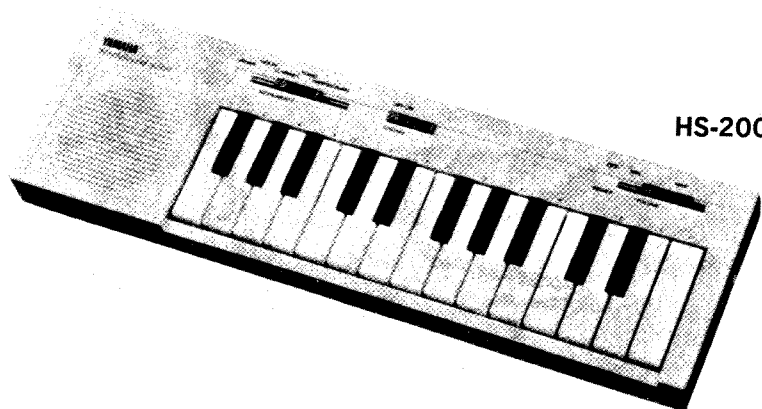


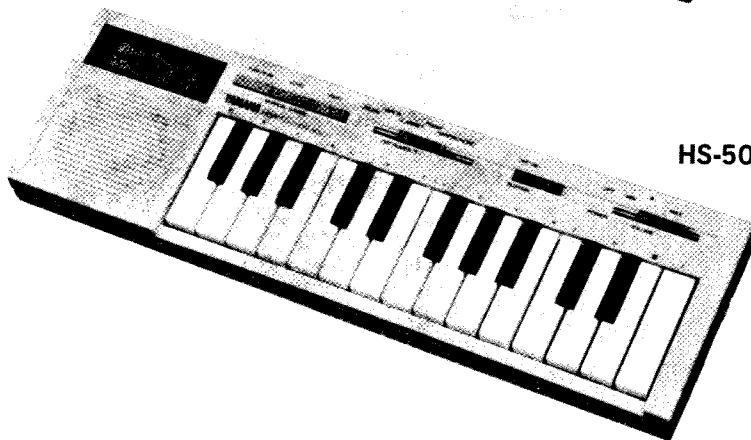
YAMAHA

HandySound

HS-200 • HS-500



HS-200



HS-500

SERVICE MANUAL

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SPECIFICATIONS

HS-200

KEY BOARD

25 keys (F2~F4), 4 notes polyphonic

INSTRUMENT VOICES

ORGAN VIOLIN
CLARINET PIANO
HARPSICHORD

EFFECT

SUSTAIN
VIBRATO (STRING only)

OTHER CONTROL

Power switch/VOLUME

AUXILIARY JACKS

Headphones
DC input

MAIN AMPLIFIER

500 mW (RMS)

SPEAKER

5.7 cm (2-1/4"), 8Ω

POWER SYSTEM

Batteries (five 1.5V SUM-3, "AA" size,
R-6 or equivalent)
Household current/car battery
(with optional adaptors)

POWER CONSUMPTION

850 mW

CABINET COLOR

Ivory white

DIMENSIONS

Width : 31.5 cm (12-3/8")
Depth : 9.5 cm (3-3/4")
Height : 3.0 cm (1-1/8")

WEIGHT (excluding batteries)

400 g (14 oz)

ACCESSORY INCLUDED

Protective soft case

Semi-conductor

LSI : 1
IC : 3
Transistor : 3
FET : 1
Diode : 33

HS-500

KEYBOARD

25 keys (F2~F4), 4 notes polyphonic

INSTRUMENT VOICES

ORGAN VIOLIN
CLARINET PIANO
HARPSICHORD

EFFECT

SUSTAIN
VIBRATO (STRING only)

MUSICAL GAMES

5 types with three levels of difficulty for each game

DISPLAY (liquid crystal type)

Function/Level/Score/Answer/ ♪♪♪ (note name)

OTHER CONTROL

Power switch/VOLUME

AUXILIARY JACKS

Headphones
DC input

MAIN AMPLIFIER

500 mW (RMS)

SPEAKER

5.7 cm (2-1/4"), 8Ω

POWER SYSTEM

Batteries (five 1.5V SUM-3, "AA" size,
R-6 or equivalent)
Household current/car battery (with optional adaptors)

POWER CONSUMPTION

850 mW

CABINET COLOR

Ivory white

DIMENSIONS

Width: 31.5 cm (12-3/8")
Depth: 9.5 cm (3-3/4")
Height: 3.0 cm (1-1/8")

WEIGHT (excluding batteries)

450 g (1 lb.)

ACCESSORY INCLUDED

Protective soft case

Semi-conductor

LSI : 2
IC : 3
Transistor : 3
FET : 1
Diode : 35
Display : 1

(HS-500)

Part Name	μ PD7503G	Function Name	μ -Computer for Musical Game
-----------	---------------	---------------	----------------------------------

Pin		Description	Pin		Description
No.	Nama		No.	Nama	
1	NC	NO connection	64	P33	Port 3 (4 bit) OUT
2	P32	Port 3 (4 bit) OUT	63	P10/INT.0	Used as in terraption Signal IN
3	P31		62	P11	
4	P30		61	P12	Port 1 (4 bit) IN
5	P30/SI	Port 0 (3 bit) (Used both as Serial data IN) (Used both as Serial data OUT) (Used as Serial Clock Pulse OUT)	60	P13	
6	P02/SO		59	CL2	R.C Connection for System Clock OSC
7	P01/SCK		58	Vss	DC Supply IN(+7.5V)
8	P63	Port 6 (4 bit) IN/OUT(Programable)	57	CL1	R.C Connection for System Clock OSC
9	P62		56	RESET	Initial Clear IN
10	P61		55	INT.1	Interruption Signal IN
11	P60	Port 5 (4 bit) IN/OUT	54	S0	Segment Signal OUT for LCD drive
12	P53		53	S1	
13	P52		52	S2	
14	P51		51	S3	
15	P50		50	S4	
16	P43	Port 4 (4 bit) IN/OUT	49	S5	
17	P42		48	S6	
18	P41		47	S7	
19	P40		46	S8	
20	X2	Quarts Vibrator Connection for Counting clock	45	S9	
21	X1		44	S10	
22	V _{DD}	DC Supply IN(Ground)	43	S11	
23	VCL3	DC Supply IN for LCD drive	42	S12	
24	VCL2		41	S13	
25	VCL1		40	S14	
26	V _{SS}	DC Supply IN(+7.5V)	39	T15	
27	COM3	Common Signal OUT for LCD drive	38	S16	
28	COM2		37	S17	
29	COM1		36	S18	
30	COM0		35	T19	
31	S23	Segment Signal OUT for LCD drive	34	S20	
32	S22		33	S21	

