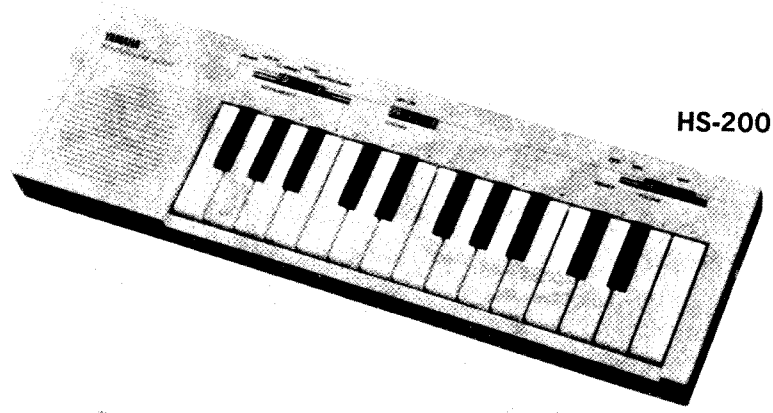
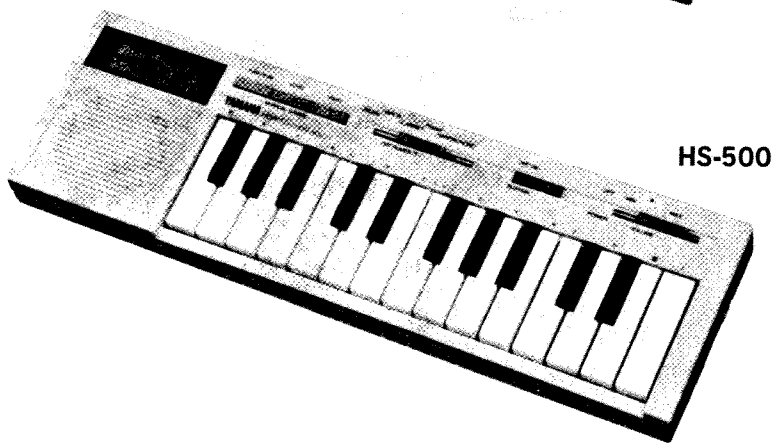
YAMAHA

HandySound

HS-200 • HS-500



HS-200



HS-500

SERVICE MANUAL

CONTENTS

SPECIFICATIONS

HS-200

KEYBOARD
25 keys (F_2~F_4), 4 notes polyphonic

INSTRUMENT VOICES
ORGAN VIOLIN
CLARINET PIANO
HARPSICHARD

EFFECT
SUSTAIN
VIBRATO (STRING only)

OTHER CONTROL
Power switch/VOLUME

AUXILIARY JACKS
Headphones
DC input

MAIN AMPLIFIER
500 mW (RMS)

SPEAKER
5.7cm (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

DIMENTIONS
Width : 31.5 cm (12-3/8")
Depth : 9.5 cm (3-3/4")
Heigh : 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 (F_2~F_4), 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

DIMENTIONS
Width: 31.5 cm (12-3/8")
Depth: 9.5 cm (3-3/4")
Heigh: 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 No.	Pin Nama	Description
1	NC	NO connection
2	P32	Port 3 (4 bit) OUT
3	P31	
4	P30	
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)
6	P02/SO	
7	P01/$\overline{SCK}$	
8	P63	Port 6 (4 bit) IN/OUT(Programable)
9	P62	
10	P61	
11	P60	
12	P53	Port 5 (4 bit) IN/OUT
13	P52	
14	P51	
15	P50	
16	P43	Port 4 (4 bit) IN/OUT
17	P42	
18	P41	
19	P40	
20	X2	Quarts Vibrator Connection for Counting clock
21	X1	
22	V_{DD}	DC Supply IN(Ground)
23	VCL3	DC Supply IN for LCD drive
24	VCL2	
25	VCL1	
26	V_{SS}	DC Supply IN(+7.5V)
27	COM3	Common Signal OUT for LCD drive
28	COM2	
29	COM1	
30	COM0	
31	S23	Segment Signal OUT for LCD drive
32	S22	

Pin No.	Pin Nama	Description
64	P33	Port 3 (4 bit) OUT
63	P10/INT.0	Used as in terraption Signal IN
62	P11	Port 1 (4 bit) IN
61	P12	
60	P13	
59	CL2	R.C Connection for System Clock OSC
58	Vss	DC Supply IN(+7.5V)
57	CL1	R.C Connection for System Clock OSC
56	RESET	Initial Clear IN
55	INT.1	Interruption Signal IN
54	S0	Segment Signal OUT for LCD drive
53	S1	
52	S2	
51	S3	
50	S4	
49	S5	
48	S6	
47	S7	
46	S8	
45	S9	
44	S10	
43	S11	
42	S12	
41	S13	
40	S14	
39	T15	
38	S16	
37	S17	
36	S18	
35	T19	
34	S20	
33	S21	

Microcomputer Operation Outline

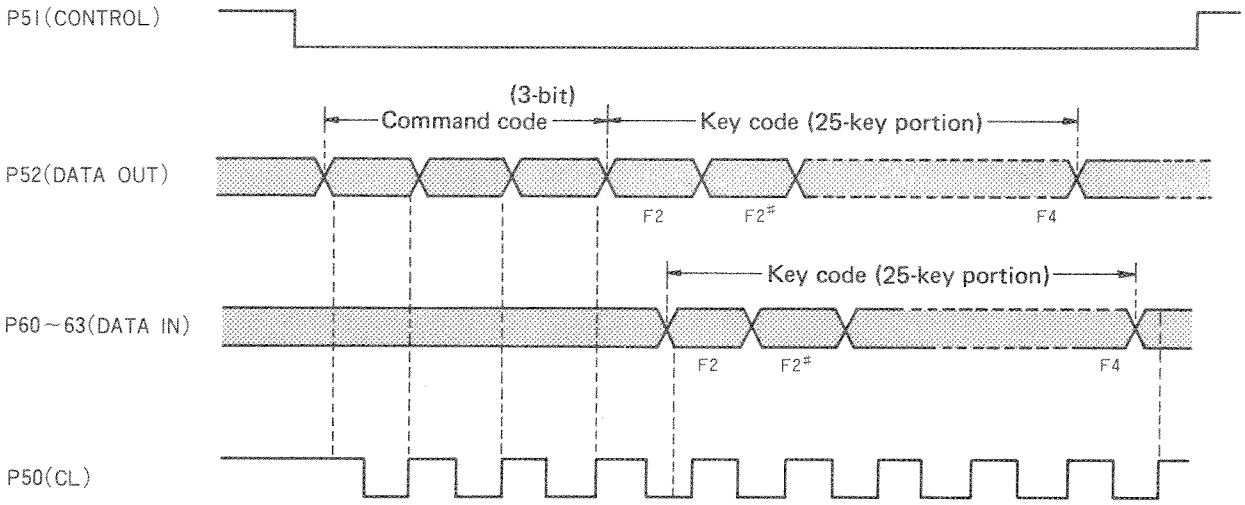
• Microcomputer operation outline

μPD7503G performs transfer between the commands and key codes shown in the table below and the music source IC (GH-2).

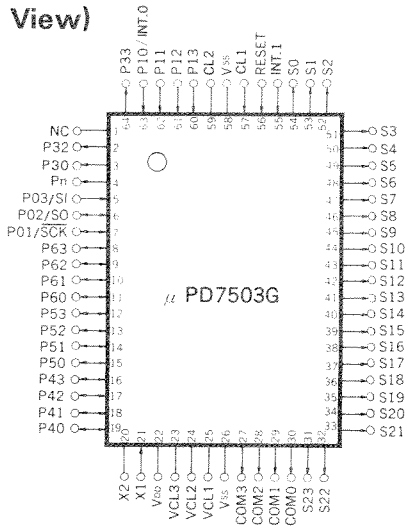
The sequence and timing are as shown in the timing chart and the switching timing is in accordance with the selected function, START button, keying timing, etc.

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.

• μPD7503G Data Timing Chart



• Terminal connection view (Top View)

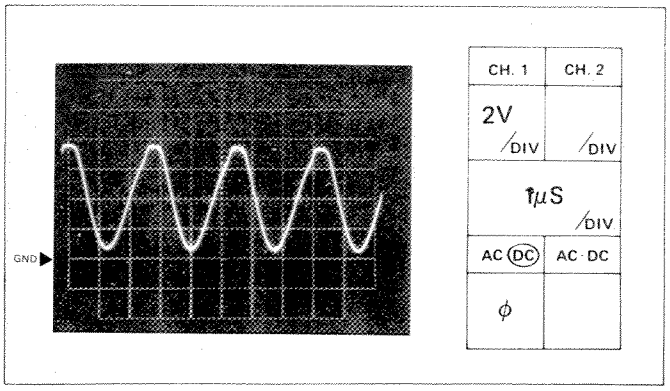


MAIN WAVEFORMS

1 Master Clock Pulse (ϕ)

●CHECK POINT
IC1 (GH-1) 9th Pin . . . HS-200
IC2 (GH-2) 24th Pin . . . HS-500

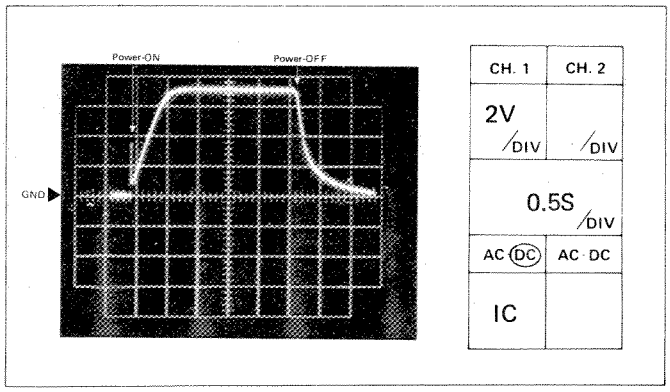
●CONDITION
Power Switch – ON



2 Initial Clear (IC)

●CHECK POINT
IC1 (GH-1) 12th Pin . . . HS-200
IC2 (GH-2) 21st Pin . . . HS-500

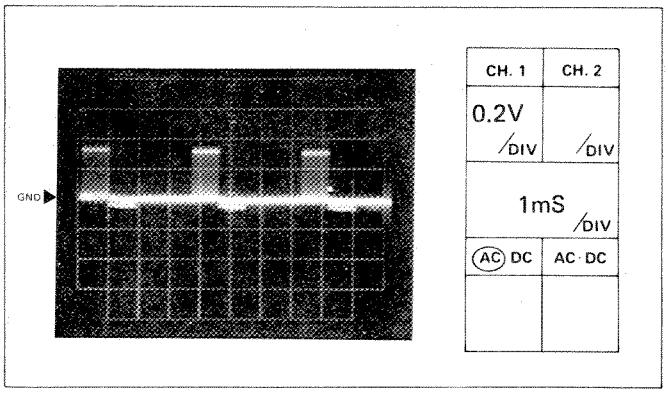
●CONDITION
Power Switch – ON/OFF



3-1 Sound Source "ORGAN"

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

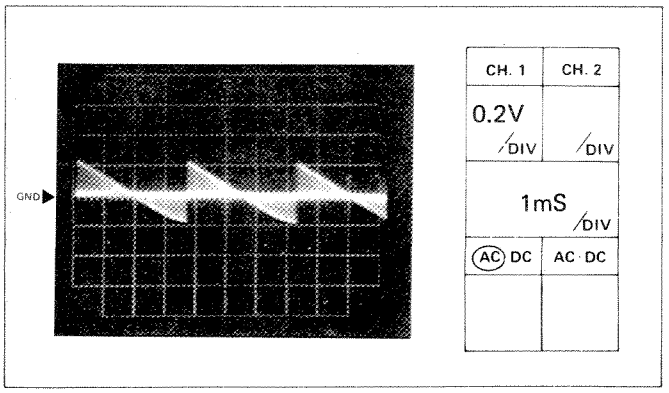
●CONDITION
1. Set Tone Selector SW. to "ORGAN".
2. Depress C_3 Key



3-2 Sound Source "STRING"

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

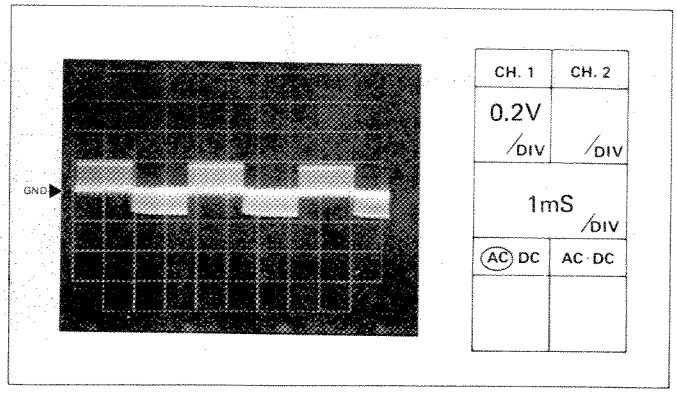
●CONDITION
1. Set Tone Selector SW. to "STRING".
2. Depress C_3 Key



