 08H and 00H resprectively.
n and cc are also recognized.
This value is not reset by a GM System ON or Reset All Controllers message.
This value affects not only MIDI reception part but the entire system of the PSR-A3.

<Panel Voice> F0H, 43H, 76H, 1BH, cc, vv, F7H

This message alternately selects Panel voice or GM voice.

cc: MIDI channel
vv: 00=GM voice mode/01=Panel voice mode

GM voice mode is defalut.
This message is ignored by the remote channel.

<Bulk Dump>

Song Memory:
F0H, 43H, 76H, 1CH, bl, bh, <DATA>, cs, F7H
Multi Pad:
F0H, 43H, 76H, 1DH, bl, bh, <DATA>, cs, F7H
Registration Memory:
F0H, 43H, 76H, 1EH, bl, bh, <DATA>, cs, F7H
Scale Memory:
F0H, 43H, 76H, 1FH, bl, bh, <DATA>, cs, F7H

"bl" and "bh" represent the total byte count as "bl + bh*128".
cs=Checksum.

<XG System On> F0H, 43H, 1nH, 4CH, 00H, 00H, 7EH, 00H, F7H

n: device number (transmission: n=0, reception: n is ignored.)

All parameters except MIDI master Tuning are reset to their default values.
Remote Channel setting is canceled.
This message requires approximately 50ms to execute, so sufficient time should be allowed before the next message is sent.

<XG Parameter Change>

F0H, 43H, 1nH, 4CH, aaH, bbH, ccH, ddH.....F7H
n: device number(transmission: n=0, reception: n is ignored.)
aa,bb,cc: address High, Mid, Low (see below)
dd: data (succesive transmission and reception are possible within the amount of data shown in the following Table-1)

Note: PSR-A3 corresponds to XG parameters in the Table-1. But this is a part of XG parameters, PSR-A3 does not perfectly correspond to XG format.

PORTATONE
PSR-A3
PARTS LIST

■CONTENTS

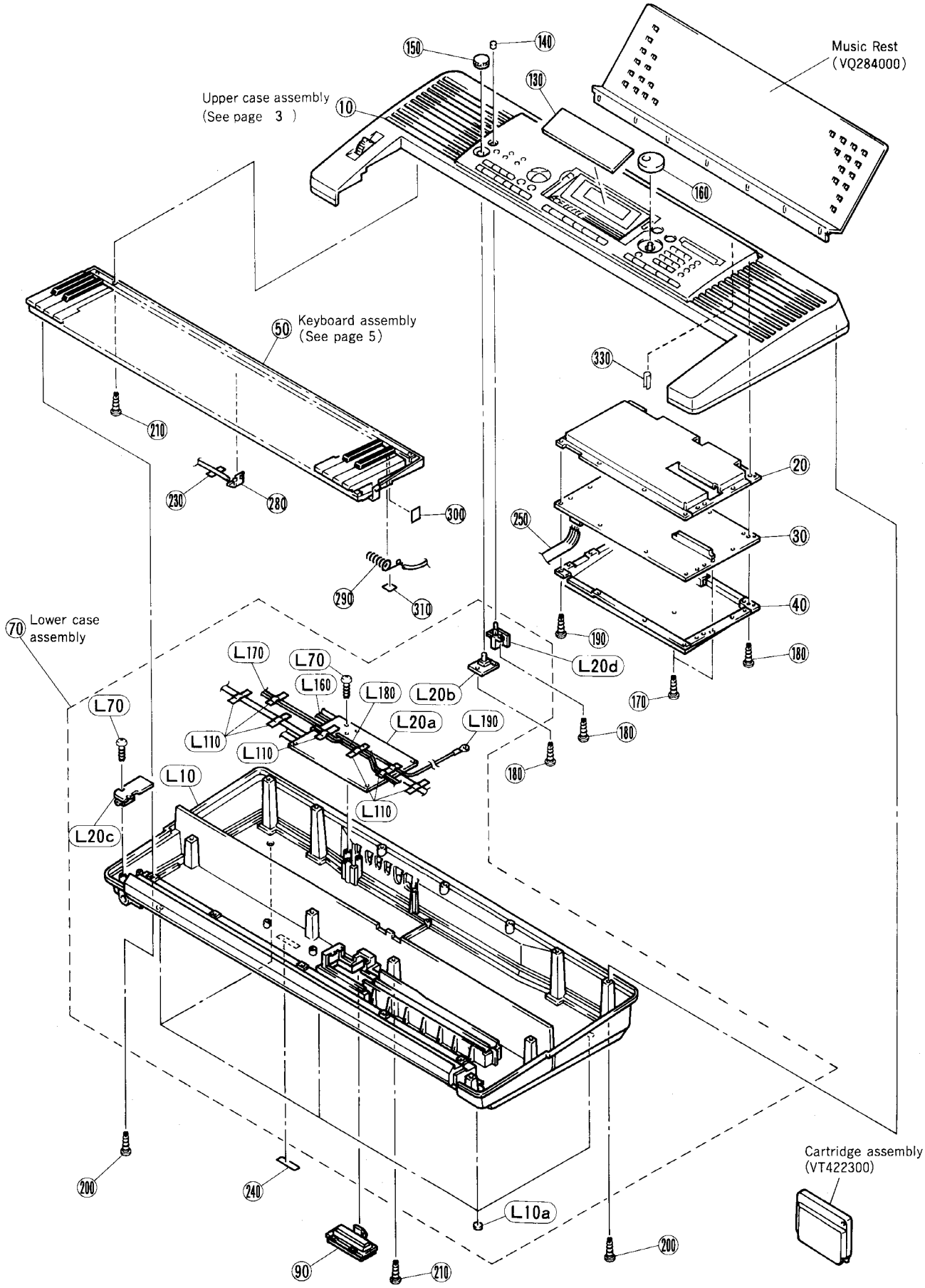
OVERALL ASSEMBLY 1
UPPER CASE ASSEMBLY 3
KEYBOARD ASSEMBLY 5
ELECTRICAL PARTS ..... 6~9

Notes DESTINATION ABBREVIATIONS

J	: Japanese model	A	: Australian model
U	: U.S. model	E	: European model
C	: Canadian model	D	: German model
X	: General model	B	: British model
M	: South African model	I	: Indonesian model
H	: North European model		

- The numbers with "pc." or "pcs" in "Remarks" show quantities for each unit.
- The parts with "——" in "Part No." are not available as spare parts.

