YAMAHA PIANO

SILENT SB SERIES

SERVICE MANUAL

•U1-Silent

- **U1-Silent (MPU1)**
- **U3-Silent**
- **M112-Silent**

■ **CONTENTS**

PP 008599

YAMAHA

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 or 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 bus in the unit (heavy gauge black wires connect to this bus).

IMPORTANT: Turn the unit OFF during disassembly and part 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 WHATSOEVER!

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.

■ **WARNING**

Components having special characteristics are marked ⚠ and must be replaced with parts having specification equal to those originally installed.

■ SPECIFICATIONS

Piano silencing mechanism:
Hammer shank stopper operated by center pedal

Key sensor system:
Continuous-position optical sensors

Pedal sensor system:
Sustain pedal: continuous (allows half-pedaling)
Soft pedal: on / off

Digital piano tone generator:
Type: Digital stereo sampling, sustain pedal resonance effects
Voice: Yamaha CFIIIS concert grand piano
Memory: 16 MB wave memory
Polyphony: 32-note stereo sampling (64-note stereo switchable)

Reverb types:
Room, Hall 1, Hall 2 (all with continuous depth control)

Volume control:
Continuous

Demo Song:
50

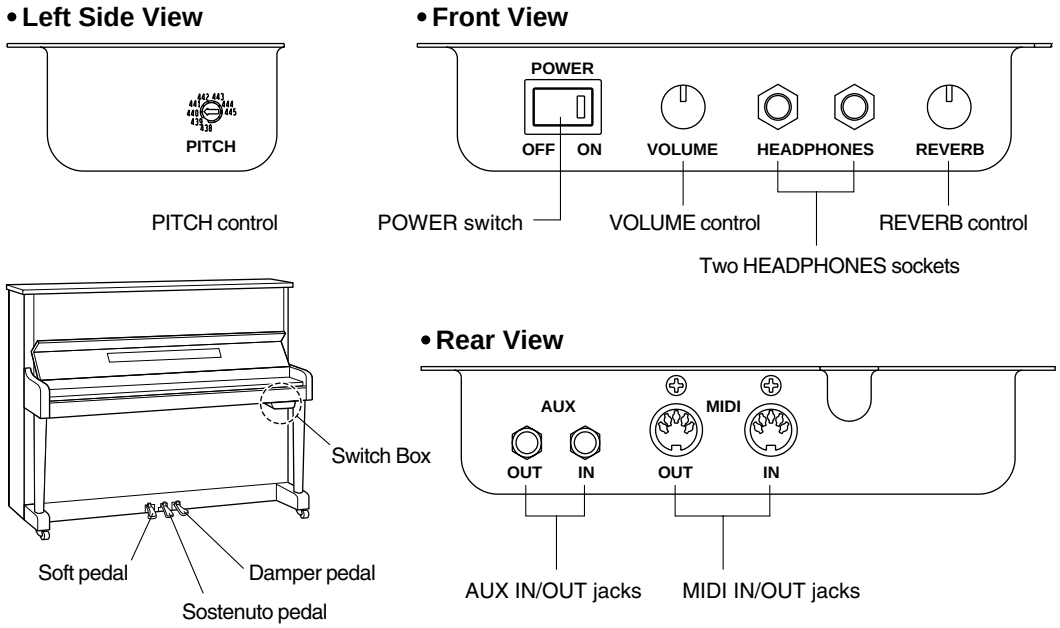
Pitch:
438—445 in 1-hertz steps,fine tuning in
1.2-cent steps

Power supply:
PA-300 AC adaptor
DC15-16V

Terminals:
Headphones × 2, MIDI IN / OUT, AUX IN / OUT, DC IN

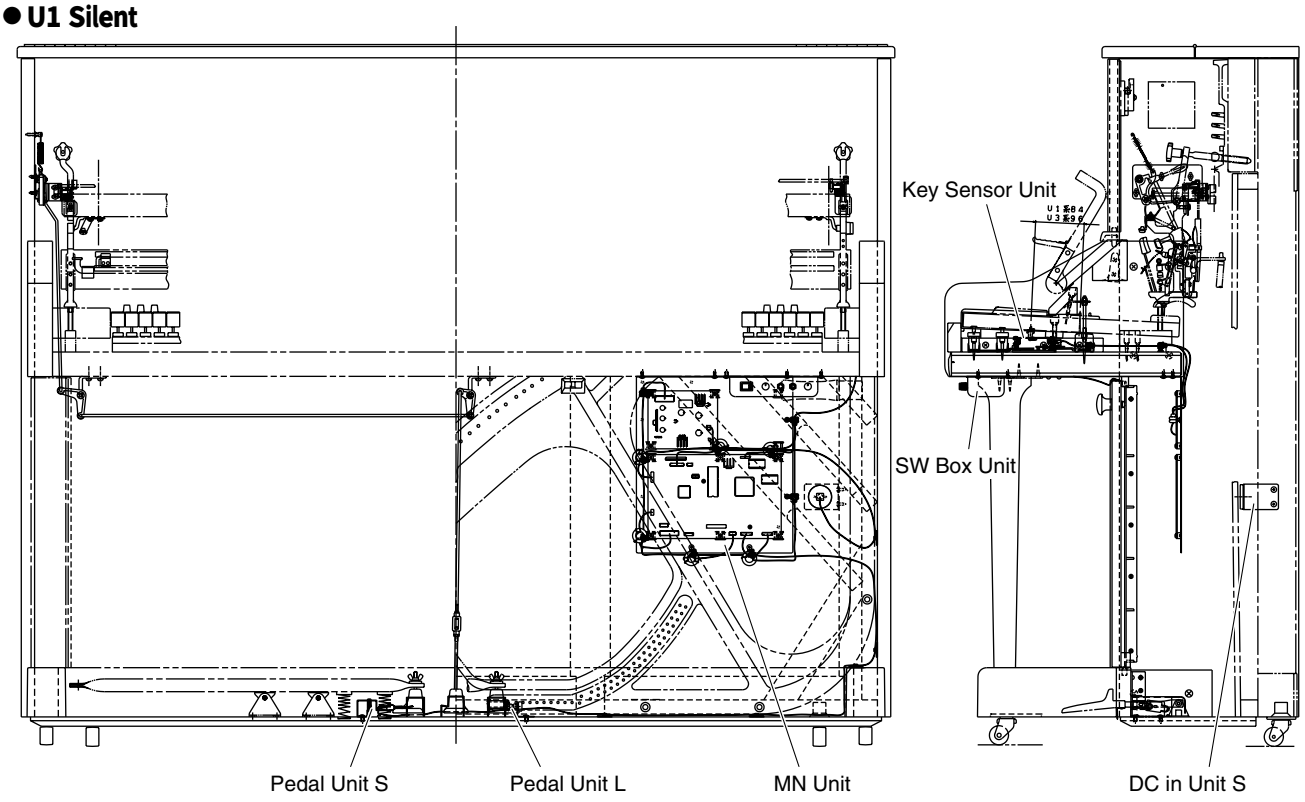
Supplied accessories:
HPE-170 headphones × 1, AC adaptor, “50 greats for the Piano” score book

■ SWITCH BOX & PEDAL

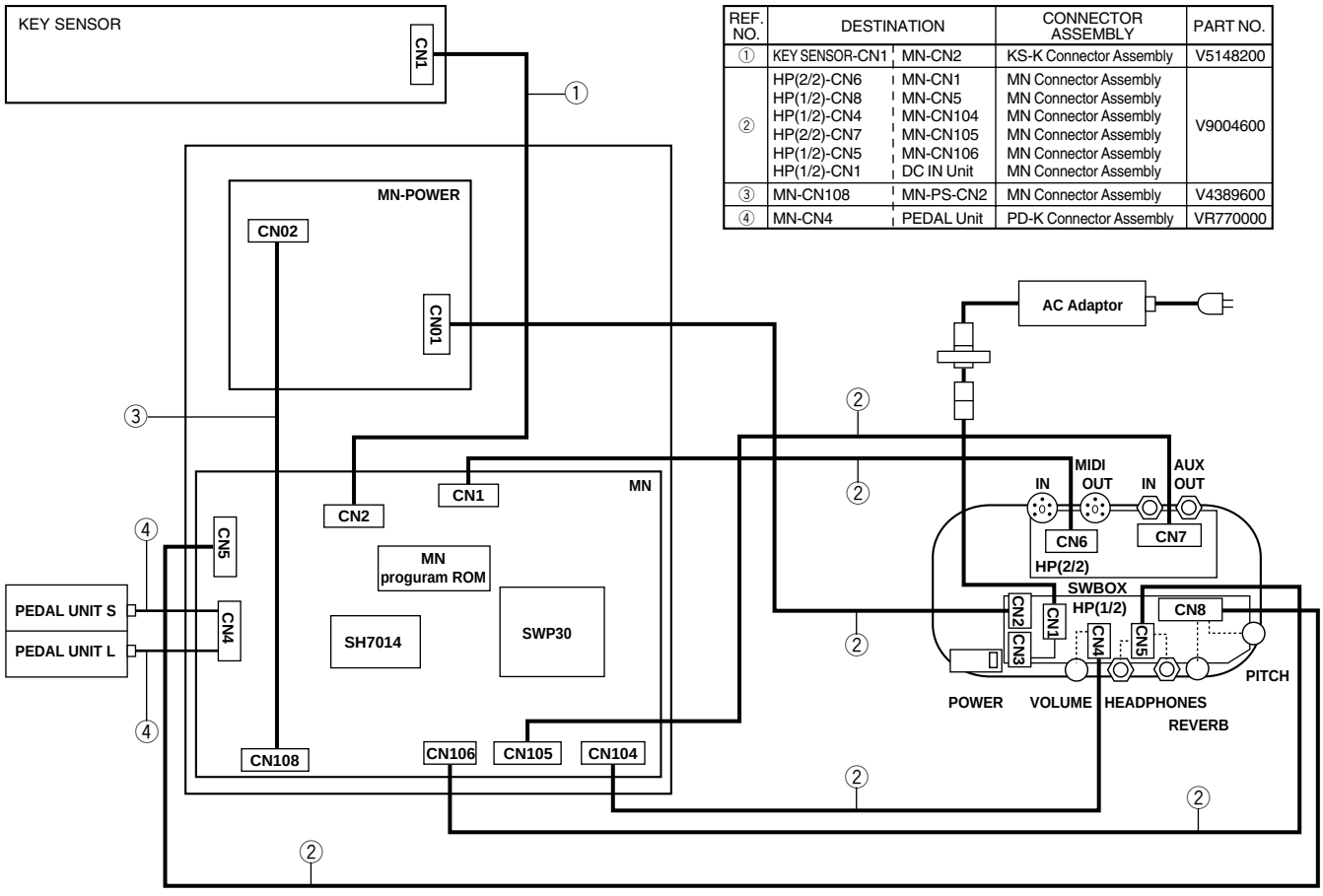


■ CIRCUIT BOARD LAYOUT

● U1 Silent



■ WIRING



REF. NO.	DESTINATION		CONNECTOR ASSEMBLY	PART NO.
①	KEY SENSOR-CN1	MN-CN2	KS-K Connector Assembly	V5148200
②	HP(2/2)-CN6	MN-CN1	MN Connector Assembly	V9004600
	HP(1/2)-CN8	MN-CN5	MN Connector Assembly	
	HP(1/2)-CN4	MN-CN104	MN Connector Assembly	
	HP(2/2)-CN7	MN-CN105	MN Connector Assembly	
	HP(1/2)-CN5	MN-CN106	MN Connector Assembly	
	HP(1/2)-CN1	DC IN Unit	MN Connector Assembly	
③	MN-CN108	MN-PS-CN2	MN Connector Assembly	V4389600
④	MN-CN4	PEDAL Unit	PD-K Connector Assembly	VR770000

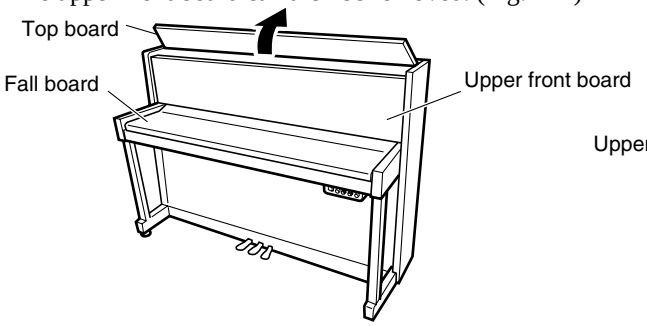
■ DISASSEMBLY PROCEDURE

A: Case & Keyboard

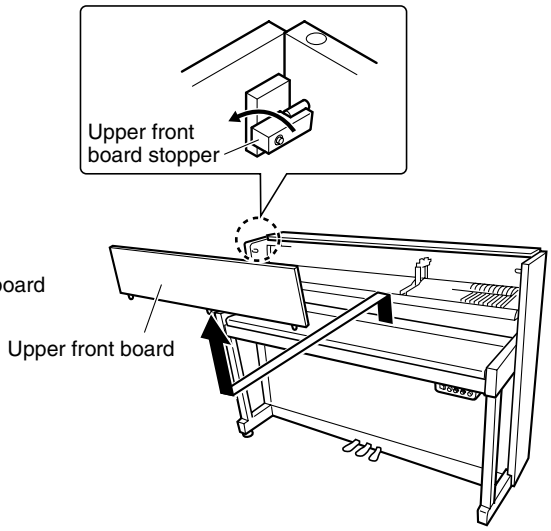
1. Upper Front Board
(time required: about 3 minutes)

1-1 Open the top board. (Fig. A-1)

1-2 Next turn the left and right upper front board stopper. The upper front board can then be removed. (Fig. A-2)



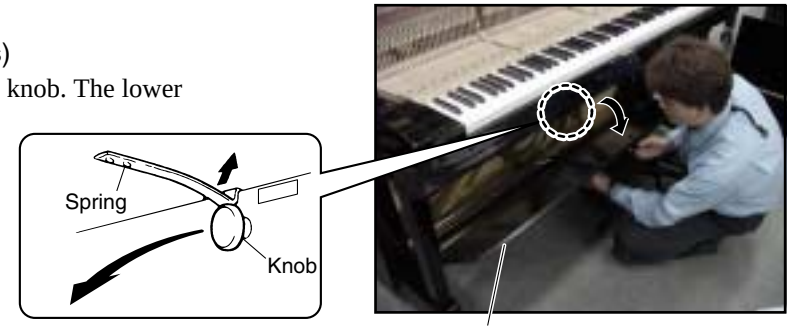
(Fig. A-1)



(Fig. A-2)

2. Lower Front Board
(time required: about 1 minutes)

2-1 While pressing the spring, pull the knob. The lower front board can then be removed. (Fig. A-3)



(Fig. A-3)

3. Key Stop & Keybard.
(time required: about 25 minutes)

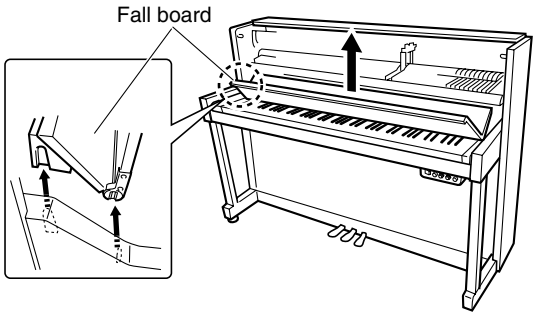
3-1 Remove the upper front board. (See Procedure A-1)

3-2 Open the fall board upright; then remove it upward.

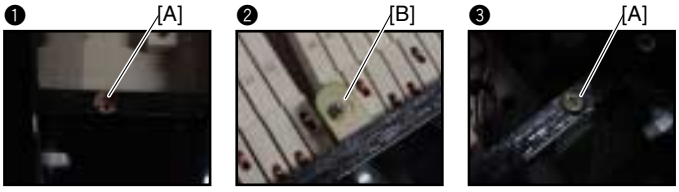
3-3 Remove the tow (2) screws marked [A] and the hexagonal nut marked [B]. The key stop rail can then be removed. (Fig. A-5)

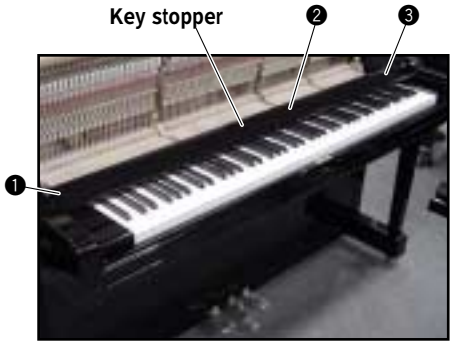
3-4 Remove all keys. (Fig. A-6)

* When removing the keyboard, take car not to damage the key shutter attached to the keyboard. Also take care not to dame the key shutter when putting down the removed keyboard. (Fig. A-7)



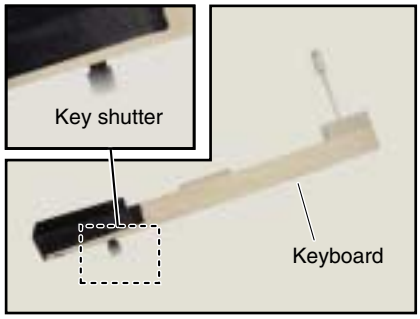
(Fig. A-4)





(Fig. A-5)

(Fig. A-6)



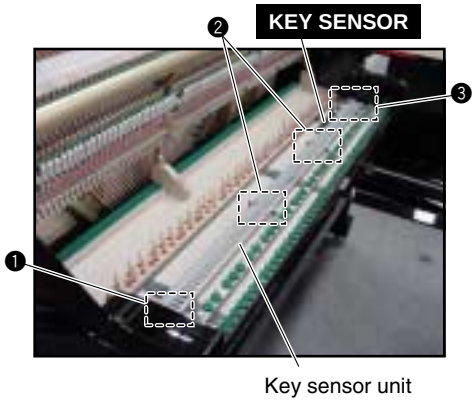
(Fig. A-7)

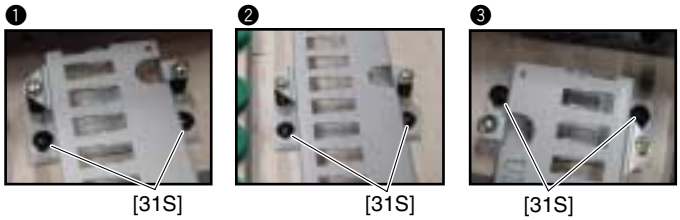
B: Electrical Parts

1. Key Sensor Unit

(time required: about 27 minutes)

1-1 Remove the upper front board. (See Procedure A-1)
1-2 Remove the fall board. (See Procedure A-3)
1-3 Remove the key stop rail. (See Procedure A-3)
1-4 Remove all keys. (See Procedure A-3)
1-5 Remove the eight (8) screws marked [31S]. the key sensor unit can then be removed. (Fig. B-1)





[31S]: Truss Head Tapping Screw-1 4.0X20 MFZN2BL (03747290)

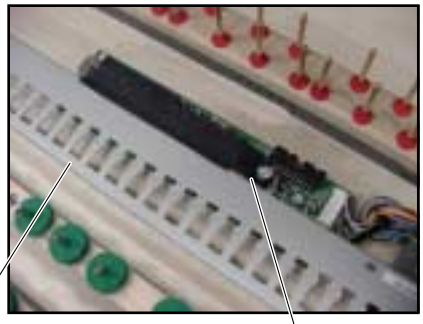
(Fig. B-1)

2. KEY SENSOR Circuit Board

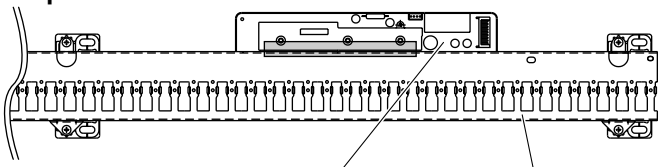
(time required: about 28 minutes)

2-1 Remove the upper front board. (See Procedure A-1)
2-2 Remove the key board cover. (See Procedure A-3)
2-3 Remove the key stop rail. (See Procedure A-3)
2-4 Remove all keys. (See Procedure A-3)
2-5 Remove the key sensor unit. (See Procedure B-1)
2-6 Remove the two (2) screws marked [51G]. the KEY SENSOR circuit board can then be removed. (Fig. B-2)

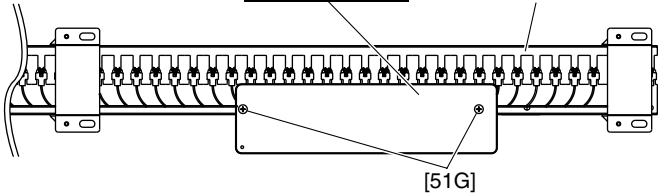
• Top View



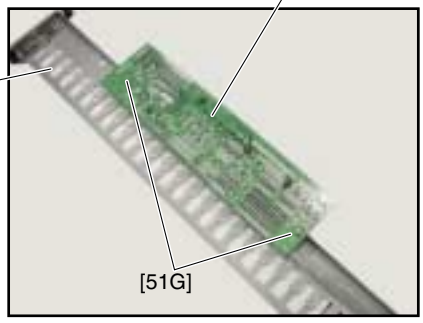
• Top View



• Rear View



• Rear View



[51G]: Bind Head Tapping Screw-S 3.0X4 MFZN2Y (VP357200)

(Fig. B-2)

3. MN Unit
(time required: about 2 minutes)

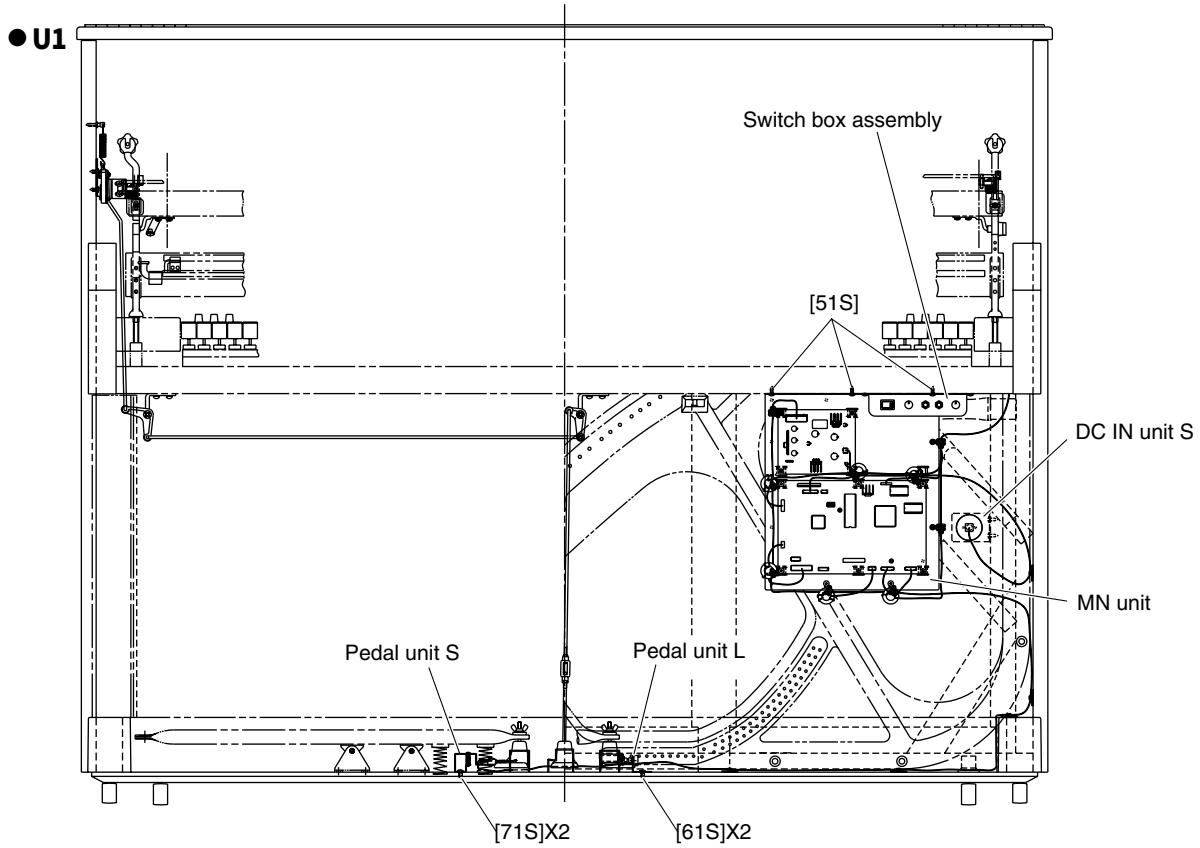
3-1 Remove the lower front board. (See Procedure A-2)

3-2 Loosen the three (3) screws marked [51S]. the MN unit can then be removed. (Fig. B-3)

4. MN Circuit Board
(time required: about 28 minutes)

4-1 Remove the lower front board. (See Procedure A-2)

4-2 Remove the six (6) screws marked [21G]. The MN circuit board can then be removed. (Fig. B-4)

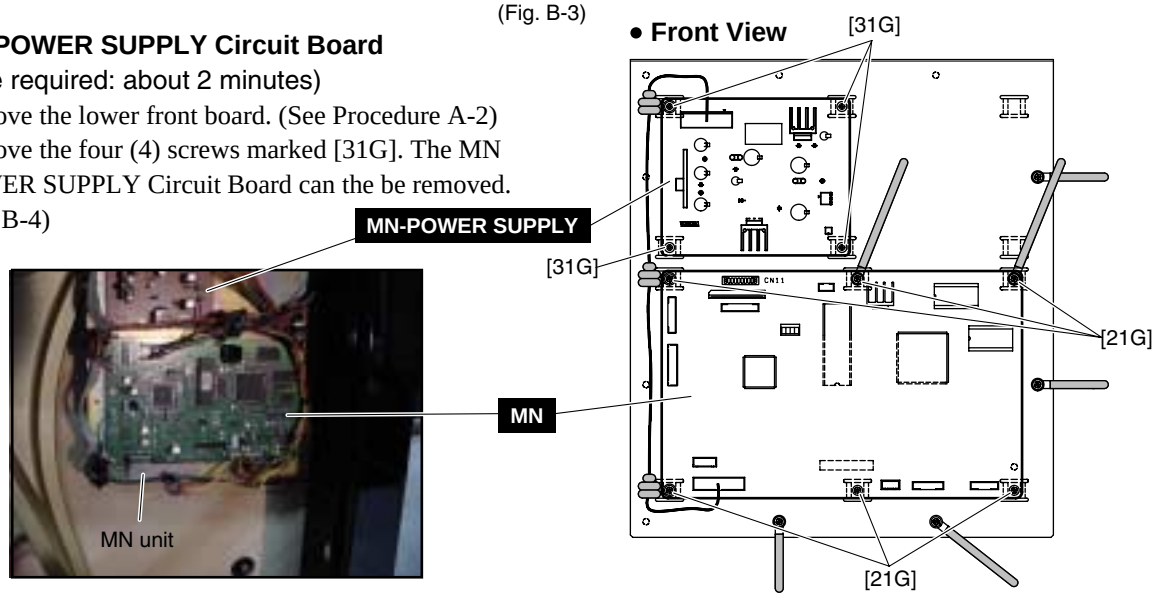


[21G]: Bind Head Tapping Screw-S 3.0X6 MFZN2Y (EP600410)
[51S]: Truss Head Tapping Screw-1 4.0X16 MFZN2Y (03747340)
[61S]: Truss Head Tapping Screw-1 4.0X16 MFZN2Y (03747340)
[71S]: Truss Head Tapping Screw-1 4.0X16 MFZN2Y (03747340)
(Fig. B-3)

5. MN POWER SUPPLY Circuit Board
(time required: about 2 minutes)

5-1 Remove the lower front board. (See Procedure A-2)

5-2 Remove the four (4) screws marked [31G]. The MN POWER SUPPLY Circuit Board can the be removed. (Fig. B-4)

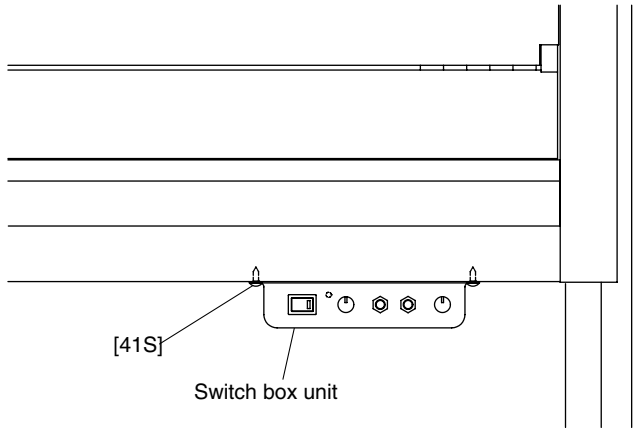


[31G]: Bind Head Tapping Screw-S 3.0X6 MFZN2Y (EP600410)
(Fig. B-4)

6. Switch Boax Unit

(time required: about 1 minutes)

6-1 Loosen the four (4) screws marked [41S]. The switch box unit can then be removed. (Fig. B-5)



[41S]: Truss Head Tapping Screw-1 4.0X12 MFZN2BL (03747270)
(Fig. B-5)

7. HP(1/2) Circuit Board

(time required: about 3 minutes)

7-1 Remove the switch box unit. (See Procedure B-6.)

