PORTATONE

KB-280

SERVICE MANUAL



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PK 001758

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

The data provided is belived 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 parts replacement. Recheck all work before you apply power to the unit.

WARNING: CHEMICAL CONTENT NOTICE!

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

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

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

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

■ WARNING

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

■ SAVING DATA

Saving and backing up your data

- Data in the instrument's internal memory can be lost due to operational errors or malfunction.
  Be sure to save any important data to external media via a computer connected to the instrument.

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SPECIFICATIONS

键盘
- 61 个标准键（C1 - C6），具备力度感响应功能。

显示器
- 大屏幕多功能 LCD 显示器（背光型）

设定
- 待机 / 开
- 主音量：最小－最大

面板控制
- 伴奏音量上和下、速度上和下、伴奏、伴奏类别、功能、+/ 是、 -/ 否、力度、混响、延音、示范乐曲、双音色、音色分割、中国音色类别、音色、音色类别、 A-B 反复、和弦伴奏开 / 关、同步结束、暂停、同步起动、前奏 / 尾声、起动 / 停止、快退、快进、主奏 / 自动插入 A、主奏 / 自动插入 B、注册记忆、音库、[1] － [4]、乐曲编号、[录音]、[1] － [5]、[A]

音色
- 525 种音色（包括 361 组 XG 音色 +12 组打击乐音色 +2 组 SE 音色）
- 复音：32

伴奏
- 163 种伴奏
- 伴奏控制 :和弦伴奏开 / 关、同步结束、同步起动、起动 / 停止、前奏 / 尾声、主奏 / 自动插入 A、主奏 / 自动插入 B
- 伴奏音量

功能按钮

效果
- 混响：9 种类型
- 叠奏：4 种类型
- 和声：26 种类型

示范乐曲
- 20 首乐曲

乐曲
- 5 首乐曲 + 闪存
- 乐曲音量

录音
- 乐曲
  用户乐曲：5 首乐曲
  录音音轨：1、 2、 3、 4、 5、 A
- 乐曲清除、音轨清除

注册记忆
- 8 个音库 x 4 个注册记忆

滑音轮
- 音域 ±1 八度

滑音
- 滑音时间：00 － 127

MIDI
- 时钟
- 初始值发送
- 本机开 / 关

附属插口
- 耳机 / 输出、直流输入 12V、 MIDI 输入 / 输出、延音踏板、表现踏板

放大器
- 6.0 W x 2

扬声器
- 12cm × 2 + 3cm × 2

功率消耗
- 20 W

电源
- 适配器 ： YAMAHA PA-5D AC 电源适配器
- 电池 ： 六节 “D” 号 R20P（LR20）或等效电池

尺寸（宽×深×高）
- 952 × 388 × 148 mm

重量
- 6.8 kg

随机附件
- 谱架
- AC 电源适配器
- 表现踏板
- 使用说明书

可选附件
- USB MIDI 接口 ： UX16
- 脚控开关 ： FC4、 FC5

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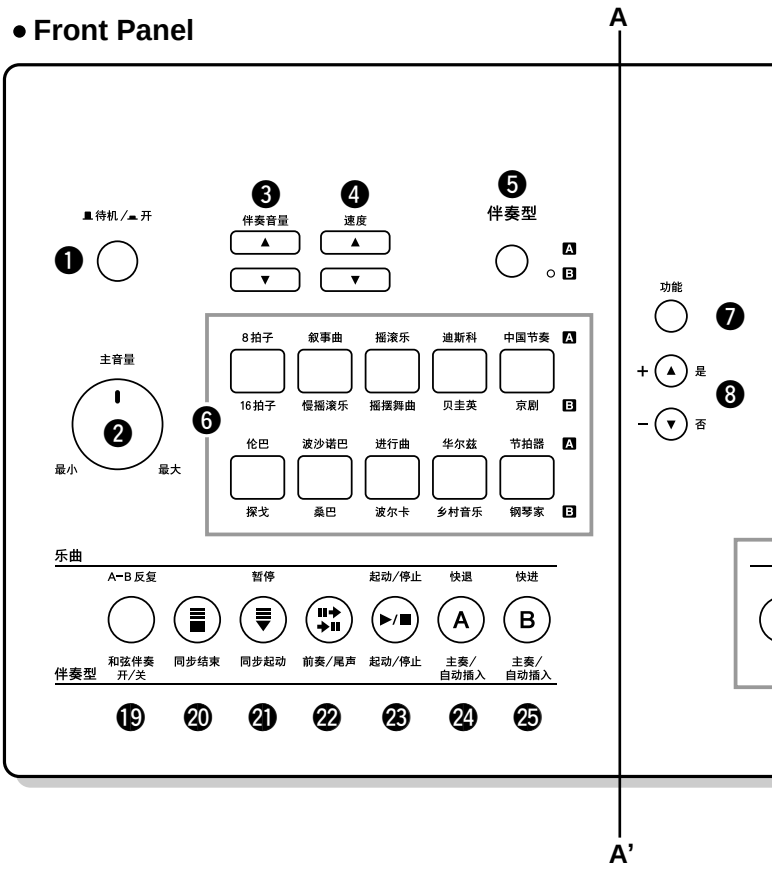
■ PANEL LAYOUT

● Front Panel



■前面板

❶ [待机/开] 开关
❷ [主音量] 旋钮
❸ 伴奏音量 [▲] 和 [▼] 按钮
❹ 速度 [▲] 和 [▼] 按钮
❺ [伴奏型] 按钮
❻ 伴奏类别按钮
❼ [功能] 按钮
❽ [+/是]、[-/否] 按钮
❾ LCD显示屏
❿ [力度] 按钮
⓫ [混响] 按钮
⓬ [延音] 按钮
⓭ [示范乐曲] 按钮
⓮ [音色] 按钮
⓯ [双音色] 按钮
⓰ [音色分割] 按钮
⓱ 中国音色类别按钮
⓲ 音色类别按钮
⓳ [A-B反复] 按钮
[和弦伴奏开/关] 按钮
⓴ [同步结束] 按钮
㉑ [暂停] 按钮
[同步起动] 按钮
㉒ [前奏/尾声] 按钮
㉓ [起动/停止] 按钮
㉔ [快退] 按钮
[主奏/自动插入A] 按钮
㉕ [快进] 按钮
[主奏/自动插入B] 按钮
㉖ 注册记忆 [存储]、[音库]、[1]-[4] 按钮
㉗ 乐曲存储 [乐曲编号]、[录音]、[1]-[5]、[A] 按钮
㉘ [PORTAMENTO] （滑音）按钮
㉙ [PITCH BEND]（滑音）轮

■后面板

㉚ MIDI输入/输出端口
㉛ 延音踏板插口
㉜ 表现踏板插口
㉝ 耳机/输出插口
㉞ 直流输入12V电源插口

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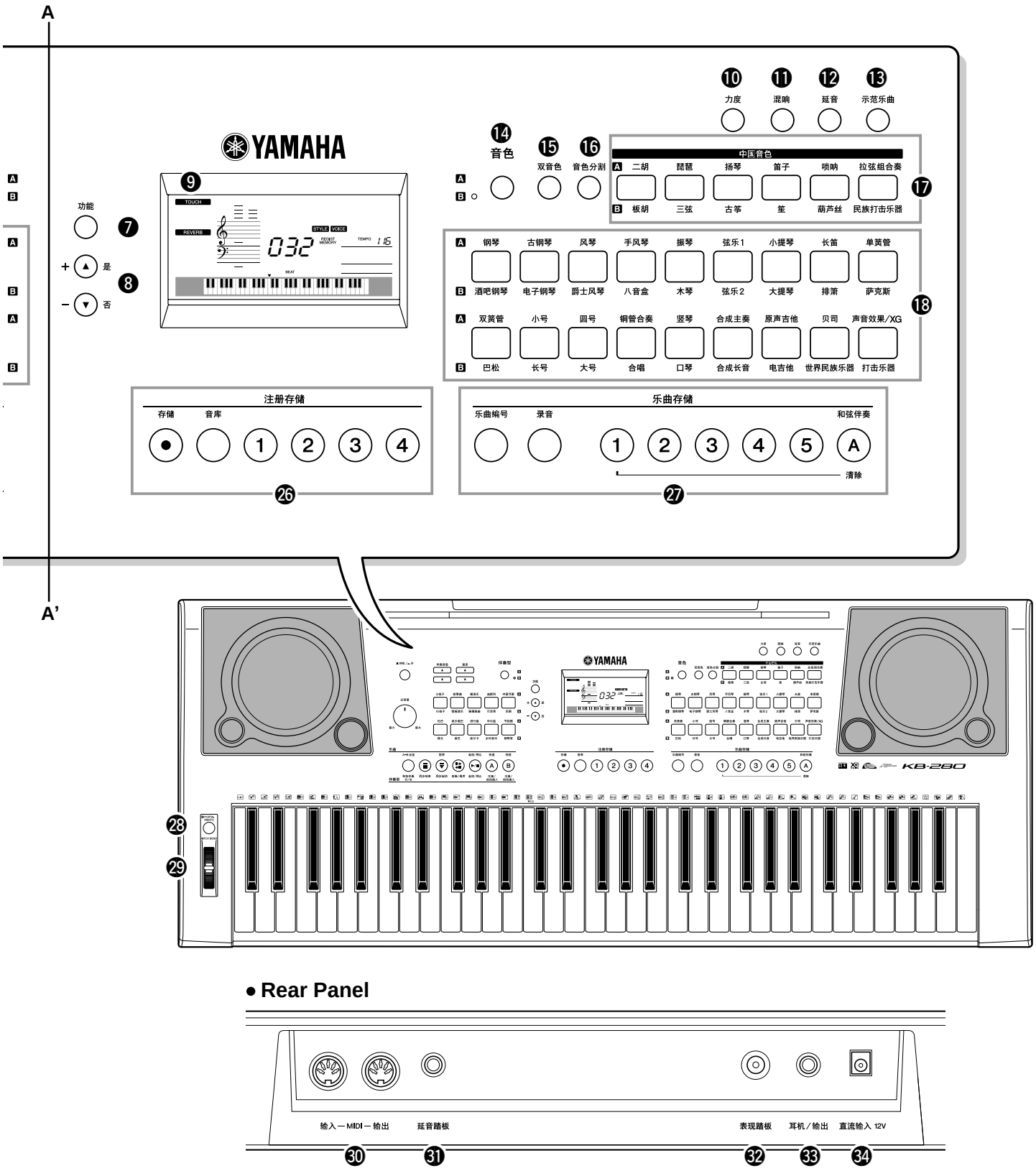

● Rear Panel

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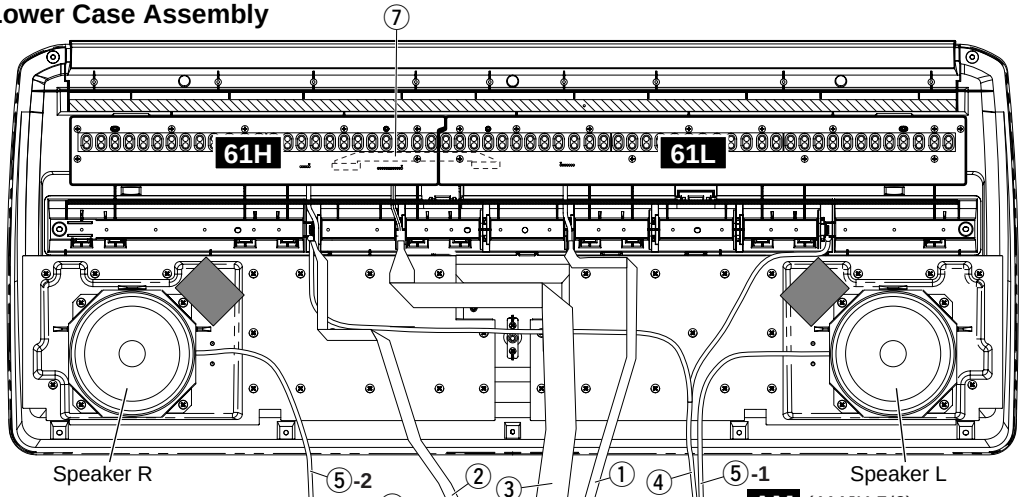
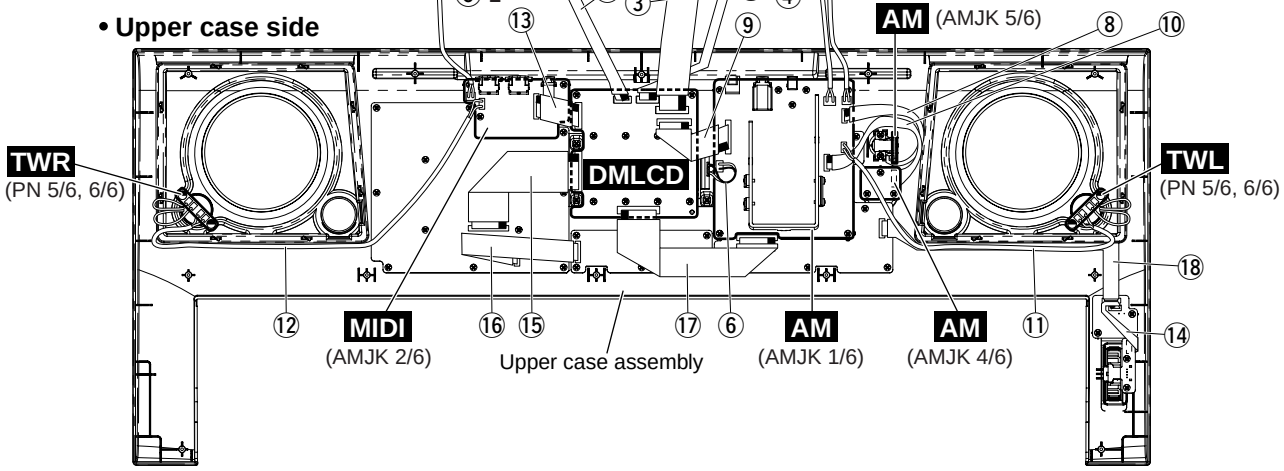
CIRCUIT BOARD LAYOUT & WIRING

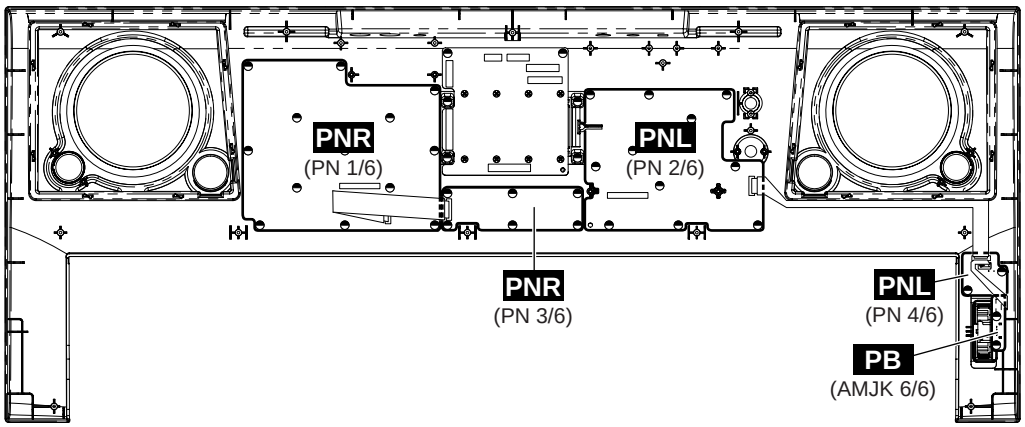
• **Lower Case Assembly**



• **Upper case side**



• **Upper case side**



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No.	Unit Name	Location	Parts No.	Connector Assembly	Destination						Remarks
①	Lower Case Assembly	30	WC601200	MK3	61L-CN5	*1	*4	DMLCD-CN402	*1	*4	7P L=550
②		40	WG343000	MK2	61H-CN2	*1	*4	DMLCD-CN403	*1	*4	5P L=500
③		50	WC601000	MK1	61H-CN2	*1	*4	DMLCD-CN401	*1	*4	12P L=600
④		130	(V873560)	BAT	Spring Terminal (+)	*2	*5	AM-CN151	*1	*6	3P
					Spring Terminal (–)	*2	*5				
⑤-1		220	(WG32410)	SPL	Speaker L	*2	*6	AM-CN554	*1	*6	2P
⑤-2					Speaker R	*2	*6	MIDI-CN555	*1	*6	2P
⑥	LCD Unit	L40	(WC60260)	BL	Back Light Assembly	*2	*7	AM-CN152	*1	*4	2P L=70
⑦	Keyboard Assembly	150c	V8696200		61H-CN3	*1	*4	61L-CN4	*1	*4	12P L=210
⑧	AM Circuit Board	WH153	(WG33270)	STB2	AM-CN153	*3	*4	AM-CN154	*3	*4	4P L=230
⑨		WH155	(WG33120)	AMDM	AM-CN155	*3	*4	DMLCD-CN101	*1	*4	13P L=120
⑩		WH551	(WG33260)	VR3	AM-CN551	*3	*4	AM-CN552	*3	*4	5P L=230
⑪		WH553	(WG34260)	TW2	AM-CN553	*3	*4	TWL +/–	*2	*7	2P L=380
⑫	MIDI Circuit Board	WH556	(WG34270)	TW3	MIDI-CN556	*3	*4	TWR +/–	*2	*7	2P L=410
⑬		WH853	(WG33110)	JK1	MIDI-CN853	*3	*4	DMLCD-CN803	*1	*4	9P L=90
⑭	PB Circuit Board	WH855	(WG33160)	PB3	PB-CN855	*3	*4	PNL-CN777	*1	*4	3P L=100
⑮	PNR Circuit Board	WH771	(WG33210)	PNR	PNR-CN771	*3	*4	DMLCD-CN701	*1	*4	16P L=170
⑯		WH772	(WG33230)	PN7	PNR-CN772	*3	*4	PNR-CN773	*3	*4	7P L=170
⑰	PNL Circuit Board	WH774	(WG33220)	PN6	PNL-CN774	*3	*4	DMLCD-CN703	*1	*4	16P L=200
⑱		WH775	(WG33240)	PN8	PNL-CN775	*3	*4	PNL-CN776	*3	*4	6P L=320

*The parts with "( )" in "**Part No.**" are not available as spare parts.
*1: Installation
*2: Manual soldering
*3: Dip soldering
*4: Edge mark is adjusted to Pin 1 mark (△ mark).
*5: Red wire is connected to (+) terminal. Black wire is connected to (–) terminal.
*6: Red wire is adjusted to Pin 1 mark (△ mark).
*7: Edge mark is adjusted to + mark.

Caution: Be sure to attach the removed filament tape just as it was before removal.

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DISASSEMBLY PROCEDURE

Caution: Be sure to attach the removed filament tape just as it was before removal.

1. Lower Case Assembly

(Time required: About 2 minutes)

1-1 Remove the battery cover assembly. (Fig. 1)

1-2 Remove the nine (9) screws marked [320] and three (3) screws marked [330]. The lower case assembly can then be removed. (Fig. 1)

2. Spring Terminal

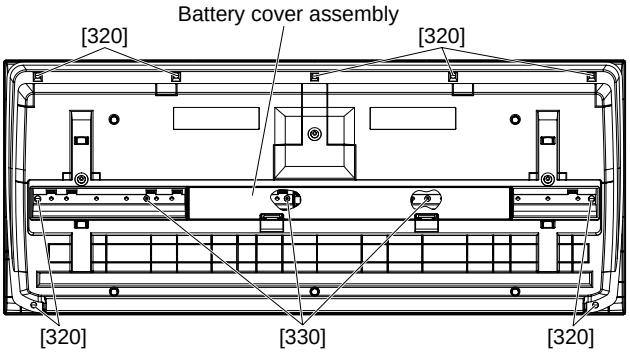
(Time required: About 2 minutes)

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

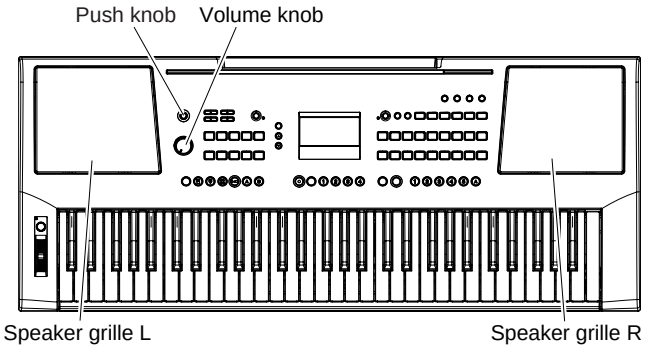
2-2 Remove the connector assemblies BAT (red/black) soldered to the spring terminals (+) and (–). (Fig. 2)

2-3 Unfasten the two (2) each hooks (A) at the bottom of the lower case assembly and pull out the respective spring terminals. (Fig. 3)

<Bottom view>



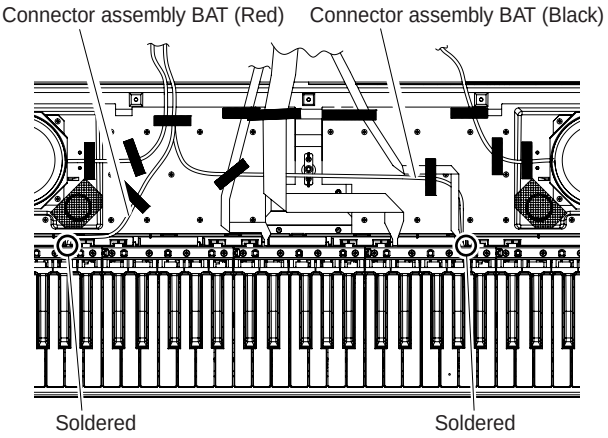
<Top view>



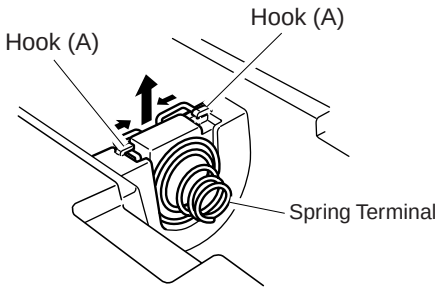
[320]: Bind Head Tapping Screw-B 3.0X12 MFZN2W3 (WE987400)
[330]: Bind Head Tapping Screw-B 3.0X30 MFZN2W3 (WF491000)

(Fig.1)

<Top view (Lower Case Assembly>



(Fig.2)



(Fig.3)

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3. AM Circuit Board

(Time required: About 4 minutes)

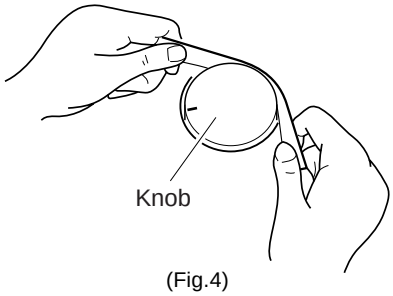
3-1 Remove the “MASTER VOLUME” knob as shown in Fig. 4. (Fig. 4)

3-2 Remove the lower case assembly. (See procedure 1.)