■OVERALL ASSEMBLY

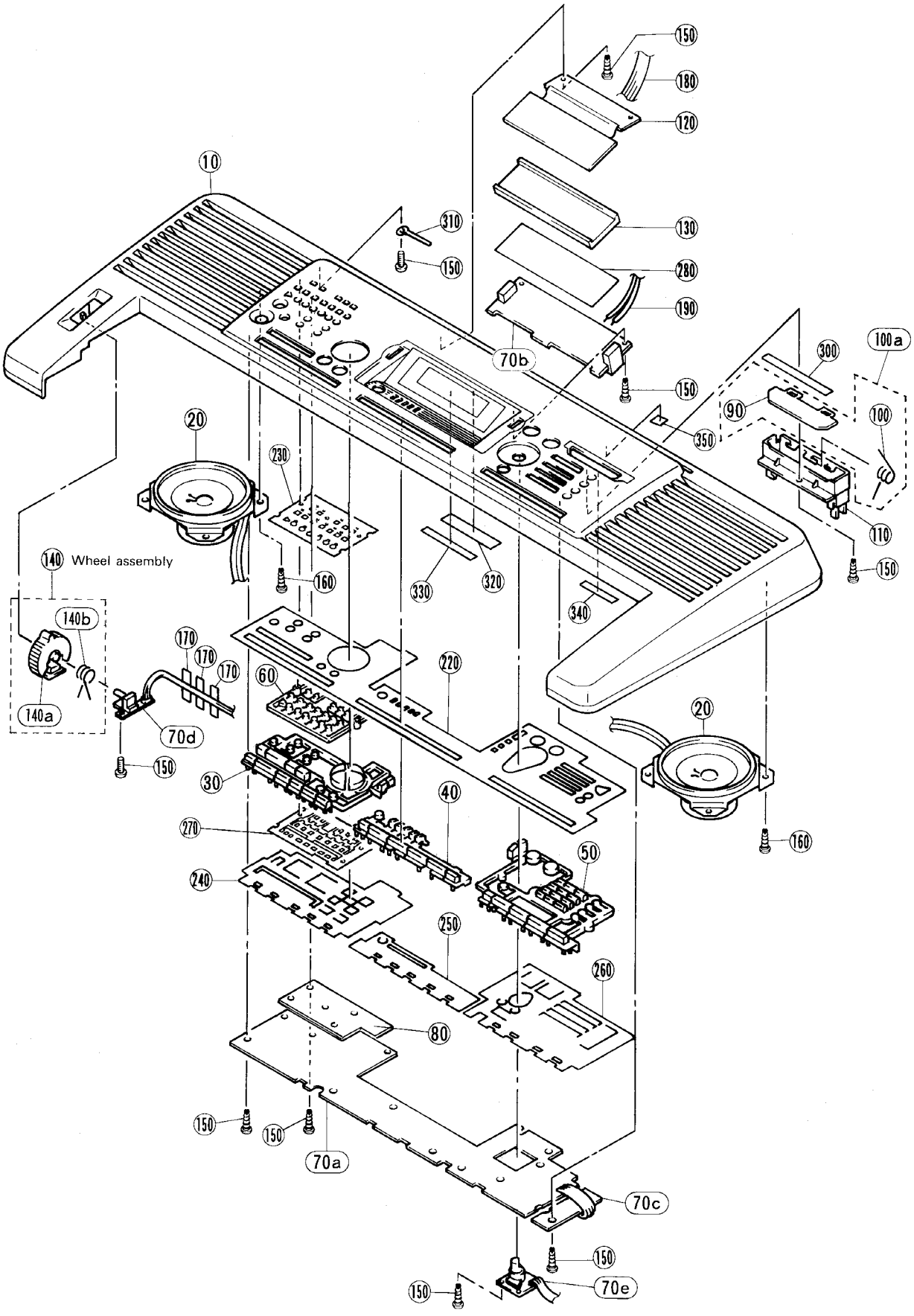


	Ref.	Part No.	Description		部品名	Remarks	ランク
			<OVERALL ASSEMBLY>		＜総組立＞		
	10	--	Upper Case Assembly		上ケースＡｓｓ'ｙ	(VT44200)	
	20	VT369700	Shield Box	U	シールドボックス上		07
*	30	VT739000	Circuit Board	DM	ＤＭシート		
	40	VT369800	Shield Box	L	シールドボックス下		06
	50	VQ383800	Keyboard Assembly	C61 K6	１６Ｌ鍵盤Ａｓｓ'ｙ	with SUB-PCB	26
	70	--	Lower Case Assembly		下ケースＡｓｓ'ｙ	(VT44220)	
	90	VJ601000	Battery Cover Assembly	BL	バッテリーカバーＡｓｓｙ		06
	130	VT370500	Seal, LCD		ＬＣＤシール		05
	140	VQ218800	Push Knob		プッシュツマミ	POWER switch	03
	150	VQ218900	Knob	V	Ｖ－ツマミ	MASTER VOLUME	03
	160	VL921100	Encoder Knob	BL	エンコーダーツマミ	Encoder	03
	170	EP600310	Bind Head Tapping Screw-P	3.0X16 MFZN2Y	＋バインドＰタイト	2pcs	01
	180	EP600280	Bind Head Tapping Screw-P	3.0X8 MFZN2Y	＋バインドＰタイト	8pcs	01
	190	EP600130	Bind Head Tapping Screw-B	3.0X6 MFZN2Y	＋バインドＢタイト	12pcs	01
	200	EP600300	Bind Head Tapping Screw-P	3.0X12 MFZN2Y	＋バインドＰタイト	16pcs	01
	210	VK228100	Bind Head Tapping Screw-P	3.0X25 MFZN2Y	＋バインドＰタイト	4pcs	01
	230	VA126100	Filament Tape	12X50	粘着テープ	11pcs	03
	240	--	Serial Number Label		規格，製番ラベル	(VT49750)	