7-2 Remove the VOLUME knob and REVERB knob. (Fig. B-6)

7-3 Remove the two (2) hexagonal nuts marked [C]. The HP(1/2) circuit board can then be removed. (Fig. B-6)

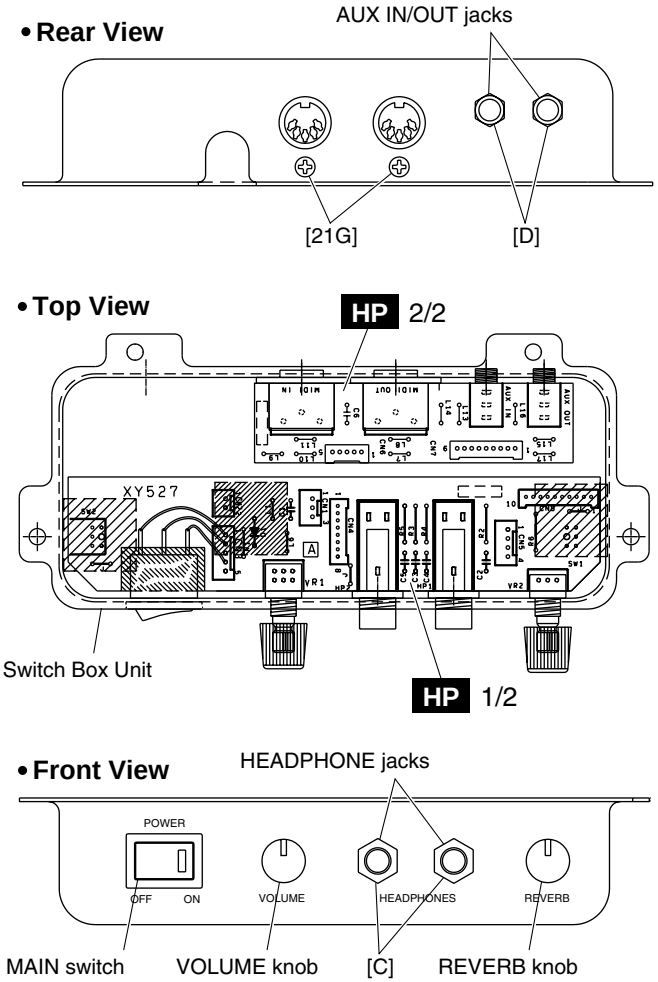
8. HP(2/2) Circuit Board

(time required: about 3 minutes)

8-1 Remove the switch box unit. (See Procedure B-6.)

8-2 Remove the two (2) screws marked [21G]. (Fig. B-6)

8-3 Remove the two (2) hexagonal nuts marked [D]. The HP(2/2) Circuit Board can the be removed. (Fig. B-4)

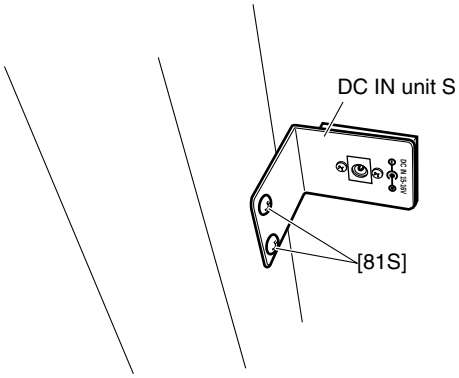


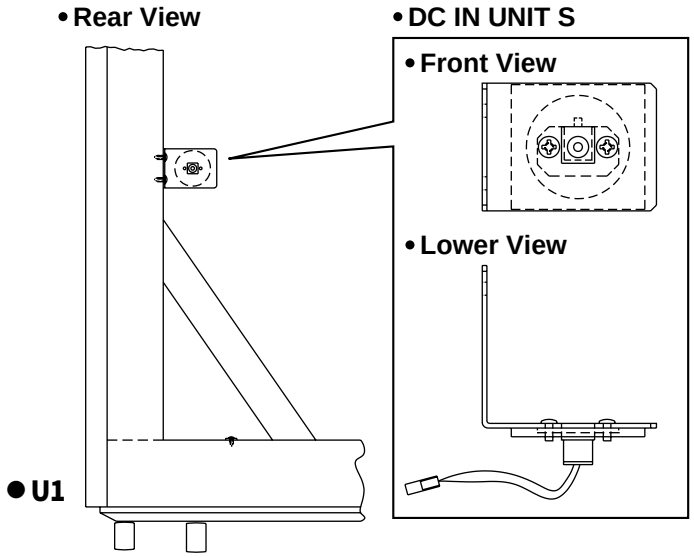
[21G]: Bind Head Tapping Screw-P 3.0X12 MFZN2BL (VC161100)
(Fig. B-6)

9. DC IN Unit

(time required: about 1 minutes)

9-1 Remove the two (2) screws marked [81S]. The DC IN unit S can then be removed. (Fig. B-7)





[81S]: Truss Head Tapping Screw-1 4.0X12 MFZN2BL (03747270)

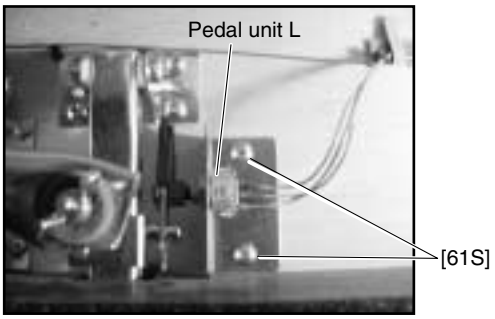
(Fig. B-7)

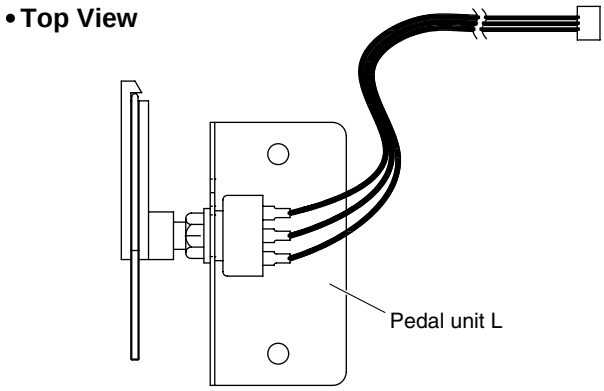
10. Pedal Unit L

(time required: about 1 minutes)

10-1 Remove the lower front board. (See Procedure A-2)

10-2 Remove the two (2) screws marked [61S]. The pedal unit L can the be removed. (Fig. B-3, 8)





[61S]: Truss Head Tapping Screw-1 4.0X16 MFZN2Y (03747340)

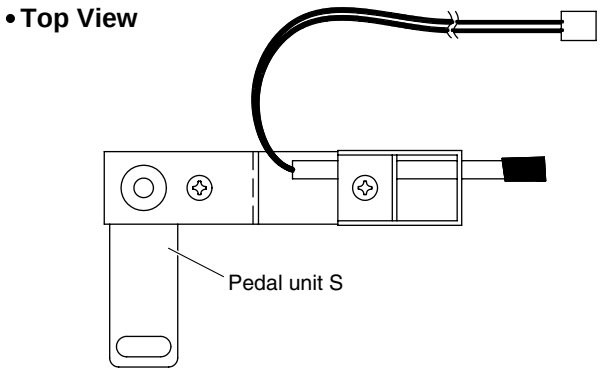
(Fig. B-8)

11. Pedal Unit S

(time required: about 1 minutes)

11-1 Remove the lower front board. (See Procedure A-2)

11-2 Remove the two (2) screws marked [71S]. The pedal unit S can the be removed. (Fig. B-3, 9)



(Fig. B-9)

■ LSI PIN DISCRIPTION

CONTENTS

• **HD64F2128F16** (X2690A00) **CPU (FLASH)** KEY SENSOR: CPU1

PIN No.	NAME	I/O	FUNCTION	PIN No.	NAME	I/O	FUNCTION
1	P50/TxD0	I/O	Port5 / Transmission data	33	P26/RxD1	I/O	Port2 / Reception data
2	P51/RxD0	I/O	Port5 / Reception data	34	P25/TxD1	I/O	Port2 / Transmission data
3	P52/SCL0	I/O	Port5 / Serial clock	35	P24/SCL1	I/O	Port2 / Serial clock
4	/RES	I	Reset	36	P23/SDA1	I/O	Port2 / Serial data
5	NMI	I	Non-maskable interrupt	37	P22	I/O	Port2
6	Vcc		Power supply +5V	38	P21	I/O	
7	/STBY	I	Stand-by mode signal	39	P20	I/O	
8	Vcc		Ground	40	Vss		Ground
9	XTAL	I	Crystal oscillator	41	P17	I/O	Port1
10	EXTAL	I		42	P16	I/O	
11	MD1	I	Mode select	43	P15	I/O	
12	MD0	I		44	P14	I/O	
13	AVss		Analog ground	45	P13	I/O	
14	P70/AN0	I	Port7 / Analog input	46	P12	I/O	
15	P71/AN1	I		47	P11	I/O	
16	P72/AN2	I		48	P10	I/O	
17	P73/AN3	I		49	P30	I/O	Port3
18	P74/AN4	I		50	P31	I/O	
19	P75/AN5	I		51	P32	I/O	
20	P76/AN6	I		52	P33	I/O	
21	P77/AN7	I		53	P34	I/O	
22	AVcc		Analog power supply +5V	54	P35	I/O	
23	P60	I/O	Port6	55	P36	I/O	
24	P61	I/O		56	P37	I/O	
25	P62	I/O		57	P40/IRQ2	I/O	Port4 / Interrupt request
26	P63	I/O		58	P41/IRQ1	I/O	
27	P64	I/O		59	P42/IRQ0	I/O	
28	P65	I/O		60	P43	I/O	Port4
29	P66	I/O		61	P44	I/O	
30	P67	I/O		62	P45	I/O	
31	Vcc		Power supply +5V	63	P46	I/O	
32	P27/SCK1	I/O	Port2 / Serial clock	64	P47/SDA0	I/O	Port4 / Serial data

● **HD6417014F28** (XU147A00) **CPU** MN: IC002

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	PE14	O	Port E	57	D11	I/O	Data bus
2	PE15	O	Port E	58	D10	I/O	
3	VSS	I	Ground	59	D9	I/O	
4	A0	O	Address bus	60	D8	I/O	
5	A1	O		61	VSS	I	Ground
6	A2	O		62	D7	I/O	Data bus
7	A3	O		63	D6	I/O	
8	A4	O		64	D5	I/O	
9	A5	O		65	VCC	I	Power supply
10	A6	O		66	D4	I/O	Data bus
11	A7	O		67	D3	I/O	
12	A8	O		68	D2	I/O	
13	A9	O		69	D1	I/O	
14	A10	O		70	D0	I/O	
15	A11	O		71	VSS	I	Ground
16	A12	O		72	XTAL	I	CLK
17	A13	O		73	MD3	I	Mode control
18	A14	O		74	EXTAL	I	CLK
19	A15	O		75	MD2	I	Mode control
20	A16	O		76	NMI	I	Non-maskable interrupt request
21	VCC	I	Power supply	77	VCC	I	Power supply
22	PB1/A17	O	Address bus	78	MD1	I	Mode control
23	VSS	I	Ground	79	MD0	I	Mode control
24	/RAS	O	Bus control	80	PLLVCC	I	CLK
25	/CASL	O		81	PLLCAP	I	
26	/CASH	O		82	PLLVSS	I	
27	VSS	O	Ground	83	PA15/CK	O	Port A
28	RDWR	O		84	/RES	I	Reset
29	A18	O	Port A	85	PE0	I	Port E
30	A19	O		86	PE1	I	
31	A20	O		87	PE2	I	
32	PB9	O	Port B	88	PE3	I	
33	VSS	I	Ground	89	PE4	I	
34	/RD	O	Bus control	90	VSS	I	Ground
35	/WDTOVF	O	NC	91	AN0	I	A/D
36	/WRH	O	NC	92	AN1	I	
37	VCC	I	Power supply	93	AN2	I	
38	/WRL	O	Bus control	94	AN3	I	
39	VSS	I	Ground	95	AN4	I	
40	/CS1	O	Bus control	96	AN5	I	
41	/CS0	O	Bus control	97	AVSS	I	Analog ground
42	PA9	O	Port A	98	AN6	I	A/D
43	PA8	I	Port A	99	AN7	I	A/D
44	/CS3	O	Bus control	100	AVCC	I	Power supply
45	/CS2	O	Bus control	101	VSS	I	Ground
46	PA5	O	Port A	102	PE5	O	Port E
47	PA4	O		103	VCC	I	Power supply
48	PA3	O		104	PE6	O	Port E
49	/IRQ0	I	Interrupt	105	PE7	O	
50	TXD0	O	SCI	106	PE8	O	
51	RXD0	I	SCI	107	PE9	O	
52	D15	I/O	Data bus	108	PE10	O	
53	D14	I/O		109	VSS	I	Ground
54	D13	I/O		110	PE11	O	Port E
55	VSS	I	Ground	111	PE12	O	
56	D12	I/O	Data bus	112	PE13	O	

- **TC203C760HF-001** (XR738A00)

SWP30 (AWM Tone Generator coped with MEG) Standard Wave Processor MN: IC007

PIN No.	NAME	I/O	FUNCTION	PIN No.	NAME	I/O	FUNCTION
1	Vss		(Ground)	121	VSS		(Ground)
2	CA0	I		122	HMD0	I/O	
3	CA1	I		123	HMD1	I/O	
4	CA2	I		124	HMD2	I/O	
5	CA3	I		125	HMD3	I/O	
6	CA4	I		126	HMD4	I/O	
7	CA5	I	Address bus of internal register	127	HMD5	I/O	
8	CA6	I		128	HMD6	I/O	Wave memory data bus (Upper data memory)
9	CA7	I		129	HMD7	I/O	
10	CA8	I		130	HMD8	I/O	
11	CA9	I		131	HMD9	I/O	
12	CA10	I		132	HMD10	I/O	
13	CA11	I		133	HMD11	I/O	
14	VSS		(Ground)	134	HMD12	I/O	
15	CD0	I/O		135	HMD13	I/O	
16	CD1	I/O		136	HMD14	I/O	
17	CD2	I/O		137	HMD15	I/O	
18	CD3	I/O		138	VSS		(Ground)
19	CD4	I/O		139	HMA0	O	
20	CD5	I/O		140	HMA1	O	
21	CD6	I/O		141	HMA2	O	
22	CD7	I/O		142	HMA3	O	
23	CD8	I/O	Data bus of internal register	143	HMA4	O	
24	CD9	I/O		144	HMA5	O	
25	CD10	I/O		145	HMA6	O	
26	CD11	I/O		146	HMA7	O	
27	CD12	I/O		147	HMA8	O	
28	CD13	I/O		148	HMA9	O	
29	CD14	I/O		149	HMA10	O	
30	VDD		(Power supply)	150	VSS		(Ground)
31	VSS		(Ground)	151	VDD		(Power supply)
32	CD15	I/O		152	HMA11	O	
33	/CS	I	Chip select	153	HMA12	O	Wave memory address bus (Upper 16 bits)
34	/WR	I	Write strobe	154	HMA13	O	
35	/RD	I	Read strobe	155	HMA14	O	
36	VDDS		(Power supply)	156	HMA15	O	
37	SYSH0	O		157	HMA16	O	
38	SYSH1	O		158	HMA17	O	
39	SYSH2	O		159	HMA18	O	
40	SYSH3	O	NSYS/LNSYS upper 16 bits	160	HMA19	O	
41	SYSH4	O		161	HMA20	O	
42	SYSH5	O		162	HMA21	O	
43	SYSH6	O		163	HMA22	O	
44	SYSH7	O		164	HMA23	O	
45	KONO0	O		165	HMA24	O	
46	KONO1	O	Key on data	166	VSS		(Ground)
47	KONO2	O		167	/MRAS	O	RAS when DRAM(s) is connected to wave memory
48	KONO3	O		168	/MCAS	O	CAS when DRAM(s) is connected to wave memory
49	VSS		(Ground)	169	/MOE	O	Wave memory output enable
50	SYSL0	I/O		170	/MWE	O	Wave memory write enable
51	SYSL1	I/O		171	VSS		(Ground)
52	SYSL2	I/O		172	LMD0	I/O	
53	SYSL3	I/O	NSYS input/LNSYS output lower 8 bits	173	LMD1	I/O	
54	SYSL4	I/O		174	LMD2	I/O	
55	SYSL5	I/O		175	LMD3	I/O	
56	SYSL6	I/O		176	LMD4	I/O	
57	SYSL7	I/O		177	LMD5	I/O	
58	KONI0	I		178	LMD6	I/O	
59	KONI1	I	Key on data	179	LMD7	I/O	Wave memory data bus (Lower data memory)
60	VDDS	I	(Power supply)	180	VDDS		(Power supply)
61	VSS		(Ground)	181	VSS		(Ground)
62	KONI2	I		182	LMD8	I/O	
63	KONI3	I		183	LMD9	I/O	
64	DAC0	O	DAC output	184	LMD10	I/O	
65	DAC1	O		185	LMD11	I/O	
66	WCLK	O	DAC0/DAC1 word clock	186	LMD12	I/O	
67	MELO0	O		187	LMD13	I/O	
68	MELO1	O		188	LMD14	I/O	
69	MELO2	O		189	LMD15	I/O	
70	MELO3	O	MEL wave data output	190	VSS		(Ground)
71	MELO4	O		191	LMA0	O	
72	MELO5	O		192	LMA1	O	
73	MELO6	O		193	LMA2	O	
74	MELO7	O		194	LMA3	O	
75	VDDS		(Power supply)	195	LMA4	O	
76	ADLR	O	ADC word clock	196	LMA5	O	
77	MELI0	I		197	LMA6	O	
78	MELI1	I		198	LMA7	O	
79	MELI2	I		199	LMA8	O	
80	MELI3	I	MEL wave data input	200	LMA9	O	
81	MELI4	I		201	LMA10	O	
82	MELI5	I		202	LMA11	O	
83	MELI6	I		203	VSS		(Ground)
84	MELI7	I		204	LMA12	O	
85	VSS		(Ground)	205	LMA13	O	Wave memory address bus (Lower data memory)
86	/RCAS	O	DRAM column address strobe	206	LMA14	O	
87	RA8	O		207	LMA15	O	
88	RA7	O		208	LMA16	O	
89	RA6	O		209	LMA17	O	
90	VDD		(Power supply)	210	VDD		(Power supply)
91	VSS		(Ground)	211	VSS		(Ground)
92	RA5	O	DRAM address bus	212	LMA18	O	
93	RA4	O		213	LMA19	O	
94	RA3	O		214	LMA20	O	
95	RA2	O		215	LMA21	O	
96	RA1	O		216	LMA22	O	
97	RA0	O		217	LMA23	O	
98	/RRAS	O	DRAM row address strobe	218	LMA24	O	
99	/RWE	O	DARM write enable	219	VSS		(Ground)
100	VSS		(Ground)	220	SYO	O	Sync. signal for master clock
101	RD7	I/O		221	SYOD	O	Sync. signal for HCLK/QCLK
102	RD6	I/O		222	QCLK	O	1/12 master clock (64Fs)
103	RD5	I/O		223	HCLK	O	1/6 master clock (128Fs)
104	RD4	I/O		224	CK256	O	1/3 master clock (256Fs)
105	RD3	I/O		225	SYSCLK	O	1/2 master clock (384Fs)
106	RD2	I/O		226	VDDS		(Power supply)
107	RD1	I/O		227	SYI	I	Sync. clock
108	RD0	I/O		228	MCLKI	I	Master clock input
109	VSS		(Ground)	229	MCLKO	O	Master clock output
110	RD17	I/O		230	VDD		(Power supply)
111	RD16	I/O	DRAM data bus	231	XIN	I	Crystal osc. input
112	RD15	I/O		232	XOUT	O	Crystal osc. output
113	RD14	I/O		233	VSS		(Ground)
114	RD13	I/O		234	/IC	I	Initial clear
115	RD12	I/O		235	CHIP2	I	2 chips mode enable
116	RD11	I/O		236	SLAVE	I	Master/Slave select when 2 chips mode
117	RD10	I/O		237	/TESTO	I	
118	RD9	I/O		238	/ACI	I	Test pin
119	RD8	I/O		239	DCTEST	I	
120	VDDS		(Power supply)	240	VDDS		(Power supply)

- **TC203C760HF-002** (XS725A00)