3-3 Sound Source "CLARINET"

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

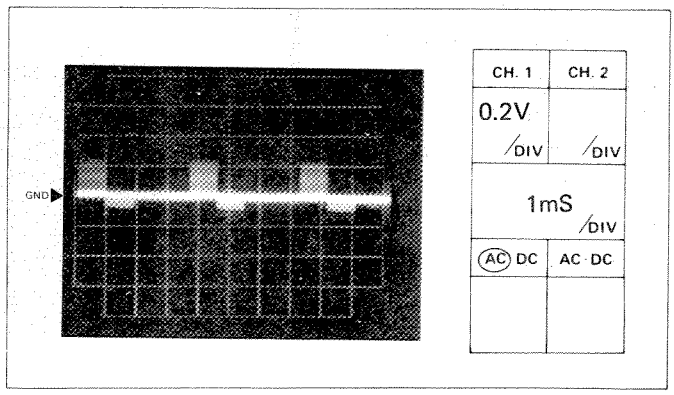
●CONDITION
1. Set Tone Selector SW. to "CLARINET".
2. Depress C_3 Key



3-4 Sound Source "PIANO"

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

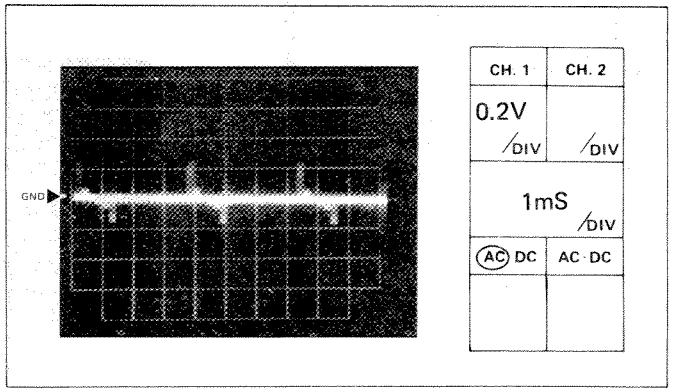
●CONDITION
1. Set Tone Selector SW to "PIANO".
2. Depress C_3 Key



3-5 Sound Source "HARPSICHORD"

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

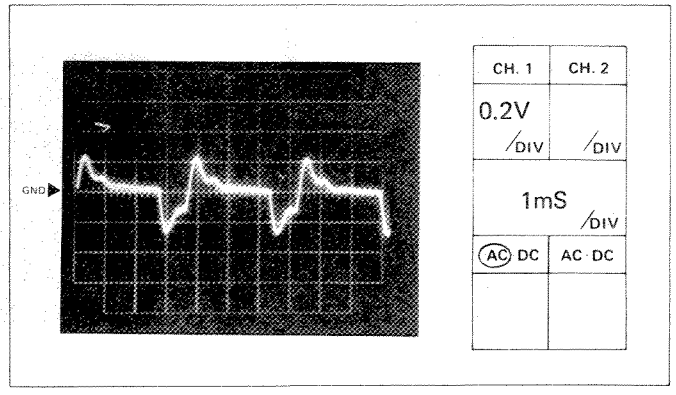
●CONDITION
1. Set Tone Selector SW. to "HARPSICHORD".
2. Depress C_3 Key



4-1 Tone Signal "ORGAN"

●CHECK POINT
Tr3 Emitter HS-200, HS-500

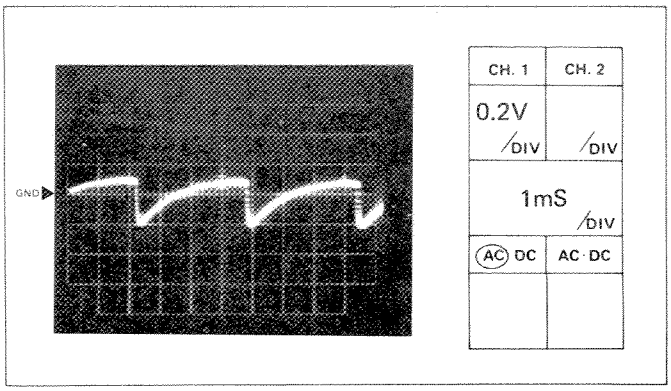
●CONDITION
1. Set Tone Selector SW. to "ORGAN".
2. Depress C_3 Key



4-2 Tone Signal "STRING"

●CHECK POINT
Tr3 Emitter HS-200, HS-500

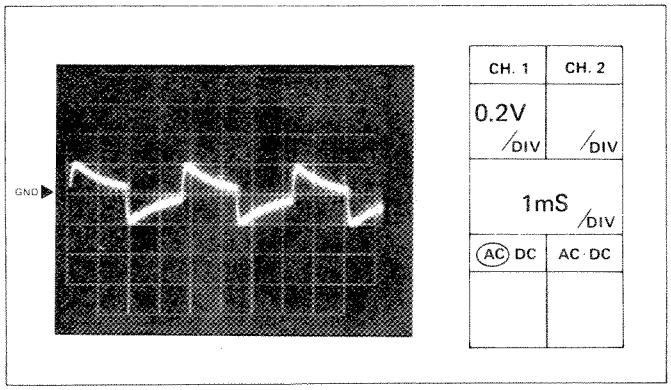
●CONDITION
1. Set Tone Selector SW. to "STRING".
2. Depress C_3 Key



4-3 Tone Signal "CLARINET"

●CHECK POINT
Tr3 Emitter HS-200, HS-500

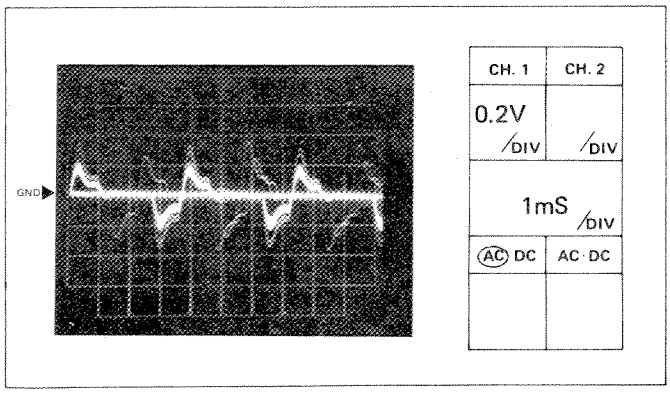
●CONDITION
1. Set Tone Selector SW. to "CLARINET".
2. Depress C_3 Key



4-4 Tone Signal "PIANO"

●CHECK POINT
Tr3 Emitter HS-200, HS-500

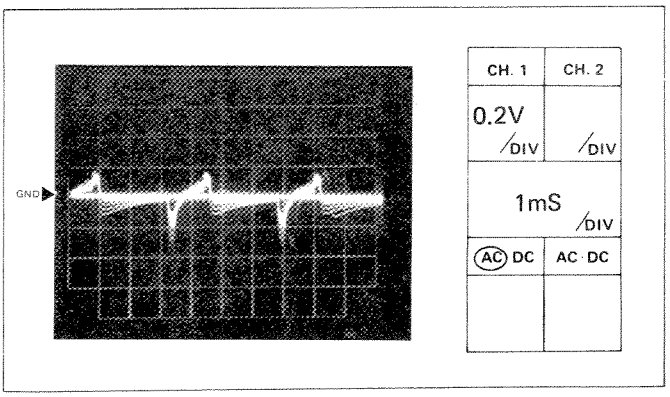
●CONDITION
1. Set Tone Selector SW. to "PIANO".
2. Depress C_3 Key



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Ⓐ～Ⓕ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.

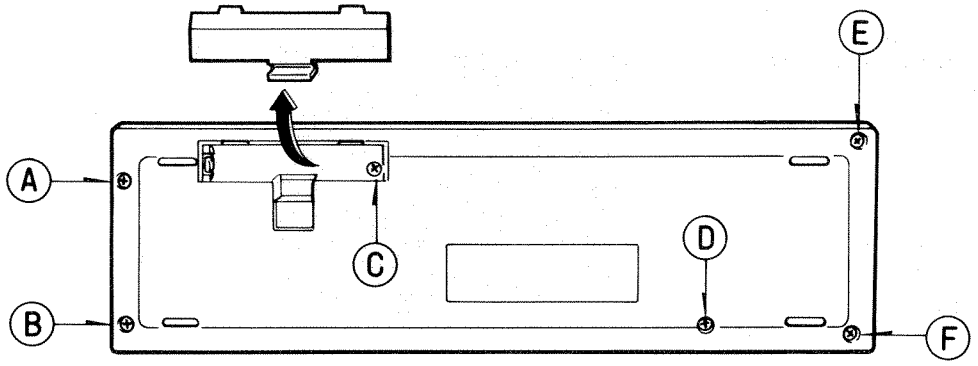


図1　Fig. 1

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Ⓖ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.

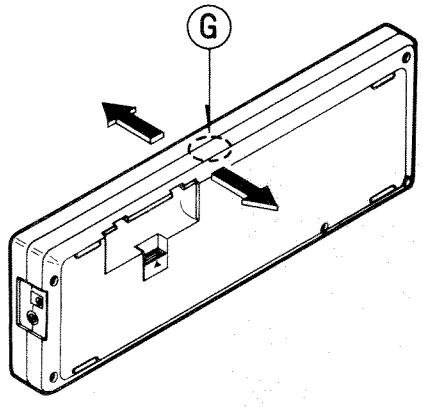


図2　Fig. 2

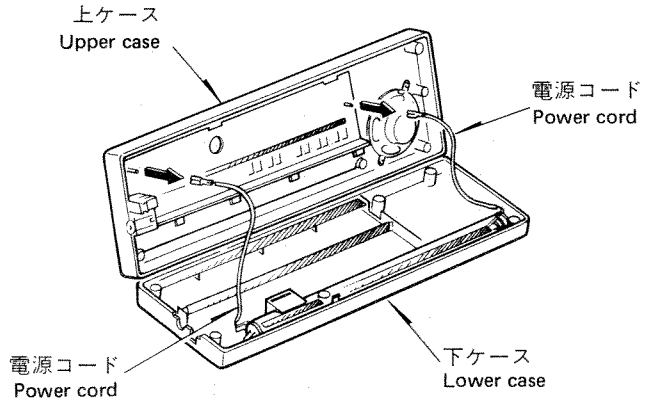


図3　Fig. 3

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Ⓐ～Ⓕ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，手等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.

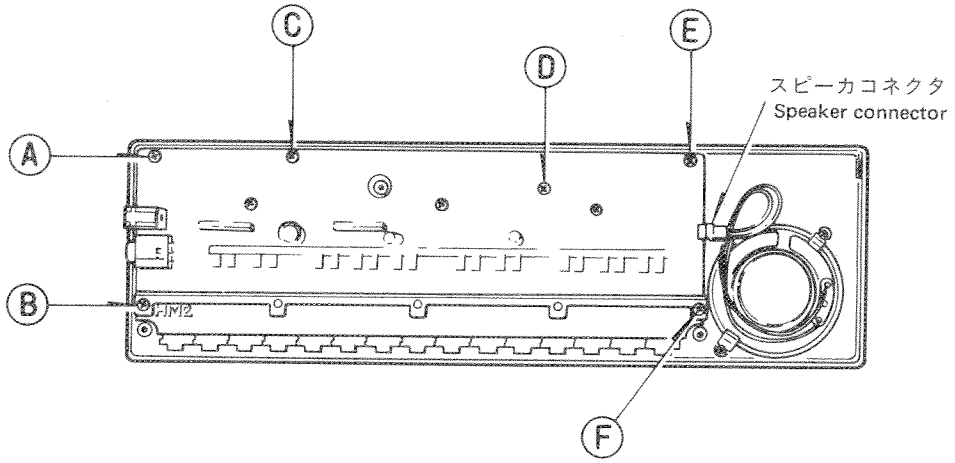


図4　Fig. 4

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Ⓐ～Ⓗ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.