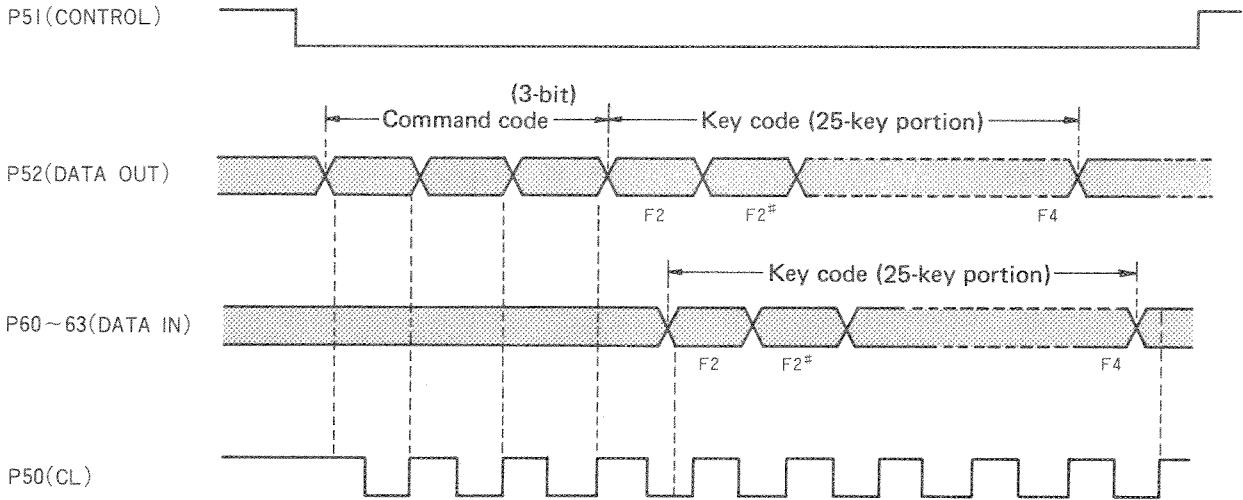
Microcomputer Operation Outline

• Microcomputer operation outline

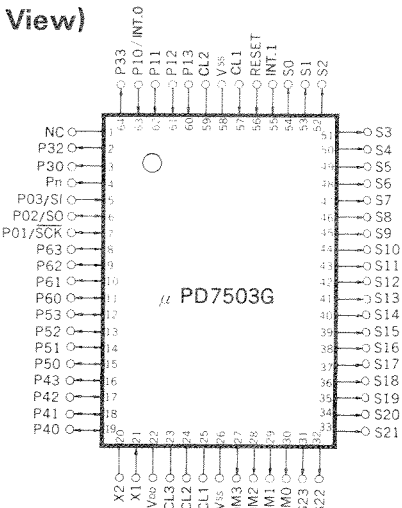
μ PD7503G performs transfer between the commands and key codes shown in the table below and the music source IC (GH-2).
The sequence and timing are as shown in the timing chart and the switching timing is in accordance with the selected function, START button, keying timing, etc.

Command	Command Code	Function
NORMAL	000	GH-2 (music source IC) independently produces notes in accordance with the keying without receiving a key code from the microcomputer.
μ - COM	010	GH-2 produces notes in accordance with the key code from the microcomputer and the keyed data is ignored.
READ	001	GH-2 directs the keyed data (key code) to the microcomputer.
WRITE	011	GH-2 receives the data from the microcomputer and produces notes accordingly.

• μ PD7503G Data Timing Chart



• Terminal connection view (Top View)



MAIN WAVEFORMS

1 Master Clock Pulse (ϕ)

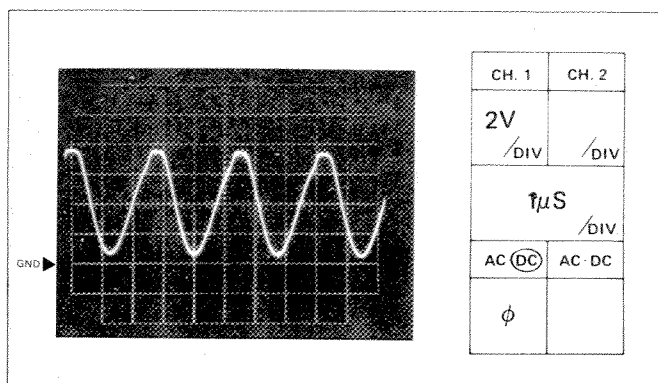
•CHECK POINT

IC1 (GH-1) 9th Pin . . . HS-200

IC2 (GH-2) 24th Pin . . . HS-500

•CONDITION

Power Switch – ON



2 Initial Clear (IC)

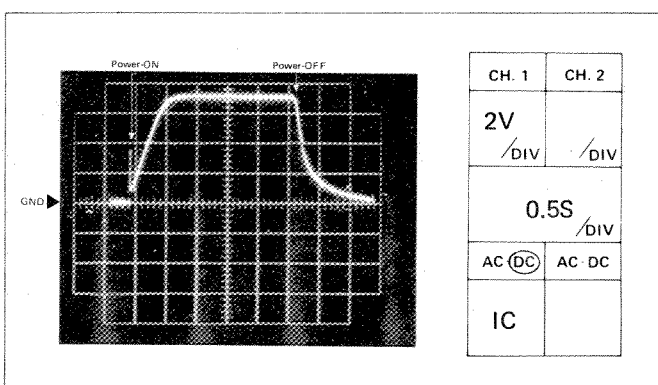
•CHECK POINT

IC1 (GH-1) 12th Pin . . . HS-200

IC2 (GH-2) 21st Pin . . . HS-500

•CONDITION

Power Switch – ON/OFF



3-1 Sound Source "ORGAN"

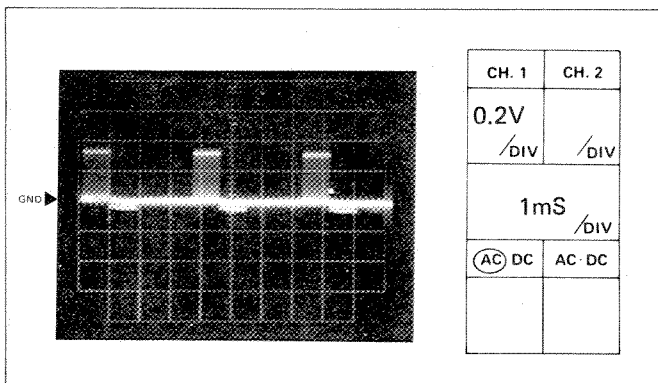
•CHECK POINT

IC1 (GH-1) 11th Pin . . . HS-200

IC2 (GH-2) 20th Pin . . . HS-500

•CONDITION

1. Set Tone Selector SW. to "ORGAN".
2. Depress C_3 Key



3-2 Sound Source "STRING"

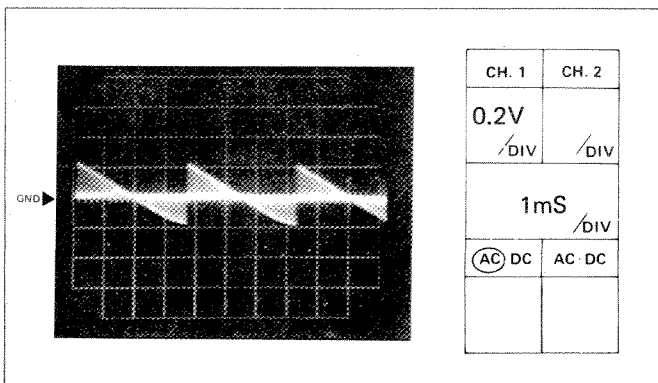
•CHECK POINT

IC1 (GH-1) 11th Pin . . . HS-200

IC2 (GH-2) 20th Pin . . . HS-500

•CONDITION

1. Set Tone Selector SW. to "STRING".
2. Depress C_3 Key



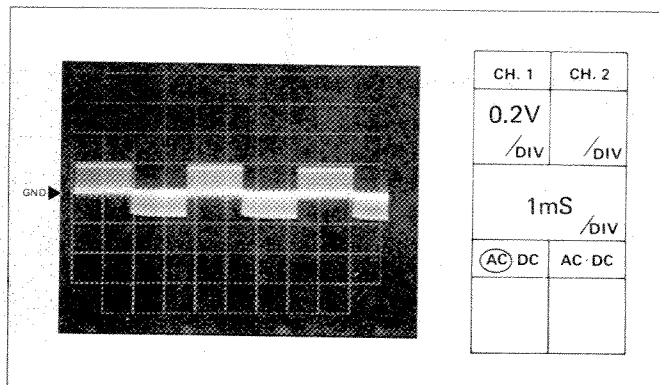
3-3 Sound Source "CLARINET"