SWP30B (AWM Tone Generator coped with MEG) **Standard Wave Processor** MN: IC007

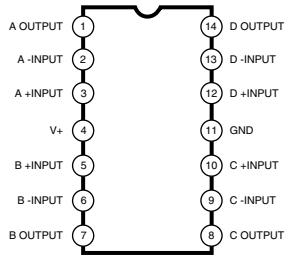
PIN No.	NAME	I/O	FUNCTION
1	Vss		(Ground)
2	CA0	I	Address bus of internal register
3	CA1	I	
4	CA2	I	
5	CA3	I	
6	CA4	I	
7	CA5	I	
8	CA6	I	
9	CA7	I	
10	CA8	I	
11	CA9	I	
12	CA10	I	
13	CA11	I	
14	VSS		(Ground)
15	CD0	I/O	Data bus of internal register
16	CD1	I/O	
17	CD2	I/O	
18	CD3	I/O	
19	CD4	I/O	
20	CD5	I/O	
21	CD6	I/O	
22	CD7	I/O	
23	CD8	I/O	
24	CD9	I/O	
25	CD10	I/O	
26	CD11	I/O	
27	CD12	I/O	
28	CD13	I/O	
29	CD14	I/O	
30	VDD		(Power supply)
31	VSS		(Ground)
32	CD15	I/O	
33	CSN	I	Chip select
34	WRN	I	Write strobe
35	RDN	I	Read strobe
36	VDD		(Power supply)
37	SYSH0	O	NSYS/LNSYS upper 16 bits output
38	SYSH1	O	
39	SYSH2	O	
40	SYSH3	O	
41	SYSH4	O	
42	SYSH5	O	
43	SYSH6	O	
44	SYSH7	O	
45	KONO0	O	Key on data
46	KONO1	O	
47	KONO2	O	
48	KONO3	O	
49	VSS		(Ground)
50	SYSL0	I/O	NSYS input/LNSYS output lower 8 bits
51	SYSL1	I/O	
52	SYSL2	I/O	
53	SYSL3	I/O	
54	SYSL4	I/O	
55	SYSL5	I/O	
56	SYSL6	I/O	
57	SYSL7	I/O	
58	KONI0	I	Key on data input
59	KONI1	I	
60	VDD	I	(Power supply)
61	VSS		(Ground)
62	KONI2	I	
63	KONI3	I	
64	DAC0	O	DAC output
65	DAC1	O	
66	WCLK	O	DAC0/DAC1 word clock
67	MELO0	O	MEL wave data output
68	MELO1	O	
69	MELO2	O	
70	MELO3	O	
71	MELO4	O	
72	MELO5	O	
73	MELO6	O	
74	MELO7	O	
75	VDD		(Power supply)
76	ADLR	O	ADC word clock
77	MELI0	I	MEL wave data input
78	MELI1	I	
79	MELI2	I	
80	MELI3	I	
81	MELI4	I	
82	MELI5	I	
83	MELI6	I	
84	MELI7	I	
85	VSS		(Ground)
86	RCASN	O	DRAM column address strobe (RAS signal)
87	RA8	O	DRAM address bus
88	RA7	O	
89	RA6	O	
90	VDD		(Power supply)
91	VSS		(Ground)
92	RA5	O	
93	RA4	O	
94	RA3	O	
95	RA2	O	
96	RA1	O	
97	RA0	O	
98	RRASN	O	DRAM row address strobe (RAS signal)
99	RWEN	O	DARM write enable
100	VSS		(Ground)
101	RD7	I/O	DRAM data bus
102	RD6	I/O	
103	RD5	I/O	
104	RD4	I/O	
105	RD3	I/O	
106	RD2	I/O	
107	RD1	I/O	
108	RD0	I/O	
109	VSS		(Ground)
110	RD17	I/O	
111	RD16	I/O	
112	RD15	I/O	
113	RD14	I/O	
114	RD13	I/O	
115	RD12	I/O	
116	RD11	I/O	
117	RD10	I/O	
118	RD9	I/O	
119	RD8	I/O	
120	VDD		(Power supply)
121	VSS		(Ground)
122	HMD0	I/O	Wave memory data bus (Upper 16 bits)
123	HMD1	I/O	
124	HMD2	I/O	
125	HMD3	I/O	
126	HMD4	I/O	
127	HMD5	I/O	
128	HMD6	I/O	
129	HMD7	I/O	
130	HMD8	I/O	
131	HMD9	I/O	
132	HMD10	I/O	
133	HMD11	I/O	
134	HMD12	I/O	
135	HMD13	I/O	
136	HMD14	I/O	
137	HMD15	I/O	
138	VSS		(Ground)
139	HMA0	O	Wave memory address bus
140	HMA1	O	
141	HMA2	O	
142	HMA3	O	
143	HMA4	O	
144	HMA5	O	
145	HMA6	O	
146	HMA7	O	
147	HMA8	O	
148	HMA9	O	
149	HMA10	O	
150	VDD		(Power supply)
151	VSS		(Ground)
152	HMA11	O	
153	HMA12	O	
154	HMA13	O	
155	HMA14	O	
156	HMA15	O	
157	HMA16	O	
158	HMA17	O	
159	HMA18	O	
160	HMA19	O	
161	HMA20	O	
162	HMA21	O	
163	HMA22	O	
164	HMA23	O	
165	HMA24	O	
166	VSS		(Ground)
167	MRASN	O	RAS when DRAM(s) is connected to wave memory
168	MCASN	O	CAS when DRAM(s) is connected to wave memory
169	MOEN	O	Wave memory output enable
170	MWEN	O	Wave memory write enable
171	VSS		(Ground)
172	LMD0	I/O	Wave memory data bus (Lower 16 bits)
173	LMD1	I/O	
174	LMD2	I/O	
175	LMD3	I/O	
176	LMD4	I/O	
177	LMD5	I/O	
178	LMD6	I/O	
179	LMD7	I/O	
180	VDD		(Power supply)
181	VSS		(Ground)
182	LMD8	I/O	
183	LMD9	I/O	
184	LMD10	I/O	
185	LMD11	I/O	
186	LMD12	I/O	
187	LMD13	I/O	
188	LMD14	I/O	
189	LMD15	I/O	
190	VSS		(Ground)
191	LMA0	O	Wave memory address bus (Lower data memory)
192	LMA1	O	
193	LMA2	O	
194	LMA3	O	
195	LMA4	O	
196	LMA5	O	
197	LMA6	O	
198	LMA7	O	
199	LMA8	O	
200	LMA9	O	
201	LMA10	O	
202	LMA11	O	
203	VSS		(Ground)
204	LMA12	O	
205	LMA13	O	
206	LMA14	O	
207	LMA15	O	
208	LMA16	O	
209	LMA17	O	
210	VDD		(Power supply)
211	VSS		(Ground)
212	LMA18	O	
213	LMA19	O	
214	LMA20	O	
215	LMA21	O	
216	LMA22	O	
217	LMA23	O	
218	LMA24	O	
219	VSS		(Ground)
220	SYO	O	Sync. signal for master clock
221	SYOD	O	Sync. signal for HCLK/QCLK
222	QCLK	O	1/12 master clock (64Fs)
223	HCLK	O	1/6 master clock (128Fs)
224	CK256	O	1/3 master clock (256Fs)
225	SYSCLK	O	1/2 master clock (384Fs)
226	VDD		(Power supply)
227	SYI	I	Sync. clock
228	MCLKI	I	Master clock input
229	MCLKO	O	Master clock output
230	VDD		(Power supply)
231	XIN	I	Crystal osc. input
232	XOUT	O	Crystal osc. output
233	VSS		(Ground)
234	ICN	I	Initial clear
235	CHIP2	I	2 chips mode enable
236	SLAVE	I	Master/Slave select when 2 chips mode
237	TESTON	I	Test pin
238	ACIN	I	
239	DCTEST	I	
240	VDD		(Power supply)

• **PCM1702U/2K** (XP551A00) **DAC** (Digital to Analog Converter) MN: IC105, 106

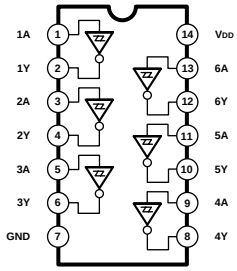
PIN No.	NAME	I/O	FUNCTION	PIN No.	NAME	I/O	FUNCTION
1	DATA	I	Data input	11	+VCC		Power supply (+5 V)
2	CLK	I	Clock	12	BPO		Bipolar de-couple
3	NC			13	NC		
4	+VDD		Power supply (+5 V)	14	IOUT	O	Output current
5	D.GND		Digital ground	15	A.GND		Analog ground
6	-VDD		Power supply (-5 V)	16	A.GND		Analog ground
7	L.E	I	Latch enable	17	SERV		Servo de-couple
8	NC			18	NC		
9	NC			19	REF		Reference de-couple
10	NC			20	-VCC		Power supply (-5 V)

■ IC BLOCK DIAGRAM

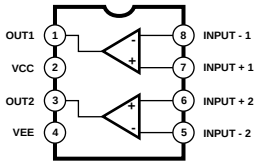
● **HA1630Q04T** (X2869A00)
Quad Operational Amplifier 4C
KEY SENSOR: OP001,002



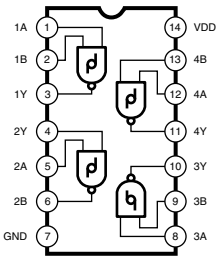
● **MM74HC14SJX** (XW104A00)
Hex INVERTER
KEY SENSOR: IC006



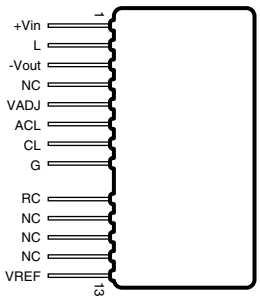
● **LA6517** (XM804A00)
Quad Operational Amplifier
MN: IC112



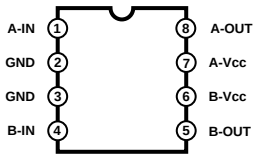
● **SN74HC132NSR** (XW792A00)
Quad 2 Input NAND
MN: IC008



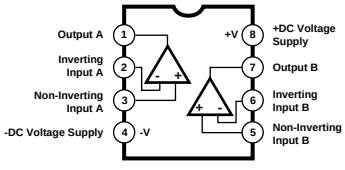
● **HRND12R35** (XT656A00)
DC-DC CONVERTER
MN POWER SUPPLY: IC002



● **MB3763P** (XF880A00)
MOTOR DRIVE
MN: IC116



● **μPC4570G2** (XF291A00)
Quad Operational Amplifier
MN: IC107,108,110,111,114

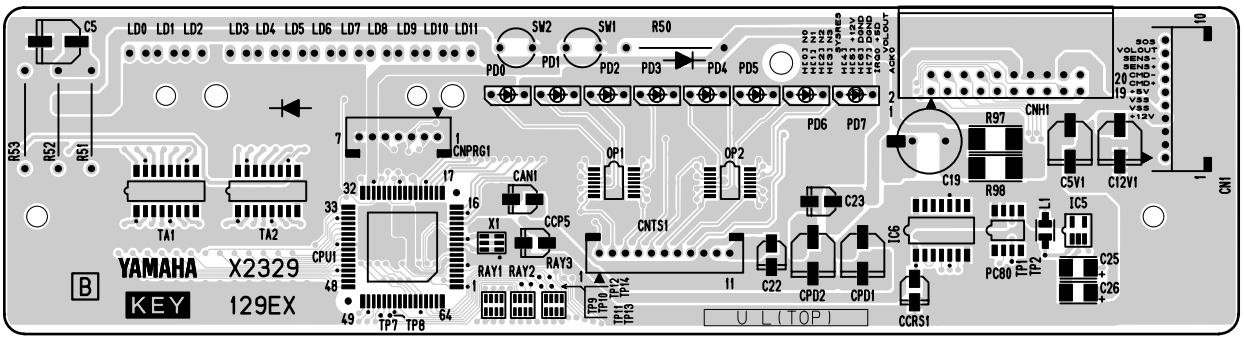


■ CIRCUIT BOARDS

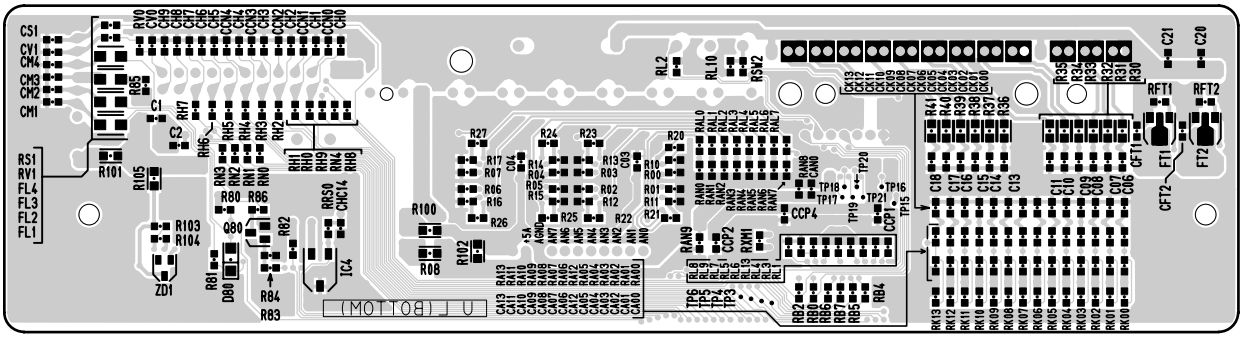
CONTENTS

• KEY SENSOR Circuit Board

WRITE MODE **to MN-CN2**



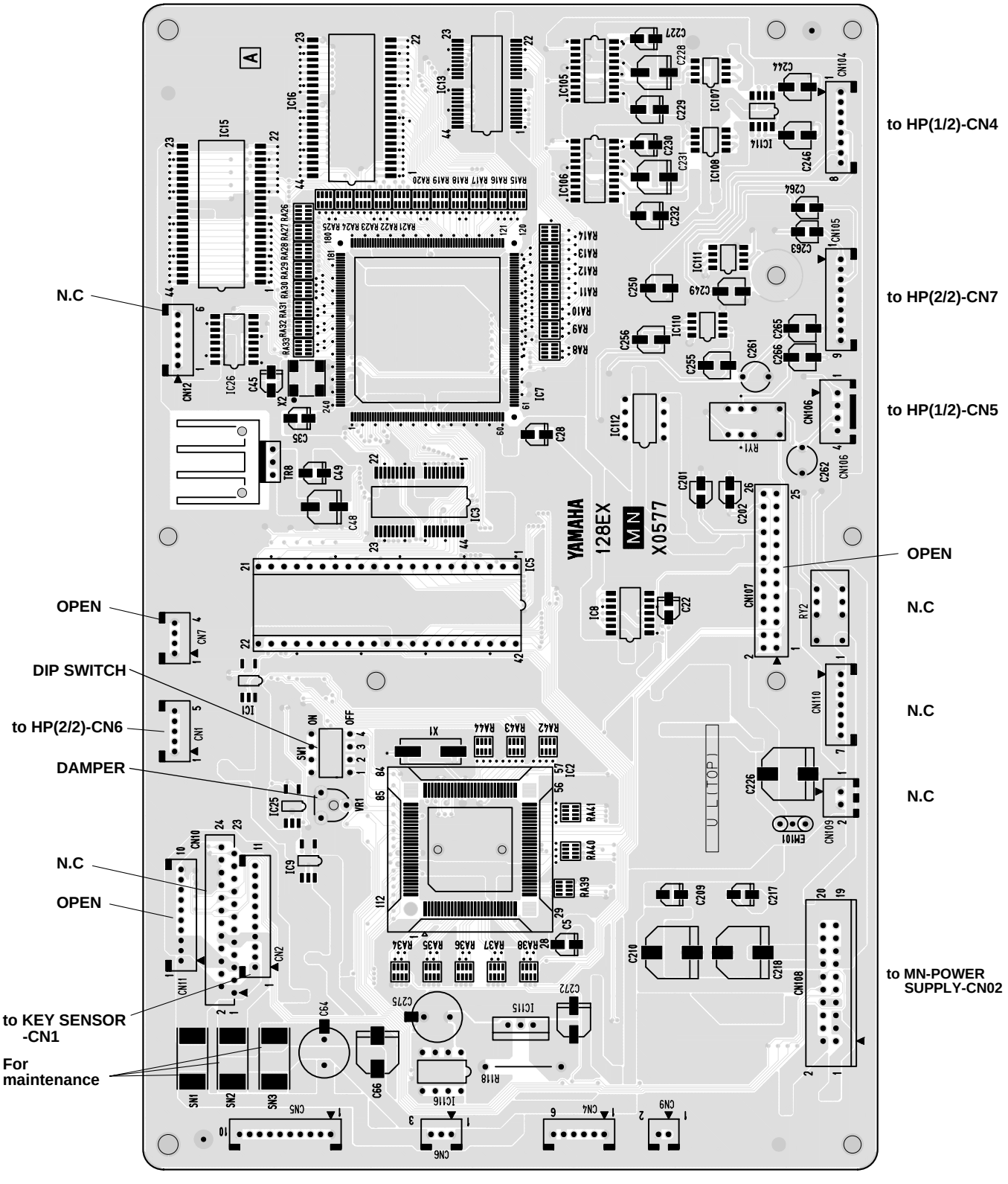
Component side



Pattern side

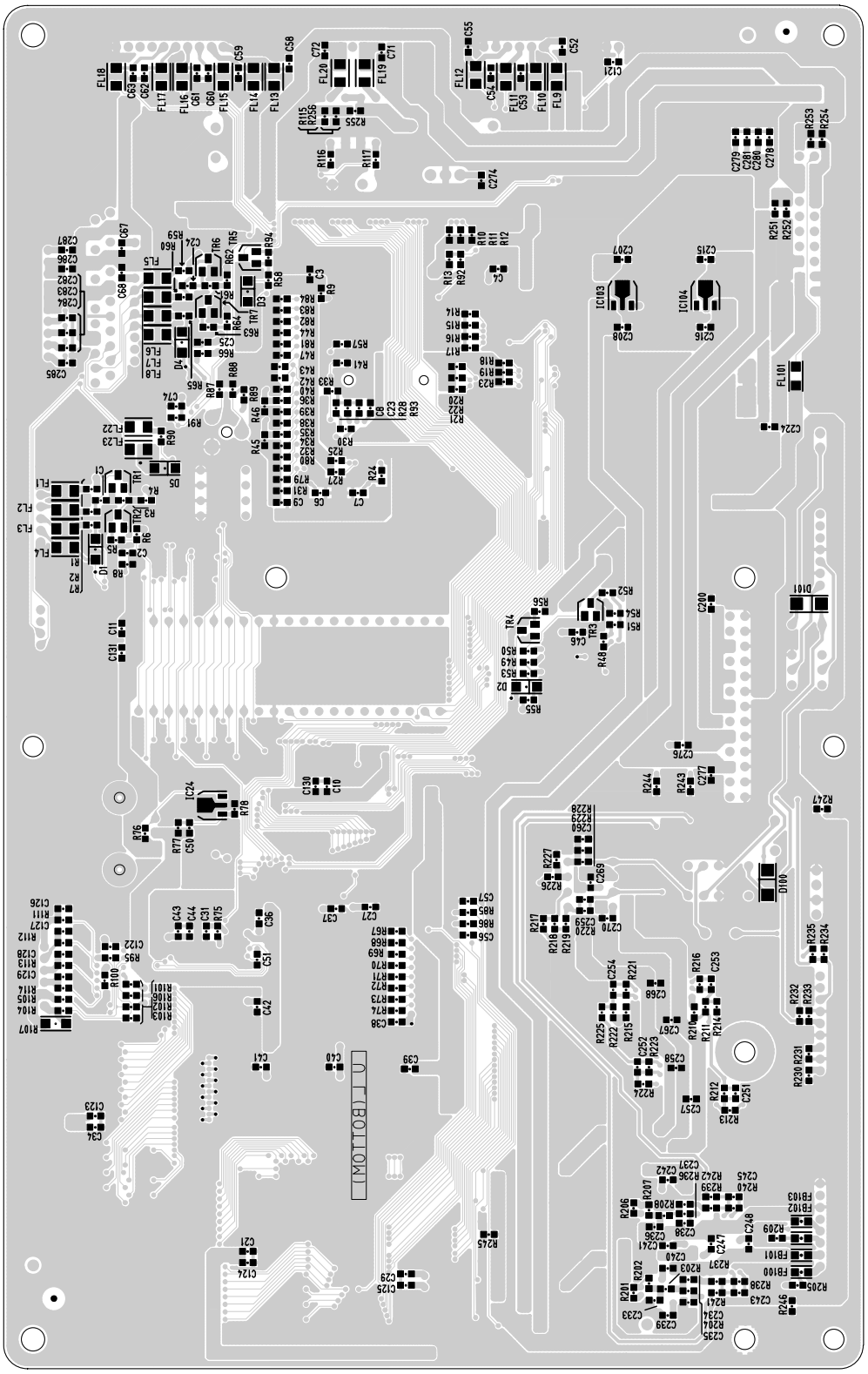
KEY SENSOR: V797810

• MN Circuit Board



MN: V798670

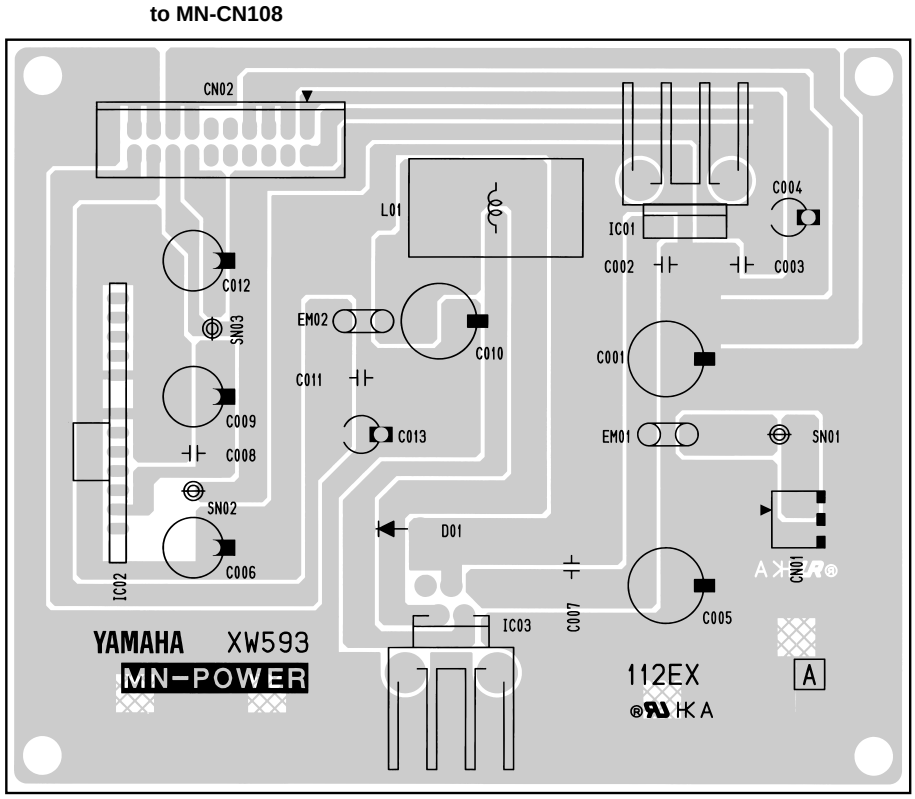
• MN Circuit Board



Pattern side

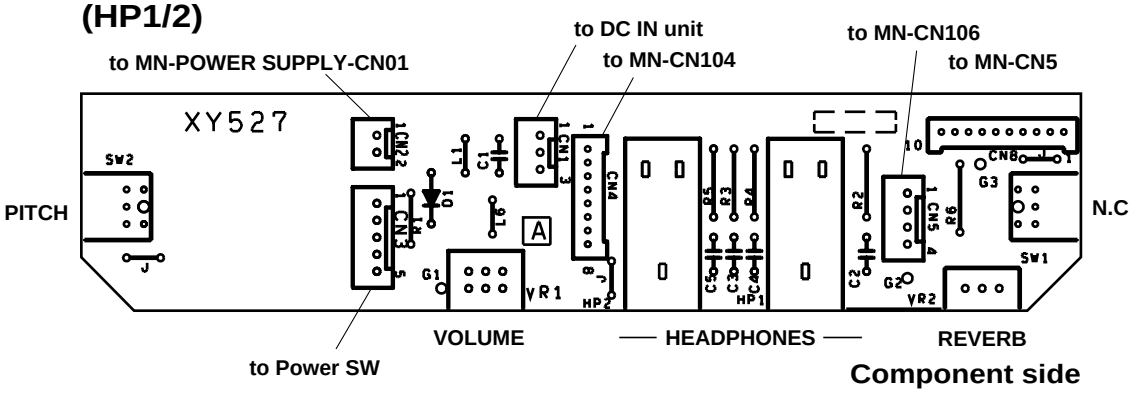
MN : V798670

• MN POWER SUPPLY Circuit Board

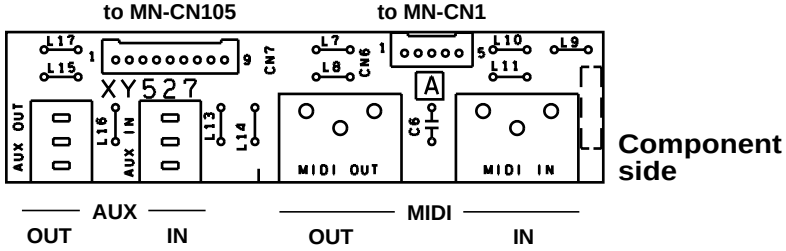


• HP Circuit Board UPS

(HP1/2)



(HP2/2)



MN-POWER SUPPLY: V438930
HP: V546010

■ TEST MODE, ADJUSTMENT

[1] Key Sensor Adjustment

A) Measurement of All Keys

1) Startup

Switch on the power source while pressing the three lowest F#(10), G#(12), and A#(14) keys.
A tone will be sounded every other second (waiting mode)

2) Start of rest value reading

Press the damper pedal.
If the tone does not change, wait a moment; then, repeat the procedure.
The tone will change to sounding twice a second.
Then, the mode will change to the rest value reading mode.

3) Rest value reading

Confirm that the key is in the rest position.
If it is not, adjust the key to the rest position.

4) Fixing the rest value

Press the damper pedal.
The rest value of the key will be fixed and the tone will change to sounding three times a second.
Then, the mode will change to the end value reading mode

5) End value reading

Press the keys lightly one by one in order as far as the end key.
(The same key may be pressed more than once because the minimum value is internally memorized.)

6) Fixing the end value

Press the damper pedal.
The end value of the key will be fixed, and the tone will change to sounding every other second as before.

7) Flash memory writing

Press the soft pedal.
The tone will die away and writing will start.
The writing will be completed in about 10 seconds; then, the high tone will sound three or four times.
(If the writing fails, the error key is shown by NG key sound alternating (“re” and “do”) in the high tone.

(Reference)

Rest value: indicates that the keyboard is not pressed.
End value: indicates that the keyboard is lightly pressed to the bottom of the key.

B) 1 key measurement

1) Start up

Switch on the power source while pressing the two lowest F(9) and G(11) keys.
The tone will sound twice a second. *Note 1
Press the key to be adjusted.
The tone will change to the tone of the key to be adjusted. *Note 2

Note 1: If the tone is consonant (“do”, “mi”, “so”, and “do”), the writing has already been done in the table.
If the tone is dissonant, the writing has not been done in the table.
Note 2: One key measurement requires the same procedure as for the measurement of all keys.
If more than one key is to be measured, press the next key and repeat the steps 3-6 and then proceed to 7).