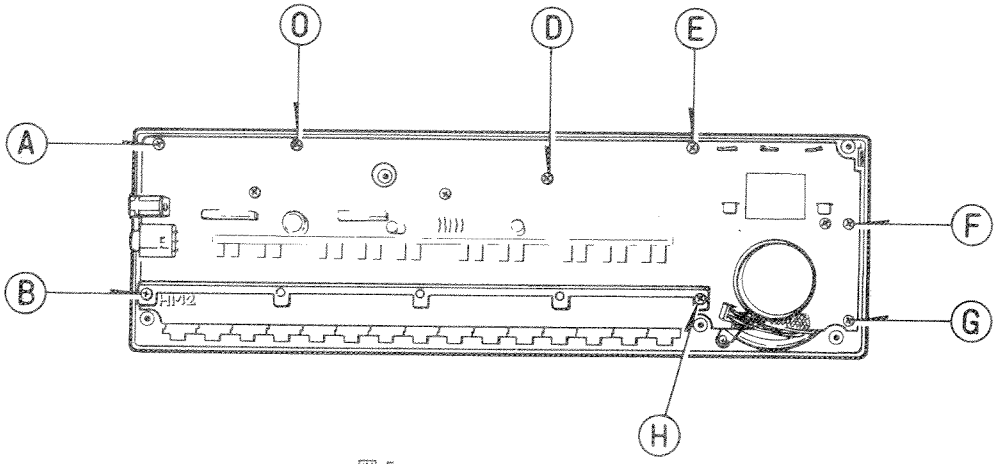


図5　Fig. 5

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.

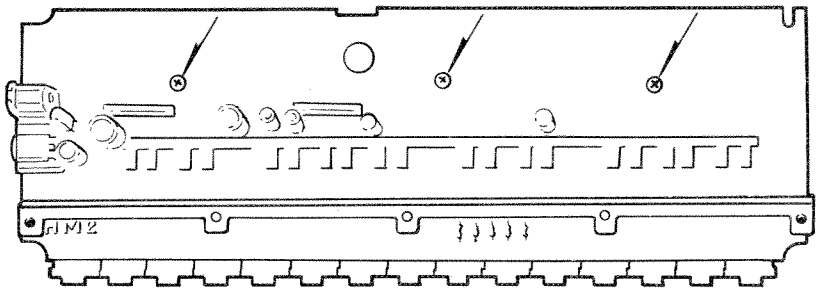


図6　Fig. 6

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.

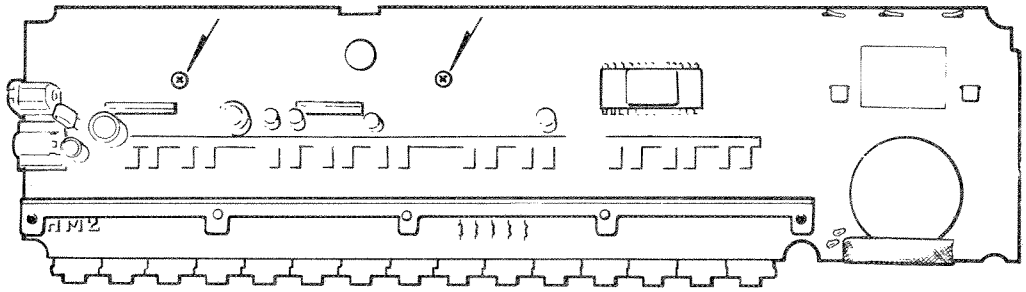


図7　Fig. 7

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.

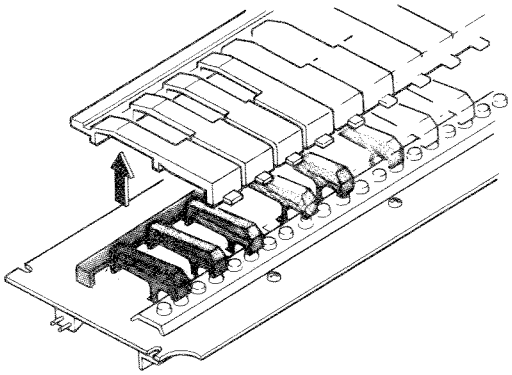


図8　Fig. 8

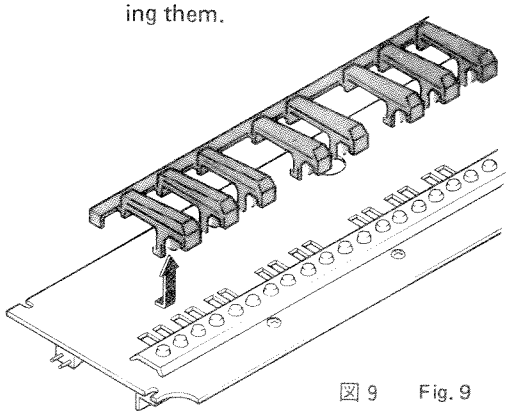


図9　Fig. 9

※取り付ける場合は，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。

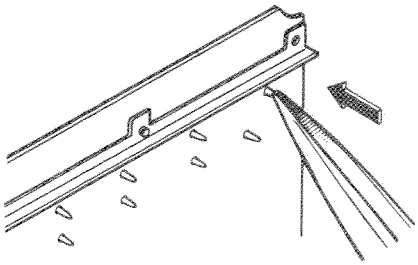


図10　Fig. 10

※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.

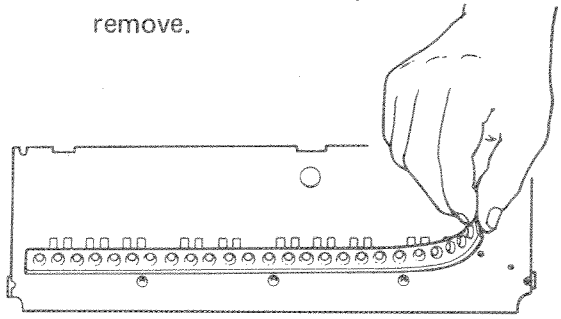


図11　Fig. 11

* 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．スイッチツマミ，スライダーユニットの取り外し方

スイッチツマミを引き抜くと，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。

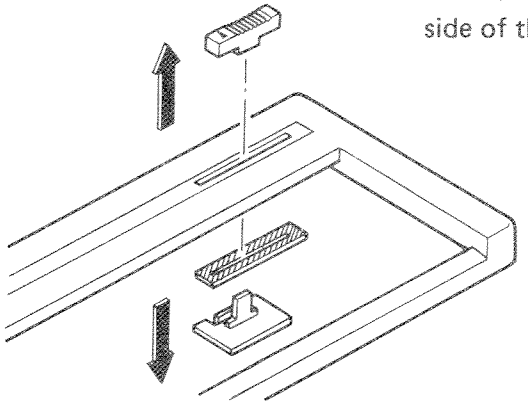


図12　Fig. 12

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.

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。

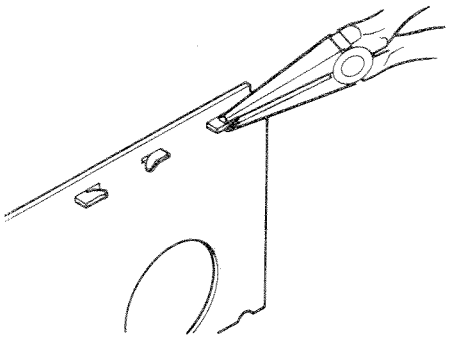


図13　Fig. 13

※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.

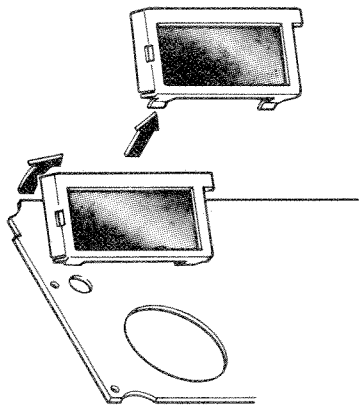


図14　Fig. 14

* 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

001149

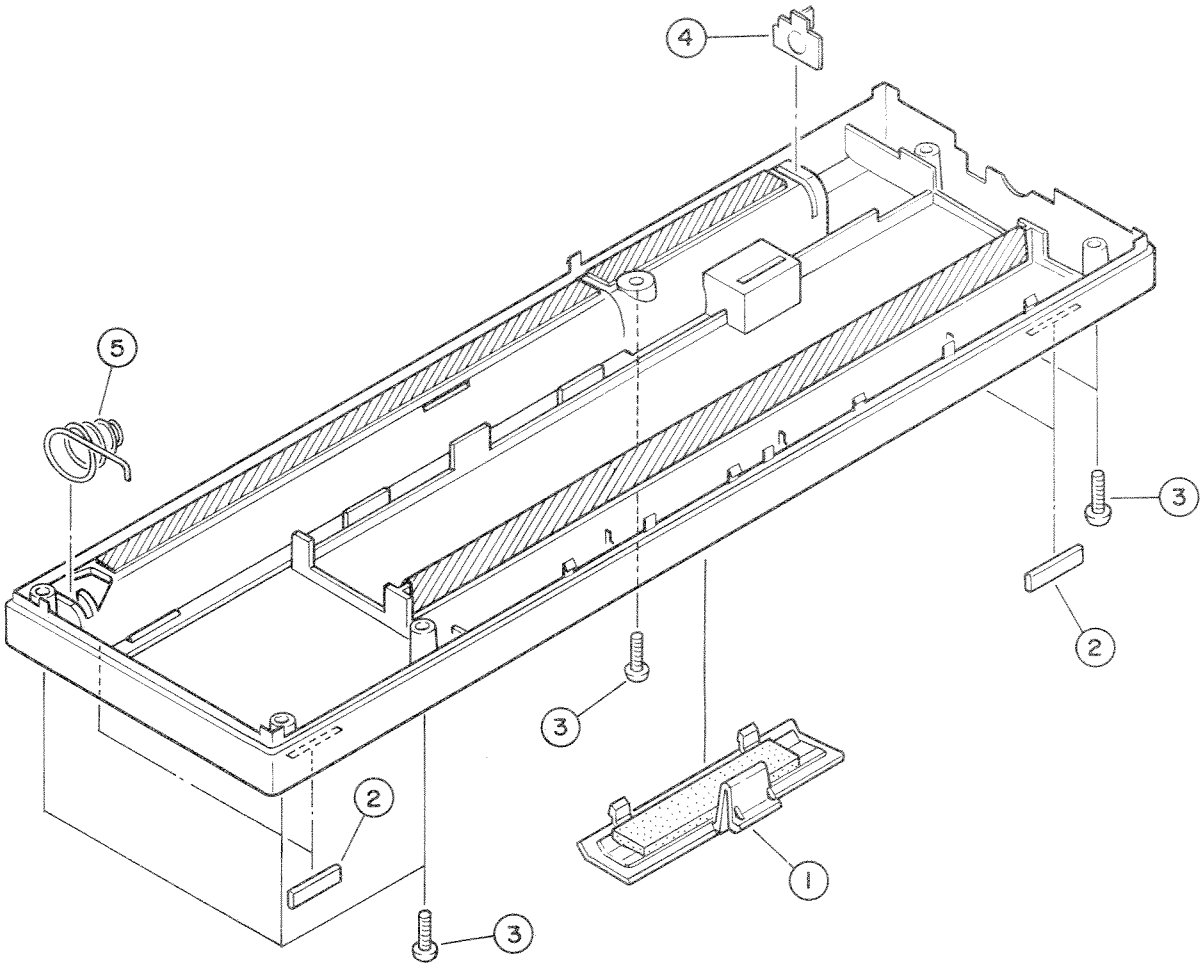
'82, 4 1.6K ㊀ Printed in Japan

A. Electronic Components (電気部品)

	Ref. No.	Part No.	Description		部品名	Remarks	Common Model	Markets		
※		NB 10 50 80	HM1 Circuit Board Assembly		HM1シートAss'y					
※		iG 06 05 00	IC Regulator	78L008P	IC 三端子レギュレータ	Power Regulator	HS-500			
※		iG 06 06 00	— do. —	LA4142	〃	Power Amp.	HS-500			
※		iG 06 44 00	— do. —	iG06440	〃	Auto Power OFF	HS-500			
※		iT 10 08 00	— do. —	YM1008	〃	GH-1				
		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)	FET					
※		iF 00 13 80	Diode	1SS84	ダイオード					
※			— do. —	1SS133	〃	Servicing 1S1555				
		iF 00 04 60	— do. —	1S1555	〃					
※		FS 54 51 00	Semi-Conductive Ceramic Capacitor	0.1 BC-12V	半導体セラミックコンデンサ					
※		FS 78 31 00	— do. —	1000pF BC-111 25V	〃					
※		FS 78 31 50	— do. —	1500pF	〃					
※		FS 78 32 20	— do. —	2200pF	〃					
※		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-500			
※		LB 10 08 50	Jack (External DC-IN)		DC−INジャック		HS-500			
※		LB 10 08 60	Jack (Headphones)		H・Pジャック		HS-500			
		LB 20 14 10	Connector, Side Type 2P		2Pコネクタ		HS-500			
※		LB 20 21 70	Bass Post, Top Type 2P		ベース付ポスト2P		HS-500			
※		LA 00 37 80	RT Pin		RTピン		HS-500			
※		BB 00 54 60	Contact Leaf, Battery		電池端子(+)		HS-500			
※		AA 05 43 10	Contact Spring(Spiral), Battery		〃 (−)		HS-500			