•CHECK POINT

IC1 (GH-1) 11th Pin ... HS-200
IC2 (GH-2) 20th Pin ... HS-500

•CONDITION

1. Set Tone Selector SW. to "CLARINET".
2. Depress C₃ Key



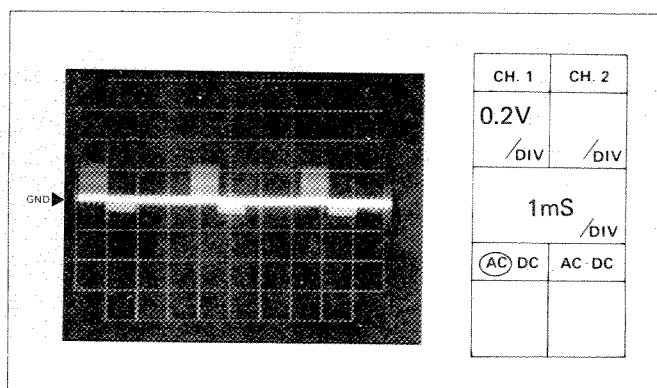
3-4 Sound Source "PIANO"

•CHECK POINT

IC1 (GH-1) 11th Pin ... HS-200
IC2 (GH-2) 20th Pin ... HS-500

•CONDITION

1. Set Tone Selector SW. to "PIANO".
2. Depress C₃ Key



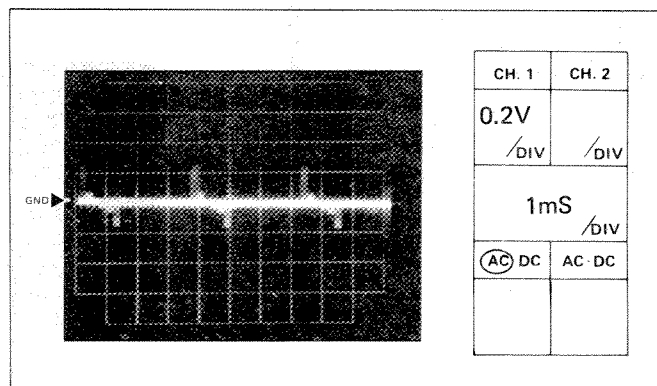
3-5 Sound Source "HARPSICHORD"

•CHECK POINT

IC1 (GH-1) 11th Pin ... HS-200
IC2 (GH-2) 20th Pin ... HS-500

•CONDITION

1. Set Tone Selector SW. to "HARPSICHORD".
2. Depress C₃ Key



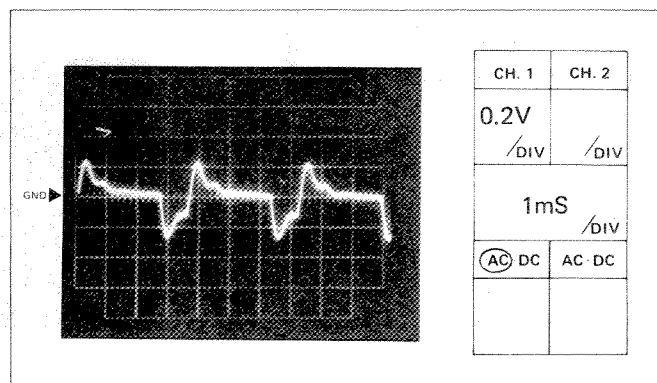
4-1 Tone Signal "ORGAN"

•CHECK POINT

Tr3 Emitter ... HS-200, HS-500

•CONDITION

1. Set Tone Selector SW. to "ORGAN".
2. Depress C₃ Key



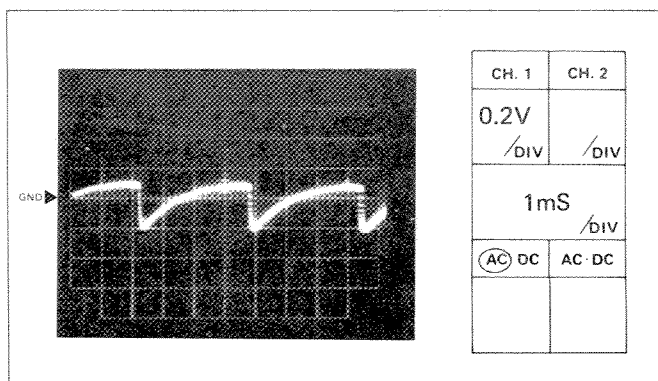
4-2 Tone Signal "STRING"

•CHECK POINT

Tr3 Emitter HS-200, HS-500

•CONDITION

1. Set Tone Selector SW. to "STRING".
2. Depress C_3 Key



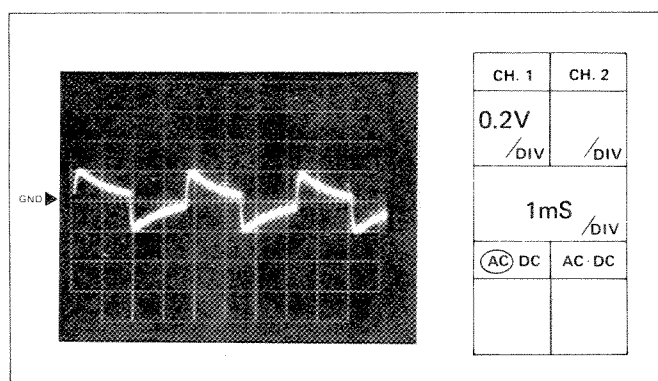
4-3 Tone Signal "CLARINET"

•CHECK POINT

Tr3 Emitter HS-200, HS-500

•CONDITION

1. Set Tone Selector SW. to "CLARINET".
2. Depress C_3 Key



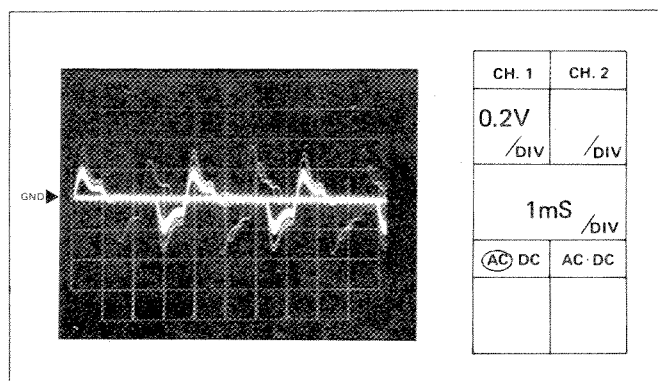
4-4 Tone Signal "PIANO"

•CHECK POINT

Tr3 Emitter HS-200, HS-500

•CONDITION

1. Set Tone Selector SW. to "PIANO".
2. Depress C_3 Key



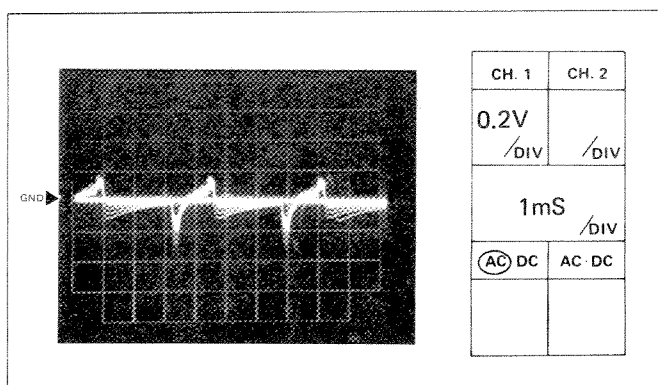
4-5 Tone Signal "HARPSICHORD"

•CHECK POINT

Tr3 Emitter HS-200, HS-500

•CONDITION

1. Set Tone Selector SW. to "HARPSICHORD".
2. Depress C_3 Key



Disassembly Procedures **HS-200** **HS-500**

- 分解は、やわらかい布などを敷いた上で、製品に傷をつけないように十分注意して作業を行なってください。

- Before disassembly, lay a soft cloth on the flat surface so that the product is not scratched or marked while it is being disassembled.