2) Measurement

The measurement procedure is the same as the steps from 3) for all key measurement.

[2] Sensor Test Mode

1) Start up

Switch on the power source while pressing the lowest A(1), B(3), and C(4) keys.

2) Key sensor unit

Confirm that the sounding position is the same as in the upright piano silent series.

K1	Buzzer sound 1	Sound position is 2.7mm from keyboard.
K2	Buzzer sound 2	Sound position is 4.5mm from keyboard.
K3	Buzzer sound 3	Sound position is 6.3mm from keyboard.
K4	Buzzer sound 4	Sound position is 8.1mm from keyboard.

3) Pedal sensor unit

Damper pedal: Confirm the three levels of buzzer sounds.
Soft pedal: Confirm the one level of buzzer sound.

[3] Key Range Test Mode

1) Start up

Switch on the power source while pressing the lowest A(1), B(3), C(4), and D(6) keys.

2) Confirmation

This confirmation mode is to make sure that the key shutter strokes are within the adjustment range.
Select one key.
That key will sound if its AD value is either 0% or over 98% of the maximum value.
As a guide to finding that the key is positioned correctly, lift up the key and set the open value to the maximum.
The key position is correct if the key does not sound at either the rest or the end value.

Note: If the sound keeps sounding during adjustment, restart by pressing the damper pedal.

[4] Total Confirmation

After all is confirmed, check the sound of each key and confirm its sound volume is consistent.

■ RELOADING THE PROGRAM

Preparation

What you need:

1. Personal computer Windows95/98
2. Add-in board for input/ output of MIDI signals (card)
   Examples: Yamaha PPC10XG (with MIDI BOX)
   Roland SCP55A (PC card)
   TDK DMC9000
3. MIDI conversion adapter
4. MIDI cable x2
5. FD for version upgrade

First, make sure that an external MIDI driver is installed to your PC.

1) Starting the program

1. Get your PC to work.
2. Run Explorer.
3. Insert the maintenance FD. Double click "LoadProjectCDP.exe" on the FD and start it. (Fig. 1)
4. Check that "KS1" is displayed at the upper left.
5. If "KS1" is not displayed, go to 2) Changing Alias.
6. If "KS1" is displayed, click the Start (S) button and proceed to 3) Displaying the dialog for version checking.

* Error occurs on a PC that has no external MIDI driver installed to it. Restart the program after setting the MIDI driver. (Supplement 1)

* "KS1" is a classifying name for DU1A sensor.

(Fig. 1)

2) Changing Alias

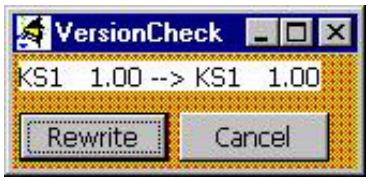
1. If Alias sensor program is not registered, you have to set for the program for the model on which you want to rewrite Alias.
2. Click the "Alias" menu. Select "KS1" from the drop-down list. "KS1" is displayed at the upper left. (Fig. 2)
3. If "KS1" is not displayed in the list, you have to perform the "Registration of Alias."

* On the Alias menu, specify the file containing the new program you want to update and the loader, and also specify the site (folder) containing the information (Filter.ini) file. (Supplement 2)

(Fig. 2)

3) Displaying the dialog for version checking

1. Check the version you want to update to and click the "Rewrite" button. The program will run. (Fig. 3)



(Fig. 3)

4) Displaying the progress

1. You can check the progress of update on the "bar." (Fig. 4)
2. Updating "KS1" takes about 1 minute 40 seconds.

(Fig. 4)

5) Completing the update
   1. When the displayed bar is filled up to the right, the updating is completed. (Fig. 5)
   2. Click the “Exit (E)” button to exit the program.

   * Checking for operation
   Turn on power for the unit.
   Check that all LEDs light up on the sensor circuit board.
   Play on the keyboard and check that sound comes on.

(Fig. 5)

Supplement 1: Setting MIDI device
If communication fails, it is likely that the MIDI device is not properly set.
Check that the driver for the external MIDI terminal is set. (It is likely that MIDI OUTPUT is connected to the PC’s interior sound source.)
Fig. 6 shows an instance of PCC10XG for the PC card of Yamaha make.

(Fig. 6)

Supplement 2: Registering Alias
Click “Add” on the “Alias” menu. (Fig. 2)
The dialog shown in Fig. 7 appears:
- Enter a name for ALIAS.
- Click the “Browse” button and specify the location of the folder containing the program file.
- Register with the “Set” button.

* The setting made here is recorded in the “LoadProjectCDP.ini” file.
If the specified folder does not contain the following, you cannot register the program name on the “Alias” menu.
- Program to be written
- Loader for writing
- “Filter.ini” file (filter file for writing the relationship of the device and program file).

(Fig. 7)

[YAMAHA UPRIGHT PIANO] Date: 01 Dec. 1999

Model: Silent Series

MIDI Implementation Chart

Version: 1.0

Function...		Transmitted	Recognized	Remarks
Basic Channel	Default	1	1, 1+2	
	Changed	X	1, 1+2	
Mode	Default	3	3	
	Messages	X	3, 4 (m=1) *1	
	Altered	**********	X	
Note Number		21-108	21-108	
	True Voice	**********	21-108	
Velocity	Note On	O 9nH, v=1-127	O v=1-127	
	Note Off	X 9nH, v=0	O	
After Touch	Keys	O	O	*2
	Ch's	X	X	
Pitch bend		X	X	
Control Change	7	X	O	Volume
	10	X	O	Pan
	11	X	O	Expression
	64	O	O	Sustain pedal
	67	O	O	Soft pedal
Prog Change		X	X	
	:True#	**********		
System Exclusive		X	X	
System Common	:Song Pos	X	X	
	:Song Sel	X	X	
	:Tune	X	X	
System Real Time	:Clock	X	X	
	:Commands	X	X	
Aux Messages	:All Sounds OFF	X	O (120, 126, 127)	
	:Reset All Controllers	X	X	
	:Local ON/OFF	X	O	
	:All Notes OFF	X	O (123-125)	
	:Active Sense	O	O	
	:Reset	X	X	
Notes		*1 "m" always represents "1".		
		*2 Applying further pressure on the keys does not output "key aftertouch" information. Instead, key position is transmitted as additional information.		

Mode 1: OMNI ON, POLY Mode 2: OMNI ON, MONO O: Yes
Mode 3: OMNI OFF, POLY Mode 4: OMNI OFF, MONO X: No

■ PIANO MAINTENANCE PART

•YAMAHA SILENT UPRIGHT PIANO SB SERIES

Since Yamaha hybrid piano series were introduced into the market in 1987, there have been 2 service materials for each piano technicain (Maintenance hand books) and electronic technician (service manuals). The both materials are unified now and will be issued as new service manuals. The service manuals will be provided as pdf formated data. For the piano technicians, the necessary maintenance pages are marked with index tabs. To print out them and bring to the customer's house to give services are recommended.

SILENT UPRIGHT PIANO SB SERIES started in April 2002.

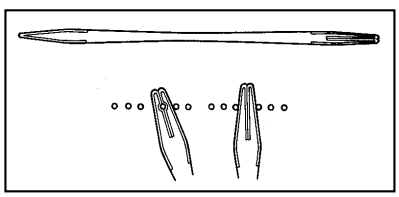
Grey-scale typed high resolution key shutters instead of metal ones.
Sensor board removable key sensor
50 sample songs

Current SB series models in April 2002

U1-Silent（MPU1), U3-Silent, M112-Silent

Wood stick mute for silent ww - TX600502
Thin 4mm type is recommended at the tuning of treble section.

This parts is handled by piano divisions.



•6 STEP MAINTENANCE for the PIANO TECHNICIAN (Minimum 3 are necessary.)

STEP 1 Check if the hammer shank stopper do not disturb the dampers or hammers movement during normal playing. --> OK STEP 2

Hammer shank stopper height/lateral adjustment is necessary if any disturbing happens. --> STEP 6

STEP 2

Depress and lock the center pedal to enter silent mode. Check if the acoustic sound doesn't come out during playing keyboard with mf (Mezzo forte level). If no sound comes, then the distance between hammer head and strings will be within 4.5mm-7mm when the hammer shank touches the shank stopper cushion. (Fig. 2) --> OK STEP 3

Shank stopper must be adjusted to the front if the acoustic sound comes. --> STEP 4

If the balance of the same section is not even (ex. bass), --> STEP 5

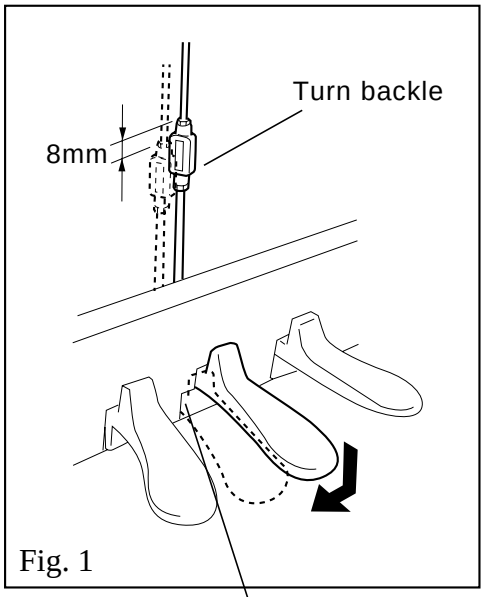


Fig. 1

Note: Hammer let off (set off) adjustment must be 1mm wider than the adjusted silent mode distance.

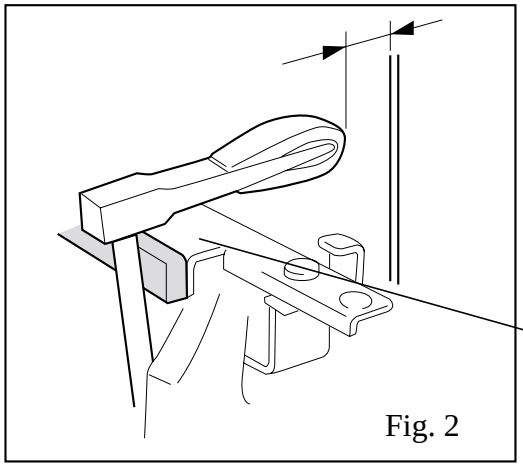


Fig. 2

STEP 3

Turn on the POWER and check if all 88 keys sound correctly through headphones. (The standard volume position is at 3 o'clock.) Depress the right pedal and play some notes to check electronic sustain function. --> OK, Complete the post-delivery inspection.

Check first that if the gray-scale shutter is damaged by taking out the keyboard when some notes sound incorrectly. Remove dirty marks if there on the shutter by cloth. --> Refer Fig. 11 --> Test mode and Key sensor measurement, page 4, 5

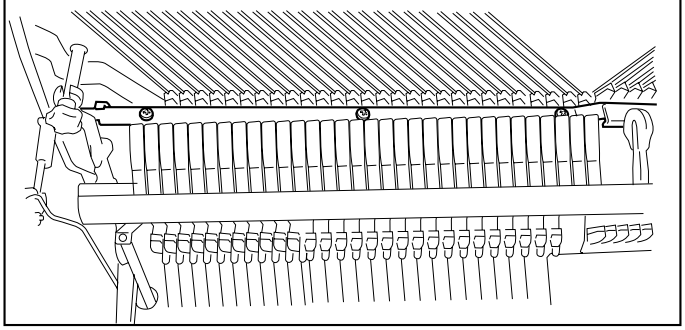
STEP 4

By rotating the turn backle (Fig. 1), the both beginning and the end of the hammer shank stopper stroke can be changed simultaneously. Normal adjustment should be done by this adjustment. In order to get wider stroke, put the additional felt on the bottom of the pedal lock window. It would be effective for the old pianos. Correct adjustment makes the turnbackle movement around 8 mm (Fig. 1). --> OK STEP 3

STEP 5

The screws on each shank stopper section give the fine hammer stop positioning and eliminate unevenness in the same section. (Fig. 3) --> OK STEP 3

Hammer shank stopper Fig. 3



STEP 6

Normally the shank stopper position is set correctly in the factory. The height adjustment and lateral adjustment can be done as following drawings. --> OK STEP 2

Height adjustment

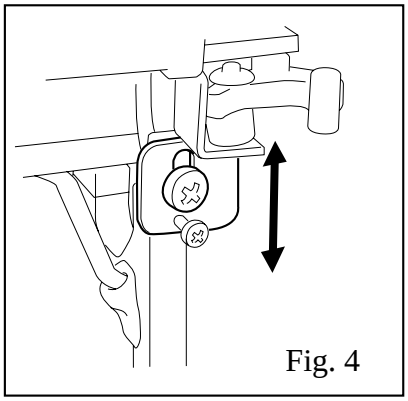


Fig. 4

Base part
(Rear view)

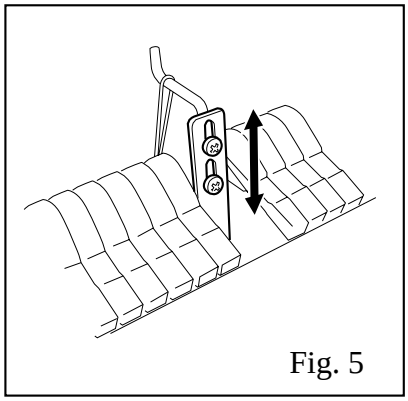


Fig. 5

Middle part
(Rear view)

Lateral adjustment

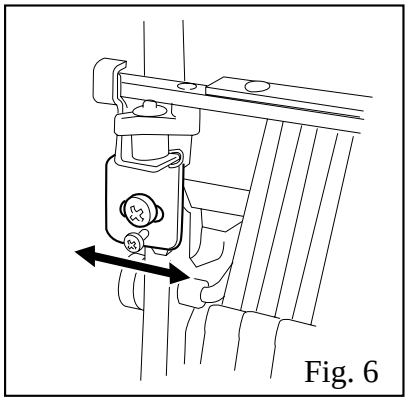


Fig. 6

Treble part
(Rear view)

NECESSARY STANDARD MEASUREMENTS

Acoustic adjustment process	**Standards**
Shank stop position	4.5 mm from string (Max. 7 mm)
Hammer let (set) off	5.5 mm - 8 mm (1 mm wider than stop opsition.)
Keyboard height	U1 - Silent: 69 mm from keybed, 19 mm from front sill top U3-Silent: 64 mm from keybed, 21 mm form front sill top
Keyboard depth	10 mm (white keys)
Hammer stop (catch distance)	13 - 15 mm from strings

•TEST MODE

Test mode has two functions that are sensor test and tone generator version check.

The keys that sound unusually or nothing in the STEP 3 need to be checked by this mode.

TEST MODE 1

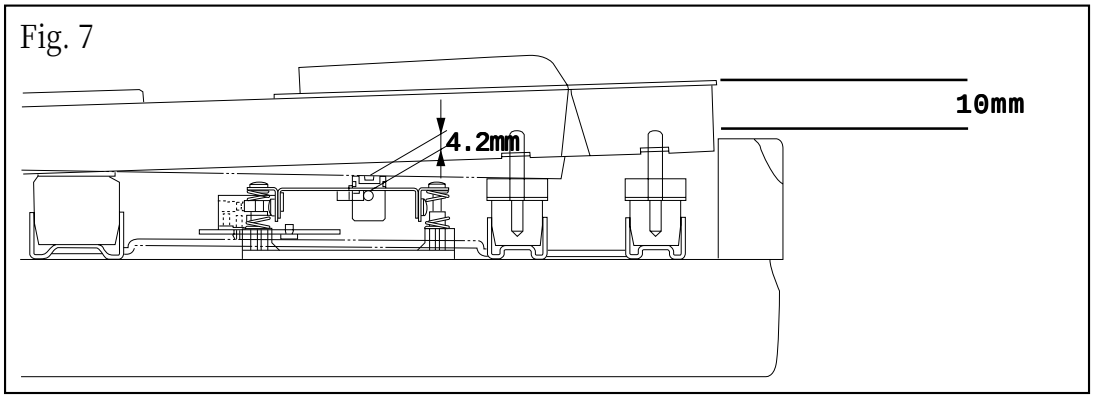
Hold A,B,C (1,3,4 keys) simultaneously and turn on the power until it clicks, then release keys.

When a key is depressed, the 4 different beeps (approx. K1/2.7 mm, K2/4.5 mm, K3/6.3 mm, K4/8.1 mm) tell the sensing conditions in 10 mm key depth stroke.

When K1 beeps too early --- Key leveling is too low or Key sensor is too high.
When K4 beeps too late or nothing --- Key leveling is too high or Key sensor is too low.
(Refer to the former page bottom for the acoustic standard.)

The correct sensor height is 4.2 mm (+1 mm / -1 mm) between sensor top and black key bottom when the black key is fully depressed. (Fig. 7)

Fig. 7



The key sensor has 4 height adjustment screws at base end, 30 key, 58 key and treble end. Then key sensor measurement on the next page is recommended.
Check STEP 3 finally.

If the pedal sustain functions (right pedal) incorrectly in STEP 3, it can be inspected with 3 steps of pedal beeps by this test mode. Check the first beep sounds when the pedal goes down 1 mm and the 3rd beep must sound before its stroke end. The adjustment is done by the VR adjuster on the main board (MN board) with a small flat screw driver. (Fig. 8)

The soft / left pedal has a leaf sensor and it should give the beep when the hammer rail has moved 2-3 mm from it's rest position. The adjustment is done by the screw on the sensor bracket. (Fig. 9)

Fig. 8

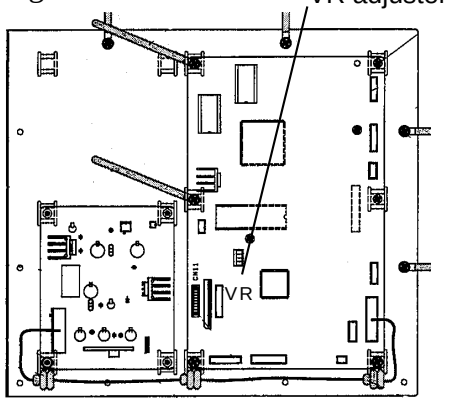
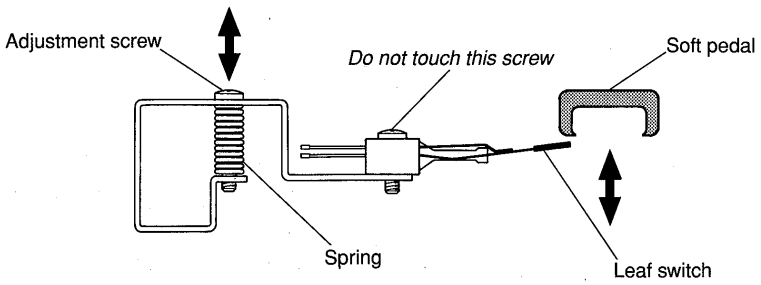


Fig. 9



•KEY SENSOR MEASUREMENT

When key sensor unit or key sensor board has been replaced, the sensor must store the correct relational measured data between the key movement and the sensor light transition quantity. According to this procedure, the virtual 4 key sensing points (K1 - K4) will be created on the gray scale stroke. The measurement is based on the calculation of 2 points that are the key rest position and the stroke end. After entering the mode, it takes around 30 sec. until the sensor gives a steady light quantity.

	All key measurement	Individual key measurement
Entering the mode	Hold F#, G#, A# (10, 12, 14 keys) and turn on the power. Wait for more than 30sec. harmony sound every 2 sec.	Hold F, G, (9, 11 keys) and turn on the power. Harmony sound twice.
1, Start measurement	Depress loud (right) pedal once to Start. --> harmony sound twice	Depress the keyboard to be measured to start. --> the note sound twice
2, Measure rest position	Check all keys are in the rest position by eyes.	Check the keys is in the rest position by eyes.
3, Write rest position data	Depress loud (right) pedal once to write the data on the RAM. --> Harmony sound 3 times	Depress loud (right) pedal once to write the data on the RAM. --> the note sound 3 times
4, Measure end position	Play through 1-88 keys.	Play the key.
5, Write end position data	Depress loud (right) pedal once to write the data on the RAM. --> harmony sound every 2 sec.	Depress loud (right) pedal once to write the data on the RAM. --> the note sound twice. Repeat 1-5 to measure others.
Calc. and store the data	Depress soft (left) pedal once to store data on the EPROM. --> 76C sound intermittently.	Depress soft (left) pedal once to store the data on the EPROM. --> 76C sound intermittently.

Notes: Individual measurement would be effective,

when a shutter has been replaced.
when a note sounds diffrent from others and the sensor test 4 beeps comes incoorrectly.
when a note was not at the rest position or has played uneven during sensor measurement.

•CONFIRM THE SYMPTOMS

In order to get more information or replacing parts about these models, Yamaha service desk reqires the correct model name and serial number. (Sometimes electorical serial number and the sensor or tone generator version.) Refer to the sticker on the bottom of the switch box under the keybed. (Fig. 10)

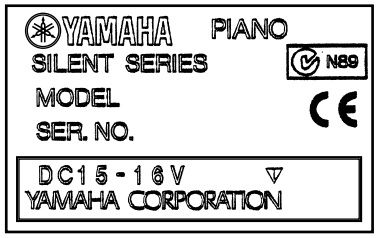


Fig. 10

The sensor board and the tone generator version will be shown by using TEST MODE 2.

TEST MODE 2
Hold A#, C#, D# (2, 5, 7 keys) simultaneously and
turn on the power unitl it clicks, then release keys.

The number of notes show the versions.
Sensor version: An ascending scale in C major, starting on the lowest C.
(Ex. "Do" and "Re" mean version 2)
Sensor Version: An descending scale in C major, starting on the highest C.
(Ex. "Do" and "Si" mean version 2)

•GRAY-SCALE KEY SHUTTER

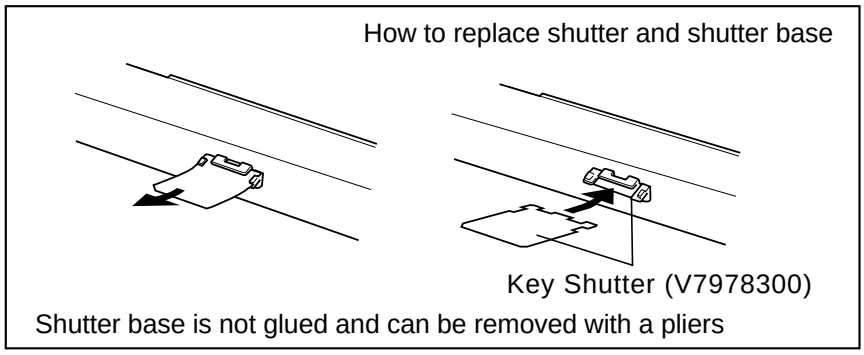


Fig. 11

•DIP SWITCH ON MN BOARD

Silent pianos include a 4-bit DIP-switch on the MN board. During normal use the switch bits (SW1 to SW4) are generally all set to OFF, but during servicing or maintenance you can use them to execute function checks as described below. Please turn power OFF before changing the DIP-switch settings, and then turn power back ON to activate the new settings.