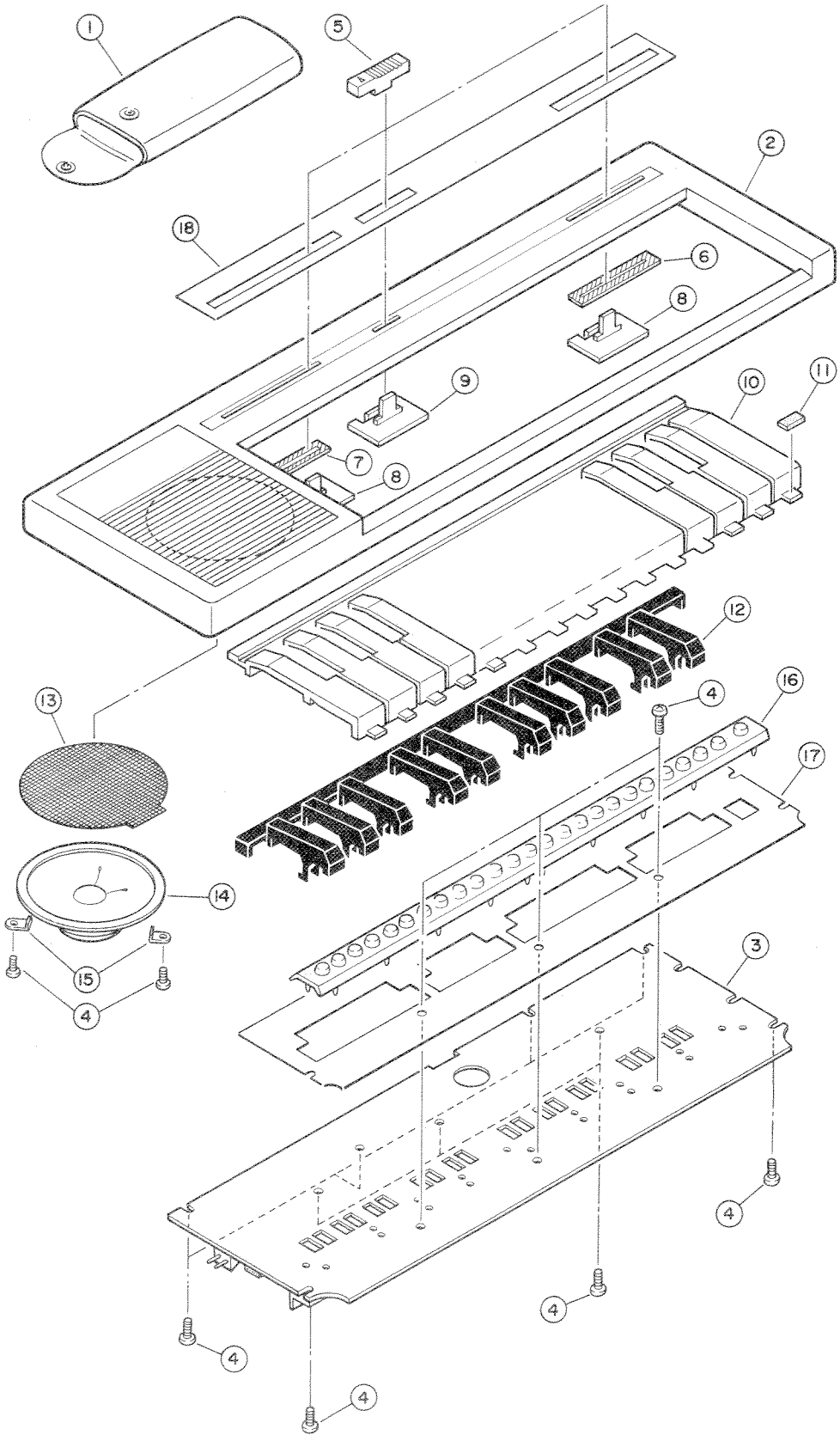
※ New Parts (新規部品)

B. Bottom Case Assembly (下ケース)



	Ref. No.	Part No.	Description		部品名	Remarks	Common Model	Markets		
※		CB 10 50 70	Lower Case Assembly		下ケース Ass'y		HS-500			
※	1	CB 04 11 70	Battery Cover		バッテリーカバー		HS-500			
※	2	CB 04 12 40	Rubber Insulator		ゴム脚		HS-500			
	3	Ei 32 60 80	Pan Head Tapping Screw	2.6 x 8	ナベタッピングネジ	BLACK				
※	4	BB 00 54 60	Contact Leaf, Battery		電池端子 (+)		HS-500			
※	5	AA 05 43 10	Contact Spring(Spiral), Battery		〃 (−)		HS-500			

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		HM2シートAss'y					
	4	Ei 32 60 80	Pan Head Tapping Screw	2.6 x 8	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 POWER/VOLUME	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	2T	スライダーユニット		HS-200			
※	9	KA 40 10 10	– do. –	1T	〃		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		スピーカ		HS-200			
※	16	AA 05 41 00	Fixture, Loud Speaker		SP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

001149

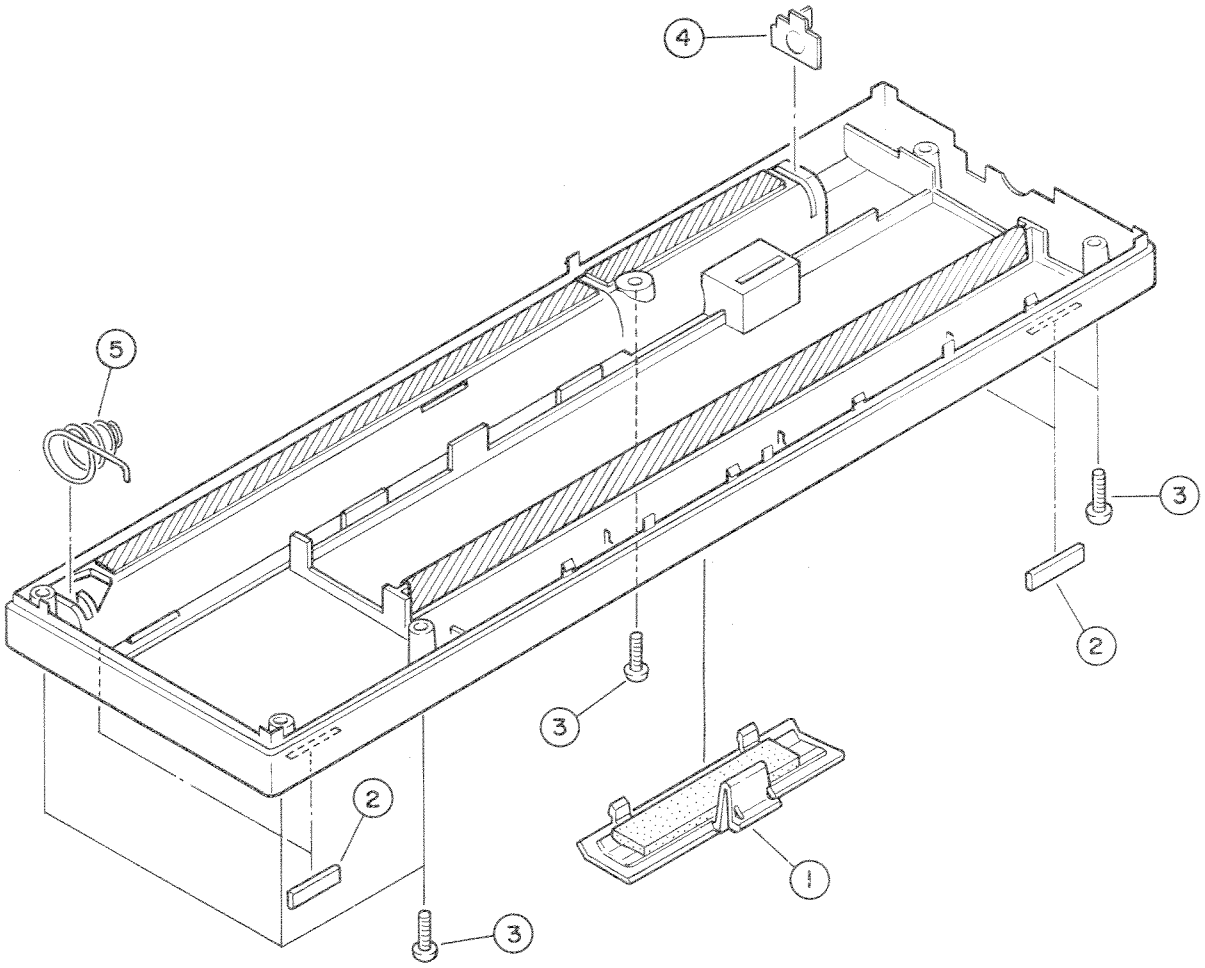
'82,4 1.6K ⊖ Printed in Japan

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		HM2シートAss'y					
※		iG 06 05 00	IC Regulator	78L008P	IC 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)	FET					
		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)		DC-IN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		2Pコネクタ		HS-200			
※		LB 20 21 70	Bass Post, Top Type 2P		ベース付ポスト2P		HS-200			
※		LA 00 37 80	RT Pin		RT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			

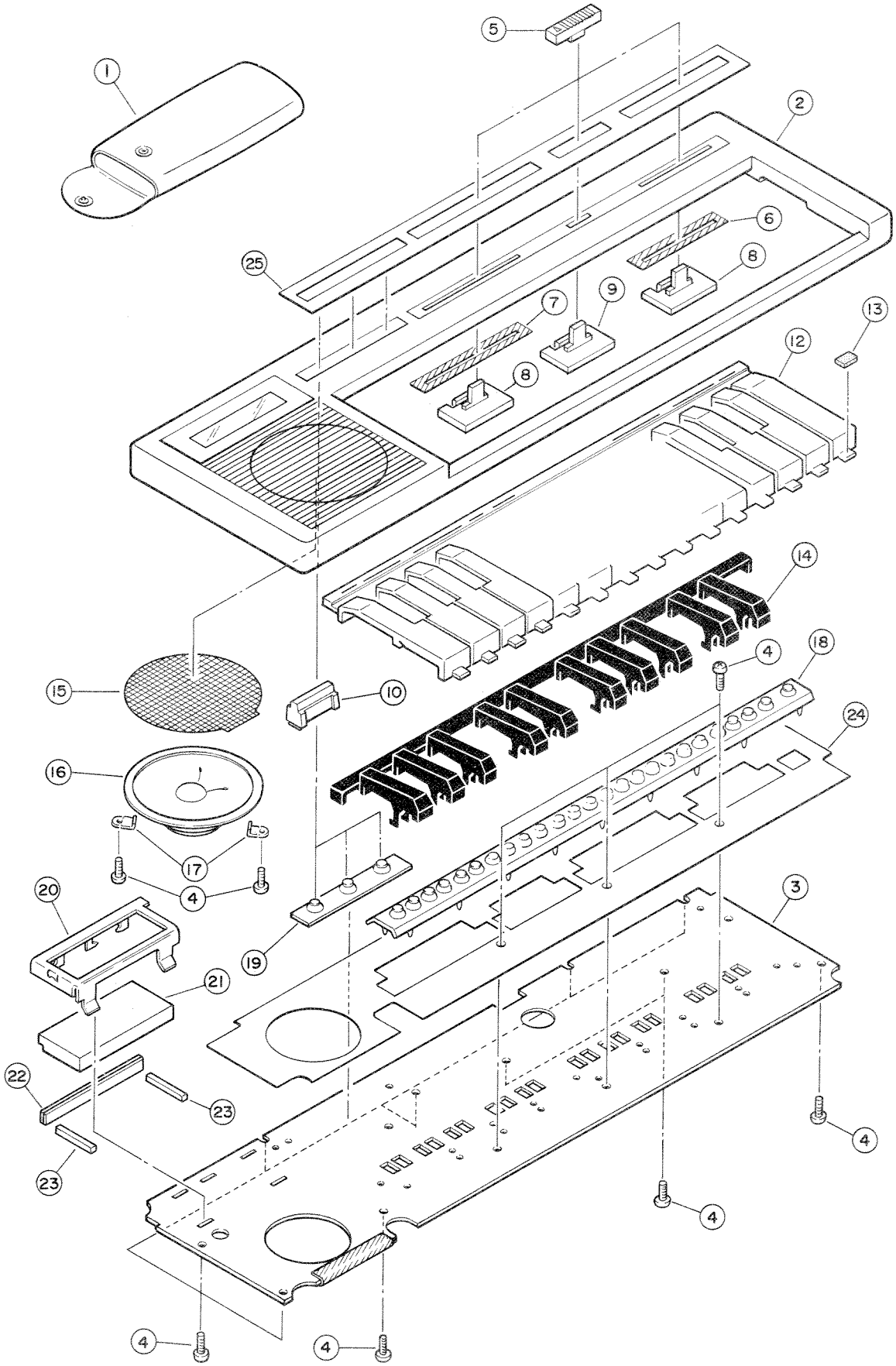
※ New Parts (新規部品)