	250	--	Connector Assembly	DM-MKS L=430 6P	ＤＭ－ＭＫＳ束線	(VT91370)	
	280	BB005490	Battery Terminal	(+)	端子板		01
	290	VN218200	Spring Terminal	(-)	接点バネ		03
	300	--	Cushion	18X25	防振テープ	(VJ86150)	
	310	--	Cushion	25X17X0.5	防振テープＦ	(VR12940)	
	330	--	Cushion	15X15X0.3	防振テープ	2pcs (VT97500)	
			<LOWER CASE ASSEMBLY>		＜下ケースＡｓｓｙ＞		
	--		Lower Case Assembly	PSR520	下ケースＡｓｓｙ	(VT44220)	
*	L10	VT442400	Lower Case	PSR520	下ケース加工品		
	L10a	CB043750	Foot	BL T1.6	ゴム足	5pcs	01
	L20a	NX007360	Circuit Board	AM	ＡＭシート	(XQ372B0)	
	L20b	NX007370	Circuit Board	MVR	ＭＶＲシート	(XQ372B0)	
	L20c	NX007380	Circuit Board	HP	ＨＰシート	(XQ372B0)	
	L20d	NX007390	Circuit Board	PSW	ＰＳＷシート	(XQ372B0)	
	L70	EP600280	Bind Head Tapping Screw-P	3.0X8 MFZN2Y	＋バインドＰタイト	9pcs	01
	L110	VA126100	Filament Tape	12X50	粘着テープ	5pcs	03
	L160	--	Connector Assembly	AM-BAT	ＡＭ－ＢＡＴ束線	(VT65530)	
	L170	--	Connector Assembly	AM-SPL	ＡＭ－ＳＰＬ束線	(VT43880)	
	L180	--	Connector Assembly	AM-SPR	ＡＭ－ＳＰＲ束線	(VT91380)	
	L190	--	Connector Assembly	L=250	ＤＭ－ＡＭ束線	(VT65560)	
			<ACCESSORIES>		＜付属品＞		
		VQ284000	Music Rest	BL	譜面立て		08
		VT422300	Cartridge Assembly		ＣＡＲＴ Ａｓｓ'ｙ		
		--	Music Score		ＭＣ楽譜	(VT95580)	

*New Parts (新規部品)