SW1	Always OFF	No use
SW2	SENSOR TEST MODE	Forces the silent piano into Sensor Test mode. Use this feature if for some reason you are unable start up test mode using the keyboard.
SW2 + SW3	DEMO PEFORMANCE	Starts demo playback. Allows you to check the state of the tone-generator. (Operation is not affected by the sensors.)
SW4	Always OFF	No use

For discribing the position for parts or explaining the symptoms. (silent SB)

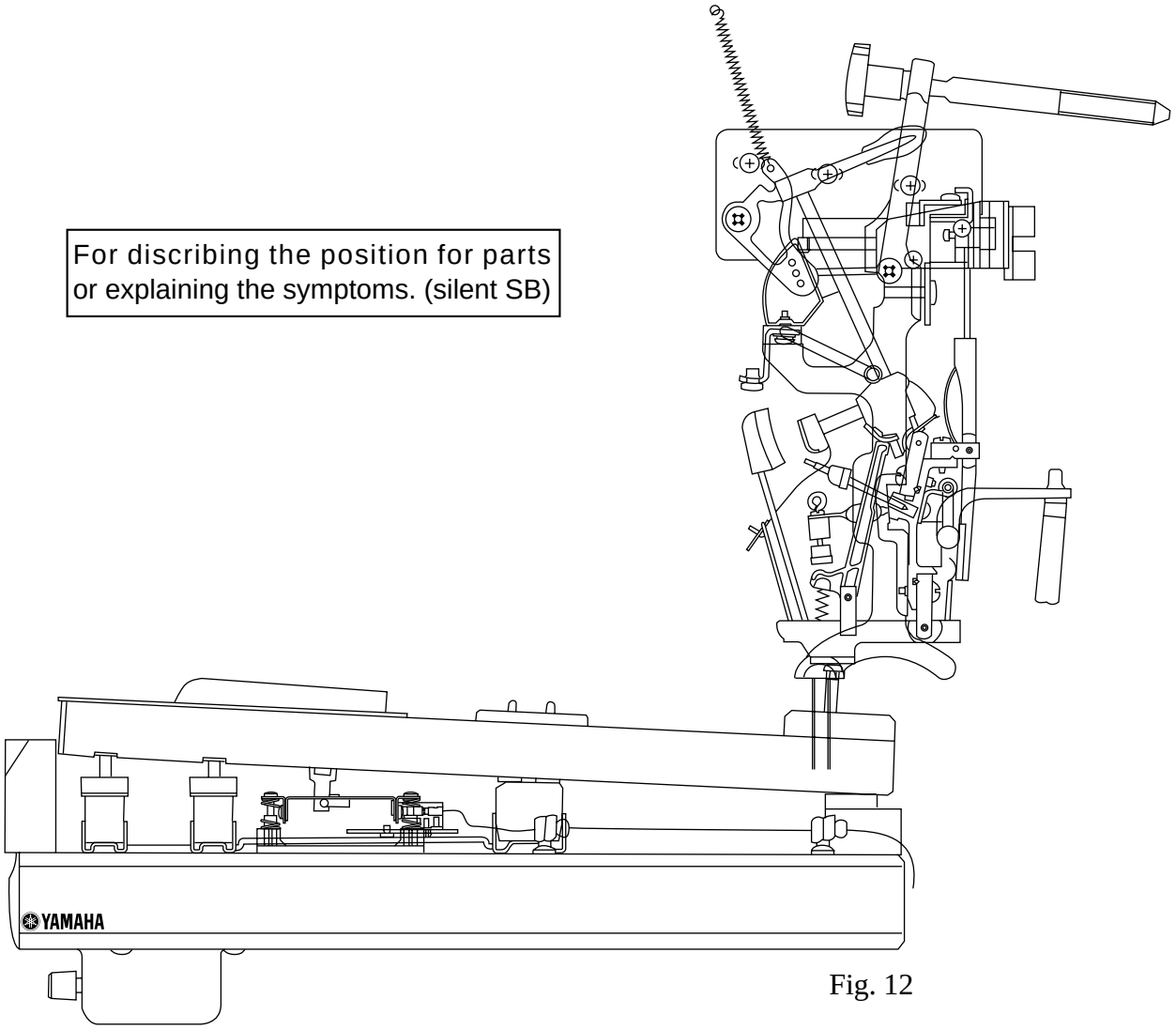


Fig. 12

YAMAHA PIANO

SILENT SB SERIES

PARTS LIST

■ CONTENTS

Notes: DESTINATION ABBREVIATIONS

A: Australian model	J: Japanese model
B: British model	U: U.S.A. model
C: Canadian model	V: General export model (110V)
E: European model	W: General export model (220V)
H: North European model	X: General export model
I: Indonesian model	Y: Export model

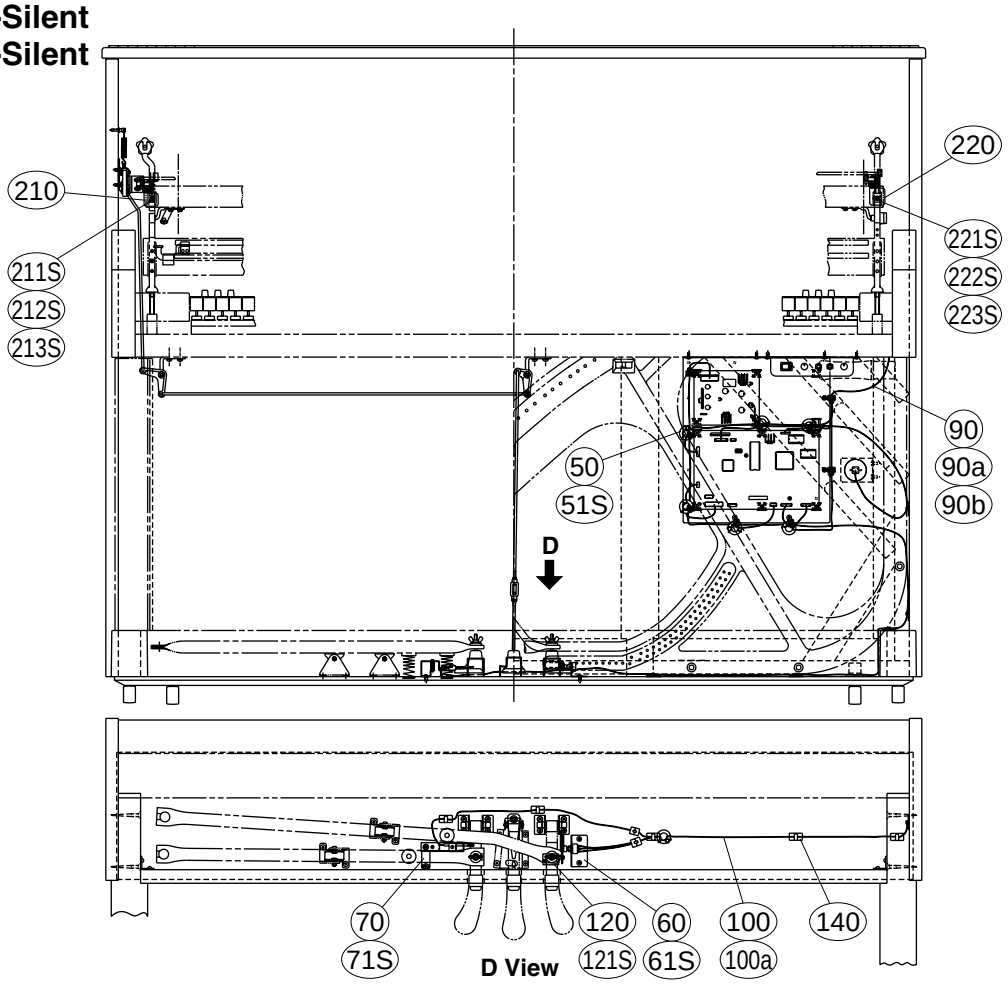
- The numbers in “QTY” show quantities for each unit.
- The parts with “--” in “Parts No.” are not available as spare parts.
- The mark “ } ” in the remarks column indicates that these parts are interchangeable.
- The second letter of the shaded ( ) part number is I, not one.

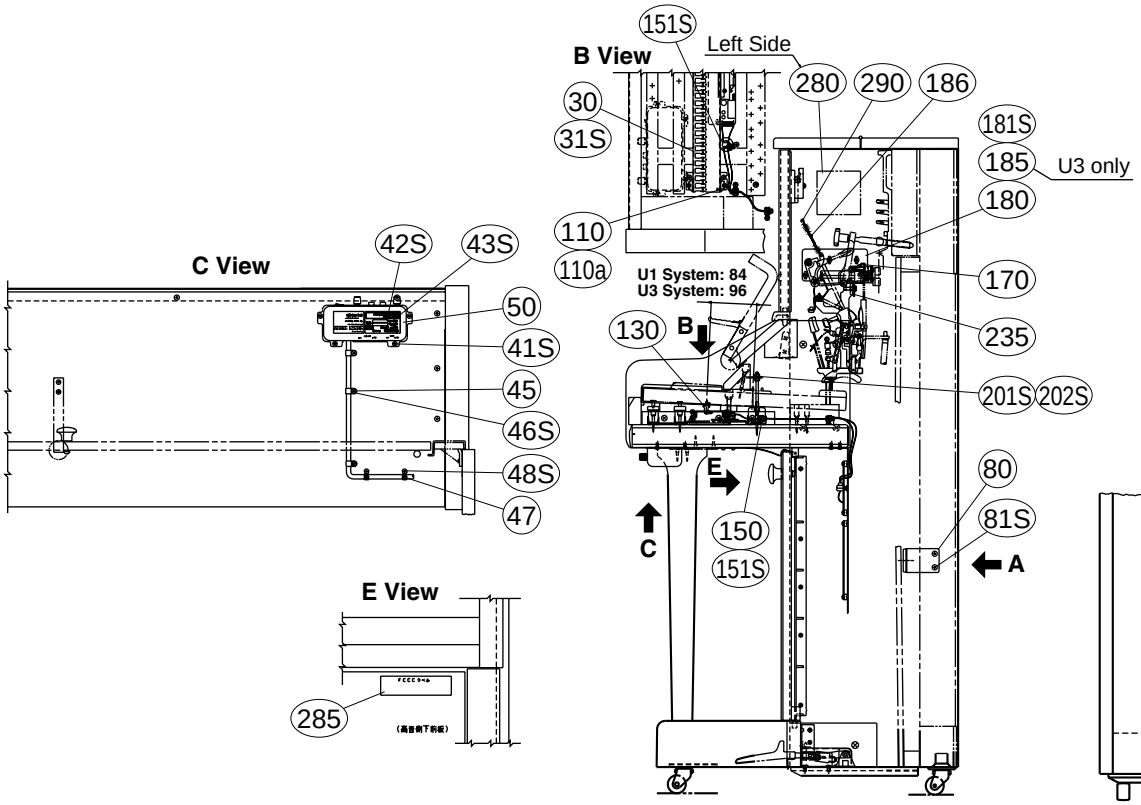
■ WARNING

Components having special characteristics are marked ⚠ and must be replaced with parts having specification equal to those originally installed.

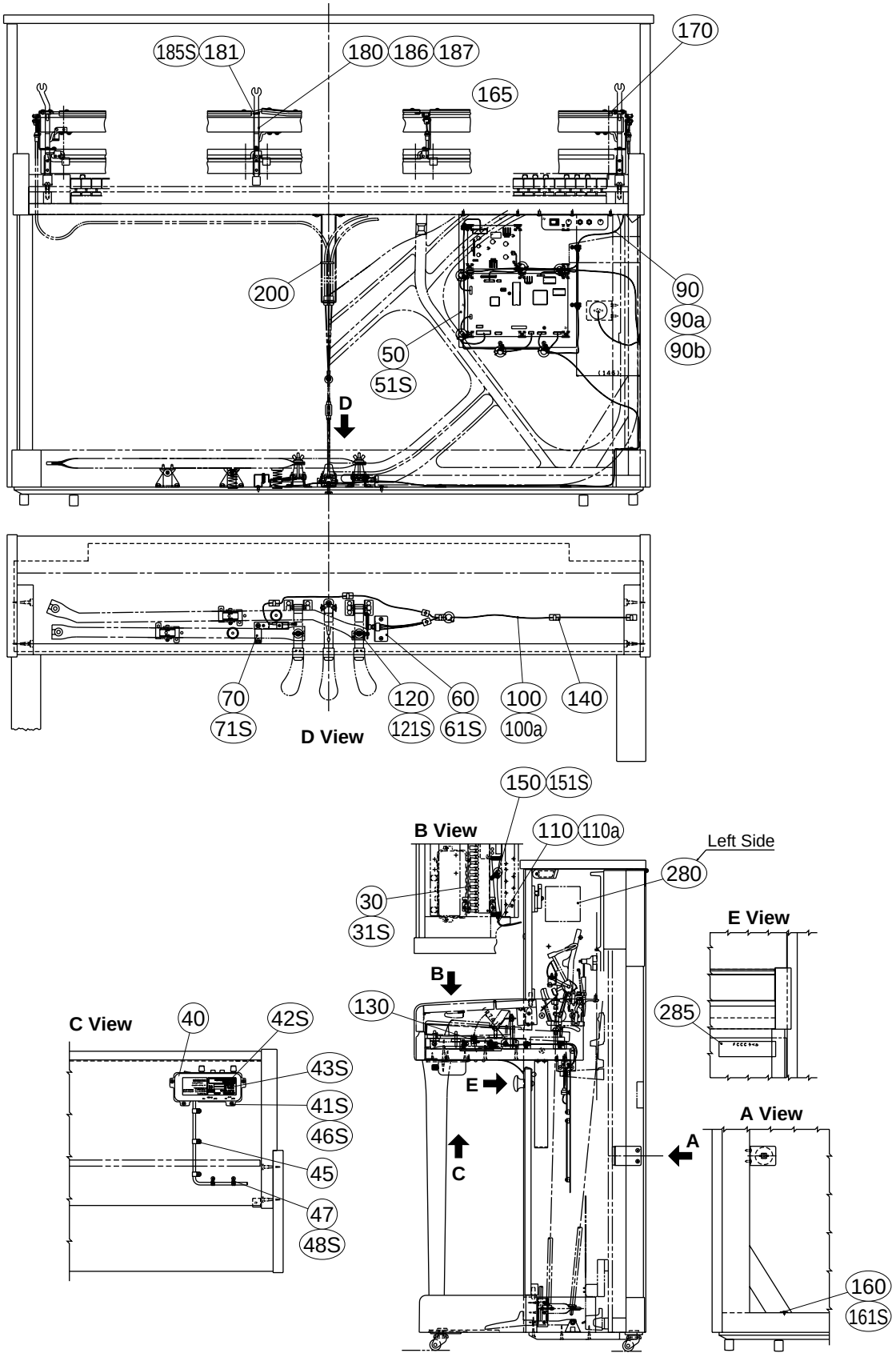
■ OVERALL ASSEMBLY

- **U1-Silent**
- **U3-Silent**

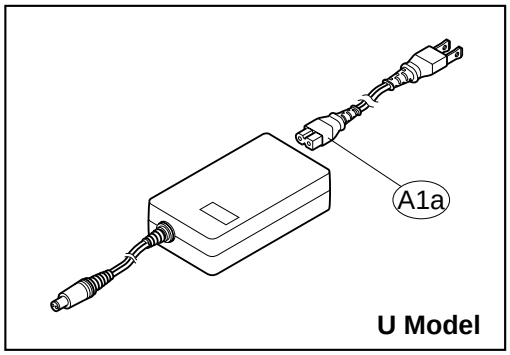




• **M112-Silent**


185S
181
180
186
187
170
165
200
90
90a
90b
50
51S
D
70
71S
D View
120
121S
60
61S
100
100a
140
150
151S
B View
110
110a
Left Side
280
30
31S
E View
B
130
285
C View
40
42S
43S
41S
46S
45
47
48S
E
C
A View
A
160
161S

• (A1) AC Adapter (PA-300)



	REF NO.	PART NO.	DESCRIPTION		部品名	REMARKS		QTY	RANK
			OVERALL ASSEMBLY		ＵＰＳ総組本体	U1/U3/M112			
		--	Overall Assembly	U1	ＵＰＳ総組本体	U1	(V900410)		
		--	Overall Assembly	U3	ＵＰＳ総組本体	U3	(V900420)		
		--	Overall Assembly	M112-SILENT	ＵＰＳ総組本体	M112	(V909160)		
*	30	**V9444200**	Key Sensor Unit	KS1 U1	キーセンサユニット	U1			
*	30	**V9444300**	Key Sensor Unit	KS1 U3	キーセンサユニット	U3			
*	30	**V9444400**	Key Sensor Unit	KS1 MI	キーセンサユニット	M112			
	40	--	Switch Box Unit	UPS	ＳＷ ＢＯＸユニット		(V900490)		
	45	--	Nylon Clamp Black	NK-6N	ナイロンクランプ		(VP35950)	3	
	47	**VB582500**	Cord Binder	#04054	束線止め			2	01
	50	--	MN Unit	UPS	ＭＮユニット	U1/U3 U,E/M112 U	(V797880)		
	60	**VQ461900**	Pedal Unit L		ペダルユニット Ｌ				10
	70	**VQ861200**	Pedal Unit S		ペダルユニット Ｓ				10
*	80	**V9607500**	DC IN Unit S	(PA-300)	ＤＣ ＩＮユニット				
*	90	**V9004600**	Connector Assembly	UPS	束線 ＭＮ				
	90a	**VC362700**	Ferrite Core	FR25/15/12-1400L	フェライトコア			4	04
	90b	**VN831500**	Bushing	RN-11	コードブッシュ				01
	100	**VR770000**	Connector Assembly	S PIANO	束線 ＰＤ－Ｋ				10
	100a	**VC362700**	Ferrite Core	FR25/15/12-1400L	フェライトコア				04
	110	**V5148200**	Connector Assembly	UPS	束線 ＫＳ－Ｋ				08
	110a	**VC362700**	Ferrite Core	FR25/15/12-1400L	フェライトコア				04
	120	**VQ870000**	Pedal Sensor Angle		Ｐセンサーアングル				06
	130	**V7978300**	Shutter Assembly		シャッターＡｓｓ’ｙＧＳ			88	02
	140	**CB830070**	Cord Binder	K105G	束線止め			5	01
	150	**VB582500**	Cord Binder	#04054	束線止め			2	01
	160	**VR429000**	Clip	A-2	フラクリップ				01
	165	**V4806200**	Stopper Rubber		ストッパーゴム	U1/U3			03
	170	--	S-Stopper Assembly	UX100	Ｓ－ストッパＡｓｓ’ｙ	U1	(V439030)		
	170	--	S-Stopper Assembly	U3	Ｓ－ストッパＡｓｓ’ｙ	U3	(V439040)		
	170	--	S-Stopper Assembly		Ｓ－ストッパＡｓｓ’ｙ	M112	(V776700)		
	180	--	S-Drive Assembly		Ｓ－駆動Ａｓｓ’ｙ－Ｂ	U1	(V580490)		
	180	--	S-Drive Assembly		Ｓ－駆動Ａｓｓ’ｙ－Ｃ	U3	(V585300)		
	180	--	SSRB Support Assembly	B1	ＳＳＲＢサポートＡｓｓｙ	M112	(V776820)		
	181	--	SSRB Support Felt	RB	ＳＳＲＢサポートフェルト	M112	(VV86690)	3	
	185	--	Base Spacer	U3	ベース スペーサ Ａ	U3	(V464890)		
	186	--	Spring		Ｓ駆動スプリング	U3/U1 U,E	(V439600)		
	186	--	Spacer	RB 1mm	ＳＳドラサポＣスペーサ	M112	(V850620)		
	187	--	Spacer	RB 2mm	ＳＳドラサポＣスペーサ	M112	(VZ51210)		
	200	--	Sling Bracket		吊り金具Ａｓｓ’ｙ－Ｂ	U1/U3	(V798060)		
	200	**CB818540**	Cord Holder	T-30RF-2	インシュロックタイ	M112		3	01
	210	--	Rail Holder Assembly		レール受Ａｓｓ’ｙ－Ｌ	U1/U3	(V439170)		
	220	--	Rail Holder Assembly		レール受Ａｓｓ’ｙ－Ｒ	U3/U1 U,E	(V439180)		
	235	**V5095400**	Spacer		ＳスペーサＳＥＣＣ	U1/U3		3	01
	280	--	Label	UP	サイレントメカ調整シール		(V217880)		
	285	**V3287200**	Label, FCCC		ＦＣＣＣラベル				05
	290	--	Hook	UCE314-D	ヒートン Ｄ	U3	(V597200)		
	31S	**03747290**	Truss Head Tapping Screw-1	4.0X20 MFZN2BL	＋トラスＴＰ １種			8	01
	41S	**03747270**	Truss Head Tapping Screw-1	4.0X12 MFZN2BL	＋トラスＴＰ １種			4	01
	42S	--	Label	UP 5X30	製番シール		(VR14340)	2	
	43S	--	Label		モデル名シール		(V958770)		
	46S	**03747270**	Truss Head Tapping Screw-1	4.0X12 MFZN2BL	＋トラスＴＰ １種			3	01
	48S	**03747270**	Truss Head Tapping Screw-1	4.0X12 MFZN2BL	＋トラスＴＰ １種	U3/U1 U,E		2	01
	51S	**03747340**	Truss Head Tapping Screw-1	4.0X16 MFZN2Y	＋トラスＴＰ １種			3	
	61S	**03747340**	Truss Head Tapping Screw-1	4.0X16 MFZN2Y	＋トラスＴＰ １種			2	
	71S	**03747340**	Truss Head Tapping Screw-1	4.0X16 MFZN2Y	＋トラスＴＰ １種			2	

*: New parts

RANK: Japan only

	REF NO.	PART NO.	DESCRIPTION		部品名	REMARKS	QTY	RANK
	81S	**03747270**	Truss Head Tapping Screw-1	4.0X12 MFZN2BL	＋トラスＴＰ　１種		2	01
	121S	**VM678900**	Bind Head Tapping Screw-S	4.0X16 MFZN2Y	＋バインドＳタイト			01
	151S	**03747270**	Truss Head Tapping Screw-1	4.0X12 MFZN2BL	＋トラスＴＰ　１種		3	01
	161S	**20404200**	Bind Head Tapping Screw-1	3.0X10 MFZN2BL	＋バインドＴＰ１種			
	181S	**EP040120**	Bind Head Tapping Screw-1	4.0X35 MFZN2Y	＋バインドＴＰ１種	U3	3	01
	181S	**EP040170**	Bind Head Tapping Screw-1	4.0X16 MFZN2Y	＋バインドＴＰ１種	U1	3	01
	185S	**03767160**	Flat Washer	5.0X16X1.6 MFZN2Y	平座金みがき丸	M112		01
	190S	**20084500**	Truss Head Tapping Screw-1	X12.2 WAXMFZN2Y	＋トラスＴＰ　１種ＳＰ	M112	5	01
	201S	**ET400030**	Hexagonal Nut	SW 4 MFZN2Y	六角ナット	U3/U1 U,E		01
	202S	**VK287600**	Flat Washer	4.0X12X1.0 MFZN2Y	平座金みがき丸	U1/U3 U		01
	211S	**V4649400**	Bind Head Screw	SP 5.0X14 MFZN2Y	＋バインド小ネジ	U1/U3 U		01
	212S	**EP630630**	Bind Head Tapping Screw-S	3.0X10 MFZN2Y	＋バインドＳタイト	U1/U3 U		01
	213S	**V6129400**	Toothed Lock Washer-B	6.0 MFZN2Y	歯付座金外歯形	U1/U3 U,E		01
	221S	**V4649400**	Bind Head Screw	SP 5.0X14 MFZN2Y	＋バインド小ネジ	U3/U1 U,E		01
	222S	**EP630630**	Bind Head Tapping Screw-S	3.0X10 MFZN2Y	＋バインドＳタイト	U1/U3 U		01
	223S	**V6129400**	Toothed Lock Washer-B	6.0 MFZN2Y	歯付座金外歯形	U1/U3 U		01
			ACCESSRIES		付属品			
		VQ785200	Headphone	HPE-170	ヘッドホーン	U,E/U1 A/U3 A		17
⚠	A1	**V7656100**	AC Adapter	PA-300 U	ＡＣアダプタ	U		16
⚠	A1a	**AAX30960**	AC Cord		ＡＣコード	U		
⚠	A1	**V7656200**	AC Adapter	PA-300 E	ＡＣアダプタ	E		15
⚠	A1a	**AAX30970**	AC Cord		ＡＣコード	E		
⚠	A1	**V7656300**	AC Adapter	PA-300 GBR	ＡＣアダプタ	B		16
⚠	A1a	**AAX30980**	AC Cord		ＡＣコード	B		
⚠ *	A1	**V8466000**	AC Adapter	PA-300 AUS	ＡＣアダプタ	A		
⚠ *	A1a	**AAX34630**	AC Cord	AUS	ＡＣコード	A		

*: New parts

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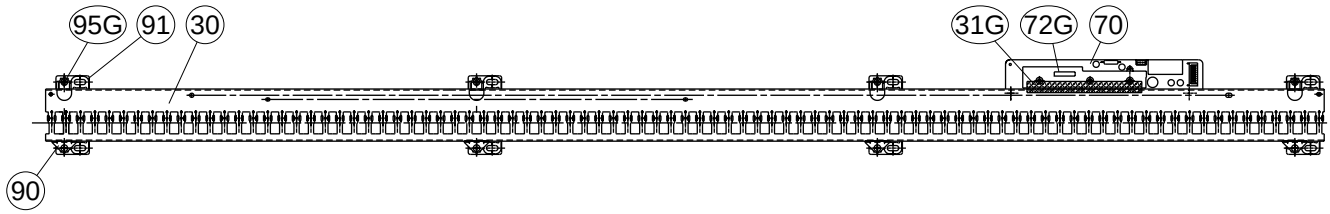
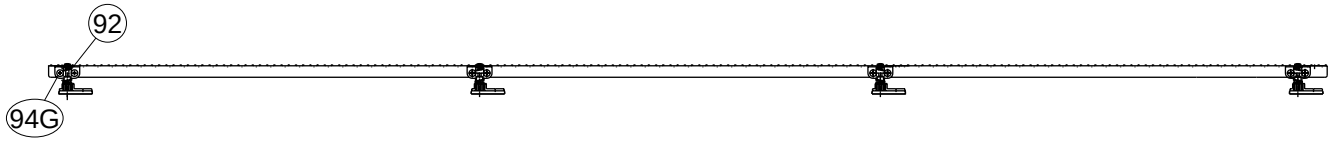
■ KEY SENSOR UNIT