B. Bottom Case Assembly (下ケース)



Ref. No.	Part No.	Description		部品名	Remarks	Common Model	Markets		
	NB 10 50 70	Lower Case Assembly		下ケースAss'y		HS-200			
※ 1	CB 04 11 70	Battery Cover		バッテリーカバー		HS-200			
※ 2	CB 04 12 40	Rubber Insulator		ゴム脚		HS-200			
※ 3	Ei 32 60 80	Pan Head Tapping Screw	2.6 x 8	ナベタッピングネジ					
※ 4	BB 00 54 60	Contact Leaf, Battery		電池端子(+)		HS-200			
※ 5	AA 05 43 10	Contact Spring (Spiral), Battery		〃 (−)		HS-200			

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

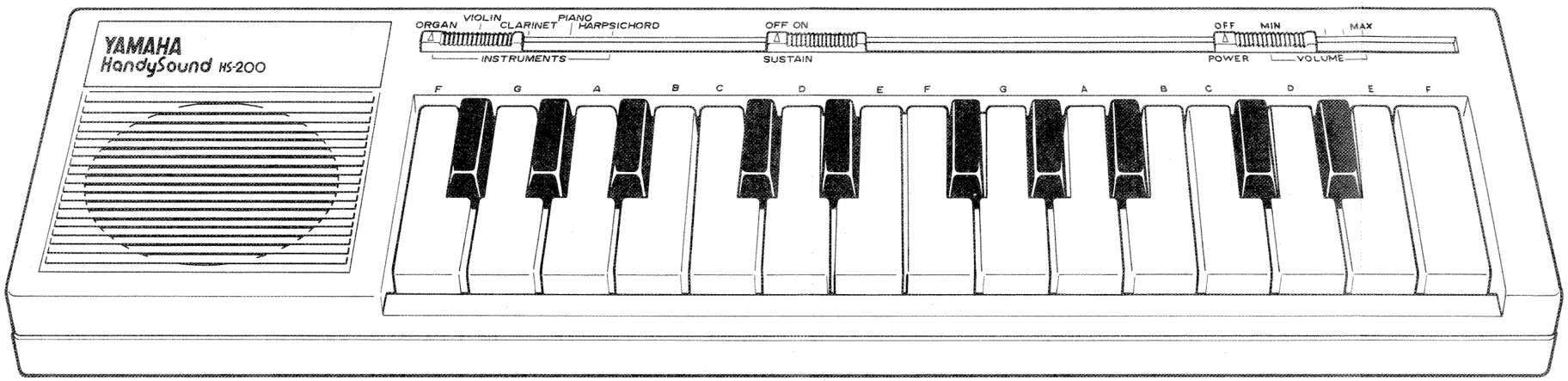


	Ref. No.	Part No.	Description		部品名	Remarks	Common Model	Markets		
※	1	CA 01 36 50	Soft Case		ソフトケース		HS-500			
※	2	NK 00 76 30	Upper Case		上ケース					
※	3	NB 10 50 80	HM1 Circuit Board Assembly		HM1シートAss'y					
	4	Ei 32 60 80	Pan Head Tapping Screw	2.6 x 8	ナベタッピングネジ	BLACK				
※	5	CB 04 12 10	Knob, Slide Switch		スライドSW. ツマミ	POWER/VOLUME SUSTAIN ON/OFF INSTRUMENT	HS-500			
※	6	CB 04 19 10	Dust Protection Film, Slide Switch		防塵フィルム	VOLUME	HS-500			
※	7	CB 04 19 20	— do. —		〃	INSTRUMENT	HS-500			
※	8	KA 40 10 00	Slider Unit, Slide Switch	2T	スライダーユニット		HS-500			
※	9	KA 40 10 10	— do. —	1T	〃		HS-500			
※	10	CB 04 11 80	White Key Assembly		白鍵Ass'y		HS-500			
※	11	CA 01 37 70	Cushion II		クッション II		HS-500			
※	12	CB 04 11 90	Black Key Assembly		黒鍵Ass'y		HS-500			
※	13	CE 02 04 20	Scren, Speaker		クレモナ		HS-500			
※	14	JA 06 51 00	Loud Speaker		スピーカ		HS-500			
※	15	AA 05 41 00	Fixture, Loud Speaker		SP取り付け金具		HS-500			
※	16	CB 04 12 50	Rubber Contact		ゴム接点		HS-500			
※	17	CA 01 36 60	Blind Cover Sheet, Circuit Board		シートカバー					
※	18	CB 04 25 20	Panel Template, Japanese Description		和文シート	for Only Japanese Model				

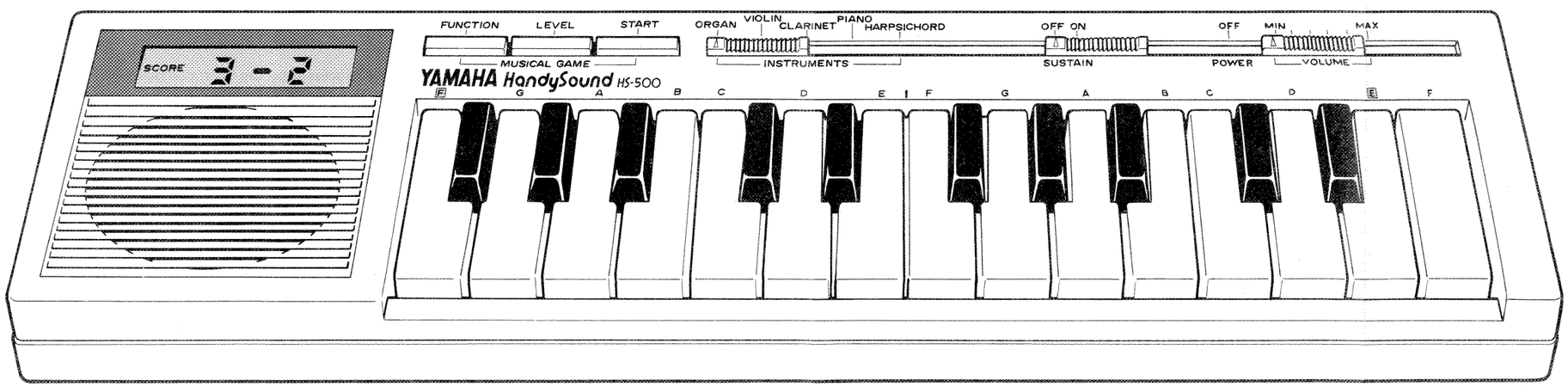
※ New Parts (新規部品)

PANEL LAYOUT

HS-200



HS-500



1. OPERATING PROCEDURE

Function selection → Level selection → Game begins by using START

KINDS OF GAMES (FUNCTION)

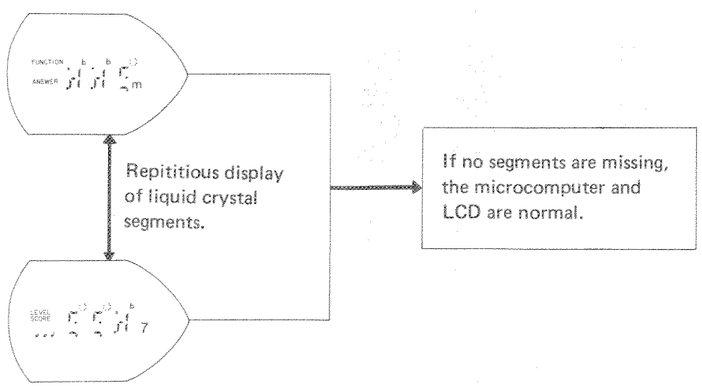
Function 1: Keyed note name display (not a game)
Function 2: Note name guessing game
Function 3: Note guessing game
Function 4: Phrase guessing game
Function 5: Chord guessing game
Function 6: Tennis game

LEVELS

3 levels from 1 to 3.

2. MICROCOMPUTER AND LCD DISPLAY TEST

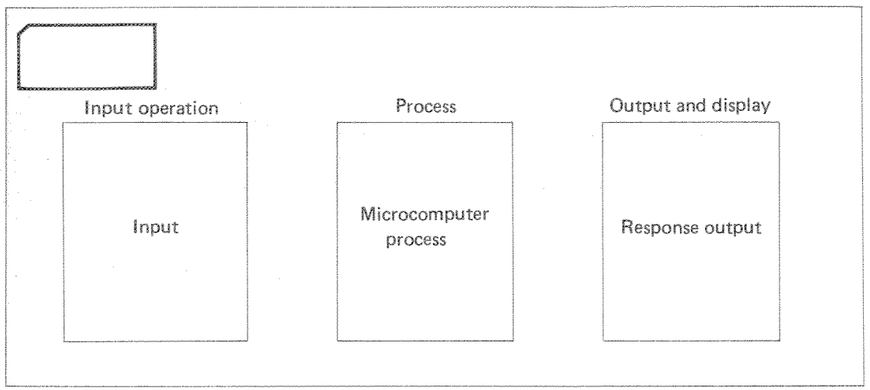
If the is turned ON while simultaneously pressing the "FUNCTION" and "START" switches, the microcomputer and LCD display will go into a test mode.



3. MANIPULATION AND OPERATION

The manipulation and operation for each function are shown below.

● How to read the chart



The microcomputer processes based on the input operation and response output can be obtained.

Function N ..... Chart title

..... Indicates that there is an input operation.

..... Shows the display contents prior to the input operation.

..... Displays the results that were processed by the microcomputer using the input operation.

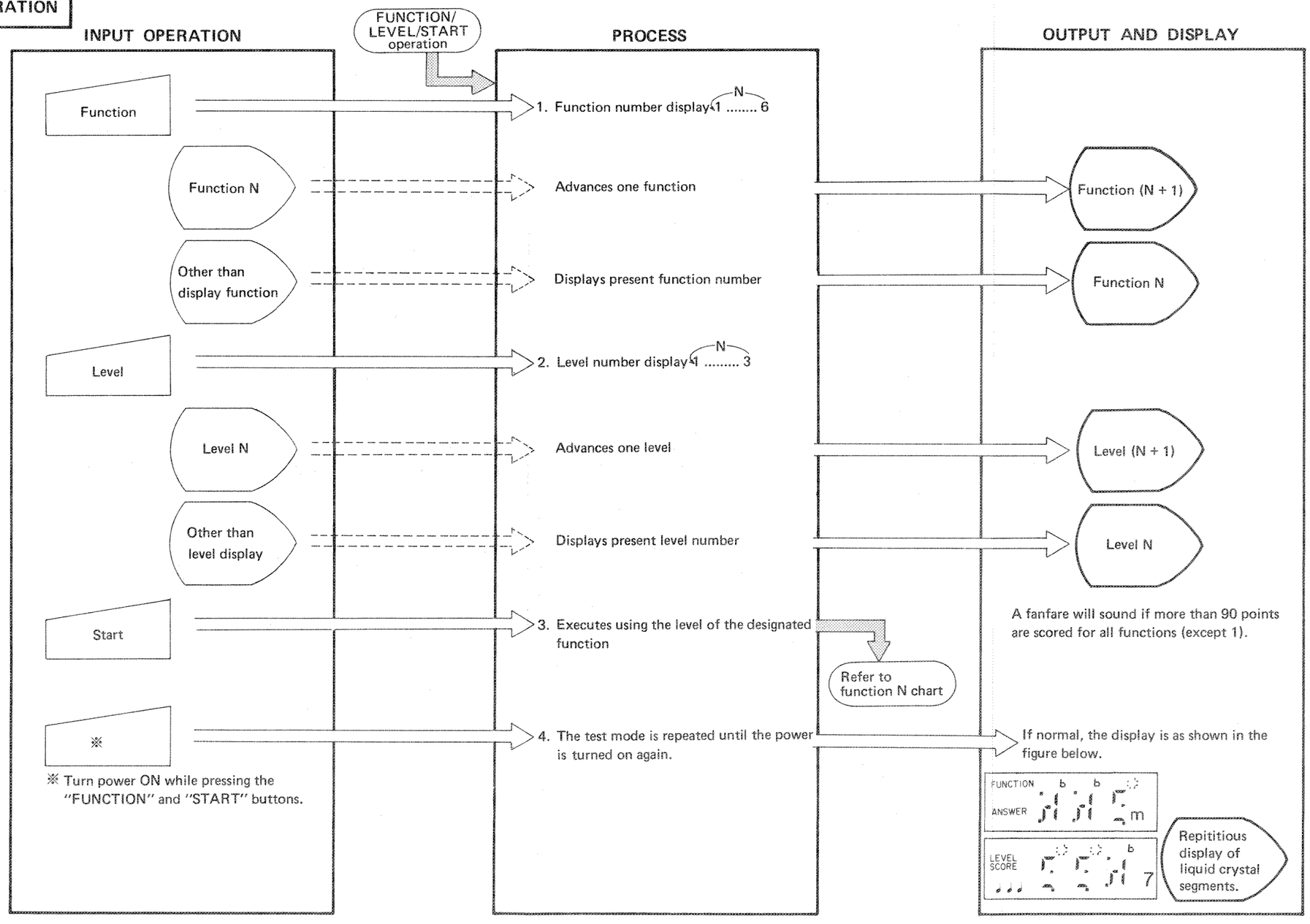
..... Indicates a judgement.