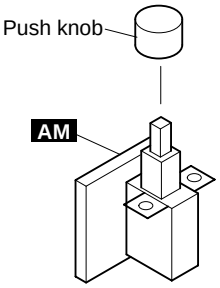
3-3 Remove the TW2 connector assembly soldered to the TWL circuit board. (Fig. 5)

3-4 Remove the seven (7) screws marked [210A], three (3) screws marked [210B], two (2) screws marked [210C] and the screw marked [210D]. The AM circuit board can then be removed. (Fig. 5)

3-5 Pull out the push knob from the AM circuit board. (Fig. 6)



(Fig.4)

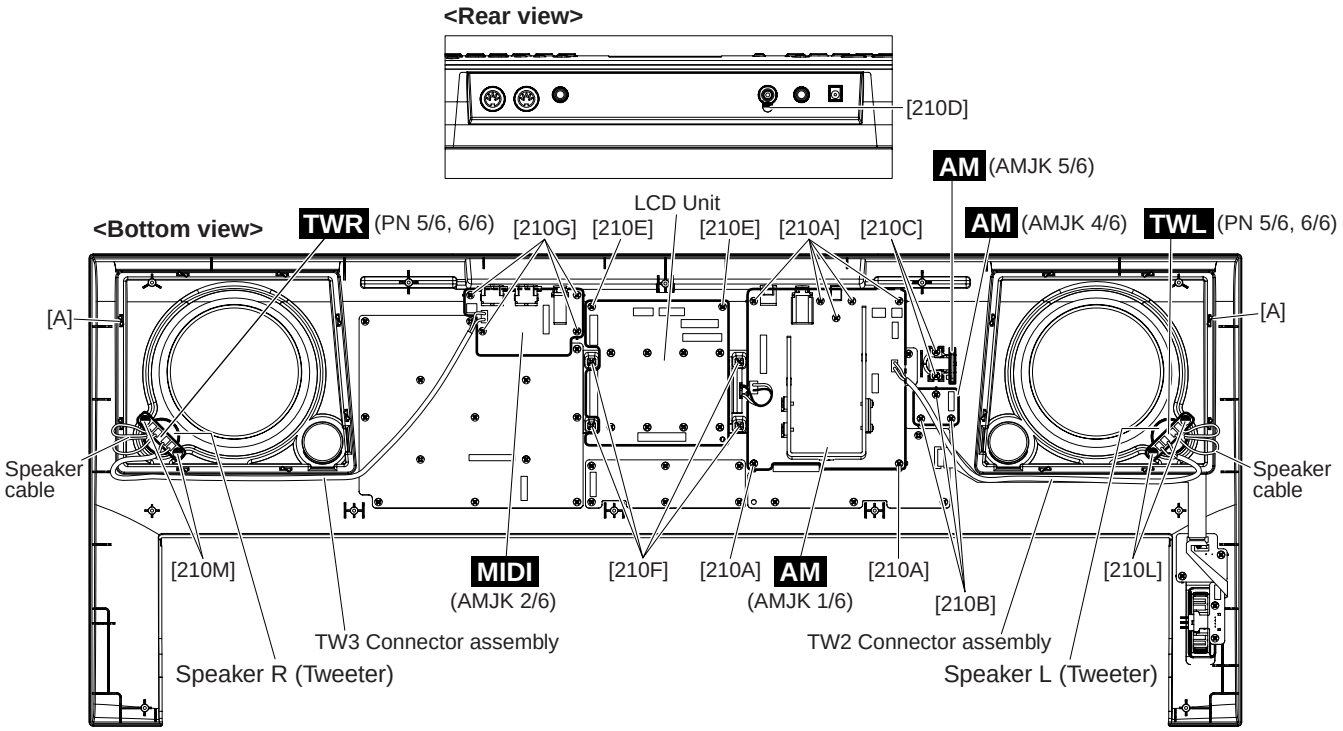


(Fig.6)

4. LCD Unit (Time required: About 3 minutes)

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

4-2 Remove the two (2) screws marked [210E] and four (4) screws marked [210F]. The LCD unit can then be removed. (Fig. 5)



[210]: Bind Head Tapping Screw-B 3.0X8 MFZN2W3 (WE774300)

(Fig. 5)

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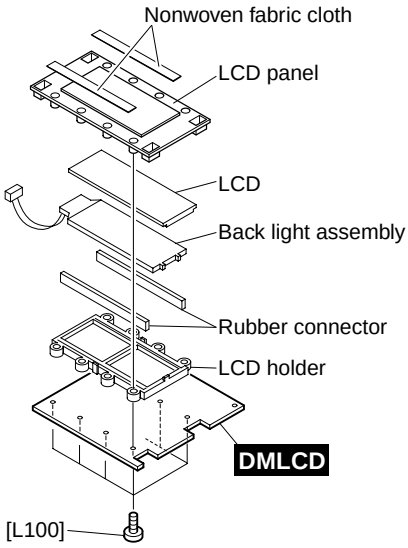
5. DMLCD Circuit Board, Back Light Assembly and LCD (Time required: About 4 minutes)

5-1 Remove the lower case assembly. (See procedure 1.)
5-2 Remove the LCD unit. (See procedure 4.)
5-3 Remove the eight (8) screws marked [L100]. The DMLCD circuit board can then be removed from the LCD unit. (Fig. 7)
5-4 Remove the LCD, back light assembly and rubber connectors from the LCD panel. (Fig. 7)

* **When attaching the rubber connector to the LCD panel, set the conductor side to face inward. (Fig. 8)**
* **When installing the DMLCD circuit board, tighten the screws 1 through 8 in numerical order as shown in Fig. 9. (Fig. 9)**
  If the DMLCD circuit board is replaced, execute the "Factory Set" in the test program.



[L100]: Bind Head Tapping Screw-P 3.0X12 MFZN2W3 (WE972900)

(Fig.7)

6. MIDI Circuit Board

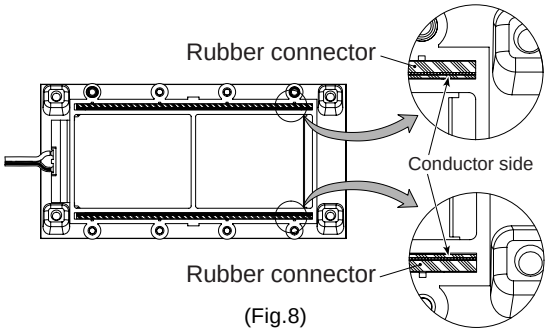
(Time required: About 6 minutes)

6-1 Remove the lower case assembly. (See procedure 1.)
6-2 Remove the four (4) screws marked [210G]. The MIDI circuit board can then be removed. (Fig. 5)

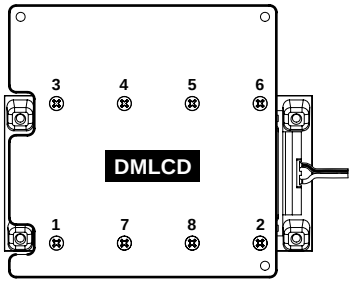
7. PNL Circuit Board

(Time required: About 6 minutes)

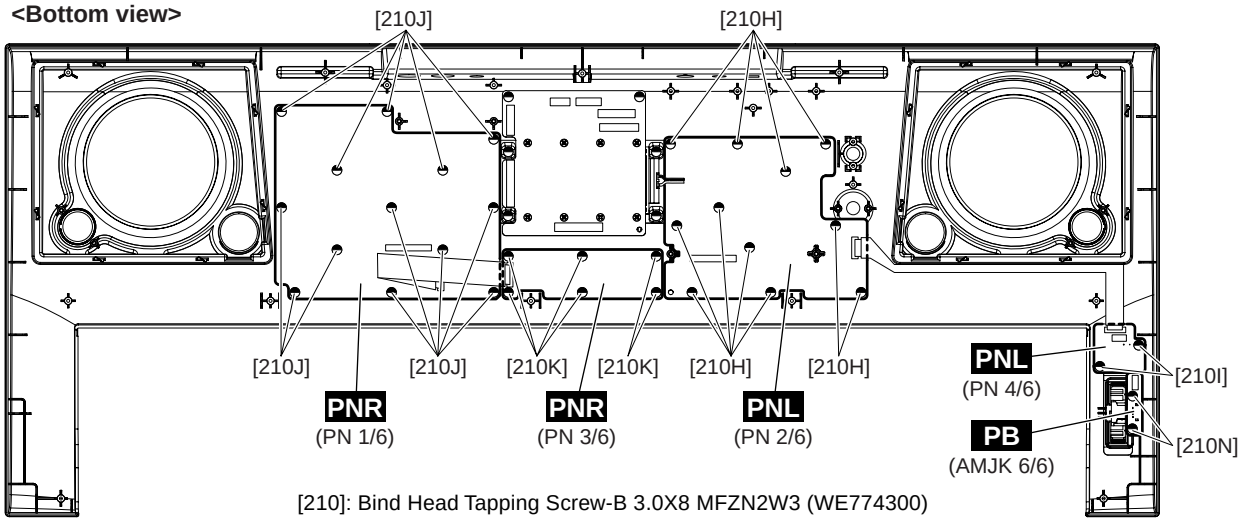
7-1 Remove the lower case assembly. (See procedure 1.)
7-2 Remove the AM circuit board. (See procedure 3.)
7-3 Remove the eleven (11) screws marked [210H] and two (2) screws marked [210I]. The PNL circuit board can then be removed. (Fig. 10)



(Fig.8)



(Fig.9)



[210]: Bind Head Tapping Screw-B 3.0X8 MFZN2W3 (WE774300)

(Fig.10)

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8. PNR Circuit Board
(Time required: About 6 minutes)

8-1 Remove the lower case assembly. (See procedure 1.)
8-2 Remove the MIDI circuit board. (See procedure 6.)
8-3 Remove the thirteen (13) screws marked [210J] and six (6) screws marked [210K]. The PNR circuit board can then be removed. (Fig. 10)

9. TWL, TWR Circuit Board and Speakers (Tweeters) (Time required: About 2 minutes each)

9-1 Remove the lower case assembly. (See procedure 1.)
9-2 Remove the TWL circuit board and TWR circuit board in the following way.
9-2-1 **TWL Circuit Board and Speaker L (Tweeter)**
Remove the TW2 connector assembly and speaker cable soldered to the TWL circuit board and remove the two (2) screws marked [210L]. The TWL circuit board and speaker L (tweeter) can then be removed. (Fig. 5)
9-2-2 **TWR Circuit Board and Speaker R (Tweeter)**
Remove the TW3 connector assembly and speaker cable soldered to the TWR circuit board and remove the two (2) screws marked [210M]. The TWR circuit board and speaker R (tweeter) can then be removed. (Fig. 5)

10. Speaker Grilles L and R
(Time required: About 3 minutes each)

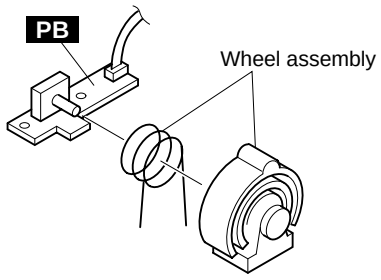
10-1 Remove the lower case assembly. (See procedure 1.)
10-2 Set the eight (8) hooks [A] parallel to the groove in the upper case assembly and remove the SP grille L. (Fig. 1, 5)
* **The speaker grille R can be removed in the same manner.**

11. PB Circuit Board and Wheel Assembly
(Time required: About 2 minutes)

11-1 Remove the lower case assembly. (See procedure 1.)
11-2 Remove the two (2) screws marked [210N] and remove the PB circuit board with the wheel assembly attached. (Fig. 10)
11-3 Pull out the wheel assembly from the PB circuit board. (Fig. 11)

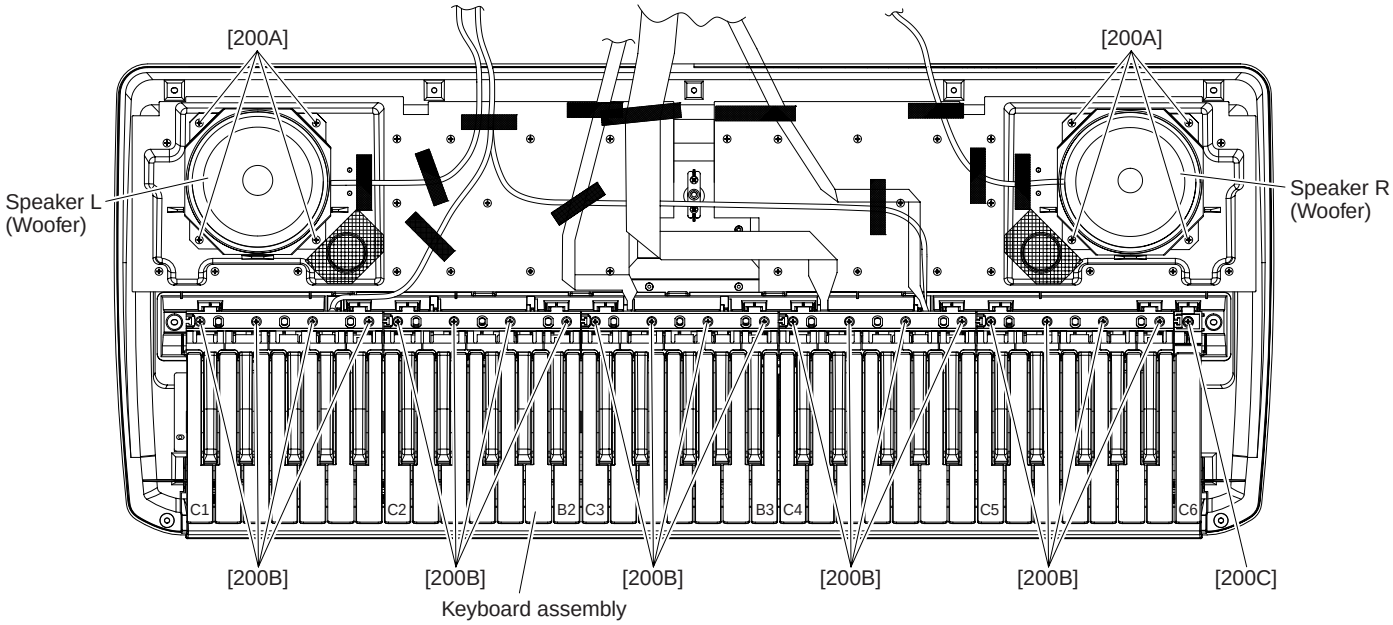
12. Speakers (Woofers) (Time required: About 3 minutes each)

12-1 Remove the lower case assembly. (See procedure 1.)
12-2 Remove the four (4) each screws marked [200A] to the right and left. The speakers (woofers) to the right and left can then be removed. (Fig. 12)



(Fig.11)

<Top view (Lower Case Assembly)>



[200A]: Bind Head Tapping Screw-B 4.0X10 MFZN2W3 (WE974500)
[200B]: Bind Head Tapping Screw-P 3.0X20 MFZN2W3 (WF492000)
[200C]: Bind Head Tapping Screw-P 3.0X20 MFZN2W3 (WF492000)

(Fig.12)

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13. Disassembling Keyboard Assembly

(Time required: About 12 minutes)

13-1 Remove the lower case assembly. (See procedure 1.)

13-2 **White Keys and Black Keys:**

13-2-1 White and black keys for one octave unit are integrated as a set. There are five sets in total. Only the C6 white key, unlike the other keys, is not integrated in a set. (Fig. 12)

To remove a set, remove the four (4) each screws marked [200B]. The white and black keys in the set can then be removed. (Fig. 12)

When removing, unfasten the two (2) hooks at the back of the black keys upward, and lift the white and black keys while pulling them toward you a little. (Photo 1)

13-2-2 To remove the white key C6, remove the screw marked [200C], unhook as described in Procedure 13-2-1, and pull out toward you. (Fig. 12)

13-3 **Rubber Contacts**

13-3-1 Remove the white and black keys corresponding to the rubber contacts to be removed. (See Fig. 12 and Procedure 13-2.)

13-3-2 Remove the rubber contacts. (Photo 2, Fig. 13)

13-4 **Circuit Board 61L**

13-4-1 Remove the white and black keys from C1 to B3. (See Fig. 12 and Procedure 13-2.)

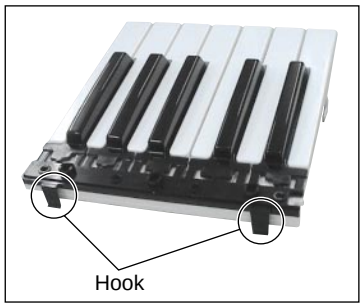
13-4-2 Remove the four (4) screws marked [180A] and eight (8) screws marked [190A]. The circuit board 61L can then be removed. (Fig. 13)

* **When installing the circuit board 61L, tighten the screws 1 through 12 in numerical order as shown in the figure for circuit board "61L" in Fig. 14. (Fig. 14)**

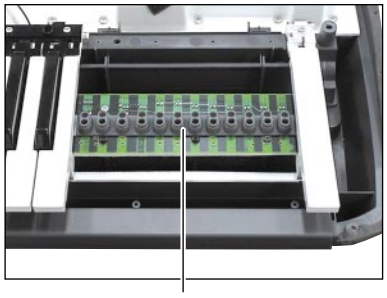
13-5 **Circuit Board 61H**

13-5-1 Remove the white and black keys from C4 to C6. (See Fig. 12 and Procedure 13-2.)