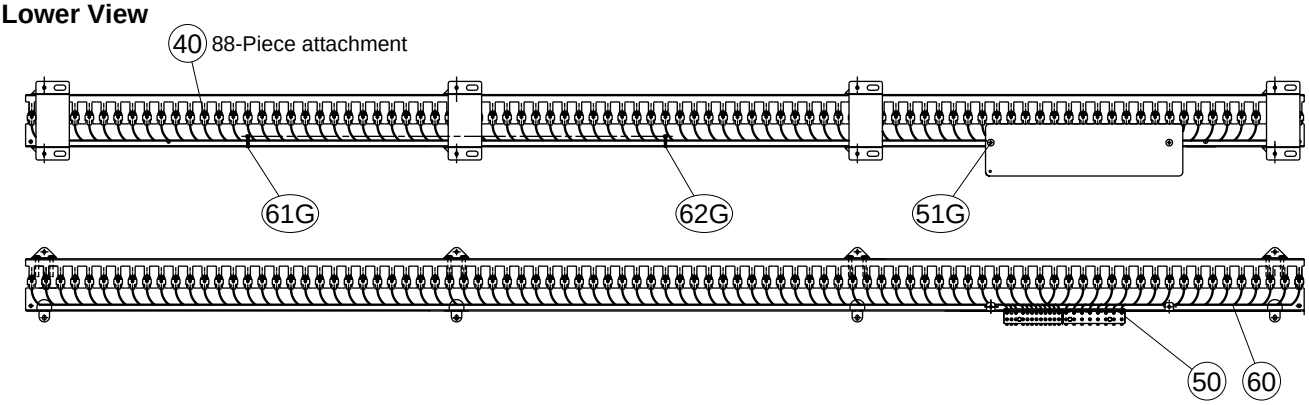
• Top View



• Side View



• Lower View



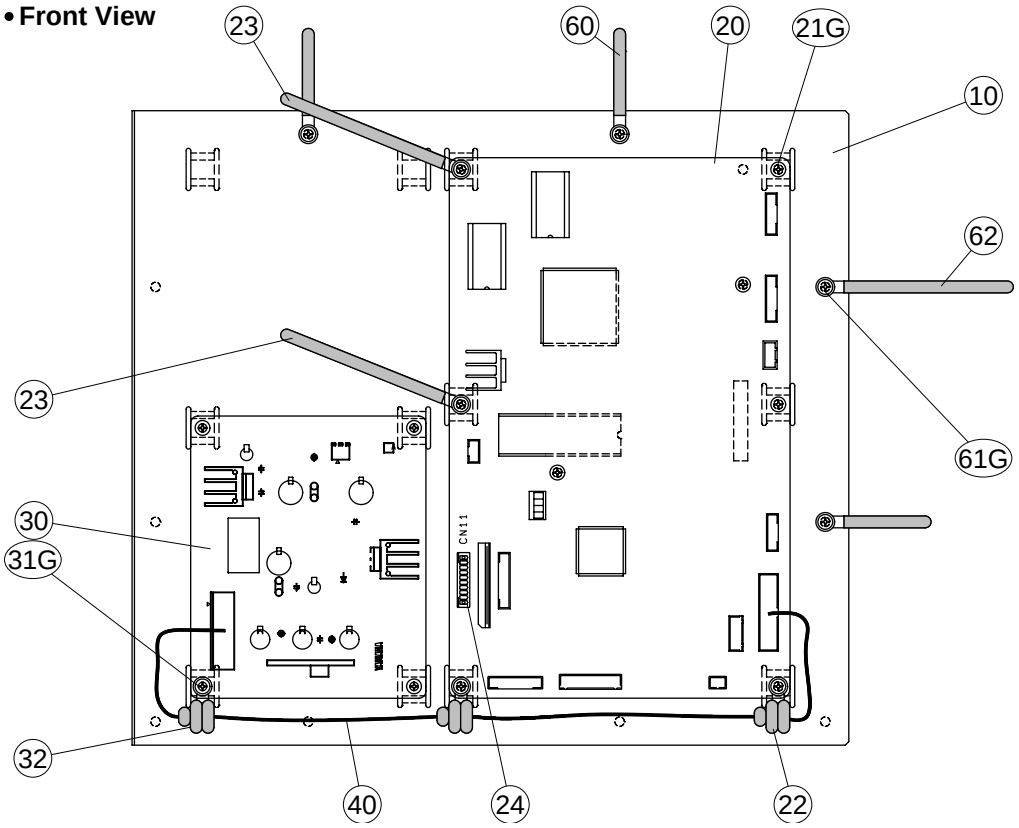
	REF NO.	PART NO.	DESCRIPTION		部品名	REMARKS	QTY	RANK
			KEY SENSOR UNIT		キーセンサユニット	U1/U3/M112		
*		**V9444200**	Key Sensor Unit	KS1 U1	キーセンサユニット	U1		
*		**V9444300**	Key Sensor Unit	KS1 U3	キーセンサユニット	U3		
*		**V9444400**	Key Sensor Unit	KS1 MI	キーセンサユニット	M112		
	30	--	Angle Bracket		KSブラケット GS	(V797740)		
	40	--	Sensor Head	UPS	センサーヘッド GS	(V797750)	89	
	50	--	Plug	1.2mm	センサープラグ AS	(V708030)		
	60	**VN371200**	Optical Fiber	0 0.5	光ファイバー素材		52	01
*	70	**V8968400**	Circuit Board	KS1	シート分割Kセンサー	(V858590, X2329B0)		
	90	--	Key Sensor Spring Holder		Kセンサバネ受け金具	(V706860)	4	
	91	--	Key Sensor Holder		キーセンサー台 GS	(V889160)	4	
*	92	**V8891500**	Spring	(B)	S調整バネ GS		8	
	31G	**CB080100**	Adhesive Tape	15X30	アセテートクロス粘着			02
	51G	**VP357200**	Bind Head Tapping Screw-S	3.0X4 MFZN2Y	+バインドSタイト		2	01
	61G	--	Cord Binder		束線糸	(VP20580)		
	62G	--	Cord Binder		束線糸	(VP20580)		
	72G	--	Label	UP 5X30	製番シール	(VR14340)		
	94G	**VP357200**	Bind Head Tapping Screw-S	3.0X4 MFZN2Y	+バインドSタイト		8	01
	95G	**EG330140**	Bind Head Screw	3.0X18 MFZN2Y	+バインド小ネジ		8	01

*: New parts

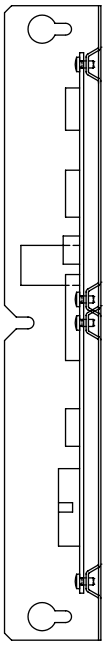
RANK: Japan only

■ MN UNIT

• **Front View**



• **Lower View**



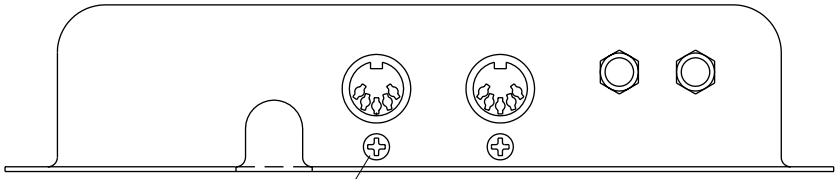
REF NO.	PART NO.	DESCRIPTION		部品名	REMARKS	QTY	RANK
		MN UNIT		MNユニット	U1/U3/M112		
	--	MN Unit	UPS	MNユニット	U1/U3 U,E/M112 U (V797880)		
10	V3768300	Angle		PK・MN金具			09
20	V7986700	Circuit Board	MN	MNシート	U1/U3 U,E/M112 U (X0577A0)		48
22	VB582500	Cord Binder	#04054	束線止め		2	01
23	CB817510	Cord Binder	S-14B	束線止め		2	03
24	--	Connector	PH10P RF-SEP-MN	ダミーコネクタ	(V693570)		
30	V4389300	Circuit Board	MN POWER SUPPLY	MN電源シート	(XW593A0)		22
32	VB582500	Cord Binder	#04054	束線止め			01
* 40	V4389600	Connector Assembly	DGMN_UPS	束線 DGMN			
60	VB582500	Cord Binder	#04054	束線止め		3	01
62	CB817510	Cord Binder	S-14B	束線止め			03
21G	EP600410	Bind Head Tapping Screw-S	3.0X6 MFZN2Y	+バインドSタイト		6	01
31G	EP600410	Bind Head Tapping Screw-S	3.0X6 MFZN2Y	+バインドSタイト		4	01
61G	EP600410	Bind Head Tapping Screw-S	3.0X6 MFZN2Y	+バインドSタイト		4	01

*: New parts

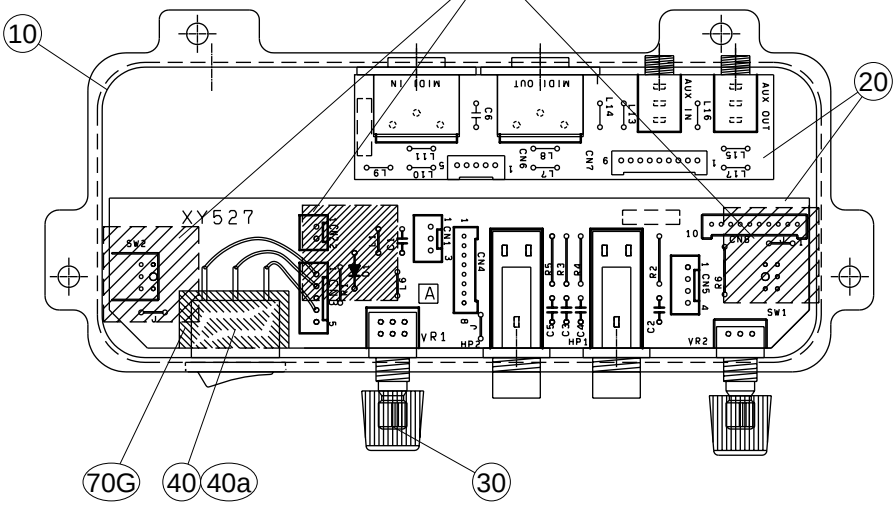
RANK: Japan only

■ SWITCH BOX UNIT

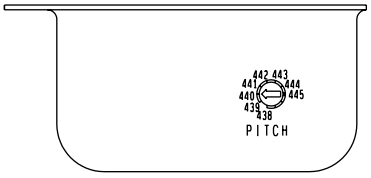
• Rear View



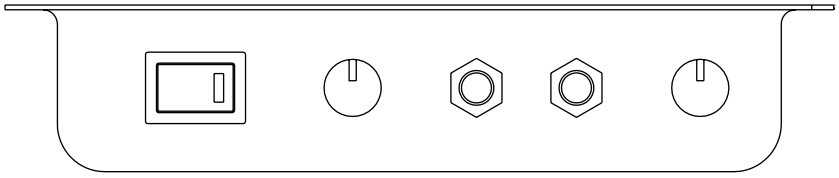
• Top View



• Left Side View



• Front View

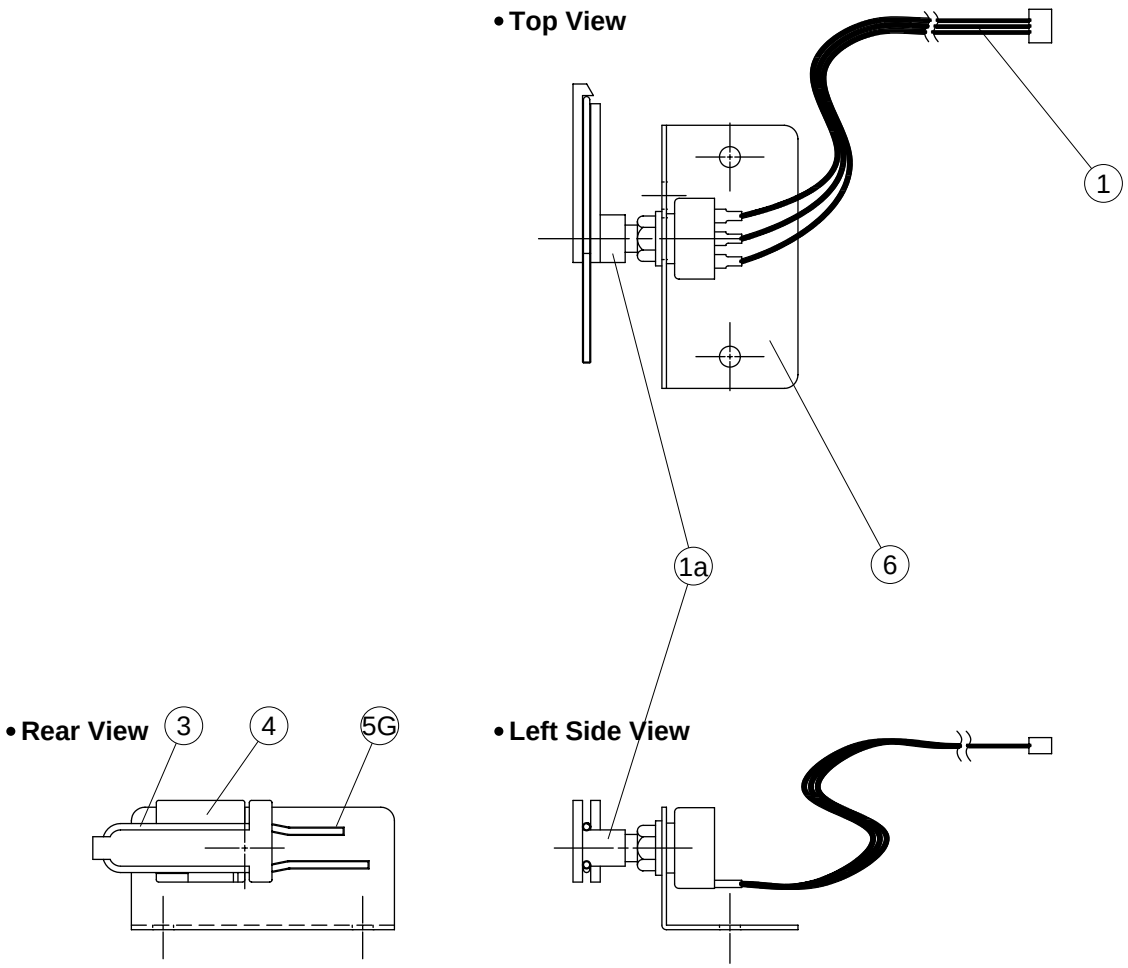


	REF NO.	PART NO.	DESCRIPTION		部品名	REMARKS	QTY	RANK
			SWITCH BOX UNIY		SW BOXユニット	U1/U3/M112		
		--	Switch Box Unit	UPS	SW BOXユニット	(V900490)		
*	10	V8950100	Switch Box	UPS	スイッチボックス			
	20	V5460100	Circuit Board	HP	HPシートUPS	(XY527A0)		15
	30	CB028970	Knob Black		ツマミ	VOLUME, REVERB	2	03
	40	VQ861700	Connector Assembly	SW	束線SW			09
	40a	VQ861800	Seesaw Switch	VLAO4L3 U.C.S	照光シーソーSW	POWER (ON/OFF)		05
	60	CB826590	Foot	SJ-5023	ゴムアシ		3	02
	21G	VC161100	Bind Head Tapping Screw-P	3.0X12 MFZN2BL	＋バインドPタイト		2	01
	70G	CB080100	Adhesive Tape	15X30	アセテートクロス粘着			02

*: New parts

RANK: Japan only

■ PEDAL UNIT L

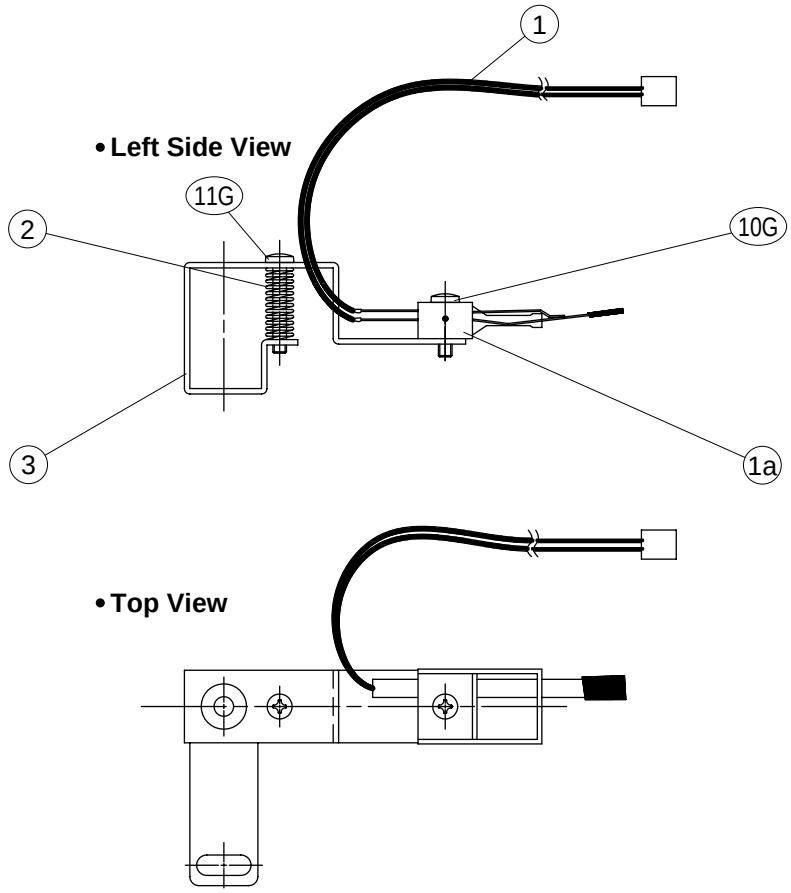


REF NO.	PART NO.	DESCRIPTION		部品名	REMARKS	QTY	RANK
		PEDAL UNIT L		ペダルユニット L	U1/U3/M112		10
	VQ461900	Pedal Unit L		ペダルユニット L			10
1	**VQ493300**	Connector Assembly	PDS-L	束線 PDS－L			09
1a	**HS412520**	Rotary Variable Resistor	RK16Y11L0001A	ロータリーVR1連			05
3	**AA104230**	Wire Spring		ワイヤーバネ			01
4	**CB059320**	Holder, Wire Black		ワイヤーホルダー			01
6	**--**	L Sensor Bracket	N	LセンサーブラケットN	(VS67870)		
5G	**--**	Tube	1	スミチューブ C	(VQ88820)		

∗: New parts

RANK: Japan only

■ PEDAL UNIT S



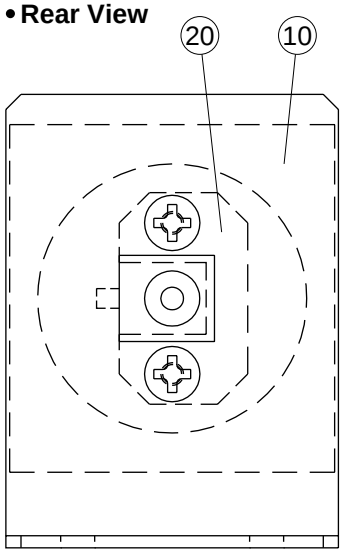
REF NO.	PART NO.	DESCRIPTION		部品名	REMARKS	QTY	RANK
		PEDAL UNIT S		ペダルユニット S	U1/U3/M112		
	VQ861200	Pedal Unit S		ペダルユニット S			10
1	**VQ861100**	Connector Assembly	PDS-S	束線 PDS－S			07
1a	**NB037050**	Switch Assembly		スイッチアセンブリー			03
2	**VR068900**	Pedal Sensor Spring		ペダルセンサーバネ			04
3	**--**	Sensor Bracket		Sセンサーブラケット	(VQ53760)		
10G	**VH553800**	Bind Head Tapping Screw-S	3.0X12 MFZN2Y	＋バインドSタイト			01
11G	**EG330130**	Bind Head Screw	3.0X20 MFZN2Y	＋バインド小ネジ			01

∗: New parts

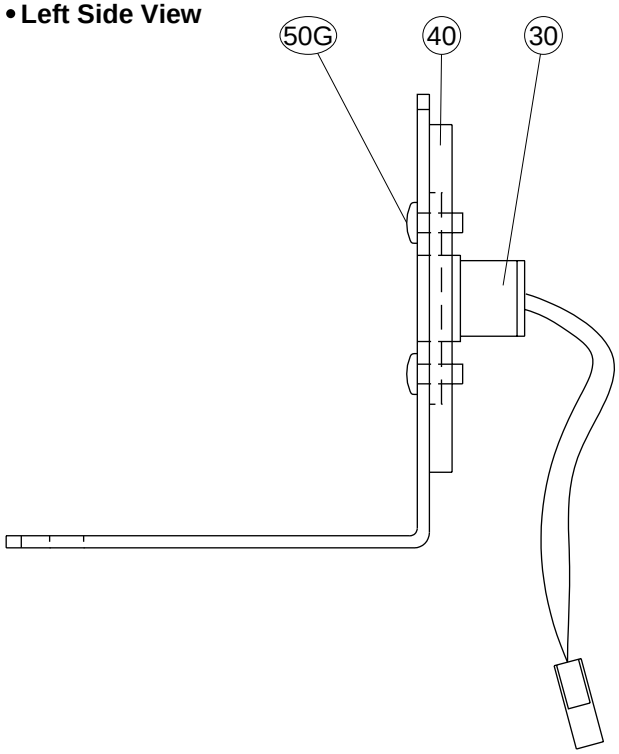
RANK: Japan only

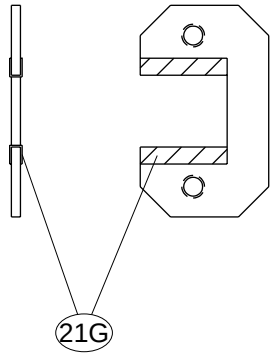
■ DC IN UNIT S

• **Rear View**



• **Left Side View**





	REF NO.	PART NO.	DESCRIPTION		部品名	REMARKS	QTY	RANK
			DC IN UNIT S		ＤＣ ＩＮユニット	U1/U3/M112		
*		**V9607500**	DC IN Unit S	(PA-300)	ＤＣ ＩＮユニット			
*	10	**V9598000**	Angle	DC-IN	ＤＣ ＩＮ 金具			
*	20	**V9598100**	Jack Holder	DC-IN	ＤＣジャックホルダ			
*	30	**V9607600**	Connector Assembly	DC-IN	束線 ＤＣ ＩＮ			
	40	**VE545100**	AC Cord Plate		電源コード 止金具防振板			02
	21G	**--**	Tape		紙 テープ	(V962060)		
	50G	**EG330360**	Bind Head Screw	3.0X6 MFZN2BL	＋バインド小ネジ		2	01

*: New parts

RANK: Japan only

■ ELECTRICAL PARTS

	REF NO.	PART NO.	DESCRIPTION		部品名	REMARKS	QTY	RANK
			ELECTRICAL PARTS		電気部品	U1/U3/M112		
		V5460100	Circuit Board	HP	ＨＰシートＵＰＳ	(XY527A0)		15
*		**V8968400**	Circuit Board	KEY SENSOR	シート分割Ｋセンサー	(V858590,X2329B0)		
		V7986700	Circuit Board	MN	ＭＮシート	(X0577A0)		48
		V4389300	Circuit Board	MN POWER SUPPLY	ＭＮ電源シート	(XW593A0)		22
		V5460100	Circuit Board	HP	ＨＰシートＵＰＳ	(XY527A0)		15
	AUX-I	**LB301870**	Phone Jack	ST MI-JACK HSJ0857	ホーンコネクタ	AUX IN		02
	AUX-O	**LB301870**	Phone Jack	ST MI-JACK HSJ0857	ホーンコネクタ	AUX OUT		02
	C1	**VD930900**	Semiconductive Cera. Cap.	0.1000 25V M	半導体セラコン			01
	-5	**VD930900**	Semiconductive Cera. Cap.	0.1000 25V M	半導体セラコン			01
	C6	**FG652100**	Ceramic Capacitor-SL	100P 50V J	セラコン（ＳＬ）			01
	CN1	**LB918030**	Base Post Connector	XH 3P TE	ベースツキポスト			01
	CN2	**LB918020**	Base Post Connector	XH 2P TE	ベースツキポスト			01
	CN3	**LB918050**	Base Post Connector	XH 5P TE	ベースツキポスト			01
	CN4	**VB390400**	Connector Base Post	PH- 8P TE	コネクタベースポスト			01
	CN5	**LB918040**	Base Post Connector	XH 4P TE	ベースツキポスト			01
	CN6	**VB390100**	Connector Base Post	PH- 5P TE	コネクタベースポスト			01
	CN7	**VB390500**	Connector Base Post	PH- 9P TE	コネクタベースポスト			03
	CN8	**VB390600**	Connector Base Post	PH-10P TE	コネクタベースポスト			01
	D1	**VC781200**	Diode	20E	ダイオード			01
	HP1	**VQ866600**	Phone Jack	ST HLJ0521	ホーンコネクタ	} HEADPHONES		02
	HP2	**VQ866600**	Phone Jack	ST HLJ0521	ホーンコネクタ	}		02
	J1	**VS195600**	Jumper Wire	L=5.0mm	ジャンパー線			01
	-3	**VS195600**	Jumper Wire	L=5.0mm	ジャンパー線			01
	L01	**VN381200**	Coil	SNT-D20TF 10UH	コイル ＳＮ １０ｕＨ			03
	L06	**VN381200**	Coil	SNT-D20TF 10UH	コイル ＳＮ １０ｕＨ			03
	L07	**VB835000**	Coil	FL5R200QNT 20UH	コイル ２０Ｕ			01
	-11	**VB835000**	Coil	FL5R200QNT 20UH	コイル ２０Ｕ			01
	L13	**VF968800**	Coil	SBT-0260TF 60UH	コイル ＳＢ ６０ｕＨ			01
	-17	**VF968800**	Coil	SBT-0260TF 60UH	コイル ＳＢ ６０ｕＨ			01
	MIDII	**VQ098700**	DIN Connector	JACK 3P YKF51-5057	ＤＩＮコネクタ	MIDI IN, MIDI OUT		03
	R1	**HF756100**	Carbon Resistor	1.0K 1/4 J	カーボン抵抗			01
	R2	**VH696500**	Carbon Resistor	68.0 1/2 J	カーボン抵抗			
	-5	**VH696500**	Carbon Resistor	68.0 1/2 J	カーボン抵抗			
	R6	**HF756100**	Carbon Resistor	1.0K 1/4 J	カーボン抵抗			01
	SW2	**VU296100**	Rotary Switch	43J12GB 10	ロータリーＳＷ	PITCH		06
	VR1	**VQ862900**	Rotary Variable Resistor	A 10.0K RK0971210	二連ロータリーＶＲ	VOLUME		04
	VR2	**VU259000**	Rotary Variable Resistor	B 10.0K RK0971110	一連ロータリーＶＲ	REVERB		03
*		**V8968400**	Circuit Board	KEY SENSOR	シート分割Ｋセンサー	(V858590,X2329B0)		
	C0001	**US135100**	Ceramic Capacitor-F (chip)	0.1000 16V Z	チップセラ（Ｆ）			01
	-0004	**US135100**	Ceramic Capacitor-F (chip)	0.1000 16V Z	チップセラ（Ｆ）			01
	C0005	**UF038100**	Electrolytic Cap. (chip)	100 16V	チップケミコン			01
	C0006	**US063100**	Ceramic Capacitor-B (chip)	1000P 50V K	チップセラ（Ｂ）			01
	-0011	**US063100**	Ceramic Capacitor-B (chip)	1000P 50V K	チップセラ（Ｂ）			01
	C0013	**US063100**	Ceramic Capacitor-B (chip)	1000P 50V K	チップセラ（Ｂ）			01
	-0018	**US063100**	Ceramic Capacitor-B (chip)	1000P 50V K	チップセラ（Ｂ）			01
	C0019	**UR839100**	Electrolytic Cap.	1000 16.0V	ケミコン			01
	C0020	**US135100**	Ceramic Capacitor-F (chip)	0.1000 16V Z	チップセラ（Ｆ）			01
	C0021	**US135100**	Ceramic Capacitor-F (chip)	0.1000 16V Z	チップセラ（Ｆ）			01
	C05V1	**UF018100**	Electrolytic Cap. (chip)	100 6.3V	チップケミコン			01
	C12V1	**UF038100**	Electrolytic Cap. (chip)	100 16V	チップケミコン			01
	CA000	**US064100**	Ceramic Capacitor-B (chip)	0.0100 50V K	チップセラ（Ｂ）			01
	-0013	**US064100**	Ceramic Capacitor-B (chip)	0.0100 50V K	チップセラ（Ｂ）			01
	CAN00	**US062470**	Ceramic Capacitor-SL(chip)	470P 50V J	チップセラ（ＳＬ）			01
	CAN01	**UF037100**	Electrolytic Cap. (chip)	10 16V	チップケミコン			01
	CCN00	**US062120**	Ceramic Capacitor-SL(chip)	120P 50V J	チップセラ（ＳＬ）			01
	-04	**US062120**	Ceramic Capacitor-SL(chip)	120P 50V J	チップセラ（ＳＬ）			01
	CCP01	**US135100**	Ceramic Capacitor-F (chip)	0.1000 16V Z	チップセラ（Ｆ）			01
	CCP02	**US135100**	Ceramic Capacitor-F (chip)	0.1000 16V Z	チップセラ（Ｆ）			01
	CCP04	**US064100**	Ceramic Capacitor-B (chip)	0.0100 50V K	チップセラ（Ｂ）			01
	CCP05	**UF066100**	Electrolytic Cap. (chip)	1 50V	チップケミコン			01
	CCRS1	**UF037100**	Electrolytic Cap. (chip)	10 16V	チップケミコン			01
	CFT01	**US063100**	Ceramic Capacitor-B (chip)	1000P 50V K	チップセラ（Ｂ）			01
	CFT02	**US063100**	Ceramic Capacitor-B (chip)	1000P 50V K	チップセラ（Ｂ）			01
	CH000	**US062120**	Ceramic Capacitor-SL(chip)	120P 50V J	チップセラ（ＳＬ）			01
	-009	**US062120**	Ceramic Capacitor-SL(chip)	120P 50V J	チップセラ（ＳＬ）			01
	CHC14	**US135100**	Ceramic Capacitor-F (chip)	0.1000 16V Z	チップセラ（Ｆ）			01
	CK000	**US062100**	Ceramic Capacitor-SL(chip)	100P 50V J	チップセラ（ＳＬ）			01
	-013	**US062100**	Ceramic Capacitor-SL(chip)	100P 50V J	チップセラ（ＳＬ）			01
	CM001	**US061470**	Ceramic Capacitor-CH(chip)	47P 50V J	チップセラ（ＣＨ）			01
	-004	**US061470**	Ceramic Capacitor-CH(chip)	47P 50V J	チップセラ（ＣＨ）			01
	CN001	**VB858900**	Connector Base Post	PH-10P SE	コネクタベースポスト			01
	CNH01	**VR623200**	Connector Header	HIF3FC-20PA2.54DS	コネクタヘッダー			03