A → B ..... Indicates B occurs as a result of A.

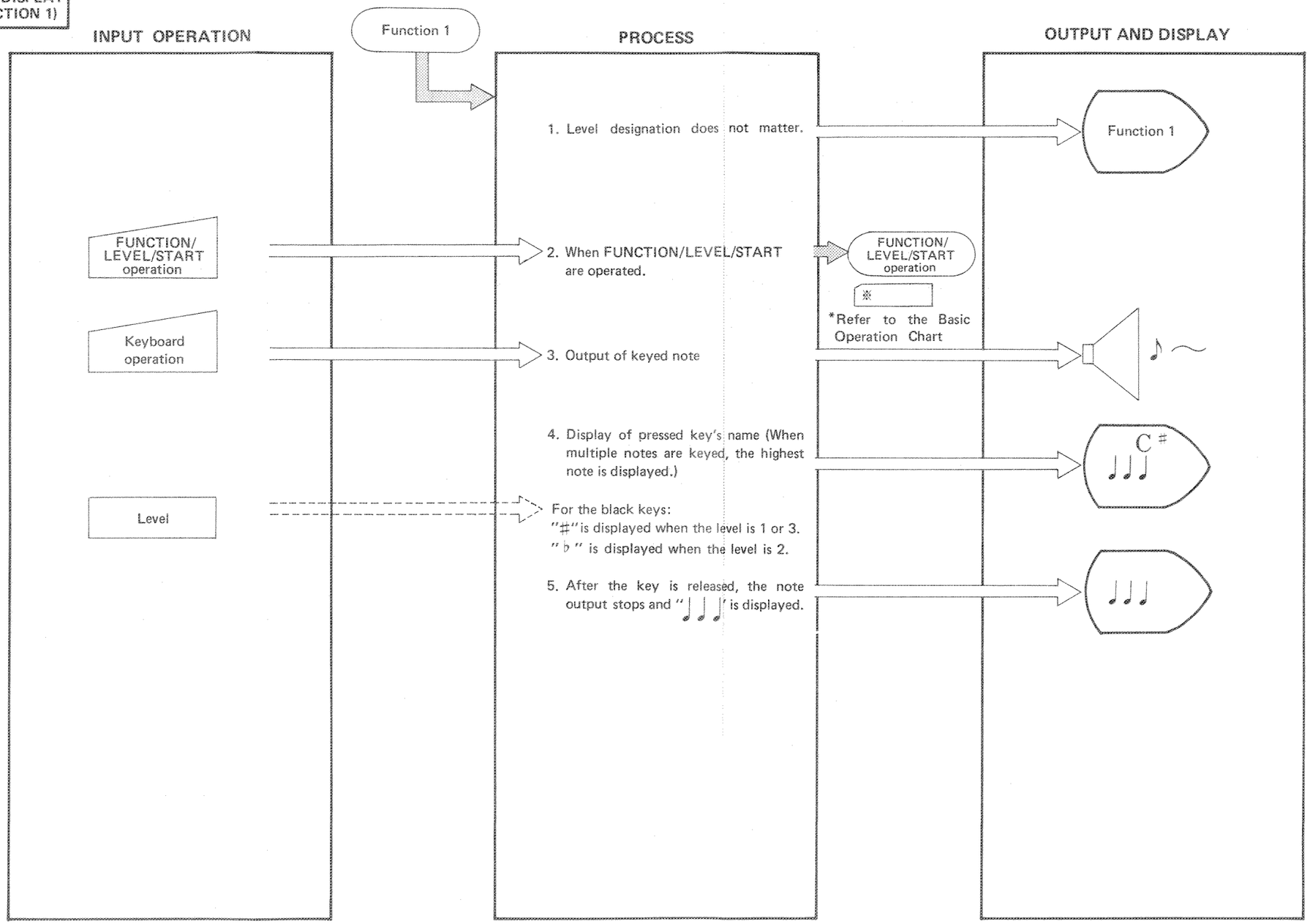
A ⇒ B ..... Indicates movement passes from A to B.

A ⇢ B ..... Indicates B is processed based on A.

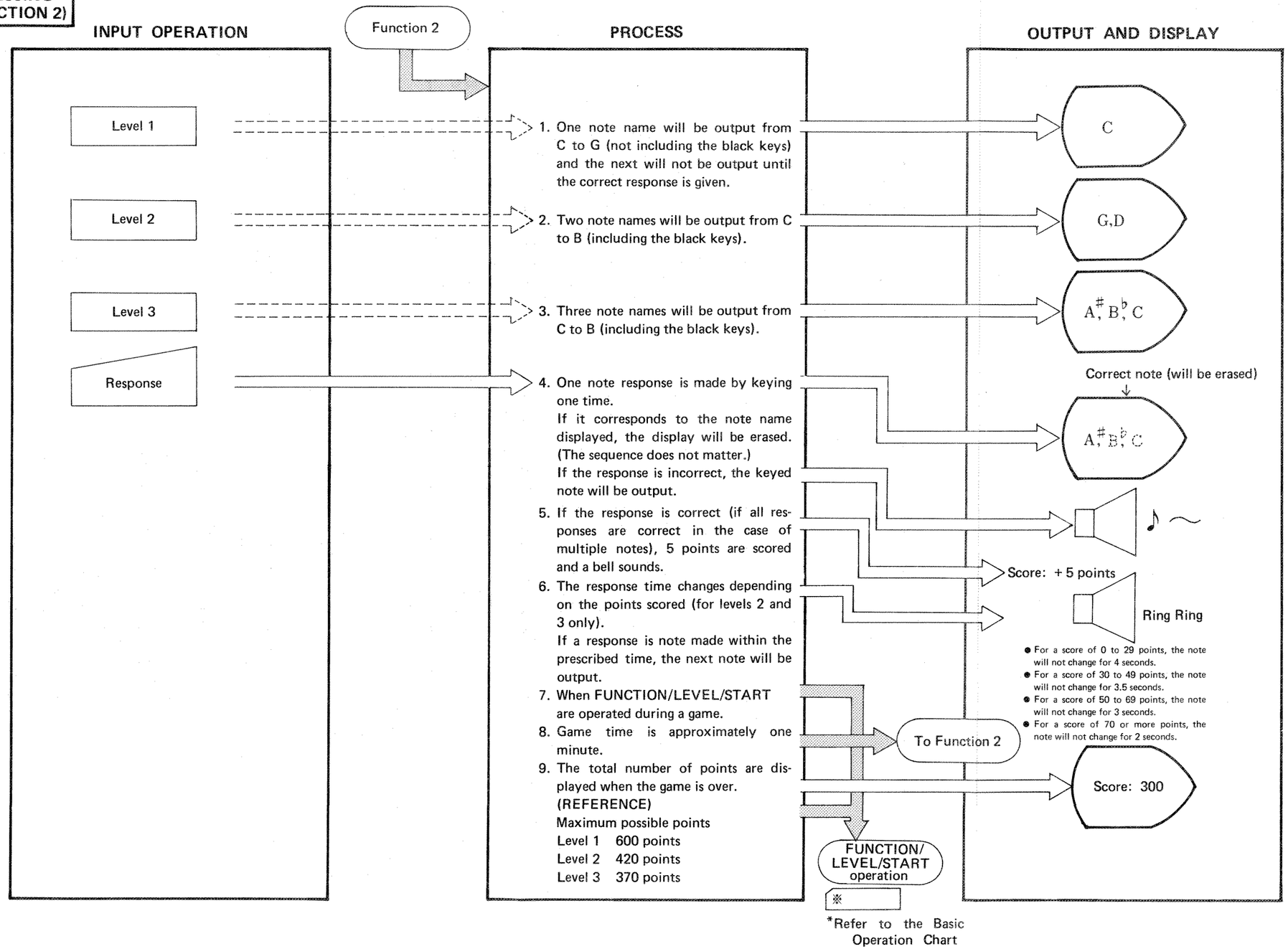
BASIC OPERATION



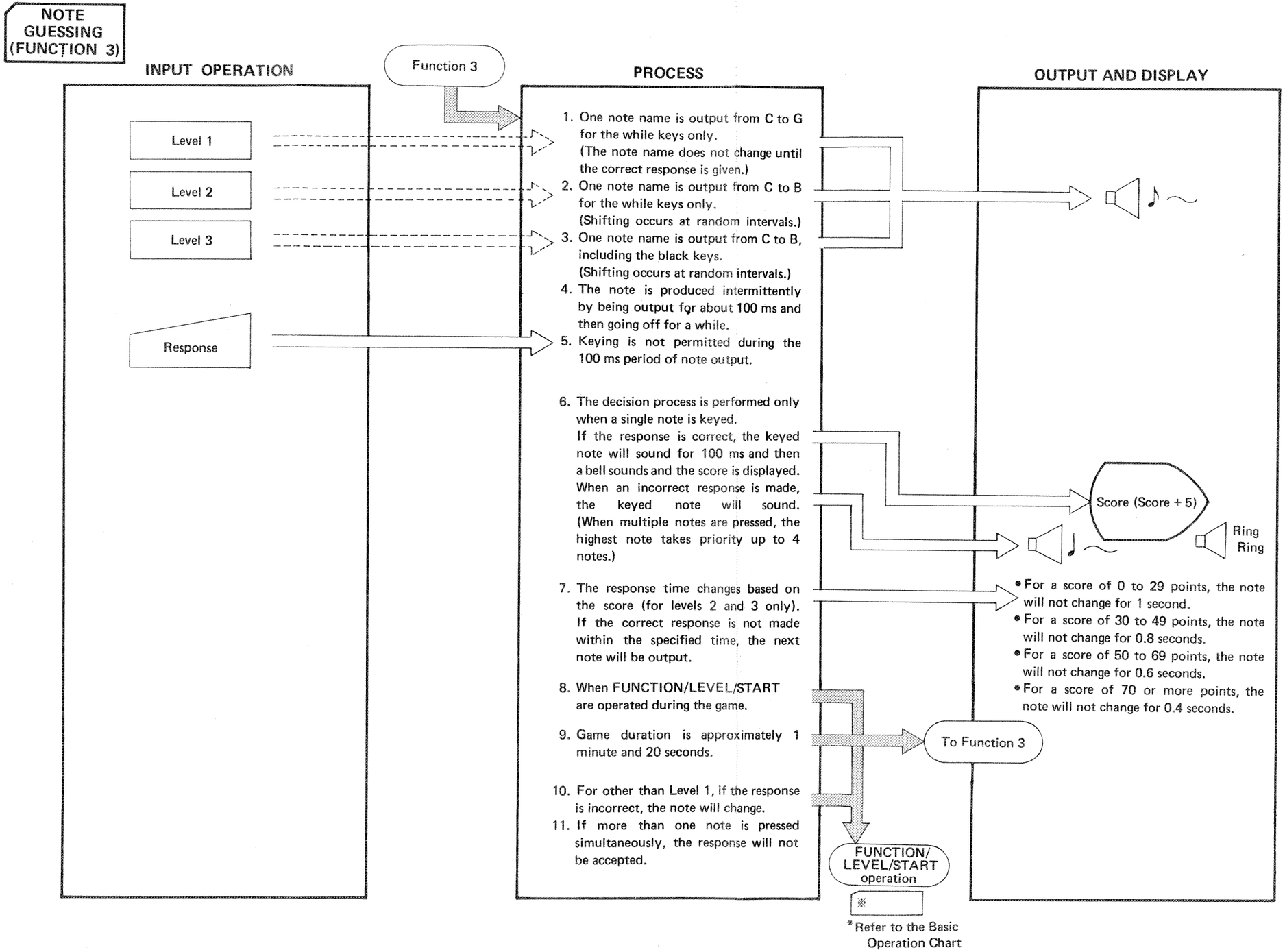
KEYED NOTE NAME DISPLAY (FUNCTION 1)