1. 下ケースの取り外し方

- ① ユニットを裏がえし、電池カバーを外し、電池 5 本を取り出します。
- ② 図 1 の矢印(A)～(F)の穴の中の止めネジ(6本)を⊕ドライバーで取り外します。

1. Removal of Lower case

- (1) Turn over the unit, remove the battery cover and take out the 5 batteries.
- (2) Remove the six screws in holes (A) – (F) indicated by the arrows in Fig. 1.

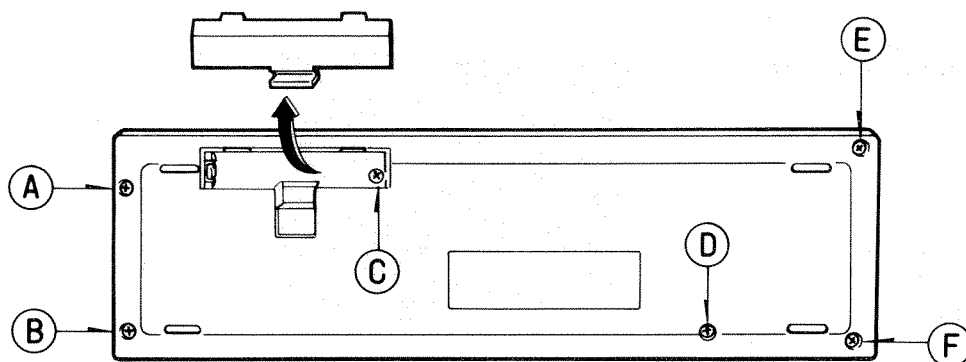


図 1 Fig. 1

- ③ ユニットを図 2 に示すように、電池カバーが上側になるように起し、下ケースの矢印(G)の部分を押すと内側の爪がはずれますので、左右にゆっくり開いてください。

図 3 の状態で電源コードをシートから取り外し、上ケースと下ケースを分離します。

- (3) Set the unit upright as in Fig. 2 so that the battery cover is on the top. The inside tabs can be disengaged when the arrow (G) is pressed. Allow the unit to open slowly on both sides.

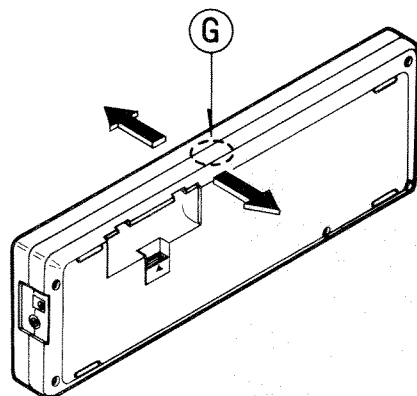


図 2 Fig. 2

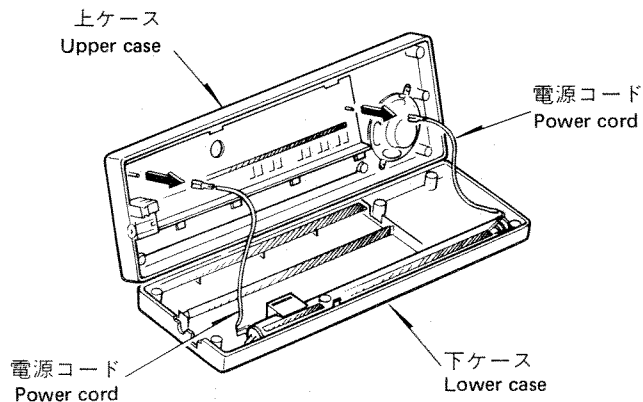


図 3 Fig. 3

2. HM1シートの取り外し方(HS-200)

スピーカのコネクタをシートから取り外します。

図4の矢印(A)~(F)の止めネジ(6本)を⊕ドライバーで取り外します。

注) HM1シートのスイッチ接点部には「導電グリス」が塗ってありますので、手で触らないよう注意してください。

2. Removal of HM1 circuit board (HS-200)

Remove the speaker connector from the circuit board. Remove the six screws in holes (A) – (F) indicated by the arrows in Fig. 4.

Note: Take care not to touch the “conductive grease” which has been applied to the switch contact section on the HM1 circuit board.

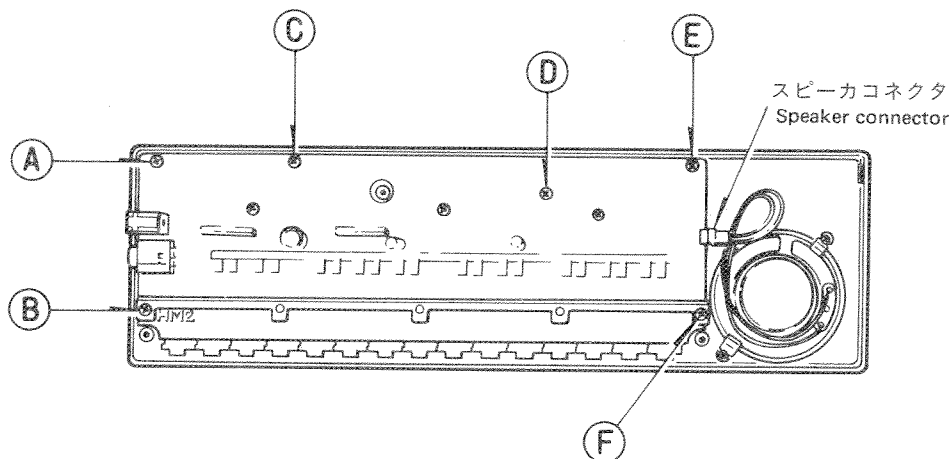


図4 Fig. 4

2. HM2シートの取り外し方(HS-500)

スピーカのコネクタをシートから取り外します。

図5の矢印(A)~(H)の止めネジ(8本)を⊕ドライバーで取り外します。

注) HM2シートのスイッチ接点部には「導電グリス」が塗ってありますので、手で触らないよう注意してください。

2. Removal of HM2 circuit board (HS-500)

Remove the speaker connector from the circuit board. Remove the eight screws in holes (A) – (H) indicated by the arrows in Fig. 5.

Note: Take care not to touch the “conductive grease” which has been applied to the switch contact section on the HM2 circuit board.

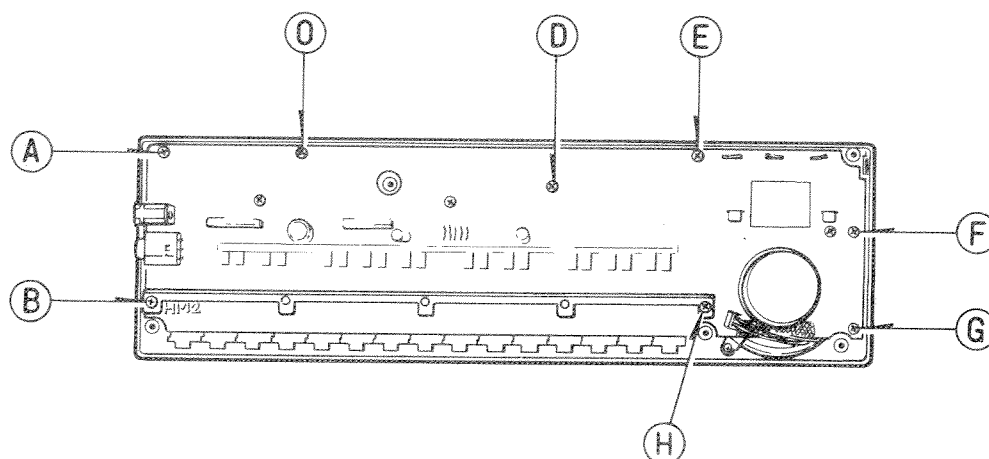


図5 Fig. 5

3. 鍵盤の取り外し方(HS-200)

図6の矢印の止めネジ(3本)を⊕ドライバーで取り外します。(HS-200)

3. Removal of keyboard (HS-200)

Remove the three screws indicated by the arrows in Fig. 6.