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	REF NO.	PART NO.	DESCRIPTION		部品名	REMARKS	QTY	RANK
	CPD01	**UF018100**	Electrolytic Cap. (chip)	100 6.3V	チップケミコン			01
	CPD02	**UF018100**	Electrolytic Cap. (chip)	100 6.3V	チップケミコン			01
	CS001	**US062120**	Ceramic Capacitor-SL(chip)	120P 50V J	チップセラ（SL）			01
	CV000	**US062120**	Ceramic Capacitor-SL(chip)	120P 50V J	チップセラ（SL）			01
	CV001	**US062120**	Ceramic Capacitor-SL(chip)	120P 50V J	チップセラ（SL）			01
	D0080	**VB493900**	Diode	MA221	ダイオード			01
	FL001	**VR243700**	Chip Inductance	56U LEM2520 T 560J	巻線チップインダクタ			01
	-004	**VR243700**	Chip Inductance	56U LEM2520 T 560J	巻線チップインダクタ			01
	FT001	**VZ427900**	FET	2SJ278MYTR	FET			01
	FT002	**VZ427900**	FET	2SJ278MYTR	FET			01
*	CPU1	**X2690A00**	IC	HD64F2128F16	IC	CPU		
	IC004	**XT384A00**	IC	PST600C-MMP3P	IC	SYSTEM RESET		03
	IC006	**XW104A00**	IC	MM74HC14SJX	IC	INVERTER		01
	LD000	**VU087300**	LED	KR3308S	LED			02
	LD001	**VU087300**	LED	KR3308S	LED			02
	LD002	**VU087300**	LED	KR3308S	LED			02
	LD003	**VU087300**	LED	KR3308S	LED			02
	LD004	**VU087300**	LED	KR3308S	LED			02
	LD005	**VU087300**	LED	KR3308S	LED			02
	LD006	**VU087300**	LED	KR3308S	LED			02
	LD007	**VU087300**	LED	KR3308S	LED			02
	LD008	**VU087300**	LED	KR3308S	LED			02
	LD009	**VU087300**	LED	KR3308S	LED			02
	LD010	**VU087300**	LED	KR3308S	LED			02
	LD011	**VU087300**	LED	KR3308S	LED			02
*	OP001	**X2869A00**	IC	HA1630Q04T	IC	OP AMP		
*	OP002	**X2869A00**	IC	HA1630Q04T	IC	OP AMP		
	PC080	**VN406200**	Photo Coupler	HCPL-0600-500	フォトカプラ			05
	PD000	**VB434400**	Photo Diode	S2506-02	シリコンフォトダイオード			03
	-007	**VB434400**	Photo Diode	S2506-02	シリコンフォトダイオード			03
	Q0080	**VV556400**	Transistor	2SC2412K Q,R,S	トランジスタ			01
	R0000	**RD357330**	Carbon Resistor (chip)	33.0K 63M J	チップ抵抗			01
	-0007	**RD357330**	Carbon Resistor (chip)	33.0K 63M J	チップ抵抗			01
	R0008	**RD254100**	Carbon Resistor (chip)	10.0 0.1 J	チップ抵抗			01
	R0010	**RD356820**	Carbon Resistor (chip)	8.2K 63M J	チップ抵抗			01
	-0017	**RD356820**	Carbon Resistor (chip)	8.2K 63M J	チップ抵抗			01
	R0020	**RD357680**	Carbon Resistor (chip)	68.0K 63M J	チップ抵抗			01
	-0027	**RD357680**	Carbon Resistor (chip)	68.0K 63M J	チップ抵抗			01
	R0030	**VI190900**	Carbon Resistor (chip)	22.0 1/10 D	チップ金被抵抗			01
	-0041	**VI190900**	Carbon Resistor (chip)	22.0 1/10 D	チップ金被抵抗			01
	R0050	**VC759900**	Metal Oxide Film Resistor	330.0 2W J	酸化金属被膜抵抗			01
	R0051	**VC759500**	Metal Oxide Film Resistor	220.0 2W J	酸化金属被膜抵抗			01
	R0052	**VC759100**	Metal Oxide Film Resistor	150.0 2W J	酸化金属被膜抵抗			01
	R0053	**VC759100**	Metal Oxide Film Resistor	150.0 2W J	酸化金属被膜抵抗			01
	R0080	**RD356100**	Carbon Resistor (chip)	1.0K 63M J	チップ抵抗			01
	R0081	**RD355220**	Carbon Resistor (chip)	220.0 63M J	チップ抵抗			01
	R0082	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
	R0083	**RD356470**	Carbon Resistor (chip)	4.7K 63M J	チップ抵抗			01
	R0084	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
	R0085	**RD355220**	Carbon Resistor (chip)	220.0 63M J	チップ抵抗			01
	R0086	**RD355220**	Carbon Resistor (chip)	220.0 63M J	チップ抵抗			01
	R0097	**V2885100**	Carbon Resistor (chip)	27.0 1/0 J	チップ抵抗			01
	R0098	**V2885100**	Carbon Resistor (chip)	27.0 1/0 J	チップ抵抗			01
	R0101	**RD250000**	Carbon Resistor (chip)	0.0 0.0 J	チップ抵抗			01
	R0102	**RD250000**	Carbon Resistor (chip)	0.0 0.0 J	チップ抵抗			01
	RA000	**RD356560**	Carbon Resistor (chip)	5.6K 63M J	チップ抵抗			01
	-011	**RD356560**	Carbon Resistor (chip)	5.6K 63M J	チップ抵抗			01
	RA012	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
	RA013	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
	RAL00	**RD354470**	Carbon Resistor (chip)	47.0 63M J	チップ抵抗			01
	-07	**RD354470**	Carbon Resistor (chip)	47.0 63M J	チップ抵抗			01
	RAN08	**RD356270**	Carbon Resistor (chip)	2.7K 63M J	チップ抵抗			01
	RAN09	**RD355100**	Carbon Resistor (chip)	100.0 63M J	チップ抵抗			01
	RAY01	**RE044680**	Resistor Array	68X4	抵抗アレイ			01
	-03	**RE044680**	Resistor Array	68X4	抵抗アレイ			01
	RB000	**RD354470**	Carbon Resistor (chip)	47.0 63M J	チップ抵抗			01
	RB002	**RD354470**	Carbon Resistor (chip)	47.0 63M J	チップ抵抗			01
	RB004	**RD354470**	Carbon Resistor (chip)	47.0 63M J	チップ抵抗			01
	-007	**RD354470**	Carbon Resistor (chip)	47.0 63M J	チップ抵抗			01
	RFT01	**RD356100**	Carbon Resistor (chip)	1.0K 63M J	チップ抵抗			01
	RFT02	**RD356100**	Carbon Resistor (chip)	1.0K 63M J	チップ抵抗			01
	RH000	**RD354470**	Carbon Resistor (chip)	47.0 63M J	チップ抵抗			01
	-009	**RD354470**	Carbon Resistor (chip)	47.0 63M J	チップ抵抗			01
	RK000	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
	-013	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01

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	REF NO.	PART NO.	DESCRIPTION		部品名	REMARKS	QTY	RANK
	RL001	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
	-007	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
	RL008	**RD354470**	Carbon Resistor (chip)	47.0 63M J	チップ抵抗			01
	RL010	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
	RL013	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
	RN000	**RD354470**	Carbon Resistor (chip)	47.0 63M J	チップ抵抗			01
	-004	**RD354470**	Carbon Resistor (chip)	47.0 63M J	チップ抵抗			01
	RRS00	**RD356470**	Carbon Resistor (chip)	4.7K 63M J	チップ抵抗			01
	RS001	**RD354470**	Carbon Resistor (chip)	47.0 63M J	チップ抵抗			01
	RSW02	**RD354470**	Carbon Resistor (chip)	47.0 63M J	チップ抵抗			01
	RV000	**RD354470**	Carbon Resistor (chip)	47.0 63M J	チップ抵抗			01
	RV001	**RD354470**	Carbon Resistor (chip)	47.0 63M J	チップ抵抗			01
	RXM01	**RD359100**	Carbon Resistor (chip)	1.0M 63M J	チップ抵抗			01
	SW001	**VV020300**	Tact Switch	SKQNAA	タクトSW	WRITE MODE		01
	SW002	**VV020300**	Tact Switch	SKQNAA	タクトSW	WRITE MODE		01
	TA001	**VQ867600**	Transistor Array	TD62003F	トランジスタアレイ			03
	TA002	**VQ867600**	Transistor Array	TD62003F	トランジスタアレイ			03
*	X0001	**V8564300**	Ceramic Resonator	20.0M CSTCW20M0	セラミック振動子			
	Z0001	**VU120900**	Sensor Socket AS Black		センサーソケットAS			05
*	Z0002	**V9543200**	Sensor Socket Base	PBT NATURAL	センサーソケットベース			
	Z011G	**V7731000**	Pan Head Tapping Screw-P	3.0X6 MFZN2BL	+ナベPタイト			
	Z014G	**--**	Label		種別ラベル	(V906370)		
		V7986700	Circuit Board	MN	MNシート	(X0577A0)		48
		BA808520	Heat Sink	T220M 25L	ヒートシンク			03
		VB659000	Bind Head Screw	3.0X8 MFZN2BL	+バインド小ネジ			01
	C0001	**US062100**	Ceramic Capacitor-SL(chip)	100P 50V J	チップセラ（SL）			01
	C0002	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
	-0004	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
	C0005	**UF037100**	Electrolytic Cap. (chip)	10 16V	チップケミコン			01
	C0006	**US061270**	Ceramic Capacitor-CH(chip)	27P 50V J	チップセラ（CH）			01
	C0007	**US061270**	Ceramic Capacitor-CH(chip)	27P 50V J	チップセラ（CH）			01
	C0008	**US062470**	Ceramic Capacitor-SL(chip)	470P 50V J	チップセラ（SL）			01
	C0009	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
	-0011	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
	C0021	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
	C0022	**UF037100**	Electrolytic Cap. (chip)	10 16V	チップケミコン			01
	C0023	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
	C0024	**US062100**	Ceramic Capacitor-SL(chip)	100P 50V J	チップセラ（SL）			01
	C0025	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
	C0027	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
	C0028	**UF037100**	Electrolytic Cap. (chip)	10 16V	チップケミコン			01
	C0029	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
	C0031	**US061270**	Ceramic Capacitor-CH(chip)	27P 50V J	チップセラ（CH）			01
	C0034	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
	C0035	**UF037100**	Electrolytic Cap. (chip)	10 16V	チップケミコン			01
	C0036	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
	-0044	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
	C0045	**UF037100**	Electrolytic Cap. (chip)	10 16V	チップケミコン			01
	C0046	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
	C0048	**UF038100**	Electrolytic Cap. (chip)	100 16V	チップケミコン			01
	C0049	**UF066100**	Electrolytic Cap. (chip)	1 50V	チップケミコン			01
	C0050	**US063100**	Ceramic Capacitor-B (chip)	1000P 50V K	チップセラ（B）			01
	C0051	**US061270**	Ceramic Capacitor-CH(chip)	27P 50V J	チップセラ（CH）			01
	C0052	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
	C0053	**US062100**	Ceramic Capacitor-SL(chip)	100P 50V J	チップセラ（SL）			01
	-0055	**US062100**	Ceramic Capacitor-SL(chip)	100P 50V J	チップセラ（SL）			01
	C0056	**US061220**	Ceramic Capacitor-CH(chip)	22P 50V J	チップセラ（CH）			01
	C0057	**US061220**	Ceramic Capacitor-CH(chip)	22P 50V J	チップセラ（CH）			01
	C0058	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
	C0059	**US062100**	Ceramic Capacitor-SL(chip)	100P 50V J	チップセラ（SL）			01
	-0063	**US062100**	Ceramic Capacitor-SL(chip)	100P 50V J	チップセラ（SL）			01
	C0066	**UF138220**	Electrolytic Cap. (chip)	220 16V UUR1C2	チップケミコン			01
	C0067	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
	C0068	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
	C0071	**US062100**	Ceramic Capacitor-SL(chip)	100P 50V J	チップセラ（SL）			01
	C0072	**US062100**	Ceramic Capacitor-SL(chip)	100P 50V J	チップセラ（SL）			01
	C0074	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
	C0123	**US064100**	Ceramic Capacitor-B (chip)	0.0100 50V K	チップセラ（B）			01
	-0125	**US064100**	Ceramic Capacitor-B (chip)	0.0100 50V K	チップセラ（B）			01
	C0130	**US064100**	Ceramic Capacitor-B (chip)	0.0100 50V K	チップセラ（B）			01
	C0131	**US064100**	Ceramic Capacitor-B (chip)	0.0100 50V K	チップセラ（B）			01
	C0200	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
	C0201	**UF266100**	Electrolytic Cap.-BP (chip	1.0 50V	チップBPコン			01
	C0202	**UF266100**	Electrolytic Cap.-BP (chip	1.0 50V	チップBPコン			01

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C0207	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
C0208	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
C0209	**UF037100**	Electrolytic Cap. (chip)	10 16V	チップケミコン			01
C0210	**UF138470**	Electrolytic Cap. (chip)	470 16V UUR1C4	チップケミコン			02
C0215	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
C0216	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
C0217	**UF037100**	Electrolytic Cap. (chip)	10 16V	チップケミコン			01
C0218	**UF138470**	Electrolytic Cap. (chip)	470 16V UUR1C4	チップケミコン			02
C0224	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
C0226	**UF119100**	Electrolytic Cap. (chip)	1000 6.3V UUR0J1	チップケミコン			02
C0227	**UF017220**	Electrolytic Cap. (chip)	22 6.3V	チップケミコン			01
C0228	**UF038100**	Electrolytic Cap. (chip)	100 16V	チップケミコン			01
C0229	**UF017470**	Electrolytic Cap. (chip)	47 6.3V	チップケミコン			01
C0230	**UF017220**	Electrolytic Cap. (chip)	22 6.3V	チップケミコン			01
C0231	**UF038100**	Electrolytic Cap. (chip)	100 16V	チップケミコン			01
C0232	**UF017470**	Electrolytic Cap. (chip)	47 6.3V	チップケミコン			01
C0233	**US063220**	Ceramic Capacitor-B (chip)	2200P 50V K	チップセラ（B）			01
C0234	**US063120**	Ceramic Capacitor-B (chip)	1200P 50V K	チップセラ（B）			01
C0235	**US062330**	Ceramic Capacitor-SL(chip)	330P 50V J	チップセラ（SL）			01
C0236	**US063220**	Ceramic Capacitor-B (chip)	2200P 50V K	チップセラ（B）			01
C0237	**US063120**	Ceramic Capacitor-B (chip)	1200P 50V K	チップセラ（B）			01
C0238	**US062330**	Ceramic Capacitor-SL(chip)	330P 50V J	チップセラ（SL）			01
C0239	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
-0242	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
C0243	**US061820**	Ceramic Capacitor-SL(chip)	82P 50V J	チップセラ（SL）			01
C0244	**UF246470**	Electrolytic Cap.-BP (chip	4.7 25V	チップBPコン			01
C0245	**US061820**	Ceramic Capacitor-SL(chip)	82P 50V J	チップセラ（SL）			01
C0246	**UF246470**	Electrolytic Cap.-BP (chip	4.7 25V	チップBPコン			01
C0247	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
C0248	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
C0249	**UF266220**	Electrolytic Cap.-BP (chip	2.2 50V	チップBPコン			01
C0250	**UF266220**	Electrolytic Cap.-BP (chip	2.2 50V	チップBPコン			01
C0251	**US061820**	Ceramic Capacitor-SL(chip)	82P 50V J	チップセラ（SL）			01
-0254	**US061820**	Ceramic Capacitor-SL(chip)	82P 50V J	チップセラ（SL）			01
C0255	**UF266330**	Electrolytic Cap.-BP (chip	3.3 50V	チップBPコン			01
C0256	**UF266330**	Electrolytic Cap.-BP (chip	3.3 50V	チップBPコン			01
C0257	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
C0258	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
C0259	**US061820**	Ceramic Capacitor-SL(chip)	82P 50V J	チップセラ（SL）			01
C0260	**US061820**	Ceramic Capacitor-SL(chip)	82P 50V J	チップセラ（SL）			01
C0261	**UN847470**	Electrolytic Cap.-BP	47.00 25.0V	BPケミコン			01
C0262	**UN847470**	Electrolytic Cap.-BP	47.00 25.0V	BPケミコン			01
C0263	**UF266100**	Electrolytic Cap.-BP (chip	1.0 50V	チップBPコン			01
C0264	**UF266100**	Electrolytic Cap.-BP (chip	1.0 50V	チップBPコン			01
C0265	**UF246470**	Electrolytic Cap.-BP (chip	4.7 25V	チップBPコン			01
C0266	**UF246470**	Electrolytic Cap.-BP (chip	4.7 25V	チップBPコン			01
C0267	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
-0270	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
C0272	**UF038100**	Electrolytic Cap. (chip)	100 16V	チップケミコン			01
C0274	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
C0275	**UR848470**	Electrolytic Cap.	470.00 25.0V	ケミコン			01
C0278	**US062330**	Ceramic Capacitor-SL(chip)	330P 50V J	チップセラ（SL）			01
C0279	**US062330**	Ceramic Capacitor-SL(chip)	330P 50V J	チップセラ（SL）			01
-0285	**US062330**	Ceramic Capacitor-SL(chip)	330P 50V J	チップセラ（SL）			01
C0286	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
C0287	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z	チップセラ（F）			01
C0288	**UI566100**	Electrolytic Cap.	1.00 50.0V	ケミコン			01
CN001	**VB390100**	Connector Base Post	PH- 5P TE	コネクタベースポスト			01
CN002	**VB390700**	Connector Base Post	PH-11P TE	コネクタベースポスト			01
CN004	**VB390200**	Connector Base Post	PH- 6P TE	コネクタベースポスト			01
CN005	**VB390600**	Connector Base Post	PH-10P TE	コネクタベースポスト			01
CN006	**VB389900**	Connector Base Post	PH- 3P TE	コネクタベースポスト			01
CN007	**VB390000**	Connector Base Post	PH- 4P TE	コネクタベースポスト			01
CN011	**VB390600**	Connector Base Post	PH-10P TE	コネクタベースポスト			01
CN104	**VB390400**	Connector Base Post	PH- 8P TE	コネクタベースポスト			01
CN105	**VB390500**	Connector Base Post	PH- 9P TE	コネクタベースポスト			03
CN106	**LB918040**	Base Post Connector	XH 4P TE	ベーステキポスト			01
CN107	**V3888200**	Connector	PIN HEADER 26P TE	コネクタ			04
CN108	**VR977700**	Connector	HIF3FC-20PA2.54DSA	コネクタ			02
D0001	**VB493900**	Diode	MA221	ダイオード			01
-0005	**VB493900**	Diode	MA221	ダイオード			01
D0001	**VV925900**	Diode	RLS-73 TE-11	ダイオード			01
-0005	**VV925900**	Diode	RLS-73 TE-11	ダイオード			01
D0100	**VN681100**	Diode	EC10DS4-TE12L	ダイオード			01
EM101	**VR193800**	LC Filter	STF-104ZB-TBM	LCフィルターEMI			01