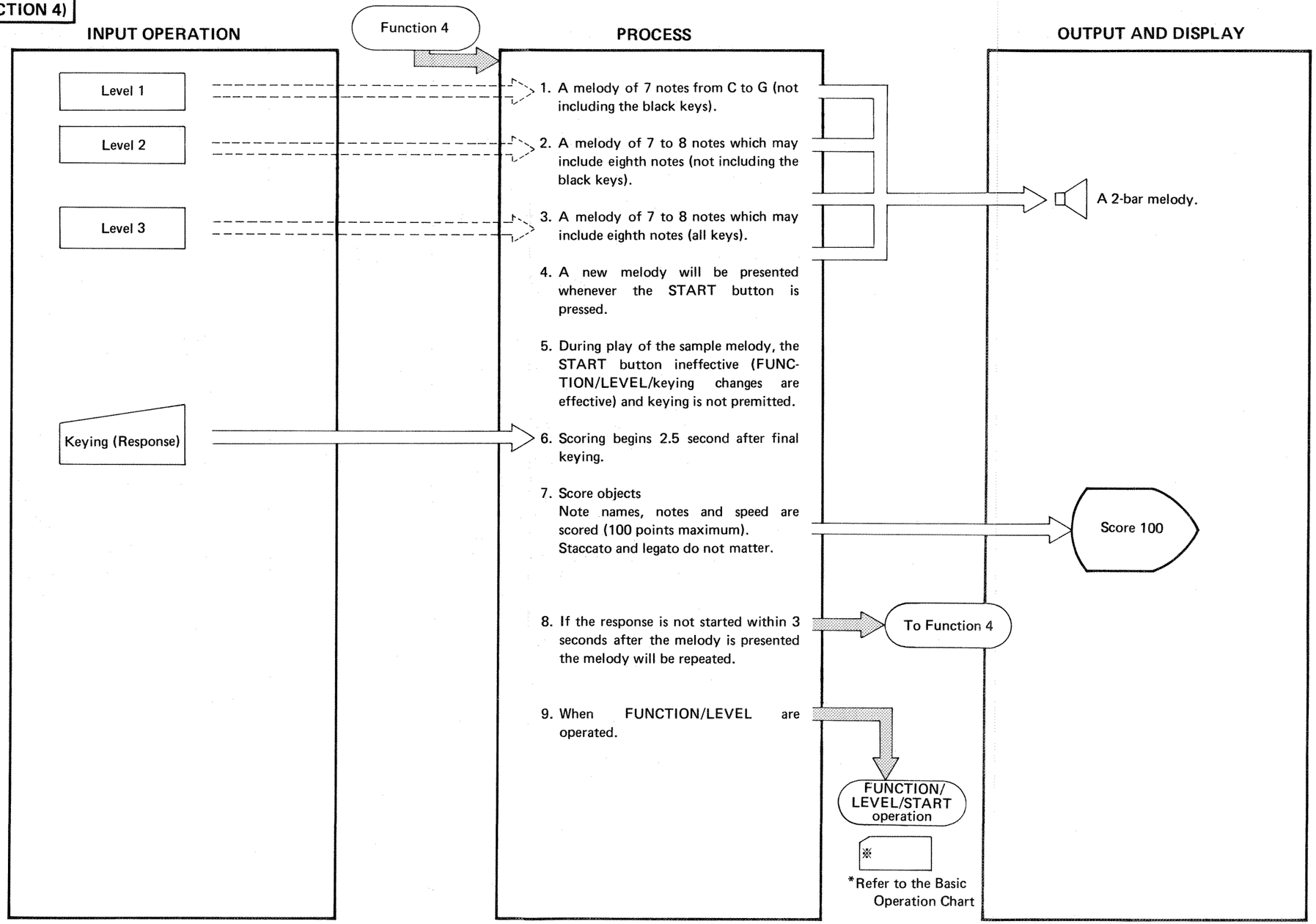
NOTE NAME GUESSING (FUNCTION 2)



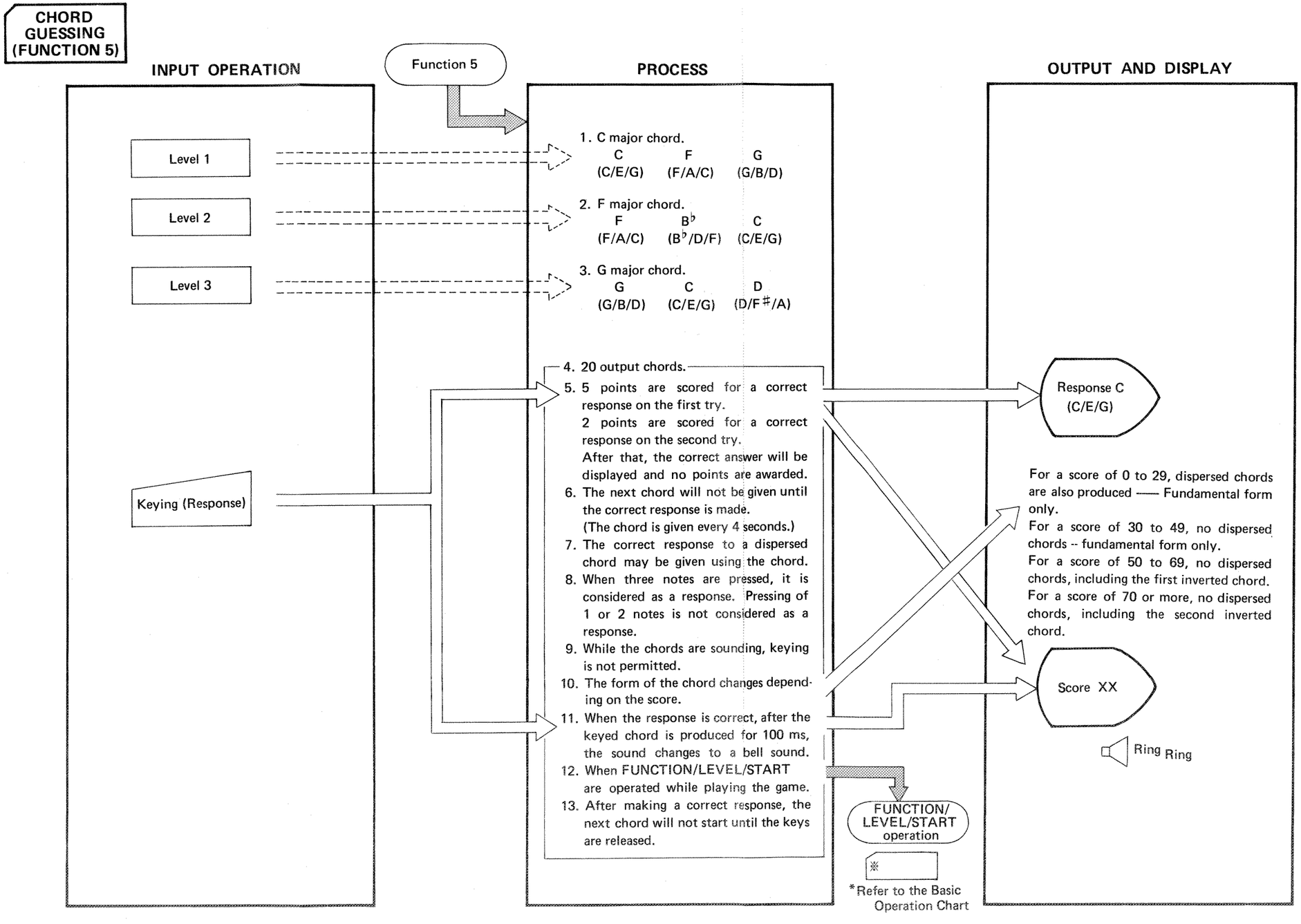
NOTE GUESSING (FUNCTION 3)



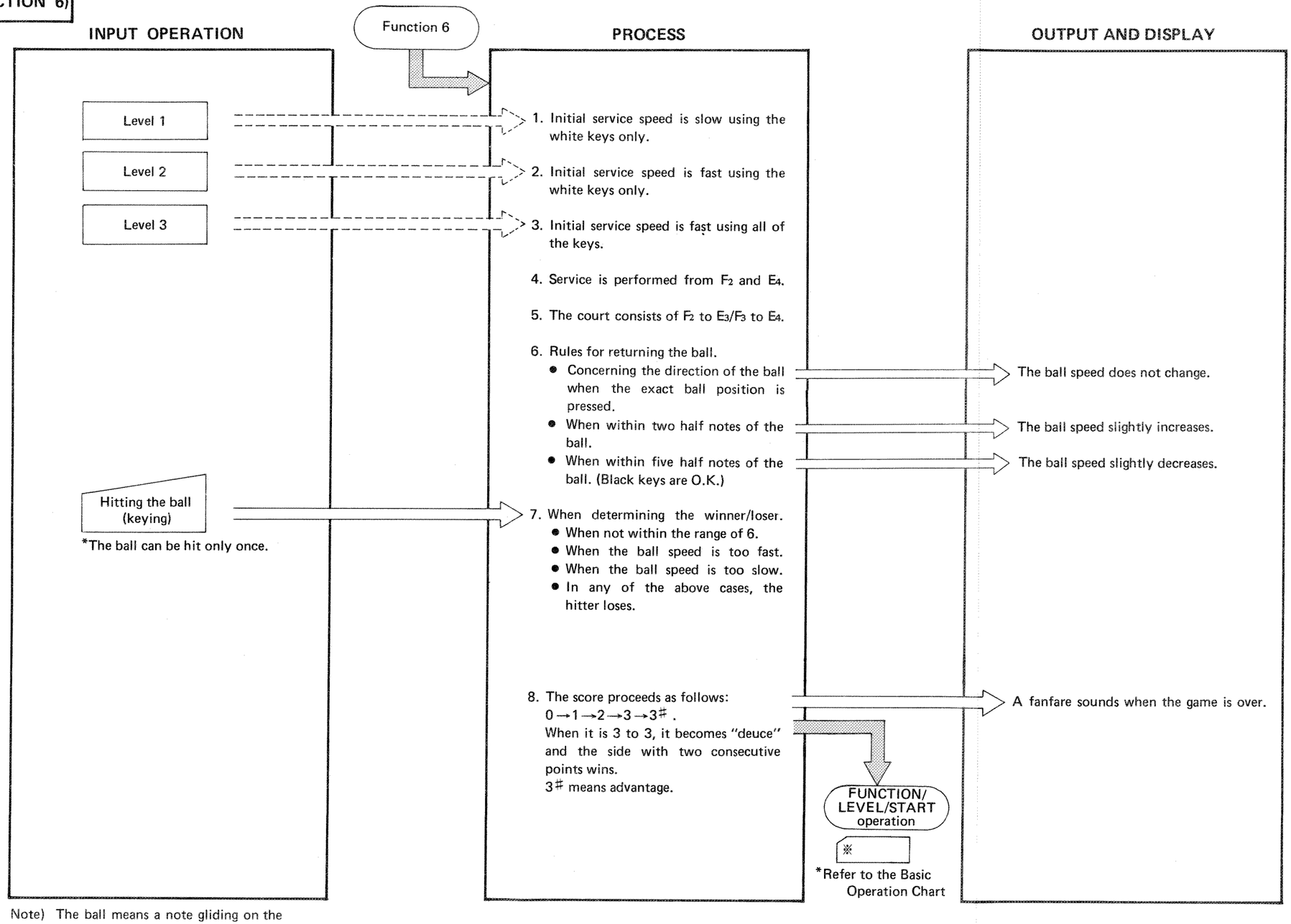
PHRASE GUESSING (FUNCTION 4)



CHORD GUESSING (FUNCTION 5)



TENNIS GAME (FUNCTION 6)



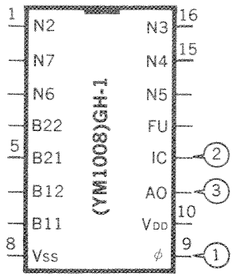
Note) The ball means a note gliding on the keyboard.