13-5-2 Remove the three (3) screws marked [180B] and five (5) screws marked [190B]. The circuit board 61H can then be removed. (Fig. 13)

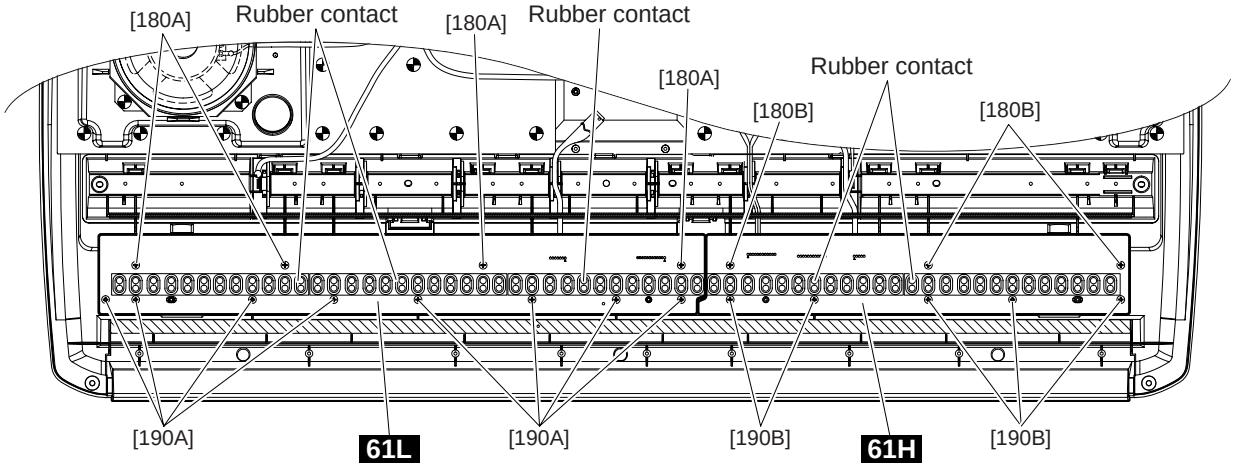


(Photo 1)



(Photo 2)

<Top view (Lower Case Assembly)>



[180]: Bind Head Tapping Screw-B 3.0X8 MFZN2W3 (WE774300)
[190]: Bind Head Tapping Screw-P SP 3.0X12 MFZN2B3 (WF491900)

(Fig.13)

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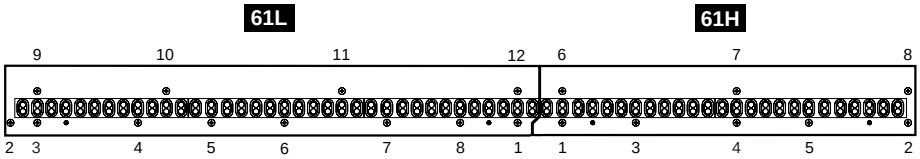
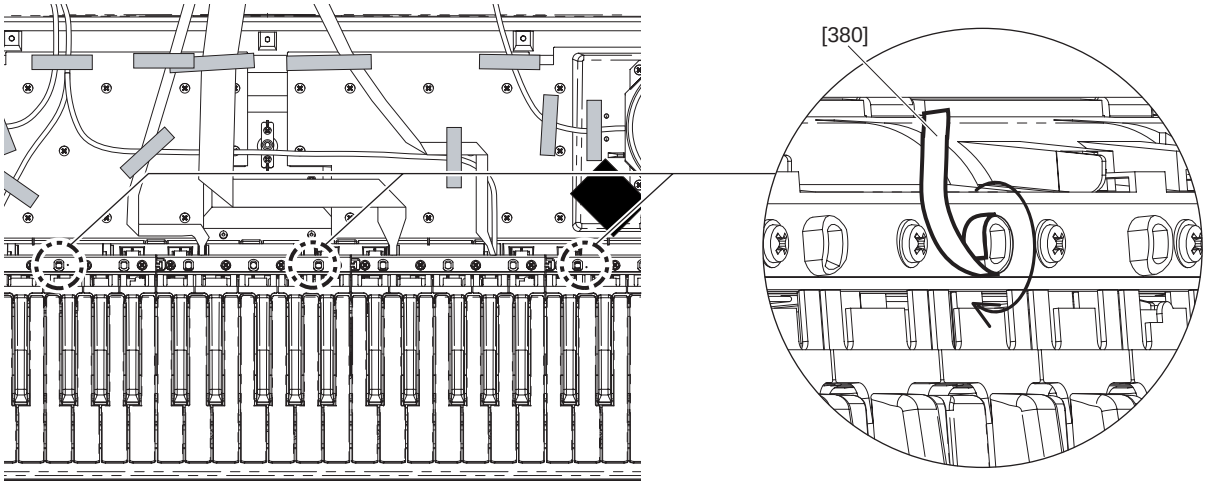
* **When installing the circuit board 61H, tighten the screws 1 through 8 in numerical order as shown in the figure for circuit board “61H” in Fig. 14. (Fig. 14)**
* **When the black keys from C#2 to A#2, from C#3 to A#3 or from C#5 to A#5 are replaced, wrap the nonwoven fabric cloth (WH347400) marked [380] around the black key ribs at the screw mounting portions marked [330] described in Procedure 1. (Fig. 15)**



(Fig.14)



(Fig.15)

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■ LSI PIN DESCRIPTION

YMW767-VTZ (X6055A00) **CPU** (SWL01B) **14**
NT3881DFG-01 (X3148A00) **LCD DRIVER** **15**
ML9040A-B01GAZ03A (XZ987A00) **LCD DRIVER** **15**
ADC084S021CIMM (X6905A00) **ADC** **15**
AK4385ET (X6040A00) **DAC** (Digital to Analog Converter) **16**

● **YMW767-VTZ** (X6055A00) **CPU** (SWL01B)

DMLCD: IC301

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	Vss	-	Ground	65	Vss	-	Ground
2	TESTN	I	Input for TEST	66	IOV_{DD}	-	Power supply +3.3 V
3	PLLBPN	I	PLL bypass select	67	LBN/LWRN/PF6	O	External memory lower-byte enable / Port F
4	$PLLV_{DD}$	-	PLL Power supply +2.5 V	68	UBN/UWRN/PF7	O	External memory upper-byte enable / Port F
5	CIN	-	Capacitor terminal for PLL	69	RDN/PF4	O	External memory read enable / Port F
6	PLLVss	-	PLL Ground	70	MD00	I/O	
7	TRSTN	I		71	MD08	I/O	
8	TMS	I	JTAG input	72	MD01	I/O	
9	TCK	I		73	MD09	I/O	External memory data bus
10	TDI	I		74	MD02	I/O	
11	TDO	O	JTAG output	75	MD10	I/O	
12	XI	I	Crystal oscillator	76	MD03	I/O	
13	XO	O	Crystal oscillator	77	Vss	-	Ground
14	Vss	-	Ground	78	MD11	I/O	
15	V_{DD}	-	Power supply +2.5 V	79	MD04	I/O	
16	ICN	I	Hardware reset	80	MD12	I/O	
17	ECSN	I	CPU I/F chip select	81	MD05	I/O	
18	EWRN/PD5	I	CPU I/F write enable / Port D	82	MD13	I/O	External memory data bus
19	ERDN/PD4	I	CPU I/F read enable / Port D	83	MD06	I/O	
20	EA3/PD3	I		84	MD14	I/O	
21	EA2/PD2	I	CPU I/F address bus / Port D	85	MD07	I/O	
22	EA1/PD1	I		86	MD15	I/O	
23	EA0/PD0	I		87	WRN/PF5	O	
24	IOV_{DD}	-	Power supply +3.3 V	88	Vss	-	Ground
25	ED0/PC0	I/O		89	V_{DD}	-	Power supply +2.5 V
26	ED1/PC1	I/O		90	IOV_{DD}	-	Power supply +3.3 V
27	ED2/PC2	I/O		91	MA17	O	
28	ED3/PC3	I/O		92	MA16	O	
29	ED4/PC4	I/O	CPU I/F data bus / Port C	93	MA15	O	
30	ED5/PC5	I/O		94	MA14	O	
31	ED6/PC6	I/O		95	MA13	O	
32	ED7/PC7	I/O		96	MA12	O	
33	Vss	-	Ground	97	MA11	O	External memory address bus
34	IRQ0N/PH0	I	Interrupt input / Port H	98	MA10	O	
35	TxD0	O	Serial output	99	MA09	O	
36	RxD0	I	Serial input	100	MA08	O	
37	TxD1/PG2	O	Serial output / Port G	101	MA07	O	
38	RxD1/PH1	I	Serial input / Port H	102	MA06	O	
39	SCLK1/PH2	I	External synchronization clock / Port H	103	MA05	O	
40	SDO	O	Serial output	104	Vss	-	Ground
41	SDI/PH3	I	Serial input / Port H	105	MA04	O	
42	BCLK	O	Bit clock output	106	MA03	O	External memory address bus
43	WCLK/SYO	O	Word clock output	107	MA02	O	
44	SYSCLK/PG3	O	Clock output / Port G	108	MA01	O	
45	Vss	-	Ground	109	CS0N/PG0	O	External memory chip select / Port G
46	V_{DD}	-	Power supply +2.5 V	110	MA18	O	External memory address bus
47	IOV_{DD}	-	Power supply +3.3 V	111	MA19	O	
48	PA0	I/O		112	MA21/PF1	O	External memory address bus / Port F
49	PA1	I/O		113	MA22/PF2	O	
50	PA2	I/O		114	MA20	O	External memory address bus
51	PA3	I/O	I/O port A	115	MA23/PF3	O	External memory address bus / Port F
52	PA4	I/O		116	CSIN/PG1	O	External memory chip select / Port G
53	PA5	I/O		117	MA00/PF0	O	External memory address bus / Port F
54	PA6	I/O		118	Vss	-	Ground
55	PA7	I/O		119	V_{DD}	-	Power supply +2.5 V
56	Vss	-	Ground	120	IOV_{DD}	-	Power supply +3.3 V
57	PB0	I/O		121	CS2N/PE0	O	
58	PB1	I/O		122	CS3N/PE1	O	
59	PB2	I/O		123	CS4N/CASN/PE2	O	
60	PB3	I/O	I/O port B	124	CS5N/PE3	O	External memory chip select / Port E
61	PB4	I/O		125	CS50RDN/PE4	O	
62	PB5	I/O		126	CS51WRN/PE5	O	
63	PB6	I/O		127	CS52WRN/PE6	O	
64	PB7/SYI	I/O		128	CS53WRN/RASN/PE7	O	

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• NT3881DFG-01 (X3148A00) LCD DRIVER
• ML9040A-B01GAZ03A (XZ987A00) LCD DRIVER

DMLCD: IC601

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	S22	O	Segment signal output for LCD driving	41	DB2	I/O	Data interface
2	S21	O		42	DB3	I/O	
3	S20	O		43	DB4	I/O	
4	S19	O		44	DB5	I/O	
5	S18	O		45	DB6	I/O	
6	S17	O		46	DB7	I/O	
7	S16	O		47	C1	O	Common signal output for LCD driving
8	S15	O		48	C2	O	
9	S14	O		49	C3	O	
10	S13	O		50	C4	O	
11	S12	O		51	C5	O	
12	S11	O		52	C6	O	
13	S10	O		53	C7	O	
14	S9	O		54	C8	O	
15	S8	O		55	C9	O	
16	S7	O		56	C10	O	
17	S6	O		57	C11	O	
18	S5	O		58	C12	O	
19	S4	O		59	C13	O	
20	S3	O		60	C14	O	
21	S2	O		61	C15	O	
22	S1	O		62	C16	O	
23	Vss		Ground	63	S40	O	Segment signal output for LCD driving
24	OSC1	I	Oscillator	64	S39	O	
25	OSC2	O	Oscillator	65	S38	O	
26	V1		Power supply	66	S37	O	
27	V2			67	S36	O	
28	V3			68	S35	O	
29	V4			69	S34	O	
30	V5			70	S33	O	
31	CLK1	O	Data latch clock	71	S32	O	
32	CLK2	O	Data shift clock	72	S31	O	
33	Vdd		Power supply (+5 V)	73	S30	O	
34	M	O	Altamated signal for LCD driver output	74	S29	O	
35	D	O	Display data interface	75	S28	O	
36	RS	I		76	S27	O	
37	R/W	I	Read/write	77	S26	O	
38	E	I	Enable	78	S25	O	
39	DB0	I/O	Data interface	79	S24	O	
40	DB1	I/O	Data interface	80	S23	O	

• ADC084S021CIMM (X6905A00) ADC

DMLCD: IC801

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	$\overline{CS}$	I	Chip select	6	AIN2	I/O	Analog input
2	VA	-	Power supply	7	AIN1	I/O	
3	GND	-	Ground	8	DIN	I	Digital data input
4	AIN4	I/O	Analog input	9	DOUT	O	Digital data output
5	AIN3	I/O		10	SCLK	I	Digital clock input

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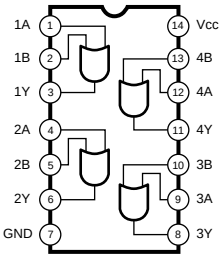
● **AK4385ET** (X6040A00) **DAC** (Digital to Analog Converter) DMLCD: IC501

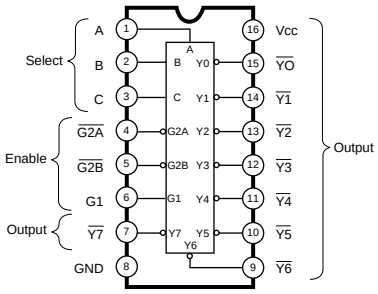
PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	MCLK	I	Master Clock	9	AOUTR-	O	Rch Analog out(-)
2	BICK	I	Audio Serial Data Clock	10	AOUTR+	O	Rch Analog out(+)
3	SDTI	I	Audio Serial Date Input	11	AOUTL-	O	Lch Analog out(-)
4	LRCK	I	L/R Clock	12	AOUTL+	O	Lch Analog out(+)
5	PDN	I	Power Down mode	13	Vss	-	Ground
6	CSN	I	Chip Select	14	VDD	-	Power Supply
7	CCLK	I	Control Data Input	15	DZFR	O	Rch Data Zero Input Detect
8	CDTI	I	Control Data Input	16	DZFL	O	Lch Data Zero Input Detect

■ IC BLOCK DIAGRAM

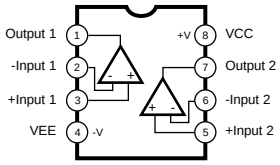
● **SN74LV32APWR** (X5647A00)
DMLCD: IC207
Quad 2 Input OR



● **SN74LV138APWR** (X7284A00)
DMLCD: IC401, 402
3 to 8 Demultiplexer



● **BA4510F-E2** (X7300A00)
DMLCD: IC502
Dual Operational Amplifier



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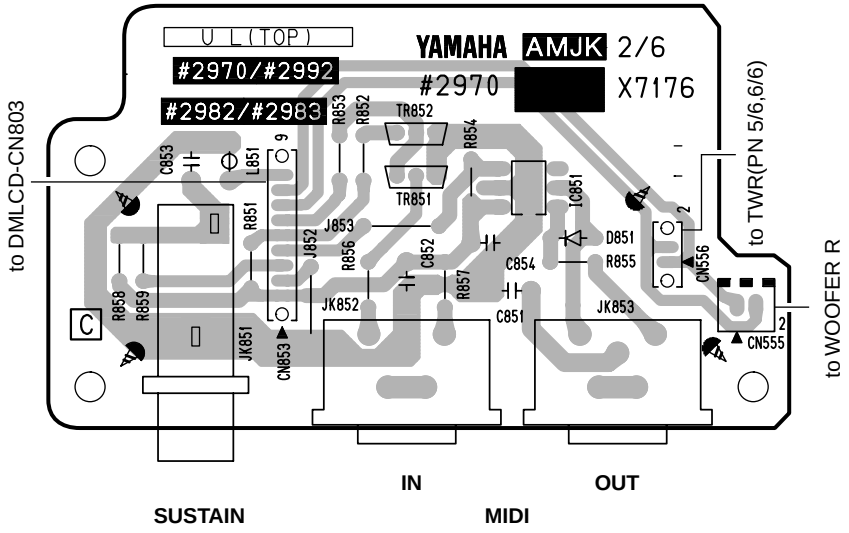
CIRCUIT BOARDS

AM (AMJK 1/6) Circuit Board (X7176C0) **24**
AM (AMJK 4/6) Circuit Board (X7176C0) **24**
AM (AMJK 5/6) Circuit Board (X7176C0) **24**
DMLCD Circuit Board (X7174C0) **18/19**
MIDI (AMJK 2/6) Circuit Board (X7176C0) **17**
PB (AMJK 6/6) Circuit Board (X7176C0) **22**
PNL (PN 2/6) Circuit Board (X7177C0) **22/23**
PNL (PN 4/6) Circuit Board (X7177C0) **22/23**
PNR (PN 1/6) Circuit Board (X7177C0) **20/21**
PNR (PN 3/6) Circuit Board (X7177C0) **20/21**
TWL (PN 5/6,6/6) Circuit Board (X7177C0) **23**
TWR (PN 5/6,6/6) Circuit Board (X7177C0) **23**
61H Circuit Board (X2335C0) **25**
61L Circuit Board (X2336B0) **25**

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

• MIDI (AMJK 2/6) Circuit Board



Component side

MIDI: 2NA-WG23590 ⚠1

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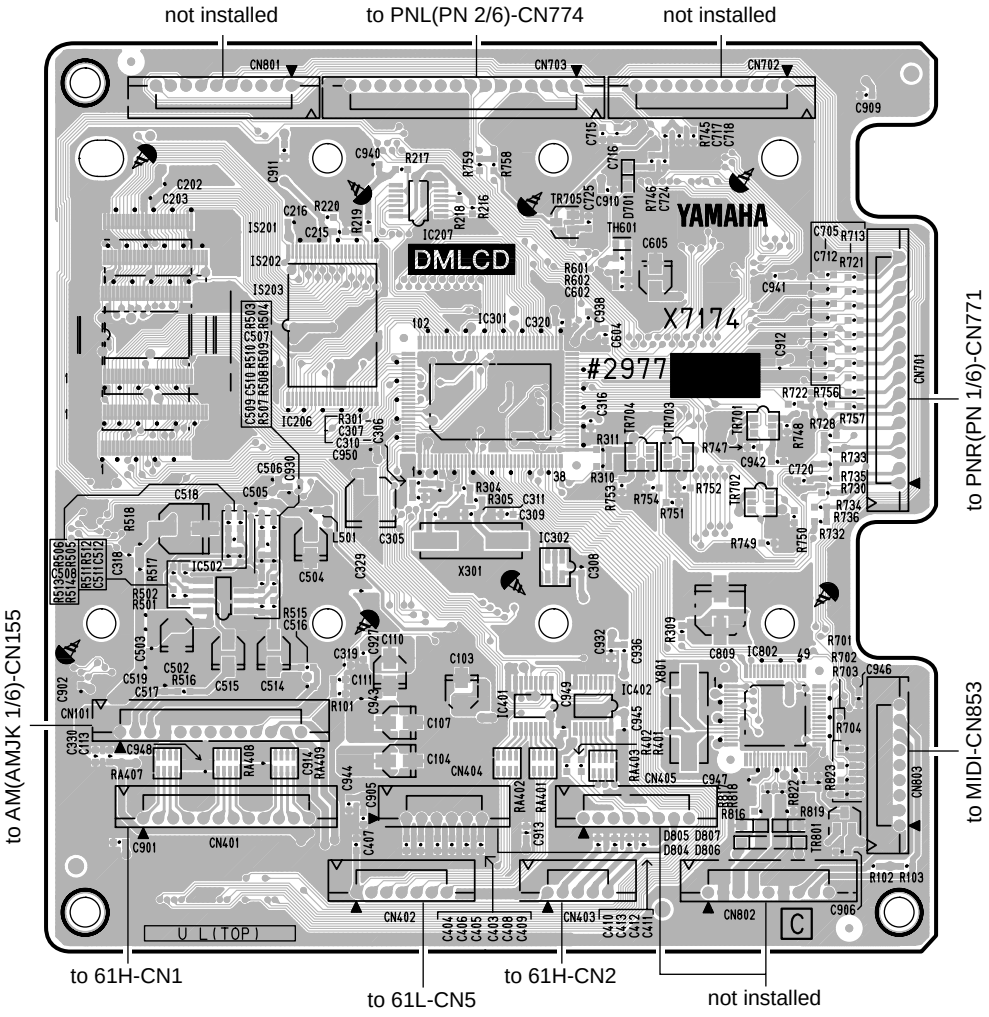
• DMLCD Circuit Board



Component side

DMLCD: 2NA-WG23540

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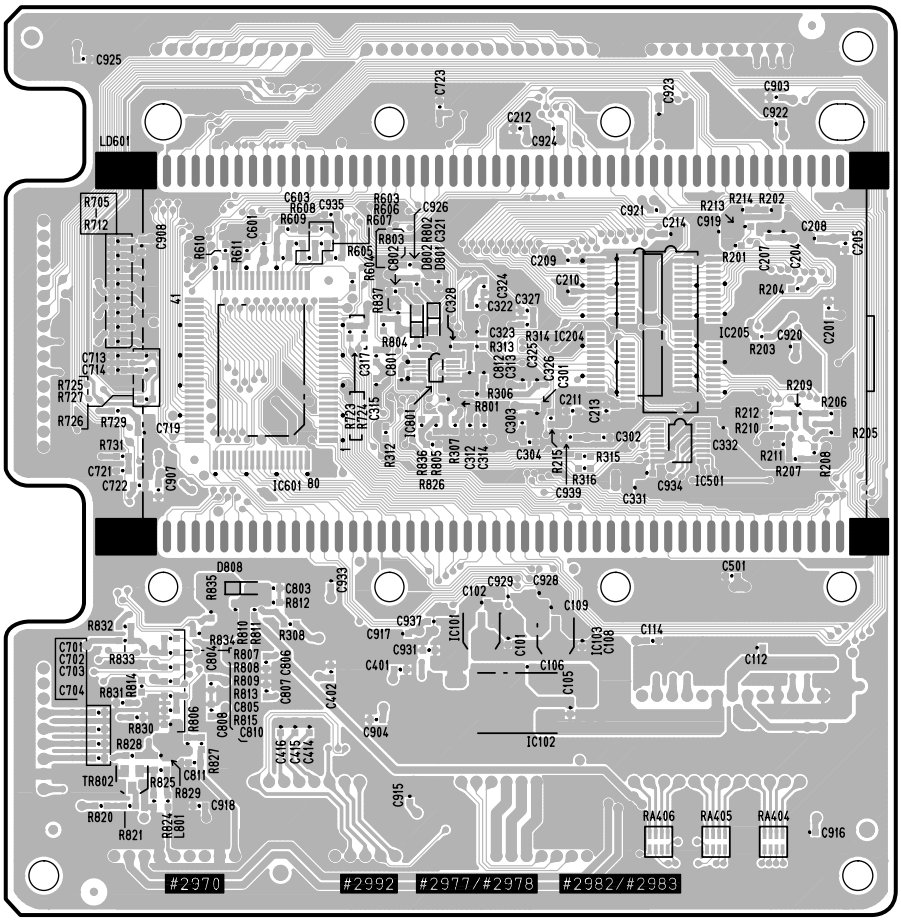
• DMLCD Circuit Board