ランク:Japan only

■UPPER CASE ASSEMBLY

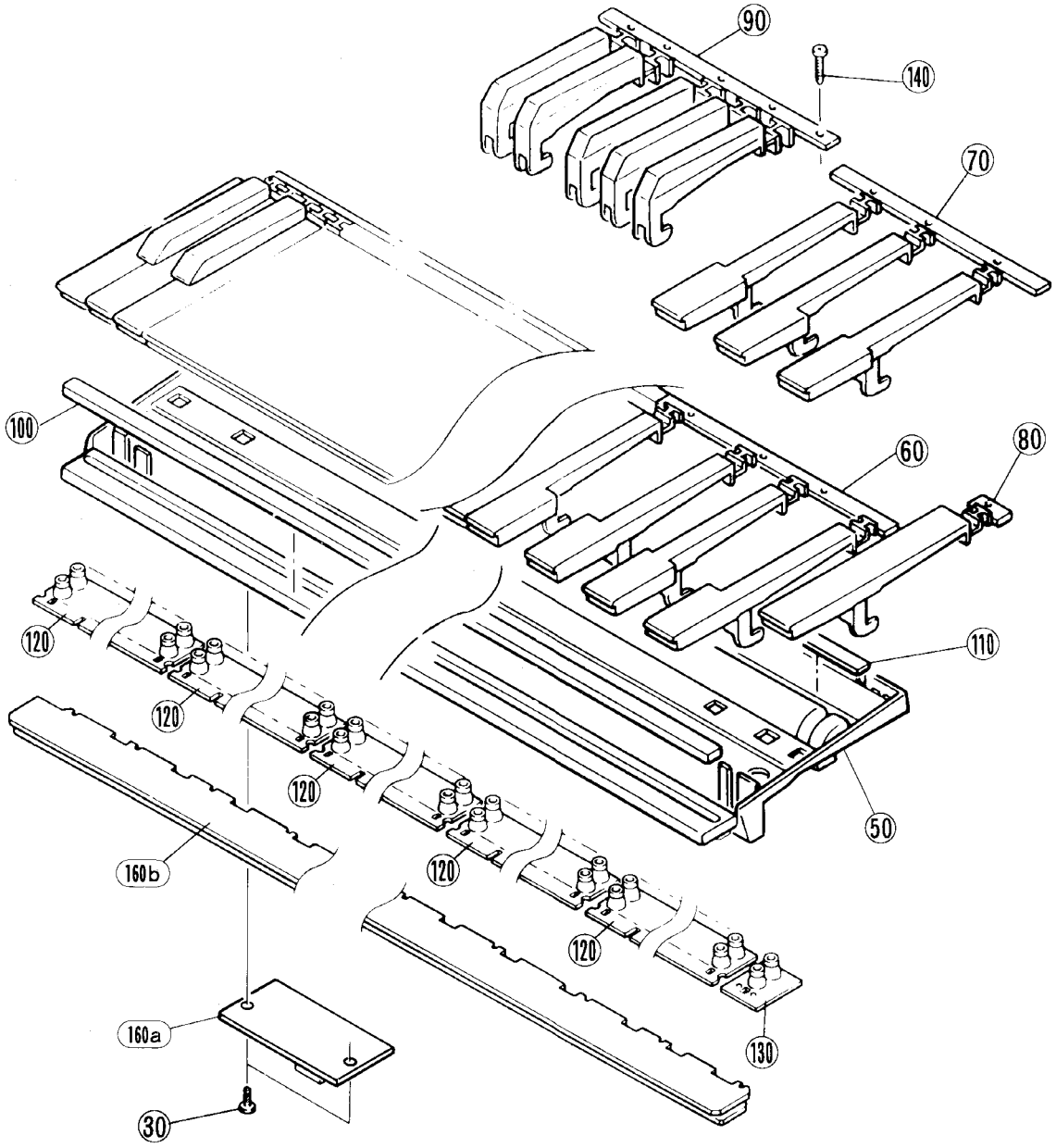


	Ref.	Part No.	Description		部品名	Remarks	ランク
			<UPPER CASE ASSEMBLY>		<上ケースＡｓｓ'ｙ>		
		--	Upper Case Assembly		上ケースＡｓｓ'ｙ	(VT44200)	
*	10	VT441700	Uower Case		上ケース加工品		15
	20	XQ764A00	Speaker	12.0cm 4ohm 8W	スピーカー	2pcs	05
	30	VT365700	Panel Switch	L	パネルスイッチ　Ｌ	DEMO-ENDING	05
	40	VT365800	Panel Switch	C	パネルスイッチ　Ｃ	LARGE-FREEZE	04
	50	VT366100	Panel Switch	R	パネルスイッチ　Ｒ	MODE-4	05
*	60	VT366200	Panel Switch	AR	パネルスイッチ　ＡＲ	SCALE-SETTING	05
*	70a	NX007510	Circuit Board	PN1-1/2	ＰＮ１－１／２シート		
	70b	NX007410	Circuit Board	PN1-2/2	ＰＮ１－２／２シート		08
	70c	NX007420	Circuit Board	PN1S	ＰＮ１Ｓシート		09
	70d	NX007430	Circuit Board	PB	ＰＢシート		08
	70e	NX007480	Circuit Board	ENC	ＥＮＣシート		08
*	80	VT401000	Circuit Board	PN2	ＰＮ２シート		
*	90	--	Cartridge Cover		ＣＡＲＴ蓋成形品	(VU26460)	03
*	100	--	Spring		回転バネ	(VU25450)	01
*	100a	NX007520	Cartridge Cover Set		ＣＡＲＴ蓋セット		
	110	VT367600	Cartridge Guide		ＣＡＲＴガイド成形品		04
	120	VT488200	LCD	EDMCR11A00	液晶ディスプレイ		14
	130	VT912200	Back-lit board Assembly		導光板Ａｓｓ'ｙ		06
	140	--	Wheel Assembly		ホイールＡｓｓ'ｙ	(VT48770)	
	140a	VT366400	Wheel		ホイール		03
	140b	VT440100	Spring		ホイールバネ		03
	150	EP600280	Bind Head Tapping Screw-P	3.0X8　MFZN2Y	＋バインドＰタイト	35pcs	01
	160	VB931600	Bind Head Tapping Screw-P	4.0X8　MFZN2BL	＋バインドＰタイト	8pcs	01
	170	VA119300	Filament Tape	12X25	粘着テープ	3pcs	01
	180	--	Connector Assembly	DM-LCD	ＤＭ－ＬＣＤ束線	(VT44520)	
	190	--	Connector Assembly	DM-LCD2	ＤＭ－ＬＣＤ２束線	(VT43950)	
	220	--	Cushion	-U	防振シート　－Ｕ	(VT74690)	
	230	--	Cushion	A-U	防振シートＡ－Ｕ	(VT74700)	
	240	--	Cushion	L-L	防振シートＬ－Ｌ	(VT74710)	
	250	--	Cushion	C-L	防振シートＣ－Ｌ	(VT74720)	
	260	--	Cushion	R-L	防振シートＲ－Ｌ	(VT74730)	
	270	--	Cushion	A-L	防振シートＡ－Ｌ	(VT74740)	
	280	--	Reflecion Sheet		反射シート	(VT54610)	
	300	--	Tape	7X80X0.5	防振テープ	(VT85810)	
	310	CB502030	Cord Binder	S-75B	束線止め		01
	320	--	Cushion Tape	5X135X0.3	防振テープ	(VU03340)	
	330	--	Cushion Tape	2X135X0.3	防振テープ	(VU03850)	
	340	--	Seal Tape	D	シールテープＤ	(VU03310)	
	350	--	Cushion	15X15X0.3	防振テープ	(VT97500)	