(HS-200)

Part Name	YM1008	Function Name	GH-1(Generator, Handy Sound-1)

Pin No.	Pin Name	Description
1	N2	Note terminal, C♯,G
2	N7	Note terminal, C, F♯
3	N6	Note terminal, B, F
4	B22	Block terminal, B_3–E_4
5	B21	Block terminal, F_3–$A^{\sharp}_3$
6	B12	Block terminal, B_2–E_3
7	B11	Block terminal, F_2–$A^{\sharp}_2$
8	Vss	DC Supply IN (+7.5V)

Pin No.	Pin Name	Description
16	N3	Note terminal, D, G♯
15	N4	Note terminal, D♯,A
14	N5	Note terminal, E, A♯
13	FU	※Function terminal
12	IC	Initial Clear Signal IN
11	AO	Sound Source Signal OUT
10	V_{DD}	DC Supply IN
9	ϕ	Master Clock Pulse IN(343.35KHz)



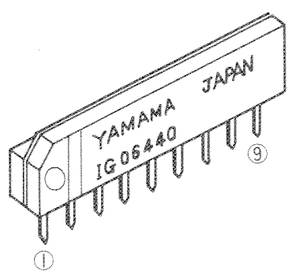
※Function terminal:for Tone Selection, SUSTAIN and F_4 note terminal

Number:Refer to Waveform photo graphs in this manual.

(HS-200·HS-500)

Part Name	iG06440	Function Name	Auto Power Off Control

Pin No.	Pin Name	Description
1		Primary DC Supply IN(positive)
2		Secondary DC Supply OUT
3		Power Switch ON/OFF Control IN
4		Start up Capacitor connection terminal
5		Primary DC Supply IN(Negative)
6		Auto Power OFF timing Setting
7		Control Signal Sensitivity Adjustment IN
8		Control Signal IN
9		Power Switch ON/OFF,Timer Reset control



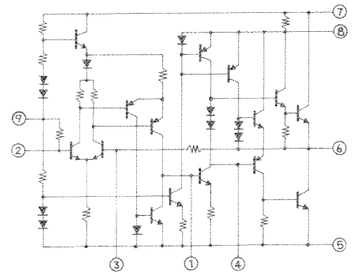
LSI Data Table

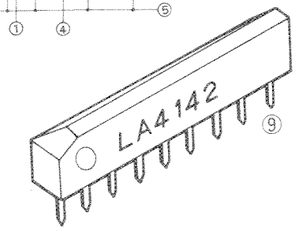
(HS-200·HS-500)

Part Name	iG0606 (LA4142)	Function Name	Power Amplifier

Pin No.	Pin Name	Description
1		Capacitor Connection for Priventing oscillation
2		Audio Signal IN
3		Gain Control
4		Capacitor Connection for Priventing oscillation
5		DC Supply IN(V_{CC})
6		Audio Signal OUT
7		DC Supply IN(V_{EE})
8		Bootstrap Capacitor Connection
9		Decoupling Capacitor Connection

・LA4142 Fquivalent circuit diagram





①

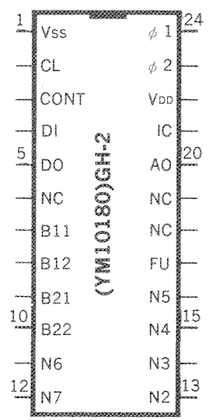
(HS-500)

Part Name	YM10180	Function Name	GH-2(Generator, Handy Sound-2)

Pin No.	Pin Name	Description
1	Vss	Primary DC Sapply IN(+7.5V)
2	CL	μCOM Clock Pulse IN
3	CONT	Control data IN from μCOM
4	DI	Data IN from μCOM
5	DO	Data OUT to μCOM
6	NC	NO Connection
7	B11	Block terminal, F_2–$A^{\sharp}_2$
8	B12	Block terminal, B_2–E_3
9	B21	Block terminal, F_3–$A^{\sharp}_3$
10	B22	Block terminal, B_3–E_4
11	N6	Note terminal, B, F
12	N7	Note terminal, C, F♯

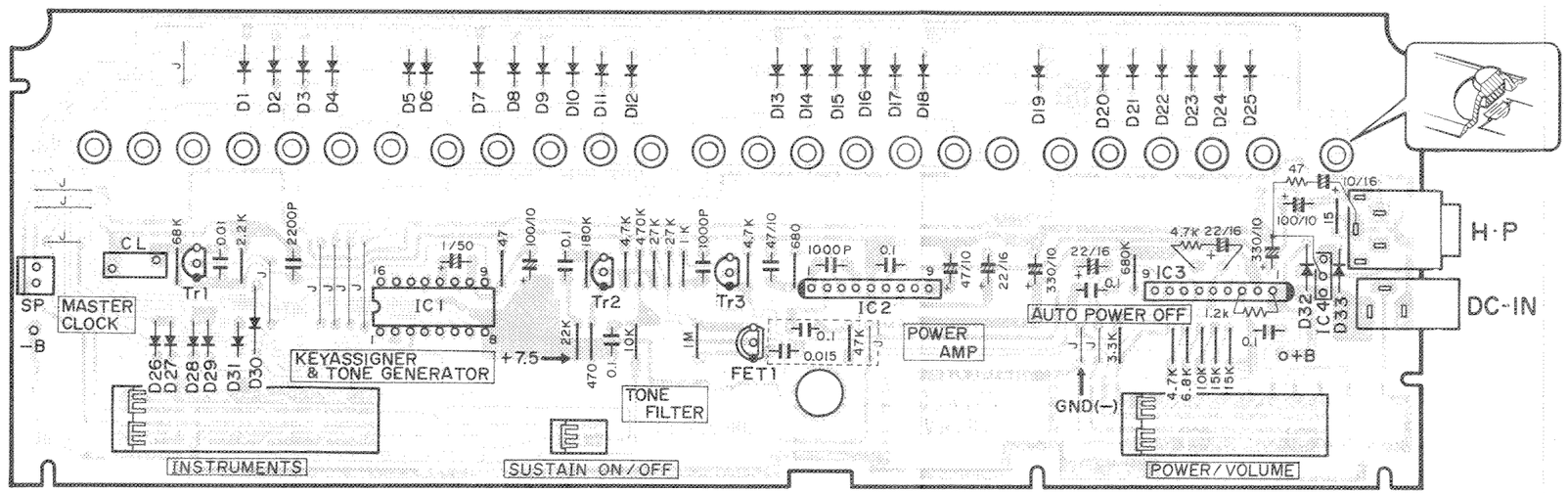
Pin No.	Pin Name	Description
24	ϕ 1	Master Clock Pulse IN (343.35kHz)
23	ϕ 2	No connection
22	V_{DD}	Primary DC Supply IN(Ground)
21	IC	Initial Clear Signal IN
20	AO	Sound Source Signal OUT
19	NC	No connection
18	NC	No connection
17	FU	※Function terminal
16	N5	Note terminal, E, A♯
15	N4	Note terminal, D♯, A
14	N3	Note terminal, D, G♯
13	N2	Note terminal, C♯, G

※Function terminal:for Tone Selection, SUSTAIN and F_4 note terminal



HS-200 HM1 Circuit Board

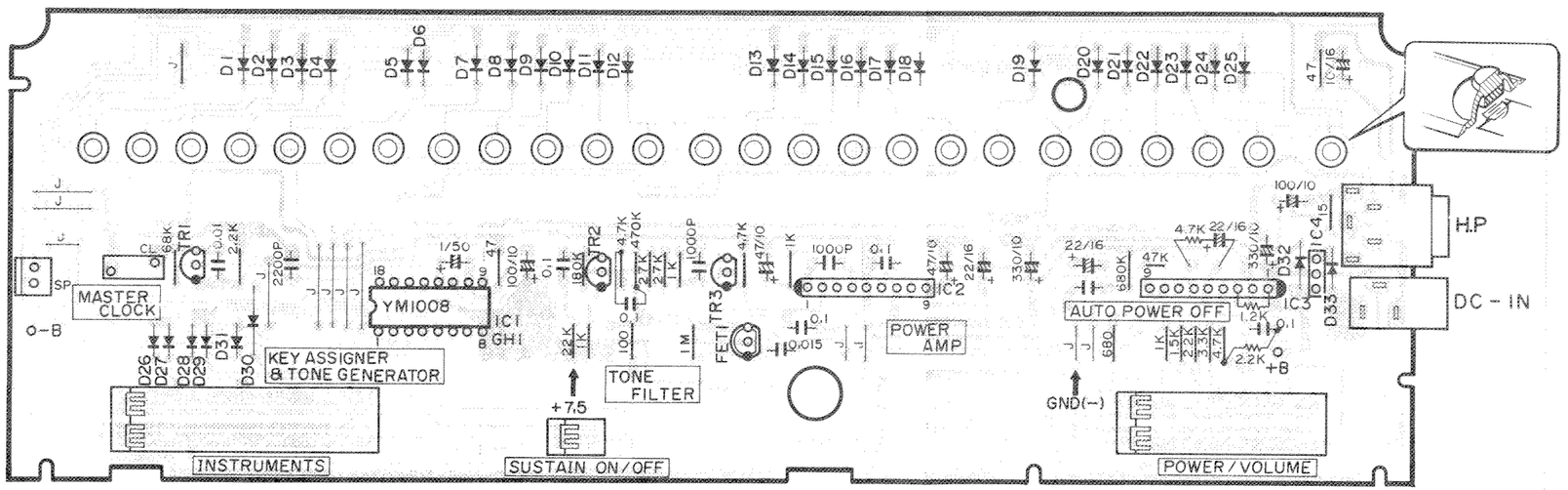
S/# 4001 ~ 4075



Component Side（部品側）

KEP-NA10803 – 1Y ⚠

S/# 11076 ~



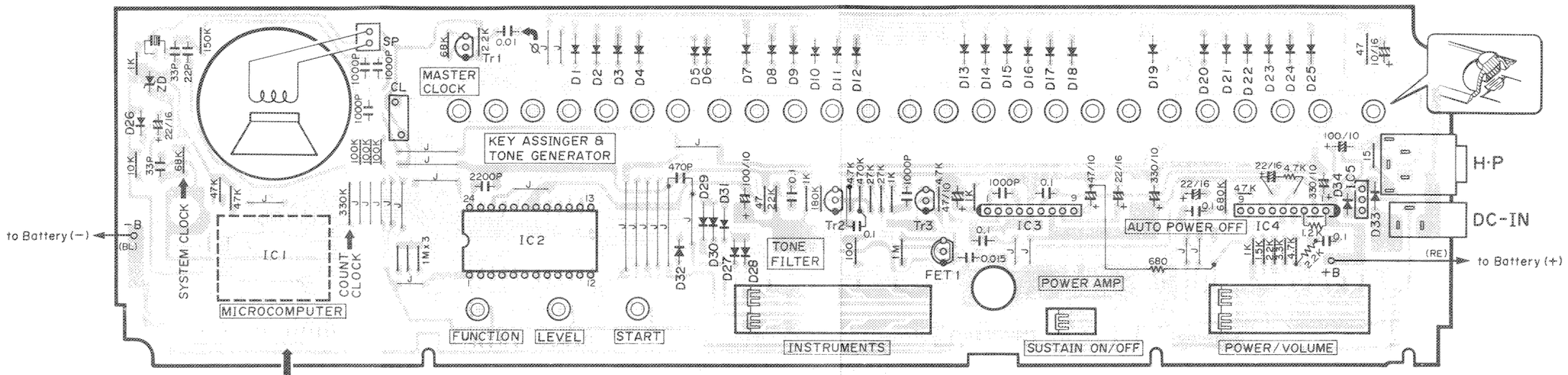
Component Side（部品側）

KEP-NA 10803-21

(Note)

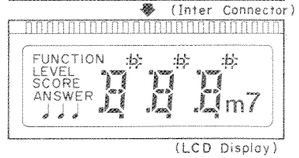
1. LC28752	: S/# 4001 ~ 4075
LC28754	: S/# 11076 ~
2. IC	
IC1	: YM1008
IC2	: LA4142
IC3	: IG06440
IC4	: 78L008P
3. Transistor	
Tr1, 3	: 2SC1815 (O) (Y)
Tr2	: 2SA733 (P) (Q)
4. FET	
FET1	: 2SK246 (Y)
5. Diode	
D1 ~ 31	: 1SS133 (Servicing : 1S1555)
D32, 33	: 1SS84
6. Ceramic Vibrator	: 343.4 kHz

HS-500 HM2 Circuit Board



Component Side（部品側）

(Inter Connector)



(LCD Display)

(Note)

1. LC28761
2. IC
   - IC1 : μPD7503G
   - IC2 : YM1018
   - IC3 : LA4142
   - IC4 : IG06440
   - IC5 : 78L008P
3. Transistor
   - Tr1.3 : 2SC1815 (O) (Y)
   - Tr2 : 2SA733 (P) (Q)
4. FET
   - FET1 : 2SK246 (Y)
5. Diode
   - D1 ~ 32 : 1SS133 (Servicing : 1S1555)
   - D 33, 34 : 1SS84
6. Ceramic Vibrator : 343.4 kHz
   Quatz Vibrator : 32.768 kHz