Pattern side

DMLCD: 2NA-WG23540

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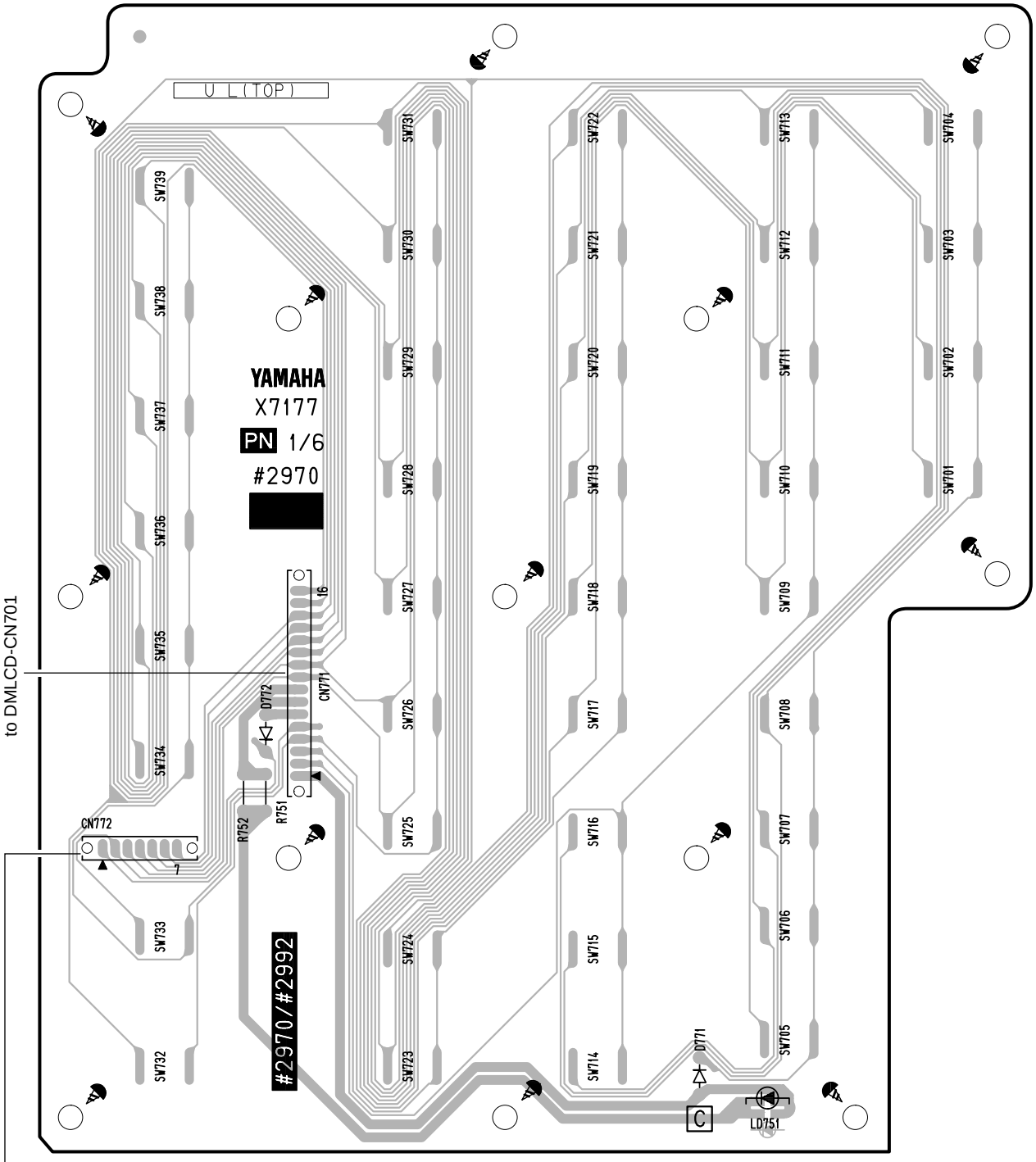
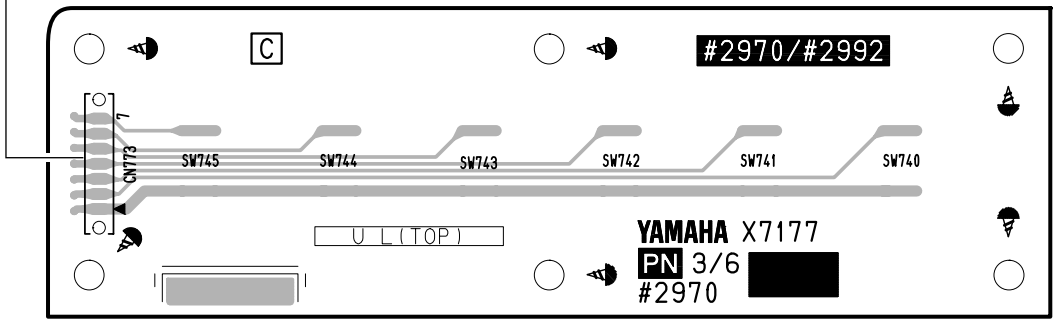
• PNR (PN 1/6) Circuit Board



Component side

• PNR (PN 3/6) Circuit Board



Component side PNR: 2NA-WG23610 ⚠1

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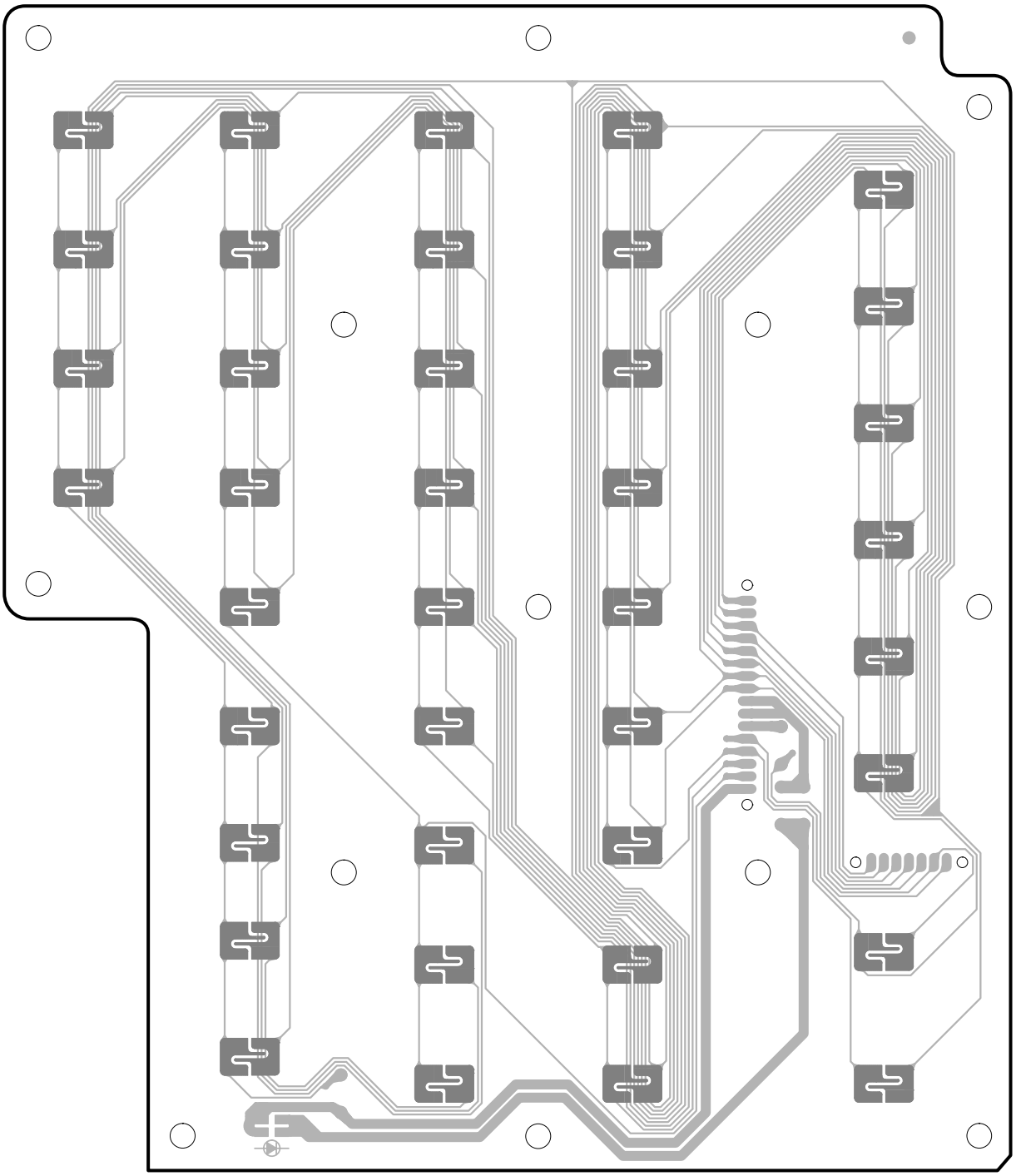
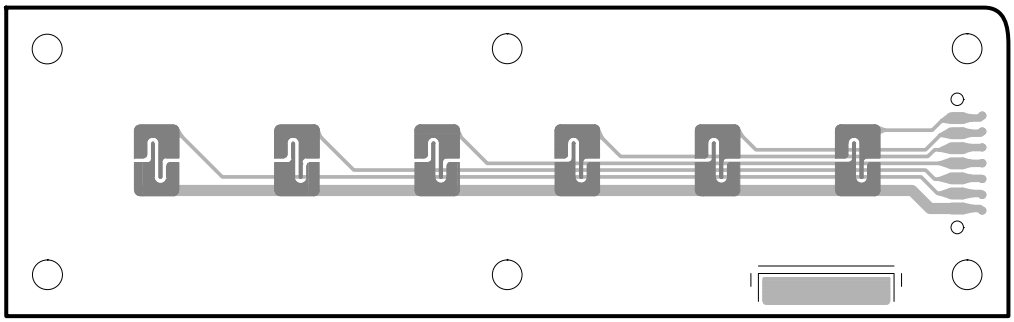
• PNR (PN 1/6) Circuit Board



Pattern side

• PNR (PN 3/6) Circuit Board



PNR: 2NA-WG23610 △1

Pattern side

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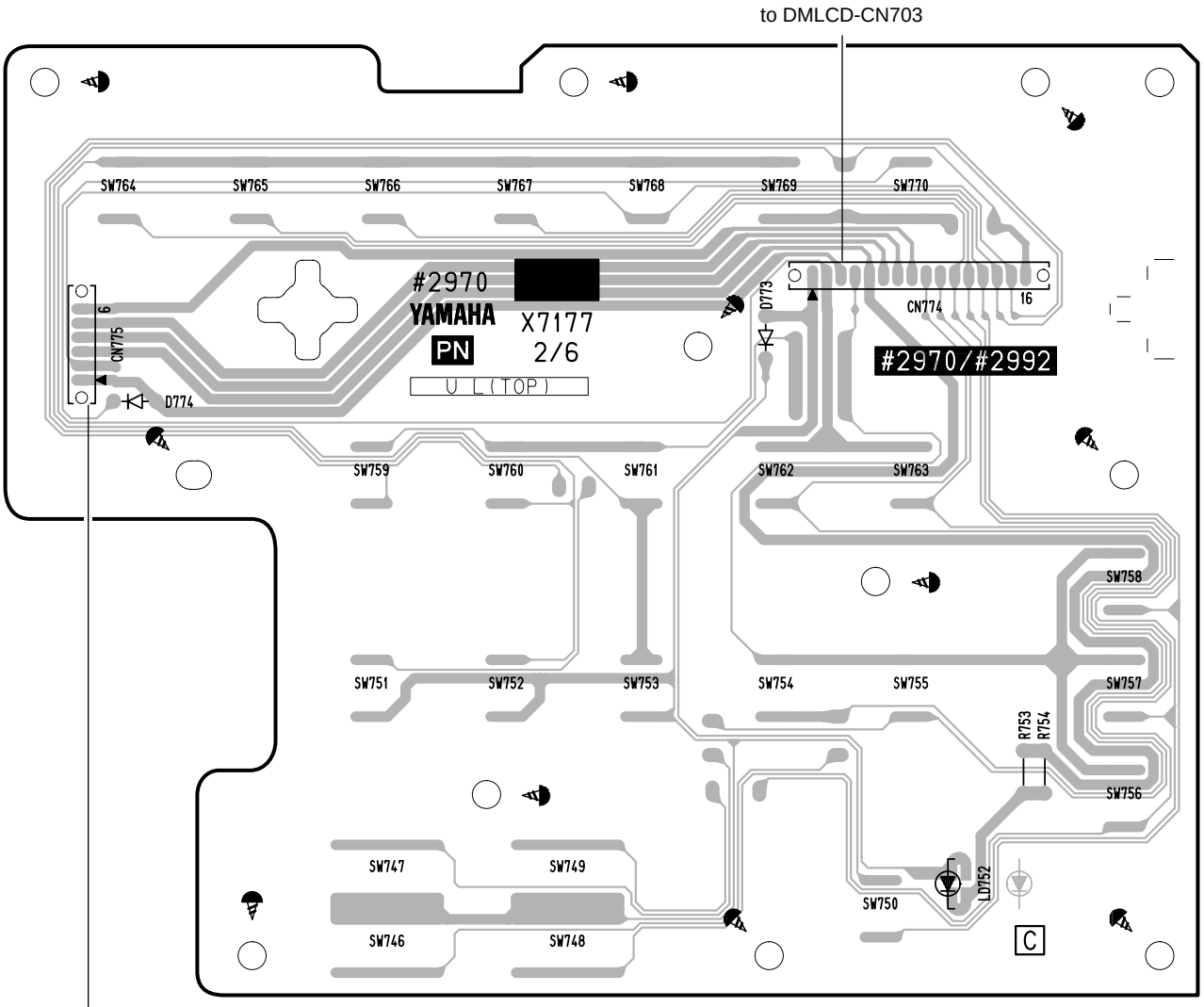
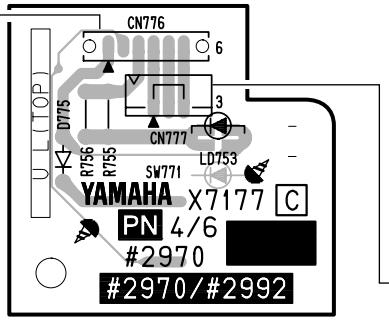
• PNL (PN 2/6) Circuit Board



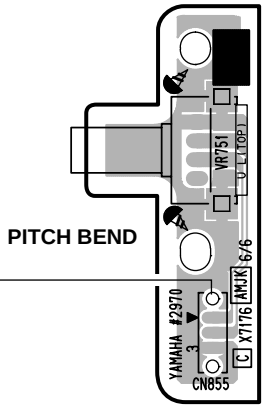
Component side

• PNL (PN 4/6) Circuit Board



Component side

• PB (AMJK 6/6) Circuit Board



Component side

PB: 2NA-WG23590 ⚠1
PNL: 2NA-WG23610 ⚠1

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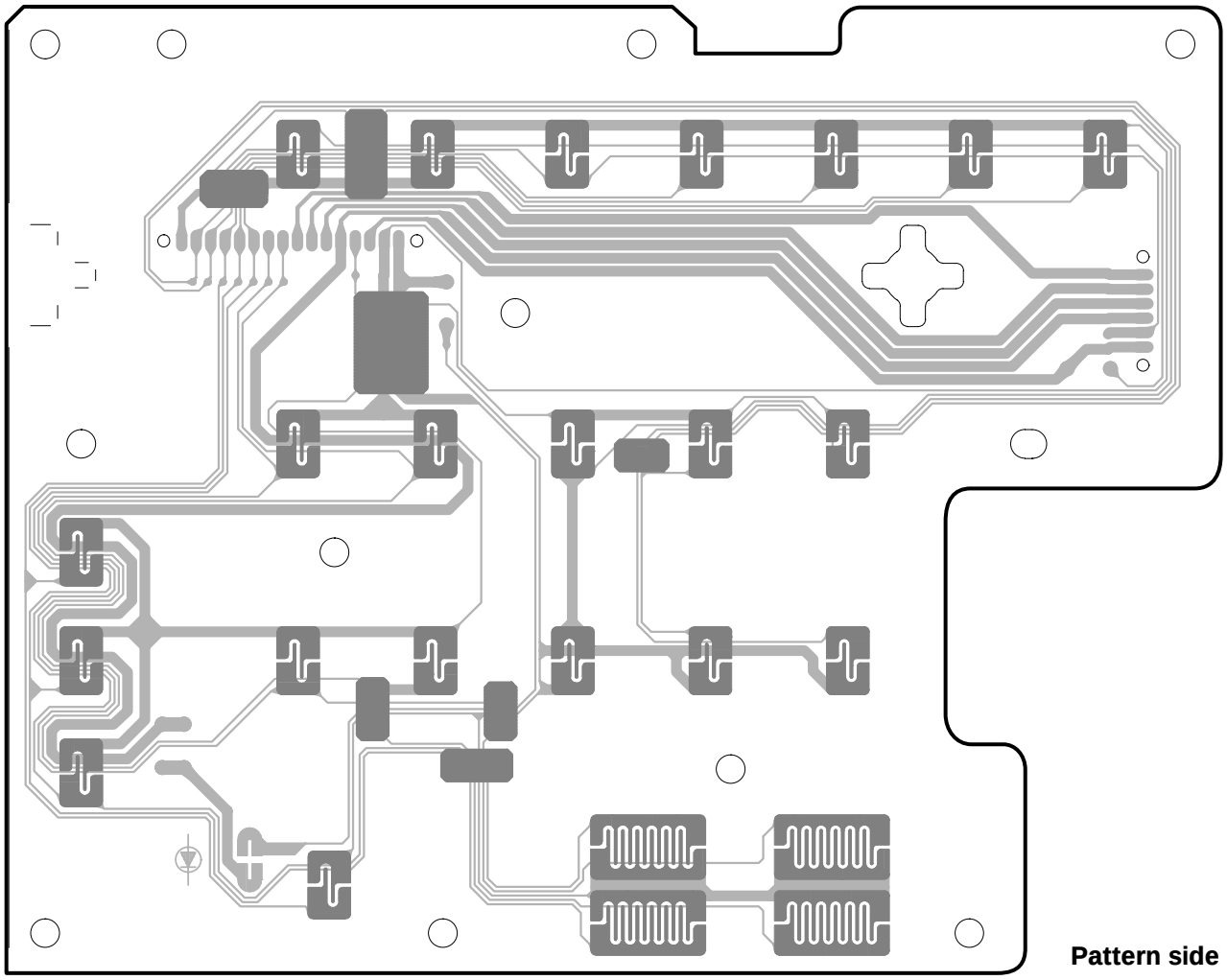
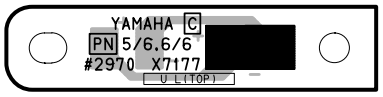
• PNL (PN 2/6) Circuit Board

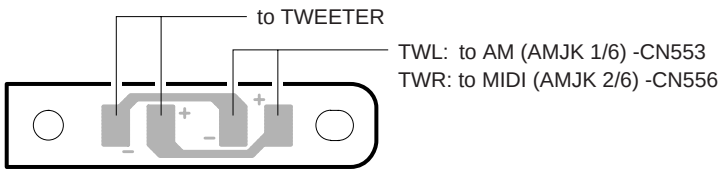


Pattern side

• TWL, TWR (PN 5/6, 6/6) Circuit Board

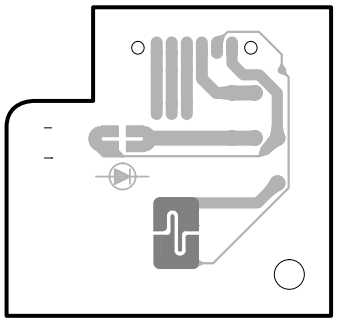


Component side



Pattern side

• PNL (PN 4/6) Circuit Board



Pattern side

PNL , TWL, TWR: 2NA-WG23610 ⚠1

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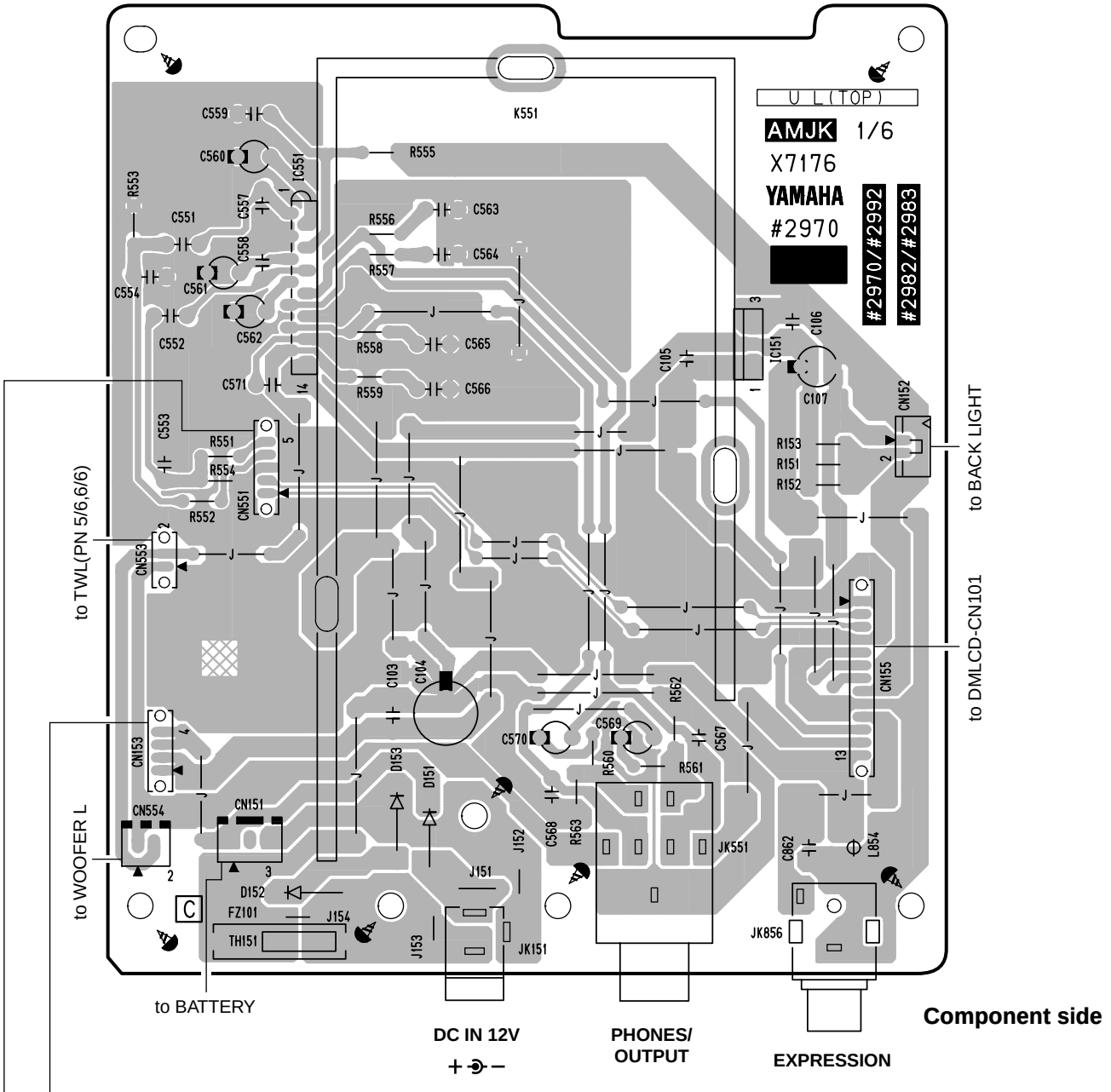
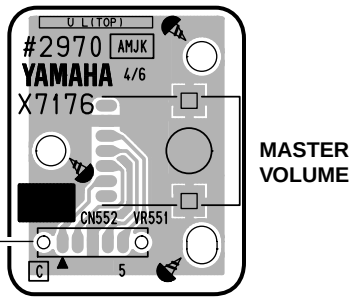
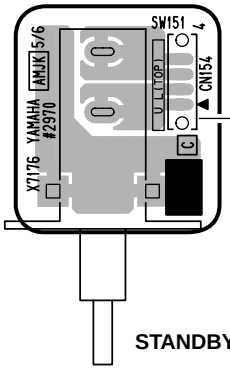
• AM (AMJK 1/6) Circuit Board