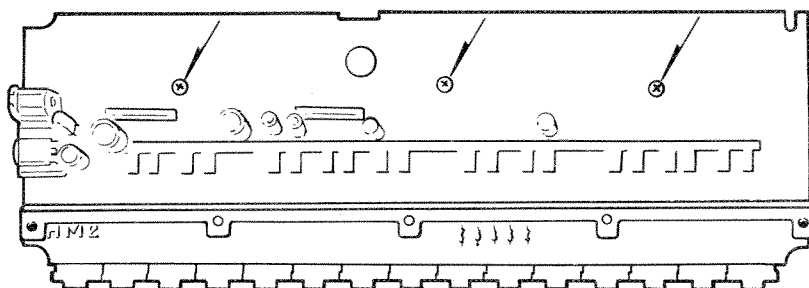


図6 Fig. 6

3. 鍵盤の取り外し方(HS-500)

図7の矢印の止めネジ(2本)を⊕ドライバーで取り外します。(HS-500)

3. Removal of keyboard (HS-500)

Remove the two screws indicated by the arrows in Fig. 7.

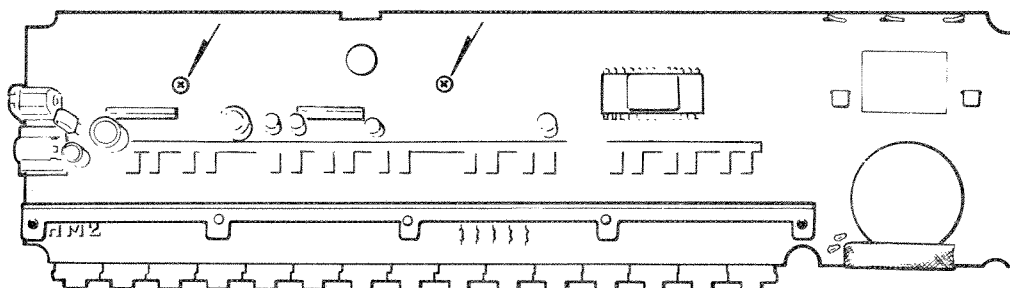


図7 Fig. 7

白鍵は、両手を添えてゆっくり持ち上げ取り外してください。(図8参照)

黒鍵は、矢印方向に少し押し出してから、両手を添えてゆっくり持ち上げ取り外してください。(図9参照)

注) 白鍵及び黒鍵は一体化されていますので、取り扱いには注意してください。

Lift the white keys using both hands slowly to remove. (Refer to Fig. 8)

To remove the black keys, push out slightly in the direction of the arrow and then lift using both hands. (Refer to Fig. 9)

Note: The white keys and black keys are consisted as a single entity and care is required in handling them.

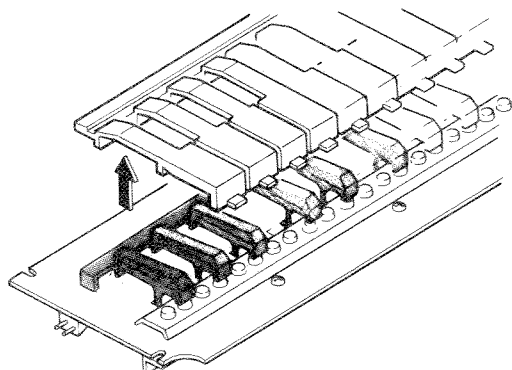


図8 Fig. 8

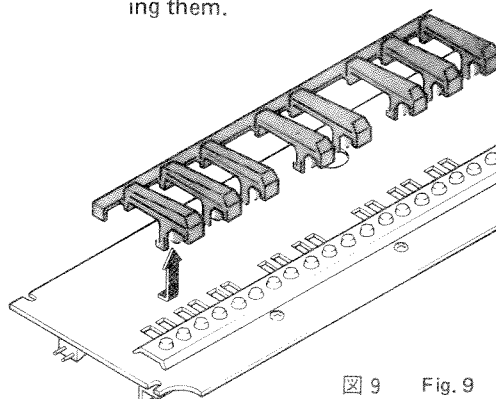


図9 Fig. 9

※取り付けの場合は、黒鍵をシートの切り込み穴に確実にはめ込んでから白鍵を取り付け、ネジで止めてください。

* For re-assembly, fit the black keys into the holes in the circuit board, then mount the white keys and secure with the screws.

4. スイッチ接点ゴムの取り外し方

- ①スイッチ接点ゴムの足をピンセットで押し込みます。(図10)
- ②スイッチ接点ゴムを指でつまみ上げ、ゆっくり取り外します(図11)。外れにくい場合は、接点ゴムの足をピンセットではさみ引き抜いて外してください。

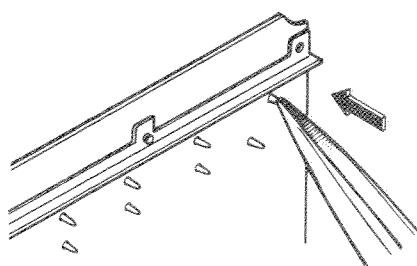


図10 Fig. 10

※接点ゴムの足をシートの穴に差し込み、部品側からピンセットでつまみ、ゆっくり引いてください。

4. Removal of switch contact rubber

- (1) Push in the foot of the switch contact rubber using a pair of tweezers.
- (2) Take the switch contact rubber between your fingers and remove it slowly. If it is hard to remove, use the tweezers to grasp the projections of contact rubber and pull them out to remove.

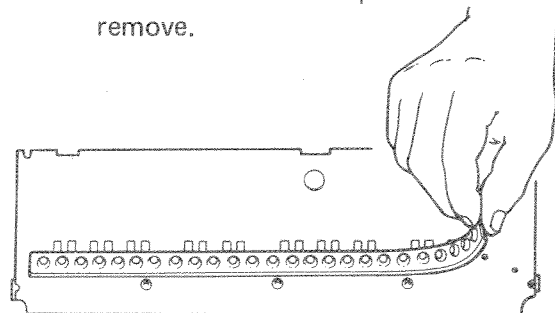


図11 Fig. 11

* Re-assembling the switch contact rubber
Insert the productions of contact rubber into the hole provided in the circuit board, grasp it from the parts side using the tweezers and pull it slowly.

5. スイッチつまみ、スライダーユニットの取り外し方

スイッチつまみを引き抜くと、スライダーユニットは、上ケースの裏側から取り外すことができます。

5. Removing the switch knob and slider unit
When the switch knob is pulled out, the slide unit can be taken out from the rear side of the upper case.