*New Parts（新規部品）

ランク:Japan only

■KEYBOARD ASSEMBLY



Ref.	Part No.	Description		部品名	Remarks	ランク
		<KEYBOARD ASSEMBLY>		＜１６Ｌ鍵盤Ａｓｓｙ＞		
	VQ383800	Keyboard Assembly	C61 K6	１６Ｌ鍵盤ＡＳＳＹ		26
30	EP630220	Bind Head Tapping Screw-P	3.0X8 MFZN2BL	＋バインドＰタイト	2pcs	01
50	--	Frame	C61	フレーム	(VG49510)	
60	VH180900	White Keys	CEGB	白鍵ＣＥＧＢ	5pcs	03
70	VH181000	White Keys	DFA	白鍵ＤＦＡ	5pcs	03
80	VH181100	White Key	C'	白鍵Ｃ		01
90	VH181200	Black Keys		黒鍵	5pcs	03
100	VH181300	Felt		フェルト		03
110	VH181400	Rubber Sheet		ゴムシート		01
120	VT694800	Rubber Contact	2X12keys	接点ゴム	5pcs	
130	VT695000	Rubber Contact	2X1key	接点ゴム		
140	VB205200	Bind Head Tapping Screw-P	3.0X16 MFZN2BL	＋バインドＰタイト	21pcs	01
140	VS756700	Bind Head Tapping Screw-P	3.0X16 MFZN2BL	＋バインドＰタイト	21pcs	01
160	--	Circuit Board	MK	ＭＫシート　サブ基板付	(VQ38960)	
160a	VQ305200	Circuit Board	MKS	ＭＫＳシート		10
160b	VL319900	Circuit Board	MK	ＭＫシート　サブ束線付		13

*New Parts（新規部品）

ランク:Japan only

■ELECTRICAL PARTS

	Ref.	Part No.	Description		部品名	Remarks	ランク
			<ELECTRICAL PARTS>		＜電気部品＞		
		NX007360	Circuit Board	AM	ＡＭシート	(XQ372B0)	
		NX007370	Circuit Board	MVR	ＭＶＲシート	(XQ372B0)	
		NX007380	Circuit Board	HP	ＨＰシート	(XQ372B0)	
		NX007390	Circuit Board	PSW	ＰＳＷシート	(XQ372B0)	
*		VT739000	Circuit Board	DM	ＤＭシート	(XQ371B0)	
		VL319900	Circuit Board	MK	ＭＫシート　サブ束線付	(XF656F0)	13
		VQ305200	Circuit Board	MKS	ＭＫＳシート	(XM324A0)	10
*		NX007510	Circuit Board	PN1-1/2	ＰＮ１－１／２シート	(XQ500B0)	
		NX007410	Circuit Board	PN1-2/2	ＰＮ１－２／２シート	(XQ500B0)	
		NX007420	Circuit Board	PN1S	ＰＮ１Ｓシート	(XQ500B0)	
		NX007430	Circuit Board	PB	ＰＢシート	(XQ500B0)	
		NX007480	Circuit Board	ENC	ＥＮＣシート	(XQ500B0)	
*		VT401000	Circuit Board	PN2	ＰＮ２シート	(XQ501B0)	
		NX007360	Circuit Board	AM	ＡＭシート	(XQ372B0)	
		NX007370	Circuit Board	MVR	ＭＶＲシート	(XQ372B0)	
		NX007380	Circuit Board	HP	ＨＰシート	(XQ372B0)	
		NX007390	Circuit Board	PSW	ＰＳＷシート	(XQ372B0)	
		EP600220	Bind Head Tapping Screw-2	3.0X10 MFZN2Y	＋バインドＴＰ２種溝		01
		UA654100	Mylar Capacitor	0.0100 50V J	マイラーコン		01
		UA654390	Mylar Capacitor	0.0390 50V J	マイラーコン		01
		UA654470	Mylar Capacitor	0.0470 50V J	マイラーコン		01
		VR168300	Mylar Capacitor	0.10 50V J	マイラーコン		01
		FG612470	Ceramic Capacitor-B	470P 50V K	セラコンＢ		01
		FG613470	Ceramic Capacitor-B	4700P 50V K	セラコンＢ		01