• AM (AMJK 4/6) Circuit Board



• AM (AMJK 5/6) Circuit Board



AM: 2NA-WG23590 1

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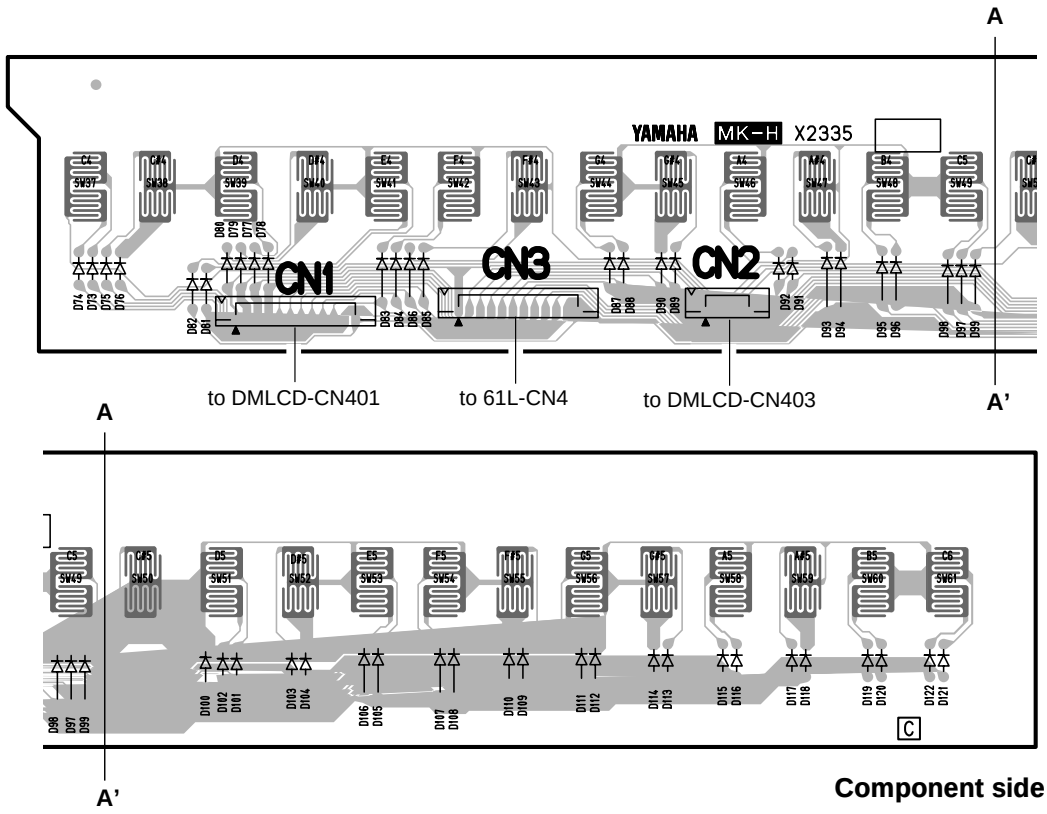
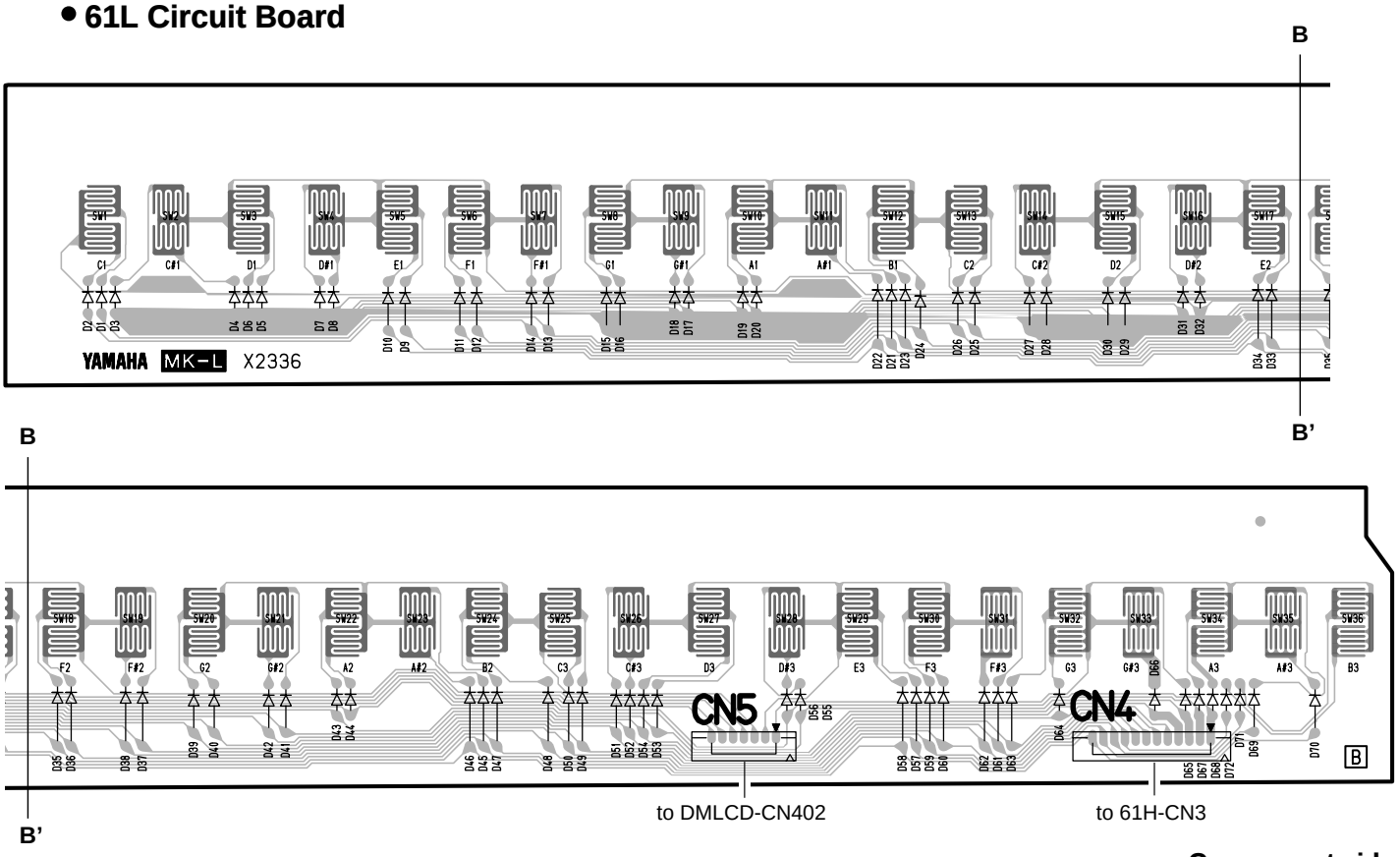
• 61H Circuit Board



Component side

• 61L Circuit Board



Component side

61H: 2NAKB-V869540
61L: 2NAKB-V869520

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TEST PROGRAM

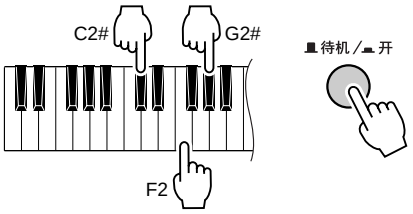
∗ **If the test number 47 “Factory Set” is executed, the data already set will be lost.**

1 Preparations

1) Use an AC adaptor PA-5D (PA-51).
2) Measuring device: Frequency counter, which can detect thousandth value or more, Level meter (with JIS-C filter)
   Note: Use a stereo plug and connect a load resistor of 33Ω to the [PHONES/OUTPUT] jack for measurement unless otherwise specified. Input impedance of the measuring device should be 1MΩ or more.
3) Jig: Foot switch (FC-4 or FC-5), MIDI cable

2 Starting up the Test Program

While holding down the keys [C2#], [F2], [G2#] simultaneously, press the [STANDBY / ON] switch.



3 Test Procedure

1) When the test program is started, “**TEST**” will be displayed on the LCD.
2) Press the [–] or [+] button of the number buttons to select a test program item.
3) Press the [START/STOP] button to execute the test.

If the result is OK or test item is completed, press the [START/STOP] button again to return to the item selection display.
Press the [–] or [+] button of the number buttons to select the next test item.
A cursor (“_”) is shown below the first character of the item for which the test results are OK.
If the results are NG, press the lowest key (white key C1) to return to the item selection display.

4 Test program list

(dBu=dBm)

Test No.	LCD display	Test descriptions, judging conditions, etc.
1	**Version** **001**	Displays version of the ROM. “**Prog** ∗∗∗” is displayed on the LCD. ∗∗∗ : Version
2	**Rom Chk1** **002**	Checks the ROM connected to the CPU bus. Make sure that “**Rom OK**” is displayed on the LCD.
3	**Ram Chk1** **003**	Checks the RAM connected to the CPU bus. Make sure that “**Ram OK**” is displayed on the LCD.
4	**FRomChk1** **006**	Checks the FROM connected to the CPU bus. Make sure that “**FRom OK**” is displayed on the LCD.
5	**TG1 Chk** **011**	Plays each key automatically in the order of scale (auto-scaling). (32 notes from C2 to G4 will be played.) Make sure that there is no abnormal sound or noise. When the auto-scaling is finished, “**TG1 End**” will be shown. Press a key to play a sound. (Single note, the key pressed first will be played)
6	**Pit Chk** **013**	Checks pitch accuracy. Connect a frequency counter to the [PHONES/OUTPUT] jack. (Either L or R) Make sure that the correct signal is output. (440.14 Hz ± 0.22 Hz)
7	**Output R** **014**	Connect a level meter (with JIS-C filter) to the L/R of the [PHONES/OUTPUT] jack. (33 Ω of load) Set the [MASTER VOLUME] to the maximum level and check the output level. • PHONES L: –55.0 dBu or less • PHONES R: –4.5 dBu ± 2 dB
8	**Output L** **015**	Connect a level meter (with JIS-C filter) to the L/R of the [PHONES/OUTPUT] jack. (33 Ω of load) Set the [MASTER VOLUME] to the maximum level and check the output level. • PHONES L: –4.5 dBu ± 2 dB • PHONES R: –55.0 dBu or less

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Test No.	LCD display	Test descriptions, judging conditions, etc.
9	**SW Chk** **020**	Checks switches and LEDs on the panel. Press the switches as shown in the LCD. When a switch is pressed, a sound is played at the prescribed pitch. (Refer to the Switch Test Item List on the next page.) When a switch with LED is turned on, the LED will light up. Make sure that "**SW OK**" is displayed on the LCD when all the switches are pressed as indicated. To cancel the operation halfway, press the lowest key (white key C1) to return to the item selection display.
10	**A. LedChk** **021**	Make sure that all the LEDs on the panel are turned on.
11	**LCD On** **028**	Make sure that all the dots on the LCD are turned on.
12	**LCD Off** **029**	Make sure that all the dots on the LCD are turned off.
13	**PD1 Chk** **031**	Connect a footswitch (FC-4 or FC-5) to the [SUSTAIN] jack. Make sure that C3 is played when the [START/STOP] button is pressed while the pedal is depressed (On), and that C4 is played when the pedal is released (Off). The sound will stop when the pedal is depressed again. Make sure that "**PD1 OK**" is displayed on the LCD.
14	**PB Chk** **033**	C3 is played when the [PITCH BEND] wheel is turned toward you to the minimum position (DW), and C4 is played when the wheel is turned away from you to the maximum position (UP). Make sure that "**PB OK**" is displayed on the LCD.
15	**Exp Chk** **035**	Connect the Exp pedal to the [Exp. PEDAL] jack. Press the [START/STOP] button to start the test and make sure that C3 is played when the pedal is depressed (On), and that C4 is played when the pedal is released (Off). Make sure that "**Exp OK**" is displayed on the LCD.
16	**MIDI Chk** **037**	Connect the [MIDI IN] terminal and [MIDI OUT] terminal with a MIDI cable and then execute the test. Make sure that C4 is played and that "**MIDI OK**" is displayed on the LCD.
17	**Rom Chk2** **041**	Checks the ROM connected to the CPU bus. Make sure that "**Rom OK**" is displayed on the LCD. It will take about 25 seconds for the check.
18	**Ram Chk2** **042**	Checks the RAM connected to the CPU bus. Make sure that "**Ram OK**" is displayed on the LCD.
19	**FRomChk2** **045**	Checks the FROM connected to the CPU bus. Make sure that "**FRom OK**" is displayed on the LCD. It will take about 30 seconds for the check.
20	**Factory** **047**	Initializes the entire backup area to reset to the factory default. "**Fact**" is displayed on the LCD during the test. "**Fact End**" is displayed on the LCD when the test is finished.
21	**TestExit** **048**	This will leave the test program and change to the play mode.

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Switch test item list

Turn	SW Name	LCD Display	Note Number
1	Acmp Vol	A-VOL UP	C2
2	Acmp Vol	A-VOL DW	C#2
3	Tempo	TEMPO UP	D2
4	Tempo	TEMPO DW	D#2
5	Style AB	Style AB	E2
6	8Beat	8BEAT	F2
7	Ballad	BALLAD	F#2
8	Rock	ROCK	G2
9	Disco 1	DISCO	G#2
10	Lou Gu	GD WUSHI	A2
11	Rumba	RUMBA	A#2
12	Bossa	BOSSANOVA	B2
13	March	MARCH	C3
14	Waltz	WALTZ	C#3
15	Metro4/4	METRO	D3
16	Function	Function	D#3
17	+/Yes	+/Yes	E3
18	–/No	–/No	F3
19	TOUCH	Touch	F#3
20	REVERB	Reverb	G3
21	SUSTAIN	Sustain	G#3
22	Demo	Demo	A3
23	Voice AB	Voice AB	A#3
24	DUAL	Dual	B3
25	SPLIT	Split	C4
26	Er Hu 1	ERHU	C#4
27	Pi Pa 1	PIPA	D4
28	Yang Qin	YANGQIN	D#4
29	Di Zi 1	DIZI	E4
30	Suo Na 1	SUONA	F4
31	Er HuEns	ENSEMBLE	F#4
32	GrandPno	PIANO	G4
33	Harpsi.	HARPSI.	G#4
34	CharchOrg	C.ORGAN	A4
35	Trad.Acd	ACCORD	A#4
36	Vibes	VIBES	B4

Turn	SW Name	LCD Display	Note Number
37	Strings	STRINGS1	C5
38	Violin	VIOLIN	C#5
39	SweetFlt	FLUTE	D5
40	Clarinet	CLARINET	D#5
41	Oboe	OBOE	E5
42	Sweet Tp	TRUMPET	F5
43	Fr.Horn	HORN	F#5
44	BrasSect	BRASS	G5
45	Harp	HARP	G#5
46	SquareLd	SYN LEAD	A5
47	ClasGtr	ACO.GTR	A#5
48	Aco. Bass	BASS	B5
49	SFX Kit1	SE/XG	C6
50	ACMP ON	ACMP	C#6
51	SYNC STOP	S. Stop	D6
52	SYNC START	S. Start	D#6
53	INTRO	Intro	E6
54	Str/Stp	Str/Stp	F6
55	Main A	Main A	F#6
56	Main B	Main B	G6
57	Memory	Memory	G#6
58	Bank	Bank	A6
59	Regist 1	Regist 1	A#6
60	Regist 2	Regist 2	B6
61	Regist 3	Regist 3	C7
62	Regist 4	Regist 4	C#7
63	Song No.	Song No.	D7
64	REC	REC	D#7
65	Song 1	Song 1	E7
66	Song 2	Song 2	F7
67	Song 3	Song 3	F#7
68	Song 4	Song 4	G7
69	Song 5	Song 5	G#7
70	Song A	Song A	A7
71	Portamento	Portamen	A#7

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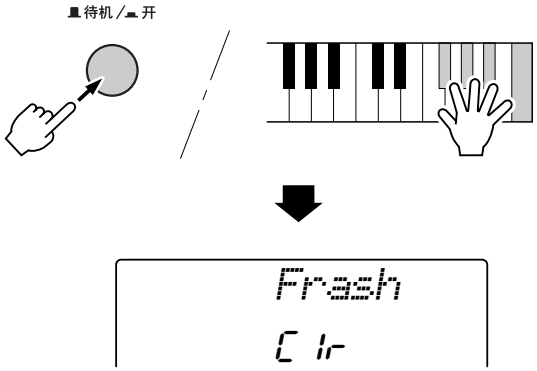
INITIALIZATION

若要初始化所有数据并恢复出厂预设状态，同时按住键盘上最高 （最靠右）的白键和最高的三个黑键并接通电源。显示屏上将出现 “FlashCLr”。



⚠ 小心

- *在执行数据初始化程序时，所有的注册记忆和用户乐曲数据，以及上面列出的其它设定都会被擦除，且/或被改变。*
- *如果KB-280发生死机，或不管出于什么原因开始出现异常，通过执行数据初始化程序，通常可以使之恢复正常操作。*

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■ MIDI IMPLEMENTATION CHART

YAMAHA [PortaTone] Date:17-NOV-2005
Model KB-280 MIDI Implementation Chart Version : 1.0

Function...		Transmitted	Recognized	Remarks
Basic Channel	Default	1 - 16	1 - 16	
	Changed	x	x	
Mode	Default	3	3	
	Messages	x	x	
	Altered	**********	x	
Note Number : True voice		0 - 127	0 - 127	
		**********	0 - 127	
Velocity	Note ON	o 9nH,v=1-127	o 9nH,v=1-127	
	Note OFF	x 9nH,v=0	x	
After Touch	Key's	x	x	
	Ch's	x	x	
Pitch Bend		o 0 - 24 semi	o 0 - 24 semi	
Control Change	0,32	o	o	Bank Select
	1,11	x *1	o	
	5,65,84	o	o	
	6,38	o	o	Data Entry
	7,10	o	o	
	64	o	o	Sustain
	71-74	x *1	o	Sound Controller
	91,93	o	o	Effect Depth
	96-97	x *1	o	RPN Inc,Dec
	100-101	o	o	RPN LSB,MSB
Prog Change : True #		o 0 - 127	o 0 - 127	
		**********		
System Exclusive		o	o	
Common : Song Pos.		x	x	
: Song Sel.		x	x	
: Tune		x	x	
System : Clock		o	o	
Real Time: Commands		o	o	
Aux :All Sound OFF		x	o(120,126,127)	
:Reset All Cntrls		x	o(121)	
:Local ON/OFF		x	o(122)	
:All Notes OFF		x	o(123-125)	
Mes- :Active Sense		o	o	
sages:Reset		x	x	

*1 *这些控制转换编号的信息无法从本乐器自身传送。不过，在演奏自动伴奏、乐曲或使用和声效果时，可能会传送这些信息。*

Mode 1 : OMNI ON , POLY Mode 2 : OMNI ON ,MONO o : Yes
Mode 3 : OMNI OFF, POLY Mode 4 : OMNI OFF,MONO x : No

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■ MIDI DATA FORMAT

注：

1 默认情况下（工厂设置），本乐器通常用作 16 通道多乐器音源发生器，外来的数据不影响面板音色或面板设置。不过，下文列出的 MIDI 信息却会影响到面板音色、自动伴奏及乐曲。
- *MIDI 主调音*
- *用于改变混响类型、叠奏类型的系统专用信息。*