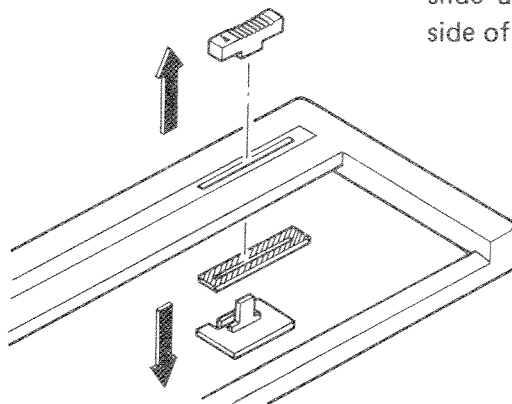


図12 Fig. 12

6. 液晶表示器(LCD)の取り外し方(HS-500)

- ①ラジオペンチで、液晶表示器を止めているツメ3本を起こします。(図13参照)
- ②液晶表示器を指ではさみ、ゆっくり起こし、図14のようにシートから外します。

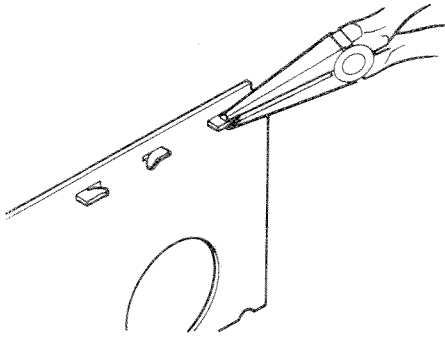


図13 Fig. 13

※取り付ける場合は、インターコネクタの接点部をやわらかい布等で軽く拭いてから取り付けてください。

6. Removing the liquid crystal display (LCD) (HS-500)

- (1) Pull up the three tabs which engage the liquid crystal display using pliers. (Refer to Fig. 13)
- (2) Grasp the liquid crystal display between fingers, pull it up slowly and remove it from the circuit board as shown in Fig. 14.

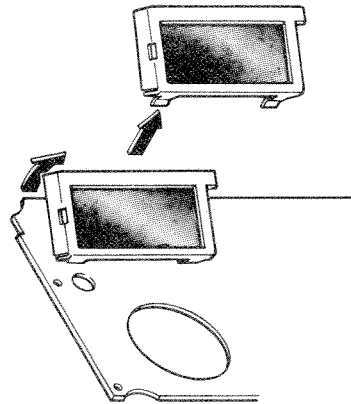


図14 Fig. 14

- * For re-assembly, wipe the contacts of the inter-connector carefully with a soft cloth first and then proceed to re-assemble.

YAMAHA

HandySound

HS-200

PARTS LIST

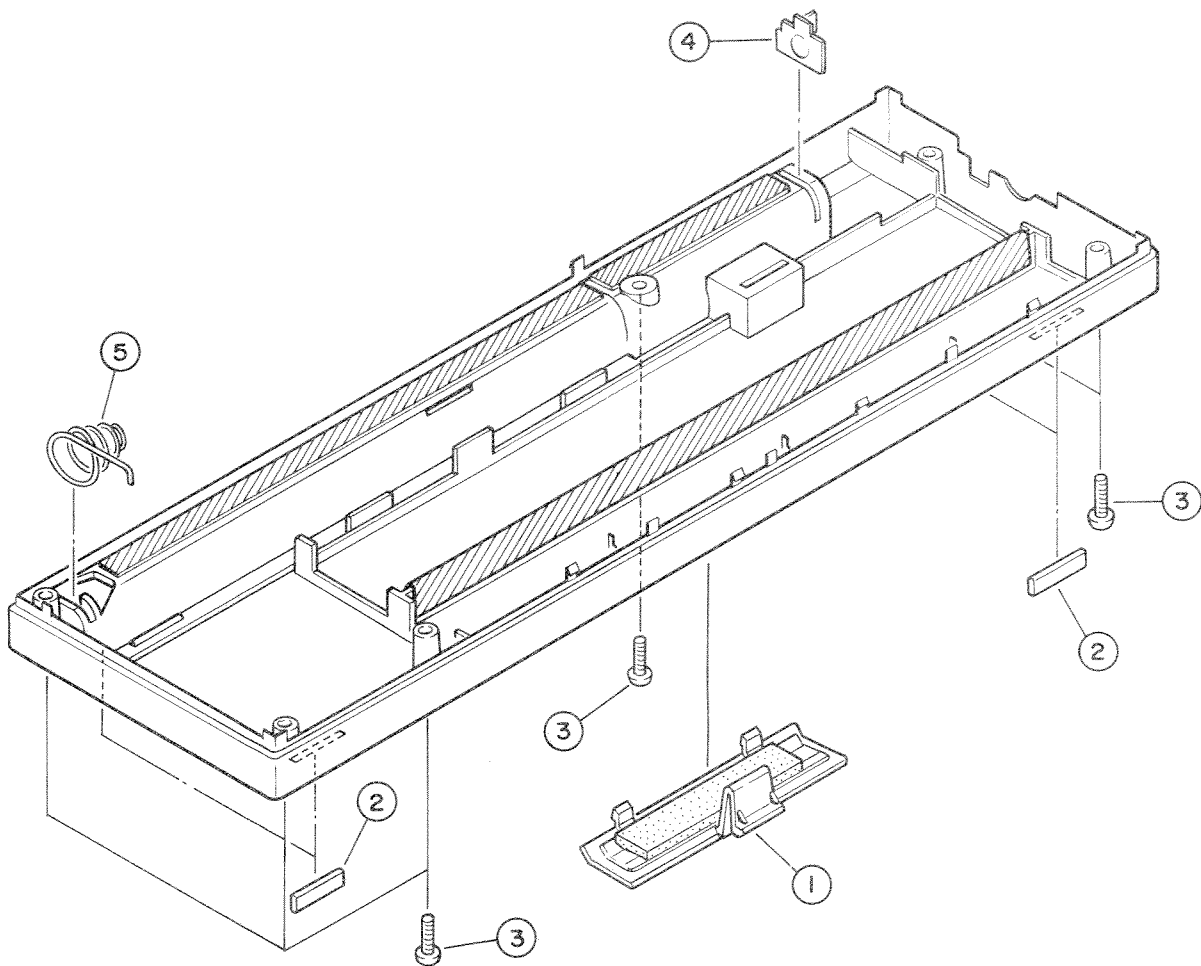
A. Electronic Components(電気部品)	2
B. Lower Case Assembly(下ケース)	3
C. Upper Case Assembly & keyboard Assembly(上ケース, 鍵盤)	4