		FG613560	Ceramic Capacitor-B	5600P 50V K	セラコン（Ｂ）		01
		FG651220	Ceramic Capacitor-SL	22P 50V J	セラコン（ＳＬ）		01
		FG644100	Ceramic Capacitor-F	0.0100 50V Z	セラコンＦ		01
		VT757800	Monolythic Ceramic Cap.	1.000 25V Z	積層セラコン		01
		UJ827330	Electrolytic Cap.	33.00 10.0V	ケミコン		01
		UJ837100	Electrolytic Cap.	10.00 16.0V	ケミコン		01
		UJ837470	Electrolytic Cap.	47.00 16.0V	ケミコン		01
		UJ838100	Electrolytic Cap.	100.00 16.0V	ケミコン		01
		UJ848100	Electrolytic Cap.	100.00 25.0V	ケミコン		01
		UJ865470	Electrolytic Cap.	0.47 50.0V	ケミコン		01
		UJ866100	Electrolytic Cap.	1.00 50.0V	ケミコン		01
*		VT848900	Electrolytic Cap.	6800 25.0V	ケミコン		
		VB835000	Coil	FL5R200QNT 20u	コイル　２０Ｕ		01
		HF753220	Carbon Resistor	2.2 1/4 J	カーボン抵抗		01
		HF755100	Carbon Resistor	100.0 1/4 J	カーボン抵抗		01
		HF755150	Carbon Resistor	150.0 1/4 J	カーボン抵抗		01
		HF755330	Carbon Resistor	330.0 1/4 J	カーボン抵抗		01
		HF755680	Carbon Resistor	680.0 1/4 J	カーボン抵抗		01
		HF756180	Carbon Resistor	1.8K 1/4 J	カーボン抵抗		01
		HF756220	Carbon Resistor	2.2K 1/4 J	カーボン抵抗		01
		HF756470	Carbon Resistor	4.7K 1/4 J	カーボン抵抗		01
		HF757100	Carbon Resistor	10.0K 1/4 J	カーボン抵抗		01
		HF757120	Carbon Resistor	12.0K 1/4 J	カーボン抵抗		01
		HF757270	Carbon Resistor	27.0K 1/4 J	カーボン抵抗		01
		HF757330	Carbon Resistor	33.0K 1/4 J	カーボン抵抗		01
		HF757470	Carbon Resistor	47.0K 1/4 J	カーボン抵抗		01
		HF758100	Carbon Resistor	100.0K 1/4 J	カーボン抵抗		01
		HF758470	Carbon Resistor	470.0K 1/4 J	カーボン抵抗		01
		VI878300	Cable Holder	51048-5P TE	ケーブルホルダー		01
		VI878400	Cable Holder	51048-6P TE	ケーブルホルダー		01
*		VT402900	Heat Sink		放熱板		
		--	Vibration-proof Tape	3.5X35X0.5	防振テープ	(VM92820)	
		--	Vibration-proof Sponge	C	防振スポンジＣ	(VT94080)	
		VA078900	Jumper Wire	0.55	ジャンパー線		
		--	Connector Assembly	DM-AM L=280 6P	ＤＭ－ＡＭ束線	(VT44580)	
		--	Connector Assembly	AM-SW L=300 6P	ＡＭ－ＳＷ束線	(VT44600)	
		--	Connector Assembly	DM-VR L=380 4P	ＤＭ－ＶＲ束線	(VT91410)	
		--	Connector Assembly	AM-VR L=440 5P	ＡＭ－ＶＲ束線	(VT91420)	
		--	Connector Assembly	DM-SW L=500 5P	ＤＭ－ＳＷ束線	(VT95690)	
		--	Connector Assembly	AM-HP	ＡＭ－ＨＰ束線	(VT96980)	
	C01	VC694800	Semiconductive Cera. Cap.	0.1000 25V Z	半導体セラコン		01
	C01	VD930900	Semiconductive Cera. Cap.	0.1000 25V M	半導体セラコン		01
	D701	VL723600	Diode	20E1-FC4	ダイオード		01
	D702	VL723600	Diode	20E1-FC4	ダイオード		01