2 这些控制转换编号的信息无法从本乐器自身传送。不过，在演奏自动伴奏、乐曲或使用和声效果时，可能会传送这些信息。

3 专用

<GM 系统开启 > F0H、 7EH、 7FH、 09H、 01H、 F7H
- *此信息自动恢复乐器的所有默认设置，只有 MIDI 主调音除外。*

<MIDI 主音量 > F0H、 7FH、 7FH、 04H、 01H、 ll、 mm、 F7H
- *此信息可用于同时改变所有通道的音量（通用系统专用信息）。*
- *“mm”的值用于 MIDI 主音量。（“ll”的值会被忽略）。*

<MIDI 主调音 > F0H、 43H、 1nH、 27H、 30H、 00H、 00H、 mm、 ll、 cc、 F7H
- *此信息同时改变所有通道的调音值。*
- *“mm”和 “ll”的值用于 MIDI 主调音。*
- *“mm”和 “ll”的默认值分别是 08H 和 00H。 “n”和 “cc”可使用任何数值。*

< 混响类型 > F0H, 43H, 1nH, 4CH, 02H, 01H, 00H, mmH, llH, F7H
- *mm : 混响类型 MSB*
- *ll：混响类型 LSB*

如需有关详细信息，请参阅效果对应表（第 67 页）。

< 叠奏类型 >F0H, 43H, 1nH, 4CH, 02H, 01H, 20H, mmH, llH, F7H
- *mm : 叠奏类型 MSB*
- *ll：叠奏类型 LSB*

如需有关详细信息，请参阅效果对应表（第 67 页）。

4 伴奏开始时，会传送一则 FAH 信息。伴奏停止时，会传送一则 FCH 信息。时钟设置为外部时， FAH（伴奏开始）和 FCH（伴奏停止）同时都可以识别。

5 本机开 / 关

< 本机开 > Bn、 7A、 7F

< 本机关 > Bn、 7A、 00

“n”的值会被忽略。

■ 效果对应表

* 接收到没有对应效果类型的类型 LSB 值时，会自动设置同效果类型（最接近指定的值）对应的值。
* 效果类型名称前面括号中的数字会对应到显示器中显示的数字。

● 混响

TYPE MSB	TYPE LSB								
	00	01	02	08	16	17	18	19	20
000	无效果								
001	(01)大厅1				(02)大厅2	(03)大厅3			
002	房间					(04)房间1		(05)房间2	
003	舞台				(06)舞台1	(07)舞台2			
004	金属				(08)金属1	(09)金属2			
005...127	无效果								

● 叠奏

TYPE MSB	TYPE LSB								
	00	01	02	08	16	17	18	19	20
000...063	无效果								
064	轰隆声								
065	叠奏		(02)叠奏2						
066	钢片琴					(01)叠奏1			
067	增效器			(03)增效器1		(04)增效器2			
068...127	无效果								

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KB-280

PARTS LIST

CONTENTS

OVERALL ASSEMBLY 2
KEYBOARD ASSEMBLY 5
LOWER CASE ASSEMBLY 6
EXP PEDAL 8
ELECTRICAL PARTS 9-14

WARNING

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

- The numbers “QTY” show quantities for each unit.
- The parts with “--” in “PART NO.” are not available as spare parts.
- This mark “ } ” in the REMARKS column means these parts are interchangeable.
- The second letter of the shaded ( ) part number is O, not zero.
- The second letter of the shaded ( ) part number is I, not one.

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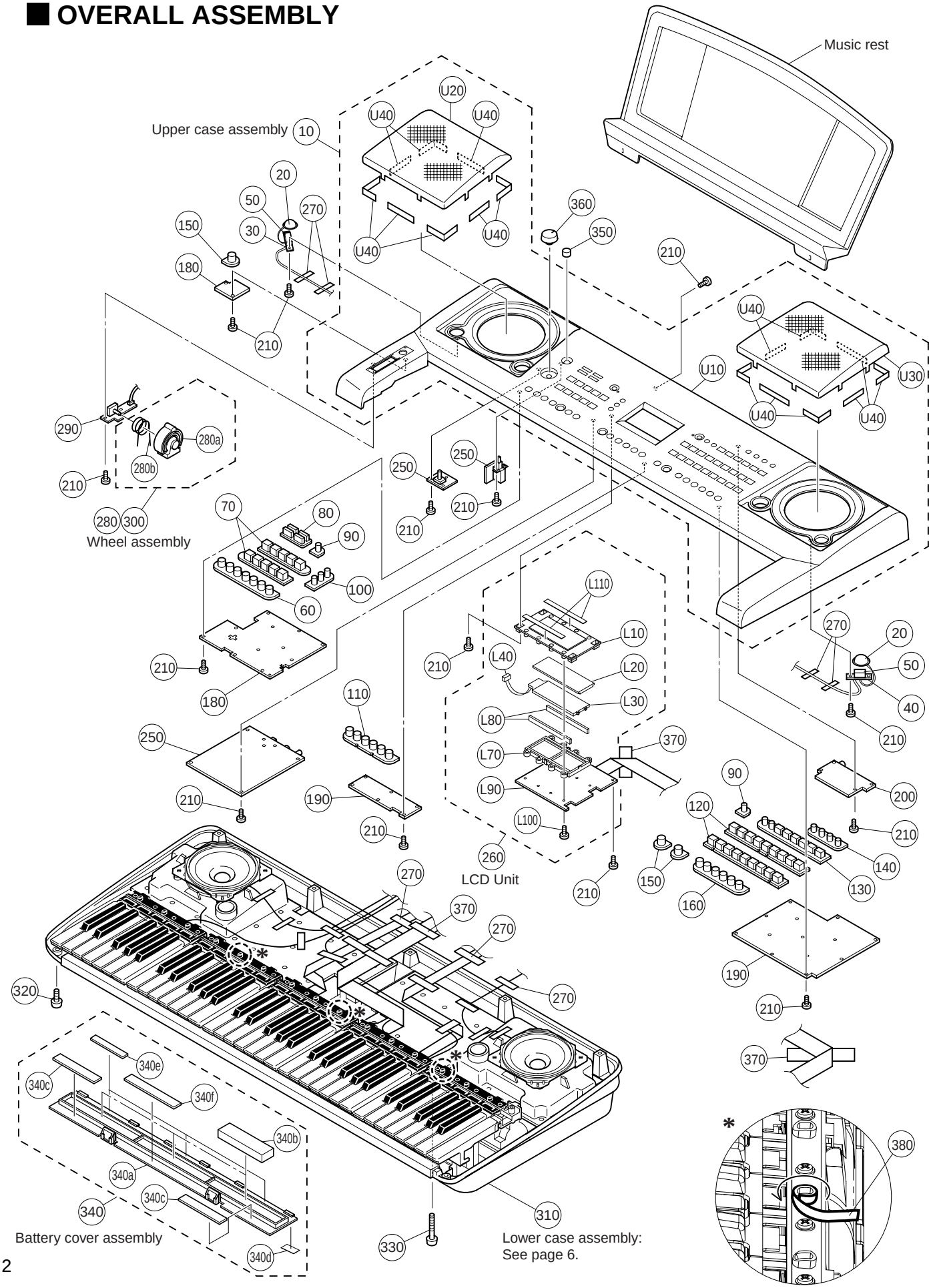
OVERALL ASSEMBLY



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	REF NO.	PART NO.	DESCRIPTION			REMARKS	QTY	RANK
			OVERALL ASSEMBLY			KB-280		
		--	Overall Assembly			(WF68200)		
*	10	**WF815300**	Upper Case Assembly					
	20	**X0159A00**	Speaker	3.0cm		TWEETER	2	01
*	30	**WG307700**	Circuit Board	TWL				
*	40	**WG307800**	Circuit Board	TWR				
	50	**V3645500**	Sponge				2	01
*	60	**WF816000**	Panel Switch 1 Black	x7		ACMP,SYNCRO STOP,SYNCRO START,INTRO/ENDING START/ STOP,MAIN A,MAIN B		
*	70	**WF816100**	Panel Switch 2 White	x5		8Beat,...,Swing, Rhumba,...,China 1	2	
*	80	**WF816200**	Panel Switch 3 Gray	x4		ACMP VOL ▲,ACMP VOL ▼, TEMPO ▲,TEMPO ▼		
*	90	**WF816300**	Panel Switch 4 Black	x1		STYLE A/B,VOISE A/B	2	
*	100	**WF816400**	Panel Switch 5 Blue	x3		FUNCTION,+/YES,-/NO		
*	110	**WF816500**	Panel Switch 6 Black	x6		MEMORY,BANK,REGIST 1, REGIST 2,REGIST 3,REGIST 4		
*	120	**WF816600**	Panel Switch 7 White	x9		Grand Piano,...,Flute, Clarinet,...,SE/GM	2	
*	130	**WF816700**	Panel Switch 8 Green/Gray	x8		DUAL,SPLIT,ERHU1,PIPA, JINHU,ZHENG,XIAO,SUONA		
*	140	**WF816800**	Panel Switch 9 Gray	x4		TOUCH,REVERB,SUSTAIN,DEMO		
*	150	**WF816900**	Panel Switch 10Black	x1		SONG NO.,REC,PORTAMENTO	3	
*	160	**WF875500**	Panel Switch 11Black	x6		SONG 1,SONG2,SONG3, SNOG4,SONG 5,SONG A		
*	180	**WG307500**	Circuit Board	PNL				
*	190	**WG307600**	Circuit Board	PNR				
*	200	**WG307000**	Circuit Board	MIDI				
	210	**WE774300**	Bind Head Tapping Screw-B	3.0X8 MFZN2W3			61	01
*	250	**WG306900**	Circuit Board	AM				
	260	--	LCD Unit	06A		(WF81700)		
	270	**VA126100**	Adhesive Tape	12X50			11	03
	270	--	Adhesive Tape	MY7# 12X50		(WB79380)	11	
	280	**VY793100**	Wheel Assembly			PITCH BEND		04
	280a	**VY750800**	Wheel					03
	280b	**VT440100**	Spring					03
*	290	**WG307100**	Circuit Board	PB				
	300	**TX920280**	Grease	G-31KA 50g		(VE96850)		10
	310	--	Lower Case Assembly			(WG07410)		
	320	**WE987400**	Bind Head Tapping Screw-B	3.0X12 MFZN2W3			9	01
	330	**WF491000**	Bind Head Tapping Screw-B	3.0X30 MFZN2W3			3	01
	340	**V9259700**	Battery Cover Assembly	PT				03
	340a	--	Battery Cover			(V704220)		
	340b	--	Battery Cushion White			(V710060)	3	
	340c	--	Cushion	PE		(V796870)	2	
	340d	--	Nonwoven Fabric Cloth	15X3X0.5		(V925980)	6	
	340e	--	Cushion	PE 55X8X1		(WA10190)	3	
	340f	--	Cushion	PE 100X12X2		(WA21920)		
	350	**VQ218800**	Push Knob Red			STANDBY/ON		03
	360	**VU432400**	Knob Black			MASTER VOLUME		01
	370	**VN195400**	Adhesive Tape	FILAMENT 12X70			3	03
	370	--	Adhesive Tape	MY7# 12X70		(WB79390)	3	
	380	--	Nonwoven Fabric Cloth	4X70		(WH34740)	3	
*		**WF815300**	Upper Case Assembly					
	U10	--	Upper Case			(WF81540)		
*	U20	**WF815600**	Speaker Grille L					
*	U30	**WF815700**	Speaker Grille R					
	U40	--	Nonwoven Fabric Cloth			(WG25550)	16	
		--	LCD Unit	60A		(WF81700)		
	L10	**V5339100**	LCD Panel	TYPE-B				01
	L20	**WF817100**	LCD					
	L30	**WB491100**	Back Light Assembly	PT				08
	L40	--	Connector Assembly	BL 2P L=70		(WC60260)		
	L70	**V8671300**	LCD Holder					01
	L80	**V7838000**	Rubber Connector	ZTT-410			2	03
*	L90	**WG306300**	Circuit Board	DMLCD				
	L100	**WE972900**	Bind Head Tapping Screw-P	3.0X12 MFZN2W3			8	01

✻: New Parts

RANK: Japan only

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REF NO.	PART NO.	DESCRIPTION			REMARKS	QTY	RANK
L110	--	Nonwoven Fabric Cloth	5X8		(V706870)	2	
		ACCESSORIES					
	WG073800	Music Rest					
⚠	**WF324900**	AC Adaptor	PA-5D CHN				08
	--	EXP Pedal	EP-1 KAI		(VP62250)		

✻: New Parts

RANK: Japan only

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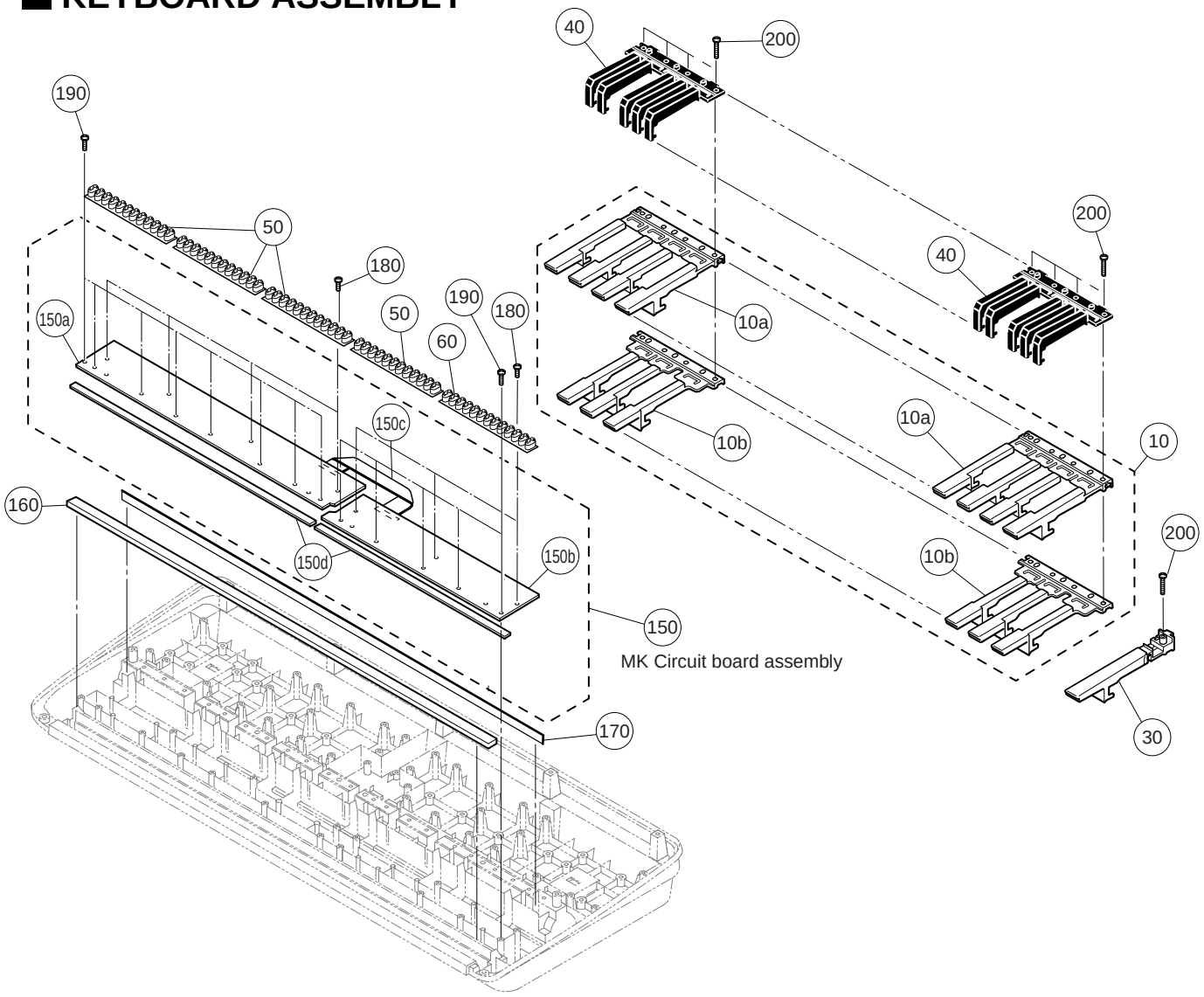
KEYBOARD ASSEMBLY



REF NO.	PART NO.	DESCRIPTION			REMARKS	QTY	RANK
		KEYBOARD ASSEMBLY			KB-280		
	V8695700	Keyboard Assembly	16N C61				
10	**V34107A1**	White Key	16N CEGBDFA			5	04
10a	--	White Key	16N CEGB		(V341260)	5	
10a	--	White Key	16N CEGB		(WB12520)	5	
10b	--	White Key	16N DFA		(V341270)	5	
10b	--	White Key	16N DFA		(WB12530)	5	
30	**V4760300**	White Key	16N C'		C6		02
40	**VZ271700**	Black Key	16N			5	06
50	**V3413600**	Rubber Contact	16N-2M OCT 2M		C1-B1,C2-B2,C3-B3,C4-B4	4	04
60	**V7477400**	Rubber Contact	16N-2M 13K 2M		C5-C6		04
150	--	MK Circuit Board Assembly	16N2M C61 P2		(V869560)		
150a	**V8695300**	Circuit Board	16L		(V869520)(X2336B0)		04
150b	**V8695500**	Circuit Board	16H		(V869540)(X2335C0)		04
150c	**V8696200**	Connector Assembly	16N-2M-C61 L=210				01
150d	**VZ302900**	Felt	U				02
160	**VZ303000**	Felt	L				02
170	**V7100100**	Rubber Support	16N				03
180	**WE774300**	Bind Head Tapping Screw-B	3.0X8 MFZN2W3			7	01
190	**WF491900**	Bind Head Tapping Screw-P	SP 3.0X12 MFZN2B3			13	01
200	**WF492000**	Bind Head Tapping Screw-P	3.0X20 MFZN2W3			21	

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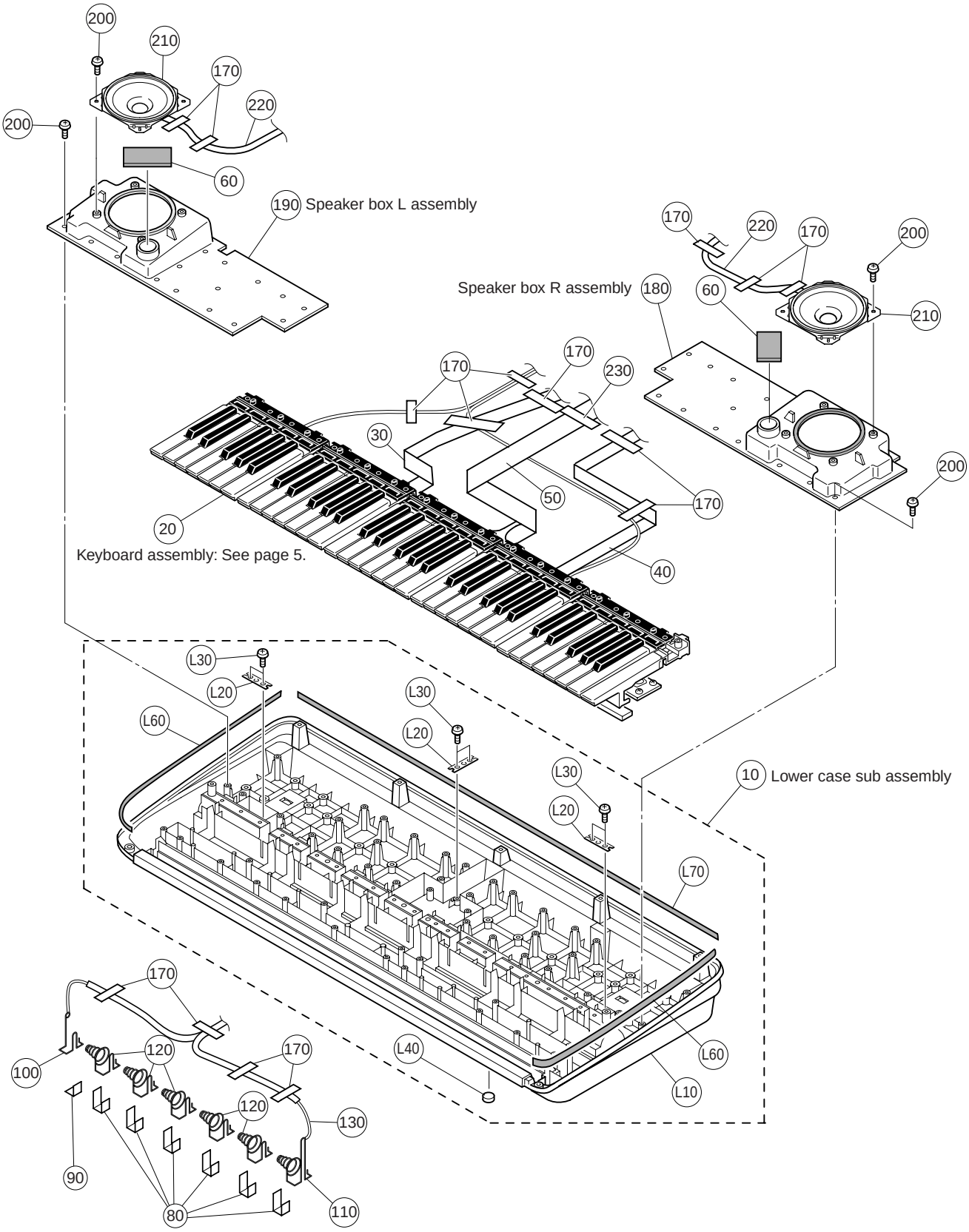
LOWER CASE ASSEMBLY