A. Electronic Components (電気部品)

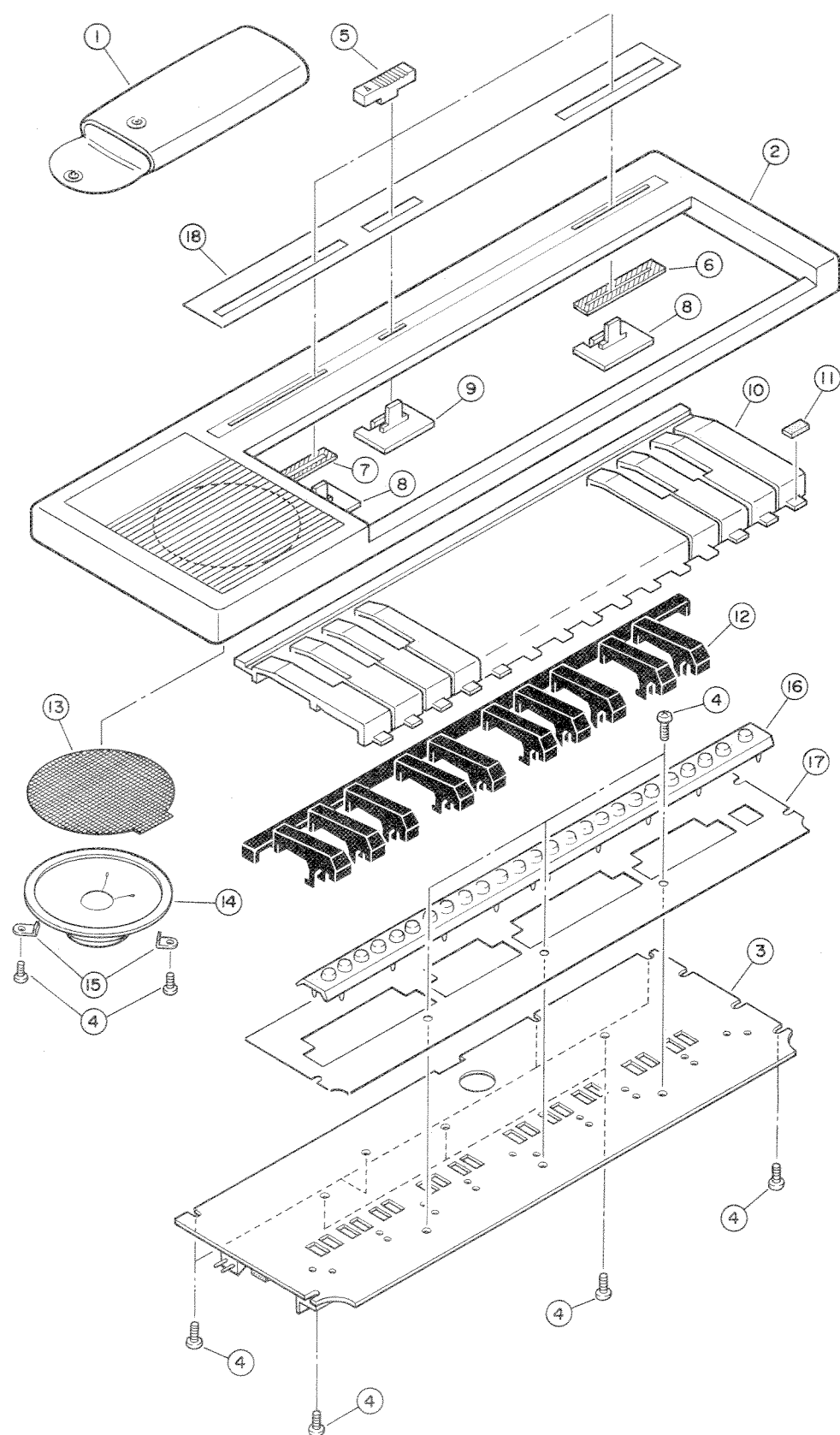
[illegible]

※ New Parts (新規部品)

B. Bottom Case Assembly (下ケース)

[illegible]

C. Upper Case Assembly & Keyboard Assembly (上ケース, 鍵盤)



Ref. No.	Part No.	Description	部 品 名	Remarks	Common Model	Markets			
1	CA 01 36 50	Soft Case	ソ フ ト ケ ー ス		HS-200				
2	NK 00 76 50	Upper Case	上 ケ ー ス						
3	NB 10 57 70	HM2 Circuit Board Assembly	H M 2 シ ー ト Ass'y						
4	Ei 32 60 80	Pan Head Tapping Screw	ナベタッピングネジ						
5	CB 04 12 10	Knob, Slide Switch	スライドSW. ツマミ	INSTRUMENT SUSTAIN ON/OFF	HS-200				
6	CB 04 19 10	Dust Protection Film, Slide Switch	防 塵 フ ィ ル ム	POWER/ VOLUME	HS-200				
7	CB 04 19 20	— do. —	//	INSTRUMENT	HS-200				
8	KA 40 10 00	Slider Unit, Slide Switch	スライダユニット		HS-200				
9	KA 40 10 10	— do. —	//		HS-200				
10	CB 04 12 20	Push Button	プッシュSWボタン	FUNCTION LEVEL START					
11	CB 04 11 80	White Key Assembly	白 鍵Ass'y		HS-200				
12	CA 01 37 70	Cushion II	ク ッ シ ョ ン II		HS-200				
13	CB 04 11 90	Black Key Assembly	黒 鍵Ass'y		HS-200				
14	CE 02 04 20	Screen, Speaker	ク レ モ ナ		HS-200				
15	JA 06 51 00	Loud Speaker	ス ビ ー カ		HS-200				
16	AA 05 41 00	Fixture, Loud Speaker	S P 取 り 付 け 用 金 具		HS-200				
17	CB 04 12 50	Rubber Contact	ゴ ム 接 点		HS-200				
18	CB 04 12 60	— do. — , Push Switch	プッシュSW接点ゴム						
19	AA 05 38 50	Frame, LCD Display	液 晶 フ レ ー ム						
20	JN 10 00 10	LCD Display	液 晶 パ ネ ル						
21	CB 04 22 90	Inter-Connector, LCD Display	イ ン タ ー コ ネ ク タ						
22	CB 04 22 80	Dummy Connector, LCD Display	ダ ミ ー コ ネ ク タ						
23	CA 01 37 80	Blind Cover Sheet, Circuit Board	シ ー ト カ バ ー						
24	CB 04 25 30	Panel Template, Japanese Description	和 文 シ ー ト	for Only Japanese Model					

※ New Parts (新規部品)



YAMAHA

HandySound

HS-500

PARTS LIST

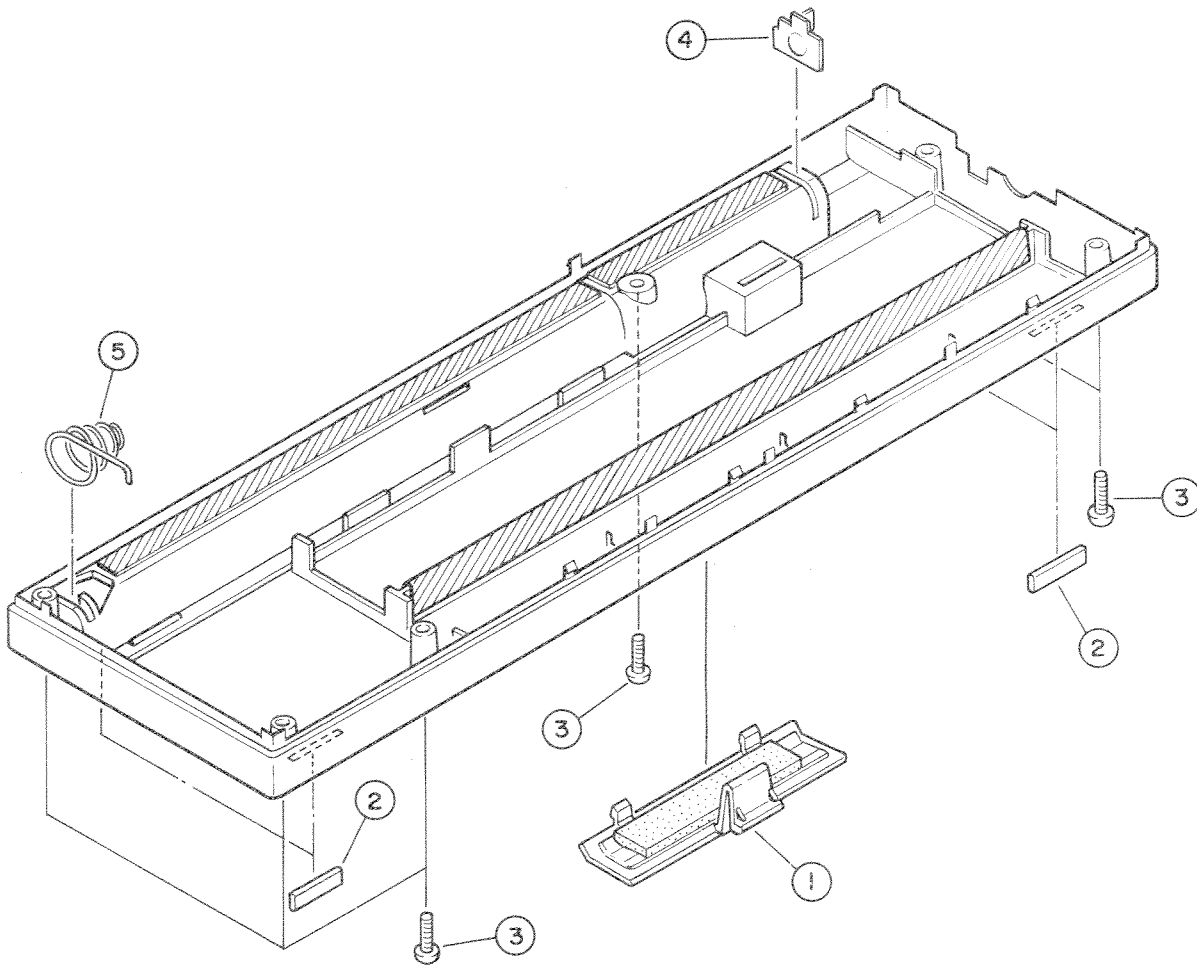
A. Electronic Components(電気部品)	2
B. Lower Case Assembly(下ケース)	3
C. Upper Case Assembly & keyboard Assembly(上ケース, 鍵盤).....	4