*New Parts（新規部品）

ランク:Japan only

	Ref.	Part No.	Description		部品名	Remarks	ランク
	IC302	XB247A00	IC	UPC4570HA	ＩＣ	OP AMP	01
*	IC303	XR162A00	IC	AN8009-(TA)	ＩＣ	REGULATOR +9V	02
	IC501	XB247A00	IC	UPC4570HA	ＩＣ	OP AMP	01
	IC701	XQ619A00	IC	LA4705NA 17W BTL	ＩＣ	POWER AMP	05
	JK401	VJ107200	DIN Connector	5P YKF51-5050	ＤＩＮコネクタ	MIDI OUT	01
	JK402	VJ107200	DIN Connector	5P YKF51-5050	ＤＩＮコネクタ	MIDI IN	01
	JK403	VB312600	Phone Jack	YKB21-5012 BL	ホーンジャック（黒）	SUSUTAIN	02
	JK501	VB312600	Phone Jack	YKB21-5012 BL	ホーンジャック（黒）	AUX OUT R	02
	JK502	VC687500	Phone Jack	YKB21-5014 BL	ホーンコネクタ（黒）	AUX OUT L/L+R	01
	JK701	LB101870	Phone Jack	YKB21-5006	ホーンジャック	PHONES	03
	JK702	VC664500	DC IN Connector	HEC2305	電源コネクタ	DC IN 10-12V	01
	LF701	VH227500	Line Filter	SU10VD-10020	ラインフィルター		03
	SW301	VQ670600	Push Switch	SDDLB1	プッシュＳＷ	POWER switch	03
	VR301	VQ320200	Rotary Variable Resistor	A10Kx2	二連ロータリーＶＲ	MASTER VOLUME	03
*		VT739000	Circuit Board	DM	ＤＭシート	(XQ371B0)	
		EP600190	Bind Head Tapping Screw-2	3.0X8 MFZN2BL	＋バインドＴＰ２種溝		01
		UA654470	Mylar Capacitor	0.0470 50V J	マイラーコン		01
		VA760600	Ceramic Capacitor-CH	10P 50V D	セラコン（ＣＨ）		01
		FG644100	Ceramic Capacitor-F	0.0100 50V Z	セラコンＦ		01
		UJ827470	Electrolytic Cap.	47.00 10.0V	ケミコン		01
		UJ828100	Electrolytic Cap.	100.00 10.0V	ケミコン		01
		UJ848100	Electrolytic Cap.	100.00 25.0V	ケミコン		01
		UJ866100	Electrolytic Cap.	1.00 50.0V	ケミコン		01
		UJ867100	Electrolytic Cap.	10.00 16.0V	ケミコン		01
		UJ819100	Electrolytic Cap.	1000 6.3V	ケミコン		01
		HF754220	Carbon Resistor	22.0 1/4 J	カーボン抵抗		01
		HF755100	Carbon Resistor	100.0 1/4 J	カーボン抵抗		01
		HF755180	Carbon Resistor	180.0 1/4 J	カーボン抵抗		01
		HF755220	Carbon Resistor	220.0 1/4 J	カーボン抵抗		01
		HF755270	Carbon Resistor	270.0 1/4 J	カーボン抵抗		01
		HF755680	Carbon Resistor	680.0 1/4 J	カーボン抵抗		01
		HF755820	Carbon Resistor	820.0 1/4 J	カーボン抵抗		01
		HF756100	Carbon Resistor	1.0K 1/4 J	カーボン抵抗		01
		HF757100	Carbon Resistor	10.0K 1/4 J	カーボン抵抗		01
		HF757220	Carbon Resistor	22.0K 1/4 J	カーボン抵抗		01
		HF757470	Carbon Resistor	47.0K 1/4 J	カーボン抵抗		01
		HF758100	Carbon Resistor	100.0K 1/4 J	カーボン抵抗		01
		HF759100	Carbon Resistor	1.0M 1/4 J	カーボン抵抗		01
		VH010400	Metal Film Resistor	220.0K 1/4 F	金属皮膜抵抗		01
		VH011000	Metal Film Resistor	390.0K 1/4 F	金属皮膜抵抗		01
		VB390000	Base Post Connecor	PH -4P TE	コネクタベースポスト		01
		VA078900	Jumper Wire	0.55	ジャンパー線		
	C01	VC694800	Semiconductive Cera. Cap.	0.1000 25V Z	半導体セラコン		01
	C01	VD930900	Semiconductive Cera. Cap.	0.1000 25V M	半導体セラコン		01
	D001	VB941200	Diode	1SS133,1SS176	ダイオード		01
	L301	VB835000	Coil	FL5R200QNT 20u	コイル ２０Ｕ		01
	L301	VF968800	Coil	SBT-0260TF 60u	コイル ＳＢ ６０ｕＨ		01
	CA301	VH285500	Ceramic Cap. Array	470Px6 50V M	セラコンアレイ		02
	CA801	VT487100	Ceramic Cap. Array	470Px12	セラコンアレイ		02
	CA803	VH285600	Ceramic Capacitor Array	470P 50V M	セラコン アレイ		02
	CL001	VT487200	Ceramic Resonator	16M EF0EC1605T4	セラミック振動子		02
	CL001	VT630600	Ceramic Resonator	16.0M CST16.00M	セラミック振動子		05
*	CN101	VT402100	Connector	PSB4D30-2	Ｐ基板用コネクター		03
	CN401	VF728300	Wire Trap	52147-6P TE	コネクタ		01
	CN402	VK025800	Wire Trap	52147-14P TE	ワイヤートラップ		01
	CN403	VK024600	Wire Trap	52147-2P TE	ワイヤートラップ		01
	CN601	VK024900	Wire Trap	52147-5P TE	ワイヤートラップ		01
	CN801	VK025100	Wire Trap	52147 7P TE	ワイヤートラップ		01
	CN802	VK025600	Wire Trap	52147-12P TE	ワイヤートラップ		01
	CN803	VK025700	Wire Trap	52147-13P TE	ワイヤートラップ		01
	CR201	VT487600	Quartz Crystal Unit	33.8688M AT-49	水晶振動子		04
	IC001	XQ799A00	IC	HD6413003TF16	ＩＣ	CPU	09
	IC002	IR013900	IC	TC74HC139P	ＩＣ	DECODER	05
	IC003	XQ693A00	IC	IC-PST993C-T	ＩＣ	RESET	01
	IC004	IR001450	IC	SN74HC14N	ＩＣ	INVERTER	05
	IC101	XL788A00	IC	TC518129APL-80	ＩＣ	PSRAM 1M	12
*	IC102	XR456A00	IC		ＩＣ	ROM 16M PROGRAM	
*	IC103	XR459A00	IC	UPD23C1600-XX	ＩＣ	ROM 16M STYLE	
	IC104	XG658A00	IC	TC74AC32P	ＩＣ	OR	02