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REF NO.	PART NO.	DESCRIPTION			REMARKS	QTY	RANK
		LOWER CASE ASSEMBLY			KB-280		
	--	Lower Case Assembly			(WG07410)		
10	**WG074000**	Lower Case Sub Assembly					
20	**V8695700**	Keyboard Assembly	16N C61				
30	**WC601200**	Connector Assembly	MK3 7P L=550				
40	**WG343000**	Connector Assembly	MK2 5P L=500				
50	**WC601000**	Connector Assembly	MK1 12P L=600				
60	--	Filter	GLAY		(WC62030)	2	
80	--	Nonwoven Fabric Cloth	40X13X0.5		(V771130)	6	
90	--	Nonwoven Fabric Cloth	13X13X0.5		(V771140)		
100	**V7060500**	Spring Terminal	(+)				01
110	**V7060700**	Spring Terminal	(-)				01
120	**V7060200**	Spring Terminal	(-/+)			5	01
130	--	Connector Assembly	BAT 2P (RED/BLACK)		(V873560)		
170	**VA126100**	Adhesive Tape	12X50			11	03
170	--	Adhesive Tape	MY7# 12X50		(WB79380)	11	
180	**V8749500**	Speaker Box R Assembly	RIGHT				05
190	**V8749400**	Speaker Box L Assembly	LEFT				05
200	**WE974500**	Bind Head Tapping Screw-B	4.0X10 MFZN2W3			40	01
210	**X5163A00**	Speaker	12.0cm 4ohm 6W		WOOFER	2	06
220	--	Connector Assembly	SPL 2P		(WG32410)	2	
230	**VN195400**	Adhesive Tape	FILAMENT 12X70		}		03
230	--	Adhesive Tape	MY7# 12X70		} (WB79390)		
	WG074000	Lower Case Sub Assembly					
L10	--	Lower Case			(WG07390)		
L20	**VI104400**	Holder				3	
L30	**WE774300**	Bind Head Tapping Screw-B	3.0X8 MFZN2W3			6	01
L40	**CB043750**	Foot	T1.6			5	01
L60	--	Cushion	PE 380X15X1.0		(V881260)	2	
L70	--	Cushion	PE 885X15X1.0		(V642110)		

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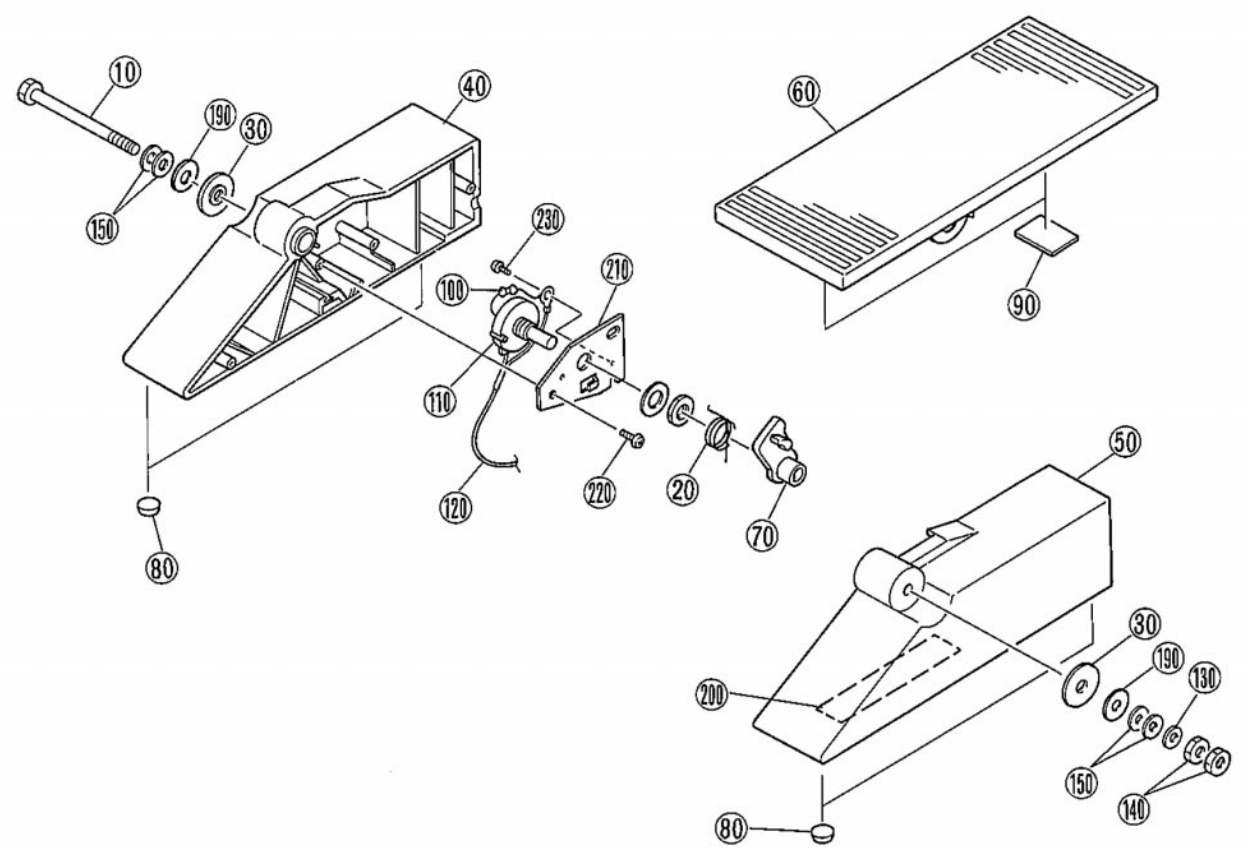
EXP PEDAL



	REF NO.	PART NO.	DESCRIPTION			REMARKS	QTY	RANK
			EXP PEDAL	EP-1		KB-280		
		--	EXP Pedal	EP-1		(VP62250)		
	10	AA049160	Shaft					02
	20	--	Coil Spring	EP-1		(VP60730)		
	30	CB033200	Metal Holder				2	03
	40	CB036830	Frame A					04
	50	CB036840	Frame B					04
	60	CB036850	EXP Pedal Plate					04
	70	--	Actuator	EP-1		(VP60740)		
	80	--	Foot			(VP79690)	4	
	90	CC021910	Felt	R FELT			2	01
	100	--	Carbon Resistor	270.0 1/4 J FORM.		(VP75920)		
	110	--	Rotary Variable Resistor	TOKU 20K RK24311L0		(VP59510)		
	120	--	Cord	EXP		(VP88910)		
	130	VA226900	Flat Washer	6X11.5 0.8 MFZN2BL				01
*	140	WF558400	Hexagonal Nut	M6 #3			2	
	150	EW200030	Flat Spring Washer	1L 6.0 MFZN2BL			4	01
	160	--	Grease	G-30H		(0412108)		
	190	ET500110	Flat Washer	6.0X16X1.0 MFC2BL			2	01
	200	--	Name Plate	EP-1		(VL64520)		
	210	--	VR Holder	EP-1		(VP60750)		
	220	WE774800	Bind Head Tapping Screw-P	3.0X8 MFZN2W3			3	01
*	230	WE974100	Bind Head Tapping Screw-C	3.0X6 MFZN2W3				

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ELECTRICAL PARTS

	REF NO.	PART NO.	DESCRIPTION			REMARKS	QTY	RANK
			ELECTRICAL PARTS			KB-280		
*		**WG306900**	Circuit Board	AM (AMJK 1,4,5/6)		(WG23590)(X7176C0)		
*		**WG307000**	Circuit Board	MIDI (AMJK 2/6)		(WG23590)(X7176C0)		
*		**WG307100**	Circuit Board	PB (AMJK 6/6)		(WG23590)(X7176C0)		
*		**WG306300**	Circuit Board	DMLCD		(WG23550)(X7174C0)		
*		**WG307500**	Circuit Board	PNL (PN 2/6,4/6)		(WG23610)(X7177C0)		
*		**WG307600**	Circuit Board	PNR (PN 1/6,3/6)		(WG23610)(X7177C0)		
*		**WG307700**	Circuit Board	TWL (PN 5/6,6/6)		(WG23610)(X7177C0)		
*		**WG307800**	Circuit Board	TWR (PN 5/6,6/6)		(WG23610)(X7177C0)		
		V8695500	Circuit Board	61H		(V869540)(X2335C0)		04
		V8695300	Circuit Board	61L		(V869520)(X2336B0)		04
*		**WG306900**	Circuit Board	AM (AMJK 1,4,5/6)		(WG23590)(X7176C0)		
*		**WG307000**	Circuit Board	MIDI (AMJK 2/6)		(WG23590)(X7176C0)		
*		**WG307100**	Circuit Board	PB (AMJK 6/6)		(WG23590)(X7176C0)		
		WE774300	Bind Head Tapping Screw-B	3.0X8 MFZN2W3			3	01
		--	Jumper Wire	0.55 TIN		(VA07890)		
	C103	**VC694800**	Semiconductive Cera. Cap.	0.1000 25V Z TATET				01
	C104	**V3510100**	Electrolytic Cap.	1000.0 25.0V TP				
	C104	**UR849100**	Electrolytic Cap.	1000 25.0V RX TP				01
	C105	**VC694800**	Semiconductive Cera. Cap.	0.1000 25V Z TATET				01
	C106	**VC694800**	Semiconductive Cera. Cap.	0.1000 25V Z TATET				01
	C107	**UR828220**	Electrolytic Cap.	220.00 10.0V RX TP				01
	C107	**V3507400**	Electrolytic Cap.	220.00 10.0V TP				01
	C551	**UA456100**	Mylar Capacitor	1.0000 50V J ST				03
	C551	**VE327200**	Monolithic Mylar Capacitor	1.0 50V J RX TP				02
	C551	**VU838100**	Monolithic Mylar Capacitor	ECQ-V1H105JL3				
	C552	**UA456100**	Mylar Capacitor	1.0000 50V J ST				03
	C552	**VE327200**	Monolithic Mylar Capacitor	1.0 50V J RX TP				02
	C552	**VU838100**	Monolithic Mylar Capacitor	ECQ-V1H105JL3				
	C557	**FG612470**	Ceramic Capacitor-B	470P 50V K RX TP				01
	C557	**VR025800**	Ceramic Capacitor-2B	470P 63V K FORMING				
	C558	**FG612470**	Ceramic Capacitor-B	470P 50V K RX TP				01
	C558	**VR025800**	Ceramic Capacitor-2B	470P 63V K FORMING				
	C559	**VC694800**	Semiconductive Cera. Cap.	0.1000 25V Z TATET				01
	C560	**UR838100**	Electrolytic Cap.	100.00 16.0V RX TP				01
	C560	**V3508500**	Electrolytic Cap.	100.00 16.0V TP				
	C561	**UR827330**	Electrolytic Cap.	33.00 10.0V RX TP				01
	C562	**UR867100**	Electrolytic Cap.	10.00 50.0V RX TP				01
	C563	**UA654470**	Mylar Capacitor	0.0470 50V J RX TP				01
	-566	**UA654470**	Mylar Capacitor	0.0470 50V J RX TP				01
	C569	**UR837470**	Electrolytic Cap.	47.00 16.0V RX TP				01
	C569	**V3508400**	Electrolytic Cap.	47.00 16.0V TP				
	C570	**UR837470**	Electrolytic Cap.	47.00 16.0V RX TP				01
	C570	**V3508400**	Electrolytic Cap.	47.00 16.0V TP				
	C571	**VC694800**	Semiconductive Cera. Cap.	0.1000 25V Z TATET				01
	C851	**FG644100**	Ceramic Capacitor-F	0.0100 50V Z RX TP				01
	C851	**VQ175700**	Ceramic Capacitor-2F	0.01 63V Z FORMING				
	C852	**VC694800**	Semiconductive Cera. Cap.	0.1000 25V Z TATET				01
	C853	**FG612100**	Ceramic Cap.-B	100P 50V K RX TP				01
	C853	**VR025000**	Ceramic Capacitor-2B	100P 63V K FORMING				
	C854	**VC694800**	Semiconductive Cera. Cap.	0.1000 25V Z TATET				01
	C862	**FG612100**	Ceramic Cap.-B	100P 50V K RX TP				01
	C862	**VR025000**	Ceramic Capacitor-2B	100P 63V K FORMING				
	CN151	**LB918030**	Base Post Connector	XH 3P TE				01
	CN152	**VK024600**	Wire Trap	52147 2P TE				01
	CN153	**VI878200**	Cable Holder	51048 4P TE				01
	CN154	**VI878200**	Cable Holder	51048 4P TE				01
	CN155	**VI879100**	Cable Holder	51048 13P TE				01
	CN551	**VI878300**	Cable Holder	51048 5P TE				01
	CN551	**VZ341700**	Cable Holder	51048 5P TE				
	CN552	**VI878300**	Cable Holder	51048 5P TE				01
	CN552	**VZ341700**	Cable Holder	51048 5P TE				
	CN553	**VI878000**	Cable Holder	51048 2P TE				01
	CN553	**VY668300**	Cable Holder	51048 2P TE				
	CN554	**LB918020**	Base Post Connector	XH 2P TE				01
	CN555	**LB918020**	Base Post Connector	XH 2P TE				01
	CN556	**VI878000**	Cable Holder	51048 2P TE				01
	CN556	**VY668300**	Cable Holder	51048 2P TE				
	CN853	**VI878700**	Cable Holder	51048 9P TE				01

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	REF NO.	PART NO.	DESCRIPTION			REMARKS	QTY	RANK
	CN853	VZ341900	Cable Holder	51048 9P TE				
	CN855	VI878100	Cable Holder	51048 3P TE				01
	CN855	VZ341600	Cable Holder	51048 3P TE				
⚠	D151	V8603100	Diode	2A02G-01 X0 JI				
⚠	D151	VV731400	Diode	2A02-05 X0				01
	D152	WB880900	Diode	10EDA40-TA1B2 26				01
	D153	WB880900	Diode	10EDA40-TA1B2 26				01
	D851	VB941200	Diode	1SS133,1SS176 TE				01
	IC151	X6980A00	IC	BA60BC0T		REGULATOR +6V		
	IC551	XY209A00	IC	LA4625		POWER AMP 13.5W		05
	IC851	WA645200	Photo Coupler	PC900V0NSZX				04
	J151	--	Jumper Wire	0.55 TIN		(VA07890)		
	-153	--	Jumper Wire	0.55 TIN		(VA07890)		
	J852	--	Jumper Wire	0.55 TIN		(VA07890)		
	J853	--	Jumper Wire	0.55 TIN		(VA07890)		
⚠	JK151	LB302260	Connector	HEC0470-01-630				02
⚠	JK151	V6557600	Connector	HTJ-020-05AZ				04
	JK551	LB101870	Phone Jack	JACK YKB21-5006				03
	JK551	VV943300	Phone Jack	HTJ064-04A				02
	JK851	VC687500	Phone Jack Black	JACK YKB21-5014				01
	JK851	WE245200	Phone Jack Black	JY-6314-01-020				
	JK852	VJ107200	DIN Connector	JACK5P YKF51-5050N				01
	JK852	VZ085800	DIN Connector	5P HDC-052S-01				01
	JK853	VJ107200	DIN Connector	JACK5P YKF51-5050N				01
	JK853	VZ085800	DIN Connector	5P HDC-052S-01				01
*	JK856	VM467200	PIN Connector	LCZ3.4-1				
	K551	--	Heat Sink			(WF87700)		
	L851	V7634400	Coil	BD-FL20-03 20uH				
	L851	VB835000	Coil	FL05RD200AT 20uH				01
	L851	VT279200	Coil	DX001-20UH 20uH				
	L854	V7634400	Coil	BD-FL20-03 20uH				
	L854	VB835000	Coil	FL05RD200AT 20uH				01
	L854	VT279200	Coil	DX001-20UH 20uH				
	R151	V2548300	Carbon Resistor	180.0 1/6J 26TP				
	R152	V2548200	Carbon Resistor	150.0 1/6J 26TP				
	R551	V2550400	Carbon Resistor	10.0K 1/6J 26TP				
	R552	V2550400	Carbon Resistor	10.0K 1/6J 26TP				
*	R553	V2549600	Carbon Resistor	2.2K 1/6 J 26TP				
*	R554	V2549600	Carbon Resistor	2.2K 1/6 J 26TP				
	R555	V2550400	Carbon Resistor	10.0K 1/6J 26TP				
	R556	WD556700	Flame Proof C. Resistor	2.2 1/4 J TE-26				01
	-559	WD556700	Flame Proof C. Resistor	2.2 1/4 J TE-26				01
	R560	V2548000	Carbon Resistor	100.0 1/6J 26TP				
	R561	V2548000	Carbon Resistor	100.0 1/6J 26TP				
	R562	V2548600	Carbon Resistor	330.0 1/6J 26TP				
	R563	V2548600	Carbon Resistor	330.0 1/6J 26TP				
	R851	V2550400	Carbon Resistor	10.0K 1/6J 26TP				
	R852	V2550600	Carbon Resistor	15.0K 1/6J 26TP				
	R853	V2550000	Carbon Resistor	4.7K 1/6 J 26TP				
	R854	V2549200	Carbon Resistor	1.0K 1/6 J 26TP				
	R855	V2548400	Carbon Resistor	220.0 1/6J 26TP				
	R856	V2547600	Carbon Resistor	47.0 1/6J 26TP				
	R857	V2547600	Carbon Resistor	47.0 1/6J 26TP				
	R858	V2551200	Carbon Resistor	47.0K 1/6J 26TP				
	R859	V2549200	Carbon Resistor	1.0K 1/6 J 26TP				
⚠	SW151	VY980400	Push Switch	SDDLB15700 J,UC,CE				03
⚠	TH151	V8132800	Fuse	MF-R185-AP				02
⚠	TH151	VU847300	Protector Switch	RUEF185 1.85A 30V				03
	TR851	IC174070	Transistor	2SC1740S R,S				01
	TR852	IC174070	Transistor	2SC1740S R,S				01
	VR551	WC709800	Rotary Variable Resistor	A 5.0K XV014111YG				02
	VR751	VZ486300	Rotary Variable Resistor	B10K EVJ05DF20B14				03
	WH153	--	Connector Assembly	STB2 4P L=230		(WG33270)		
	WH155	--	Connector Assembly	AMDM 13P L=120		(WG33120)		
	WH551	--	Connector Assembly	VR3 5P L=230		(WG33260)		
	WH553	--	Connector Assembly	TW2 2P L=380		(WG34260)		
	WH556	--	Connector Assembly	TW3 2P L=410		(WG34270)		
	WH853	--	Connector Assembly	JK1 9P L=90		(WG33110)		
	WH855	--	Connector Assembly	PB3 3P L=100		(WG33160)		

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REF NO.	PART NO.	DESCRIPTION			REMARKS	QTY	RANK
*	**WG306300**	Circuit Board	DMLCD		(WG23550)(X7174C0)		
C101	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
C102	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
C103	**UF037100**	Electrolytic Cap. (chip)	10 16V				01
C104	**UF037100**	Electrolytic Cap. (chip)	10 16V				01
C105	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
C106	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
C107	**UF037100**	Electrolytic Cap. (chip)	10 16V				01
C108	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
C109	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
C110	**UF037100**	Electrolytic Cap. (chip)	10 16V				01
C111	**US063100**	Ceramic Capacitor-B (chip)	1000P 50V K RECT.				01
C112	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
-114	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
C201	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
-205	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
C207	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
-216	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
C301	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
-304	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
C305	**UF028100**	Electrolytic Cap. (chip)	100 10V				01
C306	**US062220**	Ceramic Capacitor-SL(chip)	220P 50V J RECT.				01
C307	**US063470**	Ceramic Capacitor-B (chip)	4700P 50V K RECT.				01
C308	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
C309	**US062100**	Ceramic Capacitor-SL(chip)	100P 50V J RECT.				01
C310	**US061220**	Ceramic Capacitor-CH(chip)	22P 50V J RECT.				01
C311	**US061220**	Ceramic Capacitor-CH(chip)	22P 50V J RECT.				01
C312	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
-326	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
C327	**US062100**	Ceramic Capacitor-SL(chip)	100P 50V J RECT.				01
C328	**US062100**	Ceramic Capacitor-SL(chip)	100P 50V J RECT.				01
C329	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
-332	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
C401	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
C402	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
C403	**US061470**	Ceramic Capacitor-CH(chip)	47P 50V J RECT.				01
-416	**US061470**	Ceramic Capacitor-CH(chip)	47P 50V J RECT.				01
C501	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
C502	**UF037100**	Electrolytic Cap. (chip)	10 16V				01
C503	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
C504	**UF037100**	Electrolytic Cap. (chip)	10 16V				01
C505	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
C506	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
C507	**US063150**	Ceramic Capacitor-B (chip)	1500P 50V K RECT.				01
C508	**US063150**	Ceramic Capacitor-B (chip)	1500P 50V K RECT.				01
C509	**US062560**	Ceramic Capacitor-SL(chip)	560P 50V J RECT.				01
-512	**US062560**	Ceramic Capacitor-SL(chip)	560P 50V J RECT.				01
C514	**UF066100**	Electrolytic Cap. (chip)	1.0 50V				01
C515	**UF066100**	Electrolytic Cap. (chip)	1.0 50V				01
C516	**US062100**	Ceramic Capacitor-SL(chip)	100P 50V J RECT.				01
C517	**US062100**	Ceramic Capacitor-SL(chip)	100P 50V J RECT.				01
C518	**UF028100**	Electrolytic Cap. (chip)	100 10V				01
C519	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
C601	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
-604	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
C605	**UF037100**	Electrolytic Cap. (chip)	10 16V				01
C701	**US062100**	Ceramic Capacitor-SL(chip)	100P 50V J RECT.				01
-713	**US062100**	Ceramic Capacitor-SL(chip)	100P 50V J RECT.				01
C715	**US062100**	Ceramic Capacitor-SL(chip)	100P 50V J RECT.				01
-725	**US062100**	Ceramic Capacitor-SL(chip)	100P 50V J RECT.				01
C801	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
C802	**US063100**	Ceramic Capacitor-B (chip)	1000P 50V K RECT.				01
C804	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
C808	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
C809	**UF028100**	Electrolytic Cap. (chip)	100 10V				01
C810	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
C812	**US062100**	Ceramic Capacitor-SL(chip)	100P 50V J RECT.				01
C901	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
-950	**US145100**	Ceramic Capacitor-F (chip)	0.1000 25V Z RECT.				01
CN101	**VK025700**	Wire Trap	52147 13P TE				01