A. Electronic Components (電気部品)

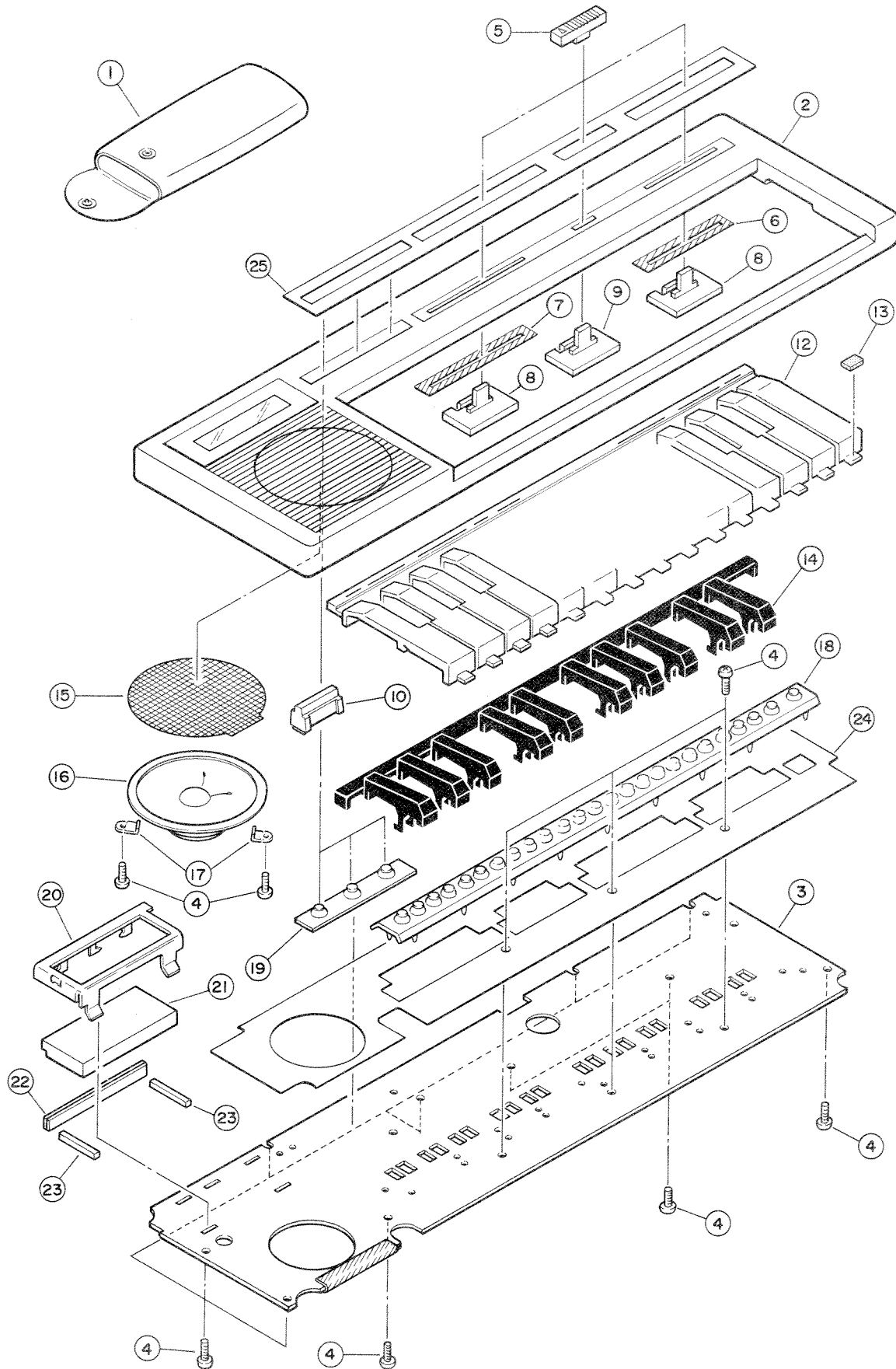
Ref. No.	Part No.	Description	部 品 名	Remarks	Common Model	Markets
	NB 10:57:70	HM2 Circuit Board Assembly	H M 2 シ ー ト Ass'y			
*	iG 06:05:00	IC Regulator	78L008P I C 三端子レギュレータ	Power Regulator	HS-200	
*	iG 06:06:00	- do. -	LA4142 "	Power Amp.	HS-200	
*	iG 06:07:00	- do. -	μPD7503G "			
*	iG 06:44:00	- do. -	iG06440 "	Auto Power OFF	HS-200	
*	iT 10:18:00	- do. -	YM1018 "		GH-2	
	iA 07:33:40	Transistor	2SA733(P)(Q) ト ラ ン ジ ス タ			
	iC 18:15:70	- do. -	2SC1815(O)(Y) "			
	iE 10:26:00	FET	2SK246(Y) F E T			
	iF 00:13:80	Diode	1SS84 ダ イ オ ード			
		- do. -	1SS133 "	Servicing 1S1555		
	iF 00:04:60	- do. -	1S1555 "			
	iF 00:26:70	Zener Diode	0.5Z5.1Y ツェナーダイオード			
*	JN 10:00:10	LCD Display	液 晶 パ ネ ル			
*	CB 04:22:90	Inter-Connector, LCD Display	イ ン タ ー コ ネ ク タ			
*	FS 54:51:00	Semi-Conductive Ceramic Capacitor	0.1 DC-12V 半導体セラミックコンデンサ			
*	FS 78:31:00	- do. -	1000 DC-25V "			
*	FS 78:32:20	- do. -	2200 "			
*	FS 78:41:00	- do. -	0.01 "			
*	FS 78:41:50	- do. -	0.015 "			
*	FS 78:46:80	- do. -	0.068 "			
*	QU 00:19:00	Ceramic Vibrator	343.4kHz セラミック振動子		HS-200	
*	QU 00:21:00	Quartz Vibrator	32.768kHz 水 晶 振 動 子			
*	LB 10:08:50	Jack (External DC-IN)	D C - I N ジャック		HS-200	
*	LB 10:08:60	Jack (Headphones)	H ・ P ジャック		HS-200	
*	LB 20:14:10	Connector, Side Type 2P	2 P コ ネ ク タ		HS-200	
*	LB 20:21:70	Bass Post, Top Type 2P	ベース付ポスト 2 P		HS-200	
*	LA 00:37:80	RT Pin	R T ピ ン		HS-200	
*	BB 00:54:60	Contact Leaf, Battery	電 池 端 子 (+)		HS-200	
*	AA 05:43:10	Contact Spring(Spiral), Battery	" (-)		HS-200	

※ New Parts (新規部品)

B. Bottom Case Assembly (下ケース)

[illegible]

C. Upper Case Assembly & Keyboard Assembly (上ケース, 鍵盤)



[illegible]

※ New Parts (新規部品)