*New Parts（新規部品）

ランク:Japan only

	Ref.	Part No.	Description		部品名	Remarks	ランク
	IC104	XQ973A00	IC	MC74AC32N	ＩＣ	OR	02
	IC201	XQ036A00	IC	TC170C120SF-003	ＩＣ	SWP00	10
	IC202	XN978A00	IC	MB81C4256A-70PS	ＩＣ	DRAM 1M	08
*	IC203	XQ709B00	IC	UPC23C16000WCZ-038	ＩＣ	WAVE ROM1 (16M)	
*	IC204	XQ710B00	IC	UPC23C8000WCZ-072	ＩＣ	WAVE ROM2 (8M)	
	IC205	IR000450	IC	SN74HC04N	ＩＣ	INVERTER	03
	IC301	XM145A00	IC	UPD63200GS	ＩＣ	DAC	07
*	IC601	XM993A00	IC	TO-92 S81250PG-T	ＩＣ	REGULATOR +5V	
	IC602	XL450A00	IC	PQ05RA1	ＩＣ	REGULATOR +5V	03
	IC604	XQ774A00	IC	PQ09RA1	ＩＣ	REGULATOR +9V	03
	IC901	VG181900	Photo Coupler	PC-900V	フォトカプラ		03
	RA101	VT455500	Resistor Array	RGLD7Y221J 220x7	抵抗アレイ		01
	RA801	VF238600	Resistor Array	RGLE8X473J 47Kx8	抵抗アレイ		01
	RA802	VF771900	Resistor Array	RGLE8X103J 10Kx8	抵抗アレイ		01
	TR801	VT507900	Transistor	2SA1524-AC	トランジスタ		01
	TR801	VT455400	Digital Transistor	DTB123YS TP	デジタルトランジスタ		01
	TR901	VD678700	Digital Transistor	DTC114ES	デジタルトランジスタ		03
	TR901	VH800800	Digital Transistor	UN4211-(TA)	デジタルトランジスタ		01
	TR902	IC260320	Transistor	2SC2603 E,F	トランジスタ		01
		VL319900	Circuit Board	MK	ＭＫシート　サブ束線付	(XF656F0)	13
		VB941200	Diode	1SS133,1SS176	ダイオード		01
		VA078900	Jumper Wire	0.55	ジャンパー線		
		--	Earth Wire	AWG22 34mm BL	アース線	(VI12660)	
		VQ305200	Circuit Board	MKS	ＭＫＳシート	(XM324A0)	10
		VD840500	Ceramic Capacitor-SL	22P 50V J	円筒セラ（ＳＬ）		01
		VK392400	Ceramic Capacitor-F	47000P 16V Z	円筒セラ（Ｆ）		01
		VL409500	Coil	BL03RN2-R62T4 0.45	コイル　０．４５Ｕ		01
		VL674500	Resistor Array	RGLE12X223J	抵抗アレイ		01
		XJ450A00	IC	HD63B05V0D73P	ＩＣ	CPU	07
		VF728300	Wire Trap	52147-6P TE	コネクタ		01
		VK025500	Wire Trap	52147-11P TE	ワイヤートラップ		01
		VK025600	Wire Trap	52147-12P TE	ワイヤートラップ		01
		--	Vibration-proof Tape	10X64X0.5	防振テープ	(VK34680)	
	10	UJ828100	Electrolytic Cap.	100.00 10.0V	ケミコン		01
	20	HF756470	Carbon Resistor	4.7K 1/4 J	カーボン抵抗		01
	30	HF757470	Carbon Resistor	47.0K 1/4 J	カーボン抵抗		01
	40	VA078900	Jumper Wire	0.55	ジャンパー線		
	CR1	VN002100	Ceramic Resonator	CST8.00MTW140	セラミック振動子		02
	CR1	VQ305500	Ceramic Resonator	8.00M EF0EC8004T3	セラミック振動子		02
*		NX007510	Circuit Board	PN1-1/2	ＰＮ１－１／２シート	(XQ500B0)	
		NX007410	Circuit Board	PN1-2/2	ＰＮ１－２／２シート	(XQ500B0)	08
		NX007420	Circuit Board	PN1S	ＰＮ１Ｓシート	(XQ500B0)	09
		NX007430	Circuit Board	PB	ＰＢシート	(XQ500B0)	08
		NX007480	Circuit Board	ENC	ＥＮＣシート	(XQ500B0)	08
		HF757100	Carbon Resistor	10.0K 1/4 J	カーボン抵抗		01
		VT488100	Lamp	0.1A HRT-6101A	ランプ　１２Ｖ		02
		VT513600	Light Touch Switch	EVQ 22C 05B	ライトタッチＳＷ　２端子	For LCD back light	01
		VQ371800	Encoder	EVQ WP5 F15 24B	１６形エンコーダ		04
		VI878100	Cable Holder	51048-3P TE	ケーブルホルダー		01
		VB941200	Diode	1SS133,1SS176	ダイオード		01
		VT387900	LED	SLZ-190B-10-T2 RE	ＬＥＤ		01
		VT370200	Holder	PSR620	ランプホルダ		03
		VA078900	Jumper Wire	0.55	ジャンパー線		
		--	Connector Assembly	PN1-PB	ＰＮ１－ＰＢ束線	(VT43910)	
		--	Connector Assembly	PN1-ENC	ＰＮ１－ＥＮＣ束線	(VT43920)	
		--	Connector Assembly	DM-PN1A	ＤＭ－ＰＮ１Ａ束線	(VT44540)	
		--	Connector Assembly	DM-PN1B	ＤＭ－ＰＮ１Ｂ束線	(VT44550)	
		--	Connector Assembly	PN1-PN2	ＰＮ１－ＰＮ２束線	(VT44660)	
		--	Connector Assembly	PN1-PN1S	ＰＮ１－ＰＮ１Ｓ束線	(VU02640)	
	VR901	VT432100	Rotary Variable Resistor	B10K EVJ05DF25B14	ロータリーＶＲ	PITCH BEND	03
*		VT401000	Circuit Board	PN2	ＰＮ２シート	(XQ501B0)	
*		VT439600	Monolithic Ceramic Cap.	0.100 50V Z	積層セラコン		01
		IR017410	IC	HD74HC174P	ＩＣ	D-FF	02
		VQ320400	Tact Switch	SKHVBE091A	タクトＳＷ		01

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ランク:Japan only

Ref.	Part No.	Description		部品名	Remarks	ランク
	VH480900	Transistor Array	AN90B22	トランジスタアレイ		02
	VC341300	LED	SLZ-190B-01 RE	ＬＥＤ		01
	VI100100	LED	SLZ-190B-11-T1 RE	ＬＥＤ		01
*	VT940900	LED	SLZ-190B-02-T1 RE	ＬＥＤ		01
	VA078900	Jumper Wire	0.55	ジャンパー線		
	--	Connector Assembly	DM-PN2	ＤＭ－ＰＮ２束線	(VT44530)	
D1	VB941200	Diode	1SS133,1SS176	ダイオード		01
D1	VD631600	Diode	1SS133,176,HSS104	ダイオード		01
R1	HF455100	Carbon Resistor	100.0 1/4 J	カーボン抵抗		01
R1	HF755100	Carbon Resistor	100.0 1/4 J	カーボン抵抗		01
R2	HF457100	Carbon Resistor	10.0K 1/4 J	カーボン抵抗		01
R2	HF757100	Carbon Resistor	10.0K 1/4 J	カーボン抵抗		01
	XQ764A00	Speaker	12.0cm 4ohm 8W	スピーカー	2pcs	05
	VT488200	LCD	EDMCR11A00	液晶ディスプレイ		14
	VT912200	Back-lit board Assembly		導光板Ａｓｓ'ｙ		06

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