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	REF NO.	PART NO.	DESCRIPTION			REMARKS	QTY	RANK
	CN401	**VK025600**	Wire Trap	52147 12P TE				01
	CN402	**VK025100**	Wire Trap	52147 7P TE				01
	CN403	**VK024900**	Wire Trap	52147 5P TE				01
	CN701	**VJ861600**	Wire Trap	52147 16P TE				01
	CN703	**VJ861600**	Wire Trap	52147 16P TE				01
	CN803	**VK025300**	Wire Trap	52147 9P TE				01
	D701	**VT332900**	Diode	1SS355 TE-17 TP				01
	IC101	**X6959A00**	IC	RH5RZ50CA-T1-F		REGULATOR +5V		
	IC102	**X5889A00**	IC	BA33BC0FP		REGULATOR +3.3V		03
	IC103	**X3679A00**	IC	RH5RZ25CA-T1-F		REGULATOR +2.5V		03
*	IC201	**X7320100**	IC	MR27T12800L-096TN0		ROM 128M PROG./WAVE		
	IC204	**X2726A00**	IC	GLT440L16P-40TC		DRAM 4M		05
	IC204	**X6504A00**	IC	M11L416256SA-35TG				05
	IC206	**X2310A00**	IC	MX29LV400BTC-70G		FLASH ROM 4M		06
	IC206	**X7130A00**	IC	MX29LV400CBTC-70G				04
	IC207	**X5647A00**	IC	SN74LV32APWR		OR		01
	IC301	**X6055A00**	IC	YMW767-VTZ		CPU (SWL01B)		10
	IC302	**X4374A00**	IC	S-80136ANMC-JCVT2G		SYSTEM RESET		
	IC302	**X5888A00**	IC	BD45365G				01
	IC401	**X7284A00**	IC	SN74LV138APWR		DECODER		01
	IC402	**X7284A00**	IC	SN74LV138APWR		DECODER		01
	IC501	**X6040A00**	IC	AK4385ET		DAC		03
	IC502	**X7300A00**	IC	BA4510F-E2		OP AMP		
	IC601	**X3148A00**	IC	NT3881DFG-01		LCD DRIVER		05
	IC601	**XZ987A00**	IC	ML9040A-B01GAZ03A				05
	IC801	**X6905A00**	IC	ADC084S021CIMM		AD CONVERTER		
	L501	**VY657200**	Chip Inductance	600 BK1608HM601-T				01
	R201	**RD357470**	Carbon Resistor (chip)	47.0K 63M J RECT.				01
	R202	**RD357470**	Carbon Resistor (chip)	47.0K 63M J RECT.				01
	R215	**RD357470**	Carbon Resistor (chip)	47.0K 63M J RECT.				01
	-220	**RD357470**	Carbon Resistor (chip)	47.0K 63M J RECT.				01
	R301	**RD356100**	Carbon Resistor (chip)	1.0K 63M J RECT.				01
	R304	**RD359100**	Carbon Resistor (chip)	1.0M 63M J RECT.				01
	R305	**RD355470**	Carbon Resistor (chip)	470.0 63M J RECT.				01
	R306	**RD357100**	Carbon Resistor (chip)	10.0K 63M J RECT.				01
	R307	**RD357470**	Carbon Resistor (chip)	47.0K 63M J RECT.				01
	R308	**RD358100**	Carbon Resistor (chip)	100.0K 63M J RECT.				01
	R309	**RD358100**	Carbon Resistor (chip)	100.0K 63M J RECT.				01
	R310	**RD357470**	Carbon Resistor (chip)	47.0K 63M J RECT.				01
	R311	**RD357470**	Carbon Resistor (chip)	47.0K 63M J RECT.				01
	R312	**RD354470**	Carbon Resistor (chip)	47.0 63M J RECT.				01
	R313	**RD355100**	Carbon Resistor (chip)	100.0 63M J RECT.				01
	R314	**RD355100**	Carbon Resistor (chip)	100.0 63M J RECT.				01
	R315	**RD354470**	Carbon Resistor (chip)	47.0 63M J RECT.				01
	R316	**RD354470**	Carbon Resistor (chip)	47.0 63M J RECT.				01
	R401	**RD355100**	Carbon Resistor (chip)	100.0 63M J RECT.				01
	R402	**RD355100**	Carbon Resistor (chip)	100.0 63M J RECT.				01
	R501	**RD350000**	Carbon Resistor (chip)	0 63M J RECT.				01
	R503	**RD356470**	Carbon Resistor (chip)	4.7K 63M J RECT.				01
	-514	**RD356470**	Carbon Resistor (chip)	4.7K 63M J RECT.				01
	R515	**RD355100**	Carbon Resistor (chip)	100.0 63M J RECT.				01
	R516	**RD355100**	Carbon Resistor (chip)	100.0 63M J RECT.				01
	R517	**RD356100**	Carbon Resistor (chip)	1.0K 63M J RECT.				01
	R518	**RD356100**	Carbon Resistor (chip)	1.0K 63M J RECT.				01
	R601	**RD356150**	Carbon Resistor (chip)	1.5K 63M J RECT.				01
	R602	**RD355220**	Carbon Resistor (chip)	220.0 63M J RECT.				01
	R603	**RD354680**	Carbon Resistor (chip)	68.0 63M J RECT.				01
	R604	**RF457910**	Carbon Resistor (chip)	91.0K D RECT.				
	R605	**RD356220**	Carbon Resistor (chip)	2.2K 63M J RECT.				01
	-609	**RD356220**	Carbon Resistor (chip)	2.2K 63M J RECT.				01
	R610	**RD357100**	Carbon Resistor (chip)	10.0K 63M J RECT.				01
	R701	**RD356100**	Carbon Resistor (chip)	1.0K 63M J RECT.				01
	-704	**RD356100**	Carbon Resistor (chip)	1.0K 63M J RECT.				01
	R705	**RD357330**	Carbon Resistor (chip)	33.0K 63M J RECT.				01
	-712	**RD357330**	Carbon Resistor (chip)	33.0K 63M J RECT.				01
	R713	**RD356100**	Carbon Resistor (chip)	1.0K 63M J RECT.				01
	-720	**RD356100**	Carbon Resistor (chip)	1.0K 63M J RECT.				01
	R723	**RD357470**	Carbon Resistor (chip)	47.0K 63M J RECT.				01
	R724	**RD357470**	Carbon Resistor (chip)	47.0K 63M J RECT.				01
	R725	**RD350000**	Carbon Resistor (chip)	0 63M J RECT.				01

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	REF NO.	PART NO.	DESCRIPTION			REMARKS	QTY	RANK
	R727	**RD350000**	Carbon Resistor (chip)	0 63M J RECT.				01
	-732	**RD350000**	Carbon Resistor (chip)	0 63M J RECT.				01
	R746	**RD355100**	Carbon Resistor (chip)	100.0 63M J RECT.				01
	R747	**RD357470**	Carbon Resistor (chip)	47.0K 63M J RECT.				01
	-754	**RD357470**	Carbon Resistor (chip)	47.0K 63M J RECT.				01
	R757	**RD350000**	Carbon Resistor (chip)	0 63M J RECT.				01
	R758	**RD350000**	Carbon Resistor (chip)	0 63M J RECT.				01
	R801	**RD357470**	Carbon Resistor (chip)	47.0K 63M J RECT.				01
	R802	**RD350000**	Carbon Resistor (chip)	0 63M J RECT.				01
	R803	**RD350000**	Carbon Resistor (chip)	0 63M J RECT.				01
	R804	**RD355100**	Carbon Resistor (chip)	100.0 63M J RECT.				01
	R805	**RD356220**	Carbon Resistor (chip)	2.2K 63M J RECT.				01
	R814	**RD356100**	Carbon Resistor (chip)	1.0K 63M J RECT.				01
	R815	**RD357470**	Carbon Resistor (chip)	47.0K 63M J RECT.				01
	R836	**RD357100**	Carbon Resistor (chip)	10.0K 63M J RECT.				01
	RA401	**RE045100**	Resistor Array	100X4				01
	-403	**RE045100**	Resistor Array	100X4				01
	RA404	**RE046100**	Resistor Array	1KX4				01
	-406	**RE046100**	Resistor Array	1KX4				01
	RA407	**RE047100**	Resistor Array	10KX4				01
	-409	**RE047100**	Resistor Array	10KX4				01
	TH601	**V9140600**	Thermistor (chip)	ERTJ1VT152J 1.5K				
	TR701	**WB123200**	Transistor Array	IMB10A T110				05
	-704	**WB123200**	Transistor Array	IMB10A T110				05
	TR705	**VY677600**	Digital Transistor	DTC123JKA TP				01
	X301	**WE194400**	Quartz Crystal Unit	16.9344M HC-49S-SM				01
*		**WG307500**	Circuit Board	PNL (PN 2/6,4/6)		(WG23610)(X7177C0)		
*		**WG307600**	Circuit Board	PNR (PN 1/6,3/6)		(WG23610)(X7177C0)		
*		**WG307700**	Circuit Board	TWL (PN 5/6,6/6)		(WG23610)(X7177C0)		
*		**WG307800**	Circuit Board	TWR (PN 5/6,6/6)		(WG23610)(X7177C0)		
	CN771	**VI879400**	Cable Holder	51048 16P TE		}		01
	CN771	**VY669100**	Cable Holder	51048 16P TE		}		
	CN772	**VI878500**	Cable Holder	51048 7P TE				01
	CN773	**VI878500**	Cable Holder	51048 7P TE				01
	CN774	**VI879400**	Cable Holder	51048 16P TE		}		01
	CN774	**VY669100**	Cable Holder	51048 16P TE		}		
	CN775	**VI878400**	Cable Holder	51048 6P TE		}		01
	CN775	**VY668500**	Cable Holder	51048 6P TE		}		01
	CN776	**VI878400**	Cable Holder	51048 6P TE		}		01
	CN776	**VY668500**	Cable Holder	51048 6P TE		}		01
	CN777	**VK024700**	Wire Trap	52147 3P TE				01
	D771	**VB941200**	Diode	1SS133,1SS176 TE				01
	-775	**VB941200**	Diode	1SS133,1SS176 TE				01
	D771	**VV437800**	Diode	1N4148 (DO-34)				01
	-775	**VV437800**	Diode	1N4148 (DO-34)				01
*	LD751	**V8952300**	LED	TL-20346D-R-F-13.5		VOICE B		
*	LD752	**V8952300**	LED	TL-20346D-R-F-13.5		STYLE B		
*	LD753	**V8952300**	LED	TL-20346D-R-F-13.5		PORTAMENTO		
*	R751	**V2547800**	Carbon Resistor	68.0 1/6J 26TP				
*	R753	**V2547800**	Carbon Resistor	68.0 1/6J 26TP				
*	R755	**V2547800**	Carbon Resistor	68.0 1/6J 26TP				
	WH771	**--**	Connector Assembly	PN5 16P L=170		(WG33210)		
	WH772	**--**	Connector Assembly	PN7 7P L=170		(WG33230)		
	WH774	**--**	Connector Assembly	PN6 16P L=200		(WG33220)		
	WH775	**--**	Connector Assembly	PN8 6P L=320		(WG33240)		
		V8695500	Circuit Board	61H		(V869540)(X2335C0)		04
	CN01	**VK025600**	Wire Trap	52147 12P TE				01
	CN02	**VK024900**	Wire Trap	52147 5P TE				01
	CN03	**VK025600**	Wire Trap	52147 12P TE				01
	D073	**VV437800**	Diode	1N4148(DO-34)				01
	-122	**VV437800**	Diode	1N4148(DO-34)				01
		V8695300	Circuit Board	61L		(V869520)(X2336B0)		04
	CN04	**VK025600**	Wire Trap	52147 12P TE				01
	CN05	**VK025100**	Wire Trap	52147 7P TE				01
	D001	**VV437800**	Diode	1N4148(DO-34)				01
	-072	**VV437800**	Diode	1N4148(DO-34)				01

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REF NO.	PART NO.	DESCRIPTION			REMARKS	QTY	RANK
	X0159A00	Speaker	3.0cm		TWEETER	2	01
	X5163A00	Speaker	12.0cm 4ohm 6W		WOOFER	2	06
	WF817100	LCD					

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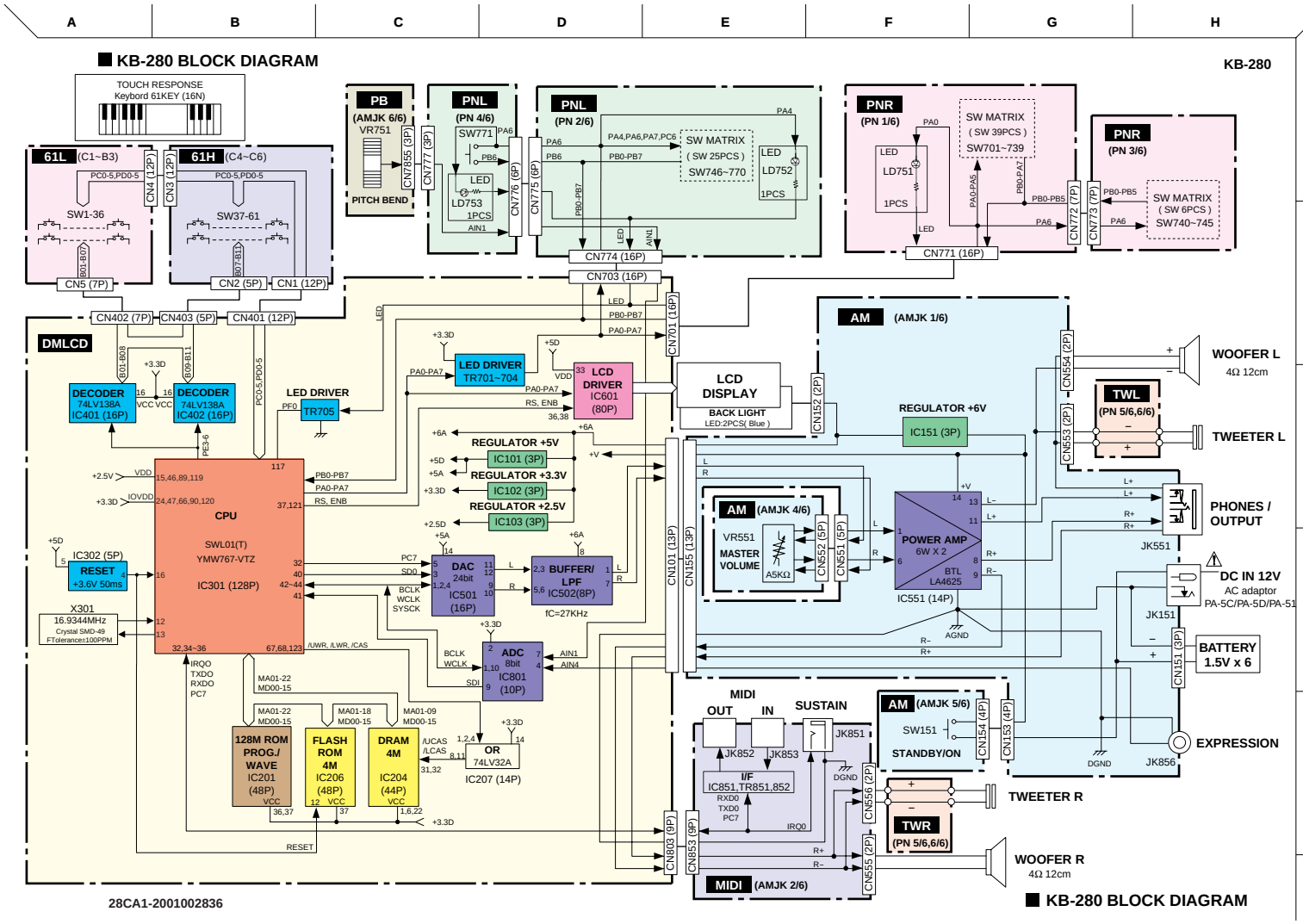

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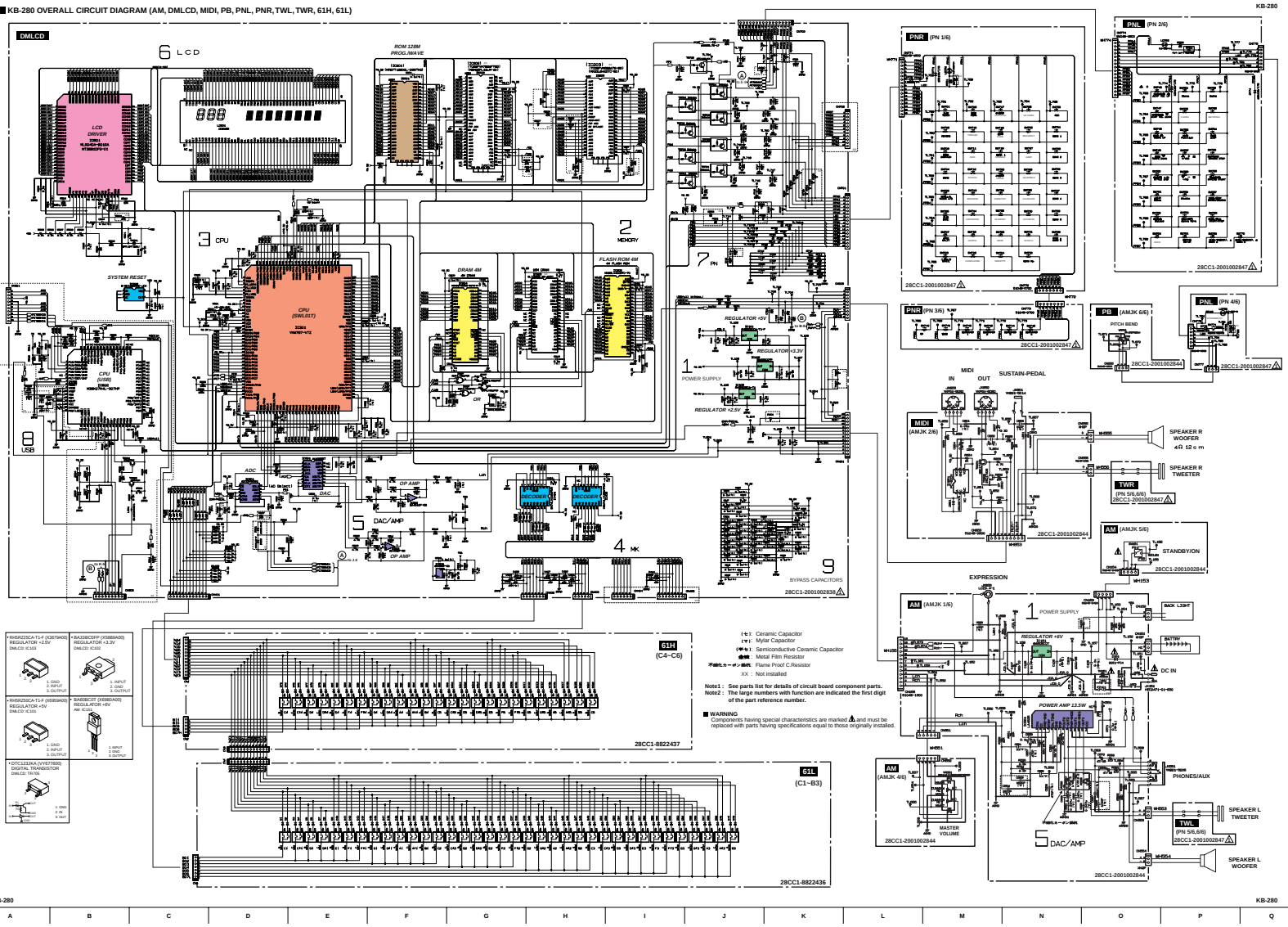
■ KB-280 OVERALL CIRCUIT DIAGRAM (AM, DMLCD, MIDI, PB, PNL, PNR, TWL, TWR, 61H, 61L)



(+): Ceramic Capacitor
(▼): Mylar Capacitor
(▼▼): Semiconductive Ceramic Capacitor
(▲): Metal Film Resistor
(▲): Flame Proof C.Resistor
XX : Not installed

Note1 : See parts list for details of circuit board component parts.
Note2 : The large numbers with function are indicated the first digit of the part reference number.

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

KB-280

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