*: New parts

RANK: Japan only

REF NO.	PART NO.	DESCRIPTION		部品名	REMARKS	QTY	RANK
FB100	**VQ724900**	Chip Inductance	BK2125HM601-T	チップインダクタ			01
-103	**VQ724900**	Chip Inductance	BK2125HM601-T	チップインダクタ			01
FL001	**VR243700**	Chip Inductance	56U LEM2520 T 560J	巻線チップインダクタ			01
-020	**VR243700**	Chip Inductance	56U LEM2520 T 560J	巻線チップインダクタ			01
FL022	**VR243700**	Chip Inductance	56U LEM2520 T 560J	巻線チップインダクタ			01
FL023	**VR243700**	Chip Inductance	56U LEM2520 T 560J	巻線チップインダクタ			01
FL101	**VJ928500**	Chip Inductance	BLM31B601S	チップインダクタ			01
IC001	**VN686000**	Photo Coupler	PC410T	フォトカプラ			04
IC001	**VR903700**	Photo Coupler	HCPL-M600	フォトカプラ			04
IC002	**XU147A00**	IC	HD6417014F28	IC	CPU		09
IC003	**XU462B00**	IC	MSM514260E-60TS-K	IC	DRAM 4M		07
IC005	**X0606A00**	IC	FM16016SF5-70	IC	EP-ROM 16M		
IC005	**X0607A00**	IC	MX29F16100AMC-90	IC	EP-ROM 16M		
IC005	**X0576A00**	IC	MX29F16100AMC-90	IC	EP-ROM 16M		16
IC007	**XR738A00**	IC	TC203C760HF-001	IC	SWP30		20
IC007	**XS725A00**	IC	TC203C760HF-002	IC	SWP30B		19
IC008	**XW792A00**	IC	SN74HC132NSR	IC	NAND		01
IC009	**VR903700**	Photo Coupler	HCPL-M600	フォトカプラ	}		04
IC009	**VN686000**	Photo Coupler	PC410T	フォトカプラ			04
IC013	**XU462B00**	IC	MSM514260E-60TS-K	IC	DRAM 4M		07
IC015	**XV451A00**	IC	K3N7C1C6CM	IC	WAVE L 64M		11
IC015	**XV451B00**	IC	K3N7C15IJE	IC	WAVE L 64M		10
IC016	**XV452A00**	IC	K3N7C1C7CM	IC	WAVE H 64M		11
IC016	**XV452B00**	IC	K3N7C104YB	IC	WAVE H 64M		10
IC024	**XP154A00**	IC	M5237ML	IC	REGULATOR +3.3V		02
IC025	**VN686000**	Photo Coupler	PC410T	フォトカプラ	}		04
IC025	**VR903700**	Photo Coupler	HCPL-M600	フォトカプラ			04
IC103	**XJ598A00**	IC	NJM78L05UA	IC	REGULATOR +5V		02
IC104	**XN086A00**	IC	NJM79L05UA	IC	REGULATOR TE1 -5V		02
IC105	**XP551A00**	IC	PCM1702U/2K	IC	D/A CONVERTER		08
IC106	**XP551A00**	IC	PCM1702U/2K	IC	D/A CONVERTER		08
IC107	**XF291A00**	IC	UPC4570G2	IC	OP AMP		03
IC108	**XF291A00**	IC	UPC4570G2	IC	OP AMP		03
IC110	**XF291A00**	IC	UPC4570G2	IC	OP AMP		03
IC111	**XF291A00**	IC	UPC4570G2	IC	OP AMP		03
IC112	**XM804A00**	IC	LA6517	IC	OP AMP		04
IC114	**XF291A00**	IC	UPC4570G2	IC	OP AMP		03
IC115	**XJ608A00**	IC	NJM7812FA	IC	REGULATOR +12V		02
IC116	**XF880A00**	IC	MB3763P	IC	MOTER DRIVE		04
R0001	**RD355220**	Carbon Resistor (chip)	220.0 63M J	チップ抵抗			01
R0002	**RD355220**	Carbon Resistor (chip)	220.0 63M J	チップ抵抗			01
R0003	**RD356150**	Carbon Resistor (chip)	1.5K 63M J	チップ抵抗			01
R0004	**RD357220**	Carbon Resistor (chip)	22.0K 63M J	チップ抵抗			01
R0005	**RD357220**	Carbon Resistor (chip)	22.0K 63M J	チップ抵抗			01
R0006	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
R0007	**RD355220**	Carbon Resistor (chip)	220.0 63M J	チップ抵抗			01
R0008	**RD356100**	Carbon Resistor (chip)	1.0K 63M J	チップ抵抗			01
R0009	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
-0013	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
R0014	**RD357470**	Carbon Resistor (chip)	47.0K 63M J	チップ抵抗			01
-0017	**RD357470**	Carbon Resistor (chip)	47.0K 63M J	チップ抵抗			01
R0018	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
-0023	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
R0024	**RD355680**	Carbon Resistor (chip)	680.0 63M J	チップ抵抗			01
R0025	**RD355220**	Carbon Resistor (chip)	220.0 63M J	チップ抵抗			01
R0027	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
R0028	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
R0030	**RD356330**	Carbon Resistor (chip)	3.3K 63M J	チップ抵抗			01
R0031	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
-0033	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
R0034	**RD358470**	Carbon Resistor (chip)	470.0K 63M J	チップ抵抗			01
R0035	**RD356100**	Carbon Resistor (chip)	1.0K 63M J	チップ抵抗			01
R0036	**RD356100**	Carbon Resistor (chip)	1.0K 63M J	チップ抵抗			01
R0039	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
-0044	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
R0045	**RD358470**	Carbon Resistor (chip)	470.0K 63M J	チップ抵抗			01
R0046	**RD358470**	Carbon Resistor (chip)	470.0K 63M J	チップ抵抗			01
R0047	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
R0048	**RD358470**	Carbon Resistor (chip)	470.0K 63M J	チップ抵抗			01
R0049	**RD358470**	Carbon Resistor (chip)	470.0K 63M J	チップ抵抗			01
R0050	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
R0051	**RD357220**	Carbon Resistor (chip)	22.0K 63M J	チップ抵抗			01
R0052	**RD356100**	Carbon Resistor (chip)	1.0K 63M J	チップ抵抗			01
R0053	**RD357220**	Carbon Resistor (chip)	22.0K 63M J	チップ抵抗			01
R0054	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01

∗: New parts

RANK: Japan only

REF NO.	PART NO.	DESCRIPTION		部品名	REMARKS	QTY	RANK
R0055	**RD356470**	Carbon Resistor (chip)	4.7K 63M J	チップ抵抗			01
R0056	**RD356220**	Carbon Resistor (chip)	2.2K 63M J	チップ抵抗			01
R0057	**RD358470**	Carbon Resistor (chip)	470.0K 63M J	チップ抵抗			01
R0058	**RD356100**	Carbon Resistor (chip)	1.0K 63M J	チップ抵抗			01
R0059	**RD355220**	Carbon Resistor (chip)	220.0 63M J	チップ抵抗			01
R0060	**RD355220**	Carbon Resistor (chip)	220.0 63M J	チップ抵抗			01
R0061	**RD356150**	Carbon Resistor (chip)	1.5K 63M J	チップ抵抗			01
R0062	**RD357220**	Carbon Resistor (chip)	22.0K 63M J	チップ抵抗			01
R0063	**RD357220**	Carbon Resistor (chip)	22.0K 63M J	チップ抵抗			01
R0064	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
R0065	**RD355220**	Carbon Resistor (chip)	220.0 63M J	チップ抵抗			01
R0066	**RD356100**	Carbon Resistor (chip)	1.0K 63M J	チップ抵抗			01
R0067	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
-0074	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
R0075	**RD354680**	Carbon Resistor (chip)	68.0 63M J	チップ抵抗			01
R0076	**RD355220**	Carbon Resistor (chip)	220.0 63M J	チップ抵抗			01
R0077	**RD356820**	Carbon Resistor (chip)	8.2K 63M J	チップ抵抗			01
R0078	**RD356470**	Carbon Resistor (chip)	4.7K 63M J	チップ抵抗			01
R0079	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
-0084	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
R0085	**RD355100**	Carbon Resistor (chip)	100.0 63M J	チップ抵抗			01
R0086	**RD355100**	Carbon Resistor (chip)	100.0 63M J	チップ抵抗			01
R0087	**RD356220**	Carbon Resistor (chip)	2.2K 63M J	チップ抵抗			01
R0088	**RD358470**	Carbon Resistor (chip)	470.0K 63M J	チップ抵抗			01
R0089	**RD356100**	Carbon Resistor (chip)	1.0K 63M J	チップ抵抗			01
R0090	**RD355220**	Carbon Resistor (chip)	220.0 63M J	チップ抵抗			01
R0091	**RD356100**	Carbon Resistor (chip)	1.0K 63M J	チップ抵抗			01
R0092	**RD354680**	Carbon Resistor (chip)	68.0 63M J	チップ抵抗			01
R0093	**RD350000**	Carbon Resistor (chip)	0 63M J	チップ抵抗			01
R0094	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
R0095	**RD355100**	Carbon Resistor (chip)	100.0 63M J	チップ抵抗			01
R0115	**RD356100**	Carbon Resistor (chip)	1.0K 63M J	チップ抵抗			01
-0117	**RD356100**	Carbon Resistor (chip)	1.0K 63M J	チップ抵抗			01
R0118	**VT574000**	Metal Oxide Film Resistor	15.0 3W J	酸化金属被膜抵抗			01
R0201	**RD356330**	Carbon Resistor (chip)	3.3K 63M J	チップ抵抗			01
R0202	**RD356220**	Carbon Resistor (chip)	2.2K 63M J	チップ抵抗			01
R0203	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
R0204	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
R0205	**RD355100**	Carbon Resistor (chip)	100.0 63M J	チップ抵抗			01
R0206	**RD356330**	Carbon Resistor (chip)	3.3K 63M J	チップ抵抗			01
R0207	**RD356220**	Carbon Resistor (chip)	2.2K 63M J	チップ抵抗			01
R0208	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
R0209	**RD355100**	Carbon Resistor (chip)	100.0 63M J	チップ抵抗			01
R0210	**RD357220**	Carbon Resistor (chip)	22.0K 63M J	チップ抵抗			01
-0215	**RD357220**	Carbon Resistor (chip)	22.0K 63M J	チップ抵抗			01
R0216	**RD357470**	Carbon Resistor (chip)	47.0K 63M J	チップ抵抗			01
R0217	**RD357180**	Carbon Resistor (chip)	18.0K 63M J	チップ抵抗			01
R0218	**RD357470**	Carbon Resistor (chip)	47.0K 63M J	チップ抵抗			01
R0219	**RD357180**	Carbon Resistor (chip)	18.0K 63M J	チップ抵抗			01
R0220	**RD357470**	Carbon Resistor (chip)	47.0K 63M J	チップ抵抗			01
R0221	**RD357470**	Carbon Resistor (chip)	47.0K 63M J	チップ抵抗			01
R0222	**RD357220**	Carbon Resistor (chip)	22.0K 63M J	チップ抵抗			01
-0225	**RD357220**	Carbon Resistor (chip)	22.0K 63M J	チップ抵抗			01
R0226	**RD357180**	Carbon Resistor (chip)	18.0K 63M J	チップ抵抗			01
R0227	**RD357470**	Carbon Resistor (chip)	47.0K 63M J	チップ抵抗			01
R0228	**RD357180**	Carbon Resistor (chip)	18.0K 63M J	チップ抵抗			01
R0229	**RD357470**	Carbon Resistor (chip)	47.0K 63M J	チップ抵抗			01
R0230	**RD357220**	Carbon Resistor (chip)	22.0K 63M J	チップ抵抗			01
R0231	**RD357220**	Carbon Resistor (chip)	22.0K 63M J	チップ抵抗			01
R0232	**RD355680**	Carbon Resistor (chip)	680.0 63M J	チップ抵抗			01
R0233	**RD356220**	Carbon Resistor (chip)	2.2K 63M J	チップ抵抗			01
R0234	**RD356220**	Carbon Resistor (chip)	2.2K 63M J	チップ抵抗			01
R0235	**RD355680**	Carbon Resistor (chip)	680.0 63M J	チップ抵抗			01
R0236	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
R0237	**RD357150**	Carbon Resistor (chip)	15.0K 63M J	チップ抵抗			01
R0238	**RD357120**	Carbon Resistor (chip)	12.0K 63M J	チップ抵抗			01
R0239	**RD357150**	Carbon Resistor (chip)	15.0K 63M J	チップ抵抗			01
R0240	**RD357120**	Carbon Resistor (chip)	12.0K 63M J	チップ抵抗			01
R0241	**RD356330**	Carbon Resistor (chip)	3.3K 63M J	チップ抵抗			01
R0242	**RD356330**	Carbon Resistor (chip)	3.3K 63M J	チップ抵抗			01
R0243	**RD357220**	Carbon Resistor (chip)	22.0K 63M J	チップ抵抗			01
R0244	**RD357220**	Carbon Resistor (chip)	22.0K 63M J	チップ抵抗			01
R0245	**RD350000**	Carbon Resistor (chip)	0 63M J	チップ抵抗			01
-0247	**RD350000**	Carbon Resistor (chip)	0 63M J	チップ抵抗			01
R0253	**RD350000**	Carbon Resistor (chip)	0 63M J	チップ抵抗			01

∗: New parts

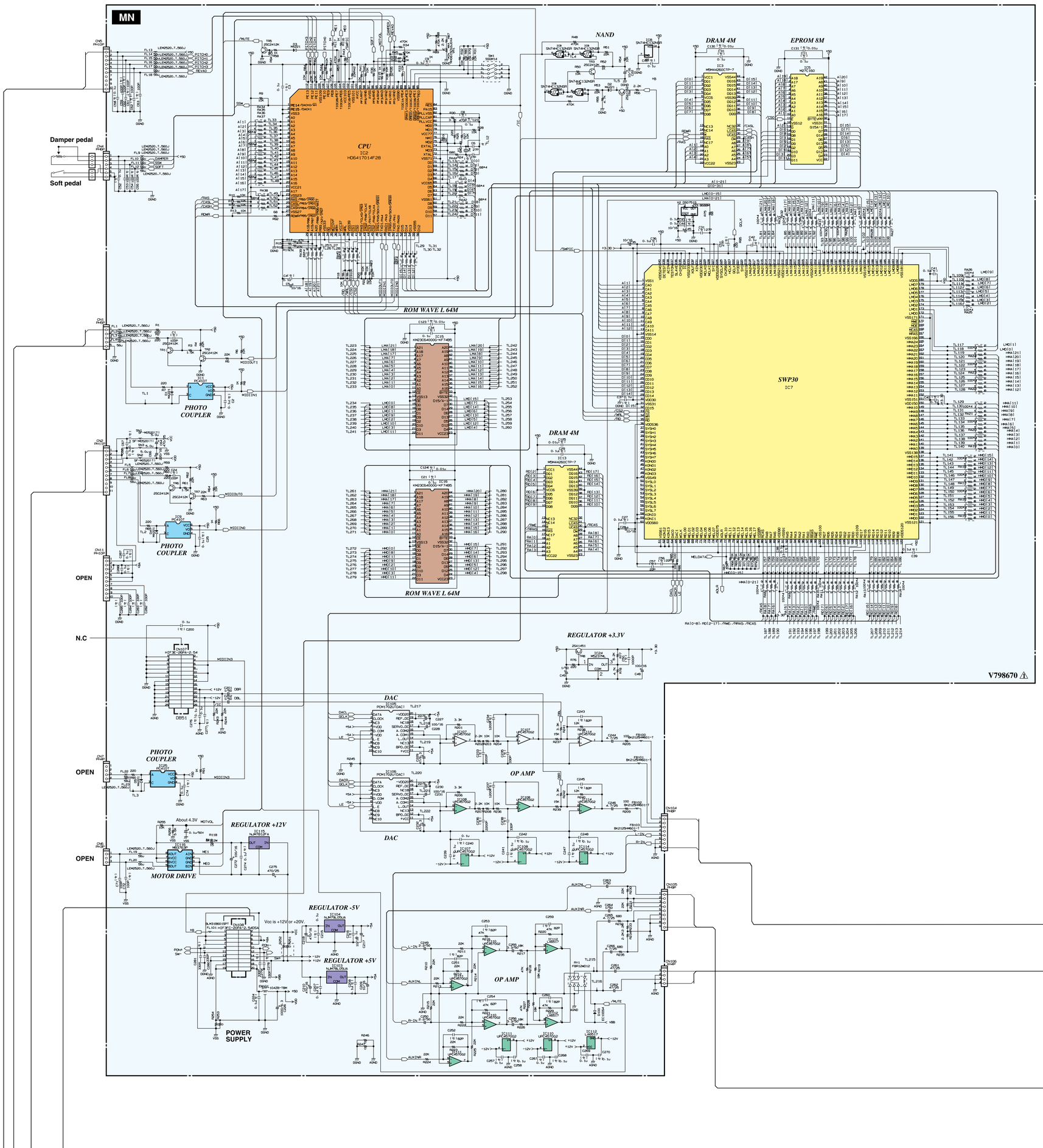
RANK: Japan only

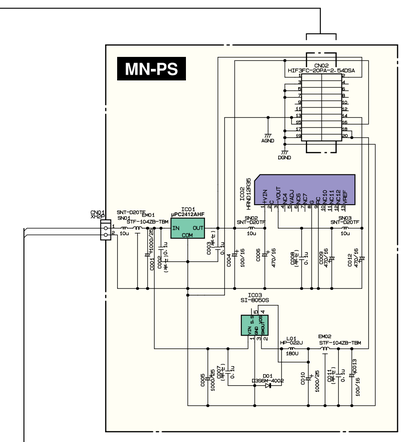
REF NO.	PART NO.	DESCRIPTION		部品名	REMARKS	QTY	RANK
R0254	**RD350000**	Carbon Resistor (chip)	0 63M J	チップ抵抗			01
R0255	**RD357100**	Carbon Resistor (chip)	10.0K 63M J	チップ抵抗			01
R0256	**RD356560**	Carbon Resistor (chip)	5.6K 63M J	チップ抵抗			01
RA008	**RE045100**	Resistor Array	100X4	抵抗アレイ			01
-033	**RE045100**	Resistor Array	100X4	抵抗アレイ			01
RA034	**RE044680**	Resistor Array	68X4	抵抗アレイ			01
-044	**RE044680**	Resistor Array	68X4	抵抗アレイ			01
RY001	**V7358200**	Relay	DC FBR12WD12	リレー12V			04
SK1	**VK863100**	IC Socket	DICF-42CS-E	ICソケット			03
SN001	**VQ332000**	Chip Inductance	5.0U SF-M0520(T)	チップインダクタ			03
-003	**VQ332000**	Chip Inductance	5.0U SF-M0520(T)	チップインダクタ			03
SW001	**VR757300**	Slide Switch	SSGM14	スライドSW			03
TR001	**VV556400**	Transistor	2SC2412K Q,R,S	トランジスタ			01
-003	**VV556400**	Transistor	2SC2412K Q,R,S	トランジスタ			01
TR004	**VJ927200**	Transistor	2SA1162 O,Y	トランジスタ			01
TR005	**VV556400**	Transistor	2SC2412K Q,R,S	トランジスタ			01
-007	**VV556400**	Transistor	2SC2412K Q,R,S	トランジスタ			01
TR008	**VJ828100**	Transistor	2SA1451A-O/Y O.Y	トランジスタ			04
VR001	**VA787800**	Trimmer Potentiometer	B 3.3K 3P RH0	半固定VR			01
X0001	**VV762900**	Quartz Crystal Unit	7M SMD-49	水晶振動子			03
X0002	**VV335600**	Quartz Crystal Unit	33.8688M DSO751S	水晶発振器			06
	V4389300	Circuit Board	112EX UPS	MN電源シート	(XW593A0)		22
	BA808520	Heat Sink	T220M 25L	ヒートシンク			03
	VB659000	Bind Head Screw	3.0X8 MFZN2BL	+バインド小ネジ			01
C0001	**UR749220**	Electrolytic Cap.	2200 25.0V	ケミコン			03
C0002	**VD287800**	Semiconductive Cera. Cap.	0.1000 50V Z	半導体セラコン			01
C0003	**VD287800**	Semiconductive Cera. Cap.	0.1000 50V Z	半導体セラコン			01
C0004	**UR838100**	Electrolytic Cap.	100.00 16.0V	ケミコン			01
C0005	**UR749220**	Electrolytic Cap.	2200 25.0V	ケミコン			03
C0006	**UR838470**	Electrolytic Cap.	470.00 16.0V	ケミコン			01
C0007	**VD287800**	Semiconductive Cera. Cap.	0.1000 50V Z	半導体セラコン			01
C0008	**VD287800**	Semiconductive Cera. Cap.	0.1000 50V Z	半導体セラコン			01
C0009	**UR838470**	Electrolytic Cap.	470.00 16.0V	ケミコン			01
C0010	**UR749100**	Electrolytic Cap.	1000 25.0V	ケミコン			01
C0011	**VD287800**	Semiconductive Cera. Cap.	0.1000 50V Z	半導体セラコン			01
C0012	**UR838470**	Electrolytic Cap.	470.00 16.0V	ケミコン			01
C0013	**UR838100**	Electrolytic Cap.	100.00 16.0V	ケミコン			01
CN001	**LB918020**	Base Post Connector	XH 2P TE	ベーステキポスト			01
CN002	**VR977700**	Connector	HIF3FC-20PA2.54DSA	コネクタ			02
D0001	**VS607800**	Diode	2.00A 40V	ダイオード			01
EM001	**VR193800**	LC Filter	STF-104ZB-TBM	LCフィルターEMI			01
EM002	**VR193800**	LC Filter	STF-104ZB-TBM	LCフィルターEMI			01
IC001	**XR833A00**	IC	UPC2412AHF	IC	REGULATOR +12V		04
IC002	**XT656A00**	IC	HRND12R35	IC	DC-DC CONVERTER		08
IC003	**XT442A00**	IC	SI-8050S	IC	REGULATOR +5V		05
L0001	**VZ017900**	Coil	HP-022J 180U	コイル			05
SN001	**VN381200**	Coil	SNT-D20TF 10UH	コイルSN 10uH			03
-003	**VN381200**	Coil	SNT-D20TF 10UH	コイルSN 10uH			03
	VQ861800	Seesaw Switch	VLAO4L3 U.C.S	照光シーソーSW	POWER (ON/OFF)		05
	HS412520	Rotary Variable Resistor	RK16Y11L0001A	ロータリーVR1連	DAMPER PEDAL		05
	NB037050	Switch Assembly		スイッチアッセンブリー	SOFT PEDAL		03

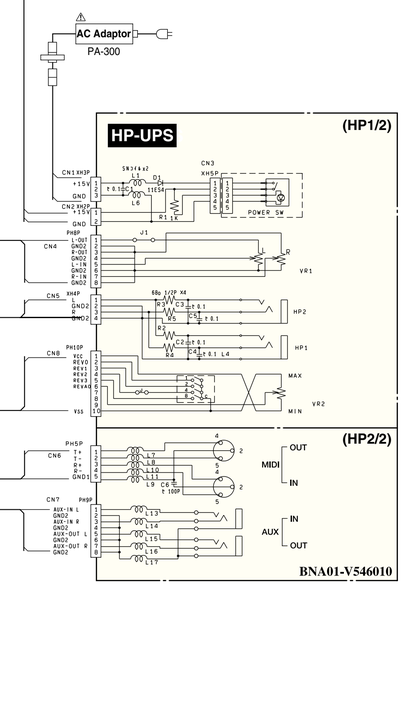
∗: New parts

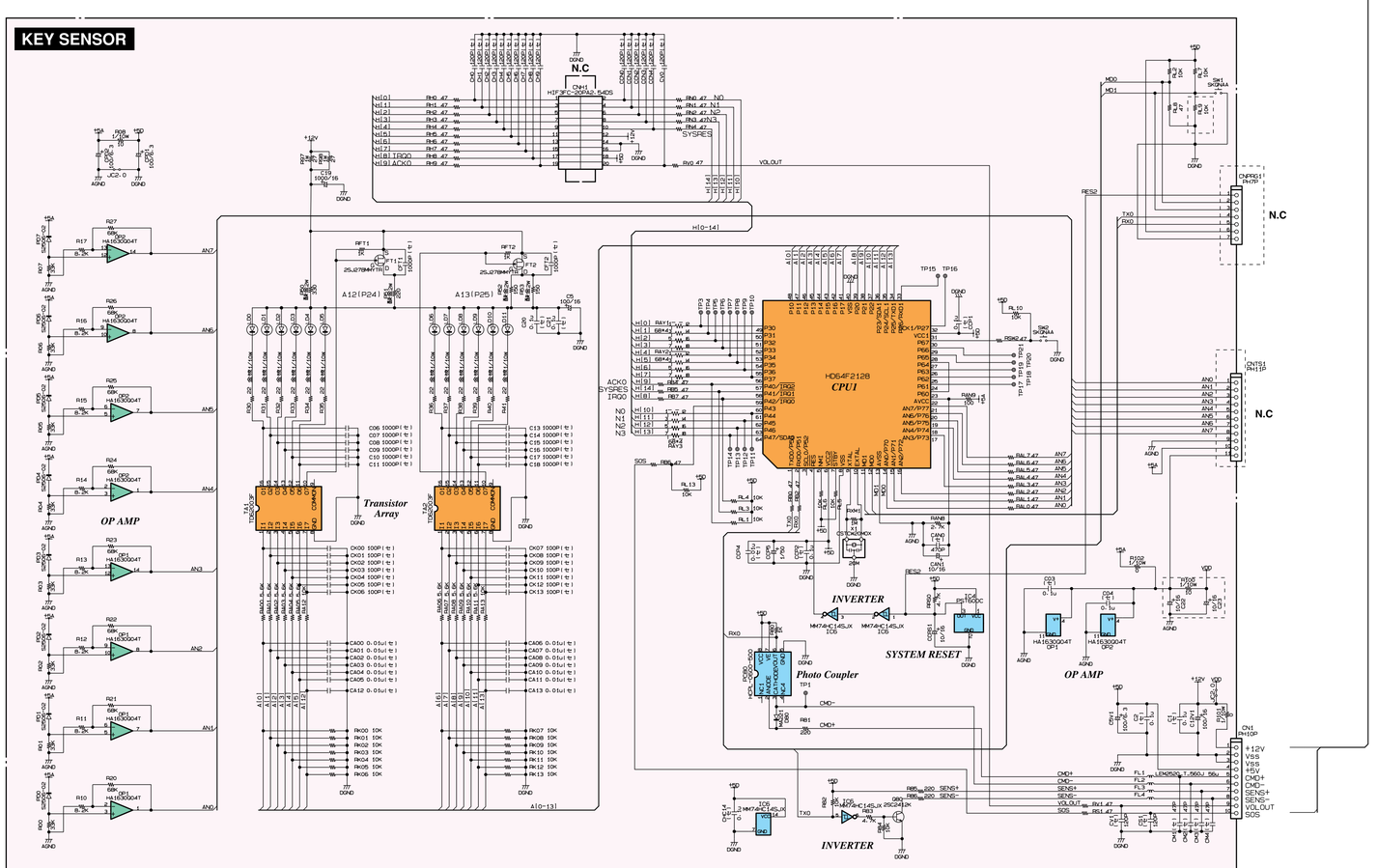
RANK: Japan only

■SILENT SB SERIES OVERALL CIRCUIT DIAGRAM (MN, KEY SENSOR, HP-UPS, MN POWER SUPPLY)









- **NJM78L05UA** (XJ598A00) REGULATOR +5V MN :IC103
  1: OUTPUT 2: COMMON 3: INPUT
- **NJM79L05UA** (XN086A00) REGULATOR -5V MN :IC104
  1: COMMON 2: INPUT 3: OUTPUT
- **µPC2412AHF** (XR833A00) REGULATOR +12V MN-PS :IC001
  1: INPUT 2: COMMON 3: OUTPUT
- **M5237ML** (XP154A00) REGULATOR +3.3V MN :IC024
  1: COMMON 2: INPUT 3: OUTPUT
- **SI-8050S** (XT442A00) REGULATOR +5V MN-PS :IC003
  1: V in 2: SW out 3: GND 4: V os 5: S.S
- **NJM7812FA** (XJ608A00) REGULATOR +12V MN :IC115
  1: OUTPUT 2: INPUT 3: COMMON

(半セ) : Semiconductive Cera. Cap.
(セ) : Ceramic Capacitor
(酸金) : Metal Oxide Film Resistor
(金被) : Carbon Resistor (Chip)

Parts inside of [ ] are not installed.

Note: See parts list for details of cicuit board component parts.